GENERAL POLICY SECTION

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POLICIES

Special Quotations

Prices, descriptions and deliveries for hardware and/or software not explicitly included in the Operating System Hardware Configurator and the Hardware Products Lists and Hardware Configuration Diagrams must be obtained from the responsible Corporate Pre-Sales Support Group; i.e., IMO, Computer Systems Group, Services Organization or Peripheral Products Organization depending on the products required for the customer. Each such quotation is individually numbered and identified as a QSE or QSS. QSE/QSS Request Form No. AA3948 must be approved by the appropriate District and Region Management. (Reference QSE/QSS Procedure No. 5:003:00 in Marketing Operating Manual.)

A QSE is a Quote for Special Equipment and may include software and all QSE's will require and include diagnostics.

A QSS is a Quote for Special Software only.

PROPOSALS

Purpose

A prospective customer may request a proposal from Control Data either by submitting a formal Request for Proposal (RFP), Request for Quotation (RFQ), Invitation for Bid (IFB), formal letter or verbal request.

A proposal or quotation is a formal written presentation of Control Data's products and services including price, delivery, and terms and condition information to prospective customers. It should clearly identify the customer's problem, our recommended solution and implementation plan.

The analysis of the proposal request is particularly important. This analysis must convince the customer that Control Data fully understands the problem. Any alternatives should be briefly discussed and the reason for the selection of Control Data's approach should be carefully delineated. Responsiveness to all of the prospective customer's requirements is extremely important; non-responsiveness may lose a contract award.

Since misunderstandings and legal actions may result from a proposal, it is essential that utmost care be taken to make certain that all proposals are clearly written, accurate and complete in every detail.

The proposal is an invitation to the prospective customer to enter into contract negotiations with Control Data and is not a legally binding offer by Control Data to sell on the terms as outlined in the proposal. This is not generally the case when dealing with agencies of the Federal Government who issue purchase orders under the GSA Contract. Depending upon the type of government procurement regulations issued, Control Data's proposal may be legally binding. It is, therefore, required that government requests for proposals (RFP's, etc.) be reviewed by the appropriate contracts function. (Reference Marketing's Delegation of Authority to Propose, Negotiate, and Accept Business.)

GSA Proposals

If there is any deviation from the Authorized ADP Schedule (GSA Contract), the terms, conditions and prices must be reviewed by the GSA & Master Contracts Department. All commitments made in writing to Government Agencies procuring under the Authorized ADP Schedule that are not in agreement with the terms, conditions and prices as stated in the current GSA contract will be binding upon Control Data Corporation.

GSA Proposals must include the following or similar paragraphs.

1. The terms, conditions and prices are in accordance with Authorized ADP Schedule Contract No. _____ (our current GSA Contract number) and any amendments thereto.

2. This letter and the attached documents (be sure to name them) represent Control Data's proposal to (name the prospective customer). This proposal will be effective for _____ days from the date of this letter. Sixty (60) days should be placed in the blank unless a longer time is required to be responsive to the proposal request.

3. An itemized list of the products and services proposed including pricing and delivery information.

NOTE: Under the Authorized ADP Schedule, all Installation and Delivery Dates quoted in the proposal are automatically binding upon Control Data if an order is received prior to the proposal expiration date. Since we do not have an opportunity to change these dates unless the original proposal has expired, any commitments specified in the proposal for hardware, software or other services will be binding upon Control Data and subject us to liquidated or other damages. Any commitments not consistent with the Contract may result in the government requiring Control Data to amend its Authorized ADP Schedule; therefore, it is mandatory that these commitments be approved by the GSA & Master Contracts Department before the proposal is submitted to the customer.

PROPOSALS (continued)

Commercial Proposals

A proposal may mistakenly be construed by the prospective customer as a legal offer by Control Data Corporation. Therefore, commercial proposals must include:

1. The following paragraphs:

   "This letter and the attached documents (be sure to name them) constitute the proposal by Control Data Corporation to (name the prospective customer)."

   "The proposal will be effective for sixty (60) days from the date of this letter. This proposal is an invitation to enter into contract negotiations with Control Data Corporation."

2. The following paragraph, since configuration changes from the customer may result in additional costs for such hardware or software.

   "Any change to the configuration of the system after an order is accepted by Control Data may result in additional hardware and/or software engineering charges to (name of prospective customer)."

3. The following General Terms and Conditions:

   a. All prices include installation and check-out at the prospective customer's prepared site.

   b. Minimum rental period is 12 months.

   c. All prices F.O.B. point of manufacture.

   d. With the exception of personal property taxes on leased equipment, Federal, State and Local taxes are not included in prices quoted.

   e. Lease and purchase prices do not include maintenance, spare parts, or other services.

4. Description, prices and delivery information for the products and services proposed (separate and/or summarized).

Proposals should include copies of current applicable contracts.

Proprietary Information

In some proposals, Control Data will disclose information to a prospective customer which may be of great value to a competitor. Also, we may be in the process of applying for a patent on the information disclosed in the proposal. The following statement must appear on the page following the title page of every proposal where proprietary information has been discussed:

"The ideas and designs set forth in the proposal are the property of Control Data Corporation and are not to be disseminated, distributed, or otherwise conveyed to third persons without the express written permission of Control Data Corporation."

Responsibilities and Approvals

Proposal Preparation is the responsibility of the sales representative. Those proposals which meet the requirements for a standard proposal and are within the region delegation of authority may be prepared without the assistance of a Marketing Pre-Sales Support Group (Industry Management Office, IMO), however, written approval is required from the Marketing Pre-Sales Support Group for certain items. (Reference Proposal Procedure 5:001:00 in the Marketing Operating Manual.)

Whenever one or more of the criteria for a standard proposal is outside the region delegation of authority, the proposal is considered non-standard and must be reviewed by the responsible Marketing Pre-Sales Support Group; e.g., IMO, KOB, BMO.

1. The first level of pre-sale support is always within the field's own resources, using district and regional resources and procedures, as defined by the respective regional management. The majority of our business should be accomplished through these resources using standard products, pricing, and delivery information.

2. The second level of pre-sale support will be provided by the appropriate Marketing Pre-Sales Support Group for all pre-sales support required in addition to that available in the field. If support is required in addition to that available in the field, the objective is to secure regional management approval that such an opportunity should be pursued and then contact the responsible Marketing Pre-Sales Support Group early in the pre-sale cycle for technical, pricing, scheduling, and proposal support.

In all instances, for both standard and non-standard proposals, a proposal file is to be established by the district sales office and must include all required approvals and documents (reference Proposal Procedure 5:001:00, in the Marketing Operating Manual).

If the proposal is being prepared in the field, it is the district sales office's responsibility for including all the required approvals and documentation in the proposal file.

If the proposal is being prepared by the responsible Marketing Pre-Sales Support Group, it is the Marketing Pre-Sales Support Group's responsibility to provide all the required approvals and documentation to the district sales office for inclusion in the proposal file and it is the district sales office's responsibility to ensure that they have obtained and included in the proposal file all the required approvals and documentation.

CUSTOMER SUPPORT POLICIES

The following policies concerning customer systems support provide information useful for proposal preparation and general selling effort.

Publications

Control Data will provide, without charge, the following number of publications:

1. Hardware - One copy of the Hardware Reference manual for each piece of equipment comprising the customer's system.
2. Software
   a. Non-licensed - One copy of the Software Reference Manual, General Information Manual and Installation Handbook for all non-licensed software installed on the customer's system.
   b. Licensed - One copy of the Software Reference Manual, Installation Handbook, and when available, the Internal Maintenance Specifications for each licensed software product installed on the customer's system.
3. Maintenance - One copy of the Equipment Maintenance Documentation, including logic diagrams and wire tabs, but excluding firmware and controlware, for each piece of equipment comprising the customer's system, providing the system is maintained by the customer. If CDC maintains the system, maintenance documentation is provided to CDC's Customer Engineering organization for their use.
4. Coding Material - One copy of code cards, code book, "instant" book, template and coding forms for any customer employee, that are system programmers or closed shop users, requiring them in their normal daily job assignments. (Not to exceed 25 sets of the above.)
5. Promotional/Sales Materials - Promotional brochures, reprints and similar publications available from Literature Distribution Services are the responsibility of the local sales office. (This material does not include the documentation in paragraphs 1, 2, and 3 above.)

Revisions to the documentation supplied in paragraphs 1-5 above are not provided automatically. Customers who require updates and/or additional manuals may order them through the Literature Distribution Services Department. Any documentation ordered by the customer is charged in accordance with the Literature Distribution Services Center catalog.

Installation and Service Support

Normal system integration, checkout, and installation assistance will be provided (by operating divisions) at no additional charge to the customer on initial hardware installation only. All customer specified system design or programming assistance provided by operating divisions will be charged to the customer. The latter includes modifications to software products to adapt them to specific customer requirements. Refer to the Software, Professional Service and Facilities Engineering Policies.

Software Support

All Control Data Software products are listed in the Software Section of the price list. Please refer to the policy at the front of the Software Section.

Customer Education and Training

All customer education and training will be charged to the customer at current prices. Please refer to the Customer Education policy in the Customer Education Section.

Systems Attachments

This will define Control Data's policy concerning customer requests for attachment of equipment manufactured by suppliers other than Control Data to Control Data manufactured computer systems.

Because of the complexity of computer equipment and software, as well as the wide variety of systems configurations and applications utilized by Customers, the consequences of attachment of non-Control Data manufactured equipment necessarily will vary in each situation and must be considered on an individual basis. Therefore, it is not possible for Control Data to endorse or certify any particular model of non-Control Data manufactured equipment, as always suitable for attachment to Control Data systems. Control Data has not so certified or endorsed the equipment of any supplier.

Control Data will, upon request, review with the Customer the extent to which any proposed attachment of such equipment to the Control Data manufactured system will affect the then existing mutual obligations and responsibilities between Control Data and Customer. The following are among the factors to which consideration ordinarily will be given:

1. Inspection by CDC of the proposed attachment or other special examination relating to the attachment and charges to be made by CDC to the customer for such inspection or other examination.

2. Customer plans for maintenance of the non-CDC manufactured attachment -- CDC generally is unable to maintain attachments manufactured by others and differing in design, specifications, and maintenance requirements from CDC equipment.

3. If CDC is maintaining the computer system, the feasibility of continued maintenance under then applicable terms and conditions of the CDC manufactured portion of the system to which the attachment is to be added, and the necessity of revising the maintenance agreement to provide for additional charges to be made to the customer on remedial maintenance calls where CDC determines the difficulty to originate in the non-CDC attachment and/or where CDC is required to furnish further preventive maintenance on CDC manufactured equipment because of the attachment.

4. Effect of the attachment upon performance and maintenance of standard CDC software and on installation or functioning of CDC sponsored modifications in the CDC manufactured portions of the system.

5. Liability of the customer for any damage caused to CDC equipment, which demage is attributable to the attachment of non-CDC manufactured equipment.

6. Unavailability of downtime credits where the downtime conditions are caused by or result from use of attachments manufactured by others.

7. Responsibility of the customer to restore the CDC manufactured equipment leased from CDC to its normal condition prior to discontinuance of the lease.

8. CDC's lack of responsibility for any damage to the attachment arising out of CDC's continued performance under its agreement with the customer, including performance of maintenance service on equipment or software and installation of CDC sponsored modifications on equipment.

In any case, no commitment may be made to a user without a written contractual agreement clearly stating the responsibilities and obligations of Control Data Corporation and of the user with respect to the attachment. Commitment must be reviewed by Regional Contracts and must be approved by the Executive Vice President, Marketing, before submission to the customer.

PURCHASE OPTION POLICY

Policy - Standard Products

Control Data Corporation offers a purchase option to customers leasing standard products. Purchase conversion credits apply to Commercial Credit's leases as well as leases under standard CDC contracts.

Purchase Option Policy

A. Customer may at any time purchase any or all equipment specified in accordance with Control Data's agreement for the sale of equipment then in effect.

Such purchase shall be at Control Data's list price to commercial users for new equipment prevailing on the date of such purchase less an amount as determined by the applicable purchase conversion plan given below, provided that equipment to be purchased was on continuous rental.

Cost to the customer shall not be less than stated minimum percentage of the current list purchase price except in the case of equipment designated "Resale". Resale products may be purchase converted at purchase conversion price or list resale price, whichever is lower.

B. The purchase shall be effective upon:

1. The day following receipt by Control Data of an executed copy of the above described Control Data agreement for the sale of equipment, or

2. A later date if so specified by mutual agreement, or

3. The date of receipt of billable document giving notice of exercise of purchase option addressed to Contracts Department, Control Data, or a later date specified in billable document, provided the effective date is confirmed by receipt of said agreement within thirty (30) days and provided further that instructions for maintenance coverage are included in the billable document and acceptable to Control Data.

C. Control Data reserves the right to change the credit option plan applicable to a given product at any time, except that the new plan cannot be less advantageous to the lessee than his current plan.

PURCHASE CONVERSION OPTION CREDIT PLANS

% of Lease Payments During Rental Period That May be Deducted From List Purchase Price

Plan Code	Months 1-03	Months 4-12	Months 13-24	Months 25-36	Months 37-48	Months 49 & Subseq.	Minimum Purchase Price
A	68%	68%	45%	0	0	0	30% see notes
B	30%	30%	45%	60%	75%	75%	20%
C	70%	70%	70%	70%	70%	70%	30%
D	30%	30%	50%	70%	80%	80%	20%
E	55%	55%	58%	60%	75%	75%	20%
F	90%	70%	70%	70%	70%	70%	30%

Notes:

1. Requests for purchase conversion quotes should be made to the Regional contracts manager who will assimilate the necessary information and prepare the quote. For additional information see the Marketing Field Manual, Purchase Conversion Policy 8:040:00.

2. Purchase Conversion Plan codes are listed by product on the price pages of this manual.

3. Purchase conversion option credit is determined by summing the credits from each 12 month period; i.e., under Plan A take 68 percent of first 12 months lease payments and add to it 45 percent of the next 12 months lease payments. The sum of these two items is the total purchase conversion option credit allowed on that contract.

4. Purchase conversion option credits may be applied against the current list purchase price only.

5. The "minimum purchase price" column above is the percent of the current list purchase price which translates into the minimum amount the customer must pay upon purchase conversion.

6. Purchase option credits are applicable until the minimum purchase price is reached. Credits are not applicable thereafter.

7. Purchase conversion prices apply to equipment already installed and on continuous rental.

8. Resale Products may be purchased at resale price or purchase conversion price, whichever is lower.

9. Purchase conversion option credits are not transferrable from product to product or from lessee to lessee.

10. All Purchase Option Credit referenced in this policy will be limited to basic monthly lease payments only and will not include any other payments such as taxes, installation charges, software charges, maintenance charges or any other service charges.

Policy - Disk Packs

Purchase conversion credits amounting to ninety percent (90%) of the rental payments made on individual disk packs during the first twelve (12) months of lease plus twenty percent (20%) of the Second twelve (12) months of lease can be applied to the list purchase price in effect at the time of purchase conversion. No credit will be given for payments made beyond twenty-four (24) months. The minimum purchase price must be at least thirty percent (30%) of the list purchase price.

Policy - GSA

Equipment rented under the GSA Contract may be purchased in accordance with the Purchase Option Policy in the GSA Contract in effect at the time the purchase conversion is made. Refer to the GSA Schedule for terms and conditions.

TRANSPORTATION POLICY

Shipments

Control Data shall make all arrangements for equipment transportation. Control Data invoices transportation charges for shipment of equipment to customers based on F.O.B. point of manufacture. These transportation service charges are based on individual shipment weight and the established rates in published tariffs, filed with the appropriate state and federal regulatory agencies or commissions.

Site/Location Charges

Rigging, drayage (local), handling charges, and packing material (and transportation of such material) are also invoiced to the customer. In addition, all Customers pay for any Site/Location charges incurred in the relocation or return of equipment.

Equipment Relocation/Return

Customers shall pay transportation charges for the return of leased equipment from the site to Control Data's place of manufacture. All customers pay for transportation charges incurred by Control Data for equipment relocations between the Customer's sites.

Shipments under Government Contracts

Shipments under negotiated or advertised Government procurements are governed by the terms as may be established in such contracts. For example, under Control Data's GSA/ADP Schedule Contract all shipments to the government's site (and return shipments for leased equipment) are made at Control Data's expense.

FIELD CONVERSIONS

Policy

Field conversion is a modification and/or addition to a product. Pricing Manual product descriptions indicate those products which may be field converted. A field conversion charge is indicated when applicable and is paid by both purchase and lease customers.

Upon completion of the conversion, purchase customers pay the difference in the two purchase prices plus the field conversion charge. Lease customers assume payment of the new product lease price in place of the old lease price, and pay the field conversion charge and new maintenance price when applicable.

Where the field conversion applies to a purchased product, it is assumed that the conversion will also be on a purchase basis. Similarly, if the conversion applies to a leased product, it is assumed that the conversion will also be on a leased basis.

Procedure

The field must indicate a field conversion by entering the product number of the new product on the Sales Order. Its descriptions should read: "Field Conversion from (old product number). Field Conversion Charge $XXXX." The lease and maintenance price is that of the new product and the difference between the purchase prices is entered as the purchase price.

TRADE-IN POLICY

Policy

Control Data may accept trade-in of customer-owned Control Data or non-Control Data manufactured equipment. The trade-in allowance may be applied to the purchase of new Control Data standard equipment. Proposals and/or orders containing a trade-in allowance cannot be accepted by the field. These proposals and/or orders must be submitted to and approved by the Profit Center responsible for the new equipment. Approval as to form, must be obtained from the responsible Contracts Function.

Procedure

Field personnel desiring trade-in information should supply the Profit Center responsible for the new equipment, the following information as a minimum:

A. Customer Name;

b. Model/Serial Number list of equipment to be traded in. Options, features, etc., are particularly important;

c. Date equipment will be available to CDC, if accepted in trade. Any contingencies which would affect this date;

d. Ownership of the proposed trade-in, i.e., is the customer in a legal position to sell the equipment to CDC;

e. A list of the new CDC equipment, including prices, to be sold to the customer, against which the trade-in will apply; and

f. If non-Control Data equipment, verification that the manufacturer will certify the equipment eligible for maintenance under a standard maintenance agreement at a new site.

The Profit Center will evaluate the request in accordance with their trade-in procedure and establish a trade-in value, together with the terms and conditions under which the trade-in will be accepted. Those terms and conditions must be incorporated into Control Data's proposal to the customer and into any ensuring agreement for the new equipment.

All requests for trade-in information must be processed and approved in the above manner before submission to the customer.

STANDARD PRODUCTS QUANTITY DISCOUNTS

Policy

Control Data offers staircase pricing discounts on purchase of certain standard hardware products. Notation of products on which staircase pricing discounts are offered is given in the Standard and Resale sections of this Pricing Manual. To qualify, the following conditions must be met.

1. The product must be purchased. Lease, Lease to Purchase Conversion, Installment or Deferred Purchase plans do not qualify. Purchase Conversion Option credits are to be applied against the unit "one" List Purchase Price only.

2. The product must be identified in either the Standard or Resale Active sections of the Pricing Manual as a product which qualifies for a staircase pricing discount.

3. Products must be ordered on Control Data's Standard Agreement Form, Schedules A and B and any add-on amendments thereto. Orders, including add-on amendments, qualify or do not qualify for a staircase pricing discount based upon the quantity specified on that ordering document. Orders (including add-on amendments) cannot be combined or grouped for staircase pricing discount purposes.

4. The order must specify mutually acceptable Product Installation Dates which require installation of the total order quantity eighteen (18) months or less from the date Control Data signs the order as indicated on the Agreement or Amendment Form.

5. The staircase price listed for any quantity is the unit price for each unit shipped within that quantity; i.e.:

Quantity	Purchase Price
1	$5,775
2-4	5,487
5-10	5,300

If the customer orders 7 units, he pays $5,775 for the first unit; $5,487 for each of the next 3 units and $5,300 for each of the remaining units.

Contract Preparation/Notation Requirement

The following shall be added to the price schedule page of the contract agreement.

1. Place an asterisk (*) next to each line item on which a staircase pricing discount has been allowed, add the note: "*Prices are based on the quantity ordered provided the mutually agreed to installation dates fall within 18 months from the date Control Data signs this agreement."

2. Show staircase prices per the following example:

Product	Quantity	Unit Price	Extension	Scheduled Installation Dates
80X-1	One	$5,775	$ 5,775	January 1, 197X
80X-1	Three*	$5,487	$16,461	Feb. 3, March 3, April 15, 197X
80X-1	Three*	$5,300	$15,900	June 1, June 15, July 10, 197X

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CONTRACTS

INTRODUCTION

Control Data Corporation and Commercial Credit Company offer their Customers various methods to contract for Control Data products and services.

This section of the Pricing Manual presents the Standard Form Schedules and Agreements under which Control Data and Commercial Credit Computer Leasing, Inc. offer their products and services to the commercial marketplace. Comments and instructions are provided regarding each of the Agreements/Schedules to explain their use.

In addition to the Agreements in this Section of the Pricing Manual, the following methods to contract are available for use when appropriate:

a) General Services Administration -

Control Data negotiates annually Authorized ADP Schedule - Section A, for EDP Products and Authorized ADP Schedule - Section B, for Accessorial Equipment. Any authorized Government agency (or other GSA approved purchasing entity) may procure under these Schedules as long as all parties comply with the specific terms, conditions, prices and maximum order limitations of the particular Schedule. Contact your Regional Contract Manager for further information about these ADP Schedules.

b) Commercial Credit Company -

Through its subsidiary, Commercial Credit Industrial Corporation, CCC has available the following very flexible Financial Plans:

1) Lease with no early termination and no purchase provision;
2) Lease with early termination but no purchase provision;
3) Lease with purchase provision at the end of full lease pay-out;
4) Lease with fixed or fluctuating interest rates; and
5) A deferred purchase plan.

The CCIC plans in this Section b), will be contract transactions between CCIC and the customer and separate from the CDC purchase pursuant to Schedules A and B by Customer, or direct purchase from CDC by CCC.

For information on these plans, contact the CCIC representative assigned to your CDC Marketing Region.

CONTROL DATA CORPORATION AGREEMENTS

1. Schedule A - General Terms and Conditions Applicable to Each Schedule (Form AA4069)

To have a complete agreement between Control Data and its Customer, you must use this Schedule. Please note that the first page is the signature page.

Fill in the Customer's Corporate Headquarters (NOT USING FACILITY) and the Customer's Corporate Headquarters address at the top of the page.

Then put an "X" in the parentheses in front of each Schedule you intend to be part of the Agreement, i.e., Schedule B, C, D, F, etc. Schedule A is predesignated since it is a mandatory part of the Agreement.

The "Agreed To" block is for the Customer's signature. Type in the Customer's Corporate name and address. Unless the Customer is contracting personally, or desires to be held personally liable, do not put an individual's name above the Customer's Corporate name. The "By" and "Title" lines are provided for signature and title of the individual who is authorized to sign for the Customer.

The terms and conditions of Schedule A are basically legal boiler plate. Any changes must have Contracts Department approval and/or legal counsel approval.

The main articles to note are 2, 4, 5, 6 & 7. These articles define the tax liability of both parties; the extent of Control Data's liability under the Agreement; the Customer's protection in case of patent or copyright infringement; termination rights; and general provisions such as applicable law, extent of the Agreement, etc.

2. Schedule B - Sale of Equipment (Form AA4071)

This Schedule covers direct sales to the Customer with total payment of the sales price due upon shipment per invoicing terms specified in this Schedule. This Schedule is also used to cover sales resulting from Customers exercising their options to purchase under the Lease Schedules. On Purchase Conversions, caution must be exercised when completing the first page of the Schedule (Equipment Listing), to ensure that the Installation Date specified, is the actual Installation Date established under the Lease Schedule and not the date the sale is consummated. It is important to remember that the one-year warranty with respect to defects in materials and workmanship (reference subparagraph a) of Article 4) is not applicable to Purchase Conversions unless the Purchase Conversion is effected within this one year period. This precaution is necessary to avoid extending the warranty beyond the period specified in Article 4 of this Schedule. Amendment Form AA1958 (reference Point No. 15 hereof) whould be used to terminate the Lease Schedule in whole or in part depending upon the scope of the Purchase Conversion. It should also reference the fact that the equipment is being purchase converted on Control Data's Sale of Equipment Schedule and it should also establish the effective date of the Purchase Conversion. (The date used for purposes of calculating the Purchase Conversion price.)

2. Schedule B (continued)

The "Scheduled Installation Date" should be that proposed; however, a Customer may not receive shipment on that date depending upon availability at the time an order is scheduled by the cognizant Scheduling Function and reviewed by the organization having product/systems responsibility. The agreed to Scheduled Installation Date, if different from that in the Schedule, will be specified in Control Data's acknowledgement letter.

It is recommended that all articles of this Schedule be read carefully. They define shipment; the risks of both parties for equipment loss; installation procedures; warranty on the equipment; and how Control Data retains its rights to the equipment via a security interest until the full purchase price is paid.

3. Schedule C - Lease of Equipment - Systems (Form AA4072)

This Schedule covers lease of systems equipment, i.e., Control Data maintains title to the equipment and customer pays a monthly rental charge to use the equipment.

The Customer's installation site may be different by name and address than that shown on Schedule A. Please fill in the appropriate blanks at the top of the page showing the correct site location.

The information relative to products and pricing is found in the "EDP Systems" Section of this Manual. The "Scheduled Installation Date" should be the date proposed but a Customer may not receive shipment on that date, depending upon availability at the time the order is scheduled by the cognizant Scheduling Function and reviewed by the organization having product/systems responsibility.

The "Purchase Option Code" is specified for each product in the Pricing Section. Please show a purchase option code for each product listed. It is important to attach Control Data's "CDC Purchase Option Policy (Form AA4891, reference Point No. 5. below), to each Schedule C you complete. Obtain the purchase option code from the quoting division on all QSE's.

Please note that the term of this Schedule is one (1) year. Control Data offers one (1) year leases only. Leases for longer than one (1) year should be offered through Commercial Credit Leasing, Inc. (Forms AA4884, AA5533 and AA5809).

The main articles to note are 2, 3, 4, 5, 7, 10, 11 and 12. These articles define CDC's position regarding methods of shipment; ownership of the equipment; risk of loss that will be borne by the parties if the equipment is damaged; installation procedures; Customer's right to use the equipment; extent of Control Data's liability under this Schedule; and the means for terminating this Schedule. Maintenance coverage for all equipment leased under Schedule C is to be contracted for pursuant to Schedule D or E.

4. Schedule C-1 - Lease of Equipment - Subsystems (Form AA4886)

This Schedule is the same as Schedule C except that it does not include the provision for lease credits. Maintenance coverage for all equipment leased under Schedule C-1 is to be contracted for pursuant to Schedule E of J, as applicable. Otherwise, the comments under Schedule C above, are applicable. This Schedule should be used for subsystems products listed in the Pricing Manual.

5. CDC Purchase Option Policy - (Form AA4891)

The Purchase Option Policy establishes the percentages of rental paid by the Customer, by equipment type, which may be applied toward the list purchase price of the equipment on which the rental was paid, if the Customer exercises his Purchase Option rights under Schedules C or C-1. Specific percentages for computing Purchase Option credits can be determined by comparing the code shown for each hardware product listed on Page 1 of Schedule C or C-1, with the Purchase Option Code in this Policy.

6. Schedule D - Maintenance Service - Systems Equipment (Form AA4073)

This Schedule is one of three standard commercial plans offered to the Control Data Customer. Schedule D is offered on all Control Data manufactured systems and should be used for maintaining systems equipment leased under Schedule C and CCCL Agreement AA4884, or purchased under Schedule B. For purposes of definition, a system is defined as a combination of equipment which is interconnected by local Control Data signal and power cables to a Control Data central processor unit.

Please note the following in preparing the Schedule for Customer signature:

1) The Customer's installation site may be different in name and address from that shown on Schedule A. Fill the appropriate blanks at the top of the face page.

2) Information regarding product maintenance prices is given in the "EDP Systems" Section of this manual.

3) If the Customer selects Extended Maintenance Coverage and/or On-Site Service, complete both sides of the Maintenance Services Amendment (Form AA5806) as shown in the "Maintenance Services" Section of this manual.

4) Use the MAINTENANCE SERVICE AMENDMENT (Zone Charges) Form AA5806-1, to apply zone charges to eligible Schedule D products in accordance with the maintenance Zone Charge Policy found in the SERVICES Section of this manual.

The main articles of Schedule D are highlighted in the "Maintenance Services" Section of this manual. It is strongly recommended that you carefully review the Services Section and Schedule D in detail to get an understanding of the services offered.

7. Schedule E - Control Data Support of Customer Maintenance (Form AA4074)

This is the second maintenance plan offered by Control Data. Under this Schedule, Control Data supplies normal maintenance support except labor. Schedule E is offered on all Control Data manufactured equipment and may be used in conjunction with equipment leased under Schedules C, C-1, CCCL Agreements AA4884, AA5533 and AA5809, or purchased under Schedule B. We recommend you review carefully the "Maintenance Services" section of this manual.

The Customer's installation site may be different in name and address from that shown on Schedule A. Please fill in the appropriate blanks at the top of the page.

The information as to product and maintenance prices is shown in the Equipment Sections of this manual. Each item of equipment should be listed at the standard Basic Monthly Maintenance price. The "Schedule E" credit is designated in the "Maintenance Services" Section and should be shown as a "lump sum" reduction in the appropriate space provided on the first page of the Schedule.

The main articles to note in this Schedule are highlighted in the "Maintenance Services" Section of this manual.

8. Schedule F - Facility Planning and Construction (Form AA4078)

This Schedule covers any engineering and/or construction services sold as a part of preparing a computer site, site modifications or as an independent service. These services are charged for on a time and material plus a fee basis.

Completion of this Schedule should be accomplished by the salesman in conjunction with the appropriate Regional Site Planning Manager or his designee.

The site where the construction or services are to be performed may be different in name and address from that shown on Schedule A. Please fill in the appropriate blanks at the top of the page.

8. a. Agreement For Facility Planning and Construction Services (AA6454)

Exhibit 1 - Services and Work (AA6454-1)

This stand-alone Agreement covers Facility Planning and Construction Services similar to Standard Schedule F (AA4078). However, unlike Schedule F under which services are charged for on a time and materials plus a fee basis, this Agreement requires Control Data to perform Services and Work defined in Exhibit 1, within an agreed to time period and for an agreed to fixed price. Because of the greater risk involved in contracting for business on a fixed price basis, it is important for Control Data and the customer to clearly describe and understand the scope of the services to be provided. The Agreement must be reviewed prior to acceptance by Control Data in accordance with the applicable proposal/order processing procedures and accepted in accordance with the applicable Delegation of Authority.

The Agreement is a one-page (front and back) snap-out form will all spaces requiring completion appearing on the front page, e.g., customer name, signature blocks, completion schedule, contract price, progress payment schedule, representatives.

Exhibit 1 must be completed for each Agreement to specify the Customer name, location of work, site and description of the services to be performed. The Agreement and Exhibit 1 must bear the same CDC Contract No. to ensure coordination between these two documents for each job.

Copies of Agreement AA6454 and Exhibit 1 AA6454-1 are available from the Facility Planning and Construction Department.

9. Schedule G - Professional and Support Services (Form AA4076)

This Schedule is a contract for Professional and Support Services and is a type of "basic ordering agreement" which does not establish the specific work to be performed or the price therefor. This Schedule, plus Schedule A are the basic terms. To complete the arrangement, Control Data and the Customer must complete a "Service Order" (Form AA4302) for each task undertaken.

This Schedule and the "SO" are, therefore, a "time and materials" type of agreement rather than a fixed-price. We recommend you review the "Professional Services" Section of the Pricing Manual.

The site location(s) where the service is to be performed may be different than the name, etc., on Schedule A. Please fill in the appropriate blanks at the top of the page.

The main articles to note are 1, 2, 5, 6, 7 and 8. These articles define the classes and meaning of Professional and Support Services; personnel supplied by Control Data; the respective obligations of both parties to protect information received and rights to developed material; the nature of service; and the extent of Control Data's liability should it fail to fulfill its obligations to provide services under any "Service Order" executed under this Schedule.

Control Data may provide services on a special PSD contract basis (non-time and material). However, such an agreement requires special contractual and pricing considerations. Contact your PSD Regional General Manager and Regional Contract Manager for support in structuring this type of contractual arrangement.

10. Schedule H - Software License - CEM Service (Form A4077)

Schedule H (Rev. 7/76) unbundled the basic right to use software in its "as is" form from the support services which we now refer to as "Central Enhancement and Maintenance Service" (CEM Service). Rev. 7/77 to Schedule H allows the customer to contract for CEM Service on less than all the products licensed on SCOPE 2, NOS and NOS/BE product sets. Refer specifically to the "Central Enhancement and Maintenance Service" (CEM Service) Section of the Software Pricing and Support Policy contained in this manual for direction in this area. Note CEM Services has been changed to CEM Service. Some of the areas to note in the new Schedule H (Rev. 6/79) are Articles 5, 6, 7 and 11 dealing with changes in mainframe in the CYBER Model 170-700 Warranty and Paid Up License.

A customer may enter into a basic license for software products by paying the license charge as specified in the Corporate Pricing Manual. At the customer's option, Customer may contract for CEM Service by specifying a price in the Monthly CEM Service Charge column in Article 1 of the License and paying the Monthly CEM Service Charges specified in this Manual. The block which required checking in Article 1 of Schedule H, Rev. 7/76, when contracting for CEM Service has been eliminated in the 7/77 revision. Those software products for which CEM Service is offered but not contracted for are indicated by "N/O" in the Monthly CEM Service Charge column. "N/A" in the Monthly CEM Service Charge column indicates that CEM Service is not available.

Please complete the Site of Installation information since it may be different from the name and address shown on Schedule A. It is important that you identify the specific mainframe on which the software will be used by Model and Serial Number. In Article 1, it is necessary to list the software product number, description, Initial Fee, Monthly License Charge and if the customer has contracted for CEM Services, the Monthly CEM Service Charge.

Another very important area in completing Schedule H relates to specifying the CEM Service Termination Date. Article 8h allows Control Data to discontinue CEM Services with notice; however, when a CEM Service Termination Date is specified in this Manual for a Software Product, Article 1 of Schedule H must reflect this termination date opposite each affected software item; i.e.: in the "CEM Service Termination Date" column.

If a customer has multiple mainframes, a license with charges as shown in the Price List is required for each mainframe on which the customer desires to use the Software Product(s). If the customer qualifies as a multi-mainframe site and orders CEM Service, only one CEM Service charge will be made for each separate software product licensed at a multiple mainframe site regardless of the number of installed mainframes. To qualify as a multiple mainframe site, the mainframes must be within a radius of 1000 feet and the licenses must be for the same Software Product. When preparing the license for a multiple mainframe site, all of the licenses must show the initial fee and Monthly License Charge; however, only one license would reflect CEM Service Charges. The other licenses would show "waived" in the Monthly CEM Service Charge column for those Software Products which have the same product number as those appearing on the license, listing a CEM Service Charge. The following footnote should appear in Article 1 of the license when the CEM Service Charge is waived:

> "Monthly CEM Service Charges are waived where noted above and will continue to be waived hereunder so long as (1) customer computer mainframes S/N ____ and ____ are located within a radius of 1000 feet; (2) the customer licenses are for the same Software product and (3) CEM Service Charges are being paid under the customer's license for software products being used on computer mainframe S/N _____. When the above conditions are no longer met, the CEM Service Charges in effect at the time shall apply immediately to those products listed above on which the CEM Service Charges are waived."

The previous change in policy which does not require contracting for CEM Servces for all Software Products licensed within specified product sets, has caused the addition of terms and conditions to Article 8. The added terms and conditions state that the customer assumes complete responsibility for the interface between those software products for which CEM Services have been contracted and all other software products. Please read Article 8 of Schedule H (Rev. 6/79) and the revised software policy.

11. Schedule H Amendments

A number of Amendment Forms have been developed for use with Schedule H. Instructions for completing these Amendments are:

- o Insert the Contract No. assigned to the Schedule H being amended at the top of the form.
- o Information required to complete the form will be found on the Schedule H being modified and in the SOFTWARE Section of this Manual.
- o The signatory section of the form should be completed in the same manner as Schedule A.

a. Amendment For Additional Software Products (AA4077-1)

This Amendment is to be used whenever Software Products (except Usage Priced and Internal Use Products) and added to Schedule H.

b. Amendment For Non Usage Priced Software Products - Internal Use License (AA1958-2, Rev. 6/79)

Special License (SPI) is in the form of an Amendment to Schedule H. This Amendment contains special license terms and conditions whereby customer agrees that its right to use certain Software Products will be limited to the processing of data for its own internal use or for the internal use of its subsidiaries, for which customer pays an

Initial Fee and Monthly License Charge. Applicable Software Products must be listed on the Amendment. The Amendment also contains a revision to Article 8 (CEM Service) of Schedule H which excludes the customer's right to Successor Products or enhancements. Refer to the Amendment itself in the CONTRACTS Section for specific terms and conditions.

c. Amendment for Usage Priced Software Products - Internal Use License (AA1958-3)

Special License (SUI) is in the form of an Amendment to Schedule H. This Amendment contains special license terms and conditions covering: (1) Usage Priced Software Products; (2) that Customer agrees that its right to use will be limited to the processing of data for its own internal use; and (3) AM Service which excludes the right to Successor Products or enhancements. Customer contracts to pay for its actual usage of a particular Software Product subject to an Initial Fee, a Minimum Monthly and Maximum Monthly License Charges. The Amendment contains major revisions/additions to Articles 1, 2, 4, 7 and 8 of Schedule H. Applicable Software Products must be listed on the Amendment. Refer to the Amendment itself in the CONTRACTS Section for specific terms and conditions.

d. Amendment For Usage Priced Software Products - Full Use License (AA1958-4)

Special License (SUF) is in the form of an Amendment to Schedule H. This Amendment contains special license terms and conditions covering; 1) Usage Priced Software Products; and 2) AM Service which exclude the right to Successor Products or enhancements. Customer contracts to pay for its actual usage of a particular Software Product subject to an Initial Fee, Monthly Internal Use Charges, and a Minimum Monthly License Charge. The Amendment contains revisions/additions to Articles 1, 4, 5, 7, 8, 9 and 11 of Schedule H. Applicable Software Products must be listed on the Amendment. Refer to the Amendment itself in the CONTRACTS Section for specific terms and conditions.

e. Amendment For QSS Products

This Amendment replaces Articles 4 and 9 of Schedule H (Rev. 6/79) whenever QSS products are listed in Article 1 of Schedule H. Refer to the Amendment itself in the CONTRACTS Section for specific terms and conditions and format.

NOTE: Special License No. 3 (SP3) is in the form of an Amendment to Schedule H and specifically to Article 8d-CEM SERVICE. This Amendment contains special license terms and conditions which delete all reference to customer's rights to Successor Products and enhancements. It must be used with all Red Book Software Products which call for SP3. This document is available from your local Regional Contracts Manager.

12. Schedule I - CYBERNET® Service (Form AA4887)

- Schedule I Exhibit 1 CYBERNET® Services CYBER 76, SCOPE 3.4 and Graphics Services Price Schedule (Form AA4888)
- Addendum to Exhibit 2 CYBER 203 Service Price Schedule (AA4888-4)
- Addendum to Exhibit 1 Reference Storage (Read Only) Under PALLAS (AA4888-5)
- Addendum to Exhibit 1 Reference Storage (Read Only) Under LEXITEC (AA4888-6)
- Addendum to Exhibit 1 Computing Service Price Schedule (NOS/NOS 175/NOS 176) (Form 4888-7)
- Addendum to Exhibit 1 Miscellaneous Services Price Schedule (Form 4888-9)

Schedule I should be used whenever CYBERNET Services are sold. In addition to Schedule A, you must attach Schedule I, Exhibit 1 and the appropriate Schedule I Addendum to Exhibit 1, to this Schedule, which delinate the current CYBERNET Service Charges.

Questions as to terms and conditions should be referred to the Regional Contracts Manager.

The main articles to note in Schedule I are 2, 4, 6, 8, 9 and 10. These articles define the method of Customers assigning work to the data centers; the method and price to be charged; CDC's obligation to protect Customer-supplied information; and the remedy available to a Customer should Control Data fail to fulfill its obligations under this Schedule; the Warranty Disclaimer; and regulations of the U.S. & Intl' Telecommunications Regulatory Agencies.

a. Agreement For CYBERNET® TECHNOTEC Technology Exchange Service (AA6797)

This Standard Agreement for Technology Exchange Services together with Exhibit A TECHNOTEC Techno-Unit Entry Application (AA6797-1) and Exhibit B Technology Management Service Charges (AA6797-2) represents the entire agreement for a new customer wishing to contract for Technology Management Services only. The Agreement can be used to purchase Services in two ways: (1) Technology Management Services (TMS) Packages which are prepaid packages of TM Services, and/or (2) as a basic ordering agreement, under which various TM Services can be purchased as they are needed. Services covered include: Search and Advisory Service reports, searching and Entering Techno-Units on Techno-Bank; Searching other data bases: creation, access to, and maintenance of a Customer Private Technology Data Base; Training; Technology Seminars and Publications; and Terminals.

Customers desiring only to search TECHNOTEC may do so by signing Form AA6797 and AA6797-2, or if equipment/services are already being contracted for under Schedule A, by adding a Schedule I - CYBERNET® Services (AA4887) together with Exhibit 1 (AA4888) and Schedule I Addendum to Exhibit 1 covering NOS Computing Service (AA4888-7).

Customers wishing to resell or distribute these services must sign the Addendum to Agreement for CYBERNET® Technology Management Services for Customers who Distribute or Resell Information (AA6797-3).

Copies of Forms AA6797, AA6797-1 and AA6797-2 are available through LDS and Form AA6797-3 is available through TECHNOTEC.

13. Schedule J - Maintenance Service - Subsystems Equipment (Form AA4890)

This is the third of the standard maintenance plans offered by Control Data. Schedule J is offered on all Control Data manufactured subsystems and should be used for maintaining subsystems equipment leased under Scheudle C-1, CCCL Agreements AA5533 and AA5809, or purchased under Schedule B. This Schedule is very similar to Schedule D and all of the comments as to completing the form, etc., (reference Point No. 6.) generally apply here

14. Schedule K - Education and Training (Form AA4075)

This Schedule is used for courses to be offered to group classes and not individuals.

Completion of this Schedule requires close coordination with the CDI Regional Educational Services Representative. Course titles, descriptions, and pricing are found in the "Customer Education" Section of this manual. Please review the Policy Section closely.

Individual registrations are handled on Application Form AA4065.

The main articles to note in this Schedule are 4, 5, 8, and 10. These articles define the content of the courses, location of the course, the expenses associated with the training location; Customer's obligations to protect Control Data supplied proprietary information; and Control Data's extent of liability to the Customer if Control Data fails to fulfill its obligations under this Schedule.

14. a. Schedule L CONTROL DATA® PLATO® Subscription and Related Services (AA6377)

This Schedule is to be used when existing Control Data customers wish to contract for CONTROL DATA® PLATO® Subscription and Related Services. Questions regarding completion of this Schedule should be coordinated through Education Company Contracts Administration (Phone No. 612/853-4748). Questions regarding technical/communication line/pricing should be coordinated through the PLATO Business Office Vice President (Phone No. 612/853-6069). Copies of Schedule L are available through Literature Distribution.

b. Schedule L CONTROL DATA® PLATO® Subscription And Related Services Amendment For Additional PLATO Services (AA6377-1)

This Amendment is for use in adding services to an existing Schedule L.

c. Agreement For CONTROL DATA® PLATO® Subscription And Related Services (AA6358)

This is a stand-alone Agreement for new customers who wish to contract for CONTROL DATA PLATO Subscription and Related Services. Questions regarding completion of this Agreement should be coordinated through Education Company Contracts Administration (Phone No. 612/853-4748. Questions regarding technical/communication line/pricing should be coordinated through the PLATO Business Office Vice President (Phone No. 612/853-6069). Copies are available through Literature Distribution.

d. CONTROL DATA® PLATO® Subscription And Related Services Amendment For Additional PLATO Services (AA6358-2)

This Amendment is for use in adding services to an existing PLATO Agreement.

15. Agreement For Lease and Maintenance of Control Data Terminal Products (Form AA6202)

This is a new Short-Form Terminal Agreement designed for use primarily with the new 75X Terminal Product Line; however, the Agreement, including its title, is generic and can be used with all Terminal Products. It is optional to continue using the 713 Agreement with the 713 Terminal Product Line. This Agreement specifies a one-year term and includes lease and maintenance terms and conditions; however, the monthly lease and maintenance charges should be separately stated. This Agreement is a one-page (front and back) multiple-copy, snap-out form.

a. Agreement For Lease And Maintenance of Tektronix Information Display Products (AA6485, 11/77)

This new stand-alone Agreement is designed specifically for use by Control Data CYBERNET customers who wish to lease Tektronix (Vendor) terminals and related products. The terms and conditions of this Agreement, including the lease plans, follow those contained in the Master Rental Agreement which exists between Control Data and the Vendor. This Agreement must be reviewed prior to acceptance by Control Data, in accordance with the applicable Proposal/Order Processing Procedures and accepted in accordance with the applicable Delegation of Authority. Changes to the Agreement may affect the Vendor's and/or Control Data's ability to perform; therefore, Profit Center approval of changes is required before acceptance.

Since the terms and conditions of this Agreement vary from Control Data's standard Lease and Maintenance terms and conditions, it is important to carefully read this Agreement and the applicable Marketing Policy. Installation, maintenance and warranty, for example, will generally be performed directly by the Vendor and there may be charges associated with these services. It is also important to read the terms and conditions regarding cancellation and the charges related thereto, including the termination service charge applicable to all units of equipment upon termination from rental.

All spaces requiring completion appear on the front or face page of this Agreement. The customer must check and initial the term of lease desired.

Copies of Agreement AA6485, are available from the CYBERNET Organization.

16. Control Data Amendment (Form AA1958)

This "all purpose" Amendment Form can be used with all Schedules. It can be used to add or delete products, services or amend terms and conditions and prices. In addition, it should be used to add Schedules to an earlier agreed-to Schedule A.

The signatory section should be completed in the same manner as Schedule A. The contract number on the Amendment should be that assigned to the Schedule you are amending.

17. Maintenance Services Amendment (Form AA5806)

The Maintenance Services Amendment Form is newly designed for use with Schedule D and J. This form must be used when the Customer selects Extended Maintenance coverage and/or On-Site Service. Complete both sides of the Amendment Form in accordance with the instructions in the "Maintenance Services" Section of this manual.

a. Maintenance Services Amendment

(Zone Charges - Form AA5806-1)

Use this amendment to tabulate the Total Monthly Zone Charge for each Schedule D contract which covers products subject to Zone Charges. List only those products on which Zone Charges will be applied in accordance with the Maintenance Zone Charge Policy found in the SERVICES SECTION of this Manual.

b. Maintenance Services Amendment (Maintenance Aids - Form AA5806-2)

This amendment applies to existing Control Data Customers who have contracted for maintenance under Schedules D or J with a revision date prior to 3/77. It must be fully executed by customer and Control Data prior to the delivery and/or installation of proprietary Maintenance Aids which are intended solely for the use of Control Data in the performance of contracted maintenance service and which are not available for sale or license. Reference the MAINTENANCE SERVICES section of this manual for additional information.

c. Maintenance Services Amendment - Subsystems Equipment (Usage Charges)- Form AA5806-3, 6/79

This Amendment was developed for those Control Data customers who wish to contract for maintenance of 32111-1 Printer Subsystems. This device has been designated for limited use, under standard 9/5 coverage, and as such, customers must pay an additional fee for usage in excess of the established level. All customers must sign the amendment to standard Schedule J to obtain maintenance coverage on these subsystems but those selecting 24/7 coverage are allowed unlimited usage at no additional charge. Copies of this Amendment are available through Literature Distribution Services.

d. Maintenance Services Amendment - Subsystems Equipment (Special Coverage)- Form AA 5806-4, 6/79

This Amendment was developed for those Control Data customers who wish to contract for maintenance of 331XX-AXX and 3303X-AXX Memory Subsystems installed in published Engineering Services Full Service Areas. It changes the contractual period of maintenance, under the standard Schedule J, from basic 9/5 coverage to 24/7. Copies of this Amendment are available through Literature Distribution Services.

18. Installment Sale of Equipment and Security Agreement (Form AA6150)

This agreement may be used to cover the installment sale of all CDC equipment within the policy limits. Pursuant to Article 14 of this Agreement, it is Control Data's intent to assign all agreements to Commercial Credit after acceptance. In order to maximize the number of agreements assigned to Commercial Credit, it is imperative that credit approval be obtained from Commercial Credit prior to acceptance, and that no changes are made to the terms and conditions.

Since Standard Form Agreement AA6150 covers hardware terms only, it is necessary to contract for software and services as ordered by customer, on the appropriate Control Data Standard Schedules, including Schedule A - General Terms and Conditions. A customer purchasing a "paid-up" software license may wish to finance the paid-up charge as part of the equipment, on Form AA6150. This may be accomplished after CCC approval, by listing the paid-up charge on the face page of AA6150, and then completing the payment schedule based on the total hardware and software amount. Form AA6150 should state that the software terms and conditions are covered by Schedules A and H and Schedule H should state that payment of the paid-up license charge is being financed on Agreement AA6150.

This agreement is designed for use in the states listed at the top of the Agreement. If there is occasion to use the Agreement in a state not listed, it is necessary to consult the Regional Contracts function, to determine what changes are necessary to accommodate the laws and regulations of the state in question. It is recommended that all articles be read carefully - particularly those articles which treat equipment protection, financing, default, assignment, etc. The Payment Schedule which appears on the first page specifies that the first installment is due on the first day of the month following the Installation Date and other succeeding payments are due on the same day of each month thereafter. All applicable taxes, including sales tax, will be invoiced with the first installment or as soon thereafter as practicable. Taxes are not to be included in the Payment Schedule for the equipment. Take caution to be certain you are using the current and correct factors for the Product line involved. The factor for the time period selected is multiplied by the Unpaid Cash Balance {Line {C}} to arrive at the monthly payment. The Financing Charge {Line {F}} is equal to the difference between the Unpaid Cash Balance and the Time Payment Balance Price {Line {G}} {Monthly Installment Payment times the number of monthly payments}. Article 3 - INVOICES, addresses those invoices which will be issued pursuant to Articles 2, 6, 9 and 12 of the Agreement and they are due and payable fifteen {15} days after date of invoice.

Instructions for typing the Agreement are shown at the top of the form.

19. Agreement For Litigation Support Services (Form AA6147, 4/76)

Form AA6147 is a contract for the Litigation Support Services offered by the Information Services group of PSD and is a type of "basic ordering agreement" which does not establish the specific work to be performed or the price therefor. This Agreement contains the basic terms. To complete the arrangement, Control Data and the Client (Customer) must complete a written "Statement of Services" for each task undertaken.

The agreement is consistent with Schedule G and the main articles to note are 1, 2, 5, 6, 7 and 8. These articles define the classes and meaning of Litigation Support Services; personnel supplied by Control Data; the respective obligations of both parties to protect information received and rights to developed material; the nature of the service and the extent of Control Data's liability should it fail to fulfill its obligations to provide services under any "Statement of Services" executed under this Agreement.

Because of the specialized use of this Standard Form Agreement, it does not appear in this section of the Manual; however, copies of the Agreement may be obtained from Midwest Region Contract Administration.

20. Agreement For Purchase of Energy Management Systems Division Terminals and Special Equipment (Form AA6691)

Form AA6691 is a contract for the sale of terminals and special equipment furnished by the Energy Management Systems Division to electric utility customers. Because of the specialized use of this Standard Form Agreement, it does not appear in this section of the Pricing Manual.

21. Agreement For Purchase of Miniperipheral Products-Provisional Pricing (Form AA6624, 5/78)

This Agreement covers the purchase of Miniperipheral products for use in conjunction with the IBM Series/1 machine.

The Agreement is written for a two (2) year term, and its more important features include provisional pricing and, within stated limitations, customer right of cancellation, rescheduling and order of additional quantities against the provisional quantity. The Agreement also provides for a ninety (90) day full service warranty.

22. Agreement For Control Data Maintenance of Miniperipheral Products (Form AA6625, 5/78)

This Agreement constitutes a basic ordering agreement for the maintenance of Control Data Miniperipheral products which are used in conjunction with the IBM Series/1 machine. Maintenance on specific equipment commences when at least thirty (30) days prior to the proposed date of service, customer furnishes Control Data with completed form No. AA6625-2, Notification to Commence Maintenance Miniperipheral Equipment.

The Agreement is written for an initial term of two (2) years from commencement of maintenance, or, until three (3) years from acceptance of the Agreement by Control Data, whichever first occurs, and remains in effect thereafter until terminated upon receipt of ninety (90) days written notice. Maintenance on specific equipment may be terminated upon thirty (30) days prior written notice provided such equipment has been on continuous maintenance for a period of at least ninety (90) days.

23. Notification to Commence Maintenance Miniperipheral Equipment (Form AA6625-2, 5/78)

This form serves to authorize Control Data to commence maintenance with respect to specific equipment. Customer shall provide Control Data with completed form No. AA6625-2 at least thirty (30) days prior to the proposed date of service, whereupon it shall become an amendment to the maintenance contract.

24. Agreement for General Maintenance Service (Form AA6831, 05/79)

This new stand-alone Agreement is designed for maintenance of equipment other than that manufactured by Control Data and IBM. Two levels or types of service are offered; i.e., Comprehensive Maintenance Service (labor and parts) and Limited Maintenance Service (labor only).

One of two available attachments must be utilized to list the equipment being maintained under this Agreement. Attachment A (Form AA6831-1, 05/79) is to be used for Comprehensive Maintenance Service and Attachment B (Form AA6831-2, 05/79) is to be used for Limited Maintenance Service.

This Agreement specifies a one year term. Note the article in the Agreement which lists the services which are outside the scope of the Agreement. Copies of these forms are available through Literature Distribution Services.

COMMERCIAL CREDIT COMPUTER LEASING, INC. AGREEMENTS

Agreement For Lease - Systems (Form AA4884)

Form AA4884 is designed for use with the equipment listed in the "EDP Systems" Section of this manual. This form provides for a lease downtime credit for inoperative equipment and provides a base contract term of three years and a non-cancellable period of 24 months.

This form allows for a maximum term of seven years. The term of the Agreement depends upon the plan selected by the Customer. If longer than three years, place an X in the box provided in the Article entitled "Customer Option" and specify the minimum term selected by the Customer.

Next, insert the minimum termination or cancellation period selected by the Customer. It is important to remember that although the minimum term and non-cancellation period need not be equal, the term must, however, be consistent for all items of equipment being ordered and likewise, the non-cancellation period must be consistent for all items of equipment. Remember that the non-cancellation period may never exceed the term selected in this lease plan.

Next, insert the cancellation charge percentage. In the event that the non-cancellable period is less than the contract term and the Customer chooses to cancel, Customer will be assessed a cancellation charge equal to the percentage specified, of the unpaid rentals due under the Agreement, to the end of the minimum term selected. The cancellation charge percentage is obtained by referring to the applicable CCC/CDC Long Term Lease Plan Policy appearing in this manual.

Finally, insert the total of the percentage reduction for the minimum term and the minimum non-cancellation period selected. This percentage may be obtained from the applicable CCC/CDC Long Term Lease Policy appearing in this manual. The percentage reduction for initial term and non-cancellation period must be recorded for each line item on the Equipment Exhibit Page of the Agreement.

Agreement For Lease (Form AA4885)

This lease plan is no longer being offered. Form AA4885 was designed for use with "Data Handling Subsystems" equipment and was identical to Form AA4884, Rev. 4/74, except that it did not provide lease downtime credit for inoperative equipment. This plan also provided a base contract term of three years and a non-cancellable period of 24 months as does Form AA4884. Long Term Leases for "Data Handling Subsystems" equipment should now be written on CCCL Agreements AA5533 or AA5809.

Agreement For Lease - Subsystems (Three-Year Term with Early Cancellation Right (Form AA5533)

This form is designed for use with equipment listed in the "Subsystems - Plug Compatible/Data Entry" Sections of this manual. This form does not provide for a lease downtime credit for inoperative equipment. This form provides a fixed contract term of three years and a base non-cancellable period of 12 months.

This form does not allow for term extension beyond the three year period; therefore, the Agreement does not contain a customer option for term extension.

The Agreement does provide the Customer with a non-cancellation option; therefore, the next step is to insert the maximum termination or cancellation period selected by the Customer. The options available to the Customer are to extend the non-cancellable period to two years or three years. It is important to remember that the non-cancellation period must be consistent for all items of equipment in the Agreement.

Next, insert the cancellation charge percentage. In the event that the non-cancellable period is less than the contract term and the Customer chooses to cancel, Customer will be assessed a cancellation charge equal to the percentage specified, of the unpaid rentals due under the Agreement, to the end of the three year term. The cancellation charge percentage is obtained by referring to the applicable CCC/CDC Long Term Lease Plan Policy appearing in this manual.

Finally, insert the percentage reduction for the minimum non-cancellation period selected. This percentage may be obtained from the applicable CCC/CDC Long Term Plan Policy appearing in this manual. The percentage reduction for the non-cancellation period must be recorded for each line item on the Equipment Exhibit Page of the Agreement.

Agreement For Lease - Subsystems (Four or Five Year Term Non-Cancellable (Form AA5809)

Form AA5809 is designed for use with the equipment listed in the "Subsystems - Plug Compatible/Data Entry" Sections of this manual, and represents the only plan currently offered for such equipment with a term longer than three years. This Agreement provides for a non-cancellable term of four or five years. Except for the option of selecting a four or five year term in Article 1, this Agreement does not provide for any other customer options. It does not permit early cancellation nor does it permit add-on and/or substitution of equipment. The initially installed equipment must remain installed throughout the term of the Agreement; add-ons must be handled by separate agreement.

When completing the Agreement, it is necessary to check the appropriate box in Article 1 TERM, to show the term of lease selected by the Customer. When completing the Equipment Exhibit Page, show the CCC base three year/twelve month lease price in the Unit and Total Basic Monthly Rental column. Calculate the total net monthly rental for months 1 through 36, months 37 through 48 and, if applicable, months 49 through 60, in accordance with the stairstep discount schedule for four and five year term Agreements in the CDC/CCC Long Term Lease Policy which appears in the "Subsystems - Plug Compatible/Data Entry" Sections of this manual.

CCCL Purchase Option Policy (Form 4918)

The Purchase Option Policy establishes the percentages of rental paid by the Customer, by equipment type, which may be applied toward the list purchase price of the equipment on which the rental was paid, if the Customer exercises his Purchase Option rights under Agreements (Forms AA4884, AA5533 or AA5809). Specific percentages for computing Purchase Option credits can be determined by comparing the code shown for each hardware product listed on the Equipment Exhibit Page of the CCCL Agreements, with the Purchase Option Code in this Policy.

CCCL Amendment Form (Form AA5673)

This Amendment Form can be used with CCCL Agreements for Lease (Forms AA4884, and AA5533) to add or delete products or amend terms and conditions and prices. The back side of the form contains an Equipment Exhibit on which equipment additions and/or deletions should be shown. When using this Form with AA5533, the column on the Equipment Exhibit entitled "Percent Reduction For Initial Term & Non-Cancellation" will not be used since add-ons and substitutions will not qualify for CCCL pricing and will, therefore, be at CDC one-year prices. An Amendment Form was not designed for new Form AA5809 since substitutions are not permitted and add-ons must be covered by separate Agreement.

The signatory section of this form should be completed in the format shown. The Amendment Form does not include the requirement for the Corporate Seal.

CCCL Amendment For QSE Equipment

A sample Amendment has been prepared on Form AA5673, for use with CCCL Agreement Forms AA4884 and AA5533 to cover the unique terms and conditions applicable to QSE equipment. Please refer to Page 64a of the CONTRACTS Section for the specific terms and conditions format of this Amendment.

Paragraph a) of the Amendment requires that the QSE be listed on the Amendment Form with the initial charge. Paragraph b) modifies the SUBSTITUTION, TERMINATION and CANCELLATION provisions of the CCCL Agreement with respect to the QSE equipment. The minimum term which is to be inserted in the blank provided for in Paragraph b) must correspond to the non-cancellable period of the Agreement unless a longer period is specified in the QSE quote. Since QSE equipment generally requires modification to standard Control Data equipment, Paragraph c) covers charging the customer for restoration of such Control Data equipment to an unmodified condition after the rental termination date.

GENERAL COMMENTS

As a financial/operating lease, the Agreement must be signed by three (3) parties. The formality of signing is more rigid because of filing requirements inherent in the operation of a financial institution. Therefore, signatures must be attested by Corporate Secretaries. A Corporate Seal is required and frequently opinion letters are required from Customer's counsel to ensure that the individual signing is someone acting in authority for the Customer's corporation (see comments on signatures for Schedule A above). The requirement for opinion letters, including the letter content and format, should be determined by CCCL as early as possible (preferably during the prospect credit review) and communicated to the Control Data Regional Contracts Manager who can ensure that the requirement is made known to the Customer. It is important to attach the CCCL Purchase Option Policy (Form AA4918) to each Form AA4884, AA5533 and AA4809, that you complete.

Any changes to the terms and conditions of these Agreements must be approved by the CCCL Vice President and Legal Counsel. Work through your Regional Contracts Manager to obtain such approval.

Credit considerations are very important and your Customers' credit must be approved before CCCL will execute the Agreement. We recommend you review the procedure referred to below, and commence CCC's credit review as soon as your prospect is rated .55 (see Marketing Operating Manual Procedure 2.014.00).

DISK PACK AND DATA MODULE LEASE WITH OPTION TO PURCHASE AGREEMENT

GENERAL

Control Data Corporation through the Computer Supplies Division, offers its customers fixed term leases of Disk Packs and Data Modules. The contract form used for this purpose is the "Disk Pack and Data Module Lease with option to Purchase Agreement" (Form AA5550).

The lease terms that are available are thirty days, one year, two years, and three years. (See the Supplies Section to determine which lease periods are used with specific model numbers.)

A lease agreement is not an order form. To actually order Disk Packs and Data Modules, an "Order Shipment Agreement" (Form AA3380) must be used.

To have a complete agreement between Control Data and its Customer, you must submit both Order/Shipment Agreement and a "Disk Pack and Data Module Lease with option to Purchase Agreement."

HOW TO FILL OUT FORM AA5550)

Contact the Business Products Regional Profit Manager in the responsible Region.

CONTROL DATA CORPORATION

CONTROL DATA CORPORATION

8100 - 34th Avenue South
P.O. Box 0
Minneapolis, Minnesota 55440

AGREEMENT FOR CONTROL DATA EQUIPMENT, PRODUCTS AND RELATED SERVICES

CUSTOMER NAME _____

STREET ADDRESS _____

CITY _____ STATE _____

(hereinafter referred to as Customer) hereby contracts for and Control Data Corporation (hereinafter referred to as Control Data) by its acceptance and execution hereof at Minneapolis, Minnesota, agrees to furnish the equipment, products and/or related services set forth in the following attached and designated Schedules each of which is incorporated fully into and is made a part of this Agreement by this reference.

(X)	Schedule A	—	General Terms and Conditions Applicable to Each Schedule
( )	Schedule B	—	Sale of Equipment
( )	Schedule C	—	Lease of Equipment — Systems
( )	Schedule C-1	—	Lease of Equipment — Subsystems
( )	Schedule D	—	Maintenance Service — Systems Equipment
( )	Schedule E	—	Support of Customer Maintenance Service
( )	Schedule F	—	Facility Planning and Construction
( )	Schedule G	—	Professional and Support Services
( )	Schedule H	—	Software License — CEM Services
( )	Schedule I	—	CYBERNET® Service
( )	Schedule J	—	Maintenance Service — Subsystems Equipment
( )	Schedule K	—	Education and Training
( )	Schedule L	—	CONTROL DATA® PLATO® Subscription and Related Services

CUSTOMER HAS READ THIS AGREEMENT AND EACH DESIGNATED SCHEDULE CONSTITUTING A PART HEREOF, UNDERSTANDS THAT THE TERMS AND CONDITIONS OF SCHEDULE A (INCLUDING ARTICLE 4, DISCLAIMER OF WARRANTY AND LIMITATION OF REMEDIES) APPLY FULLY TO ALL SCHEDULES INCORPORATED INTO AND MADE A PART OF THIS AGREEMENT AND ACKNOWLEDGES THAT IT UNDERSTANDS THIS AGREEMENT AND IS BOUND HEREBY.

AGREED TO:

BY _____

TITLE _____

DATE _____

ACCEPTED BY:

CONTROL DATA CORPORATION
8100 - 34th Avenue South
P.O. Box 0
Minneapolis, Minnesota 55440

BY _____

TITLE _____

DATE _____

AA4069
REV 2/79 (Printed in U.S.A.)

CDC Contract No. _____

SCHEDULE A
GENERAL TERMS AND CONDITIONS APPLICABLE TO EACH SCHEDULE

1. PERIOD AND SCOPE OF AGREEMENT: This Agreement shall become effective upon the date accepted and signed by Control Data and shall, except as provided in Article 6 below, continue until the termination of all Schedules incorporated into this Agreement according to their respective terms. This Agreement shall govern, in addition to the equipment, products and services in each designated Schedule, all other equipment, products, services and performance rendered by or on behalf of Control Data to Customer in furtherance of but not specifically identified in this Agreement.

2. TAXES: Customer shall pay (or reimburse Control Data) in addition to all charges specified in this Agreement, and as a separate item, all taxes (exclusive of personal property taxes on Control Data equipment leased under Schedules C or C-1 herein, and net income taxes), however designated, or amounts legally levied in lieu thereof, based on or measured by charges set forth in this Agreement or on this Agreement, or on the equipment, products and services or their use (including use described as the "act of leasing"), now or hereafter imposed under the authority of a federal, state, or local taxing jurisdiction.

3. INVOICES AND CHARGES: Invoices issued pursuant to this Agreement shall be due and payable within fifteen (15) days after date of invoice. Monthly license charges, rental charges and maintenance charges due for fractional parts of a calendar month shall be computed at the rate of one-thirtieth (1/30th) of the monthly rate for each day.

4. DISCLAIMER OF WARRANTY AND LIMITATION OF REMEDIES: CUSTOMER UNDERSTANDS AND AGREES AS FOLLOWS:

a) THE EXPRESS WARRANTIES SET FORTH IN THIS AGREEMENT ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND ALL SUCH OTHER WARRANTIES ARE HEREBY DISCLAIMED AND EXCLUDED BY CONTROL DATA.

b) CONTROL DATA SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE CAUSED BY DELAY IN FURNISHING EQUIPMENT, PRODUCTS, SERVICES OR ANY OTHER PERFORMANCE UNDER OR PURSUANT TO THIS AGREEMENT.

c) THE SOLE AND EXCLUSIVE REMEDIES FOR BREACH OF ANY AND ALL WARRANTIES AND THE SOLE REMEDIES FOR CONTROL DATA'S LIABILITY OF ANY KIND (INCLUDING LIABILITY FOR NEGLIGENCE) WITH RESPECT TO THE EQUIPMENT, PRODUCTS AND SERVICES COVERED BY THIS AGREEMENT AND ALL OTHER PERFORMANCE BY CONTROL DATA UNDER OR PURSUANT TO THIS AGREEMENT SHALL BE LIMITED TO THE REMEDIES PROVIDED IN THE FOLLOWING ARTICLES:

(i) Schedule A – Article 5
(ii) Schedule B – Article 4
(iii) Schedule C – Article 11
(iv) Schedule C-1 – Article 11
(v) Schedule D – Article 8
(vi) Schedule E – Article 8
(vii) Schedule F – Article 6
(viii) Schedule G – Article 8
(ix) Schedule H – Article 7
(x) Schedule I – Article 8
(xi) Schedule J – Article 8
(xii) Schedule K – Article 10
(xiii) Schedule L – Article 4

d) IN NO EVENT SHALL CONTROL DATA'S LIABILITY OF ANY KIND INCLUDE ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, EVEN IF CONTROL DATA SHALL HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH POTENTIAL LOSS OR DAMAGE.

5. PATENTS AND COPYRIGHTS: Control Data will defend any suit or proceeding brought against Customer so far as based on a claim that the equipment, Software Product or any part of either, furnished by Control Data under Schedule B, C, C-1, H or I of this Agreement constitutes an infringement of any patent or copyright of the United States, if notified promptly in writing of any claim of infringement and given authority, information, and assistance (at Control Data's expense) to handle the claim and for the defense of any suit or proceeding, and will pay all damages and costs awarded therein against Customer. In case the equipment, Software Product or any part of either, is in such suit held to constitute an infringement and the use of the equipment, Software Product ar any part of either, is enjoined, Control Data shall, at its own expense and at its option, either procure for Customer the right to continue using the equipment, Software Product or any part of either, or replace same with a non-infringing product, or modify it so it becomes non-infringing; or, in the event of: i) lease pursuant to Schedule C or C-1, remove the equipment at no cost to Customer except for rental charges up until such time as Customer is enjoined from using such equipment, or any part thereof, or until the equipment is removed; ii) purchase pursuant to Schedule B, grant Customer a credit for such equipment or part in accordance with the applicable Control Data depreciation policy in effect at the time and accept its return; iii) License pursuant to Schedule H, terminate the License at no cost to Customer except for charges up until such time as Customer is enjoined from such use, or; iv) services pursuant to Schedule I, terminate the service at no cost to Customer except for charges up until such time as Customer or Control Data is enjoined.

Control Data shall not be liable to Customer under any provision of this Article, if any patent or copyright infringement or claim thereof, is based upon the use of the equipment, Software Product or any part of either, in connection with equipment, software or devices not delivered by Control Data, or in a manner for which the equipment, Software Product, or any part of either, was not designed, or where the equipment, Software Product, or any part of either, has been modified by or for the Customer in a manner to become infringing, except pursuant to Article 8 of Schedule H hereto.

6. TERMINATION: If Customer petitions for relief under the Bankruptcy Act, or if any involuntary petition thereunder should be filed against Customer, and the same be

not dismissed within thirty (30) days, or if Customer is adjudicated a Bankrupt, or if a receiver is appointed for Customer's business or if Customer makes an assignment for the benefit of creditors, or if Customer defaults in payment of any sum due under this Agreement or otherwise fails to fulfill its obligations under this Agreement, then Control Data shall without further notice, have the immediate right to terminate this Agreement and enter upon Customer's premises to repossess and remove any Control Data owned, leased or licensed equipment or products Customer's obligation to pay all charges which shall have accrued shall survive any termination of this Agreement or any Schedule incorporated in this Agreement. In addition, Control Data's termination of this Agreement or such taking of possession shall be without prejudice to any other remedies Control Data may have including, without limitation, all remedies with respect to the unperformed balance of this Agreement. Termination of this Agreement or any other Agreement with Customer for any of these reasons shall be sufficient justification for termination, at Control Data's option, of any or all other Agreements between Control Data and Customer

7. GENERAL PROVISIONS: a) Customer agrees not to remove any equipment or products, to the extent Control Data has a maintenance responsibility or has retained any interest therein, from the location at which it is installed, except in an emergency, without prior written consent of Control Data, which consent shall not be unreasonably withheld.

b) Neither party shall have the right to assign or otherwise transfer its rights or obligations under this Agreement except with the written consent of the other party provided, however, that a successor in interest by merger, by operation of law, assignment, purchase, or otherwise of the entire business of either party, shall acquire all interest of such party hereunder, and Control Data shall be entitled to assign all or part of the payments under this Agreement, or in the event of lease, sell the leased equipment (subject to Customer's rights under this Agreement), to any person or organization in its own right or as agent or trustee Any prohibited assignment shall be null and void

c) This Agreement shall be governed by the laws of the State of Minnesota.

d) THIS AGREEMENT SUPERSEDES ALL PROPOSALS, ORAL OR WRITTEN, AND ALL NEGOTIATIONS, CONVERSATIONS OR DISCUSSIONS HERETOFORE HAD BETWEEN THE PARTIES RELATED TO THIS AGREEMENT. CUSTOMER ACKNOWLEDGES THAT IT HAS NOT BEEN INDUCED TO ENTER INTO THIS AGREEMENT BY ANY REPRESENTATIONS OR STATEMENTS, ORAL OR WRITTEN, NOT EXPRESSLY CONTAINED HEREIN. THE TERMS AND CONDITIONS OF THIS AGREEMENT SHALL PREVAIL, NOTWITHSTANDING ANY VARIANCE WITH THE TERMS AND CONDITIONS OF ANY ORDER OR OTHER INSTRUMENT SUBMITTED BY CUSTOMER.

e) This Agreement shall not be deemed or construed to be modified, amended, rescinded, cancelled or waived, in whole or in part, except by written amendment signed by the parties hereto.

f) No action, regardless of form, arising out of the transactions under this Agreement may be brought by either party more than two (2) years after the cause of action has accrued.

SCHEDULE B
SALE OF EQUIPMENT

Customer agrees to purchase and Control Data agrees to furnish at the place of installation indicated below, the equipment listed below, in accordance with the terms and conditions contained in this Schedule and all other terms and conditions contained in this Agreement, including specifically Article 4, Disclaimer of Warranty and Limitation of Remedies, of Schedule A:

SITE OF INSTALLATION _____
(Including Specific Operating Location – Building, Floor & Room)

STREET ADDRESS _____

CITY _____ STATE _____

Qty.	Model & Description	Unit Price	Extension	Scheduled Installation Date

CDC Contract No. _____

1. TRANSPORTATION AND INVOICES: Control Data shall make all arrangements for the transportation service and prepay the transportation service charges for shipment of the equipment to its specific operating location at the site of installation. Control Data shall invoice the transportation service charges based on individual shipment weight and the established rates in published tariffs, filed with the appropriate state and federal regulatory agencies or commissions. The methods of shipment and packaging shall be in accordance with Control Data's standards, consistent with the nature of the equipment and the hazards of transportation and handling.

Invoices for the equipment and all other charges shall be rendered upon shipment of equipment or as soon thereafter as practicable.

2. RISK OF LOSS OR DAMAGE: Customer shall be relieved of all risk of loss or damage to the equipment listed in this Schedule, with the exception of loss or damage caused by nuclear radiation, reaction or contamination, during delivery and while the equipment is being installed. From and after completion of installation, Customer assumes all risk of physical loss or damage to the equipment.

3. INSTALLATION: Equipment purchased under this Schedule will be installed, ready for use, by Control Data without additional charge. Customer shall, at its expense, have the site prepared in accordance with Control Data's written specifications thirty (30) days before the scheduled installation date to enable Control Data to promptly deliver and begin installing the equipment.

The date on which Control Data notifies Customer that the equipment is installed, ready for use, shall be the Installation Date of such equipment for all purposes of this Schedule.

4. WARRANTY AND MAINTENANCE: a) Control Data warrants for a period of one (1) year from the Installation Date that the equipment listed in this Schedule (excepting expendable components such as solid state components, capacitors, etc.) will be free from defects in materials and workmanship. Control Data's sole obligation in the event of breach of such warranty shall be repair or replacement of the defective unit at no charge to Customer, except for labor costs for repair or removal of the defective unit and installation of any replacement unit, and transportation charges for delivery of the replacement and return of the defective unit.

b) Control Data, if requested, will provide maintenance coverage for equipment purchased under this Schedule in accordance with a maintenance plan then offered by Control Data at the prices and the terms in effect to commercial users at the time of agreement for such service so long as Control Data continues to generally provide to customers maintenance coverage for the models of equipment purchased under this Schedule.

c) Control Data shall have no obligation under this Article to provide maintenance or make repairs or replacements required through normal wear and tear, or necessitated in whole or in part by catastrophe, fault or negligence of the user, improper or unauthorized use of the equipment by user, or by causes external to the equipment, such as, but not limited to, power failure or air-conditioning failure. Replaced parts shall become the property of Control Data.

d) Individual items of equipment purchased under this Agreement may not be newly manufactured. Items of equipment which are not newly manufactured are warranted equivalent to new in performance. Equipment purchased under this Agreement which is newly manufactured may consist in part of used components which are warranted equivalent to new in performance when used in the purchased equipment.

5. SECURITY INTEREST: Control Data shall retain a security interest in the equipment described on page 1 of this Schedule until the full purchase price thereof (including charges under Article 1 above and Article 2 of Schedule A) shall have been paid. Customer's failure to pay any amounts when due shall give Control Data the right to possession and removal of the equipment at any time upon giving at least ten (10) days prior written notice. Control Data's taking of such possession shall be without prejudice to any other remedies Control Data may have. Title to the equipment listed in this Schedule shall transfer to the Customer upon shipment from Control Data.

At the request of Control Data, Customer will join with Control Data in executing one or more financing statements, or other documents reasonably required by Control Data to protect Control Data's security interest in said equipment, in form satisfactory to Control Data.

CONTROL DATA CORPORATION

SCHEDULE C
LEASE OF EQUIPMENT – SYSTEMS

Customer agrees to lease and Control Data agrees to furnish at the place of installation indicated below, the equipment listed below, in accordance with the terms and conditions contained in this Schedule and all other terms and conditions contained in this Agreement, including specifically Article 4, Disclaimer of Warranty and Limitation of Remedies, of Schedule A:

SITE OF INSTALLATION _____

STREET ADDRESS _____

CITY _____ STATE _____

Qty.	Model and Description	Unit Basic Monthly Rental	Total Basic Monthly Rental	Scheduled Installation Date	Purchase Option Code

1. TERM: This Schedule shall become effective upon the date this Agreement is accepted and signed by Control Data and shall continue for an initial term of one (1) year from the date of commencement of rental charges hereunder and shall thereafter remain in effect, unless the term (including the initial term) is terminated pursuant to Article 7 or Article 12 below.

2. TRANSPORTATION AND INVOICES: Control Data shall make all arrangements for the transportation service and prepay the transportation service charges for shipment of equipment both from and to Control Data and between Customer's sites. Shipment to Customer's site and between Customer's sites shall be to its specific operating location at the site of installation. Control Data shall invoice the transportation service charges based on individual shipment weight and the established rates in published tariffs, filed with the appropriate state and federal regulatory agencies or commissions. Control Data shall also invoice for packing material and transportation service charges for such material on shipments between Customer's sites and from Customer's site to Control Data. The methods of shipment and packaging shall be in accordance with Control Data's standards, consistent with the nature of the equipment and the hazards of transportation and handling.

3. TITLE: Title to the equipment is and at all times shall remain in Control Data, provided that if Customer exercises its option under Article 7 below, title to equipment purchased shall pass in accordance with Control Data's applicable agreement for the sale of equipment.

CDC Contract No. _____

4. RISK OF LOSS OR DAMAGE: Customer shall be relieved from all risks of loss or damage to the equipment listed in this Schedule during periods of transportation, installation and possession of Customer with the exception of loss or damage caused by nuclear radiation, reaction, or contamination.

5. INSTALLATION: a) Equipment leased under this Schedule will be installed, ready for use, by Control Data without additional charge. Customer shall, at its expense, have the site prepared in accordance with Control Data's written specifications thirty (30) days before the scheduled installation date to enable Control Data to promptly deliver and begin installing the equipment.

b) Individual items of equipment leased under this Agreement may not be newly manufactured. Items of equipment which are not newly manufactured are warranted equivalent to new in performance. Equipment leased under this Agreement which is newly manufactured may consist in part of used components which are warranted equivalent to new in performance when used in the leased equipment.

c) The date on which Control Data notifies Customer that the equipment is installed, ready for use, shall be the Installation Date of such equipment for all purposes of this Schedule.

6. MAINTENANCE: Control Data shall provide maintenance coverage for all equipment leased under this Schedule, pursuant to Schedule D or E of this Agreement, whichever is applicable. All equipment comprising a system shall have the same maintenance plan. A system, for purposes of this Article, is defined as a combination of equipment which is interconnected by Control Data's signal and power cables

7. OPTION TO PURCHASE: a) Customer may at any time purchase any or all equipment specified in this Schedule in accordance with the terms of Control Data's agreement for the sale of equipment then in effect, except that:

(1) The Installation Date referred to in said agreement for the sale of equipment shall be the Installation Date under this Schedule, and

(2) Title shall pass to Customer either upon execution of said agreement for the sale of equipment by Control Data, or receipt of payment of the purchase price for said equipment by Control Data, whichever shall first occur, unless otherwise agreed to by the parties and specified in said agreement for the sale of equipment.

Such purchase shall be at Control Data's list price to commercial users for new equipment prevailing on the date of such purchase, less a purchase option credit in accordance with the attached purchase option policy.

b) For equipment purchased the effective date for discontinuance of rental charges hereunder shall be.

(1) The day following receipt by Control Data at 8100 34th Avenue South, Minneapolis, Minnesota 55440, of an executed copy of the above described Control Data agreement for the sale of equipment; or
(2) A later date if so specified in said agreement; or
(3) The date of telegraphic notice of exercise of purchase option addressed to Contracts Department, Control Data, at the above address, or a later date specified in the telegraphic notice, provided the effective date is confirmed by receipt of said agreement within thirty (30) days and provided further that instructions for maintenance coverage are included in the telegraphic notice.

8. RENTAL INVOICES AND CHARGES: a) Rental charges shall begin on the Installation Date and shall be invoiced to Customer monthly in advance. All other charges shall be invoiced after the month in which they accrue.

b) Control Data may change the monthly rental rates specified in this Schedule effective upon expiration of the initial term of this Schedule or at the end of any calendar month thereafter, by giving at least ninety (90) days written notice. The adjusted rates, however, shall not exceed Control Data's published rates for commercial users on the effective date of the adjustment.

9. ALTERATIONS: Customer agrees not to employ or use additional attachments, features, or devices on the equipment listed on this Schedule or make changes or alterations to the equipment covered hereby without the written consent of Control Data in each case. Such alterations or attachments shall be removed by Customer immediately after termination of rental. After the rental termination date, Control Data will restore the equipment to its original configuration (ordinary wear and tear only excluded) and charge the cost of restoration to Customer.

10. TERMS OF USE: The equipment listed in this Schedule may be operated at any time and for any period of time at the convenience of Customer (exclusive of time required for preventive and remedial maintenance) and shall not be restricted to consecutive hours, length of personnel shifts, or for any other reason.

11. REMEDY: Control Data warrants that the equipment listed in this Schedule will be in good operating condition when installed. Control Data will, in accordance with the provisions of the maintenance plan selected by Customer pursuant to Article 6 above, restore the equipment to good operating condition in the event of breach of such warranty.

If a component being maintained under Schedule D becomes inoperative through no fault or negligence of Customer and remains inoperative for a period of twenty-four (24) hours or more during workdays for which Customer has contracted for maintenance under Schedule D, from the time Customer notifies Control Data until it is returned in good operating condition Control Data shall grant a credit to Customer for each such hour at the rate of one-seven hundred and twentieth (1/720th) of the basic monthly rental charge for such component. A like credit shall be granted for each interconnected Control Data component being maintained under Schedule D which is not usable as a result of the breakdown.

12. TERMINATION OF LEASE: Except as provided in Article 7 hereof or Articles 5 and 6 of Schedule A, equipment leased hereunder shall not be subject to termination, in whole or in part, by either party until the expiration of the initial term of lease indicated in Article 1 above. At any time after the expiration of this period and upon receipt of at least ninety (90) days written notice by either party, which notice may be given during said period, either party may terminate this Schedule.

CONTROL DATA CORPORATION

SCHEDULE C-1
LEASE OF EQUIPMENT – SUBSYSTEMS

Customer agrees to lease and Control Data agrees to furnish at the place of installation indicated below, the equipment listed below, in accordance with the terms and conditions contained in this Schedule and all other terms and conditions contained in this Agreement, including specifically Article 4, Disclaimer of Warranty and Limitation of Remedies, of Schedule A:

SITE OF INSTALLATION _____
(Including Specific Operating Location - Building, Floor & Room.)

STREET ADDRESS _____

CITY _____ STATE _____

Qty.	Model and Description	Unit Basic Monthly Rental	Total Basic Monthly Rental	Scheduled Installation Date	Purchase Option Code

1. TERM: This Schedule shall become effective upon the date this Agreement is accepted and signed by Control Data and shall continue for an initial term of one (1) year from the date of commencement of rental charges hereunder and shall thereafter remain in effect, unless the term (including the initial term) is terminated pursuant to Article 7 or Article 12 below.

2. TRANSPORTATION AND INVOICES: Control Data shall make all arrangements for the transportation service and prepay the transportation service charges for shipment of equipment both from and to Control Data and between Customer's sites. Shipment to Customer's site and between Customer's sites shall be to the equipment's specific operating location at the site of installation. Control Data shall invoice the transportation service charges based on individual shipment weight and the established rates in published tariffs, filed with the appropriate state and federal regulatory agencies or commissions. Control Data shall also invoice for packing material and transportation service charges for such material on shipments between Customer's sites and from Customer's site to Control Data. The methods of shipment and packaging shall be in accordance with Control Data's standards, consistent with the nature of the equipment and the hazards of transportation and handling.

3. TITLE: Title to the equipment is and at all times shall remain in Control Data, provided that if Customer exercises its option under Article 7 below, title to equipment purchased shall pass in accordance with Control Data's applicable agreement for the sale of equipment.

4. **RISK OF LOSS OR DAMAGE**: Customer shall be relieved from all risks of loss or damage to the equipment listed in this Schedule during periods of transportation, installation and possession of Customer with the exception of loss or damage caused by nuclear radiation, reaction, or contamination.

5. **INSTALLATION**: a) Equipment leased under this Schedule will be installed, ready for use, by Control Data without additional charge. Customer shall, at its expense, have the site prepared in accordance with Control Data's written specifications thirty (30) days before the scheduled installation date to enable Control Data to promptly deliver and begin installing the equipment.

b) Individual items of equipment leased under this Agreement may not be newly manufactured. Items of equipment which are not newly manufactured are warranted equivalent to new in performance. Equipment leased under this Agreement which is newly manufactured may consist in part of used components which are warranted equivalent to new in performance when used in the leased equipment.

c) The date on which Control Data notifies Customer that the equipment is installed, ready for use, shall be the Installation Date of such equipment for all purposes of this Schedule.

6. **MAINTENANCE**: Control Data shall provide maintenance coverage for all equipment leased under this Schedule, pursuant to Schedule J or E of this Agreement, whichever is applicable.

7. **OPTION TO PURCHASE**: a) Customer may at any time purchase any or all equipment specified in this Schedule in accordance with the terms of Control Data's agreement for the sale of equipment then in effect, except that:

(1) The Installation Date referred to in said agreement for the sale of equipment shall be the Installation Date under this Schedule; and

(2) Title shall pass to Customer either upon execution of said agreement for the sale of equipment by Control Data, or receipt of payment of the purchase price for said equipment by Control Data, whichever shall first occur, unless otherwise agreed to by the parties and specified in said agreement for the sale of equipment.

Such purchase shall be at Control Data's list price to commercial users for new equipment prevailing on the date of such purchase, less a purchase option credit in accordance with the attached purchase option policy.

b) For equipment purchased the effective date for discontinuance of rental charges hereunder shall be:

(1) The day following receipt by Control Data at 8100 - 34th Avenue South, P.O. Box 0, Minneapolis, Minnesota 55440, of an executed copy of the above described Control Data agreement for the sale of equipment; or

(2) A later date if so specified in said agreement; or

(3) The date of telegraphic notice of exercise of purchase option addressed to Contracts Department, Control Data, at the above address, or a later date specified in the telegraphic notice, provided the effective date is confirmed by receipt of said agreement within thirty (30) days and provided further that instructions for maintenance coverage are included in the telegraphic notice.

8. **RENTAL INVOICES AND CHARGES**: a) Rental charges shall begin on the Installation Date and shall be invoiced to Customer monthly in advance. All other charges shall be invoiced after the month in which they accrue.

b) Control Data may change the monthly rental rates specified in this Schedule effective upon expiration of the term of this Schedule or at the end of any calendar month thereafter, by giving at least ninety (90) days written notice. The adjusted rates, however, shall not exceed Control Data's published rates for commercial users on the effective date of the adjustment.

9. **ALTERATIONS**: Customer agrees not to employ or use additional attachments, features, or devices on the equipment listed on this Schedule or make changes or alterations to the equipment covered hereby without the written consent of Control Data in each case. Such alterations or attachments shall be removed by Customer immediately after termination of rental. After the rental termination date, Control Data will restore the equipment to its original configuration (ordinary wear and tear only excluded) and charge the cost of restoration to Customer.

10. **TERMS OF USE**: The equipment listed in this Schedule may be operated at any time and for any period of time at the convenience of Customer (exclusive of time required for preventive and remedial maintenance) and shall not be restricted to consecutive hours, length of personnel shifts, or for any other reason.

11. **REMEDY**: Control Data warrants that the equipment listed in this Schedule will be in good operating condition when installed. Control Data will, under the provisions of Schedule J or E of this Agreement, restore the equipment to good operating condition in the event of breach of such warranty.

12. **TERMINATION OF LEASE**: Except as provided in Article 7 hereof or Articles 5 and 6 of Schedule A, equipment leased hereunder shall not be subject to termination, in whole or in part, by either party until the expiration of the initial term of lease indicated in Article 1 above. At any time after the expiration of this period and upon receipt of at least ninety (90) days written notice by either party, which notice may be given during said period, either party may terminate this Schedule.

CDC PURCHASE OPTION POLICY

Purchase option credits shall be granted for each item of equipment in an amount equal to the applicable percentages of the monthly rental paid for said item for the period of continuous rental immediately preceding purchase. Said applicable percentages shall be those shown below for the purchase option code listed on page 1 of this Schedule for said item of equipment. The minimum additional cost to the Customer after allowance for all purchase option credits, expressed as a percentage of the list price to commercial users for new equipment prevailing at the time of purchase, shall not be less than the percentage listed in the minimum additional cost column below.

PURCHASE OPTION CREDITS

PERIOD OF CONTINUOUS RENTAL

Purchase Option Code	Months 1-03	Months 4-12	Months 13-24	Months 25-36	Months 37-48	Months 49 & Subseq.	Minimum Additional Cost
A.	68%	68%	45%	-0-	-0-	-0-	30%
B.	30%	30%	45%	60%	75%	75%	20%
C.	70%	70%	70%	70%	70%	70%	30%
D.	30%	30%	50%	70%	80%	80%	20%
E.	55%	55%	58%	60%	75%	75%	20%
F.	90%	70%	70%	70%	70%	70%	30%

CDC Contract No._____

CONTROL DATA
CORPORATION

SCHEDULE D
CONTROL DATA
MAINTENANCE SERVICE – SYSTEMS EQUIPMENT

Customer agrees to purchase and Control Data agrees to furnish at the place of installation indicated below, maintenance service on the equipment listed below, in accordance with the terms and conditions contained in this Schedule and all other terms and conditions contained in this Agreement, including specifically Article 4, Disclaimer of Warranty and Limitation of Remedies, of Schedule A:

SITE OF INSTALLATION _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

Qty.	Model & Description	Unit Basic Monthly Maintenance Charge	Total Basic Monthly Maintenance Charge

Principal Period of On-Call Maintenance

From _____ To _____

Monday-Friday Excluding Local Holidays

Total Contracted Monthly Maintenance Charges _____ _____

CDC Contract No. _____

AA4073
REV. 2/78

1. INSPECTION AND REPAIR: If the equipment identified above was not under Control Data's maintenance service responsibility immediately prior to the commencement of maintenance services under this Schedule, it shall be subject to inspection by Control Data to determine if it is in good operating condition which, for purposes of this Schedule, is defined as the level established for equipment maintained by Control Data. Any repairs or adjustments deemed necessary by Control Data to bring the equipment up to good operating condition shall be made prior to commencement of maintenance service.

2. TERM OF MAINTENANCE SERVICE: This Schedule shall become effective upon the date this Agreement is accepted and signed by Control Data and shall continue for an initial term of one (1) year from the Commencement Date of monthly maintenance charges on the initial equipment maintained hereunder and shall remain in effect thereafter until terminated as provided in Article 6 below.

3. RESPONSIBILITIES OF CONTROL DATA: a) Control Data shall, for the total contracted monthly maintenance charges, maintain the equipment in good operating condition and furnish on-call maintenance service during the Principal Period of Maintenance designated herein and any additionally contracted periods of services incorporated by amendment hereto (said periods being hereinafter referred to as the "Contracted Period of Maintenance"). Pursuant to the above, Control Data shall:

(1) Provide scheduled preventive maintenance during the Principal Period of Maintenance or by mutual agreement during the Contracted Period of Maintenance;

(2) Specify the time required for preventive maintenance;

(3) Provide remedial maintenance service during the Contracted Period of Maintenance when notified that the equipment is inoperative;

(4) Attempt to be responsive to requests from Customer for maintenance service outside the Contracted Period of Maintenance, subject to reasonable notice and then current manpower availability; and

(5) Provide test equipment, tools, maintenance software, technical bulletins, maintenance documentation or other maintenance aids, hereinafter referred to as "Maintenance Aids", as it deems necessary for its maintenance personnel to perform the maintenance service.

b) Control Data will bear costs of labor and parts for maintaining the equipment leased from Control Data or its subsidiary in good operating condition.

c) Control Data will bear costs of labor and parts for maintaining the Customer owned equipment in good operating condition, which costs are required because of normal wear and tear of the equipment. Maintenance or repairs attributable to unauthorized attempts by Customer to repair or maintain the equipment, to catastrophe, fault or negligence of Customer, improper use or misuse of the equipment by Customer or causes external to the equipment, such as, but not limited to, power failure or air conditioning failure shall not be considered due to normal wear and tear.

d) Control Data shall, for the additional charges referred to in Article 5 c) and d) below, provide maintenance service and make required repairs to Customer owned equipment when either is required due to causes not attributable to normal wear or tear.

e) Title to all equipment and parts provided under this Schedule shall remain with Control Data except that upon installation of parts in Customer owned equipment, title to those installed parts shall pass to Customer. The replaced parts shall become the property of Control Data. Only new standard parts or parts which are warranted equivalent to new in performance shall be used in providing maintenance service.

f) If Customer, with Control Data's approval, causes modifications to be made, or accessories, attachments, features or devices not covered by this Schedule to be added to equipment being maintained by Control Data, then maintenance service shall be supplied thereon upon mutual agreement between Customer and Control Data and the total contracted monthly maintenance charges shall be adjusted accordingly by Control Data.

4. RESPONSIBILITIES OF CUSTOMER: a) Customer shall provide, free of charge and with ready access, storage space for Maintenance Aids and spare parts, working space, heat, light, ventilation, electric current and outlets for the use of Control Data's maintenance personnel.

b) Customer shall notify Control Data's maintenance personnel immediately upon equipment failure and shall allow Control Data full and free access to the equipment and the use of necessary data communications facilities and equipment at no charge to Control Data subject to Customer's industrial security rules.

c) Customer shall maintain site environmental conditions throughout the term of maintenance service identified in Article 2 above in accordance with the specifications established by Control Data for the equipment being maintained.

d) Customer's personnel shall not perform maintenance or attempt repairs to equipment while such equipment is under the purview of this Schedule, except as specified and approved by Control Data.

e) Customer shall not cause modifications to be made, or accessories, attachments, features or devices to be added to the equipment being maintained by Control Data under this Schedule without Control Data's prior written approval.

f) As a part of providing maintenance service hereunder, Control Data sponsored modifications may be made to the equipment covered hereby. Customer shall provide time for such modifications, if any, after notification by Control Data that such modification is ready to be made. Time required shall be at a time mutually agreeable to Customer and Control Data and shall be in addition to the normal preventive maintenance hours.

g) Subject to Control Data's instruction and direction, Customer shall, at its own expense and when necessary, perform the following:

(1) Certain duties and services of a housekeeping nature, such as, but not limited to, the replacement of printer and typewriter ribbons and paper,

cleaning of magnetic tape heads and vacuum chambers.

(2) Certain duties and services of a minor remedial maintenance nature, such as, but not limited to, recording error information, running operational readiness tests, and clearing halts not related to hard failures.

h) Customer shall contract for the same maintenance plan and Contracted Periods of Maintenance service on all equipment comprising a system. For purposes of this paragraph, a system is defined as a combination of equipment, which is interconnected by local Control Data signal and power cables.

i) Customer understands and agrees to provide computer system resources as required for installation and utilization by Control Data of its Maintenance Aids, including but not limited to maintenance software and updates and/or modifications thereof. Upon termination of this Schedule, Customer will permit Control Data to remove any Maintenance Aids, or, with respect to Maintenance Aids taking the form of software, Customer shall certify to Control Data within thirty (30) days from the date of termination, that all copies thereof have been destroyed.

5. INVOICES, PAYMENTS AND ADDITIONAL CHARGES: a) The total contracted monthly maintenance charges for each piece of equipment specified herein shall begin on the Commencement Date, which is defined:

(1) For previously installed equipment not under Control Data's maintenance service responsibility immediately prior to the commencement of maintenance service hereunder, as the day after completion of the initial repairs and/or adjustments provided pursuant to Article 1 above;

(2) For newly installed equipment, as the installation date of equipment.

Monthly maintenance charges shall be invoiced monthly in advance. All other charges hereunder shall be invoiced after the month in which charges accrue.

b) Control Data may change the monthly rates specified herein effective upon expiration of the initial one (1) year term hereunder, or at the end of any calendar month thereafter by giving at least ninety (90) days written notice. The adjusted rates, however, shall not exceed Control Data's published rates for maintenance service under this Schedule for commercial users on the effective date of the adjustment.

c) In addition to the total contracted monthly maintenance charges provided herein, Customer agrees to pay:

(1) In the case of Customer owned equipment, labor, parts and other expenses for maintenance or repair due to causes not attributable to normal wear and tear, due to the fault or negligence of Customer or due to causes reasonably within Customer's control;

(2) Labor, parts and other expenses for any repairs or adjustments deemed necessary and performed by Control Data as a result of the inspection under Article 1 above;

(3) Labor and other expenses for the performance of preventive maintenance, remedial maintenance and installation of Control Data sponsored equipment modifications performed outside the Contracted Periods of Maintenance at the request of Customer;

(4) All travel expenses outside the Contracted Period of Maintenance and during the Contracted Period of Maintenance, travel expenses in excess of fifty (50) miles each way, for sites located beyond fifty (50) miles from Control Data's nearest service center; and

(5) Labor, parts and other expenses for Customer authorized refurbishment or overhaul of Customer owned equipment.

d) All additional charges contemplated by Article 5 c) above, for labor and parts, shall be at Control Data's published rates in effect at the time that the labor and parts are furnished. Charges for labor shall include travel time to and from the installation site and be computed to the nearest one-half (1/2) hour with a minimum charge per call based upon a two (2) hour period. Travel expenses shall be billable at Control Data's then current published rates and terms and/or if commercial transportation is used, at the actual cost of such commercial transportation. Other travel costs, such as per diem, lodging, parking and tolls shall be invoiced to Customer as incurred.

6. TERMINATION OF MAINTENANCE SERVICE: a) Except as provided in Article 6 of Schedule A, maintenance service under this Schedule shall not be subject to termination, in whole or in part, by either party until the expiration of the initial one (1) year term hereunder. At any time after the expiration of this term and upon receipt of at least ninety (90) days written notice by either party, which notice may be given during said term, either party may terminate this Schedule.

b) After the initial one (1) year term and by amendment to this Agreement, Customer may change the maintenance service provided under this Schedule, to another plan then offered by Control Data to its commercial customers for the equipment specified herein with said plan being subject to termination upon receipt of at least ninety (90) days written notice by either party. In the event of such change, the published rates and terms then in effect for the maintenance plan selected shall apply.

c) If, after the initial one (1) year term, any item of Customer owned equipment being maintained under this Schedule is, in Control Data's opinion, in need of refurbishment or overhaul, Control Data shall submit to Customer a description of the necessary refurbishment and an estimate of the refurbishment charges, which shall be in addition to the total contracted monthly maintenance charges hereunder. In the event Customer does not authorize, in writing, said refurbishment within sixty (60) days from the receipt of refurbishment notice, Control Data shall: i) be relieved of maintenance responsibility for said equipment under the

terms of this Agreement and ii) upon mutual agreement provide maintenance service on a time and materials basis in accordance with its published terms, conditions and charges for such services to its commercial customers.

7. PERIOD OF ON-CALL MAINTENANCE SERVICE: a) The basic monthly maintenance charges provide for on-call maintenance service during the Principal Period of Maintenance, designated above. This period is defined as any nine (9) consecutive hours per day between the hours of 7:00 a.m. and 6:00 p.m., Mondays through Fridays, excluding local holidays.

b) By amendment to this Schedule and upon thirty (30) days prior written notice, Customer may select Extended Maintenance Coverage for Control Data equipment installed within a designated Control Data twenty-four (24) hour service area. Upon mutual agreement, Extended Maintenance Coverage may be selected for Control Data Electronic Data Processing Computer Systems located outside a twenty-four (24) hour service area. In the event Extended Maintenance Coverage is selected, the published rates then in effect for the newly selected period of maintenance service shall apply.

8. MAINTENANCE CREDIT: a) If a component being maintained under this Schedule becomes inoperative through no fault or negligence of Customer and remains inoperative for a period of twenty-four (24) hours or more during the Contracted Workdays from the time Customer notifies Control Data until it is returned in good operating condition, Control Data shall grant a credit to Customer for each such hour at the rate of one-half percent (1/2%) of the monthly maintenance charge for such component. The maximum credit for any calendar day shall not exceed one-thirtieth (1/30th) of the monthly maintenance charge for such component. A like credit shall be granted for each interconnected Control Data component being maintained under this Schedule not usable as a result of the breakdown.

b) In case maintenance credits apply, Customer shall request promptly in writing, but in no event later than ninety (90) days from the date of occurrence, the applicable credits to be applied against charges due under this Schedule. The request shall list the type and model number(s) of equipment, date of occurrence, period of downtime and the claimed amount of credit.

9. PROPRIETARY RIGHTS AND COPYRIGHTS: a) Customer agrees that during the term of this Schedule and thereafter, any Maintenance Aids provided by Control Data hereunder, including but not limited to maintenance software, are the property of Control Data and are proprietary to it and Customer agrees to keep confidential and to utilize its best efforts to prevent and protect the contents of these Maintenance Aids or any part thereof, from unauthorized disclosure by its agents, employees or customers.

b) Customer agrees that it will not make or have made copies of any Maintenance Aid or part thereof without the prior written consent of Control Data provided, however, that where Maintenance Aids are installed as part of the Customer's operating system, Customer may make necessary copies of said Maintenance Aids for use as provided in this Schedule. Each copy shall have proprietary notices and legends affixed as prescribed by Control Data. The existence of a copyright notice shall not cause, or be construed as causing any Maintenance Aid to be a published copyrighted work or to be in the public domain.

CONTROL DATA CORPORATION

SCHEDULE E
CONTROL DATA
SUPPORT OF CUSTOMER MAINTENANCE SERVICE

Customer agrees to purchase and Control Data agrees to furnish at the place of installation indicated below, maintenance support on the equipment listed below, in accordance with the terms and conditions contained in this Schedule and all other terms and conditions contained in this Agreement, including specifically Article 4, Disclaimer of Warranty and Limitation of Remedies, of Schedule A:

SITE OF INSTALLATION _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

Qty.	Model & Description	Unit Basic Monthly Maintenance Charge	Total Basic Monthly Maintenance Charge

Total Contracted Monthly
Maintenance Charges _____

Schedule E Credit _____

Total Monthly
Support Charges _____

CDC Contract No. _____

1. INSPECTION AND REPAIR: Control Data has the right, under the following circumstances to inspect the equipment identified above, to determine if it is in good operating condition, which for purposes of this Schedule is defined as the level established for equipment maintained by Control Data:

a) Initial Inspection — If the equipment was not under Control Data's maintenance service responsibility immediately prior to the commencement of this Schedule, it shall be subject to inspection by Control Data. Any repairs or adjustments then deemed necessary by Control Data to bring the equipment up to good operating condition shall be made prior to commencement of maintenance support.

b) Periodic Inspection — Control Data may, at its option, make periodic inspections within seven (7) days following the date of notification to Customer. Customer shall provide time to make such inspections at a mutually agreeable time during Control Data's normal working hours. Any repairs or adjustments then deemed necessary by Control Data shall be effected by Customer within thirty (30) days. When, as a result of any inspection on equipment owned by Control Data or its subsidiary and leased by Customer, it is determined by Control Data that the Customer provided service is not satisfactorily protecting the equipment, Control Data has the right upon thirty (30) days written notice to make the necessary repairs or adjustments to bring the equipment up to good operating condition and if Control Data so elects, it may amend this Agreement to provide maintenance service in accordance with a maintenance plan selected by Control Data. In the event of said amendment, the published rates and terms then in effect for the maintenance service selected by Control Data shall apply and the term of the maintenance service selected will remain the same as the term of maintenance support under this Schedule.

c) Termination Inspection — Upon termination of maintenance support under this Schedule, the equipment, if owned by Control Data or its subsidiary and leased by Customer, shall be subject to inspection by Control Data. Any repairs or adjustments then deemed necessary by Control Data to bring the equipment up to good operating condition shall be made.

2. TERM OF MAINTENANCE SUPPORT: This Schedule shall become effective upon the date this Agreement is accepted and signed by Control Data and shall continue for an initial term of one (1) year from the Commencement Date of monthly support charges on the initial equipment maintained hereunder and shall remain in effect thereafter until terminated as provided in Article 6 below.

3. RESPONSIBILITIES OF CONTROL DATA: a) Control Data shall, for the total monthly support charges, do the following:

(1) Provide an inventory of parts. This inventory will consist of a level of parts that is consistent with that established for maintenance if performed by Control Data. Title to these parts shall remain with Control Data except that upon installation of parts in Customer owned equipment, title to those installed parts shall pass to Customer. The replaced parts shall become the property of Control Data. Only new standard parts or used parts which are warranted equivalent to new in performance shall be used in providing maintenance support.

(2) Bear costs of parts for maintaining the equipment leased from Control Data or its subsidiary in good operating condition.

(3) Bear costs of parts for maintaining the Customer owned equipment which parts are required because of normal wear and tear of the equipment. Parts required to repair or maintain the equipment when repair or maintenance is due to catastrophe, fault or negligence of Customer, improper use or misuse of the equipment by Customer, or causes external to the equipment, such as but not limited to, power failure or air conditioning failure, shall not be considered due to normal wear and tear.

(4) Provide test equipment, tools, maintenance software, maintenance documentation or other maintenance aids, hereinafter referred to as "Maintenance Aids", as deemed necessary by Control Data to enable Customer's maintenance personnel to perform the maintenance service.

b) If requested by Customer, Control Data shall provide maintenance labor or make repairs or adjustments to the equipment covered herein for charges in addition to the total monthly support charges.

c) If Customer, with Control Data's approval, causes modifications to be made, or accessories, attachments, features or devices not covered by this Schedule to be added to equipment being supported by Control Data, then maintenance support will be supplied thereon upon mutual agreement between Customer and Control Data and the total monthly support charges shall be adjusted accordingly by Control Data.

4. RESPONSIBILITIES OF THE CUSTOMER: a) Customer is authorized to and shall perform preventive maintenance and remedial maintenance required on the equipment specified above so as to maintain the equipment in good operating condition. The maintenance performed must be consistent with the maintenance manuals and documentation provided by Control Data under this Schedule.

b) Customer may delegate some or all of its duties to provide maintenance labor hereunder where such delegation is not inconsistent with purposes of this Schedule; but in no event shall such delegation relieve Customer of any obligations or liabilities to Control Data hereunder.

c) Customer shall provide, free of charge and with ready access, storage space for Maintenance Aids and spare parts, working space, including heat, light, ventilation, electric current and outlets required for maintenance whether provided by Customer or Control Data.

d) Customer shall notify Control Data's maintenance personnel immediately upon equipment failure not attributable to normal wear and tear.

e) If Customer requests Control Data to provide maintenance service, Customer shall allow Control Data full and free access to the equipment and the use of necessary data communication facilities and equipment at no charge to Control Data, subject to Customer's industrial security rules.

f) Customer shall maintain site environmental conditions throughout the term of maintenance support identified in

Article 2 above in accordance with the specifications established by Control Data for the equipment being maintained.

g) Parts and Maintenance Aids furnished by Control Data hereunder, shall be used by Customer only in support of the specific items of equipment specified above.

h) As a part of providing maintenance support hereunder, Control Data sponsored modifications shall be made by Customer to the equipment covered hereby. Control Data shall provide the necessary kits and advise Customer when such modification is ready to be made.

i) Customer shall maintain records of and be accountable for all parts and Maintenance Aids received and their subsequent disposition. Said records shall be made available to Control Data upon request and at the time maintenance support under this Schedule terminates.

j) Customer shall not cause modifications to be made, or accessories, attachments, features or devices to be added to the equipment being supported by Control Data under this Schedule without Control Data's prior written approval.

k) Customer will be responsible for ordering replacement parts required to maintain inventory at the initial level established by Control Data. All replacement parts will be obtained from Control Data. All orders for replacement parts shall be directed to, and approved by, the local Control Data Customer Engineering Representative. All parts replaced shall, upon request, be returned to Control Data properly identified. Should Customer require an inventory of parts in quantities greater than provided by Article 3 a) above, they shall be provided by Control Data.

l) Upon termination of this Schedule, Customer shall return the unused parts inventory and all Maintenance Aids to Control Data in good condition, or, with respect to Maintenance Aids taking the form of software, Customer shall certify to Control Data within thirty (30) days from the date of termination, that all copies thereof have been destroyed.

m) Arrangements for shipment of all items to be returned to Control Data under this Schedule shall be made by Customer in accordance with instructions provided by Control Data.

5. INVOICES, PAYMENTS AND ADDITIONAL CHARGES: a) The total monthly support charges for each piece of equipment specified herein shall begin on the Commencement Date, which is defined:

(1) For previously installed equipment not under Control Data's maintenance support responsibility immediately prior to the commencement of maintenance service hereunder, as the day after completion of the initial repairs and/or adjustments provided pursuant to Article 1 above;

(2) For newly installed equipment, as the installation date of the equipment.

Monthly support charges shall be invoiced monthly in advance. All other charges hereunder shall be invoiced after the month in which charges accrue.

b) Control Data may change the monthly rates specified herein effective upon expiration of the initial one (1) year term hereunder or at the end of any calendar month thereafter by giving at least ninety (90) days written notice. The adjusted rates, however, shall not exceed Control Data's published rates for maintenance support under this Schedule for commercial users on the effective date of the adjustment.

c) In addition to the total monthly support charges, Customer shall pay:

(1) In the case of Customer owned equipment, labor, parts and other expenses for maintenance or repair due to causes not attributable to normal wear and tear, due to fault or negligence of Customer or due to causes reasonably within Customer's control;

(2) Labor, parts and other expenses for any repairs or adjustments deemed necessary and performed by Control Data as a result of inspections under Article 1 above, and all other services by Control Data requested by or furnished to the Customer except the inspections under Article 1 above;

(3) For parts inventories in quantities greater than provided by Article 3 a) above; and

(4) All travel expenses outside Control Data's normal working hours (8:00 a.m. to 5:00 p.m., Mondays through Fridays, excluding local holidays) and during Control Data's normal working hours, all travel expenses incurred beyond fifty (50) miles each way, from the Control Data Service Center from which service was supplied.

d) Charges for all labor and parts shall be at Control Data's published rates in effect at the time the labor and parts are furnished. Charges for labor shall include travel time to and from the installation site and be computed to the nearest one-half (1/2) hour with a minimum charge per call based upon a two (2) hour period. Travel expenses will be billable at Control Data's then current published rates and terms, and/or if commercial transportation is used, at the actual cost of such commercial transportation. Other travel costs, such as per diem, lodging, parking and tolls will be invoiced to Customer as incurred.

6. TERMINATION OF MAINTENANCE SUPPORT: a) Except as provided in Article 6 of Schedule A and Article 1 b) of this Schedule, maintenance support under this Schedule shall not be subject to termination, in whole or in part, by either party until the expiration of the initial one (1) year term hereunder. At any time after the expiration of this term and upon receipt of at least ninety (90) days written notice by either party, which notice may be given during said term, either party may terminate this Schedule.

b) After the initial one (1) year term and by amendment to this Agreement, Customer may change the maintenance support provided under this Schedule, to another plan then commercially offered by Control Data for the equipment specified herein, with said plan being subject to termination upon receipt of at least ninety (90) days written notice by

either party. In the event of such change, the published rates and terms then in effect for the maintenance plan selected shall apply.

7. PROPRIETARY RIGHTS AND COPYRIGHTS: a) Customer agrees that during the term of this Schedule and thereafter, any Maintenance Aids provided by Control Data hereunder, including but not limited to maintenance software, are the property of Control Data and are proprietary to it and Customer agrees to keep confidential and to utilize its best efforts to prevent and protect the contents of these Maintenance Aids or any part therof, from unauthorized disclosure by its agents, employees or customers.

b) Customer agrees that it will not make or have made copies of any Maintenance Aid or part thereof without the prior written consent of Control Data provided, however, that where Maintenance Aids are installed as part of the Customer's operating system, Customer may make necessary copies of said Maintenance Aids for use as provided in this Schedule. Each copy shall have proprietary notices and legends affixed as prescribed by Control Data. The existence of a copyright notice shall not cause, or be construed as causing any Maintenance Aid to be a published copyrighted work or to be in the public domain.

8. MAINTENANCE SUPPORT REMEDY: Control Data shall replace defective parts furnished by it and reperform any defective maintenance service provided by it.

CONTROL DATA
CORPORATION

SCHEDULE F
FACILITY PLANNING AND CONSTRUCTION

Customer agrees to purchase and Control Data agrees to furnish at the place indicated below, the services and work (hereinafter referred to as "Services") listed below, in accordance with the terms and conditions contained in this Schedule and all other terms and conditions contained in this Agreement, including specifically Article 4, Disclaimer of Warranty and Limitation of Remedies, of Schedule A:

SITE OF INSTALLATION _____

STREET ADDRESS _____

CITY _____ STATE _____ ZIP _____

1. SERVICES PURCHASED: Customer elects and agrees to purchase the Services designated below, which Services may be purchased separately:

( ) Engineering Services
( ) Construction Services
( ) Engineering and Construction Services

2. SERVICES DESCRIPTION: a) Engineering – Control Data agrees to furnish qualified personnel to perform the following design Services for the necessary General, Mechanical and Electrical work to complete the installation site identified above:

(1) Development of preliminary plans, specifications and cost estimates, including but shall not necessarily be limited to, engineering investigations and reports, as well as preliminary cost estimates and designs, drawings, specifications, material lists, schedules and requisitions for the purchase of materials and equipment;
(2) Preparation of construction drawings and specifications;
(3) Preparation of an estimate of the cost of construction based on the construction drawings and specifications; and
(4) Check and approve third party material and equipment suppliers shop and erection drawings to assure conformance with requirements as to design and arrangement.

b) Construction – In the event Construction Services are called for above, Control Data agrees to supply or cause to be supplied all labor and materials for the construction of the facility to support Customer's computer system as shown on the engineering plans and specifications and computer site planning drawings. Such Services, which may be performed by subcontractors, will include:

(1) The obtaining of competitive bids on subcontract work;
(2) The supervision of the work of subcontractors;
(3) The preparation of facility operating and maintenance manuals for all major units of mechanical and electrical equipment and systems, not including computer equipment; and
(4) Preparation of a preventive maintenance schedule.

3. INVOICES: The Customer agrees to pay or reimburse Control Data for all of the costs identified in Article 8 below, or otherwise incurred in performing Services under this Schedule, and a fee of ___% of the costs specified in Article 8 below, except the hourly rate charges for Control Data personnel. Control Data will invoice Customer monthly for all Services rendered and charges, costs and fees incurred to date.

4. RECORDS: Control Data shall maintain accurate accounting records of all costs reimbursable to it which are paid or incurred by it in connection with its Services and shall permit Customer to have access at all reasonable times to all such records and accompanying account books, vouchers, invoices and payrolls. Control Data will keep a reproducible set of drawings and specifications for a reasonable time.

5. TERMINATION: Customer may terminate Services by Control Data under this Schedule at any time by giving ten (10) days written notice and Customer agrees to pay Control Data for all Services rendered and costs and fees incurred or for which Control Data is obligated through and as of the date of termination.

6. PERFORMANCE: Control Data agrees to perform the Services supplied hereunder in a good and workmanlike manner and in accordance with the plans and specifications approved by Customer. Control Data shall refund to Customer an equitable amount not to exceed the total amount paid by Customer to Control Data for any Services as to which Control Data fails to fulfill its obligation hereunder.

7. REPRESENTATIVE: Customer designates _____

whose address for notices and communications under this Schedule is _____

as its representative to act for Customer in connection with this Schedule. Such representative shall be available as necessary for inspection and approvals, authorizing changes, and the like. Control Data designates _____,

whose address for notices and communications under this Schedule is _____

as its representative to act for Control Data in connection with this Schedule. Such representative shall be available for conferring with, receiving requests and taking communications from Customer. Each party will notify the other in the event the above designation of representative is changed within its organization.

CDC Contract No. _____

8. HOURLY RATE AND COST SCHEDULE: The cost of the materials and Services rendered by Control Data for which Customer shall pay or reimburse Control Data shall include specifically, but not exclusively, the following:

(1) Hourly rate of Control Data personnel for time devoted to the Services performed, which shall be charged as follows:

Title of Personnel	Rate Per Hour
_____	_____
_____	_____
_____	_____
_____	_____

(2) Payments to subcontractors and other subcontract costs.
(3) Materials, supplies, equipment and transportation required for the proper execution of the work.
(4) Traveling and living expenses for Control Data personnel while away from their home office.
(5) Tests required for foundations, design, or other purposes.
(6) Blueprints, photostats, other reproductions, and similar costs.
(7) Telephone and telegraph service required for proper execution of the work.
(8) Surveys and outside consultants, if required.
(9) Taxes as defined in Schedule A.
(10) Hand tools, canvas and tarpaulins, consumed in the prosecution of the work, and depreciation on such tools, canvas and tarpaulins used but not consumed.
(11) Premiums on bonds and insurance policies.
(12) Rentals of construction plant or parts thereof, whether rented from Control Data or others, in accordance with rental agreements approved by the Customers representative.
(13) Any other costs not described above which are proper charges to the work.

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SCHEDULE G
PROFESSIONAL AND SUPPORT SERVICES

Customer hereby contracts for and Control Data hereby agrees to furnish at the location indicated below, or at such other locations as may be mutually agreeable to the parties, Control Data's professional and support services, in accordance with the terms and conditions contained in this Schedule and all other terms and conditions contained in this Agreement, including specifically Article 4, Disclaimer of Warranty and Limitation of Remedies, of Schedule A:

LOCATION:

1. PROFESSIONAL AND SUPPORT SERVICES – DEFINITION: The services to be made available to Customer for the specific tasks Customer may request pursuant to Article 4 below shall include Consulting, Project Management, Systems Management, Systems Engineering, Installation and Maintenance of Software Products, Systems Analysis and Design, Application Design and Development, Program Design and Development, Conversion and Implementing Planning, Operations Evaluation and Improvement, Custom System Modifications including installation of Special Utilities, and any other similar services which Control Data may make available to its commercial customers at the time of Customer's request.

2. SERVICE CLASSIFICATION: Customer hereby recognizes and agrees that the qualifications and skills required to provide the above described services for Customer in any given situation will vary with the complexity of the tasks involved and Customer's requests, and, therefore, said services will be available in and according to the then current Control Data Service Classifications.

3. CHARGE AND PAYMENT: The above described services will be scheduled with three (3) hour minimum charges and any services provided by Control Data beyond said minimum will be charged to Customer at the applicable rate. The charges shall be based on and reflect the then current Service Classifications in which the services are to be rendered. There shall be no charge for the first hour of local travel time to and from the Customer location but any additional travel time will be charged to Customer as part of the services rendered. Customer hereby agrees to pay Control Data for all services provided by Control Data pursuant to this Schedule in accordance with the three (3) hour minimum charges and rates in effect when the services are provided and such charges shall be invoiced at the end of each calendar month for services rendered during each month. In addition, commercial transportation and travel expenses such as per diem, lodging, parking, tolls and other direct expenditures made by Control Data for the specific purpose of performing its obligations pursuant to this Schedule will be invoiced, as incurred, at cost to the Customer plus a fee of ten percent (10%) of such costs.

4. REQUEST FOR SERVICES: a) Customer may, from time to time during the term of this Schedule, request Control Data to assist Customer by providing one or more of the above described services. Control Data will submit to Customer a Service Order which shall set forth the appropriate Service Classifications, the scope of the effort, the amount of service anticipated, the probable cost and a schedule of work, and, if accepted by Customer within thirty (30) days thereafter, Control Data shall perform, during its then current scheduled working hours, the services outlined therein according to the schedule of work contained therein.

b) Customer recognizes that said Service Orders are merely estimates based upon the information supplied to Control Data by Customer and, therefore, Customer agrees, pursuant to Article 3 above to pay the charge for the services actually performed by Control Data. Control Data agrees that it will make each such estimate based on the best information made available to it by Customer prior to the submission of the Service Orders. Any Service Order may be amended or revised after the services have been commenced by the mutual agreement of the parties hereto. When Control Data provides services pursuant to this Schedule which require the use of Customer's computer system, Customer agrees to make it available during scheduled working hours and for reasonable time increments and in no event will Customer charge Control Data for any such use.

5. PERSONNEL SUPPLIED BY CONTROL DATA: Control Data shall provide Customer with personnel to perform the services requested by Customer and outlined in the Service Orders; provided, however, that Control Data hereby expressly reserves the right to allocate its personnel as it deems appropriate or necessary, and further reserves the right to have Control Data personnel who have rendered services to Customer, provide services for any other customer of Control Data.

6. CONFIDENTIALITY AND RIGHTS IN AND TO INFORMATION AND MATERIAL: a) Control Data agrees to utilize its best efforts in preserving the confidentiality of data or information relating to Customer's business which is confi-

dential, is clearly so designated, and which is submitted to Control Data personnel by the Customer in order to carry out any request for services pursuant to this Schedule, and shall be liable to Customer in the event of the willful and material disclosure of the confidential data or information by Control Data.

b) All original material and programs, whether written or machine readable, prepared for or jointly with Customer pursuant to this Schedule, shall belong to and be the property of Customer. Subject to its obligations under Article 6 a) above, Control Data shall, however, be, and hereby is, granted an irrevocable, non-exclusive, unrestricted, worldwide and fully paid license, with the unrestricted right to sublicense others, with respect to such original material and programs and under any discoveries, ideas, inventions or improvements disclosed therein which were made solely by Control Data or jointly by Control Data and Customer.

c) Customer expressly agrees that its rights and ownership of the above-described original material and programs shall not extend to or encompass any Control Data Software Product or part thereof, or any other software or part thereof previously developed by Control Data, or to the ideas, concepts, know-how or techniques employed by Control Data in rendering such services to Customer.

7. NATURE OF SERVICE: Services will be provided on a best effort basis. Accomplishment of the objective of the activities or tasks shall be the responsibility of Customer. In addition to the disclaimers provided in Article 4 of Schedule A, Control Data makes no representations or warranties that the results of the services rendered will not infringe any patent, copyright, trademark or proprietary rights of any third person.

8. REMEDY: If Control Data shall fail to fulfill its obligations to provide services under any Service Order executed pursuant to this Schedule, the Customer shall have, as its sole and exclusive remedy therefor, the right to recover an equitable amount not to exceed such charges as were paid to Control Data with respect to the particular Service Order in question.

9. TERM: This Schedule shall continue in full force and effect until terminated by either party upon ninety (90) days prior written notice.

CONTROL DATA CORPORATION

SERVICE ORDER

☐ STATEMENT OF ESTIMATED SERVICES ☐ SERVICE ORDER ☐ INTERNAL BILLING

ORDER No.

CDC Contract No.

SOLD TO (INVOICE TO ADDRESS)	INSTALLATION ADDRESS

CORPORATE FILE NUMBER	CUSTOMER ORDER NUMBER	TAX CODE	DATE PREPARED

DIVISION	PROJECT NUMBER	PROJECT CONTINUED FROM PREVIOUS MONTH ☐	SERVICE CLASSIFICATION	HOURLY RATE	ESTIMATED HOURS	ESTIMATED COST

SCOPE OF THE EFFORT AND SCHEDULE OF WORK

SUBMITTED	APPROVED	AGREED TO BY (CUSTOMER)

REPORT OF SERVICE ACTIVITY

DATE	HOURS	SERVICE PERFORMED

HOURLY RATE	TOTAL HOURS	ACTUAL COST	☐ PROJECT COMPLETED ☐ PROJECT TO BE CONTINUED	DATE PROJECT COMPLETED

CUSTOMER ACKNOWLEDGEMENT	SUBMITTED	APPROVED

AA4302 REV. 8/79
PRINTED IN U.S.A.

PREPARE ORIGINAL AND TWO COPIES: 1. ORIGINAL, 2. DISTRICT FILE COPY, AND 3. CUSTOMER COPY. RETURN ORIGINAL TO DISTRICT OFFICE AT THE END OF THE MONTH OF ANY SERVICE ACTIVITY HAS BEEN PERFORMED DURING THAT MONTH.

ESTIMATE
The estimate figure quoted on this Service Order is intended only to be informational to the Customer and Control Data Corporation will not be bound by that figure. All charges made for Services will be based on the actual amount of time required to perform the agreed upon Services.

STANDARD AGREEMENT
Services described in this Service Order are performed under and governed by the terms and conditions of Control Data Corporation's Standard Agreement Schedules A and G or other applicable contracts which are hereby incorporated in this Service Order by this reference.

CONTROL DATA CORPORATION

SCHEDULE H
SOFTWARE LICENSE — CEM SERVICE

Customer agrees to purchase and Control Data agrees to furnish at the site of installation indicated below, a) a license for the Software Products listed in Article 1, and b) Central Enhancement and Maintenance Service (hereinafter referred to as CEM Service), as such service is available and constituted from time to time, for those Software Products in Article 1 for which a price is specified in the Monthly CEM Service Charge column, in accordance with the terms and conditions contained in this Schedule and all other terms and conditions contained in this Agreement, including specifically Article 4, Disclaimer of Warranty and Limitation of Remedies, of Schedule A:

SITE OF INSTALLATION_____

STREET ADDRESS_____

CITY_____ STATE _____ ZIP_____

DESCRIPTION OF MAINFRAME_____
(Location Mainframe Model and Serial Number)

1. SOFTWARE PRODUCTS AND SERVICES:

Software Product No.	Description	Initial Fee	Monthly License Charge	Paid Up License Charge	Monthly CEM Service Charge	CEM Service Termination Date

Because of the interdependence of Software Products, if Customer contracts for CEM Service for a particular Software Product licensed hereunder, Customer will contract for CEM Service for all Software Products licensed on the above mainframe for which Control Data offers CEM Service, unless otherwise agreed to by Control Data. Those Software Products for which CEM Service is offered but not contracted for are indicated by "N O" in the Monthly CEM Service Charge column. "N A" in the Monthly CEM Service Charge column indicates that CEM Service is not available

2. LICENSE: Control Data hereby grants to Customer and Customer hereby accepts from Control Data, during the term of this Schedule, a personal, non-transferable and non-exclusive license to install and use on the mainframe with the serial number and at the site listed above in this Schedule, the Software Products listed above (complete with documentation) as each Software Product is constituted upon its acceptance together with all copies thereof appropriately made by or for Customer, and that portion of the Software Products listed above which may be part of any modification thereto or derivative therefrom developed by or for Customer during said term (hereinafter collectively referred to as the Software Products).

Prior to the Installation Date of the mainframe listed above in this Schedule and during any period that the mainframe is inoperative due to malfunction, any license granted under this Schedule is temporarily extended to authorize the Customer to use the Software Products on any other mainframe.

3. DELIVERY: Control Data shall, at no additional cost to the Customer, ship one (1) copy of each Software Product listed in Article 1 of this Schedule to Customer at the above mentioned site within thirty (30) days after (a) each such Software Product is approved for general release by Control Data, (b) execution of this Agreement, or (c) a date specified by Customer, whichever last occurs. The media and documentation for each Software Product shall be as Control Data may deem appropriate. Customer will be responsible for the installation, management, operation, and maintenance of each Software Product.

4. CHARGES: Customer agrees to pay to Control Data all charges specified in Article 1 above. The Initial Fee shall be invoiced and the Monthly License Charge and the Monthly CEM Service Charge (if CEM Service is contracted for) shall commence upon acceptance (as defined in Article 6) of each Software Product. Thereafter, the Monthly License Charge and the Monthly CEM Service Charge shall be invoiced to Customer monthly in advance. Customer's obligation to pay any such invoices shall not be subject to credit for any period of non-use for any reason.

Services rendered by Control Data in response to any requests for modifications to a Software Product or for any other assistance or support which is not part of the services Control Data has agreed to perform as part of this Schedule shall be rendered only under separate agreement and at Control Data's then current published charges and terms for commercial customers.

5. CHANGE IN DESIGNATED MAINFRAME AND CHARGES: The charges payable for Software Products licensed on a Control Data CYBER Model 170-700 series computer system vary with the model for which the Software Products are licensed. If a Control Data CYBER Model 170-700 series computer system is the mainframe for which Software Products are licensed hereunder, the following amendments to this Schedule shall become effective upon the Installation Date of any modification to the mainframe changing it to a new model mainframe in the Control Data CYBER Model 170-700 series:

a) the Monthly License Charge and Monthly CEM Service Charge applicable to the Software Products licensed hereunder shall become Control Data's then current published charges (on the Installation Date of the modification) for commercial customers for the Software Products on the new model mainframe: and

b) the product numbers for the Software Products shall become those applicable for those Software Products when licensed on the new model mainframe.

6. SOFTWARE PRODUCT TESTING; ACCEPTANCE: Each Software Product licensed hereunder is made available for a test period of non-productive use terminating on the Installation Date of the mainframe listed above in this Schedule, or ninety (90) days after shipment of the Software Product by Control Data, whichever last occurs. The test period is made available to permit the Customer to determine whether the licensed Software Products operate together, and to determine if they meet the Customer's requirements.

The Customer may terminate the license for any Software Product licensed hereunder at any time during the test period for that Software Product by giving written notice and returning the Software Product to Control Data. Unless such notice of termination is received by Control Data, Customer will be deemed to have accepted a Software Product at the end of its test period. In the event a Software Product is used for productive purposes during the test period, the test period shall end on the date Customer commenced Productive Use, the Software Product shall be considered accepted, and Customer shall immediately notify Control Data in writing of such acceptance.

For purposes of this Schedule, "Productive Use" shall mean that Customer is using a Software Product to develop or implement programs which are required or contemplated as part of the operations and activities of Customer.

7. WARRANTY; DISCLAIMER OF WARRANTIES; LIMITATION OF REMEDIES:

a) Control Data warrants that the Software Products, when delivered to Customer, will conform to the version level then being generally licensed by Control Data. Control Data's sole obligation in the event of a breach of the above warranty shall be to replace any non-conforming Software Product delivered to Customer with either a conforming Software Product or, at Control Data's option, a version of the Software Product generally being licensed at the time of replacement with modifications, improvements, or corrections, if any, since the date of delivery of the original Software Product to Customer.

b) Except as provided in paragraph 7 a) above:

(i) all Software Products are licensed on an "AS IS" basis without warranty and, unless CEM Service is contracted for, without any support, or right to any modifications, improvements, corrections or Successor Products. Without limiting the foregoing, Control Data does not warrant that the Software Products will meet the Customer's requirements or will operate in the combinations selected by the Customer, or that the operation of the Software Products will be error free, or in the event CEM Service has been contracted for, that every error, malfunction or defect will be corrected pursuant to such service.

(ii) If Control Data should fail to fulfill any of its obligations under this Schedule, Customer shall have as its sole and exclusive remedies therefor:

a) if CEM Service has been contracted for, the right to terminate CEM Service and have refunded to it the last month's CEM Service Charges paid hereunder; and

b) the right to terminate this Schedule in accordance with Article 9, Termination.

8. CENTRAL ENHANCEMENT AND MAINTENANCE SERVICE: The following terms and conditions apply only to those Software Products for which CEM Service has been contracted under this Schedule, during the period for which Customer is contracting for CEM Service.

a) The rights granted and the definition of Software Products set out in Article 2 above, shall extend to and include modifications, improvements and corrections to those Software Products for which CEM Service has been contracted, as and when said modifications, improvements and corrections are made generally available as a part of Control Data's CEM Service.

b) Control Data will employ reasonable efforts to correct, at no additional cost to Customer, errors, malfunctions or defects in the Software Products for which CEM Service has been contracted. Customer understands, however, that Control Data is not obligated to correct every error, malfunction or defect in the Software Products. For purposes of this Schedule, the terms "errors, malfunctions or defects" shall mean deviations between the Software Product and the documentation furnished for it by Control Data, and "to correct" shall mean solely to publish corrections which will bring them into agreement. Customer understands that all enhancements, updates and central error correction activities, including the verification of Corrective Code, are performed using standard Software Products which contain the latest Batch Corrective Code and are at the latest update level.

c) Customer assumes complete responsibility for the interface between those Software Products for which CEM Service has been contracted and all other software products (whether or not licensed by Control Data) used by Customer. Control Data may change the documentation for the purpose of removing errors in documentation, providing consistency of interpretation and or describing modifications or improvements made in the Software Products.

d) As and when Control Data expressly designates and generally offers a Software Product which it, in its sole discretion, deems a successor (hereinafter Successor Product) to a Software Product licensed hereunder, Customer may obtain the Successor Product at no increase in the Monthly License Charge and without any additional Initial Fee or Paid-Up License Charge if Customer:

(i) is then contracting for CEM Service for the Software Product;

(ii) continues to pay the applicable Monthly License Charges and Monthly CEM Service Charges without interruption;

(iii) agrees to pay Control Data's then current published Monthly CEM Service Charges for commercial customers applicable to the Successor Product upon its acceptance (as defined in Article 6); and

(iv) executes the standard license or amendment to this Schedule, then being used by Control Data for licensing the Successor Product.

e) Upon termination of a license for a Successor Product, any rights to the Software Product for which it was the successor shall also terminate and Customer shall certify to Control Data in writing within thirty (30) days of such termination that the Software Product and Successor Product have been destroyed.

f) CEM Service shall continue for a minimum term of twelve (12) months following acceptance of a Software Product or its Successor Product unless Control Data terminates CEM Service earlier, pursuant to its rights hereunder. Thereafter, CEM Service may be terminated by Customer upon sixty (60) days prior written notice. Customer understands that CEM Service must be terminated by Customer simultaneously with respect to all Software Products licensed by Control Data for use on the mainframe designated above, unless otherwise agreed to by Control Data.

g) Control Data may change the Monthly CEM Service Charges for any or all Software Products specified in this Schedule effective upon expiration of one (1) year from acceptance by Customer of any Software Product licensed hereunder, or at the end of any calendar month thereafter, by giving at least ninety (90) days written notice. The adjusted charges, however, shall not exceed Control Data's published charges for commercial customers on the effective date of the adjustment.

h) Control Data may discontinue CEM Service for any Software Product or part thereof licensed hereunder at any time on or after the earliest of the following:

(i) the CEM Service Termination Date in Article 1 above;

(ii) upon twelve (12) months written notice if a Successor Product is made available; or

(iii) upon twenty-four (24) months written notice if there is no Successor Product.

i) Termination of CEM Service for a Software Product shall not affect Customer's right to continue to use the Software Product, as then installed, in accordance with the terms and conditions of this Schedule, except this Article 8.

Upon mutual agreement, Customer may contract for CEM Service subsequent to entering into this Software License or may recontract for CEM Service after having canceled said service by terminating this License and entering into a new standard form license for the Software Products and CEM Service in accordance with Control Data's then current published charges and terms for commercial customers, including the payment of the applicable Initial Fee, Monthly License Charges and CEM Service Charges.

9. TERMINATION: After acceptance of a Software Product, the license for it may be terminated by Customer upon ninety (90) days written notice, provided that said termination date is at least twelve (12) months after the acceptance.

This Schedule shall terminate effective upon the date on which Customer no longer owns or leases the mainframe listed above in this Schedule.

Control Data may terminate any or all licenses hereunder if Customer fails to comply with the terms and conditions of this Schedule or the Agreement of which this Schedule is a part.

Upon any termination of this License for any Software Product:

(i) Customer shall certify to Control Data in writing within thirty (30) days of such termination that such Software Product has been destroyed, unless returned to Control Data pursuant to Article 6; and

(ii) Customer shall not use, divulge, disclose or market in any fashion such Software Product.,

10. PROPRIETARY RIGHTS AND COPYRIGHTS: Customer agrees that during the term of this Schedule and thereafter, the Software Products are the property of Control Data and are proprietary to it and Customer further agrees to keep confidential and to utilize its best efforts to prevent and protect the contents of the Software Products or any part thereof, from unauthorized disclosure by its agents, employees or customers. Customer agrees to use the Software Products only as provided in this Schedule; provided, however, where Customer performs services for others who employ the Software Products at the above mentioned Site of Installation, it may disclose to its customers such external or interface detail as may be reasonably necessary to properly use the Software Products, but it shall not disclose any design characteristics or implementation detail of the Software Products. Customer shall make it a condition of any such disclosure that its customers agree that the Software Products or any part thereof are the property of Control Data and are proprietary to it and that such customers shall hold the Software Products or any part thereof in confidence for Control Data. The obligations in this Article 10 shall not extend to any Software Product or part thereof which is now or hereafter may be in the public domain by acts not attributable to Customer or its customers; the existence of a copyright notice shall not cause, or be construed as causing, a Software Product to be a published copyrighted work or to be in the public domain.

Customer agrees that it will not make or have made any more copies of the Software Products or any part thereof than are necessary for use hereunder by Customer or its customers, and Customer agrees to reproduce or to affix or have affixed copyright or other proprietary notices to the copies or parts thereof in the manner and form specified by Control Data.

11. PAID UP LICENSE: The following additional terms and conditions apply to each Software Product for which a Paid Up License Charge is indicated in Article 1 above.

a) The Paid Up License Charge is in lieu of the Initial Fee and the Monthly License Charge and shall be invoiced to Customer upon acceptance of the Software Product.

b) If any modification in the designated mainframe takes place as described in Article 5 above and Control Data's then current published Paid Up License Charge (on the Installation Date of the modification) for commercial customers for the Software Product on the new model mainframe in the Control Data CYBER Model 170-700 series exceeds the Paid Up License Charge previously paid by Customer for the Software Product, the difference shall be invoiced to Customer on the Installation Date and shall be paid by Customer. Customer shall not be entitled to any refund if the Paid Up License Charge applicable to the Software Product on the new mainframe is less than the Paid Up License Charge previously paid.

CONTROL DATA
CORPORATION

SCHEDULE H
SOFTWARE LICENSE – CEM SERVICE
AMENDMENT
FOR
ADDITIONAL SOFTWARE PRODUCTS

Customer agrees to purchase and Control Data agrees to furnish a license for the following Software Products and where contracted for, CEM Service under the terms of the Agreement for Control Data Equipment, Products and Related Services (CDC Contract No. _____).

CUSTOMER _____

DESCRIPTION OF MAINFRAME _____
(Location – Mainframe Model and Serial Number)

Article 1 of Schedule H pertaining to the Mainframe described above is hereby amended by including the following products and descriptive information:

Software Product No.	Description	Initial Fee	Monthly License Charge	Paid-Up License Charge	Monthly CEM Service Charge	CEM Service Termination Date

Except as provided herein, all terms and conditions of the Agreement above referenced and Schedule H thereto shall remain in full force and effect and shall apply to this Amendment.

AGREED TO:

BY _____

TITLE _____

DATE _____

ACCEPTED BY:

CONTROL DATA CORPORATION
8100 34th Avenue South
P.O. Box 0
Minneapolis, Minnesota 55440

BY _____

TITLE _____

DATE _____

CONTROL DATA CORPORATION

CONTROL DATA CORPORATION

8100 34th Avenue South
P. O. Box 0
Minneapolis, Minnesota 55440

AMENDMENT NO. _____ TO CDC CONTRACT NO. _____

AGREEMENT FOR CONTROL DATA EQUIPMENT, PRODUCTS AND RELATED SERVICES

AMENDMENT TO SCHEDULE H SOFTWARE LICENSE
FOR USAGE PRICED SOFTWARE PRODUCTS —
INTERNAL USE LICENSE — AM SERVICE

CUSTOMER NAME _____

SITE OF INSTALLATION _____

STREET ADDRESS _____

CITY _____ STATE _____ ZIP _____

DESCRIPTION OF MAINFRAME _____
(Location-Mainframe Model and Serial Number)

Customer and Control Data agree that Schedule H to the above referenced Agreement is hereby amended to include a license for the Software Products listed in Section I of this Amendment in accordance with the terms and conditions contained in this Amendment, all terms and conditions of Schedule H except as expressly modified by this Amendment, and all other terms and conditions contained in this Agreement, including specifically Article 4, Disclaimer of Warranty and Limitation of Remedies, of Schedule A.

SECTION I

ARTICLE I OF SCHEDULE H IS REVISED BY THE ADDITION OF THE FOLLOWING PROVISION:

This Article I shall include the Software Products listed below and Application Maintenance Service (hereinafter referred to as AM Service) as such service is available and constituted from time to time for those Software Products for which a price is specified in the Monthly AM Service Charge column below.

Software Product Number	Description	Initial Fee	Minimum Monthly License Charge	Usage Unit Charge	Maximum Monthly License Charge	Paid-Up License Charge	Monthly AM Service Charge	AM Service Termination Date

Submit Monthly Internal Use Reports to: _____

_____

Because of the interdependence of Software Products, if Customer contracts for AM Service for a particular Software Product licensed hereunder, Customer will contract for CEM Service or AM Service, as applicable, for all Software Products licensed on the above mainframe for which Control Data offers such services unless otherwise agreed to by Control Data. Those Software Products for which AM Service is offered but not contracted for are indicated by "N/O" in the Monthly AM Service Charge column. "N/A" in the Monthly AM Service Charge column indicates that AM Service is not available.

AGREED TO:

BY _____

TITLE _____

DATE _____

ACCEPTED BY:
CONTROL DATA CORPORATION
8100 34th Avenue South
P.O. Box 0
Minneapolis, Minnesota 55440

BY _____

TITLE _____

DATE _____

SECTION II

AS TO THE SOFTWARE PRODUCTS LISTED IN SECTION I OF THIS AMENDMENT, ARTICLE 2 OF SCHEDULE H IS REVISED BY THE ADDITION OF THE FOLLOWING PROVISION:

Notwithstanding the license set out in this Article 2, Customer agrees that its right to use the Software Products is limited to the processing of data for its own internal use or the internal use of its subsidiaries (of which Customer owns fifty percent (50%) or more of the voting stock). This License does not convey the right for Customer to use the Software Products for processing data for other than its own internal use or the internal use of its subsidiaries, and neither Customer nor any of its subsidiaries shall utilize the Software Products to furnish a data processing service to anyone other than themselves.

The limitation of this License to internal use is made for the sole purpose of enabling Control Data to determine charges at any time applicable to the Software Products and is not intended to and does not restrict Customer's right to obtain a Full Use License permitting external and internal use. Customer may at any time obtain a Full Use License for a Software Product corresponding to that licensed on an internal use basis, if at the time Control Data has the right to grant a Full Use License. If a Customer obtains a Full Use License, Control Data's then current published charges and terms for commercial customers will be applicable to the License.

SECTION III

AS TO THE SOFTWARE PRODUCTS LISTED IN SECTION I OF THIS AMENDMENT, ARTICLE 4 OF SCHEDULE H IS REPLACED IN ITS ENTIRETY WITH THE FOLLOWING PROVISION:

4. CHARGES: Customer agrees to pay Control Data all charges specified in Article 1 above. The Initial Fee shall be invoiced and the Minimum Monthly License Charge and the Monthly AM Service Charge (if AM Service is contracted for) shall commence upon acceptance (as defined in Article 6) of each Software Product. Thereafter, the Minimum Monthly License Charge and Monthly AM Service Charge shall be invoiced to Customer monthly in advance.

In addition to the applicable Minimum Monthly License Charge, Customer shall pay Control Data for its internal use of the Software Product as follows:

a) Within thirty (30) days after the end of each month, Customer will forward to Control Data the Monthly Internal Use Report of Customer for that month and the charge for that month for internal use of the Software Product or the maximum monthly internal use charge specified in Article 1 of this Schedule for the Software Product, whichever is less (such payment to be reduced by the Minimum Monthly Internal Use Charge previously paid for that month).

b) If Customer fails to submit an Internal Use Report for any month, Customer shall forward to Control Data within thirty (30) days after the end of that month the Maximum Monthly Internal Use Charge specified in Article 1 of this Schedule for the Software Product (such payment to be reduced by the Minimum Monthly Internal Use Charge previously paid for that month).

c) The charge for any month for internal use of the Software Product is the usage unit charge specified in Article 1 of this Schedule multiplied by the number of internal usage units for the Software Product recorded for that month with the Software Product's online accounting file.

d) Customer's Internal Use Report for each month shall set forth the number of internal usage units by mainframe model of each Software Product and shall be in the format required by Control Data. No charge will be payable for any usage unit incurred for installation or correction of the Software Product or verification of correction of the Software Product, or for any use resulting in erroneous data if the cause of such result is documented by the Customer as either an error in standard, unmodified equipment (or modified with Control Data's approval) supplied and maintained by Control Data or in standard, unmodified Software Products supplied by Control Data and maintained under either CEM or AM Service.

e) Customer at no charge to Control Data shall use on the above described mainframe the necessary programs and routines either supplied by Control Data or approved by Control Data as equivalent to those supplied by Control Data to measure Customer's usage units of each Software Product.

f) Customer shall make no alteration or modification in any Software Product, programs or routines affecting the measurement of usage units for the Software Product unless authorized in writing by Control Data.

g) Customer shall retain usage unit accounting information, detail usage records and any other information required to substantiate internal usage of each Software Product and the payment due Control Data for at least two (2) years after submission to Control Data of the Monthly Internal Use Report covering such information. Such information shall be made available for inspection by Control Data upon thirty (30) days prior request. Customer shall take reasonable steps to protect the information from damage or loss of any kind.

Customer shall designate an individual within its organization as the primary contact for resolving any matters which may arise pertaining to the preparation, content and submission of Monthly Internal Use Reports.

Customer's obligation to pay any amount specified herein shall not be subject to credit for any period of non-use for any reason. Services rendered by Control Data in response to any requests for modifications to a Software Product or for any other assistance or support which is not part of the services Control Data has agreed to perform as part of this Schedule shall be rendered only under separate agreement and at Control Data's then current published charges and terms for commercial customers.

SECTION IV

AS TO THE SOFTWARE PRODUCTS LISTED IN SECTION I OF THIS AMENDMENT, PARAGRAPH 7b) OF SCHEDULE H IS REPLACED IN ITS ENTIRETY WITH THE FOLLOWING PROVISION:

b) Except as provided in paragraph 7a) above:

(i) All Software Products are licensed on an "AS IS" basis without warranty and, unless AM Service is contracted for, without any support, or right to any modifications, improvements, or corrections. Without limiting the foregoing, Control Data does not warrant that the Software Products will meet the Customer's requirements or will operate in the combinations selected by the Customer, or that the operation of the Software Products will be error-free, or in the event AM Service has been contracted for, that every error, malfunction or defect will be corrected pursuant to such service.

(ii) If Control Data should fail to fulfill any of its obligations under this Schedule, Customer shall have as its sole and exclusive remedies therefor:

a) if AM Service has been contracted for, the right to terminate AM Service and have refunded to it the last month's AM Service Charges paid hereunder; and

b) the right to terminate this Schedule in accordance with Article 9, Termination.

SECTION V

AS TO THE SOFTWARE PRODUCTS LISTED IN SECTION I OF THIS AMENDMENT, ARTICLE 8 OF SCHEDULE H IS REPLACED IN ITS ENTIRETY WITH THE FOLLOWING PROVISION:

8. APPLICATION MAINTENANCE SERVICE: The following terms and conditions apply only to those Software Products for which AM Service has been contracted under this Schedule during the period for which Customer is contracting for AM Service:

a) The rights granted and the definition of Software Products set out in Article 2 above shall extend to and include modifications, improvements, and corrections to those Software Products for which AM Service has been contracted, as and when said modifications, improvements, and corrections are made generally available as part of Control Data's AM Service.

b) Control Data will employ reasonable efforts to correct, at no additional cost to Customer, errors, malfunctions or defects in the Software Products for which AM Service has been contracted. Customer understands, however, that Control Data is not obligated to correct every error, malfunction or defect in the Software Products. For purposes of this Schedule, the terms "errors, malfunctions or defects" shall mean deviations between the Software Product and the documentation for it furnished by Control Data, and "to correct" shall mean solely to publish corrections which will bring them into agreement. Customer understands that all modifications, updates and error correction activities, including the verification of Corrective Code, are performed using the standard Software Products which contain the latest Batch Corrective Code and are at the latest update level. Customer understands that AM Service does not include any rights to any Successor Products or to any enhancements or to any modifications or improvements to the Software Products, or any part thereof, which are deemed by Control Data to be new, different or successor versions of said Software Products.

c) Customer assumes complete responsibility for the interface between those Software Products for which AM Service has been contracted and all other software products (whether or not licensed by Control Data) used by Customer. Control Data may change the documentation for the purpose of removing errors in documentation, providing consistency of interpretation and/or describing modifications or improvements made in the Software Products.

d) AM Service shall continue for a minimum term of six (6) months following acceptance of a Software Product, unless Control Data terminates AM Service earlier, pursuant to its rights hereunder. Thereafter, AM Service may be terminated by Customer upon sixty (60) days prior written notice. Customer understands that AM Service and CEM Service must be terminated by Customer simultaneously with respect to all Software Products licensed by Control Data for use on the mainframe designated above unless otherwise agreed to by Control Data.

e) Control Data may change the Monthly AM Service Charges for any or all Software Products specified in this Schedule effective upon expiration of six (6) months from acceptance by Customer of any Software Product licensed hereunder, or at the end of any calendar month thereafter by giving at least ninety (90) days written notice. The adjusted charges, however, shall not exceed Control Data's published charges for commercial customers on the effective date of the adjustment.

f) Control Data may discontinue AM Service for any Software Product or part thereof licensed hereunder at any time on or after the earlier of the following:

(i) the AM Service Termination Date in Article 1 above; or

(ii) upon six (6) months written notice.

g) Termination of AM Service for a Software Product shall not affect Customer's right to continue to use the Software Product, as then installed, in accordance with the terms and conditions of this Schedule, except this Article 8.

Upon mutual agreement, Customer may contract for AM Service subsequent to entering into this Software License, or may recontract for AM Service after having cancelled said service by terminating this License and entering into a new standard form license for the Software Products, AM

Service, and CEM Service in accordance with Control Data's then current published charges and terms for commercial customers including the payment of the applicable Initial Fee, Monthly License Charges (including Minimum, Maximum, and Usage Unit Charges), Monthly AM Service Charges and Monthly CEM Service Charges.

SECTION VI

AS TO THE SOFTWARE PRODUCTS LISTED IN SECTION I OF THIS AMENDMENT:

a) The phrase "Monthly License Charge and Monthly CEM Service Charge" in paragraph 5a) of Schedule H is changed to: "Minimum Monthly License Charge, Usage Unit Charge, Maximum Monthly License Charge and Monthly AM Service Charge"; and

b) The phrase "Initial Fee and the Monthly License Charge" in paragraph 11a) of Schedule H is changed to: "Initial Fee, Minimum Monthly License Charge, Usage Unit Charge and Maximum Monthly License Charge."

CONTROL DATA CORPORATION

CONTROL DATA CORPORATION
8100 34th Avenue South
P. O. Box 0
Minneapolis, Minnesota 55440

AMENDMENT NO. _____ TO CDC CONTRACT NO. _____

AGREEMENT FOR CONTROL DATA EQUIPMENT, PRODUCTS AND RELATED SERVICES

AMENDMENT TO SCHEDULE H SOFTWARE LICENSE
FOR USAGE PRICED SOFTWARE PRODUCTS -
FULL USE LICENSE — AM SERVICE

CUSTOMER NAME _____

SITE OF INSTALLATION _____

STREET ADDRESS _____

CITY _____ STATE _____ ZIP _____

DESCRIPTION OF MAINFRAME _____
(Location-Mainframe Model and Serial Number)

Customer and Control Data agree that Schedule H to the above referenced Agreement is hereby amended to include a license for the Software Products listed in Section I of this Amendment in accordance with the terms and conditions contained in this Amendment, all terms and conditions of Schedule H except as expressly modified by this Amendment, and all other terms and conditions contained in this Agreement, including specifically Article 4, Disclaimer of Warranty and Limitation of Remedies, of Schedule A.

SECTION I.

ARTICLE I OF SCHEDULE H IS REVISED BY THE ADDITION OF THE FOLLOWING PROVISION:

This Article I shall include the Software Products listed below and Application Maintenance Service (hereinafter referred to as AM Service) as such service is available and constituted from time to time for those Software Products for which a price is specified in the Monthly AM Service Charge column below.

			Monthly External Use Charges*			Monthly Internal Use Charges**			
Software Product Number	Description	Initial Fee	Minimum Monthly License Charge	Percentage Applied Against Total Net Billings — Machine Resources-%	Percentage Applied Against Total Net Billings — Computer System Resources-%	Usage Unit Charge	Maximum Monthly License Charge	Monthly AM Service Charge	AM Service Termination Date

*Applicable to External Use only. **Applicable to Internal Use only.

Submit Monthly Internal Use Reports to: _____

_____

Because of the interdependence of Software Products, if Customer contracts for AM Service for a particular Software Product licensed hereunder, Customer will contract for CEM Service or AM Service, as applicable, for all Software Products licensed on the above mainframe for which Control Data offers such services unless otherwise agreed to by Control Data. Those Software Products for which AM Service is offered but not contracted for are indicated by "N/O" in the Monthly AM Service Charge column. "N A" in the Monthly AM Service Charge column indicates that AM Service is not available.

AGREED TO:

BY _____

TITLE _____

DATE _____

ACCEPTED BY:
CONTROL DATA CORPORATION
8100 34th Avenue South
P.O. Box 0
Minneapolis, Minnesota 55440

BY _____

TITLE _____

DATE _____

AA1958-4
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(Printed in U S A)

SECTION II.

AS TO THE SOFTWARE PRODUCTS LISTED IN SECTION I OF THIS AMENDMENT, ARTICLE 4 OF SCHEDULE H IS REPLACED IN ITS ENTIRETY WITH THE FOLLOWING PROVISION:

4. CHARGES. Customer agrees to pay Control Data all charges specified in Article I above. Customer shall pay two (2) separate monthly charges as described below for each Software Product, one for Internal Use and one for External Use. In addition, a single Initial Fee is charged for each Software Product.

a) *Invoicing:* The Initial Fee shall be invoiced and the Minimum Monthly License Charge for external use and the Monthly AM Service Charge (if AM Service is contracted for) shall commence upon acceptance (as defined in Article 6) of each Software Product. Thereafter, the Minimum Monthly License Charge for external use and Monthly AM Service Charge shall be invoiced to Customer monthly in advance.

Within thirty (30) days after the end of each month, Customer will forward to Control Data the Monthly Internal Use Report and Monthly External Use Report of Customer for that month, and the additional charges for that month for internal use and external use of the Software Product, as specified below.

b) *Internal Use:* "Internal Use" means use of the Software Product by Customer for processing data for its own internal use or the internal use of its subsidiaries (of which Customer owns fifty percent (50%) or more of the voting stock).

Customer shall pay Control Data for its internal use of the Software Product as follows:

(i) The charge for any month for internal use of the Software Product is the Usage Unit Charge specified in Article I of this Schedule multiplied by the number of internal usage units for the Software Product recorded for that month with the Software Product's on-line accounting file, or the Maximum Monthly License Charge for internal use specified in Article I of this Schedule, whichever is less.

(ii) If Customer fails to submit an Internal Use Report for any month, Customer shall forward to Control Data within thirty (30) days after the end of that month the Maximum Monthly Internal Use Charge specified in Article I of this Schedule for the Software Product.

(iii) Customer's Internal Use Report for each month shall set forth the number of internal usage units by mainframe model of each Software Product and shall be in the format required by Control Data. No charge will be payable for any usage unit incurred for installation or correction of the Software Product or verification of correction of the Software Product, or for any use resulting in erroneous data if the cause of such result is documented by the Customer as either an error in standard, unmodified equipment (or modified with Control Data's approval) supplied and maintained by Control Data or in standard, unmodified Software Products supplied by Control Data and maintained under either CEM or AM Service.

(iv) Customer at no charge to Control Data shall use on the above described mainframe the necessary programs and routines either supplied by Control Data or approved by Control Data as equivalent to those supplied by Control Data to measure Customer's internal usage units of each Software Product.

(v) Customer shall make no alteration or modification in any Software Product, programs, or routines affecting the measurement of internal usage units for the Software Product unless authorized in writing by Control Data.

(vi) Customer shall retain internal usage unit accounting information, detail usage records and any other information required to substantiate internal usage of each Software Product and the payment due Control Data for at least two (2) years after submission to Control Data of the Monthly Internal Use Report covering such information. Such information shall be made available for inspection by Control Data upon thirty (30) days prior request. Customer shall take reasonable steps to protect the information from damage or loss of any kind.

c) *External Use:* "External Use" means use of the Software Product by Customer for processing data for other than its own internal use or the internal use of its subsidiaries (of which Customer owns fifty percent (50%) or more of the voting stock). External use includes use of the Software Product to furnish a data processing service to anyone other than Customer or its subsidiaries.

In addition to the applicable Minimum Monthly License Charge, Customer shall pay Control Data for its external use of the Software Product as follows:

(i) The Monthly charge for Customer's external use is based upon the external use percentages specified in Article I of this Schedule for the Software Product. For each month, Customer shall determine separately for each of its customers the Total Net Billings for Machine Resources used during execution of the Software Product and the Total Net Billings for Computer System Resources directly attributable to use of each Software Product. The monthly charge payable to Control Data by Customer for external use for each of its customers is the greater of the amounts specified in subparagraphs a) and b) below.

a) The percentage shown in Article I of this Schedule applied against Total Net Billings for that month by Customer to its customer for Machine Resources, i.e., machine cycles, used during the execution of the Software Product.

b) The separate percentage shown in Article I of this Schedule applied against Total Net Billings for that month by Customer to its customer for Computer System Resources which are directly attributable to the use of the Software Product.

c) For each month, Customer shall add the total amounts payable to Control Data under subparagraph a) above to the total amounts payable to Control Data under subparagraph b) above. The sum of the two total amounts is the charge for that month for external use of the Software Product (such payment to be reduced by the Minimum Monthly License Charge for external use previously paid for that month).

(ii) There is no maximum monthly charge for external use of a Software Product. Customer is obligated to pay the Minimum Monthly License Charge for external use regardless of the amount of charges paid for internal use.

(iii) Total Billings for Machine Resources (see subparagraph (i) a) above, i.e., machine cycles, used during execution of the Software Product) is comprised of total billings for all of the computer mainframe factors used by the Customer's own accounting routines to establish amounts invoiced to its customers. Such factors include, but are not limited to, machine cycles, central processing, memory, input output, priority, etc. Total Billings for Computer System Resources (see subparagraph (i) b) above) are comprised of total billings for Machine Resources (see subparagraph (iii)) and for all other resources which are directly attributable to the use of the Software Product including application Software Product surcharges, storage and connect charges.

(iv) "Total Net Billings" for Machine Resources and for Computer System Resources are defined as Total Billings less any applicable prompt payment discounts, any applicable discounts granted by Customer on all of the business conducted with its customer, and any applicable refunds for error correction.

(v) Customer's External Use Report for each month shall specify the monthly charge for external use payable by Customer for that month. The Report shall set forth the sum of all Total Net Billings by the Customer for that month based upon which a monthly charge for external use is payable to Control Data and the sum of deductions from Total Billings to arrive at Total Net Billings. This information concerning Total Billings and Total Net Billings shall be furnished monthly even if Customer determines that only the Minimum Monthly License Charge is payable.

The Report shall be in a format required by Control Data and shall be prepared by or in accordance with Customer's accounting routines. The Report shall contain only the sum of Total Billings and of Total Net Billings by the Customer to its customers. Information as to billings to any individual customer shall not be required.

Customer's records concerning its external use of each Software Product shall be made available to Control Data for audit at any time upon thirty (30) days prior request.

(vi) Customer shall retain detailed external use accounting records and any other information required to substantiate external use of each Software Product and the payment due Control Data, for a period of at least two (2) years after expiration or termination of the license. Customer shall take reasonable steps to protect the information from damage or loss of any kind.

d) *Change in Charges:* Control Data may change the Minimum Monthly License Charge for external use, the percentage applied against Total Net Billings for Machine Resources, and the percentage applied against Total Net Billings for Computer System Resources effective five (5) years after acceptance of the Software Product, or at the end of any calendar month thereafter, by giving at least ninety (90) days written notice. The adjusted charges, however, shall not exceed Control Data's published charges for commercial customers on the effective date of the adjustment.

e) *General:* Customer shall designate an individual within its organization as the primary contact for resolving any matters which may arise pertaining to the preparation, content and submission of Monthly Internal Use and External Use Reports.

Customer's obligation to pay any amounts specified herein shall not be subject to credit for any period of non-use for any reason. Services rendered by Control Data in response to any requests for modifications to a Software Product or for any other assistance or support which is not part of the services Control Data has agreed to perform as part of this Schedule shall be rendered only under separate agreement and at Control Data's then current published charges and terms for commercial customers.

SECTION III.

AS TO THE SOFTWARE PRODUCTS LISTED IN SECTION I OF THIS AMENDMENT, PARAGRAPH 7b) OF SCHEDULE H IS REPLACED IN ITS ENTIRETY WITH THE FOLLOWING PROVISION:

b) Except as provided in paragraph 7a) above:

(i) All Software Products are licensed on an "AS IS" basis without warranty and, unless AM Service is contracted for, without any support, or right to any modifications, improvements, or corrections. Without limiting the foregoing, Control Data does not warrant that the Software Products will meet the Customer's requirements or will operate

in the combinations selected by the Customer, or that the operation of the Software Products will be error-free, or in the event AM Service has been contracted for, that every error, malfunction or defect will be corrected pursuant to such service.

(ii) If Control Data should fail to fulfill any of its obligations under this Schedule, Customer shall have as its sole and exclusive remedies therefor:

a) if AM Service has been contracted for, the right to terminate AM Service and have refunded to it the last month's AM Service Charge paid hereunder; and,

b) the right to terminate this Schedule in accordance with Article 9, Termination.

SECTION IV.

AS TO THE SOFTWARE PRODUCTS LISTED IN SECTION I OF THIS AMENDMENT, ARTICLE 9 IS AMENDED BY INSERTION OF THE FOLLOWING PARAGRAPH IMMEDIATELY AFTER THE FIRST PARAGRAPH:

Control Data may terminate the license for a Software Product upon six (6) months written notice, provided that said termination date is at least five (5) years after acceptance of the Software Product.

SECTION V.

AS TO THE SOFTWARE PRODUCTS LISTED IN SECTION I OF THIS AMENDMENT, ARTICLE 8 OF SCHEDULE H IS REPLACED IN ITS ENTIRETY WITH THE FOLLOWING PROVISION:

8. APPLICATION MAINTENANCE SERVICE: The following terms and conditions apply only to those Software Products for which AM Service has been contracted under this Schedule during the period for which Customer is contracting for AM Service:

a) The rights granted and the definition of Software Products set out in Article 2 above, shall extend to and include modifications, improvements, and corrections to those Software Products for which AM Service has been contracted, as and when said modifications, improvements, and corrections are made generally available as part of Control Data's AM Service.

b) Control Data will employ reasonable efforts to correct, at no additional cost to Customer, errors, malfunctions or defects in the Software Products for which AM Service has been contracted. Customer understands, however, that Control Data is not obligated to correct every error, malfunction or defect in the Software Products. For purposes of this Schedule, the terms "errors, malfunctions or defects" shall mean deviations between the Software Product and the documentation for it furnished by Control Data, and "to correct" shall mean solely to publish corrections which will bring them into agreement. Customer understands that all modifications, updates and error correction activities, including the verification of Corrective Code, are performed using the standard Software Products which contain the latest Batch Corrective Code and are at the latest update level. Customer understands that AM Service does not include any rights to any Successor Products or to any enhancements or to any modifications or improvements to the Software Products, or any part thereof, which are deemed by Control Data to be new, different or successor versions of said Software Products.

c) Customer assumes complete responsibility for the interface between those Software Products for which AM Service has been contracted and all other software products (whether or not licensed by Control Data) used by Customer. Control Data may change the documentation for the purpose of removing errors in documentation, providing consistency of interpretation and/or describing modifications or improvements made in the Software Products.

d) AM Service shall continue for a minimum term of six (6) months following acceptance of a Software Product, unless Control Data terminates AM Service earlier, pursuant to its rights hereunder. Thereafter, AM Service may be terminated by Customer upon sixty (60) days prior written notice. Customer understands that AM Service and CEM Service must be terminated by Customer simultaneously with respect to all Software Products licensed by Control Data for use on the mainframe designated above unless otherwise agreed to by Control Data.

e) Control Data may change the Monthly AM Service Charges for any or all Software Products specified in this Schedule effective upon expiration of six (6) months from acceptance by Customer of any Software Product licensed hereunder, or at the end of any calendar month thereafter by giving at least ninety (90) days written notice. The adjusted charges, however, shall not exceed Control Data's then published charges for commercial customers on the effective date of the adjustment.

f) Control Data may discontinue AM Service for any Software Product or part thereof licensed hereunder at any time on or after the earlier of the following:

(i) the AM Service Termination Date in Article 1 above; or

(ii) upon six (6) months written notice.

g) Termination of AM Service for a Software Product shall not affect Customer's right to continue to use the Software Product, as then installed, in accordance with the terms and conditions of this Schedule, except this Article 8.

Upon mutual agreement, Customer may contract for AM Service subsequent to entering into this Software

License or may recontract for AM Service after having cancelled said service by terminating this License and entering into a new standard form license for the Software Products, AM Service, and CEM Service in accordance with Control Data's then current published charges and terms for commercial customers including the payment of the applicable Initial Fee, all Monthly External Use Charges, all Monthly Internal Use Charges, Monthly AM Service Charges, and Monthly CEM Service Charges.

SECTION VI.

AS TO THE SOFTWARE PRODUCTS LISTED IN SECTION I OF THIS AMENDMENT:

a) The phrase "the Monthly License Charge and Monthly CEM Service Charge" in paragraph 5a) of Schedule H is changed to: "all Monthly External Use Charges, all Monthly Internal Use Charges, and the Monthly AM Service Charge"; and

b) Article 11 of Schedule H is deleted.

CONTROL DATA CORPORATION

CONTROL DATA CORPORATION
8100 - 34th Avenue South
P.O. Box 0
Minneapolis, Minnesota 55440

AMENDMENT NO._____TO CDC CONTRACT NO._____

AGREEMENT FOR CONTROL DATA EQUIPMENT, PRODUCTS AND RELATED SERVICES

AMENDMENT TO SCHEDULE H SOFTWARE LICENSE
FOR NON-USAGE PRICED SOFTWARE PRODUCTS
INTERNAL USE LICENSE - CEM SERVICE

CUSTOMER NAME_____

SITE OF INSTALLATION_____

STREET ADDRESS_____

CITY_____STATE_____ZIP_____

DESCRIPTION OF MAINFRAME_____
(Location — Mainframe Model and Serial Number)

Customer and Control Data agree that Schedule H to the above referenced Agreement is hereby amended to include a license for the Software Products listed in Section I of this Amendment in accordance with the terms and conditions contained in this Amendment, all terms and conditions of Schedule H except as expressly modified by this Amendment, and all other terms and conditions contained in this Agreement, including specifically Article 4, Disclaimer of Warranty and Limitation of Remedies, of Schedule A.

SECTION I.

ARTICLE 1 OF SCHEDULE H IS REVISED BY THE ADDITION OF THE FOLLOWING PROVISION:

This Article 1 shall include the Software Products listed below and Central Enhancement and Maintenance Service (hereinafter referred to as CEM Service) as such service is available and constituted from time to time for those Software Products for which a price is specified in the Monthly CEM Service Charge column below.

Software Product No.	Description	Initial Fee	Monthly License Charge	Paid Up License Charge	Monthly CEM Service Charge	CEM Service Termination Date

SECTION II.

AS TO THE SOFTWARE PRODUCTS LISTED IN THIS AMENDMENT, ARTICLE 2 OF SCHEDULE H IS REVISED BY THE ADDITION OF THE FOLLOWING PROVISION:

Notwithstanding the license set out in this Article 2, Customer agrees that its right to use the Software Products is limited to the processing of data for its own internal use or the internal use of its subsidiaries (of which Customer owns fifty percent (50%) or more of the voting stock). This License does not convey the right for Customer to use the Software Products for processing data for other than its own internal use or the internal use of its subsidaries, and neither Customer nor any of its subsidiaries shall utilize the Software Products to furnish a data processing service to anyone other than themselves.

The limitation of this License to Internal Use is made for the sole purpose of enabling Control Data to determine charges at any time applicable to the Software Products and is not intended to and does not restrict Customer's right to obtain a Full Use License permitting external and internal usage. Customer may at any time obtain a Full Use License for a Software Product corresponding to that licensed on an internal use basis, if at the time Control Data has the right to grant a Full Use License. If a Customer obtains a Full Use License, Control Data's then current published charges and terms will be applicable to the License.

SECTION III.

FOR PURPOSES OF THIS AMENDMENT, ARTICLE 8 OF SCHEDULE H IS MODIFIED TO THE EXTENT NECESSARY (INCLUDING THE DELETION OF SUBPARAGRAPH d) TO PROVIDE FOR THE FOLLOWING:

Customer understands and agrees that the rights granted hereunder with respect to CEM Service do not extend to or include any rights to any Successor Products or to any enhancements or to any modifications or improvements to the Software Products, or any part thereof, which are deemed by Control Data to be new, different or successor versions of said Software Products.

AGREED TO:

BY_____

TITLE_____

DATE_____

ACCEPTED BY:
CONTROL DATA CORPORATION
8100 - 34th Avenue South
P O. Box 0
Minneapolis, Minnesota 55440

BY_____

TITLE_____

DATE_____

SCHEDULE H AMENDMENT FOR ALL SOFTWARE PRODUCTS REQUIRING SPECIAL LICENSE NO. 3

(Special License No. 3 is Required Only If CEM Services Are Ordered)

When any product requiring a Special License No. 3 is ordered and CEM Services are also ordered for that product, then the terms and conditions of Schedule H must be amended. Customers with an existing Schedule A and Schedule H (Rev. 7/76 or 7/77), must use Schedule H-Software License-CEM Services Amendment For Additional Software Products (AA4077-1, Rev. 10/76) to add the products and to amend the terms and conditions of Schedule H. Customers signing a new Schedule H must use Amendment Form (AA1958, Rev. 1/75) to amend the terms and conditions of Schedule H. The following language must appear in the body of the appropriate Amendment Form:

"Article 8: CENTRAL ENHANCEMENT AND MAINTENANCE SERVICES of Schedule H of the above referenced Agreement is revised by replacing the third paragraph in its entirety with the following provision, for Product Number(s) _____, _____, _____, _____.

Customer agrees that the rights granted hereunder with respect to CEM Services do not extend to or include any modifications or improvements to the Software Products (or any part thereof) which are deemed by Control Data to be new, different, or successor versions of said Software Products."

CONTROL DATA CORPORATION

8100 - 34th Avenue South
Minneapolis, Minnesota 55440

AMENDMENT NO._____ TO CDC CONTRACT NO._____

AGREEMENT FOR CONTROL DATA EQUIPMENT, PRODUCTS OR RELATED SERVICES

CUSTOMER NAME_____

STREET ADDRESS_____

CITY_____ STATE_____

Customer and Control Data agree that the above referenced Agreement is hereby amended as follows:

Article 4, CHARGES, and Article 6, TERMINATION, of Schedule H of the above referenced Agreement are replaced by the following articles for the following QSS Software Products listed in Article 1 of Schedule H:

Item	Qty.	Model and Description

4. CHARGES: Customer agrees to pay to Control Data the initial fee and the monthly royalty charges specified in Article 1 of Schedule H. The initial fee shall be invoiced upon shipment of each Software Product. The monthly royalty shall begin upon shipment or if Control Data has responsibility for installation, upon notification by Control Data that installation has been completed. Monthly royalties shall be invoiced to Customer monthly in advance for each month and shall not be subject to credit for any period of non-use for any reason.

6. TERMINATION: The License for the Software Products listed above may be terminated by Customer upon ninety (90) days written notice provided that said termination date is at least 24 months after commencement of royalty payments under Article 4, CHARGES, above.

Customer agrees that upon termination of the License for the above Software Products, it shall not use, divulge, disclose or market in any fashion these Software Products, and shall promptly certify to Control Data that such Software Products have been destroyed.

Except as provided above, all terms and conditions of the above referenced Agreement shall remain in full force and in effect.

AGREED TO:

BY_____

TITLE_____

DATE_____

ACCEPTED BY:
CONTROL DATA CORPORATION
8100 - 34th Avenue South
Minneapolis, Minnesota 55440

BY_____

TITLE_____

DATE_____

AA-1958
Rev 6-71

CONTROL DATA CORPORATION

SCHEDULE I
CYBERNET® SERVICE

Customer hereby contracts for and Control Data hereby agrees to furnish access to and use of the Control Data CYBERNET System, and use of the related services as the same are available and constituted during the term of this Schedule, in accordance with the terms and conditions contained in this Agreement, including specifically Article 4, Disclaimer of Warranty and Limitation of Remedies, of Schedule A.

1. GENERAL: This Schedule shall constitute a basic ordering agreement under which Customer may request the services regularly offered or made available by Control Data as part of its CYBERNET System and the use of the related services, as such system and services are available and constituted from time to time during the term of this Schedule.

Control Data reserves the right to modify, add to, or discontinue any of the services or Software Products made available as part of the CYBERNET System or related services, at any time during the term of this Schedule.

The terms and conditions contained herein and the published CYBERNET service charges contained in Exhibit 1 to this Schedule, are subject to change by Control Data upon thirty (30) days prior written notice. Customer may, by written notice, terminate this Schedule on the effective date of such change; otherwise the new charges and/or terms and conditions shall become effective.

2. SERVICE OR TASK ASSIGNMENT: Customer will submit one of the below-listed documents requesting Control Data performance whenever such performance is desired:

a) Data Center Process Control Sheet
b) Purchase Order
c) Letter of Authorization, or
d) Appropriate Job Control Card

The document will reference Customer's account number and will completely specify the services and time schedule desired. Customer may also request CYBERNET System performance by connecting its terminal to the CYBERNET System in accordance with the designated procedure. The commencement of performance of an assignment shall constitute acceptance of an assignment.

3. SCHEDULE OF PERFORMANCE: Upon receipt and acceptance of an assignment document, or other performance request, and all required information and materials, Control Data will employ reasonable efforts to complete the assignments within the time schedules requested by Customer. Control Data, however, shall not be obligated to complete specific Customer assignment(s) within particular dollar limitations if specified by Customer for such assignment(s). Customer has the right to withdraw any assignment(s) prior to commencement of Control Data performance when Control Data is unable to comply with the time schedules requested by Customer.

4. CYBERNET SERVICE CHARGES: a) In addition to rental and other charges specified in this Agreement, Customer shall pay for its actual usage of the CYBERNET System and all related services, as well as supplies. Such additional charges shall include, but not be limited to, charges for use of the CYBERNET System, for central site storage, for connection for remote job submission, and for services of Control Data personnel, all such charges to be in an amount and determined on the basis set forth in Control Data's published price schedule for commercial users in effect at the time the CYBERNET System, services and supplies are used by Customer.

b) Customer shall be invoiced for such charges after the month in which the charges accrue and said invoice shall be due and payable within fifteen (15) days after date of invoice.

c) Customer hereby recognizes and agrees with Control Data that contained in Exhibit 1 to this Schedule are the current published CYBERNET service charges. Any services or support not included in said Exhibit 1 which are requested or required by Customer in connection with this Schedule shall be rendered only under separate agreement and at Control Data's then current prices and terms for its commercial customers.

5. CUSTOMER FURNISHED DATA, RETENTION: Customer will provide, in form satisfactory for machine processing on Control Data equipment, information, data and materials as specified by Control Data to perform the services referred to herein, it being understood that Customer shall be solely responsible for information, data and material completeness and accuracy. Material furnished by Customer or resulting from the services provided hereunder and not required for the continued performance of services hereunder will be returned to the Customer unless Customer furnishes written instructions for its disposition. Unless otherwise agreed in writing, Control Data shall not be required to hold any Customer data for more than ninety (90) days after completion of work and after such period, Control Data may, without liability therefor, dispose of such data. Upon termination of this Schedule, Control Data will dispose of all Customer data still in Control Data's possession in any manner it deems appropriate unless the Customer, prior to such termination, furnishes to Control Data written instructions for the disposition of such data at the Customer's expense.

6. CONFIDENTIALITY AND RIGHTS IN AND TO INFORMATION AND MATERIALS: a) Control Data shall utilize reasonable efforts in preserving the confidentiality of data or information relating to Customer's business which is confidential, is clearly so designated, and is submitted to Control Data personnel in order to carry out any request for services pursuant to this Schedule. Control Data shall be

CDC Contract No. _____

liable to Customer only in the event of a willful and material disclosure of such confidential data or information by Control Data.

b) All original material, either written or readable by machine, prepared for or with Customer by Control Data pursuant to this Schedule shall belong to and be the property of Customer, unless otherwise agreed. Customer expressly recognizes and agrees, however, that such rights and ownership shall not extend to or encompass any Control Data standard Software Products or other software, or parts of such products or software, incorporated in the CYBERNET system, or to the ideas, concepts, know-how or techniques employed by Control Data in rendering such services to Customer.

7. NOTIFICATION: All results obtained by usage of the CYBERNET System will be obtained with generally accepted data processing procedures. Customer will notify Control Data in writing of any claimed error in the results obtained by usage of the CYBERNET System within fifteen (15) days after receipt of such results and furnish therewith reasonable supporting documentation for such claim. All results obtained pursuant to this Schedule shall be deemed acceptable to Customer unless notice and proof of claim are made within said fifteen (15) days. Without the submission of said notice and proof, or notice of any claimed invoice discrepancy within said fifteen (15) days of the invoice date, an invoice shall be deemed correct and payable in full.

8. LIMITATION OF REMEDY: a) In the event of errors in data processing results, due to the failure of Control Data equipment or a Control Data standard Software Product, or the failure of a Control Data employee to properly operate the equipment in accordance with Control Data's standard operating procedures, or to perform the operations described in Customer's written specification, Control Data's liability shall be limited to, and Customer's exclusive remedies shall be: (i) the correction of errors of which Control Data has received the above-mentioned notice and proof within said fifteen (15) days; or (ii) where such correction is not practicable, Customer shall be entitled only to an equitable credit not to exceed the charges invoiced to Customer for that portion of the service which produced the erroneous result. Control Data shall have no liability for failure of VSSL Software Products or other non-standard Software Products or Customer furnished programs, or judgment or interpretive errors by Control Data employees.

b) When Customer furnishes a program to Control Data for use by Control Data in providing the services hereunder and periodic restarts have been specified by Control Data, Control Data's liability for correction of errors shall be further limited to the machine time intervals specified for such periodic restarts.

c) Control Data shall be liable for the loss, destruction or damage to Customer furnished materials only if such loss, destruction or damage was due to the negligence of Control Data, and Customer's sole remedy shall be Control Data restoring such lost, destroyed or damaged materials provided such restoration can reasonably be performed by Control Data and Customer provides Control Data with all source data in machine readable form necessary for such restoration.

9. WARRANTY DISCLAIMER: a) ALL SOFTWARE PRODUCTS MADE AVAILABLE BY CONTROL DATA AS PART OF ITS CYBERNET SYSTEM ARE MADE AVAILABLE TO CUSTOMER ON AN "AS-IS" BASIS WITHOUT WARRANTY.

b) CONTROL DATA MAKES NO REPRESENTATIONS OR WARRANTIES, WHETHER EXPRESS OR IMPLIED, WITH RESPECT TO THE ACCURACY OR AVAILABILITY OF THE INFORMATION DESCRIBED IN ANY DATA BANK SERVICE, OR LIKE DATA BASE SERVICE, OR THE CONTENT OF THE INFORMATION SUGGESTED BY THE SUMMARY THEREOF, OR THAT THE USE OF THE RESULTS OF THE INFORMATION OBTAINED THEREUNDER WILL NOT INFRINGE ANY PATENT, COPYRIGHT, TRADEMARK OR PROPRIETARY RIGHT OF ANY THIRD PERSON.

10. USE OF COMMUNICATION SERVICES: Customer agrees to abide by the rules and regulations of the United States and International Telecommunications Regulatory Agencies which prohibit Control Data from using communications services it leases from domestic, international and foreign communications carriers to transmit information for its users which is not part of a "single integrated" data processing service. All information transmitted must be directly related to the data processing applications or service provided by Control Data and unprocessed information shall not be allowed through the service between user terminals, either directly or on a store and forward basis.

11. TERM: This Schedule shall, except as provided in Articles 5 and 6 of Schedule A, continue in full force and effect until terminated by either party upon thirty (30) days prior written notice.

CONTROL DATA CORPORATION

Schedule I
Exhibit I
Control Data CYBERNET® Services
CYBER 76, SCOPE 3.4 and Graphics Services Price Schedule

1. COMPUTER SYSTEM USAGE	CYBER 76		SCOPE 3.4		GRAPHICS	
	PRIORITY	PRICE	PRIORITY	PRICE	PRIORITY	PRICE
Charge per System Billing Unit (SBU)	P6	$1.51	P5	$0.49	Interactive	$0.49
	P4	$1.24	P4	$0.37	P4	$0.37
	P2	$0.97	P3	$0.30	P2	$0.26
			P2	$0.26	P1	$0.20
			P1	$0.20		

2. ON-LINE STORAGE

Charge per Storage Data Block (SDB) per day	$0.013
Volume discount on CYBER 76 or combined SCOPE 3.4 and Graphics monthly storage charges:	
$0-$400	No discount
$400-$1800	18% on amount over $400
$1800-$7200	$252 plus 40% on amount over $1800
Over $7200	$2412 plus 50% on amount over $7200

3. ACCESS FROM CYBERNET SERVICE CENTERS

Charge per Input-Output Data Block (IODB) for work submitted at CYBERNET Service Centers	$0.03

4. PRIVATE TERMINAL CONNECTION

Charge per connect hour:	
CYBER 76, SCOPE 3.4 Batch Terminals	
2000 bps shared access	$12.00
4800 bps shared access	$18.00
Graphics Terminals	
Standard:	
120 cps dial-up	$24.00
4800 bps dial-up	$34.00
Customer Option:	
120 cps dial-up	$15.00 plus $0.07 per 1000 characters transferred to or from the terminal
4800 bps dial-up	$21.00 plus $0.07 per 1000 characters transferred to or from the terminal

5. CDC CYBERLINK

Charge per Data Block (DB) transferred between services (i.e. Graphics, SCOPE 3.4, NOS, NOS 175, NOS 176, CYBER 76)	$0.02

6. MAGNETIC TAPE USAGE

CYBERNET tape reel storage	$0.20 per day
Customer tape reel storage	$0.10 per day
Tape processing:	
CYBER 76	$1.00 per tape reel mounted
Scope 3.4 and Graphics	$0.50 per tape reel mounted and $1.00 per tape drive scheduled

7. MINIMUM CHARGE ..... None

MISCELLANEOUS SERVICES

1. OFF-LINE I/O PROCESSING SYSTEM USAGE

	HOURLY RATE BY TURNAROUND SERVICE LEVEL	
SYSTEM	*2 HOURS*	*24 HOURS*
160A/8090	**$99**	**$55**

2. PRINTER OUTPUT CHARGES

Off-line printing	**$0.06 per output page for one-part paper**
Multi-part paper charge	**$0.01 per page for each additional part plus $10.00 set-up charge**
On-line printer forms charge	**$15.00 set-up charge**

3. OFF-LINE TELEPROCESSING

$99 per hour

4. MACHINE READABLE ACCOUNTING USER DETAIL FILE

$25 per file

5. WALK-IN USE OF SERVICE CENTERS

Interactive Terminal **$15.00 per hour** (10–30 cps)

Voice-grade Batch . . **$75.00 per hour** Terminal

6. OTHER SERVICES

Refer to local CYBERNET Service Center for prices:

- File utility service
- Clerical
- 10-inch and 30-inch plotting
- Keypunching and verifying
- Tape cleaning and certification

Additional expenses incurred by CYBERNET Services at Customer's request are to be paid by the Customer

VOLUME USAGE DISCOUNT

MONTHLY VOLUME	*DISCOUNT AMOUNT*
$0-$5000	**No discount**
$5000-$10,000	**5% on amount over $5000**
$10,000-$20,000	**$250 plus 10% on amount over $10,000**
Over $20,000	**$1250 plus 15% on amount over $20,000**

Applies only to the following monthly charges:

- System Billing Units
- Unit record input and output
- Off-line printer output
- Shared access terminal connect time
- Magnetic tape usage

DEFINITIONS

1. **SYSTEM BILLING UNIT:** A System Billing Unit is the pricing component which accounts for resources used (e.g. CPU, memory, I/O, Extended Direct Access Usage) during execution of a customer's job.

2. **SERVICE LEVELS:** Customer-specified priority that the system uses to determine the job processing rate.

FOR CYBER 76 PROCESSING:

PRIORITY	SERVICE LEVEL	DEFINITION
P6	Express	Express jobs are always given the opportunity to run ahead of Standard jobs unless the Express job requests system resources which cannot be honored.
P4	Standard	Standard jobs are initiated after all Express jobs.
P2	Nonprime	Nonprime jobs are initiated after 7 00 p.m. Central Time, Monday through Friday, and weekends and holidays as available.

FOR SCOPE 3.4 PROCESSING

PRIORITY	SERVICE LEVEL	DEFINITION-THROUGHPUT TIME
P5	Express	½ hour plus Execution Time
P4	Standard	2 hours plus Execution Time
P3	Deferred	4 hours plus Execution Time
P2	Nonprime	24 hours plus Execution Time
P1	Weekend	As available

FOR GRAPHICS PROCESSING:

PRIORITY	SERVICE LEVEL	DEFINITION
P4	Standard	Prime time processing.
P2	Nonprime	Nonprime jobs are initiated after 7:00 p.m. Central Time, Monday through Friday, and weekends and holidays as available.
P1	Weekend	Weekend jobs are initiated after 7:00 p.m., Central Time, Fridays, and the night prior to a holiday.

3. **EXECUTION TIME:** For SCOPE 3.4 only. Execution time is calculated from a standard formula utilizing the Central Processor (CP) and Input/Output (I/O) times for a job. The job execution time approximates wall-clock time of the job as if it were running alone in the system.

4. **THROUGHPUT TIME:** For SCOPE 3.4 only. "Job Throughout Time" is defined as the difference between the time the job enters the input queue and the time it completes execution. For purposes of determining the System Billing Unit price for a given job, if the "Job Throughput Time" should exceed the published Throughput Time for the requested Service Level, then the job will be billed at the actual Service Level performed. Jobs that are not immediately available for system scheduling will not be covered by the published Throughput Time and will be billed at the requested Service Level. These include (1) jobs which require dependency scheduling, (2) those which require more than $300{,}000_8$ words of central memory, and (3) jobs processed at the Weekend Service Level

5. **STANDARD DATA BLOCK:** A Standard Data Block is used as the measure for all standard on-line storage and input/output volumes for processing on the CYBERNET System. A Standard Data Block is always 1280 six-bit characters in length, whether it is a Storage Data Block (SDB) or an Input/Output Data Block (IODB).

This Price Schedule of CYBERNET Service charges applies to all U.S. CYBERNET Centers operated by Control Data Corporation and is effective April 29, 1980 and does not include any applicable Federal, State or local taxes. Control Data expressly reserves the right to change said prices upon thirty (30) days prior written notice.

CYBERNET Services reserves the right to bill the Customer for other charges that may be incurred in conjunction with the use of the services identified in this Price Schedule.

CONTROL DATA CORPORATION

Schedule I
Addendum To Exhibit 1
Control Data CYBERNET® Services
CYBER 203 Service Price Schedule

1. COMPUTER SYSTEM USAGE	PRICE
Charge per System Billing Unit (SBU)	**$0.24**

2. ON-LINE STORAGE	CYBER 203	FRONT END
Charge per Storage Data Block (SDB) per day	**$0.04** (SDB=512 64-bit words)	**$0.013** (SDB=1280 6-bit characters)

Volume discount on total monthly storage charges:

$0-$400	**No discount**
$400-$1800	**18% on amount over $400**
$1800-$7200	**$252 plus 40% on amount over $1800**
Over $7200	**$2412 plus 50% on amount over $7200**

3. ACCESS FROM CYBERNET SERVICE CENTERS	
Charge per Input/Output Data Block (1280 6-bit characters)	**$0.03**

4. PRIVATE TERMINAL CONNECTION	
Charge per connect hour:	
2000 or 2400 bps (voice-grade) batch terminals	**$12.00**
4800 bps (voice-grade) batch terminals	**$18.00**
10, 14.8 and 30 cps interactive terminals	**$ 9.00** plus $0.25 per 1000 characters transferred to or from terminal

5. MAGNETIC TAPE USAGE	
CYBERNET tape reel storage	**$0.20** per day
Customer tape reel storage	**$0.10** per day
Tape processing	**$1.00** per tape drive scheduled
	$0.50 per tape reel mounted

6. FRONT END PROCESSING

System Billing Unit (SBU) charges for the CYBER 203 Front End are shown under the SCOPE 3.4 and Graphics SBU charges on the CYBER 76, SCOPE 3.4 and Graphics Service Price Schedule. Front End SBUs are charged at the priority requested, regardless of the throughput time received.

VOLUME USAGE DISCOUNT

Monthly Volume	*Discount Amount*
$0-$5000	**No discount**
$5000-$10,000	**5% on amount over $5000**
$10,000-$20,000	**$250 plus 10% on amount over $10,000**
Over $20,000	**$1250 plus 15% on amount over $20,000**

Applies only to the following monthly charges:

- System Billing Units
- Unit record input and output
- Off-line printer output
- Shared access terminal connect time
- Magnetic tape usage

DEFINITIONS

1. SYSTEM BILLING UNIT: A System Billing Unit is the pricing component which accounts for resources used (e.g. CPU, memory, I/O) during execution of a Customer's job.
2. SERVICE LEVELS: One service level is available on the CYBER 203. On the Front End, the Customer-specified priority determines the job processing rate: higher priorities are processed first.

This Price Schedule of CYBERNET Service charges applies to all U.S. CYBERNET Centers operated by Control Data Corporation and is effective April 29, 1980, and does not include any applicable Federal, State or local taxes. Control Data expressly reserves the right to change said prices upon thirty (30) days prior written notice.

CYBERNET Services reserves the right to bill the Customer for other charges that may be incurred in conjunction with the use of the services identified in this Price Schedule.

AA4686-4 4/80 (PRINTED IN U.S.A.)

CONTROL DATA CORPORATION

Schedule I
Addendum to Exhibit 1
Control Data CYBERNET® Services
NOS Computing Service Price Schedule

1. COMPUTER SYSTEM USAGE

Charge per System Billing Unit (SBU)

NOS		NOS 175		NOS 176	
PRIORITY	PRICE	PRIORITY	PRICE	PRIORITY	PRICE
Interactive	$0.38	Interactive	$0.38	Interactive	$0.38
P4 Standard	$0.38	P6 Express	$0.30	P6 Express	$0.30
P2 Nonprime	$0.22	P4 Standard	$0.24	P4 Standard	$0.24
		P3 Deferred	$0.20	P3 Deferred	$0.20
		P2 Nonprime	$0.15	P2 Nonprime	$0.15
		P1 Weekend	$0.11	P1 Weekend	$0.11

2. ON-LINE STORAGE

Charge per Storage Data Block (SDB) per day **$0.016**
Charge per Extended Data Block (XDB) per day **$3.00**
Volume Data Pak per month
- 50M Pak **$4500**
- 100M Pak **$8000**

Volume discount on total NOS monthly storage charges:

$0-$400 ..... **No discount**
$400-$1800 ..... **18% on amount over $400**
$1800-$7200 ..... **$252 plus 40% on amount over $1800**
Over $7200 ..... **$2412 plus 50% on amount over $7200**

3. ACCESS FROM CYBERNET SERVICE CENTERS

Charge per Input-Output Data Block (IODB) for work submitted at CYBERNET Service Centers **$0.03**

4. PRIVATE TERMINAL CONNECTION

Charge per connect hour:

Interactive Terminals

Standard:

- 10, 14.8, 30 cps Local Dial-up ..... **$9.00** plus **$0.25** per 1000 characters transferred to or from the terminal
- 30 cps INWATS ..... **$21.00** plus **$0.25** per 1000 characters transferred to or from the terminal
- 120 cps Local Dial-up ..... **$15.00** plus **$0.10** per 1000 characters transferred to or from the terminal
- 120 cps INWATS ..... **$27.00** plus **$0.10** per 1000 characters transferred to or from the terminal

Customer Option:

- 10 cps Local Dial-up **$12.00**
- 14.8 cps Local Dial-up **$15.00**
- 30 cps Local Dial-up **$17.50**
- 30 cps INWATS **$29.50**
- 120 cps Local Dial-up **$28.00**
- 120 cps INWATS **$40.00**

Batch Terminals

4800 bps shared access port

- NOS ..... **$18.00** plus **$0.03** per 1280 characters transferred to or from the terminal
- NOS 175 and NOS 176 ..... **$18.00**

5. CDC CYBERLINK

Charge per Data Block (DB) transferred between services (i.e., SCOPE 3.4, NOS 176, NOS, NOS 175, CYBER 76, Graphics) **$0.02**

6. MAGNETIC TAPE USAGE

CYBERNET tape reel storage	**$0.20 per day**
Customer tape reel storage	**$0.10 per day**
Tape processing	**$2.00** per tape reel mounted plus an additional **$30.00** per hour if tape assigned for interactive processing

7. MINIMUM CHARGE ..... **$100** per month per Client Number

MISCELLANEOUS SERVICES

1. OFF-LINE I/O PROCESSING SYSTEM USAGE

	Hourly Rate by Turnaround Service Level	
System	*2 Hours*	*24 Hours*
160A/8090	**$99**	**$55**

2. PRINTER OUTPUT CHARGES

Off-line printing	**$0.06 per output page for one-part paper**
Multi-part paper charge	**$0.01 per page for each additional part plus $10.00 set-up charge**
On-line printer forms charge	**$15.00 set-up charge**

3. OFF-LINE TELEPROCESSING
$99 per hour

4. MACHINE READABLE ACCOUNTING USER DETAIL FILE
$25 per file

5. WALK-IN USE OF SERVICE CENTERS

Interactive Terminal (10-30 cps)	**$15.00 per hour**
Voice-grade Batch Terminal	**$75.00 per hour**

6. OTHER SERVICES

Refer to local CYBERNET Service Center for prices:

- File utility service
- Clerical
- 10-inch and 30-inch plotting
- Keypunching and verifying
- Tape cleaning and certification

Additional expenses incurred by CYBERNET Services at Customer's request are to be paid by the Customer.

VOLUME USAGE DISCOUNT

Monthly Volume	*Discount Amount*
$0-$5000	**No discount**
$5000-$10,000	**5% on amount over $5000**
$10,000-$20,000	**$250 plus 10% on amount over $10,000**
Over $20,000	**$1250 plus 15% on amount over $20,000**

Applies only to the following monthly charges:

- System Billing Units
- Unit record input and output
- Off-line printer output
- Shared access terminal connect time
- Magnetic tape usage

DEFINITIONS

1. **SYSTEM BILLING UNIT:** A System Billing Unit is the pricing component which accounts for resources used (e.g. CPU, memory, I/O) during execution of a Customer's job.
2. **SERVICE LEVELS:** The level of service obtained is determined by the job priority specified by the Customer. Higher priority jobs will process at a faster rate than lower priority jobs.
   Service Level P6, P4 and P3 jobs are initiated during all periods of operation.
   Service Level P2 jobs are initiated during Nonprime (after 7:00 p.m. local center time Monday through Friday and all day Saturday and Sunday).
   Service Level P1 jobs are initiated Weekends (after 7:00 p.m. local center time Friday and all day Saturday and Sunday).
3. **STANDARD DATA BLOCK:** A Standard Data Block is used as the measure for all standard on-line storage and input/output volumes for processing on the CYBERNET System. A Standard Data Block is always 1280 six-bit characters in length, whether it is a Storage Data Block (SDB) or an Input/Output Data Block (IODB).
4. **EXTENDED DATA BLOCK:** An Extended Data Block (XDB) consists of 512,000 six-bit characters and is used as the measure for all Extended Direct Access on-line storage under NOS. Extended Direct Access files are initialized with two Extended Data Blocks.
5. **VOLUME DATA PAK:** A Volume Data Pak consists of 50 million six-bit characters for the 50M Pak or 100 million six-bit characters for the 100M Pak and is used as the fixed measure of on-line storage on a monthly package basis. SDB's used in excess of the Volume Data Pak will be charged at the standard charge for SDB's. The Volume Data Pak is provided only at the Customer's Charge Number level.

This Price Schedule of CYBERNET Service charges applies to all U.S. CYBERNET Centers operated by Control Data Corporation and is effective April 29, 1980, and it does not include any applicable Federal, State or local taxes. Control Data expressly reserves the right to change said prices upon thirty (30) days prior written notice.

CYBERNET Services reserves the right to bill the Customer for other charges that may be incurred in conjunction with the use of the services identified in this Price Schedule.

CONTROL DATA CORPORATION

Schedule I
Addendum to Exhibit 1
Control Data CYBERNET® Services
Miscellaneous Services Price Schedule

1. PLOTTING CHARGES

Pen plotting charges per hour

12"-22" Plotter

0-2 Hours Turnaround	$ 60.00
>2 Hours Turnaround	$ 40.00

30"-36" Plotter

0-2 Hours Turnaround	$110.00
>2 Hours Turnaround	$ 90.00

Versatek plotting ..... $ 20.00 setup plus $0.50 per foot of Plotter output

Delivery charges not included.

2. COMMITTED SYSTEM BLOCK TIME

(When available; one-hour minimum)

Charges per wall-clock hour:

CYBER 74/6600	$1,000.00
CYBER 76/7600	$3,000.00
CYBER 174	$1,000.00
CYBER 175	$1,800.00
CYBER 176	$3,000.00
CYBER 203	$5,000.00

This Price Schedule of CYBERNET Service charges applies to all U.S. CYBERNET Centers operated by Control Data Corporation and is effective October 1, 1979, and it does not include any applicable Federal, State or local taxes. Control Data expressly reserves the right to change said prices upon thirty (30) days prior written notice.

CYBERNET Services reserves the right to bill the Customer for other charges that may be incurred in conjunction with the use of the services identified in this Price Schedule.

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CONTROL DATA CORPORATION

SCHEDULE J
CONTROL DATA
MAINTENANCE SERVICE – SUBSYSTEMS EQUIPMENT

Customer agrees to purchase and Control Data agrees to furnish at the place of installation indicated below, maintenance service on the equipment listed below, in accordance with the terms and conditions contained in this Schedule and all other terms and conditions contained in this Agreement, including specifically Article 4, Disclaimer of Warranty and Limitation of Remedies, of Schedule A:

SITE OF INSTALLATION _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

Qty.	Model & Description	Unit Basic Monthly Maintenance Charge	Total Basic Monthly Maintenance Charge

* Zone Charges _____

Total Contracted Monthly Maintenance Charges _____

* Applicable to sites located beyond a radius of fifty (50) miles from the nearest Control Data Service Center Address.

CDC Contract No. _____

Principal Period of On-Call Maintenance

From _____ To _____

Monday-Friday Excluding Local Holidays

AA4890
REV. 2/78

1. INSPECTION AND REPAIR: If the equipment identified above was not under Control Data's maintenance service responsibility immediately prior to the commencement of maintenance service under this Schedule, it shall be subject to inspection by Control Data to determine if it is in good operating condition which, for purposes of this Schedule, is defined as the level established for equipment maintained by Control Data. Any repairs or adjustments deemed necessary by Control Data to bring the equipment up to good operating condition shall be made prior to commencement of maintenance service.

2. TERM OF MAINTENANCE SERVICE: This Schedule shall become effective upon the date this Agreement is accepted and signed by Control Data and shall continue for an initial term of one (1) year from the Commencement Date of monthly maintenance charges on the initial equipment maintained hereunder and shall remain in effect thereafter until terminated as provided in Article 6 below.

3. RESPONSIBILITIES OF CONTROL DATA: a) Control Data shall, for the total contracted monthly maintenance charges, maintain the equipment in good operating condition and furnish on-call maintenance service during the Principal Period of Maintenance designated herein and any additionally contracted periods of services incorporated by amendment hereto (said periods being hereinafter referred to as the "Contracted Period of Maintenance"). Pursuant to the above, Control Data shall:

(1) Provide scheduled preventive maintenance during the Principal Period of Maintenance or by mutual agreement during the Contracted Period of Maintenance;

(2) Specify the time required for preventive maintenance;

(3) Provide remedial maintenance service during the Contracted Period of Maintenance when notified that the equipment is inoperative;

(4) Attempt to be responsive to requests from Customer for maintenance service outside the Contracted Period of Maintenance, subject to reasonable notice and then current manpower availability; and

(5) Provide test equipment, tools, maintenance software, technical bulletins, maintenance documentation or other maintenance aids, hereinafter referred to as "Maintenance Aids", as it deems necessary for its maintenance personnel to perform the maintenance service.

b) Control Data will bear costs of labor and parts for maintaining the equipment leased from Control Data or its subsidiary in good operating condition.

c) Control Data will bear costs of labor and parts for maintaining the Customer owned equipment in good operating condition, which costs are required because of normal wear and tear of the equipment. Maintenance or repairs attributable to unauthorized attempts by Customer to repair or maintain the equipment, to catastrophe, fault or negligence of Customer, improper use or misuse of the equipment by Customer or causes external to the equipment, such as, but not limited to, power failure or air conditioning failure shall not be considered due to normal wear and tear.

d) Control Data shall, for the additional charges referred to in Article 5 c) and d) below, provide maintenance service and make required repairs to Customer owned equipment when either is required due to causes not attributable to normal wear or tear.

e) Title to all equipment and parts provided under this Schedule shall remain with Control Data except that upon installation of parts in Customer owned equipment, title to those installed parts shall pass to Customer. The replaced parts shall become the property of Control Data. Only new standard parts or parts which are warranted equivalent to new in performance shall be used in providing maintenance service.

f) If Customer, with Control Data's approval, causes modifications to be made, or accessories, attachments, features or devices not covered by this Schedule to be added to equipment being maintained by Control Data, then maintenance service shall be supplied thereon upon mutual agreement between Customer and Control Data and the total contracted monthly maintenance charges shall be adjusted accordingly by Control Data.

4. RESPONSIBILITIES OF CUSTOMER: a) Customer shall provide, free of charge and with ready access, storage space for Maintenance Aids and spare parts, working space, heat, light, ventilation, electric current and outlets for the use of Control Data's maintenance personnel.

b) Customer shall notify Control Data's maintenance personnel immediately upon equipment failure and shall allow Control Data full and free access to the equipment and the use of necessary data communications facilities and equipment at no charge to Control Data subject to Customer's industrial security rules.

c) Customer shall maintain site environmental conditions throughout the term of maintenance service identified in Article 2 above in accordance with the specifications established by Control Data for the equipment being maintained.

d) Customer's personnel shall not perform maintenance or attempt repairs to equipment while such equipment is under the purview of this Schedule, except as specified and approved by Control Data.

e) Customer shall not cause modifications to be made, or accessories, attachments, features or devices to be added to the equipment being maintained by Control Data under this Schedule without Control Data's prior written approval.

f) As a part of providing maintenance service hereunder, Control Data sponsored modifications may be made to the equipment covered hereby. Customer shall provide time for such modifications, if any, after notification by Control Data that such modification is ready to be made. Time required shall be at a time mutually agreeable to Customer and Control Data and shall be in addition to the normal preventive maintenance hours.

g) Subject to Control Data's instruction and direction, Customer shall, at its own expense and when necessary, perform the following:

(1) Certain duties and services of a housekeeping nature, such as, but not limited to, the replacement of printer and typewriter ribbons and paper,

cleaning of magnetic tape heads and vacuum chambers.

(2) Certain duties and services of a minor remedial maintenance nature, such as, but not limited to, recording error information, running operational readiness tests, and clearing halts not related to hard failures.

h) Customer understands and agrees to provide computer system resources as required for installation and utilization by Control Data of its Maintenance Aids, including but not limited to maintenance software and updates and/or modifications thereof. Upon termination of this Schedule, Customer will permit Control Data to remove any Maintenance Aids, or, with respect to Maintenance Aids taking the form of software, Customer shall certify to Control Data within thirty (30) days from the date of termination, that all copies thereof have been destroyed.

5. INVOICES, PAYMENTS AND ADDITIONAL CHARGES: a) The total contracted monthly maintenance charges for each piece of equipment specified herein shall begin on the Commencement Date, which is defined:

(1) For previously installed equipment not under Control Data's maintenance service responsibility immediately prior to the commencement of maintenance service hereunder, as the day after completion of the initial repairs and/or adjustments provided pursuant to Article 1 above;

(2) For newly installed equipment, as the installation date of equipment.

Monthly maintenance charges shall be invoiced monthly in advance. All other charges hereunder shall be invoiced after the month in which charges accrue

b) Control Data may change the monthly rates specified herein effective upon expiration of the initial one (1) year term hereunder, or at the end of any calendar month thereafter by giving at least ninety (90) days written notice. The adjusted rates, however, shall not exceed Control Data's published rates for maintenance service under this Schedule for commercial users on the effective date of the adjustment.

c) In addition to the total contracted monthly maintenance charges provided herein, Customer agrees to pay:

(1) In the case of Customer owned equipment, labor, parts and other expenses for maintenance or repair due to causes not attributable to normal wear and tear, due to the fault or negligence of Customer or due to causes reasonably within Customer's control;

(2) Labor, parts and other expenses for any repairs or adjustments deemed necessary and performed by Control Data as a result of the inspection under Article 1 above;

(3) Labor and other expenses for the performance of preventive maintenance, remedial maintenance and installation of Control Data sponsored equipment modifications performed outside the Contracted Period of Maintenance at the request of Customer;

(4) All travel expenses outside the Contracted Period of Maintenance; and

(5) Labor, parts and other expenses for Customer authorized refurbishment or overhaul of Customer owned equipment.

d) All additional charges contemplated by Article 5 c) above for labor and parts shall be at Control Data's published rates in effect at the time that the labor and parts are furnished. Charges for labor shall include travel time to and from the installation site and be computed to the nearest one-half (1/2) hour with a minimum charge per call based upon a two (2) hour period. Travel expenses shall be billable at Control Data's then current published rates and terms, and/or if commercial transportation is used, at the actual cost of such commercial transportation. Other travel costs, such as per diem, lodging, parking and tolls shall be invoiced to Customer as incurred.

6. TERMINATION OF MAINTENANCE SERVICE: a) Except as provided in Article 6 of Schedule A, maintenance service under this Schedule shall not be subject to termination, in whole or in part, by either party until the expiration of the initial one (1) year term hereunder. At any time after the expiration of this term and upon receipt of at least ninety (90) days written notice by either party, which notice may be given during said term, either party may terminate this Schedule.

b) After the initial one (1) year term and by amendment to this Agreement, Customer may change the maintenance service provided under this Schedule, to another plan then offered by Control Data to its commercial customers for the equipment specified herein with said plan being subject to termination upon receipt of at least ninety (90) days written notice by either party. In the event of such change, the published rates and terms then in effect for the maintenance plan selected shall apply.

c) If, after the initial one (1) year term, any item of Customer owned equipment being maintained under this Schedule is, in Control Data's opinion, in need of refurbishment or overhaul, Control Data shall submit to Customer a description of the necessary refurbishment and an estimate of the refurbishment charges, which shall be in addition to the total contracted monthly maintenance charges hereunder. In the event Customer does not authorize, in writing, said refurbishment within sixty (60) days from the receipt of refurbishment notice, Control Data shall: i) be relieved of maintenance responsibility for said equipment under the terms of this Agreement and ii) upon mutual agreement provide maintenance service on a time and materials basis in accordance with its published terms, conditions and charges for such services to its commercial customers.

7. PERIOD OF ON-CALL MAINTENANCE SERVICE: a) The basic monthly maintenance charges provide for on-call maintenance service during the Principal Period of

Maintenance, designated above. This period is defined as any nine (9) consecutive hours per day between the hours of 7:00 a.m. and 6:00 p.m., Mondays through Fridays, excluding local holidays.

b) By amendment to this Schedule and upon thirty (30) days prior written notice, Customer may select Extended Maintenance Coverage for Control Data equipment installed within a designated Control Data twenty-four (24) hour service area. In the event Extended Maintenance Coverage is selected, the published rates then in effect for the newly selected period of maintenance service shall apply.

8. MAINTENANCE REMEDY: Control Data's liability under this Schedule shall be limited to restoring the equipment covered by this Schedule to good operating condition.

9. PROPRIETARY RIGHTS AND COPYRIGHTS: a) Customer agrees that during the term of this Schedule and thereafter, any Maintenance Aids provided by Control Data hereunder, including but not limited to maintenance software, are the property of Control Data and are proprietary to it and Customer agrees to keep confidential and to utilize its best efforts to prevent and protect the contents of these Maintenance Aids or any part thereof, from unauthorized disclosure by its agents, employees or customers.

b) Customer agrees that it will not make or have made copies of any Maintenance Aid or part thereof without the prior written consent of Control Data provided, however, that where Maintenance Aids are installed as part of the Customer's operating system, Customer may make necessary copies of said Maintenance Aids for use as provided in this Schedule. Each copy shall have proprietary notices and legends affixed as prescribed by Control Data. The existence of a copyright notice shall not cause, or be construed as causing any Maintenance Aid to be a published copyrighted work or to be in the public domain.

CONTROL DATA CORPORATION

SCHEDULE K
EDUCATION AND TRAINING

Customer agrees to purchase and Control Data agrees to furnish the training services listed below, in accordance with the terms and conditions contained in this Schedule and all other terms and conditions contained in this Agreement, including specifically Article 4, Disclaimer of Warranty and Limitation of Remedies, of Schedule A:

1. COURSES TO BE CONDUCTED

Product Number	Course Name	Course Price	Course* Location	Course Duration (Days)	Class Maximum

*
L — Control Data provided facility
S — Customer provided facility

2. COMMENCEMENT OF COURSES: The sequence of courses described in this Schedule may begin within _____ ( ) days from the date this Schedule is accepted by Control Data and on a date mutually agreeable between Customer and Control Data. Further, the courses will be conducted during normal working days excluding holidays, and class starting time shall be upon mutual agreement between Customer and Control Data.

3. STUDENT ENROLLMENT: Customer may enroll any of its personnel in any training class described in this Schedule providing the attendant meets the Control Data defined course prerequisites. Qualified students may be enrolled at any time up to the commencement of training, subject to the availability of class space. Student enrollment in excess of the number specified in this Schedule shall be upon mutual agreement, including charges therefore, between Customer and Control Data.

4. COURSE CONTENT AND INSTRUCTION: The content of each course described in this Schedule shall be established by Control Data and may be changed by Control Data when, in its judgment, such change is warranted. Variations in or from the established course content requested by Customer shall be considered by Control Data and, upon mutual agreement and for any additional consideration specified therein, offered as part of the courses described in this Schedule. Control Data shall provide sufficient personnel, in Control Data's judgment, to conduct said courses and will furnish, at no additional cost to Customer, such instructional aids as it deems appropriate for each course, including books, pamphlets and diagrams.

5. COURSE LOCATION: For courses listed in this Schedule to be conducted at a Customer provided facility, Customer shall pay to Control Data, in addition to the charges above:

CDC Contract No._____

a) All costs of transporting Control Data's training personnel and instructional aids and materials to and from such facility.

b) If Control Data's personnel are required to be away from their normal base of operation for more than twenty-four (24) hours, the then current per diem and lodging allowances for such Control Data personnel, and,

c) Customer shall arrange for and provide, at no cost to Control Data, proper facilities at which the courses can be conducted and the Customer shall allow Control Data reasonable access to such facility and shall also provide, at no cost to Control Data, any necessary equipment, as specified by Control Data, required for training purposes in accordance with the class schedules.

Customer shall pay all travel and any other related costs incurred by its personnel while attending any Control Data course.

6. CLASS CANCELLATION: Either party may cancel one or more of the courses described in this Schedule for any reason by giving the other party written notice of its election to cancel at least thirty (30) days prior to the scheduled commencement date of the course to be cancelled. However, Customer shall reimburse Control Data for all costs incurred in the development of non-standard courses designated under this Schedule (identified by the prefix QST) if said courses are cancelled by Customer. Such cancellation shall not relieve either party of any other obligation under this Schedule with respect to courses not cancelled.

7. STUDENT DISMISSAL: Control Data shall have the right to refuse continued instruction and training of any student who fails to follow Control Data's training rules, regulations and requirements. Such dismissal shall not relieve Customer of his obligation to make payment in the amount set forth above.

8. PROPRIETARY INFORMATION: Customer agrees that any proprietary information furnished by Control Data to Customer or its employees under this Schedule will not be further published or otherwise transmitted to any third parties by Customer or its employees, without Control Data's prior written consent.

9. NOTICE OF COMPLETION: At the completion of the respective training class, Control Data shall inform Customer in writing of those students who have, in Control Data's judgment, satisfactorily completed the training class.

10. LIMITATION OF REMEDY. Control Data makes no guarantees, representations or warranties with respect to the results of the training services provided hereunder, including, without limitation, the level of competence attained by the students enrolled in the courses described in this Schedule. Control Data shall refund to Customer an equitable amount not to exceed the total amount paid by Customer to Control Data for any course as to which Control Data fails to fulfill its obligations under this Schedule.

11. INVOICES: Control Data will invoice Customer upon commencement of each course described in this Schedule.

CONTROL DATA CORPORATION

CONTROL DATA CORPORATION

8100 34th Avenue South
Minneapolis, Minnesota 55440

AGREEMENT FOR LEASE AND MAINTENANCE OF CONTROL DATA TERMINAL PRODUCTS

CUSTOMER NAME _____

ADDRESS _____ CITY _____ STATE _____ ZIP CODE _____

INSTALLATION ADDRESS _____ CITY _____ STATE _____ ZIP CODE _____

(hereinafter referred to as Customer) hereby agrees to lease from CONTROL DATA CORPORATION (hereinafter referred to as Control Data) and Control Data by its acceptance and execution hereof at Minneapolis, Minnesota, agrees to lease to Customer at the place of installation indicated above, the following listed Equipment and to provide the Maintenance Service hereinafter indicated for the charges and IN ACCORDANCE WITH THE TERMS AND CONDITIONS ON THE REVERSE SIDE HEREOF, INCLUDING SPECIFICALLY ARTICLE 6, DISCLAIMER OF WARRANTY AND LIMITATION OF REMEDIES:

		MONTHLY CHARGES				SCHEDULED
		RENTAL		BASIC MAINTENANCE		INSTALLATION
QTY.	MODEL NO. & DESCRIPTION	UNIT	TOTAL	UNIT	TOTAL	DATE

Principal Period of On-Call Maintenance

From _____ To _____
Nine (9) consecutive hours per day between the hours of 7:00 a.m. and 6:00 p.m., Mondays through Fridays, excluding local holidays.

Rental Charges _____
Maintenance Charges _____
*Maintenance Zone Charges _____
Total Monthly Charges _____
*Applicable to sites located beyond a radius of fifty (50) miles from the nearest Control Data Service Center Address.

CUSTOMER HAS READ THIS AGREEMENT AND ACKNOWLEDGES THAT IT UNDERSTANDS THIS AGREEMENT AND IS BOUND HEREBY.

AGREED TO

BY: _____

TITLE: _____

DATE: _____

CONTROL DATA CORPORATION
8100 34th Avenue South
Minneapolis, Minnesota 55440

BY: _____

TITLE: _____

EFFECTIVE DATE OF AGREEMENT: _____

CDC CONTRACT NO: _____

AA6202
7/76

TERMS AND CONDITIONS

1. TERM: This Agreement shall become effective when accepted and executed by Control Data and shall continue for an initial term of one (1) year from the date Monthly charges commence with respect to the initial Equipment installed hereunder and shall thereafter remain in effect until terminated as provided in Article 10 or 11 below.

2. INSTALLATION: Equipment shall be installed, ready for use, by Control Data. Customer shall, at its expense, have the site prepared, including all necessary cables or other connections, in accordance with Control Data's written specifications, within a reasonable time prior to the Scheduled Installation Date.

3. INVOICES AND CHARGES: Separate invoices for Rental and Maintenance Charges will be issued monthly in advance, commencing with the date Control Data notifies Customer that the Equipment is installed and shall be due and payable thirty (30) days after date of invoice. Monthly Charges for fractional parts of a calendar month shall be computed at the rate of 1/30th of the monthly rate for each day. The Monthly Charges specified herein may be changed effective upon the expiration of the initial term of this Agreement or at the end of any calendar month thereafter, by Control Data giving at least thirty (30) days written notice, but in no event will said adjusted rates exceed Control Data's then current published rates for commercial users.

The following additional charges will be invoiced to Customer as they occur: a) transportation and other related charges for shipping Equipment to and from Control Data's place of manufacture and between Customer's sites; b) all taxes (exclusive of personal property taxes on Control Data owned equipment and net income taxes) however designated, or amounts legally levied in lieu thereof, based on or measured by the charges set forth in this Agreement, or on the Equipment, its use or lease, and the services defined herein, now or hereafter imposed by any taxing authority having jurisdiction thereover; c) labor and travel expenses for the performance of Maintenance Service outside the Contracted Period of Maintenance at the request of Customer, such expense to be invoiced at Control Data's then current published rates and to include such costs as per diem, lodging, parking and tolls.

4. WARRANTIES: Control Data warrants that the Equipment will be in good operating condition when installed. Customer recognizes, however, that some of the Equipment may not be newly manufactured or may be comprised in part of used components. Control Data shall, for the total Contracted Monthly Maintenance Charges, maintain the Equipment in good operating condition and furnish on-call maintenance during the Principal Period of Maintenance designated herein and any additionally contracted periods of services incorporated by amendment hereto, in accordance with the Control Data maintenance policy then in effect.

5. PATENTS: Control Data will defend any suit or proceeding brought against Customer so far as based upon a claim that the Equipment furnished by Control Data constitutes an infringement of any patent of the United States, if notified promptly in writing and given authority, information and assistance (at Control Data's expense) for the defense of such suit or proceeding, and will pay all damages and costs awarded therein against Customer. In the event the Equipment, or any part thereof, is enjoined, Control Data shall, at its own expense and at its option, either procure for Customer the right to continue using the Equipment or replace the same with non-infringing equipment, or modify it so it becomes non-infringing, or remove the Equipment at no cost to Customer except for Monthly Charges up until such time as Customer is enjoined from using such Equipment, or any part thereof, or until the Equipment is removed. Control Data shall not be liable to Customer under any provision of this Article if any patent infringement or claim thereof, is based upon the use of the Equipment or any part thereof, in connection with Equipment, Software or devices not delivered by Control Data in a manner for which the Equipment was not designed.

6. DISCLAIMER OF WARRANTY AND LIMITATION OF REMEDIES: CUSTOMER UNDERSTANDS AND AGREES AS FOLLOWS:

a) THE EXPRESS WARRANTIES SET FORTH IN THIS AGREEMENT ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND ALL SUCH OTHER WARRANTIES ARE HEREBY DISCLAIMED AND EXCLUDED BY CONTROL DATA.

b) CONTROL DATA SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE CAUSED BY DELAY IN FURNISHING EQUIPMENT, SERVICES OR ANY OTHER PERFORMANCE UNDER OR PURSUANT TO THIS AGREEMENT.

c) THE SOLE AND EXCLUSIVE REMEDIES FOR BREACH OF ANY AND ALL WARRANTIES AND THE SOLE REMEDIES FOR CONTROL DATA'S LIABILITY OF ANY KIND (INCLUDING LIABILITY FOR NEGLIGENCE) WITH RESPECT TO THE EQUIPMENT AND SERVICES COVERED BY THIS AGREEMENT AND ALL OTHER PERFORMANCE BY CONTROL DATA UNDER OR PURSUANT TO THIS AGREEMENT SHALL BE LIMITED TO RESTORING THE EQUIPMENT TO GOOD OPERATING CONDITION AT NO CHARGE TO CUSTOMER, OR, IN THE CASE OF PATENT CLAIMS, THE REMEDIES CONTAINED IN ARTICLE 5 ABOVE, AND IN NO EVENT SHALL CONTROL DATA'S LIABILITY OF ANY KIND INCLUDE ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, EVEN IF CONTROL DATA SHALL HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH POTENTIAL LOSS OR DAMAGE.

7. RISK OF LOSS OR DAMAGE: Control Data assumes all risk of loss or damage to the Equipment while the Equipment is in Customer's possession, with the exception of loss or damage caused by nuclear radiation, reaction or contamination.

8. TITLE: Title to the Equipment is and at all times shall remain in Control Data, provided that if Customer exercises its option under Article 11 below, title to equipment purchased shall pass in accordance with Control Data's applicable Agreement for the Sale of Equipment.

9. CUSTOMER RESPONSIBILITIES: a) Customer agrees to notify Control Data immediately upon Equipment failure, to allow full and free access to the Equipment, to allow reasonable use of necessary data communications facility and related Equipment at no charge, to maintain site environmental conditions in accordance with Control Data Equipment specifications and to refrain from maintaining or attempting repairs to Equipment except as specified and approved by Control Data in advance. b) Customer agrees not to employ or use additional attachments, features or devices on, or to make changes or alterations to Equipment without the written consent of Control Data in each case. c) Customer agrees not to remove the Equipment from the Installation Site, except in an emergency, without the prior written concent of Control Data, which consent shall not be unreasonable withheld.

10. TERMINATION: Except as provided herein, this Agreement shall not be subject to termination in whole or in part by either party until the expiration of the initial term of this Agreement. At any time after the expiration of said initial term and upon receipt of at least thirty (30) days written notice by either party, this Agreement may be terminated. Notwithstanding the above, if Customer petitions for relief under the Bankruptcy Act, or if any involuntary petition thereunder should be filed against Customer, and the same be not dismissed within thirty (30) days, or if Customer makes an assignment for the benefit of creditors, or if Customer defaults in the payment of any sum due under this Agreement, then Control Data shall, without further notice, have the immediate right to terminate this Agreement and enter upon Customer's premises to repossess and remove the Equipment. Customer's obligations to pay all charges which shall have accrued shall survive any termination of this Agreement. In addition, Control Data's termination of this Agreement or such taking of possession shall be without prejudice to any other remedies Control Data may have including, without limitation, all remedies with respect to the unperformed balance of this Agreement.

11. OPTION TO PURCHASE: Customer may at any time purchase the Equipment, or units thereof, in accordance with the terms of Control Data's Agreement for the Sale of Equipment then in effect, the consideration of said purchase to be the published list price for commercial users, subject to the applicable purchase option credits to be calculated in accordance with Control Data's published Purchase Option Policy then in effect.

12. GENERAL TERMS: Neither party shall have the right to assign or otherwise transfer its rights and obligations under this Agreement except with the written consent of the other party, provided, however, that a successor in interest by merger, by operation of law, assignment, purchase or otherwise of the entire business of either party, shall acquire all interest of such party hereunder, and Control Data shall be entitled to assign all or part of the payments under this Agreement to, or sell the Equipment (subject to Customer's rights under this Agreement) to any person or organization in its own right or as agent of trustee. Any prohibited assignment shall be null and void. This Agreement shall be governed by the laws of the State of Minnesota.

THIS AGREEMENT SUPERSEDES ALL PROPOSALS, ORAL OR WRITTEN, AND ALL NEGOTIATIONS, CONVERSATIONS OR DISCUSSIONS HERETOFORE HAD BETWEEN THE PARTIES RELATED TO THIS AGREEMENT. CUSTOMER ACKNOWLEDGES THAT IT HAS NOT BEEN INDUCED TO ENTER INTO THIS AGREEMENT BY ANY REPRESENTATIONS OR STATEMENTS, ORAL OR WRITTEN, NOT EXPRESSLY CONTAINED HEREIN. THE TERMS AND CONDITIONS OF THIS AGREEMENT SHALL PREVAIL, NOTWITHSTANDING ANY VARIANCE WITH THE TERMS AND CONDITIONS OF ANY ORDER OR OTHER INSTRUMENT SUBMITTED BY CUSTOMER. THIS AGREEMENT SHALL NOT BE DEEMED OR CONSTRUED TO BE MODIFIED, AMENDED, RESCINDED, CANCELLED OR WAIVED IN WHOLE OR IN PART, EXCEPT BY WRITTEN AMENDMENT BY THE PARTIES HERETO. NO ACTION, REGARDLESS OF FORM, ARISING OUT OF THE TRANSACTIONS UNDER THIS AGREEMENT, MAY BE BROUGHT BY EITHER PARTY MORE THAN TWO (2) YEARS AFTER THE CAUSE OF ACTION HAS ACCRUED.

CONTROL DATA CORPORATION

CONTROL DATA CORPORATION

8100 - 34th Avenue South
P. O. Box 0
Minneapolis, Minnesota 55440

AMENDMENT NO._____ TO CDC CONTRACT NO._____

AGREEMENT FOR CONTROL DATA EQUIPMENT, PRODUCTS AND RELATED SERVICES

CUSTOMER NAME _____

STREET ADDRESS _____

CITY _____ STATE _____

Customer and Control Data agree that the above referenced Agreement is hereby amended as follows:

Except as provided above, all terms and conditions of the above referenced Agreement shall remain in full force and in effect.

AGREED TO:

BY _____

TITLE _____

DATE _____

ACCEPTED BY:

CONTROL DATA CORPORATION
8100 - 34th Avenue South
P. O. Box 0
Minneapolis, Minnesota 55440

BY _____

TITLE _____

DATE _____

AA 1958
REV. 5/79

PRINTED IN U.S.A.

CONTROL DATA CORPORATION

8100 - 34th Avenue South
Minneapolis, Minnesota 55440

MAINTENANCE SERVICES AMENDMENT

Amendment No. _____ To CDC Contract _____

Effective Date: _____

CUSTOMER NAME _____

STREET ADDRESS _____

CITY _____ STATE _____

In consideration of the mutual promises and agreements contained herein, including the additional charges listed below and upon completion of the reverse side of this form, Control Data and Customer mutually agree that Schedule D ☐ or J ☐ of this Agreement shall be amended as designated below.

Extended Maintenance Service

☐ Option 1 Extends maintenance service to sixteen (16) consecutive hours per day, Mondays through Fridays, excluding local holidays.

☐ On-Call ☐ On-Site

Hours: From _____ To _____

☐ Option 2 Extends maintenance service to twenty-four (24) hours per day, Mondays through Fridays, excluding local holidays.

☐ On-Call ☐ On-Site

☐ Saturday _____ hours
☐ Sunday _____ hours

Extends maintenance service to Saturday and/or Sunday, excluding local holidays, for the hours indicated.

Hours: Saturday From _____ To _____ ☐ On-Call ☐ On-Site

Sunday From _____ To _____ ☐ On-Call ☐ On-Site

Modified Principal Period

☐ Modified PPM: Any nine (9) consecutive hours per day between the hours of 5:00 a.m. and 8:00 p.m., Mondays through Fridays, excluding local holidays.

☐ On-Call ☐ On-Site

Hours: From _____ To _____

On-Site Maintenance

☐ PPM: Provides on-site coverage for nine (9) consecutive hours per day between the hours of 7:00 a.m. and 6:00 p.m., Mondays through Fridays, excluding local holidays. The assignment of on-site maintenance engineers means that the site of installation is their assigned work station and does not commit these engineers to attendance during the entire on-site period. The installation site will, however, have priority of the engineer's services.

Hours: From _____ To _____

EXTENDED MAINTENANCE PERIODS AND CHARGES

Model Number	Extended Maintenance Product Group	Product Group A Total Basic Monthly Maintenance Charge*	Product Group B Total Basic Monthly Maintenance Charge*	Product Group C Total Basic Monthly Maintenance Charge*	Product Group D Total Basic Monthly Maintenance Charge*
Total Group Basic Monthly Maintenance Charges					
Option Percent					
Group Extended Monthly Maintenance Charges (Enter Below)					

*Refer to face page of Schedule being amended for total BMM Charge per product.

Summary of Extended Maintenance Charges

Product Group A _____
Product Group B _____
Product Group C _____
Product Group D _____

Total Extended On-Call*
Monthly Maintenance Charges _____

*Enter in Summary of Monthly Maintenance Charges.

Summary of Monthly Maintenance Charges

Total Basic Monthly Maintenance Charges (From face page of Schedule D/J) $ _____
Total Extended On-Call Monthly Charges $ _____
Modified PPM Charges $ _____
On-Site Charges $ _____

Total Additional Monthly Maintenance Charges $ _____

Total Contracted Monthly Maintenance Charges $ _____

Except as provided above, all terms and conditions of the above referenced Agreement shall remain in full force and in effect.

AGREED TO:

BY _____

TITLE _____

DATE _____

ACCEPTED BY:

CONTROL DATA CORPORATION
8100 34th Avenue South
Minneapolis, Minnesota 55440

BY _____

TITLE _____

DATE _____

CONTROL DATA CORPORATION

CONTROL DATA CORPORATION

8100 — 34th Avenue South
Minneapolis, Minnesota 55440

MAINTENANCE SERVICES AMENDMENT
(Zone Charges)

Amendment No._____ To CDC Contract_____

Effective Date:_____

CUSTOMER NAME_____

STREET ADDRESS_____

CITY_____ STATE_____

In consideration of the mutual promises and agreements contained herein, Control Data and Customer mutually agree that Schedule D of this Agreement shall be amended (A) to add zone charges for the following products listed on the face page thereof and (B) to replace (4) of Article 5 c) thereof, each as follows:

(A) Qty.	Model & Description	Unit BMM Charge	Total BMM Charge	Zone Adder %	Monthly Zone Adder

Total Monthly Zone Charges:_____

(B) (4) of Article 5 c) is deleted in its entirety and the following inserted therefor:

"(4) All travel expenses outside the Contracted Period of Maintenance; and"

Except as provided above, all terms and conditions of the above referenced Agreement shall remain in full force and in effect.

AGREED TO:

BY_____

TITLE_____

DATE_____

ACCEPTED BY:

CONTROL DATA CORPORATION
8100 — 34th Avenue South
Minneapolis, Minnesota 55440

BY_____

TITLE_____

DATE_____

CONTROL DATA CORPORATION

CONTROL DATA CORPORATION

8100 — 34th Avenue South
Minneapolis, Minnesota 55440

MAINTENANCE SERVICES AMENDMENT
(Maintenance Aids)

Amendment No._____ To CDC Contract No._____

Effective Date:_____

CUSTOMER NAME_____

STREET ADDRESS_____

CITY_____ STATE_____ ZIP_____

In consideration of the mutual promises and agreements contained herein, Control Data and Customer mutually agree that Schedule_____of this Agreement shall be amended as follows:

1. Add the following as a responsibility of Control Data:

   "Control Data shall provide test equipment, tools, maintenance software, technical bulletins, maintenance documentation or other maintenance aids, hereinafter referred to as "Maintenance Aids", as it deems necessary for its maintenance personnel to perform the maintenance service."

2. Add the following as a responsibility of Customer:

   "Customer understands and agrees to provide computer system resources as required for installation and utilization by Control Data of its Maintenance Aids, including but not limited to maintenance software and updates and/or modifications thereof. Upon termination of this Schedule, Customer will permit Control Data to remove any Maintenance Aids, or, with respect to Maintenance Aids taking the form of software, Customer shall certify to Control Data within thirty (30) days from the date of termination, that all copies thereof have been destroyed."

3. Add the following as a new article:

   "PROPRIETARY RIGHTS AND COPYRIGHTS: a) Customer agrees that during the term of this Schedule and thereafter, any Maintenance Aids provided by Control Data hereunder, including but not limited to maintenance software, are the property of Control Data and are proprietary to it and Customer agrees to keep confidential and to utilize its best efforts to prevent and protect the contents of these Maintenance Aids or any part thereof, from unauthorized disclosure by its agents, employees or customers.

   b) Customer agrees that it will not make or have made copies of any Maintenance Aid or part thereof without the prior written consent of Control Data provided, however, that where Maintenance Aids are installed as part of the Customer's operating system, Customer may make necessary copies of said Maintenance Aids for use as provided in this Schedule. Each copy shall have proprietary notices and legends affixed as prescribed by Control Data. The existence of a copyright notice shall not cause, or be construed as causing any Maintenance Aid to be a published copyrighted work or to be in the public domain."

Except as provided above, all terms and conditions of the above referenced Agreement shall remain in full force and in effect.

AGREED TO

BY_____

TITLE_____

DATE_____

ACCEPTED BY:

CONTROL DATA CORPORATION
8100 — 34th Avenue South
Minneapolis, Minnesota 55440

BY_____

TITLE_____

DATE_____

AA5806-2
REV. 2/78

CONTROL DATA CORPORATION

CONTROL DATA CORPORATION

8100-34th Avenue South
P.O. Box 0
Minneapolis, Minnesota 55440

MAINTENANCE SERVICES AMENDMENT — SUBSYSTEMS EQUIPMENT
(Usage Charges)

Amendment No. _____ To CDC Contract _____

Effective Date: _____

CUSTOMER NAME _____

STREET ADDRESS _____

CITY _____ STATE _____ ZIP _____

In consideration of the mutual promises and agreements contained herein, Control Data and Customer mutually agree that Schedule J of this Agreement shall be amended with respect to the Model 32111-1 Printer Subsystem Equipment listed herein. The following changes to the terms and conditions of the Schedule shall apply only to this Equipment:

1. The following Equipment is added to the face page thereof:

Qty.	Model & Decription	Unit Basic Mo. Maint. Charge	Total Basic Mo. Maint. Charge

2. Article 4. Responsibilities of Customer, is revised by adding the following provision as a new paragraph i) thereof:

   i) Customer, on the last day of each calendar month, shall record on the Meter Reading Log provided by Control Data, the line meter reading for each Model 32111-1 Printer listed above.

3. Article 5, Invoices, Payments and Additional Charges, is revised by adding the following provision as a new paragraph e) thereof:

   e) The Model 32111-1 Printer Subsystem has been designated as a limited use device and as such, Customer agrees to pay an additional monthly charge of $ _____ per million lines of print, or any additional part thereof, in excess of fifteen (15) million lines of print per calendar month. Such charges shall be invoiced quarterly after the calendar quarter in which they accrue. Said additional charge shall not apply for those customers contracting for maintenance coverage of twenty-four (24) hours per day, seven (7) days per week.

4. Paragraph c) of Article 6, Termination of Maintenance Service, is not applicable for the Equipment listed above.

5. The periods of maintenance coverage selected below by Customer, and the additional charges, if applicable, are as follows:

   1) ☐ Principal Period of Maintenance or;

   2) ☐ Option — Extends maintenance service to twenty-four (24) hours per day, seven (7) days per week, excluding local holidays.

   Total additional Monthly Maintenance Charges for Option $ _____

   Total Contracted Monthly Maintenance Charges $ _____

Except as provided above, all terms and conditions of the above referenced Agreement shall remain in full force and in effect.

AGREED TO:

BY _____

TITLE _____

DATE _____

ACCEPTED BY:

CONTROL DATA CORPORATION
8100-34th Avenue South
P.O. Box 0
Minneapolis, Minnesota 55440

BY _____

TITLE _____

DATE _____

AA5806-3 6 79 (Printed in USA)

CONTROL DATA CORPORATION

CONTROL DATA CORPORATION

8100-34th Avenue South
P.O. Box 0
Minneapolis, Minnesota 55440

MAINTENANCE SERVICES AMENDMENT—SUBSYSTEMS EQUIPMENT
(Special Coverage)

Amendment No. _____ To CDC Contract _____
(Effective Date: _____)

CUSTOMER NAME _____

STREET ADDRESS _____

CITY _____ STATE _____ ZIP _____

In consideration of the mutual promises and agreements contained herein, Control Data and Customer mutually agree that Schedule J of this Agreement shall be amended with respect to the Model 331XX-AXX and or 3303X-AXX Memory Equipment listed herein. The following changes to the terms and conditions of the Schedule shall apply only to this Equipment:

1. The following Equipment is added to the face page thereof:

Qty.	Model & Description	Unit Basic Monthly Maintenance Charge	Total Basic Monthly Maintenance Charge

2. Article 3a) is revised by adding the following provision after the first sentence thereof:

   For purposes of this Amendment, the Contracted Period of Maintenance is defined as twenty-four (24) hours per day, seven (7) days per week, excluding local holidays.

3. Article 7, Period of On-Call Maintenance Service, is revised by replacing paragraphs a) and b) with the following provision:

   The basic monthly maintenance charges provide for on-call maintenance service during the Contracted Period of Maintenance, provided the equipment is installed within a designated Control Data twenty-four (24) hour service area.

Except as provided above, all terms and conditions of the above referenced Agreement shall remain in full force and in effect.

AGREED TO:

BY _____
TITLE _____
DATE _____

ACCEPTED BY:

CONTROL DATA CORPORATION
8100-34th Avenue South
P.O. Box 0
Minneapolis, Minnesota 55440

BY _____
TITLE _____
DATE _____

SECTION I

CDC 41342

THIS SET IS COMPOSED OF TWO SECTIONS

1. BEFORE TYPING, SEPARATE SECTION 1 FROM SECTION 2.
2. LEAVE CARBONS IN SECTION 1 INTACT UNTIL ALL SIGNATURES ARE AFFIXED.
3. THE PURCHASER NEED ONLY SIGN ONCE, PROVIDED THE CARBON TRANSFER OF THE SIGNATURE APPEARS LEGIBLY ON THE REMAINING COPIES.
4. INSERT CARBONS IN SECTION 2 IF ADDITIONAL EQUIPMENT LISTING SPACE IS REQUIRED.

FOR USE IN AL, AR, CA, CO, CT, DE, FL, GA, ID, IL, IN, IA, KS, KY, MD, ME, MA, MI, MN, MS, MO, NV, NH, NJ, NM, NY, NC, OK, OR, PA, RI, SC, SD, TN, TX, UT, VA, VT, WA, WV, WI, WY, DC.

CONTROL DATA CORPORATION

CONTROL DATA CORPORATION
8100 - 34th Avenue South
P.O. Box 0
Minneapolis, Minnesota 55440

INSTALLMENT SALE OF EQUIPMENT AND SECURITY AGREEMENT

CUSTOMER NAME _____

STREET ADDRESS _____

CITY _____ STATE _____ ZIP _____

SITE OF INSTALLATION _____

The above named Customer, having been quoted both a Cash Purchase Price and a Time Purchase Price, agrees to purchase and Control Data Corporation ("Control Data") agrees to furnish the equipment listed below (the "Equipment"), in accordance with the terms and conditions contained in this Agreement, including, without limitation, Article 4, Disclaimer of Warranty and Limitation of Remedies.

QTY.	MODEL & DESCRIPTION	UNIT PRICE	EXTENSION	SCHEDULED INSTALLATION DATE

PAYMENT SCHEDULE

(A) Equipment Cash Purchase Price	$ _____
(B) Down Payment-Cash ( ) trade-in ( )	$ _____
(C) Unpaid Cash Balance (line "A" minus line "B")	$ _____
(D) Other (specify)	$ _____
(E) Subtotal (line "C" plus line "D")	$ _____
(F) Financing Charge	$ _____
(G) Time Payment Balance (line "E" plus line "F")	$ _____
(H) Time Sale Price (line "B" plus line "G")	$ _____

Possession, title and control of any trade-in constituting a portion of the Down Payment shall be delivered to Control Data at _____ at Customer's expense, no later than _____ 19____. Customer agrees to pay any cash Down Payment at a time not later than the Installation Date. Thereafter, Customer agrees to pay the Time Payment Balance in _____ consecutive monthly installments of _____ each, commencing with the first installment due on the first day of the month following the Installation Date and all succeeding payments due on the same day of each month thereafter, with interest accruing, at the option of Control Data without notice, on overdue installments until paid at the highest rate of interest then permitted under applicable law. Payments of the Down Payment and Time Payment Balance shall be due and payable to Control Data according to the schedule herein set forth whether or not invoices therefor are received. Applicable taxes, including sales tax pursuant to Article 2 shall be invoiced with the first installment or as soon thereafter as practicable.

CUSTOMER HAS READ THIS AGREEMENT AND ACKNOWLEDGES THAT IT UNDERSTANDS THIS AGREEMENT AND IS BOUND HEREBY.

AGREED TO:

BY _____

TITLE _____

DATE _____

ACCEPTED BY:

CONTROL DATA CORPORATION
8100 - 34th Avenue South
P.O. Box 0
Minneapolis, Minnesota 55440

BY _____

TITLE _____

DATE _____

CDC Contract No. _____

AA6150
Rev. 8/79 (Printed in U.S.A.)

1. PERIOD AND SCOPE OF AGREEMENT: This Agreement shall become effective upon the date accepted and signed by Control Data.

2. TAXES: Customer shall pay (or reimburse Control Data) in addition to all charges specified in this Agreement, as a separate item, all taxes, however designated, or amounts legally levied in lieu thereof, based on or measured by charges set forth in this Agreement, or on the Equipment, products and services or their use now or hereafter imposed under the authority of a federal, state or local taxing jurisdiction.

3. INVOICES: Invoices issued pursuant to Articles 2, 6, 9 and 12 of this Agreement shall be due and payable within fifteen (15) days after date of invoice.

4. DISCLAIMER OF WARRANTY AND LIMITATION OF REMEDIES: CUSTOMER UNDERSTANDS AND AGREES AS FOLLOWS:

a) THE EXPRESS WARRANTIES SET FORTH IN THIS AGREEMENT ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND ALL SUCH OTHER WARRANTIES ARE HEREBY DISCLAIMED AND EXCLUDED BY CONTROL DATA.

b) CONTROL DATA SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE CAUSED BY DELAY IN FURNISHING THE EQUIPMENT, PRODUCTS, SERVICES OR ANY OTHER PERFORMANCE UNDER OR PURSUANT TO THIS AGREEMENT.

c) THE SOLE AND EXCLUSIVE REMEDIES FOR BREACH OF ANY AND ALL WARRANTIES AND THE SOLE REMEDIES FOR CONTROL DATA'S LIABILITY OF ANY KIND (INCLUDING LIABILITY FOR NEGLIGENCE) WITH RESPECT TO THE EQUIPMENT, PRODUCTS AND SERVICES COVERED BY THIS AGREEMENT AND ALL OTHER PERFORMANCE BY CONTROL DATA UNDER OR PURSUANT TO THIS AGREEMENT SHALL BE LIMITED TO THE REMEDIES PROVIDED IN ARTICLES 5 AND 9 HEREOF.

d) IN NO EVENT SHALL CONTROL DATA'S LIABILITY OF ANY KIND INCLUDE ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, EVEN IF CONTROL DATA SHALL HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH POTENTIAL LOSS OR DAMAGE.

5. PATENTS AND COPYRIGHTS: Control Data will defend any suit or proceeding brought against Customer so far as based on a claim that the Equipment, or any part thereof manufactured by or for Control Data, constitutes an infringement of any patent or copyright of the United States, if notified promptly in writing of any claim of infringement, and given authority, information, and assistance (at Control Data's expense) to handle the claim and for the defense of any suit or proceeding, and will pay all damages and costs awarded therein against Customer. In case the Equipment, or any part thereof, is in such suit held to constitute an infringement and the use of the Equipment, or any part thereof, is enjoined, Control Data shall, at its own expense and at its option, either procure for Customer the right to continue using the Equipment, or any part thereof, or replace same with a non-infringing product, or modify it so it becomes non-infringing or grant Customer a credit for such Equipment or part in accordance with the applicable Control Data depreciation policy in effect at the time and accept its return.

Control Data shall not be liable to Customer under any provision of this Article, if any patent or copyright infringement or claim thereof, is based upon the use of the Equipment, or any part thereof, in connection with equipment or devices not delivered by Control Data, or in a manner for which the Equipment, or any part thereof was not designed, or where the Equipment, or any part thereof, has been modified by or for Customer in a manner to become infringing.

6. TRANSPORTATION AND INVOICES: Control Data shall make all arrangements for the transportation service and prepay the transportation service charges for shipment of the Equipment to its specific operating location at the site of installation. Control Data shall invoice the transportation service charges based on individual shipment weight and the established rates in published tariffs, filed with the appropriate state and federal regulatory agencies or commissions. The methods of shipment and packaging shall be in accordance with Control Data's standards, consistent with the nature of the equipment and the hazards of transportation and handling.

Invoices for the Equipment and all other charges shall be rendered upon shipment of Equipment or as soon thereafter as practicable.

7. RISK OF LOSS OR DAMAGE, TITLE: Customer shall be relieved of all risk of loss or damage to the Equipment with the exception of loss or damage caused by nuclear radiation, reaction or contamination, during delivery and while the Equipment is being installed. From and after completion of installation, Customer assumes all risk of physical loss or damage to the Equipment. Title to the Equipment shall transfer to Customer upon shipment by Control Data.

8. INSTALLATION: The Equipment will be installed, ready for use, by Control Data without additional charge. Customer shall, at its expense, have the site prepared in accordance with Control Data's written specifications thirty (30) days before the scheduled Installation Date to enable Control Data to promptly deliver and begin installing the Equipment. The date on which Control Data notifies Customer that the Equipment is installed, ready for use, shall be the Installation Date for all purposes of this Agreement.

9. WARRANTY: a) Control Data warrants for a period of one (1) year from the Installation Date that the Equipment, (excepting expendable components such as solid state components, capacitors, etc.) will be free from defects in materials and workmanship. Control Data's sole obligation in the event of breach of such warranty shall be repair or replacement of the defective Equipment, at no charge to Customer, except for labor costs for repair or removal of the defective Equipment and installation of any replacement Equipment, and transportation charges for delivery of the replacement and return of the defective Equipment. Replaced parts shall become the property of Control Data.

b) Control Data shall have no obligation under this Article to provide maintenance or make repairs or replacements required through normal wear and tear or necessitated in whole or in part by catastrophe, fault or negligence of the user, improper or unauthorized use of the Equipment by user, or by causes external to the Equipment, such as, but not limited to, power failure or air-conditioning failure.

c) Individual items of Equipment may not be newly manufactured. Equipment which is not newly manufactured, is warranted equivalent to new in performance. Equipment which is newly manufactured, may consist in part of used components which are warranted equivalent to new in performance when used in the Equipment.

10. SECURITY INTEREST: Customer hereby grants and agrees that Control Data shall have a security interest in the Equipment (and any other equipment which Customer may in the future purchase from Control Data) and the proceeds

thereof, replacements and additions thereto, and substitutions therefor, until all sums due under this Agreement (or under any future Agreement between the parties), are fully paid; Control Data shall have all the rights and remedies of a Secured Party under the Uniform Commercial Code.

11. EQUIPMENT PROTECTION: So long as Control Data retains above-mentioned Security Interest:

a) Customer shall maintain the Equipment in good condition and repair.

b) Customer will keep the Equipment free and clear of any and all taxes, encumbrances, liens, and/or claims by third parties and shall not do, or permit to be done, anything that may impair the value of the Equipment.

c) Customer will obtain, keep in force, and deliver to Control Data a policy of fire, theft, and combined additional coverage or comprehensive insurance covering Equipment; said insurance will be endorsed to make the same payable first to Control Data as its interests may appear, and shall be in form, amount and written by insurers satisfactory to Control Data.

d) Equipment will be used only for commercial, industrial, or income producing purpose.

e) Equipment shall, for all purposes, be considered personal property, notwithstanding the manner or mode or its attachment to real estate.

f) Customer shall not sell, transfer, lease, remove or otherwise dispose of the Equipment without the prior written consent of Control Data.

12. FINANCING STATEMENT: At the request of Control Data, Customer will join Control Data in executing one or more financing statements, continuation statements and other documents necessary to perfect and preserve the security interest granted herein, in form satisfactory to Control Data, and shall be responsible for all out-of-pocket costs incurred in connection with the filing and recording of the same. Customer warrants that no other financing statement covering the Equipment or any proceeds thereof is on file in any public office.

13. DEFAULT: Customer shall be in default under this Agreement upon the happening of any of the following events or conditions:

a) Default in the payment of or compliance with any term, condition, obligation, covenant or liability contained or referred to herein, or any Note evidencing the same;

b) Any warranty, representation or statement made or furnished to Control Data by or on behalf of Customer proves to have been false in any material respect made or furnished.

c) Customer becomes insolvent or unable to pay its debts as they become due, proceedings are instituted by or against Customer alleging its insolvency or inability to pay its debts as they become due, there is an appointment of a receiver for Customer, or Customer makes an assignment for benefit of creditors, or proceedings under the Bankruptcy Act or any amendment thereof, be instituted by or against Customer.

d) Loss, theft, damage, destruction, sale or encumbrance to or of any equipment, or the making of any levy, seizure, or attachment thereof or thereon;

e) Death, dissolution, termination of existence, insolvency, business failure of Customer.

In the event of default, Control Data shall have the right, at its option and without demand or notice, to declare all or any part of indebtedness secured by this Agreement due and payable immediately and to immediately enter upon Customer's premises and repossess and remove the Equipment or expend or advance funds to cure or correct any default, which expenditures shall be due upon demand at the same rate of interest as that specified above and shall become indebtedness secured hereby. In addition to the rights and remedies granted hereby, Control Data shall be entitled to all of the rights and remedies of a Secured Party under Uniform Commercial Code and any other applicable law or forum, and its taking of possession of the Equipment as provided herein shall be without prejudice to such other rights and remedies. Customer agrees it will make the Equipment available to Control Data at a place to be designated by Control Data. Customer also agrees it will pay Control Data all the expenses it incurs in enforcing its rights hereunder, including but not limited to, reasonable attorneys' fees.

14. ASSIGNMENT: All payments or other monies owing hereunder shall be paid by Customer to Control Data or upon receipt by Customer of notice of assignment to Control Data's assignee without recoupment, set-off or counter-claim, either at law or in equity, and any payments otherwise made shall be at the risk of Customer. No assignee will be obligated to assume any Control Data obligation under this Agreement, and Customer agrees to look only to Control Data for the payment or performance of said obligation.

15. MISCELLANEOUS PROVISIONS: a) Time is of the essence of this Agreement. Acceptance of any payments after maturity, or acceptance of a partial payment, or waiver or condonation of any other breach or default shall not constitute a waiver of any other or subsequent breach or default or prevent Control Data or its assigns from immediately pursuing any or all of its remedies.

b) All notices required to be given to Customer shall be properly given if mailed to Customer's address shown on the face hereof, or such other address as Customer may designate in writing.

c) This Agreement shall be governed by the laws of the State of Minnesota. Any provision of this Agreement prohibited by law or any state, shall as to said state, be ineffective to the extent of such prohibition, without invalidating the remaining provisions of the Agreement.

d) THIS AGREEMENT SUPERSEDES ALL PROPOSALS, ORAL OR WRITTEN, AND ALL NEGOTIATIONS, CONVERSATIONS OR DISCUSSIONS HERETOFORE HAD BETWEEN THE PARTIES RELATED TO THIS AGREEMENT. CUSTOMER ACKNOWLEDGES THAT IT HAS NOT BEEN INDUCED TO ENTER INTO THIS AGREEMENT BY ANY REPRESENTATIONS OR STATEMENTS, ORAL OR WRITTEN, NOT EXPRESSLY CONTAINED HEREIN. THE TERMS AND CONDITIONS OF THIS AGREEMENT SHALL PREVAIL, NOTWITHSTANDING ANY VARIANCE WITH THE TERMS AND CONDITIONS OF ANY ORDER OR OTHER INSTRUMENT SUBMITTED BY CUSTOMER.

e) This Agreement shall not be deemed or construed to be modified, amended, rescinded, cancelled, or waived, in whole or in part, except by written amendment signed by the parties hereto.

f) No action, regardless of form, arising out of the transactions under this Agreement may be brought by either party more than two (2) years after the cause of action has accrued.

g) No transfer, renewal, extension, or assignment of this Agreement or any interest thereunder, or loss, damage, injury or destruction of the Equipment shall release Customer from its obligations hereunder.

h) This Agreement shall inure to the benefit of the parties and their respective assigns.

COMMERCIAL CREDIT
a financial service of CONTROL DATA CORPORATION

COMMERCIAL CREDIT COMPUTER LEASING, INC.

300 St. Paul Place
Baltimore, Maryland 21202

AGREEMENT FOR LEASE – SYSTEMS

CUSTOMER'S NAME _____
(Including Specific Operating Location – Building, Floor and Room.)

STREET ADDRESS _____

CITY _____ STATE _____

SITE OF INSTALLATION _____

(hereinafter referred to as "Customer"), hereby agrees to lease from Commercial Credit Computer Leasing, Inc. (hereinafter referred to as "Commercial Credit"), and Commercial Credit hereby agrees to lease to Customer, at the place of installation indicated above, the equipment listed on the attached Equipment Exhibit, all of said units hereinafter being referred to as "Equipment", to be furnished to Commercial Credit by Control Data Corporation, 8100-34th Avenue South, P.O. Box 0, Minneapolis, Minnesota 55440 (hereinafter referred to as "Control Data"), in accordance with the terms and conditions contained herein, including specifically Article 12, Disclaimer of Warranty and Limitation of Remedies.

1. **TERM**: This Agreement shall become effective upon the date the same is accepted and signed by Commercial Credit and Control Data, and shall continue for an initial term of three (3) years from the date of commencement of rental charges hereunder, and shall thereafter remain in effect unless the term (including the initial term) is terminated as provided in Articles 7, 14, 15 or 19 hereof.

2. **TRANSPORTATION AND INVOICES**: Commercial Credit shall arrange for the transportation service and prepay the transportation service charges for shipment of equipment subject to this Agreement, both from and to Control Data and between Customer's sites. Shipment to Customer's site and between Customer's sites shall be to the equipment's specific operating location at the site of installation. Commercial Credit shall invoice the transportation service charges based on individual shipment weight and the established rates in published tariffs, filed with the appropriate state and federal regulatory agencies or commissions. Commercial Credit shall also invoice for packing material and transportation service charges for such material on shipments between Customer's sites and from Customer's site to Control Data. The methods of shipment and packaging shall be in accordance with Control Data's standards, consistent with the nature of the equipment and the hazards of transportation and handling.

3. **TITLE**: Customer does not hereby acquire any right, title or interest in the Equipment except as expressly herein granted to Customer as lessee, provided that if Customer exercises its option under Article 7 hereof, title to Equipment purchased shall pass to Customer in accordance therewith. All Equipment shall remain personal property notwithstanding the manner in which it may be affixed to any realty.

Customer will not sublet the Equipment (except with the prior written consent of Commercial Credit, which consent shall not be unreasonably withheld), nor shall Customer attempt to mortgage, pledge, sell or otherwise encumber or dispose of the Equipment or any of Customer's interest therein.

4. **RISK OF LOSS OR DAMAGE**: Customer shall be relieved from all risks of loss or damage to the Equipment subject hereto during periods of transportation, installation and possession thereof by Customer, with the exception of loss or damage caused by nuclear radiation, reaction or contamination.

5. **INSTALLATION**: a) Equipment leased under this Agreement will be installed, ready for use, by Control Data without additional charge. Customer, at its expense, shall have the site prepared in accordance with Control Data's written specifications not later than thirty (30) days before the scheduled installation date to enable Control Data to promptly deliver and begin installing the Equipment.

b) The date on which Control Data notifies Customer that the Equipment is installed, ready for use, shall be the Installation Date of such Equipment for all purposes of this Agreement.

c) Individual items of Equipment leased under this Agreement may not be newly manufactured. Items of Equipment which are not newly manufactured are warranted equivalent to new in performance. Equipment leased under this Agreement which is newly manufactured may consist in part of used components which are warranted equivalent to new in performance when used in the Equipment leased hereunder.

6. **MAINTENANCE**: Customer and Control Data shall enter into an agreement to provide maintenance coverage for all Equipment leased hereunder, at the Control Data prices and terms then in effect for its commercial users. All Equipment comprising a system shall have the same maintenance plan. A system, for purposes of this Article, is defined as a combination of Equipment which is interconnected by Control Data's signal and power cables.

7. **OPTION TO PURCHASE**: a) Customer may at any time purchase any or all Equipment specified in this Agreement in accordance with the terms of Control Data's agreement for the sale of equipment then in effect, except that:

(1) The Installation Date referred to in said agreement for the sale of equipment shall be the Installation Date under this Agreement, and
(2) Title shall pass to Customer either upon execution of said agreement for the sale of equipment by the

Equipment Lease Number: _____

parties thereto, or payment of the purchase price for said Equipment by Customer, whichever shall first occur, unless otherwise agreed to by the parties and specified in said agreement for the sale of equipment.

Such purchase shall be at Control Data's list price to commercial users for new equipment prevailing on the date of such purchase, less a purchase option credit in accordance with the attached purchase option policy.

b) For Equipment purchased the effective date for discontinuance of Rental Charges hereunder shall be:

(1) The day following receipt by Commercial Credit at 300 St. Paul Place, Baltimore, Maryland 21202, of an executed copy of the above described agreement for the sale of equipment;
(2) A later date if so specified in said agreement; or
(3) The date of telegraphic notice of exercise of purchase option addressed to Commercial Credit at the above address, or a later date specified in the telegraphic notice, provided the effective date is confirmed by receipt of said agreement within thirty (30) days, and provided further that instructions for maintenance coverage of the Equipment are included in the telegraphic notice.

8. ADD-ON AND SUBSTITUTIONS: By mutual agreement and proper amendment of this Agreement, Customer may add standard Control Data equipment to, or after expiration of one (1) year from the installation date of equipment leased hereunder, substitute standard Control Data equipment for, the Equipment or any part thereof. If Customer so amends, the following terms and conditions shall apply:

a) In the case of substitution, the new total basic monthly rental for all Equipment covered hereby shall not be less than the total basic monthly rental in effect prior to the substitution.

b) Rental charges for equipment added or substituted in accordance herewith shall be the Commercial Credit long-term lease prices corresponding to the years of initial term and the non-cancellable years of the initial term remaining on this Agreement's anniversary date preceding installation of said added or substituted equipment. If on the anniversary date preceding the installation of said added or substituted equipment, the remaining initial term hereof is less than three (3) years or the non-cancellation period remaining in said initial term is less than two (2) years, then the rental for such added or substituted equipment shall be in accordance with Control Data's then current one (1) year rental charges for its commercial customers.

c) Customer's options under this Article 8 shall be subject to Commercial Credit's review and approval of Customer's credit.

d) Except as provided in Article 7 hereof, Customer may not arrange for the termination of this Agreement with respect to any added or substituted equipment installed hereunder, nor the substitution of said added or substituted equipment, until the expiration of one (1) year from the installation of said added or substituted equipment.

e) Invoicing will, if required, be adjusted upon installation of any such added or substituted equipment.

9. RENTAL INVOICES AND CHARGES: a) Rental charges shall begin on the Installation Date and shall be invoiced to Customer monthly in advance. All other sums payable by Customer hereunder shall be invoiced after the month in which the same accrue.

b) Monthly rental charges due for fractional parts of a calendar month shall be computed at the rate of one-thirtieth (1/30th) of the monthly rate for each day.

c) Invoices issued pursuant to this Agreement shall be issued by Commercial Credit, or Control Data as agent for Commercial Credit, and shall be due and payable within fifteen (15) days after date of invoice.

d) Commercial Credit may change the monthly rental rates specified in this Agreement effective upon the expiration of the original term of this Agreement, or at the end of any calendar month thereafter, by giving at least ninety (90) days written notice to Customer. The adjusted rates, however, shall not exceed Commercial Credit's published rates for commercial users under similar terms and conditions on the effective date of the adjustment.

10. ALTERATIONS: Customer agrees not to employ or use additional attachments, features or devices on the Equipment subject hereto, nor to make changes or alterations to such Equipment without the written consent of Commercial Credit in each case. Such alterations or attachments shall be removed by Customer, or the Equipment otherwise restored to its original configuration, immediately after termination of this Agreement with respect to such Equipment. After the rental termination date, Commercial Credit may restore the Equipment, or may cause the same to be restored to its original configuration, ordinary wear and tear only excluded, and charge the cost of such restoration to Customer.

11. TERMS OF USE: The Equipment listed in this Agreement may be operated at any time and for any period of time at the convenience of Customer exclusive of time required for preventive and remedial maintenance, and shall not be restricted to consecutive hours, length of personnel shifts, or for any other reason.

12. DISCLAIMER OF WARRANTY AND LIMITATION OF REMEDIES: CUSTOMER UNDERSTANDS AND AGREES AS FOLLOWS:

a) COMMERCIAL CREDIT IS NOT A MANUFACTURER NOR ENGAGED IN THE SALE OR DISTRIBUTION OF THE EQUIPMENT.

b) THE EXPRESS WARRANTIES SET FORTH IN THIS AGREEMENT ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY WARRANTIES OF MERCHANTABILITY, FITNESS, CONDITION OR SUITABILITY AND ALL SUCH WARRANTIES ARE HEREBY DISCLAIMED AND EXCLUDED BY COMMERCIAL CREDIT AND CONTROL DATA.

c) NEITHER COMMERCIAL CREDIT OR CONTROL DATA SHALL BE LIABLE FOR ANY LOSS, EXPENSES

OR DAMAGES CAUSED BY DELAY IN FURNISHING EQUIPMENT, PRODUCTS, SERVICES OR ANY OTHER PERFORMANCE UNDER OR PURSUANT TO THIS AGREEMENT.

d) THE SOLE AND EXCLUSIVE REMEDIES FOR BREACH OF ANY AND ALL WARRANTIES AND THE SOLE REMEDIES FOR COMMERCIAL CREDIT'S OR CONTROL DATA'S LIABILITY OF ANY KIND, (INCLUDING LIABILITY, IF ANY, FOR NEGLIGENCE) WITH RESPECT TO THE EQUIPMENT, PRODUCTS AND SERVICES COVERED BY THIS AGREEMENT AND ALL OTHER PERFORMANCE BY COMMERCIAL CREDIT AND CONTROL DATA UNDER OR PURSUANT TO THIS AGREEMENT SHALL BE LIMITED TO THE REMEDIES PROVIDED IN ARTICLES 13 AND 17 HEREOF AND THE REMEDIES PROVIDED IN THE AGREEMENT FOR MAINTENANCE COVERAGE FOR SAID EQUIPMENT, BETWEEN CONTROL DATA AND CUSTOMER.

e) IN NO EVENT SHALL COMMERCIAL CREDIT'S OR CONTROL DATA'S LIABILITY OF ANY KIND INCLUDE ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES EVEN IF COMMERCIAL CREDIT OR CONTROL DATA SHALL HAVE BEEN ADVISED OF THE POSSIBLITY OF SUCH POTENTIAL LOSS OR DAMAGE.

13. LEASE CREDIT: If a component of Equipment leased hereunder being maintained by Control Data under its Schedule D maintenance plan becomes inoperative through no fault or negligence of Customer, and remains inoperative for a period of twenty-four (24) hours or more during workdays for which Customer has contracted for maintenance under Schedule D, from the time Customer notifies Control Data until said component is returned to good operating condition, Commercial Credit shall grant a credit to Customer for each such hour at the rate of one-seven hundred and twentieth (1/720th) of the Unit Net Monthly Rental charge for such component. A like credit shall be granted for each interconnected Control Data component under this Agreement being maintained by Control Data which is not usable as a result of any such breakdown.

14. TERMINATION: If Customer should petition for relief under any Chapter of the Bankruptcy Act, as amended, or if any involuntary petition thereunder should be filed against Customer, and the same be not dismissed within thirty (30) days, or if Customer is adjudicated a bankrupt, or if a receiver is appointed for Customer's business, or if Customer makes an assignment for the benefit of, or a composition of its debts with, its creditors, or if Customer defaults in the payment or performance of any sum due under this Agreement, or otherwise fails to fulfill any of its obligations under this Agreement, then Commercial Credit, at its option and without further notice, may forthwith terminate this Agreement, and enter upon Customer's premises to repossess and remove any Commercial Credit owned, leased or licensed Equipment or products. Commercial Credit shall thereafter hold the Equipment free and clear of this Agreement, and of any rights of Customer hereunder, and Commercial Credit may re-lease or sell all or any of the Equipment at private or public sales, at such price or prices and upon such terms as Commercial Credit may elect, without prior notice to Customer. Customer's obligation to pay all charges which shall have accrued shall survive any termination of this Agreement. In addition, Commercial Credit's termination of this Agreement, or such taking of possession, shall be without prejudice to any other remedies Commercial Credit may have, including without limitation, all remedies with respect to the unperformed balance of this Agreement. Termination of this Agreement or any other agreement with Customer for any of these reasons shall be sufficient justification for termination, at Commercial Credit's option, of any or all other agreements between Commercial Credit and Customer.

15. CANCELLATION: Except as otherwise provided in Articles 7, 8, 14, and 19 hereof, lease of Equipment under this Agreement shall not be subject to termination or cancellation in whole or in part until the expiration of twenty-four (24) months of the initial term hereof, and receipt of at least ninety (90) days written notice from Customer, which notice may be given during said twenty-four (24) month period, and payment to Commercial Credit of a cancellation charge amounting to fifteen percent (15%) of the unpaid rentals due hereunder to the end of the initial term hereof. Upon the expiration of this Agreement's initial term, the same may be terminated by any party upon at least ninety (90) days written notice, which notice may be given during said initial term.

16. TAXES: Customer shall pay, or shall reimburse Commercial Credit, in addition to all other charges specified in this Agreement, and as a separate item, and not as additional rental, for any and all taxes, exclusive of personal property taxes and Commercial Credit net income taxes, however designated, or amounts legally levied in lieu thereof, based on or measured by charges set forth in this Agreement, or on this Agreement, or on the Equipment, products and services, or their use, including use described as the act of leasing, now or hereafter imposed under the authority of any federal, state or local taxing jurisdiction.

17. PATENTS: Control Data will defend any suit or proceeding brought against Customer insofar as the same shall be based on a claim that the Equipment, or any part thereof, furnished under this Agreement constitutes an infringement of any patent of the United States, if notified promptly in writing of any claim of infringement and given authority, information and assistance (at Control Data's expense) to handle the claim and for the defense of any suit or proceeding, and will pay all damages and costs awarded therein against Customer. In the event that the Equipment, or any part thereof, is in such suit held to constitute an infringement, and the use of the Equipment, or any part thereof, is enjoined, Control Data shall, at its option, either procure for Customer the right to continue using the Equipment or part, or replace same with a non-infringing product, or modify the same so that it becomes non-infringing, or remove the Equipment at no cost to Customer, except for rental charges accrued to such time as Customer is enjoined from using such Equipment, or any part thereof, or until the Equipment is removed. Control Data shall not be liable to Customer under any provision of this clause if any patent infringement, or claim thereof, is based upon the use of the Equipment in connection with equipment or devices not delivered by Control Data or Commercial Credit, or in a manner for which the Equipment was not designed, or where the Equipment or part, was modified by or for Customer, in a manner to become infringing.

18. PREPAYMENT: Customer may at any time elect to prepay one year's rental. Such prepayment shall entitle Customer to a four percent (4%) prepayment credit applicable to the rental amount due for said period.

19. CUSTOMER OPTION: Customer, by checking the block next to the subparagraph hereof, hereby elects to make its possession of the Equipment leased hereunder subject to this option, with a consequent adjustment to the total basic monthly rental payable each month during the term hereof by Customer, as specified below in this option:

☐ INITIAL TERM AND NON-CANCELLATION OPTION: Notwithstanding the initial term recited in Article 1 hereof, the initial term of this Agreement shall continue for a minimum of ____ years from the commencement of rental charges hereunder. Notwithstanding Article 15 hereof, except as otherwise provided in Articles 7, 8 and 14 hereof, this Agreement shall not be subject to termination or cancellation in whole or in part by any party until the expiration of a minimum of ____ years of said initial term, or one (1) year after installation with respect to Add-ons and Substitutions, whichever is longer, and shall thereafter be cancellable during the remaining initial term hereof upon ninety (90) days prior written notice given to Commercial Credit, together with payment to Commercial Credit of a cancellation charge amounting to ____ % of the unpaid rentals due hereunder to the end of said initial term, with respect to the cancelled item(s). There shall be subtracted from the total basic monthly rental payable each month hereunder by Customer an amount equal to ____ % thereof as consideration for this option.

20. GENERAL PROVISIONS: a) Customer agrees not to remove any Equipment or product from the location at which it is installed except in an emergency, without the prior written consent of Control Data and Commercial Credit, which consent shall not be unreasonably withheld.

b) None of the parties hereto shall have the right to assign or otherwise transfer its rights or obligations under this Agreement, except with the written consent of the other parties, provided, however, that successors in interest by merger, by operation of law, assignment, purchase or otherwise of the entire business of any party, shall acquire all interest of such party hereunder, and Commercial Credit and/or Control Data shall be entitled to assign this Agreement, or any or all of its rights hereunder, or sell the leased Equipment, subject to the rights of the other parties under this Agreement, to any person or organization, in its own right or as agent or trustee, without prior notice to or consent of the other parties. Any prohibited assignment shall be null and void.

c) This Agreement shall be governed by the laws of the State of Minnesota. There are no understandings, agreements or representations, expressed or implied, not specified in this Agreement.

d) The relationship between Commercial Credit and Customer shall always and only be that of lessor and lessee, and, as to Commercial Credit, this Agreement is and is intended to be a lease and nothing more. Customer shall not hereby be or become the agent of Commercial Credit or Control Data and neither Control Data nor Commercial Credit shall be responsible for the acts or omissions of Customer.

e) Commercial Credit's and Control Data's rights and remedies hereunder or by law shall be cumulative and not exclusive, and shall be in addition to all other rights and remedies available to Commercial Credit and to Control Data. Commercial Credit's failure to enforce strictly any provisions of this Agreement shall not be construed as a waiver thereof or as excusing Customer from future performance.

f) THIS AGREEMENT SUPERSEDES ALL PROPOSALS, ORAL OR WRITTEN, AND ALL NEGOTIATIONS, CONVERSATIONS OR DISCUSSIONS HERETOFORE HAD BETWEEN THE PARTIES RELATED TO THIS AGREEMENT. CUSTOMER ACKNOWLEDGES THAT IT HAS NOT BEEN INDUCED TO ENTER INTO THIS AGREEMENT BY ANY REPRESENTATIONS OR STATEMENTS, ORAL OR WRITTEN, NOT EXPRESSLY CONTAINED HEREIN. THE TERMS AND CONDITIONS OF THIS AGREEMENT SHALL PREVAIL, NOTWITHSTANDING ANY VARIANCE WITH THE TERMS AND CONDITIONS OF ANY ORDER OR OTHER INSTRUMENT SUBMITTED BY CUSTOMER.

g) This Agreement shall not be deemed or construed to be modified, amended, rescinded, cancelled or waived, in whole or in part, except by written amendment signed by the parties hereto. This Agreement shall be binding upon and shall inure to the benefit of the successors and permitted assigns of the parties hereto.

h) The captions used herein are for convenience only, and shall not be deemed to constitute integral provisions of this Agreement.

i) No action, regardless of form, arising out of the transactions under this Agreement, may be brought by any party more than two (2) years after the cause of action has accrued.

CUSTOMER HAS READ AND ACKNOWLEDGES THAT IT UNDERSTANDS THE TERMS AND CONDITIONS OF THIS AGREEMENT, INCLUDING ARTICLE 12, DISCLAIMER OF WARRANTY AND LIMITATION OF REMEDIES, AND AGREES THAT IT IS BOUND HEREBY.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement for Lease to be executed by their representatives duly authorized and empowered thereunto, as of the dates set forth hereinbelow.

ATTEST:
(Corporate Seal)

_____
Secretary

_____
(Customer)

BY: _____

TITLE: _____

DATE: _____

ATTEST:
(Corporate Seal)

_____
Secretary

COMMERCIAL CREDIT COMPUTER LEASING, INC.

BY: _____

TITLE: _____

DATE: _____

CONTROL DATA CORPORATION

_____
Witness

BY: _____

TITLE: _____

DATE: _____

EQUIPMENT EXHIBIT

Item	Qty.	Model and Description	Scheduled Installation Date	Purchase Option Code	Percent Reduction For Initial Term and Non-Cancellation	Unit Basic Monthly Rental	Unit Net Monthly Rental	Total Monthly Rental

TOTAL MONTHLY RENTAL _____

COMMERCIAL CREDIT
a financial service of CONTROL DATA CORPORATION

COMMERCIAL CREDIT COMPUTER LEASING, INC.

300 St. Paul Place
Baltimore, Maryland 21202

AGREEMENT FOR LEASE – SUBSYSTEMS
(THREE-YEAR TERM WITH EARLY CANCELLATION RIGHT)

CUSTOMER'S NAME _____
(Including Specific Operating Location – Building, Floor and Room.)

STREET ADDRESS _____

CITY _____ STATE _____

SITE OF INSTALLATION _____

(hereinafter referred to as "Customer"), hereby agrees to lease from Commercial Credit Computer Leasing, Inc. (hereinafter referred to as "Commercial Credit"), and Commercial Credit hereby agrees to lease to Customer, at the place of installation indicated above, the equipment listed on the attached Equipment Exhibit, all of said units hereinafter being referred to as "Equipment", to be furnished to Commercial Credit by Control Data Corporation, 8100 - 34th Avenue South, P.O. Box 0, Minneapolis, Minnesota 55440 (hereinafter referred to as "Control Data"), in accordance with the terms and conditions contained herein, including specifically Article 12, Disclaimer of Warranty and Limitation of Remedies.

1. TERM: This Agreement shall become effective upon the date the same is accepted and signed by Commercial Credit and Control Data, and shall continue for an initial term of three (3) years from the date of commencement of rental charges hereunder, and shall thereafter remain in effect unless the term (including the initial term) is terminated as provided in Articles 7, 13, 14 or 18 hereof.

2. TRANSPORTATION AND INVOICES: Commercial Credit shall arrange for the transportation service and prepay the transportation service charges for shipment of equipment subject to this Agreement, both from and to Control Data and between Customer's sites. Shipment to Customer's site and between Customer's sites shall be to the equipment's specific operating location at the site of installation. Commercial Credit shall invoice the transportation service charges based on individual shipment weight and the established rates in published tariffs, filed with the appropriate state and federal regulatory agencies or commissions. Commercial Credit shall also invoice for packing material and transportation service charges for such material on shipments between Customer's sites and from Customer's site to Control Data. The methods of shipment and packaging shall be in accordance with Control Data's standards, consistent with the nature of the equipment and the hazards of transportation and handling.

3. TITLE: Customer does not hereby acquire any right, title or interest in the Equipment except as expressly herein granted to Customer as lessee, provided that if Customer exercises its option under Article 7 hereof, title to Equipment purchased shall pass to Customer in accordance therewith. All Equipment shall remain personal property notwithstanding the manner in which it may be affixed to any realty.

Customer will not sublet the Equipment (except with the prior written consent of Commercial Credit, which consent shall not be unreasonably withheld), nor shall Customer attempt to mortgage, pledge, sell or otherwise encumber or dispose of the Equipment or any of Customer's interest therein.

4. RISK OF LOSS OR DAMAGE: Customer shall be relieved from all risks of loss or damage to the Equipment subject hereto during periods of transportation, installation and possession thereof by Customer, with the exception of loss or damage caused by nuclear radiation, reaction or contamination.

5. INSTALLATION: a) Equipment leased under this Agreement will be installed, ready for use, by Control Data without additional charge. Customer, at its expense, shall have the site prepared in accordance with Control Data's written specifications not later than thirty (30) days before the scheduled installation date to enable Control Data to promptly deliver and begin installing the Equipment.

b) The date on which Control Data notifies Customer that the Equipment is installed, ready for use, shall be the Installation Date of such Equipment for all purposes of this Agreement.

c) Individual items of Equipment leased under this Agreement may not be newly manufactured. Items of Equipment which are not newly manufactured are warranted equivalent to new in performance. Equipment leased under this Agreement which is newly manufactured may consist in part of used components which are warranted equivalent to new in performance when used in the Equipment leased hereunder.

6. MAINTENANCE: Customer and Control Data shall enter into an agreement to provide maintenance coverage for all Equipment leased hereunder, at the Control Data prices and terms then in effect for its commercial users.

7. OPTION TO PURCHASE: a) Customer may at any time purchase any or all Equipment specified in this Agreement in accordance with the terms of Control Data's agreement for the sale of equipment then in effect, except that:

(1) The Installation Date referred to in said agreement for the sale of equipment shall be the Installation Date under this Agreement, and

(2) Title shall pass to Customer either upon execution of said agreement for the sale of equipment by the parties thereto, or payment of the purchase price for said Equipment by Customer, whichever shall first occur, unless otherwise agreed to by the parties and specified in said agreement for the sale of equipment.

Equipment Lease Number: _____

Such purchase shall be at Control Data's list price to commercial users for new equipment prevailing on the date of such purchase, less a purchase option credit in accordance with the attached purchase option policy.

b) For Equipment purchased the effective date for discontinuance of Rental Charges hereunder shall be:

(1) The day following receipt by Commercial Credit at 300 St. Paul Place, Baltimore, Maryland 21202, of an executed copy of the above described agreement for the sale of equipment;
(2) A later date if so specified in said agreement; or
(3) The date of telegraphic notice of exercise of purchase option addressed to Commercial Credit at the above address, or a later date specified in the telegraphic notice, provided the effective date is confirmed by receipt of said agreement within thirty (30) days and provided further that instructions for maintenance coverage of the Equipment are included in the telegraphic notice.

8. ADD-ON AND SUBSTITUTIONS: By mutual agreement and proper amendment of this Agreement, Customer may add standard Control Data equipment to, or after expiration of one (1) year from the installation date of Equipment leased hereunder, substitute standard Control Data equipment for, the Equipment or any part thereof. If Customer so amends, the following terms and conditions shall apply:

a) In the case of substitution, the new total basic monthly rental for all Equipment covered hereby shall not be less than the total basic monthly rental in effect prior to the substitution.

b) Rental charges for Equipment added or substituted shall be in accordance with Control Data's one-year rental prices then prevailing.

c) Customer's options under this Article 8 shall be subject to Commercial Credit's review and approval of Customer's credit.

d) Except as provided in Article 7 hereof, Customer may not arrange for the termination of this Agreement with respect to any added or substituted equipment installed hereunder, nor the substitution of said added or substituted equipment, until the expiration of one (1) year from the installation of said added or substituted equipment.

e) Invoicing will, if required, be adjusted upon installation of any such added or substituted equipment.

9. RENTAL INVOICES AND CHARGES: a) Rental charges shall begin on the Installation Date and shall be invoiced to Customer monthly in advance. All other sums payable by Customer hereunder shall be invoiced after the month in which the same accrue.

b) Monthly rental charges due for fractional parts of a calendar month shall be computed at the rate of one-thirtieth (1/30th) of the monthly rate for each day.

c) Invoices issued pursuant to this Agreement shall be issued by Commercial Credit, or Control Data as agent for Commercial Credit, and shall be due and payable within fifteen (15) days after date of invoice.

d) Commercial Credit may change the monthly rental rates specified in this Agreement effective upon the expiration of the original term of this Agreement, or at the end of any calendar month thereafter, by giving at least ninety (90) days written notice to Customer. The adjusted rates, however, shall not exceed Commercial Credit's published rates for commercial users under similar terms and conditions on the effective date of the adjustment.

10. ALTERATIONS: Customer agrees not to employ or use additional attachments, features or devices on the Equipment subject hereto, nor to make changes or alterations to such Equipment without the written consent of Commercial Credit in each case. Such alterations or attachments shall be removed by Customer, or the Equipment otherwise restored to its original configuration, immediately after termination of this Agreement with respect to such Equipment. After the rental termination date, Commercial Credit may restore the Equipment, or may cause the same to be restored, to its original configuration, ordinary wear and tear only excluded, and charge the cost of such restoration to Customer.

11. TERMS OF USE: The Equipment listed in this Agreement may be operated at any time and for any period of time at the convenience of Customer, exclusive of time required for preventive and remedial maintenance, and shall not be restricted to consecutive hours, length of personnel shifts, or for any other reason.

12. DISCLAIMER OF WARRANTY AND LIMITATION OF REMEDIES: CUSTOMER UNDERSTANDS AND AGREES AS FOLLOWS:

a) COMMERCIAL CREDIT IS NOT A MANUFACTURER NOR ENGAGED IN THE SALE OR DISTRIBUTION OF THE EQUIPMENT.

b) THE EXPRESS WARRANTIES SET FORTH IN THIS AGREEMENT ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY WARRANTIES OF MERCHANTABILITY, FITNESS, CONDITION OR SUITABILITY AND ALL SUCH WARRANTIES ARE HEREBY DISCLAIMED AND EXCLUDED BY COMMERCIAL CREDIT AND CONTROL DATA.

c) NEITHER COMMERCIAL CREDIT OR CONTROL DATA SHALL BE LIABLE FOR ANY LOSS, EXPENSES OR DAMAGES CAUSED BY DELAY IN FURNISHING EQUIPMENT, PRODUCTS, SERVICES OR ANY OTHER PERFORMANCE UNDER OR PURSUANT TO THIS AGREEMENT.

d) THE SOLE AND EXCLUSIVE REMEDIES FOR BREACH OF ANY AND ALL WARRANTIES AND THE SOLE REMEDIES FOR COMMERCIAL CREDIT'S OR CONTROL DATA'S LIABILITY OF ANY KIND, (INCLUDING LIABILITY, IF ANY, FOR NEGLIGENCE) WITH RESPECT TO THE EQUIPMENT, PRODUCTS AND SERVICES COVERED BY THIS AGREEMENT AND ALL OTHER PERFORMANCE, BY COMMERCIAL CREDIT AND CONTROL DATA UNDER OR PURSUANT TO THIS AGREEMENT SHALL BE LIMITED TO RESTORING THE EQUIPMENT LEASED UNDER THIS AGREEMENT TO GOOD OPERATING CONDITION, IN ACCORDANCE WITH THE MAINTENANCE SERVICE AGREE-

MENT COVERING SAID EQUIPMENT, BETWEEN CONTROL DATA AND CUSTOMER.

e) IN NO EVENT SHALL COMMERCIAL CREDIT'S OR CONTROL DATA'S LIABILITY OF ANY KIND INCLUDE ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES EVEN IF COMMERCIAL CREDIT OR CONTROL DATA SHALL HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH POTENTIAL LOSS OR DAMAGE.

13. TERMINATION: If Customer should petition for relief under any Chapter of the Bankruptcy Act, as amended, or if any involuntary petition thereunder should be filed against Customer, and the same be not dismissed within thirty (30) days, or if Customer is adjudicated a bankrupt, or if a receiver is appointed for Customer's business, or if Customer makes an assignment for the benefit of, or a composition of its debts with, its creditors, or if Customer defaults in the payment or performance of any sum due under this Agreement, or otherwise fails to fulfill any of its obligations under this Agreement, then Commercial Credit, at its option and without further notice, may forthwith terminate this Agreement, and enter upon Customer's premises to repossess and remove any Commercial Credit owned, leased or licensed Equipment or products. Commercial Credit shall thereafter hold the Equipment free and clear of this Agreement, and of any rights of Customer hereunder, and Commercial Credit may re-lease or sell all or any of the Equipment at private or public sales, at such price or prices and upon such terms as Commercial Credit may elect, without prior notice to Customer. Customer's obligation to pay all charges which shall have accrued shall survive any termination of this Agreement. In addition, Commercial Credit's termination of this Agreement, or such taking of possession, shall be without prejudice to any other remedies Commercial Credit may have, including without limitation, all remedies with respect to the unperformed balance of this Agreement. Termination of this Agreement or any other agreement with Customer for any of these reasons shall be sufficient justification for termination, at Commercial Credit's option, of any or all other agreements between Commercial Credit and Customer.

14. CANCELLATION: Except as otherwise provided in Articles 7, 8, 13 and 18 hereof, lease of Equipment under this Agreement shall not be subject to termination or cancellation in whole or in part until the expiration of twelve (12) months of the initial term hereof, and receipt of at least ninety (90) days written notice from Customer, which notice may be given during said twelve (12) month period, and payment to Commercial Credit of a cancellation charge amounting to fifteen percent (15%) of the unpaid rentals due hereunder to the end of the initial term hereof. Upon the expiration of this Agreement's initial term, the same may be terminated by any party upon at least ninety (90) days written notice, which notice may be given during said initial term.

15. TAXES: Customer shall pay, or shall reimburse Commercial Credit, in addition to all other charges specified in this Agreement, and as a separate item, and not as additional rental, for any and all taxes, exclusive of personal property taxes and Commercial Credit net income taxes, however designated, or amounts legally levied in lieu thereof, based on or measured by charges set forth in this Agreement, or on this Agreement, or on the Equipment, products and services, or their use, including use described as the act of leasing, now or hereafter imposed under the authority of any federal, state or local taxing jurisdiction.

16. PATENTS: Control Data will defend any suit or proceeding brought against Customer insofar as the same shall be based on a claim that the Equipment, or any part thereof, furnished under this Agreement constitutes an infringement of any patent of the United States, if notified promptly in writing of any claim of infringement and given authority, information, and assistance (at Control Data's expense) to handle the claim and for the defense of any suit or proceeding and will pay all damages and costs awarded therein against Customer. In the event that the Equipment, or any part thereof, is in such suit held to constitute an infringement, and the use of the Equipment, or any part thereof, is enjoined, Control Data shall, at its option, either procure for Customer the right to continue using the Equipment or part, or replace same with a non-infringing product, or modify the same so that it becomes non-infringing, or remove the Equipment at no cost to Customer, except for rental charges accrued to such time as Customer is enjoined from using such Equipment, or any part thereof, or until the Equipment is removed. Control Data shall not be liable to Customer under any provision of this clause if any patent infringement, or claim thereof, is based upon the use of the Equipment in connection with equipment or devices not delivered by Control Data or Commercial Credit, or in a manner for which the Equipment was not designed, or where the Equipment or part, was modified by or for Customer, in a manner to become infringing.

17. PREPAYMENT: Customer may at any time elect to prepay one year's rental. Such prepayment shall entitle Customer to a four percent (4%) prepayment credit applicable to the rental amount due for said period.

18. CUSTOMER OPTION: Customer, by checking the block next to the subparagraph hereof, hereby elects to make its possession of the Equipment leased hereunder subject to this option, with a consequent adjustment to the total basic monthly rental payable each month during the term hereof by Customer, as specified below in this option:

☐ NON-CANCELLATION OPTION: Notwithstanding Article 14 hereof, and except as otherwise provided in Articles 7, 8 and 13 hereof, this Agreement shall not be subject to termination or cancellation in whole or in part by any party until the expiration of a minimum of _____ years of said initial term, or one (1) year after installation with respect to Add-ons and Substitutions, whichever is longer, and shall thereafter be cancellable during the remaining initial term hereof upon ninety (90) days prior written notice given to Commercial Credit, together with payment to Commercial Credit of a cancellation charge amounting to _____% of the unpaid rentals due hereunder to the end of said initial term with respect to the cancelled item(s). There shall be subtracted from the total basic monthly rental payable each month hereunder by Customer an amount equal to _____% thereof as consideration for this option.

19. GENERAL PROVISIONS: a) Customer agrees not to remove any Equipment or product from the location at which it is installed except in an emergency, without the prior written consent of Control Data and Commercial Credit, which consent shall not be unreasonably withheld.

b) None of the parties hereto shall have the right to assign or otherwise transfer its rights or obligations under this Agreement, except with the written consent of the other parties, provided, however, that successors in interest by merger, by operation of law, assignment, purchase, or otherwise of the entire business of any party, shall acquire all interest of such party hereunder, and Commercial Credit

and/or Control Data shall be entitled to assign this Agreement, or any or all of its rights hereunder, or sell the leased Equipment, subject to the rights of the other parties under this Agreement, to any person or organization, in its own right or as agent or trustee, without prior notice to or consent of the other parties. Any prohibited assignment shall be null and void.

c) This Agreement shall be governed by the laws of the State of Minnesota. There are no understandings, agreements or representations, expressed or implied, not specified in this Agreement.

d) The relationship between Commercial Credit and Customer shall always and only be that of lessor and lessee, and, as to Commercial Credit, this Agreement is and is intended to be a lease and nothing more. Customer shall not hereby be or become the agent of Commercial Credit or Control Data and neither Control Data nor Commercial Credit shall be responsible for the acts or omissions of Customer.

e) Commercial Credit's and Control Data's rights and remedies hereunder or by law shall be cumulative and not, exclusive, and shall be in addition to all other rights and remedies available to Commercial Credit and to Control Data. Commercial Credit's failure to enforce strictly any provisions of this Agreement shall not be construed as a waiver thereof or as excusing Customer from future performance.

f) THIS AGREEMENT SUPERSEDES ALL PROPOSALS, ORAL OR WRITTEN, AND ALL NEGOTIATIONS, CONVERSATIONS OR DISCUSSIONS HERETOFORE HAD BETWEEN THE PARTIES RELATED TO THIS AGREEMENT. CUSTOMER ACKNOWLEDGES THAT IT HAS NOT BEEN INDUCED TO ENTER INTO THIS AGREEMENT BY ANY REPRESENTATIONS OR STATEMENTS, ORAL OR WRITTEN, NOT EXPRESSLY CONTAINED HEREIN. THE TERMS AND CONDITIONS OF THIS AGREEMENT SHALL PREVAIL, NOTWITHSTANDING ANY VARIANCE WITH THE TERMS AND CONDITIONS OF ANY ORDER OR OTHER INSTRUMENT SUBMITTED BY CUSTOMER.

g) This Agreement shall not be deemed or construed to be modified, amended, rescinded, cancelled or waived, in whole or in part, except by written amendment signed by the parties hereto. This agreement shall be binding upon and shall inure to the benefit of the successors and permitted assigns of the parties hereto.

h) The captions used herein are for convenience only, and shall not be deemed to constitute integral provisions of this Agreement.

i) No action, regardless of form, arising out of the transactions under this Agreement, may be brought by any party more than two (2) years after the cause of action has accrued.

CUSTOMER HAS READ AND ACKNOWLEDGES THAT IT UNDERSTANDS THE TERMS AND CONDITIONS OF THIS AGREEMENT, INCLUDING ARTICLE 12, DISCLAIMER OF WARRANTY AND LIMITATION OF REMEDIES, AND AGREES THAT IT IS BOUND HEREBY:

IN WITNESS WHEREOF, the parties hereto have caused this Agreement for Lease to be executed by their representatives duly authorized and empowered thereunto as of the dates set forth hereinbelow.

ATTEST:
(Corporate Seal)

_____
Secretary

_____
(Customer)

BY: _____

TITLE: _____

DATE: _____

ATTEST:
(Corporate Seal)

_____
Secretary

COMMERCIAL CREDIT COMPUTER LEASING, INC.

BY: _____

TITLE: _____

DATE: _____

CONTROL DATA CORPORATION

_____
Witness

BY: _____

TITLE: _____

DATE: _____

EQUIPMENT EXHIBIT

Item	Qty.	Model And Description	Scheduled Installation Date	Purchase Option Code	Percent Reduction For Non-Cancellation	Unit Basic Monthly Rental	Unit Net Monthly Rental	Total Monthly Rental

TOTAL MONTHLY RENTAL _____

COMMERCIAL CREDIT COMPUTER LEASING, INC.

300 St. Paul Place
Baltimore, Maryland 21202

AGREEMENT FOR LEASE – SUBSYSTEMS (FOUR OR FIVE YEAR TERM NON-CANCELLABLE)

CUSTOMER'S NAME _____

STREET ADDRESS _____

CITY _____ STATE _____

SITE OF INSTALLATION _____

(hereinafter referred to as "Customer"), hereby agrees to lease from Commercial Credit Computer Leasing, Inc. (hereinafter referred to as "Commercial Credit"), and Commercial Credit hereby agrees to lease to Customer, at the place of installation indicated above, the equipment listed on the attached Equipment Exhibit, all of said units hereinafter being referred to as "Equipment", to be furnished to Commercial Credit by Control Data Corporation, 8100 - 34th Avenue South, Minneapolis, Minnesota 55440 (hereinafter referred to as "Control Data"), in accordance with the terms and conditions contained herein, including specifically Article 11, Disclaimer of Warranty And Limitation of Remedies.

1. TERM: This Agreement shall become effective upon the date the same is accepted and signed by Commercial Credit and Control Data, and shall continue for an initial term of (4) four years ____ (5) five years ____ (check one), from the date of commencement of rental charges hereunder, and shall thereafter remain in effect unless the term (including the initial term) is terminated as provided in Articles 7, or 12 hereof.

2. SHIPMENT: Commercial Credit shall arrange for and shall prepay transportation, drayage and handling charges for Equipment subject to this Agreement, both from and to Control Data's place of manufacture and between Customer's sites. The methods of shipment and packaging shall be in accordance with Control Data's standards, consistent with the nature of the Equipment and the hazards of transportation and handling. All such charges shall be invoiced to and borne by Customer.

3. TITLE: Customer does not hereby acquire any right, title or interest in the Equipment except as expressly herein granted to Customer as lessee, provided that if Customer exercises its option under Article 7 hereof, title to Equipment purchased shall pass to Customer in accordance therewith. All Equipment shall remain personal property notwithstanding the manner in which it may be affixed to any realty.

Customer will not sublet the Equipment (except with the prior written consent of Commercial Credit, which consent shall not be unreasonably withheld), nor shall Customer attempt to mortgage, pledge, sell or otherwise encumber or dispose of the Equipment or any of Customer's interest therein.

4. RISK OF LOSS OR DAMAGE: Customer shall be relieved from all risks of loss or damage to the Equipment subject hereto during periods of transportation, installation and possession thereof by Customer, with the exception of loss or damage caused by nuclear radiation, reaction or contamination.

5. INSTALLATION: a) Equipment leased under this Agreement will be installed, ready for use, by Control Data without additional charge. Customer, at its expense, shall have the site prepared in accordance with Control Data's written specifications not later than thirty (30) days before the scheduled installation date to enable Control Data to promptly deliver and begin installing the Equipment.

b) The date on which Control Data notifies Customer that the Equipment is installed, ready for use, shall be the Installation Date of such Equipment for all purposes of this Agreement.

c) Individual items of Equipment leased under this Agreement may not be newly manufactured. Items of Equipment which are not newly manufactured are warranted equivalent to new in performance. Equipment leased under this Agreement which is newly manufactured may consist in part of used components which are warranted equivalent to new in performance when used in the Equipment leased hereunder.

6. MAINTENANCE: Customer and Control Data shall enter into an agreement to provide maintenance coverage for all Equipment leased hereunder, at the Control Data prices and terms then in effect for its commercial users.

7. OPTION TO PURCHASE: a) Customer may at any time purchase any or all Equipment specified in this Agreement in accordance with the terms of Control Data's agreement for the sale of equipment then in effect, except that:

(1) The Installation Date referred to in said agreement for the sale of equipment shall be the Installation Date under this Agreement, and
(2) Title shall pass to Customer either upon execution of said agreement for the sale of equipment by the parties thereto, or payment of the purchase price for said Equipment by Customer, whichever shall first occur, unless otherwise agreed to by the parties and specified in said agreement for the sale of equipment.

Such purchase shall be at Control Data's list price to commercial users for new equipment prevailing on the date of such purchase, less a purchase option credit in accordance with the attached purchase option policy.

Equipment Lease Number: _____

b) For Equipment purchased the effective date for discontinuance of Rental Charges hereunder shall be:

(1) The day following receipt by Commercial Credit at 300 St. Paul Place, Baltimore, Maryland 21202, of an executed copy of the above described agreement for the sale of equipment;
(2) A later date if so specified in said agreement; or
(3) The date of telegraphic notice of exercise of purchase option addressed to Commercial Credit at the above address, or a later date specified in the telegraphic notice, provided the effective date is confirmed by receipt of said agreement within thirty (30) days and provided further that instructions for maintenance coverage of the Equipment are included in the telegraphic notice.

8. RENTAL INVOICES AND CHARGES: a) Rental charges shall begin on the Installation Date and shall be invoiced to Customer monthly in advance. All other sums payable by Customer hereunder shall be invoiced after the month in which the same accrue.

b) Monthly rental charges due for fractional parts of a calendar month shall be computed at the rate of one-thirtieth (1/30th) of the monthly rate for each day.

c) Invoices issued pursuant to this Agreement shall be issued by Commercial Credit, or Control Data as agent for Commercial Credit, and shall be due and payable in accordance with their terms not more than thirty (30) days after the date of invoice.

d) Commercial Credit may change the monthly rental rates specified in this Agreement effective upon the expiration of the original term of this Agreement, or at the end of any calendar month thereafter, by giving at least ninety (90) days written notice to Customer. The adjusted rates, however, shall not exceed Commercial Credit's published rates for commercial users under similar terms and conditions on the effective date of the adjustment.

9. ALTERATIONS: Customer agrees not to employ or use additional attachments, features or devices on the Equipment subject hereto, nor to make changes or alterations to such Equipment without the written consent of Commercial Credit in each case. Such alterations or attachments shall be removed by Customer, or the Equipment otherwise restored to its original configuration, immediately after termination of this Agreement with respect to such Equipment. After the rental termination date, Commercial Credit may restore the Equipment, or may cause the same to be restored, to its original configuration, ordinary wear and tear only excluded, and charge the cost of such restoration to Customer.

10. TERMS OF USE: The Equipment listed in this Agreement may be operated at any time and for any period of time at the convenience of Customer, exclusive of time required for preventive and remedial maintenance, and shall not be restricted to consecutive hours, length of personnel shifts, or for any other reason.

11. DISCLAIMER OF WARRANTY AND LIMITATION OF REMEDIES: CUSTOMER UNDERSTANDS AND AGREES AS FOLLOWS:

a) COMMERCIAL CREDIT IS NOT A MANUFACTURER NOR ENGAGED IN THE SALE OR DISTRIBUTION OF THE EQUIPMENT.

b) THE EXPRESS WARRANTIES SET FORTH IN THIS AGREEMENT ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY WARRANTIES OF MERCHANTABILITY, FITNESS, CONDITION OR SUITABILITY AND ALL SUCH WARRANTIES ARE HEREBY DISCLAIMED AND EXCLUDED BY COMMERCIAL CREDIT AND CONTROL DATA.

c) NEITHER COMMERCIAL CREDIT OR CONTROL DATA SHALL BE LIABLE FOR ANY LOSS, EXPENSES OR DAMAGES CAUSED BY DELAY IN FURNISHING EQUIPMENT, PRODUCTS, SERVICES OR ANY OTHER PERFORMANCE UNDER OR PURSUANT TO THIS AGREEMENT.

d) THE SOLE AND EXCLUSIVE REMEDIES FOR BREACH OF ANY AND ALL WARRANTIES AND THE SOLE REMEDIES FOR COMMERCIAL CREDIT'S OR CONTROL DATA'S LIABILITY OF ANY KIND, (INCLUDING LIABILITY, IF ANY, FOR NEGLIGENCE) WITH RESPECT TO THE EQUIPMENT, PRODUCTS AND SERVICES COVERED BY THIS AGREEMENT AND ALL OTHER PERFORMANCE BY COMMERCIAL CREDIT AND CONTROL DATA UNDER OR PURSUANT TO THIS AGREEMENT SHALL BE LIMITED TO RESTORING THE EQUIPMENT LEASED UNDER THIS AGREEMENT TO GOOD OPERATING CONDITION, IN ACCORDANCE WITH THE MAINTENANCE SERVICE AGREEMENT COVERING SAID EQUIPMENT, BETWEEN CONTROL DATA AND CUSTOMER.

e) IN NO EVENT SHALL COMMERCIAL CREDIT'S OR CONTROL DATA'S LIABILITY OF ANY KIND INCLUDE ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES EVEN IF COMMERCIAL CREDIT OR CONTROL DATA SHALL HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH POTENTIAL LOSS OR DAMAGE.

12. TERMINATION: If Customer should petition for relief under any Chapter of the Bankruptcy Act, as amended, or if any involuntary petition thereunder should be filed against Customer, and the same be not dismissed within thirty (30) days, or if Customer is adjudicated a bankrupt, or if a receiver is appointed for Customer's business, or if Customer makes an assignment for the benefit of, or a composition of its debts with its creditors, or if Customer defaults in the payment or performance of any sum due under this Agreement, or otherwise fails to fulfill any of its obligations under this Agreement, then Commercial Credit, at its option and without further notice, may forthwith terminate this Agreement, and enter upon Customer's premises to repossess and remove any Commercial Credit owned, leased or licensed Equipment or products. Commer-

cial Credit shall thereafter hold the Equipment free and clear of this Agreement, and of any rights of Customer hereunder, and Commercial Credit may re-lease or sell all or any of the Equipment at private or public sales, at such price or prices and upon such terms as Commercial Credit may elect, without prior notice to Customer. Customer's obligation to pay all charges which shall have accrued shall survive any termination of this Agreement. In addition, Commercial Credit's termination of this Agreement, or such taking of possession, shall be without prejudice to any other remedies Commercial Credit may have, including without limitation, all remedies with respect to the unperformed balance of this Agreement. Termination of this Agreement or any other agreement with Customer for any of these reasons shall be sufficient justification for termination, at Commercial Credit's option, of any or all other agreements between Commercial Credit and Customer.

13. **TAXES**: Customer shall pay, or shall reimburse Commercial Credit, in addition to all other charges specified in this Agreement, and as a separate item, and not as additional rental, for any and all taxes, exclusive of personal property taxes and Commercial Credit net income taxes, however designated, or amounts legally levied in lieu thereof, based on or measured by charges set forth in this Agreement, or on this Agreement, or on the Equipment, products and services, or their use, including use described as the act of leasing, now or hereafter imposed under the authority of any federal, state or local taxing jurisdiction.

14. **PATENTS**: Control Data will defend any suit or proceeding brought against Customer insofar as the same shall be based on a claim that the Equipment, or any part thereof, furnished under this Agreement constitutes an infringement of any patent of the United States, if notified promptly in writing and given authority, information, and assistance, at Control Data's expense, for the defense of such a suit or proceeding and will pay all damages and costs awarded therein against Customer. In the event that the Equipment or any part thereof, is in such suit held to constitute an infringement, and the use of the Equipment, or any part thereof, is enjoined, Control Data shall, at its option, either procure for Customer the right to continue using the Equipment or part, or replace same with a non-infringing product, or modify the same so that it becomes non-infringing, or remove the Equipment at no cost to Customer, except for rental charges accrued to such time as Customer is enjoined from using such Equipment, or any part thereof, or until the Equipment is removed. Control Data shall not be liable to Customer under any provision of this clause if any patent infringement, or claim thereof, is based upon the use of the Equipment in connection with equipment or devices not delivered by Control Data or Commercial Credit, or in a manner for which the Equipment was not designed, or where the Equipment or part, was modified by or for Customer, in a manner to become infringing.

15. **PREPAYMENT**: Customer may at any time elect to prepay one year's rental. Such prepayment shall entitle Customer to a four percent (4%) prepayment credit applicable to the rental amount due for said period.

16. **GENERAL PROVISIONS**: a) Customer agrees not to remove any Equipment or product from the location at which it is installed except in an emergency, without the prior written consent of Control Data and Commercial Credit, which consent shall not be unreasonably withheld.

b) None of the parties hereto shall have the right to assign or otherwise transfer its rights or obligations under this Agreement, except with the written consent of the other parties, provided, however, that successors in interest by merger, by operation of law, assignment, purchase, or otherwise of the entire business of any party, shall acquire all interest of such party hereunder, and Commercial Credit and/or Control Data shall be entitled to assign this Agreement, or any or all of its rights hereunder, or sell the leased Equipment, subject to the rights of the other parties under this Agreement, to any person or organization, in its own right or as agent or trustee, without prior notice to or consent of the other parties. Any prohibited assignment shall be null and void.

c) This Agreement shall be governed by the laws of the State of Minnesota. There are no understandings, agreements or representations, expressed or implied, not specified in this Agreement.

d) The relationship between Commercial Credit and Customer shall always and only be that of lessor and lessee, and, as to Commercial Credit, this Agreement is and is intended to be a lease and nothing more. Customer shall not hereby be or become the agent of Commercial Credit or Control Data and neither Control Data nor Commercial Credit shall be responsible for the acts or omissions of Customer.

e) Commerical Credit's and Control Data's rights and remedies hereunder or by law shall be cumulative and not exclusive, and shall be in addition to all other rights and remedies available to Commercial Credit and to Control Data. Commercial Credit's failure to enforce strictly any provisions of this Agreement shall not be construed as a waiver thereof or as excusing Customer from future performance.

f) THIS AGREEMENT SUPERSEDES ALL PROPOSALS, ORAL OR WRITTEN, AND ALL NEGOTIATIONS, CONVERSATIONS OR DISCUSSIONS HERETOFORE, HAD BETWEEN THE PARTIES RELATED TO THIS AGREEMENT. CUSTOMER ACKNOWLEDGES THAT IT HAS NOT BEEN INDUCED TO ENTER INTO THIS AGREEMENT BY ANY REPRESENTATIONS OR STATEMENTS, ORAL OR WRITTEN, NOT EXPRESSLY CONTAINED HEREIN. THE TERMS AND CONDITIONS OF THIS AGREEMENT SHALL PREVAIL, NOTWITHSTANDING ANY VARIANCE WITH THE TERMS AND CONDITIONS OF ANY ORDER OR OTHER INSTRUMENT SUBMITTED BY CUSTOMER.

g) This Agreement shall not be deemed or construed to be modified, amended, rescinded, cancelled or waived, in whole or in part, except by written amendment signed by the parties hereto. This agreement shall be binding upon and shall inure to the benefit of the successors and permitted assigns of the parties hereto.

h) The captions used herein are for convenience only, and shall not be deemed to constitute integral provisions of this Agreement.

i) No action, regardless of form, arising out of the transactions under this Agreement, may be brought by any party more than two (2) years after the cause of action has accrued.

CUSTOMER HAS READ AND ACKNOWLEDGES THAT IT UNDERSTANDS THE TERMS AND CONDITIONS OF THIS AGREEMENT, INCLUDING ARTICLE 11, DISCLAIMER OF WARRANTY AND LIMITATION OF REMEDIES, AND AGREES THAT IT IS BOUND HEREBY:

IN WITNESS WHEREOF, the parties hereto have caused this Agreement for Lease to be executed by their representatives duly authorized and empowered thereunto as of the dates set forth hereinbelow.

ATTEST:
(Corporate Seal)

_____
Secretary

_____
(Customer)

BY: _____

TITLE: _____

DATE: _____

ATTEST:
(Corporate Seal)

_____
Secretary

COMMERCIAL CREDIT COMPUTER LEASING, INC.

BY: _____

TITLE: _____

DATE: _____

_____
Witness

CONTROL DATA CORPORATION

BY: _____

TITLE: _____

DATE: _____

EQUIPMENT EXHIBIT

Item	Qty.	Model and Description	Scheduled Installation Date	Purchase Option Code	Unit Basic Monthly Rental	Total Basic Monthly Rental	Total Net Monthly Rental		
							Mos. 1-36	Mos. 37-48	*Mos. 49-60

*Not applicable to 4-Year Term Agreement.

CCCL PURCHASE OPTION POLICY

Purchase option credits shall be granted for each item of Equipment in an amount equal to the applicable percentages of the monthly rental paid for said item for the period of continuous rental immediately preceding purchase. Said applicable percentages shall be those shown below for the purchase option code listed on the Equipment Exhibit for said item of equipment. The minimum additional cost to the Customer after allowance for all purchase option credits, expressed as a percentage of the list price to commercial users for new equipment prevailing at the time of purchase, shall not be less than the percentage listed in the minimum additional cost column below.

PURCHASE OPTION CREDITS

Purchase Option Code	Period of Continuous Rental						Minimum Additional Cost
	Months 1-03	Months 4-12	Months 13-24	Months 25-36	Months 37-48	Months 49 & Subseq.	
A.	68%	68%	45%	-0-	-0-	-0-	30%
B.	30%	30%	45%	60%	75%	75%	20%
C.	70%	70%	70%	70%	70%	70%	30%
D.	30%	30%	50%	70%	80%	80%	20%
E.	55%	55%	58%	60%	75%	75%	20%
F.	90%	70%	70%	70%	70%	70%	30%

Equipment Lease Number: _____

CONTROL DATA CORPORATION

COMMERCIAL CREDIT COMPUTER LEASING, INC.

300 St. Paul Place
Baltimore, Maryland 21202

AMENDMENT NO. _____ TO AGREEMENT FOR LEASE NO. _____

CUSTOMER NAME _____

STREET ADDRESS _____

CITY _____ STATE _____

Customer, Control Data and Commercial Credit agree that the above referenced Agreement is hereby amended as follows:

Except as provided above, all terms and conditions of the above referenced Agreement shall remain in full force and in effect.

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be executed by their representatives duly authorized and empowered thereunto, as of the dates set forth hereinbelow.

AGREED TO:	ACCEPTED BY:	ACCEPTED BY:
_____ (Customer Name)	COMMERCIAL CREDIT COMPUTER LEASING, INC.	CONTROL DATA CORPORATION
BY: _____	BY: _____	BY: _____
TITLE: _____	TITLE: _____	TITLE: _____
DATE: _____	DATE: _____	DATE: _____
ATTEST:	ATTEST:	ATTEST:
_____	_____	_____

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EQUIPMENT EXHIBIT

Item	Qty.	Model And Description	Scheduled Installation Date	Purchase Option Code	Percent Reduction For Initial Term and Non-Cancellation	Unit Basic Monthly Rental	Unit Net Monthly Rental	Total Monthly Rental

TOTAL MONTHLY RENTAL _____

CCCL AMENDMENT FOR QSE EQUIPMENT
CONTROL DATA CORPORATION

COMMERCIAL CREDIT COMPUTER LEASING, INC.
300 St. Paul Place
Baltimore, Maryland 21202

AMENDMENT NO. _____ TO AGREEMENT FOR LEASE NO. _____

CUSTOMER NAME _____

STREET ADDRESS _____

CITY _____ STATE _____

Customer, Control Data and Commercial Credit agree that the above referenced Agreement is hereby amended as follows:

Terms and Conditions for Special (QSE) Equipment:

a) In addition to the monthly rental charges shown herein, the Customer agrees to pay on the Installation Date to Commercial Credit, the initial charge shown below for each item of equipment listed below:

Item	Qty.	Model & Description	Unit Initial Charges	Total/Initial Charges

* b) Notwithstanding Articles 8, 14, 15 and 19 hereof, Customer may not substitute for any of the items of equipment listed in a) above and said items shall not be subject to termination or cancellation in whole or in part by Customer until the expiration of a minimum of ___years of the initial term of the above referenced Agreement.

* Articles 8, 14, 15 & 19 apply to Form AA4684. If Form AA5533 is being amended, the article references are 8, 13, 14 & 18.

c) Customer understands that furnishing the items of equipment noted below involves the modification of certain standard Control Data equipment. Customer agrees to pay to Commercial Credit the reasonable costs of restoring the modified standard Control Data equipment to an unmodified current status after the rental termination date of such modified equipment. The costs to Customer of such restoration shall be in accordance with Control Data's standard labor and material prices to commercial users in effect at the time of such restoration.

Item	Qty.	Model and Description

Except as provided above, all terms and conditions of the above referenced Agreement shall remain in full force and in effect.

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be executed by their representatives duly authorized and empowered thereunto, as the dates set forth hereinbelow:

AGREED TO:	ACCEPTED BY:	ACCEPTED BY:
_____ (Customer Name)	COMMERCIAL CREDIT COMPUTER LEASING, INC.	CONTROL DATA CORPORATION
BY: _____	BY: _____	BY: _____
TITLE: _____	TITLE: _____	TITLE: _____
DATE: _____	DATE: _____	DATE: _____
ATTEST: _____	ATTEST: _____	ATTEST: _____

AA5673
8/74

CONTROL DATA CORPORATION
Peripheral Products Company
Business Products Operations

8100 34th Avenue South
Minneapolis, Minnesota 55440

CONTROL DATA CORPORATION

DISK PACK AND DATA MODULE LEASE WITH OPTION TO PURCHASE AGREEMENT

To: Control Data Peripheral Products Company
Business Products Operations

Regional Sales Office: _____

_____

_____

_____

Lease Agreement No:

Effective Date:

Purchase Order No.:

Lease Term: _____ mos.

Lessee Billing Address:

_____

_____

_____

_____

_____

Lessee Shipping Address:

_____

_____

_____

_____

_____

Control Data Corporation (hereinafter "Control Data") hereby leases to the above referenced Company (hereinafter "Lessee"), and Lessee hereby leases from Control Data the quantity of equipment as set forth below (hereinafter referred to individually as "Disk Packs" or "Data Modules" or collectively as "Equipment") pursuant to the terms and conditions on the reverse side hereof, and as stated below, all constituting this Equipment Lease With Option to Purchase Agreement (hereinafter the "Lease").

LIST OF EQUIPMENT

Quantity	Model	Quantity Range	Basic Monthly Rental		Unit Purchase Price
			Unit	Total	

OPTIONS:

☐ PRICING CLAUSE:

Lessee may, at its option, lease in addition to the quantity indicated above, Equipment in the Quantity Range specified above at the cumulative prices listed above, i.e., Lessee shall pay the Equipment lease price for each Quantity Range, and then for all Equipment within that range before Lessee is entitled to receive the lower Equipment lease price afforded by the next higher Quantity Range. All Equipment so leased will be for the Lease term as stated above.

☐ BLANKET ORDER CLAUSE:

Lessee shall accept delivery of the quantity of Equipment stated above within a twelve (12) month period or pay to Control Data thirty (30) days after invoicing, a retroactive charge equal to the difference between that price paid to Control Data by Lessee for this quantity and that higher price Lessee would have paid to Control Data had Lessee contracted to lease the lesser quantity that Lessee did in fact accept for delivery. Equipment leased pursuant to this Agreement shall be for the Lease term as stated above and the Lease price to apply shall be that price as adjusted during the twelfth month as described herein.

THE LESSEE ACKNOWLEDGES THAT IT HAS READ, UNDERSTANDS AND IS BOUND BY EACH AND EVERY TERM HEREOF OR INCORPORATED HEREIN.

Agreed to and accepted this day of 19	Approved this day of 19
Lessee Company	CONTROL DATA CORPORATION PERIPHERAL PRODUCTS COMPANY
By	By
Title	Title

Please send all communications to Control Data at its Regional Sales office as listed above unless notified to the contrary.

AA 5550 Rev. 9/77

REGION CONTRACT ADMINISTRATION

TERMS AND CONDITIONS OF LEASE WITH OPTION TO PURCHASE AGREEMENT

TITLE AND RISK OF LOSS

Title to the Equipment shall remain at all times with Control Data except where Lessee elects to exercise its option to purchase as recited herein

Control Data shall be responsible for all risks of loss or damage to the Equipment while in transit and while in the custody of the carrier. Thereafter, Lessee assumes all risk of loss or damage.

TAXES

All taxes, however designated, levied or based on the Lease or purchase price set forth in this Agreement or on this Agreement, or on the Equipment, or its use, shall be added to the prices charged Lessee hereunder and shall be paid by Lessee.

INVOICES AND CHARGES

Rental charges shall begin seven (7) days after date of shipment, or the effective date of this Lease, whichever is the earlier, and Lessee shall be invoiced all monthly charges in advance. Rental charges for fractional parts of a calendar month shall be invoiced to Lessee at the rate of 1/30th of the monthly rate for each day. Rental charges shall continue to apply until a Lease Termination Notice is signed, submitted and received by Control Data.

All rental charges are subject to change at any time after expiration of the Lease term.

MAINTENANCE AND REPAIR OF EQUIPMENT

Lessee shall be responsible for cleaning the Equipment and, where applicable, changing associated filters in accordance with applicable industry standards and practices. Lessee shall not attempt to perform any other repairs or maintenance on Leased Equipment unless instructed to do so by Control Data in writing.

Control Data agrees to repair or replace Leased Equipment during the Lease term at no charge to Lessee, except for repairs or replacements required which in Control Data's judgment are due to the fault or negligence of Customer.

WARRANTY

The Equipment may not be newly manufactured. Equipment which is not newly manufactured is warranted equivalent to new in performance. Equipment which is newly manufactured, may consist in part of used components which are warranted equivalent to new in performance when used in the Equipment.

Control Data warrants that Disk Packs and Data Modules shall be free from defects in material and workmanship, and shall meet applicable Control Data specifications upon delivery, further, Disk Packs and Data Modules shall remain usable with respect to read error characteristics for the life of the unit.

This warranty shall remain in effect only if the Equipment is maintained in accordance with applicable industry standards and practices. Control Data's sole obligation under this warranty shall be the repair or replacement of the defective unit (at Control Data's option) at no charge to the Lessee.

Control Data may, however, assume liability for damage to the read/write heads of a Disk Drive, when in the opinion of Control Data and at its discretion, such damage occurred as a direct result of a manufacturing defect in the Disk Pack. In such instances, the liability of Control Data shall be limited to the cost of replacing the damaged read/write heads. Control Data's liability, if any, shall apply only during the Lease term and only to the Equipment leased to the original Lessee by an authorized Control Data representative or agent.

THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

WARRANTY CLAIMS

Claims made by Lessee under the above warranty shall be made immediately, in writing, and shall specify the exact nature and reason for the claim, the date the malfunction was first observed, and the serial number of the Equipment.

Repairs and service work due, in Control Data's judgment, to the fault or negligence of the Lessee or due to any other reason not covered by the warranty, will be billed to and paid for by Lessee at Control Data's then current repair charges rate.

Transportation charges for warranty service work will be paid by Control Data only during the term of the Lease. Transportation charges for service work not covered by the warranty or not during the term of the Lease will be billed to and paid for by Lessee.

Equipment that is returned to Control Data must be packaged in the original container, or its equivalent, and addressed to Control Data Corporation, 10409 I Street, Omaha, Nebraska 68137.*

LIMITATION OF LIABILITY

THE SOLE AND EXCLUSIVE REMEDY FOR CONTROL DATA LIABILITY OF WHATEVER NATURE OR KIND, INCLUDING LIABILITY FOR NEGLIGENCE WITH RESPECT TO EQUIPMENT LEASED OR PURCHASED, OR ANY PERFORMANCE BY CONTROL DATA, INCLUDING DELAY FOR DELIVERY OR REPAIR, SHALL BE LIMITED TO REPAIR OR REPLACEMENT IN ACCORDANCE WITH THE APPLICABLE PARAGRAPHS HEREIN.

IN NO EVENT, SHALL CONTROL DATA'S LIABILITY OF ANY KIND INCLUDE ANY SPECIAL INCIDENTAL OR CONSEQUENTIAL DAMAGES, EVEN IF CONTROL DATA SHALL HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH POTENTIAL LOSS OR DAMAGE.

CONTINUED POSSESSION

Lessee's continued possession of the Equipment after the Lease period has expired and the option to purchase has not been exercised, shall be considered a continuation of the Lease. In such instances the Lease shall continue until such time as it is terminated by either party upon giving ninety (90) days written notice to the other.

PATENTS

Control Data will indemnify Lessee against costs and damages arising from patent infringement provided that (1) Lessee promptly notifies Control Data of any claim of infringement; and (2) Control Data does not avoid the claim by Equipment modification or substitution satisfactory to Lessee; and (3) Control Data is given full control of litigation and settlement.

PURCHASE OPTION

Lessee may purchase at any time, any of the Equipment and such purchase shall not void the warranty as to the Equipment which is so purchased.

All such purchases shall be at the Unit Purchase Price, as set forth on the reverse side of this form (less an amount equal to ninety percent (90%) of the total Basic Monthly Rental paid during the first twelve (12) months, and twenty percent (20%) of the Total Basic Monthly Rental paid during the second twelve (12) months); provided, however, that the Equipment being purchased has been on continuous rental by Lessee. In no event, however, shall the credit toward purchase exceed seventy percent (70%) of said Unit Purchase Price.

Lessee's purchase option shall become effective and title shall pass to Lessee on the date Control Data receives full payment of the price as computed above, together with all amounts due or to become due under this Lease.

TERMINATION

If Lessee petitions for reorganization under the Bankruptcy Act; or is adjudicated a Bankrupt; or a receiver is appointed for Lessee's business; or Lessee makes an assignment for the benefit of creditors; or defaults in payment of any sum due hereunder; or otherwise fails to fulfill its obligations under this Lease, then Control Data shall have without further notice, the right to terminate this Lease and enter Lessee's premises immediately to remove and repossess any or all of Control Data's Equipment. Control Data's termination of the Lease shall be without prejudice to any other remedies Control Data may have. Termination of this Lease, or any other Agreement Control Data may have with Lessee for any of these reasons, shall be sufficient justification for termination, at Control Data's option, of any or all Agreements between Control Data and Lessee. Lessee's obligation to pay all charges which shall have accrued shall survive any termination of this Lease, or any Supplements incorporated herein.

In the event that Lessee upgrades its computer system and procures required Disk Packs or Data Modules from Control Data, or upgrades to a computer system for which Control Data is unable to supply the required Disk Packs or Data Modules, Lessee may, after Equipment has been on continuous rental for twelve (12) months, terminate this Lease without charge.

Lessee may terminate the Lease at any time, without cause, upon ninety (90) days written notice, provided Lessee pays to Control Data an amount equal to seventy-five percent (75%) of the total rental payments remaining to be paid during the balance of the rental period specified on the face page hereof.

Lessee's termination of this Lease in accordance with the above paragraphs, requires execution of a Lease Termination Notice. Termination shall not become effective until the Equipment being terminated is received by Control Data. Lessee agrees to pay or reimburse Control Data for all return transportation costs upon termination or expiration of the Lease. Equipment being returned must be packaged in their original containers or equivalent.*

MISCELLANEOUS

Lessee shall make no assignment hereunder without the express written consent of Control Data, nor shall Lessee permit any other party to use the Equipment as leased to Lessee.

This Lease shall be governed by the laws of the State of Minnesota and there are no understandings, agreements or representations, express or implied, not specified herein.

The terms and conditions of this Lease shall prevail notwithstanding the variance of any terms and conditions of any purchase order submitted to Control Data by Lessee.

This Lease shall not be deemed or construed to be modified, amended, rescinded, cancelled or waived in whole or in part, except by written amendment.

*If containers are unavailable to Lessee they may be ordered from Control Data Corporation; 10409 I Street, Omaha, Nebraska 68137, Containers ordered by Lessee will be invoiced to Lessee at Control Data's then current retail price. Lessee shall be liable for any damages resulting from Lessee's failure to package as specified herein and will be invoiced according to Control Data's then current price list.

CONTROL DATA
CORPORATION

CONTROL DATA CORPORATION
8100 34th Avenue South
P.O. Box 0
Minneapolis, Minnesota 55440

AGREEMENT FOR CYBERNET® TECHNOLOGY MANAGEMENT SERVICES

CUSTOMER _____

STREET ADDRESS _____

CITY _____ STATE _____ ZIP _____

("Customer") contracts for and Control Data Corporation ("Control Data") by its acceptance and execution hereof at Minneapolis, Minnesota, agrees to provide Technology Management Services and use of related services ("TM Services") including those Services which are listed below, as the same are available and constituted during the term of this Agreement, in accordance with the terms and conditions contained in this Agreement, including specifically Article 5, Disclaimer of Warranty and Limitation of Remedies.

Technology Management Services ("TMS") Package Number	Quantity	Charge Per Package

CUSTOMER HAS READ THIS AGREEMENT AND ACKNOWLEDGES THAT IT UNDERSTANDS THIS AGREEMENT AND IS BOUND HEREBY.

AGREED TO:

BY _____
(Signature)

_____
(Print or Type Name)

TITLE _____

DATE _____

ACCEPTED BY:
CONTROL DATA CORPORATION

BY _____
(Signature)

_____
(Print or Type Name)

TITLE _____

DATE _____

1. TM SERVICES: This Agreement constitutes an order for the TM Services listed above and shall constitute a basic ordering agreement under which Customer may request one or more of the TM Services described hereinafter:
a) Customer may search in an on-line interactive mode the computerized Technology Exchange Data Base (TECHNOTEC), other data bases made available by Control Data as part of its TM Services and/or Customer's own data base ("Private Technology Data Base") containing units of information ("Techno-Units"). Customer may also request by mail or telephone that Control Data search TECHNOTEC. All searches shall be in accordance with the then current user manual or other operating procedures established by Control Data from time to time.
b) Customer may submit Techno-Units for entry on TECHNOTEC and/or Customer's Private Technology Data Base. To enter a Techno-Unit on TECHNOTEC, Customer must complete, execute and submit to Control Data, a Techno-Unit Entry Application, a copy of which is attached hereto and made a part hereof as Exhibit A. Control Data, in its sole descretion, reserves the right to refuse to enter any Techno-Unit on TECHNOTEC.
To enter Techno-Units on the Customer's Private Technology Data Base, Customer may either:
(i) submit a Techno-Unit Entry Application or reasonable facsimile; or
(ii) submit data at a Remote Batch Service Center in accordance with Article 4. b) (iv).
c) Customer may request other services set forth in Exhibit B attached hereto and made a part hereof.

2. TERM: a) This Agreement will become effective on the date accepted and executed by Control Data and shall remain in effect:
(i) If one or more TMS Package(s) has been ordered pursuant hereto, for an initial term equal to the longest term of any such Package(s) (as set forth in Exhibit B); or
(ii) If no TMS Package has been ordered pursuant hereto, for an initial term of twelve (12) months.
TMS Package(s) shall renew automatically for a period equal to the initial term of respective TMS Package(s) unless terminated by either party upon at least thirty (30) days written notice prior to the expiration of the then current term of said TMS Package(s). For TM Services provided other than through TMS Package(s), this Agreement shall continue in full force and effect until terminated upon thirty (30) days prior written notice by either party.
b) From the date of entry on TECHNOTEC, a Techno-Unit shall be stored:
(i) If submitted under a TMS Package, for a period equal to the initial term of the respective TMS Package; and
(ii) If submitted under Unit Pricing, for a period of twelve (12) months from the date of its entry.
c) From the date of entry on Customer's Private Technology Data Base, Techno-Units shall be stored during the term of the respective TMS Package.
d) Customer may direct Control Data to cease storing one or more Techno-Unit(s) in accordance with Article 4. b) (ii). Further, upon termination of this Agreement by Customer, Control Data shall have the immediate right to remove any Techno-Unit(s) from TECHNOTEC and Customer's Private Technology Data Base.

CDC Contract No. _____

3. SERVICE CHARGES: a) Invoices issued pursuant to this Agreement shall be due and payable within fifteen (15) days after date of invoice for the TM Services ordered, notwithstanding any dollar limitation specified by Customer in any order or other instrument submitted by Customer. Invoices for TM Services shall be issued as follows.

(i) TMS Packages listed on the reverse side hereof shall be invoiced in full on the effective date of this Agreement, at the charges set opposite said TMS Packages.

(ii) All other TM Services provided under this Agreement shall be invoiced on the basis of actual usage after the month in which the TM Services were used, in accordance with the then current Unit Pricing contained in Exhibit B.

(iii) Unless a TMS Package is terminated, the renewal of said TMS Package shall be invoiced on the renewal date thereof at the then current charges.

b) Customer shall pay (or reimburse Control Data) in addition to all charges specified in this Agreement, and as a separate item, all taxes (exclusive of net income taxes) however designated, or amounts withheld or legally levied in lieu thereof, based on or measured by charges or payment of charges set forth in this Agreement, or on this Agreement, or on the TM Services or their use now or hereafter imposed by any government or agency thereof.

c) Customer and Control Data may by amendment to this Agreement add an additional TMS Package(s), the initial term for which will commence upon the date the amendment is accepted and executed by Control Data. Charges for such additional TMS Package(s) shall be invoiced upon acceptance and execution of the amendment at the then current charges.

d) In the event Customer fails to utilize all TM Services elements available pursuant to a TMS Package, there shall be no refund of any charges for such TMS Package.

e) Current published TM Services charges are set forth in Exhibit B. Control Data expressly reserves the right at any time to change said charges upon thirty (30) days prior written notice.

4. RESPONSIBLITIES:

a) Techno-Units on TECHNOTEC

(i) Customer shall be solely responsible for the accuracy and completeness of all data, information and materials submitted in connection with this Agreement. Customer recognizes that Techno-Units may become public information upon being stored on TECHNOTEC.

(ii) Customer represents and warrants that it is the true and lawful owner of any Techno-Unit submitted under this Agreement, or if not the owner, that Customer is authorized and has the authority to submit such Techno-Unit for entry on TECHNOTEC pursuant to this Agreement. Customer will defend, protect, indemnify, and hold Control Data harmless from any claims that Control Data is not entitled to store, display and use the Techno-Unit on TECHNOTEC.

b) Techno-Units on TECHNOTEC and/or Private Technology Data Base

(i) Customer may change a Techno-Unit at any time and shall pay Control Data's then current TM Services charges for its commercial customers for such change.

(ii) Customer may direct Control Data to cease storing a Techno-Unit at any time by providing Control Data with at least thirty (30) days prior written notice. In such event, Customer shall not be entitled to any refund.

(iii) Control Data will attempt to store and display Techno-Units in accordance with its generally accepted data processing procedures, but reserves the right to change TECHNOTEC and or Private Technology Data Base, and the relevant methodology, format and procedures without notice to Customer.

(iv) If Customer elects to submit data to Control Data at a CYBERNET Remote Batch Service Center for entry on Customer's Private Technology Data Base, it shall provide, in form satisfactory for machine processing on Control Data equipment, information, data and materials as specified by Control Data to perform the TM Services.

Control Data shall not be required to hold any Customer data for more than ninety (90) days after completion of work, and after such period Control Data may, without liability therefor, dispose of such data. Upon termination of this Agreement, Control Data will dispose of all Customer data still in Control Data's possession in any manner it deems appropriate unless Customer, prior to termination, furnishes to Control Data written instructions for the disposition of such data at Customer's expense.

c) Equipment:

Customer shall be responsible for obtaining, maintaining and operating, at its own expense, terminal equipment and communication devices, links and other services or equipment required to search TECHNOTEC and/or Customer's Private Technology Data Base which are compatible with Control Data CYBERNET equipment and software and which shall conform to Control Data written specifications. Where such equipment is provided by Control Data, Customer shall be responsible for its operation and maintenance, all risks of loss or damage to such equipment and the return of such equipment upon termination of the applicable TMS Package(s).

d) Notification:

(i) Customer shall notify Control Data in writing of any claimed error in the results obtained by usage of the TM Services within fifteen (15) days after the receipt of such results and furnish therewith reasonable supporting documentation for such claim. All results obtained pursuant to this Agreement shall be deemed acceptable to Customer unless said notice is given and documentation furnished within said fifteen (15) days.

(ii) Customer shall notify Control Data of any claimed invoice discrepancy within fifteen (15) days after date of invoice, and without such notice an invoice shall be deemed correct and payable in full.

5. DISCLAIMER OF WARRANTY AND LIMITATION OF REMEDIES: CUSTOMER UNDERSTANDS AND AGREES AS FOLLOWS:

a) ALL IMPLIED WARRANTIES, INCLUDING WITOUT LIMITATION, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY DISLAIMED AND EXCLUDED BY CONTROL DATA.

b) Control Data makes no representations or warranties, whether express or implied, with respect to the accuracy or availability of the information described on TECHNOTEC or other data bases, the content of the information suggested by the summary thereof, or that the use of or the results of the information stored on TECHNOTEC or other data bases and obtained hereunder will not infringe any patent, copyright, trademark or proprietary right of any third person. It is understood that Control Data is not an agent or representative of any party storing information on TECHNOTEC or other data bases.

c) Control Data shall be liable for the loss or destruction of Customer's data while stored on TECHNOTEC or Customer's Private Technology Data Base only if such loss or destruction was due solely to the negligence of Control Data and Customer's sole remedy for such loss or destruction shall be the restoration of such lost or destroyed data, provided that such restoration can reasonably be performed by Control Data and Customer provides Control Data with all source data necessary for such restoration in a format consistent with that described in Article 1. b).

d) Control Data shall not be liable for any loss or damage caused by delay in furnishing the TM Services or any other performance under or pursuant to this Agreement.

e) Customer's sole and exclusive remedies for Control Data's liability of any kind (including liability for negligence) under or pursuant to this Agreement shall be limited to the restoration of lost or destroyed data pursuant to Article 5. c) or the correction of errors in data processing results due to the fault of Control Data where Control Data has received the notice and proof specified in Article 4. d (i) above provided however that where such correction is not practicable, Control Data shall provide an equitable credit not to exceed the charges actually paid for the TM Services which produced the erroneous results.

f) IN NO EVENT SHALL CONTROL DATA'S LIABILITY OF ANY KIND INCLUDE ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, EVEN IF CONTROL DATA SHALL HAVE KNOWLEDGE OF THE POSSIBILITY OF SUCH POTENTIAL LOSS OR DAMAGE.

6. CONFIDENTIALITY OF PRIVATE TECHNOLOGY DATA BASES.

Control Data shall utilize reasonable efforts in preserving the confidentiality of:

(i) Customer data stored on the Customer's Private Technology Data Base pursuant to this Agreement; and

(ii) data or information relating to Customer's business which is confidential, is clearly so designated in writing and is submitted to Control Data personnel in order to carry out any request for TM Services pursuant hereto. Control Data shall be liable to Customer only in the event of a willful and material disclosure of such confidential data or information by Control Data.

7. GENERAL PROVISIONS: a) Customer shall not have the right to assign or otherwise transfer its rights or obligations under this Agreement nor to resell or allow third parties to use TM Services except with the prior written consent of Control Data.

b) This Agreement shall be governed by the laws of the State of Minnesota.

c) THIS AGREEMENT SUPERSEDES ALL PROPOSALS, ORAL OR WRITTEN, AND ALL NEGOTIATIONS, CONVERSATIONS OR DISCUSSIONS HERETOFORE HAD BETWEEN THE PARTIES RELATED TO THIS AGREEMENT. CUSTOMER ACKNOWLEDGES THAT IT HAS NOT BEEN INDUCED TO ENTER INTO THIS AGREEMENT BY ANY REPRESENTATIONS OR STATEMENTS, ORAL OR WRITTEN, NOT EXPRESSLY CONTAINED HEREIN. THE TERMS AND CONDITIONS OF THIS AGREEMENT SHALL PREVAIL, NOTWITHSTANDING ANY VARIANCE WITH THE TERMS AND CONDITIONS OF ANY ORDER OR OTHER INSTRUMENT SUBMITTED BY CUSTOMER UNLESS AGREED TO IN WRITING BY CONTROL DATA.

d) This Agreement shall not be deemed or construed to be modified, amended, rescinded, cancelled, or waived, in whole or in part, except by written amendment signed by the parties hereto.

e) No action, regardless of form, arising out of the transactions under this Agreement may be brought by either party more than one (1) year after the cause of action has accrued.

CONTROL DATA CORPORATION

TECHNOLOGY MANAGEMENT SERVICES CHARGES

EXHIBIT B TO AGREEMENT FOR CYBERNET® TECHNOLOGY MANAGEMENT SERVICES

TECHNOLOGY MANAGEMENT SERVICES (TMS PACKAGES)	TMS RESOURCES ONE RESOURCE ELEMENT = 1 TECHNO-UNIT OR 30 MINUTES SEARCH TIME (*)
PACKAGE 1 $3,000	60 ELEMENTS ($50.00 PER ELEMENT)
PACKAGE 2 $6,500	154 ELEMENTS ($42.00 PER ELEMENT)
PACKAGE 3 $9,500	237 ELEMENTS ($40.00 PER ELEMENT)
PACKAGE 4 $14,000	378 ELEMENTS ($37.00 PER ELEMENT)
PACKAGE 5 $19,000	542 ELEMENTS ($35.00 PER ELEMENT)
PACKAGE 6 $50,000	1785 ELEMENTS ($28.00 PER ELEMENT)

TMS PACKAGES:

1. The term of service for each TMS Package is twelve (12) months.
2. Each TM Services Resource Element may be used for one of the following:
   (A) One (1) Techno-Unit, which may be placed on TECHNOTEC, the Customer's Private Technology Data Base, (TMS Packages 2 through 6 only) or both. The same Techno-Unit placed in both TECHNOTEC and Customer's Private Technology Data Base counts as only one Resource Element. Techno-Units may not, on average, exceed 1500 characters.
   (B) Thirty (30) minutes wall-clock time* to search (i) TECHNOTEC, (ii) Customer's Private Technology Data Base, or (iii) other data bases made available by Control Data as part of its TM Services.
   (C) To purchase any of the TM Services listed under Unit Pricing.
3. Each TMS Package includes four (4) hours of Customer training in the use of the TM Services, and a reasonable number of manuals and search aids.
4. TM Services used beyond those included in the TMS Package(s) will be invoiced in accordance with then current Unit Pricing.

*Thirty (30) minutes search time at 10 to 30 cps, eight (8) minutes search time at 120 cps.

UNIT PRICING

1. TECHNOTEC OR PRIVATE TECHNOLOGY DATA BASE SEARCH CHARGES

A. COMPUTER SYSTEM USAGE

The usage of CYBERNET Interactive Service (under the Network Operating System—NOS) is charged in System Billing Units (SBUs).

$0.38 per SBU

B. PRIVATE TERMINAL CONNECTION

- Time Sharing 10, 14.8 and 30 characters per second (cps)

  Charges are $9.00 per connect hour for Local dial-up plus $0.25 per 1000 characters transferred to or from the terminal.

- Time-Sharing 120 cps . . .

  Standard:

  Charges are $15.00 per connect hour for Local dial-up plus $0.10 per 1000 characters transferred to or from the terminal.

  or

  Customer Option:

  Charges are $28.00 per connect hour for Local dial-up.

C. CONTACT FEE:

At the option of a customer submitting a Techno-Unit, searchers may be assessed a fee when retrieving the Techno-Unit's CONTACT information. The fee for Techno-Units so designated is equal to 30 SBUs unless otherwise indicated on the Techno-Unit.

D. CUSTOMER SERVICE

Customers may request a search of TECHNOTEC (not to exceed one half hour wall clock time) on any single subject or problem for a fee of $125. Contact fees, if any, are additional.

E. WALK-IN USE OF SERVICE CENTERS

Interactive Terminal (10-30 cps)	$15.00 per hour
Voice-grade Batch Terminal	75.00 per hour

Plus TECHNOTEC Search Charges 1A through 1C.

2. TECHNO-UNITS

A. SUBMITTING INDIVIDUAL TECHNO-UNITS

Input and storage of information is charged at a rate of $150 per year per Techno-Unit, Techno-Units may not, on average per customer, exceed 1500 characters.

B. TECHNO-UNIT WRITING

The services of a Technology consultant to assist in writing Techno-Units is charged at a rate of $50.00 (or one-half TM Services Resource Element) per Techno-Unit submitted.

C. TECHNO-UNIT AUTOMATIC MATCHING

The services of a Technology consultant to match submitted Techno-Units to existing Techno-Units on TECHNOTEC is charged at a rate of $60.00 (or one TM Service Resource Element) per Techno-Unit submitted. Search is one-time and may not exceed one-quarter hour wall-clock time. Contact fees, if any, are additional.

D. TECHNO-UNIT CHANGES

A fee of $25.00 is charged each time information in a Techno-Unit is changed.

3. SEARCH AND ADVISORY SERVICE

Customized reports are charged at a rate of $2500 per report. Up to five (5) copies of the report are supplied. Extra copies may be purchased for an additional charge of $25 per copy.

4. PRIVATE TECHNOLOGY DATA BASE

LEXITEC may be used as an additional method to create a private technology data base. The then current CYBERNET Service charges shall apply. CYBERNET customers whose total charges exceed $5000 per year for using LEXITEC for technology data base purposes may purchase TM Services Resource Elements for $46 per element upon entering into this Agreement for Technology Management Services. These elements may only be used for TECHNOTEC.

5. RELATED SERVICES

A. REVERSE CONTACT

Both the customer searching and the customer submitting a Techno-Unit may be charged for this service. The Searcher is charged the Contact fee indicated on the Techno-Unit and the submitter is charged a handling fee of $20.00 per notification.

B. CUSTOMER TRAINING

Customer training is charged at:

- $65.00 per trainee at Control Data locations, and
- $300.00 per day, plus per diem and travel expenses, at Customer locations.

C. TERMINAL LEASING

Customers may lease an interactive terminal for $900 per year (1 year minimum) upon signing an agreement with Control Data to lease such terminal.

D. USER MANUAL

The User Information Manual providing instructions for using TECHNOTEC is charged at a rate of $10.00 per manual.

DEFINITIONS

For the purposes of this Agreement, the following definitions shall apply:

1. CONTACT: Information to identify where to find additional detailed information describing a Techno-Unit.
2. REVERSE CONTACT: Customers who store data and desire to remain anonymous may do so by the Reverse Contact technique. Their CONTACT information is not disclosed to the searcher; instead they are informed by Control Data of the searcher's identity and they may, at their option, contact the searcher.
3. SYSTEM BILLING UNIT (SBU): A System Billing Unit is the pricing component which accounts for resources used during execution of a customer's job.
4. CHARACTER: A character is defined as one letter, space, or punctuation mark.
5. LEXITEC: A data base application program available as part of the CYBERNET Application Library.

These TM Services charges apply to all U.S. CYBERNET Centers operated by Control Data Corporation and are effective April 29, 1980 and do not include any applicable Federal, State, or Local taxes. Control Data expressly reserves the right at any time to change said charges upon thirty (30) days prior written notice.

CONTROL DATA CORPORATION
8100 - 34th Avenue South
P.O. Box 0
Minneapolis, Minnesota 55440

ADDENDUM TO AGREEMENT FOR CYBERNET® TECHNOLOGY MANAGEMENT SERVICES FOR CUSTOMERS WHO DISTRIBUTE OR RESELL INFORMATION

CUSTOMER NAME _____

STREET ADDRESS _____

CITY _____ STATE _____ ZIP _____

The Agreement for CYBERNET Technology Management Services between Customer and Control Data, accepted by Control Data on _____ (hereinafter referred to as the "Agreement") is hereby amended by the addition of the following terms and conditions:

1. GENERAL: Notwithstanding Article 7 a) of the Agreement, Customer shall have the right to distribute or resell Techno-Units in printed hard copy form only, to submit for third parties Techno-Units for listing and to search TECHNOTEC for third parties.

2. THIRD PARTIES: If the Customer provides TM Services to third parties and should any third party or anyone claiming under such third party bring or threaten to bring any legal or equitable action against Control Data related to the TM Services provided under this Agreement, whether or not the same is meritorious, the Customer will indemnify Control Data for all loss and expenses associated with the defense of such claim or threatened claim including (without limitation) attorney's fees, court costs and judgments.

3. COPY CHARGES: Customer agrees to pay Control Data for each printed hard copy Customer makes or has made of Techno-Units. The charge for each printed hard copy shall be calculated at the rate of five dollars ($5.00) for each Techno-Unit on such copy.

4. TRADEMARKS AND COPYRIGHTS: Customer shall have no right to use or display any trademark, service mark, trade name, advertising or other commercial symbol of Control Data in connection with the distribution or resale of TM Services hereunder. Customer agrees to reproduce or to affix or have affixed copyright or other proprietary notices to the printed hard copies or parts thereof in the manner and form specified by Control Data.

5. SERVICE CHARGES: Notwithstanding Article 3 a) (i) SERVICE CHARGES of the Agreement, Customer shall be invoiced forty percent (40%) of the TMS Package charge on the effective date of the Addendum. The remaining sixty percent (60%) of the TMS Package charge shall be invoiced in three (3) equal installments at three (3) month intervals with the first installment invoiced three (3) months after the effective date of the Addendum.

6. UPGRADING OR DOWNGRADING: Customer may elect to upgrade or downgrade the original TMS Package ordered under the Agreement to a different TMS Package, for the remainder of the initial term under the Agreement and renewals thereof. This election must be made in writing before the ninth (9th) month of the initial term or renewal thereof of the TMS Package to be upgraded or downgraded. A service charge of $150 shall be assessed for each upgrade or downgrade, and all resource elements used under the TMS Package upgraded or downgraded shall be deemed to have been utilized under the new TMS Package. All previous payments shall be applied to the new TMS Package and in the event of excess payments, a refund shall be made to Customer less the amount of the applicable service charge. All additional amounts due Control Data resulting from Customer's election shall be invoiced on the date of acceptance by Control Data of the upgrade or downgrade election and shall be due and payable within fifteen (15) days after date of invoice. Upgrading and downgrading is permitted only once during each one (1) year term of a TMS Package.

7. TMS PACKAGE TERMINATION: Customer may terminate a TMS Package by giving written notice to Control Data. The effective date of termination will be the last day of the month following the month in which the notice of termination is received. Customer will be liable for all amounts due prorated to the effective date of termination or for charges for resource elements used, whichever is greater. Customer will be charged an additional fee of $150 for terminating a TMS Package.

Except as provided above, all terms and conditions of the above referenced Agreement shall remain in full force and effect.

AGREED TO:	ACCEPTED BY:
	CONTROL DATA CORPORATION 8100 - 34th Avenue South P. O. Box 0 Minneapolis, Minnesota 55440
By _____	By _____
Name (Type or Print) _____	Name (Type or Print) _____
Title _____	Title _____
Date _____	Date _____

CCC/CDC LONG TERM LEASE

PLANS EDP SYSTEMS PRODUCTS

I. CDC/CCCL RELATIONSHIP

The Control Data salesman is responsible for selling the capabilities of CDC computer equipment. In addition, he can offer the user a firm price under a CDC Purchase Agreement or a one-year lease agreement.

CCCL Lease Plans will offer more attractive prices than the CDC one-year lease. It is recognized that the CDC salesman may have to mention these more attractive prices spontaneously in sales situations. CDC salesmen are authorized to quote and confirm the prices associated with extensions to the Initial Term and Non-cancellable Period, provided that such prices are based on the Basic Monthly Lease prices published in this Manual, as discounted by the standard percentages listed in paragraph III.A.2. below.

II. CDC/CCC LEASE/FINANCING PLANS

The following Lease and Financing Plans are available:

A. Commercial Credit Corporation Long Term Lease Plans
B. Installment Sale of Equipment Plan
C. Control Data One Year Lease Plan
D. Terminal Products Short Form Agreement
E. Other CDC/CCC Financing Plans

III. CCCL LONG TERM LEASE PLAN POLICY (FORM AA4884)

A. Summary of Features

The Standard CDC/CCCL Leasing Program is designed with maximum flexibility as a base in order to compete effectively with short-term and long-term programs offered by the competition. From this flexible base, the Customer is offered financial incentives to increase his commitment. By exercising certain options, he may reduce his monthly obligation, or lease price, in exchange for reduced flexibility or longer term obligations. Once a firm contract is signed, deviation will not be permitted.

The program outline is as follows:

1. Base Contract: Prices as listed under the CCCL 3 year/24 months column are the base contract prices the terms of which are presented below:

   a. Term - three years.
   b. Cancellation after 24 months on 90 days' notice.
   c. Liberal Substitution Privileges.
   d. Risk Insurance - carried by Control Data.
   e. Purchase Options - Multilevel plans.
   f. Add-on Privilege discount.
   g. Prepayment Privilege discount.
   h. Billing and Collection - Existing CDC procedures extended to cover CCCL leases.
   i. Unlimited Use
   j. Down-time lease credits
   k. Property Taxes paid by Control Data.

2. Options/Discounts: Base contract prices may be adjusted based on modification of contract terms. Changes available are:

   a. Contract Term: Customers writing contracts for a term longer than three years, receive a discount of 1% for each additional year.

      Example: Contract term of five years receives a 2% discount from the three year base price listed in this Manual.

   b. Optional Non-cancellable Period: Customers may select a non-cancellable term greater than the base 24 months period. A discount of 2% for each 12 month incremental increase in non-cancellable period will be allowed up to a limit of 84 months or the contract term, whichever is shorter.

      Example: Five year contract with a five year non-cancellable period. Discount is 6% for extending the non-cancellable period (2% per year for each of the three years beyond the base 24 months) and 2% for extending the term (1% per year for each year beyond three) giving a total discount of 8%.

   c. Prepayment Credit: A 4% discount of twelve months rental due will be allowed for each year's rental paid in advance.

B. Substance of Major Contract Provisions

1. Term/Cancellation - The term of the contract is measured from the date of commencement of rental charges, and remains in effect for three years unless: Extended, as in Option a, above; converted to purchases; or cancelled at the end of the agreed-upon period (24 months unless extended per Option b, above.)

1. Term/Cancellation - Continued

Termination -- In the event that the Customer chooses to cancel after expiration of the non-cancellable period, he will be assessed a cancellation charge equal to:

a. A percentage of the unpaid rental, such percentage being computed on the basis of contract term according to the following schedule:

If Contract Term Is:	Cancellation Charge Is:
3 Years	15% of unpaid rental
4 Years	18% of unpaid rental
5 Years	21% of unpaid rental
6 Years	24% of unpaid rental
7 Years	27% of unpaid rental

2. Add-on and Substitution -- By mutual agreement, the Customer, either by separate lease or by proper amendment of the contract, add on to or after expiration of one year from the installation date of equipment under a contract substitute for said equipment. The equipment to be added or substituted must be a standard Control Data product. The following terms and conditions will apply:

a. Equipment Substitution -- The new total basic monthly rental for all equipment covered by the contract shall be not less than the total basic monthly rental in effect prior to the substitution amendment.

b. Equipment Addition or Substitution -- Prices will be the Commercial Credit long-term lease prices in effect at the time of new order, corresponding to the years of initial term remaining and the non-cancellable years of the initial term remaining on the contract anniversary date preceding installation of said additional equipment.

Add-on is defined to include only standard CDC products, including central processor, that are to be interconnected (may be via permanent communication link) to the original system. The customer must sign a separate agreement to order additional stand-alone systems (central processors) not specified in the original contract.

Replacements are defined as standard CDC products substituted for other standard CDC products that perform an equivalent function.

c. Term -- If on the anniversary date preceding the installation of the add-on or substitute equipment, the remaining term of this Agreement is less than three years or the non-cancellation period remaining in said term is less than two years, the said equipment shall be priced at Control Data's one-year rental prices then prevailing. Invoicing will be adjusted upon installation date of the additional or substitute equipment.

IV. INSTALLMENT SALES OF EQUIPMENT POLICY

A. General Policy

1. Products Covered

CDC form AA6150 Rev. 1/77 "Installment Sale of Equipment and Security Agreement" may be utilized for all systems and products in the EDP Systems section of this Price Manual. You must get approval of the cognizant profit center prior to making a quotation for products other than CYBER 18. The special policy outlined in B below exists for CYBER 18.

2. Geographic Exclusion

Domestic

- Connecticut, Maryland, Missouri - Minimum total dollar transaction standards apply. Please contact your Regional Contracts Manager for details.

Form AA6150 (Rev. 1/77) is not approved for use in the following 9 states:

Alaska	Kansas	Nebraska
Arizona	Louisiana	North Dakota
Hawaii	Montana	Ohio

For these 9 states, contract modifications may be necessary. Appropriate changes can possibly be made but you must contact your Regional Contracts Manager to work out necessary contract modifications.

Foreign For Foreign Sale, AA6150 (1/77) may form the basis for writing Installment Sales Agreements, but local financing and legal requirement may preclude its use. Contact the local Country Manager for specific use outside the U.S.

B. CYBER 18

1. You must complete CDC form AA6150 Rev. 1/77 referenced above as well as software schedules A and H if software is involved. Note - Since AA6150 agreements are assigned to Commercial Credit, changes to terms and conditions are not permitted.

2. Customer is responsible for hardware maintenance and must either subscribe to CDC maintenance schedule D or otherwise submit evidence of acceptable maintenance support for the equipment for the duration of the contract.

3. Form AA5218 Credit Approval must be submitted in advance for Commercial Credit approval prior to signing a binding agreement.

4. The procedures defined below are to be used to get quotations of installment sale factors to be used to determine monthly payment schedules. Quotations may be requested and given by telephone but are to be confirmed by TWX.

   a. If the total monthly dollar value of the order (L1) exceeds $1000 and the term is less than 36 months, contact the following personnel for quotation of installment sale factors:

Region	Contact	Facility	Phone
Eastern Midwest Southeast	Joe Kolasa	HQS02G	853-5597
Southwest Western	Pete Klinkner	HQS02G	853-5117
Alternatively, Contact	W. D. Anderson	HQS02G	853-4172

   b. If the total monthly dollar value of the order (L1) exceeds $1000 and the term is 36 months or greater, contact the following Commercial Credit/McCullagh Leasing personnel for quotation of installment sale factors:

	Jac Morin	HQN11Q	853-7051
Alternatively, Contact	Charlie Rathburn	HQN11Q	853-4830

   Example: The customer desires installment sale on a product with a "Price Manual" (Redbook) purchase list or resale price as noted below and wishes to make payments over a 48 month period. The factor quoted by the Commercial Credit/McCullagh Leasing representative was .026827.

Prod. No.	Pur. Price	x	Factor	
XXX-XXX	128,500		.026827	= $3,447/Mo.

V. CONTROL DATA ONE YEAR LEASE PLAN (Form AA4072)

The CDC lease contract is for one year only. New contracts for terms longer than one year will be accepted under the Commercial Credit lease plan only. One year lease plans are non-cancellable. Cancellation clauses that permit termination of the lease agreement prior to expiration of the initial contract term will not be accepted by Control Data.

Customers may convert one year terms leases to a Commercial Credit lease for a longer term. Upon conversion to a longer term lease, the term of the new lease begins on the date of contract acceptance by Control Data. No credit is given for prior months rental.

The lease for any equipment under a Control Data Lease may be terminated at the end of the initial term (one year) or at any time thereafter with 90 days prior written notice from the customer.

VI. TERMINAL PRODUCTS SHORT FORM AGREEMENT (Form AA6202)

This is a short-form Terminal Agreement designed for use primarily with the 75X Terminal Product Line; however, the agreement, including its title, is generic and can be used with all Terminal Products. The Agreement specifies a one-year term and includes lease and maintenance terms and conditions. See Contracts Section for details.

VII. MULTIPLE SYSTEMS/DENSITY MAINTENANCE DISCOUNTS

Maintenance price discounts are allowed for Multiple CYBER 170, 6000, CYBER 76 and 7600 Systems. Density discounts also apply to CYBER 18-10M and 75X products. See pages 4 and 5 of the Maintenance Services section for details.

VIII. OTHER CDC/CCC FINANCING PLANS

SPECIAL ARRANGMENT, VARIATIONS

It may be to the Customer's advantage to have payments other than straight-line, equal monthly payments over the life of the lease. For example, the Customer may be able to commit to high payments early in the life of the contract, but desires lower payments later because of uncertainty of available funds.

Conversely, the Customer may require lower payments in the early years but can commit to high payments in later years. For such a Customer, a "stair step" type of plan can be devised, which will entail lower payments, graduated to high payments in later period of the contract. These plans must be tailored to each situation, and may affect the standard discount schedules given above.

These agreements are firm contracts and deviation will not be possible.

"FUNDING-OUT" PROVISION

Certain incrementally funded agencies (state and local governments, educational institutions etc.) acquire data processing equipment over extended periods using funds which are appropriated annually or bi-annually. Under certain conditions, these agencies may be eligible under the new CDC/CCCL Lease Plan for restricted cancellation privileges related to funding availability. Each case must be evaluated separately on the basis of funding source and system application, and approved by the General Manager - Business Contracts.

COMMERCIAL CREDIT INDUSTRIAL CORP. - (CCIC) "THIRD PARTY" LEASE/FINANCE PLANS

All products listed in the Pricing Manual qualify for the CCIC "Full Payout" Plans. Contact the CCEC representative designated for your territory or the Commercial Credit office at CDC Headquarters, HQN11Q, (612) 853-3323 for details.

CCIC, part of the CCEC/McCullagh Leasing, Inc. group, is the CCC subsidiary which will provide conventional finance and lease programs for CDC products and the field support to conclude "payout" type transactions for those CDC customers who desire ultimate ownership of the CDC equipment. CCIC Plans offer in some instances longer terms than normally available on certain products and greater flexibility for the customer who has other needs for capital equipment.

CCIC programs are negotiated by CCEC field personnel inasmuch as documentation requirements for CCIC contracts are usually stringent. The CCIC/customer relationship basically is financial, i.e., fixed term non-cancellable commitments under which the customer is responsible for all taxes, insurance, maintenance, etc.

Documents and complete information pertaining to the procedures involved can be secured through the CCEC/McCullagh field offices and representatives listed in the directory which follows.

In general the following types of contracts are available:

A. RENTAL PURCHASE AGREEMENT

Contract Form 12590 and Schedule 12591 provide a specific "purchase option" price. This type program is used by several manufacturers of equipment selling in the $10,000.00 to $50,000.00 price range.

B. FINANCE LEASE (CAPITAL)

Lease Form 12575 offers "early termination if equipment is obsolete or no longer useful", and schedules define "Estimated Fair Market Values" as lessee's responsibility on disposition of equipment. Monthly rentals under this type of arrangement may "fluctuate" monthly or quarterly with changes in the "Prime Rate" (Schedule 12574), or may be fixed for entire period of the lease (Schedule 12576).

This contract has been preferred by lessees for the acquisition of larger items. Rulings by the Financial Accounting Standards Board would classify this form as a "Capital" lease requiring lessee to list the equipment as an asset on its balance sheet.

C. "TRUE" LEASE

Lease Form 12513 provides that Lessee does not acquire an "equity" position, and residual value accrues to lessor (CCIC). This document may be used when lessee has restrictions precluding use of a "Capital" lease. Its use will require some form of residual value assumption to qualify for off balance sheet treatment.

D. CCIC - DEFERRED PURCHASE

Installment sales can be negotiated with CDC customers using CCIC Form 12529 Security Agreement which is approved for use in 39 states. Chattel mortgage financing is available through CCEC in the remaining states.

In addition, Tax Shelter leases can be structured through Commercial Credit Capital Corp., another CCEC/McCullagh entity. Information on this operation can be obtained through the CCEC/McCullagh Baltimore headquarters Minneapolis.

Following is a listing of Commercial Credit McCullagh Leasing, Inc. offices and personnel designated to assist the CDC field marketing organization.

Western Area - Control/Liaison office - CDC Headquarters (612) 853-3321

MIDWEST REGION

MINNEAPOLIS

Western Area HQN11Q
Senior VP John Pfouts
VP Sales Mike Booth
VP Credit Charlie Rathburn
Credit Mgr Dick Routt

8100-34th Avenue South
Minneapolis, MN 55440
(612) 853-3321

CHICAGO

Reg Mgr Tom Gruneisen
Dist Mgr Don Benton

745 South Route 53
Addison, IL 60101
(312) 629-7150

KANSAS CITY

Reg Mgr Howard O'Neil

Blue Ridge Tower
4240 Blue Ridge Blvd.
Kansas City, MO 64133
(816) 358-4900

MIDWEST REGION - Continued

DETROIT

Northern Area H.Q.
Senior VP John Stewart
VP Sales Lou Fischer
Credit Mgr Chet Ozeck

30803 Little Mack Avenue
Roseville, MI 48066
(313) 294-7800

DAYTON

Dist Mgr John Nienhaus

30803 Little Mack Avenue
Roseville, MI 48066
(313) 294-7800

WESTERN REGION

SAN JOSE
SAN FRANCISCO
SUNNYVALE

Reg Mgr Margaret Wilson
Acct Exec Charlie Martin

1409 Rollins Road
Burlingame, CA 94010
(415) 342-9701

LOS ANGELES

Reg Mgr Carl Holmquist
Dist Mgr Sam Ficklin

633 SE Street
P.O. Box 939
Anaheim, CA 92805
(714) 956-8910

SEATTLE/PORTLAND

Reg Mgr Max Kendrick
Dist Mgr Dave Damert

12713 NE Whitaker Way
Portland, OR 97230
(503) 255-7403

SOUTHEAST REGION

Southeast Region ROCOLA

District Mgr R. J. Brown

Village of Cross Keys
2 Hamill Road
Baltimore, MD 21210
(301) 323-7000

ATLANTA

Southern Area H.Q.

Senior VP John H. Seth
VP Sales Bill Keenan
Credit Mgr Keith Diller

1954 Airport Drive
Chamblee, GA 30366
(404) 455-6220

ORLANDO

Reg Mgr W. C. Brooks

5750 Major Blvd
Suite 330
P.O. Box 15130B
Orlando, FL 32808
(305) 351-1343

EASTERN REGION

PITTSBURGH

District Mgr Anthony Sigee

5320 William Flynn Highway
Gibsonia, PA 15044
(412) 443-7241

WALTHAM

District Mgr Art Beeman

2264 Silas Deane Highway
Hartford, CT 06067
(203) 563-0147

PHILADELPHIA

District Mgr Tom Lydon

822 E Washington Street
West Chester, PA 19380
(215) 692-8600

SOUTHERN REGION

HOUSTON

Regional Mgr C. R. West

6400 Westpark Drive
Houston, TX 77036
(713) 782-2200

DALLAS

Regional Mgr T. F. Stacks

15051 Beltwood Drive
Dallas, TX 75240
(214) 387-2153

DENVER/ALBUQUERQUE

Reg Mgr Val Campbell

12005 East 45th Avenue
Denver, CO 80239
(303) 373-5480

DEFINITIONS

Included in this section are CDC hardware products in current marketing status. See availability section for production status. Data provided is:

1. Product Number

2. Product Description

3. Notation showing interfaces to other products, i.e.,

   a. RECEIVES FROM: Products closer to the central computer than the listed product.

   b. SENDS TO: Product further from the central computer than the listed product.

   c. AVA OPTIONS: Additional features available for this product.

   d. OPT APPLIES TO: Products to which this feature applies.

4. Product price data

   Listed are purchase price and conversion plan codes (as listed in the Purchase Option Policy of the General Policy section), monthly lease prices for one year, CCC 3 year/24 month base, three and five year leases.

   Special Note:

   Three and five year prices as listed are for add-on or substitution on existing contracts. All new contracts of three years or longer in the domestic commercial market will be written under the Commercial Credit Corporation lease contracts.

5. Maintenance price data

   - Basic Monthly Maintenance Charge as defined in the Maintenance Policy section.
   - Extended Maintenance Product Group as defined in the Maintenance Policy section and is used for determining additional maintenance charges for extended coverage.
   - NOS/BE and NOS operating systems provide routines to support specified maintenance features on CYBER 170 systems. Systems not utilizing those operating systems may impair CDC's ability to provide service with an effect on system availability and will require a special maintenance price quotation.
   - The maintenance prices contained herein apply to the contiguous 48 states. In Hawaii, 12 percent must be added.

6. Installation charges

   a. One Time Installation Charge -

   A charge made for installing the product in the customer's system. The charge applies for either field or factory installation.

   b. Field Installation Charge -

   Charges made to cover costs of installing an additional feature on a system at the customer's site. The cost of installation in the factory during the initial manufacturing cycle may be negligible, but when done at the customer's site, substantial efforts are required on the part of the customer engineer.

Temporary Pages

It is not feasible to provide complete new price lists incorporating each new product as announced. Therefore, you will find "temporary" pages inserted at the back of the section. These pages list the new or changed products in product number sequence.

STANDARD PRODUCTS

PRODUCT NUM	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	3YR/24MO	SALE 5 YEAR	PAGE 1 MAINTENANCE MONTHLY CHARGE	PROD GRP
18 20	PROCESSOR INCLUDES BASIC PROCESSING UNIT, CABINET, POWER SUPPLIES, OPERATOR PANEL, CONTROLLER FOR OPERATOR CONSOLE DISPLAY AND FLEXIBLE DISK DRIVE WITH CONTROLLER (AD DRIVEN) FOR LOADING DIAGNOSTICS. FEATURES INCLUDE: MICRO-PROGRAMMING, HARDWARE MULTIPLY/DIVIDE, 16 LEVELS OF MICRO INTERRUPT AND 16 LEVELS OF MACRO INTERRUPT, REALTIME CLOCK, AUTO-DATA TRANSFER CAPABILITY. PROCESSOR SUPPORTS UP TO FOUR AD TYPE PERIPHERAL CONTROLLERS PLUS FOUR AD/DMA-TYPE CONTROLLERS. UNIT ACCOMODATES 32K TO 262K BYTES (8-BITS) OF MOS MAIN MEMORY HAVING 1 PROTECT BIT AND 1 PARITY BIT FOR EACH TWO BYTES AND AN EFFECTIVE CYCLE TIME OF 750 NSEC. R/W MICRO-MEMORY FOR UP TO 4096 INSTRUCTIONS MAY BE ADDED FOR EXECUTION OF USER MICRO PROGRAMS. NO MAIN MEMORY OR R/W MICRO-MEMORY IS INCLUDED. USE OF 1890-1, -2 OR -3 OR THIS PROCESSOR REQUIRES USE OF 1611-1 AND 1942-1. (120 VAC 50/60 HZ) REDUCED PRICES FOR QUANTITY PURCHASES (STAIR-CASE) ARE - QUANTITY PURCHASE PRICE 1ST UNIT 15,300 2ND THRU 4TH UNITS 14,690 5TH THRU 9TH UNITS 14,230 10TH THRU 14TH UNITS 13,770 15TH OR OVER UNITS 13,310 SENDS TO 1811 1/ 1811 2/ 1828 1/ SENDS TO 1828 2/ 1833 1/ 1833 2/ SENDS TO 1833 6/ 1833 6/ 1843 1/ SENDS TO 1843 2/ 1850 1/ 1860 1/ SENDS TO 1860 2/ 1860 3/ 1860 4/ SENDS TO 1860 5/ 1860 6/ 1862 1/ SENDS TO 1865 9/ 1867 3/ 1867 4/ AVA OPTIONS 1870 1/ 1870 2/ 1872 / AVA OPTIONS 1876 1/ 1875 1/ 1875 2/ AVA OPTIONS 1882 16/ 1882 32/ 1888 1/ AVA OPTIONS 1890 1/ 1890 2/ 1890 3/ AVA OPTIONS 10429 1/	15,300	R	551	510	333	119	D/3
18 25	PROCESSOR INCLUDES A MAIN PROCESSOR, A COMMUNICATIONS PROCESSOR, AND A MULTIPLEXOR FOR COMMUNICATION LINE ADAPTERS. THE MAIN PROCESSOR HAS THE SAME FEATURES, CHARACTERISTICS AND I/O CAPABILITIES AS THE CYBER 18-20. THE COMMUNICATIONS PROCESSOR IS SIMILAR TO THE CYBER 18-20 EXCEPT FOR I/O CAPABILITIES. EACH PROCESSOR INCLUDES A FLEXIBLE DISK DRIVE FOR DIAGNOSTIC LOADING AND A R/W MICRO-MEMORY OF 2048 INSTRUCTIONS FOR EXECUTION OF MICRO-PROGRAMS. EACH PROCESSOR CAN ACCOMMODATE 32K BYTES TO 262K BYTES OF MOS MAIN MEMORY. NO MAIN MEMORY IS INCLUDED. THE MAIN PROCESSOR AND COMMUNICATIONS PROCESSOR ARE LINKED BY INTERRUPT/STATUS LINES AND THE ABILITY TO SHARE EACH OTHERS MAIN MEMORY. THE COMMUNICATIONS MULTIPLEXOR ACCOMMODATES UP TO SIXTEEN 2561 LINE ADAPTERS (NOT INCLUDED). ONE CONSOLE DISPLAY (NOT INCLUDED) MAY BE SWITCHED BETWEEN PROCESSORS. INCLUDES DUAL PROCESSOR CABINET AND A SEPARATE COMMUNICATIONS SUBSYSTEM CABINET. (120 VAC, 50/60 HZ). SENDS TO 1811 1/ 1811 2/ 1828 1/ SENDS TO 1828 2/ 1833 4/ 1833 6/ SENDS TO 1843 1/ 1843 2/ 1850 1/ SENDS TO 1860 1/ 1860 2/ 1860 3/ SENDS TO 1860 4/ 1860 5/ 1860 6/ SENDS TO 1862 1/ 1867 1/ 1867 2/ SENDS TO 1867 3/ 1867 4/ 2561 / AVA OPTIONS 1876 1/ 1875 1/ 1882 16/ AVA OPTIONS 1892 32/ 1888 3/ 1888 4/	41,050	9	1,473	1,364	SEE CCC	296	D/3
18 5M	BATCH TERMINAL CONTROLLER INCLUDES 32K OF READ/WRITE MEMORY, EXPANDABLE TO 65K TOTAL. DISPLAY CONSOLE, CARD READER/LINE PRINTER/COMMUNICATION LINE ADAPTER WITH ONE RS232C/CCITT V.24 COMPATIBLE COMMUNICATION CHANNEL FOR SYNCHRONOUS, 2-WAY ALTERNATE, 2 OR 4 WIRE, 1200-9600 BAUD OPERATION. PRICE INCLUDES ONE 1890-X EMULATION OPTION AT NO ADDITIONAL CHARGE WHEN ORDERED CONCURRENTLY WITH THIS CONTROLLER. HAS DESK TOP SPACE FOR CARD READER AND CONSOLE. INCLUDES 20 FT. MODEM CABLE. 120 VAC, 50/60 HZ. SENDS TO 793 10/ 1827 30/ 1827 31/ SENDS TO 1827 32/ 1827 60/ 1827 90/ SENDS TO 1829 30/ 1829 60/ 1860 1/ SENDS TO 1860 2/ 1860 3/ 1860 4/ AVA OPTIONS 1892 16/ 1888 1/ 1890 1/ AVA OPTIONS 1990 2/ 1890 3/10429 1/	16,705	8	327	302	SEE CCC	153	D/3

CHANGES EFFECTIVE 05/01/80

STANDARD PRODUCTS

PRODUCT MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
18 10M	PROCESSOR INCLUDES BASIC PROCESSING UNIT, CABINET, POWER SUPPLIES, OPERATOR PANEL, CONTROLLER FOR OPERATOR CONSOLE DISPLAY AND FLEXIBLE DISK DRIVE WITH CONTROLLER (AQ DRIVEN) FOR LOADING DIAGNOSTICS. FEATURES INCLUDE; HARDWARE MULTIPLY/DIVIDE, SIXTEEN LEVELS OF INTERRUPT (15 EXTERNAL AND 1 INTERNAL), REAL-TIME CLOCK, AUTO-DATA TRANSFER CAPABILITY AND DEADSTART LOAD CAPABILITY. PROCESSOR SUPPORTS UP TO FOUR AQ TYPE PERIPHERAL CONTROLLERS PLUS FOUR AQ/DMA CONTROLLERS. UNIT ACCOMODATES 32K TO 131K BYTES (8-BITS) OF MOS MAIN MEMORY HAVING 1 PARITY BIT AND 1 PROTECT BIT FOR EACH TWO BYTES AND AN EFFECTIVE CYCLE TIME OF 750 NSEC. NO MAIN MEMORY IS INCLUDED. USE OF 1890-1, -2, OR -3 ON THIS PROCESSOR REQUIRES USE OF 1811-1 AND 1843-1 (120 VOLTS 50/60 CPS) REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE - QUANTITY — PURCHASE PRICE 1ST UNIT — 13,700 2ND THRU 4TH UNITS — 13,150 5TH THRU 9TH UNITS — 12,740 10TH THRU 14TH UNITS — 12,330 15TH OR OVER UNITS — 11,920 SENDS TO 1811 1 1811 2 1828 1 SENDS TO 1829 2 1833 4 1843 1 SENDS TO 1843 2 1850 1 1960 1 SENDS TO 1860 2 1860 3 1860 4 SENDS TO 1860 5 1860 6 1862 1 SENDS TO 1865 2 AVA OPTIONS 1872 1874 1 1875 1 AVA OPTIONS 1875 2 1882 16 1882 32 AVA OPTIONS 1888 1 1890 1 1890 2 AVA OPTIONS 1890 3 10428 1	13,700	8	494	457	298	87	D/3
* 18 17A	PROCESSOR BASIC PROCESSOR WITH 8192 8-BIT BYTES (1 MEMORY PROTECT BIT AND 1 PARITY BIT FOR EACH 2 BYTES) OF MOS MEMORY, 900 NANOSECOND CYCLE TIME, HARDWARE MULTIPLY/DIVIDE, ONE INTERNAL AND 15 EXTERNAL INTERRUPTS, TWO HARDWARE INDEX REGISTERS, BREAKPOINT SWITCH. CONTAINS PREWIRED POSITIONS FOR UP TO 65K 8-BIT BYTES OF MEMORY, 1 MAGNETIC TAPE CONTROLLER, 1 DISK CONTROLLER PLUS 4 AQ POSITIONS AND 3 DSA POSITIONS FOR CONNECTION OF PERIPHERALS AND CHANNELS. MEMORY EXPANDABLE TO 132K BYTES - EXPANSION OVER 65K BYTES REQUIRES 1783-1 AND 1786-1 MEMORY EXPANSION UNITS. PROCESSOR INCLUDES CONSOLE, POWER SUPPLY AND CONTROLLER FOR TTY OR CRT. RACK MOUNTABLE IN A 1787 CABINET. SENDS TO 713 10 1711 4 1711 5 SENDS TO 1713 4 1713 5 1729 3 SENDS TO 1732 2 1732 3 1733 2 SENDS TO 1742 30 1742120 1743 1 SENDS TO 1743 2 1782 1 1783 1 SENDS TO 1785 1 1785 2 1785 3 SENDS TO 1785 4 AVA OPTIONS 10297 1	11,160	8	426	394	258	115	D/3
* 18 17B	PROCESSOR SAME AS 18-17A EXCEPT CYCLE TIME IS 600 NANOSECOND.	13,643	8	520	482	315	139	D/3
170 720	CENTRAL PROCESSOR SIXTY BIT WORD SIZE, 98,304 WORDS OF SEMICONDUCTOR STORAGE WITH ERROR CORRECTION CODE. 10 PERIPHERAL AND CONTROL PROCESSORS, EACH WITH 4,096 12 BIT (PLUS 1 PARITY BIT) WORDS OF STORAGE. FLOATING POINT HARDWARE. CHARACTER COMPARE AND MOVE INSTRUCTIONS. 8 OPERAND, 8 ADDRESSING, AND 8 INCREMENT REGISTERS. CENTRAL PROCESSOR INTERRUPT THRU EXCHANGE JUMP LOGIC. TWELVE 12 BIT (PLUS 1 PARITY BIT) DATA CHANNELS. ONE DATA CHANNEL CONVERTER FOR 3000 SERIES PERIPHERALS. INCLUDES SYSTEM CONSOLE AND REQUIRED COOLING EQUIPMENT. REQUIRED SYSTEM POWER OPTIONS ARE NOT INCLUDED. SEE AVAILABLE OPTIONS BELOW. SENDS TO / 415 30/ 580 12/ 580 16 SENDS TO / 580 20/ 2550 2/ 2558 3 SENDS TO / 2558 4/ 3446 2/ 3447 2 SENDS TO / 3518 1/ 3518 2/ 3518 3 SENDS TO / 3528 3/ 3553 1/ 3555 1 SENDS TO / 6671 3/ 6673 / 6674 SENDS TO / 6676 / 6681 2/ 6683 2 SENDS TO / 7021 21/ 7021 22/ 7021 31 SENDS TO / 7021 32/ 7054 21/ 7054 22 SENDS TO / 7054 41/ 7054 42/ 7152 1 AVA OPTIONS /10501 702/10503 701/10504 701 AVA OPTIONS /10505 701/10506 701/10507 701 AVA OPTIONS /10513 725/10513 740/10514 725 AVA OPTIONS /10514 740	460,950	8	8,805	7,925	SEE CCC	1,671	B/1

* NO LONGER IN PRODUCTION

CHANGES EFFECTIVE 05/01/80

PRODUCT MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE CCC BASE 1 YEAR	CCC BASE 3YR/24MO	OR INSTLMNT SALE 5 YEAR	MONTHLY CHARGE	MAINTENANCE PROD GRP
170 730	CENTRAL PROCESSOR SIXTY BIT WORD SIZE, 131,072 WORDS OF SEMI-CONDUCTOR STORAGE WITH ERROR CORRECTION CODE. 10 PERIPHERAL AND CONTROL PROCESSORS. EACH WITH 4,096 12 BIT (PLUS 1 PARITY BIT) WORDS OF STORAGE. FLOATING POINT HARDWARE. CHARACTER COMPARE AND MOVE INSTRUCTIONS. 8 OPERAND, 8 ADDRESSING, AND 8 INCREMENT REGISTERS. CENTRAL PROCESSOR INTERRUPT THRU EXCHANGE JUMP LOGIC. TWELVE 12 BIT (PLUS 1 PARITY BIT) DATA CHANNELS. ONE DATA CHANNEL CONVERTER FOR 3000 SERIES PERIPHERALS. INCLUDES SYSTEM CONSOLE AND REQUIRED COOLING EQUIPMENT. REQUIRED SYSTEM POWER OPTIONS ARE NOT INCLUDED. SEE AVAILABLE OPTIONS BELOW. AVA OPTIONS 10917?XX SENDS TO / 415 30/ 580 12/ 580 16 SENDS TO / 590 20/ 2550 2/ 2558 3 SENDS TO / 2558 4/ 3446 2/ 3447 2 SENDS TO / 3518 1/ 3518 2/ 3518 3 SENDS TO / 3528 3/ 3553 1/ 3555 1 SENDS TO / 6671 3/ 6673 / 6674 SENDS TO / 6676 / 6681 2/ 6683 2 SENDS TO / 7021 21/ 7021 22/ 7021 31 SENDS TO / 7021 32/ 7054 21/ 7054 22 SENDS TO / 7054 41/ 7054 42/ 7152 1 AVA OPTIONS /10439 701/10501 704/10503 701 AVA OPTIONS /10504 701/10505 701/10509 701 AVA OPTIONS /10513 725/10513 740/10514 725 AVA OPTIONS /10514 740/10517 701	731,315	8	14,535	13,080	SEE CCC	3,240	8/1
170 740	CENTRAL PROCESSOR SIXTY-BIT WORD SIZE, 131,072 WORDS OF STORAGE WITH 8-BIT ERROR CORRECTION CODE. TEN PERIPHERAL AND CONTROL PROCESSORS, EACH WITH 4096 12 BIT (PLUS 1 PARITY BIT) WORDS OF STORAGE. INSTRUCTION WORD STACK, NINE FUNCTIONAL UNITS, FLOATING POINT HARDWARE, EIGHT OPERAND, EIGHT ADDRESSING AND EIGHT INCREMENT REGISTERS. THE NINE FUNCTIONAL UNITS PROCESS SERIALLY. CENTRAL PROCESSOR INTERRUPT THROUGH EXCHANGE JUMP LOGIC. TWELVE 12-BIT (PLUS 1 PARITY BIT) DATA CHANNELS. ONE DATA CHANNEL CONVERTOR FOR 3000 SERIES PERIPHERALS. INCLUDES SYSTEM CONSOLE AND REQUIRED SYSTEM COOLING. REQUIRED SYSTEM POWER OPTIONS ARE NOT INCLUDED. SEE AVAILABLE OPTIONS BELOW. SENDS TO 590XXX 2550 3 2558 4 SENDS TO 6673 6674 6676 SENDS TO 6681 2 6683 2 7021 XX SENDS TO 70301XX 7054 2X 7054 4X SENDS TO 7152 1 AVA OPTIONS 10501704 10503701 10504701 AVA OPTIONS 10513740 10513780 10514740 AVA OPTIONS 10514780 105107XX 10518701	1,492,500	8	36,315	32,685	SEE CCC	6,360	8/1
170 750	CENTRAL PROCESSOR SIXTY BIT WORD SIZE, 131,072 WORDS OF STORAGE WITH 8 BIT ERROR CORRECTION CODE. 10 PERIPHERAL AND CONTROL PROCESSORS, EACH WITH 4,096 12 BIT (PLUS 1 PARITY BIT) WORDS OF STORAGE. INSTRUCTION WORD STACK, NINE FUNCTIONAL UNITS, FLOATING POINT HARDWARE, 8 OPERAND, 8 ADDRESSING, AND 8 INCREMENT REGISTERS. CENTRAL PROCESSOR INTERRUPT THRU EXCHANGE JUMP LOGIC. TWELVE 12 BIT (PLUS 1 PARITY BIT) DATA CHANNELS. ONE DATA CHANNEL CONVERTER FOR 3000 SERIES PERIPHERALS. INCLUDES SYSTEM CONSOLE AND REQUIRED COOLING EQUIPMENT. REQUIRED SYSTEM POWER OPTIONS ARE NOT INCLUDED. SEE AVAILABLE OPTIONS BELOW. SENDS TO / 580 XXX/ 2558 3/ 2558 4 SENDS TO / 3528 X/ 6673 / 6674 SENDS TO / 6676 / 6681 2/ 6683 2 SENDS TO / 7021 XX/ 7030 1XX/ 7054 2X SENDS TO / 7054 4X/ 7152 1 AVA OPTIONS /10501 704/10503 701/10504 701 AVA OPTIONS /10511 701/10513 740/10513 780 AVA OPTIONS /10514 740/10514 780	2,310,025	8	56,865	52,320	SEE CCC	7,426	8/1
170 760	CENTRAL PROCESSOR SIXTY BIT WORD SIZE, 131,072 WORDS OF STORAGE WITH 8 BIT ERROR CORRECTION CODE. 10 PERIPHERAL AND CONTROL PROCESSORS, EACH WITH 4,096 12 BIT (PLUS 1 PARITY BIT) WORDS OF STORAGE. INSTRUCTION WORD STACK, NINE FUNCTIONAL UNITS, FLOATING POINT HARDWARE, 8 OPERAND, 8 ADDRESSING, AND 8 INCREMENT REGISTERS. CENTRAL PROCESSOR INTERRUPT THRU EXCHANGE JUMP LOGIC. TWELVE 12 BIT (PLUS 1 PARITY BIT) DATA CHANNELS. ONE DATA CHANNEL CONVERTER FOR 3000 SERIES PERIPHERALS. INCLUDES SYSTEM CONSOLE AND REQUIRED COOLING EQUIPMENT. REQUIRED SYSTEM POWER OPTIONS ARE NOT INCLUDED. SEE AVAILABLE OPTIONS BELOW. SENDS TO / 580 XXX/ 2558 3/ 2558 4 SENDS TO / 3528 X/ 6673 / 6674 SENDS TO / 6676 / 6681 2/ 6683 2 SENDS TO / 7021 XX/ 7030 1XX/ 7054 2X SENDS TO / 7054 4X/ 7152 1 AVA OPTIONS /10502 764/10503 701/10504 701 AVA OPTIONS /10513 740/10513 780/10514 740 AVA OPTIONS /10514 780	3,100,440	8	76,050	68,445	SEE CCC	8,334	8/1

STANDARD PRODUCTS

PRODUCT MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
176 4XX	CENTRAL COMPUTER SIXTY BIT WORD SIZE, SEMI-CONDUCTOR STORAGE WITH ERROR CORRECTION CODE. TWELVE WORD INSTRUCTION STACK; 9 FUNCTIONAL UNITS; 10 PERIPHERAL AND CONTROL PROCESSORS, EACH WITH 4,096 12 BIT (PLUS 1 PARITY BIT) WORDS OF STORAGE; 8 OPERAND, 8 ADDRESSING, AND 8 INCREMENT REGISTERS; TWELVE 12 BIT (PLUS 1 PARITY BIT) DATA CHANNELS; ONE DATA CHANNEL CONVERTOR FOR 3000 SERIES PERIPHERALS. INCLUDES SYSTEM CONSOLE AND REQUIRED POWER AND COOLING EQUIPMENT. SENDS TO / 6676 / 6683 2/ 7012 1 SENDS TO / 7021 21/ 7021 22/ 7054 XX SENDS TO / 415 30/ 580 12/ 580 16 SENDS TO / 580 20/ 580 4XX/ 2550 1 SENDS TO / 2550 2/ 2552 1/ 3447 2 SENDS TO / 6671 / 6673 / 6674 SENDS TO / 7154 XX SENDS TO / 7611 1/ 7622 1/ 7622 2 SENDS TO / 7639 1/ 7639 2/ 7654 SENDS TO / 7681 1/ 7683 1/10329 2 SENDS TO /60144							
176 408	CENTRAL PROCESSOR 131,072 WORDS OF CENTRAL MEMORY.	4,205,460	A	93,590	84,885	SEE CCC	13,515	A/1
176 412	CENTRAL PROCESSOR 196,608 WORDS OF CENTRAL MEMORY.	4,505,460	A	100,285	90,690	SEE CCC	14,522	A/1
176 416	CENTRAL PROCESSOR 262,144 WORDS OF CENTRAL MEMORY.	4,805,460	A	106,980	97,035	SEE CCC	15,529	A/1
176 421	CENTRAL PROCESSOR 131,072 WORDS OF CENTRAL MEMORY, 524,288 WORDS OF CORE MEMORY WITH ERROR CORRECTION, 4 BI-DIRECTIONAL I/O CHANNELS WITH ASSEMBLY/ DISASSEMBLY LOGIC, 4 10376-401 PERIPHERAL PROCESSORS, EACH ATTACHED TO AN I/O CHANNEL. AVA OPTIONS / 7012 1/10293 2/10315 AVA OPTIONS /10348 1/10348 2/10374 1 AVA OPTIONS /10375 401/10376 2/10376 401 AVA OPTIONS /10377 401/65044 /65045	5,057,060	A	112,975	102,810	SEE CCC	17,655	A/1
176 422	CENTRAL PROCESSOR 131,072 WORDS OF CENTRAL MEMORY, 1,048,576 WORDS OF CORE MEMORY WITH ERROR CORRECTION, 4 BI-DIRECTIONAL I/O CHANNELS WITH ASSEMBLY/ DISASSEMBLY LOGIC, 4 10376-401 PERIPHERAL PROCESSORS, EACH ATTACHED TO AN I/O CHANNEL. AVA OPTIONS / 7012 1/10293 2/10315 AVA OPTIONS /10348 1/10348 2/10374 1 AVA OPTIONS /10375 2/10376 2/10376 401 AVA OPTIONS /10377 401/65044 /65045	5,687,060	A	127,020	115,590	SEE CCC	21,179	A/1
176 424	CENTRAL PROCESSOR 131,072 WORDS OF CENTRAL MEMORY, 2,097,152 WORDS OF CORE MEMORY WITH ERROR CORRECTION, 4 BI-DIRECTIONAL I/O CHANNELS WITH ASSEMBLY/ DISASSEMBLY LOGIC, 4 10376-401 PERIPHERAL PROCESSORS, EACH ATTACHED TO AN I/O CHANNEL. AVA OPTIONS / 7012 1/10293 2/10315 AVA OPTIONS /10348 1/10348 2/10374 1 AVA OPTIONS /10375 2/10376 401/10377 401 AVA OPTIONS /65044 /65045	6,804,560	A	151,985	138,305	SEE CCC	27,725	A/1
176 431	CENTRAL PROCESSOR 196,608 WORDS OF CENTRAL MEMORY, 524,288 WORDS OF CORE MEMORY WITH ERROR CORRECTION, 4 BI-DIRECTIONAL I/O CHANNELS WITH ASSEMBLY/ DISASSEMBLY LOGIC, 4 10376-401 PERIPHERAL PROCESSORS, EACH ATTACHED TO AN I/O CHANNEL. AVA OPTIONS / 7012 1/10293 2/10315 AVA OPTIONS /10348 1/10348 2/10374 2 AVA OPTIONS /10375 1/10376 2/10376 401 AVA OPTIONS /10377 401/65044 /65045	5,357,060	A	119,660	108,885	SEE CCC	18,662	A/1
176 432	CENTRAL PROCESSOR 196,608 WORDS OF CENTRAL MEMORY, 1,048,576 WORDS OF CORE MEMORY WITH ERROR CORRECTION, 4 BI-DIRECTIONAL I/O CHANNELS WITH ASSEMBLY/ DISASSEMBLY LOGIC, 4 10376-401 PERIPHERAL PROCESSORS, EACH ATTACHED TO AN I/O CHANNEL. AVA OPTIONS / 7012 1/10293 2/10315 AVA OPTIONS /10348 1/10348 2/10374 2 AVA OPTIONS /10375 2/10376 2/10376 401 AVA OPTIONS /10377 401/65044 /65045	5,987,060	A	133,705	121,665	SEE CCC	22,186	A/1
176 434	CENTRAL PROCESSOR 196,608 WORDS OF CENTRAL MEMORY, 2,097,152 WORDS OF CORE MEMORY WITH ERROR CORRECTION, 4 BI-DIRECTIONAL I/O CHANNELS WITH ASSEMBLY/ DISASSEMBLY LOGIC, 4 10376-401 PERIPHERAL PROCESSORS, EACH ATTACHED TO AN I/O CHANNEL. AVA OPTIONS / 7012 1/10293 2/10315 AVA OPTIONS /10348 1/10348 2/10374 2 AVA OPTIONS /10376 2/10376 401/10377 401 AVA OPTIONS /65044 /65045	7,104,560	A	158,670	144,380	SEE CCC	28,732	A/1
176 441	CENTRAL PROCESSOR 262,144 WORDS OF CENTRAL MEMORY, 524,288 WORDS OF CORE MEMORY WITH ERROR CORRECTION, 4 BI-DIRECTIONAL I/O CHANNELS WITH ASSEMBLY/ DISASSEMBLY LOGIC, 4 10376-401 PERIPHERAL PROCESSORS, EACH ATTACHED TO AN I/O CHANNEL. AVA OPTIONS / 7012 1/10293 2/10315 AVA OPTIONS /10348 1/10348 2/10375 401 AVA OPTIONS /10376 2/10376 401/10377 401 AVA OPTIONS /65044 /65045	5,657,060	A	126,355	114,960	SEE CCC	19,669	A/1

STANDARD PRODUCTS

PRODUCT NO	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
176 442	CENTRAL PROCESSOR 262,144 WORDS OF CENTRAL MEMORY, 1,048,576 WORDS OF CORE MEMORY WITH ERROR CORRECTION, 4 8I-DIRECTIONAL I/O CHANNELS WITH ASSEMBLY/ DISASSEMBLY LOGIC, 4 10376-401 PERIPHERAL PROCESSORS, EACH ATTACHED TO AN I/O CHANNEL. AVA OPTIONS / 7012 1/10293 2/10315 AVA OPTIONS /10348 1/10348 2/10375 2 AVA OPTIONS /10376 2/10376 401/10377 401 AVA OPTIONS /65044 /65045	6,287,060	A	140,440	127,740	SEE CCC	23,193	A/1
176 444	CENTRAL PROCESSOR 262,144 WORDS OF CENTRAL MEMORY, 2,097,152 WORDS OF CORE MEMORY WITH ERROR CORRECTION, 4 8I-DIRECTIONAL I/O CHANNELS WITH ASSEMBLY/ DISASSEMBLY LOGIC, 4 10376-401 PERIPHERAL PROCESSORS, EACH ATTACHED TO AN I/O CHANNEL. AVA OPTIONS / 7012 1/10293 2/10315 AVA OPTIONS /10348 1/10348 2/10376 2 AVA OPTIONS /10376 401/10377 401/65044 AVA OPTIONS /65045	7,404,560	A	165,365	150,455	SEE CCC	29,739	A/1
203	CDC CYBER 200 MODEL 203 INCLUDES LSI SCALAR PROCESSOR AND TCS VECTOR PROCESSOR, 64 BIT WORD SIZE OF SEMICONDUCTOR MEMORY WITH 7 SECDED BITS FOR EACH 32 BITS, REGISTER FILE OF 256 WORDS, 12 I/O DATA CHANNELS, MAINTENANCE CONTROL UNIT, AND REQUIRED POWER AND COOLING EQUIPMENT. SENDS TO 65208 1 65208 2 65209 1							
203 50	COMPUTER SYSTEM 524,288 WORDS OF CENTRAL MEMORY. AVA OPTIONS 10441 1	5,800,000	A	145,000	139,200	SEE CCC	28,036	A/1
203 100	COMPUTER SYSTEM 1,048,576 WORDS OF CENTRAL MEMORY AVA OPTIONS 10441 2	7,700,000	A	192,500	184,800	SEE CCC	30,952	A/1
203 200	COMPUTER SYSTEM 2,097,152 WORDS OF CENTRAL MEMORY	11,700,000	A	292,500	280,800	SEE CCC	36,785	A/1
405	CARD READER READS 1200 CARDS/MINUTE FOR 80 COLUMN CARDS, READS 1600 CARDS/MINUTE FOR 51 COLUMN CARDS, 4000 CARD HOPPER CAPACITY, 4000 CARD STACKER CAPACITY, 240 CARD SECONDARY STACKING CAPACITY FOR LIMITED SORTING OR REJECTING. COLOR IS CYBER 170. RECEIVES FROM 177 1726 1 3447 RECEIVES FROM 3447 2 3649 AVA OPTIONS 10362 1	26,156	E	401	396	SEE CCC	96	D/1
415	CARD PUNCH PUNCHES 250 CARDS/MINUTE, 80 COLUMN CARD, PROGRAMMABLE OFFSET STACKING, 1200 CARD HOPPER CAPACITY, 1500 CARD STACKER CAPACITY, READ CHECK AFTER PUNCH. RECEIVES FROM 3446 3446 2 3644 AVA OPTIONS 10352 2 10362 14	21,147	E	282	278	SEE CCC	91	D/1
580	TRAIN PRINTER SUBSYSTEM WITH MECHANICAL FORMAT CONTROL PRINTS SPECIFIED LINES PER MINUTE WITH A 48 CHARACTER TRAIN, 136 COLUMNS WITH 6 OR 8 LINES PER INCH SPACING. INCLUDES A POWERED STACKER, CONTROLLER WITH ONE LINE BUFFER, TRAIN IMAGE STORAGE, AND ERROR CHECKING. REQUIRES INTERCHANGEABLE 596 TRAIN CARTRIDGE - NOT INCLUDED. COLOR IS CYBER 170. RECEIVES FROM 172 173 174 RECEIVES FROM 176 3106 3107 RECEIVES FROM 3177 3206 3207 RECEIVES FROM 3306 3307 3507 RECEIVES FROM 6681 6681 2 10378 1 RECEIVES FROM 10381 SENDS TO 596 1 596 2 596 3 SENDS TO 596 4 596 5 596 6 AVA OPTIONS 10362 2 65120 1							
580 12	TRAIN PRINTER SUBSYSTEM PRINTS UP TO 1200 LINES PER MINUTE.	57,065	D	1,445	1,160	SEE CCC	421	D/1
580 16	TRAIN PRINTER SUBSYSTEM PRINTS UP TO 1600 LINES PER MINUTE.	75,637	D	1,960	1,579	SEE CCC	566	D/1
580 20	TRAIN PRINTER SUBSYSTEM PRINTS UP TO 2000 LINES PER MINUTE.	91,956	D	2,240	1,802	SEE CCC	724	D/1
580 1XX	TRAIN PRINTER SUBSYSTEM WITH PROGRAMMABLE FORMAT CONTROL PRINTS SPECIFIED LINES PER MINUTE WITH A 48-CHARACTER TRAIN, 136 COLUMNS, AND 6 OR 8 LINES PER INCH SPACING. INCLUDES A POWERED STACKER, CONTROLLER WITH ONE-LINE BUFFER, TRAIN IMAGE STORAGE, PFC STORAGE, ERROR CHECKING AND 30 FT. I/O CABLE. REQUIRES INTERCHANGEABLE 596 TRAIN CARTRIDGE-NOT INCLUDED. COLOR IS CYBER 170. RECEIVES FROM 170 3177 3306 RECEIVES FROM 3307 3507 6681 RECEIVES FROM 6681 2 10378 1 10381 SENDS TO 596 X 596 XX AVA OPTIONS 10362 2							
580 120	TRAIN PRINTER SUBSYSTEM PRINTS UP TO 1200 LINES PER MINUTE.	57,065	D	1,445	1,160	SEE CCC	421	D/1
580 160	TRAIN PRINTER SUBSYSTEM PRINTS UP TO 1600 LINES PER MINUTE	75,637	D	1,960	1,579	SEE CCC	566	D/1
580 200	TRAIN PRINTER SUBSYSTEM PRINTS UP TO 2000 LINES PER MINUTE.	91,956	D	2,240	1,802	SEE CCC	724	D/1

CHANGES EFFECTIVE 05/01/80

STANDARD PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO		SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
596		TRAIN CARTRIDGE RECEIVES FROM E 580 12 580 16 580 20							
596	1	TRAIN CARTRIDGE 63 PRINTING CHARACTERS PLUS SPACE. SAME AS 501 AND 595-1 CHARACTER SET, MODIFIED STANDARD GOTHIC FONT.	3,122	D	95	77	SEE CCC	55	D/1
596	2	TRAIN CARTRIDGE 48 PRINTING CHARACTERS PLUS SPACE. SAME CHARACTERS AS 595-2 AND IBM-AN-MODIFIED STANDARD GOTHIC FONT. WILL NOT HANDLE ALL CHARACTER CODES GENERATED BY STANDARD SOFTWARE SYSTEMS.	3,122	D	95	77	SEE CCC	55	D/1
596	3	TRAIN CARTRIDGE 48 PRINTING CHARACTERS PLUS SPACE. SAME AS 595-3 AND IBM -HN- ARRANGEMENT, MODIFIED STANDARD GOTHIC FONT. WILL NOT HANDLE ALL CHARACTER CODES GENERATED BY STANDARD SOFTWARE SYSTEMS	3,122	D	95	77	SEE CCC	55	D/1
596	4	TRAIN CARTRIDGE ARRAY CARTRIDGE CONTAINS SIX SETS OF CHARACTERS WHICH IN COMBINATION COMPRISE THE 63 DIFFERENT CHARACTERS OF THE CDC 64 CHARACTER SUBSET OF ASCII 3.4, REVISION 1. SAME CHARACTERS AS 595-4.	3,122	D	95	77	SEE CCC	55	D/1
596	5	TRAIN CARTRIDGE 63 CHARACTERS PLUS SPACE, ARRAY CARTRIDGE CONTAINS SIX SETS OF CHARACTERS WHICH ARE COMPRISED OF THE CENTER FOUR COLUMNS OF THE ASCII CODE TABLE. ASCII 3.4 REVISION I SUBSET - SAME CHARACTERS AS 595-5.	3,122	D	95	77	SEE CCC	55	D/1
596	6	TRAIN CARTRIDGE 94 CHARACTERS PLUS SPACE, ARRAY IS COMPRISED OF THE SIX RIGHT MOST COLUMNS OF THE ASCII CODE TABLE. THIS ARRAY CARTRIDGE INCLUDES UPPER AND LOWER CASE CHARACTERS. SAME CHARACTERS AS 595-6.	3,122	D	95	77	SEE CCC	55	D/1
596	11	TRAIN CARTRIDGE 63 CHARACTER FASTRAIN TYPE ARRAY CAPABLE OF PRINTING DANISH/NORWEGIAN ALPHANUMERIC CHARACTERS IN ECMA OCR B 1971 FONT.	3,770	D	117	96	SEE CCC	73	D/1
596	12	TRAIN CARTRIDGE 63 CHARACTER FASTRAIN TYPE ARRAY CAPABLE OF PRINTING HEBREW AND ENGLISH CHARACTERS IN THE STANDARD FASTRAIN FONT. CONTAINS 28 HEBREW CHARACTERS.	3,770	D	117	96	SEE CCC	73	D/1
596	13	TRAIN CARTRIDGE 63 CHARACTER FASTRAIN TYPE ARRAY CAPABLE OF PRINTING GREEK AND ENGLISH IN THE STANDARD FASTRAIN FONT. CONTAINS 10 GREEK CHARACTERS.	3,770	D	117	96	SEE CCC	73	D/1
596	14	TRAIN CARTRIDGE 63 CHARACTER FASTRAIN TYPE ARRAY CAPABLE OF PRINTING SWEDISH AND FINNISH ALPHANUMERIC CHARACTERS IN ECMA OCR B 1971 FONT. CONTAINS A TOTAL OF 72 ALPHA NUMBER CHARACTERS.	3,770	D	117	96	SEE CCC	73	D/1
596	71	TRAIN CARTRIDGE 63 REDUCED SIZE (.079 IN. HIGH) CHARACTERS PLUS SPACE. SAME CHARACTERS AS 501, 595-1 AND 596-1. MODIFIED STANDARD GOTHIC FONT.	3,770	D	117	96	SEE CCC	55	D/1
596	74	TRAIN CARTRIDGE CONTAINS SIX SETS OF REDUCED SIZE (.079 IN. HIGH) CHARACTERS WHICH IN COMBINATION COMPRISE THE 63 DIFFERENT CHARACTERS OF THE CDC 64 CHARACTER SUBSET OF ASCIII 3.4, REVISION 1 SAME CHARACTERS AS 595-4 AND 596-4.	3,770	D	117	96	SEE CCC	55	D/1
616	72	MAGNETIC TAPE TRANSPORT 7 TRACK, 25 IPS, 556 AND 800 BPI NRZI. 13.9K AND 20K 6 BIT CHARACTERS PER SECOND. REWINDS AT 160 IPS. TRANSPORT DOES NOT INCLUDE SKINS AND MUST BE HOUSED IN A 1787-4 CABINET OR EQUIVALENT. INCLUDES A POWER CABLE AND TWO I/O CABLES. REQUIRES INSTALLATION KIT, 1860-200 FOR UPPER CABINET INSTALLATION OR 1860-FOR LOWER INSTALLATION. (120 VAC, 50/60 HZ). REDUCED PRICES FOR QUANTITY PURCHASES (STAIR-CASE) ARE - QUANTITY PURCHASE PRICE 1ST UNIT 6,000 2ND UNIT 5,404 3RD THRU 5TH UNITS 4,848 6TH THRU 24TH UNITS 3,904 25TH THRU 49TH UNITS 3,644 50TH THRU 99 TH UNITS 3,416 100TH OR OVER UNITS 3,215 RECEIVES FROM 1732 3 AVA OPTIONS 1787 4 1860200 1860201	6,000	B	161	157	SEE CCC	94	D/3

STANDARD PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
616	92	MAGNETIC TAPE TRANSPORT 9 TRACK, 25 IPS, 800 BPI NRZI AND 1600 BPI PHASE ENCODED. 20K AND 40K 8 BIT CHARACTERS PER SECOND. REWINDS AT 160 IPS. TRANSPORT DOES NOT INCLUDE SKINS AND MUST BE HOUSED IN A 1787-4 CABINET OR EQUIVALENT. REQUIRES STANDARD OPTION 10300-2 ON THE 1732-3 FOR PHASE ENCODE CAPABILITY. INCLUDES A POWER CABLE AND TWO I/O CABLES. REQUIRES INSTALLATION KIT, 1860-200 FOR UPPER CABINET INSTALLATION OR 1860-201 FOR LOWER INSTALLATION. (120 VAC, 50/60 HZ). REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE – QUANTITY — PURCHASE PRICE 1ST UNIT — 7,100 2ND UNIT — 5,981 3RD THRU 5TH UNITS — 4,861 6TH THRU 24TH UNITS — 4,085 25TH THRU 49TH UNITS — 3,813 50TH THRU 99TH UNITS — 3,575 100TH OR OVER UNITS — 3,364 RECEIVES FROM 1732 3 AVA OPTIONS 1794 4 1860200 1860201	7,100	B	191	186 SEE CCC	104	D/3
616	95	MAGNETIC TAPE TRANSPORT 9 TRACK, 50 IPS, 800 BPI NRZI AND 1600 BPI PHASE ENCODED. 40K AND 80K 8 BIT CHARACTERS PER SECOND. REWINDS AT 160 IPS. TRANSPORT DOES NOT INCLUDE SKINS AND MUST BE HOUSED IN A 1787-4 CABINET OR EQUIVALENT. REQUIRES STANDARD OPTION 10300-2 ON THE 1732-3 FOR PHASE ENCODE CAPABILITY. INCLUDES A POWER CABLE AND TWO I/O CABLES. REQUIRES INSTALLATION KIT, 1860-200 FOR UPPER CABINET INSTALLATION OR 1860-201 FOR LOWER INSTALLATION. (120 VAC, 50/60 HZ). REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE – QUANTITY — PURCHASE PRICE 1ST UNIT — 7,700 2ND UNIT — 6,369 3RD THRU 5TH UNITS — 5,037 6TH THRU 24TH UNITS — 4,233 25TH THRU 49TH UNITS — 3,951 50TH THRU 99TH UNITS — 3,704 100TH OR OVER UNITS — 3,486 RECEIVES FROM 970 2 1732 3 AVA OPTIONS 1787 4 1860200 1860201	7,700	B	207	202 SEE CCC	114	D/3
677	2	MAGNETIC TAPE TRANSPORT A SINGLE CAPSTAN UNIT. 7-TRACK, 556 BPI AND 800 BPI NRZI RECORDING. TRANSFER RATES ARE 55.6K AND 80K 6-BIT CHARACTER PER SECOND. TAPE SPEED IS 100 INCHES PER SECOND. FORWARD AND REVERSE READ. REWIND TIME IS 60 SECONDS. COLOR IS CYBER 170. RECEIVES FROM 7021 31 7021 32 AVA OPTIONS 10362 11	19,165	E	456	419 SEE CCC	107	B/1
677	3	MAGNETIC TAPE TRANSPORT A SINGLE CAPSTAN UNIT. 7-TRACK, 556 BPI AND 800 BPI NRZI RECORDING. TRANSFER RATES ARE 83.4K AND 120K 6-BIT CHARACTER PER SECOND. TAPE SPEED IS 150 INCHES PER SECOND. FORWARD AND REVERSE READ. REWIND TIME IS 50 SECONDS. COLOR IS CYBER 170. RECEIVES FROM 7021 31 7021 32 AVA OPTIONS 10362 11	23,565	E	561	516 SEE CCC	113	B/1
677	4	MAGNETIC TAPE TRANSPORT A SINGLE CAPSTAN UNIT. 7-TRACK, 556 BPI AND 800 BPI NRZI RECORDING. TRANSFER RATES ARE 111.2K AND 160K 6-BIT CHARACTERS PER SECOND. TAPE SPEED IS 200 INCHES PER SECOND. FORWARD AND REVERSE READ. REWIND TIME IS 45 SECONDS. COLOR IS CYBER 170. RECEIVES FROM 7021 31 7021 32 AVA OPTIONS 10362 11	26,830	E	639	587 SEE CCC	147	B/1
679	2	MAGNETIC TAPE TRANSPORT A SINGLE CAPSTAN UNIT. 9-TRACK, 800 BPI NRZI RECORDING AND 1600 BPI PHASE ENCODED RECORDING. TRANSFER RATES ARE 80K AND 160K 8-BIT CHARACTERS PER SECOND. TAPE SPEED IS 100 INCHES PER SECOND. FORWARD AND REVERSE READ. REWIND TIME IS 60 SECONDS. COLOR IS CYBER 170. RECEIVES FROM 7021 31 7021 32 AVA OPTIONS 10362 11	19,710	E	469	431 SEE CCC	107	B/1
679	3	MAGNETIC TAPE TRANSPORT A SINGLE CAPSTAN UNIT. 9-TRACK, 800 BPI NRZI RECORDING AND 1600 BPI PHASE ENCODED RECORDING. TRANSFER RATES ARE 120K AND 240K 8-BIT CHARACTERS PER SECOND. TAPE SPEED IS 150 INCHES PER SECOND. FORWARD AND REVERSE READ. REWIND TIME IS 50 SECONDS. COLOR IS CYBER 170 RECEIVES FROM 7021 31 7021 32 AVA OPTIONS 10362 11	24,090	E	573	527 SEE CCC	113	B/1

STANDARD PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE 1 YEAR	CCC BASE 3YR/24MO	PAGE OR INSTLMNT SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
679	4	MAGNETIC TAPE TRANSPORT A SINGLE CAPSTAN UNIT. 9-TRACK, 800 BPI NRZI RECORDING AND 1600 BPI PHASE ENCODED RECORDING. TRANSFER RATES ARE 160K AND 320K 8-BIT CHARACTERS PER SECOND. TAPE SPEED IS 200 INCHES PER SECOND. FORWARD AND REVERSE READ. REWIND TIME IS 45 SECONDS. COLOR IS CYBER 170. RECEIVES FROM 7021 31 7021 32 AVA OPTIONS 10362 11	26,250	E	652	599	SEE CCC	147	B/1
679	5	MAGNETIC TAPE TRANSPORT A SINGLE CAPSTAN UNIT. 9-TRACK, 6250 BPI GCR OR 1600 BPI PHASE ENCODED RECORDING. TRANSFER RATES ARE 625K AND 160K 8-BIT CHARACTERS PER SECOND. TAPE SPEED IS 100 INCHES PER SECOND. FORWARD AND REVERSE READ. REWIND TIME IS 60 SECONDS. COLOR IS CYBER 170. RECEIVES FROM 7021 31 7021 32 AVA OPTIONS 10362 11	26,775	E	620	570	SEE CCC	116	B/1
679	6	MAGNETIC TAPE TRANSPORT A SINGLE CAPSTAN UNIT. 9-TRACK, 6250 BPI GCR OR 1600 BPI PHASE ENCODED RECORDING. TRANSFER RATES ARE 937K AND 240K 8-BIT CHARACTERS PER SECOND. TAPE SPEED IS 150 INCHES PER SECOND. FORWARD AND REVERSE READ. REWIND TIME IS 50 SECONDS. COLOR IS CYBER 170. RECEIVES FROM 7021 31 7021 32 AVA OPTIONS 10362 11	31,540	E	701	644	SEE CCC	121	B/1
679	7	MAGNETIC TAPE TRANSPORT A SINGLE CAPSTAN UNIT. 9-TRACK, 6250 BPI GCR OR 1600 BPI PHASE ENCODED RECORDING. TRANSFER RATES ARE 1250K AND 320K 8-BIT CHARACTERS PER SECOND. TAPE SPEED IS 200 INCHES PER SECOND. FORWARD AND REVERSE READ. REWIND TIME IS 45 SECONDS. AVAILABLE ON CYBER 170 ONLY (REQUIRES 2X PPU). COLOR IS CYBER 170. RECEIVES FROM 7021 31 7021 32 AVA OPTIONS 10362 11	33,510	E	745	685	SEE CCC	156	B/1
714	30	MASTER STATION CONSISTS OF A MASTER KEYBOARD DISPLAY STATION (16/24 LINES BY 80 CHARACTERS PER LINE) THAT INTERFACES TO A RS232-C COMPATIBLE SYNCHRONOUS MODEM AT DATA RATES UP TO 9600 BAUD IN CONTROL DATA MODE 48/4C PROTOCOL. IT WILL SUPPORT UP TO 14 ADDITIONAL DEVICES (INCLUDING ONE LOCAL PRINTER). TOTAL CABLE LENGTH MAY NOT EXCEED 1000 FT. EACH SLAVE HAS ONE RS232-C PRINTER INTERFACE. THIS COMBINATION WOULD COUNT AS TWO DEVICES. DATA SET CABLE IS 10 FT. MAXIMUM SYSTEM CONFIGURATION IS 15 TOTAL DEVICES (INCLUDING MASTER) OF WHICH 7 CAN BE PRINTERS. SENDS TO 714125 753 11 755 11 SENDS TO 755 21	10,108	D	284	272	SEE CCC	74	D/3
714	40	SINGLE STATION THIS PRODUCT CONSISTS OF A KEYBOARD DISPLAY STATION (16/24 LINES BY 80 CHARACTERS PER LINE) WHICH INTERFACES TO AN RS232-C COMPATIBLE SYNCHRONOUS MODEM AT DATA RATES UP TO 9600 BAUD IN CONTROL DATA MODE 48/4C PROTOCOL IT WILL SUPPORT 1 LOCAL RS232 COMPATIBLE PRINTER. DATA SET CABLE LENGTH IS 10 FEET. SENDS TO 753 11 755 11 755 21 AVA OPTIONS 714200	5,361	D	181	174	SEE CCC	50	D/3
714	125	SLAVE STATION INCLUDES A CRT KEYBOARD AND SUFFICIENT BUFFER TO DISPLAY 16/24 LINES OF 80 CHARACTERS. 64 OR 96 ASCII CHARACTER SET SELECTABLE. PROVIDES DATA PROTECTION AND ADDITIONAL CONTROL. INCLUDES ALLOWANCE FOR CPU CONTROL OF INFORMATION PROTECTED FROM OPERATOR DISTURBANCE. AUTOMATIC FORWARD OR BACKWARD TABBING TO PROTECTED FIELDS. INCLUDES CURSOR CONTROL FOR AUTOMATIC INSERT/DELETE OF CHARACTERS OR LINES AND TRANSMISSION OF INFORMATION FROM ANY CRT DISPLAY LOCATION. RECEIVES FROM 714 30 SENDS TO 753 11 755 11 755 21	4,480	D	112	106	SEE CCC	48	D/3
714	200	EXPANSION KIT A FIELD INSTALLABLE KIT WHICH INCLUDES THE NECESSARY CONTROL, FIRMWARE AND HARDWARE TO UPGRADE A 714-40 SINGLE STATION TO THE EQUIVALENT OF A 714-30 MASTER STATION. OPT APPLIES TO 714 40	4,747	D	94	89	SEE CCC	27	D/3

STANDARD PRODUCTS

PRODUCT NUM MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/24MO	PAGE 9 SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
751 10	DISPLAY TERMINAL SINGLE STATION, TTY COMPATIBLE DISPLAY TERMINAL WITH THE FOLLOWING FEATURES - 1920 CHARACTER DISPLAY (24 LINES OF 80 CHARACTERS PER LINE), 128 ASCII CHARACTER SET, TYPEWRITER LAYOUT, DETACHABLE KEYBOARD, INCLUDING NUMERIC PAD, DISPLAYED DATA EDITING AND HIGHLIGHTING, CURSOR ADDRESSING, TRANSMISSION OF CABLE. 50 OR 60 HZ. FULL DUPLEX, AT SWITCH SELECTABLE DATA RATES FROM 110 TO 9600 BITS PER SECOND, AND SELF TEST. COMMUNICATION INTERFACE MEETS RS232-C AND CCITT V.24. INCLUDES 10.5 FEET MODEM CABLE. 50 OR 60 HZ. DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. SENDS TO 753 10 754 10 754 20 SENDS TO 755 10 755 20 755 21 AVA OPTIONS 751101 751103 751104 AVA OPTIONS 10425 1	3,150	E	110	102	SEE CCC	27	D/3
751 101	MULTIDROP OPTION PLUG-IN MODULE ALLOWS DISPLAY TERMINAL TO OPERATE IN POLLED ENVIRONMENT. PROTOCOL IS COMPATIBLE WITH AT&T 95A1 DATA SELECTIVE CALLING SERVICE. CANNOT BE USED WITH ANSWERBACK OPTION. DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. OPT APPLIES TO 751 10	490	E	28	26	SEE CCC	4	D/3
751 103	CURRENT LOOP OPTION PLUG-IN MODULE PROVIDES ELECTRICAL ISOLATION AND SIGNAL LEVEL CONVERSION BETWEEN RS232-C/CCITT V.24 SIGNAL LEVELS AND 20 TO 60 MA LOOP CURRENTS. MODES OF OPERATION INCLUDE UNIPOLAR HALF DUPLEX, UNIPOLAR FULL DUPLEX, AND BIPOLAR FULL DUPLEX. DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. OPT APPLIES TO 751 10	125	E	10	9	SEE CCC	4	D/3
751 104	ANSWERBACK OPTION PLUG-IN MODULE PROVIDES FOR IDENTIFICATION OF DISPLAY TERMINAL. UPON RECEIPT OF WRU CODE OR ACTUATION OF HERE IS KEY, TERMINAL TRANSMITS SERIES OF UP TO 21 CUSTOMER SELECTABLE CHARACTERS. CANNOT BE USED WITH MULTIDROP OPTION. DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. OPT APPLIES TO 751 10	390	E	15	14	SEE CCC	4	D/3
752 30	DISPLAY TERMINAL SINGLE STATION, TTY COMPATIBLE DISPLAY TERMINAL WITH THE FOLLOWING FEATURES 1920 CHARACTER DISPLAY(24 LINES OF 80 CHARACTERS PER LINE); 128 ASCII CHARACTER SET; CHOICE OF KEYBOARD LAYOUT, KEYBOARD NOT INCLUDED; HIGHLIGHTING; CURSOR ADDRESSING; AND CHARACTER AT A TIME TRANSMISSION, HALF OR FULL DUPLEX, AT SWITCH SELECTABLE DATA RATES FROM 110-9600 BITS PER SECOND. COMMUNICATION INTERFACE MEETS RS232-C AND CCITT V.24. INCLUDES 10.5 FT. MODEM CABLE, 120 V, 60 HZ. REQUIRES KEYBOARD 752-201 OR 752-202 DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. SENDS TO 753 11 755 11 755 21 AVA OPTIONS 752 270/ 752 271	1,360	E	50	46	SEE CCC	15	D/3
752 31	DISPLAY TERMINAL SAME AS 752-30, EXCEPT COMMUNICATIONS INTERFACE IS CURRENT LOOP. REQUIRES KEYBOARD 752-201 OR 752-202. DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. SENDS TO 753 11 755 11 755 21	1,460	E	59	53	SEE CCC	24	D/3
752 40	DISPLAY TERMINAL 50 HZ, 220 V/240 V VERSION OF 752-30. FTZ LICENSE. REQUIRES KEYBOARD 752-203 OR 752-204 DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. SENDS TO 753 11 755 11 755 21 AVA OPTIONS 752 270/ 752 271	1,420	E	55	52	SEE CCC	15	D/3
752 41	DISPLAY TERMINAL 50 HZ, 220 V/240 V VERSION OF 752-31. FTZ LICENSE. REQUIRES KEYBOARD 752-203 OR 752-204. DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. SENDS TO 753 11 755 11 755 21	1,520	E	64	59	SEE CCC	24	D/3
752 201	TYPEWRITER KEYBOARD U.S. TYPEWRITER LAYOUT. DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. OPT APPLIES TO 752 30 752 31	290	E	11	11	SEE CCC	4	D/3

STANDARD PRODUCTS

PRODUCT MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT SALE 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
752 202	INTERNATIONAL KEYBOARD INTERNATIONAL LAYOUT. DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, OPT APPLIES TO 752 30 752 31	290	E	11	11	SEE CCC	4	D/3
752 203	TYPEWRITER KEYBOARD U.S. TYPEWRITER LAYOUT. FTZ LICENSE. DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. OPT APPLIES TO 752 40 752 41	315	E	11	11	SEE CCC	4	D/3
752 204	INTERNATIONAL KEYBOARD QUANTITY PURCHASE PRICE INTERNATIONAL LAYOUT, FTZ LICENSE. DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. OPT APPLIES TO 752 40 752 41	315	E	11	11	SEE CCC	4	D/3
752 270	DATA ENTRY KEYBOARD 029 KEYPUNCH LAYOUT - FTZ LICENSE DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY. SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. OPT APPLIES TO 752 30 752 40	440	E	18	16	SEE CCC	4	D/3
752 271	DATA ENTRY KEYBOARD TYPEWRITER WITH NUMERIC PAD LAYOUT - FTZ LIC. DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY. SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. OPT APPLIES TO 752 30 752 40	440	E	18	16	SEE CCC	4	D/3
753 10	NONIMPACT PRINTER DESK TOP, CHARACTER PRINTER WITH 5X7 DOT MATRIX PRINT HEAD. PRODUCES HARD COPY ON 8.5 INCH WIDE, HEAT SENSITIVE, CONTINUOUS ROLL PAPER. PRINTS 94 ASCII SYMBOLS, UP TO 80 COLUMNS AT 30 CHARACTERS PER SECOND. HAS PARITY CHECK. INCLUDES 10.5 FT. CABLE AND CONTROLLER WHICH PLUGS INTO ASSOCIATED QUANTITY PURCHASE PRICE HAS FTZ LICENSE. DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. RECEIVES FROM 18 5M 751 10 1811 1	2,540	E	88	82	SEE CCC	27	D/3
753 11	NON-IMPACT PRINTER SAME AS 753-10 EXCEPT CONTROLLER NOT REQUIRED DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. RECEIVES FROM 752 10 752 11 752 20 RECEIVES FROM 752 21 752 30 752 31 RECEIVES FROM 752 40 752 41 756 10 RECEIVES FROM 756 11 756 20 756 21	2,440	E	84	77	SEE CCC	27	D/3
755 20	IMPACT PRINTER A DESK TOP, LINE PRINTER WITH 7 X 9 MATRIX PRINTING. PRODUCES UP TO FOUR COPIES PLUS ONE ORIGINAL AND PRINTS UP TO 132 COLUMNS AT NOMINAL SPEEDS OF 70 LINES PER MINUTE, 94 ASCII SYMBOLS. INCLUDES PARITY CHECK, 1,000 CHARACTER BUFFER, SELF TEST, FORMAT TAPE, 10.5 FT. I/O CABLE AND CONTROLLER TO BE PLUG- QUANTITY PURCHASE PRICE DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. RECEIVES FROM 751 10	3,990	E	148	138	SEE CCC	60	D/3
755 21	IMPACT PRINTER QUANTITY PURCHASE PRICE DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. RECEIVES FROM 752 10 752 11 752 20 RECEIVES FROM 752 21 752 30 752 31 RECEIVES FROM 752 40 752 41 756 10 RECEIVES FROM 756 11 756 20 756 21	3,790	E	144	133	SEE CCC	60	D/3
756 10	DISPLAY TERMINAL SINGLE STATION, TTY COMPATIBLE DISPLAY TERMINAL WITH THE FOLLOWING FEATURES - 1920 CHARACTER DISPLAY (24 LINES OF 80 CHARACTERS PER LINE), 128 ASCII CHARACTER SET, CHOICE OF KEYBOARD LAYOUT, KEYBOARD NOT INCLUDED, CURSOR ADDRESSING, TRANSMISSION OF CHARACTER OR PAGE AT A TIME, SCREEN EDITING FEATURES, HALF OR FULL DUPLEX, SWITCH SELECTABLE DATA RATES FROM 110 TO 9600 BITS PER SECOND. COMMUNICATION INTERFACE MEETS RS232-C OR CCITT V.24, INCLUDES RS232 PRINTER INTERFACE, 10.5 FT. MODEM CABLE, 120 V., 60 HZ. REQUIRES KEYBOARD 756-201 OR 756-202. DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. SENDS TO 753 11 755 11 755 21	1,850	E	66	61	SEE CCC	18	D/3
756 11	DISPLAY TERMINAL SAME AS 756-10 EXCEPT COMMUNICATIONS INTERFACE IS CURRENT LOOP. REQUIRES KEYBOARD 756-201 OR 756-202. DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. SENDS TO 753 11 755 11 755 21	1,897	E	75	69	SEE CCC	27	D/3

STANDARD PRODUCTS

PRODUCT MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT SALE CCC BASE 3YR/24MO	1 YEAR	5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
756 20	DISPLAY TERMINAL 50 HZ., 220 V/240 V VERSION OF 756-10. FTZ LICENSE. CASE) ARE - REQUIRES KEYBOARD 756-203 OR 756-204. DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. SENDS TO 753 11 755 11 755 21	1,940	E	69	64	SEE CCC	18	D/3
756 21	DISPLAY TERMINAL 50 HZ., 220V/240V VERSION OF 756-11. FTZ LICENSE. REQUIRES KEYBOARD 756-203 OR 756-204. DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. SENDS TO 753 11 755 11 755 21	1,982	E	78	72	SEE CCC	27	D/3
756 201	TYPEWRITER KEYBOARD U.S. TYPEWRITER LAYOUT. DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. OPT APPLIES TO 756 10 756 11	347	E	11	11	SEE CCC	4	D/3
756 202	INTERNATIONAL KEYBOARD INTERNATIONAL LAYOUT DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. OPT APPLIES TO 756 10 756 11	347	E	11	11	SEE CCC	4	D/3
756 203	TYPEWRITER KEYBOARD U.S. TYPEWRITER LAYOUT. FTZ LICENSE. DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. OPT APPLIES TO 756 20 756 21	363	E	14	14	SEE CCC	4	D/3
756 204	INTERNATIONAL KEYBOARD INTERNATIONAL LAYOUT. FTZ LICENSE. DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. OPT APPLIES TO 756 20 756 21	363	E	14	14	SEE CCC	4	D/3
795 10	DIGIGRAPHICS V A REFRESH, RANDOM STROKE DISPLAY TERMINAL FEATURING A 1024 X 1024 VIEWABLE GRID (2048 X 2048 ADDRESSABLE) IN A 12 X 12 IN. RECTANGULAR AREA. INCLUDES THE 128 CHAR. ASCII CODE SET, ASYNCHRONOUS COMMUNICATION TO 9600 BPS, A LIGHT PEN AND A KEYBOARD. THE KEYBOARD HAS 64 KEYS IN A U.S. TYPEWRITER CONFIGURATION PLUS 16 FUNCTION AND 16 CONTROL KEYS. POWER IS 120 VAC, 60 HZ. REQUIRES 795-101 OR 102. AVA OPTIONS 795101 795102 795110 AVA OPTIONS 795111 795120 795201 AVA OPTIONS 795202 795301	36,540	B	1,956	1,590	SEE CCC	370	D/1
795 20	DIGIGRAPHICS V SAME AS 795-10 EXCEPT POWER IS 220/240 VAC, 50 HZ.	36,540	B	1,956	1,590	SEE CCC	370	D/1
795 101	32K BYTE MEMORY OPT APPLIES TO 795 10 795 20	3,960	B	212	173	SEE CCC	25	D/1
795 102	64K BYTE MEMORY OPT APPLIES TO 795 10 795 20	7,150	B	382	312	SEE CCC	50	D/1
795 110	EXPANSION MODULE PROVIDES EXPANSION CAPABILITY FOR 795-111, 795-202. MUST BE PURCHASED WITH THE FIRST OPTION, BUT WILL ACCOMODATE THE 2ND OPTION AS WELL. OPT APPLIES TO 795 10 795 20	575	B	31	25	SEE CCC	10	D/1
795 111	TEKTRONIX 4014-1 EMULATOR ADDITIONAL FIRMWARE WHICH ENABLES THE 795-10 OR 795-20 TO OPERATE IN TEKTRONIX 4014-1 MODE (IN ADDITION TO 795 NATIVE MODE). OPT APPLIES TO 795110	1,650	B	88	72	SEE CCC	8	D/1
795 120	MULTIPORT SERIAL INTERFACE REQUIRED IF MORE THAN THE FOLLOWING INPUT/OUTPUT OPTIONS ARE REQUIRED. 1 EACH 795-201, 795-202, 795-301 OR 795-302. OPT APPLIES TO 795 10 795 20	1,320	B	71	55	SEE CCC	26	D/1
795 201	FORCE STICK OPT APPLIES TO 795 10 795 20	3,300	D	176	143	SEE CCC	24	D/1
795 202	DATA TABLET AN INPUT DEVICE FOR THE 795 DIGIGRAPHICS TERMINAL. FREE CURSOR OR STYLUS. RESOLUTION IS 1000 POINTS PER INCH WITH A SPEED OF 1-100 POINTS PER SEC. INPUT DOCUMENT IS UP OPT APPLIES TO 795 10 795 20	3,450	B	185	150	SEE CCC	55	D/1
795 301	HARD COPY UNIT PRODUCES 8 1/2 X 11 INCH BLACK AND WHITE OR GRAY SCALE COPIES OF THE 795 DISPLAY PRESENTATION IN APPROXIMATELY 18 SEC. FOR THE FIRST OPT APPLIES TO 795 10	19,550	B	1,047	851	SEE CCC	225	D/1
795 302	HARD COPY UNIT SAME AS 795-301 EXCEPT POWER IS 220/240 VAC, OPT APPLIES TO 795 20	19,550	B	1,047	851	SEE CCC	225	D/1

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
819	11	DISK STORAGE UNIT SINGLE SPINDLE WITH NON-REMOVABLE DISK PACK INCLUDED. DUAL ACCESS, CAPACITY OF 2.4 BILLION BITS. POSITIONING TIME IS 15 TO 80 MS, 50 MS AVERAGE. AVERAGE DATA RATE IS 36.8 MHZ STORAGE UNIT PROVIDES CLOCK AND SECTOR MARK TIMING TO CONTROLLER. COLOR IS CYBER 170. RECEIVES FROM 7639 1 7639 2 7639 21 RECEIVES FROM 7639 22 AVA OPTIONS 10362 7 10422 1	53,550	D	1,700	1,650	SEE CCC	215	B/1
819	21	DISK STORAGE UNIT SINGLE SPINDLE WITH NON-REMOVABLE DISK PACK INCLUDED. DUAL ACCESS, CAPACITY OF 4.8 BILLION BITS. POSITIONING TIME IS 15 TO 80 MS, 50 MS AVERAGE. AVERAGE DATA RATE IS 36.8 MHZ STORAGE UNIT PROVIDES CLOCK AND SECTOR MARK TIMING TO CONTROLLER. COLOR IS CYBER 170. RECEIVES FROM 7639 21 7639 22 AVA OPTIONS 10362 7	75,000	D	2,025	1,965	SEE CCC	265	B/1
844	41	DISK STORAGE UNIT CAPACITY OF 1422 MILLION BITS OR 237 MILLION CHARACTERS IN A SECTORED FORMAT. 30 MILLISECOND AVERAGE POSITIONING TIME, 6.45 MILLION BITS PER SECOND TRANSFER RATE, 3600 RPM, HAS VOICE COIL ACTUATOR, USES PRE-WRITTEN SERVO TRACKS. REQUIRES ONE 883-60 DISK PACK WITH 19 DATA AND ONE SERVO SURFACE (NOT INCLUDED). PROVIDES FOR TWO CONTROLLER ACCESSES. COLOR IS CYBER 170. RECEIVES FROM 3554 1 7054 41 7054 42 RECEIVES FROM 7154 X 10398 1 AVA OPTIONS 10362 4	25,725	D	719	663	SEE CCC	104	B/1
844	44	DISK STORAGE UNIT CAPACITY OF 1422 MILLION BITS OR 237 MILLION CHARACTERS IN A SECTORED FORMAT. 30 MILLISECOND AVERAGE POSITIONING TIME, 6.45 MILLION BITS PER SECOND TRANSFER RATE, 3600 RPM, HAS VOICE COIL ACTUATOR, USES PRE-WRITTEN SERVO TRACKS. PROVIDES FOR 4 CONTROLLER ACCESSES. REQUIRES ONE 883-60 DISK PACK WITH 19 DATA AND ONE SERVO SURFACE (NOT INCLUDED). COLOR IS CYBER 170. RECEIVES FROM 7054 41 7054 42 7154 X RECEIVES FROM 10398 1 AVA OPTIONS 10362 4	28,725	D	798	755	SEE CCC	109	B/1
856	12	CARTRIDGE DISK DRIVE CARTRIDGE DISK DRIVE WITH VOICE COIL POSITIONING. STORES 1.1 MILLION WORDS ON A FIXED DISK PLUS 1.1 MILLION WORDS ON A REMOVABLE DISK. EACH DISK HAS TWO SURFACES, 200 TRACKS PER SURFACE, 29 SECTORS PER TRACK, AND 96 WORDS PER SECTOR. AVERAGE POSITIONING TIME IS 35 MILLISECONDS. ROTATIONAL SPEED IS 2400 RPM. TRANSFER RATE IS 156,000 WORDS PER SECOND. INCLUDES FLOOR MOUNT CABINET. REQUIRES 848-29 DISK CARTRIDGE (NOT INCLUDED) REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE- QUANTITY — PURCHASE PRICE 1ST UNIT — 9,450 2ND UNIT — 7,591 3RD THRU 5TH UNITS — 5,731 6TH THRU 24TH UNITS — 4,816 25TH THRU 49TH UNITS — 4,495 50TH THRU 99 TH UNITS — 4,214 100TH OR OVER UNITS — 3,966 RECEIVES FROM 1733 2	9,450	B	214	209	SEE CCC	74	D/3
856	14	CARTRIDGE DISK DRIVE CARTRIDGE DISK DRIVE WITH VOICE COIL POSITIONING. STORES 2.7 MILLION WORDS ON A FIXED DISK PLUS 2.2 MILLION WORDS ON A REMOVABLE DISK. EACH DISK HAS TWO SURFACES, 400 TRACKS PER SURFACE, 29 SECTORS PER TRACK, AND 96 WORDS PER SECTOR. AVERAGE POSITIONING TIME IS 35 MILLISECONDS. ROTATIONAL SPEED IS 2400 RPM. TRANSFER RATE IS 156,000 WORDS PER SECOND. INCLUDES FLOOR MOUNT CABINET. REQUIRES 848-29 DISK CARTRIDGE (NOT INCLUDED) REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE - QUANTITY — PURCHASE PRICE 1ST UNIT — 13,125 2ND UNIT — 9,478 3RD THRU 5TH UNITS — 5,831 6TH THRU 24TH UNITS — 4,900 25TH THRU 49TH UNITS — 4,573 50TH THRU 99TH UNITS — 4,287 100TH OR OVER UNITS — 4,035 RECEIVES FROM 1733 2	13,125	B	338	329	SEE CCC	90	D/3
885	11	DISK STORAGE UNIT TWO INDEPENDENT SPINDLES WITH NON-REMOVABLE HEAD/DISK ASSEMBLIES (HDA). CYBER 170 SECTORED CAPACITY OF 4152 MILLION BITS OR 692 MILLION SIX BIT CHARACTERS PER SPINDLE, FOR A TOTAL OF 1.384 BILLION CHARACTERS PER DSU. POSITIONING TIME IS 10 TO 50 MILLISEC., 25 MS AVERAGE. 9.58 MILLION BITS PER SECOND BURST TRANSFER RATE. 3600 RPM. PROVIDES ACCESS FOR ONE CONTROLLER PER SPINDLE. RECEIVES FROM 7155 1 10399 1 AVA OPTIONS 10396 1	59,900	D	1,500	1,380		158	B/1

STANDARD PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT SALE 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
885	12	DISK STORAGE UNIT SAME AS 885-11 EXCEPT PROVIDES ACCESS FOR TWO CONTROLLERS PER SPINDLE. RECEIVES FROM 7154 1 10399 1	63,320	D	1,585	1,460		173	B/1
1501	10	ANALOG INPUT MUX/CONTROL, 10V PROVIDES CONTROL AND 8 CHANNELS OF SINGLE ENDED, HIGH LEVEL, UNITY GAIN, SOLID STATE ANALOG MUX INTERFACING TO EXTERNAL EQUIPMENT. SCAN RATE UP TO 20 KHZ OF INPUT SIGNAL LEVELS UP TO +/-10.25 VOLTS. ANALOG CHANNEL ADDRESSING MODES OF RANDOM SELECTION OR SEQUENTIAL SCAN. CONNECTS TO 1525-3 ANALOG-TO-DIGITAL CONVERTER. MUX CAPACITY DOUBLES TO A 16 CHANNEL UNIT WITH ADDITION OF 1501-11 MUX EXPANDER. REQUIRES ONE STATION ADDRESS IN 1750-1 OR 1750-2. UP TO TWELVE 16-CHANNEL UNITS (192 ANALOG POINTS) MAY BE INSTALLED IN ONE MODULE. RECEIVES FROM 1590 3 1750 1 1750 2 SENDS TO 1525 3 AVA OPTIONS 1501 11	583	B	19	18	SEE CCC	9	D/1
1501	11	ANALOG INPUT EXPANDER, 10V PROVIDES 8 CHANNELS OF SINGLE ENDED HIGH LEVEL SOLID STATE ANALOG MUX INTERFACING AUGMENTING CHANNEL CAPACITY OF 1501-10 ANALOG MUX TO MAKE A 16-CHANNEL UNIT. SCAN RATE UP TO 20 KHZ OF INPUT LEVELS UP TO +/-10.25 VOLTS. OCCUPIES SAME STATION ADDRESS AS 1501-10 IN 1750-1 OR 1750-2. OPT APPLIES TO 1501 10	258	B	9	9	SEE CCC	8	D/1
1501	81	ANALOG INPUT CHANNELS, 0-20MA INSERTS IN 1502-80 MODULE. EACH 1501-81 PROVIDES MERCURY WETTED RELAYS FOR SWITCHING EIGHT DIFFERENTIAL ANALOG INPUT SIGNALS TO AMPLIFIER IN 1502-80. INPUT SIGNAL CONDITIONING ACCOMMODATES RESISTORS FOR UNIPOLAR CURRENT INPUTS UP TO 20 MA FULL SCALE. PROVIDES UNIPOLAR FILTER. RECEIVES FROM 1502 80	499	B	14	14	SEE CCC	10	D/1
1501	82	ANALOG IN CHANNELS, WIDE RANGE INSERTS IN 1502-80 MODULE. EACH 1501-82 PROVIDES MERCURY WETTED RELAYS FOR SWITCHING EIGHT DIFFERENTIAL ANALOG INPUT SIGNALS TO AMPLIFIER IN 1502-80. INPUT SIGNAL CONDITIONING INCLUDES UNIPOLAR FILTER FOR FULL SCALE VOLTAGE INPUTS FROM +5MV TO +5V. WIDE RANGE OF LOW-LEVEL SIGNALS ACCOMMODATED THROUGH GAIN-CHANGING AMPLIFIER OF 1502-80. RECEIVES FROM 1502 80	552	B	15	15	SEE CCC	10	D/1
1501	83	ANALOG IN CHANNELS, WIDE RANGE INSERTS IN 1502-80 MODULE. EACH 1502-83 PROVIDES MERCURY WETTED RELAYS FOR SWITCHING EIGHT DIFFERENTIAL ANALOG INPUT SIGNALS TO AMPLIFIER IN 1502-80. INPUT SIGNALS CONDITIONING INCLUDES BIPOLAR FILTER FOR FULL SCALE VOLTAGE INPUTS FROM +/-5MV TO +/-5V. WIDE RANGE OF LOW-LEVEL SIGNALS ACCOMMODATED THROUGH GAIN-CHANGING AMPLIFIER OF 1502-80. RECEIVES FROM 1502 80	604	B	17	17	SEE CCC	10	D/1
1502	80	RELAY ANALOG MUX MODULE ACCEPTS UP TO SIXTEEN 1501-81, 1501-82, OR 1501-83 ANALOG INPUT CHANNEL CARDS TO ACCOMMODATE UP TO 128 LOW-LEVEL ANALOG SIGNALS. CONNECTS TO 1536-2 RELAY MUX CONTROLLER AND 1525-4 ADC. PROVIDES FOR CHAINING OF UP TO SEVEN ADDITIONAL 1502-80 FOR MAXIMUM OF 1024 ANALOG INPUTS. EACH 1502-80 MODULE IS PROVIDED WITH TWO RELAY CONTROL CARDS AND GAIN CHANGING DIFFERENTIAL AMPLIFIER WITH PROGRAMMABLE GAIN FOR FULL SCALE INPUTS OF +/-5 MILLIVOLTS, +/-50 MILLIVOLTS, +/-0.5 VOLTS, AND +/-5 VOLTS. REQUIRES ONE MODULE SPACE IN 1787 CABINET. RECEIVES FROM 1525 4 1536 2 SENDS TO 1501 81 1501 82 1501 83	2,331	B	74	72	SEE CCC	38	D/1
1525	3	ANALOG-TO-DIGITAL CONV, 12-BIT PROVIDES DIGITIZED VALUE OF ANALOG INPUT TO 12 BITS RESOLUTION (INCLUDING SIGN). CONNECTS TO 1501-10 HIGH LEVEL ANALOG MUX CONTROLLER. REQUIRES ONE STATION ADDRESS IN THE 1750-1/2 OR 1590-3 MODULES. REQUIRES + OR - 24 VDC POWER SUPPLY. RECEIVES FROM 1590 3 1750 1 1750 2 SENDS TO 1501 10 1501 11	1,843	B	57	55	SEE CCC	52	D/1
1525	4	ANALOG TO DIG.CONV., 12-BIT PROVIDES DIGITIZED VALUE OF ANALOG INPUT TO 12 BITS RESOLUTION, INCLUDING SIGN. UNIT CAN BE SELECTED FOR OPERATION WITH 12 BITS UNIPOLAR OR + OR - 11 BITS BIPOLAR. CONNECTS TO 1502-80 RELAY ANALOG MUX MODULE. REQUIRES ONE STATION ADDRESS IN 1750-1, 1750-2 OR 1590-3. REQUIRES + OR - 15 VDC FROM 1502-80. RECEIVES FROM 1590 3 1750 1 1750 2 SENDS TO 1502 80 1536 2	1,843	B	57	55	SEE CCC	52	D/1

CHANGES EFFECTIVE 05/01/80

STANDARD PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
1536	2	RELAY ANALOG MUX CONTROLLER PROVIDES CONTROL FOR UP TO 1024 ANALOG INPUT POINTS. CONNECTS TO 1502-80 RELAY ANALOG MUX MODULE AND 1525-4 ADC. OPERATES 1501-8X AT 200 SAMPLES PER SECOND, NON-OVERLAPPED. OVERLAPPED MULTIPLEXING WITH FIVE OR MORE 1502-80 MODULES AND SPECIAL SOFTWARE CAN ATTAIN 1000 SAMPLES PER SECOND. REQUIRES ONE STATION ADDRESS IN 1750-1/2 OR 1590-3 MODULES. RECEIVES FROM 1590 3 1750 1 1750 2 SENDS TO 1502 80 1525 4	431	B	14	14	SEE CCC	16	D/1
1544	1	DIGITAL INPUT UNIT, TRUE = +5V PROVIDES 16 INPUTS AND SIGNAL CONDITIONING TO SAMPLE DATA FROM EXTERNAL DEVICES. ALL 16 INPUTS ARE IDENTICAL PER CARD. DATA SAMPLING CAN BE SYNCHRONIZED TO EXTERNAL DEVICES, IF DESIRED. THE INPUTS SENSE 0V AND +5V WITH +5V AS TRUE. REQUIRES ONE STATION ADDRESS OF 1750-1/2 OR 1590-3 MODULES. RECEIVES FROM 1590 3 1750 1 1750 2	210	B	7	7	SEE CCC	7	D/1
1544	2	DIGITAL INPUT UNIT, TRUE = 0V PROVIDES 16 INPUTS AND SIGNAL CONDITIONING TO SAMPLE DATA FROM EXTERNAL DEVICES. ALL 16 INPUTS ARE IDENTICAL PER CARD. DATA SAMPLING CAN BE SYNCHRONIZED TO EXTERNAL DEVICES, IF DESIRED. THE INPUTS SENSE 0V AND +5V WITH 0V AS TRUE. REQUIRES ONE STATION ADDRESS OF 1750-1/2 OR 1590-3 MODULES. RECEIVES FROM 1590 3 1750 1 1750 2	210	B	7	7	SEE CCC	7	D/1
1544	3	DIGITAL INPUT CONTACT OPEN T. PROVIDES SIGNAL CONDITIONING AND 16 INPUTS TO SAMPLE DATA FROM EXTERNAL DEVICES. ALL 16 INPUTS ARE IDENTICAL PER CARD. DATA SAMPLING CAN BE SYNCHRONIZED TO EXTERNAL DEVICES, IF DESIRED. THE INPUTS SENSE CONTACT CLOSURES TO GROUND, WITH AN OPEN CONTACT RECOGNIZED AS LOGICAL TRUE. REQUIRES ONE STATION ADDRESS OF 1750-1, 1750-2 OR 1590-3 MODULE. RECEIVES FROM 1590 3 1750 1 1750 2	210	B	7	7	SEE CCC	7	D/1
1544	4	DIGITAL INPUT CONTACT CLOS T. PROVIDES SIGNAL CONDITIONING AND 16 INPUTS TO SAMPLE DATA FROM EXTERNAL DEVICES. ALL 16 INPUTS ARE IDENTICAL PER CARD. DATA SAMPLING CAN BE SYNCHRONIZED TO EXTERNAL DEVICES, IF DESIRED. THE INPUTS SENSE CONTACT CLOSURES TO GROUND, WITH A CLOSED CONTACT RECOGNIZED AS LOGICAL TRUE. REQUIRES ONE STATION ADDRESS OF 1750-1, 1750-2 OR 1590-3 MODULE. RECEIVES FROM 1590 3 1750 1 1750 2	210	B	7	7	SEE CCC	7	D/1
1547	1	EVENTS COUNTER, LOGIC LEVEL CONTAINS TWO 8-BIT COUNTERS WHICH MAY COUNT AT A RATE UP TO 50 KHZ SENSING EXTERNAL LOGIC LEVELS OF 0V AND +5V, ONE CYCLE IS ONE COUNT. THE COUNTERS MAY BE CONNECTED IN TANDEM TO FORM ONE 16-BIT COUNTER. REQUIRES ONE STATION ADDRESS OF 1750-1/2 OR 1590-3 MODULES. RECEIVES FROM 1590 3 1750 1 1750 2	447	B	14	14	SEE CCC	10	D/1
1547	2	EVENTS COUNTER, CONTACT CONTAINS TWO 8-BIT COUNTERS WHICH MAY COUNT AT A RATE UP TO 200 HZ SENSING CONTACT CLOSURES FROM FORM C CONTACT INPUTS. ONE CYCLE IS ONE COUNT. THE COUNTERS MAY BE CONNECTED IN TANDEM TO FORM ONE 16-BIT COUNTER. REQUIRES ONE STATION ADDRESS OF 1750-1/2 OR 1590-3 MODULES RECEIVES FROM 1750 1 1750 2	447	B	14	14	SEE CCC	10	D/1
1553	1	DIGITAL OUT, TRUE = 0V LL SYNC PROVIDES LOGIC LEVEL OUTPUTS OF 16 PER UNIT. LOGIC LEVELS MAY BE SYNCHRONIZED WITH EXTERNAL DEVICES. TRUE OUTPUT = 0V AT 65MA SYNC SIGNALS ARE 0V AND +5V LOGIC LEVELS. REQUIRES ONE STATION ADDRESS IN 1750-1 OR 1750-2 OR 1590-3 MODULES. RECEIVES FROM 1590 3 1750 1 1750 2	310	B	10	10	SEE CCC	9	D/1
1553	2	DIGITAL OUT, T = +5V LL SYNC PROVIDES LOGIC LEVEL OUTPUTS OF 16 PER UNIT. LOGIC LEVELS MAY BE SYNCHRONIZED WITH EXTERNAL DEVICES. TRUE OUTPUT = +5V LOGIC LEVELS. REQUIRES ONE STATION ADDRESS IN 1750-1/2 OR 1590-3 MODULES. RECEIVES FROM 1590 3 1750 1 1750 2	310	B	10	10	SEE CCC	9	D/1
1553	3	DIGITAL OUT, TRUE = 0V CC SYNC PROVIDES LOGIC LEVEL OUTPUTS OF 16 PER UNIT. LOGIC LEVELS MAY BE SYNCHRONIZED WITH EXTERNAL DEVICES. TRUE OUTPUT = 0V AT 65MA; SYNC SIGNALS ARE FORM-C CONTACT CLOSURES. REQUIRES ONE STATION ADDRESS IN 1750-1/2 OR 1590-3 MODULES. RECEIVES FROM 1590 3 1750 1 1750 2	310	B	10	10	SEE CCC	9	D/1
1553	4	DIGITAL OUT, T = +5V CC SYNC PROVIDES LOGIC LEVEL OUTPUTS OF 16 PER UNIT. LOGIC LEVELS MAY BE SYNCHRONIZED WITH EXTERNAL DEVICES. TRUE OUTPUT = +5V VIA 470 OHMS; SYNC SIGNALS ARE FORM-C CONTACT CLOSURES. REQUIRES ONE STATION ADDRESS IN 1750-1/2 OR 1590-3 MODULES. RECEIVES FROM 1590 3 1750 1 1750 2	310	B	10	10	SEE CCC	9	D/1

STANDARD PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
1553	5	DIG. OUT. O. C. T = 0V LL SYNC PROVIDES OPEN COLLECTOR OUTPUTS OF 16 PER UNIT. MAY BE SYNCHRONIZED WITH EXTERNAL DEVICES. POWER DRIVER OPEN COLLECTOR IS TRUE WITH 0V AT 125 MA. SYNC SIGNALS ARE 0V AND +5V LOGIC LEVELS. REQUIRES ONE STATION ADDRESS IN 1750-1/2 OR 1590-3 MODULES. RECEIVES FROM 1590 3 1750 1 1750 2	310	B	10	10	SEE CCC	9	D/1
1553	6	DIG. OUT. O. C. T = +V LL SYNC PROVIDES OPEN COLLECTOR OUTPUTS OF 16 PER UNIT. MAY BE SYNCHRONIZED WITH EXTERNAL DEVICES. POWER DRIVER OPEN COLLECTOR IS TRUE WITH TRANSISTOR OFF AT 28V MAX; SYNC SIGNALS ARE 0V AND 5V LOGIC LEVELS. REQUIRES ONE STATION ADDRESS IN 1750-1/2 OR 1590-3 MODULES RECEIVES FROM 1590 3 1750 1 1750 2	310	B	10	10	SEE CCC	9	D/1
1555	1	NON-LATCHING RELAY OUTPUT UNIT PROVIDES 8 FORM C MERCURY NON-LATCHING CONTACT CLOSURE OUTPUTS UNDER REGISTER CONTROL. SYNCHRONOUS OR ASYNCHRONOUS OPERATION IS AVAILABLE BY JUMPER SELECTION. REQUIRES ONE STATION ADDRESS OF 1750-1 OR 1750-2 MODULE. RECEIVES FROM 1750 1 1750 2	520	B	17	17	SEE CCC	11	D/1
1555	2	LATCHING RELAY OUTPUT UNIT PROVIDES 8 FORM C MERCURY LATCHING RELAY CONTACT CLOSURE OUTPUTS. SYNCHRONOUS OR ASYNCHRONOUS OPERATION IS AVAILABLE BY JUMPER SELECTION. REQUIRES ONE STATION ADDRESS OF 1750-1 OR 1750-2 MODULE. RECEIVES FROM 1750 1 1750 2	625	B	20	19	SEE CCC	11	D/1
1555	3	MOMENTARY RELAY OUTPUT UNIT PROVIDES 8 FORM C MOMENTARY CONTACT CLOSURE OUTPUTS. DURATION ADJUSTABLE FROM 5MS TO 1 SECOND AS A GROUP OF EIGHT. REQUIRES ONE STATION ADDRESS OF 1750-1 OR 1750-2 MODULE. RECEIVES FROM 1750 1 1750 2	646	B	21	20	SEE CCC	11	D/1
1566	20	D/A CONVERSION UNIT PROVIDES 4 ANALOG OUTPUTS OF + OR - 10 VDC AT 5 MA WITH 10 BIT RESOLUTION. REQUIRES ONE STATION ADDRESS IN THE 1750-1/2 OR 1590-3 MODULES. REQUIRES OPTION 10299-24. RECEIVES FROM 1590 3 1750 1 1750 2	1,063	B	29	27	SEE CCC	27	D/1
1566	21	D/A CONVERSION UNIT PROVIDES 4 ANALOG CURRENT MODE OUTPUTS OF 0 TO + OR - 5 MA AT 13 BITS (SIGN BIT INCLUDED) OF RESOLUTION. A TWO CARD DEVICE REQUIRING TWO STATION ADDRESSES IN THE 1750-1/2 OR 1590-3 MODULES. REQUIRES OPTION 10299-24. RECEIVES FROM 1590 3 1750 1 1750 2	1,800	B	49	47	SEE CCC	41	D/1
1566	22	D/A CONVERSION UNIT PROVIDES 4 ANALOG CURRENT MODE OUTPUTS OF 0 TO + OR - 20 MA AT 10 BITS (SIGN BIT INCLUDED) OF RESOLUTION. A TWO CARD DEVICE THAT REQUIRES TWO STATION ADDRESSES IN THE 1750-1, 1750-2 OR 1590-3 MODULES. REQUIRES 10299-24. RECEIVES FROM 1590 3 1750 1 1750 2	1,800	B	49	47	SEE CCC	41	D/1
1566	23	D/A CONVERSION UNIT PROVIDES FOUR ANALOG CURRENT MODE OUTPUTS OF 0 TO + OR - 50 MA AT 10 BITS (SIGN BIT INCLUDED) OF RESOLUTION. A TWO CARD DEVICE THAT REQUIRES TWO STATION ADDRESSES IN THE 1750-1/2 OR 1590-3 MODULES. REQUIRES 10299-24 RECEIVES FROM 1590 3 1750 1 1750 2	1,800	B	49	47	SEE CCC	41	D/1
1570		TERMINATION PANELS PROVIDE CAPABILITY TO CONNECT A/D SUBSYSTEM INPUTS OR OUTPUTS TO BARRIER STRIP TERMINATIONS, CONTAINED IN SEPERATE ENCLOSURES AND CAN THEREFORE BE SHIPPED PRIOR TO SYSTEM.(IF DESIRED. THESE TERMINATION PANELS MAY, IN SOME CASES, BE BYPASSED WITH DIRECT CONNECTED CABLE.) 1570F AND 1570J THROUGH 1570X ARE MATING CONNECTIONS SUPPLIED AT NO EXTRA CHARGE FOR CABLE TERMINATIONS.							
1570	A	TERMINATION PANELS ACCOMODATES ANALOG INPUTS OR ANALOG OUTPUTS, IS UTILIZED WITH THE 1563 SIGNAL CONDITIONING MODULES, AND IS EXPANDABLE IN INCREMENTS OF 16 INPUTS. (FILTERS NOT INCLUDED.)	247	E	11	11	SEE CCC	N/C	
1570	B	TERMINATION PANELS ACCOMODATES THERMOCOUPLE INPUTS IN OF 63 OF LIKE MATERIAL. INCLUDES REFERENCE JUNCTION, RTD, AND RTD POWER SUPPLY. ALLOWABLE STANDARD THERMOCOUPLE TYPES ARE IRON-CONSTANTAN, CHROME-ALUMEL, COPPER-CONSTANTAN, AND CHROMEL CONSTANTAN. INTERMIXING WITHIN GROUPS OF 63 INPUTS OR OTHER TYPES ARE OSE. (FILTERS NOT INCLUDED.)	2,783	E	72	71	SEE CCC	N/C	
1570	C	TERMINATION PANELS ACCOMODATES NONPROTECTED ISOLATED CONTACT CLOSURE INPUTS- IS EXPANDABLE IN INCREMENTS OF 32 POINTS.	520	E	13	13	SEE CCC	N/C	
1570	D	TERMINATION PANELS ACCOMMODATES PROTECTED ISOLATED CONTACT CLOSURE INPUTS- IS EXPANDABLE IN INCREMENTS OF 32 POINTS. INCLUDES INPUT OVERVOLTAGE PROTECTION.	588	E	15	15	SEE CCC	N/C	

CHANGES EFFECTIVE 05/01/80

STANDARD PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
1570	E	TERMINATION PANELS ACCOMMODATES CONTACT CLOSURE OUTPUTS. IS EXPANDABLE IN INCREMENTS OF 16 POINTS. INCLUDES CONTACT SUPPRESSION.	394	E	12	12	SEE CCC	N/C	
1570	G	TERMINATION PANELS ACCOMMODATES FORM-C CONTACT CLOSURE INPUTS TO INTERRUPT CONDITIONING UNITS OR EVENT COUNTER UNITS- IS EXPANDABLE IN INCREMENTS OF 16 POINTS.	504	E	13	13	SEE CCC	N/C	
1570	H	TERMINATION PANELS ACCOMMODATES POWER DRIVER OUTPUTS- IS EXPANDABLE IN INCREMENTS OF 16 POINTS.	305	E	10	10	SEE CCC	N/C	
1570	Y	TERMINATION PANELS ACCOMMODATES UNPROTECTED CONTACT CLOSURE INPUTS (FORM C) OR LOGIC LEVEL INPUTS TO EVENTS COUNTER OR INTERRUPT CONDITIONING UNIT.	334	E	11	11	SEE CCC	N/C	
1572	1	SAMPLE TIMING UNIT PROVIDES TWO DISTINCT FUNCTIONAL UNITS, A LINE SYNCHRONIZED TIMER AND A SAMPLE RATE GENERATOR. THE LINE SYNCHRONIZED TIMER PROVIDES INTERRUPTS AT 1, 2, 4, 9, OR 16 TIMES THE 50/60 HZ LINE FREQUENCY. THE SAMPLE RATE GENERATOR PROVIDES INTERRUPTS AT A RATE DETERMINED BY THE PRODUCT OF A 16 BIT REGISTER AND A PRECISION TIME BASE OF 1, 10, 100, OR 1000 MICROSECONDS. EITHER OR BOTH THE LINE SYNC TIMER AND/OR THE SAMPLE RATE GENERATOR CAN GENERATE SYNC 1, SYNC 2 OR ANY INTERRUPT. REQUIRES ONE STATION ADDRESS OF 1750-1 OR 1750-2 MODULE. RECEIVES FROM 1750 1 1750 2	667	B	22	21	SEE CCC	15	D/1
1576	1	STALL ALARM UNIT FOUR STALL TIMERS, PROGRAMMABLE FOR TIME INTERVALS UP TO 10 SECONDS. INTERRUPT ON TIME OUTS AND POWER FAILURE. GENERATES STALL LOGIC SIGNAL FOR DATA AND CONTROL BUS. REQUIRES ONE STATION ADDRESS OF 1750-1 OR 1750-2 MODULE. RECEIVES FROM 1750 1 1750 2	814	B	26	25	SEE CCC	22	D/1
1576	2	STALL ALARM WITH REMOTE PANEL FOUR STALL TIMERS, PROGRAMMABLE FOR TIME INTERVALS UP TO 10 SECONDS. INTERRUPT ON TIME OUTS, POWER FAILURE, EXTERNAL FIELD STALL INPUT. STALL CONDITION ACTIVATES CONTACT CLOSURE AND AN AUDIBLE ALARM. GENERATES STALL LOGIC SIGNAL FOR DATA AND CONTROL BUS. REQUIRES ONE STATION ADDRESS OF 1750-1 OR 1750-2 MODULE. RECEIVES FROM 1750 1 1750 2	945	B	29	28	SEE CCC	24	D/1
1590	3	REMOTE COMPUTER INERFACE SUBSY PROVIDES FOR REMOTE OPERATION OF 1500 SERIES I/O EQUIPMENT. COMPRISED OF LOCAL CONTROL UNIT(LCU) AND REMOTE COMPUTER INTERFACE UNIT (RCIU). THE LCU REQUIRES 2 STATIONS AND PLUGS INTO A 1750-1 COMPUTER INTERFACE UNIT OR 1750-2 INTERFACE EXPANDER. THE RCIU PROVIDES A MODULE WITH CONTROL CARDS FOR INTERFACE TO THE LCU, AND 15 STATIONS. EXPANDABLE TO 127 STATIONS BY THE ADDITION OF UP TO 7 1750-2 MODULES. SELECTABLE SERIAL BIT RATES OF 1200, 2400, 4800, 9600 BAUD, 57 KHZ AND 115 KHZ ARE AVAILABLE. SELECTION OF VOLTAGE MODE (RS232) OPERATION OR PHOTO DIODE/CURRENT LOOP MODE FOR SIGNAL ISOLATION IS PROVIDED. OPERATION WITH OR WITHOUT MODEMS IS PERMISSIBLE. RECEIVES FROM 1750 1 1750 2 SENDS TO 1501 10 1501 11 1525 3 SENDS TO 1525 4 1536 2 1544 1 SENDS TO 1544 2 1544 3 1544 4 SENDS TO 1547 1 1547 2 1553 1 SENDS TO 1553 2 1553 3 1553 4 SENDS TO 1553 5 1553 6 1555 1 SENDS TO 1555 2 1555 3 1566 20 SENDS TO 1566 21 1566 22 1566 23 SENDS TO 1572 1 1576 1 1576 2 SENDS TO 1595 10 1595 11 1595 20 SENDS TO 1595 21	6,500	B	175	171	SEE CCC	106	D/1
1595	10	SERIAL I/O INTERFACE, RS232C PROVIDES NON-SYNCHRONOUS, HALF OR FULL DUPLEX DATA COMMUNICATIONS TO RS232C COMPATIBLE DEVICES. MODEM CONTROL FOR MODEM TYPES A THROUGH F IS INCLUDED. PERFORMS PARALLEL TO SERIAL AND SERIAL TO PARALLEL I/O DATA INTERFACING TO EXTERNAL EQUIPMENT. SELECTABLE FEATURES INCLUDE EIGHT BAUD RATE (75 TO 9600), FOUR WORD LENGTHS (5 TO 8 BITS), EVEN OR ODD PARITY, AND EOT DETECT. REQUIRES ONE STATION ADDRESS IN 1750-1/2 OR 1590-3 MODULE. INCLUDES POWER SUPPLY WHICH CAN ACCOMMODATE UP TO 14 1595-11 UNITS. RECEIVES FROM 1590 3 1750 1 1750 2	609	B	19	18	SEE CCC	15	D/1

STANDARD PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
1595	11	SERIAL I/O EXPANDER, RS232C PROVIDES NON-SYNCHRONOUS, HALF OR FULL DUPLEX DATA COMMUNICATIONS TO RS232C COMPATIBLE DEVICES. MODEM CONTROL FOR MODEM TYPES A THROUGH F IS INCLUDED. PERFORMS PARALLEL TO SERIAL AND SERIAL TO PARALLEL I/O DATA INTERFACING TO EXTERNAL EQUIPMENT. SELECTABLE FEATURES INCLUDE EIGHT BAUD RATES (75 TO 9600), FOUR WORD LENGTHS (5 TO 8 BITS), EVEN OR ODD PARITY, AND EOT DETECT. REQUIRES ONE STATION ADDRESS IN 1750-1/2 OR 1590-3 MODULE. EXPANDS SERIAL I/O CAPABILITY OF 1595-10. UP UP TO 14 1595-11 MAY BE USED PER 1595-10. RECEIVES FROM 1590-3 1595 10 1750 1 RECEIVES FROM 1750 2	473	B	14	14 SEE CCC	15	D/1
1595	20	SERIAL I/O INTERFACE, ISOLATED PROVIDES NON-SYNCHRONOUS HALF OR FULL DUPLEX COMMUNICATIONS BY PARALLEL TO SERIAL AND SERIAL TO PARALLEL I/O DATA INTERFACING TO EXTERNAL EQUIPMENT. INTERFACE SERIAL DATA IS CURRENT DRIVE AND PHOTODIODE RECEIVE (0-30 MA). SELECTABLE FEATURES INCLUDE EIGHT BAUD RATES (75 TO 9600), FOUR WORD LENGTHS (5 TO 8 BITS), EVEN OR ODD PARITY, AND EOT DETECT. REQUIRES ONE STATION ADDRESS OF 1750-1/2 OR 1590-3 MODULES. INCLUDES POWER SUPPLY WHICH CAN ACCOMMODATE UP TO 14 1595-21 UNITS. RECEIVES FROM 1590 3 1750 1 1750 2	609	B	19	18 SEE CCC	15	D/1
1595	21	SERIAL I/O EXPANDER, ISOLATED PROVIDES NON-SYNCHRONOUS HALF OR FULL DUPLEX COMMUNICATIONS BY PARALLEL-TO-SERIAL AND SERIAL-TO-PARALLEL I/O DATA INTERFACING TO EXTERNAL EQUIPMENT. INTERFACE SERIAL DATA IS CURRENT DRIVE AND PHOTODIODE RECEIVE (0-30MA). SELECTABLE FEATURES INCLUDE EIGHT BAUD RATES (75 TO 9600), FOUR WORD LENGTHS (5 TO 8 BITS), EVEN OR ODD PARITY, AND EOT DETECT. REQUIRES ONE STATION ADDRESS IN 1750-1/2 OR 1590-3 MODULE. EXPANDS SERIAL I/O CAPABILITY OF 1595-20. UP TO 14 1595-21 UNITS MAY BE USED PER 1595-20. RECEIVES FROM 1595 20 1750 1 1750 2	473	B	14	14 SEE CCC	15	D/1
* 1711	4	TELETYPEWRITER 33 KSR, 100 WPM, KEYBOARD AND PRINTER. USES 64 CHARACTER SUBSET OF ASCII. RECEIVES FROM 1817A 1817B 970 2 RECEIVES FROM 1784 1 1784 2	1,470	B	42	41 SEE CCC	48	D/3
* 1711	5	TELETYPEWRITER 35 KSR, 100 WPM, KEYBOARD AND PRINTER. USES 64 CHARACTER SUBSET OF ASCII. RECEIVES FROM 1817A 1817B 1784 1 RECEIVES FROM 1784 2	3,150	B	85	83 SEE CCC	61	D/3
* 1720	1	PAPER TAPE READ/PUNCH CONTROL CONTROLS PAPER TAPE I/O WITH (FACIT) 4020 READER AND 4070 PUNCH PAPER TAPE DEVICES. (NON CDC SUPPLIED EQUIP.). DATA TRANSFER IS EIGHT BIT CHARACTER MODE. MAXIMUM CABLE LENGTH FROM CONTROLLER TO (FACIT) DEVICE IS 5 FEET. OCCUPIES ONE A/O POSITION IN THE CPU OR THE EXPANSION CHASSIS. RECEIVES FROM 1817A 1817B 1783 1 RECEIVES FROM 1784 1 1784 2	2,000	B	58	55 SEE CCC	15	D/3
* 1725	1	CARD PUNCH AND CONTROLLER SINGLE COLUMN PUNCH RATED AT 100 CARDS PER MINUTE OR 6 MILLISECONDS PER COLUMN MAXIMUM. PUNCH HOUSED IN STANDALONE CABINET. CONTAINS OCCUPIES ONE AO POSITION IN THE CPU OR CARD COUNTERS (FEED COUNTER AND PUNCH COUNT-1783-1. PUT STACKER CAPACITY IS 1300. THE CONTROLLER OCCUPIES ONE AO POSITION IN THE CPU OR 1783-1 EXPANSION CHASSIS. USER MUST SPECIFY 50 HZ OR 60 HZ OPERATION. 50 HZ REQUIRES 10299-22. REQUIRES 1785-1 IF LOCATED IN 1783-1. RECEIVES FROM 1817A 1817B 1783 1 RECEIVES FROM 1784 1 1784 2	25,000	B	700	665 SEE CCC	252	D/3
* 1729	3	CARD READER AND CONTROLLER DESK TOP, 300 CARD-PER-MIN. AT 50HZ, 350 CPM AT 60 HZ, 80 COLUMN CARD OPTICAL READER WITH CONTROLLER. PHOTOELECTRIC WITH LIGHT-DARK READ CHECKING. 1000 CARD INPUT HOPPER WITH CASE) ARE - AO POSITION IN CPU OR EXPANSION ENCLOSURE. RECEIVES FROM 1817A 1817B 1783 1 RECEIVES FROM 1784 1 1784 2	3,440	B	131	122 75	119	D/3
* 1732	3	MAGNETIC TAPE CONTROLLER CONTROLS ANY COMBINATION OF(UP TO FOUR) 7 OR 9 TRACK TAPE TRANSPORTS. SEVEN TRACK AVAILFOR 1600 BPI PHASE ENCODE CAPABILITY. OCCUTRACK AVAILABLE IN 25 OR 50 IPS AT 800 BPI NRZI/1600 BPI PHASE ENCODED. REQUIRES 10300-2 FOR 1600 BPI PHASE ENCODE CAPABILITY. OCCUPIES FOUR PREASSIGNED POSITIONS IN CPU ENCLOSURE. UNIVERSAL TRANSLATOR ASSEMBLY IS INCLUDED AND MOUNTS IN FIRST TRANSPORT. RECEIVES FROM 1817A 1817B 1784 1 RECEIVES FROM 1784 2 SENDS TO 616 72 616 92 616 95 AVA OPTIONS 10300 2	5,250	B	193	179 114	60	D/3

CHANGES EFFECTIVE 05/01/80 * NO LONGER IN PRODUCTION

STANDARD PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	1 YEAR	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
* 1733	2	CARTRIDGE DISK CONTROLLER SINGLE DIRECT MEMORY ACCESS CHANNEL CONNECTION. CONTROLLER HAS ABSOLUTE CYLINDER ADDRESSING AND A DAISY CHAIN CAPABILITY TO CONTROL UP TO FOUR CARTRIDGE DISK DRIVES WITH SEEK-OVERLAP CAPABILITY IN ANY COMBINATION. OCCUPIES FIVE PRE-ASSIGNED POSITIONS IN CPU ENCLOSURE. RECEIVES FROM 1817A 1817B 1784 1 RECEIVES FROM 1794 2 SENDS TO 856	5,775	B	225	208	126	40	D/3
* 1742	32	LINE PRINTER AND CONTROLLER A 300 LINES PER MINUTE BAND PRINTER IN A QUIETIZED CABINET. PRINTS 64 ASCII SYMBOLS, UP TO 136 COLUMNS AT 10 COLUMNS PER INCH. INCLUDES ONE LINE BUFFER, PAPER BASKET, TEST PRINT FEATURE, 12 CHANNEL VFU, ONE 64 CHARACTER BAND AND 25 FOOT I/O CABLE. CONTROLLER REQUIRES ONE A9 POSITION IN THE CPU OR EXPANSION ENCLOSURE. (110 VAC, 60 HZ OR 220 VAC, 50 HZ). MAINTENANCE PRICE DOES NOT INCLUDE REPLACEMENT PRINT BANDS. RECEIVES FROM 1817A 1817B 1783 1 RECEIVES FROM 1794 1 1784 2	10,800	B	389	360	SEE CCC	239	B/1
* 1743	1	SYNC COMMUNICATIONS CONTROL CONTROLLER MULTIPLEXES 2 SYNC FULL OR HALF DUPLEX DATA CHANNELS. THE CONTROLLER INTERFACE IS EIA RS232C OR CC ITT V24 COMPATIBLE. OCCUPIES ONE A9 POSITION IN THE CPU OR 1783-1 EXPANSION CHASSIS. ODD OR EVEN PARITY SYNC CHAR. BITS, PROTECT; 5, 6, 7 OR 8 DATA BITS; AND BAUD RATES OF 1200, 2400, 4800, 9600 AND 19,200 RESPECTIVELY ARE HARDWARE SELECTABLE. DEVICE WILL DRIVE DIRECT UP TO 50 FEET AT 19,200 BAUD RATE. REQUIRES OPTION 10343-1 POWER SUPPLY ASSEMBLY OR EQUIVALENT. RECEIVES FROM 1817A 1817B 970 2 RECEIVES FROM 979 71 979 91 1783 1 RECEIVES FROM 1794 1 1784 2 AVA OPTIONS 10343 1	2,660	B	101	93	58	33	D/3
* 1743	2	ASYNC COMMUNICATION CONTROL CONTROLLER MULTIPLEXES UP TO 8 ASYNC, FULL OR HALF DUPLEX CHANNELS. CHANNEL INTERFACE SIGNALS ARE EIA RS232C OR CCITT V24 COMPATIBLE. OCCUPIES ONE A9 POSITION IN THE CPU OR 1783-1 EXPANSION CHASSIS. ODD OR EVEN PARITY, 5, 6, 7 OR 8 DATA BITS; PROTECT; ONE OR TWO STOP BITS AND BAUD RATES OF 110, 300, 600, 1200, 2400, 4800 AND 9600 ARE HARDWARE SELECTABLE. DEVICE WILL DRIVE UP TO 50 FEET WITH STANDARD TTL SIGNALS. REQUIRES OPTION 10343-1 POWER SUPPLY ASSEMBLY OR EQUIVALENT. RECEIVES FROM 1817A 1817B 1783 1 RECEIVES FROM 1784 1 1784 2 AVA OPTIONS 10343 1	2,950	B	116	107	64	33	D/3
* 1750	1	COMPUTER INTERFACE UNIT CONNECTS TO A/O CHANNEL OF 1700 TO PROVIDE INTERFACE TO 1500 PERIPHERAL PRODUCTS. PROVIDES CAPABILITY TO HOUSE UP TO 16 I/O UNITS IN STATION ADDRESSES 0-15. EXPANSION BEYOND STATION ADDRESS IS PROVIDED BY 1750-2 COMPUTER INTERFACE EXPANDER. UP TO SEVEN (7) 1750-2 MODULES MAY BE CONNECTED TO 1750-1. REQUIRES ONE MODULE SPACE IN 1787 CABINET. REQUIRES RACK OPTION 10299-22 FOR 220/240 VAC OPERATION. RECEIVES FROM 1705 1714 1 1775 1 RECEIVES FROM 1795 3 1850 1 SENDS TO 1501 10 1525 3 1525 4 SENDS TO 1536 2 1544 1 1544 2 SENDS TO 1544 3 1544 4 1547 1 SENDS TO 1547 2 1553 1 1553 2 SENDS TO 1553 3 1553 4 1553 5 SENDS TO 1553 6 1555 1 1555 2 SENDS TO 1555 3 1566 21 1566 22 SENDS TO 1566 23 1572 1 1576 1 SENDS TO 1576 2 1595 10 1595 11 SENDS TO 1595 20 1750 2	2,625	B	80	78	SEE CCC	32	D/3
* 1750	2	COMPUTER INTERFACE EXPANDER PROVIDES UP TO 16 ADDITIONAL STATION ADDRESSES TO 1750-1. UP TO SEVEN (7) 1750-2 MODULES MAY BE CONNECTED TO 1750-1. EACH 1750-2 REQUIRES ONE MODULE SPACE IN 1787 CABINET. RECEIVES FROM 1750 1 SENDS TO 1501 10 1525 3 1525 4 SENDS TO 1536 2 1544 1 1544 2 SENDS TO 1544 3 1544 4 1547 1 SENDS TO 1547 2 1553 1 1553 2 SENDS TO 1553 3 1553 4 1553 5 SENDS TO 1553 6 1555 1 1555 2 SENDS TO 1555 3 1566 21 1566 22 SENDS TO 1566 23 1572 1 1576 1 SENDS TO 1576 2 1590 3 1595 10 SENDS TO 1595 11 1595 20 1595 21	2,100	B	63	60	SEE CCC	26	D/3
* 1782	1	MEMORY MODULE, 900 NANOSECONDS MEMORY MODULE, 4096 WORDS, 16-BITS PLUS 1 PARITY AND 1 PROTECT BIT OF DYNAMIC VOLATILE MOS MEMORY. HAS A 900 NANOSECOND MEMORY CYCLE TIME. OCCUPIES ONE MEMORY POSITION IN THE 1784-1 OR 1783-1 ENCLOSURE. 10297-1 MEMORY HOLD BATTERY OPTION AVAILABLE FOR RETAINING MEMORY DATA DURING POWER OFF. OPT APPLIES TO 1817A 1784 1	2,360	B	90	84	51	40	D/3

STANDARD PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	PAGE 19 MONTHLY CHARGE	MAINTENANCE PROD GRP
* 1782	2	MEMORY MODULE, 600 NANOSECONDS MEMORY MODULE, 499K WORDS, 16-BITS PLUS 1 PARITY AND 1 PROTECT BIT OF DYNAMIC VOLATILE MOS MEMORY. HAS A 600 NANOSECOND MEMORY CYCLE TIME. OCCUPIES ONE MEMORY POSITION IN THE 1784-2 OR 1793-1 ENCLOSURE. 10297-1 MEMORY HOLD BATTERY OPTION AVAILABLE FOR RETAINING MEMORY DATA DURING POWER OFF. OPT APPLIES TO 18178 1784 2	3,054	9	117	108	66	46	D/3
* 1783	1	EXPANSION ENCLOSURE CONTAINS PREWIRED POSITIONS FOR MEMORY EXPANSION FROM 32K TO 65K WORDS, AND 10 AQ AND 4 OSA POSITIONS FOR CONNECTION OF PERIPHERALS AND CHANNEL ADAPTERS AND 12 UNWIRED POSITIONS AVAILABLE FOR SPECIAL INTERFACE. FOR USE OF AQ OR OSA POSITIONS REQUIRES 1785-1 AQ CHANNEL OR 1785-2 OSA CHANNEL EXPANSION UNITS RESPECTIVELY IN BOTH CPU AND EXPANSION ENCLOSURES. REQUIRES 1786-1 FOR MEMORY EXPANSION FROM 32K TO 65K. RACK MOUNTABLE IN 1700 SERIES CABINETS. RECEIVES FROM 1917A 18178 1784 1 RECEIVES FROM 1784 2 SENDS TO 1720 1 1725 1 1729 3 SENDS TO 1742 30 1742120 1743 1 SENDS TO 1749 2 1781 1 1782 1 SENDS TO 1787 2 1785 1 1785 2 SENDS TO 1795 3 1785 4 1786 1 SENDS TO 10336 1 65110 1	4,200	8	163	152	91	13	D/3
* 1785	1	AQ CHANNEL EXPANSION AQ CHANNEL EXPANSION IS REQUIRED TO EXTEND THE AQ BUS TO THE 1783-1 EXPANSION ENCLOSURE. THIS MODULE OCCUPIES ONE AQ POSITION IN BOTH THE CPU AND 1783-1. RECEIVES FROM 1917A 18178 1784 1 RECEIVES FROM 1784 2 SENDS TO 1793 1	1,050	8	41	38	23	15	D/3
* 1785	2	OSA CHANNEL EXPANSION OSA CHANNEL EXPANSION IS REQUIRED TO EXTEND THE OSA BUS TO THE 1783-1 EXPANSION ENCLOSURE. THIS MODULE OCCUPIES ONE OSA POSITION IN BOTH THE CPU AND 1783-1. RECEIVES FROM 1917A 18178 1784 1 RECEIVES FROM 1784 2 SENDS TO 1793 1	1,050	8	41	38	23	15	D/3
* 1785	3	1700 AQ CHANNEL ADAPTER CONVERTS THE 1784 AQ BUS TO A 1700 STANDARD I/O BUS AND INCLUDES THE 61 PIN CONNECTOR. THIS ALLOWS ATTACHMENT OF STANDARD 1700 AQ PERIPHERAL DEVICES. OCCUPIES TWO AQ POSITIONS. RECEIVES FROM 1917A 18178 1783 1 RECEIVES FROM 1784 1 1784 2 SENDS TO 364 4 364 5 1590 1 SENDS TO 1590 2 1706 1716 SENDS TO 1718 1726 1 1728 SENDS TO 1729 2 1731 1732 SENDS TO 1733 1 1735 1736 SENDS TO 1738 1739 1740 SENDS TO 1742 1744 1745 SENDS TO 1746 1748 1749 SENDS TO 1750 1751 1752 SENDS TO 1777 1797 8271 9 SENDS TO 60198 1	2,625	8	102	94	57	22	D/3
* 1785	4	1700 OSA CHANNEL ADAPTER CONVERTS THE 1784 OSA BUS TO THE 1700 STANDARD I/O BUS AND INCLUDES THE 61 PIN CONNECTOR. WHEN USED IN CONJUNCTION WITH THE 1785-3 CASE) ARE - REQUIRE DIRECT STORAGE ACCESS. THIS MODULE CONNECTS TO AND REQUIRES THE 1785-3. IT OCCUPIES TWO OSA POSITIONS. RECEIVES FROM 1817A 18178 1783 1 RECEIVES FROM 1784 1 1784 2 SENDS TO 1736 1716 1733 1 SENDS TO 1739 1739 1 1748 2 SENDS TO 1751 1752 1797 SENDS TO 8271 0	1,575	8	61	57	34	22	D/3
* 1786	1	MEMORY EXPANSION CONTROL MEMORY EXPANSION MODULE IS REQUIRED TO EXTEND THE MEMORY BUS TO THE 1783-1 EXPANSION ENCLOSURE. THIS CONTROL OCCUPIES TWO PERMANENTLY ASSIGNED POSITIONS IN THE EXPANSION ENCLOSURE. RECEIVES FROM 1817A 18178 1784 1 RECEIVES FROM 1784 2 SENDS TO 1782 1 1782 2	1,575	8	61	57	34	22	D/3
* 1787	3	PEDESTAL CABINET ACCOMMODATES 19 INCH EIA STANDARD MOUNTING EQUIPMENT. PROVIDES POWER DISTRIBUTION PANEL WITH CIRCUIT BREAKERS, MAIN POWER SWITCH, LINE FILTER, A. C. RECEPTACLES, AIR FILTER AND HIGH TEMPERATURE WARNING/POWER DOWN CIRCUITRY. MEASURES 24 IN. WIDE, 32 IN. DEEP AND 29.5 IN. HIGH. ACCOMMODATES SYSTEM 17 RACK MOUNTED EQUIPMENT AND 1500 SERIES PRODUCTS. PROVIDES 22 INCHES OF VERTICAL RACK MOUNTING SPACE. AVA OPTIONS 10299 17 10299 20 10299 21 AVA OPTIONS 10299 22 10299 25	1,100	9	32	31 SEE CCC		N/A	

CHANGES EFFECTIVE 05/01/80

STANDARD PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
* 1787	4	EQUIPMENT CABINET DESIGNED TO ACCOMMODATE 48.26 CM (19 INCH) OF RACK MOUNTING EQUIPMENTS. INCLUDES REAR DOOR POWER DISTRIBUTION BOX, LINE FILTER, MAIN POWER SWITCH, CIRCUIT BREAKERS, CONVENIENCE OUTLETS AND AIR FILTER. EXTERNAL CABINET DIMENSIONS ARE - WIDTH - 57.15 CM (22.5 IN.), DEPTH - 74.93 CM (29.5 IN.), HEIGHT - 172.72 CM (68 IN.). PROVIDES 151.13 CM (59.5 IN.) OF VERTICAL MOUNTING SPACE. AVA OPTIONS 10299 19 10299 20 10299 21 AVA OPTIONS 10299 22 10299 23 10299 25	1,375	B	39	38	SEE CCC	N/A	
* 1787	5	EQUIPMENT TABLE PROVIDES TABLE TOP SPACE FOR MOUNTING A 1784 COMPUTER OR 1729-3 CARD READER OR OTHER TABLE TOP MOUNTED EQUIPMENTS. NO POWER DISTRIBUTION IS PROVIDED. THE TABLE MEASURES 24 INCHES WIDE X 32 INCHES DEEP X 29 INCHES HIGH. ACCOMMODATES BELOW MOUNTED 1783 WHEN USED WITH OPTION 10299-18. AVA OPTIONS 10299 18	400	B	12	11	SEE CCC	N/A	
* 1787	6	DESK CONSOLE PROVIDES TABLE TOP SPACE FOR MOUNTING A 1784 CPU OR 1729-3. PROVIDES DISTRIBUTION PANEL WITH CIRCUIT BREAKERS, MAIN POWER SWITCH, LINE FILTER, A.C. RECEPTACLES, AIR FILTER AND HIGH TEMPERATURE WARNING/POWER DOWN CIRCUITRY CONSOLE DIMENSIONS ARE 48 INCHES WIDE X 32 INCHES DEEP X 29 INCHES HIGH. ACCOMMODATES BELOW MOUNTED 1783 WHEN USED WITH OPTION 10299-18. PROVIDES 22 INCHES OF VERTICAL RACK MOUNTING SPACE. AVA OPTIONS 10299 17 10299 18 10299 20 AVA OPTIONS 10299 21 10299 22 10299 25	1,250	B	35	35	SEE CCC	N/A	
1811	1	CONSOLE DISPLAY SINGLE STATION CRT DISPLAY, DETACHABLE KEYBOARD WITH TYPEWRITER LAYOUT AND NUMERIC PAD. PROVIDES 1920-CHARACTER DISPLAY (24 LINES OR 80 CHARACTERS), 128-CHARACTER ASCII SET, CURSOR ADDRESSING, AND DATA TRANSMISSION EITHER CHARACTER, LINE OR PAGE AT A TIME.(120 VAC 50/60 HZ). RECEIVES FROM 18 20 18 25 1810M SENDS TO 753 10 755 10 AVA OPTIONS 1898 1	2,200	B	79	73	48	19	D/3
1811	2	OPERATOR CONSOLE SINGLE STATION CRT DISPLAY, DETACHABLE KEYBOARD WITH TYPEWRITER LAYOUT AND NUMERIC PAD. PROVIDES 1920-CHARACTER DISPLAY (24 LINES OR 80 CHARACTERS), 128-CHARACTER ASCII SET AND CHARACTER AT A TIME DATA TRANSMISSION. (120 VAC 50/60 HZ). RECEIVES FROM 18 20 18 25 1810M SENDS TO 753 11 755 11 AVA OPTIONS 1898 1	1,650	B	55	52	36	19	D/3
1827	7	IMPACT PRINTER DESK TOP MATRIX PRINTER. PRODUCES ORGINAL AND UP TO FOUR COPIES. PRINTS UP TO 132 COLUMNS AT NOMINAL SPEEDS OF 70 LINES/MINUTE. PRINTS 63 ASCII SYMBOLS. INCLUDES PARITY CHECK, 1000-CHARACTER BUFFER, SELF-TEST, FORMAT TAPE AND AUTOMATIC MOTOR CONTROL. REQUIRES 1843-980 CABLE FOR CONNECTION TO 1843-2. (120 VAC, 60 HZ OR 220 VAC, 50 HZ). REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE- QUANTITY PURCHASE PRICE 1ST UNIT 4,370 2ND THRU 4TH UNITS 4,195 5TH THRU 9TH UNITS 4,064 10TH THRU 14TH UNITS 3,933 15TH OR OVER UNITS 3,802 RECEIVES FROM 1843 2	4,370	B	135	124	95	63	D/3
1827	32	LINE PRINTER (300 LPM) PRINTS UP TO 132 COLUMNS AT 10 CHARACTERS PER INCH AND EITHER 6 OR 8 LINES PER INCH. INCLUDES QUIETIZED CABINET, VERTICAL FORMAT CONTROL, ONE LINE BUFFER, TEST PRINT FEATURE, PAPER BASKET, CONTROL PANEL, 20 FT. I/O CABLE AND ONE 63 CHARACTER ASCII BAND. (120 VAC, 60 HZ OR 200 VAC, 50 HZ). MAINTENANCE PRICE DOES NOT INCLUDE REPLACEMENT PRINT BANDS. REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE - QUANTITY PURCHASE PRICE 1ST UNIT 10,300 2ND THRU 4TH UNITS 9,890 5TH THRU 9TH UNITS 9,580 10TH THRU 14TH UNITS 9,270 REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE - QUANTITY PURCHASE PRICE 1ST THRU 1ST UNITS 103.00 2ND THRU 4TH UNITS 98.90 5TH THRU 9TH UNITS 95.80 10TH THRU 14TH UNITS 92.70 15TH OR OVER UNITS 89.60 RECEIVES FROM 18 5 18 5M 1828 1 RECEIVES FROM 1828 2 AVA OPTIONS 10307 1	10,300	B	370	343	224	140	D/3

STANDARD PRODUCTS

PRODUCT NUM	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
1027 60	LINE PRINTER (600 LPM) 600-LINES-PER-MINUTE PRINTER IN QUIETIZED CABINET. PRINTS 64 ASCII SYMBOLS, UP TO 132 COLUMNS AT 10 CHARACTERS PER INCH (HORIZONTAL) AND EITHER 6 OR 8 LINES PER INCH (VERTICAL). INCLUDES OPERATOR CONTROL PANEL, ONE LINE BUFFER, TEST PRINT FEATURE, FAULT INDICATORS, PAPER BASKET, 20-FOOT I/O CABLE AND ONE 63-ASCII CHARACTER BAND. (120 VAC, 60 HZ OR 220 VAC, 50 HZ). MAINTENANCE PRICE DOES NOT INCLUDE REPLACEMENT PRINT BANDS. REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE - QUANTITY — PURCHASE PRICE 1ST UNIT — 17,000 2ND THRU 4TH UNITS — 16,320 5TH THRU 9TH UNITS — 15,810 10TH THRU 14TH UNITS — 15,300 REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE - QUANTITY — PURCHASE PRICE 1ST THRU 1ST UNITS — 170.00 2ND THRU 4TH UNITS — 163.20 5TH THRU 9TH UNITS — 158.10 10TH THRU 14TH UNITS — 153.00 15TH OR OVER UNITS — 147.90 RECEIVES FROM 10 5 10 5M 1020 1 RECEIVES FROM 1020 2 AVA OPTIONS 1027950 10307	17,000	8	565	523	370	190	D/3
1027 90	LINE PRINTER (900 LPM) 900 LINES PER MINUTE PRINTER IN A QUIETTIZED CABINET. PRINTS 64 ASCII SYMBOLS, UP TO 136 COLUMNS AT 10 CHARACTERS PER INCH (HORIZ.) AND EITHER 6 OR 8 LINES PER INCH (VERT.). INCLUDES VERTICAL FORMAT CONTROL, ONE LINE BUFFER, TEST FEATURE, PAPER BASKET, OPERATOR CONTROL PANEL, 20 FOOT I/O CABEL AND ONE 64 CHARACTER ASCII PRINT BAND. (120 VAC, 60 HZ OR 200 VAC, 50 HZ). MONTHLY MAINTENANCE PRICE DOES NOT INCLUDE REPLACEMENT PRINT BANDS. RECEIVES FROM 10 5M	23,700	8	855	790	SEE CCC	260	D/3
1027 950	LINE PRINTER INTERFACE CABLE FIFTY (50) FT. SHIELDED CABLE PROVIDES FOR INTERFACING THE LINE PRINTER TO THE LINE PRINTER CONTROLLER. OPT APPLIES TO 1027 30 1027 31 1027 60	376	8	N/A	N/A	SEE CCC	T AND M	
1029 1	CARD READER/LINE PRINTER CONTR PROVIDES TWO INDEPENDENT CONTROLLERS FOR CONNECTION OF ONE CARD READER AND/OR ONE LINE PRINTER TO PROCESSOR UNIT; OCCUPIES ONE I/O CARD POSITION WITHIN PROCESSOR UNIT. CONTROLLER FEATURES APF; ACCEPTS CARD READER INPUT DATA IN FORM OF HOLLERITH CODE, BINARY CODE, OR ANY OTHER DESIRED FORMAT, PROVIDES FACILITY FOR DEADSTART OPERATION OF PROCESSOR UNIT PERFORMS HOLLERITH TO ASCII CODE CONVERSION DURING DEADSTART OPERATION. LINE PRINTER CONTROLLER HAS DATA BUFFER FACILITY AND TEST MODE CAPABILITY OF CLOSED LOOP OPERATION UNDER SOFTWARE CONTROL FOR DIAGNOSTIC PURPOSES. REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE - QUANTITY — PURCHASE PRICE 1ST UNIT — 1,000 2ND THRU 4TH UNITS — 960 5TH THRU 9TH UNITS — 930 10TH THRU 14TH UNITS — 900 15TH OR OVER UNITS — 870 RECEIVES FROM 10 20 10 25 10 30 RECEIVES FROM 1010M 65109 1 SENDS TO 1027 30 1027 31 1027 32 SENDS TO 1027 60 1029 30 1029 60	1,000	8	36	33	22	9	D/3

CHANGES EFFECTIVE 05/01/80

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
1828	2	CR/LP CONTR/CLA PROVIDES TWO INDEPENDENT CONTROLLERS FOR CONNECTION OF ONE CARD READER AND/OR ONE LINE PRINTER TO THE PROCESSOR UNIT. PROVIDES ONE COMMUNICATION LINE ADAPTOR FOR THE PROCESSOR UNIT. OCCUPIES ONE POSITION IN THE PROCESSOR. CARD READER - ACCEPTS HOLLERITH, BINARY OR OTHER CODE FORMATS. PROVIDES FACILITY FOR PROCESSOR DEADSTART, PERFORMS HOLLERITH TO ASCII CONVERSION DURING DEADSTART. LINE PRINTER - DATA BUFFER FACILITY AND TEST MODE USING LOOP-BACK TO CARD READER CONTROL UNDER SOFTWARE SUPERVISION. COMMUNICATIONS LINE ADAPTOR - PROVIDES INTERFACE TO SYNCHRONOUS OR ASYNCHRONOUS MODEMS WHICH CONFORM TO CCITT REC V.24 OR EIA RS232-C STANDARDS. BAUD RATES OF 110, 150, 300, 600, 1200, 2400, 4800, 9600 AND 19,200 (ASYNC) AND 1200, 2400, 4800, AND 9600 (SYNC) INTERNAL CYCLIC ENCODER FOR CHECKWORD GENERATION. INCLUDES ONE 20 FT. MODEM CABLE. REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE- QUANTITY PURCHASE PRICE 1ST UNIT 1,500 2ND THRU 4TH UNITS 1,440 5TH THRU 9TH UNITS 1,395 10TH THRU 14TH UNITS 1,350 15TH OR OVER UNITS 1,305 RECEIVES FROM 18 20 18 25 18 30 RECEIVES FROM 1810M SENDS TO 1827 30 1827 31 1827 32 SENDS TO 1827 60 1829 30 1829 60 AVA OPTIONS 1843901 1843950	1,500	9	54	50	SEE CCC	26	D/3
1829	30	CARD READER (300 CPM) SELF CONTAINED DESK TOP UNIT PROVIDED WITH INTERFACE CONTROL LOGIC AND AN OPERATOR'S CONTROL/INDICATOR PANEL. FUNCTIONAL FEATURES - 300 CARDS PER MINUTE READ SPEED, 1000 CARD HOPPER/STACKER CAPACITY, 80 COLUMN PUNCH CARD INPUT MEDIUM, PHOTOELECTRIC READ STATION WITH LIGHT/DARK READ CHECKING. ONE 7 FT. INTERFACE CABLE SUPPLIED. REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE - QUANTITY PURCHASE PRICE 1ST UNIT 2,940 2ND THRU 4TH UNITS 2,820 5TH THRU 9TH UNITS 2,735 10TH THRU 14TH UNITS 2,645 15TH OR OVER UNITS 2,560 RECEIVES FROM 19 5 18 5M 1828 1 RECEIVES FROM 1828 2 AVA OPTIONS 1829915 1888 1	2,940	9	106	98	SEE CCC	49	D/3
1829	60	CARD READER (600 CPM) SELF CONTAINED DESK TOP UNIT PROVIDED WITH INTERFACE CONTROL LOGIC AND OPERATOR'S CONTROL/INDICATOR PANEL. FUNCTIONAL FEATURES ARE - 80 COLUMN, 600 CARDS PER MINUTE READ SPEED, 1000 CARD/HOPPER CAPACITY AND PHOTOELECTRIC READ STATION WITH LIGHT/DARK READ CHECKING FACILITY. ONE 7 FT. INTERFACE CABLE SUPPLIED. REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE - QUANTITY PURCHASE PRICE 1ST UNIT 4,410 2ND THRU 4TH UNITS 4,235 5TH THRU 9TH UNITS 4,100 10TH THRU 14TH UNITS 3,970 15TH OR OVER UNITS 3,835 RECEIVES FROM 18 5 18 5M 1828 1 RECEIVES FROM 1828 2 AVA OPTIONS 1829915 1888 1	4,410	9	161	149	SEE CCC	66	D/3
1829	915	CARD READER CABLE FIFTEEN (15) FOOT (4.5 METERS) SHIELDED CABLE FOR INTERFACING CARD READER TO THE CONTROLLER OPT APPLIES TO 1829 30 1829 60	190	9	N/A	N/A	SEE CCC	T AND M	
1833	1	STORAGE MODULE DRIVE INTERFACE PROVIDES SINGLE CPU AO/DMA CHANNEL INTERFACE TO THE STORAGE MODULE CONTROL UNIT. THE INTERFACE HANDLES ALL CONTROL AND STATUS OPERATIONS VIA THE A/O CHANNEL AND ALL DATA TRANSFER VIA THE DMA CHANNEL. THE INTERFACE SUPPORTS THE CONTROL UNIT CONNECTION OF UP TO EIGHT DRIVES IN ANY MIX. CONNECTION TO THE CONTROL UNIT IS VIA TWO 25 FOOT (7.62 METERS) CABLE ASSEMBLIES. THE INTERFACE OCCUPIES ONE AO/DMA POSITION WITHIN THE PROCESSOR UNIT. REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE - QUANTITY PURCHASE PRICE 1ST UNIT 3,000 2ND THRU 4TH UNITS 2,880 5TH THRU 9TH UNITS 2,790 10TH THRU 14TH UNITS 2,700 15TH OR OVER UNITS 2,610 RECEIVES FROM 18 20 1833 2 65109 1 SENDS TO 1833 3 AVA OPTIONS 1833950 10445 1	3,000	8	108	100	SEE CCC	20	D/3

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	1 YEAR	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
1833	2	SMD INTERFACE - DUAL CPU PROVIDES AO/DMA CHANNEL INTERFACE FOR THE SECOND CPU IN A DUAL CPU-SMD SUBSYSTEM. THE INTERFACE HANDLES ALL CONTROL AND STATUS OPERATIONS VIA THE A/O CHANNEL AND ALL DATA TRANSFERS VIA THE DMA CHANNEL. THE INTERFACE SUPPORTS CONTROL UNIT CONNECTIONS OF UP TO EIGHT DRIVES IN ANY MIX. CONNECTION TO THE FIRST COMPUTERMS SMD INTERFACE IS VIA TWO 25 FOOT (7.62 METERS) CABLE ASSEMBLIES. THE INTERFACE OCCUPIES ONE AO/DMA POSITION WITHIN THE PROCESSOR UNIT. REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE - QUANTITY PURCHASE PRICE 1ST UNIT 3,000 2ND THRU 4TH UNITS 2,880 5TH THRU 9TH UNITS 2,790 10TH THRU 14TH UNITS 2,700 15TH OR OVER UNITS 2,610 RECEIVES FROM 18 20 SENDS TO 1833 1 AVA OPTIONS 10445 2	3,000	B	108	100	SEE CCC	20	D/3
1833	3	STORAGE MODULE CONTROL UNIT CONTROL UNIT FOR STORAGE MODULE DRIVES. PROVIDES CONTROL FOR UP TO EIGHT DRIVES IN ANY MIX OF 25 MILLION 8-BIT BYTES AND 50 MILLION 8-BIT BYTES OF FORMATTED DATA CAPACITY. THE CONTROL UNIT HANDLES ALL SMD DATA TRANSFERS, FORMATTING AND ERROR RECOVERY. IT PROVIDES FOR EITHER SINGLE OR DUAL CPU CONNECTION VIA THE SMD INTERFACE. THE CONTROL UNIT IS PHYSICALLY HOUSED IN THE BASE CABINET OF THE FIRST SMD IN THE SUBSYSTEM. REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE - QUANTITY PURCHASE PRICE 1ST UNIT 10,000 2ND THRU 4TH UNITS 9,600 5TH THRU 9TH UNITS 9,300 10TH THRU 14TH UNITS 9,000 15TH OR OVER UNITS 8,700 RECEIVES FROM 1833 1 1833 2 SENDS TO 1867 10 1867 11 1867 20 SENDS TO 1867 21	10,000	B	367	340	SEE CCC	36	D/3
1833	4	CARTRIDGE DISK CONTROLLER SINGLE DIRECT MEMORY ACCESS CHANNEL CONNECTION. CONTROLLER HAS ABSOLUTE CYLINDER ADDRESSING AND A DAISY CHAIN CAPABILITY TO CONTROL UP TO FOUR CARTRIDGE DISK DRIVES WITH SEEK-OVERLAP IN ANY COMBINATION. HAS AUTOLOAD CAPABILITY WITH AUTOMATIC RE-TRY. HAS CHECKWORD GENERATION AND CHECKING FOR ERROR DETECTION. INCLUDES CABLES AND RELAY STATIONS. OCCUPIES ONE DMA POSITION IN THE PROCESSOR. REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE - QUANTITY PURCHASE PRICE 1ST UNIT 2,500 2ND THRU 4TH UNITS 2,400 5TH THRU 9TH UNITS 2,325 10TH THRU 14TH UNITS 2,250 15TH OR OVER UNITS 2,175 RECEIVES FROM 18 20 18 25 18 30 RECEIVES FROM 1913M SENDS TO 1866 12 1866 14	2,500	B	74	68	SEE CCC	34	D/3
1833	5	FLEXIBLE DISK DRIVE CONTROLLER PROVIDES SINGLE CPU A/O-DMA CHANNEL INTERFACE AND CONTROL FOR ONE OR TWO FLEXIBLE DISK DRIVE UNITS. THE CONTROLLER IS CAPABLE OF HANDLING ALL DATA, CONTROL AND STATUS OPERATIONS VIA THE A/O CHANNEL ONLY OR BUFFERED DATA TRANSFERS VIA THE DMA CHANNEL. THE CONTROLLER IS CAPABLE OF READING AND WRITING IN EITHER THE IBM 3740 FORMAT (128 BYTES/SECTOR) OR THE CDC 1700 ROTATING MASS STORAGE FORMAT (192 BYTES/SECTOR). OCCUPIES ONE A/O OR A/O-DMA POSITION WITHIN THE PROCESSOR. REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE - QUANTITY PURCHASE PRICE 1ST UNIT 1,500 2ND THRU 4TH UNITS 1,440 5TH THRU 9TH UNITS 1,395 10TH THRU 14TH UNITS 1,350 15TH OR OVER UNITS 1,305 RECEIVES FROM 18 20 18 30 1810M RECEIVES FROM 65139 1 SENDS TO 1865 1 1865 2	1,500	B	55	51	SEE CCC	16	D/3

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
1833	6	MODULE DRIVE CONTROLLER PROVIDES INTERFACE UNIT AND CONTROL UNIT FOR CONNECTING MODULE DRIVE MASS MEMORY DEVICES TO AO/DMA CHANNELS OF PROCESSOR. INTEFACE REQUIRES ONE(1)DMA POSITION IN PROCESSOR AND CONNECTS TO CONTROL UNIT WITH 25 FOOT (7.62 METERS) CABLES (PROVIDED). CONTROL UNIT HANDLES UP TO EIGHT(8) MODULE DRIVE UNITS IN ANY MIX OF TYPES. CONTROL UNIT MOUNTS IN 1887-5 ENCLOSURE OR EQUIVALENT. ENCLOSURE IS NOT INCLUDED. (120V, 60HZ SINGLE PHASE OR 220V, 50HZ SINGLE PHASE). RECEIVES FROM 18 20 18 25 SENDS TO 1867 10 1867 20 1867 40 SENDS TO 1858 1 OPT APPLIES TO 1887 5	8,000	B	286	265	SEE CCC	50	D/1
1833	950	SMD INTERFACE CABLE OPTION PROVIDES 50 FOOT (15.2 METERS) BUS IN AND BUS OUT CABLE ASSEMBLIES FOR THE CONNECTION BETWEEN ONE 1833-1 AND ONE 1833-3. OPT APPLIES TO 1833 1	790	B	N/A	N/A	SEE CCC	T AND M	
1843	1	COMMUNICATION LINE ADAPTER CONTROLLER FOR 2 SYNCHRONOUS OR ASYNCHRONOUS MODEMS OR DEVICES THAT HAVE EIA RS 232C OR CCITT V-24 COMPATIBLE INTERFACES. SWITCH SELECTABLE BAUD RATES OF 110, 150, 300, 600, 1200, 2400, 4800, 9600 OR 19200 FOR ASYNCHRONOUS OPERATION. IN ASYNCHRONOUS MODE BOTH CHANNELS HAVE SAME BAUD RATE. SYNCHRONOUS OPERATION IS UP TO 19200 BAUD AS DETERMINED BY EXTERNAL CLOCK. EACH CHANNEL HAS PROGRAM SELECTABLE OPERATING MODE (ASYNCHRONOUS OR SYNCHRONOUS, FULL OR HALF DUPLEX), CHARACTER LENGTH (5,6,7 OR 8 BITS), STOP BIT LENGTH (1, 1.5 OR 2 UNITS) AND PARITY TYPE (ODD, EVEN OR NONE). CONTAINS CYCLIC CHECKWORD GENERATOR. REQUIRES ONE AO POSITION IN PROCESSOR. INCLUDES ONE 20 FOOT MODEM CABLE. REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE - QUANTITY PURCHASE PRICE 1ST THRU 4TH UNITS 1,700 5TH THRU 9TH UNITS 1,630 10TH THRU 14TH UNITS 1,580 15TH THRU 19TH UNITS 1,530 20 OR OVER UNITS 1,480 RECEIVES FROM 18 20 18 25 18 30 RECEIVES FROM 1810M AVA OPTIONS 1843901 1843950	1,700	B	62	57	SEE CCC	12	D/3
1843	2	8-CHAN. COMMUN. LINE ADAPTOR CONTROLLER FOR UP TO 8 ASYNCHRONOUS COMMUNICATION DEVICES THAT HAVE EIA RS-232C OR CCITT V.24 COMPATIBLE INTERFACES. BAUD RATES OF 75, 110, 150, 300, 600, 1200, 2400, 4800 OR 9600 ARE SWITCH SELECTABLE FOR TWO GROUPS OF 4 CHANNELS. EACH CHANNEL HAS SWITCH SELECTABLE FULL OR HALF-DUPLEX MODE AND PROGRAM SELECTABLE CHARACTER LENGTH (5, 6, 7 OR 8 BITS), STOP BIT LENGTH (1, 1.5, OR 2 UNITS) AND PARITY TYPE (ODD, EVEN OR NONE). LIMITED MODEM CONTROL (RTS, CTS, AND DTR) FOR EACH CHANNEL. PROGRAM SELECTABLE EOT CHARACTER INTERRUPT AND TIMER INTERRUPT COMMON TO ALL CHANNELS. REQUIRES ONE AO POSITION IN PROCESSOR. REQUIRES 1843-960, 1843-970 OR 1843-980 TO CONNECT EXTERNAL DEVICES. REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE - QUANTITY PURCHASE PRICE 1ST UNIT 2,200 2ND THRU 4TH UNITS 2,112 5TH THRU 9TH UNITS 2,046 10TH THRU 14TH UNITS 1,980 15TH OR OVER UNITS 1,914 RECEIVES FROM 18 20 18 25 18 30 RECEIVES FROM 1810M SENDS TO 752 10 755 11 1827 7 AVA OPTIONS 1843960 1843970 1843980	2,200	B	68	63	SEE CCC	20	D/3
1843	901	TERMINAL ADAPTER CABLE ENABLES CONNECTION OF A CRT DISPLAY TERMINAL TO A COMMUNICATION LINE ADAPTER USING A MODEM CABLE. INSTALLS BETWEEN MODEM CABLE AND TERMINAL. OPT APPLIES TO 1843950	125	B	N/A	N/A	SEE CCC	T AND M	
1843	950	MODEM CABLE FIFTY (50) FOOT (15.2 METERS) SHIELDED CABLE FOR CONNECTING A MODEM TO ONE CHANNEL OF A COMMUNICATIONS LINE ADAPTER. OPT APPLIES TO 18 5 1828 2 1843 1	150	B	N/A	N/A	SEE CCC	T AND M	
1843	960	CRT CABLE FIFTY (50) FOOT (15.2 METERS) SHIELDED CABLE TO CONNECT ONE 752-10 OR 1811-2 CRT TO ONE CHANNEL OF 1843-2 COMMUNICATIONS LINE ADAPTER OPT APPLIES TO 1843 2	125	B	N/A	N/A	SEE CCC	T AND M	
1843	970	MODEM/PUNCH CABLE FIFTY (50) FOOT (15.2 METERS) SHIELDED CABLE TO CONNECT ONE CUSTOMER-SUPPLIED MODEM OR TAB 560-56 CARD PUNCH TO ONE CHANNEL OF 1843-2 COMMUNICATIONS LINE ADAPTER. OPT APPLIES TO 1843 2	125	B	N/A	N/A	SEE CCC	T AND M	

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE 1 YEAR	CCC BASE 3YR/24MO	OR INSTLMNT SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
1843	980	PRINTER CABLE FIFTY (50) FOOT (15.2 METERS) SHIELDED CABLE TO CONNECT ONE 755-11 OR 1827-7 IMPACT PRINTER TO ONE CHANNEL OF 1843-2 COMMUNICATIONS LINE ADAPTER. OPT APPLIES TO 1843 2	125	B	N/A	N/A	SEE CCC	T AND M	
1850	1	COMPUTER INTERFACE UNIT PROVIDES INTERFACE FOR 1500 SERIES IOM EQUIPMENTS. ACCOMMODATES ALL PRODUCTS NORMALLY INSTALLED IN A 1750-1. INCLUDES CYBER 18 INTERFACE CONTROLLER, TERMINATOR, POWER SUPPLY AND CABLE. RECEIVES FROM 18 20 18 25 18 30 RECEIVES FROM 1810M SENDS TO 1750 1	2,500	B	74	68	SEE CCC	37	D/3
1860	1	MAGN. TAPE SUBSYST.(7-TRACK) 7 TRACK TAPE SUBSYSTEM WITH CABINET AND CONTROLLER. OPERATES AT 25 IPS, 800 BPI NRZI, 20K 6-BIT CHARACTERS PER SECOND. REWINDS AT 150 IPS. TRANSPORT IS INSTALLED IN UPPER HALF OF CABINET. (120 VAC 50/60HZ). RECEIVES FROM 18 5 18 20 18 25 RECEIVES FROM 18 5M 1810M 65109 1 AVA OPTIONS 1860 72 1860 92 1860200 AVA OPTIONS 1860201 1887 4 1888 1	10,200	B	373	345	SEE CCC	81	D/3
1860	2	DUAL MAG. TAPE SUBSY.(7-TRACK) DUAL 7 - TRACK TAPE SUBSYSTEM WITH CABINET AND CONTROLLER. OPERATES AT 25 IPS, 800 BPI, NRZI, 20K 6-BIT CHARACTERS PER SECOND. REWINDS AT 150 IPS. BOTH TRANSPORTS ARE INSTALLED IN ONE CABINET. (120 VAC 50/60HZ). RECEIVES FROM 18 5 18 20 18 25 RECEIVES FROM 18 5M 1810M 65109 1 AVA OPTIONS 1860 72 1860 92 1860200 AVA OPTIONS 1860201 1887 4 1888 1	17,900	B	654	606	SEE CCC	142	D/3
1860	3	MAG. TAPE SUBSYS.(9-TRACK) 9 TRACK TAPE SUBSYSTEM WITH CABINET AND CONTROLLER, OPERATES AT 25 IPS, 800 BPI NRZI 20K 8-BIT CHARACTERS PER SECOND. REWINDS AT 150 IPS. TRANSPORT IS INSTALLED IN UPPER HALF OF CABINET. (120 VAC 50/60HZ). RECEIVES FROM 18 5 18 20 18 25 RECEIVES FROM 18 5M 1810M 65109 1 AVA OPTIONS 1860 72 1860 92 1860200 AVA OPTIONS 1860201 1887 4 1888 1	10,200	B	373	345	SEE CCC	91	D/3
1860	4	DUAL MAG. TAPE SUBS.-(9-TRACK) DUAL 9-TRACK TAPE SUBSYSTEM WITH CABINET AND CONTROLLER. OPERATES AT 25 IPS, 800 BPI NRZI. 20K 8-BIT CHARACTERS PER SECOND. REWINDS AT 150 IPS. BOTH TRANSPORTS ARE INSTALLED IN ONE CABINET. (120 VAC 50/60HZ). RECEIVES FROM 18 5 18 20 18 25 RECEIVES FROM 18 5M 1810M 65109 1 AVA OPTIONS 1860 72 1860 92 1860200 AVA OPTIONS 1860201 1887 4 1888 1	17,900	B	654	606	SEE CCC	142	D/3
1860	5	MAG. TAPE SUBS. 9-TR.DUAL MODE 9-TRACK DUAL MODE TAPE SUBSYSTEM WITH CABINET, FORMATTER AND CONTROLLER. OPERATES AT 50 IPS, 800 BPI NRZI OR 1600 BPI PHASE ENCODE. TRANSFER RATE OF 40K OR 80K 8-BIT CHARACTER PER SECOND. REWINDS AT 160 IPS. TRANSPORT IS INSTALLED IN UPPER HALF OF CABINET. RECEIVES FROM 18 20 18 25 18 30 RECEIVES FROM 1810M AVA OPTIONS 1860 72 1860 92 1860 95 AVA OPTIONS 1960200 1860201 1887 4 AVA OPTIONS 1888 1	14,800	B	533	493	SEE CCC	122	D/3
1860	6	DUAL. MAG.TAPE S.9-TR.DUAL MOD DUAL 9-TRACK DUAL MODE, TAPE SUBSYSTEM WITH CABINET, FORMATTER AND CONTROLLER OPERATES AT 50 IPS, 800 BPI NRZI OR 1600 BPI PHASE ENCODE. TRANSFER RATE OF 40K OR 80K 8-BIT CHARACTERS PER SECOND. REWINDS AT 160 IPS. BOTH TRANSPORTS ARE INSTALLED IN ONE CABINET. RECEIVES FROM 18 20 18 25 18 30 RECEIVES FROM 1810M AVA OPTIONS 1860 72 1860 92 1860 95 AVA OPTIONS 1960200 1860201 1887 4 AVA OPTIONS 1888 1	22,500	B	810	750	SEE CCC	207	D/3
1860	72	MAGNETIC TAPE TRANSPORT 7 TRACK 25 IPS, 800 BPI NRZI, 20K 6-BIT CHARACTERS PER SECOND. REWINDS AT 150 IPS. TRANSPORT DOES INCLUDE SKINS AND MUST BE HOUSED IN A 1887-4 CABINET. REQUIRES AN INSTALLATION KIT, EITHER 1860-200 FOR UPPER CABINET INSTALLATION OR 1860-201 FOR LOWER CABINET INSTALLATION. REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE - QUANTITY PURCHASE PRICE 1ST THRU 4TH UNITS 7,100 5TH THRU 9TH UNITS 6,815 10TH THRU 14TH UNITS 6,605 15TH THRU 19TH UNITS 6,390 20TH OR OVER UNITS 6,175 AVA OPTIONS 1860200 1860201 1888 1 OPT APPLIES TO 18 30 1860 1 1860 2 OPT APPLIES TO 1850 3 1860 4 1860 5 OPT APPLIES TO 1960 6	7,100	B	260	241	SEE CCC	60	D/3

STANDARD PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE 1 YEAR	CCC BASE 3YR/24MO	PAGE OR INSTLMNT SALE 5 YEAR	26 MAINTENANCE MONTHLY CHARGE	PROD GRP
1860	92	MAGNETIC TAPE TRANSPORT 9 TRACK, 25 IPS, 800 BPI NRZI. 20K 8-BIT CHARACTERS PER SECOND. REWINDS AT 150 IPS. TRANSPORT DOES NOT INCLUDE SKINS AND MUST BE HOUSED IN A 1887-4 CABINET. REQUIRES AN INSTALLATION KIT, EITHER 1860-200 FOR UPPER CABINET INSTALLATION OR 1860-201 FOR LOWER CABINET INSTALLATION. REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE - QUANTITY — PURCHASE PRICE 1ST THRU 4TH UNITS — 7,100 5TH THRU 9TH UNITS — 6,815 10TH THRU 14TH UNITS — 6,605 15TH THRU 19TH UNITS — 6,390 20 OR OVER UNITS — 6,175 AVA OPTIONS 1860200 1860201 1888 1 OPT APPLIES TO 18 30 1860 1 1860 2 OPT APPLIES TO 1860 3 1860 4 1860 5 OPT APPLIES TO 1860 6	7,100	B	260	241	SEE CCC	60	D/3
1860	95	MAG.TAPE TRANS.(DUAL MODE) 9-TRACK, 50 IPS, 800 BPI NRZI AND 1600 BPI PHASE ENCODED, 40K AND 80K 8-BIT CHARACTERS PER SECOND. REWINDS AT 160 IPS. TRANSPORT DOES NOT INCLUDE SKINS AND MUST BE HOUSED IN A 1887-4 CABINET. REQUIRES AN INSTALLATION KIT, EITHER 1860-200 FOR UPPER CABINET INSTALLATION OR 1860-201 FOR LOWER CABINET INSTALLATION. AVA OPTIONS 1860200 1860201 1887 4 AVA OPTIONS 1888 1 OPT APPLIES TO 1860 5 1860 6	7,700	B	274	253	SEE CCC	95	D/3
1860	200	MAG TAPE INSTALL KIT, UPPER INSTALLATION KIT FOR ONE 1860-72 OR 1860-92 DRIVE TO BE INSTALLED IN UPPER HALF OF 1887-4 CABINET. OPT APPLIES TO 616 XX 1860 1 1860 2 OPT APPLIES TO 1860 3 1860 4 1860 5 OPT APPLIES TO 1860 6 1860 72 1860 92 OPT APPLIES TO 1860 95	700	B	25	23	SEE CCC	N/A	
1860	201	MAG TAPE INSTALL KIT, LOWER INSTALLATION KIT FOR ONE 1860-72 OR 1860-92 DRIVE TO BE INSTALLED IN LOWER HALF OF 1887-4 CABINET. INCLUDES CABINET FRONT PANEL BELOW LOWER MAGNETIC TAPE. OPT APPLIES TO 616 XX 1860 1 1860 2 OPT APPLIES TO 1860 3 1860 4 1860 5 OPT APPLIES TO 1860 6 1860 72 1860 92 OPT APPLIES TO 1860 95	700	B	25	23	SEE CCC	N/A	
1862	1	PAP. TAPE READ/PUNCH CONTROLL. CONTROLS PAPER TAPE I/O WITH (FACIT) 4020 READER AND 4070 PUNCH PAPER TAPE DEVICES. (NON-CDC SUPPLIED EQUIPMENT.) DATA TRANSFER IS 8-BIT CHARACTER MODE. CONTROLLER OCCUPIES ONE POSITION IN THE PROCESSOR. CONNECTION TO THE PAPER TAPE DEVICES IS BY MEANS OF A 15 FT. (MAX.) CABLE FROM CONTROLLER TO AN I/O RELAY STATION. TWO 5 FT. (MAX.) CABLES FROM THE RELAY STATION CONNECT TO THE DEVICES. (ONE CABLE PER DEVICE.) INCLUDES CABLE AND RELAY STATION. REDUCED PRICES FOR QUANTITY PURCHASE (STAIRCASE) ARE - QUANTITY — PURCHASE PRICE 1ST UNIT — 2,000 2ND THRU 4TH UNITS — 1,920 5TH THRU 9TH UNITS — 1,860 10TH THRU 14TH UNITS — 1,800 15TH OR OVER UNITS — 1,740 RECEIVES FROM 18 20 18 25 18 30 RECEIVES FROM 1810M	2,000	B	55	51	SEE CCC	38	D/3
1865	1	FLEXIBLE DISK DRIVE FLEXIBLE DISK DRIVE IS A RANDOM ACCESS DEVICE USING REMOVABLE DISKETTES FOR THE STORAGE MEDIA. IT HAS A FORMATTED DATA CAPACITY OF 256K 8-BIT BYTES WHEN USING THE IBM FORMAT (128 BYTES/SECTOR) OR 280K 8-BIT BYTES WHEN USING THE CDC 1700 FORMAT (196 BYTES/SECTOR). THE DATA TRANSFER RATE IS 31.2K 8-BIT BYTES/SECOND. THE ACCESS TIME IS 343 MILLISECONDS. DRIVE IS THE FIRST DRIVE (UNIT 0) WITHIN AN FDD SUBSYSTEM. REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE - QUANTITY — PURCHASE PRICE 1ST THRU 4TH UNITS — 1,620 5TH THRU 9TH UNITS — 1,555 10TH THRU 14TH UNITS — 1,505 15TH THRU 19TH UNITS — 1,460 20 OR OVER UNITS — 1,410 RECEIVES FROM 1833 5	1,620	B	59	55	SEE CCC	23	D/3

STANDARD PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR CCC BASE 1 YEAR	CCC BASE 3YR/24MO	INSTLMNT SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
1865	2	FLEXIBLE DISK DRIVE SAME AS 1865-1 EXCEPT THAT IT IS THE SECOND DRIVE (UNIT 1) WITHIN AN FDD SUBSYSTEM. THE SECOND DRIVE IS PHYSICALLY HOUSED IN THE SAME CABINET AS UNIT 0. REDUCED PRICES FOR QUANTITY PURCHASES (STAIR-CASE) ARE- QUANTITY — PURCHASE PRICE 1ST THRU 4TH UNITS — 1,620 5TH THRU 9TH UNITS — 1,555 10TH THRU 14TH UNITS — 1,505 15TH THRU 19TH UNITS — 1,460 20 OR OVER UNITS — 1,410 RECEIVES FROM 18 20 1813M 1833 5	1,620	B	59	55	SEE CCC	20	D/3
1866	12	CARTRIDGE DISK DRIVE CARTRIDGE DISK DRIVE WITH VOICE COIL POSITIONING. STORES 2.2 MILLION BYTES ON A FIXED DISK PLUS 2.2 MILLION BYTES ON A REMOVABLE SURFACE, 29 SECTORS PER TRACK, AND 96 WORDS PER SECTOR. AVERAGE POSITIONING TIME IS 35 MILLISECONDS. ROTATIONAL SPEED IS 2400 RPM. TRANSFER RATE IS 156,000 WORDS PER SECOND. INCLUDES FLOOR MOUNT CABINET. REQUIRES 848-29 DISK CARTRIDGE (NOT INCLUDED). REDUCED PRICES FOR QUANTITY PURCHASE (STAIR-CASE) ARE - QUANTITY — PURCHASE PRICE 1ST UNIT — 7,887 2ND THRU 4TH UNITS — 7,572 5TH THRU 9TH UNITS — 7,335 10TH THRU 14TH UNITS — 7,098 15TH OR OVER UNITS — 6,862 RECEIVES FROM 1833 4	7,887	B	284	263	SEE CCC	67	D/3
1866	14	CARTRIDGE DISK DRIVE CARTRIDGE DISK DRIVE WITH VOICE COIL POSITIONING. STORES 4.4 MILLION BYTES ON A FIXED DISK PLUS 4.4 MILLION BYTES ON A REMOVABLE DISK. EACH DISK HAS TWO SURFACES, 200 TRACKS PER SURFACE, 29 SECTORS PER TRACK, AND 96 WORDS PER SECTOR. AVERAGE POSITIONING TIME IS 35 MILLISECONDS. ROTATIONAL SPEED IS 2400 RPM. TRANSFER RATE IS 156,000 WORDS PER SECOND. INCLUDES FLOOR MOUNT CABINET. REQUIRES 848-29 DISK CARTRIDGE (NOT INCLUDED) REDUCED PRICES FOR QUANTITY PURCHASE (STAIR-CASE) ARE - QUANTITY — PURCHASE PRICE 1ST UNIT — 10,000 2ND THRU 4TH UNITS — 9,630 5TH THRU 9TH UNITS — 9,380 10TH THRU 14TH UNITS — 9,000 15TH OR OVER UNITS — 8,700 RECEIVES FROM 1833 4	10,000	B	339	329	SEE CCC	96	D/3
1867	1	SMD SUBSYSTEM (25M BYTE) PROVIDES A SINGLE ACCESS MASS MEMORY SUBSYSTEM WITH REMOVABLE DISK PACKS AS THE STORAGE MEDIA. SUBSYSTEM HAS A FORMATTED DATA CAPACITY OF 25M 8-BIT BYTES WITH A MAXIMUM DATA TRANSFER RATE OF 1.2M BYTES/SEC. AND AN AVERAGE ACCESS TIME OF 30 MILLISECONDS. INCLUDES BASE CABINET, STORAGE MODULE DRIVE, CONTROL UNIT, INTERFACE AND ALL REQUIRED CABLES. INTERFACE OCCUPIES ONE AQ/DMA POSITION IN THE PROCESSOR. CONTROL UNIT HOUSED IN THE BASE CABINET AND WILL CONTROL UP TO FOUR STORAGE MODULE DRIVES IN ANY MIX OF 25M BYTE OR 50M BYTE PER DRIVE. REQUIRES 877 DISK PACK (NOT INCLUDED). RECEIVES FROM 18 20 18 25 SENDS TO 1867 10 1867 11 1867 20 SENDS TO 1867 21 AVA OPTIONS 10445 1	18,000	B	648	600	SEE CCC	142	D/3
1867	2	SMD SUBSYSTEM (50M BYTE) SAME AS 1867-1 EXCEPT THE STORAGE MODULE DRIVE INCLUDED HAS A FORMATTED DATA CAPACITY OF 50M 8-BIT BYTES. RECEIVES FROM 18 20 18 25 SENDS TO 1867 10 1867 11 1867 20 SENDS TO 1867 21 AVA OPTIONS 10445 1	21,300	B	767	710	SEE CCC	158	D/3

STANDARD PRODUCTS

PRODUCT MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	PAGE 28 SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
1867 3	SMD SUBSYSTEM (25 MB) PROVIDES HIGH PERFORMANCE RANDOM ACCESS MASS MEMORY SUBSYSTEM USING REMOVABLE DISK PACKS AS THE STORAGE MEDIA. SUBSYSTEM HAS DUAL CPU ACCESS, A FORMATTED DATA CAPACITY OF 25 MILLION 8-BIT BYTES AND A MAXIMUM TRANSFER RATE OF 1.2 MILLION BYTES PER SECOND. AVERAGE SEEK TIME IS 30 MILLISECONDS AND AVERAGE LATENCY IS 8.3 MILLISECONDS. SUBSYSTEM INCLUDES ONE STORAGE MODULE DRIVE WITH BASE CABINET, CONTROL UNIT, PROCESSOR INTERFACE AND ALL REQUIRED CABLES. INTERFACE REQUIRES ONE(1) DMA POSITION IN THE PROCESSOR AND CONNECTS TO THE CONTROL UNIT WITH 25 FOOT (7.62 METER) CABLE. CONTROL UNIT MOUNTS IN BASE CABINET OF SMD AND WILL CONTROL SEVEN(7) ADDITIONAL (TOTAL OF 8) MODULE DRIVE UNITS IN ANY MIX OF TYPES. REQUIRES 877 DISK PACK (NOT INCLUDED). (120V, 60HZ, SINGLE PHASE OR 220V, 50HZ SINGLE PHASE OR 220V, 50HZ SINGLE PHASE) RECEIVES FROM 1* 20/ 1* 25/ SENDS TO 1867 10/ 1867 20/ 1867 40/ SENDS TO 1868 1/	18,000	B	648	600 SEE CCC	142	D/1	
1867 4	SMD SUBSYSTEM (50 MB) SAME AS 1867-3 EXCEPT THE STORAGE MODULE DRIVE INCLUDED HAS A FORMATTED CAPACITY OF 50 MILLION 8-BIT BYTES. RECEIVES FROM 1* 20/ 1* 25/ SENDS TO 1867 10/ 1867 20/ 1867 40/ SENDS TO 1868 1/	21,300	B	767	710 SEE CCC	158	D/1	
1867 10	STORAGE MODULE DRIVE (60HZ) RANDOM ACCESS DEVICE, USING REMOVABLE DISK PACKS FOR THE STORAGE MEDIA. IT HAS A FORMATTED DATA CAPACITY OF 25 MILLION 8-BIT BYTES WITH A MAXIMUM DATA TRANSFER RATE OF 1.2 MILLION 8-BIT BYTES/SEC. AND AVERAGE ACCESS TIME IS 30 MILLISECONDS. INCLUDES BASE CABINET AND ONE 10-FOOT (3 METER) "A" CABLE (DAISY CHAIN) AND ONE 20-FOOT (6 METER) "B" CABLE (STAR). REQUIRES ONE 877 DISK PACK NOT INCLUDED. REDUCED PRICES FOR QUANTITY PURCHASES (STAIR-CASE) ARE - QUANTITY PURCHASE PRICE 1ST UNIT 14,000 2ND THRU 4TH UNITS 13,440 5TH THRU 9TH UNITS 13,020 10TH THRU 14TH UNITS 12,600 15TH OR OVER UNITS 12,180 REDUCED PRICES FOR QUANTITY PURCHASES (STAIR-CASE) ARE - QUANTITY PURCHASE PRICE 1ST THRU 1ST UNITS 14,000 2ND THRU 4TH UNITS 13,440 5TH THRU 9TH UNITS 13,020 10TH THRU 14TH UNITS 12,600 15TH OR OVER UNITS 12,180 RECEIVES FROM 1833 3/ 1833 6/ 1867 1/ RECEIVES FROM 1867 2/ 1867 3/ 1867 4/ AVA OPTIONS 1868 1/	14,000	B	515	475 309	120	D/3	
1867 11	STORAGE MODULE DRIVE (50HZ) SAME AS 1867-10 EXCEPT POWER IS 50HZ, 220 VAC REDUCED PRICES FOR QUANTITY PURCHASES (STAIR-CASE) ARE - QUANTITY PURCHASE PRICE 1ST UNIT 14,000 2ND THRU 4TH UNITS 13,440 5TH THRU 9TH UNITS 13,020 10TH THRU 14TH UNITS 12,600 15TH OR OVER UNITS 12,180 REDUCED PRICES FOR QUANTITY PURCHASES (STAIR-CASE) ARE - QUANTITY PURCHASE PRICE 1ST THRU 1ST UNITS 14,000 2ND THRU 4TH UNITS 13,440 5TH THRU 9TH UNITS 13,020 10TH THRU 14TH UNITS 12,600 15TH OR OVER UNITS 12,180 RECEIVES FROM 1833 3/ 1867 1/ 1867 2/ AVA OPTIONS 1868 2/10445 1/	14,000	B	515	475 SEE CCC	120	D/3	
1867 20	STORAGE MODULE DRIVE (60HZ) DRIVE IS A RANDOM ACCESS DEVICE, USING REMOVABLE DISK PACK PACKS FOR THE STORAGE MEDIA. IT HAS A FORMATTED DATA CAPACITY OF 50 MILLION 8-BIT BYTES WITH A MAXIMUM TRANSFER RATE OF 1.2 MILLION 8-BIT BYTES/SECOND AND AN AVERAGE ACCESS OF 30 MILLISECONDS. DRIVE INCLUDES BASE CABINET, ONE 10 FOOT "A" CABLE (DAISY CHAIN) AND ONE 20 FOOT "B" CABLE (STAR). REQUIRES ONE 877 DISK PACK NOT INCLUDED. REDUCED PRICES FOR QUANTITY PURCHASES (STAIR-CASE) ARE - QUANTITY PURCHASE PRICE 1ST UNIT 18,100 2ND THRU 4TH UNITS 17,375 5TH THRU 9TH UNITS 16,835 10TH THRU 14TH UNITS 16,290 15TH OR OVER UNITS 15,745 RECEIVES FROM 1833 3/ 1833 6/ 1867 1/ RECEIVES FROM 1867 2/ 1867 3/ 1867 4/ AVA OPTIONS 1868 1/	18,100	B	664	615 394	145	D/3	

STANDARD PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	PAGE 29 SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
1867	21	STORAGE MODULE DRIVE (50HZ) SAME AS 1867-21 EXCEPT POWER IS 50HZ, 220 VAC REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE – QUANTITY PURCHASE PRICE 1ST UNIT 18,100 2ND THRU 4TH UNITS 17,375 5TH THRU 9TH UNITS 16,835 10TH THRU 14TH UNITS 16,290 15TH OR OVER UNITS 15,745 RECEIVES FROM 1833 3/ 1867 1/ 1867 2/ AVA OPTIONS 1898 2/	18,100	8	664	615 SEE CCC	145	D/3
1867	40	STORAGE MODULE DRIVE SMD IS A DISK STORAGE DEVICE WITH A REMOVABLE DISK PACK. IT HAS A FORMATTED CAPACITY OF 188 MILLION 8-BIT BYTES AND A MAXIMUM DATA TRANSFER RATE OF 1.2 MILLION BYTES PER SECOND. AVERAGE SEEK TIME IS 30 MILLISECONDS AND AVERAGE LATENCY IS 8.3 MILLISECONDS. INCLUDES CABINET, ONE(1) 10 FOOT MAM CABLE, AND ONE(1) 20 FOOT MAM CABLE. CABINET CANNOT HOUSE CONTROL UNIT. REQUIRES 883-41 DISK PACK (NOT INCLUDED). (230V, 60HZ, THREE PHASE OR 240V, 50HZ, THREE PHASE). RECEIVES FROM 1833 6/ 1867 3/ 1867 4/	25,000	8	895	830 SEE CCC	198	D/1
1868	1	MINI-MODULE DRIVE (MMD) MMD IS A DISK STORAGE DEVICE WITH FIXED HEAD (HEAD-PER-TRACK) CAPABILITIES. MOVING HEAD STORAGE HAS A FORMATTED CAPACITY OF 15.7 MILLION 8-BIT BYTES. AVERAGE SEEK TIME IS 40 MILLISECONDS AND AVERAGE LATENCY IS 8.3 MILLISECONDS. FIXED HEAD STORAGE HAS A FORMATTED CAPACITY OF 990 THOUSAND 8-BIT BYTES. MAXIMUM DATA TRANSFER RATE IS 1.2 MILLION BYTES PER SECOND. INCLUDES ONE (1) 20 FT (6 METERS) CABLES THAT CONNECTS TO MODULE DRIVE CONTROL UNIT OR PREVIOUS MODULE DRIVE UNIT. MMD MOUNTS IN 1887-5 ENCLOSURE OR EQUIVALENT. ENCLOSURE IS NOT INCLUDED. (120V, 60HZ SINGLE PHASE OR 220V, 50HZ SINGLE PHASE) RECEIVES FROM 1833 6/ 1867 3/ 1867 4/ OPT APPLIES TO 1887 5/	13,000	8	470	435 SEE CCC	94	D/1
1870	2	2048 INSTRUCTION MICROMEMORY PROVIDES STORAGE FOR UP TO 2048 32-BIT MICRO CONTROL INSTRUCTIONS FOR THE PROCESSOR. THE MEMORY IS READ OR WRITE RAM AND CAN BE LOADED EXTERNALLY OR UNDER CONTROL OF THE MICROPROGRAM. DESIGNED FOR MICROPROGRAM STORAGE IN THOSE APPLICATIONS THAT REQUIRE THE PROCESSOR BE PROGRAMMED AT THE MICRO LEVEL. REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE – QUANTITY PURCHASE PRICE 1ST UNIT 4,266 2ND THRU 4TH UNITS 4,095 5TH THRU 9TH UNITS 3,965 10TH THRU 14TH UNITS 3,840 15TH OR OVER UNITS 3,710 OPT APPLIES TO 18 20/ 18 30/65109 1/	4,266	8	157	145 93	48	D/3
1872		READ/WRITE MICROMEMORY ACCOMMODATING SCIENTIFIC/COMMERCIAL MICRO-CODED INSTRUCTION SET. ACCESS IS VIA AN ENABLE/DISABLE INSTRUCTION SERIES. INSTRUCTION SET IS LOADED AT DEADSTART BY THE CYBER 18 OPERATING SYSTEM BOOT STRAP. MAY REQUIRE OPTION 10428-1.						
1872	3	SCIENTIFIC/COMMERCIAL FIRMWARE PROVIDES FOR BOTH SINGLE/DOUBLE PRECISION FLOATING POINT AND COMMERCIAL DATA PROCESSING CAPABILITY. OPT APPLIES TO 18 20/ 18 30/ 18 10M/	2,330	8	83	77 SEE CCC	49	D/3
1874	1	ECC MOS ARRAY 192K BYTES PROVIDES STORAGE FOR THE 5 BIT ERROR CORRECTION CODES (ECC) FOR UP TO 192K 8-BIT BYTES OF 1882-16/1882-32 READ/WRITE MOS MEMORY. ECC FACILITY CORRECTS SINGLE BIT ERRORS AND DETECTS DOUBLE BIT ERRORS. ALL INTERFACE CONTROL TO ECC MODULE IS PERFORMED BY THE MEMORY INTERFACE MODULE. ECC MODULE OCCUPIES ONE MEMORY POSITION WITHIN THE PROCESSOR UNIT LIMIT MAXIMUM MEMORY SIZE OF PROCESSORS TO 192K 8-BIT BYTES. REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE – QUANTITY PURCHASE PRICE 1ST UNIT 5,000 2ND THRU 4TH UNITS 4,700 5TH THRU 9TH UNITS 4,650 10TH THRU 14TH UNITS 4,500 15TH OR OVER UNITS 4,350 OPT APPLIES TO 18 20/ 18 25/ 18 30/ OPT APPLIES TO 18 10M/	5,000	8	184	170 169	49	D/3

CHANGES EFFECTIVE 05/01/80

STANDARD PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
1875	1	BREAKPOINT CONTROLLER PROVIDES THE BREAKPOINT HALT REGISTER FOR BOTH MICRO MEMORY AND MAIN MEMORY FOR PROGRAM DEBUG. ALSO PROVIDES A HARDWARE INTERFACE TO THE MICRO PROCESSOR. THIS ALLOWS THE OPERATOR TO LOAD AND DISPLAY ALL REGISTERS, INTERFACE TO THE FUNCTION CONTROL REGISTER WHICH ALLOWS THE SETTING OF ALL CONTROL BITS. (WHEN NOT INSTALLED ALL FUNCTIONS EXCEPT BREAKPOINT ARE EMULATED BY THE PANEL SIMULATOR OF THE 1700 EMULATOR). OPERATOR INTERFACE IS VIA CONSOLE DISPLAY OR BREAKPOINT PANEL (NOT INCLUDED). CONTROLLER OCCUPIES ONE DEDICATED CARD POSITION WITHIN THE PROCESSOR. REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE - QUANTITY — PURCHASE PRICE 1ST UNIT — 1,625 2ND THRU 4TH UNITS — 1,530 5TH THRU 9TH UNITS — 1,510 10TH THRU 14TH UNITS — 1,465 15TH OR OVER UNITS — 1,415 RECEIVES FROM 18 20/ 18 30/ 18 10M/ SENDS TO 1875 2/ OPT APPLIES TO 18 25/	1,625	8	59	55	36	12	0/3
1875	2	BREAKPOINT PANEL PROVIDES THE OPERATOR AN INPUT MEDIUM TO THE BREAKPOINT CONTROLLER IN THE ABSENCE OF THE CONSOLE DISPLAY. CONTAINS A 16 BIT DISPLAY AND A LIMITED KEYBOARD. REQUIRES PARALLEL INPUT FROM BREAKPOINT CONTROLLER. PANEL DOES NOT REQUIRE A PROCESSOR CARD POSITION. REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE - QUANTITY — PURCHASE PRICE 1ST UNIT — 600 2ND THRU 4TH UNITS — 565 5TH THRU 9TH UNITS — 560 10TH THRU 14TH UNITS — 540 15TH OR OVER UNITS — 520 RECEIVES FROM 1875 1/	600	8	22	20	14	7	0/3
1882	8	CORE MAIN MEMORY STORAGE PROVIDES 16,384 9-BIT BYTES OF READ/WRITE CORE MEMORY. (ONE PROTECT AND ONE PARITY BIT ARE PROVIDED FOR EACH TWO BYTES). EFFECTIVE READ/WRITE CYCLE TIME IS 750 NANOSECONDS. OCCUPIES ONE MEMORY POSITION WITHIN THE PROCESSOR UNIT. REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE - QUANTITY — PURCHASE PRICE 1ST THRU 4TH UNITS — 5,500 5TH THRU 9TH UNITS — 5,280 10TH THRU 14TH UNITS — 5,115 15TH THRU 19TH UNITS — 4,950 20TH OR OVER UNITS — 4,785 OPT APPLIES TO 18 5/ 18 13/	5,500	8	285	262	120	58	0/3
1882	16	MOS MAIN MEMORY STORAGE PROVIDES 32,768 9-BIT BYTES OF READ/WRITE MOS MEMORY. ONE PROTECT BIT AND ONE PARITY BIT ARE PROVIDED WITH EACH TWO BYTES. EFFECTIVE READ/WRITE CYCLE TIME IS 750 NANOSECONDS. OCCUPIES ONE MEMORY POSITION WITHIN THE PROCESSOR UNIT. REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE - QUANTITY — PURCHASE PRICE 1ST THRU 4TH UNITS — 3,000 5TH THRU 9TH UNITS — 2,850 10TH THRU 14TH UNITS — 2,790 15TH THRU 19TH UNITS — 2,700 20TH OR OVER UNITS — 2,610 OPT APPLIES TO 18 20/ 18 25/ 18 30/ OPT APPLIES TO 18 5M/ 18 10M/	3,000	8	108	101	65	25	0/3
1882	32	MOS MAIN MEMORY STORAGE PROVIDES 65,536 9-BIT BYTES OF READ/WRITE MOS MEMORY. ONE PROTECT BIT AND ONE PARITY BIT ARE PROVIDED WITH EACH TWO BYTES. EFFECTIVE READ/WRITE CYCLE TIME IS 750 NANOSECONDS. OCCUPIES ONE MEMORY POSITION WITHIN THE PROCESSOR UNIT. REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE - QUANTITY — PURCHASE PRICE 1ST THRU 4TH UNITS — 6,000 5TH THRU 9TH UNITS — 5,760 10TH THRU 14TH UNITS — 5,580 15TH THRU 19TH UNITS — 5,400 20TH OR OVER UNITS — 5,220 OPT APPLIES TO 18 20/ 18 25/ 18 30/ OPT APPLIES TO 18 10M/	6,000	8	216	200	131	50	0/3

STANDARD PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
1887	4	EQUIPMENT CABINET DESIGNED TO ACCOMMODATE 48.26 CM (19 INCH) RACK MOUNTING EQUIPMENTS. INCLUDES REAR DOOR POWER DISTRIBUTION BOX, LINE FILTER, MAIN POWER SWITCH, CIRCUIT BREAKERS, CONVENIENCE OUTLETS AND AIR FILTER. EXTERNAL DIMENSIONS ARE - WIDTH - 57.15 CM (22.5 IN.), DEPTH - 74.93 CM (29.5 IN.), HEIGHT - 172.72 CM (68 IN.). PROVIDES 151.13 CM (59.5 IN) OF VERTICAL MOUNTING SPACE. AVA OPTIONS 1889 1/ OPT APPLIES TO 1860 1/ 1860 2/ 1860 3/ OPT APPLIES TO 1860 4/ 1860 5/ 1860 6/ OPT APPLIES TO 1860 72/ 1860 92/ 1860 95/	1,375	8	50	46	30	T AND M		
1887	5	MODULE DRIVE ENCLOSURE PROVIDES HOUSING FOR MODULE DRIVE UNITS AND/OR MODULE DRIVE CONTROLLER DEVICES WHICH REQUIRE RACK MOUNTING. ACCOMODATES ONE (1) 1833-6 MODULE DRIVE CONTROLLER, ONE(1) 1868-1 MINI-MODULE DRIVE OR BOTH UNITS. AVA OPTIONS 1833 6/ 1868 1/		8						D/1
1888	3	POWER CONVERSION UNIT PROVIDES CONVERSION TO A NOMINAL 120 VAC 50HZ 20 AMPERE MAXIMUM, SINGLE PHASE FROM NOMINAL 220/240 VAC 50HZ, SINGLE PHASE MAINS FOR OPERATION OF CYBER 18 EQUIPMENT. UNIT MOUNTS INSIDE THE PROCESSOR CABINET. OPT APPLIES TO 18 20/ 18 25/ 18 30/ OPT APPLIES TO 18 50/ 18 100/	550	8	20	18	SEE CCC	T AND M		
1888	4	POWER CONVERSION UNIT PROVIDES CONVERSION TO A NOMINAL 120 VAC 50HZ 20 AMPERE MAXIMUM, SINGLE PHASE FROM A NOMINAL 220/240 VAC 50HZ, SINGLE PHASE MAIN FOR OPERATION OF CYBER 18 MAGNETIC SUBSYSTEM. UNIT MOUNTS INSIDE THE EQUIPMENT CABINET. OPT APPLIES TO 18 25/ 1860 1/ 1860 2/ OPT APPLIES TO 1860 3/ 1860 4/ 1860 5/ OPT APPLIES TO 1860 6/ 1887 4/	550	8	20	18	SEE CCC	T AND M		
1890	1	200UT EMULATION OPTION PROVIDES 200 USER TERMINAL (MODE 4A) EMULATION CONTROLWARE (LOADED VIA THE CARD READER) IN THIS MODE THE TERMINAL MAY COMMUNICATE WITH A CENTRAL SITE HOST THAT SUPPORTS 200 UTMS. COMMUNICATION IS SYNCHRONOUS, 2 WIRE OR 4 WIRE, 1200 TO 9600 BAUD. INTERFACE IS RS232-CCITT V24 COMPATIBLE. OPT APPLIES TO 18 5/ 18 20/ 18 30/ OPT APPLIES TO 18 50/ 18 100/	700	8	25	24	17	T AND M		
1890	2	2780 EMULATION OPTION PROVIDES IBM 2780 (MODEL - 1) EMULATION CONTROLWARE (LOADED VIA THE CARD READER). IN THIS MODE THE TERMINAL MAY COMMUNICATE VIA POINT TO POINT (DIAL OR LEASE) WITH ANOTHER EQUIVALENT 2780 TERMINAL OR A CENTRAL SITE WHICH SUPPORTS 2780 TERMINALS. COMMUNICATION IS SYNCHRONOUS, 2 WAY ALTERNATE, 2 WIRE OR 4 WIRE, AT 1200 - 9600 BPS. OPT APPLIES TO 18 5/ 18 20/ 18 30/ OPT APPLIES TO 18 50/ 18 100/	750	8	25	24	17	T AND M		
1890	3	3780 EMULATION OPTION PROVIDES IBM 3780 EMULATION CONTROLWARE (LOADED VIA THE CARD READER). IN THIS MODE THE TERMINAL MAY COMMUNICATE VIA POINT TO POINT (DIAL OR LEASE) WITH ANOTHER EQUIVALENT 3780 TERMINAL OR A CENTRAL SITE THAT SUPPORTS 3780 TERMINALS. COMMUNICATION IS SYNCHRONOUS, 2 WAY ALTERNATE, 2 WIRE OR 4 WIRE, AT 1200 TO 9600 BPS. OPT APPLIES TO 18 5/ 18 20/ 18 30/ OPT APPLIES TO 18 50/ 18 100/	750	8	25	24	17	T AND M		
2550	101	6671/6676 EMULATION CONTROLWAR A ONE TIME INSTALLATION CHARGE ENABLES THE 255X SYSTEM TO EMULATE UP TO FOUR 6671 AND/OR 6676 MULTIPLEXERS WHEN OPERATING WITH STANDARD HOST SOFTWARE PRODUCTS. LIMITED TO A MAXIMUM OF 128 COMMUNICATION CIRCUITS (LINES) REGARDLESS OF NUMBER OF MULTIPLEXERS SIMULATED. OPT APPLIES TO 2550 2/ 2551 1/ 2551 2/	N/A 500		N/C	N/A	SEE CCC	N/C		
2551	1	NETWORK PROCESSING UNIT ENTRY LEVEL COMMUNICATION PROCESSOR WITH LIMITED LINE TERMINATION CAPACITY FOR COMPUTER FRONT END OR REMOTE PROCESSOR APPLICATIONS. INCLUDES 32K WORDS OF 16 BIT MOS MEMORY (EXPANABLE TO 128K WORDS), CABINET, LOOP MULTIPLEXER AND CAPACITY TO HOUSE UP TO 16 CLAMS (NOT INCLUDED), POWER SUPPLY, MAINTENANCE PANEL, CASSETTE TAPE CONTROLLER, CASSETTE TAPE DRIVE AND CYCLIC REDUNDANCY CHECK SUM MODULE. REQUIRES CONSOLE (752-10 OR EQUIVALENT), PLUS CHANNEL COUPLER (2558-3 OR 2558-4 OR 10344-1) FOR FRONT-END APPLICATIONS OR AUTOSTART MODULE-CASSETTE (2580-4) FOR REMOTE APPLICATIONS. RECEIVES FROM 2558 3/ 2558 4/10344 1/ SENDS TO 256X X/ AVA OPTIONS 2550 101/ 2554 16/ 2554 32/ AVA OPTIONS 2580 3/ 2580 4/	33,400	9	867	866	SEE CCC	319		D/1

CHANGES EFFECTIVE 05/01/80

STANDARD PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
2551	2	NETWORK PROCESSING UNIT COMMUNICATION PROCESSOR FOR FRONT-END OR REMOTE PROCESSOR APPLICATIONS. INCLUDES 32K OF 16 BIT MOS MEMORY (EXPANDABLE TO 128K WORDS), CABINET, TWO LOOP MULTIPLEXERS AND CAPACITY TO HOUSE UP TO 32 CLAMS (NOT INCLUDED) WITH EXPANSION CAPABILITY TO 127 CLAMS (EXPANSION CABINET 2556-1C IS REQUIRED BEYOND 32 CLAMS), POWER SUPPLY, MAINTENANCE PANEL, CASSETTE TAPE CONTROLLER, CASSETTE TAPE DRIVE AND CYCLIC REDUNDANCY CHECK SUM MODULE. REQUIRES CONSOLE (752-10 OR EQUIVALENT PLUS CHANNEL COUPLER (2559-3 OR 2558-4 OR 10344-1) FOR FRONT-END APPLICATIONS OR AUTOSTART MODULE CASSETTE (2580-4) FOR REMOTE APPLICATIONS RECEIVES FROM 2559 3/ 2558 4/10344 1/ SENDS TO 256X X/ AVA OPTIONS 2550 13 1/ 2554 16/ 2554 32/ AVA OPTIONS 2556 10/ 2556 11/ 2580 1/ AVA OPTIONS 2590 4/	43,400	B	1,161	1,133	SEE CCC	366	D/1
2554	16	MOS MEMORY EXPANSION PLUG-IN MEMORY MODULE CONTAINING 16,384 WORDS OF READ/WRITE MEMORY. EACH WORD CONSISTS OF 16 DATA BITS, ONE PROTECT BIT AND ONE PARITY BIT. CYCLE TIME IS 550 NSEC. OPT APPLIES TO 2550 2/ 2551 1/ 2551 2/ OPT APPLIES TO 2552 1/ 2552 2/	5,500	B	156	152	SEE CCC	48	D/1
2554	32	MOS MEMORY EXPANSION PLUG-IN MEMORY MODULE CONTAINING 32,768 WORDS OF READ/WRITE MEMORY. EACH WORD CONSISTS OF 16 DATA BITS, ONE PROTECT BIT AND ONE PARITY BIT. CYCLE TIME IS 550 NSEC. OPT APPLIES TO 2550 2/ 2551 1/ 2551 2/ OPT APPLIES TO 2552 1/ 2552 2/	9,920	B	295	288	SEE CCC	96	D/1
2556	10	EXPANSION CABINET SINGLE BAY CABINET WITH POWER SUPPLY. WILL HOUSE ONE OR TWO 2556-11 LOOP MULTIPLEXER LINE EXPANSION UNITS (NOT INCLUDED). OPT APPLIES TO 2550 2/ 2551 2/ 2552 2/	6,000	B	154	151	SEE CCC	27	D/1
2556	11	LOOP MULTIPLEXER LINE EXPANS. CAPACITY TO HOUSE AND CONTROL UP TO 16 CLAMS. MOUNTS IN 2556-10 OR 2552-2. OPT APPLIES TO 2550 2/ 2551 2/ 2552 2/	4,029	B	120	117	SEE CCC	32	D/1
2558	3	HOST COMPUTER COUPLER CONNECTS 255X SYSTEMS TO CYBER 70/170/6000 SERIES COMPUTER CHANNELS. INCLUDES CABLES AND MOUNTS IN 255X CABINET. RECEIVES FROM 7X / 17X / 6000 / SENDS TO 2550 2/ 2551 1/ 2551 2/ SENDS TO 2552 2/	3,938	B	99	97	SEE CCC	39	D/1
2558	4	6671/6676 EMULATOR COUPLER CONNECTS 255X SYSTEMS TO CYBER 70/170/6000 SERIES COMPUTER CHANNELS. REQUIRES 2550-101 6671/6676 EMULATION CONTROLWARE. INCLUDES CABLES AND MOUNTS IN 255X CABINET. RECEIVES FROM 7X / 17X / 6000 / SENDS TO 2550 2/ 2551 1/ 2551 2/	3,938	B	99	97	SEE CCC	39	D/1
2560		COMMUNICATION LINES WITH EIA RS232C OR CCA CIRCUITS FEATURING SOFTWARE SELECTION AND CODE LENGTHS, FRAME SYNCHRONIZATION AND LOOP AND CONTROL OF HALF DUPLEX, FULL DUPLEX, 6, 7, OR 8 BIT CODE LENGTHS, FRAME SYNCHRONIZATION, AND LOOP BACK CAPABILITIES. RECEIVES FROM 2550 1/ 2550 2/ 2551 1/ RECEIVES FROM 2551 2/ 2552 2/ 2556 / RECEIVES FROM 2556 2/ 2556 3/ 2556 4/ RECEIVES FROM 2556 10/ 2556 11/							
2560	1	COMMUNICATIONS LINE ADAPTER PROVIDES FOR CONNECTION VIA MODEM CONFORMING TO EIA RS232C INTERFACE STANDARDS AND COMPATIBLE WITH AT&T 201/208 DATA SETS OF TWO (2) COMMUNICATION LINES AT SPEEDS UP TO 19,200 BITS PER SECOND. LOCAL CONNECTION OF TERMINALS IS PERMITTED. REQUIRES ONE OR TWO 10401 CLA CABLES, ONE FOR EACH COMMUNICATION CIRCUIT OR LOCAL CONNECTION TERMINATED. (NOT INCLUDED) SENDS TO 10401 /	853	B	32	31	SEE CCC	8	D/1
2560	2	COMMUNICATIONS LINE ADAPTER PROVIDES FOR CONNECTION VIA MODEMS COMPATIBLE WITH AT&T 301/303 DATA SETS OF TWO (2) COMMUNICATIONS LINES AT SPEEDS UP TO 56,000 BITS PER SECOND. ACTUAL SPEED IS DETERMINED BY THE MODEMS. REQUIRES ONE OR TWO 10402 CLA CABLES, ONE FOR EACH COMMUNICATION CIRCUIT.(NOT INCLUDED) SENDS TO 10402 /	853	B	32	31	SEE CCC	8	D/1
2560	3	COMMUNICATIONS LINE ADAPTER PROVIDES FOR CONNECTION OF TWO (2) COMMUNICATION LINES OR FACILITIES CONFORMING TO CCITT REC V35 AT SPEEDS UP TO 56,000 BITS PER SECOND (INCLUDING AT&T DIGITAL DATA SYSTEMS AT 56K BPS). REQUIRES ONE OR TWO 10403 CLA CABLES, ONE FOR EACH COMMUNICATION CIRCUIT. (NOT INCLUDED). LOCAL CONNECTION OF TERMINALS IS PERMITTED. SENDS TO 10403 /	853	B	32	31	SEE CCC	8	D/1

PRODUCT NUM		DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
2560	11	CLA,RS232,201/88 COMPATIBLE PROVIDES FOR CONNECTION VIA MODEM COMPATIBLE WITH AT+T 201A,B,C/203A, OR 208B INTERFACE CONNECTS TWO COMMUNICATION LINES OF UP TO 20000 BPS TO CLA. TWO 50 FOOT CABLES PROVIDED RECEIVES FROM 2550-1/ 2550-2/ 2551-1/ 2551-2/ 2556-2/ 2556-3/ 2556-4/ 2556-10/ 2556-11	997	8	34	33		7	D/1
2560	12	CLA,RS232,203A/9 COMPATIBLE PROVIDES FOR CONNECTION VIA MODEM COMPATIBLE WITH AT+T 208A OR 209 EQUIVALENT INTERFACE. CONNECTS TWO COMMUNICATION LINES OF UP TO 20000 BPS TO CLA. TWO 50 FOOT CABLES PROVIDED RECEIVES FROM 2550-1/ 2550-2/ 2551-1/ 2551-2/ 2556-2/ 2556-3/ 2556-4/ 2556-10/ 2556-11	997	8	34	33		7	D/1
2560	13	CLA,RS232,DIRECT TO TERMINAL PROVIDES FOR CONNECTION DIRECT TO TERMINAL WITH AT+T 201 OR 208B EQUIVALENT INTERFACE. CONNECTS TWO COMMUNICATION LINES TO CLA. CABLE SWITCH ALLOWS SELECTION OF 2400,4800, OR 9600 BPS OPERATION. TWO 50FT. CABLES ARE INCLUDEDED. RECEIVES FROM 2550-1/ 2550-2/ 2551-1/ 2551-2/ 2556-2/ 2556-3/ 2556-4/ 2556-10/ 2556-11	997	8	34	33		7	D/1
2560	21	CLA,COAX,301/303 COMPATIBLE PROVIDES CONNECTION OF HOST COMM. PROCESSOR TO AT+T 301/303 OR EQUIVALENT DATA SETS AT UP TO 56000 BPS. INCLUDES 2 SYNCHRONOUS CLA CIRCUITS FEATURING SOFTWARE SELECTION AND CONTROL OF HALF OR FULL DUPLEX,6,7, OR 8 BIT CODE LENGTHS, FRAME SYNCHRONIZATION AND LOOP BACK CAPABILITY. TWO COMM. LINES AT UP TO 56000 BITS/SECOND CAN BE CONNECTED. TWO 50FT. COAXIAL CABLES ARE INCLUDED. RECEIVES FROM 2550-1/ 2550-2/ 2551-1/ 2551-2/ 2556-2/ 2556-3/ 2556-4/ 2556-10/ 2556-11	1,553	8	53	52		7	D/1
2560	31	CLA,DIFFERENTIAL,CCITT REC V.35 PROVIDES CONNECTION OF HOST COMM. PROCESSOR TO CIRCUITS CONFORMING TO CCITT V.35 AT SPEED UP TO 56000 BPS. INCLUDES 2 SYNCHRONOUS CLA CIRCUITS FEATURING SOFTWARE SELECTION AND CONTROL OF HALF OR FULL DUPLEX,6,7, OR 8 BIT CODE LENGTHS, FRAME SYNCHRONIZATION AND LOOP BACK CAPABILITY. TWO COMM. LINES AT UP TO 56000 BITS/SECOND CAN BE CONNECTED. TWO 50FT. CABLES ARE INCLUDED. RECEIVES FROM 2550-1/ 2550-2/ 2551-1/ 2551-2/ 2556-2/ 2556-3/ 2556-4/ 2556-10/ 2556-11		8					D/1
2561		COMMUNICATIONS LINE ADAPTER PROVIDES FOR CONNECTION OF TWO ASYNCHRONOUS COMMUNICATION LINES AT ALL STANDARD SPEEDS UP TO 9600 BITS PER SECOND. FEATURES SOFTWARE SELECTION AND CONTROL OF HALF DUPLEX, FULL DUPLEX AND ECHOPLEX OPERATION; CODE LENGTHS OF 5, 6, 7 OR 8 BITS; VARIABLE INPUT/OUTPUT SPEEDS; EVEN, ODD OR NO CHARACTER PARITY CHECKING AND GENERATION, STOP BIT DURATION OF 1.0, 1.5 OR 2.0 BITS AND LOOP BACK CAPABILITIES. RECEIVES FROM 18 25/ 2550 1/ 2550 2/ RECEIVES FROM 2551 1/ 2551 2/ 2552 2/ RECEIVES FROM 2556 / 2556 2/ 2556 3/ RECEIVES FROM 2556 4/ 2556 10/ 2556 11/							
2561	1	COMMUNICATIONS LINE ADAPTER PROVIDES FOR CONNECTION VIA MODEMS CONFORMING TO EIA RS232C OR CCITT REC V24 INTERFACE STANDARDS AND COMPATIBLE WITH AT+T 103/113/ 202 DATA SETS. ALLOWS CONNECTION OF TWO COMMUNICATION LINES AT SPEEDS UP TO 9600 BITS PER SECOND. LOCAL CONNECTION OF ASYNCHRONOUS TERMINALS IS PERMITTED. REQUIRES ONE OR TWO 10400 CLA CABLES, ONE FOR EACH COMMUNICATION CIRCUIT OR LOCAL CONNECTION TERMINATED. (NOT INCLUDED). SENDS TO 10400 /	657	8	26	25	SEE CCC	7	D/1
2561	11	CLA,ASYNC,RS232C,203 CON CONNECTS TO AT+T 103A/9,1130 OR 202C/D OR EQUIVALENT. INCLUDES TWO 50 CABLES. RECEIVES FROM 2550-1/ 2550-2/ 2551-1/ 2551-2/ 2556-2/ 2556-3/ 2556-4/ 2556-10/ 2556-11	885	8	25	27		6	D/1
2561	12	CLA,ASYNC,RS232C,DIR. TO TERM. CONNECTS TO LOCAL TERMINAL WITH RS232C IF OPERATING WITH AT+T 103A/E, J2 OR EQUIVALENT RECEIVES FROM 2550-1/ 2550-2/ 2551-1/ 2551-2/ 2556-2/ 2556-3/ 2556-4/ 2556-10/ 2556-11	885	8	28	27		6	D/1
2561	13	CLA,ASYNC,RS232C,103F COMPAT. INCLUDES TWO 50FT. CABLES. RECEIVES FROM 2550-1/ 2550-2/ 2551-1/ 2551-2/ 2556-2/ 2556-3/ 2556-4/ 2556-10/ 2556-11	885	8	28	27		6	D/1
2563		COMMUNICATIONS LINE ADAPTER PROVIDES FOR CONNECTION OF ONE SYNCHRONOUS COMMUNICATION LINE ADHERING TO THE CONTROL DATA COMMUNICATION CONTROL PROCEDURE (CDCCP) PROTOCOL AT SPEEDS UP TO 20,000 BITS PER SECOND. RECEIVES FROM 2550 1/ 2550 2/ 2551 1/ RECEIVES FROM 2551 2/ 2556 2/ 2556 3/ RECEIVES FROM 2556 4/ 2556 10/ 2556 11/							
2563	1	COMMUNICATIONS LINE ADAPTER PROVIDES FOR THE CONNECTION VIA MODEM CONFORMING TO EIA RS232C INTERFACE STANDARDS AND COMPATIBLE WITH AT+T 201/208 DATA SETS OF ONE COMMUNICATION LINE AT SPEEDS UP TO 20,000 BITS PER SECOND. LOCAL CONNECTION OF TERMINAL IS PERMITTED. REQUIRES ONE 10401 CLA CABLE (NOT INCLUDED). SENDS TO 10401 /	453	8	32	31	SEE CCC	19	D/1

CHANGES EFFECTIVE 05/01/80

STANDARD PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
2563	11	CLA,SDLC,RS232C,201/88 COMPAT. PROVIDES CONNECTION TO AT+T 201A/B/C, 203A OR 208B OR EQUIVALENT. ONE 50FT. CABLE INCLUDED. RECEIVES FROM 2550-1/ 2550-2/ 2551-1/ 2551-2/ 2556-2/ 2556-3/ 2556-4/ 2556-10/ 2556-11	925	B	32	31		17	D/1
2563	12	CLA,SDLC,RS232C,208A COMPAT. PROVIDES CONNECTION TO AT+T 208A,209 OR EQUIVALENT. ONE 50FT. CABLE INCLUDED. RECEIVES FROM 2550-1/ 2550-2/ 2551-1/ 2551-2/ 2556-2/ 2556-3/ 2556-4/ 2556-10/ 2556-11	925	B	32	31		17	D/1
2563	13	CLA,SDLC,RS232C,DIRECT TO TERM PROVIDES CONNECTION TO LOCAL TERMINAL WITH RS232C I.F. OPERATING WITH AT+T 201,208B OR EQUIVALENT. ONE 50FT. CABLE PROVIDED WITH CABLE SWITCH TO ALLOW SELECTION OF 2400,4800, OR 9600 BPS OPERATION. RECEIVES FROM 2550-1/ 2550-2/ 2551-1/ 2551-2/ 2556-2/ 2556-3/ 2556-4/ 2556-10/ 2556-11	925	B	32	31		17	D/1
2580	3	2551-1 TO 2551-2 UPGRADE KIT CONVERTS A 2551-1 TO A 2551-2. OPT APPLIES TO 2551 1/	10,000	B	274	268	SEE CCC	48	D/1
2580	4	SYSTEM AUTOSTART MODULE-CASSET PROVIDES THE CAPABILITY TO SUPPORT THE LOADING AND/OR RESTARTING OF A REMOTE PROCESSOR FROM THE TAPE CASSETTE. INCLUDES MOUNTING ENCLOSURE AND CABLES. REQUIRED FOR REMOTE PROCESSOR APPLICATIONS. OPT APPLIES TO 2550 2/ 2551 1/ 2551 2/	1,500	B	42	41	SEE CCC	19	D/1
2806		PROVIDES A STANDARD PROTECTED MESSAGE EXCHANGE (PMX). REQUIRES NECESSARY TERMINAL INTERFACE PACKAGES (COMMUNICATIONS ADAPTERS) - NOT INCLUDED. SENDS TO 2910 2/ 2816 1/ 2920 1/ SENDS TO 2927 3/ 2841 1/ 2841 2/ SENDS TO 2941 3/ 2841 4/ 2841 5/ SENDS TO 2941 6/ 2842 1/ 2843 1/ SENDS TO 2844 1/ 2844 2/ 2845 1/ SENDS TO 2946 1/ 2846 2/ 2850 1/ SENDS TO 2856 2/ 2856 1/ 2869 1/ SENDS TO 2969 2/ 2870 2/ 2970 3/ SENDS TO 2879 5/ 2870 6/ AVA OPTIONS 2830 1/ 2840 1/ 2940 2/							
2808		PROVIDES A STANDARD INQUIRY MESSAGE EXCHANGE (IMX). REQUIRES NECESSARY TERMINAL INTERFACE PACKAGES (COMMUNICATIONS ADAPTERS) - NOT INCLUDED. SENDS TO 2810 2/ 2816 1/ 2820 1/ SENDS TO 2927 3/ 2841 1/ 2941 2/ SENDS TO 2941 3/ 2841 4/ 2841 5/ SENDS TO 2941 6/ 2842 1/ 2943 1/ SENDS TO 2944 1/ 2844 2/ 2845 1/ SENDS TO 2946 1/ 2846 2/ 2850 1/ SENDS TO 2856 2/ 2856 1/ 2869 1/ SENDS TO 2969 2/ 2870 2/ 2870 3/ SENDS TO 2870 5/ 2870 6/ AVA OPTIONS 2930 1/ 2840 1/ 2940 2/							
2809	3	2-BAY BASIC EXCHANGE UNIT SINGLE COMMUNICATIONS SWITCHING PROCESSOR AT 1200-NANOSECOND CYCLE TIME IN A 2-BAY EXCHANGE UNIT CONFIGURATION. EQUIPPED WITH 65K WORDS OF 27 BIT-PER-WORD (8-BIT BYTES PLUS PARITY) MEMORY. CONTAINS A MEDIUM-SPEED MULTIPLEXER WITH SCANNING CAPABILITY OF 128 LINES FROM 75-9600 BAUD. BASIC EXCHANGE UNIT CONTAINS 16 LINE TERMINATION PORTS. SENDS TO 2810 3/ 2810 4/ 2815 1/ SENDS TO 2815 3/ 2816 1/ 2817 7/ SENDS TO 2818 1/ 2818 2/ 2818 3/ SENDS TO 2819 3/ 2819 4/ 2820 1/ SENDS TO 2827 1/ 2827 2/ 2827 3/ SENDS TO 2830 1/ 2830 2/ 2830 3/ SENDS TO 2830 4/ 2830 5/ 2830 6/ SENDS TO 2833 1/ 2833 2/ 2834 4/ SENDS TO 2840 1/	93,210	B	3,107	3,029	SEE CCC	758	D/2
2809	4	3-BAY BASIC EXCHANGE UNIT SINGLE COMMUNICATIONS SWITCHING PROCESSOR AT 1200-NANOSECOND CYCLE TIME IN A 3-BAY EXCHANGE UNIT CONFIGURATION. EQUIPPED WITH 65K WORDS OF 27 BIT-PER-WORD (8-BIT BYTES PLUS PARITY) MEMORY. CONTAINS INSTALLATION SPACE FOR A FIXED-HEAD DISK SYSTEM AND 32 TERMINATION PORTS UTILIZING A 2824-1 LINE ENCLOSURE UNIT. SENDS TO 2810 3/ 2810 4/ 2815 1/ SENDS TO 2815 3/ 2816 1/ 2817 7/ SENDS TO 2818 1/ 2818 2/ 2818 3/ SENDS TO 2819 3/ 2819 4/ 2820 1/ SENDS TO 2827 1/ 2827 2/ 2827 3/ SENDS TO 2830 2/ 2830 3/ 2830 4/ SENDS TO 2830 5/ 2830 6/ 2833 1/ SENDS TO 2833 2/ 2834 4/ 2840 1/ AVA OPTIONS 2824 1/	119,515	B	2,988	2,913	SEE CCC	846	D/2
2810	4	MAGNETIC TAPE CONTROLLER DUAL CHANNEL CONNECTION FOR BACKUP CAPABILITY CONTROLS UP TO EIGHT MAGNETIC TAPE TRANSPORTS PER CHANNEL AT 37.5 IPS AND 800 OR 1600 BPI. RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2909 4/ SENDS TO 2814 1/ 2814 2/ 2814 3/ SENDS TO 2814 4/ 2814 5/ 2814 6/ OPT APPLIES TO 2906 1/ 2806 2/ 2906 3/ OPT APPLIES TO 2908 1/ 2808 2/ 2808 3/	6,090	D	218	213	SEE CCC	63	D/2
2814		9-TRACK, 50 IPS, 800/1600 BPI MAGNETIC TAPE DRIVE CONFIGURATION IN ONE CABINET. SOME CONFIGURATIONS HAVE THE TAPE DRIVES SWITCHABLE BETWEEN CHANNELS, AND OTHERS HAVE THE DRIVES DEDICATED TO A SINGLE CHANNEL. RECEIVES FROM 2810 4/							
2814	1	MAGNETIC TAPE TRANSPORT SINGLE DRIVE WITH CHANNEL SWITCH FOR SWITCHABLE CHANNEL OPERATION. RECEIVES FROM 2810 4/	13,533	D	424	413	SEE CCC	101	D/2

CHANGES EFFECTIVE 09/01/80

STANDARD PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	1 YEAR	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
2814	4	MAGNETIC TAPE TRANSPORT DUAL DRIVE WITH DUAL CHANNEL SWITCH FOR DUAL CHANNEL SWITCHABLE OPERATION. RECEIVES FROM 2810 4/	21,409	D	765	746	SEE CCC	318	D/2
2815	3	CONSOLE TERMINAL-MODEL 40 KD/P PROVIDES ENTRY/READOUT EQUIPMENT FOR 28XX CONSOLE SUBSYSTEM WITH FULL-DUPLEX OPERATION AT 1200 BPS. RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/ OPT APPLIES TO 2806 1/ 2806 2/ 2806 3/ OPT APPLIES TO 2808 1/ 2808 2/ 2808 3/	10,056	D	251	245	SEE CCC	110	D/2
2817	2	FIXED-HEAD DISK SUBSYS-24 MIL FIXED-HEAD DISK SUBSYSTEM CONSISTING OF A 24-MILLION-BIT CAPACITY FIXED-HEAD DISK, DISK ACCESS CONTROLLER, SYNC UNIT (DUAL OR LARGER SYSTEMS), DISK POWER SUPPLY, AND ASSOCIATED MOUNTING AND CONNECTING HARDWARE. SUBSYSTEM MOUNTS DIRECTLY INTO THE 28XX 3-BAY BASIC EXCHANGE UNIT. RECEIVES FROM 2817 7/	87,415	D	2,185	2,130	SEE CCC	449	D/2
2817	7	FIXED-HEAD DISK CONTROLLER SINGLE CHANNEL CONNECTION. CONTROLS ONE FIXED-HEAD DISK SUBSYSTEM IN EITHER 12M OR 24M-BIT SIZE. RECEIVES FROM 2809 1/ 2809 3/ 2809 4/ SENDS TO 2817 1/ 2817 2/ 2817 8/ SENDS TO 2917 9/	7,144	D	179	175	SEE CCC	141	D/2
2818	2	STATUS AND CONTROL PANEL PROVIDES THE CONTROL SWITCHES AND INDICATORS NECESSARY FOR CONTROL OF A 28XX EXCHANGE UNIT. FUNCTIONS IN CONJUNCTION WITH THE CONTROL DISPLAY GROUP. RECEIVES FROM 2809 3/ 2809 4/ 2818 3/ RECEIVES FROM 2818 4/	1,430	D	53	52	SEE CCC	13	D/2
2818	3	CONTROL DISPLAY GROUPS PROVIDES THE PHYSICAL MOUNTING CAPABILITY FOR THE STATUS AND CONTROL PANEL, 32-LINE NETWORK MONITOR, AND 16/16-LINE NETWORK MONITOR. CONSISTS OF A DESK, CHAIR, AND A 7-SLOT ENCLOSURE FOR MOUNTING STATUS AND CONTROL PANEL AND NETWORK MONITOR UNITS. RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/ SENDS TO 2818 2/ 2818 4/ 2819 3/ SENDS TO 2819 4/ OPT APPLIES TO 2806 1/ 2806 2/ 2806 3/ OPT APPLIES TO 2808 1/ 2808 2/ 2808 3/	2,200	D	75	73	SEE CCC	N/A	D/2
2818	4	CONTROL DISPLAY EXPANS. GROUP PROVIDES FOR THE EXPANSION OF THE CONTROL DISPLAY GROUP. CONTAINS A 7-SLOT ENCLOSURE FOR MOUNTING STATUS AND CONTROL PANEL AND NETWORK MONITOR UNITS. RECEIVES FROM 2818 3/ SENDS TO 2819 2/ 2819 3/ 2819 4/	968	D	33	29	SEE CCC	N/A	D/2
2819	1	32-LINE NETWORK MONITOR PROVIDES THE INDICATORS FOR THE NETWORK MONITOR DISPLAY PORTION OF A 28XX EXCHANGE UNIT SYSTEM CONSOLE. PROVIDES INDICATORS FOR 32 COMMUNICATIONS LINES. MOUNTS IN THE CONTROL DISPLAY AND CONTROL DISPLAY EXPANSION GROUPS. RECEIVES FROM 2818 3/ 2818 4/	842	D	34	33	SEE CCC	7	D/2
2819	2	16/16-LINE NETWORK MONITOR PROVIDES THE INDICATORS FOR THE NETWORK MONITOR DISPLAY PORTION OF A 28XX EXCHANGE UNIT SYSTEM CONSOLE. PROVIDES INDICATORS FOR 32 COMMUNICATIONS LINES SPLIT INTO TWO GROUPS OF 16 LINES EACH. MOUNTS IN THE CONTROL DISPLAY AND CONTROL DISPLAY EXPANSION GROUPS. RECEIVES FROM 2818 3/ 2818 4/	1,345	D	45	44	SEE CCC	7	D/2
2820	1	DISK PACK DRIVE CONTROLLER SINGLE CHANNEL CONNECTION, CONTROLS ONE DISK PACK ACCESS UNIT. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/ SENDS TO 2921 1/ 2821 2/ 2821 3/ SENDS TO 2821 4/	6,559	D	164	160	SEE CCC	53	C/2
2821	3	DISK PACK DRIVE ACCESS UNIT PROVIDES CONTROL OF DISK PACK DRIVES FOR A DISK PACK CONTROLLER. THE CABINET CONTAINS ONE ACCESS UNIT WHICH OPERATES WITH UP TO FOUR DRIVES IN TANDEM. CABINET ALLOWS CONNECTION OF TWO DISK PACK DRIVE CONTROLLERS. RECEIVES FROM 2820 1/ SENDS TO 2922 1/	26,460	D	662	645	SEE CCC	151	C/2
2821	4	DISK PACK ACCESS UNIT PROVIDES CONTROL OF DISK PACK STORAGE DRIVES FOR A DISK PACK CONTROLLER. THE CABINET CONTAINS TWO ACCESS UNITS IN TANDEM, EACH ACCESS UNIT OPERATES WITH UP TO FOUR DRIVES IN TANDEM. ALLOWS CONNECTION OF TWO DISK PACK CONTROLLERS. RECEIVES FROM 2820 1/ SENDS TO 2922 2/	55,250	D	1,381	1,346	SEE CCC	204	C/2

CHANGES EFFECTIVE 05/01/80

STANDARD PRODUCTS

PRODUCT NO		DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	PAGE 36 MONTHLY CHARGE	MAINTENANCE PROD SRP
2822	2	DISK PACK DRIVE DISK PACK DRIVE AND CABLES, CAPACITY 40 MILLION 9 BIT CHARACTERS, 2400 RPM. REQUIRES ONE 873 DISK PACK - NOT INCLUDED. RECEIVES FROM 2821 3/ 2821 4/	16,435	D	410	400 SEE CCC	109	C/2
2824	1	LINE MODULE ENCLOSURE UNIT PROVIDES THE MEANS OF TERMINATING COMMUNICATIONS LINES IN THE 2809-2 3-BAY EXCHANGE UNIT. UNIT PROVIDES FOR CONNECTABILITY OF 32 COMMUNICATIONS LINES. OPT APPLIES TO 2809 2/ 2809 4/	15,193	D	380	370 SEE CCC	73	D/2
2827	3	PERIPHERAL CONTROLLER DUAL CHANNEL CONTROLLER WHICH ALLOWS CONNECTION OF A 2829-2 CARD READER OR 2829-3 LINE PRINTER TO A 28XX EXCHANGE UNIT VIA THE APPLICABLE 2827-4/2827-5 INTERFACE CARD. RECEIVES FROM 2836 1/ 2806 2/ 2806 3/ RECEIVES FROM 2908 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/ SENDS TO 2827 4/ 2827 5/	3,537	D	88	86 SEE CCC	24	D/2
2827	4	CARD READER INTERFACE ALLOWS INTERFACE CONNECTION BETWEEN A 2829-2 CARD READER AND A 2827-3 PERIPHERAL CONTROLLER. RECEIVES FROM 2827 3/ SENDS TO 2829 2/	797	D	20	19 SEE CCC	16	D/2
2827	5	LINE PRINTER INTERFACE ALLOWS INTERFACE CONNECTION BETWEEN A 2829-3 LINE PRINTER AND A 2827-3 PERIPHERAL CONTROLLER. RECEIVES FROM 2827 3/ SENDS TO 2829 3/	797	D	20	19 SEE CCC	16	D/2
2828		**CONTROLLER EXTENSION CABINET** PROVIDES ADDITIONAL PERIPHERAL CONTROLLER PORTS FOR 28XX EXCHANGE UNITS. RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/						
2828	3	CONTROLLER EXTENS. CAB.- DUAL PROVIDES SIX ADDITIONAL CONTROLLER PORTS FOR A DUAL 28XX EXCHANGE UNIT (THREE PER EACH EXCHANGE UNIT). ACCOMMODATES ALL EXISTING 28XX CONTROLLERS EXCEPT THE 1700 AND 3000 DATA CHANNEL ADAPTERS. RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/	17,959	D	449	438 SEE CCC	114	D/2
2829	2	CARD READER 80 COLUMN 300 CPM DESK TOP CARD READER WITH HOPPER/STACKER CAPACITY OF 1000 CARDS. INTERFACES WITH THE 2827-3 PERIPHERAL CONTROLLER THRU THE 2827-4 CARD READER INTERFACE. RECEIVES FROM 2827 4/	4,301	D	108	105 SEE CCC	70	D/2
2830		PROVIDES THE MEANS OF EXTENDING THE COMMUNICATIONS LINES CONNECTABILITY OF THE 28XX EXCHANGE UNIT WITHIN THE LIMITS OF THE PARTICULAR EXCHANGE UNIT CONFIGURATION. RECEIVES FROM 2809 1/ 2809 2/ OPT APPLIES TO 2806 1/ 2806 2/ 2806 3/ OPT APPLIES TO 2808 1/ 2808 2/ 2808 3/						
2830	1	LINE MODULE EXT. CAB.-32 MS ALLOWS CONNECTABILITY OF 32 MEDIUM-SPEED MULTIPLEXER LINES. RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/ OPT APPLIES TO 2806 1/ 2806 2/ 2806 3/ OPT APPLIES TO 2808 1/ 2808 2/ 2808 3/	24,226	D	794	774 SEE CCC	121	C/2
2830	2	LINE MODULE EXTENS. CAB.-48 MS ALLOWS CONNECTABILITY OF 48 MEDIUM-SPEED MULTIPLEXER LINES. RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/ OPT APPLIES TO 2806 1/ 2806 2/ 2806 3/ OPT APPLIES TO 2808 1/ 2808 2/ 2808 3/	33,504	D	1,046	1,020 SEE CCC	121	D/2
2830	3	LINE MODULE EXTENS. CAB.-32 HS ALLOWS CONNECTABILITY OF 32 HIGH-SPEED LINE CONTROLLER LINES. RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/ OPT APPLIES TO 2806 1/ 2806 2/ 2806 3/ OPT APPLIES TO 2808 1/ 2808 2/ 2808 3/	26,787	D	819	799 SEE CCC	121	D/2
2830	4	LINE MOD EXTEN CAB-32 HS,16 MS ALLOWS CONNECTABILITY OF 32 HIGH-SPEED LINE CONTROLLER LINES AND 16 MEDIUM-SPEED MULTIPLEXER LINES. RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/ OPT APPLIES TO 2806 1/ 2806 2/ 2806 3/ OPT APPLIES TO 2808 1/ 2808 2/ 2808 3/	31,679	D	1,056	1,030 SEE CCC	121	D/2
2830	5	LINE MOD EXT. CAB.-32 HS,16 HS ALLOWS CONNECTABILITY OF 32 MEDIUM-SPEED MULTIPLEXER LINES AND 16 HIGH-SPEED LINE CONTROLLER LINES. RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/ OPT APPLIES TO 2806 1/ 2806 2/ 2806 3/ OPT APPLIES TO 2808 1/ 2808 2/ 2808 3/	31,679	D	1,056	1,030 SEE CCC	121	D/2

STANDARD PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/2490		SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
					1 YEAR				
2833	1	MEMORY MODULE PROVIDES THE HARDWARE TO EXTEND THE 28XX EXCHANGE UNIT ABOVE 64K, 128K OR 192K WORDS OF MEMORY. USED WITH EITHER THE 2833-2 OR 2833-3 MEMORY EXTENSION PRODUCTS. CONTAINS MEMORY HOUSING, WITH SPACE AND POWER FOR ONE 2833-2 MEMORY EXTENSION MODULE. RECEIVES FROM 2809 3/ 2809 4/ 2833 2/ SENDS TO 2833 2/	29,751	D	1,306	1,273	SEE CCC	192	D/2
2833	2	EXPANSION MODULE PROVIDES THE HARDWARE TO EXTEND THE 28XX EXCHANGE UNIT ABOVE 96K, 160K OR 224K WORDS OF MEMORY. IS USED WITH EITHER THE 2833-1 OR 2833-3 MEMORY EXTENSION PRODUCTS. RECEIVES FROM 2809 3/ 2809 4/ 2833 1/ RECEIVES FROM 2833* 2/ SENDS TO 2833 1/	35,545	D	889	867	SEE CCC	146	D/2
2833	3	EXTENDED MEMORY CONV. KIT PROVIDES THE HARDWARE TO EXTEND THE 28XX EXCHANGE UNIT ABOVE 65K WORDS OF MEMORY. THE CONVERSION KIT IS USED FOR THE FIRST EXPANSION OF 32K WORDS ABOVE THE INITIAL 65K WORDS OF MEMORY. FURTHER MEMORY EXPANSION WOULD BE ACCOMPLISHED WITH 2833-2 AND 2833-1 MEMORY EXTENSION PRODUCTS. RECEIVES FROM 2809 1/ 2809 2/ SENDS TO 2833 2/ OPT APPLIES TO 2806 1/ 2806 2/ 2806 3/ OPT APPLIES TO 2808 1/ 2808 2/ 2808 3/	53,343	D	2,432	2,371	SEE CCC	388	D/2
2834	3	MEDIUM-SPEED MULTIPLEXER PROVIDES PHYSICAL CONNECTABILITY AND MULTIPLEX LINE SCANNING CAPABILITY FOR INTERFACING 128 COMMUNICATIONS LINES VIA APPLICABLE TIPS TO A 28XX EXCHANGE UNIT. PHYSICAL CONNECTABILITY IS ALSO PROVIDED FOR 128 BACKUP COMMUNICATIONS LINES WHEN THE 28XX EXCHANGE UNIT IS UTILIZED IN DUAL OR LARGER SYSTEM CONFIGURATIONS. LINE SPEEDS SERVICED CAN VARY FROM 75-9600 BPS. CONTAINS AUTO LOGIC FOR EXCHANGE UNIT OPERATION. RECEIVES FROM 2809 2/ 2809 4/ SENDS TO 2830 1/ 2830 2/ 2830 4/ SENDS TO 2830 5/	9,790	D	245	239	SEE CCC	86	D/2
2834	4	HIGH-SPEED LINE CONTROLLER PROVIDES PHYSICAL CONNECTABILITY AND CONTROLLING CAPABILITY FOR INTERFACING 16 COMMUNICATIONS LINES VIA APPLICABLE TIPS TO A 28XX EXCHANGE UNIT. PHYSICAL CONNECTABILITY IS ALSO PROVIDED FOR 16 BACKUP COMMUNICATIONS LINES WHEN THE 28XX EXCHANGE UNIT IS UTILIZED IN DUAL OR LARGE SYSTEM CONFIGURATIONS. LINE SPEEDS SERVICED CAN VARY FROM 9600-56 KBPS. EXPANSION FROM 16 LINES TO 32 LINES IN 8-LINE INCREMENTS BY USE OF 2834-5 EXPANSION MODULE. RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/ SENDS TO 2830 3/ 2830 4/ 2830 5/ SENDS TO 2830 6/ OPT APPLIES TO 2806 1/ 2806 2/ 2806 3/ OPT APPLIES TO 2808 1/ 2808 2/ 2808 3/	7,749	D	194	189	SEE CCC	93	D/2
2834	5	HIGH-SPEED LINE CONT. EXP. MOD PROVIDES PHYSICAL CONNECTABILITY EXPANSION OF THE 2834-4 HIGH-SPEED LINE CONTROLLER IN 8-LINE INCREMENTS FROM 16 LINES TO 32 LINES. RECEIVES FROM 2834 4/ SENDS TO 2830 4/	1,380	D	63	61	SEE CCC	15	D/2
2834	14	ENHANCED LINE CONTROLLER PROVIDES CONTROL CAPABILITY FOR INTERFACING 16 COMMUNICATION LINES VIA APPLICABLE TIPS TO A 2809-3 EXCHANGE UNIT. PROVIDES FOR 16 BACK COMMUNICATION LINES WHEN THE EXCHANGE UNIT IS UTILIZED IN A DUAL OR LARGE SYSTEM CONFIGURATION. LINE SPEEDS SERVICED VARY FROM 9600-56K BPS. RECEIVES FROM 2809 3 SENDS TO 2830 1/2830 2/2830 3/ SENDS TO 2830 4/2830 5/	7,749	D	194	189	SEE CCC	84	D/1
2836	9	CYBER 1000 MAC INTERFACE UNIT PROVIDES THE HARDWARE CAPABILITY TO INTERFACE A CYBER 1000 EXCHANGE UNIT (2804-X, 2808-X, 2809-3/4) TO UP TO 8 HOST COMPUTER INTERFACE UNITS. VERIFY WITH CSD FOR PROPER HOST COMPUTER INTERFACE UNIT BASED ON HOST AND ACCESS METHOD. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 3/ 2809 4/ DESCRIPTION APPLIES TO 284X THROUGH 289X PRODUCTS. INTERFACES A DATA COMMUNICATION PORT TO A SINGLE DATA LINE AND A SPECIFIC TYPE OF TERMINAL UNIT. EACH TYPE OF INTERFACE REQUIRES A CORRESPONDING SOFTWARE PACKAGE FOR OPERATION. SEE THE SOFTWARE SECTION AND CONFIGURATORS.	5,065	D	127	124	SEE CCC	44	D/2
2840	2	AUTO CALL UNIT SELEC. EXP. KIT PROVIDES THE PHYSICAL CONNECTABILITY OF THE 2840-1 AUTO CALL UNIT SELECTOR TO THE COMMUNICATIONS LINE ACU. ONE UNIT IS REQUIRED FOR EACH ACU CONNECTED. RECEIVES FROM 2840 1/ 2840 3/	378	D	9	9	SEE CCC	4	D/2

CHANGES EFFECTIVE 05/01/80

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
2840	3	AUTO-CALL UNIT SELECTOR PROVIDES THE SWITCHING LOGIC TO ALLOW A DIAL CONTROL MODULE (2891-1) TO OPERATE WITH UP TO EIGHT CUSTOMER-FURNISHED AUTOMATIC CALLING UNITS. EACH AUTOMATIC CALLING UNIT INTERFACES THE AUTO-CALL UNIT SELECTOR VIA A 2840-2 AUTO-CALL UNIT SELECTOR EXPANSION KIT. RECEIVES FROM 2809 3/ 2809 4/ SENDS TO 2840 2/ OPT APPLIES TO 2806 1/ 2806 2/ 2806 3/ OPT APPLIES TO 2808 1/ 2808 2/ 2808 3/	2,967	0	74	72	SEE CCC	41	D/2
2841		BAUDOT CODE TTY TIP TERMINAL INTERFACE PACKAGES (COMMUNTCATION ADAPTERS) FOR 28XX. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/							
2842	1	AT+T 830 TTY REMOTE INTERFACE OPERATES WITH UP TO 32 MODEL 28 ASR TELETYPEWRITERS OR EQUIVALENT IN AN AT+T 830 SYSTEM, BAUDOT CODE, HALF DUPLEX, UP TO 100 WPM. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/	1,759	0	56	55	SEE CCC	13	C/2
2842	2	BANK WIRE TTP (12141) ALLOWS 28XX EXCHANGE UNIT TO ACT AS A BANK-WIRE 1 COMPUTER CONTROLLED TERMINAL. ASYNCHRONOUS TRANSMISSION WITH BAUDOT CODE, FULL-DUPLEX WITH 75 BAUD SPEED. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/	1,477	0	47	46	SEE CCC	10	D/2
2843	1	AT+T 8101 TTP (12961) OPERATES MODEL 29 TELETYPEWRITER AND SOTUS ON FDX CIRCUIT, FDX, BAUDOT CODE, ASYNCHRONOUS, 100 WPM, SPECIFY LOOP CURRENT OR RS232 LEVEL. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/	1,759	0	56	55	SEE CCC	13	C/2
2843	2	8101/CABLE TTP (10361) ALLOWS 28XX EXCHANGE UNIT TO INTERFACE FREE-WHEELING, CABLE AND 8101 REMOTE INTERFACES WITH HOST COMPUTER CONTROL. ASYNCHRONOUS TRANSMISSION WITH BAUDOT CODE, FULL-DUPLEX WITH 67 WPM SPEED. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/	1,477	0	47	46	SEE CCC	10	D/2
2843	3	8101/CABLE TTP (10392) ALLOWS 28XX EXCHANGE UNIT TO INTERFACE FREE-WHEELING, CABLE, AND 8101 REMOTE INTERFACES WITH HOST COMPUTER CONTROL. ASYNCHRONOUS TRANSMISSION WITH BAUDOT CODE, FULL-DUPLEX AT 100 WPM SPEED. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/	1,477	0	47	46	SEE CCC	10	D/2
2843	4	8101/CABLE TTP (10804/10864) PROVIDES INTERFACE WITH TERMINALS USING FREE WHEELING CABLE AND INTERNATIONAL 8101 CONTROL PROCEDURES. OPERATING MODE IS HALF-DUPLEX, BAUDOT CODE, ASYNCHRONOUS, 67 WPM A QUARTER SPEED. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 3/ 2809 4/	1,477	0	47	46	SEE CCC	18	D/2
2843	5	8101/CABLE TTP (10305) ALLOWS 28XX EXCHANGE UNIT TO INTERFACE FREE-WHEELING, CABLE, AND 8101 REMOTE INTERFACES WITH HOST COMPUTER CONTROL. ASYNCHRONOUS TRANSMISSION WITH BAUDOT CODE, FULL-DUPLEX WITH 67/2 WPM SPEED. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/	1,477	0	47	46	SEE CCC	10	D/2
2843	6	FW BAUDOT TTP (10365) PROVIDES INTERFACE WITH TERMINALS USING FREE WHEELING BAUDOT CONTROL PROCEDURES. SPECIAL CONTROL CHARACTER PROCESSING IS PROVIDED. OPERATIONAL MODE IS FULL-DUPLEX, BAUDOT CODE, ASYNCHRONOUS, 100 WPM (75 BAUD). RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 3/ 2809 4/	1,477	0	47	46	SEE CCC	18	D/2
2844	1	TTY PRIVATE LINE CRT TIP(1204) PROVIDES EQUIPMENT TO INTERFACE MODEL 40 CRT KOP TO THE 28XX EXCHANGE USING BA1 LINE PROCEDURES. ASYNCHRONOUS (10 UNITS), HALF DUPLEX, 1200 BPS, ASCII CODE (EVEN PARITY). RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/	2,406	0	83	81	SEE CCC	19	C/2

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
2844	2	TTY DIAL (IN/OUT) TIP (1268) PROVIDES EQUIPMENT TO INTERFACE MODEL 40 CRT KDP IN DIAL (INPUT/OUTPUT) MODE. TIP USES DIAL CONTROL TIP AND A COMMON CARRIER SUPPLIED AUTO CALL UNIT TO INITIATE OUTGOING CALLS. INCOMING CALLS ARE ANSWERED BY MODEM. ASYNCHRONOUS (10 UNITS), HALF DUPLEX, 1200 BPS ASCII CODE (EVEN PARITY). RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/	2,636	D	83	81 SEE CCC	19	C/2
2844	3	DIAL REMOTE INTERFACE PROVIDES COMPUTER ACCESS TO THE TELETYPE DIAL I/O HARDWARE AT 110 BAUD. ASCII MODULE WITH PARITY CHECK ON INPUT, PARITY GENERATION ON OUTPUT-EVEN, PARITY STRIP ON INPUT TO NEUTRAL ASCII (CYBER 1000 MACHINE LANGUAGE), SUPPRESS CR ON INPUT, DETECTS LF ON OUTPUT AND SENDS STATUS TO PROGRAM TO ADD CR, DETECTS FF ON OUTPUT AND SENDS STATUS TO PROGRAM TO ADD 10 DELETE CHARACTERS. RECEIVES FROM 2809 3/2809 4/	2,606	D	83	81 SEE CCC	16	D/1
2845	1	ATA/IATA LOW SPEED TIP (1096E1) OPERATES ONE LINE FOR PROCESSOR TO PROCESSOR LINK. ATA/IATA ALPHABET NO. 2, 100 WPM, ASYNCHRONOUS, FDX, SPECIFY LOOP CURRENT OR RS232 LEVEL. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/	1,753	D	56	55 SEE CCC	16	C/2
2846	1	MOD 35 TTY REMOTE (10591) OPERATES WITH ONE NON-CONTROLLED MODEL 35 ASR TELETYPEWRITER, ASCII CODE, FULL DUPLEX, UP TO 100 WPM. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/	1,477	D	47	46 SEE CCC	13	C/2
2846	3	ASCII TTY TIP (10504) OPERATES ONE ASCII TELEPRINTER INTERFACE IN A NON-CONTROLLED MODE AT 1200 BAUD. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/	1,477	D	47	46 SEE CCC	13	D/2
2846	4	ASCII TTY TIP (10503) OPERATES ONE ASCII TELEPRINTER INTERFACE IN A NON-CONTROLLED MODE AT 1050 BAUD. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/	1,477	D	47	46 SEE CCC	13	D/2
2846	6	NON-CONTROLED ASCII TTP(10503) PROVIDES EQUIPMENT TO INTERFACE A REMOTE TERMINAL OPERATING AT 1200 BAUD IN A FULL-DUPLEX, NON-CONTROLLED MODE WITH THE ASCII CODE SET. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/	1,477	D	47	46 SEE CCC	13	D/2
2847	1	AT+T 83A TTY REMOTE (1114) OPERATES WITH UP TO 32 MODEL 35 OR 37 TELETYPEWRITERS OR EQUIVALENT IN AN AT+T 83A SYSTEM, ASCII CODE, HALF DUPLEX, UP TO 100 WPM (MODEL 35). RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/	1,477	D	47	46 SEE CCC	13	C/2
2849	1	MODEM SIMULATOR-RS-232 PROVIDES THE MODEM SIMULATION CAPABILITY FOR A 28XX EXCHANGE UNIT THAT IS CONNECTED TO EITHER COLOCATED EXCHANGE UNITS OR COMMUNICATIONS TERMINALS. THE KIT WILL DRIVE UP TO FOUR ADJACENT COMMUNICATIONS LINES WITH VARIOUS INDIVIDUAL BAUD RATES EITHER SYNCHRONOUS OR ASYNCHRONOUS. THE SYNCHRONOUS RATES PROVIDED ARE 2000, 2400, 4800, 9600 BAUD. THE ELECTRICAL INTERFACE CONFORMS TO EIA RS-232-C OPT APPLIES TO 2806 1/ 2806 2/ 2806 3/ OPT APPLIES TO 2808 1/ 2806 2/ 2808 3/ OPT APPLIES TO 2809 1/ 2809 2/	1,574	D	39	38 SEE CCC	19	D/2
2849	2	MODEM SIMULATOR - V35 PROVIDES THE MODEM SIMULATION CAPABILITY FOR A 28XX EXCHANGE UNIT THAT IS CONNECTED TO EITHER COLOCATED EXCHANGE UNITS OR COMMUNICATIONS TERMINALS. THE KIT WILL DRIVE UP TO FOUR ADJACENT COMMUNICATIONS LINES WITH VARIOUS INDIVIDUAL BAUD RATES, EITHER SYNCHRONOUS OR ASYNCHRONOUS. THE SYNCHRONOUS RATES PROVIDED ARE 2000, 2400, 4800, 9600, 48,000 AND 56,000 BAUD. THE ELECTRICAL INTERFACE CONFORMS TO CCITT V35. OPT APPLIES TO 2806 1/ 2806 2/ 2806 3/ OPT APPLIES TO 2808 1/ 2808 2/ 2808 3/ OPT APPLIES TO 2809 1/ 2809 2/	2,079	D	52	51 SEE CCC	19	D/2

STANDARD PRODUCT	MOD	PRODUCTS DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	PAGE NO	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
2849	3	LINE MONITOR INTERFACE UNIT PROVIDES THE CAPABILITY TO UTILIZE THE COMMUNICATIONS MONITORING FACILITIES OF THE 28XX EXCHANGE UNIT. WHEN AN APPLICABLE COMMERCIAL COMMUNICATIONS LINE MONITORING DEVICE (SPECTRON, ETC.) IS CONNECTED TO THE OUTPUT OF THE LINE MONITOR INTERFACE UNIT, THE RS-232-C SIGNAL INTERFACE CAN BE MONITORED. OPT APPLIES TO 2806 1/ 2808 1/ 2809 1/ OPT APPLIES TO 2809 2/ 2830 1/ 2830 2/ OPT APPLIES TO 2830 3/ 2830 4/ 2830 5/ OPT APPLIES TO 2830 6/	524	0	13	13	SEE CCC		7	D/2
2849	4	MODEM SIMULATOR - AT+T 301/303 PROVIDES THE MODEM SIMULATION CAPABILITY FOR A 28XX EXCHANGE UNIT THAT IS CONNECTED TO EITHER COLOCATED EXCHANGE UNITS OR COMMUNICATIONS TERMINALS. THE KIT WILL DRIVE UP TO FOUR ADJACENT COMMUNICATION LINES WITH VARIOUS INDIVIDUAL BAUD RATES, EITHER SYNCHRONOUS OR ASYNCHRONOUS. THE SYNCHRONOUS RATES PROVIDED ARE 2,000, 2,400, 9,600, 48,000 AND 56,000 BAUD. THE ELECTRICAL INTERFACE CONFORMS TO AT+T 301/303 DATA SETS. OPT APPLIES TO 2806 1/ 2806 2/ 2806 3/ OPT APPLIES TO 2808 1/ 2808 2/ 2808 3/ OPT APPLIES TO 2809 3/ 2809 4/	1,272	0	41	40	SEE CCC		10	D/2
2850	3	CONSOLE INTERFACE (104C) PROVIDES EQUIPMENT TO INTERFACE AN AT+T MODEL 40 KD/P TO THE 28XX EXCHANGE UNIT FOR USE AS THE CONTROL CONSOLE. TEN-UNIT ASCII START/STOP CODE NON-CONTROLLED, FULL-DUPLEX, 1200 BAUD. RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/ OPT APPLIES TO 2806 1/ 2806 2/ 2806 3/ OPT APPLIES TO 2808 1/ 2808 2/ 2808 3/	1,033	0	47	46	SEE CCC		13	D/2
2850	4	CONSOLE SELECTOR PANEL ALLOWS TWO EXCHANGE UNITS TO BE CONNECTED TO EITHER THEIR INDIVIDUAL LOCAL CONSOLE OR TO DEDICATED REMOTE CONSOLES. LOCAL CONSOLE RECEIVES ALL OUTPUT MESSAGES REGARDLESS OF INPUT CONSOLE SELECTION. RECEIVES FROM 2809 3/	1,689	0	42	41	SEE CCC		20	D/1
2855	2	DIAL-IN/OUT TWX REMOTE (1148) OPERATES MODEL 33 OR 35 TELETYPEWRITERS EQUIPPED FOR TWX OPERATION ON A DIAL-IN/DIAL-OUT BASIS. ELEVEN-UNIT ASCII START/STOP CODE, HALF-DUPLEX, 100 BAUD. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/	1,759	8	56	55	SEE CCC		13	C/2
2855	3	DIAL-IN/OUT TWX REMOTE (1148I) OPERATES MODEL 33 OR 35 TELETYPEWRITERS EQUIPPED FOR TWX OPERATION ON A DIAL-IN/DIAL-OUT BASIS. TEN-UNIT ASCII START/STOP CODE, HALF-DUPLEX, 300 BAUD. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/	1,759	0	56	55	SEE CCC		13	D/2
2855	4	DOMESTIC TWX TTP (114C1) ALLOWS 28XX EXCHANGE UNIT TO INTERFACE DOMESTIC TWX REMOTE INTERFACE WITH HOST COMPUTER CONTROL. ASYNCHRONOUS TRANSMISSION WITH ASCII CODE. HALF-DUPLEX AT 110 BAUD. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/	1,477	0	47	46	SEE CCC		10	D/2
2856	2	DOMESTIC TELEX TTP (113C2) ALLOWS 28XX EXCHANGE UNIT TO INTERFACE DOMESTIC WESTERN UNION TELEX. SUPPORTS HOST COMPUTER CONTROL. ASYNCHRONOUS TRANSMISSION WITH BAUDOT CODE, HALF-DUPLEX AT 50 BAUD RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/	1,477	0	47	46	SEE CCC		10	D/2
2856	3	INTERNATIONAL TELEX (11301) ALLOWS 28XX EXCHANGE TO INTERFACE INTERNATIONAL TELEX (RCA, ITT WORLD COM., AND WESTERN UNION INT.) WITH HOST COMPUTER CONTROL. ASYNCHRONOUS TRANSMISSION WITH BAUDOT CODE, HALF-DUPLEX AT 50 BAUD. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/	1,477	0	47	46	SEE CCC		10	D/2
2859	1	DATAPHONE TTP (114A) PROVIDES EQUIPMENT TO INTERFACE TERMINALS USING STANDARD AT+T DIAL DATAPHONE FACILITIES OPERATES HALF-DUPLEX, 1967 ASCII CODE, 1200 BAUD. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/	1,759	0	56	55	SEE CCC		13	D/2

STANDARD PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
		DESCRIPTION APPLIES TO 286X AND 287X PRODUCTS INTERFACES A M-1000 DATA COMMUNICATIONS PORT TO A SINGLE DATA LINE AND A SPECIFIC TYPE OF TERMINAL UNIT AT LINE SPEEDS OF UP TO 2400 BPS. EACH TYPE OF INTERFACE REQUIRES A CORRESPONDING SOFTWARE PACKAGE FOR OPERATION. SEE THE SOFTWARE SECTION AND CONFIGURATORS.							
2868	1	TC500 TIP (1178) PROVIDES EQUIPMENT TO INTERFACE BURROUGHS TC500 COMMUNICATIONS TERMINAL IN A MULTIPOINT OR POINT-TO-POINT MODE. SERIAL ASYNCHRONOUS TRANSMISSION WITH SEVEN-BIT PLUS PARITY ASCII CODE, HALF-DUPLEX WITH SPEED AT 600, 1200, 1800 BAUD. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/	1,759	D	56	55	SEE CCC	13	D/2
2869	1	ATA/IATA MEDIUM SPEED TIP(209) OPERATES PROCESSOR TO PROCESSOR INTERCONNECT, ATA/IATA SYNCHRONOUS CONTROL PROCEDURE, FDX, SCATTER/GATHER, PRIORITY INTERRUPT, ASCII CODE. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/	2,606	D	83	81	SEE CCC	19	C/2
2869	2	ATA/IATA SABRE CODE TIP (209A) OPERATES PROCESSOR TO PROCESSOR INTERCONNECT, ATA/IATA SYNCHRONOUS CONTROL PROCEDURE, FDX, SCATTER/GATHER, PRIORITY INTERRUPT, IBM SABRE CODE. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/	2,606	D	83	81	SEE CCC	19	C/2
2870		OPERATES A VARIETY OF IBM EQUIPMENTS USING BINARY SYNCHRONOUS COMMUNICATION, HALF DUPLEX 2 OR 4 WIRE CIRCUITS, WITH SPEEDS UP TO 50 KBPS. INCLUDES TRANSPARENT TEST CAPABILITY AND HANDLES SPECIAL SEQUENCES (WART, TTD, RVI). RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/							
2870	7	IBM POINT-TO-POINT BSC(201A/B) ASCII CODE ON A 4-WIRE, CONSTANT-CARRIER CIRCUIT.	2,606	D	83	81	SEE CCC	19	D/2
2870	10	BSC SWIFT TIP (20503) PROVIDES COMMUNICATIONS USING S.W.I.F.T. BSC PROCEDURES ON EITHER SWITCHED TELEPHONE NETWORK OR POINT-TO-POINT LINES. OPERATES WITH HOST COMPUTER CONTROL IN SYNCHRONOUS TRANSMISSION WITH EBCDIC CODE, HALF-DUPLEX MODE. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/	2,606	D	85	81	SEE CCC	18	D/2
2870	11	IBM BSC (205G1) ROM VERSION SUPPORTING ASCII OR EBCDIC CODE IN DIAL, POINT-TO-POINT, AND MULTI-POINT OPERATION. TRANSPARENT OPERATION.	2,606	D	83	81	SEE CCC	18	D/2
2870	12	IBM BSC - VRC/LRC (205G2) ROM VERSION SUPPORTING ASCII CODE IN DIAL, POINT-TO-POINT, MULTI-POINT USING VRC/LRC ERROR CHECKING. NON-TRANSPARENT OPERATION.	2,606	D	83	81	SEE CCC	18	D/2
2870	13	IBM BSC (205F2) ROM VERSION SUPPORTING ASCII CODE ODD PARITY IN DIAL, POINT-TO-POINT, AND MULTI-POINT USING CRC 16 ERROR CHECKING. TRANSPARENT OPERATION.	2,606	D	83	81	SEE CCC	18	D/2
2870	14	CDT BSC (21281) ROM VERSION SUPPORTING ASCII CODE ODD PARITY IN POINT-TO-POINT CONFIGURATIONS USING VRC/CRC ERROR CHECKING. REQUIRES CONTINUOUS CARRIER AND PROVIDES INTERFACE FOR TELE-TYPE CLUSTER DISPLAY TERMINALS.	2,606	D	83	81	SEE CCC	19	D/2
2870	15	IBM BSC PARTIAL EDIT LINE MOD PROVIDES INTERFACE TO DATA COMMUNICATION LINES USING IBM BSC PROCEDURES. THE HARDWARE PROVIDES, ON THE TRANSMIT SIDE, DLE AND SYN INSERTION WHILE IN THE TRANSPARENT MODE. INCLUDES A BELL SYSTEM 301 DATA SET INTERFACE AND CABLE ASSEMBLY. RECEIVES FROM 2809 3/2809 4/	2,606	D	83	81	SEE CCC	16	D/1
2870	16	BSC, DIAL, LINE MODULE PROVIDES FOR DATA COMMUNICATIONS USING IBM BSC PROCEDURES ON SWITCHED POINT-TO-POINT OR MULTIPOINT COMMON CARRIER FACILITIES. TRANSMISSION MODE IS HALF DUPLEX SYNCHRONOUS IN EITHER ASCII OR EBCDIC CODE. INCLUDES ONE LEVEL CONVERTER COMPATIBLE WITH AT+T 301/303 DATA SET PLUS ONE INTERFACE CABLE ASSEMBLY. RECEIVES FROM 2809 3/2809 4/	2,606	D	83	81	SEE CCC	16	D/1

STANDARD PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
2870	17	BSC, 303C INTERFACE LINE MOD PROVIDES DATA COMMUNICATIONS USING IBM BSC PROCEDURES ON SWITCHED, POINT-TO-POINT OR MULTIPOINT COMMON CARRIER FACILITIES. TRANSMISSION MODE IS HALF DUPLEX SYNCHRONOUS IN THE ASCII CODE. ERROR CHECKING IS VIA THE VRC/LRC METHOD. TRANSPARENT CAPABILITY IS NOT PROVIDED. INCLUDES ONE 303C LEVEL CONVERTER AND ONE CABLE ASSEMBLY. RECEIVES FROM 2809 3/2809 4/	2,606	D	83	81	SEE CCC	16	D/1
2871	2	CDC CP TIP (2004A) PROVIDES NETWORK CONNECTABILITY USING VARIOUS CLASSES OF THE CONTROL DATA COMMUNICATION CONTROL PROCEDURE ON EITHER DIAL OR POINT-TO-POINT LINES. OPERATES IN EITHER HALF-DUPLEX OR FULL-DUPLEX MODE IN THE SYNCHRONOUS BIT ORIENTED FORMAT WITH THE DATA FIELD RESTRICTED TO MULTIPLE OCTETS. COMPATIBLE WITH EIARS 232-C AND/OR CCITTV24. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 3/ 2809 4/	2,606	D	83	81	SEE CCC	18	D/2
2872	2	CYBER 1000 INTERCONNECT TIP (2 PROVIDES NETWORK CONNECTABILITY BETWEEN 2806-X, 2808-Y, 2809-X UNITS AND SYSTEMS IN BOTH LOCAL AND REMOTE CONFIGURATIONS. OPERATION IS PROCESSOR-TO-PROCESSOR FULL-DUPLEX, ASCII CODE, INDEPENDENT PARITY, SYNCHRONOUS MODE WITH TRANSMISSION SPEEDS OF 2400 BAUD TO 50K BAUD. DATA SET INTERFACE IS COMPATIBLE WITH AT&T 301/303 DATA SETS. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 3/ 2809 4/	2,352	D	83	81	SEE CCC	14	D/2
2873	1	ISO 1745 TIP (2004A2) PROVIDES INTERFACE WITH TERMINALS USING ISO 1745 BASIC MODE CONTROL PROCEDURES ON MULTIPOINT LINES. OPERATING MODE IS HALF-DUPLEX, NONTRANSPARENT, AND SYNCHRONOUS AT A DATA RATE DETERMINED BY THE MODEMCS CLOCK (2400-9600 BPS). RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/	2,606	D	83	81	SEE CCC	19	D/2
2891	1	DIAL OUT CONTROL MODULE (210A) PROVIDES CONTROL FOR A AT&T 801 AUTOMATIC CALLING UNIT OR EQUIVALENT. USE WITH REMOTE TERMINAL INTERFACE TO PROVIDE DIAL CAPABILITIES. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/	1,477	D	47	46	SEE CCC	9	C/2
2898	1	TEMPERATURE SENSOR KIT PROVIDES THE TEMPERATURE SENSOR AND CABLING TO BE USED IN CONJUNCTION WITH THE 2898-2 ALARM MONITOR UNIT. ONE SENSOR KIT IS REQUIRED FOR EACH BAY OF A 28XX EXCHANGE UNIT FOR COMPLETE COVERAGE. RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/ OPT APPLIES TO 2806 1/ 2806 2/ 2806 3/ OPT APPLIES TO 2808 1/ 2808 2/ 2808 3/	111	D	3	3	SEE CCC	5	D/2
2898	2	ALARM MONITOR UNIT PROVIDES CENTRAL ALARM DISPLAY CAPABILITY FOR ALL SYSTEM ALARMS ON THE 28XX EXCHANGE UNIT SYSTEMS. RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/ OPT APPLIES TO 2806 1/ 2806 2/ 2806 3/ OPT APPLIES TO 2808 1/ 2808 2/ 2808 3/	1,920	D	48	47	SEE CCC	13	D/2
3270	A	TRANSFER SWITCH CONTROLLER TWO CHANNEL CONNECTIONS, CONTROLS UP TO 4 TRANSFER SWITCHES, MANUAL SWITCHING ONLY. REQUIRES AN 8271-2 TRANSFER SWITCH. RECEIVES FROM 1705 / 1706 / 1716 / RECEIVES FROM 3106 / 3177 2/ 3177 4/ RECEIVES FROM 3306 / 3507 1/ 6681 / SENDS TO 8271 2/ 8271 2/	3,675	C	104	87	SEE CCC	22	C/1
3446		CARD PUNCH CONTROLLER SINGLE CHANNEL CONNECTION, CONTROLS ONE CARD PUNCH, FULL CARD BUFFER, CHECKING. COLOR IS CYBER 170. RECEIVES FROM 3106 / 3107 / 3150 / RECEIVES FROM 3306 / 3307 / 3507 1/ RECEIVES FROM 6681 / SENDS TO 415 / AVA OPTIONS 10194 1/10362 13/	25,599	E	466	460	SEE CCC	96	C/1

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	1 YEAR	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
3446	2	CARD PUNCH CONTROLLER PERMITS DIRECT CONNECTION WITH 415 CARD PUNCH FROM ONE 3600 TYPE CHANNEL. FULL CARD BUFFER AND CHECKING. INCLUDES CAPABILITY TO TRANSLATE 6-BIT INTERNAL BCD CODES TO ENABLE THE PUNCHING OF A 64 CHARACTER SUBSET OF ASCII HOLLERITH CARD CODES. COLOR IS CYBER 170. RECEIVES FROM 172 / 173 / 174 / RECEIVES FROM 175 / 176 / 3106 / RECEIVES FROM 3137 / 3306 / 3307 / RECEIVES FROM 3507 / 6681 / SENDS TO 615 / AVA OPTIONS 10362 13/	27,804	E	504	495	SEE CCC	104	C/1
3447		CARD READER CONTROLLER SINGLE CHANNEL CONNECTION, CONTROLS ONE CARD READER, FULL CARD BUFFER, BCD CODE CONVERSION, CHECKING. RECEIVES FROM 3136 / 3147 / 3150 / RECEIVES FROM 3336 / 3307 / 3507 1/ RECEIVES FROM 6681 /10381 / SENDS TO 605 / AVA OPTIONS 10194 2/60031 /	13,356	E	206	205	SEE CCC	83	C/1
3447	2	CARD READER CONTROLLER PERMITS DIRECT CONNECTION OF MODEL 405 CARD READER FROM ONE 3000 TYPE CHANNEL. FULL CARD BUFFER, BCD CONVERSION, CHECKING. INCLUDES CAPABILITY TO READ AND TRANSLATE A 64 CHARACTER SUBSET OF ASCII HOLLERITH CARD CODES TO 6-BIT INTERNAL BCD CODES. RECEIVES FROM 172 / 173 / 174 / RECEIVES FROM 175 / 176 / 3106 / RECEIVES FROM 3107 / 3306 / 3307 / RECEIVES FROM 3507 / 6581 / 6681 2/ RECEIVES FROM 10378 1/10381 / SENDS TO 405 /	15,561	E	238	236	SEE CCC	92	C/1
6642	2	DISTRIBUTIVE DATA PATH CONTAINS ONE 480-BIT BUFFER REGISTER. CONNECTS TO ECS AND ONE 6000, CYBER 70 OR CYBER 170 TYPE INPUT/OUTPUT CHANNEL. THE BUFFER REGISTER PROVIDES AN INTERFACE BETWEEN THE 480-BIT ECS RECORD AND 12-BIT PERIPHERAL PROCESSOR CHANNEL. UP TO THREE ADDITIONAL 480-BIT BUFFER REGISTERS MAY BE ADDED AS OPTIONAL EQUIPMENT. INCLUDES SWITCH-SELECTABLE DATA PARITY CHECKING/GENERATING. RECEIVES FROM 72 / 73 / 74 / RECEIVES FROM 172 / 173 / 174 / RECEIVES FROM 175 / 6214 / 6215 / RECEIVES FROM 6413 / 6414 / 6415 / RECEIVES FROM 6513 / 6514 / 6613 / RECEIVES FROM 6614 / 6615 / 6713 / RECEIVES FROM 6714 / SENDS TO 6640 / 7030 / AVA OPTIONS 10280 13/10364 1/	34,721	A	991	969	SEE CCC	359	B/1
6683	2	SATELLITE COUPLER TWO COUPLERS PERMIT DIRECT CONNECTION BETWEEN TWO 12-BIT CYBER/6000 SERIES DATA CHANNELS OR USED WITH ONE 7000 SATELLITE COUPLER PERMITS DIRECT CONNECTION BETWEEN A 6000 SERIES DATA CHANNEL AND ONE 7000 SERIES DATA CHANNEL. CONTAINS TRANSMISSION PARITY GENERATION AND CHECKING LOGIC NECESSARY FOR CYBER 170. INDICATED PRICES ARE FOR A SINGLE COUPLER. RECEIVES FROM 71 / 72 / 73 / RECEIVES FROM 74 / 170 7XX/ 171 / RECEIVES FROM 172 / 173 / 174 / RECEIVES FROM 175 / 176 / 6014 / RECEIVES FROM 6015 X/ 6214 / 6215 X/ RECEIVES FROM 6413 / 6414 / 6415 X/ RECEIVES FROM 6513 / 6615 / 6713 / RECEIVES FROM 6714 /10378 1/65209 1/ SENDS TO 6683 / 6683 2/ 7683 1/	12,243	B	224	221	SEE CCC	42	B/1
7012	1	SECOND CONSOLE INCLUDES CATHODE RAY TUBE, KEYBOARD, SYSTEM DEAD-START SWITCH, AND LEFT/RIGHT PRESENTATION SWITCH WHICH ALSO SELECTS THE SPLIT SCREEN FEATURE. DOT MODE OR CHARACTER MODE WITH ONE OF THREE CHARACTER SIZES ARE SELECTABLE. OPERATES IN PARALLEL WITH THE SYSTEM CONSOLE AND DOES NOT PROVIDE INDEPENDENT OPERATOR CONTROL. OPT APPLIES TO 171 / 172 / 173 / OPT APPLIES TO 174 / 175 / 176 /	21,783	B	530	477	SEE CCC	97	B/1
7021	31	MAGNETIC TAPE CONTROLLER SINGLE CHANNEL CONNECTION TO ONE CONTROL. PERMITS READ/WRITE OPERATIONS ON ANY OF EIGHT MODEL 677-X AND 679-X (ANY INTER-MIX) ATS TAPE UNITS. WILL READ/WRITE 556/800 CHAR/INCH NRZI RECORDING, 1600 CHAR/INCH PHASE ENCODED AND 6250 GROUP CODED RECORDING (GCR). WILL READ AT 200 CHAR/INCH RECORDING. THE FIRMWARE FOR BASIC SUBSYSTEM CONTROL RESIDES IN SEMICONDUCTOR READ ONLY MEMORY. COLOR IS CYBER 170. RECEIVES FROM 71 / 72 / 73 / RECEIVES FROM 74 / 170 / 6000 / SENDS TO 677 X/ 679 X/ AVA OPTIONS 10362 6/	42,300	D	1,133	1,014	SEE CCC	144	B/1

STANDARD PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT SALE CCC BASE 3YR/24MO	5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
7021	32	MAGNETIC TAPE CONTROLLER SINGLE CHANNEL CONNECTION TO EACH OF TWO CONTROLS. PERMITS SIMULTANEOUS READ/WRITE OPERATIONS ON ANY TWO OF EIGHT MODEL 677-X AND/OR 679-X (ANY INTER-MIX) TAPE UNITS. WILL READ/WRITE 556/800/CHAR/INCH NRZI RECORDING, 1600 CHAR/INCH PHASE ENCODED AND 6250 GROUP CODED RECORDING (GCR). WILL READ 200 CHAR/INCH NRZI RECORDING. THE FIRMWARE FOR BASIC SUBSYSTEM CONTROL RESIDES IN SEMICONDUCTOR READ ONLY MEMORY. COLOR IS CYBER 170. RECEIVES FROM 71 / 72 / 73 / RECEIVES FROM 74 / 170 / 6000 / SENDS TO 677 X/ 679 X/ AVA OPTIONS 10362 6/	90,000	D	2,346	2,158 SEE CCC	292	B/1
7021	41	MAGNETIC TAPE CONTROLLER SINGLE CHANNEL CONNECTION TO ONE CONTROL. PERMITS READ/WRITE OPERATIONS ON ANY OF EIGHT MODEL 677-2, 3, 4 AND 679-2, 3, 4 (ANY INTER-MIX) TAPE UNITS. WILL READ/WRITE 556/800 CPI NRZI RECORDING AND 1600 CPI PHASE ENCODED RECORDING. WILL READ 200 CPI RECORDING. THE FIRMWARE FOR BASIC SYSTEM CONTROL RESIDES IN SEMI-CONDUCTOR READ ONLY MEMORY. COLOR IS CYBER 170.	25,900	D	674	619 SEE CCC	106	B/1
7021	42	MAGNETIC TAPE CONTROLLER SINGLE CHANNEL CONNECTION TO EACH OF TWO CONTROLS. PERMITS SIMULTANEOUS READ/WRITE OPERATIONS ON ANY TWO OF EIGHT MODEL 677-2, 3, 4 AND 679-2, 3, 4 (ANY INTER-MIX) TAPE UNITS. WILL READ/WRITE 556/800 CPI NRZI RECORDING AND 1600 CPI PHASE ENCODED RECORDING. WILL READ 200 CPI RECORDING. THE FIRMWARE FOR BASIC SYSTEM CONTROL RESIDES IN SEMI-CONDUCT-	55,700	D	1,451	1,336 SEE CCC	218	B/1
7030	1XX	MAGNETIC CORE STORAGE WITH 3 MICROSECOND FIRST WORD APPROXIMATE ACCESS TIME, UP TO 10 MILLION WORDS/SECOND TRANSFER RATE INCLUDES CONTROLLER ENABLING DIRECT MEMORY ACCESS BY ONE OR TWO CENTRAL COMPUTERS IN ANY COMBINATION, FOR UP TO 2 MILLION WORDS OF EXTENDED CORE STORAGE. INCLUDES THE DISTRIBUTIVE DATA PATH WITH ONE CONNECTOR TO ECS AND ONE 480-BIT BUFFER REGISTER. ADDITIONAL BUFFER REGISTERS MAY BE ADDED FOR A MAXIMUM OF 4 REGISTERS. COLOR IS CYBER 170 ONLY. COUPLER NOT INCLUDED. RECEIVES FROM 170 7XX/10318 1/10318 2/ RECEIVES FROM 10354 1/10354 2/10354 3/ RECEIVES FROM 10355 1/10355 2/ AVA OPTIONS 10280 10/						
7030	102	EXTENDED CORE STORAGE, 262K 262,144 60-BIT WORDS WITH A MAXIMUM TRANSFER RATE OF 5 MILLION WORDS/SECOND. AVA OPTIONS 10319 2/	298,620	B	9,330	9,395 SEE CCC	2,163	B/1
7030	104	EXTENDED CORE STORAGE, 524K 524,288 60-BIT WORDS WITH A MAXIMUM TRANSFER RATE OF 10 MILLION WORDS/SECOND. AVA OPTIONS 10319 4/	530,760	B	17,045	15,350 SEE CCC	3,088	B/1
7030	108	EXTENDED CORE STORAGE, 1,048K 1,048,576 60-BIT WORDS WITH A MAXIMUM TRANSFER RATE OF 10 MILLION WORDS/SECOND. AVA OPTIONS 10319 8/	1,014,720	B	32,140	28,960 SEE CCC	4,458	B/1
7030	116	EXTENDED CORE STORAGE, 2,097K 2,097,152 60-BIT WORDS WITH A MAXIMUM TRANSFER RATE OF 10 MILLION WORDS/SECOND.	1,916,650	B	61,480	55,330 SEE CCC	6,171	B/1
7155	1	MASS STORAGE CONTROLLER ALLOWS ONE CDC CYBER 70/170/6000 I/O CHANNEL TO ACCESS UP TO EIGHT SPINDLES (FOUR DRIVES) OF THE 885 DISK STORAGE UNIT. THE CAPACITY OF EACH 885-11/12 SPINDLE IS 692 MILLION SIX BIT CHARACTERS. TWO 7155-1 CONTROLLERS ARE REQUIRED FOR DUAL ACCESS OPERATION TO THE 885 SPINDLES. COLOR IS CDC CYBER 170. RECEIVES FROM 71 / 72 / 73 / RECEIVES FROM 74 / 170 / 6000 / SENDS TO 885 11/ 885 12/ AVA OPTIONS 10397 1/10398 1/10399 1/	39,990	D	1,095	1,008	130	B/1
7639	21	MASS STORAGE CONTROLLER ALLOWS TIME SHARED ACCESS BY TWO STANDARD CDC CYBER 76, CYBER 176, OR 7000 PPU ACCESSES OF UP TO FOUR DSUMS. DSUMS CAN BE EITHER 819-1 OR 819-11 OR 819-21 AND INTERMIX IS PERMISSABLE IN ANY COMBINATION. CAPACITY OF EACH 819-1 OR 819-11 IS 2.4 BILLION BITS AND EACH 819-21 IS 4.8 BILLION BITS. COLOR IS CYBER 170. RECEIVES FROM 7602 1/10376 1/65208 1/ RECEIVES FROM 65208 2/ SENDS TO 819 1/ 819 11/ 819 21/ AVA OPTIONS 10362 9/10424 1/	103,000	D	2,784	2,700 SEE CCC	220	B/1

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
7639	22	MASS STORAGE CONTROLLER CONTAINS TWO IDENTICAL MASS STORAGE CONTROLLERS THAT ARE INDEPENDENT OF EACH OTHER. EACH CONTROLLER ALLOWS TIME SHARED ACCESS BY TWO STANDARD CDC CYBER 76, CYBER 176 OR 7000 PPU ACCESS OF UP TO FOUR DSUMS. DSUMS CAN BE EITHER 819-1 OR 819-11 OR 819-21 AND INTERMIX IS PERMISSABLE IN ANY COMBINATION. CAPACITY OF EACH 819-1 OR 819-11 IS 2.4 BILLION BITS AND EACH 819-21 IS 4.8 BILLION BITS. COLOR IS CYBER 170. RECEIVES FROM 7602 1/10376 1/6520R 1/ RECEIVES FROM 6590R 2/ SENDS TO 819 1/ 819 11/ 819 21/ AVA OPTIONS 10362 9/10424 1/	170,000	D	4,595	4,457	SEE CCC	370	B/1
7683	1	SATELLITE COUPLER USED WITH ONE 6683-1/2 SATELLITE COUPLER TO PERMIT DIRECT CONNECTION BETWEEN ONE 76C2-1 PERIPHERAL PROCESSOR UNIT AND ONE CYBER 70/ CYBER 170/6000 SERIES DATA CHANNEL RECEIVES FROM 76 / 7602 1/10376 1/ SENDS TO 6683 / 6683 2/	16,500	A	330	324	SEE CCC	49	A/1
7680	1	MASS STORAGE CONTROLLER CONSISTS OF ONE CYBER MASS STORAGE COUPLER (CMSC) AND ONE MASS STORAGE ADAPTER (MSA).THE CMSC ALLOWS TWO CDC CYBER PPU CHANNELS TO INTERFACE TO ONE MSA ON A TIME SHARED BASIS AND HAS A 4K 24BIT DATA BUFFER MEMORY. THE MSA CONNECTS TO THE CMSC AND CONTROLS UP TO A TOTAL OF EIGHT DEVICES (7881-1 CSUMS AND 7882-1 MSTMS). THE MSA IS MICROPROGRAMMED TO CONTROL THE ATTACHED DEVICES AND CONTAINS ONE DATA PATH WITH 9-TRACK GCR FORMAT CAPABILITY TO EXCHANGE DATA WITH MSTMS. RECEIVES FROM 71 XX/ 72 XX/ 73 XX/ RECEIVES FROM 74 XX/ 17X XX/ 6000 / SENDS TO 7881 1/ 7882 1/ AVA OPTIONS 10390 1/10391 1/	154,030	B	3,943	3,556	SEE CCC	486	A/1
7881	1	CARTRIDGE STORAGE UNIT CONSISTS OF A STORAGE MODULE WITH A CAPACITY OF 2000 CARTRIDGES, A TWO-AXIS SELECTOR MODULE AND TWO DRAWERS FOR ENTERING AND REMOVING CARTRIDGES. INCLUDES 500 MASS STORAGE CARTRIDGES (7883-20). IT IS REQUIRED THAT A MINIMUM OF TWO 7882-1 MASS STORAGE TRANSPORTS BE USED WITH EACH CARTRIDGE STORAGE UNIT. MAINTENANCE PRICES AND SYSTEM AVAILABILITY ARE BASED ON THIS MINIMUM CONFIGURATION. RECEIVES FROM 7680 1/ AVA OPTIONS 10393 1/	95,175	B	1,654	1,487	SEE CCC	138	A/1
7882	1	MASS STORAGE TRANSPORT INCLUDES INTER-STATION DRIVE FOR MOVING CARTRIDGES WITHIN THE TRANSPORT AND AUTOMATIC TAPE LOAD/UNLOAD,MOVABLE READ/WRITE HEAD FOR ACCESSING EIGHT DATA STREAM PAIRS, 129 INCHES PER SEC. TAPE SPEED AND 6250 BYTES PER INCH GROUP CODED RECORDING FORMAT CAPABILITY. UP TO FOUR 7882-1 TRANSPORTS MAY BE PHYSICALLY CONNECTED TO 7981-1 CSU. RECEIVES FROM 7680 1/ AVA OPTIONS 10392 1/	67,080	B	1,717	1,544	SEE CCC	307	A/1
8271	2	TRANSFER SWITCH MANUALLY SWITCHES PERIPHERAL CONTROLLERS BETWEEN TWO DATA CHANNELS, USED ON 1700, 3000 COMPUTERS. USE WITH 600, MODEL 70 OR MODEL 170 SERIES COMPUTERS REQUIRES A DATA CHANNEL CONVERTER. REQUIRES A 3270-A OR 3270-B TRANSFER SWITCH CONTROLLER. RECEIVES FROM 3270 A/ 3270 B/	4,011	C	79	77	SEE CCC	21	D/3
10010	16	LONG LINE DRIVER MOD., 3446	473	C	13	13	SEE CCC	N/C	
10010	17	LONG LINE DRIVER MOD., 3447	473	C	13	13	SEE CCC	N/C	
10194	1	ASCII HOLLERITH CODE OPTION	2,205	E	39	37	SEE CCC	11	C/1
		FIELD INSTALLATION CHARGE	410						
		PROVIDES THE 3446 WITH THE ADDED CAPABILITY OF TRANSLATING 6-BIT INTERNAL BCD CODES TO ENABLE THE PUNCHING OF A 64 CHARACTER SUBSET OF ASCII HOLLERITH CARD CODES. OPT APPLIES TO 3446 /							
10194	2	ASCII HOLLERITH CODE OPTION	2,205	E	33	31	SEE CCC	15	C/1
		FIELD INSTALLATION CHARGE	410						
		PROVIDES THE 3447 WITH THE ADDED CAPABILITY OF READING AND TRANSLATING A 64 CHARACTER SUBSET OF ASCII HOLLERITH CARD CODES TO 6-BIT INTERNAL BCD CODES. OPT APPLIES TO 3447 /							
10280	10	DDP REGISTER ADDS ONE ADDITIONAL 480-BIT BUFFER REGISTER AND I/O CHANNEL CONNECTION TO ECS DISTRIBUTIVE DATA PATH REGISTER. OPT APPLIES TO 6642 2/ 7030 1XX/	17,535	A	452	441	SEE CCC	113	C/1

STANDARD PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
10297	1	MEMORY HOLD BATTERY CONTAINS ONE NICKEL-CADMIUM BATTERY WHICH ENABLES PRESERVATION OF UP TO 32K OF MEMORY CONTENTS DURING POWER-OFF PERIODS OF UP TO 8 HOURS. BATTERY IS SELF CHARGING DURING POWER ON. MOUNTS DIRECTLY TO CPU OR EXPANSION ENCLOSURE. REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE - QUANTITY PURCHASE PRICE 1ST THRU 4TH UNITS 520 5TH THRU 24TH UNITS 494 25TH THRU 49TH UNITS 469 50TH THRU 99TH UNITS 446 100TH OR OVER UNITS 425 OPT APPLIES TO 19 178/ 18 178/ 1783 1/ OPT APPLIES TO 1784 1/ 1784 2/	520	8	20	19	SEE CCC	14	8/1
10300	2	PHASE ENCODING OPTION PROVIDES 1732-3 WITH ABILITY TO HANDLE PHASE ENCODE MODE 1600 BPI, 9 TRACK TRANSPORTS. OCCUPIES 3 PRE-ASSIGNED POSITIONS IN THE 1784-1 OR 1784-2 ENCLOSURE. REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE - QUANTITY PURCHASE PRICE 1ST UNIT 1,575 2ND THRU 5TH UNITS 1,316 6TH THRU 24TH UNITS 1,106 25TH THRU 49TH UNITS 1,032 50TH THRU 99TH UNITS 967 100TH OR OVER UNITS 911 OPT APPLIES TO 970 2/ 1732 3/	1,575	8	48	47	SEE CCC	21	8/1
10307	1	136 COLUMN OPTION A ONE TIME INSTALLATION CHARGE PROVIDES 1827-32 OR -60 LINE PRINTERS WITH 136 PRINT COLUMNS INSTEAD OF 132 COLUMNS. OPT APPLIES TO 1827 32/ 1827 60/	N/A 500		N/C	N/A	SEE CCC	N/C	
10312		CDC CYBER 170 MEMORY INCREMENT ADDS SPECIFIED NUMBER OF 60 BIT WORDS PLUS 8 BIT ERROR CORRECTION CODE OF SEMICONDUCTOR MEMORY.							
10312	3	CDC CYBER 170 MEMORY INCREMENT ADDS 16,384 WORDS, INCREASING MEMORY FROM 32,768 TO 49,152 WORDS OPT APPLIES TO 172 2/	49,560	8	1,105	990	SEE CCC	119	8/1
10312	4	CDC CYBER 170 MEMORY INCREMENT ADDS 16,384 WORDS, INCREASING MEMORY FROM 49,152 TO 65,536 WORDS OPT APPLIES TO 172 3/	49,560	8	1,105	990	SEE CCC	119	8/1
10312	6	CDC CYBER 170 MEMORY INCREMENT ADDS 32,768 WORDS, INCREASING MEMORY FROM 65,536 TO 98,304 WORDS OPT APPLIES TO 171 4/ 172 4/ 173 4/ OPT APPLIES TO 174 4/	79,295	8	1,770	1,585	SEE CCC	245	8/1
10312	8	CDC CYBER 170 MEMORY INCREMENT ADDS 32,768 WORDS, INCREASING MEMORY FROM 98,304 TO 131,072 WORDS. OPT APPLIES TO 171 6/ 172 6/ 173 6/ OPT APPLIES TO 174 6/	79,295	8	1,770	1,585	SEE CCC	245	8/1
10312	12	CDC CYBER 170 MEMORY INCREMENT ADDS 65,536 WORDS, INCREASING MEMORY FROM 131,072 TO 196,608 WORDS. REQUIRES PRIOR INSTALLATION OF 10317-1 ON 172 AND 173. OPT APPLIES TO 171 8/ 172 8/ 173 8/ OPT APPLIES TO 174 8/	154,645	8	3,460	3,150	SEE CCC	489	8/1
10312	16	CDC CYBER 170 MEMORY INCREMENT ADDS 65,536 WORDS, INCREASING MEMORY FROM 196,608 TO 262,144 WORDS. OPT APPLIES TO 171 12/ 172 12/ 173 12/ OPT APPLIES TO 174 12/	154,645	8	3,460	3,150	SEE CCC	489	8/1
10313		CDC CYBER 170 MEMORY INCREMENT ADDS SPECIFIED NUMBER OF 60 BIT WORDS PLUS 8 BIT ERROR CORRECTION CODE OF SEMICONDUCTOR MEMORY.							
10313	6	CDC CYBER 170 MEMORY INCREMENT ADDS 32,768 WORDS, INCREASING MEMORY FROM 65,536 TO 98,304 WORDS. OPT APPLIES TO 175 4/	147,734	8	3,319	2,996	SEE CCC	320	8/1
10313	8	CDC CYBER 170 MEMORY INCREMENT ADDS 32,768 WORDS, INCREASING MEMORY FROM 98,304 TO 131,072 WORDS. OPT APPLIES TO 175 6/	147,734	8	3,319	2,996	SEE CCC	320	8/1
10313	12	CDC CYBER 170 MEMORY INCREMENT ADDS 65,536 WORDS, INCREASING MEMORY FROM 131,072 TO 196,608 WORDS. OPT APPLIES TO 175 8/ 175 108/ 175 208/	258,000	8	5,815	5,300	SEE CCC	636	8/1
10313	16	CDC CYBER 170 MEMORY INCREMENT ADDS 65,536 WORDS. INCREASING MEMORY FROM 196,608 TO 262,144 WORDS. OPT APPLIES TO 175 12/ 175 112/ 175 212/	258,000	8	5,815	5,300	SEE CCC	636	8/1

STANDARD PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
10313	112	CDC CYBER 170 MEMORY INCREMENT ADDS 65,536 WORDS, INCREASING MEMORY FROM 131,072 TO 196,608 WORDS. OPT APPLIES TO 175 308/	258,000	B	5,815	5,300 SEE CCC	636	B/1
10313	116	CDC CYBER 170 MEMORY INCREMENT ADDS 65,536 WORDS, INCREASING MEMORY FROM 196,608 TO 262,144 WORDS. OPT APPLIES TO 175 312/	258,000	B	5,815	5,300 SEE CCC	636	B/1
10314		**CDC CYBER 170 PPU INCREMENT** ADDS PERIPHERAL PROCESSOR AND I/O CHANNELS						
10314	1	CDC CYBER 170 PPU INCREMENT ADDS 4 PERIPHERAL PROCESSORS AND 12 I/O CHANNELS. RESULTING SYSTEM HAS 14 PPUMS AND 24 I/O CHANNELS. REQUIRES PRIOR INSTALLATION OF 10317-1 ON MODELS 172 AND 173. AVA OPTIONS 10314 2/10315 1/ OPT APPLIES TO 171 / 172 / 173 / OPT APPLIES TO 174 /	85,660	B	1,913	1,728 SEE CCC	432	B/1
10314	2	CDC CYBER 170 PPU INCREMENT ADDS 3 PERIPHERAL PROCESSORS. RESULTING SYSTEM HAS 17 PPUMS AND 24 I/O CHANNELS. AVA OPTIONS 10314 3/ OPT APPLIES TO10314 1/	13,890	B	313	286 SEE CCC	98	B/1
10314	3	CDC CYBER 170 PPU INCREMENT ADDS 3 PERIPHERAL PROCESSORS. RESULTING SYSTEM HAS 20 PPUMS AND 24 I/O CHANNELS. OPT APPLIES TO10314 2/	13,890	B	313	286 SEE CCC	98	B/1
10314	51	CDC CYBER 170 PPU INCREMENT ADDS 4 PERIPHERAL PROCESSORS AND 12 I/O CHANNELS. RESULTING SYSTEM HAS 14 PPUMS AND 24 I/O CHANNELS. AVA OPTIONS 10314 52/10315 1/ OPT APPLIES TO 175 /	92,432	B	2,056	1,855 SEE CCC	439	B/1
10314	52	CDC CYBER 170 PPU INCREMENT ADDS 3 PERIPHERAL PROCESSORS. RESULTING SYSTEM HAS 17 PPUMS AND 24 I/O CHANNELS. AVA OPTIONS 10314 53/ OPT APPLIES TO10314 51/10377 1/	14,994	B	334	307 SEE CCC	96	B/1
10314	53	CDC CYBER 170 PPU INCREMENT ADDS 3 PERIPHERAL PROCESSORS. RESULTING SYSTEM HAS 20 PPUMS AND 24 I/O CHANNELS. OPT APPLIES TO10314 52/	14,994	B	334	307 SEE CCC	96	B/1
10314	151	CYBER 170 PPU INCREMENT ADDS 4 PERIPHERAL PROCESSORS AND 12 I/O CHANNELS. RESULTING SYSTEM HAS 14 PPUMS AND 24 I/O CHANNELS. AVA OPTIONS 10314 152/10315 1/ OPT APPLIES TO 175 1XX/ 175 2XX/ 175 3XX/	92,432	B	2,056	1,855 SEE CCC	439	B/1
10314	152	CYBER 170 PPU INCREMENT ADDS 3 PERIPHERAL PROCESSORS. RESULTING SYSTEM HAS 17 PPUMS AND 24 I/O CHANNELS. AVA OPTIONS 10314 153/ OPT APPLIES TO10314 151/	14,994	B	334	307 SEE CCC	96	B/1
10314	153	CYBER 170 PPU INCREMENT ADDS 3 PERIPHERAL PROCESSORS. RESULTING SYSTEM HAS 20 PPUMS AND 24 I/O CHANNELS. OPT APPLIES TO10314 152/	14,994	B	334	307 SEE CCC	96	B/1
10315		**DATA CHANNEL CONVERTER** ALLOWS CDC CYBER 170 SERIES COMPUTERS TO USE 3000 SERIES PERIPHERAL EQUIPMENT.						
10315	1	DATA CHANNEL CONVERTER PROVIDES FIRST ADDITIONAL DATA CHANNEL CONVERTER AVA OPTIONS 10315 2/ OPT APPLIES TO 176 /10314 1/10314 51/ OPT APPLIES TO10314 151/	15,580	B	347	311 SEE CCC	48	B/1
10315	2	DATA CHANNEL CONVERTER PROVIDES SECOND ADDITIONAL DATA CHANNEL CONVERTER OPT APPLIES TO10315 1/10377 1/	15,580	B	347	311 SEE CCC	48	B/1
10316	1	CDC CYBER 172 CONVERSION UPGRADES A MODEL 172 TO A MODEL 173. OPT APPLIES TO 172 6/ 172 8/ 172 12/ OPT APPLIES TO 172 16/	370,800	B	13,035	11,735 SEE CCC	1,072	B/1
10316	2	CDC CYBER 173 CONVERSION UPGRADES A MODEL 173 TO A MODEL 174 BY ADDING A SECOND CENTRAL PROCESSOR. REQUIRES PRIOR INSTALLATION OF 10317-1. OPT APPLIES TO 173 6/ 173 8/ 173 12/ OPT APPLIES TO 173 16/	331,630	B	7,395	6,590 SEE CCC	1,023	B/1
10317	1	171/172/173 EXPANS. CABINET ADDITIONAL CABINET WITH POWER CONTROL. REQUIRED FOR CERTAIN UPGRADE OPTIONS ON CYBER 171, 172 AND 173. OPT APPLIES TO10312 12/10314 1/10316 2/ OPT APPLIES TO10382 /10384 1/	N/C		N/C	N/C SEE CCC	N/A	
10318		**CDC CYBER 170 ECS COUPLER** ALLOWS THE CENTRAL COMPUTER TO INTERFACE TO THE EXTENDED CORE STORAGE SUBSYSTEM SENDS TO 7030 XXX/						

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
10318	1	171/172/173/174 ECS COUPLER OPT APPLIES TO 171 / 172 / 173 / OPT APPLIES TO 174 /	N/C		N/A	N/C	SEE CCC	N/A	
10318	2	MODEL 175 ECS COUPLER OPT APPLIES TO 175 /	N/C		N/A	N/C	SEE CCC	N/A	
10319		ECS II EXPANSION KITS ADDS SPECIFIED NUMBER OF 60-BIT WORDS.							
10319	2	262K ECS II EXPANSION ADDS 262,144 60-BIT WORDS OF MAGNETIC CORE STORAGE TO 7030-102, INCREASING STORAGE FROM 262,144 TO 524,288 60-BIT WORDS (EQUIVALENT TO 7030-104). OPT APPLIES TO 7030 102/	232,090	B	7,715	6,955	SEE CCC	873	B/1
10319	4	524K ECS II EXPANSION ADDS 524,288 60-BIT WORDS OF MAGNETIC CORE STORAGE TO 7030-104, INCREASING STORAGE FROM 524,288 TO 1,049,576 60-BIT WORDS (EQUIVALENT TO 7030-108). OPT APPLIES TO 7030 104/	483,960	B	15,095	13,610	SEE CCC	1,292	B/1
10319	8	1,048K ECS II EXPANSION ADDS 1,048,576 60-BIT WORDS OF MAGNETIC CORE STORAGE TO 7030-108, INCREASING STORAGE FROM 1,048,576 TO 2,097,152 60-BIT WORDS (EQUIVALENT TO 7030-116). OPT APPLIES TO 7030 108/	901,930	B	29,340	26,370	SEE CCC	1,616	B/1
10321	1	405/7 BLOWER SOUND SUPPRESSOR	N/A		N/C	N/A	SEE CCC	N/A	
		A ONE TIME INSTALLATION CHARGE	660						
		REDUCES 405 OR 407 A-WEIGHTED SOUND POWER OUTPUT WHEN IN STANDBY MODE BY 5.4 DECIBELS. FITS BOTH 50 AND 60 HZ MACHINES. OPT APPLIES TO 405 / 407 /							
10321	2	405/407 TOP SOUND QUIETER.	N/A		N/C	N/A	SEE CCC	N/A	
		A ONE TIME INSTALLATION CHARGE	1,050						
		FIELD-INSTALLABLE SHROUDS, MUFFLER, AND HINGED TRANSPARENT ACOUSTIC HOOD FOR CARD STACKER WHICH REDUCES A-WEIGHTED SOUND POWER OUTPUT BY 10 DECIBELS AT THE OPERATOR LOCATION. OPT APPLIES TO 405 / 407 1/							
10322	1	QUIETED BLOWER, NULINE CABINET	N/A		N/C	N/A	SEE CCC	N/A	
		A ONE TIME INSTALLATION CHARGE	495						
		IMPROVES COOLING RELIABILITY AND LOWERS BLOWER SOUND POWER OUTPUT, THE MAIN SOUND SOURCE IN MOST NULINE PRODUCTS, BY NINE DECIBELS AT ALL FREQUENCIES. FOR HALF-SIZE CABINET. 50 HZ/60 HZ							
10322	2	QUIETED BLOWER, NULINE CABINET	N/A		N/C	N/A	SEE CCC	N/A	
		A ONE TIME INSTALLATION CHARGE	990						
		IMPROVES COOLING RELIABILITY AND LOWERS BLOWER SOUND POWER OUTPUT, THE MAIN SOUND SOURCE IN MOST NULINE PRODUCTS, BY NINE DECIBELS AT ALL FREQUENCIES. FOR FULL-SIZE CABINET. 50 HZ/60 HZ .							
10329	2	MANUAL MULTI-CONTROLLER SWITCH ALLOWS 2 DATA CHANNELS TO SHARE COMMON PERIPHERAL DEVICES. DOES NOT INCLUDE PARITY CHECKING. PARITY CHECKING REQUIRES 10329-3. RECEIVES FROM 72 / 73 / 74 / RECEIVES FROM 170 / 6214 / 6215 X/ RECEIVES FROM 6413 / 6414 / 6415 X/ RECEIVES FROM 6513 / 6514 / 6613 / RECEIVES FROM 6614 / 6615 /10378 1/ SENDS TO 255X X/ 6671 X/ 6673 / SENDS TO 4674 / 6676 / 6691 X/ SENDS TO 6683 X/ 6684 X/ 7021 XX/ SENDS TO 7707 / AVA OPTIONS 10329 3/	11,400	D	320	312	SEE CCC	32	D/1
10329	3	PARITY OPTION	N/A		N/A	N/A	SEE CCC	N/A	
		A ONE TIME INSTALLATION CHARGE	750						
		ADDS CYBER 170 CHANNEL PARITY BIT PASS-THROUGH CAPABILITY TO 10329-2 MULTI-CONTROLLER SWITCH. OPT APPLIES TO10329 2/							
10331	2	SMALL SEMICONDUCTOR MEMORY 65,536 60-BIT WORDS OF SEMICONDUCTOR STORAGE PLUS 8 ERROR CORRECTION BITS. ADDITIONAL STORAGE IS ARRANGED IN 16 BANKS AND PROVIDES CONSECUTIVE ADDRESSING OF SMALL SEMICONDUCTOR MEMORY TO 131,072 WORDS. OPT APPLIES TO 76 122/	897,000	A	19,500	19,070	SEE CCC	3,451	A/1
10332	1	LARGE CORE MEMORY INCREMENT - 256,000 60-BIT WORDS OF LARGE CORE MEMORY ARRANGED IN FOUR BANKS. EXPANDS CONSECUTIVE ADDRESSING OF LARGE CORE MEMORY FROM 256,000 TO 512,000 WORDS. EACH BANK HAS ITS OWN 480-BIT HOLDING REGISTER. OPT APPLIES TO 76 121/	1,408,000	A	29,700	29,056	SEE CCC	3,548	A/1

STANDARD PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	1 YEAR	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
10336	1	REAL TIME CLOCK PROVIDES A PROGRAMMABLE RATE INTERVAL. TIME INTERVAL IS EQUIVALENT TO THE PRODUCT OF A PROGRAMMABLE 16 BIT REGISTER, AND THE BASIC TIME BASE. TIME BASE IS SELECTABLE BY JUMPER AS 1, 10, 100, 1K, 10K, 100K, AND 1 MILLION MICROSECONDS. PROVISION IS MADE FOR THE INPUT OF AN EXTERNAL CLOCK. UNIT OCCUPIES 1 AQ SLOT IN THE 1704-1/2 OR 1783-1 EXPANSION CHASSIS. REQUIRES A 1785-1 IF LOCATED IN 1783-1. RECEIVES FROM 1793 1/ 1784 1/ 1784 2/	1,200	B	32	30	SEE CCC	15	D/1
10343	1	POWER SUPPY ASSY PROVIDES POWER FOR ONE 1743-1 AND 2 OR OTHER SIMILAR DEVICES. POWER SUPPLY MOUNTS ON 3.5X 19 INCH PANEL IN 1787-3, 4 AND 6 OR EQUIVALENT. INCLUDES 5 WIRE CABLE WITH TERMINAL LUGS, MUST BE MOUNTED WITHIN 10 FEET OF 1743-1/2. OUTPUT IS A REGULATED + OR - 12 VDC AT + OR - 1.0 AMP MAXIMUM LOAD. INPUT IS 115, 220, 230 OR 240 VAC SINGLE PHASE AT 50/60 HZ OR 400 HZ. SUPPLIES POWER FOR UP TO FOUR 1743-1 OR FIVE 1743-2 OR COMBINATIONS THAT DO NOT EXCEED OUTPUT LOADING CAPACITY. REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE - QUANTITY PURCHASE PRICE 1ST UNIT 435 2ND UNIT 343 3RD THRU 5TH UNITS 251 6TH THRU 24TH UNITS 211 25TH THRU 49TH UNITS 197 50TH THRU 99 TH UNITS 185 100TH OR OVER UNITS 174	435	B	11	10	SEE CCC	T AND M	
10344	1	COMMUNICATION COUPLER PROVIDES THE INTERFACE BETWEEN 3170/3300/3500 SERIES COMPUTERS AND THE HOST COMMUNICATIONS PROCESSOR (HCP). REQUIRES ONE OF 10344-XX. RECEIVES FROM 3177 X/ 3306 / 3307 / RECEIVES FROM 3507 1/ SENDS TO 2550 2/ 2551 1/ 2551 2/ SENDS TO 2552 2/	3,938	B	93	88	SEE CCC	19	D/1
10344	57	COMMUNICATION CONTROL MODULE	4,086	B	117	111	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	567						
		PROVIDES OPERATING CONTROLWARE FOR 2551 NETWORK PROCESSING UNIT WITHOUT THE REMOTE 2551 NPU CAPABILITY WHEN CONNECTED TO A 3000L MASTER 4 SYSTEM. INCLUDES PROGRAM VARIANTS FOR CONFIGURABILITY OF ASYNCHRONOUS AND/OR SYNCHRONOUS TERMINAL INTERFACE PACKAGES. RELEASE MEDIA INCLUDES THE FOLLOWING THREE VARIANTS (1) SUPPORTS ASYNCHRONOUS MODE 3 (TTY) TIP. (2) SUPPORTS SYNCHRONOUS MODE 4 (MD4) TIP. (3) SUPPORTS BOTH MODE3/MODE4 (TIPS). MEDIA IS 7 TRACK TAPE. REQUIRES 65K MEMORY AND 10344-1. OPT APPLIES TO 2551 2/							
10344	59	COMMUNICATION CONTROL MODULE	4,086	B	117	111	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	567						
		SAME AS 10344-57 EXCEPT MEDIA IS 9 TRACK TAPE OPT APPLIES TO 2551 2/							
10344	67	COMMUNICATION CONTROL MODULE	4,086	B	117	111	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	567						
		PROVIDES OPERATING CONTROLWARE FOR 2552 NETWORK PROCESSING UNIT WITH REMOTE 2551 NPU CAPABILITY WHEN CONNECTED TO 3000L MASTER 4 SYSTEM. INCLUDES ASYNCHRONOUS AND SYNCHRONOUS TERMINAL INTERFACE PKGS. AND THE LINK INTERFACE PKGS FOR BOTH LOCAL 2552 AND REMOTE NPU. MEDIA IS 7 TRACK TAPE. REQUIRES 65K MEMORY AND 10344-1. OPT APPLIES TO 2552 2/							
10344	69	COMMUNICATION CONTROL MODULE	4,086	B	117	111	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	567						
		SAME AS 10344-67 EXCEPT MEDIA IS 9 TRACK TAPE OPT APPLIES TO 2552 2/							
10344	77	COMMUNICATION CONTROL MODULE	4,086	B	117	111	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	567						
		PROVIDES OPERATING CONTROLWARE FOR THE NETWORK PROCESSING UNIT WITH REMOTE 2551 NPU CAPABILITY WHEN CONNECTED TO A 3000L MASTER 4 SYSTEM. INCLUDES ASYNCHRONOUS AND SYNCHRONOUS TERMINAL INTERFACE PKGS. AND LINK INTERFACE PKGS. FOR BOTH LOCAL 2552 AND REMOTE 2551 NPU MEDIA IS 7 TRACK TAPE. REQUIRES 65K MEMORY AND 10344-1. OPT APPLIES TO 2551 2/							

STANDARD PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	PAGE SB SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
10344	79	COMMUNICATION CONTROL MODULE	4,086	B	117	111 SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	567					
		SAME AS 10344-77 EXCEPT MEDIA IS 9 TRACK TAPE OPT APPLIES TO 2551 2/						
10348	1	CYBER 76 DATA CHANNEL UNIT	15,950	A	330	323 SEE CCC	63	A/1
		FIELD INSTALLATION CHARGE	333					
		ONE HI-SPEED BI-DIRECTIONAL CPU I/O CHANNEL WITH ASSEMBLY/DISASSEMBLY LOGIC. CAN BE INSTALLED AS CHANNEL NUMBERS TWO THROUGH FIFTEEN. OPT APPLIES TO 76 121/ 76 122/ 76 142/ OPT APPLIES TO 176 /10376 10/						
10348	2	CYBER 76 DATA CHANNEL UNIT	15,950	A	330	323 SEE CCC	66	A/1
		FIELD INSTALLATION CHARGE	333					
		ONE NORMAL SPEED BI-DIRECTIONAL CPU I/O CHANNEL WITH ASSEMBLY/DISASSEMBLY LOGIC CAN BE ONLY INSTALLED AS CHANNEL NUMBERS SIXTEEN SIXTEEN OR SEVENTEEN. OPT APPLIES TO 76 121/ 76 122/ 76 142/ OPT APPLIES TO 176 /10376 10/						
10352		415/435-30 ACOUSTICAL KIT FIELD INSTALLABLE MUFFLERS AND SHROUD WITH HINGED TRANSPARENT ACOUSTICAL DOORS FOR CARD HOPPER AND STACKER, WHICH REDUCE THE SOUND POWER LEVEL OF CARD PUNCH BY APPROXIMATELY 17 DECIBELS. (AN ACOUSTICAL NOISE REDUCTION OF APPROXIMATELY 65-70%).						
	1	ACOUSTICAL REDUCTION KIT	N/A		N/C	N/A SEE CCC	N/A	
		A ONE TIME INSTALLATION CHARGE	2,800					
		OPT APPLIES TO 415 30/						
	2	ACOUSTICAL REDUCTION KIT	N/A		N/C	N/A SEE CCC	N/A	
		A ONE TIME INSTALLATION CHARGE	2,800					
		OPT APPLIES TO 415 /						
10364	1	CYBER 170 ECS CONTROLLER	N/A		N/C	N/A SEE CCC	N/A	
		A ONE TIME INSTALLATION CHARGE	11,000					
		ALLOWS CYBER 170 CENTRAL COMPUTERS TO ACCESS 6000/CYBER 70 ECS. CONTROLS UP TO TWO MILLION WORDS OF EXTENDED CORE STORAGE FROM UP TO FOUR 6000/CYBER CENTRAL COMPUTERS OR DISTRIBUTIVE DATA PATHS IN ANY COMBINATION. INCLUDES SWITCH-SELECTABLE PARITY CHECKING GENERATION. REPLACED CONTROLLER BECOMES THE PROPERTY OF CDC. OPT APPLIES TO 6633 2/ 6634 2/ 6635 2/ OPT APPLIES TO 6636 2/ 6642 2/ 7030 /						
10374	1	176 CENTRAL MEMORY INCREMENT ADDS 65,536 60-BIT WORDS OF SEMICONDUCTOR CENTRAL MEMORY, INCREASING THE CENTRAL MEMORY FROM 131,072 TO 196,608 WORDS. INCLUDES CHASSIS AND CABINET. OPT APPLIES TO 176 8/ 176 21/ 176 22/ OPT APPLIES TO 176 24/	300,000	A	6,625	6,075 SEE CCC	1,007	A/1
10374	2	176 CENTRAL MEMORY INCREMENT ADDS 65,536 60-BIT WORDS OF SEMICONDUCTOR CENTRAL MEMORY INCREASING THE CENTRAL MEMORY FROM 196,609 TO 262,144 WORDS. INCLUDES CHASSIS AND CABINET. OPT APPLIES TO 176 8/ 176 12/ 176 21/ OPT APPLIES TO 176 22/ 176 24/ 176 31/ OPT APPLIES TO 176 32/ 176 34/	300,000	A	6,695	6,075 SEE CCC	1,007	A/1
10375	1	176 MEMORY EXPANSION ADDS 524,288 60-BIT WORDS OF MAGNETIC CORE MEMORY, INCREASING THE CORE MEMORY FROM 524,288 TO 1,048,576 WORDS. INCLUDES CHASSIS AND CABINET. OPT APPLIES TO 176 8/ 176 12/ 176 16/ OPT APPLIES TO 176 21/ 176 31/ 176 41/ OPT APPLIES TO10375 10/	630,000	A	14,045	12,780 SEE CCC	3,525	A/1
10375	2	176 MEMORY EXPANSION ADDS 1,048,576 60-BIT WORDS OF MAGNETIC CORE MEMORY, INCREASING THE CORE MEMORY FROM 1,048,576 TO 2,097,152 WORDS. INCLUDES CHASSIS, CABINET AND COOLING EQUIPMENT. OPT APPLIES TO 176 8/ 176 12/ 176 16/ OPT APPLIES TO 176 22/ 176 32/ 176 42/	1,117,500	A	24,965	22,715 SEE CCC	6,546	A/1
10375	10	CYBER 176 EXTENDED MEMORY ADDS THE INITIAL 524,288 60-BIT WORDS OF MAGNETIC CORE MEMORY ALONG WITH ASSOCIATED MEMORY CONTROL. INCLUDES CHASSIS AND CABINET. AVA OPTIONS 10375 1/ OPT APPLIES TO 176 8/ 176 12/ 176 16/	840,000	A	17,100	15,560 SEE CCC	3,525	A/1
10375	410	524K EXTENDED MEMORY OPTION ADDS THE INITIAL 524,288 60 BIT WORDS OF MAGNETIC CORE MEMORY ALONG WITH ASSOCIATED MEMORY CONTROL. INCLUDES CHASSIS AND CABINET.	630,000	A	14,045	12,780 SEE CCC	3,525	A/1

STANDARD PRODUCTS

PRODUCT NO	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
10376	1	176 PERIPHERAL PROCESSOR UNIT PERIPHERAL PROCESSOR UNIT WITH 4,096 12-BIT WORDS, PLUS 1 PARITY BIT OF STORAGE AND 8 INPUT/OUTPUT CHANNELS. DOES NOT INCLUDE CHASSIS AND CABINET. RECEIVES FROM 176 /1C378 1/ SENDS TO 7622 X/ 7639 XX/ 7654 / SENDS TO 7681 1/ 7683 1/ AVA OPTIONS 10376 2/ OPT APPLIES TO 176 /1C376 1D/1C378 1/	58,300	A	1,283	1,236	SEE CCC	154	A/1
10376	2	176 PERIPHERAL PROC CHASSIS ADD-ON CHASSIS CONTAINING WIRING FOR FOUR ADDITIONAL 10376-1 PERIPHERAL PROCESSOR UNITS. UPGRADES THE CENTRAL COMPUTER TO PROVIDE WIRING FOR 12 PERIPHERAL PROCESSOR UNITS. DOES NOT INCLUDE PERIPHERAL PROCESSORS OPT APPLIES TO 176 /10376 1/	N/C		N/C	N/C	SEE CCC	N/C	
10376	10	176 INITIAL PERIPH PROC UNIT ADDS THE FIRST FOUR PERIPHERAL PROCESSOR UNITS. ALSO INCLUDES FOUR HIGH SPEED CPU I/O MUX CHANNELS. AVA OPTIONS 10293 2/10348 1/10348 2/ AVA OPTIONS 10376 1/ OPT APPLIES TO 176 8/ 176 12/ 176 16/	233,200	A	5,132	4,944	SEE CCC	615	A/1
10376	401	176 PERIPHERAL PROCESSOR UNIT PERIPHERAL PROCESSOR UNIT WITH 4,096 12 BIT WORDS, PLUS 1 PARITY BIT, OF STORAGE AND 8 INPUT/OUTPUT CHANNELS. DOES NOT INCLUDE CHASSIS, CABINET, POWER OR COOLING APPARATUS. RECEIVES FROM 176 4XX/10378 1 SENDS TO 7611 1/7622 1/7622 2 SENDS TO 7639 1/7639 2/7654 SENDS TO 7681 1/7683 1 AVA OPTIONS 10293 2 OPT APPLIES TO 176 4XX/10376 2/10376410	55,400	A	1,335	1,285	SEE CCC	154	A/1
10376	410	176 INITIAL PERIPHERAL PROC UN ADDS THE FIRST FOUR PERIPHERAL PROCESSOR UNITS. ALSO INCLUDES FOUR HIGH SPEED CPU I/O MUX CHANNELS. DOES NOT INCLUDE CHASSIS AND CABINET. AVA OPTIONS 10293 2/10348 1/10348 2 AVA OPTIONS 10376 401 OPT APPLIES TO 176 408/ 176 412/176 416	221,600	A	5,340	5,145	SEE CCC	615	A/1
10377	1	176 PERPH/CONT PROCESSOR INCR ADDS 4 ADDITIONAL CYBER 170 PERIPHERAL AND CONTROL PROCESSORS AND 12 I/O CHANNELS. RESULTING SYSTEM HAS 14 PPUS AND 24 I/O CHANNELS. INCLUDES MODIFICATION TO THE CENTRAL COMPUTER TO ALLOW COMMUNICATION TO THESE PPUS AND CHASSIS. AVA OPTIONS 10314 5Z/10315 2/ OPT APPLIES TO 176 /1C378 1/	92,432	A	2,056	1,955	SEE CCC	439	B/1
10377	401	176 10 TO 14 PPU OPTION ADDS 4 PERIPHERAL PROCESSORS AND 12 I/O CHANNELS. RESULTANT SYSTEM HAS 14 PERIPHERAL PROCESSORS AND 24 I/O CHANNELS. INCLUDES MODIFICATION TO THE CENTRAL COMPUTER TO ALLOW COMMUNICATION TO THESE PPUS AND CHASSIS. AVA OPTIONS 10503 702 OPT APPLIES TO 1764XX/10378 1	92,432	A	2,250	2,030	SEE CCC	439	A/1
10378	1	76/170 MODIFICATION OPTION ALLOWS A CYBER 76 TO RUN CYBER 170 OPERATING SYSTEMS AND CONNECT TO CYBER 170 PERIPHERALS BY ADDING 10 PERIPHERAL AND CONTROL PROCESSORS, TWELVE 12-BIT DATA CHANNELS AND 1 DATA CHANNEL CONVERTER FOR 3000 SERIES DATA CHANNELS PLUS A DISPLAY CONSOLE. MODIFICATION REMOVES THE MAINTENANCE CONTROL UNIT AND ITS ASSOCIATED PERIPHERAL EQUIPMENT. REMOVED ITEMS BECOME THE PROPERTY OF CONTROL DATA CORPORATION. RECEIVES FROM 415 30/ 580 / 580 1XX/ RECEIVES FROM 2550 2/ 2552 1/ 3447 2/ RECEIVES FROM 4671 / 6673 / 6674 / RECEIVES FROM 4676 / 6683 2/ 7012 1/ RECEIVES FROM 7021 2X/ 7054 XX/ 7154 XX/ RECEIVES FROM 10329 2/60144 / AVA OPTIONS 7012 1/10376 1/10377 1/ AVA OPTIONS 10379 1/ OPT APPLIES TO 76 121/ 76 122/ 76 142/	290,000	A	5,920	5,390	SEE CCC	944	A/1
10379	1	7602-1/170 MODIFICATION OPTION MODIFIES ONE 7602-1 PERIPHERAL PROCESSOR TO BE THE FUNCTIONAL EQUIVALENT OF A 1C376-1 PERIPHERAL PROCESSOR. ADDS THE CAPABILITY TO STOP ON BOTH CENTRAL AND ITS OWN MEMORY ERRORS. OPT APPLIES TO 7602 1/	3,300	A	73	70	SEE CCC	35	A/1
10380		**CYBER 171 COMPARE/MOVE UNIT** ADDS FOUR 6 BIT CHARACTER ORIENTED COMPARE/MOVE INSTRUCTIONS WHICH OPERATE ON VARIABLE LENGTH FIELDS IN CENTRAL MEMORY.							
10380	1	CYBER 171 COMPARE/MOVE UNIT ADDS COMPARE/MOVE INSTRUCTIONS TO A MODEL 171 WITH ONE CENTRAL PROCESSOR. OPT APPLIES TO 171 /	16,300	B	270	240	SEE CCC	80	B/1
10380	2	CYBER 171 COMPARE/MOVE UNIT ADDS COMPARE/MOVE INSTRUCTIONS TO A MODEL 171 WITH TWO CENTRAL PROCESSORS. REQUIRES PRIOR INSTALLATION OF 10382-1. OPT APPLIES TO10382 1/	32,600	B	540	480	SEE CCC	159	B/1
10381		**CYBER 171 DATA CHANNEL CONVERTER** PERMITS PERIPHERAL EQUIPMENT WITH A 3000 SERIES INTERFACE TO BE ATTACHED TO A MODEL 171 DATA CHANNEL.							
10381	1	DATA CHANNEL CONVERTER ADDS FIRST DATA CHANNEL CONVERTER AVA OPTIONS 10341 2/ OPT APPLIES TO 171 /	15,580	B	347	311	SEE CCC	57	B/1

STANDARD PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
10381	2	DATA CHANNEL CONVERTER ADDS SECOND DATA CHANNEL CONVERTER. REQUIRES PRIOR INSTALLATION OF 10381-1. OPT APPLIES TO10381 1/	15,580	B	367	311	SEE CCC	97	B/1
10382		171 SECOND CENTRAL PROCESSOR ADD A SECOND CENTRAL PROCESSOR TO A MODEL 171 REQUIRES PRIOR INSTALLATION OF 10317-1.							
10382	1	171 SECOND CENTRAL PROCESSOR ADDS A SECOND CENTRAL PROCESSOR TO A MODEL 171 WITHOUT COMPARE/MOVE OPTION 10380-1. AVA OPTIONS 10380 2/ OPT APPLIES TO 171 /	197,930	B	4,400	3,960	SEE CCC	944	B/1
10382	2	171 SECOND CENTRAL PROCESSOR ADDS A SECOND CENTRAL PROCESSOR TO A MODEL 171 WITH COMPARE/MOVE OPTION 10380-1. OPT APPLIES TO10380 1/	214,130	B	4,670	4,200	SEE CCC	1,023	B/1
10383	1	CYBER 170 MODEL 171 CONVERSION UPGRADES A MODEL 171 WITH ONE CENTRAL PROCESSOR TO AN EQUIVALENT MODEL 172. REQUIRES PRIOR INSTALLATION OF 10380-1, 10381-1, AND 10381-2. AVA OPTIONS 10316 1/10384 1/ OPT APPLIES TO 171 /	322,465	B	4,956	4,513	SEE CCC	845	B/1
10383	2	CYBER 170 MODEL 171 CONVERSION UPGRADES A MODEL 171 WITH TWO CENTRAL PROCESSORS TO AN EQUIVALENT MODEL 172 WITH TWO CENTRAL PROCESSORS. REQUIRES PRIOR INSTALLATION OF 10380-1 AND 10382-2 OR 10382-1 AND 10380-2 IN ADDITION TO 10381-1 AND 10381-2. AVA OPTIONS 10385 1/ OPT APPLIES TO10382 /	402,625	B	7,196	6,533	SEE CCC	845	B/1
10384	1	172 SECOND CENTRAL PROCESSOR ADDS A SECOND CENTRAL PROCESSOR TO A MODEL 172. REQUIRES PRIOR INSTALLATION OF 10317-1. AVA OPTIONS 10395 1/ OPT APPLIES TO 172 /10383 1/	294,290	B	6,910	6,220	SEE CCC	1,023	B/1
10385	1	CYBER 170 MODEL 172 CONVERSION UPGRADES A MODEL 172 WITH TWO CENTRAL PROCESSORS TO AN EQUIVALENT MODEL 174. REQUIRES PRIOR INSTALLATION OF 10383-2 OR 10384-1. OPT APPLIES TO10383 2/10384 1/	408,140	B	13,520	12,105	SEE CCC	1,072	B/1
10390	1	MSC 16 DEVICE ADDRESS OPTION	49,665	B	1,272	1,144	SEE CCC	151	A/1
		FIELD INSTALLATION CHARGE	980						
		AUGMENTS THE NUMBER OF ALLOWABLE DEVICE CONNECTIONS TO A MASS STORAGE CONTROLLER FROM EIGHT TO A TOTAL OF SIXTEEN. FIELD INSTALLABLE. SENDS TO 7881 1/ 7882 1/ OPT APPLIES TO 7990 1/							
10391	1	MSC CHANNEL ACCESS OPTION PROVIDES TWO ADDITIONAL CYBER PPU CHANNEL CONNECTIONS TO A MASS STORAGE CONTROLLER. FIELD INSTALLABLE. RECEIVES FROM 71 XX/ 72 XX/ 73 XX/ RECEIVES FROM 74 XX/ 17X / 6000 / OPT APPLIES TO 7990 1/	3,500	B	97	89	SEE CCC	13	A/1
10392	1	MST ALTERNATE PATH OPTION	2,150	B	60	54	SEE CCC	19	A/1
		FIELD INSTALLATION CHARGE	250						
		ALLOWS THE CONNECTION OF ONE 7882-1 MST TO TWO MSC (7890-1), PROVIDES AN ALTERNATE PATH TO AN MST, AND ALLOWS SWITCHING TO ANOTHER MSC. ONE PER MST. FIELD INSTALLABLE. RECEIVES FROM 7880 1/ OPT APPLIES TO 7882 1/							
10393	1	CSU ALTERNATE PATH OPTION	5,000	B	136	123	SEE CCC	19	A/1
		FIELD INSTALLATION CHARGE	500						
		ALLOWS THE CONNECTION OF ONE CSU TO TWO MSC, PROVIDES AN ALTERNATE PATH TO A CSU AND ALLOW SWITCHING TO ANOTHER MSC. ONE PER CSU. FIELD INSTALLABLE. RECEIVES FROM 7880 1/ OPT APPLIES TO 7881 1/							
10396	1	885 TWO CHANNEL ACCESS OPTION PROVIDES A SECOND CONTROLLER CONNECTION TO BOTH SPINDLES OF AN 885-11 DISK STORAGE UNIT MAKING IT EQUIVALENT TO THE 885-12 FIELD INSTALLABLE. OPT APPLIES TO 885 11/	3,420	D	89	80		15	B/1
10397	1	7155-1 ADDITIONAL CHANNEL OPT PROVIDES AN ADDITIONAL CHANNEL CONNECTION TO A 7155 MASS STORAGE CONTROLLER. UP TO THREE ADDITIONAL CHANNEL OPTIONS MAY BE ADDED TO THE BASIC 7155-1 TO PROVIDE A TOTAL OF FOUR CHANNEL ACCESSES. FIELD INSTALLABLE. OPT APPLIES TO 7155 1/	6,500	D	181	165		12	B/1

STANDARD PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
10398	1	7155 - 844-4X ACCESS OPTION ALLOWS ACCESS TO UP TO EIGHT 844-41 OR 844-44 DISK STORAGE UNITS. THE CAPACITY OF EACH 844-4X IS 296 MILLION SIX BIT CHARACTERS. FIELD INSTALLABLE. OPT APPLIES TO 7155 1/	9,950	D	274	252	25	B/1
10399	1	7155 - 885 FOUR DRIVE EXP OPT ALLOWS ACCESS TO UP TO EIGHT ADDITIONAL SPINDLES (FOUR DRIVES) OF THE 885 DISK STORAGE UNIT. CAPACITY OF EACH 885-11/12 SPINDLE IS 692 MILLION SIX BIT CHARACTERS. WITH THIS OPTION INSTALLED, A TOTAL OF 16 885 SPINDLES (EIGHT DRIVES) CAN BE ACCESSED. FIELD INSTALLABLE. OPT APPLIES TO 7155 1/	15,550	D	423	395	35	B/1
10400		ASYNCH CLA CABLE (RS232) ASYNCHRONOUS COMMUNICATIONS LINE ADAPTER (CLA) CABLE TO INTERFACE TO CUSTOMER PROVIDED MODEM OR LOCAL TERMINAL AT CIRCUIT SPEEDS TO 9600 BPS. CABLE LENGTH IS 50 FEET (15M). NOTE: DETAILED CABLE DEFINITION WILL BE ACCOMPLISHED SUBSEQUENT TO ORDER PLACEMENT AND PRIOR TO EQUIPMENT DELIVERY. PRICING MANUAL VOLUME II (COMMUNICATIONS SECTION, SEE 255X) CONTAINS CABLE DEFINITION DETAILS. REDUCED PRICES FOR QUANTITY PURCHASE (STAIR-CASE) ARE - QUANTITY PURCHASE PRICE 1ST THRU 11TH UNITS 64 12TH OR OVER UNITS 53 RECEIVES FROM 2541 1/	64		N/A	N/A SEE CCC	N/A	
10401		SYNCH CLA CABLE (RS232) SYNCHRONOUS COMMUNICATIONS LINE ADAPTER (CLA) CABLE TO INTERFACE TO CUSTOMER PROVIDED MODEM TO 9600 BPS, OR LOCAL TERMINAL AT 2400, 4800 OR 9600 BPS. CABLE LENGTH IS 50 FT. (15M). NOTE: DETAILED CABLE DEFINITION WILL BE ACCOMPLISHED SUBSEQUENT TO ORDER PLACEMENT AND PRIOR TO EQUIPMENT DELIVERY. PRICING MANUAL VOLUME II (COMMUNICATIONS SECTION, SEE 255X) CONTAINS CABLE DEFINITION DETAILS. REDUCED PRICES FOR QUANTITY PURCHASE (STAIR-CASE) ARE- QUANTITY PURCHASE PRICE 1ST THRU 11TH UNITS 72 12TH OR OVER UNITS 60 RECEIVES FROM 2560 1/ 2563 1/	72		N/A	N/A SEE CCC	N/A	
10402		SYNCH CLA CABLE (T1AY) SYNCHRONOUS COMMUNICATIONS LINE ADAPTER (CLA) CABLE TO INTERFACE TO CUSTOMER PROVIDED AT+T 301/303 MODEM OR EQUIVALENT AT FROM 19,200 BPS TO 56,000 BPS. ACTUAL SPEED IS DETERMINED BY THE MODEMS. CABLE LENGTH IS 50 FEET (15M). NOTE: DETAILED CABLE DEFINITION WILL BE ACCOMPLISHED SUBSEQUENT TO ORDER PLACEMENT AND PRIOR TO EQUIPMENT DELIVERY. PRICING MANUAL VOLUME II (COMMUNICATIONS SECTION, SEE 255X) CONTAINS CABLE DEFINITION DETAILS. RECEIVES FROM 2560 2/	350		N/A	N/A SEE CCC	N/A	
10403		SYNCH CLA CABLE (DIFFERENTIAL) SYNCHRONOUS COMMUNICATIONS LINE ADAPTER (CLA) CABLE TO INTERFACE TO CUSTOMER PROVIDED MODEM COMPATIBLE WITH CCITT V35 INTERFACE AT SPEEDS TO 56,000 BPS (INCLUDING AT+T DIGITAL DATA SYSTEM AT 56,000 BPS). CABLE LENGTH IS 50 FT. (15M). NOTE: DETAILED CABLE DEFINITION WILL BE ACCOMPLISHED SUBSEQUENT TO ORDER PLACEMENT AND PRIOR TO EQUIPMENT DELIVERY. PRICING MANUAL VOLUME II (COMMUNICATIONS SECTION, SEE 255X) CONTAINS CABLE DEFINITION DETAILS. REDUCED PRICES FOR QUANTITY PURCHASE (STAIR-CASE) ARE- QUANTITY PURCHASE PRICE 1ST THRU 11TH UNITS 72 12TH OR OVER UNITS 60 RECEIVES FROM 2560 3/	72		N/A	N/A SEE CCC	N/A	
10417	1	KEY ENTRY STA,RS232 INTERFACE	N/C		N/C	N/C SEE CCC	N/A	
		FIELD INSTALLATION CHARGE	184					
		THIS OPTION CONVERTS A STANDARD 970-480 OR 970-481 KEY ENTRY STATION FROM CURRENT LOOP TO RS232-C INTERFACE. COMPATIBLE WITH AN ASYNCHRONOUS MODEM BELL TYPE 103, 202 OR EQUIVALENT. SENDS TO/ RECEIVES FROM; ASYNCHRONOUS MODEM.						
10421	1	DISK STORAGE UNIT CONVERSION DOUBLES THE CAPACITY OF A 819-1 DISK STORAGE UNIT FROM 2.4 BILLION BITS TO 4.8 BILLION BITS. NOT FIELD INSTALLABLE. FACTORY UPGRADE ONLY. PURCHASE ONLY. OPT APPLIES TO 819 1/	23,450		N/A	N/A SEE CCC	18	D/1

CHANGES EFFECTIVE 05/01/80

STANDARD PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT SALE CCC BASE 1 YEAR	CCC BASE 3YR/24MO	PAGE 5M 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
10422	1	DISK STORAGE UNIT CONVERSION DOUBLES THE CAPACITY OF THE 819-11 DISK STORAGE UNIT FROM 2.4 BILLION BITS. FIELD INSTALLABLE. OPT APPLIES TO 819 11/	21,450	D	325	315	SEE CCC	18	D/1
10423	1	DOUBLE TRACK DENSITY OPTION PROVIDES CAPABILITY FOR ATTACHING 819-21 DISK TO THE 7639-1 CONTROLLER BY UPGRADING THE 7639-1 TO A FUNCTIONALLY EQUIVALENT 7639-21. OPT APPLIES TO 7639 1/	6,000	D	162	157	SEE CCC	12	D/1
10423	2	DOUBLE TRACK DENSITY OPTION PROVIDES CAPABILITY FOR ATTACHING 819-21 DISK TO THE 7639-2 CONTROLLER BY UPGRADING THE 7639-2 TO A FUNCTIONALLY EQUIVALENT 7639-22. OPT APPLIES TO 7639 2/	12,000	D	324	314	SEE CCC	23	D/1
10424	1	MASS STORAGE CONTR. UPGRADE ALLOWS EXPANSION OF A 7639-21 TO AN EQUIVALENT 7639-22 BY THE ADDITION OF A SECOND IDENTICAL CONTROLLER TO THE EXISTING CABINET. OPT APPLIES TO 7639 21/	67,000	D	1,811	1,757	SEE CCC	173	D/1
10425	1	PRINTER INTERFACE OPTION PLUG-IN MODULE PROVIDES SIGNAL LEVEL CONVERSION AND CONTROL FUNCTIONS FOR DRIVING RS232-C PRINTER INTERFACE. CANNOT BE USED IF 753-10, 755-10 OR 755-20 IS ATTACHED. REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE - QUANTITY — PURCHASE PRICE 1ST THRU 4TH UNITS — 200 5TH THRU 9TH UNITS — 188 10TH THR 19TH UNITS — 184 20TH OR OVER UNITS — 180 OPT APPLIES TO 751 10/	200	E	8	7	SEE CCC	11	D/1
10426	1	175-1XX CENTRAL PROC ENHANCEMT SPEEDS UP THE EXECUTION TIME OF A 175-1XX COMPUTER TO PROVIDE 175-2XX LEVEL PERFORMANCE OPT APPLIES TO 175 108/ 175 112/ 175 116/	536,590	B	11,954	10,758	SEE CCC	803	B/1
10427		SPEEDS UP THE EXECUTION TIME OF A 175-2XX COMPUTER TO PROVIDE 175-3XX LEVEL PERFORMANCE THIS OPTION REPLACES ALL EXISTING CENTRAL MEMORY ARRAY CARDS WITH AN EQUIVALENT AMOUNT OF HIGH SPEED ARRAY CARDS. REPLACED ARRAY CARDS BECOME THE PROPERTY OF CONTROL DATA CORPORATION.							
10427	1	175-208 CENTRAL PROC ENHANCEMT SPEEDS UP THE EXECUTION TIME OF A 175-208 COMPUTER TO PROVIDE 175-308 LEVEL PERFORMANCE AVA OPTIONS 10313 112/ OPT APPLIES TO 175 208/	469,507	B	10,459	9,413	SEE CCC	431	B/1
10427	2	175-212 CENTRAL PROC ENHANCEMT SPEEDS UP THE EXECUTION TIME OF A 175-212 COMPUTER TO PROVIDE 175-312 LEVEL PERFORMANCE AVA OPTIONS 10313 116/ OPT APPLIES TO 175 212/	469,507	B	10,459	9,413	SEE CCC	401	B/1
10427	3	175-216 CENTRAL PROC ENHANCEMT SPEEDS UP THE EXECUTION TIME OF A 175-216 COMPUTER TO PROVIDE 175-316 LEVEL PERFORMANCE OPT APPLIES TO 175 216/	469,507	B	10,459	9,413	SEE CCC	431	B/1
10428	1	TRANSFORM BOARD MODIFICATION REQUIRED IN ALL CYBER 18 MAINFRAMES WITH SERIAL NUMBERS BELOW 2000 WHEN 1872-1, 2, OR 3 IS ADDED. OPT APPLIES TO 18 20/ 18 30/ 18 10M/	N/C		N/C	N/C	SEE CCC	N/A	
10429	1	CYBER 18-5M FIELD UPGRADE OPT.	6,000	B	494	457	SEE CCC	25	D/1
		FIELD INSTALLATION CHARGE	1,000						
		PROVIDES FIELD CONVERSION OF 18-5M BATCH TERMINAL CONTROLLER TO THE EQUIVALENT OF A 18-10M PROCESSOR WITH 32K BYTES MAIN MEMORY, OPERATOR CONSOLE AND CARD READER/LINE PRINTER/COMMUNICATION LINE ADAPTOR. OPT APPLIES TO 18 5M/							
10441	1	CDC CYBER 203 MEMORY INCREMENT ADDS 524,288 64-BIT WORDS OF SEMICONDUCTOR MEMORY, INCREASING SIZE FROM 524,288 TO 1,048,576 WORDS. INCLUDES COOLING UNIT. OPT APPLIES TO 203 50/	2,000,000	A	50,000	48,000	SEE CCC	2,916	A/1
10441	2	CDC CYBER 203 MEMORY INCREMENT ADDS 1,048,576 64-BIT WORDS OF SEMICONDUCTOR MEMORY, INCREASING SIZE FROM 1,048,576 TO 2,097,152 WORDS. INCLUDES COOLING AND POWER EQUIPMENT. OPT APPLIES TO 203 100/	4,000,000	A	100,000	84,000	SEE CCC	5,833	A/1

STANDARD PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
10442	1	CHARACTER MODE ADT/PAGE MEMORY BOARD. OPTION APPLIES TO CYBER 18-10 OR 18-20 THIS OPTION ENABLES THE USE OF PAGE MEMORY WHEN PROGRAM IS OPERATING IN CHARACTER MODE ADT. OPTION CONSISTS OF AN ENHANCED TRANSFORM MAINFRAMES WITH SERIAL NUMBERS BELOW 3102 AND 18-30 MAINFRAMES WITH SERIAL NUMBERS BELOW 2027. OPTION IS REQUIRED IF COMP 18/ITOS 2 (A622-11 OPT APPLIES TO 18 20/ 18 30/ 18 10M/	N/C		N/C	N/C	SEE CCC	N/C	
10445	1	MODULE DRIVE UPGRADE A ONE TIME INSTALLATION CHARGE PROVIDES FIELD UPGRADE OF 1833-1 SMD INTERFACE OR INTERFACE PORTION OF THE 1867-1/ 1867-2 SMD SUBSYSTEM TO ALLOW USE OF THE 1867-40 SMD. RESULTING CAPABILITIES ARE EQUIVALENT TO THE INTERFACE PORTION OF THE 1867-3/1867-4 SMD SUBSYSTEMS. OPT APPLIES TO 1833 1/ 1867 1/ 1867 2/	2,000				SEE CCC		
10445	2	MODULE DRIVE DUAL CPU UPGRADE A ONE TIME INSTALLATION CHARGE PROVIDES FIELD UPGRADE OF 1833-2 SMD INTERFACE TO ALLOW USE OF 1867-40 SMD. RESULTING CAPABILITIES ARE EQUIVALENT TO INTERFACE PORTION OF THE 1867-3/1867-4 SMD SUBSYSTEM WITH 10443-1 DUAL ACCESS OPTION INSTALLED. REQUIRES THAT THE 10445-1 SMD SUBSYSTEM UPGRADE OPTION IS INSTALLED IN FIRST CPU. OPT APPLIES TO 1833 2/	2,000				SEE CCC		
10447	1	GROUP CODED RECORDING OPTION IMPLEMENTS 6250 BPI GROUP CODED RECORDING INTO THE 7021-41 MAG TAPE CONTROLLER. OPTION PERMITS USAGE OF 679-5, 6 AND 7 TAPE UNITS. OPTION IS FIELD INSTALLABLE. OPT APPLIES TO/ 7021 41	16,400	D	430	396	SEE CCC	38	B/1
10447	2	GROUP CODED RECORDING OPTION IMPLEMENTS 6250 BPI GROUP CODED RECORDING INTO THE 7021-42 MAG TAPE CONTROLLER. OPTION PERMITS USAGE OF 679-5, 6 AND 7 TAPE UNITS. OPTION IS FIELD INSTALLABLE. OPT APPLIES TO/ 7021 42	34,300	D	895	822	SEE CCC	75	B/1
10501	702	98K TO 131K MEMORY OPTION ADDITIONAL 32,768 WORDS OF 60 BIT SEMI-CONDUCTOR MEMORY (PLUS ERROR CORRECTION CODE). INCREASES CENTRAL MEMORY FROM 98K TO 131K. AVA OPTIONS /10501 704 OPT APPLIES TO/ 170 720	43,435	B	1,550	1,395	SEE CCC	245	B/1
10501	704	131K TO 196K MEMORY OPTION ADDITIONAL 65,536 WORDS OF 60 BIT SEMI-CONDUCTOR MEMORY (PLUS ERROR CORRECTION CODE). INCREASES CENTRAL MEMORY FROM 131K TO 196K. OPT APPLIES TO10501 7XX/ AVA OPTIONS 10501 706/ OPT APPLIES TO 170 720/ 170 730/ OPT APPLIES TO 170 750/	123,715	B	3,030	2,760	SEE CCC	489	B/1
10501	706	196K TO 262K MEMORY OPTION ADDITIONAL 65,536 WORDS OF 60 BIT SEMI-CONDUCTOR MEMORY (PLUS ERROR CORRECTION CODE). INCREASES CENTRAL MEMORY FROM 196K TO 262K. OPT APPLIES TO 170 720/ 170 730/ 170 750/	123,715	B	3,030	2,760	SEE CCC	489	B/1
10502	764	131K TO 196K MEMORY OPTION ADDITIONAL 65,536 WORDS OF 60 BIT SEMI-CONDUCTOR MEMORY (PLUS ERROR CORRECTION CODE). INCREASES CENTRAL MEMORY FROM 131K TO 196K. AVA OPTIONS 10502 766/ OPT APPLIES TO 170 760/	206,400	B	5,090	4,645	SEE CCC	636	B/1
10502	766	196K TO 262K MEMORY OPTION ADDITIONAL 65,536 WORDS OF 60 BIT SEMI-CONDUCTOR MEMORY (PLUS ERROR CORRECTION CODE). INCREASES CENTRAL MEMORY FROM 196K TO 262K. OPT APPLIES TO 170 760/	206,400	B	5,090	4,645	SEE CCC	636	B/1
10503	701	10 TO 14 PPU OPTION ADDS 4 PERIPHERAL PROCESSORS AND 12 I/O CHANNELS. RESULTANT SYSTEM HAS 14 PERIPHERAL PROCESSORS AND 24 I/O CHANNELS. AVA OPTIONS 10503 702/ OPT APPLIES TO 170 720/ 170 730/ OPT APPLIES TO 170 750/ 170 760/	69,900	B	1,675	1,510	SEE CCC	432	B/1
10503	702	14 TO 17 PPU OPTION ADDS 3 PERIPHERAL PROCESSORS. RESULTANT SYSTEM HAS 17 PPUS AND 24 I/O CHANNELS. AVA OPTIONS 10503 703/ OPT APPLIES TO 10503 701/	13,990	B	345	315	SEE CCC	98	B/1
10503	703	17 TO 20 PPU OPTION ADDS 3 PERIPHERAL PROCESSORS. RESULTANT SYSTEM HAS 20 PPUS AND 24 I/O CHANNELS. OPT APPLIES TO 10503 702/	13,890	B	345	315	SEE CCC	98	B/1
10504	701	ECS COUPLER ALLOWS THE CENTRAL COMPUTER TO INTERFACE TO AN EXTENDED CORE STORAGE SYSTEM. REQUIRES PRIOR INSTALLATION OF 10505-701 ON 170-720 AND 170-730. OPT APPLIES TO 170 720/170 730/170 750 OPT APPLIES TO 170 760	N/C		N/C	N/C	N/C	N/C	
10505	701	7XX OPTION CHASSIS ADDITIONAL LOGIC CHASSIS WHICH IS USED TO ACCOMODATE THE OPTIONAL CPU AND/OR ECS COUPLER. INCLUDES POWER ADJUST PANEL. OPT APPLIES TO/ 170 720/ 170 730	N/C		N/C	N/C	N/C	N/C	

CHANGES EFFECTIVE 05/01/80

STANDARD PRODUCTS

PRODUCT MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	PAGE 56 MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
10506 701	720 TO 730 UPGRADE REQUIRES PREVIOUS INSTALLATION OF 10501-702. OPT APPLIES TO 170 720	206,930	B	4,180	3,770 SEE CCC	1,352	B/1
10507 701	720 SECOND CPU OPTION REQUIRES PRIOR INSTALLATION OF 10505-701. AVA OPTIONS 10509 701 OPT APPLIES TO 170 720	145,225	B	3,805	3,430 SEE CCC	944	B/1
10508 701	DUAL CPU 720 TO 730 UPGRADE REQUIRES PRIOR INSTALLATION OF 10507-701. OPT APPLIES TO 170 720/	268,340	B	5,760	5,180 SEE CCC	1,412	B/1
10509 701	730 SECOND CPU OPTION REQUIRES PRIOR INSTALLATION OF 10505-701. OPT APPLIES TO 170 730/	206,635	B	5,385	4,850 SEE CCC	1,023	B/1
10510 701	730 TO 750 UPGRADE THIS OPTION UPGRADES A CYBER 170-730 TO MODEL 750 PERFORMANCE. THIS OPTION REQUIRES THAT A MINIMUM OF 40KVA OF 400HZ POWER AND 8 GALLONS PER MIN. OF COOLING WATER IS AVAILABLE ON THE SITE. ANY ADDITIONAL POWER AND/OR COOLING CAPACITY REQUIRED BY THIS CONVERSION ARE NOT INCLUDED IN THIS OPTION. AVA OPTIONS 10501 704/ 10503 701/ AVA OPTIONS 10504 701/ 10511 701/ AVA OPTIONS 10513 740/ 10513 780/ AVA OPTIONS 10514 740/ 10514 780/ OPT APPLIES TO 170 730/	1,578,710	B	42,330	39,240	4,178	B/1
10511 701	750 TO 760 UPGRADE THIS OPTION UPGRADES A CYBER 170-750 TO MODEL 760 PERFORMANCE. THIS OPTION REPLACES 131K OF CENTRAL MEMORY ARRAY PAKS WITH AN EQUIVALENT AMOUNT OF HIGH SPEED ARRAY PAKS. REPLACED ARRAY PAKS ARE THE PROPERTY OF CONTROL DATA. AVA OPTIONS 10502 764/ 10512 764/ OPT APPLIES TO 170 750/	790,415	B	19,185	16,125	909	B/1
10512 764	750 TO 760 MEMORY UPGRADE THIS OPTION REPLACES 65K (131K - 196K) OF CENTRAL MEMORY ARRAY PAKS WITH AN EQUIVALENT AMOUNT OF HIGH SPEED ARRAY PAKS. REPLACED ARRAY PAKS ARE THE PROPERTY OF CONTROL DATA. AVA OPTIONS 10502 766/ 10512 766/ OPT APPLIES TO 10501 704/ 10511 701/	82,685	B	2,065	1,885	148	B/1
10512 766	750 TO 760 MEMORY UPGRADE THIS OPTION REPLACES 65K (196K - 262K) OF CENTRAL MEMORY ARRAY PAKS WITH AN EQUIVALENT AMOUNT OF HIGH SPEED ARRAY PAKS. REPLACED ARRAY PAKS ARE THE PROPERTY OF CONTROL DATA. OPT APPLIES TO 10501 704/ 10512 764/	82,685	B	2,065	1,885	148	B/1
10513 725	25KVA MG 60HZ OPT APPLIES TO 170 720/ 170 730/	17,380	C	560	535	22	B/1
10513 740	40KVA MG 60HZ OPT APPLIES TO 170 720/ 170 730/ OPT APPLIES TO 170 750/ 170 760	19,970	C	635	610	28	B/1
10513 780	80KVA MG 60HZ OPT APPLIES TO 170 750/ 170 760/	26,654	C	840	805	33	B/1
10514 725	25KVA MG 50HZ OPT APPLIES TO 170 720/ 170 730/	17,380	C	560	535 SEE CCC	22	B/1
10514 740	40KVA MG 50HZ OPT APPLIES TO 170 720/ 170 730/ OPT APPLIES TO 170 750/ 170 760/	19,970	C	635	610 SEE CCC	28	B/1
10514 780	80KVA MG 50HZ OPT APPLIES TO 170 750/ 170 760/	26,654	C	840	805 SEE CCC	33	B/1
10517 701	730 TO 740 UPGRADE THIS OPTION UPGRADES A CYBER 170-730 TO MODEL 740 LEVEL PERFORMANCE. THIS OPTION REQUIRES A MINIMUM OF 40KVA OF 400HZ POWER AND A MINIMUM OF 8 GALLONS PER MINUTE OF COOLING WATER IS AVAILABLE ON SITE. ANY ADDITIONAL POWER AND COOLING WATER CAPACITY REQUIRED BY THIS CONVERSION ARE NOT INCLUDED IN THIS OPTION. AVA OPTIONS 10501 704/10503 701/10504 701/ AVA OPTIONS 10513 740/10513 780/10514 740/ AVA OPTIONS 10514 740/10518 7XX/10518 701/ OPT APPLIES TO 170 730/	761,185	B	21,780	19,405 SEE CCC	3,113	B/1
10518 701	740 TO 750 UPGRADE THIS OPTION UPGRADES A CYBER 170-740 TO MODEL 750 LEVEL PERFORMANCE. THE UPGRADE CONSISTS OF ADDING PARALLEL PROCESSING CAPABILITY TO THE NINE FUNCTIONAL UNITS PRESENT IN THE MODEL 740 CPU. AVA OPTIONS 10501 704/10503 701/10504 701/ AVA OPTIONS 10511 701/10513 740/10513 780/ AVA OPTIONS 10514 740/10514 780/ OPT APPLIES TO 170 740/10517 7XX/	817,525	B	20,550	18,635 SEE CCC	1,066	B/1
10527 641	131K TO 196K MEMORY OPTION		B				B/1

SPECIAL HARDWARE PRODUCTS

Included in this section are CDC special hardware products. The data provided on these products are the same as outlined for standard hardware products.

All special hardware products have one or more of the following characteristics:

1. They are typically built only after receipt of a customer order. Lead time before shipment may, therefore, be longer than for most standard products.

2. Supporting standard software is generally not available. A quote for special software (QSS) may, thus, be necessary to obtain software for a specific customer configuration or application.

3. Diagnostics maintenance software may not be available. In that case, a QSS is then required for the customer's particular configuration.

4. Special hardware/systems configuration limitations may exist which will limit the usefulness of a special product to only certain cases or applications.

5. Documentation requirements for special hardware products are less stringent than for standard products.

These products in most cases will require additional effort and costs beyond the special product hardware cost to the customer for integrating these products into his current or future system. The approval to quote and the quotation of effort must be obtained from Computer Systems Operations, ARHOPS, prior to determining sale price to the customer. For more information relative to these products, please contact the Computer Systems Operations, Proposal Resource/Marketing Support Department, ARHOPS.

SPECIAL PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
60130	1	LOOP CURRENT POWER SUPPLY A 120 VOLT DC POWER SUPPLY USED TO SUPPLY CURRENT TO UNIPOLAR TELEGRAPHIC LINES. THE CURRENT FOR UP TO 14 LINES IS ADJUSTABLE BETWEEN 20 AND 60 MILLIAMPERES. MOUNTS IN A 362-1 AND CABLE CONNECTS TO EITHER 362-1 OR 362-2. REQUIRED WHEN CURRENT IS NOT SUPPLIED BY A COMMON CARRIER.	928	C	26	26 SEE CCC	22	D/1
60144		MULTI-ACCESS CONTROLLER SWITCH ALLOWS UP TO 4 DATA CHANNELS TO SHARE COMMON PERIPHERAL DEVICES ON A ONE-AT-A-TIME BASIS VIA PROGRAM CONTROL. DOES NOT INCLUDE PARITY CHECKING. RECEIVES FROM 71 / 72 / 73 / RECEIVES FROM 74 / 170 / 6214 / RECEIVES FROM 6215 X/ 6413 / 6414 / RECEIVES FROM 6415 X/ 6513 / 6514 / RECEIVES FROM 6613 / 6614 / 6615 / RECEIVES FROM 10070 1/ SENDS TO 255Y X/ 6671 X/ 6673 / SENDS TO 6674 / 6676 / 6681 X/ SENDS TO 6683 X/ 6684 X/ 7021 XX/ SENDS TO 7707 /						
60144	2	MULTI-ACCESS CONTROL (2X1) ALLOWS 2 DATA CHANNELS TO SHARE COMMON PERIPHERAL DEVICES. AVA OPTIONS 60144 3/60144 4/	19,250	D	535	522 SEE CCC	63	D/1
60144	3	MULTI-ACCESS CONTROL (3X1)	2,300	D	65	64 SEE CCC	21	D/1
		FIELD INSTALLATION CHARGE	275					
		UPGRADES 60144-2 TO ALLOW 3 DATA CHANNELS TO SHARE COMMON PERIPHERAL DEVICES. OPT APPLIES TO60144 2/						
65027		2KVA MG SET (430HZ) (APPLIES TO 1770/1730 SYSTEMS) 400 HZ POWER.	1,790	C	57	56 SEE CCC T AND M		/1
65028	1	5KVA MG SET 5KVA MG SET WITH 400 HZ POWER FOR USE WITH 1704/1714/1774 SYSTEMS. OPT APPLIES TO 1704 / 1714 1/ 1774 /	6,980	D	227	222 SEE CCC T AND M		/1
65044	1	MG 40KVA, 60HZ OPT APPLIES TO 171 / 172 / 173 / OPT APPLIES TO 174 / 176 /	19,970	C	578	557 SEE CCC T AND M		/1
65044	2	MG 40KVA, 50HZ OPT APPLIES TO 171 / 172 / 173 / OPT APPLIES TO 174 / 176 /	19,970	C	578	557 SEE CCC T AND M		/1
65045	1	MG 80KVA, 60HZ OPT APPLIES TO 175 / 176 /	26,654	C	766	737 SEE CCC T AND M		/1
65045	2	MG 80KVA, 50HZ OPT APPLIES TO 175 / 176 /	26,654	C	766	737 SEE CCC T AND M		/1
65046	1	MG 125KVA, 60HZ OPT APPLIES TO 76 / 7600 /	31,190	C	890	856 SEE CCC T AND M		/1
65046	2	MG 125KVA, 50HZ OPT APPLIES TO 76 / 7600 /	31,190	C	890	856 SEE CCC T AND M		/1
65096	2	MAP III BASIC PROCESSOR	344,500	C	N/A	9,392 SEE CCC	2,006	B/1
		A ONE TIME INSTALLATION CHARGE	16,000					
		MICROPROGRAMMABLE MATRIX ALGORITHM PROCESSOR (MAP III) WITH 24,576 WORDS OF 32 BIT MEMORY DESIGNED FOR HIGH SPEED (150 NS PER STEP) PROCESSING. DUAL ACCESS STANDARD CHANNEL INTERFACE, EXPANDABLE TO 256K WORDS, ASSEMBLY DISASSEMBLY AND NUMERIC CONVERSION UNIT, CONTROL UNIT, OFFLINE LOAD INTERFACE, ONE ADD/SUBTRACT UNIT, ONE MULTIPLY UNIT PLUS CONTROL FOR ADDITIONAL FUNCTIONAL UNITS. FUNCTIONAL UNITS CAN BE EXPANDED TO FOUR ADD/SUBTRACT, FOUR MULTIPLY, TWO SQUARE ROOT AND/OR TWO DIVIDE UNITS WITH AVAILABLE OPTIONS. INCLUDES ECS INTERFACE WHICH CONNECTS TO 6640 ONLY. INCLUDES CONTROLWARE FOR BASIC EXECUTION, CONTROL AND ECS I/O ALLOWING THE USER TO PROGRAM THE DEVICE. SOFTWARE AND APPLICATIONS MACROS ARE AVAILABLE IN THE SPECIAL PROGRAM LIBRARY. REQUIRES ADDITION OF ONE ADD/SUBTRACT UNIT, ONE MULTIPLY UNIT, ONE SQUARE ROOT UNIT, ONE DIVIDE UNIT AND ECS TO SUPPORT THE AVAILABLE SOFTWARE AND APPLICATIONS MACROS. RECEIVES FROM 71 / 72 / 73 / RECEIVES FROM 74 / 171 / 172 / RECEIVES FROM 173 / 174 / 175 / RECEIVES FROM 6000 / AVA OPTIONS 65097 1/65099 1/65099 2/ AVA OPTIONS 65099 3/65099 14/						
65097	1	MEMORY EXPANSION, 24K ADDS 24K WORDS OF 32 BIT MEMORY IN AN EXTERNAL CABINET RAISING TOTAL MEMORY SIZE OF BASIC UNIT TO 48K WORDS, EXPANDABLE TO 256K WORDS IN 8K INCREMENTS. BEYOND 96K WORDS, POWER SUPPLY OPTION IS REQUIRED. MAY BE REQUIRED BETWEEN 48K AND 96K DEPENDING ON MEMORY CONFIGURATION. AVA OPTIONS 65097 2/65097 10/ OPT APPLIES TO65096 1/65096 2/	95,400	C	N/A	2,608 SEE CCC	550	B/1

SPECIAL PRODUCT	MOD	PRODUCTS DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
65097	2	MEMORY MODULES, 8K ALLOWS EXPANSION OF MAP III MEMORY UNIT FROM 48K BY INCREMENTS OF 8K WORDS OF 32 BIT MEMORY TO MAXIMUM OF 256K WORDS. OPT APPLIES TO65097 1/	23,744	C	N/A	652	SEE CCC	141	B/1
65099	1	SQUARE ROOT UNIT ADDS ONE SQUARE ROOT EXPANSION UNIT TO THE BASIC MAP III UNIT. A MAXIMUM OF TWO SQUARE ROOT UNITS MAY BE ADDED FOR A TOTAL OF TWO. OPT APPLIES TO65096 1/65096 2/	23,744	C	N/A	652	SEE CCC	141	B/1
65099	2	DIVIDE UNIT ADDS ONE DIVIDE EXPANSION UNIT TO THE BASIC MAP III UNIT. A MAXIMUM OF TWO DIVIDE UNITS CAN BE ADDED FOR A TOTAL OF TWO. OPT APPLIES TO65096 1/65096 2/	17,868	C	N/A	488	SEE CCC	106	B/1
65099	3	MULTIPLY UNIT ADDS ONE MULTIPLY EXPANSION UNIT TO THE BASIC MAP III UNIT. A MAXIMUM OF THREE MULTIPLY UNITS MAY BE ADDED FOR A TOTAL OF FOUR. OPT APPLIES TO65096 1/65096 2/	29,680	C	N/A	806	SEE CCC	141	B/1
65099	14	ADD/SUBTRACT UNIT ADDS ONE ADD/SUBTRACT EXPANSION UNIT TO THE BASIC MAP III WHICH INCLUDES FPT ENHANCEMENT. THREE ADD/SUBTRACT UNITS MAY BE ADDED TO THE MAP III BASIC PROCESSOR. OPT APPLIES TO65096 2/	17,808	C	N/A	488	SEE CCC	106	B/1
65135		AN ADAPTER WHICH REQUIRES THE REPLACEMENT OF THE CONSOLE TYPEWRITER ON THE 3000 SERIES OF OF COMPUTER SYSTEMS SPECIFIED BELOW. CONTROL SWITCHES AND LIGHTS ASSOCIATED WITH THE CONSOLE TYPEWRITER ARE DUPLICATED BY KEYBOARD CODES AND LIGHTS ON THE DISPLAY TERMINAL. REQUIRES 752-10 OR EQUIVALENT PRODUCT. HARD COPY AVAILABLE VIA OPTIONS. REMOVED ITEMS BECOME THE PROPERTY OF CONTROL DATA CORPORATION. AVA OPTIONS 753 11/ 755 11/							
65135	1	3100/3150/3200/3170/3300 ADPT	1,625	C	54	51	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	500						
		OPT APPLIES TO 3100 / 3150 / 3170 / OPT APPLIES TO 3200 / 3300 /							
65135	2	3500 SRA CONSOLE ADAPTER	2,250	C	75	71	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	700						
		OPT APPLIES TO 3 500/							
65135	3	3600/3800 SRA CONSOLE ADAPTER	1,625	C	54	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	500						
		OPT APPLIES TO 3400 / 3800 /							
65139	1	PACK ACCESS COVER INTERLOCK	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	1,130						
		PROVIDES AN INTERLOCK FOR ANY 844 DISK STORAGE UNIT. PREVENTS OPENING OF PACK ACCESS COVER WHILE DISK IS ROTATING. OPT APPLIES TO 844 XX/							
65144	1	DISPATCHER TRAINING SIMULATOR INCLUDES 40,960 16-BIT WORDS (PLUS ONE PARITY AND PROTECT BIT PER WORD), 600 NANOSECOND CYCLE TIME STORAGE, FLOATING POINT HARDWARE, PROGRAM PROTECT HARDWARE, INTERNAL AND EXTERNAL INTERRUPTS, REAL TIME CLOCK, OPERATOR CONSOLE, DISK CONTROLLER AND CARTRIDGE DISK DRIVE (4.4M WDS), CS-19 COLOR CRT SIMULATION CONSOLE WITH KEYBOARD. REQUIRES DISPATCHER TRAINING SIMULATOR SOFTWARE (A125-01). AVA OPTIONS 65144 2/	135,800		N/A	N/A	SEE CCC	1,056	D/1
65144	2	DATA LOGGER OPTION IMPACT PRINTER WITH 9 X 7 DOT MATRIX PRINTING. PRODUCES ORIGINAL AND UP TO FOUR COPIES. PRINTS UPTO 132 COLUMNS AT NOMINAL SPEEDS OF 60 LINES PER MINUTE WITH 6 LINES PER INCH SPACING. INCLUDES GRAPHIC CHARACTER SET, STAND AND PAPER HOLDER. OPT APPLIES TO65144 1/	5,500		N/A	N/A	SEE CCC	69	D/1
65182	1	PORT CONTROLLER OPTION OPTION MODIFIES ECS CONTROLLER SUCH THAT THREE OF FOUR PORTS CAN BE SELECTIVELY DISABLED ALLOWING SPECIFIC DEVICE(S) TO BE OPT APPLIES TO 6633 2/ 6634 2/ 6635 2/ OPT APPLIES TO 6636 2/ 7030 X/	7,943	C	N/A	217	SEE CCC	48	B/1

SPECIAL PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
65208	1	DISK STATION INCLUDES STATION CONTROL UNIT WITH 8,192 16-BIT WORDS OF 200 NANOSECOND MEMORY, MICRODRUM, KEYBOARD/DISPLAY AND ONE (1) STATION BUFFER UNIT WITH 32,768 16 BIT WORDS OF 1.1 MICROSECOND MEMORY. ATTACHES UP TO FOUR (4) 819 DISK STORAGE UNITS VIA ONE (1) 7639 CONTROLLER. RECEIVES FROM 203 XXX/ SENDS TO 7639 21/ 7639 22/ RECEIVES FROM 203 50/203 100/203 200	223,400	A	5,585	5,362	SEE CCC	200	B/1
65208	2	DISK STATION (AUGMENTED) INCLUDES STATION CONTROL UNIT WITH 8,192 16-BIT WORDS OF 200 NANOSECOND MEMORY, MICRODRUM, KEYBOARD/DISPLAY, AND TWO (2) STATION BUFFER UNITS, EACH WITH 32,768 16-BIT WORDS OF 1.1 MICROSECOND MEMORY. ATTACHES UP TO EIGHT (8) 819 DISK STORAGE UNITS VIA UP TO TWO (2) 7639 CONTROLLERS. RECEIVES FROM 203 XXX/ SENDS TO 7639 21/ 7639 22/ RECEIVES FROM 203 50/203 100/203 200	245,000	A	6,175	5,880	SEE CCC	355	B/1
65209	1	COUPLING STATION CONNECTS CYBER 203 TO 6000/CYBER 70/CYBER 170 FRONT END PROCESSOR. INCLUDES STATION CONTROL UNIT WITH 8,192 16-BIT WORDS OF 200 NANOSECOND MEMORY, MICRODRUM, KEYBOARD/DISPLAY AND 6000/CYBER 77/170 COMPATIBLE DATA CHANNEL REQUIRES TWO 6683 SATELLITE COUPLERS FOR CONNECTION (NOT INCLUDED). RECEIVES FROM 203 XXX/ SENDS TO 6683 2/ RECEIVES FROM 203 50/203 100/203 200	96,000	A	2,400	2,304	SEE CCC	148	B/1

POLICY

ACTIVE RESALE PRODUCTS

Definition:

Resale Products are those Control Data products that are no longer on an active production basis and are no longer part of the Standard Product Line offering.

Active Resale Products are actively marketed and are generally available.

Active Resale Products are usually (but not necessarily) used equipment. 'Resale' is a marketing category while 'used' refers to the equipment condition. Those 'Resale' products which are 'used' are warranted equivalent to new in performance.

Data provided is:

1. Product number
2. Product name/description
3. Notation showing interfaces to other products, i.e.,
   a. RECEIVES FROM: Products closer to the central computer than the listed product.
   b. SENDS TO: Products further from the central computer than the listed product.
   c. AVA OPTIONS: Additional features available for this product.
   d. OPT APPLIES TO: Products to which this feature applies.
4. Product price data

   Listed are purchase prices (List and Resale) and purchase conversion plan codes (as defined in the General Policy section), monthly lease prices for one, three, and five year leases. Generally, the resale price has been discounted from the purchase price. The resale price is the maximum price for either outright purchase or for purchase conversion.

   Special Note:

   See Policy General, page 5 for general description of CDC one year lease terms. All new contracts of three years or longer in the domestic commercial market will be written under the Commercial Credit Corporation lease contracts.

   International -

   In the International market, the same criteria will apply. In countries where Commercial Credit financing is not available, three year and longer leases will be arranged on a case by case basis by the EDP organization in cooperation with the International Finance Department and considering the availability of local financing.

5. Installation charges

   a. One Time Installation Charge -

   A charge made for installing the product in the customer's system. The charge applies for either field or factory installation.

   b. Field Installation Charge -

   Charges made to cover costs of installing an additional feature on a system at the customer's site. The cost of installation in the factory during the initial manufacturing cycle may be negligible, but when done at the customer's site, substantial efforts are required on the part of the customer engineer.

6. Maintenance price data

   - Basic Monthly Maintenance Charge as defined in the Maintenance Policy section.
   - Extended Maintenance Product Group as defined in the Maintenance Policy section and is used for determining additional maintenance charges for extended coverage.
   - The maintenance prices contained herein apply to the contiguous 48 states and Hawaii.

POLICY

ACTIVE RESALE PRODUCTS
(continued)

7. Purchase conversion

Purchase conversion credits can be applied only against the current list purchase price and not against the resale price. The Resale purchase price should be quoted to a customer if it is lower than the price calculated on the basis of purchase conversion credits. See the Policy Section of this Manual for further details.

8. Availability

The Abailability Schedule lists current availabilities for those Active Resale products which have a definite availability. For the availability of any Resale product which is not listed in the Availability Schedule, check CSS.

RESALE PRODUCT	MOD	PRODUCTS DESCRIPTION	ACTIVE	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	PAGE 1 SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
						1 YEAR			
18	5	BATCH TERMINAL CONTROLLER	LIST	15,105	C	327	302 SEE CCC	157	D/3
			RESALE	15,105					

CONTROLLER INCLUDES R/W MEMORY, OPERATOR DISPLAY CONSOLE, CARD READER/LINE PRINTER CONTROLLER, RS232-C/CCITT V.24 COMPATIBLE COMMUNICATION LINE ADAPTER FOR SYNCHRONOUS, 2-WAY ALTERNATE, 2 OR 4 WIRE, 1200-9600 BPS OPERATION. PRICE INCLUDES ONE 1490-X EMULATION OPTION AT NO ADDITIONAL CHARGE WHEN THE EMULATION OPTION IS ORDERED CONCURRENTLY WITH THIS CONTROLLER. HAS MODEM SHELF AND DESK TOP SPACE FOR CARD READER. INCLUDES ONE 20 FOOT MODEM CABLE. (120 VAC, 50/60 HZ).

SENDS TO	1927 30/	1827 31/	1827 32/			
SENDS TO	1927 60/	1829 30/	1929 60/			
SENDS TO	1860 1/	1860 2/	1860 3/			
SENDS TO	1960 4/					
AVA OPTIONS	1843 950/	1852 8/	1858 1/			
AVA OPTIONS	1890 1/	1890 2/	1890 9/			

18	30	TIMESHARE SYSTEM	LIST	110,000	B	3,960	3,667	2,392	958	D/3
			RESALE	110,000					

SUPPORTS UP TO 16 USER TERMINALS (EXPANDABLE TO 64 TERMINALS). INCLUDES; TIMESHARE PROCESSOR WITH 12BK BYTES MEMORY(EXPANDABLE TO 256K BYTES), 50 MEGABYTE SMD, MAGNETIC TAPE (9 TRACK, 25IPS, NRZI), 300 LPM PRINTER, 300 CPM CARD READER, AND TAPE CASSETTE FOR DIAGOSTIC LOADING; COMMUNICATION PROCESSOR WITH 96K BYTES (EXPANDABLE TO 256K BYTES), MUX ADAPTER 32 CHANNEL MUX (HOLDS 16 LINE ADAPTERS), TAPE CASSETTE FOR DIAGNOSTIC LOADING; CONSOLE DISPLAY SHARED BETWEEN PROCESSORS, EACH PROCESSOR HAS - A 204B INSTRUCTION READ/WRITE MICROMEMORY, MEMORY PAGING AND ADDRESSES UP TO 512K BYTES OF MEMORY, AN INTERPROCESSOR LINK ALLOWS SHARED MEMORY. SYSTEM INCLUDES - POWER SUPPLIES AND CABINETS. TERMINALS, TERMINAL CABLES, AND LINE ADAPTERS ARE NOT INCLUDED. TERMINALS MUST BE 33 KSR TTY COMPATIBLE WITH RS232 INTERFACE (752-10 OR EQUIVALENT). ONE 2561-1 LINE ADAPTER REQUIRED FOR EACH TWO TERMINALS. EXPANSION BEYOND 32 LINES REQUIRES 2556-2 AND 1887-4 CABINET. (120 VAC 50/60HZ).

REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE -

QUANTITY	PURCHASE PRICE
1ST UNIT	110,000
2ND THRU 4TH UNITS	105,600
5TH THRU 9TH UNITS	102,300
10TH THRU 14TH UNITS	99,000
15TH OR OVER UNITS	95,700

SENDS TO	753 10/	1828 1/	1829 2/						
SENDS TO	1833 4/	1833 5/	1843 1/						
SENDS TO	1843 2/	1850 1/	1860 5/						
SENDS TO	1860 6/	1860 72/	1860 92/						
SENDS TO	1862 1/	1867 10/	1867 20/						
SENDS TO	2556 2/	2561 1/							
AVA OPTIONS	1870 1/	1870 2/	1872 3/						
AVA OPTIONS	1874 1/	1875 1/	1882 16/						
AVA OPTIONS	1882 32/	1887 4/	1888 1/						
AVA OPTIONS	1890 1/	1890 2/	1890 3/						
AVA OPTIONS	1042B 1/								

76		CENTRAL COMPUTER							

SIXTY BIT WORD SIZE, 12 WORD INSTRUCTION STACK, 9 FUNCTIONAL UNITS, 8 OPERAND, 8 ADDRESSING AND 8 INCREMENT REGISTERS. SEVEN BI-DIRECTIONAL I/O CHANNELS EACH WITH ITS OWN ASSEMBLY/DISASSEMBLY LOGIC. SIX 7602-1 PERIPHERAL PROCESSORS EACH ATTACHED TO ONE OF THE I/O CHANNELS, AND ONE MAINTENANCE CONTROL UNIT WITH ITS OWN CARD READER AND VISUAL DISPLAY. POWER AND COOLING INCLUDED.

SENDS TO	7602 1/	7618 1/	7622 1/						
SENDS TO	7622 2/	7628 1/	7654 1/						
SENDS TO	7654 21/	7683 1/							

12		CENTRAL PROCESSOR	LIST	4,510,000	C	90,200	88,240 SEE CCC	16,457	A/1
			RESALE	4,510,000					

WITH 32,768 60-BIT WORDS OF SMALL CORE MEMORY AND 256,000 60-BIT WORDS OF LARGE CORE MEMORY EXPANDABLE TO 65,536 60-BIT WORDS OF SMALL CORE MEMORY, 512,000 60-BIT WORDS OF LARGE CORE MEMORY, FIFTEEN BI-DIRECTIONAL I/O CHANNELS AND THIRTEEN 7602-1 PERIPHERAL PROCESSORS.

AVA OPTIONS	7606 1/	7606 2/	7608 1/			
AVA OPTIONS	7609 1/	10293 1/	10293 2/			

14		CENTRAL PROCESSOR	LIST	5,214,000	C	106,260	103,950 SEE CCC	18,269	A/1
			RESALE	5,214,000					

WITH 65,536 60-BIT WORDS OF SMALL CORE MEMORY AND 256,000 60-BIT WORDS OF LARGE CORE MEMORY EXPANDABLE TO 512,000 60-BIT WORDS OF LARGE CORE MEMORY, FIFTEEN BI-DIRECTIONAL I/O CHANNELS AND THIRTEEN 7602-1 PERIPHERAL PROCESSORS.

AVA OPTIONS	7606 1/	7606 2/	7608 1/			
AVA OPTIONS	10293 1/	10293 2/				

16		CENTRAL PROCESSOR	LIST	5,918,000	C	119,900	117,294 SEE CCC	20,194	A/1
			RESALE	5,918,000					

WITH 32,768 60-BIT WORDS OF SMALL CORE MEMORY AND 512,000 60-BIT WORDS OF LARGE CORE MEMORY EXPANDABLE TO 65,536 60-BIT WORDS OF SMALL CORE MEMORY, FIFTEEN BI-DIRECTIONAL I/O CHANNELS AND THIRTEEN 7602-1 PERIPHERAL PROCESSORS.

AVA OPTIONS	7606 1/	7606 2/	7609 1/			
AVA OPTIONS	10293 1/	10293 2/				

18		CENTRAL PROCESSOR	LIST	6,622,000	C	135,960	133,006 SEE CCC	21,994	A/1
			RESALE	6,622,000					

WITH 65,536 60-BIT WORDS OF SMALL CORE MEMORY AND 512,000 60-BIT WORDS OF LARGE CORE MEMORY EXPANDABLE TO FIFTEEN BI-DIRECTIONAL I/O CHANNELS AND THIRTEEN 7602-1 PERIPHERAL PROCESSORS.

AVA OPTIONS	7606 1/	7606 2/	10293 1/			
AVA OPTIONS	10293 2/					

RESALE PRODUCTS ACTIVE

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OP 1 YEAR	CCC BASE 3YR/24MO	INSTLMNT SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
121		CENTRAL PROCESSOR	LIST	5,214,000	C	106,260	103,950	SEE CCC	18,269	A/1
			RESALE	5,214,000						
		WITH 65,536 60-BIT WORDS OF SINGLE ERROR CORRECTION AND DOUBLE ERROR DETECTION SEMI-CONDUCTOR MEMORY AND 256,000 60-BIT WORDS OF LARGE CORE MEMORY. EXPANDABLE TO 512,000 60 BIT WORDS OF LARGE CORE MEMORY, FIFTEEN BI-DIRECTIONAL I/O CHANNELS AND THIRTEEN 7602-1 PERIPHERAL PROCESSORS.								
		AVA OPTIONS 7602 1/10293 2/10332 1/								
		AVA OPTIONS 10348 1/10348 2/								
122		CENTRAL PROCESSOR	LIST	6,622,000	C	135,960	133,006	SEE CCC	21,993	A/1
			RESALE	6,622,000						
		WITH 65,536 60-BIT WORDS OF SINGLE ERROR CORRECTION AND DOUBLE ERROR DETECTION SEMI-CONDUCTOR MEMORY AND 512,000 60-BIT WORDS OF LARGE CORE MEMORY. EXPANDABLE TO 131,072 WORDS OF SEMICONDUCTOR MEMORY. FIFTEEN BI-DIRECTIONAL I/O CHANNELS AND THIRTEEN 7602-1 PERIPHERAL PROCESSORS.								
		AVA OPTIONS 7602 1/10293 2/10331 2/								
		AVA OPTIONS 10348 1/10348 2/								
142		CENTRAL PROCESSOR	LIST	7,519,000	C	155,460	152,076	SEE CCC	25,616	A/1
			RESALE	7,519,000						
		WITH 131,072 60-BIT WORDS OF SINGLE ERROR CORRECTION AND DOUBLE ERROR DETECTION SEMI-CONDUCTOR MEMORY AND 512,000 60-BIT WORDS OF LARGE CORE MEMORY. EXPANDABLE TO FIFTEEN BI-DIRECTIONAL I/O CHANNELS AND THIRTEEN 7602-1 PERIPHERAL PROCESSORS.								
		AVA OPTIONS 7602 1/10293 2/10348 1/								
		AVA OPTIONS 10348 2/								
171		CENTRAL COMPUTER								
		SIXTY BIT WORD SIZE PLUS 8 BIT ERROR CORRECTION CODE, SEMICONDUCTOR STORAGE, 10 PERIPHERAL AND CONTROL PROCESSORS EACH WITH 4,096 12 BIT WORDS, PLUS 1 PARITY BIT, FLOATING POINT HARDWARE, 8 OPERAND, 8 ADDRESSING, AND 8 INCREMENT REGISTERS, CENTRAL PROCESSOR INTERRUPT THROUGH EXCHANGE JUMP LOGIC, 12 DATA CHANNELS WITH 12 BITS PLUS 1 PARITY BIT, SYSTEM CONSOLE, AND REQUIRED POWER AND COOLING EQUIPMENT.								
		SENDS TO 2550 2/ 2558 3/ 2559 4/								
		SENDS TO 6671 3/ 6673 / 6674 /								
		SENDS TO 6676 / 6681 2/ 6683 2/								
		SENDS TO 7021 / 7054 / 7152 1/								
		SENDS TO 7154 /								
		AVA OPTIONS 7012 1/10314 1/10317 1/								
		AVA OPTIONS 10314 1/10380 1/10381 1/								
		AVA OPTIONS 10382 1/10383 1/65044 /								
171	4	CENTRAL COMPUTER	LIST	376,900	B	5,875	5,290	SEE CCC	1,447	B/1
			RESALE	376,900						
		65,536 WORDS OF CENTRAL MEMORY								
		AVA OPTIONS 10312 6/								
171	6	CENTRAL COMPUTER	LIST	456,195	B	7,645	6,875	SEE CCC	1,692	B/1
			RESALE	456,195						
		98,304 WORDS OF CENTRAL MEMORY								
		AVA OPTIONS 10312 9/								
171	8	CENTRAL COMPUTER	LIST	535,490	B	9,415	8,460	SEE CCC	1,937	B/1
			RESALE	535,490						
		131,072 WORDS OF CENTRAL MEMORY								
		AVA OPTIONS 10312 12/								
171	12	CENTRAL COMPUTER	LIST	690,135	B	12,875	11,610	SEE CCC	2,426	B/1
			RESALE	690,135						
		196,608 WORDS OF CENTRAL MEMORY								
		AVA OPTIONS 10312 16/								
171	16	CENTRAL COMPUTER	LIST	844,780	B	16,335	14,760	SEE CCC	2,914	B/1
			RESALE	844,780						
		262,144 WORDS OF CENTRAL MEMORY								
172		CENTRAL COMPUTER								
		SIXTY BIT WORD SIZE PLUS 8 BIT ERROR CORRECTION CODE, SEMI-CONDUCTOR STORAGE, 10 PERIPHERAL AND CONTROL PROCESSORS EACH WITH 4,096 12 BIT WORDS, PLUS 1 PARITY BIT, FLOATING POINT HARDWARE, CHARACTER COMPARE AND MOVE INSTRUCTIONS, 8 OPERAND, 8 ADDRESSING AND 8 INCREMENT REGISTERS, CENTRAL PROCESSOR INTERRUPT THROUGH EXCHANGE JUMP LOGIC, 12 DATA CHANNELS WITH 12 BITS PLUS 1 PARITY BIT, TWO DATA CHANNEL CONVERTERS FOR 3000 SERIES CONTROLLERS, SYSTEM CONSOLE, AND REQUIRED POWER AND COOLING EQUIPMENT.								
		SENDS TO 415 30/ 580 12/ 580 16/								
		SENDS TO 580 20/ 2550 2/ 2558 3/								
		SENDS TO 2559 4/ 3446 2/ 3447 2/								
		SENDS TO 3518 1/ 3518 2/ 3518 3/								
		SENDS TO 3528 1/ 3528 2/ 3528 3/								
		SENDS TO 3553 1/ 3555 1/ 6671 3/								
		SENDS TO 6673 / 6674 / 6676 /								
		SENDS TO 6681 2/ 6683 2/ 7021 21/								
		SENDS TO 7021 22/ 7021 31/ 7021 32/								
		SENDS TO 7054 21/ 7054 22/ 7054 41/								
		SENDS TO 7054 42/ 7152 1/								
		AVA OPTIONS 10384 1/65044 /								

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
4		CENTRAL COMPUTER	LIST	746,825	B	11,795	10,665 SEE CCC	2,494	B/1
			RESALE	746,825					
		65,536 WORDS OF CENTRAL MEMORY							
		AVA OPTIONS 7012 1/1C312 6/10314 1/							
		AVA OPTIONS 10316 1/1C317 1/1C318 1/							
6		CENTRAL COMPUTER	LIST	826,120	B	13,565	12,250 SEE CCC	2,729	B/1
			RESALE	826,120					
		98,304 WORDS OF CENTRAL MEMORY							
		AVA OPTIONS 7012 1/1C312 8/1C314 1/							
		AVA OPTIONS 10316 1/10317 1/10318 1/							
8		CENTRAL COMPUTER	LIST	905,415	B	15,335	13,835 SEE CCC	2,974	B/1
			RESALE	905,415					
		131,072 WORDS OF CENTRAL MEMORY							
		AVA OPTIONS 7012 1/10312 12/1C314 1/							
		AVA OPTIONS 10316 1/10317 1/10318 1/							
172	12	CENTRAL COMPUTER	LIST	1,060,060	B	18,795	16,985 SEE CCC	3,462	B/1
			RESALE	1,060,060					
		196,608 WORDS OF CENTRAL MEMORY.							
		AVA OPTIONS 7012 1/1C312 16/10314 1/							
		AVA OPTIONS 10316 1/10317 1/1C318 1/							
172	16	CENTRAL COMPUTER	LIST	1,214,705	B	22,255	20,135 SEE CCC	3,951	B/1
			RESALE	1,214,705					
		262,144 WORDS OF CENTRAL MEMORY.							
		AVA OPTIONS 7012 1/10314 1/10316 1/							
		AVA OPTIONS 10317 1/10318 1/							
173		CENTRAL COMPUTER							
		SIXTY BIT WORD SIZE PLUS 8 BIT ERROR CORRECTION CODE, SEMI-CONDUCTOR STORAGE, 10 PERIPHERAL AND CONTROL PROCESSORS EACH WITH 4,096 12 BIT WORDS, PLUS 1 PARITY BIT, FLOATING POINT HARDWARE, CHARACTER COMPARE AND MOVE INSTRUCTIONS, 8 OPERAND, 8 ADDRESSING AND 8 INCREMENT REGISTERS, CENTRAL PROCESSOR INTERRUPT THROUGH EXCHANGE JUMP LOGIC, 12 DATA CHANNELS WITH 12 BITS PLUS 1 PARITY BIT, TWO DATA CHANNEL CONVERTERS FOR 3000 SERIES CONTROLLERS, SYSTEM CONSOLE, AND REQUIRED POWER AND COOLING EQUIPMENT.							
		SENDS TO 415 30/ 580 12/ 580 16/							
		SENDS TO 580 20/ 2550 2/ 2558 3/							
		SENDS TO 2558 4/ 3446 2/ 3447 2/							
		SENDS TO 3518 1/ 3518 2/ 3518 3/							
		SENDS TO 3528 1/ 3528 2/ 3528 3/							
		SENDS TO 3553 1/ 3555 1/ 6671 3/							
		SENDS TO 6673 / 6674 / 6676 /							
		SENDS TO 6681 2/ 6683 2/ 7021 21/							
		SENDS TO 7021 22/ 7021 31/ 7021 32/							
		SENDS TO 7054 21/ 7054 22/ 7054 41/							
		SENDS TO 7054 42/ 7152 1/							
		AVA OPTIONS 65044 /							
173	6	CENTRAL COMPUTER	LIST	1,196,920	B	26,600	23,985 SEE CCC	3,801	B/1
			RESALE	1,196,920					
		98,304 WORDS OF CENTRAL MEMORY							
		AVA OPTIONS 7012 1/1C312 9/10314 1/							
		AVA OPTIONS 10316 2/10317 1/10318 1/							
173	8	CENTRAL COMPUTER	LIST	1,276,215	B	28,370	25,570 SEE CCC	4,045	B/1
			RESALE	1,276,215					
		131,072 WORDS OF CENTRAL MEMORY							
		AVA OPTIONS 7012 1/1C312 12/1C314 1/							
		AVA OPTIONS 10316 2/10317 1/10318 1/							
173	12	CENTRAL COMPUTER	LIST	1,430,860	B	31,830	28,720 SEE CCC	4,534	B/1
			RESALE	1,430,860					
		196,608 WORDS OF CENTRAL MEMORY							
		AVA OPTIONS 7012 1/1C312 16/10314 1/							
		AVA OPTIONS 10316 2/10317 1/1C318 1/							
173	16	CENTRAL COMPUTER	LIST	1,585,505	B	35,290	31,870 SEE CCC	5,023	B/1
			RESALE	1,585,505					
		262,144 WORDS OF CENTRAL MEMORY							
		AVA OPTIONS 7012 1/1C314 1/1C315 1/							
		AVA OPTIONS 10316 2/10317 1/1C318 1/							
174		CENTRAL COMPUTER							
		CENTRAL COMPUTER WITH TWO CENTRAL PROCESSORS SIXTY BIT WORD SIZE PLUS 8 BIT ERROR CORRECTION CODE, SEMI-CONDUCTOR STORAGE, 10 PERIPHERAL AND CONTROL PROCESSORS EACH WITH 4,096 12 BIT WORDS, PLUS 1 PARITY BIT, FLOATING POINT HARDWARE, CHARACTER COMPARE AND MOVE INSTRUCTIONS, 8 OPERAND, 8 ADDRESSING AND 6 INCREMENT REGISTERS, CENTRAL PROCESSOR INTERRUPT THROUGH EXCHANGE JUMP LOGIC, 12 DATA CHANNELS WITH 12 BITS PLUS 1 PARITY BIT, TWO DATA CHANNEL CONVERTERS FOR 3000 SERIES CONTROLLERS, SYSTEM CONSOLE, AND REQUIRED POWER AND COOLING EQUIPMENT.							
		SENDS TO 415 30/ 580 12/ 580 16/							
		SENDS TO 580 20/ 2550 2/ 2558 3/							
		SENDS TO 2558 4/ 3446 2/ 3447 2/							
		SENDS TO 3518 1/ 3518 2/ 3518 3/							
		SENDS TO 3528 1/ 3528 2/ 3528 3/							
		SENDS TO 3553 1/ 3555 1/ 6671 3/							
		SENDS TO 6673 / 6674 / 6676 /							
		SENDS TO 6681 2/ 6683 2/ 7021 21/							
		SENDS TO 7021 22/ 7021 31/ 7021 32/							
		SENDS TO 7054 21/ 7054 22/ 7054 41/							
		SENDS TO 7054 42/ 7152 1/							
		AVA OPTIONS 65044 /							

RESALE PRODUCT	MOD	PRODUCTS ACTIVE DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
174	6	CENTRAL COMPUTER	LIST	1,528,550	8	33,995	30,575	SEE CCC	4,823	B/1
			RESALE	1,528,550						
		98,304 WORDS OF CENTRAL MEMORY.								
		AVA OPTIONS 7012 1/10312 8/10314 1/								
		AVA OPTIONS 10318 1/								
174	8	CENTRAL COMPUTER	LIST	1,647,845	8	35,765	32,160	SEE CCC	5,068	B/1
			RESALE	1,607,845						
		131,072 WORDS OF CENTRAL MEMORY.								
		AVA OPTIONS 7012 1/10312 12/10314 1/								
		AVA OPTIONS 10318 1/								
174	12	CENTRAL COMPUTER	LIST	1,762,490	8	39,225	35,310	SEE CCC	5,557	B/1
			RESALE	1,762,490						
		196,608 WORDS OF CENTRAL MEMORY.								
		AVA OPTIONS 7012 1/10312 16/10314 1/								
		AVA OPTIONS 10318 1/								
174	16	CENTRAL COMPUTER	LIST	1,917,135	8	42,685	38,460	SEE CCC	6,046	B/1
			RESALE	1,917,135						
		262,144 WORDS OF CENTRAL MEMORY.								
		AVA OPTIONS 7012 1/10314 1/10318 1/								
175		CENTRAL COMPUTER SIXTY BIT WORD SIZE PLUS 6 BIT ERROR CORRECTION CODE, SEMI-CONDUCTOR STORAGE, 10 PERIPHERAL AND CONTROL PROCESSORS EACH WITH 4,096 12 BIT WORDS PLUS 1 PARITY BIT, INSTRUCTION WORD STACK, 9 FUNCTIONAL UNITS, FLOATING POINT HARDWARE, 8 OPERAND, 8 ADDRESSING AND 8 INCREMENT REGISTERS, CENTRAL PROCESSOR INTERRUPT THROUGH EXCHANGE JUMP LOGIC, 12 DATA CHANNELS WITH 12 BITS PLUS 1 PARITY BIT, TWO DATA CHANNEL CONVERTERS FOR 3000 SERIES CONTROLLERS, SYSTEM CONSOLE AND REQUIRED POWER AND COOLING EQUIPMENT. SENDS TO 580 16/ 580 20/ 2550 2/ SENDS TO 2558 3/ 2558 4/ 3446 2/ SENDS TO 3446 2/ 3528 1/ 3528 2/ SENDS TO 3528 3/ 6673 / 6674 / SENDS TO 6676 / 6681 2/ 6683 2/ SENDS TO 7021 21/ 7021 21/ 7021 22/ SENDS TO 7021 22/ 7021 31/ 7021 32/ SENDS TO 7030 108/ 7030 116/ 7054 21/ SENDS TO 7054 21/ 7054 21/ 7054 22/ SENDS TO 7054 22/ 7054 22/ 7054 41/ SENDS TO 7054 41/ 7054 42/ 7054 42/ SENDS TO 7152 1/								
175	8	CENTRAL COMPUTER	LIST	3,353,623	8	64,250	57,830	SEE CCC	7,955	B/1
			RESALE	2,984,120						
		131,072 WORDS OF CENTRAL MEMORY AVA OPTIONS 7012 1/10313 12/10314 51/ AVA OPTIONS 10318 2/65045 /								
175	12	CENTRAL COMPUTER	LIST	3,611,623	8	70,065	63,130	SEE CCC	9,591	B/1
			RESALE	3,142,120						
		196,608 WORDS OF CENTRAL MEMORY AVA OPTIONS 7012 1/10313 16/10314 51/ AVA OPTIONS 10318 2/65045 /								
175	16	CENTRAL COMPUTER	LIST	3,869,623	8	75,880	68,430	SEE CCC	9,227	B/1
			RESALE	3,400,120						
		262,144 WORDS OF CENTRAL MEMORY AVA OPTIONS 7012 1/10314 51/10318 2/ AVA OPTIONS 65045 /								
175	XXX	CDC CYBER 170 MODEL 175	LIST	N/A		N/A	N/A	SEE CCC	N/A	
			RESALE	N/A						
		CENTRAL COMPUTER SIXTY-BIT WORD SIZE PLUS 8-BIT ERROR CORRECTION SEMI-CONDUCTOR STORAGE, 10 PERIPHERAL AND CONTROL PROCESSORS, EACH WITH 4096 12-BIT WORDS PLUS ONE PARITY BIT, INSTRUCTION WORD STACK, NINE FUNCTIONAL UNITS, FLOATING-POINT HARDWARE, 8 OPERAND, 8 ADDRESSING AND 8 INCREMENT REGISTERS, CENTRAL PROCESSOR INTERRUPT THROUGH EXCHANGE JUMP LOGIC, TWELVE 12-BIT PLUS ONE PARITY BIT DATA CHANNELS, TWO DATA CHANNEL CONVERTERS FOR 3000 SERIES DATA CHANNELS, SYSTEM CONSOLE AND REQUIRED SYSTEM POWER AND COOLING. SENDS TO 580 XXX/ 2558 3/ 2558 4/ SENDS TO 3528 X/ 6673 / 6674 / SENDS TO 6676 / 6681 2/ 6683 2/ SENDS TO 7021 XX/ 7030 1XX/ 7054 2X/ SENDS TO 7054 4X/ 7152 1/ AVA OPTIONS 7012 1/10314 151/10318 2/ AVA OPTIONS 65045 X/								
175	108	CENTRAL COMPUTER	LIST	2,257,536	8	50,696	45,625	SEE CCC	7,152	B/1
			RESALE	2,257,536						
		131,072 WORDS OF CENTRAL MEMORY AVA OPTIONS 10313 12/10426 1/								
175	112	CENTRAL COMPUTER	LIST	2,515,536	8	56,511	50,925	SEE CCC	7,788	B/1
			RESALE	2,515,536						
		196,608 WORDS OF CENTRAL MEMORY AVA OPTIONS 10313 16/10426 1/								
175	116	CENTRAL COMPUTER	LIST	2,773,536	8	62,326	56,225	SEE CCC	8,424	B/1
			RESALE	2,773,536						
		262,144 WORDS OF CENTRAL MEMORY AVA OPTIONS 10426 1/								
175	208	CENTRAL COMPUTER	LIST	2,794,116	8	62,690	56,383	SEE CCC	7,955	B/1
			RESALE	2,794,116						
		131,072 WORDS OF CENTRAL MEMORY AVA OPTIONS 10313 12/10427 1/								

RESALE PRODUCYS ACTIVE

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
175	212	CENTRAL COMPUTER	LIST RESALE	3,052,116 3,052,116	B	68,465	61,683 SEE CCC	8,591	B/1
		196,608 WORDS OF CENTRAL MEMORY AVA OPTIONS 10313 16/10427 2/							
175	216	CENTRAL COMPUTER	LIST RESALE	3,310,116 3,310,116	B	74,280	66,989 SEE CCC	9,227	B/1
		262,144 WORDS OF CENTRAL MEMORY AVA OPTIONS 10427 3/							
175	308	CENTRAL COMPUTER	LIST RESALE	3,263,623 3,263,623	B	73,109	65,796 SEE CCC	9,355	B/1
		131,072 WORDS OF CENTRAL MEMORY AVA OPTIONS 10313 112/							
175	312	CENTRAL COMPUTER	LIST RESALE	3,521,623 3,521,623	B	78,924	71,096 SEE CCC	8,991	B/1
		196,608 WORDS OF CENTRAL MEMORY AVA OPTIONS 10313 116/							
175	316	CENTRAL COMPUTER	LIST RESALE	3,779,623 3,779,623	B	84,739	76,396 SEE CCC	9,627	B/1
		262,144 WORDS OF CENTRAL MEMORY							
176		CENTRAL COMPUTER 60-BIT WORD SIZE, 12 WORD INSTRUCTION STACK, 9 FUNCTIONAL UNITS, 8 OPERAND, 8 ADDRESSING AND 8 INCREMENT REGISTERS, SEMICONDUCTOR CENTRAL MEMORY WITH ERROR CORRECTION, 10 PERIPHERAL AND CONTROL PROCESSORS, EACH WITH 4,096 12-BIT WORDS PLUS 1 PARITY BIT, TWELVE 12-BIT DATA CHANNELS, AND ONE DATA CHANNEL CONVERTER FOR 3000 SERIES DATA CHANNELS. INCLUDES CONSOLE AND REQUIRED POWER AND COOLING EQUIPMENT. SENDS TO 415 10/ 580 / 580 1XX/ SENDS TO 2550 2/ 2558 3/ 2558 3/ SENDS TO 3446 2/ 3447 2/ 6671 / SENDS TO 6673 / 6674 / 6676 / SENDS TO 6693 2/ 7012 1/ 7021 2X/ SENDS TO 7021 3X/ 7054 XX/ 7152 1/ SENDS TO 7154 XX/ 7611 1/ 7622 XX/ SENDS TO 7639 X/ 7654 XX/ 7681 1/ SENDS TO 7683 1/10329 2/65044 / AVA OPTIONS 7012 1/10293 2/10315 / AVA OPTIONS 10348 1/10348 2/10376 1/ AVA OPTIONS 10376 2/10377 1/65044 / AVA OPTIONS 65045 /							
176	8	CENTRAL COMPUTER	LIST RESALE	4,426,800 4,426,800	A	89,968	81,596 SEE CCC	13,537	A/1
		131,072 WORDS OF CENTRAL MEMORY AVA OPTIONS 10374 1/10374 2/10375 1/ AVA OPTIONS 10375 2/10375 10/10376 10/							
176	12	CENTRAL COMPUTER	LIST RESALE	4,826,800 4,826,800	A	98,119	88,996 SEE CCC	14,544	A/1
		196,608 WORDS OF CENTRAL MEMORY AVA OPTIONS 10374 2/10375 1/10375 2/ AVA OPTIONS 10375 10/10376 10/							
176	16	CENTRAL COMPUTER	LIST RESALE	5,226,800 5,226,800	A	106,268	96,396 SEE CCC	15,551	A/1
		262,144 WORDS OF CENTRAL MEMORY AVA OPTIONS 10375 1/10375 2/10375 10/ AVA OPTIONS 10376 10/							
176	21	CENTRAL COMPUTER	LIST RESALE	5,500,000 5,500,000	A	112,200	102,100 SEE CCC	17,676	A/1
		131,072 WORDS OF CENTRAL MEMORY, 524,288 WORDS OF CORE MEMORY WITH ERROR CORRECTION, 4 BI-DIRECTIONAL I/O CHANNELS WITH ASSY./DISASSY LOGIC, 4 10376-1 PERIPHERAL PROCESSORS EACH ATTACHED TO AN I/O CHANNEL. AVA OPTIONS 10374 1/10374 2/10375 1/ AVA OPTIONS 10375 2/								
176	22	CENTRAL COMPUTER	LIST RESALE	6,340,000 6,340,000	A	129,303	117,660 SEE CCC	21,200	A/1
		131,072 WORDS OF CENTRAL MEMORY, 1,048,576 WORDS OF CORE MEMORY WITH ERROR CORRECTION, 4 BI-DIRECTIONAL I/O CHANNELS WITH ASSY./DISASSY LOGIC, 4 10376-1 PERIPHERAL PROCESSORS EACH ATTACHED TO AN I/O CHANNEL. AVA OPTIONS 10374 1/10374 2/10375 2/								
176	24	CENTRAL COMPUTER	LIST RESALE	7,830,000 7,830,000	A	159,700	145,320 SEE CCC	27,746	A/1
		131,072 WORDS OF CENTRAL MEMORY, 2,097,152 WORDS OF CORE MEMORY WITH ERROR CORRECTION, 4 BI-DIRECTIONAL I/O CHANNELS WITH ASSY./DISASSY LOGIC, 4 10376-1 PERIPHERAL PROCESSORS EACH ATTACHED TO AN I/O CHANNEL. AVA OPTIONS 10374 1/10374 2/								
176	31	CENTRAL COMPUTER	LIST RESALE	5,900,000 5,900,000	A	120,350	109,500 SEE CCC	18,683	A/1
		196,608 WORDS OF CENTRAL MEMORY, 524,288 WORDS OF CORE MEMORY WITH ERROR CORRECTION, 4 BI-DIRECTIONAL I/O CHANNELS WITH ASSY./DISASSY LOGIC, 4 10376-1 PERIPHERAL PROCESSORS EACH ATTACHED TO AN I/O CHANNEL. AVA OPTIONS 10374 2/10375 1/10375 2/								

RESALE PRODUCT	MOD	PRODUCTS ACTIVE DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
176	32	CENTRAL COMPUTER	LIST	6,740,000	A	137,450	125,060	SEE CCC	22,207	A/1
			RESALE	6,740,000						
		196,608 WORDS OF CENTRAL MEMORY, 1,048,576 WORDS OF CORE MEMORY WITH ERROR CORRECTION, 4 BI-DIRECTIONAL I/O CHANNELS WITH ASSY./DISASSY LOGIC, 4 10376-1 PERIPHERAL PROCESSORS EACH ATTACHED TO AN I/O CHANNEL. AVA OPTIONS 10374 2/10375 2/								
176	34	CENTRAL COMPUTER	LIST	8,230,000	A	167,850	152,720	SEE CCC	28,753	A/1
			RESALE	8,230,000						
		196,608 WORDS OF CENTRAL MEMORY, 2,097,152 WORDS OF CORE MEMORY WITH ERROR CORRECTION, 4 BI-DIRECTIONAL I/O CHANNELS WITH ASSY./DISASSY LOGIC, 4 10376-1 PERIPHERAL PROCESSORS EACH ATTACHED TO AN I/O CHANNEL. AVA OPTIONS 10374 2/								
176	41	CENTRAL COMPUTER	LIST	6,300,000	A	128,500	116,900	SEE CCC	19,690	A/1
			RESALE	6,300,000						
		262,144 WORDS OF CENTRAL MEMORY, 524,288 WORDS OF CORE MEMORY WITH ERROR CORRECTION, 4 BI-DIRECTIONAL I/O CHANNELS WITH ASSY./DISASSY LOGIC, 4 10376-1 PERIPHERAL PROCESSORS EACH ATTACHED TO AN I/O CHANNEL. AVA OPTIONS 10375 1/10375 2/								
176	42	CENTRAL COMPUTER	LIST	7,140,000	A	145,660	132,460	SEE CCC	23,214	A/1
			RESALE	7,140,000						
		262,144 WORDS OF CENTRAL MEMORY, 1,048,576 WORDS OF CORE MEMORY WITH ERROR CORRECTION, 4 BI-DIRECTIONAL I/O CHANNELS WITH ASSY./DISASSY LOGIC, 4 10376-1 PERIPHERAL PROCESSORS EACH ATTACHED TO AN I/O CHANNEL. AVA OPTIONS 10375 2/								
176	44	CENTRAL COMPUTER	LIST	8,630,000	A	176,000	160,120	SEE CCC	29,760	A/1
			RESALE	8,630,000						
		262,144 WORDS OF CENTRAL MEMORY, 2,097,152 WORDS OF CORE MEMORY WITH ERROR CORRECTION, 4 BI-DIRECTIONAL I/O CHANNELS WITH ASSY./DISASSY LOGIC, 4 10376-1 PERIPHERAL PROCESSORS EACH ATTACHED TO AN I/O CHANNEL.								
358	1	TRANSCEIVER	LIST	1,061	E	17	17	SEE CCC	27	D/3
			RESALE	1,061						
		ASYNCHRONOUS MODEM, RS-232C INTERFACE, RATE 9600 BAUDS OR LESS ON UNSWITCHED METALLIC LINE PAIRS OR COAXIAL CABLE ONLY, POINT-TO-POINT OR MULTIPOINT, HALF-DUPLEX TWO-WIRE OR FULL-DUPLEX FOUR-WIRE, UP TO ONE MILE. NOT COMPATIBLE WITH VOICE FREQUENCY TELEPHONE CIRCUITS. RECEIVES FROM 2561 1/ 6671 / 6676 /								
358	2	TRANSCEIVER	LIST	1,948	E	34	34	SEE CCC	37	D/3
			RESALE	1,948						
		SYNCHRONOUS MODEM, RS-232C INTERFACE, RATE 1200/2400/4800/9600 BPS, SWITCH SELECTABLE, FOR USE ON UNSWITCHED METALLIC LINE PAIRS OR COAXIAL CABLE ONLY, POINT-TO-POINT OR MULTIPOINT, HALF-DUPLEX TWO-WIRE OR FULL-DUPLEX FOUR-WIRE, UP TO ONE MILE. NOT COMPATIBLE WITH VOICE FREQUENCY TELEPHONE CIRCUITS. RECEIVES FROM 311 2/ 1747 / 2560 1/ RECEIVES FROM 3275 / 6671 / 8197 /								
358	3	TRANSCEIVER	LIST	2,625	E	65	63	SEE CCC	52	D/3
			RESALE	2,625						
		SYNCHRONOUS MODEM, 40.8K OR 163.2K BPS, SWITCH SELECTABLE, FOR USE ON UNSWITCHED METALLIC LINE PAIRS OR COAXIAL CABLE ONLY, POINT-TO-POINT OR MULTIPOINT, HALF-DUPLEX TWO-WIRE OR FULL-DUPLEX FOUR-WIRE, UP TO ONE MILE. INTERFACE SIMILAR TO THAT OF AT+T 301 DATA SETS. NOT COMPATIBLE WITH VOICE FREQUENCY TELEPHONE CIRCUITS. RECEIVES FROM 311 2/ 1747 / 2560 2/ RECEIVES FROM 6673 / 6674 / 8529 8/								

PRODUCT MOD		DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR		MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
358	4	TRANSCEIVER	LIST	3,290	E	66	66	SEE CCC	53	D/3
			RESALE	3,293						
		SYNCHRONOUS MODEM, 50K OR 200K BPS, SWITCH SELECTABLE. FOR USE ON UNSWITCHED METALLIC LINE PAIRS OR COAXIAL CABLE ONLY. POINT-TO-POINT OR MULTIPOINT, HALF-DUPLEX TWO-WIRE OR FULL-DUPLEX FOUR-WIRE, UP TO ONE MILE. INTERFACE SIMILAR TO THAT OF AT&T 301 DATA SETS. NOT COMPATIBLE WITH VOICE FREQUENCY TELEPHONE CIRCUITS.								
		RECEIVES FROM 311 2/ 1747 / 3257 C/								
		RECEIVES FROM 4473 / 6674 / 8529 B/								
361		**COMMUNICATIONS ADAPTER**								
		A COMPONENT IN A COMMUNICATIONS SUBSYSTEM USED TO INTERFACE A COMMUNICATIONS MULTIPLEXER IN THE 364 FAMILY TO COMMUNICATIONS FACILITIES. PROVIDES CONVERSION, ISOLATION, AND SERIAL TO PARALLEL, PARALLEL TO SERIAL CONVERSION WHEN APPLICABLE. MOUNTS WITHIN A 364.								
		RECEIVES FROM 364 /								
361	1	COMMUNICATIONS ADAPTER	LIST	966	D	26	26	SEE CCC	14	D/3
			RESALE	966						
		A DEDICATED, FULL OR HALF DUPLEX, NON-SYNCHRONOUS ADAPTER WITH EIA RS 232-C INTERFACE TO AT&T 103 OR 107 DATA SET OR EQUIVALENT MODEMS. REQUIRES ONE ADDRESS OF A 364 MULTIPLEXOR. DATA BYTE SIZES ARE ADJUSTABLE FROM FIVE TO EIGHT BITS AND ARE TRANSMITTED OVER COMMUNICATIONS FACILITIES AT SPEEDS RANGING FROM 50 TO 3030 BAUDS.								
361	2	COMMUNICATIONS ADAPTER	LIST	493	D	13	13	SEE CCC	8	D/3
			RESALE	493						
		A DEDICATED, SIMPLEX, RECEIVE-ONLY, NON-SYNCHRONOUS ADAPTER WITH EIA RS 232-C INTERFACE TO AT&T 103 OR 107 DATA SET OR EQUIVALENT MODEMS. REQUIRES ONE ADDRESS OF A 364 MULTIPLEXOR. DATA BYTE SIZES ARE ADJUSTABLE FROM FIVE TO EIGHT BITS AND ARE RECEIVED OVER COMMUNICATIONS FACILITIES AT RATES RANGING FROM 50 TO 2000 BAUDS.								
361	3	COMMUNICATIONS ADAPTER	LIST	483	D	13	13	SEE CCC	8	D/3
			RESALE	483						
		A DEDICATED, SIMPLEX, SEND-ONLY, NON-SYNCHRONOUS ADAPTER WITH EIA RS 232-C INTERFACE TO AT&T 103 OR 107 DATA SET OR EQUIVALENT MODEMS. REQUIRES ONE ADDRESS OF A 364 MULTIPLEXOR. DATA BYTE SIZES ARE ADJUSTABLE FROM FIVE TO EIGHT BITS AND ARE TERMINATED OVER COMMUNICATIONS FACILITIES AT RATES RANGING FROM 50 TO 2000 BAUDS.								
361	4	COMMUNICATIONS ADAPTER	LIST	2,027	D	53	52	SEE CCC	16	D/3
			RESALE	2,027						
		A FULL OR HALF DUPLEX, NON-SYNCHRONOUS ADAPTER WITH EIA RS 232-C INTERFACE TO AT&T 103 OR 107 DATA SET OR EQUIVALENT MODEMS. REQUIRES TWO ADDRESSES IN A 364 MULTIPLEXOR. COMPUTER CONTROLLED AUTO ANSWERING, DISCONNECT, MODEM CARRIER, AND STATUS. SELECTABLE CHARACTER PARITY AND FIELD ADJUSTABLE FIVE TO EIGHT BIT BYTES TRANSMITTED AT SPEEDS FROM 50 TO 2000 BAUDS.								
361	5	COMMUNICATIONS ADAPTER	LIST	2,205	D	58	58	SEE CCC	24	D/3
			RESALE	2,205						
		A FULL OR HALF DUPLEX, SYNCHRONOUS ADAPTER WITH EIA RS 232-C OR CURRENT MODE INTERFACE (BELL 301 TYPE). REQUIRES TWO ADDRESSES IN A 364 MULTIPLEXER. COMPUTER CONTROLLED AUTO ANSWER, DISCONNECT, MODEM CARRIER AND STATUS. SELECTABLE CHARACTER AND LONGITUDINAL LOGICAL SUM PARITY OR UNIVERSAL MODE. DATA IS EIGHT BIT BYTES TRANSMITTED AT 600 TO 230.4K BITS PER SECOND DEPENDING ON THE MODEM AND SYSTEM LIMITATIONS. SPECIFY WHEN 300 TYPE DATA SET WILL BE USED.								
361	6	COMMUNICATIONS ADAPTER	LIST	2,205	D	58	58	SEE CCC	24	D/3
			RESALE	2,205						
		A FULL OR HALF DUPLEX, SYNCHRONOUS ADAPTER WITH EIA RS 232-C OR CURRENT MODE INTERFACE (BELL 301 TYPE). REQUIRES TWO ADDRESSES IN A 364 MULTIPLEXER. COMPUTER CONTROLLED AUTO ANSWER, DISCONNECT, MODEM CARRIER AND STATUS. SELECTABLE CHARACTER AND CYCLIC MESSAGE PARITY OR UNIVERSAL MODE. DATA IS EIGHT BIT BYTES TRANSMITTED AT 600 TO 230.4K BITS PER SECOND. SPECIFY WHEN 300 TYPE DATA SET WILL BE USED.								
361	7	COMMUNICATIONS ADAPTER	LIST	814	D	21	21	SEE CCC	14	D/3
			RESALE	814						
		A CONTROL ADAPTER WHICH REQUIRES ONE ADDRESS IN A 364 MULTIPLEXER. INTERFACE EITHER AN 801A OR 801C UNIT AND ALLOWS COMPUTER CONTROLLED AUTOMATIC DIALING INTO THE DDD SWITCHED TELEPHONE NETWORK. ONE UNIT IS REQUIRED FOR EACH DIALER CONTROLLED.								
362		**TELEGRAPHIC LEVEL CONVERTER**								
		A COMPONENT IN A COMMUNICATIONS SUBSYSTEM USED TO PROVIDE ISOLATION AND LEVEL CONVERSION BETWEEN A NON-SYNCHRONOUS COMMUNICATIONS ADAPTER WITH RS 232-C INTERFACE AND 120 VOLT, 20 TO 60 MILLIAMPERE, UNIPOLAR OR BIPOLAR, TELEGRAPHIC LINES.								

RESALE PRODUCT	MOD	PRODUCTS ACTIVE DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR PAGE & INSTLMNT 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
362	1	TELEGRAPHIC LEVEL CONVERTER	LIST	9,135	D	237	233	SEE CCC	45	D/3
			RESALE	9,135						
		A STAND-ALONE TELEGRAPHIC LEVEL CONVERTER WHICH WILL INTERFACE UP TO 16 FOUR-WIRE DUPLEX LINES. ADDITIONAL RACK SPACE IS AVAILABLE FOR MOUNTING UP TO THREE 362-2 UNITS, OR THREE 60130-1 UNITS, OR IN COMBINATION TOTALLING THREE UNITS. STANDARD OPTION 60130-1 IS USED WHEN AN INTEGRAL LOOP CURRENT POWER SOURCE IS REQUIRED.								
362	2	TELEGRAPHIC LEVEL CONVERTER	LIST	6,458	D	168	165	SEE CCC	39	D/3
			RESALE	6,458						
		A RACK MOUNTABLE TELEGRAPHIC LEVEL CONVERTER WHICH WILL MOUNT IN A 362-1. THIS UNIT WILL INTERFACE UP TO 16 FOUR WIRE DUPLEX LINES.								
364		COMMUNICATIONS MULTIPLEXER								
		A COMPONENT IN A COMMUNICATIONS SUBSYSTEM WHICH PROVIDES AN INTERFACE TO A DATA CHANNEL OR MULTIPLEXER CONTROLLER AND FAN-IN, FAN-OUT LOGIC TO SEVERAL COMMUNICATIONS ADAPTERS PHYSICALLY MOUNTED WITHIN THE MULTIPLEXER. THE NUMBER OF AVAILABLE ADDRESSES (PORTS) IN THE MULTIPLEXOR DETERMINES THE NUMBER OF COMMUNICATION ADAPTERS THAT CAN BE PHYSICALLY MOUNTED WITHIN A MULTIPLEXOR.								
364	1	COMMUNICATIONS MULTIPLEXER	LIST	6,825	D	179	176	SEE CCC	30	D/3
			RESALE	6,825						
		A STAND-ALONE, EIGHT-ADDRESS MULTIPLEXER THAT INTERFACES A 1748, 3316, OR 3516 MULTIPLEXER CONTROLLER. UP TO THREE ADDITIONAL 364-2 MAY BE MOUNTED IN THIS CABINET WHEN EXPANSION IS REQUIRED. STANDARD OPTION 10193-1 IS REQUIRED FOR EXPANSION BEYOND 16 ADDRESSES. RECEIVES FROM 1748 2/ 3316 1/ 3516 1/ SENDS TO 361 1/ 361 2/ 361 3/ SENDS TO 361 4/ 361 5/ 361 6/ SENDS TO 361 7/ AVA OPTIONS 10193 1/								
364	2	COMMUNICATIONS MULTIPLEXER	LIST	2,940	D	79	78	SEE CCC	21	D/3
			RESALE	2,940						
		A MODULAR, EIGHT-ADDRESS MULTIPLEXER THAT INTERFACES A 1748, 3316 OR 3516 MULTIPLEXER CONTROLLER AND MOUNTS IN A 364-1 WHEN EXPANSION IS REQUIRED. STANDARD OPTION 10193-1 IS REQUIRED FOR EXPANSION BEYOND 16 ADDRESSES. RECEIVES FROM 1748 2/ 3316 1/ 3516 1/ SENDS TO 361 1/ 361 2/ 361 3/ SENDS TO 361 4/ 361 5/ 361 6/ SENDS TO 361 7/ AVA OPTIONS 10193 1/								
364	4	COMMUNICATIONS MULTIPLEXER	LIST	7,298	D	189	186	SEE CCC	30	D/3
			RESALE	7,298						
		A STAND-ALONE EIGHT-ADDRESS MULTIPLEXER THAT INTERFACES A 17XX A/D CHANNEL. UP TO THREE ADDITIONAL 364-5 MAY BE MOUNTED IN THIS CABINET WHEN EXPANSION IS REQUIRED. STANDARD OPTION 10193-1 IS REQUIRED FOR EXPANSION BEYOND 16 ADDRESSES. RECEIVES FROM 1705 / 1775 / 1785 3/ SENDS TO 361 1/ 361 2/ 361 3/ SENDS TO 361 4/ 361 5/ 361 6/ SENDS TO 361 7/ AVA OPTIONS 10193 1/								
364	5	COMMUNICATIONS MULTIPLEXER	LIST	3,413	D	90	89	SEE CCC	24	D/3
			RESALE	3,413						
		A MODULAR EIGHT-ADDRESS MULTIPLEXER THAT INTERFACES A 17XX A/D CHANNEL AND MOUNTS IN A 364-4 WHEN EXPANSION IS REQUIRED. STANDARD OPTION 10193-1 IS REQUIRED FOR EXPANSION BEYOND 16 ADDRESSES. RECEIVES FROM 1705 / 1775 / 1785 3/ SENDS TO 361 1/ 361 2/ 361 3/ SENDS TO 361 4/ 361 5/ 361 6/ SENDS TO 361 7/ AVA OPTIONS 10193 1/								
415	30	CARD PUNCH AND CONTROLLER	LIST	48,951	D	785	772	SEE CCC	193	D/1
			RESALE	48,951						
		PUNCHES 80 COLUMN CARDS, 250 CARDS/MINUTE, PROGRAMMABLE OFF-SET STACKING, 1200 CARD HOPPER CAPACITY, 1500 CARD STACKER CAPACITY, READ CHECK AFTER PUNCH. COLOR IS CYBER 170. WITH FULL CARD BUFFER WHICH CONNECTS TO 3000 TYPE CHANNEL, CAPABLE OF TRANSLATING 6-BIT INTERNAL BCD INTO A 64 CHARACTER SUBSET OF ASCII HOLLERITH CODES. COLOR IS CYBER 170. RECEIVES FROM 172 / 173 / 174 / RECEIVES FROM 175 / 176 / 3106 / RECEIVES FROM 3107 / 3306 / 3307 / RECEIVES FROM 3507 1/ 6681 / 6681 2/ RECEIVES FROM 10315 /10378 1/10381 / AVA OPTIONS 10352 1/								
430		CARD READ-PUNCH	LIST	20,034	C	373	366	SEE CCC	187	D/3
			RESALE	20,034						
		READS 500 CARDS/MINUTE, PUNCHES 100 TO 400 CARDS/MINUTE FOR 80 TO SINGLE COLUMN PUNCH, PROGRAMMABLE OFFSET STACKING, 1200 CARD HOPPER CAPACITY, 1300 CARD STACKER CAPACITY. RECEIVES FROM 1728 /								

RESALE PRODUCTS ACTIVE

PRODUCT NUM		DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	PAGE ¶	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
667	2	MAGNETIC TAPE TRANSPORTS LIST RESALE	20,590 20,590	E	365	329	SEE CCC		157	D/1
		A SINGLE CAPSTAN UNIT, 7-TRACK, 556 CPI AND 800 CPI NRZI RECORDING. TRANSFER RATES ARE 55.6K AND 80K 6-BIT CHARACTERS PER SECOND. TAPE SPEED IS 100 INCHES PER SECOND. FORWARD AND REVERSE READ. REWIND TIME IS 60 SECONDS. COLOR IS CYBER 170. RECEIVES FROM 3421 1/ 3521 2/ 7021 1/ RECEIVES FROM 7021 2/ 7021 21/ 7021 22/ RECEIVES FROM 7622 1/ 7622 2/ AVA OPTIONS 10342 3/10370 1/								
667	3	MAGNETIC TAPE TRANSPORT LIST RESALE	26,155 26,155	E	483	436	SEE CCC		170	D/1
		A SINGLE CAPSTAN UNIT, 7-TRACK, 556 CPI AND 800 CPI NRZI RECORDING. TRANSFER RATES ARE 83.4K AND 120K 6-BIT CHARACTER PER SECOND. TAPE SPEED IS 150 INCHES PER SECOND. FORWARD AND REVERSE READ. REWIND TIME IS 50 SECONDS. COLOR IS CYBER 170. RECEIVES FROM 3521 1/ 3521 2/ 7021 1/ RECEIVES FROM 7021 2/ 7021 21/ 7021 22/ RECEIVES FROM 7622 1/ 7622 2/ AVA OPTIONS 10362 3/10370 1/								
667	4	MAGNETIC TAPE TRANSPORTS LIST RESALE	29,717 29,717	E	537	483	SEE CCC		190	D/1
		A SINGLE CAPSTAN UNIT, 7-TRACK, 556 CPI AND 800 CPI NRZI RECORDING. TRANSFER RATES ARE 111.2K AND 160K 6-BIT CHARACTERS PER SECOND. TAPE SPEED IS 200 INCHES PER SECOND. FORWARD AND REVERSE READ. REWIND TIME IS 45 SECONDS. COLOR IS CYBER 170. RECEIVES FROM 3521 1/ 3521 2/ 7021 1/ RECEIVES FROM 7021 2/ 7021 21/ 7021 22/ RECEIVES FROM 7622 1/ 7622 2/ AVA OPTIONS 10342 3/10370 1/								
669	2	MAGNETIC TAPE TRANSPORT LIST RESALE	21,425 21,425	E	376	340	SEE CCC		157	D/1
		A SINGLE CAPSTAN UNIT, 9-TRACK, 800 CPI NRZI RECORDING AND 1600 CPI PHASE ENCODED RECORDING. TRANSFER RATES ARE 80K AND 160K 8-BIT CHARACTERS PER SECOND. TAPE SPEED IS 100 INCHES PER SECOND. FORWARD AND REVERSE READ. REWIND TIME IS 40 SECONDS. COLOR IS CYBER 170 RECEIVES FROM 3521 1/ 3521 2/ 7021 1/ RECEIVES FROM 7021 2/ 7021 21/ 7021 22/ RECEIVES FROM 7622 1/ 7622 2/ AVA OPTIONS 10342 3/10370 1/								
669	3	MAGNETIC TAPE TRANSPORT LIST RESALE	26,990 26,990	E	509	460	SEE CCC		170	D/1
		A SINGLE CAPSTAN UNIT, 9-TRACK, 800 CPI NRZI RECORDING AND 1600 CPI PHASE ENCODED RECORDING. TRANSFER RATES ARE 120K AND 240K 8-BIT CHARACTERS PER SECOND. TAPE SPEED IS 150 INCHES PER SECOND. FORWARD AND REVERSE READ. REWIND TIME IS 50 SECONDS. COLOR IS CYBER 170 RECEIVES FROM 3521 1/ 3521 2/ 7021 1/ RECEIVES FROM 7021 2/ 7021 21/ 7021 22/ RECEIVES FROM 7622 1/ 7622 2/ AVA OPTIONS 10362 3/10370 1/								
669	4	MAGNETIC TAPE TRANSPORT LIST RESALE	30,050 30,050	E	561	508	SEE CCC		190	D/1
		A SINGLE CAPSTAN UNIT, 9-TRACK, 800 CPI NRZI RECORDING AND 1600 CPI PHASE ENCODED RECORDING. TRANSFER RATES ARE 160K AND 320K 8-BIT CHARACTERS PER SECOND. TAPE SPEED IS 200 INCHES PER SECOND. FORWARD AND REVERSE READ. REWIND TIME IS 45 SECONDS. COLOR IS CYBER 170 RECEIVES FROM 3521 1/ 3521 2/ 7021 1/ RECEIVES FROM 7021 2/ 7021 21/ 7021 22/ RECEIVES FROM 7622 1/ 7622 2/ AVA OPTIONS 10362 3/10370 1/								
711	10	CRT DISPLAY TERMINAL LIST RESALE	3,969 3,969	D	133	132	SEE CCC		44	D/3
		INCLUDES 8 LINES OF 80 CHARACTERS DISPLAYED ON A 9-INCH HIGH BY 13-INCH WIDE VIEWING AREA OF A 15-INCH (DIAGONAL) CRT SCREEN, ELECTRONIC KEYBOARD WITH STANDARD TYPEWRITER LAYOUT INCLUDING ADDITIONAL CONTROLS PLUS 10 KEY NUMERIC CLUSTER, 96 ASCII ALPHANUMERICS AND SYMBOLS PLUS CONTROL CODES. RS232-C INTERFACE DESIGNED FOR SYNCHRONOUS DATA TRANSMISSION, UP TO 4800 BPS, HALF-DUPLEX. FEATURES INCLUDE - CURSOR CONTROL- UP, DOWN, RIGHT, LEFT, HOME, START, STOP, INVERSE VIDEO (BLACK ON WHITE), ROLL AND PAGE FORMAT, NON-DESTRUCTIVE BLINKING CURSOR, 5 X 9 DOT MATRIX USING STANDARD 525 LINE TV RASTER, 60 HZ REFRESH RATE, MOS SEMICONDUCTOR MEMORIES, DUAL-LEVEL KEYBOARD, CHARACTER SIZE (NOMINAL) .25 INCH HIGH, .125 INCH WIDE, MODULAR DESIGN, PROVISION FOR HARDCOPY. EACH UNIT REQUIRES LINE MODULATION (MODEM) EQUIPMENT. SENDS TO 711 120/ 711 121/ AVA OPTIONS 711 100/ 711 101/ 711 102/								

RESALE PRODUCT	MOD	PRODUCTS ACTIVE DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
711	100	CRT EXPANDED MEMORY	LIST RESALE	353 353	D	15	15	SEE CCC	N/A	
		EXPANDS THE CRT TO DISPLAY CAPACITIES TO PROVIDE A TOTAL OF 16 LINES OF 80 CHARACTERS (ADDS 640 CHARACTER POSITIONS). FEATURES INCLUDE - INCREASE OF 640 MORE BUFFER LOCATIONS, MOS SEMICONDUCTOR MEMORY, EASY FIELD INSTALLATION. OPT APPLIES TO 711 10/ 713 10/								
711	101	CRT PROTECT FEATURE	LIST RESALE	159 159	D	9	9	SEE CCC	N/A	
		INCLUDES ADDITIONAL CURSOR CONTROL FOR AUTOMATIC FORWARD AND BACKWARD TABBING. CPU CONTROL OF PROTECTED INFORMATION DISPLAYED AS BLACK CHARACTERS ON WHITE BACKGROUND (INVERSE VIDEO). FEATURES INCLUDE - PROTECTION FROM OPERATOR INADVERTENTLY DISTURBING DATA DISPLAYED FROM DATA SOURCE, TURN-KEY LOCK CONTROLLED FOR DELIBERATE ENTRY, AUTOMATIC TABBING OF CURSOR FROM ONE FIELD TO ANOTHER, EASY FIELD INSTALLATION, MODULAR DESIGN. OPT APPLIES TO 711 10/								
711	102	CRT DATA CONTROL FEATURE	LIST RESALE	181 181	D	10	10	SEE CCC	N/A	
		INCLUDES ADDITIONAL CURSOR CONTROL FOR AUTOMATIC INSERT/DELETE CHARACTERS, INSERT/DELETE LINES, AND ALLOWS TRANSMISSION OF OPERATOR SELECTED INFORMATION FROM ANY CRT PAGE LOCATION (PARTIAL PAGE, MULTIPLE CHOICE, ETC.). FEATURES INCLUDE- INCREASED RANGE OF EDITING FUNCTIONS, MODULAR DESIGN, EASY FIELD INSTALLATION. OPT APPLIES TO 711 10/								
711	120	NON-IMPACT PRINTER STATION	LIST RESALE	2,730 2,730	C	107	105	SEE CCC	39	D/3
		PROVIDES HARDCOPY ON 8-1/2 INCH WIDE HEAT SENSITIVE PAPER. SMALL DESK UNIT FEATURES PRINT RATE OF 30 CHARACTERS PER SECOND, 80 COLUMN LINES, USING 5 X 7 MATRIX. PRINTS 96 ASCII CODED CHARACTER SET. CDC NON-STANDARD CABLE LENGTHS ARE AT AN ADDITIONAL CHARGE - SEE CONFIGURATOR SECTION. RECEIVES FROM 711 10/ 714 10/ 714 20/								
713	10	CONVERSATIONAL DISPLAY TERMNL	LIST RESALE	1,595 1,250	F	69	68	SEE CCC	28	D/3
		INCLUDES 8 LINES OF 80 CHARACTERS DISPLAYED ON A 8-INCH HIGH BY 10-INCH WIDE VIEWING AREA OF A 15-INCH (DIAGONAL) CRT SCREEN, ELECTRONIC KEYBOARD WITH STANDARD TELETYPE LAYOUT INCLUDING ADDITIONAL CONTROLS PLUS 10 KEY NUMERIC CLUSTER, 94 ASCII ALPHANUMERICS AND SYMBOLS PLUS 33 ANSI CONTROL CODES. RS232-C INTERFACE DESIGNED FOR ASYNCHRONOUS DATA TRANSMISSION AT 75, 110, 150 AND 300 BPS. FEATURES INCLUDE- CURSOR CONTROL- UP, DOWN, RIGHT, LEFT, HOME, START, STOP, INVERSE VIDEO (BLACK ON WHITE), ROLL OR PAGE FORMAT, NON-DESTRUCTIVE BLINKING CURSOR, 5 X 9 DOT MATRIX USING STANDARD 525 LINE TV RASTER, 60 HZ REFRESH RATE, MOS SEMI-CONDUCTOR MEMORY, TRI-LEVEL KEYBOARD, CHARACTER SIZE (NOMINAL) .25 INCH HIGH, .125 INCH WIDE, PROVISION FOR HARDCOPY, SWITCH SELECTION - FULL OR HALF DUPLEX, ODD, EVEN, OR NO PARITY; KEYBOARD LOCKOUT, REMOTE-LOCAL (TEST), ROLL-PAGE FORMAT. SENDS TO 713 120/ AVA OPTIONS 711 100/								
713	120	NON-IMPACT PRINTER STATION	LIST RESALE	2,540 2,540	E	99	97	SEE CCC	43	D/3
		PROVIDES HARDCOPY ON 8-1/2 INCH WIDE HEAT SENSITIVE PAPER. UP TO EIGHT DISPLAY TERMINALS MAY BE CONNECTED TO ONE PRINTER USING A MAXIMUM TOTAL OF 1,500 FEET OF CABLE(S). SMALL DESK TOP UNIT FEATURES PRINT RATE OF 30 CHARACTERS PER SECOND, 80-COLUMN LINES, USING 5 X 7 DOT MATRIX, PRINTS 96 ASCII CODED CHARACTER SET. TEN FEET OF DATA CABLE PROVIDED. RECEIVES FROM 713 10/								
714	10	BASIC TERMINAL CONTROLLER	LIST RESALE	5,300 5,300	C	154	147	SEE CCC	32	D/3
		PROVIDES THE CAPABILITY TO COMMUNICATE WITH AN RS232 COMPATIBLE SYNCHRONOUS DATA SET (BELL 201 OR 208 OR EQUIVALENT) AT DATA RATES UP TO 4,800 BPS AND TO COMMUNICATE WITH UP TO 15 PERIPHERAL DEVICES USING A MAXIMUM TOTAL OF 1,000 FEET OF CABLE. ONE 240 CHARACTER PRINT BUFFER PROVIDED. CDC NON-STANDARD CABLE LENGTHS ARE AT AN ADDITIONAL CHARGE - SEE CONFIGURATOR SECTION. CONTROLLER REQUIRES LINE MODULATION (MODEM) EQUIPMENT. SENDS TO 711 120/ 711 121/ 714 122/ SENDS TO 714 123/								

* * STANDARD MAINTENANCE SERVICE IS BEING DISCONTINUED ON THESE PRODUCTS - SEE MAINTENANCE SERVICES SECTION, PAGE 14.

PRODUCT NUM	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT SALE CCC BASE 1 YEAR	3YR/24MO	5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
714 20	MULTIBUFFER TERM. CONTROLLER	LIST	6,013	C	173	165	SEE CCC	40	D/3
		RESALE	6,013						
	PROVIDES CAPABILITY TO COMMUNICATE WITH AN RS232 COMPATIBLE SYNCHRONOUS DATA SET (BELL 201 OR 208 OR EQUIVALENT) AT DATA RATES UP TO 4,800 BPS AND TO COMMUNICATE WITH UP TO 15 PERIPHERAL DEVICES USING A MAXIMUM TOTAL OF 1,000 FEET OF CABLE. SEVEN 240 CHARACTER PRINT BUFFERS INCLUDED. BUFFERS ARE DYNAMICALLY RESERVED FOR SPECIFIC PRINTERS. CDC NON-STANDARD CABLE LENGTHS ARE AT AN ADDITIONAL CHARGE-SEE CONFIGURATOR SECTION. CONTROLLER REQUIRES LINE MODULATION (MODEM) EQUIPMENT. SENDS TO 711 120/ 711 121/ 714 122/ SENDS TO 714 123/								
714 122	BASIC DISPLAY STATION	LIST	3,465	C	94	89	SEE CCC	48	D/3
		RESALE	3,465						
	INCLUDES A CRT, KEYBOARD, AND SUFFICIENT BUFFER TO DISPLAY 8 LINES OF 80 CHARACTERS, 64 OR 96 ASCII CHARACTER SET SELECTABLE. CDC NON-STANDARD CABLE LENGTHS ARE AT AN ADDITIONAL CHARGE-SEE CONFIGURATOR SECTION. RECEIVES FROM 714 10/ 714 20/								
714 123	EXPANDED DISPLAY STATION	LIST	4,095	C	111	107	SEE CCC	53	D/3
		RESALE	4,095						
	INCLUDES A CRT, KEYBOARD, AND SUFFICIENT BUFFER TO DISPLAY 14 LINES OF 80 CHARACTERS, 64 OR 96 ASCII CHARACTER SET SELECTABLE. PROVIDES DATA PROTECTION AND ADDITIONAL CONTROL. INCLUDES ALLOWANCE FOR CPU CONTROL OF INFORMATION PROTECTED FROM OPERATOR DISTURBANCE, AUTOMATIC FORWARD OR BACKWARD TABBING TO PROTECTED FIELDS, AND INVERSE VIDEO DISPLAY OF PROTECTED FIELDS. INCLUDES CURSOR CONTROL FOR AUTOMATIC INSERT/DELETE OF CHARACTERS OR LINES AND TRANSMISSION OF INFORMATION FROM ANY CRT DISPLAY LOCATION. CDC NON-STANDARD CABLE LENGTHS ARE AT AN ADDITIONAL CHARGE-SEE CONFIGURATOR SECTION. RECEIVES FROM 714 10/ 714 20/								
733 10	HIGH SPEED BATCH STATION	LIST	131,640	C	2,447	2,398	SEE CCC	1,058	B/3
		RESALE	101,640						
	THE BASIC HSBS CONTAINS 8K-8 BIT BYTES OF 16-BIT 200 NANOSECOND MEMORY, ONE 1200 CPM CARD READER AND ONE 1200 LPM LINE PRINTER. THE LINE PRINTER REQUIRES THE 595-X PRINT TRAIN. THE ADDITION OF OPTIONS 733-101, 733-110 OR 733-120, OR 733-130 IN ANY COMBINATION TO THE BASIC STATION. REQUIRES MEMORY INCREMENT 733-140. RECEIVES FROM 792 / SENDS TO 595 5/ 595 6/ 733 101/ SENDS TO 733 110/ 733 120/ 733 150/ SENDS TO 733 152/ AVA OPTIONS 733 130/ 733 140/								
733 101	HSBS / TERMINAL CARD PUNCH	LIST	21,000	C	410	401	SEE CCC	166	C/3
		RESALE	21,000						
	PUNCHES 250 CPM, 80 COLUMN CARD, PROGRAMMABLE OFFSET STACKING, 1200 CARD HOPPER CAPACITY, 1500 CARD STACKER CAPACITY, READ CHECK AFTER PUNCH. RECEIVES FROM 733 10/								
733 110	HSBS / TERMINAL LINE PRINTER	LIST	44,100	C	940	919	SEE CCC	425	C/3
		RESALE	44,100						
	TRAIN PRINTER, PRINTS 1200 LPM USING 48 CHARACTER TRAIN, SKIPS 70 INCHES/SECOND AT 6 LINES/INCH OR 60 INCHES/SECOND AT 8 LINES/INCH, 136 COLUMNS, DOES NOT INCLUDE INTERCHANGEABLE 595 SERIES TRAIN CARTRIDGES. RECEIVES FROM 733 10/ SENDS TO 595 5/ 595 6/								
733 120	HSBS / TERMINAL CARD READER	LIST	18,900	C	410	401	SEE CCC	150	C/3
		RESALE	18,900						
	READS 1200 CPM FOR 80 COLUMN CARDS, READS 1600 CPM FOR 51 COLUMN CARDS, 4000 CARD CAPACITY STACKER. RECEIVES FROM 733 10/								
733 130	H/S BATCH TERMINAL ADAPTER	LIST	630	C	16	15	SEE CCC	N/A	
		RESALE	630						
	DATA SET ADAPTER FOR HIGH SPEED BATCH STATION, CONVERTS LOCAL BATCH STATION TO A REMOTE BATCH TERMINAL, COMMUNICATES WITH A 50,000 BPS LINE USING AN AT+T 301 OR 303 DATA SET. REQUIRES 733-140. OPT APPLIES TO 733 10/								
733 140	MEMORY INCREMENT FOR 733-10	LIST	17,010	C	410	401	SEE CCC	53	C/3
		RESALE	17,010						
	8K BYTES MEMORY INCREMENTS FOR 733-10, REQUIRED WHEN 733-110, 733-101 OR 733-120, OR 733-130 ARE ADDED TO THE BASIC HIGH SPEED BATCH TERMINAL OR STATION. OPT APPLIES TO 733 10/								
733 150	H/S BATCH KEYBOARD AND DISPLAY	LIST	3,360	C	74	73	SEE CCC	36	C/3
		RESALE	3,360						
	16 LINE BY 80 CHARACTER DISPLAY FORMAT, 96 ASCII CHARACTERS, INCLUDES 82-KEY KEYBOARD. RECEIVES FROM 733 10/								

RESALE PRODUCT	MOD	PRODUCTS ACTIVE DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
733	152	H/S BATCH KEYBOARD AND DISPLAY	LIST RESALE	3,360 3,360	C	74	73 SEE CCC	36	C/3
		18 LINE BY 64 CHARACTER DISPLAY FORMAT, 96 ASCII CHARACTERS, INCLUDES 92-KEY KEYBOARD. RECEIVES FROM 733 10/							
734	1	BATCH TERMINAL CONTROLLER	LIST RESALE	14,065 14,065	C	459	384 SEE CCC	142	D/3
		PROCESSOR WITH 16K BYTES OF R/W MEMORY, COMMUNICATION LINE ADAPTER, OPERATOR PANEL, KEYBOARD/EXPANDED DISPLAY, CARD READER SUPPORT STRUCTURE WITH MODEM SHELF, AND 200 UT EMULATION CONTROLWARE. COMMUNICATIONS IS SYNCHRONOUS, 2 WAY ALTERNATE, 2 WIRE OR 4 WIRE, AT 1200-9600 BPS. INTERFACE IS RS232-C/CCITT V24 COMPATIBLE. SENDS TO 734 101/ 734 151/ 734 201/ SENDS TO 734 251/ AVA OPTIONS 734 11/							
734	11	2780 (MODEL 1) EMULATION	LIST RESALE	1,575 1,575	C	45	30 SEE CCC	17	D/3
		PROVIDES IBM 2780 (MODEL 1) EMULATION CONTROLWARE (LOADED VIA THE CARD READER) AND A HARDWARE - CYCLIC ENCODER. IN THIS MODE THE TERMINAL MAY COMMUNICATE WITH ANOTHER EQUIVALENT 2780 TERMINAL OR A CENTRAL SITE THAT SUPPORTS 2780 TERMINALS. COMMUNICATIONS IS SYNCHRONOUS, 2 WAY ALTERNATE, 2 WIRE OR 4 WIRE, AT 1200-9600 BPS. OPT APPLIES TO 734 1/							
734	12	3780 EMULATION	LIST RESALE	1,575 1,575	C	45	30 SEE CCC	17	D/3
		PROVIDES IBM 3780 EMULATION CONTROLWARE (LOADED VIA THE CARD READER) AND A HARDARE CYLIC ENCODER. IN THIS MODE THE TERMINAL MAY COMMUNICATE WITH ANOTHER EQUIVALENT 3780 TERMINAL OR A CENTRAL SITE THAT SUPPORTS 3780 TERMINALS. COMMUNICATIONS IS SYNCHRONUS, 2 WAY ALTERNATE, 2 WIRE OR 4 WIRE AT 1200-9600 BPS. INTERFACE IS RS232-C/CCITT V24 COMPATABLE. OPT APPLIES TO 734 1/							
734	101	CARD READER	LIST RESALE	2,940 2,940	C	88	73 SEE CCC	50	D/3
		PHOTOELECTRICALLY READS 300 CARDS/MINUTE, 80 COLUMN CARDS, 1000 CARD HOPPER CAPACITY, 1500 CARD STACKER CAPACITY. TABLE TOP MOUNTING. RECEIVES FROM 734 1/							
734	151	CARD READER	LIST RESALE	4,410 4,410	C	143	118 SEE CCC	63	D/3
		PHOTOELECTRICALLY READS 600 CARDS/MINUTE, 80 COLUMN CARDS, 1000 CARD HOPPER CAPACITY, 1500 CARD STACKER CAPACITY. RECEIVES FROM 734 1/							
734	201	LINE PRINTER	LIST RESALE	11,340 11,340	C	339	275 SEE CCC	296	D/3
		QUIETIZED DRUM PRINTER WITH TWO POSITION PAPER SHIFT. PRINTS 300 LINES/MINUTE, 63 CHARACTERS PLUS SPACE, 136 COLUMNS. RECEIVES FROM 734 1/							
734	251	LINE PRINTER	LIST RESALE	20,370 20,370	C	653	539 SEE CCC	367	D/3
		QUIETIZED DRUM PRINTER, PRINTS 600 LINES/MINUTE, 63 CHARACTERS PLUS SPACE, 136 COLUMNS RECEIVES FROM 734 1/							
752	10	DISPLAY TERMINAL	LIST RESALE	1,650 1,650	F	61	57 SEE CCC	18	D/3
		SINGLE STATION, TTY COMPATIBLE DISPLAY TERMINAL WITH THE FOLLOWING FEATURES - 1920 CHARACTER DISPLAY (24 LINES OF 80 CHARACTERS PER LINE) - 128 ASCII CHARACTER SET, TYPEWRITER LAYOUT, DETACHABLE KEYBOARD, INCLUDING NUMERIC PAD, HIGHLIGHTING, CURSOR ADDRESSING, AND CHARACTER AT A TIME TRANSMISSION, HALF OR FULL DUPLEX, AT SWITCH SELECTABLE DATA RATES FROM 110-9600 BITS PER SECOND. COMMUNICATION INTERFACE MEETS RS232-C AND CCITTV.24. INCLUDES 10.5 FT. MODEM CABLE 120V, 60 HZ. DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. SENDS TO 753 11/ 755 11/							
752	11	DISPLAY TERMINAL	LIST RESALE	1,750 1,750	E	69	64 SEE CCC	27	D/3
		SAME AS 752-10 EXCEPT COMMUNICATIONS INTERFACE IS CURRENT LOOP. DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. SENDS TO 753 11/ 755 11/							
752	20	DISPLAY TERMINAL	LIST RESALE	1,735 1,735	E	66	63 SEE CCC	18	D/3
		50 HZ, 220V/240V VERSION OF 752-10. FTZ LICENSE. DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. SENDS TO 753 11/ 755 11/							

PRODUCT NO		DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
752	21	DISPLAY TERMINAL	LIST RESALE	1,835 1,815	E	75	69	SEE CCC	27	D/3
		50 HZ, 220V/240V VERSION OF 752-11. FTZ LICENSE. DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. SENDS TO 753 11/ 755 11/								
754	10	SINGLE CASSETTE	LIST RESALE	2,200 2,200	F	83	77	SEE CCC	39	D/3
		TABLE TOP, SINGLE CASSETTE STATION WHICH READS AND WRITES DIGITAL DATA IN SERIAL FORM ON ANSI COMPATIBLE, PHILLIPS MAGNETIC TAPE CASSETTES. STORES UP TO 288,000 CHARACTERS OF CUSTOMER DATA PER CASSETTE. INCLUDES 10.5 FT. CABLE AND CONTROLLER WHICH PLUGS INTO ASSOCIATED DISPLAY TERMINAL. DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. RECEIVES FROM 751 10/								
754	20	DUAL CASSETTE	LIST RESALE	2,520 2,520	F	94	87	SEE CCC	39	D/3
		TABLE TOP, DUAL CASSETTE STATION WHICH READS AND WRITES DIGITAL DATA IN SERIAL FORM ON ANSI COMPATIBLE, PHILLIPS MAGNETIC TAPE CASSETTES. STORES UP TO 576,000 CHARACTERS OF CUSTOMER DATA, 288,000 PER CASSETTE. INCLUDES 10.5 FT. CABLE AND CONTROLLER WHICH PLUGS INTO ASSOCIATED DISPLAY TERMINAL. DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. RECEIVES FROM 751 10/								
755	10	IMPACT PRINTER	LIST RESALE	4,370 4,370	C	149	138	SEE CCC	60	D/3
		DESK TOP, LINE PRINTER WITH 7X7 DOT MATRIX PRINT HEAD. PRODUCES UP TO FOUR COPIES PLUS ONE ORIGINAL ON 4 TO 16.75 INCH WIDE FORMS. PRINTS 94 ASCII SYMBOLS, UP TO 132 COLUMNS AT 55 LINES PER MINUTE (173 CHARACTERS PER SECOND). HAS PARITY CHECK AND 1000 CHARACTER BUFFER. INCLUDES FORMAT TAPE, 10.5 FT. CABLE, AND CONTROLLER WHICH PLUGS INTO ASSOCIATED DISPLAY TERMINAL. 50 OR 60 HZ. 50 HZ UNIT HAS FTZ LICENSE. DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. RECEIVES FROM 751 10/								
755	11	IMPACT PRINTER	LIST RESALE	4,270 4,270	C	144	133	SEE CCC	60	D/3
		SAME AS 755-10 EXCEPT CONTROLLER NOT REQUIRED DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY, SEE PAGE 5 OF MAINTENANCE SERVICES SECTION. RECEIVES FROM 752 10/ 752 11/ 752 20/ RECEIVES FROM 752 21/ 752 30/ 752 31/ RECEIVES FROM 752 40/ 752 41/ 756 10/ RECEIVES FROM 756 11/ 756 20/ 756 21/								
774	1	DIGIGRAPHICS TV CONSOLE	LIST RESALE	61,404 61,404	B	1,682	1,414	SEE CCC	732	D/3
		FEATURES A CIRCULAR CRT WITH 21 INCH DIAMETER VIEWING AREA, 3 LINE TYPES, HARDWARE VECTOR AND SYMBOL GENERATION (126 CHAR. SYMBOL SET), VARIABLE INTENSITY CONTROL ALONG A VECTOR, ZOOM, SCISSORING, AUDIBLE ALARM, LIGHT PEN AND 92 KEY ASCII CODED KEYBOARD. RECEIVES FROM 774 2/ 777 2/ 777 3/ RECEIVES FROM 1704 / 18 17/								
774	2	DIGIGRAPHICS TV SUBSYSTEM	LIST RESALE	69,441 69,441	B	1,888	1,602	SEE CCC	770	D/3
		CONVERTS 1734 OR 1774 SYSTEM CONTROLLERS HAVING 24K OF 15-BIT CORE MEMORY, 40 CHANNEL, DIRECT STORAGE ACCESS, AND CARD READ CAPABILITY TO A CDC CYBER GRAPHICS TERMINAL. INCLUDES DIGIGRAPHICS TV CONSOLE WITH SYNCHRONOUS COMMUNICATION ADAPTER DESIGNED TO INTERFACE WITH EXTERNAL AT&T 301 TYPE MODEM OR EQUIV. CONSOLE FEATURES CIRCULAR CRT WITH 20 INCH DIAM. VIEWING AREA, 3 LINE TYPES, HARDWARE VECTOR AND SYMBOL GENERATION (126 CHAR. SYMBOL SET), VARIABLE INTENSITY CONTROL ALONG A VECTOR, ZOOM, SCISSORING, AUDIBLE ALARM, LIGHT PEN AND 92 KEY ASCII CODED KEYBD RECEIVES FROM 1774 1/ SENDS TO 713 / 1711 / 1713 / SENDS TO 1726 1/ 1728 / 1729 2/ SENDS TO 1729 3/ 1742 30/ 1742 120/								

RESALE PRODUCT	MOD	PRODUCTS ACTIVE DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	PAGE 14 MONTHLY CHARGE	MAINTENANCE PROD GRP
777	2	CDC CYBER GRAPHICS TERMINAL INTERACTIVE GRAPHICS/REMOTE JOB ENTRY TERMINAL, INCLUDES ONE DIGIGRAPHICS IV CONSOLE, 24K-16 BIT CONTROLLER, COMMUNICATIONS ADAPTER AND 300 CPM CARD READER AND CONTROLLER. SYNCHRONOUS COMMUNICATION INTERFACE ACCOMODATES EXTERNAL AT+T 301 TYPE MODEMS. COMMUNICATIONS MODE AND TERMINAL SOFTWARE ARE IDENTIFIED AS EQUIVALENT TO 1700 IMPORT HS; PROCESSOR MEMORY EXPANSION AVAILABLE UP TO 65K CORE. UP TO TWO DIGIGRAPHICS IV CONSOLES MAY BE ADDED TO THE INITIAL CONFIGURATIONS. RJE REQUIRES TELETYPE-COMPATIBLE DEVICE FOR OPERATOR; PLUS LINE PRINTER. RECEIVES FROM 6673 / 6676 / SENDS TO 713 / 774 / 1711 / SENDS TO 1713 / 1726 / 1728 / SENDS TO 1742 /	LIST RESALE	115,000 115,000	B	2,875	2,530	SEE CCC	1,332	D/3
777	3	CDC CYBERGRAPHICS TERMINAL INTERACTIVE GRAPHICS/REMOTE JOB ENTRY TERMINAL. INCLUDES DIGIGRAPHICS IV CONSOLE, 24K-16 BIT CONTROLLER, 300 CPM CARD READER AND CONTROLLER, SYNCHRONOUS COMMUNICATION INTERFACE ACCOMMODATES EXTERNAL AT+T 201A AND 208 TYPE MODEMS. PROCESSOR MEMORY EXPANSION AVAILABLE UP TO 65K MEMORY. RECEIVES FROM 791 / 255X / 6671 X/ SENDS TO 713 / 774 / 1711 / SENDS TO 1713 / 1726 / 1728 / SENDS TO 1742 /	LIST RESALE	110,000 110,000	B	2,750	2,420	SEE CCC	1,304	D/3
791		PROVIDES AN INTERFACE TO A 7,77-1 COMMUNICATIONS STATION AND FAN-IN, FAN OUT LOGIC FOR UP TO FORTY-EIGHT COMMUNICATION ADAPTERS.							
	1	COMMUNICATION SUBSYSTEM CNTRL PROVIDES A COMMUNICATIONS INTERFACE FOR UP TO SIXTEEN 792 COMMUNICATION ADAPTERS. INCLUDES 4096 16 BIT WORDS OF CORE MEMORY WITH 200 NANOSECOND CYCLE TIME AND A CYCLIC ENCODER UNIT. RECEIVES FROM 7377 1/ SENDS TO 792 / AVA OPTIONS 10274 1/	LIST RESALE	39,900 39,900	C	998	977	SEE CCC	159	C/3
	2	COMMUNICATION SUBSYSTEM MODULE PROVIDES COMMUNICATION INTERFACE FOR FROM 17 TO 24 792 COMMUNICATIONS ADAPTERS IN ANY COMBINATION. PROVIDES CABINETRY FOR 791-3, 791-4 AND 791-5 COMMUNICATION SUBSYSTEM MODULES. RECEIVES FROM 791 1/ SENDS TO 792 /	LIST RESALE	23,625 23,625	C	588	577	SEE CCC	96	C/3
	3	COMMUNICATION SUBSYSTEM MODULE PROVIDES COMMUNICATION INTERFACE FOR FROM 25 TO 32 792 COMMUNICATION ADAPTERS IN ANY COMBINATION. RECEIVES FROM 791 2/ SENDS TO 792 /	LIST RESALE	4,200 4,200	C	105	103	SEE CCC	19	C/3
	4	COMMUNICATION SUBSYSTEM MODULE PROVIDES COMMUNICATION INTERFACE FOR FROM 33 TO 40 792 COMMUNICATION ADAPTERS IN ANY COMBINATION. RECEIVES FROM 791 2/ SENDS TO 792 /	LIST RESALE	4,200 4,200	C	105	103	SEE CCC	34	C/3
	5	COMMUNICATION SUBSYSTEM MODULE PROVIDES COMMUNICATION INTERFACE FROM 41 TO 48 792 COMMUNICATION ADAPTERS IN ANY COMBINATION. RECEIVES FROM 791 2/ SENDS TO 792 /	LIST RESALE	4,200 4,200	C	105	103	SEE CCC	34	C/3
792		**COMMUNICATION ADAPTER** A COMPONENT IN A COMMUNICATION SUBSYSTEM USED TO INTERFACE COMMUNICATION MODULE IN THE 791 FAMILY TO COMMUNICATION FACILITIES. PERFORMS INPUT SYNCHRONIZATION, FULL DUPLEX CHARACTER ASSEMBLY AND DISASSEMBLY AND MODEM CONTROL. MOUNTS WITHIN THE 791 FAMILY OF COMMUNICATION SUBSYSTEM CONTROLLER/MODULES. RECEIVES FROM 791 / SENDS TO 731 10/ 731 12/ 732 10/ SENDS TO 732 12/ 733 10/							
792	1	COMMUNICATIONS ADAPTER A FULL OR HALF DUPLEX NON-SYNCHRONOUS ADAPTER WITH EIA RS 232-C INTERFACE COMPATIBLE WITH THE BELL 103 AND 202 DATA SET. MAY BE ALTERED TO PROVIDE CCITT COMPATIBILITY. WILL OPERATE FROM 75 TO 1800 BPS.	LIST RESALE	368 368	C	9	9	SEE CCC	7	D/3

RESALE PRODUCTS ACTIVE

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	PAGE 35 MAINTENANCE MONTHLY CHARGE	PROD GRP
792	2	COMMUNICATIONS ADAPTER	LIST RESALE	420 420	C	11	11 SEE CCC	7	D/3
		A FULL OR HALF DUPLEX SYNCHRONOUS ADAPTER WITH EIA RS 232-C INTERFACE COMPATIBLE WITH THE BELL 201 AND 203 DATA SETS. MAY BE ALTERED TO PROVIDE COTTY COMPATIBILITY. WILL OPERATE AT 2400, 4800 OR 9600 BPS.							
792	3	COMMUNICATIONS ADAPTER	LIST RESALE	504 504	C	13	13 SEE CCC	8	D/3
		A FULL OR HALF DUPLEX SYNCHRONOUS ADAPTER WITH CURRENT MODE INTERFACE COMPATIBLE WITH BELL 300 TYPE DATA SETS. WILL OPERATE AT 1?,200, 40,800, OR 50,000 BPS.							
792	10	COMMUNICATIONS ADAPTER	LIST RESALE	578 578	C	15	15 SEE CCC	9	D/3
		A CONTROL ADAPTER WHICH IS INTERFACE COMPATIBLE WITH THE BELL 801 AUTO DIALER AND ALLOWS COMPUTER CONTROLLED AUTOMATIC DIALING INTO THE DDD SWITCHED TELEPHONE NETWORK. ONE UNIT IS REQUIRED FOR EACH 801 DIALER TO BE CONTROLLED.							
819	1	DISK STORAGE UNIT	LIST RESALE	63,000 53,550	C	1,760	1,650 SEE CCC	248	B/1
		SINGLE SPINDLE WITH NON-REMOVABLE DISK PACK, INCLUDED. DUAL ACCESS, CAPACITY OF 2.4 BILLION BITS. POSITIONS TIME IS 15 TO 40 MS, 50 MS AVERAGE. AVERAGE DATA RATE IS 36.8 MHZ. STORAGE UNIT PROVIDES CLOCK AND SECTOR MARK TIMING TO CONTROLLER. CCLOR IS CYBER 170. RECEIVES FROM 7639 1/ 7639 2/ 7639 21/ RECEIVES FROM 7639 22/1C339 1/ AVA OPTIONS 10362 7/10421 1/							
		CONTAINS THE SPECIFIED NUMBER OF DISK DRIVES EACH DRIVE HAS A CAPACITY OF 35.6M 6-BIT CHARACTERS. 25 TO 135 MS POSITIONING TIME, 2400 RPM, 42CK CHARACTERS/SECOND TRANSFER RATE. SECTORED WITH 640 OR 644 CHARACTERS PER SECTOR, 14 SECTORS/TRACK, 200 TRACKS PER SURFACE AND 20 SURFACES/DRIVE. USES 871 DISK PACK, NOT INCLUDED. RECEIVES FROM 3553 1/ 3553 2/ AVA OPTIONS 10143 /							
844	2	DISK STORAGE UNIT	LIST RESALE	20,540 12,000	C	520	509 SEE CCC	99	B/1
		MAXIMUM CAPACITY OF 859 MILLION BITS WHEN USED IN AN UNSECTORED FORMAT OR 712 MILLION BITS WITH 24 SECTORS PER TRACK, 404 TRACKS, 10 TO 55 MS POSITIONING TIME - 30 MS AVERAGE, 6.? MILLION BITS PER SECOND TRANSFER RATE, 3600 RPM, HAS VOICE COIL ACTUATOR, USES PREWRITTEN SERVO TRACKS. CONTROLS ARE LOCATED ON FRONT PANEL OF CABINET. REQUIRES ONE 861 DISK PACK WITH 19 DATA AND ONE SERVO SURFACE - NOT INCLUDED. RECEIVES FROM 3554 1/ 7054 1/ 7054 2/ RECEIVES FROM 7054 21/ 7054 22/ 7054 41/ RECEIVES FROM 7054 42/ 7154 X/ 7654 1/							
844	21	DISK STORAGE UNIT	LIST RESALE	20,590 12,000	C	520	509 SEE CCC	99	B/1
		MAXIMUM CAPACITY OF 840 MILLION BITS WHEN USED IN AN UNSECTORED FORMAT OR 712 MILLION BITS WITH 24 SECTORS PER TRACK, 404 TRACKS, 10 TO 55 MS POSITIONING TIME - 30 MS AVERAGE, 6.? MILLION BITS PER SECOND TRANSFER RATE, 3600 RPM, HAS VOICE COIL ACTUATOR, USES PREWRITTEN SERVO TRACKS. CONTROLS ARE LOCATED ON TOP OF CABINET. REQUIRES ONE 861 DISK PACK WITH 19 DATA AND ONE SERVO SURFACE - NOT INCLUDED. COLOR IS CYBER 170. RECEIVES FROM 3554 1/ 7054 1/ 7054 2/ RECEIVES FROM 7054 21/ 7054 22/ 7054 41/ RECEIVES FROM 7054 42/ 7154 X/ 7654 1/ AVA OPTIONS 10362 4/							
856	2	CARTRIDGE DISK DRIVE	LIST RESALE	9,450 9,450	C	214	209 SEE CCC	74	D/3
		CARTRIDGE DISK DRIVE WITH VOICE COIL POSITIONING. STORES 1.1 MILLION WORDS ON A FIXED DISK PLUS 1.1 MILLION WORDS ON A REMOVABLE DISK. EACH DISK HAS TWO SURFACES, 200 TRACKS PER SURFACE, 29 SECTORS PER TRACK, AND 96 WORDS PER SECTOR. AVERAGE POSITIONING TIME IS 35 MILLISECONDS. ROTATIONAL SPEED IS 2400 RPM. TRANSFER RATE IS 156,000 WORDS PER SECOND. INCLUDES FLOOR MOUNT CABINET. REQUIRES 847-29 DISK CARTRIDGE (NOT INCLUDED). RECEIVES FROM 1733 2/							
856	4	CARTRIDGE DISK DRIVE	LIST RESALE	13,125 13,125	C	334	329 SEE CCC	90	D/3
		CARTRIDGE DISK DRIVE WITH VOICE COIL POSITIONING. STORES 2.? MILLION WORDS ON A FIXED DISK PLUS 2.2 WORDS ON A REMOVABLE DISK. EACH DISK HAS TWO SURFACES, 400 TRACKS PER SURFACE, 29 SECTORS PER TRACK, AND 96 WORDS PER SECTOR. AVERAGE POSITIONING TIME IS 35 MILLISECONDS. ROTATIONAL SPEED IS 2400 RPM. TRANSFER RATE IS 156,000 WORDS PER SECOND. INCLUDES FLOOR MOUNT CABINET. REQUIRES 84A-29 DISK CARTRIDGE (NOT INCLUDED). RECEIVES FROM 1733 2/							

RESALE PRODUCT	MOD	PRODUCTS ACTIVE DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
970	2	DATA ENTRY SYSTEM CONTROLLER	LIST RESALE	48,900 48,900	C	850	772 SEE CCC	324	D/3
		A STORED PROGRAM PROCESSOR, CABINET, AND NECESSARY CONTROLLERS AND MEMORY TO SUPPORT A BASIC SYSTEM OF EIGHT DATA ENTRY STATIONS. MAY NOT BE ORDERED AS A SEPARATE ITEM. MINIMUM ORDER MUST ADDITIONALLY INCLUDE A TAPE TRANSPORT, A DISK DRIVE, AN OPERATORS CONSOLE AND EIGHT KEY ENTRY STATIONS. SEE VOLUME II FOR CONFIGURATIONS. SENDS TO 614 72/ 616 92/ 616 95/ SENDS TO 956 2/ 856 4/ 929 X/ SENDS TO 959 X/ 970 8/ 970 21/ SENDS TO 970 25/ 1711 X/ 1713 X/ SENDS TO 1729 3/ 1742 30/ 1742 120/ SENDS TO 1743 1/ 1743 2/10419 1/ AVA OPTIONS 956 2/ 856 4/ 856 14/ AVA OPTIONS 1782 1/ 1783 1/ 1785 1/ AVA OPTIONS 1785 2/ 1785 3/ 1786 1/ AVA OPTIONS 1787 3/ 1787 4/								
970	8	DATA ENTRY DISTRIBUTION UNIT	LIST RESALE	3,100 3,100	C	85	75 SEE CCC	28	D/3
		PROVIDES SIGNAL DISTRIBUTION AND POWER DISTRIBUTION FOR UP TO EIGHT KEY ENTRY STATIONS. STATIONS MAY BE EITHER 970-32 OR 970-480, OR COMBINATIONS THEREOF. UP TO SEVEN 970-8 UNITS MAY BE ADDED TO THE DATA ENTRY SYSTEM CONTROLLER AND ITS EXPANSION CABINET. EACH DATA ENTRY DISTRIBUTION UNIT INCLUDES 15 FEET OF CABLING. OPTIONAL CABLING - SEE SUPPLIES SECTION. RECEIVES FROM 970 1/ 970 2/ 970 212/ SENDS TO 970 32/ 970 480/ 970 481/								
970	21	BINARY SYNCHRONOUS COMM. CONT.	LIST RESALE	3,000 3,000	C	120	105 SEE CCC	54	D/3
		A HALF-DUPLEX COMMUNICATIONS CONTROLLER THAT PROVIDES HARDWARE ERROR CHECKING AND SYNCHRONIZATION. HARDWARE SUPPORTS IBM BISYNC PROTOCOL IMPLEMENTATION. CONFORMS TO EIA RS232C AND CCITTV.24 INTERFACE STANDARDS. COMPATIBLE WITH AT+T 201, 203 AND 208 DATA SETS AND EQUIVALENT AT TRANSMISSION RATES UP TO 9600 BITS PER SECOND. RECEIVES FROM 970 1/ 970 2/ 970 212/ SENDS TO 9008M / AVA OPTIONS 10324 1/								
970	32	KEY ENTRY STATION	LIST RESALE	1,170 1,170	C	32	26 SEE CCC	22	D/3
		CONSISTS OF A KEYBOARD AND A 32 CHARACTER DISCHARGE DISPLAY. DISPLAY FORMAT OF 18 DATA CHARACTERS PLUS 14 HEADER INDICATOR CHARACTERS WHEN IN ENTRY, VERIFY, OR READ MODES. KEYBOARD LAYOUT IS 029 FORMAT. EACH KEY ENTRY STATION INCLUDES 50 FEET OF CABLING. OPTIONAL CABLING - SEE SUPPLIES SECTION. RECEIVES FROM 970 1/ 970 2/ 970 8/ RECEIVES FROM 970 212/ AVA OPTIONS 10324 1/								
970	480	KEY ENTRY STATION	LIST RESALE	1,560 1,560	C	49	36 SEE CCC	20	D/3
		CONSISTS OF A KEYBOARD AND A 480 CHARACTER CATHODE RAY TUBE DISPLAY ORGANIZED IN TEN LINES OF 48 CHARACTERS. STANDARD KEYBOARD LAYOUT IS 029 FORMAT. EACH KEY ENTRY STATION INCLUDES 50 FEET OF CABLING. OPTIONAL CABLING - SEE SUPPLIES SECTION. RECEIVES FROM 970 1/ 970 2/ 970 8/ RECEIVES FROM 970 26/ 970 212/								
970	481	KEY ENTRY STATION	LIST RESALE	1,800 1,900	C	55	41 SEE CCC	20	D/3
		CONSISTS OF A KEYBOARD AND A 480 CHARACTER CATHODE RAY TUBE DISPLAY ORGANIZED IN TEN LINES OF 48 CHARACTERS. KEYBOARD LAYOUT IS IN TYPEWRITER FORMAT WITH 10 KEY NUMERIC CLUSTER. EACH KEY ENTRY STATION INCLUDES 50 FEET OF CABLING. OPTIONAL CABLING SEE SUPPLY SECTION. RECEIVES FROM 970 1/ 970 2/ 970 8/ RECEIVES FROM 970 26/ 970 212/								
979	1	DOCUMENT READER/SORTER	LIST RESALE	77,855 77,855	C	1,765	1,500 SEE CCC	533	D/3
		A MEDIUM SPEED, MULTI-PURPOSE READER/SORTER DEVICE TO FEED, TRANSPORT, READ AND SORT INTERMIXED DOCUMENT SIZES FROM 4.85 TO 8.75 INCHES LONG AND FROM 2.5 TO 4.25 INCHES WIDE AT A RATE OF 830 DOCUMENTS PER MINUTE FOR A 6 INCH LONG DOCUMENT. IT HANDLES PAPER THICKNESS RANGING FROM .003 INCHES TO .013 INCHES. CONTAINS A FOURTEEN POCKET OUTPUT STACKER. OPTIONS ARE AVAILABLE FOR READING MAGNETIC INK CHARACTERS (MICR) OR OPTICAL MARK READ (OMR). RECEIVES FROM 1784 1/ AVA OPTIONS 10409 1/10410 1/10411 1/ AVA OPTIONS 10412 1/10413 1/								

RESALE PRODUCT	MOD	PRODUCTS DESCRIPTION ACTIVE		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	PAGE 17 MAINTENANCE MONTHLY CHARGE	PROD GRP
979	10	OFF LINE READER/SORTER	LIST	55,900	C	1,090	925	SEE CCC	505	D/3
			RESALE	55,900						
		A MEDIUM SPEED READER/SORTER DEVICE FOR OFF-LINE SORTING OF CHECKS. HANDLES INTERMIXED DOCUMENT SIZES FROM 4.85 TO 8.75 INCHES LONG AND FROM 2.50 TO 4.25 INCHES HIGH AT A RATE OF 830 DOCUMENTS PER MINUTE FOR SIX INCH LONG DOCUMENTS. DOCUMENT THICKNESS CAN RANGE FROM .003 INCHES TO .013 INCHES. CONTAINS A FOURTEEN POCKET OUTPUT STACKER, 10409-1 E139 CHARACTER SET OPTION AND A 10412-1 FINE SORT OPTION.									
		AVA OPTIONS 10413 1/								
979	72	BANK ENTRY SUBSYSTEM	LIST	107,135	C	2,560	2,185	SEE CCC	1,291	D/3
			RESALE	107,135						
		A STANDALONE SYSTEM FOR CHECK PROCESSING. THE SYSTEM CONSISTS OF A FOURTEEN POCKET DOCUMENT READER/SORTER WITH E133 CHARACTER SET, MINI-COMPUTER WITH 64K BYTES OF MEMORY, 8.8M BYTE CARTRIDGE DISK DRIVE, MODEL 33 KSR TELETYPE-WRITER, OPERATOR CONSOLE, AND A SEVEN TRACK MAGNETIC TAPE TRANSPORT. THE DOCUMENT READER/SORTER HANDLES INTERMIXED DOCUMENT SIZES FROM 4.85 TO 8.75 INCHES LONG AND FROM 2.5 TO 4.25 INCHES HIGH RANGING IN THICKNESS FROM .003 INCHES TO .013 INCHES.									
		AVA OPTIONS 616 XX/ 856 2/ 856 4/								
		AVA OPTIONS 970 8/ 970 21/ 1729 3/								
		AVA OPTIONS 1742 30/ 1742 120/ 1743 1/								
		AVA OPTIONS 1743 1/ 1785 1/ 1785 2/								
		AVA OPTIONS 1785 9/ 1786 1/10300 2/								
		AVA OPTIONS 10410 1/10411 1/10412 1/								
		AVA OPTIONS 10413 1/10415 1/								
979	92	BANK ENTRY SUBSYSTEM	LIST	107,135	C	2,560	2,185	SEE CCC	1,304	D/3
			RESALE	107,135						
		SAME AS 979-72 SUBSYSTEM EXCEPT MAGNETIC TAPE TRANSPORT IS NINE TRACK.								
1530		INTEG ANALOG IN INTERFACE	LIST	8,430	E	260	256	SEE CCC	85	D/1
			RESALE	8,430						
		ACCEPTS LOW-LEVEL (10 TO + 40 MILLIVOLTS) INPUT SIGNAL AND CONVERTS IT TO A 14-BIT DIGITAL VALUE USING INTEGRATING A/D CONVERTER. CONNECTS TO DCR OR RDCR. UP TO 1024 MULTIPLEXER POINTS CAN BE ACCOMMODATED. 1530A (30 PPS) CONNECTS TO 1535 MERCURY-WETTED RELAY MPLX. 1530B (40 PPS) CONNECTS TO 1532 DRY CONTACT RELAY MPLX.									
1533		**DRY CONTACT RELAY MPLX/FILTER** MULTIPLEXES LOW-LEVEL ANALOG INPUT SIGNALS INTO 1534 LOW-LEVEL ANALOG IN INTERFACE. 1533 INCLUDES 3.5 CPS INPUT FILTERS. ACCEPTS INPUTS FROM 1563 ANALOG SIGNAL CONDITIONER. 1533 CAN BE EXPANDED TO 1024 POINTS USING COMBINATIONS OF THE FOLLOWING.								
	A	DRY CONTACT RELAY MPLX/FILTER 16 POINTS	LIST	2,230	E	63	62	SEE CCC	79	D/1
			RESALE	2,230						
	B	DRY CONTACT RELAY MPLX/FILTER 32 POINTS	LIST	3,180	E	82	81	SEE CCC	44	D/1
			RESALE	3,180						
	C	DRY CONTACT RELAY MPLX/FILTER 48 POINTS	LIST	4,135	E	99	98	SEE CCC	57	D/1
			RESALE	4,135						
	D	DRY CONTACT RELAY MPLX/FILTER 64 POINTS	LIST	5,090	E	120	119	SEE CCC	70	D/1
			RESALE	5,090						
	E	DRY CONTACT RELAY MPLX/FILTER 80 POINTS	LIST	6,045	E	140	139	SEE CCC	84	D/1
			RESALE	6,045						
	F	DRY CONTACT RELAY MPLX/FILTER 96 POINTS	LIST	7,000	E	155	153	SEE CCC	97	D/1
			RESALE	7,000						
	G	DRY CONTACT RELAY MPLX/FILTER 112 POINTS	LIST	7,950	E	175	174	SEE CCC	107	D/1
			RESALE	7,950						
	H	DRY CONTACT RELAY MPLX/FILTER 128 POINTS	LIST	8,905	E	195	194	SEE CCC	121	D/1
			RESALE	8,905						
1534		**ANALOG INPUT INTERFACE** ACCEPTS LOW LEVEL ANALOG INPUT SIGNALS AND CONVERTS THEM TO A 12-BIT DIGITAL VALUE. CONNECTS TO DCR OR RDCR AND TO 1533 OR 1535 MULTIPLEXER. CONTROLS UP TO 1024 MULTIPLEX POINTS.								
	1	ANALOG INPUT INTERFACE FIXED GAIN AMPLIFIER (GAIN EQUALS 100).	LIST	10,865	F	310	305	SEE CCC	99	D/1
			RESALE	10,865						
	2	ANALOG INPUT INTERFACE FOUR RANGE PROGRAMMABLE AMPLIFIER (RANGE EQUALS 1, 10, 100, 1000).	LIST	12,720	E	355	348	SEE CCC	110	D/1
			RESALE	12,720						

RESALE PRODUCT	MOD	PRODUCTS ACTIVE DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
1535		WETTED CONTACT RELAY MULTIPLEXER FOR LOW LEVEL ANALOG INPUT SIGNALS AND UP TO EIGHT 1535 MULTIPLEXERS (MAXIMUM OF 1024 INPUTS) CAN BE ATTACHED TO ONE 1534 ANALOG INPUT INTERFACE.								
	16	MULTIPLEXER 16 INPUT POINTS.	LIST RESALE	2,650 2,650	F	65	65	SEE CCC	27	D/1
	32	MULTIPLEXER 32 INPUT POINTS.	LIST RESALE	3,710 3,710	E	78	78	SEE CCC	49	D/1
	48	MULTIPLEXER 48 INPUT POINTS.	LIST RESALE	4,770 4,770	F	97	96	SEE CCC	59	D/1
	64	MULTIPLEXER 64 INPUT POINTS	LIST RESALE	5,830 5,830	E	120	119	SEE CCC	70	D/1
	80	MULTIPLEXER 80 INPUT POINTS.	LIST RESALE	6,890 6,890	E	140	139	SEE CCC	84	D/1
	96	MULTIPLEXER 96 INPUT POINTS.	LIST RESALE	7,950 7,950	E	160	158	SEE CCC	93	D/1
	112	MULTIPLEXER 112 INPUT POINTS.	LIST RESALE	9,010 9,010	F	180	179	SEE CCC	102	D/1
	128	MULTIPLEXER 128 INPUT POINTS.	LIST RESALE	10,070 10,070	E	200	196	SEE CCC	110	D/1
1538		**HIGH-LEVEL ANALOG IN INTERFACE** ACCEPTS HIGH-LEVEL ANALOG INPUT SIGNAL AND CONVERTS IT TO 8-, 10-, 12-, OR 14-BIT DIGITAL VALUE. OUTPUT IS CONNECTED TO DCB OR BDCB. INPUT IS CONNECTED TO 1539 SOLID-STATE MPLX AND CAN ADDRESS UP TO 64 CHANNELS. INPUT RANGES AND CONVERSION SPEEDS UNDER OPTIMUM CONDITIONS ARE-								
	C	HIGH-LEVEL ANALOG IN INTERFACE +/- 5V, 12-BIT ADC, 50 KC CONVERSION RATE	LIST RESALE	8,375 8,375	E	260	256	SEE CCC	85	D/1
	D	HIGH-LEVEL ANALOG IN INTERFACE +/- 5V, 14-BIT ADC, 40 KC CONVERSION RATE	LIST RESALE	8,590 8,590	E	265	261	SEE CCC	86	D/1
	F	HIGH-LEVEL ANALOG IN INTERFACE +/- 10V, 10-BIT ADC, 100 KC CONVERSION RATE	LIST RESALE	8,165 8,165	E	250	245	SEE CCC	84	D/1
	G	HIGH-LEVEL ANALOG IN INTERFACE +/- 10V, 12-BIT ADC, 50 KC CONVERSION RATE	LIST RESALE	8,375 8,375	F	260	256	SEE CCC	85	D/1
	H	HIGH-LEVEL ANALOG IN INTERFACE +/- 10V, 14-BIT ADC, 40 KC CONVERSION RATE	LIST RESALE	8,590 8,590	E	265	261	SEE CCC	86	D/1
1539		**SOLID-STATE MULTIPLEXER** MULTIPLEXES HIGH-LEVEL, SINGLE-ENDED, ANALOG SIGNALS INTO 1538 HIGH-LEVEL ANALOG IN INTERFACE. INPUTS CONNECT DIRECTLY TO EXTERNAL DEVICES OR TO 1567 SIMULTANEOUS SAMPLE-AND-HOLD. UP TO 64 CHANNELS, MAXIMUM, ARE PROVIDED.								
	A	SOLID-STATE MULTIPLEXER 8 CHANNELS	LIST RESALE	2,385 2,385	F	73	72	SEE CCC	27	D/1
	B	SOLID-STATE MULTIPLEXER 16 CHANNELS	LIST RESALE	2,760 2,760	E	85	84	SEE CCC	29	D/1
	C	SOLID-STATE MULTIPLEXER 24 CHANNELS	LIST RESALE	3,130 3,130	E	97	96	SEE CCC	33	D/1
	D	SOLID-STATE MULTIPLEXER 32 CHANNELS	LIST RESALE	3,500 3,500	E	105	104	SEE CCC	37	D/1
	E	SOLID-STATE MULTIPLEXER 40 CHANNELS	LIST RESALE	4,190 4,190	E	130	129	SEE CCC	46	D/1
	F	SOLID-STATE MULTIPLEXER 48 CHANNELS	LIST RESALE	4,560 4,560	E	145	144	SEE CCC	49	D/1
	G	SOLID-STATE MULTIPLEXER 56 CHANNELS	LIST RESALE	4,930 4,930	F	150	147	SEE CCC	52	D/1
	H	SOLID-STATE MULTIPLEXER 64 CHANNELS	LIST RESALE	5,300 5,300	E	165	164	SEE CCC	55	D/1

RESALE PRODUCTS ACTIVE

PRODUCT MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	PAGE 19 MONTHLY CHARGE	MAINTENANCE PROD GRP
1544	PROVIDES CONTROL OF DIGITAL INPUT UNITS. 1544 CONNECTS TO OCP TO RDCB AND ACCEPTS DIGITAL INPUTS FROM 1544. ACCOMODATES 256 BITS (16 WORDS) OF DIGITAL INPUT. EXTERNAL SYNCHRONIZATION PROVIDED BY 1545.								
A	DIGITAL INPUT INTERFACE ACCEPTS 4 WORD (64 BIT) INPUT	LIST RESALE	2,970 2,970	E	89	89	SEE CCC	39	D/1
B	DIGITAL INPUT INTERFACE ACCEPTS 8 WORD (128 BIT) INPUT	LIST RESALE	3,235 3,235	E	95	94	SEE CCC	49	D/1
C	DIGITAL INPUT INTERFACE ACCEPTS 12 WORD (192 BIT) INPUT	LIST RESALE	3,500 3,500	E	100	98	SEE CCC	55	D/1
D	DIGITAL INPUT INTERFACE ACCEPTS 16 WORD (256 BIT) INPUT	LIST RESALE	3,765 3,765	E	105	104	SEE CCC	64	D/1
1545	PROVIDES ABILITY TO SYNCHRONIZE DIGITAL INPUTS TO EXTERNAL DEVICES. 1545 CONNECTS TO 1544 AND ACCEPTS EITHER CONTACT CLOSURE OR LOGIC LEVEL INPUTS. ONLY ONE 1545 MAY BE CONNECTED TO A 1544.								
A	DIGITAL INPUT SYNC UNIT LOGIC LEVEL INPUT SYNC FOR 4 WORDS	LIST RESALE	745 745	E	25	25	SEE CCC	9	D/1
B	DIGITAL INPUT SYNC UNIT LOGIC LEVEL INPUT SYNC FOR 8 WORDS	LIST RESALE	955 955	E	30	30	SEE CCC	13	D/1
C	DIGITAL INPUT SYNC UNIT LOGIC LEVEL INPUT SYNC FOR 12 WORDS	LIST RESALE	1,170 1,170	E	35	35	SEE CCC	19	D/1
D	DIGITAL INPUT SYNC UNIT LOGIC LEVEL INPUT SYNC FOR 16 WORDS	LIST RESALE	1,380 1,380	E	40	40	SEE CCC	22	D/1
E	DIGITAL INPUT SYNC UNIT CONTACT INPUT SYNC FOR 4 WORDS	LIST RESALE	745 745	E	25	25	SEE CCC	9	D/1
F	DIGITAL INPUT SYNC UNIT CONTACT INPUT SYNC FOR 8 WORDS	LIST RESALE	955 955	E	30	30	SEE CCC	13	D/1
G	DIGITAL INPUT SYNC UNIT CONTACT INPUT SYNC FOR 12 WORDS	LIST RESALE	1,170 1,170	E	35	35	SEE CCC	19	D/1
H	DIGITAL INPUT SYNC UNIT CONTACT INPUT SYNC FOR 16 WORDS	LIST RESALE	1,380 1,380	E	40	40	SEE CCC	22	D/1
1546	**EVENTS COUNTER SIGNAL COND.** CONDITIONS LOGIC LEVEL OR FORM C CONTACT CLOSURE INPUTS TO 1547.								
A	EVENTS COUNTER SIGNAL COND CONDITIONS 16 LOGIC LEVELS.	LIST RESALE	190 190	E	7	7	SEE CCC	8	D/1
B	EVENTS COUNTER SIGNAL COND CONDITIONS 16 CONTACT CLOSURES.	LIST RESALE	215 215	E	8	8	SEE CCC	8	D/1
1547	**EVENTS COUNTER INTERFACE** COUNTS DIGITAL EVENTS INPUTS IN 8-BIT COUNTERS. A 16-BIT COUNTER CAN BE FORMED BY CONNECTING TWO 8-BIT COUNTERS IN TANDEM. FREQUENCY OF EVENTS NOT TO EXCEED 10KC. INPUTS TO 1547 ORIGINATE FROM 1546. 1547 IS EXPANDABLE IN 2-COUNTER INCREMENTS UP TO 16 COUNTERS.								
A	EVENTS COUNTER INTERFACE 2 COUNTERS	LIST RESALE	4,350 4,350	E	135	134	SEE CCC	46	D/1
B	EVENTS COUNTER INTERFACE 4 COUNTERS	LIST RESALE	4,880 4,880	E	150	147	SEE CCC	51	D/1
C	EVENTS COUNTER INTERFACE 6 COUNTERS	LIST RESALE	5,385 5,385	E	170	169	SEE CCC	55	D/1
D	EVENTS COUNTER INTERFACE 8 COUNTERS	LIST RESALE	5,940 5,940	E	180	179	SEE CCC	59	D/1
E	EVENTS COUNTER INTERFACE 10 COUNTERS	LIST RESALE	6,425 6,425	E	200	196	SEE CCC	65	D/1
F	EVENTS COUNTER INTERFACE 12 COUNTERS	LIST RESALE	6,945 6,945	E	220	218	SEE CCC	73	D/1
G	EVENTS COUNTER INTERFACE 14 COUNTERS	LIST RESALE	7,465 7,465	E	230	229	SEE CCC	77	D/1

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
	H	EVENTS COUNTER INTERFACE 16 COUNTERS	LIST RESALE	7,985 7,985	E	250	245	SEE CCC	83	D/1
1548		INTERRUPT SIGNAL CONDITIONER CONDITIONS LOGIC LEVEL OR FORM C CONTACT INPUTS FOR ENTRY INTO 1549 INTERRUPT INTERFACE.								
1548	A	INTERRUPT SIGNAL CONDITIONER CONDITIONS 16 LOGIC LEVEL INPUTS	LIST RESALE	200 200	E	9	9	SEE CCC	8	D/1
1548	B	INTERRUPT SIGNAL CONDITIONER CONDITIONS 32 LOGIC LEVEL INPUTS	LIST RESALE	394 394	E	14	14	SEE CCC	9	D/1
1548	C	INTERRUPT SIGNAL CONDITIONER CONDITIONS 48 LOGIC LEVEL INPUTS	LIST RESALE	588 588	E	20	20	SEE CCC	10	D/1
1548	D	INTERRUPT SIGNAL CONDITIONER CONDITIONS 64 LOGIC LEVEL INPUTS	LIST RESALE	783 783	E	27	27	SEE CCC	11	D/1
1548	E	INTERRUPT SIGNAL CONDITIONER CONDITIONS 16 CONTACT INPUTS	LIST RESALE	226 226	E	10	10	SEE CCC	8	D/1
1548	F	INTERRUPT SIGNAL CONDITIONER CONDITIONS 32 CONTACT INPUTS	LIST RESALE	447 447	E	15	15	SEE CCC	9	D/1
1548	G	INTERRUPT SIGNAL CONDITIONER CONDITIONS 48 CONTACT INPUTS	LIST RESALE	672 672	E	22	22	SEE CCC	11	D/1
1548	H	INTERRUPT SIGNAL CONDITIONER CONDITIONS 64 CONTACT INPUTS	LIST RESALE	867 867	E	29	29	SEE CCC	13	D/1
1549		INTERRUPT INTERFACE CONNECTS TO DCR AND PROVIDES INDIVIDUAL ANTI-REPEAT, MASK, HOLD, AND STATUS FOR EXTERNAL INTERRUPT LINES. EXPANSION OF INTERRUPT LEVELS IS PROVIDED BY FANNING 1 TO 16 LINES INTO ONE COMPUTER INTERRUPT LEVEL. INPUTS MUST BE FROM 1548. SPECIFY INTERRUPT ASSIGNMENTS REQUIRED.								
1549	A	INTERRUPT INTERFACE 16 EXTERNAL INTERRUPT LINES	LIST RESALE	4,122 4,122	E	135	134	SEE CCC	44	D/1
1549	B	INTERRUPT INTERFACE 32 EXTERNAL INTERRUPT LINES	LIST RESALE	5,009 5,009	E	164	163	SEE CCC	53	D/1
1549	C	INTERRUPT INTERFACE 48 EXTERNAL INTERRUPT LINES	LIST RESALE	5,901 5,901	E	192	191	SEE CCC	64	D/1
1549	D	INTERRUPT INTERFACE 64 EXTERNAL INTERRUPT LINES	LIST RESALE	6,794 6,794	E	220	219	SEE CCC	76	D/1
1553		EXTERNAL REG OUTPUT INTERFACE PROVIDES CAPABILITY TO OUTPUT DIGITAL DATA WORDS TO VARIOUS UNITS. 1553 CONNECTS TO DCR OR BDCR AND PROVIDES DATA TO THE 1555 DIGITAL OUT UNITS, 1556 ANALOG OUT UNITS, AND 1557 DIGITAL DISPLAY UNITS. IT ALSO PROVIDES UP TO 8 WORDS (128 BITS) OF ASYNCHRONOUS OUTPUT. OUTPUTS MAY BE SYNCHRONIZED TO EXTERNAL DEVICES WITH 1554.								
	A	EXTERNAL REG OUTPUT INTERFACE PROVIDES 2 WORDS (32 BITS) OUTPUT	LIST RESALE	3,025 3,025	E	92	91	SEE CCC	33	D/1
	B	EXTERNAL REG OUTPUT INTERFACE PROVIDES 4 WORDS (64 BITS) OUTPUT	LIST RESALE	3,575 3,575	E	110	108	SEE CCC	39	D/1
	C	EXTERNAL REG OUTPUT INTERFACE PROVIDES 6 WORDS (96 BITS) OUTPUT	LIST RESALE	4,030 4,030	E	125	124	SEE CCC	46	D/1
	D	EXTERNAL REG OUTPUT INTERFACE PROVIDES 8 WORDS (128 BITS) OUTPUT	LIST RESALE	4,710 4,710	E	145	144	SEE CCC	51	D/1
1554		EXTERNAL REGISTER OUTPUT SYNC CONNECTS TO 1553 AND SYNCHRONIZES OUTPUTS TO EXTERNAL DEVICES. SYNC SIGNALS ARE LOGIC LEVELS.	LIST RESALE	585 585	E	18	18	SEE CCC	10	D/1
1555		DIGITAL OUTPUT UNIT PROVIDES DIGITAL DATA OUTPUTS. 1555 CONNECTS TO 1553 EXTERNAL REG OUT INTERFACE. OUTPUTS FROM 1555 GO TO 1570 TERMINATION PANELS, OR DIRECTLY TO EXTERNAL EQUIPMENT. TWO VERSIONS ARE AVAILABLE. POWER DRIVER OUTPUT UNIT (24 VOLTS AT 300 MA), RELAY OUTPUT UNIT (FORM C MERCURY-WETTED CONTACTS). EACH GROUP OF 32 (OR LESS) DIGITAL OUTPUTS OF ONE TYPE REQUIRES TWO DIGITAL WORD OUTPUTS FROM THE 1553.								
	A	DIGITAL OUTPUT UNIT 16 POWER DRIVERS	LIST RESALE	1,540 1,540	E	47	47	SEE CCC	21	D/1

PRODUCT MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT SALE CCC BASE 1 YEAR	3YR/24MO	5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
B	DIGITAL OUTPUT UNIT 32 POWER DRIVERS	LIST RESALE	1,805 1,805	F	54	54	SEE CCC	25	D/1
C	DIGITAL OUTPUT UNIT 48 POWER DRIVERS	LIST RESALE	2,070 2,070	E	60	59	SEE CCC	28	D/1
D	DIGITAL OUTPUT UNIT 64 POWER DRIVERS	LIST RESALE	2,335 2,335	F	67	67	SEE CCC	33	D/1
E	DIGITAL OUTPUT UNIT 80 POWER DRIVERS	LIST RESALE	2,600 2,600	F	75	74	SEE CCC	39	D/1
F	DIGITAL OUTPUT UNIT 96 POWER DRIVERS	LIST RESALE	2,865 2,865	F	82	81	SEE CCC	44	D/1
G	DIGITAL OUTPUT UNIT 112 POWER DRIVERS	LIST RESALE	3,075 3,075	E	89	89	SEE CCC	49	D/1
H	DIGITAL OUTPUT UNIT 128 POWER DRIVERS	LIST RESALE	3,340 3,340	E	97	96	SEE CCC	52	D/1
J	DIGITAL OUTPUT UNIT 16 RELAY OUTPUTS	LIST RESALE	1,730 1,700	E	51	50	SEE CCC	21	D/1
K	DIGITAL OUTPUT UNIT 32 RELAY OUTPUTS	LIST RESALE	2,150 2,150	E	64	64	SEE CCC	28	D/1
L	DIGITAL OUTPUT UNIT 48 RELAY OUTPUTS	LIST RESALE	2,600 2,600	F	76	75	SEE CCC	35	D/1
M	DIGITAL OUTPUT UNIT 64 RELAY OUTPUTS	LIST RESALE	3,050 3,050	E	87	86	SEE CCC	44	D/1
N	DIGITAL OUTPUT UNIT 80 RELAY OUTPUTS	LIST RESALE	3,500 3,500	E	99	97	SEE CCC	51	D/1
P	DIGITAL OUTPUT UNIT 96 RELAY OUTPUTS	LIST RESALE	3,950 3,950	E	115	114	SEE CCC	57	D/1
Q	DIGITAL OUTPUT UNIT 112 RELAY OUTPUTS	LIST RESALE	4,400 4,400	E	130	129	SEE CCC	64	D/1
R	DIGITAL OUTPUT UNIT 128 RELAY OUTPUTS	LIST RESALE	4,850 4,850	E	140	139	SEE CCC	73	D/1
1556	**ANALOG OUTPUT UNIT** PROVIDES RELAY DIGITAL-TO-ANALOG CONVERTERS (DAC) FOR GENERATING ANALOG OUTPUTS. 1556 CONNECTS TO 1553. IT SENDS ANALOG OUTPUTS TO EXTERNAL EQUIPMENT. THREE TYPES OF DAC ARE AVAILABLE. EACH DAC REQUIRES ONE DIGITAL OUTPUT WORD FROM THE 1553.								
A	ANALOG OUTPUT UNIT 2 DAC OUTPUTS 1-5MA 4000 OHM LOAD	LIST RESALE	2,600 2,600	E	80	79	SEE CCC	29	D/1
B	ANALOG OUTPUT UNIT 4 DAC OUTPUTS 1-5MA 4000 OHM LOAD	LIST RESALE	3,605 3,605	E	111	108	SEE CCC	44	D/1
C	ANALOG OUTPUT UNIT 6 DAC OUTPUTS 1-5MA 4000 OHM LOAD	LIST RESALE	4,615 4,615	E	143	139	SEE CCC	55	D/1
D	ANALOG OUTPUT UNIT 8 DAC OUTPUTS 1-5MA 4000 OHM LOAD	LIST RESALE	5,620 5,620	E	170	169	SEE CCC	66	D/1
E	ANALOG OUTPUT UNIT 2 DAC OUTPUTS 4-20MA 1200 OHM LOAD	LIST RESALE	2,600 2,600	E	80	79	SEE CCC	29	D/1
F	ANALOG OUTPUT UNIT 4 DAC OUTPUTS 4-20MA 1200 OHM LOAD	LIST RESALE	3,605 3,605	E	110	108	SEE CCC	44	D/1
G	ANALOG OUTPUT UNIT 6 DAC OUTPUTS 4-20MA 1200 OHM LOAD	LIST RESALE	4,615 4,615	E	140	139	SEE CCC	55	D/1
H	ANALOG OUTPUT UNIT 8 DAC OUTPUTS 4-20MA 1200 OHM LOAD	LIST RESALE	5,620 5,620	E	170	169	SEE CCC	69	D/1

RESALE PRODUCT	MOD	PRODUCTS ACTIVE DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT SALE 1 YEAR	CCC BASE 3YR/24MO	5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
	J	ANALOG OUTPUT UNIT 2 DAC OUTPUTS 10-50MA 600 OHM LOAD	LIST RESALE	2,600 2,600	E	80	79	SEE CCC	29	D/1
	K	ANALOG OUTPUT UNIT 4 DAC OUTPUTS 10-50MA 600 OHM LOAD	LIST RESALE	3,605 3,605	E	110	108	SEE CCC	44	D/1
	L	ANALOG OUTPUT UNIT 6 DAC OUTPUTS 10-50MA 600 OHM LOAD	LIST RESALE	4,615 4,615	E	140	139	SEE CCC	55	D/1
	M	ANALOG OUTPUT UNIT 8 DAC OUTPUTS 10-50MA 600 OHM LOAD	LIST RESALE	5,620 5,620	E	170	169	SEE CCC	69	D/1
1557		**DIGITAL DISPLAY UNIT** PROVIDES CAPABILITY TO DISPLAY DIGITAL INFORMATION ON A PANEL CONTAINING UP TO EIGHT CHARACTER DISPLAYS. DISPLAY CHARACTERS 0 THROUGH 9, MINUS SIGN, DECIMAL POINT. 1557 CONNECTS TO 1553 EXTERNAL REGISTER OUTPUT INTERFACE AND REQUIRES TWO WORDS. DISPLAYS ARE AVAILABLE IN 2-CHARACTER INCREMENTS.								
	A	DIGITAL DISPLAY UNIT 2-CHARACTER DISPLAY	LIST RESALE	905 905	F	28	28	SEE CCC	11	D/1
	B	DIGITAL DISPLAY UNIT 4-CHARACTER DISPLAY	LIST RESALE	1,325 1,325	E	41	41	SEE CCC	19	D/1
	C	DIGITAL DISPLAY UNIT 6-CHARACTER DISPLAY	LIST RESALE	1,760 1,760	E	55	55	SEE CCC	21	D/1
	D	DIGITAL DISPLAY UNIT 8-CHARACTER DISPLAY	LIST RESALE	2,215 2,215	F	68	68	SEE CCC	26	D/1
1558		LATCH RELAY OUTPUT INTERFACE PROVIDES CAPABILITY TO TRANSFER DIGITAL DATA TO LATCHING RELAY OUTPUT UNITS. 1558 CONNECTS TO THE OCR OR MDCR AND PROVIDES DATA TO 1559 AND 1560. 1558 CONTROLS 64 WORDS OF OUTPUT.	LIST RESALE	2,970 2,970	E	93	92	SEE CCC	32	D/1
1559		**LATCH RELAY OUTPUT UNIT** PROVIDES FORM-C RELAY CONTACT CLOSURE OUTPUTS FOR EXTERNAL USE. 1559 CONNECTS TO 1558 LATCH RELAY OUT INTERFACE. 1559 IS EXPANDABLE TO 1024 RELAYS IN COMBINATIONS OF THE FOLLOWING. EACH GROUP OF UP TO 128 RELAYS REQUIRES 8 DIGITAL OUTPUT WORDS FROM 1558.								
	A	LATCH RELAY OUTPUT UNIT 16 RELAYS	LIST RESALE	1,805 1,805	E	55	55	SEE CCC	24	D/1
	B	LATCH RELAY OUTPUT UNIT 32 RELAYS	LIST RESALE	2,120 2,120	E	63	62	SEE CCC	28	D/1
	C	LATCH RELAY OUTPUT UNIT 48 RELAYS	LIST RESALE	2,440 2,440	E	71	70	SEE CCC	33	D/1
	D	LATCH RELAY OUTPUT UNIT 64 RELAYS	LIST RESALE	2,760 2,760	E	80	79	SEE CCC	39	D/1
	E	LATCH RELAY OUTPUT UNIT 80 RELAYS	LIST RESALE	3,075 3,075	E	86	85	SEE CCC	46	D/1
	F	LATCH RELAY OUTPUT UNIT 96 RELAYS	LIST RESALE	3,395 3,395	E	99	97	SEE CCC	51	D/1
	G	LATCH RELAY OUTPUT UNIT 112 RELAYS	LIST RESALE	3,710 3,710	E	105	104	SEE CCC	55	D/1
	H	LATCH RELAY OUTPUT UNIT 128 RELAYS	LIST RESALE	4,030 4,030	F	115	114	SEE CCC	59	D/1
1560		**LATCH RELAY ANALOG OUTPUT UNIT** PROVIDES 10-BIT LATCHING RELAY DIGITAL-TO-ANALOG CONVERTERS (DAC). 1560 CONNECTS TO 1558 AND PROVIDES ANALOG OUTPUTS FOR EXTERNAL EQUIPMENT. THREE TYPES OF DAC ARE AVAILABLE. EACH GROUP OF UP TO 16 DAC REQUIRES 16 DIGITAL OUTPUT WORDS FROM THE 1558.								
	A	LATCH RELAY ANALOG OUTPUT UNIT 4 DAC OUTPUTS 1-5MA 4000 OHM LOAD	LIST RESALE	2,440 2,440	F	70	69	SEE CCC	35	D/1
	B	LATCH RELAY ANALOG OUTPUT UNIT 6 DAC OUTPUTS 1-5MA 4000 OHM LOAD	LIST RESALE	2,865 2,865	E	81	80	SEE CCC	46	D/1

RESALE PRODUCT MOD	PRODUCTS ACTIVE DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
C	LATCH RELAY ANALOG OUTPUT UNIT 8 DAC OUTPUTS 1-5MA 4000 OHM LOAD	LIST RESALE	3,290 3,290	E	91	90	SEE CCC	53	D/1
D	LATCH RELAY ANALOG OUTPUT UNIT 10 DAC OUTPUTS 1-5MA 4000 OHM LOAD	LIST RESALE	3,820 3,820	E	110	108	SEE CCC	62	D/1
E	LATCH RELAY ANALOG OUTPUT UNIT 12 DAC OUTPUTS 1-5MA 4000 OHM LOAD	LIST RESALE	4,240 4,240	E	120	119	SEE CCC	73	D/1
F	LATCH RELAY ANALOG OUTPUT UNIT 14 DAC OUTPUTS 1-5MA 4000 OHM LOAD	LIST RESALE	4,665 4,665	E	130	129	SEE CCC	81	D/1
G	LATCH RELAY ANALOG OUTPUT UNIT 16 DAC OUTPUTS 1-5MA 4000 OHM LOAD	LIST RESALE	5,090 5,090	E	140	139	SEE CCC	87	D/1
H	LATCH RELAY ANALOG OUTPUT UNIT 4 DAC OUTPUTS 4-20MA 1200 OHM LOAD	LIST RESALE	2,440 2,440	E	70	69	SEE CCC	35	D/1
J	LATCH RELAY ANALOG OUTPUT UNIT 6 DAC OUTPUTS 4-20MA 1200 OHM LOAD	LIST RESALE	2,865 2,865	E	81	80	SEE CCC	46	D/1
K	LATCH RELAY ANALOG OUTPUT UNIT 8 DAC OUTPUTS 4-20MA 1200 OHM LOAD	LIST RESALE	3,290 3,290	E	91	90	SEE CCC	53	D/1
L	LATCH RELAY ANALOG OUTPUT UNIT 10 DAC OUTPUTS 4-20MA 1200 OHM LOAD	LIST RESALE	3,820 3,820	E	110	108	SEE CCC	62	D/1
M	LATCH RELAY ANALOG OUTPUT UNIT 12 DAC OUTPUTS 4-20MA 1200 OHM LOAD	LIST RESALE	4,240 4,240	E	120	119	SEE CCC	73	D/1
N	LATCH RELAY ANALOG OUTPUT UNIT 14 DAC OUTPUTS 4-20MA 1200 OHM LOAD	LIST RESALE	4,665 4,665	E	130	129	SEE CCC	81	D/1
P	LATCH RELAY ANALOG OUTPUT UNIT 16 DAC OUTPUTS 4-20MA 1200 OHM LOAD	LIST RESALE	5,090 5,090	E	140	139	SEE CCC	87	D/1
Q	LATCH RELAY ANALOG OUTPUT UNIT 4 DAC OUTPUTS 10-50MA 600 OHM LOAD	LIST RESALE	2,440 2,440	E	70	69	SEE CCC	35	D/1
R	LATCH RELAY ANALOG OUTPUT UNIT 6 DAC OUTPUTS 10-50MA 600 OHM LOAD	LIST RESALE	2,865 2,865	E	81	80	SEE CCC	46	D/1
S	LATCH RELAY ANALOG OUTPUT UNIT 8 DAC OUTPUTS 10-50MA 600 OHM LOAD	LIST RESALE	3,290 3,290	E	91	90	SEE CCC	53	D/1
T	LATCH RELAY ANALOG OUTPUT UNIT 10 DAC OUTPUTS 10-50MA 600 OHM LOAD	LIST RESALE	3,820 3,820	E	110	108	SEE CCC	69	D/1
U	LATCH RELAY ANALOG OUTPUT UNIT 12 DAC OUTPUTS 10-50MA 600 OHM LOAD	LIST RESALE	4,240 4,240	E	120	119	SEE CCC	73	D/1
V	LATCH RELAY ANALOG OUTPUT UNIT 14 DAC OUTPUTS 10-50MA 600 OHM LOAD	LIST RESALE	4,665 4,665	E	130	129	SEE CCC	91	D/1
W	LATCH RELAY ANALOG OUTPUT UNIT 16 DAC OUTPUTS 10-50MA 600 OHM LOAD	LIST RESALE	5,090 5,090	E	140	139	SEE CCC	87	D/1
1961	ANALOG OUTPUT INTERFACE PROVIDES CONTROL OF SOLID-STATE D/A CONVERTERS AND ANALOK OUTPUTS. THE 1561 CONNECTS TO THE DCB OR 9DCA. CAPACITY FOR UP TO 64 1566 HIGH-SPEED ANALOG OUT UNITS AND 64 1568 ANALOK ANALOG MEMORY OUTPUT UNITS IS PROVIDED.	LIST RESALE	3,290 3,290	E	105	104	SEE CCC	35	D/1

CHANGES EFFECTIVE 05/01/80

RESALE PRODUCTS ACTIVE

PRODUCT MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
1563	**ANALOG INPUT SIGNAL** PROVIDES SIGNAL CONDITIONING ON A PER-POINT BASIS FOR ANALOG INPUTS IN ANY COMBINATION. ONE 1563 MUST BE PROVIDED FOR EACH INPUT POINT OF 1531, 1532, AND 1533. ONLY THOSE INPUT CHARACTERISTICS SHOWN BELOW ARE STANDARD. ALL OTHERS, SUCH AS STRAIN GAUGES, RTD, ETC., ARE OSE.								
B	ANALOG INPUT SIGNAL COND	LIST RESALE	N/A N/A		N/A	N/A	SEE CCC	N/A	
	A ONE TIME INSTALLATION CHARGE		32						
	VOLTAGE ATTENUATION OF UP TO 20V P-P								
C	ANALOG INPUT SIGNAL COND	LIST RESALE	N/A N/A		N/A	N/A	SEE CCC	N/A	
	A ONE TIME INSTALLATION CHARGE		48						
	VOLTAGE ATTENUATION OF 20V TO 140V P-P								
D	ANALOG INPUT SIGNAL COND	LIST RESALE	N/A N/A		N/A	N/A	SEE CCC	N/A	
	A ONE TIME INSTALLATION CHARGE		27						
	CURRENT ADAPTER OF 0 TO 1 MA								
E	ANALOG INPUT SIGNAL COND	LIST RESALE	N/A N/A		N/A	N/A	SEE CCC	N/A	
	A ONE TIME INSTALLATION CHARGE		27						
	CURRENT ADAPTER OF 0 TO 2 MA								
F	ANALOG INPUT SIGNAL COND	LIST RESALE	N/A N/A		N/A	N/A	SEE CCC	N/A	
	A ONE TIME INSTALLATION CHARGE		38						
	CURRENT ADAPTER OF 1 TO 5 MA								
G	ANALOG INPUT SIGNAL COND	LIST RESALE	N/A N/A		N/A	N/A	SEE CCC	N/A	
	A ONE TIME INSTALLATION CHARGE		37						
	CURRENT ADAPTER OF 4 TO 20 MA								
H	ANALOG INPUT SIGNAL COND	LIST RESALE	N/A N/A		N/A	N/A	SEE CCC	N/A	
	A ONE TIME INSTALLATION CHARGE		37						
	CURRENT ADAPTER OF 10 TO 50 MA								
J	ANALOG INPUT SIGNAL COND	LIST RESALE	N/A N/A		N/A	N/A	SEE CCC	N/A	
	BASIC INPUT TO 1530 OR 1534.								
K	ANALOG INPUT SIGNAL COND	LIST RESALE	N/A N/A		N/A	N/A	SEE CCC	N/A	
	THERMOCOUPLE INPUT								
1564	**DIGITAL INPUT SIGNAL COND** CONDITIONS DIFFERENT TYPES OF DIGITAL INPUTS AND IS EXPANDABLE IN 32-BIT INCREMENTS TO A MAXIMUM OF 256 BITS (16 WORDS). LOGIC LEVELS 0V AND +6V. CONTACT INPUTS FROM ISOLATED CONTACT CLOSURES. 1564 MUST BE CONNECTED TO 1544. NOTE - IN INDUSTRIAL SYSTEMS INPUT 1564J THROUGH 1564R SHOULD BE FROM 1570D TERMINATION PANELS.								
A	DIGITAL INPUT SIGNAL COND	LIST RESALE	190 190	F	7	7	SEE CCC	8	D/1
	32 LOGIC LEVEL INPUTS								
B	DIGITAL INPUT SIGNAL COND	LIST RESALE	375 375	E	12	12	SEE CCC	9	D/1
	64 LOGIC LEVEL INPUTS								
C	DIGITAL INPUT SIGNAL COND	LIST RESALE	560 560	E	18	18	SEE CCC	10	D/1
	96 LOGIC LEVEL INPUTS								
D	DIGITAL INPUT SIGNAL COND	LIST RESALE	745 745	E	23	23	SEE CCC	11	D/1
	128 LOGIC LEVEL INPUTS								
E	DIGITAL INPUT SIGNAL COND	LIST RESALE	930 930	E	30	30	SEE CCC	13	D/1
	160 LOGIC LEVEL INPUTS								
F	DIGITAL INPUT SIGNAL COND	LIST RESALE	1,115 1,115	E	35	35	SEE CCC	15	D/1
	192 LOGIC LEVEL INPUTS								
G	DIGITAL INPUT SIGNAL COND	LIST RESALE	1,300 1,300	E	41	41	SEE CCC	17	D/1
	224 LOGIC LEVEL INPUTS								
H	DIGITAL INPUT SIGNAL COND	LIST RESALE	1,485 1,485	E	46	46	SEE CCC	19	D/1
	256 LOGIC LEVEL INPUTS								
J	DIGITAL INPUT SIGNAL COND	LIST RESALE	215 215	E	8	8	SEE CCC	8	D/1
	32 CONTACT CLOSURE INPUTS								

RESALE PRODUCTS ACTIVE

PRODUCT MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
K	DIGITAL INPUT SIGNAL COND 64 CONTACT CLOSURE INPUTS	LIST RESALE	425 425	E	13 13	SEE CCC	9	D/1
L	DIGITAL INPUT SIGNAL COND 96 CONTACT CLOSURE INPUTS	LIST RESALE	640 640	E	19 19	SEE CCC	11	D/1
M	DIGITAL INPUT SIGNAL COND 128 CONTACT CLOSURE INPUTS	LIST RESALE	825 825	E	25 25	SEE CCC	13	D/1
N	DIGITAL INPUT SIGNAL COND 160 CONTACT CLOSURE INPUTS	LIST RESALE	1,010 1,010	E	30 30	SEE CCC	15	D/1
P	DIGITAL INPUT SIGNAL COND 192 CONTACT CLOSURE INPUTS	LIST RESALE	1,195 1,195	E	36 36	SEE CCC	19	D/1
Q	DIGITAL INPUT SIGNAL COND 224 CONTACT CLOSURE INPUTS	LIST RESALE	1,380 1,380	E	41 41	SEE CCC	20	D/1
R	DIGITAL INPUT SIGNAL COND 256 CONTACT CLOSURE INPUTS	LIST RESALE	1,620 1,620	E	48 48	SEE CCC	21	D/1
1566	**D/A CONVERSION UNIT** CONVERTS 15-BIT DIGITAL VALUES TO ANALOG OUTPUT VOLTAGES, CONNECTS TO 1561 ANALOG OUTPUT INTERFACE OR 1568 ANALOK MEMORY OUTPUT, STANDARD RANGE OF OUTPUT + AND -10 VOLTS AND COMBINATIONS OF THE FOLLOWING ARE USED TO PROVIDE UP TO 64 OUTPUTS.							
1	D/A CONVERSION UNIT 1 CHANNEL.	LIST RESALE	4,240 4,240	F	120 119	SEE CCC	73	D/1
4	D/A CONVERSION UNIT 4 CHANNELS.	LIST RESALE	9,435 9,435	F	215 212	SEE CCC	121	D/1
8	D/A CONVERSION UNIT 8 CHANNELS.	LIST RESALE	14,840 14,840	E	350 343	SEE CCC	211	D/1
12	D/A CONVERSION UNIT 12 CHANNELS.	LIST RESALE	19,080 19,080	E	515 506	SEE CCC	293	D/1
16	D/A CONVERSION UNIT 16 CHANNELS.	LIST RESALE	23,320 23,320	E	690 680	SEE CCC	367	D/1
1567	**SIMULTANEOUS SAMPLE-AN-HOLD** PROVIDES SIMULTANEOUS SAMPLE-AND-HOLD CAPABILITY FOR 1539 MULTIPLEXER UNIT. 1567 IS EXPANDABLE IN INCREMENTS OF 2 INPUT CHANNELS.							
A	SIMULTANEOUS SAMPLE-AND-HOLD 2 INPUT CHANNELS	LIST RESALE	2,120 2,120	E	65 65	SEE CCC	25	D/1
B	SIMULTANEOUS SAMPLE-AND-HOLD 4 INPUT CHANNELS	LIST RESALE	2,760 2,760	E	85 84	SEE CCC	29	D/1
C	SIMULTANEOUS SAMPLE-AND-HOLD 6 INPUT CHANNELS	LIST RESALE	3,395 3,395	E	110 108	SEE CCC	35	D/1
D	SIMULTANEOUS SAMPLE-AND-HOLD 8 INPUT CHANNELS	LIST RESALE	4,030 4,030	E	125 124	SEE CCC	44	D/1
E	SIMULTANEOUS SAMPLE-AND-HOLD 10 INPUT CHANNELS	LIST RESALE	4,665 4,665	E	150 147	SEE CCC	50	D/1
F	SIMULTANEOUS SAMPLE-AND-HOLD 12 INPUT CHANNELS	LIST RESALE	5,300 5,300	E	165 164	SEE CCC	55	D/1
G	SIMULTANEOUS SAMPLE-AND-HOLD 14 INPUT CHANNELS	LIST RESALE	5,940 5,940	E	180 179	SEE CCC	62	D/1
H	SIMULTANEOUS SAMPLE-AND-HOLD 16 INPUT CHANNELS	LIST RESALE	6,575 6,575	E	205 202	SEE CCC	69	D/1
1568	**ANALOK ANALOG MEMORY OUTPUT** PROVIDES CAPABILITY TO EXPAND ANALOG OUTPUT CHANNELS FROM ONE 1562 DIGITAL-TO-ANALOG CONVERTER UNIT. ANALOG OUTPUT MAINTAINS ACQUIRED VALUE FOR INDEFINITE PERIOD TO AN ACCURACY OF + OR - 0.05 PERCENT AND OUTPUT OF + OR - 5V OR + OR - 10V AT 10MA. 1568 CAN BE EXPANDED IN INCREMENTS OF TWO OUTPUT CHANNELS. NOTE - ONE 1567 DAC MUST BE INCLUDED IN SYSTEM TO DRIVE 1568. 1568 CAN BE EXPANDED TO 64 OUTPUT CHANNELS (FOUR 1568H UNITS).							
A	ANALOK ANALOG MEMORY OUTPUT 2 OUTPUT CHANNELS	LIST RESALE	2,545 2,545	F	78 78	SEE CCC	28	D/1

RESALE PRODUCT	MOD	PRODUCTS DESCRIPTION ACTIVE		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
	B	ANALOK ANALOG MEMORY OUTPUT 4 OUTPUT CHANNELS	LIST RESALE	3,180 3,180	E	97 96	SEE CCC	33	D/1
	C	ANALOK ANALOG MEMORY OUTPUT 6 OUTPUT CHANNELS	LIST RESALE	3,820 3,820	E	120 119	SEE CCC	41	D/1
	D	ANALOK ANALOG MEMORY OUTPUT 8 OUTPUT CHANNELS	LIST RESALE	4,455 4,455	E	140 139	SEE CCC	49	D/1
	E	ANALOK ANALOG MEMORY OUTPUT 10 OUTPUT CHANNELS	LIST RESALE	5,090 5,090	E	160 158	SEE CCC	53	D/1
	F	ANALOK ANALOG MEMORY OUTPUT 12 OUTPUT CHANNELS	LIST RESALE	5,725 5,725	E	180 179	SEE CCC	59	D/1
	G	ANALOK ANALOG MEMORY OUTPUT 14 OUTPUT CHANNELS	LIST RESALE	6,360 6,360	E	195 194	SEE CCC	65	D/1
	H	ANALOK ANALOG MEMORY OUTPUT 16 OUTPUT CHANNELS	LIST RESALE	7,000 7,000	E	215 212	SEE CCC	73	D/1
1571		CHAINING BUFFER CHANNEL 1571 CONNECTS TO 1797 BUFFERED I/O INTERFACE AND PROVIDES A BUFFERED DATA AND CONTROL BUS (BDCB) FOR I/O. CAN BE USED WITH 1530, 1534, 1538, 1544, 1546, 1553, 1558, AND 1561.	LIST RESALE	11,130 11,130	C	349 344	SEE CCC	99	D/1
1572		PROGRAMMABLE SAMPLE RATE CONNECTS TO DCB TO PROVIDE PROGRAMMABLE SAMPLE RATE CONTROL OF INTERFACE UNITS, CAN BE OPERATED AS ELAPSED-TIME CLOCK, PROVIDES SAMPLES OR INTERVALS FROM 1 MICROSECOND TO 65 SECONDS (1KC CLOCK) AND ONLY ONE CAN BE CONNECTED TO DCB.	LIST RESALE	2,650 2,650	E	82 81	SEE CCC	27	D/1
1573		LINE SYNCHRONIZED TIMING CONNECTS TO PROVIDE 60-CYCLE LINE SYNCHRONIZED TIMING INTERVALS AT A FIXED FREQUENCY OF 60, 120, 240, 480, 960, 1920, 3840 OR 7680 CPS. SPECIFY FREQUENCY. ONLY ONE 1573 MAY BE CONNECTED TO DCB.	LIST RESALE	1,590 1,590	E	50 49	SEE CCC	20	D/1
1574		SEQUENTIAL ADDRESSING OPTION CONNECTS TO DCB AND PROVIDES CAPABILITY TO ADDRESS ANALOG OR DIGITAL INPUT/OUTPUT INTERFACES SEQUENTIALLY BETWEEN PROGRAMMABLE FIRST-CHANNEL AND LAST-CHANNEL ADDRESSES. 1574 CAN BE SEQUENCED UNDER INTERNAL OR EXTERNAL CONTROL, PROVIDING ADDRESSING AND CONTROL OF 1530, 1534, 1538, 1544, 1553, 1558, AND 1561. ONLY ONE 1574 CAN BE CONNECTED TO DCB.	LIST RESALE	2,650 2,650	E	82 81	SEE CCC	28	D/1
1577		STALL ALARM DETECTS COMPUTER STALL (PROGRAM LOCK-UP, POWER FAILURE, OR STORAGE PARITY ERROR) AND PROVIDES AN OUTPUT THAT CAN BE USED FOR ALARM.	LIST RESALE	2,650 2,650	E	82 81	SEE CCC	28	D/1
1583		TYPEWRITER INTERFACE PROVIDES CONTROL FOR UP TO FOUR 1584 FIXED CARRIAGE TYPEWRITERS AND CONNECTS TO DCB.							
1583	1	TYPEWRITER INTERFACE CONTROL FOR 1 TYPEWRITER.	LIST RESALE	3,675 3,675	E	83 82	SEE CCC	55	D/1
1583	2	TYPEWRITER INTERFACE CONTROL FOR 2 TYPEWRITERS.	LIST RESALE	5,345 5,345	E	104 103	SEE CCC	69	D/1
1583	3	TYPEWRITER INTERFACE CONTROL FOR 3 TYPEWRITERS.	LIST RESALE	7,014 7,014	E	142 141	SEE CCC	83	D/1
1583	4	TYPEWRITER INTERFACE CONTROL FOR 4 TYPEWRITERS.	LIST RESALE	8,684 8,684	E	187 186	SEE CCC	92	D/1
1584	1	TYPEWRITER PROVIDES FIXED CARRIAGE TYPEWRITER FOR INPUT/OUTPUT APPLICATIONS, 10 ALPHANUMERIC CHARACTERS PER SECOND, 15.5 INCH PIN FEED, 12 CHARACTERS/INCH, INCLUDES 24 FEET OF CABLE AND CONNECTS TO 1583.	LIST RESALE	2,783 2,783	E	106 105	SEE CCC	64	D/1
1585	1	INCREMENTAL PLOTTER PROVIDES PLOTTING CAPABILITY IN 0.01 INCH INCREMENTS ON 11 INCH PAPER, INCLUDES 24 FEET OF CABLE, DOES NOT INCLUDE PLOTTER STAND AND CONNECTS TO DCB.	LIST RESALE	13,356 13,356	E	512 502	SEE CCC	117	D/1

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
1587		**OPERATOR ENTRY/CONTROL PANEL** 1587 PROVIDES OPERATOR CONTROL AND ENTRY THROUGH VARIOUS MODULAR INPUT AND DISPLAY PANELS. 1587 MUST BE UTILIZED WITH 1564 DIGITAL INPUT SIGNAL CONDITIONING, 1545 DIGITAL INPUT SYNC UNIT, 1544 DIGITAL INPUT INTERFACE, 1553 EXTERNAL REGISTER OUTPUT INTERFACE. ENCLOSURES MUST BE PRICED BY OSE. NOTE - PANELS ARE 19 INCHES, RACK-MOUNTED.								
	A	OPERATOR ENTRY/CONTROL PANEL MASTER CONTROL PANEL - CONTAINS ON/OFF (KEY) SWITCH, TWO ROTARY SWITCHES FOR FUNCTION SELECTION, THREE DISPLAY WINDOWS, SIX PUSH BUTTON SWITCHES AND ONE ENTER BUTTON. REQUIRES 1544, 1545, AND 1564.	LIST RESALE	1,275 1,275	E	39	39	SEE CCC	16	D/1
	B	OPERATOR ENTRY/CONTROL PANEL DIGISWITCH PANEL - OPERATES WITH A 1587A AND CONTAINS TWO SETS OF 9 DECIMAL DIGISWITCHES - INCLUDES ONE SIGN ENTRY DIGISWITCH PER SET. REQUIRES 1544 AND 1564.	LIST RESALE	795 795	E	25	25	SEE CCC	11	D/1
	C	OPERATOR ENTRY/CONTROL PANEL PUSHBUTTON PANEL - OPERATES WITH 1587A AND CONTAINS ONE SET OF 14 PUSHBUTTONS. REQUIRES 1544 AND 1564.	LIST RESALE	1,010 1,010	E	31	31	SEE CCC	13	D/1
	D	OPERATOR ENTRY/CONTROL PANEL FUNCTION DISPLAY PANEL - OPERATES WITH AND CONTAINS 20 BACKLIGHTED DISPLAY WINDOWS - ADDRESSED BY ROTARY SWITCHES ON 1587A, UP TO FIVE 1587D-S CAN BE USED TO DISPLAY ALL 100 POSSIBLE FUNCTION DISPLAYS SELECTABLE BY 1587A.	LIST RESALE	1,275 1,275	E	39	39	SEE CCC	16	D/1
	E	OPERATOR ENTRY/CONTROL PANEL ROTARY SWITCH PANEL - OPERATES WITH AND CONTAINS ONE SET OF ROTARY SWITCHES THAT FUNCTION IDENTICALLY TO 1587C. REQUIRES 1544 AND 1564.	LIST RESALE	850 850	E	27	27	SEE CCC	11	D/1
	F	OPERATOR ENTRY/CONTROL PANEL KEYBOARD PANEL - OPERATES WITH KEYBOARD AND PROVIDES ENTRY INTO 1700 COMPUTER. REQUIRES 1544, 1545, AND 1564.	LIST RESALE	850 850	E	27	27	SEE CCC	11	D/1
	G	OPERATOR ENTRY/CONTROL PANEL ANNUNCIATOR PANEL - OPERATES WITH AND CONTAINS 16 BACKLIGHTED INDICATORS, ONE TEST SWITCH, AND ONE ACKNOWLEDGE SWITCH. REQUIRES 1544, 1564, AND 1553.	LIST RESALE	640 640	E	20	20	SEE CCC	10	D/1
1590		**REMOTE I/O LOCAL ADAPTER** CONNECTS TO 1705 OR 1775 DATA CHANNEL FOR INTERFACE TO 1591 REMOTE TERMINAL STATION. 1590 MAY BE EXPANDED TO OPERATE WITH MORE THAN ONE 1591 (UP TO 9 TOTAL) BY ADDING OPTION 10228 FOR EVERY TWO 1591 STATIONS ADDED.								
1590	1	REMOTE I/O LOCAL ADAPTER CONNECTS TO 1591-1 VIA TYPE 201A OR SIMILAR ADAPTER AND OPERATES AT 1200, 2400 OR 4800 BAUD. RECEIVES FROM 1705 / 1775 1/ SENDS TO 1591 1/ AVA OPTIONS 10228 1/	LIST RESALE	16,800 16,800	F	450	441	SEE CCC	125	D/1
1590	2	REMOTE I/O LOCAL ADAPTER CONNECTS TO 1591-2 VIA COAXIAL CABLE (UP TO 15,000 FEET). CONTAINS 2 MBPS MODEM. RECEIVES FROM 1705 / 1775 1/ SENDS TO 1591 2/ AVA OPTIONS 10228 2/	LIST RESALE	16,800 16,800	F	450	441	SEE CCC	125	D/1
1591		**REMOTE I/O STATION** PROVIDES REMOTE DATA AND CONTROL BUS (RDCB) TO WHICH 1590 PRODUCTS MAY BE CONNECTED. SENDS TO 1530 / 1534 / 1538 / SENDS TO 1545 / 1549 / 1553 / SENDS TO 1558 / 1561 / 1583 / SENDS TO 1585 1/								
1591	1	REMOTE I/O STATION FIELD INSTALLATION CHARGE LOW SPEED REMOTE STATION CONNECTS TO 1590-1 AT COMPUTER SITE VIA A TYPE 201B OR SIMILAR 2400 OR 4800 BIT/SECOND MODEM. RECEIVES FROM 1590 1/	LIST RESALE	16,800 16,800 2,625	E	495	489	SEE CCC	161	D/1
1591	2	REMOTE I/O STATION FIELD INSTALLATION CHARGE HIGH SPEED REMOTE STATION CONNECTS TO 1590-2 AT COMPUTER SITE VIA A CFE COAXIAL CABLE. INCLUDES A 2 MBPS MODEM. RECEIVES FROM 1590 2/	LIST RESALE	16,800 16,800 3,675	E	495	489	SEE CCC	161	D/1

RESALE PRODUCTS ACTIVE

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
1742	30	LINE PRINTER AND CONTROLLER	LIST	10,800	B	389	360	235	291	D/3
			RESALE	10,800						

300 LINES PER MINUTE PRINTER IN QUIETIZED CABINET AND CONTROLLER, 136 COLUMNS, FULL LINE BUFFER, 12 VFU CHANNELS, 64 CHARACTER DRUM, 6/8 LINES PER INCH, CONTROLLER OCCUPIES ONE A0 POSITION IN THE CPU OR EXPANSION ENCLOSURE.
RECEIVES FROM 18 17A/ 18 17B/ 1783 1/
RECEIVES FROM 1784 1/ 1784 2/

1827	30	LINE PRINTER (300 LPM, 60 HZ)	LIST	10,300	C	370	343	SEE CCC	104	D/3
			RESALE	10,300						

300 LINES PER MINUTE DRUM PRINTER IN QUIETIZED CABINET WITH FULL LINE BUFFER FACILITY, 136 COLUMN PRINT LINE, 12 VFU CHANNELS, 64 CHARACTER PRINT DRUM, 6 OR 8 LINES PER INCH LINE SPACING. INCLUDES 20 FT. INTERFACE CABLE.

REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE -

QUANTITY	PURCHASE PRICE
1ST UNIT	10,300
2ND THRU 4TH UNITS	9,890
5TH THRU 9TH UNITS	9,580
10TH THRU 14TH UNITS	9,270
15TH OR OVER UNITS	8,960

RECEIVES FROM 18 9/ 18 5M/ 1828 1/
RECEIVES FROM 1828 2/
AVA OPTIONS 1827 950/ 1888 1/

1827	31	LINE PRINTER (300 LPM, 50HZ)	LIST	10,300	C	370	343	SEE CCC	104	D/3
			RESALE	10,300						

SAME AS 1827-30 EXCEPT 50HZ, 220 VAC.

REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE) ARE -

QUANTITY	PURCHASE PRICE
1ST UNIT	10,300
2ND THRU 4TH UNITS	9,890
5TH THRU 9TH UNITS	9,580
10TH THRU 14TH UNITS	9,270
15TH OR OVER UNITS	8,960

RECEIVES FROM 18 5/ 18 5M/ 1828 1/
RECEIVES FROM 1828 2/
AVA OPTIONS 1827 950/ 1888 2/

1870	1	512 INSTRUCTION MICROMEMORY	LIST	1,744	A	64	59	38	21	D/3
			RESALE	1,744						

PROVIDES FOR UP TO 512 32-BIT MICRO CONTROL INSTRUCTIONS FOR THE PROCESSOR. MEMORY IS READ OR WRITE RAM AND CAN BE LOADED EXTERNALLY OR UNDER CONTROL OF THE MICRO PROGRAM. DESIGNED FOR MICRO PROGRAM STORAGE IN THOSE APPLICATIONS THAT REQUIRE THAT THE PROCESSOR BE PROGRAMMED AT THE MICRO LEVEL.
OPT APPLIES TO 18 20/ 18 30/

1872	1	SCIENTIFIC OPTION	LIST	3,200	A	115	106	98	40	D/3
			RESALE	3,200						

PROVIDES FOR SINGLE AND DOUBLE PRECISION FLOATING POINT.
OPT APPLIES TO 18 20/ 18 10M/

1872	2	COMMERCIAL OPTION	LIST	3,200	B	115	106	98	40	D/3
			RESALE	3,200						

PROVIDES COMMERCIAL DATA PROCESSING CAPABILITY.
OPT APPLIES TO 18 20/ 18 10M/

1888	1	POWER CONVERSION TRANSFORMER	LIST	300	B	10	10	SEE CCC	T AND M	
			RESALE	300						

PROVIDES CONVERSION TO 120 VAC SINGLE PHASE FROM ANY OF THE FOLLOWING VOLTAGES - 95, 105, 220, 230, 240 AND 250. UNIT WILL SUPPLY MULTIPLE EQUIPMENTS UP TO 40 AMPS MAX. LOAD AT 120 VAC. MOUNTS EXTERNAL TO EQUIPMENTS.
OPT APPLIES TO 18 5/ 18 10/ 18 20/
OPT APPLIES TO 18 30/ 18 5M/ 18 10M/
OPT APPLIES TO 1911 1/ 1827 30/ 1829 30/
OPT APPLIES TO 1829 60/ 1860 1/ 1860 2/
OPT APPLIES TO 1860 3/ 1860 4/ 1860 5/
OPT APPLIES TO 1860 6/ 1860 72/ 1860 92/
OPT APPLIES TO 1860 95/ 1867 10/ 1867 20/
OPT APPLIES TO 1887 4/65119 1/

1888	2	POWER CONVERSION TRANSFORMER	LIST	300	B	12	10	SEE CCC	T AND M	
			RESALE	300						

PROVIDES CONVERSION TO 220 VAC. UNIT WILL SUPPLY MULTIPLE EQUIPMENTS UP TO 20 AMPS MAX. LOAD 220 VAC. MOUNTS EXTERNAL TO EQUIPMENTS.
OPT APPLIES TO 1827 31/ 1867 11/ 1867 21/
OPT APPLIES TO65119 1/

RESALE PRODUCT MOD	PRODUCTS ACTIVE DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
2550 2	NETWORK PROCESSING UNIT	LIST RESALE	51,500 41,000	C	1,585 1,547	SEE CCC	424	D/1
	A COMMUNICATION PROCESSOR AND LOOP MULTIPLEXER WITH INTERFACE ADAPTER WHICH SUPPORTS FROM 2 TO 32 COMMUNICATION LINES WITH OPTIONAL EXPANSION TO 256 COMMUNICATION LINES. INCLUDES A CHANNEL COUPLER FOR INTERFACE TO A CDC 6000/CYBER 70/170 SERIES COMPUTER AND THE REQUIRED CHANNEL CABLES. INCLUDES REQUIRED MAINTENANCE PANEL, MAINTENANCE TAPE CASSETTE, CYCLIC ENCODER, EXPANSION CABINET AND POWER SUPPLIES. PROVIDES 32K 16 BIT WORDS OF MEMORY WITH OPTIONAL EXPANSION TO 128K WORDS OF MEMORY. PROVIDES CAPABILITY TO SUPPORT A REQUIRED COMMUNICATIONS CONSOLE. THE 1711-4 (33 KSR TTY), 752-10 OR CUSTOMER SUPPLIED EQUIVALENT TTY MUST BE SELECTED AS THE COMMUNICATIONS CONSOLE. RECEIVES FROM 72 / 73 / 74 / RECEIVES FROM 171 / 172 / 173 / RECEIVES FROM 174 / 175 / 176 / RECEIVES FROM 6000 /10344 1/10378 1/ SENDS TO 713 10/ 1711 4/ 2560 1/ SENDS TO 2560 2/ 2561 3/ 2561 1/ AVA OPTIONS 2550 100/ 2554 16/ 2554 32/ AVA OPTIONS 2556 2/ 2556 10/ 2556 11/ AVA OPTIONS 2559 1/10344 XX/							
2556	**COMMUNICATIONS LINE EXPANSION** PROVIDES AN ADDITIONAL LOOP MULTIPLEXER WHICH SUPPORTS AN ADDITIONAL 32 ASYNCHRONOUS OR SYNCHRONOUS COMMUNICATION LINES. INCLUDES REQUIRED WIRED CARD CAGES, POWER SUPPLIES AND AIR BLOWER ASSEMBLIES. RECEIVES FROM 2550 2/ SENDS TO 2560 1/ 2560 2/ 2560 3/ SENDS TO 2561 1/							
2556 2	COMMUNICATIONS LINE EXPANSION	LIST RESALE	4,029 4,029	C	120 118	SEE CCC	32	D/1
	SUPPORTS FROM 33 TO 64 LINES ON 2550-2.							
2556 3	COMMUNICATIONS LINE EXPANSION	LIST RESALE	4,029 4,029	C	120 107	SEE CCC	32	D/1
	SUPPORTS FROM 65 TO 96 LINES ON 2550-2.							
2810 3	MAGNETIC TAPE CONTROLLER	LIST RESALE	5,332 5,332	B	133 130	SEE CCC	31	C/2
	SINGLE CHANNEL CONNECTION, CONTROLS ONE MAGNETIC TAPE TRANSPORT AT 25 IPS AND 556 OR 800 BPI. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2859 4/ SENDS TO 2812 3/							
2812 3	MAGNETIC TAPE TRANSPORT	LIST RESALE	7,657 7,657	B	191 186	SEE CCC	184	D/2
	NINE-TRACK, 25 IPS, 556 OR 800 BPI, FORWARD READ/WRITE, NRZI RECORDING. RECEIVES FROM 2810 3/							
2817 1	FIXED-HEAD DISK SUBSYS.-12 MIL	LIST RESALE	84,750 84,750	E	2,119 2,066	SEE CCC	457	D/2
	FIXED-HEAD DISK SUBSYSTEM CONSISTING OF A 12-MILLION-BIT CAPACITY FIXED-HEAD DISK, DISK ACCESS CONTROLLER, SYNC UNIT (DUAL OR LARGER SYSTEMS), DISK POWER SUPPLY, AND ASSOCIATED MOUNTING AND CONNECTING HARDWARE. SUBSYSTEM MOUNTS DIRECTLY INTO THE 29XX 3-BAY BASIC EXCHANGE UNIT. RECEIVES FROM 2817 7/							
2817 6	FAST DISK UNIT - 12M	LIST RESALE	63,896 63,896	E	1,597 1,557	SEE CCC	345	D/2
	FIXED-HEAD DISK UNIT WITH 12-MILLION BITS OF STORAGE CAPACITY. UNIT CONSISTS OF DISK WITH ASSOCIATED MOUNTING AND CONNECTING HARDWARE. UNIT MOUNTS DIRECTLY INTO THE 29XX 3-BAY BASIC EXCHANGE UNIT. RECEIVES FROM 2817 9/							
2817 9	FAST DISK ACCESS UNIT - 12M	LIST RESALE	13,133 13,133	E	329 320	SEE CCC	172	D/2
	PROVIDES THE ACCESS CONTROL LOGIC NECESSARY FOR THE 28XX EXCHANGE UNIT CPU TO ACCESS THE 12M FIXED-HEAD DISK UNITS. UNIT MOUNTS DIRECTLY INTO THE 29XX 3-BAY BASIC EXCHANGE UNIT. RECEIVES FROM 2817 7/ SENDS TO 2817 6/							
2821 1	DISK PACK DRIVE ACCESS UNIT	LIST RESALE	28,350 28,350	D	704 691	SEE CCC	159	C/2
	PROVIDES CONTROL OF DISK PACK DRIVES FOR A DISK PACK CONTROLLER. THE CABINET CONTAINS TWO ACCESS UNITS IN TANDEM. EACH ACCESS UNIT OPERATES WITH UP TO FOUR DRIVES IN TANDEM. ALLOWS CONNECTION OF TWO DISK PACK DRIVE CONTROLLERS. RECEIVES FROM 2920 1/ SENDS TO 2822 1/							

RESALE PRODUCTS ACTIVE

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
2821	2	DISK STORAGE DRIVE ACCESS UNIT	LIST	47,744	D	1,176	1,153 SEE CCC	214	C/2
			RESALE	47,744					
		DUAL CONNECTION FROM UP TO TWO DISK STORAGE DRIVE CONTROLLERS, CONTROLS UP TO FOUR DISK STORAGE DRIVES PER CONTROLLER (MAXIMUM OF 8 DRIVES). RECEIVES FROM 2820 1/ SENDS TO 2922 1/							
2821	5	DISK PACK DRIVE ACC. UNIT EXP.	LIST	1,955	D	49	48 SEE CCC	10	D/2
			RESALE	1,955					
		ALLOWS EXPANSION FOR 3RD CONTROLLER INTERFACE FOR A TRIPLE 28XX EXCHANGE SYSTEM. OPT APPLIES TO 2821 3/ 2821 4/							
2821	6	DISK PACK DRIVE ACC. UNIT EXP.	LIST	1,258	D	31	30 SEE CCC	7	D/2
			RESALE	1,258					
		ALLOWS EXPANSION FOR 4TH CONTROLLER INTERFACE FOR A QUAD 28XX EXCHANGE SYSTEM. OPT APPLIES TO 2821 3/ 2821 4/							
2821	7	DISK PACK DRIVE ACC. UNIT EXP.	LIST	832	D	21	21 SEE CCC	5	D/2
			RESALE	832					
		ALLOWS EXPANDED CONNECTABILITY OF FROM FOUR TO EIGHT 2822 DISK PACK DRIVES PER DISK PACK DRIVE ACCESS UNIT. OPT APPLIES TO 2821 3/ 2821 4/							
2822	1	DISK STORAGE DRIVE	LIST	15,750	D	394	384 SEE CCC	121	C/2
			RESALE	15,750					
		FIVE MILLION, 8 BIT CHARACTERS, 30 TO 165 MS POSITIONING TIME, 2400 RPM. REQUIRES ONE 2823-1 DISK PACK - NOT INCLUDED. RECEIVES FROM 2821 1/ 2821 2/							
2827	1	DATA CHANNEL ADAPTER	LIST	5,929	E	148	144 SEE CCC	64	C/2
			RESALE	5,929					
		SINGLE CHANNEL CONNECTION, ALLOWS OPERATION OF ONE SPECIFIED 1700 PERIPHERAL. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/ SENDS TO 1700 / 2829 1/							
2827	2	DATA CHANNEL ADAPTER	LIST	8,537	E	213	208 SEE CCC	143	C/2
			RESALE	8,537					
		SINGLE CHANNEL CONNECTION, ALLOWS OPERATION OF ONE SPECIFIED 3000 PERIPHERAL. RECEIVES FROM 2806 1/ 2806 2/ 2806 3/ RECEIVES FROM 2808 1/ 2808 2/ 2808 3/ RECEIVES FROM 2809 1/ 2809 2/ 2809 3/ RECEIVES FROM 2809 4/ SENDS TO 2929 1/ 3254 /							
2832	8	CORE STORAGE MODULE	LIST	26,040	B	651	635 SEE CCC	24	C/2
			RESALE	26,040					
		MAGNETIC CORE MEMORY, 1200-NANOSECOND CYCLE TIME, 8K 24-BIT WORDS, THREE 8-BIT BYTES PER WORD. RECEIVES FROM 2809 1/ 2809 2/ OPT APPLIES TO 2805 / 2808 1/ 2808 2/							
2832	16	CORE STORAGE MODULE	LIST	47,702	B	1,208	1,178 SEE CCC	39	C/2
			RESALE	47,702					
		MAGNETIC CORE MEMORY, 1200-NANOSECOND CYCLE TIME, 16K 24-BIT WORDS, THREE 8-BIT BYTES PER WORD. RECEIVES FROM 2809 1/ 2809 2/ OPT APPLIES TO 2805 / 2808 1/							

3502 SYSTEM STORAGE

MAGNETIC CORE STORAGE, 32K TO 262K WORDS, 24 INFORMATION BITS AND 4 PARITY BITS PER STORAGE WORD, ONE INDEPENDENT READ/WRITE CONTROL PER 16K WORDS, 900 NANOSECOND CYCLE TIME, 600 NANOSECOND ACCESS TIME, ALLOWS ODD-EVEN OVERLAP, ACCESSIBLE FROM ONE PROCESSOR, ADDITIONAL ACCESSES AVAILABLE BY OPTION. ANY MODEL 3502 IS FIELD CONVERTIBLE TO ANY OTHER MODEL AT NO FIELD CONVERSION CHARGE.
RECEIVES FROM 3504 1/ 3514 1/ 3514 2/
RECEIVES FROM 3514 3/ 3514 4/
AVA OPTIONS 10121 /

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
3502	32	SYSTEM STORAGE	LIST	168,000	E	4,090	4,001 SEE CCC	581	C/1
			RESALE	168,000					
		32,768 WORDS							
3502	65	SYSTEM STORAGE	LIST	278,250	E	6,852	6,706 SEE CCC	1,159	C/1
			RESALE	278,250					
		65,536 WORDS							

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
3502	98	SYSTEM STORAGE 98,304 WORDS	LIST RESALE	372,750 372,750	E	9,062	8,869	SEE CCC	1,736	C/1
3502	131	SYSTEM STORAGE 131,072 WORDS	LIST RESALE	462,000 462,000	E	11,162	10,929	SEE CCC	2,313	C/1
3502	163	SYSTEM STORAGE 163,840 WORDS	LIST RESALE	551,250 551,250	E	13,209	12,920	SEE CCC	2,891	C/1
3502	196	SYSTEM STORAGE 196,608 WORDS	LIST RESALE	635,250 635,250	F	15,199	14,872	SEE CCC	3,468	C/1
3502	229	SYSTEM STORAGE 229,376 WORDS	LIST RESALE	721,350 721,350	E	17,131	16,762	SEE CCC	4,045	C/1
3502	262	SYSTEM STORAGE 262,144 WORDS	LIST RESALE	798,000 798,000	F	19,011	18,598	SEE CCC	4,623	C/1
3504	1	PROCESSOR TWENTY-FOUR-BIT WORD SIZE, 6-BIT CHARACTERS, OPERATES IN 6, 24 AND 48-BIT MODES, THREE INDEX REGISTERS, INTERNAL AND EXTERNAL INTERRUPTS, INCLUDES FLOATING POINT, BUSINESS DATA PROCESSING AND MULTIPROGRAMMING HARDWARE INCLUDES CONTROLS FOR REFERENCING UP TO 262K WORDS OF MAGNETIC CORE STORAGE AND UP TO 8 DATA CHANNELS, DESK CONSOLE WITH TYPEWRITER AND REQUIRED POWER AND COOLING EQUIPMENT. SENDS TO 3502 / 3507 1/ AVA OPTIONS 10309 1/	LIST RESALE	420,000 420,000	A	9,151	8,789	SEE CCC	1,376	C/1
3507	1	COMMUNICATION CHANNEL TWELVE OR TWENTY-FOUR-BIT DATA EXCHANGE, SELECTABLE BY TOGGLE SWITCH AND CABLE PLACEMENT, PERMITS ATTACHMENT OF UP TO 8 PERIPHERAL CONTROLLERS. BI-DIRECTIONAL, BUFFERED DATA EXCHANGE. RECEIVES FROM 1714 / 3504 1/ 3514 1/ RECEIVES FROM 3514 2/ 3514 3/ 3514 4/ SENDS TO 3121 / 3128 / 3165 / SENDS TO 3228 / 3229 / 3234 / SENDS TO 3254 / 3254 2/ 3256 / SENDS TO 3244 / 3290 2/ 3290 4/ SENDS TO 3291 / 3293 / 3298 / SENDS TO 3344 / 3387 1/ 3398 2/ SENDS TO 3423 / 3446 / 3446 2/ SENDS TO 3447 / 3447 2/ 3516 1/ SENDS TO 3518 / 3521 1/ 3521 2/ SENDS TO 3528 / 3553 2/ 3554 1/ SENDS TO 3555 1/ 3624 / 3637 / SENDS TO 3644 / 3649 / 3659 / SENDS TO 3691 / 3694 /10344 1/ AVA OPTIONS 10136 1/	LIST RESALE	16,027 16,027	E	385	370	SEE CCC	69	C/1
3514	1	BASIC PROCESSOR TWENTY-FOUR-BIT WORD SIZE, OPERATES IN 6, 24 AND 48-BIT MODES, THREE INDEX REGISTERS, INTERNAL AND EXTERNAL INTERRUPTS AND INTERFACE TO REAL TIME INTERRUPT MODULE, INCLUDES FLOATING-POINT HARDWARE, INCLUDES CONTROLS FOR REFERENCING UP TO 262,144 WORDS OF MAGNETIC CORE STORAGE AND UP TO 8 DATA CHANNELS, DESK CONSOLE WITH TYPEWRITER AND REQUIRED POWER AND COOLING EQUIPMENT. FIELD CONVERTIBLE TO ANY HIGHER MODEL NUMBER 3514 AT NO FIELD CONVERSION CHARGE. SENDS TO 3502 / 3507 1/ 3522 / AVA OPTIONS 10288 2/10309 2/	LIST RESALE	352,548 352,548	F	8,603	8,425	SEE CCC	1,391	C/1
3514	2	ADP PROCESSOR TWENTY-FOUR-BIT WORD SIZE, 6-BIT CHARACTERS, OPERATES IN 6, 24 AND 48-BIT MODES, THREE INDEX REGISTERS, INTERNAL AND EXTERNAL INTERRUPTS AND INTERFACE TO REAL TIME INTERRUPT MODULE, INCLUDES FLOATING-POINT AND BUSINESS DATA PROCESSING HARDWARE, INCLUDES CONTROLS FOR REFERENCING UP TO 262K WORDS OF MAGNETIC CORE STORAGE AND UP TO 8 DATA CHANNELS, DESK CONSOLE WITH TYPEWRITER AND REQUIRED POWER AND COOLING EQUIPMENT. FIELD CONVERTIBLE TO ANY HIGHER MODEL NUMBER 3514 AT NO FIELD CONVERSION CHARGE. SENDS TO 3502 / 3507 1/ 3522 / AVA OPTIONS 10288 2/10309 2/	LIST RESALE	427,392 427,392	F	9,529	9,450	SEE CCC	1,419	C/1

RESALE PRODUCT	MOD	PRODUCTS ACTIVE DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
3514	3	MULTIPROGRAMMING PROCESSOR	LIST	459,440	E	10,635	10,410	SEE CCC	1,444	C/1
			RESALE	459,440						
		TWENTY-FOUR-BIT WORD SIZE, OPERATES IN 6, 24 AND 48-BIT MODES, THREE INDEX REGISTERS, INTERNAL AND EXTERNAL INTERRUPTS AND INTERFACE TO REAL TIME INTERRUPT MODULE, INCLUDES FLOATING-POINT AND MULTIPROGRAMMING HARDWARE, INCLUDES CONTROLS FOR REFERENCING UP TO 262K WORDS OF MAGNETIC CORE STORAGE AND UP TO 8 DATA CHANNELS, DESK CONSOLE WITH TYPEWRITER AND REQUIRED POWER AND COOLING EQUIPMENT. FIELD CONVERTIBLE TO ANY HIGHER MODEL NUMBER 3514 AT NO FIELD CONVERSION CHARGE.								
		SENDS TO 3502 / 3507 1/ 3522 /								
		AVA OPTIONS 10288 2/10309 2/								
3514	4	GENERAL PURPOSE PROCESSOR	LIST	534,240	E	11,640	11,230	SEE CCC	1,497	C/1
			RESALE	534,240						
		TWENTY-FOUR-BIT WORD SIZE, 6-BIT CHARACTERS, OPERATES IN 6, 24 AND 48-BIT MODES, THREE INDEX REGISTERS, INTERNAL AND EXTERNAL INTERRUPTS AND INTERFACE TO REAL TIME INTERRUPT MODULE, INCLUDES FLOATING-POINT, BUSINESS DATA PROCESSING AND MULTIPROGRAMMING HARDWARE, INCLUDES CONTROLS FOR REFERENCING UP TO 262K WORDS OF MAGNETIC CORE STORAGE AND UP TO 9 DATA CHANNELS, DESK CONSOLE WITH TYPEWRITER AND REQUIRED POWER AND COOLING EQUIPMENT.								
		SENDS TO 3502 / 3507 1/ 3522 /								
		AVA OPTIONS 10288 2/10309 2/								
3516	1	MULTIPLEXER CONTROLLER	LIST	44,100	E	965	865	SEE CCC	241	C/1
			RESALE	44,100						
		PROVIDES CONTROL FOR UP TO FOUR 304-1 COMMUNICATIONS MULTIPLEXERS OR UP TO EIGHT 303-1 COMMUNICATION EXPANSION UNITS (OR A COMBINATION OF THE ABOVE). THE CONTROLLER PROVIDES DIRECT TRANSFER OF DATA TO AND FROM UP TO 245K WORDS OF 3500 CORE STORAGE. A DEDICATED 12-BIT CHANNEL IS REQUIRED. FEATURES VARIABLE MESSAGE LENGTH, BUFFERING ON A PER LINE BASIS, INTERRUPT QUEUEING, THREE CODE CONVERSION TABLES, PROGRAMMABLE PRIORITY INTERRUPT SELECTION, AND BUFFER CHAINING. STANDARD OPTION 10121 IS REQUIRED ON THE MEMORY BANKS.								
		RECEIVES FROM 3507 1/								
		SENDS TO 303 1/ 304 1/ 364 1/								
		SENDS TO 364 2/								
		AVA OPTIONS 10121 /								
3521	1	MAGNETIC TAPE CONTROLLER	LIST	30,600	D	689	620	SEE CCC	170	C/1
			RESALE	30,600						
		SINGLE CHANNEL CONNECTION TO ONE CONTROL. PERMITS READ/ WRITE ON ANY OF EIGHT 667 AND 669 (INTERMIXED) TAPE UNITS. CONTAINS A PROGRAMMABLE PROCESSOR. WILL READ/WRITE 556/800 CHAR./INCH NRZI RECORDING AND 1600 CHAR./INCH PHASE ENCODED. 669-3/4 SUPPORTED ON 3500 SYSTEMS ONLY. WILL READ 200 CHAR./INCH NRZI. THE REQUIRED CONTROLWARE IS PROVIDED IN BINARY FORM ONLY.								
		RECEIVES FROM 3177 / 3307 / 3507 /								
		SENDS TO 667 2/ 667 3/ 667 4/								
		SENDS TO 669 2/ 669 3/ 669 4/								
	2	MAGNETIC TAPE CONTROLLER	LIST	67,330	D	1,585	1,426	SEE CCC	351	C/1
			RESALE	67,330						
		SINGLE CHANNEL CONNECTION TO EACH OF TWO CONTROLS. PERMITS SIMULTANEOUS READ/WRITE ON ANY TWO OF EIGHT MODEL 667 AND 669 (INTERMIXED) TAPE UNITS. CONTAINS TWO PROGRAMMABLE PROCESSORS. WILL READ/WRITE 556/800 CHAR./INCH NRZI RECORDING AND 1600 CHAR./INCH PHASE ENCODED. 669-3/4 SUPPORTED ON 3500 SYSTEMS ONLY. WILL READ 200 CHAR./INCH NRZI. THE REQUIRED CONTROLWARE IS PROVIDED IN BINARY FORM ONLY.								
		RECEIVES FROM 3177 / 3307 / 3507 /								
		SENDS TO 667 2/ 667 3/ 667 4/								
		SENDS TO 669 2/ 669 3/ 669 4/								
3554	1	MASS STORAGE CONTROLLER	LIST	74,175	C	1,521	1,406	SEE CCC	269	C/1
			RESALE	74,175						
		CONTROLS UP TO EIGHT 844-21 DISK STORAGE UNITS. CONNECTS TO ONE STANDARD I/O CHANNEL. (NOTE - DUAL ACCESS TO DISK STORAGE UNITS REQUIRES A SECOND MASS STORAGE CONTROLLER.) CAPACITY OF EACH 844-21 IS 118M 6-BIT CHARACTERS, 640 CHARACTERS/SECTOR AND 24 SECTORS/TRACK.								
		RECEIVES FROM 3177 / 3307 / 3507 /								
		SENDS TO 844 2/ 844 21/ 844 41/								
3644		CARD PUNCH CONTROLLER	LIST	36,040	E	640	631	SEE CCC	182	B/1
			RESALE	36,040						
		TWO CHANNEL CONNECTIONS, CONTROLS ONE CARD PUNCH, FULL CARD BUFFER.								
		RECEIVES FROM 3106 / 3107 / 3306 /								
		RECEIVES FROM 3307 / 3507 1/ 6681 /								
		SENDS TO 415 /								

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	MONTHLY CHARGE	MAINTENANCE PROD GRP
3649		CARD READER CONTROLLER LIST RESALE	19,020 18,020	E	315	310 SEE CCC	79	B/1
		TWO CHANNEL CONNECTIONS, CONTROLS ONE CARD READER, FULL CARD BUFFER, BCD CONVERSION, CHECKING. RECEIVES FROM 3106 / 3107 / 3306 / RECEIVES FROM 3307 / 3507 1/ 6681 / SENDS TO 405 / AVA OPTIONS 60064 /						
3682		SATELLITE COUPLER LIST RESALE	10,600 6,750	C	170	153 SEE CCC	50	B/1
		PERMITS DIRECT CONNECTION BETWEEN TWO 3000 TYPE 12-BIT DATA CHANNELS.						
6633	2	EXTENDED CORE STORAGE. LIST RESALE	168,557 168,557	C	5,156	4,577 SEE CCC	1,479	B/1
		MAGNETIC CORE STORAGE, 125K 60-BIT WORDS, 3 MICROSECOND FIRST WORD APPROXIMATE ACCESS TIME, UP TO 2.5 MILLION WORDS/SECOND TRANSFER RATE. INCLUDES CONTROLLER ENABLING DIRECT MEMORY ACCESS TO UP TO FOUR 6000 SERIES CENTRAL COMPUTERS FOR UP TO 2 MILLION WORDS OF EXTENDED CORE STORAGE. PRICE INCLUDES CEJ/MEJ (10103, 10104) AT NO ADDITIONAL CHARGE PROVIDED THIS ITEM IS ORDERED AND INSTALLED CONCURRENTLY WITH THE ECS MODULE. RECEIVES FROM 6413 / 6414 / 6415 / RECEIVES FROM 6513 / 6514 / 6613 / RECEIVES FROM 6614 /10354 1/10354 2/ RECEIVES FROM 10354 3/10355 1/10355 2/ AVA OPTIONS 10122 1/10364 1/						
6634	2	EXTENDED CORE STORAGE LIST RESALE	297,017 297,017	C	9,104	8,093 SEE CCC	2,072	B/1
		MAGNETIC CORE STORAGE, 250K 60-BIT WORDS, 3 MICROSECOND FIRST WORD APPROXIMATE ACCESS TIME, UP TO 5 MILLION WORDS/SECOND TRANSFER RATE. INCLUDES CONTROLLER ENABLING DIRECT MEMORY ACCESS TO UP TO FOUR 6000 SERIES CENTRAL COMPUTERS FOR UP TO 2 MILLION WORDS OF EXTENDED CORE STORAGE. PRICE INCLUDES CEJ/MEJ (10103, 10104) AND AT NO ADDITIONAL CHARGE PROVIDED THIS ITEM IS ORDERED AND INSTALLED CONCURRENTLY WITH THE ECS MODULE. RECEIVES FROM 6413 / 6414 / 6415 / RECEIVES FROM 6513 / 6514 / 6613 / RECEIVES FROM 6614 /10354 1/10354 2/ RECEIVES FROM 10354 3/10355 1/10355 2/ AVA OPTIONS 10122 2/10364 1/						
6635	2	EXTENDED CORE STORAGE LIST RESALE	558,632 558,632	C	17,073	15,180 SEE CCC	3,106	B/1
		MAGNETIC CORE STORAGE, 500K 60-BIT WORDS, 3 MICROSECOND FIRST WORD APPROXIMATE ACCESS TIME, UP TO 10 MILLION WORDS/SECOND TRANSFER RATE. INCLUDES CONTROLLER ENABLING DIRECT MEMORY ACCESS TO UP TO FOUR 6000 SERIES CENTRAL COMPUTERS FOR UP TO 2 MILLION WORDS OF EXTENDED CORE STORAGE. PRICE INCLUDES CEJ/MEJ (10103, 10104) AT NO ADDITIONAL CHARGE PROVIDED THIS ITEM IS ORDERED AND INSTALLED CONCURRENTLY WITH THE ECS MODULE. RECEIVES FROM 6413 / 6414 / 6415 / RECEIVES FROM 6513 / 6514 / 6613 / RECEIVES FROM 6614 /10354 1/10354 2/ RECEIVES FROM 10354 3/10355 1/10355 2/ AVA OPTIONS 10122 3/10364 1/						
6636	2	EXTENDED CORE STORAGE LIST RESALE	1,102,112 1,102,112	C	33,674	29,949 SEE CCC	4,644	B/1
		MAGNETIC CORE STORAGE, ONE MILLION 60-BIT WORDS. 3 MICROSECOND FIRST WORD APPROXIMATE ACCESS TIME. UP TO 10 MILLION WORDS/SECOND TRANSFER RATE. INCLUDES CONTROLLER ENABLING DIRECT MEMORY ACCESS TO UP TO FOUR 6000 SERIES CENTRAL COMPUTERS FOR UP TO 2 MILLION WORDS OF EXTENDED CORE STORAGE. PRICE INCLUDES CEJ/MEJ (10103, 10104) AND AT NO ADDITIONAL CHARGE PROVIDED THIS ITEM IS ORDERED AND INSTALLED CONCURRENTLY WITH THE ECS MODULE. RECEIVES FROM 6413 / 6414 / 6415 / RECEIVES FROM 6513 / 6514 / 6613 / RECEIVES FROM 6614 /10354 1/10354 2/ RECEIVES FROM 10354 3/10355 1/10355 2/ AVA OPTIONS 10944 1/						
6671		DATA SET CONTROLLER LIST RESALE	46,746 46,746	C	1,155	1,131 SEE CCC	227	B/1
		CONTROLS 1 TO 16 AT&T 103 (110 BITS PER SECOND) OR AT&T 201 (2000 OR 2400 BITS PER SECOND) DATA SETS OR EQUIVALENT, OR ANY COMBINATION OF THESE. ATTACHES TO ONE STANDARD 6000 CHANNEL. AT THE REMOTE SITES TERMINAL DEVICES USING COMPATIBLE DATA SETS MAY BE USED. RECEIVES FROM 71 / 72 / 73 / RECEIVES FROM 74 / 6413 / 6414 / RECEIVES FROM 6415 / 6513 / 6514 / RECEIVES FROM 6613 / 6614 / SENDS TO 349 1/ 358 2/ 732 12/ AVA OPTIONS 13258 1/10295 1/						

CHANGES EFFECTIVE 05/01/80

RESALE PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT SALE 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
6671	2	DATA SET CONTROLLER LIST RESALE	30,000 30,000	C	1,125	850	SEE CCC	227	B/1
		CONTROLS 1 TO 16 AT+T 103 (110 BITS PER SECOND), AT+T 201 (2000, 2400, OR 4800 PER SECOND) OR EQUIVALENT DATA SETS IN ANY COMBINATION. ATTACHES TO ONE STANDARD 6000 CHANNEL. AT THE REMOTE SITES TERMINAL DEVICES USING COMPATIBLE DATA SETS MAY BE USED. RECEIVES FROM 72 / 73 / 74 / RECEIVES FROM 358 1/ 358 2/ 732 12/ RECEIVES FROM 6413 / 6414 / 6415 / RECEIVES FROM 6513 / 6514 / 6613 / RECEIVES FROM 6614 / AVA OPTIONS 10295 1/							
6671	3	DATA SET CONTROLLER LIST RESALE	34,650 34,650	C	1,325	992	SEE CCC	227	B/1
		CONTROLS UP TO 16 ASYNCHRONOUS OR SYNCHRONOUS DATA SETS, CONNECTS TO ONE STANDARD I/O CHANNEL. A ROTARY SWITCH FOR EACH COMMUNICATIONS PORT SELECTS THE DATA RATE AND MODE OF OPERATION -- ASYNCHRONOUS - 110, 134.5, 300, 600, 1200 BPS OR SYNCHRONOUS - UP TO 9600 BPS (WHEN OPERATING AT 9600 BPS THE HARDWARE WILL ONLY SUPPORT UP TO 8 PORTS). CONNECTS TO AT+T 103, 201, 202 DATA SETS OR EQUIVALENT. RECEIVES FROM 71 / 72 / 73 / RECEIVES FROM 74 / 171 / 172 / RECEIVES FROM 173 / 174 / 175 / RECEIVES FROM 6413 / 6414 / 6415 / RECEIVES FROM 6513 / 6514 / 6613 / RECEIVES FROM 6614 /							
6673		DATA SET CONTROLLER LIST RESALE	21,735 N/A	C	899	552	SEE CCC	187	B/1
		SYNCHRONOUS OPERATION, 12 BIT WORDS, TWO AT+T 301B INTERFACES OR EQUIVALENT, EACH AT 40.8K BPS USING MODEM CLOCKS. TWO-WAY-ALTERNATE DATA FLOW ON FULL DUPLEX LINKS. INCLUDES HARDWARE CYCLIC CODE CHECK. ATTACHES TO ONE CDC 6000 STANDARD CHANNEL. COMPATIBLE WITH 1747, 9529, 3279, AND 6674. RECEIVES FROM 71 / 72 / 73 / RECEIVES FROM 74 / 170 7XX/ 171 / RECEIVES FROM 172 / 173 / 174 / RECEIVES FROM 175 / 6014 / 6015 / RECEIVES FROM 6014 7/ 6015 8/ 6015 9/ RECEIVES FROM 6214 / 6215 / 6215 7/ RECEIVES FROM 6215 8/ 6215 9/ 6413 / RECEIVES FROM 6414 / 6415 / 6415 7/ RECEIVES FROM 6415 8/ 6415 9/ 6513 / RECEIVES FROM 6514 / 6613 / 6614 / RECEIVES FROM 6615 / 6713 / 6714 / SENDS TO 358 3/ 358 4/							
6674		DATA SET CONTROLLER LIST RESALE	36,015 36,015	C	1,285	982	SEE CCC	279	B/1
		SYNCHRONOUS OPERATION, 12 BIT WORDS, FOUR AT+T 301B INTERFACES OR EQUIVALENT, EACH AT 40.8K BPS USING MODEM CLOCKS. TWO-WAY-ALTERNATE DATA FLOW ON FULL DUPLEX LINKS. INCLUDES HARDWARE CYCLIC CODE CHECK. ATTACHES TO ONE CDC 6000 STANDARD CHANNEL. COMPATIBLE WITH 1747, 9529, 3279, AND 6673 RECEIVES FROM 71 / 72 / 73 / RECEIVES FROM 74 / 170 7XX/ 171 / RECEIVES FROM 172 / 173 / 174 / RECEIVES FROM 175 / 6014 / 6015 / RECEIVES FROM 6015 7/ 6015 8/ 6015 9/ RECEIVES FROM 6214 / 6215 / 6215 7/ RECEIVES FROM 6215 8/ 6215 9/ 6413 / RECEIVES FROM 6414 / 6415 / 6415 7/ RECEIVES FROM 6415 8/ 6415 9/ 6513 / RECEIVES FROM 6514 / 6613 / 6614 / RECEIVES FROM 6615 / 6713 / 6714 / SENDS TO 358 3/ 358 4/							
6676		DATA SET CONTROLLER LIST RESALE	42,000 42,000	C	2,095	1,545	SEE CCC	272	B/1
		CONTROLS ONE TO 64 AT+T 103 DATA SETS (110 BAUDS) LOCATED AT THE CENTRAL COMPUTER SITE. ATTACHES TO ONE STANDARD 6000 CHANNEL. AT REMOTE SITES COMPATIBLE DATA SETS ARE USED TO CONNECT MODEL 33 OR 35 TELETYPEWRITERS OR EQUIVALENT TERMINALS USING THE ASCII CODE IN 11-UNIT CHARACTER FORMAT. SERIAL NUMBERS 1-130 REQUIRE 2X PPU OPTION (65117-1) FOR USE ON CYBER 170. RECEIVES FROM 71 / 72 / 73 / RECEIVES FROM 74 / 170 7XX/ 171 / RECEIVES FROM 172 / 173 / 174 / RECEIVES FROM 175 / 6413 / 6414 / RECEIVES FROM 6415 / 6513 / 6514 / RECEIVES FROM 6613 / 6614 / SENDS TO 358 1/ AVA OPTIONS 10294 1/65117 1/							

PRODUCT NUM		DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
6681		DATA CHANNEL CONVERTER — LIST RESALE PERMITS 3000 SERIES PERIPHERAL EQUIPMENT TO BE ATTACHED TO 6000 SERIES CHANNEL.	15,582 10,900	C	230	225 SEE CCC	63	B/1
		RECEIVES FROM 71 / 72 / 73 /						
		RECEIVES FROM 74 / 1718 / 6014 /						
		RECEIVES FROM 6015 / 6015 7/ 6015 8/						
		RECEIVES FROM 6015 9/ 6214 / 6215 /						
		RECEIVES FROM 6215 7/ 6215 8/ 6215 9/						
		RECEIVES FROM 6413 / 6414 / 6415 /						
		RECEIVES FROM 6513 / 6514 / 6613 /						
		RECEIVES FROM 6614 / 6615 / 6713 /						
		RECEIVES FROM 6714 /10329 2/						
		SENDS TO 3228 / 3229 / 3234 /						
		SENDS TO 3256 / 3266 / 3423 /						
		SENDS TO 3446 2/ 3446 2/ 3447 /						
		SENDS TO 3447 2/ 3518 / 352E /						
		SENDS TO 3553 1/ 3555 1/ 3624 /						
		SENDS TO 3637 / 3644 / 3649 /						
		SENDS TO 3659 /						
6681	2	DATA CHANNEL CONVERTER — LIST RESALE PERMITS 3000 SERIES PERIPHERAL EQUIPMENT TO BE ATTACHED TO EITHER A CYBER OR 6000 SERIES DATA CHANNEL. CONTAINS TRANSMISSION PARITY GENERATION AND CHECKING LOGIC NECESSARY FOR CYBER 170.	16,517 16,517	B	358	351 SEE CCC	66	B/1
		RECEIVES FROM 71 / 72 / 73 /						
		RECEIVES FROM 74 / 170 7XX/ 171 /						
		RECEIVES FROM 172 / 173 / 174 /						
		RECEIVES FROM 175 / 1718 / 6014 /						
		RECEIVES FROM 6015 X/ 6214 / 6215 X/						
		RECEIVES FROM 6413 / 6414 / 6415 /						
		RECEIVES FROM 6513 / 6514 / 6613 /						
		RECEIVES FROM 6614 / 6615 / 6713 /						
		RECEIVES FROM 6714 /						
		SENDS TO 615 30/ 58, ALL/ 3228 /						
		SENDS TO 3229 / 3234 / 3256 /						
		SENDS TO 3266 / 3423 / 3446 /						
		SENDS TO 3446 2/ 3447 / 3447 2/						
		SENDS TO 3518 / 352E / 3553 1/						
		SENDS TO 3555 1/ 3624 1/ 3644 /						
		SENDS TO 3649 / 3659 /						
6683		SATELLITE COUPLER — LIST RESALE TWO COUPLERS PERMIT DIRECT CONNECTION BETWEEN TWO 12-BIT CYBER/4000 SERIES DATA CHANNELS OR USED WITH ONE 7000 SATELLITE COUPLER PERMITS DIRECT CONNECTION BETWEEN A 6000 SERIES DATA CHANNEL AND ONE 7000 SERIES DATA CHANNEL.	11,130 11,130	C	188	187 SEE CCC	40	B/1
		RECEIVES FROM 71 / 72 / 73 /						
		RECEIVES FROM 74 / 6014 / 6015 /						
		RECEIVES FROM 6015 7/ 6015 8/ 6015 9/						
		RECEIVES FROM 6214 / 6215 / 6215 7/						
		RECEIVES FROM 6215 8/ 6215 9/ 6413 /						
		RECEIVES FROM 6414 / 6415 / 6415 7/						
		RECEIVES FROM 6415 8/ 6415 9/ 6513 /						
		RECEIVES FROM 6514 / 6613 / 6614 /						
		RECEIVES FROM 6615 / 6683 / 6683 2/						
		RECEIVES FROM 6713 / 6714 / 7683 1/						
		SENDS TO 6683 /						
6684		**TAPE CONTROLLER INTERFACE** PERMITS 3000 SERIES TAPE CONTROLLERS TO BE ATTACHED TO 6000 SERIES CHANNELS. PROVIDES SELECTABLE TRANSLATION BETWEEN INTERNAL BCD AND DISPLAY CODE.						
7021	1	MAGNETIC TAPE CONTROLLER — LIST RESALE SINGLE CHANNEL CONNECTION TO ONE CONTROL. PERMITS READ/WRITE ON ANY ONE OF EIGHT MODEL 667 AND 669 (INTERMIXED) TAPE UNITS. WILL READ/WRITE 556/800 CHARACTERS/INCH NRZI RECORDING AND 1600 CHARACTERS/INCH PHASE ENCODED. WILL READ 200 CHARACTERS/INCH NRZI. INCLUDES A PROGRAMMED PROCESSOR. THE REQUIRED CONTROLWARE PROGRAM IS PROVIDED IN BINARY FORM ONLY.	30,608 30,608	E	689	620 SEE CCC	170	B/1
		RECEIVES FROM 71 / 72 / 73 /						
		RECEIVES FROM 74 / 6000 /						
		SENDS TO 667 2/ 667 3/ 667 4/						
		SENDS TO 669 2/ 669 3/ 669 4/						
7021	2	MAGNETIC TAPE CONTROLLER — LIST RESALE SINGLE CHANNEL CONNECTION TO EACH OF TWO CONTROLS. PERMITS SIMULTANEOUSLY READ/WRITE ON ANY TWO OF EIGHT MODEL 667 AND 669 (INTERMIXED) TAPE UNITS. WILL READ/WRITE 556/800 CHARACTERS/INCH NRZI RECORDING AND 1600 CHARACTERS/INCH PHASE ENCODED. WILL READ 200 CHARACTERS/INCH NRZI. INCLUDES TWO PROGRAMMED PROCESSORS. THE REQUIRED CONTROLWARE PROGRAM IS PROVIDED IN BINARY FORM ONLY.	67,336 67,336	E	1,585	1,426 SEE CCC	351	B/1
		RECEIVES FROM 71 / 72 / 73 /						
		RECEIVES FROM 74 / 6000 /						
		SENDS TO 667 2/ 667 3/ 667 4/						
		SENDS TO 669 2/ 669 3/ 669 4/						

RESALE PRODUCT NUM	PRODUCTS ACTIVE DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
7021 21	MAGNETIC TAPE CONTROLLER	LIST RESALE	30,608 30,608	E	689	620 SEE CCC	170	8/1
	SINGLE CHANNEL CONNECTION TO ONE CONTROL. PERMITS READ/WRITE ON ANY ONE OF EIGHT MODEL 667 AND 669 (INTERMIXED) TAPE UNITS. CONTAINS A PROGRAMMABLE PROCESSOR. WILL READ/WRITE 556/800 CHAR./INCH, NRZI RECORDING AND 1600 CHAR./INCH PHASE ENCODED. WILL READ 200 CHAR./INCH NRZI. THE REQUIRED CONTROLWARE IS PROVIDED IN BINARY FORM ONLY. COLOR IS CYBER 170 ONLY. RECEIVES FROM 71 / 72 / 73 / RECEIVES FROM 74 / 171 / 172 / RECEIVES FROM 173 / 174 / 175 / RECEIVES FROM 176 / 6000 /10378 1/ SENDS TO 667 2/ 667 3/ 667 4/ SENDS TO 669 2/ 669 3/ 669 4/ AVA OPTIONS 10362 6/							
7021 22	MAGNETIC TAPE CONTROLLER	LIST RESALE	67,336 67,336	E	1,585	1,426 SEE CCC	351	8/1
	SINGLE CHANNEL CONNECTION TO EACH OF TWO CONTROLS. PERMITS SIMULTANEOUS READ/WRITE ON ANY TWO OF EIGHT MODEL 667 AND 669 (INTERMIXED) TAPE UNITS. CONTAINS TWO PROGRAMMABLE PROCESSORS. WILL READ/WRITE 556 AND 800 CHAR./INCH, NRZI RECORDING AND 1600 CHAR./INCH PHASE ENCODED. WILL READ 200 CHAR./INCH NRZI. THE REQUIRED CONTROLWARE IS PROVIDED IN BINARY FORM ONLY. COLOR IS CYBER 170 ONLY. RECEIVES FROM 71 / 72 / 73 / RECEIVES FROM 74 / 171 / 172 / RECEIVES FROM 173 / 174 / 175 / RECEIVES FROM 176 / 6000 /10378 1/ SENDS TO 667 2/ 667 3/ 667 4/ SENDS TO 669 2/ 669 3/ 669 4/ AVA OPTIONS 10362 6/							
7030	**CDC CYBER 70 EXT CORE STORAGE** MAGNETIC CORE STORAGE WITH 3 MICROSECOND FIRST WORD APPROXIMATE ACCESS TIME. INCLUDES CONTROLLER ENABLING DIRECT MEMORY ACCESS BY ONE OR TWO CDC CYBER 70 SERIES CENTRAL COMPUTERS IN ANY COMBINATION. FOR UP TO 2 MILLION WORDS OF EXTENDED CORE STORAGE. INCLUDES THE DISTRIBUTIVE DATA PATH WITH ONE CONNECTOR TO ECS AND ONE 480-BIT BUFFER REGISTER FOR CONNECTION TO A STANDARD CDC CYBER 70 DATA CHANNEL. ADDITIONAL BUFFER REGISTERS AND CHANNEL CONNECTORS MAY BE ADDED FOR A MAXIMUM OF 4 REGISTERS. COMPILER NOT INCLUDED. RECEIVES FROM 10354 1/10354 2/10354 3/ RECEIVES FROM 10355 1/10355 2/ AVA OPTIONS 10266 X/10266 1/10266 2/ AVA OPTIONS 10266 3/10364 1/							
7030 1	EXTENDED CORE STORAGE	LIST RESALE	206,010 164,810	C	5,115	4,615 SEE CCC	1,573	8/1
	125,952 60-BIT WORDS WITH A MAXIMUM TRANSFER RATE OF 2.5 MILLION WORDS/SECOND. AVA OPTIONS 10271 1/							
7030 2	EXTENDED CORE STORAGE	LIST RESALE	335,370 268,300	C	8,430	7,570 SEE CCC	2,079	8/1
	251,904 60-BIT WORDS WITH A MAXIMUM TRANSFER RATE OF 5 MILLION WORDS/SECOND. AVA OPTIONS 10271 2/							
7030 4	EXTENDED CORE STORAGE	LIST RESALE	596,085 476,870	C	15,130	13,525 SEE CCC	2,969	8/1
	503,809 60-BIT WORDS WITH A MAXIMUM TRANSFER RATE OF 10 MILLION WORDS/SECOND. AVA OPTIONS 10271 4/							
7030 8	EXTENDED CORE STORAGE	LIST RESALE	1,139,565 911,650	C	29,070	25,930 SEE CCC	4,286	8/1
	1,007,616 60-BIT WORDS WITH A MAXIMUM TRANSFER RATE OF 10 MILLION WORDS/SECOND. AVA OPTIONS 10271 8/							
7030 16	EXTENDED CORE STORAGE	LIST RESALE	2,152,500 1,722,000	C	57,690	48,510 SEE CCC	5,935	8/1
	2,015,232 60-BIT WORDS WITH A MAXIMUM TRANSFER RATE OF 10 MILLION WORDS/SECOND.							
7054 1	MASS STORAGE CONTROLLER	LIST RESALE	70,500 70,500	C	1,434	1,329 SEE CCC	241	8/1
	CONTROLS UP TO 8 DISK STORAGE DRIVES, CONNECTS TO ONE STANDARD I/O CHANNEL. CAPACITY OF DISK STORAGE UNIT, IS 118 M 6 BIT CHARACTERS, 644 CHARACTERS/SECTORS, AND 24 SECTORS/TRACK. (NOTE-DUAL ACCESS TO DISK STORAGE UNITS REQUIRES A SECOND MASS STORAGE CONTROLLER). MINIMUM CONFIGURATION WILL HAVE TWO DISK STORAGE UNITS. RECEIVES FROM 71 / 72 / 73 / RECEIVES FROM 74 / 6000 / SENDS TO 844 2/ 844 21/ AVA OPTIONS 10299 1/10304 1/10333 1/							

RESALE PRODUCTS ACTIVE

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
7054	2	MASS STORAGE CONTROLLER	LIST	89,425	C	1,840	1,704	SEE CCC	291	8/1
			RESALE	89,425						

CONTROLS UP TO EIGHT DISK STORAGE UNITS, CONNECTS TO ONE OR TWO STANDARD I/O CHANNELS. SECOND CHANNEL PROVIDES FOR ACCESS FROM TWO MAINFRAMES OR FOR CHANNEL REDUNDANCY WHEN FROM SAME MAINFRAME. (NOTE-DUAL ACCESS TO DISK STORAGE UNITS REQUIRES A SECOND MASS STORAGE CONTROLLER.) CAPACITY OF EACH DISK STORAGE UNIT IS 1184 6 BIT CHARACTERS, 644 CHARACTERS/SECTOR AND 24 SECTORS/TRACK. MINIMUM OF TWO DISK STORAGE UNITS IS RECOMMENDED.
RECEIVES FROM 71 / 72 / 73 /
RECEIVES FROM 74 / 6000 /
SENDS TO 844 2/ 844 21/
AVA OPTIONS 10304 1/10333 1/

7054	21	MASS STORAGE CONTROLLER	LIST	70,500	C	1,434	1,329	SEE CCC	241	8/1
			RESALE	70,500						

CONTROLS UP TO EIGHT DISK STORAGE UNITS, CONNECTS TO ONE STANDARD I/O CHANNEL. (NOTE-DUAL ACCESS TO DISK STORAGE UNITS REQUIRES A SECOND MASS STORAGE CONTROLLER.) CAPACITY OF EACH DISK STORAGE UNIT IS 1184 6 BIT CHARACTERS, 644 CHARACTERS/SECTOR, 19 TRACKS/CYLINDER AND 404 CYLINDERS/PACK. CONTAINS TRANSMISSION PARITY GENERATION AND CHECKING LOGIC NECESSARY FOR CYBER 170. MINIMUM OF TWO DISK STORAGE UNITS IS RECOMMENDED. COLOR IS CYBER 170.
RECEIVES FROM 71 / 72 / 73 /
RECEIVES FROM 74 / 170 7XX/ 171 /
RECEIVES FROM 172 / 173 / 174 /
RECEIVES FROM 175 / 176 / 6000 /
RECEIVES FROM 10378 1/
SENDS TO 844 2/ 844 21/
AVA OPTIONS 10304 1/10328 1/10333 1/
AVA OPTIONS 10342 5/

7054	22	MASS STORAGE CONTROLLER	LIST	89,425	C	1,840	1,704	SEE CCC	291	8/1
			RESALE	89,425						

CONTROLS UP TO EIGHT DISK STORAGE UNITS, CONNECTS TO ONE OR TWO STANDARD I/O CHANNELS. SECOND CHANNEL PROVIDES FOR ACCESS FROM TWO MAINFRAMES OR FOR CHANNEL REDUNDANCY WHEN FROM SAME MAINFRAME. (NOTE-DUAL ACCESS TO DISK STORAGE UNITS REQUIRES A SECOND MASS STORAGE CONTROLLER.) CAPACITY OF EACH DISK STORAGE UNIT IS 1184 6 BIT CHARACTERS, 644 CHARACTERS/SECTOR, 19 TRACKS/CYLINDER AND 404 CYLINDERS/PACK. CONTAINS TRANSMISSION PARITY GENERATION AND CHECKING LOGIC NECESSARY FOR CYBER 170. MINIMUM OF TWO DISK STORAGE UNITS IS RECOMMENDED. COLOR IS CYBER 170.
RECEIVES FROM 71 / 72 / 73 /
RECEIVES FROM 74 / 170 7XX/ 171 /
RECEIVES FROM 172 / 173 / 174 /
RECEIVES FROM 175 / 176 / 6000 /
RECEIVES FROM 10378 1/
SENDS TO 844 2/ 844 21/
AVA OPTIONS 10304 1/10333 1/10362 5/

7054	41	MASS STORAGE CONTROLLER	LIST	74,175	C	1,521	1,435	SEE CCC	241	8/1
			RESALE	74,175						

CONTROLS UP TO EIGHT DISK STORAGE UNITS, CONNECTS TO ONE STANDARD I/O CHANNEL. (NOTE-DUAL ACCESS TO DISK STORAGE UNITS REQUIRES A SECOND MASS STORAGE CONTROLLER.) COLOR IS CYBER 170.
RECEIVES FROM 71 / 72 / 73 /
RECEIVES FROM 74 / 170 7XX/ 171 /
RECEIVES FROM 172 / 173 / 174 /
RECEIVES FROM 175 / 176 / 6000 /
RECEIVES FROM 10378 1/
SENDS TO 844 2/ 844 21/ 844 41/
SENDS TO 844 44/
AVA OPTIONS 10304 1/10328 1/10362 5/

7054	42	MASS STORAGE CONTROLLER	LIST	93,100	C	1,927	1,781	SEE CCC	291	8/1
			RESALE	93,100						

CONTROLS UP TO EIGHT DISK STORAGE UNITS, CONNECTS TO ONE OR TWO STANDARD I/O CHANNELS. SECOND CHANNEL PROVIDES FOR ACCESS FROM TWO MAINFRAMES OR FOR CHANNEL REDUNDANCY WHEN FROM SAME MAINFRAME. (NOTE-DUAL ACCESS TO DISK STORAGE UNITS REQUIRES A SECOND MASS STORAGE CONTROLLER.) COLOR IS CYBER 170.
RECEIVES FROM 71 / 72 / 73 /
RECEIVES FROM 74 / 170 7XX/ 171 /
RECEIVES FROM 172 / 173 / 174 /
RECEIVES FROM 175 / 176 / 6000 /
RECEIVES FROM 10378 1/
SENDS TO 844 2/ 844 21/ 844 41/
SENDS TO 844 44/
AVA OPTIONS 10304 1/10362 5/

7077	1	COMMUNICATIONS STATION	LIST	44,625	C	1,155	1,131	SEE CCC	188	8/1
			RESALE	44,625						

CONTROLS UP TO THREE 791-1 COMMUNICATION CONTROLLERS. PROVIDES 4K WORDS OF BUFFER CORE MEMORY WITH A CYCLE TIME OF 1.1 MICROSECONDS. REQUIRES ONE DEDICATED 6000 PPU AND ONE SHARED 6000 DATA CHANNEL.
RECEIVES FROM 71 / 72 / 73 /
RECEIVES FROM 74 / 6000 /
SENDS TO 791 1/
AVA OPTIONS 13262 /

RESALE PRODUCT	MOD	PRODUCTS ACTIVE DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/2400	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
7152	1	MASS STORAGE/MAG. TAPE CONTR.	LIST	45,500	C	720	650	SEE CCC	318	B/1
			RESALE	45,500						
		CONTROLS UP TO FOUR 844 DISK STORAGE UNITS AND FOUR 66X MAGNETIC TAPE UNITS ON INDEPENDENT SINGLE I/O CHANNEL CONNECTIONS. THE CAPACITY OF EACH 844-2/21 IS 118 M 6-BIT CHARACTERS. THE CAPACITY OF EACH 844-4X IS 236 M 6-BIT CHARACTERS. INTERMIX OF DSU TYPES ON ONE CONTROLLER IS PERMISSIBLE. A MINIMUM OF 2 DSUMS IS RECOMMENDED. THE DISK CONTROLLER ACCESS TRANSFERS DATA AT ONE TO ONE INTERLACE (FULL TRACKING). THE TAPE CONTROLLER PERMITS READ/WRITE ON ANY ONE OF FOUR 667 AND 669 (INTERMIXED) TAPE UNITS. WILL READ/WRITE 556/800 CHARACTERS/INCH, NRZI RECORDING AND 1600 CHARACTERS/INCH PHASE ENCODED. WILL READ 200 CHARACTERS/INCH NRZI. THE CONTROLLER CONTAINS PROM WHICH ALLOWS CONTROLWARE TO BE LOADED WITHOUT AN ON-LINE CARD READER. THE REQUIRED CONTROLWARE IS PROVIDED IN BINARY FORM ONLY AND REQUIRES THAT AT LEAST ONE 669 BE CONFIGURED ON THE CONTROLLER FOR DEADSTART. COLOR IS CYBER 170 ONLY.									
		RECEIVES FROM 170 7XX/ 171 / 172 /								
		RECEIVES FROM 173 / 174 / 175 /								
		RECEIVES FROM 176 /								
		SENDS TO 667 / 669 / 844 2/								
		SENDS TO 844 21/ 844 4X/								
7154		**MASS STORAGE CONTROLLER**								
		ALLOWS SPECIFIED NUMBER OF CDC CYBER 70/170/6000 I/O CHANNEL TO ACCESS UP TO 8 DISK STORAGE UNITS. CAPACITY OF EACH 844-2 OR 844-21 IS 118M 6-BIT CHARACTERS. THE CAPACITY OF EACH 844-4X IS 236M 6-BIT CHARACTERS. INTERMIX OF DSU TYPES ON ONE CONTROLLER IS PERMISSABLE. A MINIMUM OF 2 DSUMS IS RECOMMENDED. TWO CONTROLLERS ARE REQUIRED FOR DUAL ACCESS OPERATION TO THE DSUMS. ALLOWS SYSTEM TRANSFERS AT ONE TO ONE INTERLACE (FULL TRACKING) ON A CYBER 170 CHANNEL. COLOR IS CDC CYBER 170.									
		RECEIVES FROM 71 / 72 / 73 /								
		RECEIVES FROM 74 / 170 / 176 /								
		RECEIVES FROM 6000 /10378 1/								
		SENDS TO 844 2/ 844 21/ 844 41/								
		SENDS TO 844 44/								
		AVA OPTIONS 10304 1/10362 5/								
7154	1	MASS STORAGE CONTROLLER	LIST	74,175	C	1,521	1,406	SEE CCC	241	B/1
			RESALE	74,175						
		CONNECTS TO ONE CHANNEL.								
		AVA OPTIONS 10365 1/10367 1/								
7154	2	MASS STORAGE CONTROLLER	LIST	93,100	C	1,927	1,781	SEE CCC	291	B/1
			RESALE	93,100						
		CONNECTS TO TWO CHANNELS								
		AVA OPTIONS 10367 1/								
7154	3	MASS STORAGE CONTROLLER	LIST	101,100	C	2,127	1,965	SEE CCC	341	B/1
			RESALE	101,100						
		CONNECTS TO THREE CHANNELS								
		AVA OPTIONS 10367 1/								
7154	4	MASS STORAGE CONTROLLER	LIST	109,100	C	2,327	2,149	SEE CCC	391	B/1
			RESALE	109,100						
		CONNECTS TO FOUR CHANNELS.								
7602	1	PERIPHERAL PROCESSOR	LIST	55,000	C	1,210	1,166	SEE CCC	132	A/1
			RESALE	55,000						
		TWELVE-BIT, 4,096 WORD OF INDEPENDENT MAGNETIC CORE STORAGE, TWO MULTIPHASED BANDS OF 2048 WORDS, CONTROLS UP TO 6 PERIPHERAL STATIONS.								
		RECEIVES FROM 76 /								
		SENDS TO 6014 / 6015 8/ 6015 9/								
		SENDS TO 7611 / 7618 1/ 7628 1/								
		SENDS TO 7639 XX/ 7654 1/ 7681 1/								
		AVA OPTIONS 10379 1/								
7606		**DATA CHANNEL UNIT**								
		FOUR BIDIRECTIONAL CPU I/O CHANNELS EACH WITH ASSEMBLY DISASSEMBLY LOGIC. ATTACHES TO A MODEL 76 CENTRAL PROCESSOR. FIELD INSTALLABLE.								
7606	1	DATA CHANNEL UNIT	LIST	63,800	C	1,320	1,292	SEE CCC	150	A/1
			RESALE	63,800						
		ADDS TWO HIGH SPEED AND TWO NORMAL CHANNELS.								
		OPT APPLIES TO 76 12/ 76 14/ 76 16/								
		OPT APPLIES TO 76 18/								
7606	2	DATA CHANNEL UNIT	LIST	63,800	C	1,320	1,292	SEE CCC	150	A/1
			RESALE	63,800						
		ADDS THREE NORMAL CHANNELS AND ONE REAL-TIME CHANNEL RESERVATION.								
		OPT APPLIES TO 76 12/ 76 14/ 76 16/								
		OPT APPLIES TO 76 18/								
7608	1	LARGE CORE MEMORY MODULE	LIST	1,408,000	C	29,700	29,056	SEE CCC	3,726	A/1
			RESALE	1,408,000						
		256,000 60-BIT WORDS OF MAGNETIC CORE STORAGE ARRANGED IN FOUR PHASED AND INTERLEAVED BANKS - EACH BANK HAVING A 480-BIT HOLDING REGISTER. PROVIDES CONSECUTIVE ADDRESSING OF LARGE CORE MEMORY. INCREMENTS LARGE CORE MEMORY FROM 256,000 TO 512,000 WORDS. FIELD INSTALLABLE.									
		OPT APPLIES TO 76 12/ 76 14/								

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
7609	1	SMALL CORE MEMORY MODULE 32,768 60-BIT WORDS OF MAGNETIC CORE STORAGE ARRANGED IN SIXTEEN BANKS. PROVIDES CONSECUTIVE ADDRESSING IN SMALL CORE MEMORY. INCREMENTS SMALL CORE MEMORY FROM 32,768 TO 65,536 WORDS. FIELD INSTALLABLE. OPT APPLIES TO 76 12/ 76 16/	LIST 704,000 RESALE 704,000	C	16,060	15,712 SEE CCC	1,811	A/1
7622	1	MAGNETIC TAPE CONTROLLER TWO CHANNEL CONNECTION TO ONE CONTROL. PERMITS READ/WRITE ON ANY ONE OF EIGHT MODEL 667 AND 669 (INTERMIXED) TAPE UNITS. WILL READ/WRITE 556/800 CHARACTERS/INCH NRZI RECORDING AND 1600 CHARACTERS/INCH PHASE ENCODED. WILL READ 200 CHARACTERS/INCH NRZI. INCLUDES A PROGRAMMED PROCESSOR. THE REQUIRED CONTROLWARE PROGRAM IS PROVIDED IN BINARY FORM ONLY. PRICE INCLUDES INSTALLATION OF UP TO TWO 10293-2 OPTIONS (DEPENDENT UPON SYSTEM CONFIGURATION) AT NO ADDITIONAL CHARGE WHEN THE 10293-2 OPTION IS ORDERED AND INSTALLED CONCURRENTLY WITH THIS CONTROLLER. COLOR IS CYBER 170. RECEIVES FROM 74 / 7602 1/10376 1/ SENDS TO 667 2/ 667 3/ 667 4/ SENDS TO 669 2/ 669 3/ 669 4/ AVA OPTIONS 10293 2/10362 8/	LIST 37,180 RESALE 37,180	C	830	740 SEE CCC	178	A/1
7622	2	MAGNETIC TAPE CONTROLLER TWO CHANNEL CONNECTIONS TO EACH OF TWO CONTROLS. PERMITS SIMULTANEOUSLY READ/WRITE ON ANY TWO OF EIGHT MODEL 667 AND 669 (INTERMIXED) TAPE UNITS. WILL READ/WRITE 556/800 CHARACTERS/INCH NRZI RECORDING AND 1600 CHARACTERS/INCH PHASE ENCODED. WILL READ 200 CHARACTERS/INCH NRZI. INCLUDES TWO PROGRAMMED PROCESSORS. THE REQUIRED CONTROLWARE PROGRAM IS PROVIDED IN BINARY FORM ONLY. PRICE INCLUDES INSTALLATION OF UP TO FOUR 10293-2 OPTIONS (DEPENDENT UPON SYSTEM CONFIGURATION) AT NO ADDITIONAL CHARGE WHEN THE 10293-2 OPTION IS ORDERED AND INSTALLED CONCURRENTLY WITH THIS CONTROLLER. COLOR IS CYBER 170. RECEIVES FROM 74 / 7602 1/10376 1/ SENDS TO 667 2/ 667 3/ 667 4/ SENDS TO 669 2/ 669 3/ 669 4/ AVA OPTIONS 10293 2/10362 8/	LIST 80,655 RESALE 80,655	C	1,810	1,630 SEE CCC	363	A/1
7639	1	MASS STORAGE CONTROLLER ALLOWS TIME SHARED ACCESS BY TWO STANDARD CDC CYBER 76 OR 7000 I/O CHANNELS OF UP TO FOUR 819 DISK STORAGE UNITS. CAPACITY OF EACH 819 IS 2.4 BILLION DATA BITS. COLOR IS CYBER 170. RECEIVES FROM 7602 1/10376 1/ SENDS TO 819 1/ 819 11/ AVA OPTIONS 10339 1/10362 9/10423 1/	LIST 117,000 RESALE 97,000	C	2,622	2,543 SEE CCC	210	A/1
7639	2	MASS STORAGE CONTROLLER TWO INDEPENDENT MASS STORAGE CONTROLLERS IN ONE CABINET. EACH CONTROLLER ALLOWS TIME SHARED ACCESS BY TWO STANDARD CDC CYBER 76 OR 7000 I/O CHANNELS OF UP TO FOUR 819 DISK STORAGE UNITS. CAPACITY OF EACH 819 IS 2.4 BILLION DATA BITS. COLOR IS CYBER 170. RECEIVES FROM 7602 1/10376 1/ SENDS TO 819 1/ 819 11/ AVA OPTIONS 10362 9/10423 2/	LIST 190,000 RESALE 158,000	C	4,270	4,143 SEE CCC	350	B/1
7654	1	MASS STORAGE CONTROLLER CONTROLS UP TO 8 DISK STORAGE DRIVES, CONNECTS TO TWO STANDARD 7000 PERIPHERAL PROCESSORS. CAPACITY OF 844-2 IS 118 M 6 BIT CHARACTERS IN 644 CHARACTERS PER SECTOR, 24 SECTORS PER TRACK, 19 TRACKS PER CYLINDER AND 404 CYLINDERS PER PACK. TWO MASS STORAGE CONTROLLERS ARE REQUIRED FOR DUAL ACCESS OPERATION. MINIMUM CONFIGURATION WILL HAVE TWO DISK STORAGE UNITS. PRICE INCLUDES INSTALLATION OF UP TO TWO 10293-1 (DEPENDENT UPON SYSTEM CONFIGURATION) WHEN THE 10293-1 ARE OPERED AND INSTALLED CONCURRENTLY WITH THE CONTROLLERS. COLOR IS CYBER 170. RECEIVES FROM 74 / 7602 1/ SENDS TO 844 2/ 844 21/ AVA OPTIONS 10293 1/10293 2/10304 1/ AVA OPTIONS 10362 10/	LIST 99,000 RESALE 99,000	C	1,938	1,898 SEE CCC	359	A/1

RESALE PRODUCTS ACTIVE

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
7654	21	MASS STORAGE CONTROLLER	LIST RESALE	99,000 99,000	C	1,938	1,898 SEE CCC	359	A/1
		ALLOWS TIME SHARED ACCESS BY TWO STANDARD CDC CYBER 76 OR 7000 I/O CHANNELS OF UP TO EIGHT 844 DISK STORAGE UNITS. CAPACITY OF EACH 844 IS 118M 6-BIT CHARACTERS, 644 CHARACTERS/ SECTOR, 24 SECTORS/TRACK, 19 TRACKS/CYLINDER AND 404 CYLINDERS/PACK. TWO CONTROLLERS ARE REQUIRED FOR DUAL-ACCESS OPERATION. A MINIMUM OF TWO 844 ARE RECOMMENDED. PRICE INCLUDES INSTALLATION OF UP TO TWO 10293-1 OR UP TO TWO 10293-2 (10293-2 IF MAINFRAME IS 76-121, 76-122 OR 76-142) WHEN ORDERED AND INSTALLED CONCURRENTLY WITH THE CONTROLLERS. REQUIREMENT FOR 10293-1 OR 13293-2 IS DEPENDENT UPON SYSTEM CONFIGURATION. COLOR IS CYBER 170.							
		RECEIVES FROM 76 / 7602 1/ SENDS TO 844 2/ 844 2/ AVA OPTIONS 10293 1/10293 2/10304 1/ AVA OPTIONS 10362 10/							
7681	1	DATA CHANNEL CONVERTER	LIST RESALE	17,600 17,600	C	396	390 SEE CCC	37	A/1
		PERMITS 3000 SERIES PERIPHERAL EQUIPMENT TO BE ATTACHED TO A 7602-1 PERIPHERAL PROCESSOR. OSS SOFTWARE ONLY.							
		RECEIVES FROM 7602 1/10376 1/							
10107		PRINTER BUFFER OPTION	LIST RESALE	2,230 800	C	59	59 SEE CCC	15	D/1
		OCCUPIES 1 DISPLAY STATION POSITION ON 216-2, PERMITS DIRECT COMPUTER ADDRESSING OF 218 OUTPUT STATION AND DOES NOT BUFFER PRINTERS ASSOCIATED WITH DISPLAYS.							
		OPT APPLIES TO 216 2/							
10121		STORAGE ACCESS	LIST RESALE	5,009 5,009	F	all	110 SEE CCC	30	C/1
		PROVIDES DIRECT ACCESS TO 32K WORDS OF SYSTEM CORE STORAGE FOR USE BY AN ADDITIONAL PROCESSOR OR SPECIAL DEVICE. UP TO THREE ADDITIONAL STORAGE ACCESSES MAY BE ADDED TO EACH 32K WORDS OF SYSTEM STORAGE.							
		OPT APPLIES TO 3002 /							
10122	1	ECS MEMORY INCREMENT	LIST RESALE	135,828 135,828	C	3,948	3,516 SEE CCC	545	B/1
		ADDS AN ADDITIONAL 125K OF ECS TO AN EXISTING 125K SYSTEM. THIS WILL INVOLVE ADDING ANOTHER CHASSIS. THE FINAL PRODUCT WILL BE A 250K SYSTEM. THIS INCLUDES DELIVERY OF 250K TO THE CUSTOMER AND RETURN OF 125K UNIT ON SITE. RETURNED UNIT BECOMES THE PROPERTY OF CDC.							
		OPT APPLIES TO 6639 2/							
10122	2	ECS MEMORY INCREMENT	LIST RESALE	273,751 273,751	C	7,973	7,089 SEE CCC	992	B/1
		ADDS AN ADDITIONAL 250K OF ECS TO AN EXISTING 250K SYSTEM. THIS INVOLVES DELIVERY OF 500K TO THE CUSTOMER AND RETURN OF THE 250K UNIT ON SITE. THE RETURNED 250K UNIT BECOMES THE PROPERTY OF CONTROL DATA.							
		OPT APPLIES TO 6634 2/							
10122	3	ECS MEMORY INCREMENT	LIST RESALE	571,158 571,158	C	16,601	14,770 SEE CCC	1,469	B/1
		ADDS AN ADDITIONAL 500K OF ECS TO AN EXISTING 500K SYSTEM. THIS INVOLVES INSTALLATION OF AN ADDITIONAL BAY OF ECS AT CUSTOMERS SITE.							
		OPT APPLIES TO 6635 2/							
10126		TIME BASE SOURCE	LIST RESALE	8,000 8,000	D	370	290 SEE CCC	72	D/1
		PROVIDES TIME OF DAY INFORMATION AND PROGRAM TIMING SIGNALS FOR REAL TIME MESSAGE ENTRY PROGRAMS DESIGNED TO PREPARE MESSAGE TRANSMISSIONS DIRECTLY FROM SOURCE DOCUMENTS USING OPTICAL CHARACTER READING EQUIPMENT.							
		OPT APPLIES TO 1704 / 1748 2/							
10128		DUAL MODE OPTION	LIST RESALE	6,726 6,726	E	111	110 SEE CCC	49	D/1
		ENABLES COMMUNICATION BETWEEN THE MULTIPLEXING SYSTEM(CONSISTING OF 303-1 AND 304-1) AND EITHER TWO 1748 OR TWO 3316-1 MULTIPLEXER UNITS.							
		OPT APPLIES TO 1748 / 1748 2/ 3316 1/							

CHANGES EFFECTIVE 05/01/80

RESALE PRODUCTS ACTIVE

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
10180		32,768 WORD CENTRAL MEMORY INCREMENT.							
10191	1	TELETYPE UPDATE	LIST RESALE	N/A N/C		N/C N/A	SEE CCC	N/A	
		A ONE TIME INSTALLATION CHARGE		125					
		SEVEN TYPE PALLETS PLUS KEY TOPS REPLACE EXISTING PARTS FOR UPGRADING FROM ASCII 63 TO ASCII 88. 64 CHARACTER PLUS 32 CONTROL COMPATIBILITY. OPT APPLIES TO 1711 / 1713 /							
10193	1	POWER SUPPLY OPTION	LIST RESALE	1,234 1,734	D	32 32	SEE CCC	11	D/1
		A COMPONENT THAT IS REQUIRED WHEN THE SECOND 364-2 OR 364-5 IS MOUNTED IN EITHER 364-1 OR 364-4 RESPECTIVELY.							
10196	1	REAL TIME SOURCE	LIST RESALE	12,600 12,600	E	431 424	SEE CCC	85	C/1
		PROVIDES TIME AND DATE TO A COMPUTER VIA A STANDARD 3000 I/O CHANNEL. TIMING ACCURACY IS INDEPENDENT OF THE COMPUTER. OUTPUTS ARE MONTH, DAY, HOUR, MINUTE, SECOND, AND 1/60 SECOND. OPT APPLIES TO 3306 / 3307 / 3507 /							
10251	1	DUAL CONNECTION OPTION	LIST RESALE	3,570 3,570	C	79 74	SEE CCC	5	D/2
		PERMITS THE CONNECTION OF TWO 3553 CONTROLLERS TO 841-11 MULTIPLE DISK DRIVE MODULE. UPGRADES 841-11 TO 841-21. OPT APPLIES TO 841 11/							
10251	2	DUAL CONNECTION OPTION	LIST RESALE	6,510 6,510	C	147 137	SEE CCC	16	D/2
		PERMITS THE CONNECTION OF TWO 3553 CONTROLLERS TO 841-12 MULTIPLE DISK DRIVE MODULE. UPGRADES 841-12 TO 841-22. OPT APPLIES TO 841 12/							
10258	1	6671 CONVERSION	LIST RESALE	1,050 1,050	C	27 27	SEE CCC	N/A	
		FIELD CONVERTS A 6671 TO A 6671-2 BY ADDING 4800 BAUD CAPABILITY. OPT APPLIES TO 6671 /							
10262		MEMORY MODULE CONSISTS OF 8,192 14 BIT WORDS OF BUFFER CORE STORAGE, 1.1 MICRO-SECONDS CYCLE TIME. PROVIDES FOR EXPANSION OF BUFFER CORE MEMORY IN THE 7077-1 TO A MAXIMUM OF 32,768 WORDS. OPT APPLIES TO 7077 1/							
10262	1	MEMORY INCREMENT MODULE	LIST RESALE	5,670 5,670	C	142 138	SEE CCC	29	C/1
		EXPANDS 7077-1 COMMUNICATIONS STATION MEMORY FROM 8,192 TO 16,384 WORDS.							
10262	2	MEMORY EXPANSION MODULE	LIST RESALE	7,350 7,350	C	184 178	SEE CCC	29	C/1
		EXPANDS 7077-1 COMMUNICATIONS STATION MEMORY FROM 16,384 TO 24,576 WORDS. PROVIDES CABINETRY AND POWER SUPPLY FOR EXPANSION TO 32,768 WORDS.							
10262	3	MEMORY INCREMENT MODULE	LIST RESALE	5,670 5,670	C	142 138	SEE CCC	29	C/1
		EXPANDS 7077-1 COMMUNICATIONS STATION MEMORY FROM 24,576 TO 32,768 WORDS.							
10264		UPGRADES CENTRAL MEMORY BY THE ADDITION OF 60-BIT WORDS OF CORE STORAGE TO THE EXISTING CENTRAL MEMORY.							
10264	2	MODELS 72, 73 CM UPGRADES	LIST RESALE	288,750 288,750	C	6,505 5,780	SEE CCC	870	B/1
		ADDS 16,384 WORDS TO UPGRADE 72-13 TO 72-14, OR 73-13 TO 73-14. OPT APPLIES TO 72 13/ 73 13/							
10264	3	MODELS 72, 73 CM UPGRADES	LIST RESALE	304,500 304,500	C	8,270 6,410	SEE CCC	1,892	B/1
		ADDS 32,768 WORDS TO UPGRADE 72-14, -24 TO 72-16, -26, OR 73-14, -24 TO 73-16, -26. OPT APPLIES TO 72 14/ 72 24/ 73 14/ OPT APPLIES TO 73 24/							
10264	4	MODELS 72, 73 CM UPGRADES	LIST RESALE	267,750 267,750	C	6,780 5,260	SEE CCC	1,889	B/1
		ADDS 32,768 WORDS TO UPGRADE 72-16, -26 TO 72-18, -28, OR 73-16, -26 TO 73-18, -28. OPT APPLIES TO 72 16/ 72 26/ 73 16/ OPT APPLIES TO 73 26/							
10265		CDC CYBER 70-MODEL 74 CM UPGRADE UPGRADES CENTRAL MEMORY BY THE ADDITION OF 60-BIT WORDS OF CORE STORAGE TO THE EXISTING CENTRAL MEMORY.							
10265	3	MODEL 74 CENTRAL MEMORY UPGRD	LIST RESALE	304,500 304,500	C	8,270 6,410	SEE CCC	595	B/1
		ADDS 32,768 WORDS TO UPGRADE 74-14, -24 TO 74-16, -26. OPT APPLIES TO 74 14/ 74 24/							

CHANGES EFFECTIVE 05/01/80

RESALE PRODUCT	MOD	PRODUCTS ACTIVE DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
10265	4	MODEL 74 CENTRAL MEMORY UPGRD	LIST	267,750	C	6,780	5,260	SEE CCC	594	B/1
			RESALE	267,750						
		ADDS 32,768 WORDS TO UPGRADE 74-16, -26 TO 74-18, -28.								
		OPT APPLIES TO 74 16/ 74 26/								
10268		MODEL 72, 73 PPU UPGRADES								
		OPTION ADDS PERIPHERAL PROCESSORS TO THE CENTRAL COMPUTER. EACH PERIPHERAL PROCESSOR HAS 4,095 12-BIT WORDS OF PRIVATE CORE STORAGE AND CAN ACCESS CENTRAL MEMORY AND INPUT/OUTPUT CHANNELS OF THE CENTRAL COMPUTER.								
		OPT APPLIES TO 72 / 73 /								
10268	1	MODEL 72, 73 PPU UPGRADES	LIST	141,750	C	3,750	3,465	SEE CCC	327	B/1
			RESALE	141,750						
		ADDS 4 PERIPHERAL PROCESSORS AND 12 INPUT/OUTPUT CHANNELS TO A CENTRAL COMPUTER HAVING 10 PERIPHERAL PROCESSORS FOR A TOTAL OF 14 PERIPHERAL PROCESSOR AND 24 INPUT/OUTPUT CHANNELS.								
10268	2	MODEL 72, 73 PPU UPGRADES	LIST	48,300	C	1,270	1,190	SEE CCC	246	B/1
			RESALE	48,300						
		ADDS 3 PERIPHERAL PROCESSORS TO A CENTRAL COMPUTER HAVING 14 PERIPHERAL PROCESSORS FOR A TOTAL OF 17 PERIPHERAL PROCESSORS AND 24 INPUT/OUTPUT CHANNELS.								
10268	3	MODEL 72, 73 PPU UPGRADES	LIST	48,300	C	1,270	1,190	SEE CCC	246	B/1
			RESALE	48,300						
		ADDS 3 PERIPHERAL PROCESSORS TO A CENTRAL COMPUTER HAVING 17 PERIPHERAL PROCESSORS FOR A TOTAL OF 20 PERIPHERAL PROCESSORS AND 24 INPUT/OUTPUT CHANNELS.								
10269		CDC CYBER 70-MODEL 74 PPU UPGRADE								
		THIS OPTION ADDS PERIPHERAL PROCESSORS TO THE CENTRAL COMPUTER. EACH PERIPHERAL PROCESSOR HAS 4,095 12-BIT WORDS OF PRIVATE MEMORY AND CAN ACCESS CENTRAL MEMORY AS WELL AS INPUT/OUTPUT CHANNELS OF THE CENTRAL COMPUTER.								
		OPT APPLIES TO 74 /								
10269	1	MODEL 74 PPU UPGRADE	LIST	141,750	C	3,750	3,465	SEE CCC	327	B/1
			RESALE	141,750						
		ADDS 4 PERIPHERAL PROCESSORS AND 12 INPUT/OUTPUT CHANNELS TO A CENTRAL COMPUTER HAVING 10 PERIPHERAL PROCESSORS FOR A TOTAL OF 14 PERIPHERAL PROCESSORS AND 24 INPUT/OUTPUT CHANNELS.								
10269	2	MODEL 74 PPU UPGRADE	LIST	48,300	C	1,270	1,190	SEE CCC	246	B/1
			RESALE	48,300						
		ADDS 3 PERIPHERAL PROCESSORS TO A CENTRAL COMPUTER HAVING 14 PERIPHERAL PROCESSORS FOR A TOTAL OF 17 PERIPHERAL PROCESSORS AND 24 INPUT/OUTPUT CHANNELS.								
10269	3	MODEL 74 PPU UPGRADE	LIST	48,300	C	1,270	1,190	SEE CCC	246	B/1
			RESALE	48,300						
		ADDS 3 PERIPHERAL PROCESSORS TO A CENTRAL COMPUTER HAVING 17 PERIPHERAL PROCESSORS FOR A TOTAL OF 20 PERIPHERAL PROCESSORS AND 24 INPUT/OUTPUT CHANNELS.								
10270		STANDARD OPTION 10270 ADDS A SECOND CENTRAL PROCESSOR TO A MAINFRAME.								
10270	2	CENTRAL PROCESSOR OPTION	LIST	315,000	C	6,245	5,380	SEE CCC	1,469	B/1
			RESALE	220,500						
		ADDS A SECOND UNTIED CENTRAL PROCESSOR TO MODEL 73-14, -16, OR -18 TO PRODUCE A MODEL 73-24, -26, OR -28 RESPECTIVELY. THE SECOND CENTRAL PROCESSOR IS THE SAME SPEED AS THE FIRST CENTRAL PROCESSOR.								
		OPT APPLIES TO 73 14/ 73 16/ 73 18/								
10270	4	CENTRAL PROCESSOR OPTION	LIST	157,500	C	N/A	3,850	SEE CCC	1,081	B/1
			RESALE	157,500						
		ADDS A SECOND CENTRAL PROCESSOR TO MODEL 71-14 TO PRODUCE AN EQUIVALENT 71-24.								
		OPT APPLIES TO 71 14/								
10271		EXT CORE STORAGE								
		OPTIONS EXPAND THE EXISTING EXTENDED CORE STORAGE BY ADDING THE INDICATED NUMBER OF 60-BIT WORDS.								
10271	1	EXT CORE STORAGE INCREMENTS	LIST	129,360	C	3,315	2,955	SEE CCC	531	B/1
			RESALE	103,490						
		UPGRADES 7030-1 TO 7030-2 BY ADDITION OF 125,952 WORDS. A COMPLETE 251,904 WORD UNIT IS INSTALLED AND THE REPLACED 125,952 UNIT BECOMES THE PROPERTY OF CDC.								
		OPT APPLIES TO 7030 1/								
10271	2	EXT CORE STORAGE INCREMENTS	LIST	260,715	C	6,700	5,955	SEE CCC	935	B/1
			RESALE	208,570						
		UPGRADES 7030-2 TO 7030-4 BY ADDITION OF 251,904 WORDS. FOR THE -2 OPTION, A COMPLETE 503,808 WORD UNIT IS INSTALLED, AND THE INITIAL 251,904 WORD UNIT IS RETURNED TO CONTROL DATA AND BECOMES THE PROPERTY OF CONTROL DATA								
		OPT APPLIES TO 7030 2/								
10271	4	EXT CORE STORAGE INCREMENTS	LIST	543,480	C	13,940	12,405	SEE CCC	1,383	B/1
			RESALE	434,780						
		UPGRADES 7030-4 TO 7030-8 BY ADDITION OF 503,808 WORDS.								
		OPT APPLIES TO 7030 4/								

RESALE PRODUCT NUM	MOD	PRODUCTS ACTIVE DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
10271	8	EXT CORE STORAGE	LIST RESALE	1,012,935 810,350	C	28,620	22,500 SEE CCC	1,731	B/1
		UPGRADES 7030-8 TO 7030-16 BY ADDITION OF 1,007,616 WORDS. OPT APPLIES TO 7030 8/							
10272		CDC CYBER 70-MOD 72 TO 73 CONVERSION THIS OPTION CONVERTS A MODEL 72 CENTRAL COMPUTER TO A MODEL 73 CENTRAL COMPUTER BY CONVERSION OF THE CENTRAL PROCESSOR OR CENTRAL PROCESSORS.							
10272	1	MODEL 72 TO 73 CONVERSION	LIST RESALE	126,000 88,200	C	2,200	2,155 SEE CCC	25	C/1
		CONVERTS A MODEL 72-1X TO AN EQUIVALENT MODEL 73-1X BY CONVERSION OF THE CENTRAL PROCESSOR.							
10273		MEMORY INCREMENT MODULE 8192 16 BIT WORDS OF CORE STORAGE, 1.1 MICROSECOND CYCLE TIME, FOR USE WITH THE 1714-1 TO PROVIDE EXPANSION OF CORE MEMORY TO A MAXIMUM OF 65,526 WORDS. OPT APPLIES TO 1714 1/							
10273	1	MEMORY INCREMENT MODULE	LIST RESALE	13,600 13,600	D	460	360 SEE CCC	129	D/1
		EXPANDS 1714-1 MEMORY FROM 24,576 TO 32,768 WORDS.							
10273	2	MEMORY INCREMENT MODULE	LIST RESALE	10,880 10,880	D	345	270 SEE CCC	129	D/1
		EXPANDS 1714-1 MEMORY FROM 32,768 TO 40,960 WORDS. 10273-2 REQUIRES 10273-1.							
10273	3	MEMORY INCREMENT MODULE	LIST RESALE	9,600 9,600	D	290	225 SEE CCC	129	D/1
		EXPANDS 1714-1 MEMORY FROM 40,963 TO 49,152 WORDS. 10273-3 REQUIRES 10273-2.							
10274	1	MEMORY MODULE	LIST RESALE	17,850 17,850	C	473	464 SEE CCC	80	C/1
		PROVIDES 4,096 16 BIT WORDS OF CORE MEMORY, 200 NANOSECOND CYCLE TIME. EXPANDS CORE MEMORY IN THE 791-1 COMMUNICATIONS SUBSYSTEM CONTROLLER TO A MAXIMUM OF 8,192 WORDS. OPT APPLIES TO 791 1/							
10277	1	16 BIT ADDRESS FOR 1706	LIST RESALE	1,365 1,365	D	37	32 SEE CCC	17	D/1
		PROVIDES DIRECT STORAGE ADDRESSING FOR 65K MEMORY ON THE 1714. OPT APPLIES TO 1706 /							
10285	1	SECOND CHANNEL FEATURE	LIST RESALE	18,925 18,925	C	406	375 SEE CCC	50	B/1
		PROVIDES A SECOND CHANNEL CONNECTION ON A 7054-1 MASS STORAGE CONTROLLER MAKING IT EQUIVALENT TO A 7154-2. OPT APPLIES TO 7054 1/							
10293	1	CDC CYBER 76 CHANNEL MOD	LIST RESALE	N/A N/A		N/C	N/A SEE CCC	N/A	
		A ONE TIME INSTALLATION CHARGE		8,360					
		HIGH SPEED CHANNEL MODIFICATION CONVERTS ONE NORMAL SPEED MULTIPLEXER CHANNEL TO HIGH SPEED. CHANNELS WHICH CAN BE MODIFIED ARE 10, 11, 12, 13, 14, OR 15. MODIFIES PPU CHANNELS 4-7 SO THAT THE CHANNEL CABLES MAY BE UP TO 120 FEET LONG. REQUIRED BY 7654-XX WHEN MAINFRAME IS 76-XX OR 7600. NOT REQUIRED WITH MAINFRAMES 76-1XX (SSP). ONE TIME INSTALLATION CHARGE IS WAIVED IF ORDERED AND INSTALLED CONCURRENTLY WITH THE 7654-XX. OPT APPLIES TO 76 12/ 76 14/ 76 16/ OPT APPLIES TO 76 19/							
10293	2	CDC CYBER 76 CHANNEL MOD	LIST RESALE	N/A N/A		N/C	N/A SEE CCC	N/A	
		A ONE TIME INSTALLATION CHARGE		2,200					
		PPU CHANNEL MODIFICATION MODIFIES PPU CHANNELS 4-7 SO THAT THE CHANNEL CABLES MAY BE UP TO 200 FEET LONG. REQUIRED BY 7622 OR 7654-XX (IF 7654-XX USED ON 76-121 76-122, 76-142 MAINFRAMES). ONE TIME INSTALLATION CHARGE IS WAIVED IF ORDERED AND INSTALLED CONCURRENTLY WITH THE 7622-1/7622-2/ 7654-XX. OPT APPLIES TO 76 12/ 76 14/ 76 16/ OPT APPLIES TO 76 18/ 76 121/ 76 122/ OPT APPLIES TO 76 142/ 176 /1C376 10/							
10294	1	6676 BAUD RATE ENHANCEMENT	LIST RESALE	2,310 2,310	C	105	102 SEE CCC	17	B/1
		ADDS THE CAPABILITY OF OPERATING AT 300 AND 134.5 BAUD TO A STANDARD 6676. THE 300 BAUD PORTS BEGIN AT ADDRESS 0 AND CONTINUE IN CONSECUTIVELY NUMBERED PORTS UNTIL THE FIRST SELECTABLE SWITCH SETTING IS REACHED. THE NEXT BLOCK OF CONSECUTIVELY NUMBERED PORTS, BEGINNING AT FIRST SWITCH SETTING AND ENDING AT SECOND SELECTABLE SWITCH SETTING, OPERATES AT 134.5 BAUD. THE REMAINING PORTS ABOVE THE SECOND SWITCH SETTING OPERATE AT THE STANDARD 110 BAUD RATE. OPT APPLIES TO 6676 /							

RESALE PRODUCT	MOD	PRODUCTS ACTIVE DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
10295	1	6671 BAUD RATE ENHANCEMENT	LIST	2,205	C	90	88 SEE CCC	17	B/1
			RESALE	2,205					
		CONVERTS THE FIRST FOUR PORTS (ADDRESS 0-3) TO OPERATE AT 300 BAUD AND THE NEXT FOUR PORTS (ADDRESS 4-7) TO OPERATE AT 134.5 BAUD. THE ABOVE PORTS THAT ARE NOT OPERATED AT THE OPTIONAL SPEED CAN, UNDER INDIVIDUAL SWITCH SELECTION, OPERATE AT 110 BAUD. THE REMAINING EIGHT PORTS OPERATE AT THE STANDARD 110 BAUD RATE. THE SYNCHRONOUS CAPABILITY OF THE MULTIPLEXER ARE NOT AFFECTED.								
		OPT APPLIES TO 6671 / 6671 2/							
10299	1	CABINET ACCESSORIES KIT	LIST	N/A		N/A	N/A SEE CCC	N/A	
			RESALE	N/A					
		A ONE TIME INSTALLATION CHARGE		441					
		HINGED POWER SUPPLY HOUSING TO ACCOMMODATE POWER SUPPLIES FOR 1500 SERIES EQUIPMENTS AND BLOWER. TWO 10299-1 KITS MAY BE INSTALLED IN A 1787-1 CABINET; ONE IN 1787-2.							
		OPT APPLIES TO 1787 1/ 1787 2/							
10299	11	CABINET DOOR, EXTENDED	LIST	N/A		N/A	N/A SEE CCC	N/A	
			RESALE	N/A					
		A ONE TIME INSTALLATION CHARGE		79					
		SOLID FULL HEIGHT DOOR FOR 1787-1 CABINET. DIMENSIONS ARE 20 INCHES WIDE X 66 INCHES HIGH. DOOR IS HINGED AND PUSH LATCH SECURED.							
		OPT APPLIES TO 1787 1/							
10299	13	UTILITY DOOR WITH SHELF	LIST	N/A		N/A	N/A SEE CCC	N/A	
			RESALE	N/A					
		A ONE TIME INSTALLATION CHARGE		121					
		FOR USE WITH 1784 COMPUTER IN EITHER 1787-1 OR 1787-2 CABINET. PROVIDES FRONT CLOSURE OF 20 INCHES WIDE FOR LOWER 28 INCHES OF CABINET. INCLUDES EXTENDED WRITING SHELF 20 INCHES WIDE X 12 INCHES DEEP X 1 INCH HIGH. DOOR IS HINGED AND PUSH LATCH SECURED.							
		OPT APPLIES TO 1787 1/ 1787 2/							
10299	14	UTILITY DOOR, LOWER	LIST	N/A		N/A	N/A SEE CCC	N/A	
			RESALE	N/A					
		A ONE TIME INSTALLATION CHARGE		63					
		PROVIDES FRONT DOOR CLOSURE OF 20 INCHES WIDE FOR LOWER 28 INCHES OF 1787-1 OR 1787-2 CABINET. MAY BE USED IN LIEU OF OPTION 10299-13 WHEN SHELF IS NOT DESIRED. DOOR IS HINGED AND PUSH LATCH SECURED.							
		OPT APPLIES TO 1787 1/ 1787 2/							
10299	15	UTILITY DOOR, UPPER	LIST	N/A		N/A	N/A SEE CCC	N/A	
			RESALE	N/A					
		A ONE TIME INSTALLATION CHARGE		69					
		PROVIDES FRONT CLOSURE OF 20 INCHES WIDE FOR UPPER 29.75 INCH HEIGHT OF 1787-1 CABINET. DOOR HEIGHT INCLUDES 1.75 INCH HIGH X 20 INCH WIDE AIR INLET GRILL. DOOR IS HINGED AND PUSH LATCH SECURED.							
		OPT APPLIES TO 1787 1/							
10299	17	TABLE TOP ENCLOSURE FOR 1784	LIST	N/A		N/C	N/A SEE CCC	N/A	
			RESALE	N/A					
		A ONE TIME INSTALLATION CHARGE		215					
		CONSISTS OF SIDE, REAR AND BASE ASSEMBLIES TO CONVERT A 19 INCH RACK MOUNTABLE 1784 INTO A DESK TOP UNIT. USED FOR MOUNTING A 1784 ON TOP OF THE 1787-3, 1787-5 OR 1787-6 CABINETS. THE ENCLOSURE IS 19 INCHES WIDE, 24 INCHES DEEP AND 17.5 INCHES HIGH.							
		OPT APPLIES TO 1784 1/ 1784 2/							
10299	18	BELOW TABLE ENCLOSURE FOR 1783	LIST	N/A		N/C	N/A SEE CCC	N/A	
			RESALE	N/A					
		A ONE TIME INSTALLATION CHARGE		215					
		PROVIDES SIDE AND REAR SKINS TO MOUNT AND ATTACH A 1783 UNDERNEATH THE 1787-5 TABLE OR 1787-6 CONSOLE. THE ENCLOSURE MEASURES 19 INCHES WIDE X 23 INCHES DEEP X 19.38 INCHES HIGH.							
		OPT APPLIES TO 1787 5/ 1787 6/							
10299	19	HINGED POWER SUPPLY HOUSING	LIST	N/A		N/C	N/A SEE CCC	N/A	
			RESALE	N/A					
		A ONE TIME INSTALLATION CHARGE		580					
		HOUSING IS 24 INCHES HIGH AND MOUNTS IN THE REAR OF THE 1787-4 CABINET. ACCOMMODATES MODULAR POWER SUPPLY USED WITH 1500 SERIES EQUIPMENT. ONE REQUIRED FOR EACH OF UP TO THREE 1750-1/2 OR 1502-R0 MODULES. UP TO TWO HOUSINGS CAN BE MOUNTED IN A 1787-4 CABINET.							
		OPT APPLIES TO 1787 4/							

RESALE PRODUCTS ACTIVE

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
10299	20	BLOWER ASSEMBLY	LIST RESALE	N/A N/A		N/C N/A	SEE CCC	N/A	
		A ONE TIME INSTALLATION CHARGE		270					
		BLOWER ASSEMBLY HAS TWO FANS WITHOUT FILTER. THE FILTER IS PROVIDED BY THE RACK. ONE BLOWER ASSEMBLY IS USED WITH EACH 1787-3, 1784-4 OR 1787-4 RACK. THIS ASSEMBLY IS 19 INCH RACK MOUNTED AND REQUIRES 3 1/2 INCHES OF VERTICAL SPACE. FOR HIGH DENSITY RACK LOADING A SECOND BLOWER MAY BE REQUIRED FOR A 1787-4 RACK. ONE OPTION IS REQUIRED BY EACH GROUP OF UP TO 3 1500 SERIES MOUNTED IN EACH RACK. REQUIRES 10299-22 OPTION WHEN 200-256 VAC OPERATION IS REQUIRED.								
10299	21	220 VAC POWER CONVERSION KIT	LIST RESALE	N/A N/A		N/C N/A	SEE CCC	N/A	
		A ONE TIME INSTALLATION CHARGE		62					
		PROVIDES CONVERSION OF THE 1787-3/4/6 CABINETS AND BLOWERS ASSEMBLY FOR 204-256 VAC 50 HZ APPLICATIONS. OPT APPLIES TO 1787 3/ 1787 4/ 1787 5/ OPT APPLIES TO10299 20/							
10299	22	POWER CONVERSION TRANSFORMER	LIST RESALE	N/A N/A		N/C N/A	SEE CCC	N/A	
		A ONE TIME INSTALLATION CHARGE		895					
		PROVIDES CONVERSION FROM VOLTAGES WITHIN THE RANGE OF 85 VAC TO 244 VAC SINGLE PHASE(95, 105, 127, 200V, 220V AND 240 VAC) FROM MULTIPLE TAPS TO A 117 VAC SECONDARY. UNIT WILL SUPPLY MULTIPLE RACKS, 40 AMPERES MAXIMUM LOAD LIMIT, WILL ACCOMODATE UP TO 18 1500 - IOM SERIES MODULES AND MOUNTS EXTERNAL TO 1787 RACK OPT APPLIES TO 1787 3/ 1787 4/ 1787 6/							
10299	23	WRITING/UTILITY SHELF	LIST RESALE	N/A N/A		N/C N/A	SEE CCC	N/A	
		A ONE TIME INSTALLATION CHARGE		160					
		PROVIDES SHELF SPACE ON 1787-4 THAT MAY BE MOUNTED IN CONVENIENT LOCATIONS DEPENDING ON EQUIPMENT HOUSED IN THE 1787-4. SHELF IS 19 INCHES WIDE AND PROVIDES 12 INCHES OF WRITING SPACE. REQUIRES 3.5 INCHES OF VERTICAL RACK SPACE.							
10299	24	DAC POWER SUPPLIES	LIST RESALE	N/A N/A		N/C N/A	SEE CCC	T AND M	/1
		A ONE TIME INSTALLATION CHARGE		580					
		PROVIDES PLUS OR MINUS 24 VDC POWER FOR UP TO EIGHT 1566-21/22/23 OR UP TO SIXTEEN 1566-20. SENDS TO 1566 20/ 1566 21/ 1566 22/ SENDS TO 1566 23/							
10299	25	HINGED POWER SUPPLY HOUSING	LIST RESALE	N/A N/A		N/A N/A	SEE CCC	N/A	
		A ONE TIME INSTALLATION CHARGE		580					
		HEIGHT 17.5 INCHES, HINGED AT REAR OF 1787-3, 1787-4, OR 1787-5 CABINETS. ONE MAY BE INSTALLED IN 1787-3 OR 1787-6, TWO IN 1787-4. INCLUDES COOLING FANS, AC POWER CABLES FOR POWER SUPPLIES AND FANS. PROVIDES FOR MOUNTING OF REQUIRED POWER SUPPLIES FOR UP TO TWO 1750-1, 1750-2, 1593-3, OR 1532-80 MODULES. OPT APPLIES TO 1787 3/ 1787 4/ 1787 6/							
10301	1	ACCESS CHANNEL PRESENT SWITCH	LIST RESALE	1,890 1,890	F	72 69	SEE CCC	N/A	
		ONE SWITCH FOR EACH 32K OF 3500. OPTIONAL WITH MASTER 4 PACKAGE III.							
10309		**60 MODE/SDL OPTIONS** CONTAINS 60 MODE AND SET DESTRUCTIVE LOAD A (SDL) INSTRUCTION REQUIRED FOR RUNNING A DUAL MASTER SYSTEM. 60 MODE ALLOWS MAINFRAME TO BE PUT IN "RUN" CONDITION WITH AN "ASSOCIATED PROCESSOR" INTERRUPT. SDL ALLOWS EXECUTION OF THE "SET DESTRUCTIVE LOAD" INSTRUCTION IN PROGRAM STATE OF EXECUTIVE MODE.							
10309	1	60 MODE/SDL	LIST RESALE	N/C N/A		N/C N/A	SEE CCC	N/A	
		OPT APPLIES TO 3504 1/							
10309	2	60 MODE/SDL	LIST RESALE	N/C N/A		N/C N/A	SEE CCC	N/A	
		OPT APPLIES TO 3514 1/							

RESALE PRODUCTS ACTIVE

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO		PAGE % SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
						1 YEAR				
10310	1	SOUND SUPPRESSION KIT	LIST RESALE	N/A N/A		N/C	N/A	SEE CCC	N/A	
		A ONE TIME INSTALLATION CHARGE		473						
		SOUND REDUCTION OPTION FOR THE CDC 512 PRINTER, FOR USE IN HIGH CONCENTRATIONS OF THE PRINTERS OR WHERE QUIETER OPERATION IS OTHERWISE DESIREABLE. REDUCES A-WEIGHTED SOUND POWER OUTPUT BY 6 DECIBELS, WHICH CORRESPONDS TO AN APPROXIMATE LOUDNESS REDUCTION OF 45 PER CENT. OPT APPLIES TO 512 1/								
10326	1	MANUAL INTERRUPT KIT	LIST RESALE	N/C N/C		N/C	N/C	SEE CCC	N/C	
		REMOTES THE MANUAL INTERRUPT TO THE CONSOLE ON A 970 SYSTEM. OPT APPLIES TO 1711 X/ 1713 X/								
10326	2	MANUAL INTERRUPT KIT	LIST RESALE	N/C N/C		N/C	N/C	SEE CCC	N/C	
		REMOTES THE MANUAL INTERRUPT TO THE CRT CONSOLE ON 970 AND 979 SYSTEMS. INCLUDES A MANUAL INTERRUPT BUTTON AND 20 FOOT CABLE. OPT APPLIES TO 752 XX/								
10328	1	SECOND CHANNEL FEATURE	LIST RESALE	16,925 16,925	C	406	375	SEE CCC	53	B/1
		PROVIDES A SECOND CHANNEL CONNECTION ON A 7054-21 OR 7054-41 MASS STORAGE CONTROLLER MAKING THEM EQUIVALENT TO 7054-22 AND 7054-42 RESPECTIVELY.								
10333	1	MASS STORAGE CNTR CONVERSION	LIST RESALE	3,675 3,675	C	87	77	SEE CCC	N/C	
		A FIELD CONVERSION OPTION, WHEN INSTALLED IN A 7054-X/7054-2X MASS STORAGE CONTROLLER, WILL ALLOW THE RESULTING PRODUCT TO HANDLE DUAL-CAPABILITY 844-41/44 DISK STORAGE UNITS. THE DUAL-CAPACITY FEATURE WILL ALLOW THE 7054 TO INTERMIX 844-21 AND 844-41/44 DRIVES IN ANY COMBINATION. OPT APPLIES TO 7054 1/ 7054 2/ 7054 21/ OPT APPLIES TO 7054 22/								
10339	1	MASS STORAGE CONTROLLER	LIST RESALE	73,000 61,000	C	1,649	1,600	SEE CCC	149	B/1
		ALLOWS EXPANSION OF A 7639-1 TO THE EQUIVALENT OF A 7639-2 BY ADDING A SECOND IDENTICAL MASS STORAGE CONTROLLER TO THE EXISTING CABINET. EACH CONTROLLER ALLOWS TIME SHARED ACCESS BY FOUR STANDARD CDC CYBER 76 OR 7000 I/O CHANNELS OF UP TO FOUR 819 DISK STORAGE UNITS. CAPACITY OF EACH 819 IS 2.4 BILLION DATA BITS. EACH CONTROLLER ALLOWS FOR DUAL MAINFRAME OPERATION. THE 819 DSU ALLOWS FOR DUAL CONTROLLER ACCESS. RECEIVES FROM 7502 1/ SENDS TO 819 / OPT APPLIES TO 7639 1/								
10342	1	DTSPLAY SUBSYSTEM	LIST RESALE	56,000 N/A	C	1,600	1,560	SEE CCC	208	B/1
		DUAL 12-INCH CRTS WITH SYNCHRONIZER PROVIDING REAL-TIME PROGRAM MONITORING DURING CYBER 70/6000 SERIES COMPUTER OPERATIONS. THE SYNCHRONIZER IS CONTAINED IN A SEPARATE CABINET WITH SEPARATE POWER SUPPLY AND COOLING. RECEIVES FROM 72 / 73 / 74 /								
10354		**6000 ECS COUPLER** ALLOWS THE CENTRAL COMPUTER TO INTERFACE TO THE EXTENDED CORE STORAGE SUBSYSTEM.								
10354	1	6400/6500 ECS COUPLER	LIST RESALE	N/C N/A		N/C	N/C	SEE CCC	N/C	
		SENDS TO 663X 2/ 7030 / OPT APPLIES TO 641X / 651X /								
10354	2	6600 ECS COUPLER	LIST RESALE	N/C N/A		N/C	N/C	SEE CCC	N/C	
		SENDS TO 663X 2/ 7030 / OPT APPLIES TO 661X /								
10354	3	6400 ECS COUPLER WITH 10117	LIST RESALE	N/C N/A		N/C	N/C	SEE CCC	N/C	
		ALLOWS SECOND CPU TO INTERFACE TO ECS WHEN STANDARD OPTION 10117 IS ADDED TO 6400 WITH 10354-1 ECS COUPLER. SENDS TO 663X 2/ 7030 / OPT APPLIES TO 641X /								
10355	1	MODEL 71/72/73 ECS COUPLER	LIST RESALE	N/C N/A		N/C	N/C	SEE CCC	N/C	
		SENDS TO 663X 2/ 7030 / OPT APPLIES TO 71 / 72 / 73 /								
10355	2	MODEL 74 ECS COUPLER	LIST RESALE	N/C N/A		N/C	N/C	SEE CCC	N/C	
		SENDS TO 663X 2/ 7030 / OPT APPLIES TO 74 /								
10362	1	CYBER 70/6000 COLOR FOR 405	LIST RESALE	N/C N/A		N/A	N/A	SEE CCC	N/A	
		OPT APPLIES TO 405 /								

RESALE PRODUCTS ACTIVE

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
10362	2	CYBER 70/6000 COLOR FOR 580-XX	LIST	N/C		N/A	N/A	SEE CCC	N/A	
			RESALE	N/A						
		OPT APPLIES TO 580 1Z/ 580 1G/ 580 2G/								
10362	3	CYBER 70/6000 COLOR FOR 66X-X	LIST	N/C		N/A	N/A	SEE CCC	N/A	
			RESALE	N/A						
		OPT APPLIES TO 667 2/ 667 3/ 667 4/								
		OPT APPLIES TO 669 2/ 669 3/ 669 4/								
10362	4	CYBER 70/6000 COLOR FOR 844	LIST	N/C		N/A	N/A	SEE CCC	N/A	
			RESALE	N/A						
		OPT APPLIES TO 844 21/ 844 41/ 844 44/								
10362	5	CYBER 70/6000 COLOR 7054/7154	LIST	N/C		N/A	N/A	SEE CCC	N/A	
			RESALE	N/A						
		OPT APPLIES TO 7054 21/ 7054 22/ 7054 41/								
		OPT APPLIES TO 7154 42/ 7154 X/								
10362	6	CYBER 70/6000 COLOR FOR 7021	LIST	N/C		N/A	N/A	SEE CCC	N/A	
			RESALE	N/A						
		OPT APPLIES TO 7021 21/ 7021 22/ 7021 31/								
		OPT APPLIES TO 7021 32/								
10362	7	CYBER 70/6000 COLOR FOR 819	LIST	N/C		N/A	N/A	SEE CCC	N/A	
			RESALE	N/A						
		OPT APPLIES TO 819 1/ 819 11/ 819 21/								
10362	8	CYBER 70/6000 COLOR FOR 7622-X	LIST	N/C		N/A	N/A	SEE CCC	N/A	
			RESALE	N/A						
		OPT APPLIES TO 7622 1/ 7622 2/								
10362	9	CYBER 70/6000 COLOR FOR 7639-X	LIST	N/C		N/A	N/A	SEE CCC	N/A	
			RESALE	N/A						
		OPT APPLIES TO 7639 1/ 7639 2/ 7639 21/								
		OPT APPLIES TO 7639 22/								
10362	10	CYBER 70/6000 COLOR FOR 7654-X	LIST	N/C		N/A	N/A	SEE CCC	N/A	
			RESALE	N/A						
		OPT APPLIES TO 7654 1/ 7654 21/								
10362	11	CYBER 70/6000 COLOR FOR 67X	LIST	N/C		N/A	N/A	SEE CCC	N/A	
			RESALE	N/A						
		OPT APPLIES TO 67X /								
10362	12	CYBER 70/6000 COLOR FOR 65142	LIST	N/C		N/C	N/C	SEE CCC	N/C	
			RESALE	N/C						
		OPT APPLIES TO 65142 2/								
10362	13	CYBER 70/6000 COLOR FOR 3446-X	LIST	N/C		N/C	N/C	SEE CCC	N/A	
			RESALE	N/C						
		OPT APPLIES TO 3446 X/								
10362	14	CYBER 70/6000 COLOR FOR 415	LIST	N/C		N/C	N/C	SEE CCC	N/A	
			RESALE	N/C						
		OPT APPLIES TO 415 /								
10365	1	7154 SECOND CHANNEL OPTION	LIST	18,925	C	406	375	SEE CCC	50	B/1
			RESALE	18,925						
		PROVIDES A SECOND CHANNEL CONNECTION TO A 7154-1 MASS STORAGE CONTROLLER MAKING THE CONTROLLER EQUIVALENT TO A 7154-2.								
		OPT APPLIES TO 7154 1/								
10367	1	7154 ADDITIONAL CHAN. OPTION	LIST	8,000	C	200	184	SEE CCC	50	B/1
			RESALE	8,000						
		PROVIDES AN ADDITIONAL CHANNEL CONNECTION TO A 7154 MASS STORAGE CONTROLLER. UP TO TWO ADDITIONAL CHANNEL FEATURES MAY BE ADDED FOR A TOTAL OF FOUR CHANNEL ACCESS ON A 7154. 7154-1 REQUIRES INSTALLATION OF 10365-1 SECOND CHANNEL OPTION.								
		OPT APPLIES TO 7154 1/ 7154 2/ 7154 3/								
10370	1	66X ENHANCED AUTO LATCH HUB	LIST	N/A		N/C	N/A	SEE CCC	N/A	
			RESALE	N/A						
		A ONE TIME INSTALLATION CHARGE		678						
		MODIFIED AUTO LATCH HUB WHICH PROVIDES FOR MORE POSITIVE TAPE SUPPLY REEL MOUNTING AND ALIGNMENT. AVAILABLE ONLY ON UNITS WITH SERIAL NUMBERS AS FOLLOWS: 667-2 (147-230), 667-3 (166-253), 667-4 (231-385), 669-2 (203-452), 669-3 (245-463), 669-4 (309-665).								
		OPT APPLIES TO 667 X/ 669 X/								
10371	1	CYBER 71 CM UPGRADE	LIST	152,250	C	N/A	3,205	SEE CCC	1,394	B/1
			RESALE	152,250						
		ADDS 32,768 60-BIT OF CENTRAL MEMORY TO UPGRADE EITHER A 71-14 OR 71-24 TO AN EQUIVALENT 71-16 OR 71-26 RESPECTIVELY.								
		OPT APPLIES TO 71 14/ 71 24/								
10371	2	CYBER 71 CM UPGRADE	LIST	133,875	C	N/A	2,630	SEE CCC	1,396	B/1
			RESALE	133,875						
		ADDS 32,768 60-BIT WORDS OF CENTRAL MEMORY TO UPGRADE EITHER A 71-14 OR 71-26 (OR EQUIVALENT) TO AN EQUIVALENT 71-18 OR 71-28 RESPECTIVELY.								
		OPT APPLIES TO 71 14/ 71 16/ 71 24/								
		OPT APPLIES TO 71 26/								
10372		CYBER 71 PPU UPGRADES								
		OPTION ADDS SPECIFIED PERIPHERAL PROCESSORS TO THE CENTRAL COMPUTER. EACH PERIPHERAL PROCESSOR CONTAINS 4,095 12-BIT WORDS OF CORE STORAGE AND CAN ACCESS CENTRAL MEMORY AND INPUT/OUTPUT CHANNELS OF THE CENTRAL COMPUTER								
		OPT APPLIES TO 71 /								

RESALE PRODUCT	MOD	PRODUCTS ACTIVE DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/24MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
10372	1	MODEL 71 PPU UPGRADES	LIST	70,875	C	N/A	1,730	SEE CCC	240	B/1
			RESALE	70,875						
		ADDS 4 PERIPHERAL PROCESSORS AND 12 INPUT/OUTPUT CHANNELS TO A CENTRAL COMPUTER HAVING 10 PERIPHERAL PROCESSORS FOR A TOTAL OF 14 PERIPHERAL PROCESSORS AND 24 INPUT/OUTPUT CHANNELS.								
10372	2	MODEL 71 PPU UPGRADES	LIST	24,150	C	N/A	595	SEE CCC	181	B/1
			RESALE	24,150						
		ADDS 3 PERIPHERAL PROCESSORS TO A CENTRAL COMPUTER HAVING 14 PERIPHERAL PROCESSORS FOR TOTAL OF 17 PERIPHERAL PROCESSORS.								
10372	3	MODEL 71 PPU UPGRADES	LIST	24,150	C	N/A	595	SEE CCC	181	B/1
			RESALE	24,150						
		ADDS 3 PERIPHERAL PROCESSORS TO A CENTRAL COMPUTER HAVING 17 PERIPHERAL PROCESSORS FOR A TOTAL OF 20 PERIPHERAL PROCESSORS.								
10412	1	FINE SORT OPTION	LIST	1,905	C	53	45	SEE CCC	32	D/3
			RESALE	1,905						
		ENABLES THE DOCUMENT READER/SORTER TO PERFORM SORTING INDEPENDENTLY OF THE DATA ENTRY SYSTEMS CONTROLLER. SORTING MAY BE ACCOMPLISHED ON ANY ONE OF 15 DIGITS WITHIN A DATA FIELD SPECIFIED BY THE OPERATOR. OPT APPLIES TO 979 1/ 979 71/ 979 72/ OPT APPLIES TO 979 91/ 979 92/								
10413	1	OUTSORT OPTION	LIST	1,110	C	25	20	SEE CCC	21	D/3
			RESALE	1,110						
		ENABLES THE DOCUMENT READER/SORTER TO PERFORM SORTING TO TWO OUTPUT STACKERS FOR HIGH ACTIVITY ACCOUNT NUMBERED DOCUMENTS INDEPENDENTLY OF THE DATA ENTRY SYSTEMS CONTROLLER WHEN USED IN COMBINATION WITH THE FINE SORT FEATURE. OPT APPLIES TO 979 1/ 979 10/ 979 71/ OPT APPLIES TO 979 72/ 979 91/ 979 92/								
60128	1	DATA CHANNEL CONVERTER	LIST	8,560	C	252	246	SEE CCC	118	D/1
			RESALE	8,560						
		FIELD INSTALLATION CHARGE		193						
		INTERFACES 1700 COMPUTERS WITH 821, 841, 512, 657, OR 659 CONTROLLERS VIA A 1706 OR 1716 DATA CHANNEL. CONVERTER IS TO BE MOUNTED IN A 1706 OR 1716 (PRICE DOES NOT INCLUDE 1706 OR 1716). RECEIVES FROM 1706 / 1716 / SENDS TO 3518 / 3563 / 3565 / OPT APPLIES TO 1706 / 1716 /								
65030		MG 10-A 10KVA	LIST	9,385	C	265	260	SEE CCC	T AND M	/1
			RESALE	9,385						
65031		MG 10-B 10KVA	LIST	8,960	C	254	250	SEE CCC	T AND M	
			RESALE	8,960						
65032		MG 20 20KVA 50HZ	LIST	10,250	C	293	282	SEE CCC	T AND M	/1
			RESALE	10,250						
65033		MG 20 20KVA 60 HZ	LIST	10,250	C	293	282	SEE CCC	T AND M	/1
			RESALE	10,250						
65034		MG 30 30KVA 50HZ	LIST	11,885	C	334	328	SEE CCC	T AND M	/1
			RESALE	11,885						
65035		MG 30 30KVA 60HZ	LIST	10,890	C	304	298	SEE CCC	T AND M	/1
			RESALE	10,890						
65036		MG 40 40KVA 50HZ	LIST	13,715	C	388	381	SEE CCC	T AND M	/1
			RESALE	13,715						
		OPT APPLIES TO 71 /								
65037		MG 40 40KVA 60HZ	LIST	12,238	C	347	339	SEE CCC	T AND M	/1
			RESALE	12,238						
		OPT APPLIES TO 71 /								
65038		MG 20 20KVA 50-400 HZ	LIST	10,250	C	293	282	SEE CCC	T AND M	/1
			RESALE	10,250						
65039		MG 40 40KVA 50-400HZ	LIST	13,715	C	388	381	SEE CCC	T AND M	/1
			RESALE	13,715						

RESALE PRODUCTS ACTIVE

PRODUCT NUM	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/24MO	SALE 5 YEAR	PAGE NO MONTHLY CHARGE	MAINTENANCE PROD GRP
65109	1	BASIC SYSTEM CONTROLLER	LIST RESALE	50,500 50,500		N/A	N/A	SEE CCC	579	D/1

MICROPROGRAMMABLE PROCESSOR UNIT, 32-BIT WORD INCLUDES 4,096 WORDS OF R/W MICROMEMORY (CONTROL STORE) 168 NANOSECOND CYCLE TIME, EXPANDABLE TO 8,192 WORDS; MAIN MEMORY INTERFACE; A9 I/O PORT; DNA I/O PORT WHICH SUPPORTS UP TO 4 DNA TYPE DEVICES, REAL TIME CLOCK; POWER SUPPLY; BASIC TRANSFORM, BACKPLANE, CABLE SET, AND CHASSIS ENCLOSURE. HAS INTERFACE FOR RS-232 TTY COMPATIBLE DEVICE. ADDRESS CAPABILITY OF UP TO 4 MILLION 32-BIT WORDS OF MAIN MEMORY, INCLUDES 256 WORD AND 32 WORD REGISTER FILES. ALLOWS FOR 2,048 WORDS OF HIGH SPEED BUFFER OPTION, 168 NANOSECOND CYCLE TIME. UTILIZES 13 CARD SLOTS OF 26 AVAILABLE IN CHASSIS ENCLOSURE. IN ADDITION, FOUR CARD SLOTS RESERVED FOR THE FOLLOWING; TWO CARD SLOTS DEFINED FOR R/W MICROMEMORY (CONTROL STORE) EXTENSION OPTION (1870-2), ONE DEFINED FOR HIGH SPEED BUFFER OPTION, 2,048 WORDS (1870-2) AND ONE SLOT DEFINED FOR CASSETTE CONTROLLER. HIGH SPEED BUFFER EXPANDABLE FROM 2,048 WORDS TO 8,192 WORDS WITH SPECIAL QUOTE. APPLICATION DEPENDENT BACKPLANE/TRANSFORM EXTENSION FOR CARD SLOT UTILIZATION AVAILABLE BY SPECIAL QUOTE.

REDUCED PRICES FOR QUANTITY PURCHASES (STAIRCASE ARE -

QUANTITY	PURCHASE PRICE
1ST UNIT	50,500
2ND THRU 3RD UNITS	48,500
4TH THRU 5TH UNITS	46,500
6TH OR OVER UNITS	44,000

DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY. SEE PAGE 5 OF MAINTENANCE SERVICES SECTION.

SENDS TO 1811 1/ 1811 2/ 1828 1/
SENDS TO 1833 1/ 1860 1/ 1860 2/
SENDS TO 1860 3/ 1860 4/ 2558 1/
SENDS TO 65109 9/65109 10/65109 11/
AVA OPTIONS 1870 7/65109 13/65109 20/

65109	10	MULTIPORT MEMORY CONTROL CHASS	LIST RESALE	22,000 22,000		N/A	N/A	SEE CCC	177	D/1

PROVIDES CHASSIS FOR UP TO 256K WORDS OF 32 BIT MOS MAIN MEMORY, 8 PORT ACCESSES AND 4 BANK ACCESSES. INCLUDES BACKPLANE, POWER SUPPLY AND REQUIRED CONNECTORS, TWO PORT ACCESSES AND TWO BANK ACCESSES WHICH PERMITS UP TO 131K WORDS OF MEMORY. ADDITIONAL BANK OPTIONS ALLOW MEMORY EXPANSION. NO MEMORY IS INCLUDED. USE OPTION 65109-11 FOR PORT EXPANSION, 65109-12 FOR BANK EXPANSION, AND 65109-32 FOR MAIN STORAGE INCREMENTS.

RECEIVES FROM 65109 1/
SENDS TO 65109 32/
AVA OPTIONS 65109 11/65109 12/65109 13/
AVA OPTIONS 65109 20/

65109	20	EQUIPMENT CABINET	LIST RESALE	3,000 3,000		N/A	N/A	SEE CCC	N/A	

CABINET FOR 65109-1 AND 65109-10 CHASSIS UNITS. UP TO THREE CHASSIS UNITS CAN BE ENCLOSED IN THIS CABINET. CHASSIS MIX NOT TO EXCEED TWO 65109-1 IN A GIVEN CABINET.

OPT APPLIES TO65109 1/65109 10/

65109	32	MAIN MEMORY STORAGE	LIST RESALE	28,000 28,000		N/A	N/A	SEE CCC	210	D/1

PROVIDES 32,768 WORDS OF 32-BIT READ/WRITE MOS MEMORY. ONE PARITY BIT PROVIDED FOR EACH 8-BIT BYTE.

REDUCED PRICES FOR QUANTITY PURCHASED (STAIRCASE) ARE -

QUANTITY	PURCHASE PRICE
1ST UNIT	28,000
2ND THRU 3RD UNITS	27,000
4TH THRU 6TH UNITS	25,000
7TH THRU 9TH UNITS	25,000
10TH THRU 12TH UNITS	23,000
13TH THRU 14TH UNITS	21,000
17TH OR OVER UNITS	17,000

DENSITY DISCOUNTS ON MAINTENANCE ALSO APPLY. SEE PAGE 5 OF MAINTENANCE SERVICES SECTION.

OPT APPLIES TO65109 10/65109 12/

65110	1	PROM LOADER	LIST RESALE	1,000 N/A		N/A	N/A	SEE CCC	T AND M	/1

OCCUPIES ONE DSA POSITION. CONTROLS LOADING OF 1784 MEMORY WITH CONTENTS (UP TO 1024 WORDS) OF P.R.O.M. OPTION AVAILABLE IN 256 WORD INCREMENTS. MEMORY LOADING ADDRESS AND P.R.O.M. PROGRAM IS SWITCH SELECTABLE.

SENDS TO 1784 1/ 1784 1/ 1784 2/
AVA OPTIONS 65110 2/

65117	1	2X PPU OPTION	LIST RESALE	N/C N/C		N/C	N/C	SEE CCC	N/A	

ALLOWS THE 6676 TO OPERATE AT A 1 MHZ TRANSFER RATE ON A CYBER 170 CHANNEL WHICH IS SELECTED TO OPERATE AT A MAXIMUM TRANSFER RATE OF 2 MHZ.

OPT APPLIES TO 6676 /

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/2400	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
65142		MASS STORAGE EXTENDER EACH MASS STORAGE EXTENDER ELEMENT OCCUPIES ONE PORT ON THE DISK DRIVE CONTROLLER AND CAN ACCESS UP TO EIGHT DISK DRIVES. THE INDIVIDUAL ELEMENTS MAY BE DRIVEN FROM DIFFERENT DISK DRIVE CONTROLLERS. BOTH 844-2X AND 844-4X DRIVES WILL OPERATE ON THIS OPTION. OPT APPLIES TO 3554 1/ 7054 1/ 7054 2/ OPT APPLIES TO 7054 21/ 7054 22/ 7054 41/ OPT APPLIES TO 7054 42/ 7154 1/ 7154 2/ OPT APPLIES TO 7154 3/ 7154 4/ 7651 21/ OPT APPLIES TO 7654 1/								
65142	2	BASIC MASS STORAGE EXTENDER BASIC EXTENDER INCLUDES A CABINET AND TWO MASS STORAGE EXTENDER ELEMENTS. CABINET HAS SPACE FOR ADDITION OF ONE 65142-4 EXTENTER EXPANSION. COLOR IS CYBER 170. AVA OPTIONS 10362 12/65142 4/	LIST RESALE	40,000 40,000	C	839	768	SEE CCC	181	B/1
65142	4	EXTENDER EXPANSION INCLUDES TWO MASS STORAGE EXTENDER ELEMENTS. OPT APPLIES TO65142 2/	LIST RESALE	28,500 28,500	C	594	546	SEE CCC	117	B/1

POLICY

INACTIVE HARDWARE PRODUCTS

Definition:

Inactive Hardware Products are listed for reference only. Inactive products are no longer in production, and are not marketed. Products in Inactive will generally not be refurbished, nor will maintenance be offered for units ordered after the product has been moved to Inactive.

Price pages include:

1. Product number
2. Product name (Descriptive product data is dropped at time of transfer to Inactive status.)
3. Product price data

   Listed are purchase prices (List and Resale) and purchase conversion plan codes (as defined in the General Policy section), monthly lease prices for one, three, and five year lease.
4. Maintenance price data

   - Basic Monthly Maintenance Charge as defined in the Maintenance Policy section.
   - Extended Maintenance Product Group as defined in the Maintenance Policy section and is used for determining additional maintenance charges for extended coverage.
   - The maintenance prices contained herein apply to the contiguous 48 states and Hawaii.

   PLEASE NOTE THAT CONTRACTUAL MAINTENANCE COVERAGE MAY NOT BE OFFERED ON INACTIVE PRODUCTS (REFER TO MAINTENANCE POLICY).
5. Purchase conversion will be accepted under existing policies (see General Policy page 6)
6. Availability

   Inactive Products generally

   - are not available from inventory
   - are not refurbished
   - have no usable returns forecast.

INACTIVE HARDWARE PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	RESALE PRICE	MONTHLY LEASE PRICE 1 YEAR	CCC BASE 3YR/24MO	MAINTENANCE MONTHLY CHARGE	PROD GRP
18	10	PROCESSOR	13,700	B	13,700	494	457	91	D/3
71	14	CENTRAL COMPUTER	305,000	C	305,000	N/A	6,775	4,050	B/1
71	16	CENTRAL COMPUTER	457,250	C	457,250	N/A	9,980	5,444	B/1
71	18	CENTRAL COMPUTER	591,125	C	591,125	N/A	12,610	6,829	B/1
71	24	CENTRAL COMPUTER	462,500	C	462,500	N/A	10,625	5,129	B/1
71	26	CENTRAL COMPUTER	614,750	C	614,750	N/A	13,990	6,523	B/1
71	28	CENTRAL COMPUTER	748,625	C	748,625	N/A	16,460	7,938	B/1
72	12	CENTRAL COMPUTER	556,500	C	556,500	14,775	13,850	3,768	B/1
72	13	CENTRAL COMPUTER	787,500	C	787,500	21,335	19,360	4,635	B/1
72	14	CENTRAL COMPUTER	1,076,250	C	1,076,250	27,840	25,140	5,505	B/1
72	16	CENTRAL COMPUTER	1,390,750	C	1,390,750	36,110	31,545	7,394	B/1
72	18	CENTRAL COMPUTER	1,648,500	C	1,648,500	42,890	36,805	9,282	B/1
72	24	CENTRAL COMPUTER	1,307,250	C	1,307,250	34,455	30,455	6,971	B/1
72	26	CENTRAL COMPUTER	1,611,750	C	1,611,750	42,725	36,870	8,860	B/1
72	28	CENTRAL COMPUTER	1,879,500	C	1,879,500	49,505	42,120	10,749	B/1
73	12	CENTRAL COMPUTER	682,500	C	682,500	17,920	16,925	3,789	B/1
73	13	CENTRAL COMPUTER	913,500	C	913,500	24,480	22,440	4,658	B/1
	14	CENTRAL COMPUTER	941,575	C	941,575	21,685	19,750	5,526	B/1
	16	CENTRAL COMPUTER	1,146,075	C	1,146,075	29,955	26,155	7,416	B/1
	18	CENTRAL COMPUTER	1,413,825	C	1,413,825	36,735	31,415	9,305	B/1
	24	CENTRAL COMPUTER	1,062,075	C	1,062,075	27,930	25,130	6,934	B/1
	26	CENTRAL COMPUTER	1,366,575	C	1,366,575	36,200	31,535	8,883	B/1
	28	CENTRAL COMPUTER	1,634,925	C	1,634,925	42,980	36,795	10,773	B/1
74	12	CENTRAL COMPUTER	1,795,500	B	1,795,500	47,135	46,150	8,719	B/1
74	13	CENTRAL COMPUTER	2,026,500	B	2,026,500	53,695	51,665	9,232	B/1
74	14	CENTRAL COMPUTER	1,620,675	C	1,620,675	42,140	40,200	9,746	B/1
74	16	CENTRAL COMPUTER	1,925,175	C	1,925,175	50,410	44,410	12,361	B/1
74	18	CENTRAL COMPUTER	2,192,925	C	2,192,925	57,190	51,870	10,934	B/1
74	24	CENTRAL COMPUTER	2,735,250	C	2,735,250	70,780	67,495	10,596	B/1
74	26	CENTRAL COMPUTER	3,039,750	C	3,039,750	79,050	74,100	11,192	B/1
74	28	CENTRAL COMPUTER	3,307,500	C	3,307,500	85,830	79,360	11,785	B/1
LGP	21	COMPUTER MAINFRAME	14,250	C	14,250	455	446	216	D/1
101		VISUAL SCOPE DISPLAY	1,850	C	1,850	31	31	18	D/3
121	03	FLEXOWRITER	5,850	C	5,850	145	144	94	D/3
124	1	TRANSCEIVER	1,600	A	1,600	37	37	12	D/3
160		COMPUTER-4K	63,000	C	7,900	1,400	340	433	D/3
160	A	COMPUTER-8K	94,500	C	13,000	2,125	327	489	D/3
160	G	COMPUTER-8K	176,500	C	86,250	3,090	3,415	927	D/3
161		ON-LINE T/O TYPEWRITER	11,640	C	3,800	190	153	220	D/3
162	S	MAGNETIC TAPE SYNCHRONIZER	19,030	C	19,030	395	N/A	253	D/3
162	1	MAGNETIC TAPE SYNCHRONIZER	21,000	C	6,100	425	219	240	D/3
162	2	MAGNETIC TAPE SYNCHRONIZER	29,500	C	9,900	625	354	264	D/3
162	3	MAGNETIC TAPE SYNCHRONIZER	26,550	C	10,950	545	381	237	D/3
165	2	INCREMENTAL PLOTTER	10,070	C	8,600	225	194	188	D/3
166	2	LINE PRINTER	31,530	C	5,000	395	185	T AND M	D/3
167	1	CARD READER	14,500	C	14,500	280	278	T AND M	D/3
167	2	CARD READER	19,000	C	19,000	335	332	T AND M	D/3
168	1	AUXILIARY ARITHMETIC UNIT	12,500	C	1,625	285	174	260	D/3
169	1	AUXILIARY MEMORY UNIT	52,500	C	5,800	1,200	234	211	D/3
169	2	AUXILIARY MEMORY UNIT	86,000	C	6,100	1,950	272	313	D/3
169	G3	AUXILIARY MEMORY UNIT-24K	161,000	C	161,000	3,770	3,691	608	D/3
170		CARD PUNCH CONTROLLER	15,370	C	6,170	310	191	124	D/3
170	G	CARD PUNCH CONTROLLER	14,500	C	4,900	295	294	134	D/3
171	G2	INPUT/OUTPUT MODULE	50,500	C	50,500	1,130	1,109	265	D/3
172	3	CENTRAL COMPUTER	697,265	B	697,265	10,690	9,675	2,365	B/1
174	G	PAPER TAPE READER PUNCH	12,500	C	6,250	200	196	343	D/3
177		CARD READER CONTROLLER	5,300	C	3,830	99	98	23	D/3
211	B	ENTRY AND DISPLAY STATION	3,730	C	2,000	66	66	55	D/3
211	F	DISPLAY AND ENTRY STATION	4,200	C	4,200	120	115	60	D/3
211	1	DISPLAY/ENTRY STATION	4,240	C	2,000	110	87	48	D/3
211	2	DISPLAY/ENTRY STATION	4,435	C	2,000	125	87	48	D/3
211	4	DISPLAY/ENTRY STATION	3,500	C	2,400	70	70	60	D/3
211	11	DISPLAY/ENTRY STATION	2,415	C	2,415	74	74	56	D/3
211	12	DISPLAY/ENTRY STATION	2,415	C	2,415	74	74	56	D/3
211	13	DISPLAY/ENTRY STATION	2,625	C	2,625	88	88	59	D/3
211	14	DISPLAY/ENTRY STATION	2,625	C	2,625	82	82	59	D/3
211	21	DISPLAY/ENTRY STATION	2,415	C	2,415	74	74	59	D/3
211	22	DISPLAY/ENTRY STATION	2,415	C	2,415	74	74	59	D/3
211	23	DISPLAY/ENTRY STATION	2,625	C	2,625	88	88	59	D/3
211	24	DISPLAY/ENTRY STATION	2,625	C	2,625	92	92	61	D/3
211	51	DISPLAY/ENTRY STATION	2,415	C	2,415	74	74	59	D/3
211	52	DISPLAY/ENTRY STATION	2,415	C	2,415	74	74	59	D/3
211	53	DISPLAY/ENTRY STATION	2,625	C	2,625	82	82	61	D/3
211	54	DISPLAY/ENTRY STATION	2,625	C	2,625	82	82	61	D/3
211	55	DISPLAY/ENTRY STATION	2,415	C	2,415	74	74	59	D/3
211	56	DISPLAY/ENTRY STATION	2,415	C	2,415	74	74	59	D/3
211	57	DISPLAY/ENTRY STATION	2,625	C	2,625	82	82	61	D/3
211	58	DISPLAY/ENTRY STATION	2,625	C	2,625	82	82	61	D/3
214	11	REMOTE DISPLAY/ENTRY TERMINAL	4,410	C	4,410	147	143	94	D/3
214	12	REMOTE DISPLAY/ENTRY TERMINAL	4,410	C	4,410	147	143	94	D/3
215	21	DATA SET ADAPTER/POLLER	3,129	C	3,129	90	89	131	D/3
215	22	DATA SET ADAPTER/POLLER	3,129	C	3,129	90	89	105	D/3
216	2	INQUIRY/RETRIEVAL CONTROLLER	24,650	C	8,000	645	327	176	D/3
216	51	REMOTE TERMINAL CONTROLLER	9,975	C	9,975	347	344	198	D/3
216	52	REMOTE TERMINAL CONTROLLER	9,975	C	9,975	347	344	198	D/3
216	53	REMOTE TERMINAL CONTROLLER	10,185	C	10,185	368	361	198	D/3
216	54	REMOTE TERMINAL CONTROLLER	10,185	C	10,185	368	361	198	D/3
216	55	REMOTE TERMINAL CONTROLLER	9,975	C	9,975	347	344	198	D/3
216	56	REMOTE TERMINAL CONTROLLER	9,975	C	9,975	347	344	198	D/3
216	57	REMOTE TERMINAL CONTROLLER	10,185	C	10,185	368	361	198	D/3
216	58	REMOTE TERMINAL CONTROLLER	10,185	C	10,185	368	361	198	D/3
217		SINGLE STATION ENTRY/DISPLAY	14,000	C	9,600	340	218	98	D/3
217	2	REMOTE ENTRY/DISPLAY STATION	4,750	C	4,750	250	248	123	D/3
217	11	REMOTE DISPLAY/ENTRY CONTROL	4,750	C	4,200	250	248	103	D/3
217	12	REMOTE DISPLAY/ENTRY CONTROL	4,750	C	4,200	250	248	103	D/3
217	13	REMOTE DISPLAY/ENTRY CONTROL	4,750	C	4,200	250	248	103	D/3
217	14	REMOTE DISPLAY/ENTRY CONTROL	4,750	C	4,200	250	248	103	D/3
218	1	OUTPUT STATION	8,436	C	4,000	255	250	60	D/3
218	2	OUTPUT STATION	8,480	C	4,000	255	202	60	D/3
218	4	OUTPUT STATION	9,490	C	4,000	245	243	86	D/3
218	21	OUTPUT STATION	5,985	C	5,985	200	195	80	D/3
218	22	OUTPUT STATION	5,985	C	5,985	200	195	80	D/3
218	51	OUTPUT STATION	5,985	C	5,985	200	195	92	D/3
218	52	OUTPUT STATION	5,985	C	5,985	200	195	90	D/3
218	55	OUTPUT STATION	5,985	C	5,985	200	195	80	D/3
218	56	OUTPUT STATION	5,985	C	5,985	200	195	69	D/3
222	1	TERMINAL LINE PRINTER	25,440	C	25,440	465	457	425	D/3
222	2	TERMINAL LINE PRINTER	12,500	C	12,500	390	381	431	D/3
222	11	TERMINAL LINE PRINTER	12,500	C	11,550	390	381	431	D/3
222	12	TERMINAL LINE PRINTER	12,500	C	11,550	390	381	431	D/3

INACTIVE HARDWARE PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	RESALE PRICE	MONTHLY LEASE PRICE CCC BASE 1 YEAR	3YR/24MO	MAINTENANCE MONTHLY CHARGE	PROD GRP
222	13	TERMINAL LINE PRINTER	12,500	C	11,550	390	381	431	D/3
222	14	TERMINAL LINE PRINTER	12,500	C	11,550	390	381	431	D/3
222	51	TERMINAL LINE PRINTER	12,128	C	12,128	410	401	401	D/3
222	52	TERMINAL LINE PRINTER	12,128	C	12,128	410	401	401	D/3
222	55	TERMINAL LINE PRINTER	12,128	C	12,128	410	401	401	D/3
222	56	TERMINAL LINE PRINTER	12,128	C	12,128	410	401	401	D/3
224	1	TERMINAL CARD READER	6,500	C	6,500	130	129	98	D/3
224	2	TERMINAL CARD READER	5,750	C	5,750	110	109	88	D/3
224	11	TERMINAL CARD READER	5,750	C	5,250	110	109	90	D/3
224	12	TERMINAL CARD READER	5,750	C	5,250	110	109	90	D/3
224	13	TERMINAL CARD READER	5,750	C	5,250	110	109	90	D/3
224	14	TERMINAL CARD READER	5,750	C	5,250	110	109	90	D/3
241	1	GRAPHICS SUBSYSTEM	55,650	C	30,000	1,649	1,516	697	D/3
243	1	GRAPHICS SUBSYSTEM	55,650	C	30,000	1,591	1,559	697	D/3
248	2	MEMORY EXPANSION	7,560	S	4,000	242	241	105	D/3
252		DISPLAY CONSOLE	28,000	C	26,000	815	799	T AND M	D/3
252	2	GRAPHICS DISPLAY	38,000	C	24,000	1,170	1,147	T AND M	D/3
253	2	HARDCOPY RECORDER	48,000	C	25,000	1,365	1,337	T AND M	D/3
254	2	MICROFILM RECORDER	51,960	A	51,960	1,225	1,202	T AND M	D/3
274		DIGIGRAPHICS CONSOLE	28,000	D	28,000	1,040	990	240	D/3
303	1	COMMUNICATIONS EXPANSION UNIT	2,600	C	1,300	56	43	26	D/3
304	1	COMMUNICATIONS MULTIPLEXER	16,960	C	8,000	375	326	107	D/3
311		DATA SET ADAPTER	4,500	C	4,500	75	75	32	D/3
311	A	DATA SET ADAPTER	5,700	C	3,600	120	119	44	D/3
311	2	DATA SET ADAPTER	6,045	C	3,000	125	87	44	D/3
312	B	DATA SET ADAPTER	8,300	C	4,500	165	164	60	D/3
313		DATA SET ADAPTER	3,925	C	1,600	69	49	31	D/3
314		DATA SET ADAPTER	6,680	C	2,692	105	76	48	D/3
317		DATA SET ADAPTER	4,190	C	1,920	67	52	31	D/3
318		DATA SET ADAPTER	7,030	C	2,740	110	82	50	D/3
319		DATA SET ADAPTER	4,615	C	2,400	81	65	33	D/3
321		TELETYPEWRITER TERMINAL UNIT	2,230	C	1,200	34	27	26	D/3
323		TELETYPEWRITER TERMINAL UNIT	1,380	C	650	22	16	13	D/3
326		TRUNK LINE ADAPTER	3,710	C	3,710	58	58	53	D/3
328		DATA MODEM	1,275	D	1,275	28	28	11	D/3
330		DATA SET ADAPTER	2,395	C	883	42	33	21	D/3
331		DATA SET ADAPTER	3,055	C	1,500	56	43	24	D/3
332	1	DATA SET ADAPTER	1,965	C	780	42	33	21	D/3
364	3	COMMUNICATIONS MULTIPLEXER	18,700	B	18,700	485	475	139	D/3
407	1	CARD READER	24,910	A	24,910	360	354	163	D/1
417	1	CARD PUNCH	20,140	A	20,140	250	245	178	D/3
452		SAMPLE AND HOLD CHANNELS	2,810	C	2,810	70	69	18	D/1
501		LINE PRINTER	7,500	C	7,500	700	290	600	D/1
505		LINE PRINTER	28,620	C	7,500	480	359	523	D/1
512	1	LINE PRINTER	50,085	C	37,565	819	605	415	D/1
517	1	TRAIN PRINTER	47,700	A	47,700	735	723	564	D/1
595	1	TRAIN CARTRIDGE	3,339	C	3,339	81	80	60	D/1
595	2	TRAIN CARTRIDGE	3,339	C	3,339	81	80	60	D/1
595	3	TRAIN CARTRIDGE	3,339	C	3,339	81	80	60	D/1
595	4	ASCII TRAIN CARTRIDGE	3,339	C	3,339	81	80	60	D/1
595	5	TRAIN CARTRIDGE	3,339	C	3,339	81	80	60	D/1
595	6	TRAIN CARTRIDGE	3,339	C	3,339	81	80	60	D/1
601		MAGNETIC TAPE TRANSPORT	13,500	C	5,260	200	40	275	D/1
603		MAGNETIC TAPE TRANSPORT	25,000	C	7,500	460	55	301	D/1
604		MAGNETIC TAPE TRANSPORT	15,000	C	6,000	520	115	312	D/1
604	2	MAGNETIC TAPE TRANSPORT	21,250	C	6,000	520	115	299	D/1
605		MAGNETIC TAPE TRANSPORT	21,500	C	21,500	425	N/A	325	D/1
606		MAGNETIC TAPE TRANSPORT	38,000	C	5,600	730	109	351	D/1
607		MAGNETIC TAPE TRANSPORT	20,000	C	10,000	805	326	358	D/1
607	2	MAGNETIC TAPE TRANSPORT	26,960	C	10,000	805	326	343	D/1
608		MAGNETIC TAPE TRANSPORT	17,252	C	17,252	305	304	225	D/1
609		MAGNETIC TAPE TRANSPORT	17,252	C	17,252	305	304	225	D/1
657	1	MAGNETIC TAPE TRANSPORT	18,735	C	18,785	336	332	138	D/1
657	2	MAGNETIC TAPE TRANSPORT	30,608	C	30,668	452	446	226	D/1
657	3	MAGNETIC TAPE TRANSPORT	36,819	C	36,819	704	691	263	D/1
657	4	MAGNETIC TAPE TRANSPORT	48,972	C	48,972	851	834	280	D/1
659	1	MAGNETIC TAPE TRANSPORT	19,478	C	19,478	342	338	157	D/1
659	2	MAGNETIC TAPE TRANSPORT	27,547	C	27,547	493	475	213	D/1
659	3	MAGNETIC TAPE TRANSPORT	40,068	C	40,068	720	708	290	D/1
659	4	MAGNETIC TAPE TRANSPORT	46,680	C	46,080	851	834	309	D/1
		1 TO 3 UNITS	15,500	C	15,000	1,185	1,164	T AND M	D/1
		4 OR 5 UNITS	44,000	C	15,000	1,185	1,164	T AND M	D/1
		1 TO 3 UNITS	25,265	C	25,265	1,530	1,500	T AND M	D/1
		4 TO 9 UNITS	25,265	C	25,265	1,530	1,500	T AND M	D/1
		10 OR MORE UNITS	14,000	C	14,000	1,530	1,500	T AND M	D/1
		1 TO 3 UNITS	50,000	C	10,000	1,075	1,055	750	D/1
		4 OR 5 UNITS	44,000	C	10,000	1,075	1,055	750	D/1
711	121	80 IMPACT PRINTER STATION	4,001	C	4,001	162	158	96**	D/3
731	10	LOW SPEED BATCH (MODE II)	28,800	C	28,800	982	775	481	D/3
731	12	LOW SPEED BATCH (200 UT MODE)	28,800	C	28,800	982	775	481	D/3
731	106	2780 (MODEL 1) EMULATION	N/A		N/C	N/C	N/C	N/A	
		A ONE TIME INSTALLATION CHARGE	53						
732	12	MED SPEED BATCH (200 UT MODE)	43,400	C	41,932	1,426	1,114	698	D/3
781	1	1/2 INCH MAGNETIC TAPE CLEANER	2,100	C	2,100	100	N/A	T AND M	D/3
		1 TO 3 UNITS	2,625		2,500	N/A	N/A	T AND M	D/3
		4 TO 9 UNITS	2,494		2,375	N/A	N/A	T AND M	D/3
		10 UNITS	2,363		2,250	N/A	N/A	T AND M	D/3
813		DISK FILE	155,820	C	55,000	3,105	1,305	1,269	D/1
814		DISK FILE	255,930	C	90,000	5,110	2,174	1,607	D/1
821	1	DATA FILE	155,820	E	155,820	2,988	2,831	1,027	D/1
821	2	DATA FILE	299,380	E	289,380	5,376	5,268	1,753	D/1
841	3	MULTIPLE DISK DRIVE	71,400	C	60,690	1,940	1,908	567	D/1
841	4	MULTIPLE DISK DRIVE	97,650	C	83,003	2,545	1,923	669	D/1
841	5	MULTIPLE DISK DRIVE	107,100	C	91,035	3,380	2,112	770	D/1
841	6	MULTIPLE DISK DRIVE	133,350	C	113,348	3,565	2,427	872	D/1
841	7	MULTIPLE DISK DRIVE	142,800	C	121,380	3,990	2,816	971	D/1
841	8	MULTIPLE DISK DRIVE	169,050	C	143,693	4,360	3,331	1,075	D/1
841	11	MULTIPLE DISK DRIVE MODULE	26,250	C	22,313	588	515	148	D/1
841	12	MULTIPLE DISK DRIVE MODULE	35,700	C	30,345	977	704	240	D/1
841	21	MULTIPLE DISK DRIVE MODULE	29,820	C	25,347	667	598	157	D/1
841	22	MULTIPLE DISK DRIVE MODULE	42,210	C	35,879	1,124	840	298	D/1
852		DISK STORAGE DRIVE	17,530	C	5,000	340	98	126	D/3
853		DISK STORAGE DRIVE	16,430	C	7,500	315	136	127	D/3
854		DISK STORAGE DRIVE	20,000	C	10,000	470	218	166	D/1
		1 TO 3 UNITS	20,000	C	10,000	470	218	166	D/1
		4 UNITS OR MORE	15,000	C	10,300	470	218	166	D/1
863		DRUM STORAGE	148,400	C	80,000	2,645	1,196	T AND M	D/1
865		DRUM STORAGE	153,700	C	90,000	2,530	1,900	T AND M	D/1
924	A8	COMPUTER	231,000	C	231,000	8,390	8,212	2,394	D/1
924	32	COMPUTER	273,000	C	273,000	10,150	9,930	2,912	D/1

INACTIVE HARDWARE PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	RESALE PRICE	MONTHLY LEASE PRICE 1 YEAR	CCC BASE 3YR/24MO	MAINTENANCE MONTHLY CHARGE	PROD GRP
925		MAGNETIC TAPE CONTROLLER	56,000	C	55,000	1,505	1,473	306	D/1
926		MAGNETIC TAPE CONTROLLER	77,000	C	77,000	2,410	2,359	434	D/1
970	25	DISTRIBUTED CLUSTER LOCAL CONT	2,015	C	N/A	80	68	33	D/3
970	26	DISTRIBUTED CLUSTER REMOTE CON	4,495	C	N/A	149	145	60	D/3
970	212	DATA ENTRY SYSTEM	66,000	C	N/A	1,540	1,330	748	D/3
979	71	BANK ENTRY SUBSYSTEM	175,745	C	175,745	4,262	3,661	1,210	D/3
979	91	BANK ENTRY SUBSYSTEM	175,745	C	175,745	4,262	3,661	1,224	D/3
0107		BADGE READER	1,590	C	1,590	35	35	28	D/3
0107	B	BADGE READER	1,635	C	1,635	36	36	33	D/3
1010	C	INPUT STATION	2,950	C	2,950	46	46	71	D/3
1010	E	INPUT STATIONS	3,200	C	3,200	51	50	76	D/3
1020		INPUT STATION	3,130	C	3,130	61	60	68	D/3
1021		INPUT STATION	3,395	C	3,395	66	66	75	D/3
1023		DATA COLLECTOR	3,200	C	3,200	63	62	T AND M	D/3
1531	A	MERCURY-WETTED RELAY MPLX	2,000	C	2,000	60	59	32	D/1
1581	B	LOGGING TYPEWRITER INTERFACE	4,560	E	4,560	145	144	53	D/1
1581	C	LOGGING TYPEWRITER INTERFACE	5,620	F	5,620	175	174	69	D/1
1581	D	LOGGING TYPEWRITER INTERFACE	6,680	E	6,680	205	202	81	D/1
1582	A	TYPEWRITER AND DRIVER UNIT	3,710	F	3,710	195	194	104	D/1
1611		LINE PRINTER CONTROLLER	30,210	C	11,000	770	223	155	C/3
1612		HIGH SPEED LINE PRINTER	77,300	C	9,500	1,550	218	1,039	C/3
1614		CARD READER CONTROLLER	16,500	C	4,950	970	136	48	C/3
1615		MAGNETIC TAPE CONTROLLER-1X8	69,500	C	6,700	1,910	191	414	C/3
1703		STORAGE INCREMENT-16K	38,500	C	38,500	920	914	280	D/3
1704		COMPUTER	18,000	D	18,000	830	480	206	D/3
1705		INTERRUPT DATA CHANNEL	2,600	D	2,000	105	50	52	D/3
1706		BUFFERED DATA CHANNEL	7,560	C	7,560	342	188	59	D/3
1708		STORAGE INCREMENT	4,000	D	4,000	230	80	71	D/3
1709		STORAGE INCREMENT-8K	16,000	C	16,000	440	435	140	D/3
1711		TELETYPEWRITER	2,000	D	2,000	125	78	79	D/3
1711	2	TELETYPEWRITER	2,000	D	2,000	125	99	73	D/3
1711	3	TELETYPEWRITER	2,000	D	2,000	125	99	73	D/3
1712		TELETYPEWRITER	4,800	C	4,800	145	144	106	D/3
1713		TELETYPEWRITER	2,332	D	2,332	215	119	114	D/3
1713	2	TELETYPEWRITER	2,332	D	2,332	215	160	114	D/3
1713	3	TELETYPEWRITER	2,332	D	2,332	215	160	114	D/3
1713	4	TELETYPEWRITER	1,680	B	1,680	55	54	54	D/3
1713	5	TELETYPEWRITER	5,040	B	5,040	133	126	72	D/3
1716		COUPLING DATA CHANNEL	19,163	C	19,163	704	546	114	D/3
1717	1	DATA SET CONTROLLER	27,825	C	27,825	631	520	215	D/3
1718		SATELLITE COUPLER	8,978	C	8,978	315	247	40	D/3
1721		PAPER TAPE READER	1,000	D	1,000	115	30	61	D/3
1722		PAPER TAPE READER WITH HANDLER	3,980	D	3,980	170	125	83	D/3
1723		PAPER TAPE PUNCH	1,400	D	1,400	140	45	T AND M	D/3
1724		PAPER TAPE PUNCH WITH HANDLER	4,263	D	4,263	180	130	83	D/3
1726	1	CARD READER CONTROLLER	13,356	E	13,356	200	199	103	D/3
1728		CARD READ-PUNCH CONTROLLER	9,461	C	9,461	237	235	69	D/3
1729		CARD READER	9,000	C	9,000	265	262	T AND M	D/3
1729	2	CARD READER	7,000	D	7,000	340	220	143	D/3
1731		MAGNETIC TAPE CONTROLLER	9,540	C	9,540	255	223	71	D/3
1732		MAGNETIC TAPE CONTROLLER	8,000	C	8,000	330	250	88	D/3
1733	1	DISK STORAGE DRIVE CONTROLLER	11,025	C	11,025	389	389	97	D/3
1738		DISK STORAGE DRIVE CONTROLLER	12,720	A	7,500	350	218	69	D/3
1739	1	CARTRIDGE DISK SUBSYSTEM	13,500	C	13,500	500	450	204	D/3
1740		PRINTER CONTROLLER	24,390	C	14,000	503	449	116	D/3
1742		LINE PRINTER WITH CONTROL	14,940	D	14,940	505	445	361	D/3
1742	120	LINE PRINTER AND CONTROLLER	52,500	B	52,500	1,641	1,600	377	D/3
1744		DIGIGRAPHICS CONTROLLER	21,000	D	21,000	960	750	385	D/3
1744	2	GRAPHICS CONTROLLER	26,600	D	26,000	1,190	800	456	D/3
1745	1	INQUIRY/RETRIEVAL CONTROLLER	26,130	C	8,000	675	294	154	D/3
	11	LOCAL TERMINAL CONTROLLER	9,975	C	9,975	357	354	174	D/3
	12	LOCAL TERMINAL CONTROLLER	9,975	C	9,975	357	354	174	D/3
1745	13	LOCAL TERMINAL CONTROLLER	10,185	C	10,185	405	394	174	D/3
	14	LOCAL TERMINAL CONTROLLER	10,185	C	10,185	378	366	174	D/3
1746	1	SINGLE STATION ENTRY/DISPLAY	8,400	C	8,400	321	314	77	D/3
1747		DATA SET CONTROLLER	18,965	F	18,345	394	389	114	D/3
1748		MULTIPLEXER CONTROLLER	16,921	F	16,921	394	389	131	D/3
1748	2	MULTIPLEXER CONTROLLER	16,921	F	16,921	394	389	131	D/3
1749		COMMUNICATION TERMINAL CONTROL	13,780	C	6,400	370	272	137	D/3
1750		DCB TERMINATOR	7,350	C	7,350	263	158	70	D/3
1751	C	DRUM INTERFACE AND STORAGE	48,760	E	48,760	1,885	1,848	398	D/3
1751	F	DRUM INTERFACE AND STORAGE	55,120	F	55,120	2,070	2,028	439	D/3
1751	G	DRUM INTERFACE AND STORAGE	61,480	F	61,480	2,260	2,212	480	D/3
1751	H	DRUM INTERFACE AND STORAGE	64,660	F	64,660	2,355	2,305	499	D/3
1751	J	DRUM INTERFACE AND STORAGE	67,840	E	67,840	2,445	2,397	522	D/3
	1	DRUM SUBSYSTEM	54,600	C	54,600	2,225	2,180	304	D/3
	2	DRUM SUBSYSTEM	71,400	C	71,400	2,748	2,594	348	D/3
	3	DRUM SUBSYSTEM	87,150	C	87,150	3,091	2,899	367	D/3
	4	DRUM SUBSYSTEM	94,500	C	94,500	3,371	3,288	378	D/3
1772		MEMORY MODULE	N/A		N/A	N/A	N/A	N/A	
	1	MEMORY INCREMENT MODULE	3,500	C	3,500	94	80	82	D/3
	2	MEMORY EXPANSION MODULE	3,500	C	3,500	94	80	74	D/3
1773	1	DIRECT STORAGE ACCESS	1,560	C	1,560	37	30	33	D/3
1774	1	SYSTEM CONTROLLER	14,000	C	14,000	315	270	244	D/3
1775	1	INTERRUPT DATA CHANNEL	1,700	C	1,700	47	35	33	D/3
1777	1	PAPER TAPE STATION	7,875	C	7,875	247	246	T AND M	D/3
1777	2	PAPER TAPE STATION	6,400	C	6,400	263	258	T AND M	D/3
1778	1	PAPER TAPE READER HANDLER	2,100	C	2,100	47	47	38	D/3
1778	2	PAPER TAPE PUNCH HANDLER	1,575	C	1,575	39	39	30	D/3
1779	1	CHARACTER HANDLING	500	C	500	11	11	22	D/3
1781	1	HARDWARE FLOATING POINT UNIT	9,700	B	9,700	270	257	71	D/3
1787	1	CABINET	945	B	945	27	26	N/A	
1787	2	MINI CABINET	814	B	814	21	20	N/A	
1797		BUFFERED I/O INTERFACE	9,461	C	9,460	221	218	96	D/3
1832	4	MAGNETIC TAPE CONTR (MRZI)	3,300	B	3,300	121	112	21	D/3
2012		UTILITY CABINET	1,380	C	1,380	32	32	N/C	
2014		TIME EMITTER	4,505	A	4,505	110	108	33	D/3
2020	A	COMPILER	14,840	C	14,840	300	294	T AND M	D/3
2020	B	COMPILER	14,840	C	14,840	295	289	T AND M	D/3
2022		DATA COLLECTOR CONTROL/PUNCH	4,000	C	4,000	90	89	T AND M	D/3
2025	1	MAGNETIC TAPE COMPILER	67,840	C	67,840	1,330	1,305	735	D/3
2040		COMPILER SHUNT	1,590	C	1,590	38	38	T AND M	D/3
2065		MASTER CLOCK	570	C	570	14	14	T AND M	D/3
2070		CONCENTRATOR	4,880	C	4,880	74	73	T AND M	D/3
2075		CONVERTER	3,075	C	3,075	47	47	22	D/3
2550	100	6671/6676 EMULATION OPTION	3,938	B	3,938	90	88	39	
		A ONE TIME INSTALLATION CHARGE	530						
2552	1	NETWORK PROCESSING UNIT	87,259	B	87,259	2,203	2,153	687	D/1
2552	2	NETWORK PROCESSING UNIT	73,400	B	N/A	1,810	1,765	479	D/1
2556	4	COMMUNICATIONS LINE EXPANSION	4,029	B	4,029	109	97	32	D/1

CHANGES EFFECTIVE 05/01/80

INACTIVE HARDWARE PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	RESALE PRICE	MONTHLY LEASE PRICE CCC BASE 1 YEAR	MONTHLY LEASE PRICE CCC BASE 3YR/24MO	PAGE 4 MAINTENANCE MONTHLY CHARGE	PROD GRP
2558	1	CYBER COMMUNICATION COUPLER	3,938	B	3,938	90	88	39	D/1
2558	2	6671/6676 EMULATION COUPLER	3,938	C	3,938	115	112	39	D/1
2580	1	2551-2 TO 2552-2 UPGRADE KIT	30,000	A	N/A	750	731	113	D/1
2580	2	2550-2 TO 2552-2 UPGRADE KIT	20,000	B	N/A	500	488	133	D/1
2801	2	M-1000/32S PMX	227,650	C	200,000	5,200	4,489	1,912	C/2
2801	3	M-1000/64S PMX	247,300	C	215,000	5,400	5,102	1,994	C/2
2802	1	M-1000/32D PMX	373,400	C	320,000	8,980	7,653	3,239	C/2
2805	102	CDC CYBER 1000/64S PMX	259,665	B	259,665	6,090	5,938	1,186	C/2
2805	202	CDC CYBER 1000/64D PMX	462,315	B	462,315	10,500	10,238	1,952	C/2
2805	204	CDC CYBER 1000/128D PMX	501,429	B	501,429	11,760	11,466	2,074	C/2
2806	1	32 LINE SINGLE PMX	347,261	A	347,261	8,680	8,463	1,300	C/2
2806	2	64 LINE DUAL PMX	722,651	A	722,651	18,066	17,615	2,811	C/2
2806	3	128 LINE DUAL PMX	856,682	A	956,682	21,420	20,885	3,502	C/2
2808	1	16 LINE SINGLE TMX	211,535	B	N/A	5,288	5,156	1,290	C/2
2808	2	32 LINE DUAL TMX	381,358	B	381,358	9,534	9,296	2,328	C/2
2808	3	96 LINE DUAL TMX	509,423	B	509,423	12,725	12,407	2,882	C/2
2809	1	2-BAY BASIC EXCHANGE UNIT	105,397	A	105,397	2,635	2,569	713	D/2
2809	2	3-BAY BASIC EXCHANGE UNIT	118,749	A	118,749	2,969	2,895	798	D/2
2810	2	MAGNETIC TAPE CONTROLLER	3,749	D	3,749	79	78	70	C/2
2811	2	TRANSPORT CHANNEL SWITCH	1,470	D	1,470	37	37	N/A	
2812	2	MAGNETIC TAPE TRANSPORT	18,848	D	18,848	741	726	339	C/2
2813	1	MAGNETIC TAPE TRANSPORT	12,432	D	12,432	262	255	295	C/2
2813	2	MAGNETIC TAPE TRANSPORT	21,656	D	21,656	457	446	467	C/2
2814	2	MAGNETIC TAPE TRANSPORT	27,853	D	27,853	696	679	318	D/2
2814	3	MAGNETIC TAPE TRANSPORT	15,180	D	15,180	380	371	181	D/2
2814	5	MAGNETIC TAPE TRANSPORT	27,140	D	27,140	679	662	318	D/2
2814	6	MAGNETIC TAPE TRANSPORT	26,638	D	26,638	666	649	318	D/2
2815	1	OPERATOR CONSOLE TERMINAL	7,051	D	N/A	176	172	83	C/2
2815	2	OPERATOR CONSOLE	6,269	B	6,269	195	184	95	C/2
2816	1	CONSOLE TERMINAL-TTY 833 ASR	2,448	D	2,448	76	74	36	C/2
2817	5	FAST DISK UNIT - 24M	76,880	D	76,880	1,922	1,874	395	D/2
2817	8	FAST DISK ACCESS UNIT - 24M	14,799	D	14,799	370	360	121	D/2
2818	1	COMPACT STATUS AND CONTROL PAN	2,838	D	2,838	71	69	16	D/2
2823	1	DISK PACK CARTRIDGE	735	D	735	18	18	N/A	
2825	1	LOCAL INTERFACE CONTROLLER	15,068	D	15,068	373	366	157	C/2
2826	2	LOCAL INTERFACE ACCESS UNIT	24,980	D	24,980	620	606	263	C/2
2828	5	CONTROLLER EXTENS. CAB.-DUAL	19,516	D	19,516	488	476	124	D/2
2829	3	LINE PRINTER	17,491	D	17,491	437	426	185	D/2
2830	6	LINE MODULE EXTENSION CAB-16HS	34,196	D	34,196	1,056	1,030	121	D/2
2832	32	CORE STORAGE MODULE	67,998	A	67,998	1,680	1,638	72	C/2
2833	16	CORE STORAGE INCREMENT	45,430	C	35,000	1,150	918	311	C/2
2833	32	CORE STORAGE INCREMENT	66,760	C	54,000	1,500	1,326	440	C/2
2840	1	AUTO-CALL UNIT SELECTOR	2,360	D	2,360	65	64	46	C/2
2841	1	BAUDOT CODE TTY TIP (103D1)	1,477	A	1,477	47	46	13	C/2
2841	2	BAUDOT CODE TTY TIP (103D2)	1,477	D	1,477	47	46	13	C/2
2841	3	BAUDOT CODE TTY TIP (103D3)	1,477	D	1,477	47	46	13	C/2
2841	4	BAUDOT CODE TTY TIP (103D4)	1,477	D	1,477	47	46	13	C/2
2841	5	BAUDOT CODE TTY TIP (103D5)	1,477	D	1,477	47	46	13	C/2
2841	6	BAUDOT CODE TTY TIP (103D6)	1,477	D	1,477	47	46	13	C/2
2841	7	BAUDOT CODE TTY TIP (103D9)	1,759	D	1,759	56	55	19	D/2
2846	2	MODEL 37 TTY TIP (105C2)	1,477	D	1,477	47	46	13	C/2
2848	1	WU M37 TTY REMOTE INTERFACE	1,265	D	1,265	40	40	14	C/2
2850	1	CONSOLE INTERFACE (103A1)	1,477	D	1,477	47	46	13	C/2
2855	1	TWX REMOTE INTERFACE	1,265	D	1,265	40	40	14	C/2
2856	1	TELEX DIAL-IN TIP (113A)	1,759	D	1,759	56	55	14	C/2
2858	1	IBM 1053 REMOTE INTERFACE	1,329	D	1,329	42	42	14	C/2
2867	2	CDC 711 RTIP (206A)	2,606	A	2,606	83	81	19	C/2
2870	1	IBM BSC REMOTE INTERFACE	1,575	D	1,575	50	49	24	C/2
2870	2	IBM DIAL BSC (205D1)	2,342	D	N/A	83	81	19	C/2
2870	3	IBM POINT-TO-POINT (205B)	2,606	A	2,606	83	81	19	C/2
2870	5	IBM DIAL BSC (205B2)	2,606	D	2,606	83	81	19	C/2
2870	6	IBM POINT-TO-POINT BSC (2C5D)	2,606	D	2,606	83	81	19	C/2
2870	8	IBM DIAL BSC (205B1)	2,606	D	2,606	83	81	19	D/2
2870	9	IBM POINT-TO-POINT BSC (2C5D2)	2,606	D	2,606	83	81	19	D/2
2872	1	1000 INTERCONNECT TIP (207CY8)	2,606	D	2,606	83	81	18	D/2
3101		STT DOWN CONSOLE	12,500	C	12,500	230	207	195	C/2
3103		STORAGE MODULE	84,000	C	84,000	1,820	1,289	299	C/2
3104		COMPUTER	100,000	C	100,000	2,710	2,446	308	C/2
3106		COMMUNICATION CHANNEL	6,150	C	1,325	105	44	63	C/2
3107		COMMUNICATION CHANNEL	9,435	C	2,000	175	77	96	C/2
3108		STORAGE MODULE	31,500	C	31,500	675	598	149	C/2
3109		STORAGE MODULE	44,000	C	44,000	990	631	248	C/2
3113		STORAGE MODULE	99,040	C	7,230	2,515	544	276	C/2
3114		COMPUTER MODULE	111,830	C	12,785	3,790	1,153	429	C/2
3119		STORAGE MODULE	46,640	C	46,640	1,235	674	243	C/2
3121		MAGNETIC TAPE CONTROLLER	19,610	C	9,800	375	250	138	C/2
3127		MAGNETIC TAPE CONTROLLER	15,370	C	4,985	295	87	121	C/2
3128		MAGNETIC TAPE CONTROLLER	18,550	C	10,950	350	223	151	C/2
3142		CARD READER WITH CONTROL	11,000	C	11,000	280	278	147	C/2
3150		DATA PROCESSING SYSTEM	344,500	C	344,500	7,725	6,299	1,937	D/2
3172	49	MAGNETIC CORE STORAGE	118,400	C	118,400	2,890	2,739	775	C/1
3172	65	MAGNETIC CORE STORAGE	134,400	C	134,400	3,285	3,108	1,032	C/1
3172	91	MAGNETIC CORE STORAGE	176,000	C	176,000	4,305	4,076	1,299	C/1
3172	98	MAGNETIC CORE STORAGE	217,600	C	217,600	5,315	5,033	1,547	C/1
3172	114	MAGNETIC CORE STORAGE	259,200	C	259,200	6,330	5,978	1,803	C/1
3172	131	MAGNETIC CORE STORAGE	301,000	C	301,000	7,350	6,957	2,061	C/1
3174	1	BASIC PROCESSOR	134,400	C	134,400	3,287	3,105	491	C/1
3174	2	SCIENTIFIC PROCESSOR	147,840	C	147,840	3,618	3,425	547	C/1
3174	3	BUSINESS DATA PROCESSOR	147,840	C	147,840	3,618	3,425	634	C/1
3174	4	GENERAL PURPOSE PROCESSOR	160,650	C	160,650	3,948	3,732	690	C/1
3177	2	COMMUNICATION CHANNEL MODULE	13,094	C	13,094	300	298	138	C/1
3177	4	COMMUNICATION CHANNEL MODULE	26,040	C	26,040	594	582	274	C/1
3177	6	COMMUNICATION CHANNEL MODULE	38,850	C	38,850	882	900	410	C/1
3192		ON-LINE MONITOR TYPEWRITER	9,500	C	9,500	180	179	194	C/1
3203		STORAGE MODULE	110,500	C	10,000	2,165	892	381	C/2
3204		BASIC PROCESSOR	215,500	C	16,750	4,225	1,740	565	C/2
3205		SCIENTIFIC PROCESSOR	252,000	C	113,400	5,000	3,261	668	C/2
3206		COMMUNICATION CHANNEL	5,800	C	1,750	90	44	74	C/2
3207		COMMUNICATION CHANNEL	8,930	C	2,850	160	66	104	C/2
3209		STORAGE MODULE	63,000	C	6,130	1,165	479	280	C/2
3210		DATA PROCESSOR	255,000	C	114,750	4,995	3,261	659	C/2
3215		GENERAL PROCESSOR	262,500	C	118,125	5,090	3,321	669	C/2
3217		REAL TIME COMM. MODULE	16,000	C	16,000	265	261	124	C/2
3218		PROGRAMMED DATA CHANNEL	50,000	C	50,000	1,445	1,446	270	C/2
3221		SEISMIC PROCESSING SYSTEM	370,000	C	370,000	10,460	10,234	3,324	D/2
3228		MAGNETIC TAPE CONTROLLER	22,260	C	13,500	400	218	138	C/1
3229		MAGNETIC TAPE CONTROLLER	26,500	C	16,500	580	261	158	C/1
3232		DISK STORAGE DRIVE CONTROLLER	21,220	C	9,500	470	218	115	C/1
3234		DISK STORAGE CONTROLLER	26,500	C	16,500	495	272	138	C/1
3245		CARD PUNCH CONTROLLER	14,500	C	2,670	300	98	101	C/1

INACTIVE HARDWARE PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	RESALE PRICE	MONTHLY LEASE PRICE 1 YEAR	MONTHLY LEASE PRICE CCC BASE 3YR/24MO	MAINTENANCE MONTHLY CHARGE	PROD GRP
3249		CARD READER CONTROLLER	5,000	C	3,200	70	69	76	C/1
3254		LINE PRINTER WITH CONTROL	40,810	C	9,300	775	490	412	C/1
3256		LINE PRINTER CONTROLLER	24,380	C	11,500	500	245	132	C/1
3266		COMMUNICATION TERMINAL CONTROL	13,790	C	7,800	275	207	118	C/1
3270	B	TRANSFER SWITCH CONTROLLER	4,725	C	4,725	153	115	51	C/1
3275		DATA SET CONTROLLER	21,730	C	16,000	365	299	127	C/1
3276		COMMUNICATION TERMINAL CONTROL	13,000	C	13,000	210	131	127	C/1
3286	C	A/D CONVERSION CONTROLLER	31,800	C	31,800	860	843	331	C/1
3288	A	D/A CONVERSION CONTROLLER	21,730	C	21,730	575	566	249	C/1
3288	B	D/A CONVERSION CONTROLLER	22,790	C	22,790	600	587	265	C/1
3290	A	INQUIRY/RETRIEVAL CONTROLLER	20,500	C	5,500	500	490	T AND M	C/1
3290	B	INQUIRY/RETRIEVAL CONTROLLER	24,650	C	8,000	645	636	T AND M	C/1
3290	2	INQUIRY/RETRIEVAL CONTROLLER	26,130	C	8,000	675	299	176	C/1
3290	4	LOCAL DISPLAY CONTROLLER	13,150	C	13,520	340	337	202	C/1
3290	21	LOCAL TERMINAL CONTROLLER	9,975	C	9,975	357	354	198	C/1
3290	22	LOCAL TERMINAL CONTROLLER	9,975	C	9,975	357	354	198	C/1
3290	23	LOCAL TERMINAL CONTROLLER	10,185	C	10,185	405	394	198	C/1
3290	24	LOCAL TERMINAL CONTROLLER	10,185	C	10,185	378	366	198	C/1
3291		SINGLE STATION ENTRY/DISPLAY	8,400	C	8,400	373	366	89	C/1
3293		INCREMENTAL PLOTTER	10,574	F	10,574	237	235	220	C/1
3302	3	STORAGE MODULE, 65K	290,000	C	290,000	7,340	7,185	1,081	C/1
3302	16	STORAGE SYSTEM	95,630	C	95,930	2,430	2,250	261	C/1
3302	32	STORAGE SYSTEM	172,780	C	172,780	4,340	4,011	516	C/1
3302	49	STORAGE SYSTEM	259,170	C	259,170	6,510	6,017	775	C/1
3302	65	STORAGE SYSTEM	307,400	C	307,400	7,635	7,055	1,032	C/1
3302	81	STORAGE SYSTEM	384,250	C	384,250	9,430	8,718	1,289	C/1
3302	98	STORAGE SYSTEM	434,600	C	434,600	10,570	9,767	1,547	C/1
3302	114	STORAGE SYSTEM	506,470	C	506,470	12,270	11,337	1,803	C/1
3302	131	STORAGE SYSTEM	554,380	C	554,380	13,345	12,332	2,061	C/1
3302	147	STORAGE SYSTEM	622,435	C	622,435	14,950	13,816	2,318	C/1
3302	163	STORAGE SYSTEM	667,800	C	667,800	15,965	14,756	2,577	C/1
3302	180	STORAGE SYSTEM	731,930	C	731,930	16,955	15,577	2,835	C/1
3302	196	STORAGE SYSTEM	774,860	C	774,860	18,430	17,033	3,090	C/1
3302	212	STORAGE SYSTEM	835,280	C	835,280	19,880	18,370	3,348	C/1
3302	229	STORAGE SYSTEM	875,560	C	875,560	20,790	19,212	3,605	C/1
3302	245	STORAGE SYSTEM	932,800	C	932,800	22,140	20,457	3,861	C/1
3302	262	STORAGE SYSTEM	970,960	C	970,960	22,905	21,250	4,120	C/1
3304		BASIC PROCESSOR	181,419	C	181,419	4,720	4,366	290	C/1
3304	2	BUSINESS DATA PROCESSOR	185,500	C	185,500	4,505	4,144	444	C/1
3304	3	BUSINESS DATA PROCESSOR	194,775	C	194,775	4,731	4,373	434	C/1
3306		COMMUNICATION CHANNEL	6,458	C	6,458	137	136	57	C/1
3307		COMMUNICATION CHANNEL	9,907	C	9,907	237	235	82	C/1
3309		STORAGE MODULE	55,650	F	55,650	1,380	1,354	215	C/1
3310		FLOATING POINT MODULE	35,063	C	35,063	914	897	57	C/1
3311		MULTIPROGRAMMING MODULE	40,058	C	40,058	993	976	203	C/1
3312		RPR MODULE	37,000	C	37,000	909	881	156	C/1
3316	1	MULTIPLEXER CONTROLLER	30,608	C	30,608	672	663	138	C/1
3344	2	DIGIGRAPHICS CONTROLLER	36,000	D	36,000	1,190	1,169	434	C/1
3373	1	MAGNETIC CORE STORAGE	9,990	C	N/A	3,250	3,120	510	C/1
3387	1	A/D INTERFACE CONTROLLER	18,900	C	18,900	473	457	75	C/1
3398		DISPLAY CONTROLLER	99,000	C	30,700	2,200	2,152	602	C/1
3398	2	GRAPHICS CONTROLLER	95,400	A	76,300	2,065	2,022	602	C/1
3404		BASIC 16K COMPUTER	386,500	C	56,000	7,645	1,435	2,786	C/1
3404		STANDARD INPUT/OUTPUT CHANNEL	25,000	C	3,500	435	93	173	C/1
3409		16K STORAGE OPTION	131,500	C	18,300	2,575	494	674	C/1
3410		FLOATING POINT OPTION	26,500	C	3,700	485	98	173	C/1
3421		MAGNETIC TAPE CONTROLLER	40,000	C	40,000	710	696	273	C/1
3422		MAGNETIC TAPE CONTROLLER	54,500	C	54,500	1,005	984	303	C/1
3423		MAGNETIC TAPE CONTROLLER	73,670	C	26,900	1,345	359	304	C/1
3458		LINE PRINTER CONTROLLER	44,620	A	12,000	875	327	227	C/1
3518	1	MAGNETIC TAPE CONTROLLER	24,503	C	34,503	588	577	229	C/1
3518	2	MAGNETIC TAPE CONTROLLER	41,323	C	41,323	725	714	270	C/1
3518	3	MAGNETIC TAPE CONTROLLER	48,972	C	48,972	898	879	293	C/1
3528	1	MAGNETIC TAPE CONTROLLER	55,650	C	55,650	1,119	1,097	453	C/1
3528	2	MAGNETIC TAPE CONTROLLER	64,554	C	64,554	1,218	1,193	454	C/1
3528	3	MAGNETIC TAPE CONTROLLER	73,458	C	73,458	1,323	1,296	471	C/1
3553	1	MASS STORAGE CONTROLLER	30,240	C	22,680	735	410	193	C/1
3553	2	MASS STORAGE CONTROLLER	32,918	C	24,689	909	461	208	C/1
3555	1	LINE PRINTER CONTROLLER	30,051	C	16,530	636	467	84	C/1
3602		COMMUNICATION MODULE	132,500	C	4,600	1,825	555	517	B/1
3603		STORAGE MODULE	588,000	C	145,000	9,215	2,843	2,302	B/1
3604		COMPUTATION MODULE	956,500	C	32,000	11,645	631	3,323	B/1
3606		BI-DIRECTIONAL DATA CHANNEL	27,000	C	2,500	325	49	225	B/1
3608		SPECIAL 48-BIT DATA CHANNEL	47,500	C	8,075	1,040	1,022	289	B/1
3610		DUAL ACCESS MODULE	142,000	C	24,140	3,110	164	611	B/1
3622		MAGNETIC TAPE CONTROLLER	142,000	C	142,000	2,645	2,593	632	B/1
3623		MAGNETIC TAPE CONTROLLER	147,000	C	147,000	2,760	2,702	601	B/1
3624		MAGNETIC TAPE CONTROLLER	206,170	C	25,000	3,870	3,789	718	B/1
3637		DRUM STORAGE CONTROLLER	51,410	A	18,000	1,060	327	T AND M	B/1
3659		LINE PRINTER CONTROLLER	42,930	C	17,000	685	272	179	B/1
3681		DATA CHANNEL CONVERTER	12,195	A	6,000	285	154	41	B/1
3691		PAPER TAPE READER PUNCH	13,913	C	13,913	221	218	256**	B/1
3694		PAPER TAPE READER PUNCH	32,277	C	32,277	468	464	T AND M	B/1
3802		COMMUNICATION MODULE	82,000	C	22,700	1,825	555	493	B/1
3803		STORAGE MODULE	378,000	C	145,000	11,860	2,843	1,098	B/1
3804		COMPUTATION MODULE	472,500	C	131,000	11,645	3,212	3,323	B/1
3806		BI-DIRECTIONAL DATA CHANNEL	42,000	C	11,600	845	283	225	B/1
3810		DUAL ACCESS MODULE	94,500	C	47,250	2,245	1,087	282	B/1
3811		MULTIPROGRAMMING MODULE	73,500	C	36,750	1,780	870	217	B/1
3898		MICROFILM RECORDER/CONTROLLER	150,000	C	67,000	5,260	5,147	T AND M	B/1
6015		STATION	793,260	C	793,260	19,500	19,079	4,130	B/1
6404		CENTRAL COMPUTER	1,365,000	C	1,365,000	28,975	28,348	5,552	B/1
6405		CENTRAL COMPUTER	797,500	C	797,500	16,140	15,810	3,687	B/1
6411		AUGMENTED I/O BUFFER-CONTROL	357,000	C	357,000	6,970	6,821	838	B/1
6413		CENTRAL COMPUTER	2,641,149	C	1,848,800	39,675	38,815	9,951	B/1
6414		CENTRAL COMPUTER	1,519,245	C	1,063,400	25,970	25,400	5,173	B/1
6415		CENTRAL COMPUTER	958,293	C	958,293	23,657	23,147	3,436	B/1
6415	9	CENTRAL COMPUTER	833,637	C	833,637	20,402	19,962	3,406	B/1
6513		CENTRAL COMPUTER	2,863,749	C	2,004,600	43,490	42,550	10,417	B/1
6514		CENTRAL COMPUTER	1,741,845	C	1,219,200	29,785	29,135	6,640	B/1
6601		CENTRAL COMPUTER	3,675,000	C	3,675,000	67,790	66,321	11,354	B/1
6602		CONSOLE DISPLAY	48,000	C	48,000	790	778	254	B/1
6603		DISK SYSTEM	205,000	C	28,000	5,290	2,729	T AND M	B/1
6604		CENTRAL COMPUTER	2,310,000	C	2,310,000	49,600	48,522	10,079	B/1
6612		CONSOLE DISPLAY	53,424	C	37,300	795	780	238	B/1
6613		CENTRAL COMPUTER	4,090,275	C	2,863,100	62,900	61,525	10,579	B/1
6614		CENTRAL COMPUTER	2,571,030	C	1,799,725	42,850	41,950	9,391	B/1
6615		CENTRAL COMPUTER	1,811,408	C	1,811,408	44,011	43,057	8,364	B/1
6622		MAGNETIC TAPE CONTROLLER	25,000	C	25,000	505	495	157	B/1
6633		EXTENDED CORE STORAGE	168,557	C	168,557	5,156	4,577	1,479	B/1

CHANGES EFFECTIVE 05/01/80

INACTIVE HARDWARE PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	RESALE PRICE	MONTHLY LEASE PRICE CCC BASE 1 YEAR	3YR/24MO	MAINTENANCE MONTHLY CHARGE	PROD GRP
6634		EXTENDED CORE STORAGE	297,917	C	297,917	9,104	8,093	2,072	B/1
6635		EXTENDED CORE STORAGE	558,632	C	558,632	17,073	15,180	3,106	B/1
6636		EXTENDED CORE STORAGE	1,102,112	C	1,102,112	33,674	29,949	4,644	B/1
6638		DISK SYSTEM	270,000	C	125,000	8,995	8,808	1,692	B/1
6640		ECS STORAGE CONTROLLER	N/A	C	N/A	N/C	N/C	N/A	
6642	1	DISTRIBUTIVE DATA PATH	37,454	C	37,454	935	914	342	B/1
6682		SATELLITE COUPLER	4,300	C	4,300	83	82	25	B/1
6684	1	TAPE CONTROLLER INTERFACE	17,809	C	17,809	357	354	87	B/1
6684	2	TAPE CONTROLLER INTERFACE	17,808	C	17,808	357	354	83	B/1
6713		CENTRAL COMPUTER	4,368,525	C	4,368,525	96,054	93,970	11,432	B/1
7611	1	LOCAL OPERATORS STATION	236,500	A	236,500	4,675	4,462	1,208	A/1
7613	1	CENTRAL PROCESSOR	6,622,000	A	6,622,000	135,960	120,914	21,993	A/1
7614	1	CENTRAL PROCESSOR	5,214,000	A	5,214,000	106,260	94,500	18,269	A/1
7616	1	CENTRAL PROCESSOR	4,510,000	A	4,510,000	90,200	80,218	16,457	A/1
7618	1	MAGNETIC TAPE CONTROLLER	51,304	C	51,304	941	921	265	A/1
7628	1	MAGNETIC TAPE CONTROLLER	76,956	C	76,956	1,346	1,358	449	A/1
7638	1	DISK FILE SYSTEM	440,000	C	125,000	11,985	6,900	2,074	A/1
8011	B	INPUT STATION	3,500	C	3,500	42	42	52	D/3
8012		REMOTE MULTIPLEXER	6,300	C	6,300	190	189	51	D/3
8013		MASTER MULTIPLEXER	8,600	C	8,600	245	243	105	D/3
8014		TIME EMITTER	2,500	C	2,500	61	60	11	D/3
8016		INTERRUPT CLOCK	900	C	900	18	18	11	D/3
8017		LINE MODULE	560	C	560	12	12	11	D/3
8019	1	OCR DOCUMENT READER CONTROLLER	2,363	C	2,363	79	75	58	D/3
8032	C	A/D AND D/A CONVERSION CONTROL	27,030	C	27,030	740	729	312	D/3
8049		INQUIRY/RETRIEVAL CONTROLLER	26,130	C	8,000	675	299	T AND M	D/3
8049		SINGLE STATION ENTRY/DISPLAY	4,500	C	3,000	355	185	T AND M	D/3
8066		COMMUNICATION TERMINAL CONTROL	11,660	C	8,000	285	185	101	D/3
8067		DATA SET CONTROLLER	8,905	C	4,060	180	77	98	D/3
8070		MAGNETIC TAPE CONTROLLER	13,790	C	8,900	260	120	127	D/3
8073		PAPER TAPE PERFORATOR	3,555	C	3,550	93	92	65	D/3
8074		PAPER TAPE READER	3,130	C	3,130	90	89	48	D/3
8079		PAPER TAPE PUNCH	4,560	C	3,972	130	98	68	D/3
8081		BASIC 8K COMPUTER	43,460	C	18,500	1,540	631	321	D/3
8082		BASIC 8K COMPUTER	43,000	C	43,000	1,620	1,587	410	D/3
8083		ARITHMETIC UNIT	11,130	C	7,100	250	218	257	D/3
8084		AUXILIARY MEMORY	28,090	C	11,300	990	261	219	D/3
8085		8K STORAGE OPTION	22,260	C	13,400	770	734	114	D/3
8092	A	TELEPROGRAMMER-2K	21,000	C	21,000	565	555	227	D/3
8094		PERIPHERAL EQUIPMENT ADAPTER	3,605	C	1,400	99	98	23	D/3
8095		TRANSMISSION CONTROL PANEL	2,335	C	1,000	29	29	23	D/3
8137		COMMUNICATIONS EXPANSION UNIT	2,230	C	2,230	47	47	38	D/3
8156		PRINTER WITH CONTROL	40,810	A	40,810	775	761	412	D/3
8156	2	OCR LINE PRINTER WITH CONTROL	43,407	A	43,407	946	329	511	D/3
8170		MAGNETIC TAPE CONTROLLER	15,370	C	10,700	330	223	134	D/3
8193		MAGNETIC TAPE CONTROLLER	9,500	C	3,000	195	66	37	D/3
8194		MAGNETIC TAPE CONTROLLER	12,935	C	3,600	225	131	67	D/3
8195		INPUT/OUTPUT TELETYPEWRITER	7,370	A	3,140	280	278	129	D/3
8197		DATA SET CONTROLLER	6,360	C	6,360	155	153	29	D/3
8230		READER/PRINTER TERMINAL	148,000	C	148,000	3,190	3,120	1,679	D/3
8231	1	CARD READER/PRINTER TERMINAL	65,000	C	65,000	1,950	1,901	1,732	D/3
8231	2	CARD READER/PRINTER TERMINAL	65,000	C	65,000	1,950	1,901	1,732	D/3
8271	A	TRANSFER SWITCH	3,600	C	2,000	71	54	21	D/3
8271	D	TRANSFER SWITCH	3,820	C	3,820	74	73	21	D/3
8299		PAPER TAPE READER	3,925	C	1,400	140	139	37	D/3
8529		DATA SET CONTROLLER	21,730	C	16,000	365	299	134	D/3
8909	D	TEST BOARD DRAWER	4,200	C	4,200	95	94	29	D/3
8909	E	TEST BOARD DRAWER	4,200	C	4,200	95	94	29	D/3
8909	G	TEST BOARD DRAWER	4,455	C	3,000	99	82	23	D/3
8909	H	TEST BOARD UNIT	11,130	C	7,000	420	348	49	D/3
T2816		AUTOMATED TYPING SYSTEM	3,600	C	3,000	145	N/A	T AND M	/1
T3816		AUTOMATED TYPING SYSTEM	N/C		N/C	N/C	N/C	T AND M	/1
T7816		AUTOMATED DATA COMPUTING SYST.	6,300	C	6,300	360	N/A	T AND M	/1
T9816		AUTOMATED DATA COMPUTING SYST	N/C		N/C	N/C	N/C	T AND M	/1
T7816	P	ARITHMETIC PROCESSING UNIT	3,900	C	3,900	215	N/A	T AND M	/1
T228		VERTIPUNCH	1,200	C	1,200	50	N/A	T AND M	/1
T229		PAPER TAPE READER	600	C	600	30	N/A	T AND M	/1
T330		MAGNETIC TAPE UNIT	N/C	C	N/C	N/C	N/C	T AND M	/1
T331		CARD PUNCH INTERCOUPLER	N/C		N/C	N/C	N/C	T AND M	/1
T332		TAB CARD READER	N/C		N/C	N/C	N/C	T AND M	/1
S550		SORTER	N/C		N/C	N/C	N/C	T AND M	/1
S550I		SORTER WITH OPTION I	N/C		N/C	N/C	N/C	T AND M	/1
026		KEYPUNCH	N/C		N/C	N/C	N/C	T AND M	/1
10005		160A INTERFACE FOR 3206	1,850	C	1,850	58	58	13	C/3
10010		LONG-LINE DRIVER MODIFICATION	473	C	473	13	13	N/C	
10010	14	LONG LINE DRIVER MOD. 3306	473	C	473	13	13	N/C	
10010	15	LONG LINE DRIVER MOD. 3307	473	C	473	13	13	N/C	
	18	LONG LINE DRIVER MOD. 3555	473	C	473	13	13	N/C	
10010	21	LONG LINE DRIVER MOD. 3458	473	C	473	13	13	N/A	
10013		3200 CONSOLE OPTION	17,000	C	17,000	285	283	168	C/1
		FIELD INSTALLATION CHARGE	275						
10018		FLOATING POINT	33,390	C	16,450	980	299	52	C/1
		FIELD INSTALLATION CHARGE	880						
10019		BCD OPTION	13,780	C	7,250	335	109	63	C/1
		FIELD INSTALLATION CHARGE	902						
10019	10	BCD OPTION	13,780	C	2,300	335	109	63	C/1
		FIELD INSTALLATION CHARGE	902						
10020		GENERAL PURPOSE ARITHMETIC	45,160	C	18,775	1,160	408	72	C/1
		FIELD INSTALLATION CHARGE	935						
10022		ALPHANUMERIC KEYBOARD	6,500	C	6,500	225	223	49	D/1
10024		EXPANDED BUFFER (8192 X 24)	38,160	C	38,160	880	865	127	C/1
10033		FORMAT OPTION	1,590	C	550	44	44	12	D/1
10034		FORMAT OPTION	N/A		N/C	N/C	N/A	N/A	
		A ONE TIME INSTALLATION CHARGE	160						
10037		READ/WRITE CONTROL OPTION	28,090	C	15,000	690	690	134	B/1
10047		POWER/SUPPLY JUNCTION PANEL	850	A	850	19	18	12	D/1
		FIELD INSTALLATION CHARGE	17						
10052		EXPANDED CHARACTER SET	9,000	C	9,000	195	194	67	D/1
10053		LIGHT PEN	6,360	A	6,360	195	194	35	D/1
10054		ALPHANUMERIC KEYBOARD	6,890	A	6,890	235	234	46	D/1
10055		SWITCH/INDICATOR MODULE	2,995	A	2,995	78	78	15	D/1
10071		SNAP LOCK REEL HUB	N/A		N/C	N/C	N/A	N/A	
		A ONE TIME INSTALLATION CHARGE	80						
10099		MEMORY PROTECT	N/A		N/C	N/C	N/A	N/A	
		A ONE TIME INSTALLATION CHARGE	1,670						
10101	1	CONVERSION KIT FOR 6404	38,955	C	38,955	5,460	5,342	N/A	
10103		CEJ/MEJ INSTRUCTIONS -64/6500	N/A		N/C	N/C	N/A	N/A	
		A ONE TIME INSTALLATION CHARGE	3,675						
10104		CEJ/MEJ INSTRUCTIONS FOR 6600	N/A		N/C	N/C	N/A	N/A	
		A ONE TIME INSTALLATION CHARGE	7,350						

CHANGES EFFECTIVE 05/31/80

INACTIVE HARDWARE PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	RESALE PRICE	MONTHLY LEASE PRICE 1 YEAR	MONTHLY LEASE PRICE CCC BASE 3YR/24MO	PAGE 7 MAINTENANCE MONTHLY CHARGE	PROD GRP
10105		6614 MEMORY INCREMENT	1,591,590	C	1,591,590	28,402	27,986	1,248	B/1
10106		6604 MEMORY INCREMENT	1,669,500	C	1,669,500	36,582	35,792	1,158	B/1
10112		6415 MEMORY INCREMENT	606,585	C	606,585	13,451	13,160	1,826	B/1
10116		LINE PRINTER SPEED INCREASE	30,740	C	30,740	425	316	221	D/1
10117		6500 CONVERSION	250,425	C	175,300	3,820	3,735	1,469	B/1
10119		6414/6514 MEMORY INCREMENT	1,196,249	C	1,196,249	19,578	19,158	3,969	B/1
10123		MEMORY PROTECT	5,830	C	2,500	160	44	N/C	
		FIELD INSTALLATION CHARGE	1,500						
10127		EXPANDED MEMORY OPTION	2,573	C	2,573	53	52	30	C/1
10133		ONE INCH OPTION	11,130	D	11,130	315	309	30	D/1
		FIELD INSTALLATION CHARGE	278						
10134		LINE PRINTER REPLACEMENT	35,510	C	35,510	610	598	190	C/1
10135		EPROP LOCATION PRINTER	2,230	D	2,230	52	52	26	D/1
10136		ZOOM MICROSCOPE	1,948	D	1,948	55	55	T AND M	
10137		WEAR TEST	672	D	672	17	17	N/C	
10138		FOURTH DENSITY	394	D	394	10	10	N/C	
10143		EXPANDED CHARACTER SET	4,240	A	4,240	86	85	36	C/1
10144		ANTI-ECHO OPTION	N/C		N/A	N/A	N/A	N/A	
10161		6615 MEMORY INCREMENT	806,925	C	806,925	17,257	16,887	1,028	B/1
10163		DUAL ACCESS OPTION	5,300	C	5,300	115	114	26	D/1
10165		ALPHANUMERIC KEYBOARD	3,780	A	3,780	263	258	39	D/1
10165	2	ALPHANUMERIC KEYBOARD	3,780	A	3,780	263	258	43	D/1
10166		FUNCTION KEYBOARD	3,885	A	3,885	210	206	24	D/1
10166	2	FUNCTION KEYBOARD	3,885	A	3,885	210	206	24	D/1
10169		CENTRAL MEMORY ACCESS PRIORITY	N/A	C	N/C	N/A	N/A	N/A	
		A ONE TIME INSTALLATION CHARGE	5,250						
10173	1	6713 PPU INCREMENT	239,295	C	239,295	5,266	5,154	817	B/1
		FIELD INSTALLATION CHARGE	105,800						
10173	2	6714 PPU INCREMENT	239,295	C	239,295	5,266	5,154	817	B/1
		FIELD INSTALLATION CHARGE	72,450						
10173	3	6613 PPU INCREMENT	239,295	C	239,295	5,266	5,154	817	B/1
		FIELD INSTALLATION CHARGE	96,500						
10173	4	6614 PPU INCREMENT	239,295	C	239,295	5,266	5,154	817	B/1
		FIELD INSTALLATION CHARGE	66,150						
10173	6	6513 PPU INCREMENT	239,295	C	167,500	3,685	3,600	817	B/1
		FIELD INSTALLATION CHARGE	48,250						
10173	8	6413 PPU INCREMENT	239,295	C	167,500	3,685	3,600	817	B/1
		FIELD INSTALLATION CHARGE	61,950						
10173	10	6415 PPU INCREMENT	239,295	C	239,295	5,266	5,154	817	B/1
		FIELD INSTALLATION CHARGE	24,250						
10177	1	6415 MEMORY INCREMENT	317,205	C	317,205	6,993	6,843	883	B/1
10177	2	6615 MEMORY INCREMENT	300,510	C	210,350	4,510	4,415	883	B/1
10178	1	6414/6514 INCREMENT	617,715	C	403,695	7,045	6,895	1,911	B/1
10178	2	6414/6514 INCREMENT	844,325	C	591,705	6,660	6,520	1,911	B/1
10180	1	6614/6714 INCREMENT	818,055	C	539,150	10,165	9,925	605	B/1
10180	2	6614/6714 INCREMENT	795,795	C	524,225	9,885	9,650	605	B/1
10181		505 TWO-SPEED OPTION	18,550	C	7,150	220	55	75	D/1
10182		SYMBOL SET EXPANSION	3,780	C	3,780	121	120	N/C	
10195	1	607 ENHANCEMENT	N/A		N/C	N/A	N/A	N/A	
		FIELD INSTALLATION CHARGE	1,947						
10195	4	604 ENHANCEMENT	N/A		N/C	N/A	N/A	N/A	
		FIELD INSTALLATION CHARGE	2,156						
10256	1	3200 MODULE	89,500	C	34,500	900	543	189	C/2
		FIELD INSTALLATION CHARGE	6,050						
10256	2	3100 MODULE	89,500	C	34,500	900	543	189	C/2
		FIELD INSTALLATION CHARGE	6,050						
10256	4	3100 MODULE	89,500	C	34,500	900	543	189	C/2
		FIELD INSTALLATION CHARGE	6,050						
10265	1	MODEL 74 CENTRAL MEMORY UPGRD	231,000	C	231,000	4,248	5,250	516	B/1
10265	2	MODEL 74 CENTRAL MEMORY UPGRD	286,750	C	286,750	6,195	5,502	516	B/1
10266	1	ECS REGISTER OPTIONS	17,535	C	17,535	475	454	103	C/1
10266	2	ECS REGISTER OPTIONS	17,535	C	17,535	475	464	103	C/1
10278	1	16 BIT ADDRESS FOR 173#	1,345	D	N/A	40	35	17	D/1
10280	1	DDP REGISTER	17,535	C	17,535	452	441	119	C/1
10282	1	3300 PARITY CHECK OPTION	N/C		N/A	N/A	N/A	N/A	
10282	2	3300 PARITY CHECK OPTION	N/C		N/A	N/A	N/A	N/A	
10287	1	3200 MODIFICATION	N/A		N/A	N/A	N/A	N/A	
10287	2	3100 MODIFICATION	N/A		N/A	N/A	N/A	N/A	
10287	4	3100 MODIFICATION	N/A		N/A	N/A	N/A	N/A	
10299	12	MINI CABINET DOOR	N/A		N/A	N/A	N/A	N/A	
		A ONE TIME INSTALLATION CHARGE	63						
10304	1	BASIC EXTENDER	45,000	D	45,000	800	750	221	B/1
10308	2	GO MODE/SOL	N/C	C	N/A	N/C	N/A	N/A	
10311	1	TAPE CONTROLLER INTERRUPT	N/A		N/A	N/C	N/A	N/A	
10311	2	TAPE CONTROLLER INTERRUPT	N/A		N/A	N/C	N/A	N/A	
10356	1	MAGNETIC CORE MEMORY MODULE	16,000	C	N/A	570	547	49	C/1
10357	1	3373 ADDITIONAL MEMORY ACCESS	10,500	C	N/A	375	360	25	C/1
10363	1	4800 BAUD OPTION	1,100		1,100	N/A	N/A	13	D/1
		FIELD INSTALLATION CHARGE	306						
10363	2	4800 BAUD OPTION	1,100		1,100	N/A	N/A	14	D/1
		FIELD INSTALLATION CHARGE	306						
10363	3	4800 BAUD OPTION	1,100		1,100	N/A	N/A	14	D/1
		FIELD INSTALLATION CHARGE	306						
60013		STORAGE MODULE CONNECTOR	N/A		N/A	N/A	N/A	N/A	
		A ONE TIME INSTALLATION CHARGE	265						
60017		679/689 CHANNEL SWITCH CONSOLE	1,485	C	700	34	N/A	10	D/1
		FIELD INSTALLATION CHARGE	80						
60036	1	21-TRACK TAPE TRANSPORT (627)	58,433	C	36,170	940	N/A	349	D/1
60076		IBM 2321 DATA CELL ADAPTER	13,500	C	13,500	275	N/A	198	D/1
60094		8000 SERIES PROCESSOR I/O	2,700	C	2,520	63	62	36	D/3
60141	1	DSD CONTROLLER EXPANSION	1,125	B	1,125	37	36	10	D/1
65072	10	CENTRAL PROCESSOR	4,731,100	C	N/A	95,728	93,630	18,930	A/1
65073	1	FLAG REGISTER EXPANSION	16,500	C	N/A	413	402	131	A/1
65074	1	SECOND PROCESSOR MODEL 76/7600	3,102,000	C	N/A	60,500	59,186	13,368	A/1
65074	10	SMALL CORE MEMORY MODULE	704,000	C	N/A	16,060	15,712	1,902	A/1
65074	20	LARGE CORE MEMORY MODULE	1,408,000	C	N/A	29,700	29,056	3,913	A/1
65094	10	360/370 TERMINAL CONTROLLER	22,800	D	22,800	622	557	137	D/3
65094	20	POLLER	4,185	D	4,185	131	119	31	D/3
65095	10	INTERACTIVE DATA STATION	9,440	D	9,440	258	197	138	D/3
65095	20	TAPE CARTRIDGE DRIVE	2,970	D	2,970	83	64	76	D/3
65095	30	DATA MODEM	1,125	D	1,125	45	36	24	D/3
65096	1	MAP III BASIC PROCESSOR	344,500	C	344,500	N/A	9,392	2,235	B/1
		A ONE TIME INSTALLATION CHARGE	16,000						
65099	4	ADD SUBTRACT UNIT	17,808	C	17,808	N/A	488	136	B/1
65119	1	LINE PRINTER (600 LPM)	22,000	B	N/A	808	748	231	D/1
65210	1	PROCESSING UNIT	5,500	B	5,500	N/A	183	49	D/3
65211	1	MEMORY ADAPTER UNIT	750	B	750	N/A	25	4	D/3
65211	2	MOS MEMORY ARRAY	1,500	B	1,500	N/A	50	16	D/3
65212	1	FLEXIBLE DISK SUBSYSTEM	3,350	B	3,350	N/A	112	29	D/3

SOFTWARE PRICING AND SUPPORT POLICY

SCOPE

This policy is to be implemented in the United States and, subject to local considerations, in other countries. Any deviations in implementing this policy in other countries, especially Sections IV and V, require approval of the Corporate Pricing Policy Committee (CPPC).

POLICY

This Policy applies to Software Products listed in the Pricing Manual and is subject to change without notice. It is not an offer to enter into a contract.

Each license must identify a specific location and mainframe model and serial number.

I. DEFINITIONS

A. Software Product

A deliverable item of Software identified by a unique product number as listed in the Pricing Manual. A Software Product is identified, licensed, delivered and invoiced by the Software Product number.

B. Standard Software License

A license granted by Control Data which allows Customer full use of the then current released level of a Software Product on a specific mainframe model owned, leased or controlled by Customer. Future error corrections and enhancements will be provided only if the Customer contracts for CEM Service or Application Maintenance Service (AM Service) if offered for the Software Product.

C. Usage Priced Software Product - Full Use License

A Software Product License Amendment to Schedule H generally used with Usage Priced Application Software Products. This License applies to Customers who use a Usage Priced Software Product for external and internal Data Processing. Internal use means use of a Software Product by Customer for processing data for its own internal use or the internal use of its subsidiaries (of which Customer owns fifty percent (50%) or more of the voting stock). Internal use charges under the full use license are based upon actual usage of the Software Products at the internal usage rates specified in the Pricing Manual subject to a Maximum Monthly License Charge. Internal use charges may not be credited toward the Minimum Monthly License Charge applicable to external use in the full License.

External use means use of a Software Product by Customer for processing data other than for its own Internal Use or the internal use of its subsidiaries. External use charges payable to Control Data are determined separately for each of Customer's customers. The monthly charge for each of Customer's customers is the greater of: a) a percentage of the Total Net Billings by Customer to its customer for Machine Resources used during execution of the Software Product, or b) a separate percentage of the Total Net Billings by Customer to its customer for Computer System Resources directly attributable to the Software Product, including any surcharges for the Software Product. If the total monthly charge for external use, which is the sum of all amounts payable for Customer's customers determined under a) and b) above, is less than the Minimum Monthly External Use Charge, the Customer pays the minimum charge for that month.

D. Usage Priced Software Product - Internal Use License

A Software Product License Amendment to Schedule H generally used with Usage Priced Application Software Products. This License applies to customers who use the Software Products for their internal processing or that of their subsidiaries. Charges for internal use under the Internal Use License are based upon actual usage of the Software Product at the internal usage rates specified in the Pricing Manual subject to monthly minimum and maximum Internal Use Charges.

E. Non-Usage Priced Software Product - Internal Use License

A Software Product License Amendment to Schedule H used with Software Products designated in the Pricing Manual as requiring the SPI License. This License applies to customers who use the Software Product for their internal processing, or the internal processing of their subsidiaries. Charges for Software Products requiring the SPI License are specified in the Pricing Manual. Information on a full use license with respect to software products corresponding to these described in this subsection may be obtained from the Director of Product Management.

F. Central Enhancement and Maintenance Service (CEM Service)

An optional support service available for additional monthly charges. It provides error corrections, updates and enhancements as may be made available from time to time for the Software Products, including, when applicable, rights to Successor Products as designated by Control Data. CEM Service does not guarantee that all errors, malfunctions or defects will be corrected.

G. Application Maintenance Service (AM Service)

An optional support service available for additional monthly charges. It provides error corrections and updates as may be made available from time to time, for Application Software Products, but does not include enhancements or successor products. AM Service does not guarantee that all errors, malfunctions or defects will be corrected.

H. Successor Product

A Software Product specifically designated by Control Data as the Successor Product which has fundamental similarities to and replaces, in terms of support, function, description, specification and application, an existing Software Product.

I. Software Documentation and Media Supplied with a Software Product

One copy of the Software Product on machine readable media specified by Control Data, and one copy of the documentation specified by Control Data for the particular Software Product.

J. Productive Use

Use of the Software Product for or as part of Customer's operations and activities. Investigating feasibility and software testing prior to acceptance of the Software Product is not considered in "Productive Use."

K. Software Product Required for Maintenance

A Software Product which is required to install, or revise another Software Product.

II. GENERAL SOFTWARE PRODUCT LICENSE REQUIREMENTS

A. License Requirements

1. Standard

The license requirements for all Software Products are shown on the price pages of the Pricing Manual. "STD" under license requirement means that the Standard Agreement is applicable.

2. Special

A designation other than "STD" under license requirement means that there is a requirement for special or additional terms in the license for that product. This requirement does not differ by class of customer.

B. Classes of Customers

The classes of customers to which these License requirements apply are:

U.S. Commercial Customer

All U.S. Customers must sign a license.

U.S. Federal Government Customers

GSA -- If the Software Product is listed in Control Data's Authorized ADP Schedule Price List, the Government customer must issue a purchase/delivery order and the specific terms and conditions of that GSA Schedule apply. If the Software Product is not listed in that price list, the Government customer must enter into an appropriate contractual document outside the GSA Schedule, which provides the required protection to Control Data. All such orders must be coordinated through the GSA & Master Contracts organization.

Non-GSA -- The Government customer must enter into an appropriate contractual document which provides the required protection to Control Data. All such orders must be coordinated through the GSA & Master Contracts organization.

International Customers

Non-U.S. Customers must execute an agreement with the cognizant subsidiary.

C. Commercial Contract Forms: Schedule H, Special Usage Full License (SUF), Special Usage Internal License (SUI), and Special Non-Usage Priced Internal License (SPI)

Original contracts for licensed Software Products except Usage Priced Software Products are to be submitted on Schedule H (Form AA4077 Rev. 6/79) under the Agreement for Control Data Equipment, Products and Related Services (Form AA4069). Additional Software Products may be licensed by submitting the appropriate Schedule H Amendment forms.

Special license terms and conditions to cover Usage Priced Software Products are provided as Amendments to Schedule H. Customer may license Usage Priced Software Products on a license which provides for both internal and external use (SUF) or on a license which provides for internal use only (SUI). Customer may license non-usage priced application Software Products on a license which provides for internal use only (SPI).

D. Term of the Commercial Standard Software License Agreement (Schedule H)

Prior to acceptance of the Software Product, the Customer may terminate the license for any or all of the standard Software Products listed in the Schedule H upon written notice to Control Data.

After acceptance of the Software Product, Customer may terminate the license for any or all of the standard Software Products listed in the Schedule H upon ninety (90) days prior written notice, provided that the termination date is at least twelve (12) months after the date of acceptance. However, if a Software Product is licensed on the CYBER 170-700 Series Mainframe, the prices, terms and conditions of the Software License must be amended coincident with a change in mainframe model. For example, if a CYBER 170-720 Mainframe is upgraded to a CYBER 170-730, the prices, terms and conditions for the Software licensed for use on the CYBER 170-720 are changed to become those currently applicable to the CYBER 170-730 for that software effective upon installation of the upgrade.

Control Data may terminate any or all Licenses under Schedule H if the Customer fails to comply with the terms and conditions of the Agreement.

E. Acceptance

Software Products licensed under Schedule H are made available for a ninety (90) day test period of nonproductive use after shipment by Control Data. Acceptance of licensed Software Products will occur either upon completion of the Software Product testing period (90 days after shipment by Control Data or on the installation date of the mainframe whichever last occurs) or upon Customer's utilization of the Software Product for "Productive Use" whichever first occurs. The test period is made available to permit the Customer to determine whether the Software Products operate together and whether they meet the Customer's requirements. Customer is required to notify Control Data in writing if the licensed Software Product is used for "Productive Use" prior to expiration of the testing period. In the absence of a written acceptance notice or termination notice, the Software Product is deemed accepted ninety (90) days after shipment.

F. Customer Obligation

Upon termination of a Software License, Customer is obligated to erase, destroy or otherwise render unusable the Software Product and associated documentation. Customer must certify compliance with this requirement in writing upon the date of termination and, in no event, may Customer use, disclose, divulge or market the Software Product.

G. Third Party Software Products

The Pricing Manual includes Software Products which are the property of outside vendors; this fact is noted in the Software Product title or description.

H. Commencement of Charges

Applicable Software Product charges commence upon acceptance of the Software Product(s).

I. Multiple Mainframe Licenses

A Software Product license is required for each mainframe on which the customer desires to use the Software Product, regardless of whether the mainframes are electronically connected or are operating in a "stand alone" mode.

J. Warranty and Support

Control Data warrants that the Software Products when delivered to the Customer will conform to the version level then being generally licensed by Control Data. Except for the warranty stated above, all Software Products are licensed on an "AS IS" basis and do not include any support, or right to any corrections, enhancements, documentation changes or Successor Products which may be released in the future. Control Data does

not warrant that the Software Products will meet the Customer's requirements or will operate in the combinations selected by the Customer or that the operation of the Software Products will be error free.

K. Support

Optional support services may be available under CEM Service or AM Service, (see Sections VI and VII below), as designated in the Pricing Manual.

III. LICENSE CHARGES Standard Software Product License

A. Fixed Monthly License Charge

An Initial Fee and a Monthly License Charge is specified for each Software Product irrespective of the amount of usage. The monthly license for these Software Products entitles the Customer to use the Software Product on a specific mainframe model at the release level of the Software Product at the time of delivery without any future support. CYBER Model 170-700 Series Software Products have separate product numbers and license charges for each mainframe model number. Therefore, if a Software Product is licensed on the CYBER 170-700 Series Mainframe, the prices, terms and conditions of the Software License must be amended coincident with a change in mainframe model. For example, if a CYBER 170-720 Mainframe is upgraded to a CYBER 170-730, the prices, terms and conditions for the Software licensed for use on the CYBER 170-720 are changed to become those currently applicable to the CYBER 170-730 for that software effective upon installation of the upgrade. The CEM Service charge is not included in the price of the fixed Monthly License Charge.

B. Paid-up License Charge

A customer may purchase a "fully paid-up" license for a Software Product by paying the amount indicated in the Pricing Manual as the "Paid-Up Charges" (in lieu of the Initial Fee and Monthly License charges). Paid-Up licenses are not available for those Software Products where "N/A" appears in the "Paid-Up License" column. The Paid-Up license will be for the release level of the Software Product at the time of delivery of the Software Product, without any future support, for use on the mainframe model number specified.

The CEM Service charge is not included in the price of Paid-Up licenses.

A Paid-Up License only allows use of a Software Product on a specific mainframe model. If the Customer changes or upgrades its mainframe, a new License must be entered into for the Software Products applicable to the new/upgraded mainframe. The then current Paid-Up License Charge is applicable to the Software for the new/upgraded mainframe model. Under the following circumstances, Control Data will make available a Paid-Up License allowance to reduce a new Paid-Up License Charge.

1. The physical replacement of the mainframe on which the Software Product is licensed. The allowance applies when the same Software Product or its successor is licensed on the new mainframe.

   Example: A Customer holding a Paid-Up license for F621-01 upgrades from a CYBER 173 to a CYBER 175. The allowance on F621-01 applies toward the current paid up License charge for F621-86.

   Example: A Customer holding a Paid-Up license for F521-01 upgrades from a CYBER 173 to a CYBER 170 Series 750. The allowance for F521-01 would be applied toward the current paid up License charge for F750-01.

   Example: A Customer holding a Paid-Up license for F760-01 upgrades from a CYBER 170 Series 760 to a CYBER 176. The allowance for F760-01 on the 760 would be applied toward the current paid up License charge for F770-01 on the CYBER 176.

2. A Customer, without CEM Service for a Software Product, elects to contract for CEM Service after acceptance of the Software Product.

For circumstances, as noted in items 1, 2 and 4, the allowance is calculated by multiplying the difference between the months accepted and forty-two (42) by the Paid-Up license charge actually paid and then dividing by forty-two (42). No allowance is applied for Software Products which have been accepted longer than forty-two (42) months.

Example: The allowance for a $42,000 Paid-Up license when a mainframe is upgraded and replaced 30 months after acceptance of the Software Product is

$$\frac{42-30}{42} \times \$42,000 = \$12,000.$$

3. A CYBER 170-700 series mainframe model on which the Software Product is licensed is upgraded to a different CYBER 170-700 series mainframe model without physically replacing the mainframe.

   For the above situation (Item 3), the Paid-Up License Charges for the old license may be applied in full toward the new Paid-Up license charges.

Example: A Customer holding a Paid-Up license for F720-01 upgrades from a CYBER 170 Series 720 to a 730. The original charges paid for F720-01 on the 720 may be applied in full toward a new F730-01 license on the 730. The Customer pays only the difference between the original paid-up charges paid and the new current Paid Up License Charges.

4. Customers who upgrade from Itos 2(A622-01, 02, 03, 04, 05, 06) to Itos 2/Comm 18 (A622-11, 12, 13, 14, 15, 16) will qualify for the Paid Up License Allowance when converting to Comm 18. For customers who upgraded from Itos I (A325-14) to Itos 2(A622-0X) to Itos 2/Comm 18 (A622-1X), the acceptance date of the original Itos I (A325-14) shall be used as the base date for determining the number of months since acceptance.

C. Multiple Mainframe License Charges

To qualify as a multiple mainframe site, the mainframes must be within a radius of 1000 feet and the licenses must be for the same item of software although they may be designated by different Software Product Numbers. An Initial Fee and fixed Monthly License Charge or Paid-Up License charge must be applied to each mainframe of a multiple mainframe site. Only one CEM Service charge is made for the same software licensed on more than one mainframe at a qualifying site even though these items of software may be identified by different Software Product Numbers depending on the mainframe. The single CEM Service charge applied will be the highest CEM Service charge of the Software Products so qualifying as provided in the following example:

Example: A Customer has three CYBER mainframe models, e.g., a Cyber Model 172, a Cyber Model 170-730 and a Cyber Model 176, installed at the same location running NOS, e.g., F521-01, F730-01 and F770-01 respectively. The total charges, including CEM Service, are calculated as follows:

1. Monthly License:

   a. One Time Charges (Applicable to Monthly License) = Initial Fee (all three)

   b. Monthly Charges
      Monthly License Charge = Monthly License charge (all three)

      Monthly CEM Service Charge = Monthly CEM Service charge for F770-01

or

2. PAID-UP License Charge: = Paid Up License charge (all three)

   Monthly CEM Service Charge = Monthly CEM Service charge for F770-01

IV. Usage Priced Software Products - Full License

This section sets forth the current policy for licensing Software Products designated in the Pricing Manual as Usage Priced Software Products, requiring the SUF License. Usage Priced Software Products are generally Application Software Products. The SUF Full License Amendment permits the Software Product to be used for internal and external use.

"Internal use" means use of the Software Product by Customer for processing data for its own internal use or the internal use of its subsidiaries (of which Customer owns fifty percent (50%) or more of the capital stock).

"External use" means use of the Software Product by Customer for processing data for other than its own internal use or the internal use of its subsidiaries.

The standard documents to be used to license these Software Products are; Schedule A, AA4069, Rev. 2/79, Schedule H, AA4077, Rev. 6/79, and Amendment for Usage Priced Software Products, Full Use License (SUF), AA1958-4, 6/79. The Customer may also choose to license these Software Products for internal use only as provided in Section V of this policy.

The individual terms and conditions of the license document for each Software Product may differ depending upon the Software Product. However, the general policy provisions are as follows:

A. Term

The term of a Usage Priced Software Product License will be up to five (5) years from acceptance of the Software Product. However, Customer may terminate such a License upon ninety (90) days notice provided that the termination date is at least twelve (12) months after acceptance. Upon expiration of the initial License term, the License shall remain in effect until terminated by Control Data with one hundred-eighty (180) days written notice or by Customer with ninety (90) days written notice. Control Data may change the Monthly License Charge effective upon expiration of the initial term with ninety (90) days written notice.

B. License Charges

Customer pays two (2) separate monthly charges; one based upon its reported internal use, and one based upon its reported external use, of a Usage Priced Software Product. In addition, a single Initial Fee is charged for the Usage Priced Software Product as specified in the Pricing Manual. Usage Priced Software Products are not available on a paid-up Full License.

The monthly charge for Customer's internal use is based upon the Usage Unit Charge specified in the Pricing Manual for the Software Product and Mainframe Model. Each month the Customer reports usage units of the Software Product recorded by Mainframe Model as measured by the on-line accounting files. The monthly charge for internal use is determined by multiplying the total reported usage units by the Usage Unit Charge. If the result exceeds the Maximum Monthly License Charge for internal usage specified in the Pricing Manual, the Customer pays the Maximum Monthly License Charge, for its internal use. There is no minimum charge for internal use under the Full Use License.

The monthly charge for Customer's external use is based upon the external use percentages specified in the Pricing Manual for the Software Product. Each month the Customer determines Total Net Billings for Machine Resources used during execution of the Software Product and for Computer System Resources directly attributable to use of the Software Product. Subject to subparagraph c) below, the monthly charge payable to Control Data by Customer for external use for each of its customers is determined separately for each of Customer's customers. The monthly charge payable by Customer for each of its customers is the greater of the amounts specified in subparagraphs a) and b):

a) The percentage shown in the Pricing Manual applied against Total Net Billings by Customer to its customer for Machine Resources, i.e., machine cycles, used during the execution of the Software Product;

b) The separate percentage shown in the Pricing Manual applied against Total Net Billings by Customer to its customer for Computer System Resources which are directly attributable to the use of the Software Product.

c) For each month, Customer shall add the total amounts payable to Control Data under subparagraph a) above to the total amounts payable to Control Data under subparagraph b) above. If the sum is less than the minimum monthly external use charge specified in the Pricing Manual, the Customer shall pay the Minimum Monthly License Charge in lieu of the amounts payable under subparagraphs a) and b).

There is no maximum monthly charge for external use of a Software Product.

Customer is obligated to pay the Minimum Monthly License Charge for external use regardless of the amount of charges paid for internal use.

Total Billings for Machine Resources (reference subparagraph a) above), i.e., machine cycles, used during execution of the Software Product is comprised of total billings for all of the computer mainframe factors used by the Customer's own accounting routines to establish amounts invoiced to its customers. Such factors include, but are not limited to, machine cycles, central processing, memory, input/output, priority, etc.

Total Billings for Computer System Resources (reference subparagraph b) above) are comprised of total billings for Machine Resources (see previous paragraph) and for all other resources which are directly attributable to the use of the Software Product including application Software Product surcharges, storage and connect charges. "

Total Net Billings" for Machine Resources and Computer System Resources are defined as Total Billings less any applicable prompt payment discounts, any applicable discounts granted by Customer on all of the business conducted with its customer, and any applicable refunds for error correction.

No additional Initial Fee will be charged if a Customer replaces an Internal Use License under Section V of this policy with a Full Use License for the same usage priced Software Product.

C. Multiple Mainframe Licenses

To qualify as a Multiple Mainframe site, the mainframes must be within a radius of 1,000 feet and the Licenses must be for the same item of usage priced software, although they may be designated by different Software Product Numbers. For the multiple mainframes, the Customer pays a single initial fee and, when applicable, a single AM Service Charge. Monthly Charges for a Customer's Internal Use of a Usage Priced Software Product at a Multiple Mainframe Site are determined in the same manner as if the Software Product were licensed at separate mainframe sites.

Similarly, Monthly Charges for a Customer's external use of a Usage Priced Software Product licensed to a Multiple Mainframe Site are determined in the same manner as if the License covered separate sites, with the exception that, for all of the licensed mainframes at the multiple site, a single Minimum Monthly License Charge is applicable to external use.

D. Invoicing

The Initial Fee shall be invoiced and the Minimum Monthly External Use Charge shall commence upon acceptance of the Software Product, as set forth in Section II.E. of this policy, and the latter shall be invoiced to Customer monthly in advance. Payment for Monthly Charges for internal use and for Monthly Charges for external use in excess of the Minimum Monthly External Use Charge will be forwarded by Customer within thirty (30) days after the end of the month accompanied by the Customer's Internal Use Report and External Use Report for that month. If a Customer fails to submit a monthly Internal Use Report as described below, the Maximum Monthly Charge for internal use will be payable by Customer for the internal use portion of total charges due under the License.

E. Customer Obligations

In entering into a Full License for Usage Priced Software Products, Customer agrees:

1. Internal Use

a. Customer will provide Control Data with a monthly Internal Use Report within thirty (30) days after the end of each month. The report shall set forth the internal unit usage by mainframe model of each Usage Priced Software Product licensed by Customer and shall be in the format required by Control Data. No charge will be payable for any unit usage incurred for installation or correction of the Software Product or verification of correction of the Software Product or for any usage resulting in erroneous data if the cause of such result is documented by the Customer as either an error in standard, unmodified equipment (unless such modification was approved by Control Data) supplied and maintained by Control Data or in standard, unmodified Software Products supplied by Control Data and maintained under either CEM or AM service.

b. Customer shall retain usage accounting information, detail usage records and any other information required to substantiate internal usage of the Software Product and the payment due Control Data for at least two years after submission to Control Data of the Internal Use Report covering such information. Such information shall be made available upon thirty (30) days prior request for inspection by Control Data. Customer shall take reasonable steps to protect the information from damage or loss of any kind.

2. External Use

a. Customer shall provide Control Data with a monthly External Use Report within thirty (30) days after the end of each month. The Report shall specify the monthly charge for external use payable by Customer for the preceding month. The report shall set forth the sum of all Total Net Billings by the Customer for the preceding month based upon which a monthly charge is payable to Control Data and the sum of deductions from Total Billings to arrive at Total Net Billings. This information concerning Total Billings and Total Net Billings shall be furnished monthly even if Customer determines that only the minimum monthly charge is payable.

The Report shall be in a format required by Control Data and shall be prepared by or in accordance with Customer's accounting routines.

The Report shall contain only the sums of Total Billings and Total Net Billings by the Customer to its customers. Information as to billings to any individual customer shall not be required. However, Control Data shall have a right to have Customer's records concerning its external use of the Software Product made available for audit at any time upon thirty (30) days' prior request. In no event shall any request be made for any Customer's records without the prior approval of the Vice President, Financial Plans and Controls, Computer Group of Control Data.

b. Customer shall retain detail usage accounting, records and any other information required to substantiate external use of the Software Product and the payment due Control Data, for a period of at least two (2) years after expiration or termination of the License. Customer shall take reasonable steps to protect the information from damage or loss of any kind.

F. Application Maintenance Service

Application Maintenance Service is available for Usage Priced Software Products for an additional monthly charge. This service is described in Section VII Application Maintenance Service (AM Service) of this policy. Central Enhancement and Maintenance Service (CEM Service) is not available for Usage Priced Software Products.

V. USAGE PRICED SOFTWARE PRODUCTS - INTERNAL USE LICENSE

This Section sets forth the current policy for licensing Software Products designated in the Pricing Manual as Usage Priced Software Products, requiring the SUI license. Usage Priced Software Products are generally Application Software Products. The SUI Internal Use License Amendment permits the Software Product to be used for internal use only.

"Internal use" means use of the Software Product by Customer for processing data for its own internal use or the internal use of its subsidiaries (of which Customer owns fifty percent (50%) or more of the capital stock).

"External use" means use of the Software Product by Customer for processing data for other than its own internal use or the internal use of its subsidiaries.

The standard documents to be used to license these Software Products are; Schedule A, AA4069, Rev. 2/79, Schedule H, AA4077 - Rev. 6/79, and Amendment for Usage Priced Software Products, Internal Use License, (SUI), AA1958-3, 6/79. The Customer may also choose to license these Software Products for full use (internal and external) only as provided in Section IV of this policy. Further, a Customer having licensed the Software Products for Internal Use only may obtain a full use license in the manner described in subsection V.F. below (Full Use License).

The individual terms and conditions of the license document for each Software Product may differ depending upon the Software Product. However, the general policy provisions are as follows;

A. Term

The term of a Usage Priced Software Product Internal Use License will be in accordance with the provisions of Schedule H.

B. License Charges

Customer pays monthly charges based upon its reported internal use of a Usage Priced Software Product. In addition, an initial fee is charged for the Usage Priced Software Product as specified in the Pricing Manual. Usage Priced Software Products are available on a Paid-up Internal Use License.

The monthly charge for Customer's internal use is based upon the Usage Unit Charge specified in the Pricing Manual for the Software Products and Mainframe Model. Each month the Customer reports unit usage of the Software Products recorded by Mainframe Model as measured by the on-line accounting files. The monthly charge for internal use is determined by multiplying the total reported usage units by the Usage Unit Charge. If the result exceeds the Maximum Monthly License Charge for internal use specified in the Pricing Manual, the Customer pays the Maximum Monthly License Charge. If the result is less than the Minimum Monthly License Charge for Internal Usage specified in the Pricing Manual, the Customer pays the Minimum Monthly License Charge.

Example:

A Customer with an Internal Use license incurs 8000 Usage Units on a CYBER Model 175 during the month for a Software Product having a Minimum Monthly Charge of $200, a Maximum Monthly Charge of $900 and a Usage Unit Charge of $.09 per Usage Unit. The Customer is billed $200 in advance. The incurred Usage Charge is $720 (8000 x $.09) for which the Customer will be invoiced $520. If the Customer's usage had been 12,000 units, he would have been invoiced $700, the difference between the Minimum and Maximum Monthly License Charge, since 12,000 times $.09 exceeds the Maximum Monthly License Charge.

C. Multiple Mainframe Licenses

To qualify as a Multiple Mainframe site, the mainframes must be within a radius of 1,000 feet and the Licenses must be for the same Usage Priced Software Product, although they may be designated by different product numbers. For the multiple mainframes, the Customer pays a single Initial Fee and, when applicable, a single Application Maintenance Service Charge. Monthly Charges for a Customer's Internal Use of a Usage Priced Software Product at a Multiple Mainframe Site are determined in the same manner as if the Software Product were licensed at separate mainframe sites, with the exception that, for all of the licensed mainframes at the multiple site, a single Minimum Monthly Charge is applicable to internal use.

Example:

Customer with an Internal Use license has three CYBER mainframes installed at the same site location and is using a Software Product with an Initial Fee of $2,310, Minimum Monthly License Charge of $200, Maximum Monthly License Charge of $870 and monthly Application Maintenance Service of $630. The total charges are calculated as follows:

a) Initial Fee - $2,310, one time charge

b) Monthly Application Maintenance Service Charge - $630, invoiced monthly in advance

c) Minimum Monthly License Charge - $200, invoiced monthly in advance

If the Customer's Usage Report showed the following;

CYBER Model 171 - 1000 Usage Units at $.04 per unit

CYBER Model 174 - 1500 Usage Units at $.12 per unit

CYBER Model 176 - 900 Usage Units at $.65 per unit

Customer would be invoiced for $605 ((1000 x $.04 + 1500 x $.12 + 900 x $.65) - 200). If the combined Usage Charge for all mainframes exceeds $2,610 (3 x $870), the Customer will be invoiced for $2,410; the difference between the Minimum and three times the Maximum Monthly License Charge.

D. Invoicing

The Initial Fee shall be invoiced and the Minimum Monthly License Charge for Internal Use shall commence upon acceptance of the Software Product, as set forth in Section II.E. of this policy, and the latter shall be invoiced to Customer monthly in advance. Payment for monthly charges for internal use in excess of the Minimum Monthly Internal Use Charge will be forwarded by Customer within thirty (30) days after the end of the month accompanied by the Customer's Internal Use Report for that month. If a Customer fails to submit a monthly Internal Use Report as described below, the Maximum Monthly License Charge for internal use will be payable by Customer.

E. Customer Obligations

In entering into an Internal Use License for Usage Priced Software Products, Customer agrees:

1. Customer will provide Control Data with a monthly Internal Use Report within thirty (30) days after the end of each month. The report shall set forth the internal unit usage by mainframe model of each Usage Priced Software Product licensed by Customer and shall be in the format required by Control Data. No charge will be payable for any unit usage incurred for installation or correction of the Software Product or verification of correction of the Software Product, or for usage resulting in erroneous data if the cause of such result is documented by the Customer as either an error in standard, unmodified equipment (unless such modification was approved by Control Data) supplied and maintained by Control Data or in standard unmodified Software Products supplied by Control Data and maintained under either CEM of AM Service.

2. Customer shall retain unit usage accounting information, detail usage records and any other information required to substantiate internal usage of the Software Product and the payment due Control Data for at least two years after submission to Control Data of the Internal Use Report covering such information. Such information shall be made available upon thirty (30) days prior request for inspection by Control Data. Customer shall take reasonable steps to protect the information from damage or loss of any kind.

F. Full Use License

An Internal Use License Amendment authorizes Customer to use the Software Product for internal use only, as defined above. This limited authorization is made for the sole purpose of enabling Control Data to determine charges applicable to the Software Product, and is not intended to restrict Customer's right to obtain a Full Use License. Customer may at any time obtain a Full Use License for a Software Product corresponding to that licensed on an internal use basis, if at the time Control Data has the right to grant a Full Use License. If a Customer obtains a Full Use License, Control Data's then current published terms and conditions will be applicable to the License. However, on that mainframe, no additional initial fee will be charged for the Full Use License.

G. Application Maintenance Service

Application Maintenance Service is available for Usage Priced Software Products for an additional monthly charge. This service is described in Section VII Application Maintenance Service (AM Service) of this policy. Central Enhancement and Maintenance Service (CEM Service) is not available for Usage Priced Software Products.

VI. CENTRAL ENHANCEMENT AND MAINTENANCE SERVICE (CEM SERVICE)

A. Definition of Service

CEM Service is an optional support service available (except as to usage priced Software Products) for an additional monthly charge which provides central error correction, updates, enhancements and, when applicable, rights to Successor Products. Specific CEM Service as presently offered includes:

1. Review, classification and verification of PSR's (Programming System Reports) received for released Software Products used under a CEM Service option.

2. Publication of PSR's as received; Control Data's response to PSR's, including suggested corrective code, where applicable, except that the corrective code may be "published" via Batch Corrective Code.

3. Distribution of available Batch Corrective Code, Updates and Enhancements, if requested by Customer.

4. Notification of the availability of certain enhancements designated by Control Data on specific Software Products as Successor Products, and distribution of these Successor Products upon Customer request and execution of the necessary licensing agreement or amendment.

5. Publication of errata and/or revision packets for Software Product documentation.

Control Data will employ reasonable effort to correct, at no additional cost to Customer, errors, malfunctions or defects in the Software Products but does not guarantee it will correct all such errors, malfunctions or defects.

NOTE: All enhancements, updates and central correction services, including the verification of corrective code, are performed using standard Software Products which contain the latest Batch Corrective Code and are at the latest update level. Customer assumes complete responsibility for the interface between those Software Products for which CEM Service has been contracted and all other software (whether or not licensed from Control Data) used by Customer.

B. CEM Service Offering

Unless designated with a "N/A" (not available), CEM Service is offered on standard Software Products as listed in the Pricing Manual. If Customer desires CEM Service, Customer must contract for CEM Service for all Software Products licensed on the mainframe for which CEM Service is offered (except for SCOPE 2, NOS and NOS/BE product set software as provided below).

SCOPE 2, NOS and NOS/BE Product Sets

Control Data recommends that Customer always contract for CEM Service where offered. However, for SCOPE 2, NOS and NOS/BE Product Sets the Customer may select CEM Service for some Software Products and not others.

Such selection is constrained by the requirement that contracting for CEM Service for any Software Product necessitates concurrently contracting for CEM Service for all Software Products required for its operation as identified in the Pricing Manual. For example, Customer ordering CEM Service for COBOL 5 under NOS/BE 1 (F621-16) must also order CEM Service, for SORT/MERGE 4 (F621-13) plus the operating system (F621-01 or F621-76). Also, if COBOL 5 is to be used interactively, CEM Service must also be ordered for Intercom 4 (F621-04).

C. Minimum Term

The minimum term for which CEM Service may be contracted is twelve (12) months, unless a lesser time is specified in the Pricing Manual. After the minimum term, CEM Service automatically continues thereafter until terminated by Customer or Control Data in accordance with the License Agreement.

D. Charges

The Monthly CEM Service charges are shown in the price pages of the Pricing Manual. CEM Service charges commence upon acceptance of the Software Product and are billed monthly in advance.

The Monthly CEM Service Charge may be adjusted by Control Data at any time after the initial twelve (12) months of charges with ninety (90) days written notice. The new CEM Service Charge will automatically be invoiced unless a termination notice is received from the CEM Service customer in accordance with the License Agreement.

E. Multiple Mainframe Charges

Only one CEM Service charge will be made for each separate Software Product licensed at a multiple mainframe site regardless of the number of installed mainframes. If the CEM Service charge varies by mainframe model, the highest charge will apply.

Example: A multiple mainframe customer with licenses for F521-01 and F720-01 would pay the CEM Service charges for F521-01.

F. Successor Product

A contract for CEM Service for an existing Software Product entitles the Customer, upon request, to a license for any Software Product designated by Control Data as the Successor Product of the existing Software Product.

Upon acceptance of a Successor Product, the customer may retain the right to use the predecessor product on a "no charge" basis until the Customer terminates the license for the Successor Product. Upon termination of a Successor Product, the license for any predecessor product shall also be terminated and Customer shall certify to Control Data that all products have been destroyed.

CEM Service for Successor Products will be contracted for in accordance with the terms and prices established by Control Data for the Successor Product. Contracting CEM Service for Successor Products preserves the Customer's rights to receive CEM Service on the predecessor product at no charge for as long as it is offered or until CEM Service is terminated on the Successor Product, whichever occurs first.

G. CEM Service Termination

Unless otherwise specified in the Pricing Manual by a CEM Service End Date for a specific Software Product(s), Control Data may discontinue CEM Service for any or all licensed Software Products upon twelve (12) months written notice if a Successor Product is made available, or upon twenty-four (24) months written notice, if there is no Successor Product. When a CEM Service End Date is specified for a Software Product, Article 1 of Schedule H must reflect this date.

Customer may terminate CEM Service with no effect on the Software License upon sixty (60) days prior written notice provided, however, the termination date is at least twelve (12) months after the date CEM Service was initiated. Upon such termination, the license will entitle Customer to use the installed version of the Software Product as it existed on the date of termination of CEM Service. Control Data's obligation to supply error corrections, updates, enhancements and Successor Products shall cease upon termination of CEM Service.

H. General

Upon mutual agreement, Customer may contract for CEM Service subsequent to entering into a License Agreement or may recontract for CEM Service after having cancelled said service by providing Control Data with notice to cancel the existing agreement and provided Customer enters into a new license for the Software Products and CEM Service in accordance with the then prevailing prices (Monthly License and CEM Service Charges and Initial Fee) and terms and conditions for the Software Products.

VII. APPLICATION MAINTENANCE SERVICE (AM SERVICE)

A. Definition of Service

Application Maintenance Service is an optional support service available for an additional monthly charge which provides error correction and updates as may be made available from time to time for Application Software Products. The policy governing AM Service is essentially the same as for CEM Service except that AM Service does not include rights to any Successor Products or to any enhancements and the minimum term and termination provisions are different.

B. AM Service Offering

Unless designated with a "N/A" (not available), AM Service is offered on Application Software Products as listed in the Pricing Manual. As a condition to contracting for AM Service for a particular Application Software Product, Customer must also contract for CEM Service or AM Service, as applicable, for all Software Products required for operation of the Application Software Product.

C. Minimum Term

A minimum term for which AM Service may be contracted is six (6) months unless a lesser time is specified in the Pricing Manual. After the minimum term, AM Service automatically continues thereafter until terminated by Customer or Control Data in accordance with the License Agreement.

D. Charges

The Monthly AM Service Charges are shown in the price pages of the Pricing Manual. The AM Service charges commence upon acceptance of the Application Software Product and are billed monthly in advance. The Monthly AM Service Charge may be adjusted by Control Data at any time afer the initial six (6) months of charges with ninety (90) days written notice. The new AM Service Charge will automatically be invoiced unless a termination notice is received from the AM Service Customer in accordance with the License Agreement.

E. AM Service Termination

Control Data reserves the right to change the nature of the AM Service or to discontinue the service at any time after the initial six (6) months upon six (6) months prior written notice. Customer may terminate AM Service with no effect on the Software License upon sixty (60) days written notice provided that the termination date is at least six (6) months after the AM Service is initiated.

VIII. NOS/BE to NOS Transition

The following special transition provisions will apply to all customers currently under CEM Service wishing to convert from the NOS/BE operating system to the NOS operating system:

A. General Provisions

1. Upon execution of a Schedule H Software License Agreement or Amendment to an existing current Schedule H, Control Data will deliver the NOS Operating System and associated product set to the Customer for his use during the period of conversion not to extend beyond October 1, 1983. Only those NOS Software Products required to convert the Customer's existing NOS/BE product set are to be included on this license (i.e., equivalent products). Charges for the NOS Transition License will be suspended until NOS is utilized for Productive Use or on October 1, 1983 whichever is earlier.

2. The NOS Transition license will remain in effect only as long as the Customer continues to have a license to use the NOS/BE product set and continues to pay all applicable charges, including the monthly CEM Service charge for NOS/BE and its product set. This NOS Transition license will terminate upon completion of conversion efforts and the placement of NOS into Productive Use or October 1, 1983, whichever occurs earlier.

3. Control Data will supply CEM Service as made available under Schedule H to the appropriate products included on the NOS license. Standard CEM Service will apply to these products (i.e., Successor Products will be supplied, CEM Service End Dates apply, etc.).

4. To continue use of the NOS product set after the conversion period, the Customer must sign a new license agreement for the NOS product set at the then current charges. This license may be ordered either on a Paid-Up license or on a monthly license basis (see rules below which apply to customers who may have acquired a paid-up license for NOS/BE). The Initial Fee for the NOS Software Products covered by this transition policy will be waived. CEM Service for NOS may be ordered at the option of the customer at the then current terms, conditions and prices.

5. All charges applicable to the license and CEM Service for the NOS/BE product set will terminate on the day preceding the commencement date of charges of the license for NOS as described in Item 4 above. The Customer retains the right to use NOS/BE in accordance with the basic license terms but CEM Service for NOS/BE is terminated once the NOS charges are effective.

B. Implementation

The following statement is to be placed on the first page of Schedule H or Amendment to an existing current Schedule H under the columns entitled "Monthly License Charge" and "Monthly CEM Service Charge" for NOS product ordered under this transition policy:

"Customer is provided a license for use of the following Software Products at no additional charge for purposes of conversion from the NOS/BE Software Operating System and product set presently licensed from Control Data under the Agreement dated _____ (CDC Contract No. _____). This license shall remain in effect for as long as Customer has a license to use the above referenced NOS/BE product set including CEM Service and shall terminate on the earlier of the following events: (i) termination by Control Data or Customer of this License or the Agreement dated _____ in accordance with the provisions of either; or (ii) completion of conversion from NOS/BE to NOS and commencement of Productive Use of the NOS Software Products; or (iii) October 1, 1983. Control Data will in addition provide at no additional charge those services described in Article 8 hereof (CEM Service) as may be made available for the (NOS) Software Products listed during the period of this license as set forth herein provided that CEM Service is being provided for the equivalent NOS/BE Software Products."

C. Paid-up License Rules

The established policy of subsection VIII.A in the General Provisions above, will apply to all Customers who have acquired a fully paid-up license for the NOS/BE product set as long as the Customer is also under contract for CEM Service. In addition, the paid-up license Customer for NOS/BE will be granted a fully paid-up license for the equivalent NOS product set at no additional charge upon commencement of Productive Use of the NOS Software Products..

D. Government Customers Under the GSA/ADP Schedule Contract or Other Negotiated Government Contracts

1. These special transition provisions will be offered to GSA for inclusion in the FY1979 GSA/ ADP Schedule contract. Until an approved supplemental agreement to that contract has been issued, any offering concerning this special transition plan must be the subject of a contract outside of the GSA contract. Contact the GSA and Master Contracts organization for guidance.

2. These special transition provisions may be offered to existing Government customers under negotiated contracts outside of the GSA/ADP Schedule Contracts. All such transactions must be coordinated through the GSA and Master Contracts organization.

IX. MISCELLANEOUS

A. Pre-Release

All pre-releases for licensed Software Products will require a special license with monthly charges beginning as specified in the license.

B. Customer Education

All courses for Customer education are to be arranged for separately as indicated in the Customer Education Section of the Pricing Manual and charged separately. There is no training or education included with Control Data Software Products.

C. Software Installation

Installation is not included with Control Data Software Products. However, for new computer system installations where the software is being installed concurrent with the system installation by Control Data, Control Data will provide, at no additional charge, initial installation.

D. At-Site Software Support

It is the policy of Control Data to make available analyst services and support, on a Time and Material basis, using the standard analyst rates to any Customer who desires such support. The specific scope of such analyst support should be determined on an individual basis and documented by the Schedule G and its associated Service Order for commercial customers.
Analyst services for Government/GSA customers will be provided in accordance with the GSA/ADP Schedule Contract. All other Government customers must enter into an appropriate contractual document for such services. Non-GSA Government contracts must be coordinated through the GSA and Master Contracts organization.

E. Publicity and Promotion

Customer may not use the trade name, trademark, service mark, logo or other designation of Control Data in its promotional or marketing activities or for any other purpose whatsoever without the prior written approval of Control Data in each case.

F. Definition of Price Page Headings

1. Product Number

2. Product Description

a. Licensable To

"****" in the Product Number column denotes a general software heading that applies to the Software set below. This general heading specifies the mainframe that the product set is to be licensed to. Example: "*** CDC 2809, 2808, 2806 software" specifies that M631-xx product set below must be licensed to either a 2809, or 2808, or 2806 mainframe.

b. Outside Vendor Products

"(Chargeable to all customers)" denotes a Software Product which is the property of an outside vendor(s).

3. Available Date

Column contains either a date or a code designating the availability and status of a Software Product. A date designates the projected date a product will be available for shipment formulated as mm/yy. Available Date Codes are A - Available, S - Superseded (use current product), I - Inactive (not to be marketed and are listed in the Inactive Software section for reference only).

4. License Required (see Section II. Software License, above). This column indicates the type of license required, i.e.: STD, SUI, etc. PST in this column indicates product cannot be added on to Sch. H revisions prior to 6/79 but must be entered to Schedule H of 6/79 or newer. SUI is Standard Usage Internal Only. SUF is Standard Usage Full license.

5. Initial Fee

   A one time charge payable upon acceptance of the Software Product(s).

6. Minimum Monthly License Charge and Usage Unit Charges

   a. Fixed Monthly License Charge Software Products

      These Software Products have a specified Monthly License Charge for the license irrespective of the amount of use. The Use Unit column will always contain an "N/A" for these products. The amount in the Minimum Monthly column is the specified Monthly License Charge.

   b. Usage Priced Software Products

      These Software Products are priced on a percentage or per usage unit basis. The Use Unit column for these Software Products will always contain two (2) percentage numbers or a price per usage unit. The amount shown in the Minimum Monthly License Charge column is billed monthly in advance.

7. Paid-Up License Charge (see Subsection III.B Paid-Up License Charge, above). The one time charge for a Fully-Paid license.

8. CEM Service Charge (see Subsection VI.D CEM Service Charges, above). The monthly charge for CEM Service.

9. CEM End Date

   Designated date CEM Service will end for that Software Product and is the first day of the month so designated.

10. AM Service Charge (see Subsection VII.D AM Service Charge, above). The monthly charge for AM Service.

11. Maximum Monthly License Charge - The maximum monthly charge payable for the Internal Use of a Usage Priced Application Software Product.

PRODUCT NUMBER	PRODUCT DESCRIPTION	AVAIL DATE	LIC REQ	****** CHARGES ****** INITIAL FEE	MINIMUM/USE MONTHLY/UNIT	PAID UP LICENSE	CEM SERVICE	CEM END DATE
***	**NON-CDC SYSTEM SOFTWARE**							
V621- 01	**STORAGE MANAGEMENT SYSTEM (SMS)**	08/79	STD	3,000	ACC/ N/A	20,000	100	
	THE STORAGE MANAGEMENT SYSTEM (SMS) IS A UTILITY SYSTEM WHICH MANAGES DATA IN A HIERARCHICAL SYSTEM COMPOSED OF DASD, TAPE AND MASS STORAGE. SMS PROVIDES A MEANS THROUGH BOTH BATCH AND TSO PROCESSING TO ARCHIVE, RESTORE, BACK-UP AND TRANSPARENTLY MIGRATE DATA TO DIFFERENT STORAGE DEVICES. THIS RELEASE SUPPORTS MVS AND REQUIRES VDAM 2.1.							
V523- 02	**VIRTUAL DATASET ACCESS METHOD**	A	STD	3,260	375/ N/A	17,510	150	
	PROVIDES STAGING AND DE-STAGING CAPABILITIES BETWEEN AN IBM 370 (145 OR LARGER) AND THE CDC 38500 MASS STORAGE SYSTEM WHICH SUPPORTS MULTIPLE MAINFRAME CONFIGURATIONS. OPERATES UNDER OS/VS2 RELEASE 1.7 (SVS), OS/VS2 RELEASE 2.7 AND ABOVE (MVS), OS/VS1 RELEASES 3.0 TO 6.0, OS/MVT RELEASE 21.8. SUCCESSOR TO / V522- 01, V422- 01, V322- 01, V222- 01							

AVAIL DATE CODES * A - AVAILABLE S - SUPERSEDED (USE CURRENT PRODUCT)
*LICENSE REQUIRED (SPI/SF3/SPU) SEE PAGE 27/28 OF CONTRACTS SECTION.

SOFTWARE PRODUCTS - CURRENT

PRODUCT NUMBER	PRODUCT DESCRIPTION	AVAIL DATE	LIC REQ	INITIAL FEE	MINIMUM/USE MONTHLY/UNIT	PAID UP LICENSE	CEM SERVICE	CEM END DATE
***	CDC 2550-1, 2550-2, 2551-1, 2551-2, 2552-2 SOFTWARE							
N222- 01	COMMUNICATIONS CONTROL FOR INTERCOM (CCI) 3 (INTERACTS WITH NOS/BE 1)	A	STD	570	70/ N/A	3,370	55	
	255X NPU RESIDENT SOFTWARE PROVIDING FRONT-END DATA COMMUNICATIONS ACTIVITIES WITH HOST INTERFACE TO A CYBER 170/CYBER 70L/6000 MAINFRAME OPERATING WITH NOS/BE 1 AND INTERCOM 5.							
	REQUIRES F621-07 OR F6X0-10 PLUS REQUIRES F621-C3 OR F6X0-15 FOR MAINTENANCE							
	SUCCESSOR TO / N221- 03, F621- 04							
N221- 01	COMMUNICATIONS CONTROL PROGRAM (CCP) 3 (INTERACTS WITH NOS 1)	A	STD	570	70/ N/A	3,370	55	
	255X RESIDENT SOFTWARE PROVIDING FRONT-END DATA COMMUNICATIONS ACTIVITIES WITH HOST INTERFACE TO A CYBER 170/CYBER 70L/6000 COMPUTER OPERATING WITH NOS 1/NAM 1.							
	REQUIRES F521-C6 OR F7X0-10 PLUS REQUIRES F521-25 OR F7XC-15 FOR MAINTENANCE							
	SUCCESSOR TO / F521- 21, F521- 04, F521- 03							
N221- 02	LINK INTERFACE PROGRAM 1 UNDER CCP 3	A	STD	120	30/ N/A	1,320	20	
	PROVIDES SUPPORT FOR COMMUNICATION BETWEEN LOCAL AND REMOTE NODAL 255X PROCESSORS USING HDLC PROTOCOL. REMOTE NODAL PROCESSOR MUST ALSO BE OPERATING WITH CCP 3							
	REQUIRES N221-01							

PRODUCT NUMBER	PRODUCT DESCRIPTION	AVAIL DATE	LIC REQ	CHARGES INITIAL FEE	CHARGES MINIMUM/USE MONTHLY/UNIT	CHARGES PAID UP LICENSE	CHARGES CEM SERVICE	CEM END DATE
***	CDC 2809, 2808, 2806 SOFTWARE							
M631- 01	DISTRIBUTED NETWORK SYSTEM 1	A	STD	4,825	1,095/0.000	48,625	810	
	HIGH-SPEED NODAL INTERCONNECT TIP, BINARY NETWORK HEADER, FULL SESSION SUPPORT, MULTINODE ENVIRONMENT, MULTIHOST-PER-NODE ENVIRONMENT,FULL INTERNODAL SYNCHRONIZATION.							
M631- 10	TC500 TIP 1	A	STD	200	115/0.000	4,800	70	
M631- 11	3940 TIP 1	A	STD	200	115/0.000	4,800	70	
M631- 12	AT770 TIP 1	A	STD	200	115/0.000	4,800	70	
M631- 13	3271 CLUSTER CONTROLLER TIP 1	A	STD	200	115/0.000	4,800	70	
M631- 14	TTY MOD 40 3270 EMULATION TIP 1	A	STD	200	115/0.000	4,800	70	
M631- 15	TTY DISPLAY CLUSTER CONTR TIP 1	A	STD	200	115/0.000	4,800	70	
M631- 16	2780 BSC TIP 1	A	STD	200	115/0.000	4,800	70	
M631- 17	TTY M28 TIP 1	A	STD	200	115/0.000	4,800	70	
M631- 18	TTY M33/M35 TIP 1	A	STD	200	115/0.000	4,800	70	
M631- 19	TWX DIAL-IN/OUT TIP 1	A	STD	200	115/0.000	4,800	70	
M631- 20	ISD R1745 TIP 1	A	STD	200	115/0.000	4,800	70	
M631- 51	EXTERNAL STIMULATOR 1	A	STD	250	150/0.000	6,250	70	
M631- 52	SYSTEM RECORD AND REDUCTION PACKAGE 1	A	STD	250	150/0.000	6,250	70	

PRODUCT NUMBER	PRODUCT DESCRIPTION	AVAIL DATE	LIC REC	CHARGES INITIAL FEE	CHARGES MINIMUM/USE MONTHLY/UNIT	CHARGES PAID UP LICENSE	CHARGES CEM SERVICE	CEM END DATE
***	CDC 2808, 2806, 2805 SOFTWARE							
M621-100	SINGLE PMX MESSAGE SWITCHING SYSTEM 2	A	STD	2,450	730/ N/A	31,650	520	
	ACCOMODATES A VARIETY OF PROTOCOLS AND TERMINAL TYPES - CLASSIC MESSAGE SWITCHING APPLICATIONS.							
M621-102	DUAL PMX TRANSPORTATION MODULE 1	A	STD	3,670	840/ N/A	37,270	595	
	DESIGNED FOR HIGH THROUGHPUT OF SMALL-TO-MEDIUM SIZE MESSAGES IN A HIGH SPEED FAST RESPONSE ENVIRONMENT.							
M621-104	DUAL PMX FINANCIAL MODULE 1	A	STD	3,670	840/ N/A	37,270	595	
	PROVIDES STRICT PROTECTION AND ACCOUNTABILITY FOR A RELATIVELY LOWER VOLUME OF TRAFFIC - ORIENTED TOWARDS FUNDS TRANSFER AND ADMINISTRATIVE CONTROL APPLICATIONS.							
M621-106	DUAL PMX SERVICE ORDER MODULE 1	A	STD	3,670	840/ N/A	37,270	595	
	TYPICALLY OPERATES ON LONG MESSAGES (INVENTORY CONTROL, ORDER ENTRY) AND PROVIDES DATA COLLECTION CAPABILITY TO GENERATE MAGNETIC TAPES FOR DOWNLINE PROCESSING.							
M621-108	DUAL PMX INDUSTRIAL MODULE 1	A	STD	3,670	840/ N/A	37,270	595	
	CREATES AND MAINTAINS AN INTERNAL DATA BASE OF SERVICE ORDER ENTRY AND DISSEMINATION. PROVIDES ORDER ENTRY AND DATA COLLECTION FUNCTIONS FOR REAL-TIME OPERATIONS CONTROL.							
M521- 01	PROGRAM PRODUCTION SYSTEM PACKAGE 1	A	STD	120	190/ N/A	7,720	140	
	INCLUDES ASSEMBLER, BUILDER, UTILITIES, TEST AIDS AND BASIC STANDARD FORTRAN WITH FORTRAN JOB LOAD PROCESSOR FOR LOAD AND CONTROL.							

SOFTWARE PRODUCTS - CURRENT

PRODUCT NUMBER	PRODUCT DESCRIPTION	AVAIL DATE	LIC REQ	CHARGES INITIAL FEE	CHARGES MINIMUM/USE MONTHLY/UNIT	CHARGES PAID UP LICENSE	CHARGES CEM SERVICE	CEM END DATE
***	CDC 2005 SOFTWARE							
M321- 01	SINGLE PMX BASE SWITCHING SYSTEM 1 INCLUDES THE FOLLOWING SELECTABLE FEATURES - HISTORY MAGNETIC TAPE, MAGNETIC TAPE JOURNAL, MAGNETIC TAPE RETRIEVAL, DISK RETRIEVAL, QUEUE EXTENSION ON MAGNETIC TAPE, QUEUE EXTENSION DISK. UP TO FIVE RTIPS AND ONE COMPUTER INTERFACE WILL BE INTEGRATED INTO AN INITIAL SYSTEM WITHOUT ADDITIONAL CHARGE. (VERIFY SELECTION WITH STAOPS.)	A	STD	2,450	520/ N/A	23,250	370	
M321- 02	DUAL PMX BASE SWITCHING SYSTEM 1 INCLUDES THE FOLLOWING SELECTABLE FEATURES - HISTORY MAGNETIC TAPE, MAGNETIC TAPE JOURNAL, MAGNETIC TAPE RETRIEVAL, DISK RETRIEVAL, QUEUE EXTENSION ON MAGNETIC TAPE, QUEUE EXTENSION DISK. UP TO FIVE RTIPS AND ONE COMPUTER INTERFACE WILL BE INTEGRATED INTO AN INITIAL SYSTEM WITHOUT ADDITIONAL CHARGE. (VERIFY SELECTION WITH STAOPS.)	A	STD	3,670	620/ N/A	29,470	435	
M321- 03	TRIPLE PMX BASE SWITCHING SYSTEM 1 INCLUDES THE FOLLOWING SELECTABLE FEATURES - HISTORY MAGNETIC TAPE, MAGNETIC TAPE JOURNAL, MAGNETIC TAPE RETRIEVAL, DISK RETRIEVAL, QUEUE EXTENSION ON MAGNETIC TAPE, QUEUE EXTENSION DISK. UP TO FIVE RTIPS AND ONE COMPUTER INTERFACE WILL BE INTEGRATED INTO AN INITIAL SYSTEM WITHOUT ADDITIONAL CHARGE. (VERIFY SELECTION WITH STAOPS.)	A	STD	4,900	720/ N/A	33,700	510	
M321- 04	QUAD PMX BASE SWITCHING SYSTEM 1 INCLUDES THE FOLLOWING SELECTABLE FEATURES - HISTORY MAGNETIC TAPE, MAGNETIC TAPE JOURNAL, MAGNETIC TAPE RETRIEVAL, DISK RETRIEVAL, QUEUE EXTENSION ON MAGNETIC TAPE, QUEUE EXTENSION DISK. UP TO FIVE RTIPS AND ONE COMPUTER INTERFACE WILL BE INTEGRATED INTO AN INITIAL SYSTEM WITHOUT ADDITIONAL CHARGE. (VERIFY SELECTION WITH STAOPS.)	A	STD	6,120	820/ N/A	39,920	585	
M321-121	TELETYPE ORIENTED RTIP PKG 1 UNDER PMX 8SS1 INCLUDES REMOTE INTERFACE SOFTWARE PACKAGE FOR - MODEL 28 TTY, AT+T 838 TTY, MODEL 33/35 TTY, 713-10 CONVERSATIONAL DISPLAY LEVEL, AT+T 854 TTY AND WU TWX.	A	STD	120	70/ N/A	2,920	55	
M321-131	CRT ORIENTED RTOP PKG 1 UNDER PMX 8SS1 INCLUDES REMOTE INTERFACE SOFTWARE PACKAGE FOR - IBM 2740, IBM 1053 AND CDC 711-1.	A	STD	120	70/ N/A	2,920	55	
M321-141	ASCII, EBCDIC ORIENTED RTIP UNDER PMX 8SS1 INCLUDES REMOTE INTERFACE SOFTWARE PACKAGE FOR DIAL NETWORK OR POINT TO POINT DEDICATED CIRCUIT. SPECIFY CODE.	A	STD	120	70/ N/A	2,920	55	
M121-130	TTY ORIENTED RTIP PKG 1 UNDER DCS 1 REMOTE TERMINAL INTERFACE PKG, INCLUDES SOFTWARE INTERFACE FOR THE FOLLOWING, TTY-MODEL 28, AT+T 838, AT+T 8101, MODEL 35, MODEL 37, AT+T 954, AT+T 869, AT+T INKTRONIC, WU M37, TWX MODEL 33 OR 35 AT 100 BPS - TELEX WITH WU 12159 AT 50 BPS.	A	STD	120	100/ N/A	4,120	75	

AVAIL DATE CODES * A - AVAILABLE S - SUPERSEDED (USE CURRENT PRODUCT)
*LICENSE REQUIRED (SPT/SP3/SPU) SEE PAGE 27/28 OF CONTRACTS SECTION.

PRODUCT NUMBER	PRODUCT DESCRIPTION	AVAIL DATE	LIC REQ	CHARGES INITIAL FEE	CHARGES MINIMUM/USE MONTHLY/UNIT	CHARGES PAID UP LICENSE	CHARGES CEM SERVICE	CEM END DATE
***	CDC CYBER 170 MODEL 176/CYBER 70 MODEL 76/7000 SOFTWARE							
G122- 01	SCOPE 2 PACKAGE INCLUDING SCOPE 2 AND COMPASS 3 (FORMERLY IDENTIFIED AS COMPASS 2). PROVIDES COMMUNICATION WITH THE FOLLOWING WHEN USED AS STATIONS UNDER NOS/BE 1 OR SCOPE 3.4. -CDC CYBER 170 MODELS 171, 172, 173, 174, 175, 176 OR CYBER 70 MODELS 72, 73, 74 OR 6000. REQUIRES G122-05 FOR MAINTENANCE PLUS REQUIRES G122-08 FOR MAINTENANCE PLUS REQUIRES G122-03 OR G122-25 FOR MAINTENANCE	A	STD	6,680	3,560/ N/A	149,080	1,260	
G122- 03	FORTRAN EXTENDED 4 UNDER SCOPE 2 (FORMERLY IDENTIFIED AS FORTRAN EXTENDED 2) REQUIRES G122-01	A	STD	860	460/ N/A	19,260	170	
G122- 04	COBOL 2 UNDER SCOPE 2 (FORMERLY IDENTIFIED AS COBOL 1) REQUIRES G122-05	A	STD	130	230/ N/A	9,330	170	
G122- 05	SORT/MERGE 1 UNDER SCOPE 2 REQUIRES G122-01	A	STD	130	180/ N/A	7,330	125	
G122- 06	FORTRAN EXTENDED 5 UNDER SCOPE 2	A	STD	1,030	550/ N/A	23,030	295	
G122- 07	FORTRAN 4/5 CONVERSION AIDS 1 UNDER SCOPE 2 REQUIRES G122-03 OR G122-25	A	STD	N/C	N/C / N/A	N/C	N/A	
G122- 08	MAINTENANCE PACKAGE 1 UNDER SCOPE 2 INCLUDES REQUIRED MAINTENANCE TOOLS. REQUIRES G122-01	A	STD	N/C	N/C/ N/A	N/C	N/A	
G122- 09	SIMSCRIPT 3 UNDER SCOPE 2 (CHARGEABLE TO ALL CUSTOMERS) CONSOLIDATED ANALYSIS CENTERS, INC. (CACI) PREPARED THIS CDC VERSION OF THEIR SIMSCRIPT 1.5. SIMSCRIPT IS A LANGUAGE DESIGNED TO SIMULATE A REAL SITUATION THAT CHANGES OVER A TIME INTERVAL. TIMING ROUTINE IS AUTOMATICALLY GENERATED TO TRACK SIMULATED TIME AND CALLS USER ROUTINES AT THEIR SCHEDULED TIMES. REQUIRES G122-03 OR G122-25	A	STD	680	290/ N/A	13,730	N/A	
G122- 14	ALGOL-60 5 UNDER SCOPE 2 REQUIRES G122-01 SUCCESSOR TO / G122 13	A	STD	750	300/ N/A	12,750	210	
G122- 20	APEX-III OUT-OF-CORE SYSTEM 1 UNDER SCOPE 2 A HIGH PERFORMANCE LINEAR PROGRAMMING SYSTEM PROVIDING A PRIMAL OPTIMIZER, DEVEX OPTIMIZER, SOLUTION RANGING, AND NUMEROUS ADDITIONAL CAPABILITIES INCLUDING AN OUT-OF-CORE CAPABILITY INCLUDING DISK AND/OR ECS. REQUIRES G122-03 OR G122-25 SUCCESSOR TO / G122 19	A	*SPI	2,310	410/ N/A	19,530	295	
G122- 21	APEX-III MIXED INTEGER PROGRAMMING OPTION UNDER SCOPE 2 PROVIDES A MIXED INTEGER PROGRAMMING CAPABILITY INCLUDING BINARY AND GENERAL INTEGER VARIABLES AND SPECIAL ORDERED SETS, TYPE 1 AND 2. REQUIRES G122-20	A	*SPI	210	320/ N/A	13,650	225	
G122- 22	APEX-III MATRIX REDUCTION OPTION UNDER SCOPE 2 PROVIDES A MATRIX REDUCTION (REDUCE) CAPABILITY TO THE APEX-III PACKAGE INCLUDING REGENERATION OF SOLUTION TO THE ORIGINAL PROBLEM. REQUIRES G122-20	A	*SPI	210	70/ N/A	3,150	55	
G122- 23	APEX-III PARAMETRICS OPTION UNDER SCOPE 2 PROVIDES PARAMETRIC RHS AND PARAMETRIC OBJ CAPABILITIES FOR APEX-III PACKAGE. REQUIRES G122-20	A	*SPI	210	70/ N/A	3,150	55	
G122- 25	FORTRAN EXTENDED 4 UNDER SCOPE 2 INCLUDES SINGLE PASS COMPILE OPTION. REQUIRES G122-01	A	STD	1,030	550/ N/A	23,030	295	
G122- 27	IMSL UNDER SCOPE 2 REQUIRES G122-03 OR G122-25	07/78	*SPI	500	110/ N/A	14,000	40	

PRODUCT NUMBER	PRODUCT DESCRIPTION	CPU	AVAIL DATE	LIC REQ	INITIAL FEE	MONTHLY RIGHT TO USE	MONTHLY CEMS	PAID UP LICENSE	CEMS END DATE
F720-01	NOS 1 PACKAGE FOR CYBER 170-	720	A	*PST	1,368	684	470	28,728	
F730-01	700 Series. Requires F7X0-02	730			1,632	816	555	34,272	
F740-01	for maintenance plus requires	740			2,360	1,180	785	49,560	
F750-01	F7X0-21 or F7X0-22 for main-	750			3,142	1,571	1,070	65,982	
F760-01	tenance.	760			3,514	1,757	1,200	73,794	
F770-01		176-4XX			4,270	2,135	1,455	89,670	
F720-02	Maintenance Package under	720	A	*PST	N/C	N/C	N/A	N/C	
F730-02	NOS 1. Requires F7X0-01.	730			N/C	N/C	N/A	N/C	
F740-02		740			N/C	N/C	N/A	N/C	
F750-02		750			N/C	N/C	N/A	N/C	
F760-02		760			N/C	N/C	N/A	N/C	
F770-02		176-4XX			N/C	N/C	N/A	N/C	
F720-03	Multi-Mainframe Module 1	720	A	*PST	198	99	65	4,158	
F730-03	under NOS. Requires	730			240	120	85	5,040	
F740-03	F7X0-01.	740			340	170	115	7,140	
F750-03		750			460	230	155	9,660	
F760-03		760			514	257	175	10,794	
F770-03		176-4XX			624	312	215	13,104	
F720-04	Mass Storage Systems (MSS)	720	5/80	*PST	908	454	310	19,068	
F730-04	1 under NOS 1. Requires	730			1,074	537	365	22,554	
F740-04	F7X0-01.	740			1,500	750	500	31,500	
F750-04		750			2,070	1,035	705	43,470	
F760-04		760			2,310	1,155	790	48,510	
F770-04		176-4XX			2,814	1,407	960	59,094	
F720-10	Network Access Method (NAM)	720	A	*PST	132	66	45	2,772	
F730-10	1 under NOS 1. Requires	730			154	77	55	3,234	
F740-10	F7X0-01 plus requires	740			230	115	75	4,830	
F750-10	N221-01.	750			296	148	100	6,216	
F760-10	Successor to F7X0-16 and	760			340	170	110	7,140	
F770-10	F7X0-17	176-4XX			406	203	140	8,526	
F720-11	Interactive Facility (IAF)	720	A	*PST	756	378	260	15,876	
F730-11	1 under NOS 1. Requires	730			898	449	310	18,858	
F740-11	F7X0-10.	740			1,310	655	435	27,510	
F750-11	Successor to F7X0-16	750			1,730	865	590	36,330	
F760-11		760			1,928	964	660	40,488	
F770-11		176-4XX			2,354	1,177	800	49,434	
F720-12	Remote Batch Facility (RBF)	720	A	*PST	186	93	60	3,906	
F730-12	1 under NOS 1. Requires	730			220	110	75	4,620	
F740-12	F7X0-10.	740			320	160	105	6,720	
F750-12	Successor to F7X0-17	750			416	208	140	8,736	
F760-12		760			460	230	155	9,660	
F770-12		176-4XX			558	279	190	11,718	
F720-13	Transaction Facility (TAF)	720	A	*PST	548	274	190	11,508	
F730-13	1 under NOS 1. Requires	730			658	329	225	13,818	
F740-13	F7X0-10.	740			950	475	315	19,950	
F750-13		750			1,260	630	435	26,460	
F760-13		760			1,402	701	485	29,442	
F770-13		176-4XX			1,708	854	595	35,868	
F720-14	Network Utilities 1 under	720	A	*PST	54	27	20	1,134	
F730-14	NOS 1. Requires F7X0-10.	730			66	33	25	1,386	
F740-14		740			100	50	35	2,100	
F750-14		750			120	60	40	2,520	
F760-14		760			132	66	45	2,772	
F770-14		176-4XX			164	82	55	3,444	
F720-15	CYBER Cross System 1 under	720	A	*PST	164	82	55	3,444	
F730-15	NOS 1. Requires F7X0-01.	730			186	93	65	3,906	
F740-15		740			290	145	95	6,090	
F750-15		750			372	186	125	7,812	
F760-15		760			416	208	140	8,736	
F770-15		176-4XX			504	252	170	10,584	
F720-18	Message Control System 1.0	720	A	*PST	306	153	110	6,426	
F730-18	under NOS 1. Requires	730			362	181	135	7,602	
F740-18	F7X0-01, F7X0-10 and	740			540	265	190	11,800	
F750-18	F7X0-23	750			690	345	260	14,490	
F760-18		760			766	383	290	16,096	
F770-18		176-4XX			942	471	345	19,782	

Changes Effective 05/01/80 Avail Date Codes * A - Available S - Superseded (Use current product)
*License required (SPI/SP3/SPU) See Page 27/28 of Contracts Section.

*PST - Indicates that the product must be licensed under Schedule H dated 6/79.

PRODUCT NUMBER	PRODUCT DESCRIPTION	CPU	AVAIL DATE	LIC REQ	INITIAL FEE	MONTHLY RIGHT TO USE	MONTHLY CEMS	PAID UP LICENSE	CEMS END DATE
F720-20	FORTRAN 5 under	720	A	*PST	384	192	130	8,064	
F730-20	NOS 1. Requires F7X0-01	730			460	230	155	9,660	
F740-20	plus requires F7X0-11 for	740			660	330	220	13,860	
F750-20	interactive usage.	750			876	438	300	18,396	
F760-20	Successor to F7X0-21 and	760			986	493	335	20,706	
F770-20	F7X0-22	176-4XX			1,194	597	410	25,074	
F720-21	FORTRAN Extended 4 under	720	A	*PST	296	148	100	6,216	
F730-21	NOS 1. Requires F7X0-01	730			350	175	120	7,350	
F740-21	plus requires F7X0-11 for	740			510	255	170	10,710	
F750-21	interactive usage.	750			678	339	230	14,238	
F760-21		760			756	378	260	15,876	
F770-21		176-4XX			920	460	315	19,320	
F720-22	FORTRAN Extended 4 with	720	A	*PST	384	192	130	8,064	
F730-22	Interactive Option under	730			460	230	155	9,660	
F740-22	NOS 1. Includes inter-	740			660	330	220	13,860	
F750-22	active option. Requires	750			876	438	300	18,396	
F760-22	F7X0-01 plus requires F7X0-11	760			986	493	335	20,706	
F770-22	for interactive usage.	176-4XX			1,194	597	410	25,074	
F720-23	COBOL 5 under NOS 1.	720	A	*PST	350	175	120	7,350	
F730-23	Requires F7X0-27 plus	730			416	208	140	8,736	
F740-23	requires F7X0-11 for inter-	740			610	305	205	12,810	
F750-23	active plus requires F7X0-40	750			810	405	275	17,010	
F760-23	for database management.	760			898	449	310	18,858	
F770-23		176-4XX			1,096	548	375	23,016	
F720-24	Interactive Basic 3 under	720	A	*PST	290	142	100	6,090	
F730-24	NOS 1. Requires F7X0-01	730			340	170	120	7,140	
F740-24	plus requires F7X0-11 for	740			490	245	165	10,290	
F750-24	interactive usage.	750			658	329	225	13,318	
F760-24		760			734	367	250	15,414	
F770-24		176-4XX			898	449	310	18,858	
F720-25	APL 2 under NOS 1.	720	A	*PST	296	148	100	6,216	
F730-25	Requires F7X0-11.	730			350	175	120	7,350	
F740-25		740			510	255	170	10,710	
F750-25		750			678	339	230	14,238	
F760-25		760			756	378	260	15,876	
F770-25		176-4XX			920	460	315	19,320	
F720-26	PL/I 1 under NOS 1.	720	A	*PST	536	268	180	11,256	
F730-26	Requires F7X0-01.	730			636	318	220	13,356	
F740-26		740			930	465	310	19,530	
F750-26		750			1,216	608	415	25,536	
F760-26		760			1,358	679	465	28,518	
F770-26		176-4XX			1,654	827	565	34,734	
F720-27	SORT/MERGE 4 under NOS 1.	720	A	*PST	186	93	60	3,906	
F730-27	Requires F7X0-01.	730			220	110	75	4,620	
F740-27		740			320	160	105	6,720	
F750-27		750			416	208	140	8,736	
F760-27		760			460	230	155	9,660	
F770-27		176-4XX			558	279	190	11,718	
F720-28	XEDIT 3	720	A	*PST	164	82	55	3,444	
F730-28		730			186	93	65	3,906	
F740-28		740			290	145	95	6,090	
F750-28		750			372	186	125	7,812	
F760-28		760			416	208	140	8,736	
F770-28		176-4XX			504	252	170	10,584	
F720-29	CYBER Interactive Debug 1	720	A	*PST	110	55	40	2,310	
F730-29	under NOS 1. Requires	730			132	66	45	2,772	
F740-29	F7X0-01.	740			190	95	65	3,990	
F750-29	Requires F7X0-11 for	750			252	126	90	5,292	
F760-29	interactive use.	760			284	142	95	5,964	
F770-29		176-4XX			350	175	120	7,350	
F720-30	ALGOL-60 5 under NOS 1.	720	A	*PST	318	159	105	6,678	
F730-30	Requires F7X0-01.	730			372	186	130	7,812	
F740-30		740			550	275	185	11,550	
F750-30		750			722	361	245	15,162	
F760-30		760			810	405	275	17,010	
F770-30		176-4XX			986	493	335	20,706	

Changes Effective 05/01/80 Avail Date Codes * A - Available S - Superseded (Use current product)
*License required (SPI/SP3/SPU) See Page 27/28 of Contracts Section.

*PST - Indicates that the product must be licensed under Schedule H dated 6/79.

PRODUCT NUMBER	PRODUCT DESCRIPTION	CPU	AVAIL DATE	LIC REQ	INITIAL FEE	MONTHLY RIGHT TO USE	MONTHLY CEMS	PAID UP LICENSE	CEMS END DATE
F720-31	IMSL under NOS 1.	720	A	SPI	550	120	45	15,330	
F730-31	Requires F7X0-21 or	730			550	120	45	15,330	
F740-31	F7X022. Requires F7X0-21	740			550	120	45	15,330	
F750-31	or F7X0-22.	750			550	120	45	15,330	
F760-31		760			550	120	45	15,330	
F770-31		176-4XX			550	120	45	15,330	
F720-32	FTN 4/5 Conversion Aid 1	720	A	*PST	N/C	N/C	N/A	N/C	
F730-32	under NOS 1. Requires	730			N/C	N/C	N/A	N/C	
F740-32	F7X0-21 or F7X0-22.	740			N/C	N/C	N/A	N/C	
F750-32		750			N/C	N/C	N/A	N/C	
F760-32		760			N/C	N/C	N/A	N/C	
F770-32		176-4XX			N/C	N/C	N/A	N/C	
F720-40	CYBER Database Control	720	A	*PST	712	356	241	14,952	
F730-40	System 2 under NOS 1.	730			844	422	285	17,724	
F740-40	Requires F7X0-27.	740			1,230	615	410	25,830	
F750-40		750			1,620	810	550	34,020	
F760-40		760			1,806	903	615	37,926	
F770-40		176-4XX			2,200	1,100	750	46,200	
F720-41	Data Description Language	720	A	*PST	120	60	40	2,520	
F730-41	3 under NOS 1. Requires	730			132	66	45	2,772	
F740-41	F7X0-27.	740			210	105	70	4,410	
F750-41		750			262	131	90	5,502	
F760-41		760			296	148	100	6,216	
F770-41		176-4XX			362	181	125	7,602	
F720-42	Query/Update 3 under NOS 1.	720	A	*PST	362	181	125	7,602	
F730-42	Requires F7X0-41. Requires	730			438	219	145	9,200	
F740-42	F7X0-11 for interactive use.	740			630	315	210	13,230	
F750-42		750			832	416	285	17,472	
F760-42		760			930	465	320	19,530	
F770-42		176-4XX			1,140	570	390	23,940	
F720-43	FORTRAN Database Facility 1	720	A	*PST	120	60	40	2,520	
F730-43	under NOS 1. Requires	730			132	66	45	2,772	
F740-43	F7X0-21 or F7X0-22.	740			210	105	70	4,410	
F750-43	Requires F7X0-40.	750			262	131	90	5,502	
F760-43		760			296	148	100	6,216	
F770-43		176-4XX			362	181	125	7,602	
F720-44	Total Universal 2 under	720	A	SPI	980	980	255	41,160	
F730-44	NOS 1. (Third party soft-	730			1,040	1,040	270	43,680	
F740-44	ware, chargeable to all	740			1,175	1,175	295	47,000	
F750-44	customers.) Requires	750			1,424	1,424	365	59,808	
F760-44	F7X0-01 plus F7X0-23 for	760			1,506	1,506	385	63,252	
F770-44	maintenance. CEMS on this product does not include rights to successor products.	176-4XX			1,643	1,643	420	69,006	
F720-45	Total Extended 2 under NOS 1	720	A	*PST	1,057	1,057	270	44,394	
F730-45	(Third party software,	730			1,150	1,150	300	48,300	
F740-45	chargeable to all customers.)	740			1,305	1,305	330	52,200	
F750-45	Requires F7X0-13 plus	750			1,588	1,588	410	66,696	
F760-45	requires F7X0-23 for main-	760			1,675	1,675	430	70,350	
F770-45	tenance. CEMS on this product does not include rights to successor products.	176-4XX			1,862	1,862	475	78,204	
F720-46	Data Catalogue 2 under NOS 1.	720	A	*PST	492	246	170	10,332	
F730-46	Requires F7X0-23 plus	730			592	296	205	12,432	
F740-46	F7X0-27.	740			850	425	285	17,850	
F750-46		750			1,128	564	385	23,688	
F760-46		760			1,260	630	430	26,460	
F770-46		176-4XX			1,534	767	520	32,214	

Changes Effective 05/01/80 Avail Date Codes * A - Available S - Superseded (Use current product)
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PRODUCT NUMBER	PRODUCT DESCRIPTION	CPU	AVAIL DATE	LIC REQ	INITIAL FEE	MONTHLY RIGHT TO USE	MONTHLY CEMS	PAID UP LICENSE	CEMS END DATE
F720-47	Information Management	720	A	*SP4	13,790	895	595	49,590	
F730-47	Facility (IMF 1) under NOS 1	730			14,120	1,060	705	56,520	
F740-47	IMF 1 interfaces to FORTRAN	740			15,385	1,690	1,125	82,985	
F750-47	COBOL and QUERY/UPDATE. A	750			16,090	2,045	1,365	97,890	
F760-47	training class for a maximum	760			16,560	2,280	1,520	107,760	
F770-47	of 20 customer personnel consisting of 15 instructor days will be provided on Information Analysis, Information Base Usage and Prototype Development at the customer's facilities at no additional charge.	176-4XX			17,560	2,780	1,855	128,760	
F720-60	TIGS 1 under NOS 1.	720	A	*PST	296	148	100	6,216	
F730-60	Requires F7X0-11 plus	730			350	175	120	7,350	
F740-60	requires F7X0-21 or F7X0-22	740			510	255	170	10,710	
F750-60	plus requires F7X0-61 and/or	750			668	334	230	14,028	
F760-60	F7X0-62.	760			744	372	255	15,624	
F770-60		176-4XX			910	455	310	19,110	
F720-61	Tektronix 401X Post-	720	A	*PST	2,200	N/C	30	2,200	
F730-61	Processor under TIGS.	730			2,200	N/C	30	2,200	
F740-61	Requires F7X0-60.	740			2,200	N/C	30	2,200	
F750-61		750			2,200	N/C	30	2,200	
F760-61		760			2,200	N/C	30	2,200	
F770-61		176-4XX			2,200	N/C	30	2,200	
F720-63	CDC 795 Digigraphics-V Post-	720	A	*PST	2,200	N/C	30	2,200	
F730-63	processor under TIGS.	730			2,200	N/C	30	2,200	
F740-63	Requires F7X0-60.	740			2,200	N/C	30	2,200	
F750-63		750			2,200	N/C	30	2,200	
F760-63		760			2,200	N/C	30	2,200	
F770-63		176-4XX			2,200	N/C	30	2,200	
F720-65	Chromatics 1599 Post-	720	7/80	*PST	2,000	N/A	25	2,000	
F730-65	processor under TIGS.	730	7/80		2,000	N/A	25	2,000	
F750-65	Requires F7X0-60.	750	7/80		2,000	N/A	25	2,000	
F760-65		760	7/80		2,000	N/A	25	2,000	
F770-65		176-4XX	7/80		2,000	N/A	25	2,000	
F720-69	Utility Package under	720	6/80	*PST	1,000	N/C	25	1,000	
F730-69	AD-2000. Provides an	730	6/80		1,000	N/C	25	1,000	
F740-69	interface between AD-2000	740	6/80		1,000	N/C	25	1,000	
F750-69	drawing files and Uniplot.	750	6/80		1,000	N/C	25	1,000	
F760-69	Requires F7X0-70 and either	760	6/80		1,000	N/C	25	1,000	
F770-69	F7X0-108 and/or F7X0-109 or F7X0-110 or F7X0-111.	176-4XX	6/80		1,000	N/C	25	1,000	
F720-70	Uniplot 3 under NOS 1.	720	A	*PST	90	45	30	1,890	
F730-70	Requires F7X0-01. Requires	730			110	55	35	2,310	
F740-70	F7X0-71 and/or F7X0-72 and/	740			150	75	50	3,150	
F750-70	or F7X0-73.	750			200	100	65	4,200	
F760-70		760			220	110	75	4,620	
F770-70		176-4XX			274	137	90	5,754	
F720-71	Calcomp 906 Post-Processor	720	A	*PST	550	N/C	20	550	
F730-71	under Uniplot.	730			550	N/C	20	550	
F740-71	Requires F7X0-70.	740			550	N/C	20	550	
F750-71		750			550	N/C	20	550	
F760-71		760			550	N/C	20	550	
F770-71		176-4XX			550	N/C	20	550	
F720-72	Houston Instrument BTC-7	720	A	*PST	550	N/C	20	550	
F730-72	Post-Processor under Uniplot.	730			550	N/C	20	550	
F740-72	Requires F7X0-70.	740			550	N/C	20	550	
F750-72		750			550	N/C	20	550	
F760-72		760			550	N/C	20	550	
F770-72		176-4XX			550	N/C	20	550	

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PRODUCT NUMBER	PRODUCT DESCRIPTION	CPU	AVAIL DATE	LIC REQ	INITIAL FEE	MONTHLY RIGHT TO USE	MONTHLY CEMS	PAID UP LICENSE	CEMS END DATE
F720-73	Tektronix 401 X Post-	720	A	*PST	550	N/C	20	550	
F730-73	Processor under Uniplot.	730			550	N/C	20	550	
F740-73	Requires F7X0-01. .	740			550	N/C	20	550	
F750-73		750			550	N/C	20	550	
F760-73		760			550	N/C	20	550	
F770-73		176-4XX			550	N/C	20	550	
F720-80	Conversion Aids Subsystems	720	A	*PST	N/C	N/C	N/A	N/C	
F730-80	2 under NOS 1.	730			N/C	N/C	N/A	N/C	
F740-80		740			N/C	N/C	N/A	N/C	
F750-80		750			N/C	N/C	N/A	N/C	
F760-80		760			N/C	N/C	N/A	N/C	
F770-80		176-4XX			N/C	N/C	N/A	N/C	
F720-81	NOS-Scope 2 Station	720	03/80	*PST	880	440	295	16,500	
F730-81	Requires F7X0-01	730			880	440	295	16,500	
F740-81		740			880	440	295	16,500	
F750-81		750			880	440	295	16,500	
F760-81		760			880	440	295	16,500	
F770-81		176-4XX			880	440	295	16,500	
F720-82	NOS/BE to NOS Conversion Aids	720	A	*PST	N/C	N/C	N/A	N/C	
F730-82	Includes several utilities	730			N/C	N/C	N/A	N/C	
F740-82	Designed to ease the effort	740			N/C	N/C	N/A	N/C	
F750-82	To convert from NOS/BE to	750			N/C	N/C	N/A	N/C	
F760-82	NOS.	760			N/C	N/C	N/A	N/C	
F770-82	Requires F7X0-01	176-4XX			N/C	N/C	N/A	N/C	
F720-901	MSSI Version 2.0 under NOS 1	720		3/80	Std.	5,000	20,000	350	
F730-901	MAP III software	730		3/80	Std.	5,000	20,000	350	
F740-901	requires B401-01	740		3/80	Std.	5,000	20,000	350	
F750-901		750		3/80	Std.	5,000	20,000	350	
F760-901		760		3/80	Std.	5,000	20,000	350	
F770-901		176-4xx		3/80	Std.	5,000	20,000	350	

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PRODUCT NUMBER	PRODUCT DESCRIPTION	CPU	AVAIL DATE	LIC REQ	INITIAL FEE	MONTHLY RIGHT TO USE MIN/USAGE/MAX	MONTHLY AMS	PAID UP LICENSE	AMS END DATE
F720-101	GPSS V UNDER	720	A	SUI	600	100/.012/300	100	10,000	
F730-101	NOS 1	730		SUI	600	100/.018/300	100	10,000	
F740-101	Requires F7X0-21	740		SUI	600	100/.043/300	100	10,000	
F750-101	or F7X0-22	750		SUI	600	100/.080/300	100	10,000	
F760-101		760		SUI	600	100/.090/300	100	10,000	
F770-101		176-4XX		SUI	600	100/.150/300	100	10,000	
F799-101	GPSS V	N/A	A	SUF	600	300/ - /N/A	100	N/A	
	Full License - % of TNB/MR					85%			
	Full License - % of TNB/CSR					46%			
F720-102	APEX III UNDER	720	A	SUI	2,310	200/.050/870	630	39,300	
F730-102	NOS 1	730		SUI	2,310	200/.080/870	630	39,300	
F740-102	Requires F7X0-21	740		SUI	2,310	200/.180/870	630	39,300	
F750-102	or F7X0-22	750		SUI	2,310	200/.270/870	630	39,300	
F760-102		760		SUI	2,310	200/.380/870	630	39,300	
F770-102		176-4XX		SUI	2,310	200/.650/870	630	39,300	
F799-102	APEX III	N/A	A	SUF	2,310	1,000/ -/N/A	630	N/A	
	Full License - % of TNB/MR					85%			
	Full License - % of TNB/CSR					46%			
F720-103	PDS/MAGEN 1 UNDER	720	A	SUI	1,990	400/.040/750	270	32,000	
F730-103	NOS 1 (Third Party	730		SUI	1,990	400/.060/750	270	32,000	
F740-103	Software, Chargeable	740		SUI	1,990	400/.140/750	270	32,000	
F750-103	to all Customers)	750		SUI	1,990	400/.220/750	270	32,000	
F760-103	Requires F7X0-21	760		SUI	1,990	400/.300/750	270	32,000	
F770-103	or F7X0-22	176-4XX		SUI	1,990	400/.520/750	270	32,000	
F799-103	PDS/MAGEN 1	N/A	A	SUF	1,990	750/ - /N/A	270	N/A	
	Full License - % of TNB/MR					137%			
	Full License - % of TNB/CSR					58%			
F720-104	SIMSCRIPT II.5 UNDER	720	A	SUI	1,600	370/.030/600	250	25,200	
F730-104	NOS 1 (Third Party	730		SUI	1,600	370/.050/600	250	25,200	
F740-104	Software, Chargeable	740		SUI	1,600	370/.110/600	250	25,200	
F750-104	to all Customers)	750		SUI	1,600	370/.170/600	250	25,200	
F760-104	Requires F7X0-21	760		SUI	1,600	370/.230/600	250	25,200	
F770-104	or F7X0-22	176-4XX		SUI	1,600	370/.390/600	250	25,200	
F799-104	SIMSCRIPT II.5	N/A	A	SUF	1,600	600/ - /N/A	250	N/A	
	Full License - % of TNB/MR					50%			
	Full License - % of TNB/CSR					33%			
F720-105	APT IV 2 UNDER	720	A	SUI	2,100	200/.040/750	400	42,000	
F730-105	NOS 1	730		SUI	2,100	200/.060/750	400	42,000	
F740-105	Requires F7X0-21	740		SUI	2,100	200/.140/750	400	42,000	
F750-105	or F7X0-22	750		SUI	2,100	200/.220/750	400	42,000	
F760-105		760		SUI	2,100	200/.300/750	400	42,000	
F770-105		176-4XX		SUI	2,100	200/.520/750	400	42,000	
F799-105	APT IV 2	N/A	A	SUF	2,100	750/ - /N/A	400	N/A	
	Full License - % TNB/MR					85%			
	Full License - % TNB/CSR					46%			
F720-106	GTICES/STRUDL UNDER	720	A	SUI	6,000	500/.050/1,000	800	60,000	
F730-106	NOS 1	730		SUI	6,000	500/.080/1,000	800	60,000	
F740-106	Requires F7X0-21	740		SUI	6,000	500/.180/1,000	800	60,000	
F750-106	or F7X0-22	750		SUI	6,000	500/.270/1,000	800	60,000	
F760-106		760		SUI	6,000	500/.380/1,000	800	60,000	
F770-106		176-4XX		SUI	6,000	500/.650/1,000	800	60,000	
F720-107	GTTABLE	720	A	SUI	1,000	100/.015/250	100	10,500	
F730-107	Requires F7X0-106	730		SUI	1,000	100/.023/250	100	10,500	
F740-107		740		SUI	1,000	100/.055/250	100	10,500	
F750-107		750		SUI	1,000	100/.083/250	100	10,500	
F760-107		760		SUI	1,000	100/.113/250	100	10,500	
F770-107		176-4XX		SUI	1,000	100/.195/250	100	10,500	

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F720-109	AD-2000 Package 1	720	6/80	SUI	9,500	1,545/0.170/2,375	900	95,000	
F730-109	with NC interface	730	6/80	SUI	9,500	1,545/0.240/2,375	900	95,000	
F740-109	Under NOS 1 Includes	740	6/80	SUI	9,500	1,545/0.610/2,375	900	95,000	
F750-109	Basic Geometry,	750	6/80	SUI	9,500	1,545/0.790/2,375	900	95,000	
F760-109	Mechanical Drafting,	760	6/80	SUI	9,500	1,545/0.950/2,375	900	95,000	
F770-109	Geometric Analysis, Extended Geometry and Numerical Control. Binary Only	176-4XX	6/80	SUI	9,500	1,545/1.580/2,375	900	95,000	
F720-110	AD-2000 Basic	720	A	SUI	4,600	750/0.170/1,150	460	46,000	
F730-110	Package 1 UNDER	730		SUI	4,600	750/0.240/1,150	460	46,000	
F740-110	NOS 1 Includes	740		SUI	4,600	750/0.610/1,150	460	46,000	
F750-110	Basic Geometry	750		SUI	4,600	750/0.790/1,150	460	46,000	
F760-110	Mechanical Drafting	760		SUI	4,600	750/0.950/1,150	460	46,000	
F770-110	and Geometric Analysis.Binary Only	176-4XX		SUI	4,600	750/1.580/1,150	460	46,000	
F720-111	AD-2000 Package 1	720	6/80	SUI	7,000	1,140/0.170/1,750	700	70,000	
F730-111	with Extended	730	6/80	SUI	7,000	1,140/0.240/1,750	700	70,000	
F740-111	Geometry under NOS 1	740	6/80	SUI	7,000	1,140/0.610/1,150	700	70,000	
F750-111	Includes Basic	750	6/80	SUI	7,000	1,140/0.790/1,750	700	70,000	
F760-111	Geometry, Mechanical	760	6/80	SUI	7,000	1,140/0.950/1,750	700	70,000	
F770-111	Drafting, Geometric Analysis and Extended Geometry. Binary Only	176-4XX	6/80	SUI	7,000	1,140/1.580/1,750	700	70,000	
F720-115	CDC SynthaVision	720	6/80	SUI	6,800	1,125/0.090/2,250	1,000	90,000	
F730-115	under NOS. 1	730	6/80	SUI	6,800	1,125/0.130/2,250	1,000	90,000	
F740-115	Includes Interactive	740	6/80	SUI	6,800	1,125/0.290/2,250	1,000	90,000	
F750-115	Modeler, Image/	750	6/80	SUI	6,800	1,125/0.400/2,250	1,000	90,000	
F760-115	Analysis Package,	760	6/80	SUI	6,800	1,125/0.470/2,250	1,000	90,000	
F770-115	Tektronix UOIX Previewer/Post processor, and Ramtek 3351 Post Processor. Binary only.	176-4XX	6/80	SUI	6,800	1,125/0.750/2,250	1,000	90,000	
F799-115	CDC SynthaVision Full License - % TNB/MR Full License - % TNB/CSR	N/A	6/80	SUF	6,800	2,250/ N/A/ N/A	1,000	N/A	
F720-116	CDC Syntha-	720	6/80	SUI	1,200	185/0.090/275	200	15,000	
F730-116	Vision Inter-	730	6/80	SUI	1,200	185/0.130/275	200	15,000	
F740-116	active Modeler	740	6/80	SUI	1,200	185/0.290/275	200	15,000	
F750-116	under NOS. 1	750	6/80	SUI	1,200	185/0.400/275	200	15,000	
F760-116	Binary only.	760	6/80	SUI	1,200	185/0.470/275	200	15,000	
F770-116		176-4XX	6/80	SUI	1,200	185/0.750/275	200	15,000	
F720-117	CDC SynthaVision	720	6/80	SUI	3,800	625/0.090/1,250	500	50,000	
F730-117	Image/Analysis	730	6/80	SUI	3,800	625/0.130/1,250	500	50,000	
F740-117	Package under NOS. 1	740	6/80	SUI	3,800	625/0.290/1,250	500	50,000	
F750-117	Binary only	750	6/80	SUI	3,800	625/0.400/1,250	500	50,000	
F760-117		760	6/80	SUI	3,800	625/0.470/1,250	500	50,000	
F770-117		176-4XX	6/80	SUI	3,800	625/0.750/1,250	500	50,000	
F720-118	Tektronix 401X Pre-	720	6/80	SUI	1,200	185/0.090/375	200	15,000	
F730-118	viewer/Post processor	730	6/80	SUI	1,200	185/0.130/375	200	15,000	
F740-118	Under CDC Syntha-	740	6/80	SUI	1,200	185/0.290/375	200	15,000	
F750-118	Vision.	750	6/80	SUI	1,200	185/0.400/375	200	15,000	
F760-118	Requires F7X0-116	760	6/80	SUI	1,200	185/0.470/375	200	15,000	
F770-118	and F7X0-117 Binary only.	176-4XX	6/80	SUI	1,200	185/0.750/375	200	15,000	

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F720-119	Ramtek 3351 Post-	720	6/80	SUI	1,200	185/0.090/375	200	15,000	
F730-119	processor under	730	6/80	SUI	1,200	185/0.130/375	200	15,000	
F740-119	CDC SynthaVision	740	6/80	SUI	1,200	185/0.290/375	200	15,000	
F750-119	Requires F7X0-116	750	6/80	SUI	1,200	185/0.400/375	200	15,000	
F760-119	and F7X0-117 Binary	760	6/80	SUI	1,200	185/0.470/375	200	15,000	
F770-119	only.	176-4XX	6/80	SUI	1,200	185/0.750/375	200	15,000	
F720-125	PROPLAN under NOS 1	720	A	SUI	1,000	800/0.168/1,200	400	36,000	
F730-125		730		SUI	1,000	800/0.252/1,200	400	36,000	
F740-125		740		SUI	1,000	800/0.605/1,200	400	36,000	
F750-125		750		SUI	1,000	800/1.080/1,200	400	36,000	
F760-125		760		SUI	1,000	800/1.200/1,200	400	36,000	
F770-125		176-4XX		SUI	1,000	800/1,800/1,200	400	36,000	
F799-125	PROPLAN	N/A	A	SUF	1,000	1,200/- /N/A	400	N/A	
	Full License - % of TNB/MR					325%			
	Full License - % of TNB/CSR					76%			
F720-131	PERT/TIME UNDER	720	A	SUI	200	80/N/A/80	20	3,200	
F730-131	NOS 1	730		SUI	200	80/N/A/80	20	3,200	
F740-131		740		SUI	200	80/N/A/80	20	3,200	
F750-131	Requires F7X0-01	750		SUI	200	80/N/A/80	20	3,200	
F760-131		760		SUI	200	80/N/A/80	20	3,200	
F770-131		176-4XX		SUI	200	80/N/A/80	20	3,200	
F799-131	PERT/TIME	N/A	A	SUF	200	80/ - /N/A	20	N/A	
	Full License - % of TNB/MR					50%			
	Full License - % of TNB/CSR					33%			

PRODUCT NUMBER	PRODUCT DESCRIPTION	AVAIL DATE	LIC REQ	CHARGES INITIAL FEE	CHARGES MINIMUM/USE MONTHLY/UNIT	CHARGES PAID UP LICENSE	CHARGES CEM SERVICE	CEM END DATE
***	CDC CYBER 170 MODELS 171, 172, 173, 174, 175/CYBER 70 MODELS 71, 72, 73, 74/6000 SOFTWARE							
F521- 01	NETWORK OPERATING SYSTEM (NOS) 1 PACKAGE NOTE - IF MAINFRAME CYBER 170 MODEL 175-1XX, 175-2XX OR 175-3XX ORDER F521-86 INSTEAD. INCLUDES NOS 1, COMPASS 3, CYBER RECORD MANAGER 1, ADVANCED ACCESS METHODS 2, FORM 1, UPDATE 1 AND MODIFY 1. REQUIRES F521-02 FOR MAINTENANCE PLUS REQUIRES F521-12 OR F521-39 FOR MAINTENANCE	A	STD	6,410	1,220/ N/A	55,210	975	
F521- 02	MAINTENANCE PACKAGE UNDER NOS 1 REQUIRES F521-01 OR F521-86	A	STD	N/C	N/C/ N/A	N/C	N/A	
F521- 05	MULTI-MAINFRAME MODULE 1 UNDER NOS 1. PROVIDES FOR LINK COMMUNICATION AND SHARED MASS STORAGE DEVICES BETWEEN ONE CYBER 70L/170 AND ONE OTHER CYBER 70L/170. REQUIRES F521-01 OR F521-86	A	STD	120	180/ N/A	7,320	140	
F521- 06	NETWORK ACCESS METHOD (NAM) 1 UNDER NOS 1 NETWORK DEFINITION LANGUAGE (NDL) PROCESSOR, NETWORK SUPERTIONS NETWORK VIA 255X NPU USING CCP SOFTWARE. INCLUDES NETWORK DEFINITION LANGJAGE. REQUIRES F521-01 OR F521-86 PLUS REQUIRES N221-01 SUCCESSOR TO / F521 03/ F521 21/ F521 48	A	STD	120	120/ N/A	4,940	85	
F521- 07	CONVERSION AIDS SUBSYSTEM 2 UNDER NOS 1 REQUIRES F521-01 OR F521-86	A	STD	N/C	N/C/ N/A	N/C	N/A	
F521- 08	INTERACTIVE FACILITY (IAF) 1 UNDER NOS 1 PROVIDES FOR INTERACTIVE TIMESHARING ACCESS TO THE NOS 1 SYSTEM VIA THE NETWORK ACCESS METHOD (NAM) 1 SUBSYSTEM. REQUIRES F521-06. SUCCESSOR TO / F521 03	A	STD	120	690/ N/A	27,600	515	
F521- 09	PL/I 1 UNDER NOS 1 PROVIDES A SUBSET OF THE ECMA/ANSI STANDARD PL/I FEATURES. REQUIRES F521-01 OR F521-86	A	STD	50	490/ N/A	19,420	360	
F521- 10	MASS STORAGE SYSTEM (MSS) 1 UNDER NOS 1 MASS STORAGE SYSTEM (MSS) 1 UNDER NOS 1	S/80	STD	5,000	825/ N/A	39,650	615	
F521- 11	ALGOL-60 5 UNDER NOS 1 REQUIRES F521-01 OR F521-86 SUCCESSOR TO / F521 15	A	STD	680	280/ N/A	11,880	225	
F521- 12	FORTRAN EXTENDED 4 UNDER NOS 1 INCLUDES INTERACTIVE OPTION REQUIRES F521-01 OR F521-86 PLUS REQUIRES F521-08 OR F521-03 FOR INTERACTIVE USAGE PLUS REQUIRES F521-14 FOR SORT	A	STD	120	340/ N/A	13,720	275	
F521- 14	SORT/MERGE 4 UNDER NOS 1 REQUIRES F521-01 OR F521-86	A	STD	120	170/ N/A	6,920	130	
F521- 17	INTERACTIVE BASIC 3 UNDER NOS 1 REQUIRES F521-01 OR F521-86 PLUS REQUIRES F521-08 OR F521-03 FOR INTERACTIVE USAGE	A	STD	120	260/ N/A	10,520	200	
F521- 23	NETWORK UTILITIES 1 UNDER NOS 1 CONTAINS NETWORK PRODUCT SIMULATOR TO SIMULATE A CONTROLLED MESSAGE LOAD WITHOUT USE OF EXTERNAL COMMUNICATIONS EQUIPMENT. REQUIRES F521-06	A	STD	120	50/ N/A	2,210	35	
F521- 24	XEDIT 3 UNDER NOS 1 ENCHANCED INTERACTIVE TEXT FILE EDITING SYSTEM FOR TIMESHARING USERS. REQUIRES F521-03 OR F521-08	A	STD	500	150/ N/A	6,500	110	
F521- 25	CYBER CROSS SYSTEM 1 UNDER NOS 1 PROVIDES FOR MAINTENANCE AND COMPILATION OF CCP. REQUIRES F521-01 OR F521-86	A	STD	570	140/ N/A	6,170	115	
F521- 26	REMOTE BATCH FACILITY (RBF) 1 UNDER NOS 1 PROVIDES FOR INPUT AND OUTPUT OF BATCH FILE TRANSMISSIONS BETWEEN REMOTE TERMINALS AND NOS JOB QUEUE ON ROTATING MASS STORAGE. RBF PERFORMS CHARACTER CONVERSION, MAPPING AND ALLOWS TERMINAL USERS TO CONTROL DISPOSITION AND TRANSMISSION OF FILES VIA A COMMAND LANGUAGE. RBF SUPPLIES TERMINAL USERS STATUS INFORMATION CONCERNING FILES AND TERMINAL DEVICES. REQUIRES F521-06 SUCCESSOR TO / F521 21	A	STD	120	160/ N/A	6,520	130	
F521- 27	INSL UNDER NOS 1 REQUIRES F521-12 OR F521-39	07/78	*SPI	500	110/ N/A	14,000	45	

AVAIL DATE CODES * A - AVAILABLE S - SUPERSEDED (USE CURRENT PRODUCT)
*LICENSE REQUIRED (SPI/SP3/SPU) SEE PAGE 27/28 OF CONTRACTS SECTION.

PRODUCT NUMBER	PRODUCT DESCRIPTION	AVAIL DATE	LIC REQ	CHARGES INITIAL FEE	CHARGES MINIMUM/USE MONTHLY/UNIT	CHARGES PAID UP LICENSE	CHARGES CEM SERVICE	CEM END DATE
F521- 30	CYBER DATABASE CONTROL SYSTEM 2 UNDER NOS 1 PROVIDES CENTRAL CONTROL OF DATABASE ACCESS INCLUDING CONCURRENT UPDATE, ENCHANCED RECOVERY, SCHEMA/SUBSCHEMA INTERFACE, DATA INDEPENDENCE, VALIDATION, ENCODE/DECODE, DERIVED ITEMS, LOGGING AND DATABASE PROCEDURES. REQUIRES F521-31 PLUS REQUIRES F521-46 SUCCESSOR TO / F521 44	A	STD	530	630/ N/A	25,730	445	
F521- 31	DATA DESCRIPTION LANGUAGE 3 UNDER NOS 1 SELF-CONTAINED LANGUAGE USED TO PRODUCE SCHEMA AND SUBSCHEMA DATABASE DESCRIPTIONS FOR USE WITH QUERY UPDATE, CDCS 2 AND COBOL 5. INCLUDES DATABASE UTILITIES. REQUIRES F521-14 SUCCESSOR TO / F521 43	A	STD	120	100/ N/A	4,120	85	
F521- 39	FORTRAN EXTENDED 4 UNDER NOS 1 REQUIRES F521-01 OR F521-86 PLUS REQUIRES F521-08 OR F521-03 FOR INTERACTIVE USAGE PLUS REQUIRES F521-14 FOR SORT	A	STD	120	260/ N/A	10,520	215	
F521- 41	CYBER INTERACTIVE DEBUG 1 UNDER NOS 1 PROVIDES INTERACTIVE DEBUGGING FACILITIES. REQUIRES F521-03 OR F521-08 PLUS REQUIRES F521-12	A	STD	120	100/ N/A	4,120	80	
F521- 42	QUERY UPDATE 3 UNDER NOS 1 A HIGH LEVEL, ENGLISH-LIKE CONVERSATIONAL LANGUAGE FOR QUERYING AND MANIPULATING DATA FILES ORGANIZED UNDER CYBER RECORD MANAGER WITH MULTIPLE INDEXING. INCLUDES A REPORT WRITER MODULE. REQUIRES F521-31 OR F521-43 PLUS REQUIRES F521-08 OR F521-03 FOR INTERACTIVE USAGE	A	STD	120	320/ N/A	12,920	265	
F521- 43	DATA DESCRIPTION LANGUAGE 2 UNDER NOS 1 A SEPARATE SELF-CONTAINED LANGUAGE WHICH IS USED TO PRODUCE A DESCRIPTION OF AN ENTIRE DATA BASE (SCHEMA) AND DESCRIPTION OF THE DATA WHICH IS KNOWN TO SPECIFIC PROGRAMS OR USERS (SUB-SCHEMAS). THE DDL COMPILER ACCEPTS SCHEMA AND SUB-SCHEMA SOURCE STATEMENTS WHICH IT CONVERTS TO SCHEMA AND SUB-SCHEMA OBJECT DIRECTORIES. THESE DIRECTORIES ARE THEN CATALOGED AND REFERENCED BY INTERACTIVE QUERY UPDATE USERS AND BY COBOL PROGRAMS USING CDCS. INCLUDES DATA BASE UTILITIES 1. REQUIRES F521-14	A	STD	120	100/ N/A	4,120	85	
F521- 44	CYBER DATABASE CONTROL SYSTEM 1 UNDER NOS 1 ADDS DATA BASE FEATURES TO THE CONVENTIONAL FILES OF THE CYBER RECORD MANAGER. USING THE DDL-GENERATED SCHEMA AND SUB-SCHEMAS CDCS PROVIDES INDEPENDENCE OF DATA FROM THE PROGRAMS THAT ACCESS OR MANIPULATE IT. IT ALSO PROVIDES FEATURES FOR DATA VALIDATION, ENCODE/DECODE, DERIVED ITEMS, AS WELL AS LOGGING AND DATA BASE UTILITIES FOR RECOVERY/RESTORATION. REQUIRES F521-31 OR F521-43 PLUS REQUIRES F521-13 OR F521-46	A	STD	530	630/ N/A	25,730	500	01/01
F521- 45	TOTAL/ATHENA 1 UNDER NOS 1 (CHARGEABLE TO ALL CUSTOMERS) HIGH LEVEL INTERACTIVE/BATCH, RETRIEVAL/UPDATE FACILITY FOR TOTAL DATA BASE MANAGEMENT SYSTEM. PERMITS DATA OR RECORD SELECTION FROM MULTIPLE TOTAL FILES BASED ON MULTIPLE SELECTION CRITERIA. INCLUDES A REPORT WRITER AND A PLOT GENERATOR. REQUIRES F521-28 OR F521-29 PLUS REQUIRES F521-13 FOR MAINTENANCE PLUS REQUIRES F521-08 OR F521-03 FOR INTERACTIVE USAGE	A	*SP3	500	400/ N/A	21,500	110	11/80
F521- 46	COBOL 5 UNDER NOS 1 ADDRESSES 1974 ANSI SPECIFICATIONS. INITIAL RELEASE IMPLEMENTS THE HIGHEST LEVEL OF 10 OF THE 12 MODULES DEFINED IN THE SPECIFICATION. THE COMMUNICATIONS MODULE IS NOT INCLUDED AND ONLY A SUBSET OF THE INTER-PROGRAM COMMUNICATIONS IS CONTAINED. REQUIRES F521-14 PLUS REQUIRES F521-08 OR F521-03 FOR INTERACTIVE USAGE PLUS REQUIRES F521-30 OR F521-44 FOR DATA BASE MANAGEMENT SUCCESSOR TO / F521 13	A	STD	140	310/ N/A	12,540	250	
F521- 48	TRANSACTION FACILITY (TAF) 1 UNDER NOS 1 THE TAF 1 PRODUCT PROVIDES A GENERAL PURPOSE TRANSACTION FACILITY THAT COEXISTS WITH THE OTHER NOS SUBSYSTEMS. A TRANSACTION IS DEFINED AS A REQUEST BY A TERMINAL TO PERFORM A PREDEFINED OPERATION (OR SERIES OF OPERATIONS) CALLED A TASK. TAF 1 PROVIDES INTERFACE AND COMMUNICATION PROCEDURES ENABLING IT TO UTILIZE THE NETWORK ACCESS METHOD FOR SYNCHRONOUS TRANSACTION TERMINAL COMMUNICATIONS. PRODUCT IS IMPLEMENTED IN SUCH A WAY AS TO ALLOW INSTALLATIONS UNABLE TO UTILIZE NAM TO STILL BE ABLE TO RUN ASYNCHRONOUS TERMINALS WITH A TELEX INTERFACE, AS IS DONE WITH TRANEX 1. INCLUDES MODE 4 TRANSACTION TERMINAL SUPPORT. REQUIRES F521-06 FOR INTERFACE TO NAM 1 OR REQUIRES F521-03 FOR INTERFACE TO TIMESHARING MODULE 1 SUCCESSOR TO / F521 04	A	STD	1,000	500/ N/A	21,000	375	
F521- 50	COBOL 4 TO 5 CONVERSION AIDS SYSTEM UNDER NOS 1 REQUIRES F521-01 OR F521-86	A	STD	N/C	N/C/ N/A	N/C	N/A	

PRODUCT NUMBER	PRODUCT DESCRIPTION	AVAIL DATE	LIC REQ	CHARGES INITIAL FEE	CHARGES MINIMUM/USE MONTHLY/UNIT	CHARGES PAID UP LICENSE	CHARGES CEM SERVICE	CEM END DATE
F521- 51	APL 2 UNDER NOS 1 PROGRAMMING LANGUAGE FOR THE ADVANCED SCIENTIFIC USER AS WELL AS THE OCCASIONAL USER WITH LITTLE OR NO PREVIOUS EXPERIENCE WITH COMPUTERS. FASTER AND MORE POWERFUL THAN THE STANDARD LANGUAGES, QUICK TO PROGRAM AND EASIER TO LEARN AND USE. REQUIRES F521-01 OR F521-86 PLUS REQUIRES F521-08 OR F521-03 FOR INTERACTIVE USAGE SUCCESSOR TO / F521 16	A	STD	680	260/ N/A	11,080	215	
F521- 55	TOTAL UNIVERSAL 2 UNDER NOS 1 (CHARGEABLE TO ALL CUSTOMERS) DATABASE MANAGEMENT SYSTEM (SINGLE THREAD). PERMITS NETWORK STRUCTURE RELATIONSHIPS BETWEEN DATA FILES. INCLUDES DATA-BASE DEFINITION LANGUAGE (DBDL), DATA MANIPULATION LANGUAGE (DML) AND UTILITIES PACKAGE. REQUIRES F521-01 OR F521-86 PLUS REQUIRES F521-46 FOR MAINTENANCE CEMS ON THIS PRODUCT DOES NOT INCLUDE RIGHTS TO SUCCESSOR PRODUCTS. SUCCESSOR TO / F521 28	10/78	*SPI	1,000	975/ N/A	35,700	195	
F521- 56	TOTAL EXTENDED 2 UNDER NOS 1 (CHARGEABLE TO ALL CUSTOMERS) DATABASE MANAGEMENT SYSTEM (TRANSACTION, MULTI-THREAD). PERMITS NETWORK STRUCTURE RELATIONSHIPS BETWEEN DATA FILES, AND CONCURRENT ACCESS/UPDATE BY LANGUAGE (DBDL), DATA MANIPULATION LANGUAGE (DML), AND UTILITIES PACKAGE. REQUIRES F521-04 OR F521-48 PLUS REQUIRES F521-46 FOR MAINTENANCE CEMS ON THIS PRODUCT DOES NOT INCLUDE RIGHTS TO SUCCESSOR PRODUCTS. SUCCESSOR TO / F521 29	10/78	*SPI	1,000	1,080/ N/A	38,525	205	
F521- 58	FORTRAN DATABASE FACILITY 1 UNDER NOS 1 PROVIDES DATA MANIPULATION LANGUAGE CAPABILITY FOR FORTRAN TO INTERFACE TO CDCS 2 DATABASES. REQUIRES F521-12 OR F521-39 OR F521-77 OR F521-78 PLUS REQUIRES F521-30	12/78	STD	120	100/ N/A	4,120	85	
F521- 59	FORTRAN EXTENDED 5 UNDER NOS 1 NOTE - IF MAINFRAME CYBER 170 MODEL 176, ORDER F521-79 INSTEAD. SUPPORTS A SUPERSET OF 1978 ANSI FORTRAN LANGUAGE SPECIFICATIONS. INCLUDES POST-MORTEM DUMP. REQUIRES F521-01 OR F521-86 REQUIRES F521-08 FOR INTERACTIVE USE SUCCESSOR TO / F521- 39, F521- 12	A	STD	120	340/ N/A	13,720	275	
F521- 67	MESSAGE CONTROL SYSTEM 1.0 UNDER NOS REQUIRES F521-01, F521-36, F521-46	A	STD	150	275/ N/A	12,375	225	
F521- 68	DATA CATALOGUE 2 UNDER NOS 1 REQUIRES F521-14 PLUS REQUIRES F521-46	A	STD	900	450/ N/A	18,900	335	
F521- 74	FORTRAN 4/5 CONVERSION AIDS 1 UNDER NOS 1 REQUIRES F521-12 OR F521-39 OR F521-77 OR F521-78	04/79	STD	N/C	N/C / N/A	N/C	N/A	
F521- 76	NOS 1 PACKAGE FOR CYBER 170 MODEL 176 INCLUDES NOS 1, COMPASS 3, CYBER RECORD MANAGER 1, ADVANCED ACCESS METHODS 2, FCRM 1, UPDATE 1 AND MODIFY 1. REQUIRES F521-02 FOR MAINTENANCE PLUS REQUIRES F521-77 OR F521-78 FOR MAINTENANCE	A	STD	12,820	2,850/ N/A	126,820	1,460	
F521- 77	FORTRAN EXTENDED 4 FOR CYBER 170 MOD 176 UNDER NOS 1 REQUIRES F521-76 PLUS REQUIRES F521-08 FOR INTERACTIVE USE PLUS REQUIRES F521-14 FOR SORT	A	STD	1,420	610/ N/A	25,820	320	
F521- 78	FORTRAN EXTENDED 4 FOR CYBER 170 MOD 176 UNDER NOS 1 INCLUDES INTERACTIVE OPTION REQUIRES F521-76 PLUS REQUIRES F521-08 FOR INTERACTIVE USE PLUS REQUIRES F521-14 FOR SORT	09/79	STD	2,490	1,070/ N/A	45,290	560	
F521- 79	FORTRAN EXTENDED 5 FOR CYBER 170 MOD 176 UNDER NOS 1 SUPPORTS A SUPERSET OF 1978 ANSI FORTRAN LANGUAGE SPECIFICATIONS. INCLUDES POST-MORTEM DUMP. REQUIRES F521-76 PLUS REQUIRES F521-08 FOR INTERACTIVE USE SUCCESSOR TO / F521- 78, F521- 77	A	STD	2,490	1,070/ N/A	45,290	560	
F521- 81	NOS - SCOPE 2 STATION REQUIRES F521-01 OR F521-86	A	STD	800	400/ N/A	15,000	290	
F521- 82	NOS/BE TO NOS CONVERSION AIDS UNDER NOS INCLUDES SEVERAL UTILITIES DESIGNED TO EASE THE EFFORT TO TO CONVERT FROM NOS/BE TO NOS REQUIRES F521-01 OR F521-76 OR F521-86	A	STD		/ N/A		N/A	
F521- 83	INFORMATION MANAGEMENT FACILITY (IMF) UNDER NOS IMF 1 INTERFACES TO FORTRAN, COBOL AND QUERY/UPDATE. A TRAINING CLASS FOR A MAXIMUM OF 20 CUSTOMER PERSONNEL CONSISTING OF 15 INSTRUCTOR DAYS WILL BE PROVIDED ON INFORMATION ANALYSIS, INFORMATION BASE USAGE AND PROTOTYPE DEVELOPMENT AT THE CUSTOMERS FACILITIES AT NO ADDITIONAL CHARGE.	A	*SP4	15,440	1,720/ N/A	72,240	1,250	

CHANGES EFFECTIVE 09/01/80

AVAIL DATE CODES * A - AVAILABLE S - SUPERSEDED (USE CURRENT PRODUCT)
*LICENSE REQUIRED (SPI/SP3/SPU) SEE PAGE 27/28 OF CONTRACTS SECTION.

PRODUCT NUMBER	PRODUCT DESCRIPTION	AVAIL DATE	LIC REQ	CHARGES INITIAL FEE	CHARGES MINIMUM/USE MONTHLY/UNIT	CHARGES PAID UP LICENSE	CHARGES CER SERVICE	CER END DATE
F521- 86	NOS 1 PACKAGE FOR CYBER 170 MODEL 175 INCLUDES NOS 1, COMPASS 3, CYBER RECORD MANAGER 1, ADVANCED ACCESS METHODS 2, FORM 1, UPDATE 1, AND MODIFY 1. REQUIRES F521-02 FOR MAINTENANCE PLUS REQUIRES F521-12 OR F521-39 FOR MAINTENANCE	A	STD	9,000	2,170/ N/A	96,940	1,275	
F521- 88	TIGS 1 UNDER NOS 1 PROVIDES INTERACTIVE GRAPHICS CAPABILITIFS WITH TERMINAL INDEPENDENCE PROVIDED VIA POST-PROCESSORS TO A NEUTRAL DISPLAY FILE. STANDARD POST-PROCESSORS ARE AVAILABLE BY EITHER OF THE FOLLOWING OPTIONS. OPTION F521-89 OPTION F521-90 ADDITIONAL POST-PROCESSORS ARE AVAILABLE ON A QUOTE FOR SPECIAL SOFTWARE. REQUIRES F521-03 OR F521-08 PLUS F521-12 OR F521-39 SUCCESSOR TO / F521 54	07/78	STD	500	270/ N/A	11,300	195	
F521- 89	TEKTRONIX 401X POST-PROCESSOR UNDER TIGS PROVIDES SUPPORT OF TEKTRONIX 401X GRAPHICS TERMINAL VIA THE TERMINAL INDEPENDENT GRAPHICS SYSTEM (TIGS). INTERFACE IS PROVIDED TO THE TIGS NEUTRAL DISPLAY FILE. REQUIRES F521-88. SUCCESSOR TO / F521- 54	07/78	STD	2,000	N/A / N/A	2,000	30	
F521- 91	CDC-795 DIGIGRAPHICS V POST-PROCESSOR UNDER TIGS-NOS PROVIDES SUPPORT OF CDC-795 DIGIGRAPHICS V GRAPHICS TERMINAL VIA THE TERMINAL INDEPENDENT GRAPHICS SYSTEM (TIGS). INTERFACE IS PROVIDED TO THE TIGS NEUTRAL DISPLAY FILE. REQUIRES F521-08, F521-88	A	STD	2,000	N/C / N/A	2,000	30	
F521- 92	CHROMATICS 1599 POST-PROCESSOR UNDER TIGS. REQUIRES F521-88.	07/80	STD	2,000	N/A / N/A	2,000	25	
F521- 95	RAMTEK 3351 PSPROCR-CDC SYNVSN THIS PRODUCT PROVIDES AN INTERFACE BETWEEN AD-2000 DRAWING FILES AND UNIPLOT. REQUIRES F521-99 AND EITHER F521-10X OR F521-19X OR F521-20X OR F521-21X.	/	STD		/ N/A			
F521- 96	CALCOMP 906 POST-PROCESSOR UNDER UNIPLOT PROVIDES SUPPORT OF CALCOMP 906 TERMINAL VIA UNIPLOT 3. REQUIRES F521-99.	01/79	STD	500	N/A / N/A	500	20	
F521- 97	HOUSTON INSTRUMENT 8TC-7 POST-PROCESSOR UNDER UNIPLOT PROVIDES SUPPORT OF H. I. 8TC-7 TERMINAL VIA UNIPLOT 3 REQUIRES F521-99.	01/79	STD	500	N/A / N/A	500	20	
F521- 98	TEKTRONIX 401X POST-PROCESSOR UNDER UNIPLOT PROVIDES SUPPORT OF TEKTRONIX 401X TERMINALS VIA UNIPLOT 3 REQUIRES F521-99.	01/79	STD	500	N/A / N/A	500	20	
F521- 99	UNIPLOT 3 UNDER NOS 1 A GRAPHICS UTILITY WHICH CREATES FILES FOR DISPLAYING OR PLOTTING ON GRAPHICS DEVICES SUCH AS PEN PLOTTERS, DISPLAY TUBES, REFRESH SCOPES AND MICROFILM PLOTTERS. THE SYSTEM CONSISTS OF A SET OF CDC NEUTRAL PLOT ROUTINES WHICH PRODUCE A CDC NEUTRAL PLOT FILE AND A STAND-ALONE POST-PROCESSOR WHICH PERMITS THE USER TO PREVIEW IN VARIOUS WAYS AND TO MODIFY THE GRAPIC DATA IN THE CDC NEUTRAL PLOT FILE. IT PERMITS THE USER TO DELAY SELECTION OF THE PLOTTING DEVICE UNTIL PLOT TIME, OR TO HAVE A NUMBER OF PLOTTING DEVICES FOR THE SAME PLOT. PLOTTING DEVICE SUPPORT CAN BE PROVIDED BY THE USER. STANDARD POST-PROCESSORS ARE AVAILABLE BY ANY OF THE FOLLOWING OPTIONS. OPTION F521-96 OPTION F521-97 OPTION F521-98 REQUIRES F521-01 OR F521-86 SUCCESSOR TO / F521 49	01/79	STD	100	80/ N/A	3,150	55	
F521-901	MSSI VERSION 2.0 ON NOS MAP III SOFTWARE WHICH REQUIRES 8401-01.	05/80	STD	5,000	500/ N/A	20,000	350	

SOFTWARE PRODUCTS - CURRENT

PRODUCT NUMBER	PRODUCT DESCRIPTION	CPU	AVAIL DATE	LIC REQ	INITIAL FEE	MONTHLY RIGHT TO USE MIN/USAGE/MAX	MONTHLY AMS	PAID UP LICENSE	AMS END DATE
F521-101	GPSS V UNDER	171	A	SUI	600	100/.008/300	100	10,000	
F521-102	NOS 1	172		SUI	600	100/.012/300	100	10,000	
F521-103	Requires F521-12	173		SUI	600	100/.018/300	100	10,000	
F521-104	or F521-86	174		SUI	600	100/.029/300	100	10,000	
F521-105		175-1XX		SUI	600	100/.066/300	100	10,000	
F521-106		175-2XX		SUI	600	100/.080/300	100	10,000	
F521-107		175-3XX		SUI	600	100/.090/300	100	10,000	
F521-108		176-XX		SUI	600	100/.150/300	100	10,000	
F521-109	GPSS V	N/A	A	SUF	600	300/ - /N/A	100	N/A	
	Full License - % TNB/MR					85%			
	Full License - % TNB/CSR					46%			
F521-121	APEX III Under NOS 1	171	A	SUI	2,310	200/.040/870	630	39,300	
F521-122	Requires F521-12	172		SUI	2,310	200/.050/870	630	39,300	
F521-123	or F521-39, or	173		SUI	2,310	200/.080/870	630	39,300	
F521-124	F521-77	174		SUI	2,310	200/.120/870	630	39,300	
F521-125	or F521-78	175-1XX		SUI	2,310	200/.220/870	630	39,300	
F521-126		175-2XX		SUI	2,310	200/.340/870	630	39,300	
F521-127		175-3XX		SUI	2,310	200/.380/870	630	39,300	
F521-128		176-XX		SUI	2,310	200/.650/870	630	39,300	
F521-129	APEX III	N/A	A	SUF	2,310	1000/ - /N/A	630	N/A	
	Full License - % TNB/MR					85%			
	Full License % TNB/CSR					46%			
F521-131	PDS/MAGEN 1 UNDER	171	A	SUI	1,990	400/.030/750	270	32,000	
F521-132	NOS 1 (Third Party	172		SUI	1,990	400/.040/750	270	32,000	
F521-133	Software, Chargeable	173		SUI	1,990	400/.060/750	270	32,000	
F521-134	to all Customers)	174		SUI	1,990	400/.100/750	270	32,000	
F521-135		175-1XX		SUI	1,990	400/.220/750	270	32,000	
F521-136		175-2XX		SUI	1,990	400/.270/750	270	32,000	
F521-137		175-3XX		SUI	1,990	400/.300/750	270	32,000	
F521-138		176-XX		SUI	1,990	400/.520/750	270	32,000	
F521-139	PDS/MAGEN 1	N/A	A	SUF	1,990	750/ - /N/A	270	N/A	
	Full License - % TNB/MR					137%			
	Full License - % TNB/CSR					58%			
F521-141	SIMSCRIPT II.5	171	A	SUI	1,600	375/.020/600	250	25,200	
F521-142	Under NOS 1	172		SUI	1,600	375/.030/600	250	25,200	
F521-143	Software, Chargeable	173		SUI	1,600	375/.050/600	250	25,200	
F521-144	to all Customers)	174		SUI	1,600	375/.070/600	250	25,200	
F521-145	Requires F521-12,	175-1XX		SUI	1,600	375/.170/600	250	25,200	
F521-146	or F521-39, or	175-2XX		SUI	1,600	375/.200/600	250	25,200	
F521-147	F521-77 or F521-78	175-3XX		SUI	1,600	375/.230/600	250	25,200	
F521-148		176-XX		SUI	1,600	375/.390/600	250	25,200	
F521-149	SIMSCRIPT II.5	N/A	A	SUF	1,600	600/ - /N/A	250	N/A	
	Full License - % TNB/MR					50%			
	Full License - % TNB/CSR					33%			
F521-151	APT IV 2 UNDER	171	9/79	SUI	2,100	200/.028/750	400	42,000	
F521-152	NOS 1	172	9/79	SUI	2,100	200/.040/750	400	42,000	
F521-153	Requires F521-14,	173	9/79	SUI	2,100	200/.060/750	400	42,000	
F521-154	or F521-15, or	174	9/79	SUI	2,100	200/.096/750	400	42,000	
F521-155	F521-77 or F521-78	175-1XX	9/79	SUI	2,100	200/.220/750	400	42,000	
F521-156		175-2XX	9/79	SUI	2,100	200/.270/750	400	42,000	
F521-157		175-3XX	9/79	SUI	2,100	200/.300/750	400	42,000	
F521-158		176-XX	9/79	SUI	2,100	200/.520/750	400	42,000	
F521-159	APT IV 2	N/A	9/79	SUF	2,100	750/ - /N/A	400	N/A	
	Full License - % TNB/MR					85%			
	Full License - % TNB/CSR					46%			

Changes Effective 05/01/80 Avail Date Codes * A - Available S - Superseded (Use current product)
*License required (SUI/SUF/SPI/SP3) See Page 27/28 of Contracts Section.

PRODUCT NUMBER	PRODUCT DESCRIPTION	CPU	AVAIL DATE	LIC REQ	INITIAL FEE	MONTHLY RIGHT TO USE MIN/USAGE/MAX	MONTHLY AMS	PAID UP LICENSE	AMS END DATE
F521-161	GTICES/GTSTRUDL	171	A	SUI	6,000	500/.040/1,000	800	60,000	
F521-162	UNDER NOS 1	172		SUI	6,000	500/.050/1,000	800	60,000	
F521-163	Requires F521-12	173		SUI	6,000	500/.080/1,000	800	60,000	
F521-164	or F521-39, or	174		SUI	6,000	500/.120/1,000	800	60,000	
F521-165	F521-77 or F521-78	175-1XX		SUI	6,000	500/.270/1,000	800	60,000	
F521-166		175-2XX		SUI	6,000	500/.340/1,000	800	60,000	
F521-167		175-3XX		SUI	6,000	500/.380/1,000	800	60,000	
F521-168		176-XX		SUI	6,000	500/.650/1,000	800	60,000	
F521-171	GTTABLE	171	A	SUI	1,000	100/0.010/250	100	10,500	
F521-172	Requires F521-16X	172		SUI	1,000	100/0.015/250	100	10,500	
F521-173		173		SUI	1,000	100/0.023/250	100	10,500	
F521-174		174		SUI	1,000	100/0.036/250	100	10,500	
F521-175		175-1XX		SUI	1,000	100/0.083/250	100	10,500	
F521-176		175-2XX		SUI	1,000	100/0.100/250	100	10,500	
F521-177		175-3XX		SUI	1,000	100/0.113/250	100	10,500	
F521-178		176-XX		SUI	1,000	100/0.195/250	100	10,500	
F521-191	AD-2000 Package 1	171	6/80	SUI	9,500	1,545/0.120/2,375	900	95,000	
F521-192	with NC interface	172	6/80	SUI	9,500	1,545/0.170/2,375	900	95,000	
F521-193	Under NOS 1.	173	6/80	SUI	9,500	1,545/0.240/2,375	900	95,000	
F521-194	Includes Basic	174	6/80	SUI	9,500	1,545/0.340/2,375	900	95,000	
F521-195	Geometry, Mechanical	175-1XX	6/80	SUI	9,500	1,545/0.590/2,375	900	95,000	
F521-196	Drafting, Geometric	175-2XX	6/80	SUI	9,500	1,545/0.790/2,375	900	95,000	
F521-197	Analysis, Extended	175-3XX	6/80	SUI	9,500	1,545/0.950/2,375	900	95,000	
F521-198	Geometry and Numerical Control	176-XX	6/80	SUI	9,500	1,545/1.580/2,375	900	95,000	
F521-199	AD-2000 Package 1 Full License - % TNB/MR	N/A	1/81	SUF	9,500	2,375/ N/A /N/A 150%	900	N/A	
	Full License - % TNB/CSR					60%			
F521-201	AD-2000 Basic	171	A	SUI	4,600	750/0.120/1,150	460	46,000	
F521-202	Package 1 under NOS 1.	172		SUI	4,600	750/0.170/1,150	460	46,000	
F521-203	Includes Basic	173		SUI	4,600	750/0.240/1,150	460	46,000	
F521-204	Geometry, Mechanical	174		SUI	4,600	750/0.340/1,150	460	46,000	
F521-205	Drafting and	175-1XX		SUI	4,600	750/0.590/1,150	460	46,000	
F521-206	Geometric Analysis	175-2XX		SUI	4,600	750/0.790/1,150	460	46,000	
F521-207		175-3XX		SUI	4,600	750/0.950/1,150	460	46,000	
F521-208		176-XX		SUI	4,600	750/1.580/1,150	460	46,000	
F521-211	AD-2000 Package 1	171	6/80	SUI	7,000	1,140/0.120/1,750	700	70,000	
F521-212	with Extended	172	6/80	SUI	7,000	1,140/0.170/1,750	700	70,000	
F521-213	Geometry Under NOS 1.	173	6/80	SUI	7,000	1,140/0.240/1,750	700	70,000	
F521-214	Includes Basic	174	6/80	SUI	7,000	1,140/0.340/1,750	700	70,000	
F521-215	Geometry, Mechanical	175-1XX	6/80	SUI	7,000	1,140/0.590/1,750	700	70,000	
F521-216	Drafting, Geometric,	175-2XX	6/80	SUI	7,000	1,140/0.790/1,750	700	70,000	
F521-217	Analysis and Extended	175-3XX	6/80	SUI	7,000	1,140/0.950/1,750	700	70,000	
F521-218	Geometry. Binary Only	176-XX	6/80	SUI	7,000	1,140/1.580/1,750	700	70,000	
F521-251	CDC SynthaVision	171	6/80	SUI	6,800	1,125/0.060/2,250	1,000	90,000	
F521-252	under NOS 1.	172	6/80	SUI	6,800	1,125/0.090/2,250	1,000	90,000	
F521-253	Includes Interactive	173	6/80	SUI	6,800	1,125/0.130/2,250	1,000	90,000	
F521-254	Modeler, Image/	174	6/80	SUI	6,800	1,125/0.180/2,250	1,000	90,000	
F521-255	Analysis Package,	175-1XX	6/80	SUI	6,800	1,125/0.300/2,250	1,000	90,000	
F521-256	Tektronix 401X	175-2XX	6/80	SUI	6,800	1,125/0.400/2,250	1,000	90,000	
F521-257	Previewer/Post-	175-3XX	6/80	SUI	6,800	1,125/0.470/2,250	1,000	90,000	
F521-258	Processor, and	176-XX	6/80	SUI	6,800	1,125/0.750/2,250	1,000	90,000	
F521-259	Ramtek 3351 Post-Processor. Binary Only.	N/A	6/80	SUF	6,800	2,250/ N/A N/A	1,000	N/A	
	Full License - % TNB/MR					150%			
	Full License - % TNB/CSR					60%			

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PRODUCT NUMBER	PRODUCT DESCRIPTION	CPU	AVAIL DATE	LIC REQ	INITIAL FEE	MONTHLY RIGHT TO USE MIN/USAGE/MAX	MONTHLY AMS	PAID UP LICENSE	AMS END DATE
F521-261	CDC SynthaVision	171	6/80	SUI	1,200	185/0.060/375	200	15,000	
F521-262	Interactive Modeler	172	6/80	SUI	1,200	185/0.090/375	200	15,000	
F521-263	under NOS 1	173	6/80	SUI	1,200	185/0.130/375	200	15,000	
F521-264	Binary Only.	174	6/80	SUI	1,200	185/0.180/375	200	15,000	
F521-265	Requires F521-27X	175-1XX	6/80	SUI	1,200	185/0.300/375	200	15,000	
F521-266		175-2XX	6/80	SUI	1,200	185/0.400/375	200	15,000	
F521-267		175-3XX	6/80	SUI	1,200	185/0.470/375	200	15,000	
F521-268		176-XX	6/80	SUI	1,200	185/0.750/375	200	15,000	
F521-271	CDC SynthaVision	171	6/80	SUI	3,800	625/0.060/1,250	500	50,000	
F521-272	Image/Analysis	172	6/80	SUI	3,800	625/0.090/1,250	500	50,000	
F521-273	Package Under NOS 1.	173	6/80	SUI	3,800	625/0.130/1,250	500	50,000	
F521-274	Binary Only.	174	6/80	SUI	3,800	625/0.180/1,250	500	50,000	
F521-275		175-1XX	6/80	SUI	3,800	625/0.300/1,250	500	50,000	
F521-276		175-2XX	6/80	SUI	3,800	625/0.400/1,250	500	50,000	
F521-277		175-3XX	6/80	SUI	3,800	625/0.470/1,250	500	50,000	
F521-278		176-XX	6/80	SUI	3,800	625/0.750/1,250	500	50,000	
F521-281	Tektronix 401X	171	6/80	SUI	1,200	185/0.060/375	200	15,000	
F521-282	Previewer/Post-	172	6/80	SUI	1,200	185/0.090/375	200	15,000	
F521-283	Processor under	173	6/80	SUI	1,200	185/0.130/375	200	15,000	
F521-284	CDC SynthaVision.	174	6/80	SUI	1,200	185/0.180/375	200	15,000	
F521-285	Requires F521-26X	175-1XX	6/80	SUI	1,200	185/0.300/375	200	15,000	
F521-286	and F521-27X.	175-2XX	6/80	SUI	1,200	185/0.400/375	200	15,000	
F521-287	Binary only.	175-3XX	6/80	SUI	1,200	185/0.470/375	200	15,000	
F521-288		176-XX	6/80	SUI	1,200	185/0.750/375	200	15,000	
F521-291	Ramtek 3351 Post-	171	6/80	SUI	1,200	185/0.060/375	200	15,000	
F521-292	Processor under CDC	172	6/80	SUI	1,200	185/0.090/375	200	15,000	
F521-293	SynthaVision.	173	6/80	SUI	1,200	185/0.130/375	200	15,000	
F521-294	Requires F521-26X	174	6/80	SUI	1,200	185/0.180/375	200	15,000	
F521-295	and F521-27X	175-1XX	6/80	SUI	1,200	185/0.300/375	200	15,000	
F521-296	Binary only.	175-2XX	6/80	SUI	1,200	185/0.400/375	200	15,000	
F521-297		175-3XX	6/80	SUI	1,200	185/0.470/375	200	15,000	
F521-298		176-XX	6/80	SUI	1,200	185/0.750/375	200	15,000	
F521-301	PROPLAN under NOS 1	171	A	SUI	1,000	800/0.120/1,200	400	36,000	
F521-302		172		SUI	1,000	800/0.168/1,200	400	36,000	
F521-303		173		SUI	1,000	800/0.252/1,200	400	36,000	
F521-304		174		SUI	1,000	800/0.408/1,200	400	36,000	
F521-305		175-1XX		SUI	1,000	800/0.840/1,200	400	36,000	
F521-306		175-2XX		SUI	1,000	800/1.080/1,200	400	36,000	
F521-307		175-3XX		SUI	1,000	800/1.200/1,200	400	36,000	
F521-308		176-XX		SUI	1,000	800/1.800/1,200	400	36,000	
F521-309	PROPLAN Full License - % TNB/MB Full License - % TNB/CSR	N/A	A	SUF	1,000	1,200/ -/ N/A 325% 76%	400	N/A	
F521-421	PERT/TIME	171	A	SUI	200	80/N/A /80	20	3,400	
F521-422	UNDER NOS 1	172		SUI	200	80/N/A /80	20	3,400	
F521-423	Requires F521-01	173		SUI	200	80/N/A /80	20	3,400	
F521-424	or F521-86	174		SUI	200	80/N/A /80	20	3,400	
F521-425		175-1XX		SUI	200	80/N/A /80	20	3,400	
F521-426		175-2XX		SUI	200	80/N/A /80	20	3,400	
F521-427		175-3XX		SUI	200	80/N/A /80	20	3,400	
F521-428		176-XX		SUI	200	80/N/A /80	20	3,400	
F521-429	PERT/TIME Full License - % TNB/MR Full License - % TNB/CSR	N/A	A	SUF	200	80/ - /N/A 50% 33%	20	N/A	

PRODUCT NUMBER	PRODUCT DESCRIPTION	CPU	AVAIL DATE	LIC REQ	INITIAL FEE	MONTHLY RIGHT TO USE	MONTHLY CEMS	PAID UP LICENSE	CEMS END DATE
F620-01	NOS/BE 1 Package for CYBER	720	A	*PST	2,420	1,210	805	50,840	
F630-01	170-700 Series. Requires	730			2,880	1,440	960	60,500	
F640-01	F6X0-02 for maintenance plus	740			4,360	2,180	1,455	91,560	
F650-01	requires F6X0-21 or F6X0-22	750			5,545	2,770	1,850	116,425	
F660-01	for maintenance.	760			6,190	3,095	2,065	129,950	
F670-01		176-4XX			7,535	3,765	2,510	158,215	
F620-02	Maintenance Package under	720	A	*PST	N/C	N/C	N/A	N/C	
F630-02	NOS/BE 1. Requires F6X0-01.	730			N/C	N/C	N/A	N/C	
F640-02		740			N/C	N/C	N/A	N/C	
F650-02		750			N/C	N/C	N/A	N/C	
F660-02		760			N/C	N/C	N/A	N/C	
F670-02		176-4XX			N/C	N/C	N/A	N/C	
F620-03	Multi-Mainframe Module	720	A	*PST	350	175	115	7,370	
F630-03	under NOS/BE 1. Requires	730			420	210	140	8,770	
F640-03	F6X0-01.	740			630	315	210	13,230	
F650-03		750			805	400	270	16,880	
F660-03		760			895	450	300	18,840	
F670-03		176-4XX			1,090	545	365	22,940	
F620-10	Intercom 5 under NOS/BE 1.	720	A	*PST	695	345	230	14,555	
F630-10	Requires F6X0-01 plus	730			825	410	275	17,320	
F640-10	requires N222-01.	740			1,240	620	415	26,040	
F650-10	Successor to F6X0-09	750			1,585	795	530	33,325	
F660-10		760			1,770	885	590	37,195	
F670-10		176-4XX			2,155	1,080	720	45,290	
F620-11	Export High Speed	720	A	*PST	N/C	N/C	N/A	N/C	
F630-11	under NOS/BE 1	730			N/C	N/C	N/A	N/C	
F640-11	Requires F6X0-10	740			N/C	N/C	N/A	N/C	
F650-11		750			N/C	N/C	N/A	N/C	
F660-11		760			N/C	N/C	N/A	N/C	
F670-11		176-4XX			N/C	N/A	N/C	N/C	
F620-15	CYBER Cross System 1 under	720	A	*PST	164	82	55	3,444	
F630-15	NOS/BE 1. Requires F6X0-01.	730			186	93	65	3,906	
F640-15		740			290	145	95	6,090	
F650-15		750			372	186	125	7,812	
F660-15		760			416	208	140	8,736	
F670-15		176-4XX			504	252	170	10,584	
F620-20	FORTRAN 5 under	720	A	*PST	475	235	160	9,955	
F630-20	NOS/BE 1. Requires F6X0-01	730			565	280	190	11,845	
F640-20	plus requires F6X0-10 for	740			890	445	295	18,690	
F650-20	interactive usage.	750			1,085	545	360	22,795	
F660-20	Successor to F6X0-21 and	760			1,210	605	405	25,440	
F670-20	F6X0-22	176-4XX			1,475	740	490	30,975	
F620-21	FORTRAN Extended 4 under	720	A	*PST	296	148	100	6,216	
F630-21	NOS/BE 1. Requires F6X0-01	730			350	175	120	7,350	
F640-21	plus requires F6X0-10 for	740			510	255	170	10,710	
F650-21	interactive usage.	750			678	339	230	14,238	
F660-21		760			756	378	260	15,876	
F670-21		176-4XX			920	460	315	19,320	
F620-22	FORTRAN Extended 4 with	720	A	*PST	475	235	160	9,955	
F630-22	Interactive Option under	730			565	280	190	11,845	
F640-22	NOS/BE 1.	740			890	445	295	18,690	
F650-22	Requires F6X0-01 plus	750			1,085	545	360	22,795	
F660-22	requires F6X0-10 for inter-	760			1,210	605	405	25,440	
F670-22	active usage.	176-4XX			1,475	740	490	30,975	
F620-23	COBOL 5 under NOS/BE 1.	720	A	*PST	350	175	120	7,350	
F630-23	Requires F6X0-27 plus	730			416	203	140	8,736	
F640-23	requires F6X0-10 for inter-	740			610	305	205	12,810	
F650-23	active plus requires F6X0-40	750			810	405	275	17,010	
F660-23	for database management.	760			898	449	310	18,858	
F670-23		176-4XX			1,096	548	375	23,016	

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PRODUCT NUMBER	PRODUCT DESCRIPTION	CPU	AVAIL DATE	LIC REQ	INITIAL FEE	MONTHLY RIGHT TO USE	MONTHLY CEMS	PAID UP LICENSE	CEMS END DATE
F620-24	Interactive Basic 3 under	720	A	*PST	290	142	100	6,090	
F630-24	NOS/BE 1. Requires F6X0-01	730			340	170	120	7,140	
F630-24	plus requires F6X0-10 for	740			490	245	165	10,200	
F650-24	interactive usage.	750			658	329	225	13,818	
F660-24		760			734	367	250	15,414	
F670-24		176-4XX			898	449	310	18,858	
F620-26	PL/I 1 under NOS/BE 1.	720	A	*PST	536	268	180	11,256	
F630-26	Requires F6X0-01.	730			635	318	220	13,356	
F640-26		740			930	465	310	19,530	
F650-26		750			1,216	608	415	25,536	
F660-26		760			1,358	679	465	28,518	
F670-26		176-4XX			1,654	827	565	34,734	
F620-27	SORT/MERGE 4 under NOS/BE 1.	720	A	*PST	186	93	60	3,906	
F630-27	Requires F6X0-01.	730			220	110	75	4,620	
F640-27		740			320	160	105	6,720	
F650-27		750			416	208	140	8,736	
F660-27		760			460	230	155	9,660	
F670-27		176-4XX			558	279	190	11,718	
F620-29	CYBER Interactive Debug 1	720	A	*PST	110	55	40	2,310	
F630-29	under NOS/BE 1.	730			132	66	45	2,772	
F640-29	Requires F6X0-01.	740			190	95	65	3,990	
F650-29	Requires F6X0-10 for	750			252	126	90	5,292	
F660-29	interactive use	760			284	142	95	5,964	
F670-29		176-4XX			350	175	120	7,350	
F620-30	ALGOL-60 under NOS/BE 1.	720	A	*PST	318	159	105	6,678	
F630-30	Requires F6X0-01.	730			372	186	130	7,812	
F640-30		740			550	275	185	11,550	
F650-30		750			722	361	245	15,162	
F660-30		760			810	405	275	17,010	
F670-30		176-4XX			986	493	335	20,706	
F620-31	IMSL under NOS/BE 1.	720	A	SPI	550	120	45	15,330	
F630-31	Requires F6X0-21 or F6X0-22.	730			550	120	45	15,330	
F640-31		740			550	120	45	15,330	
F650-31		750			550	120	45	15,330	
F660-31		760			550	120	45	15,330	
F670-31		176-4XX			550	120	45	15,330	
F620-32	FTN 4/5 Conversion Aid 1	720	A	*PST	N/C	N/C	N/A	N/C	
F630-32	under NOS/BE 1. Requires	730			N/C	N/C	N/A	N/C	
F640-32	F6X0-21 or F6X0-22.	740			N/C	N/C	N/A	N/C	
F650-32		750			N/C	N/C	N/A	N/C	
F660-32		760			N/C	N/C	N/A	N/C	
F670-32		176-4XX			N/C	N/C	N/A	N/C	
F620-40	CYBER Database Control	720	A	*PST	712	356	241	14,952	
F630-40	System 2 under NOS/BE 1.	730			844	422	285	17,724	
F640-40	Requires F6X0-01. Requires	740			1,230	615	410	25,830	
F650-40	F6X0-23 or F6X0-43.	750			1,620	810	550	34,020	
F660-40	Requires F6X0-41.	760			1,806	903	615	37,926	
F670-40		176-4XX			2,200	1,100	750	46,200	
F620-41	Data Description Language	720	A	*PST	120	60	40	2,520	
F630-41	3 under NOS/BE 1.	730			132	66	45	2,772	
F640-41	Requires F6X0-27.	740			210	105	70	4,410	
F650-41		750			262	131	90	5,502	
F660-41		760			296	148	100	6,216	
F670-41		176-4XX			362	181	125	7,602	
F620-42	Query/Update 3 under	720	A	*PST	362	181	125	7,602	
F630-42	NOS/BE 1.	730			438	219	145	9,200	
F640-42	Requires F6X0-41. Requires	740			630	315	210	13,230	
F650-42	F6X0-10 for interactive use.	750			832	416	285	17,472	
F660-42		760			930	465	320	19,530	
F670-42		176-4XX			1,140	570	390	23,940	

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PRODUCT NUMBER	PRODUCT DESCRIPTION	CPU	AVAIL DATE	LIC REQ	INITIAL FEE	MONTHLY RIGHT TO USE	MONTHLY CEMS	PAID UP LICENSE	CEMS END DATE
F620-43	FORTRAN Database Facility 1	720	A	*PST	120	60	40	2,520	
F630-43	under NOS/BE 1	730			132	66	45	2,772	
F640-43	Requires F6X0-21 or F6X0-22.	740			210	105	70	4,410	
F650-43	Requires F6X0-40.	750			262	131	90	5,502	
F660-43		760			296	148	100	6,216	
F670-43		176-4XX			362	181	125	7,602	
F620-44	Total Universal 2 under	720	A	SPI	980	980	255	41,160	
F630-44	NOS/BE 1. (Third party soft-	730			1,040	1,040	270	43,630	
F640-44	ware, chargeable to all	740			1,305	1,305	330	52,200	
F650-44	customers.) Requires	750			1,424	1,424	365	59,808	
F660-44	F6X0-01 plus F6X0-23 for	760			1,506	1,506	385	63,252	
F670-44	maintenance. CEMS on this product does not include rights to successor products.	176-4XX			1,643	1,643	420	69,006	
F620-46	Data Catalogue 2 under	720	A	*PST	492	246	170	10,332	
F630-46	NOS/BE 1. Requires F6X0-23	730			592	296	205	12,432	
F640-46	plus F6X0-27.	740			850	425	285	17,850	
F650-46		750			1,128	564	385	23,688	
F660-46		760			1,260	630	430	26,460	
F670-46		176-4XX			1,534	767	520	32,214	
F620-51	APEX III Out-of-Core	720	A	SPI	2,530	450	330	21,385	
F630-51	System 1 under NOS/BE 1	730			2,530	450	330	21,385	
F640-51	Requires F6X0-21 or	740			2,530	450	330	21,385	
F650-51	F6X0-22	750			2,530	450	330	21,385	
F660-51		760			2,530	450	330	21,385	
F670-51		176-4XX			2,530	450	330	21,385	
F620-52	APEX III Mixed	720	A	SPI	230	350	250	14,950	
F630-52	Integer Programming	730			230	350	250	14,950	
F640-52	Option under NOS/BE 1	740			230	350	250	14,950	
F650-52	Requires F6X0-51	750			230	350	250	14,950	
F660-52		760			230	350	250	14,950	
F670-52		176-4XX			230	350	250	14,950	
F620-53	APEX III Matrix	720	A	SPI	230	75	60	3,450	
F630-53	Reduction Option	730			230	75	60	3,450	
F640-53	Under NOS/BE 1	740			230	75	60	3,450	
F650-53	Requires F6X0-51	750			230	75	60	3,450	
F660-53		760			230	75	60	3,450	
F670-53		176-4XX			230	75	60	3,450	
F620-54	APEX III Parametrics	720	A	SPI	230	75	60	3,450	
F630-54	Under NOS/BE 1	730			230	75	60	3,450	
F640-54	Requires F6X0-51	740			230	75	60	3,450	
F650-54		750			230	75	60	3,450	
F660-54		760			230	75	60	3,450	
F670-54		176-4XX			230	75	60	3,450	
F620-60	TIGS 1 under NOS/BE 1.	720	A	*PST	296	148	100	6,216	
F630-60	Requires F6X0-10 plus	730			350	175	120	7,350	
F640-60	requires F6X0-21 or F6X0-22	740			510	255	170	10,710	
F650-60	plus requires F6X0-61 and/or	750			668	334	230	14,028	
F660-60	F6X0-62.	760			744	372	255	15,624	
F670-60		176-4XX			910	455	310	14,110	
F620-61	Tektronix 401X Post-	720	A	*PST	2,200	N/C	30	2,200	
F630-61	Processor under TIGS.	730			2,200	N/C	30	2,200	
F640-61	Requires F6X0-60.	740			2,200	N/C	30	2,200	
F650-61		750			2,200	N/C	30	2,200	
F660-61		760			2,200	N/C	30	2,200	
F670-61		176-4XX			2,200	N/C	30	2,200	
F620-63	SIMSCRIPT 3 Under	720	A	*PST	680	290	N/A	13,730	
F630-63	NOS/BE 1	730			680	290	N/A	13,730	
F640-63	(Third Party Software,	740			680	290	N/A	13,730	
F650-63	Chargeable to all Customers)	750			680	290	N/A	13,730	
F660-63	Requires F6X0-21 or	760			680	290	N/A	13,730	
F670-63	F6X0-22	176-4XX			680	290	N/A	13,730	

Changes Effective 05/01/80 Avail Date Codes * A - Available S - Superseded (Use current product)
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PRODUCT NUMBER	PRODUCT DESCRIPTION	CPU	AVAIL DATE	LIC REQ	INITIAL FEE	MONTHLY RIGHT TO USE	MONTHLY CEMS	PAID UP LICENSE	CEMS END DATE
F620-64	CDC 795 Digigraphics-V Post-	720	1/80	*PST	2,200	N/C	30	2,200	
F630-64	Processor under TIGS.	730			2,200	N/C	30	2,200	
F640-64		740			2,200	N/C	30	2,200	
F650-64	Requires F6X0-60.	750			2,200	N/C	30	2,200	
F660-64		760			2,200	N/C	30	2,200	
F670-64		176-4XX			2,200	N/C	30	2,200	
F620-65	Chromatics 1599 Post-	720	7/80	*PST	2,000	N/A	25	2,000	
F630-65	processor under TIGS.	730	7/80	*PST	2,000	N/A	25	2,000	
F640-65	Requires F6X0-60.	740	7/80	*PST	2,000	N/A	25	2,000	
F650-65		750	7/80	*PST	2,000	N/A	25	2,000	
F660-65		760	7/80	*PST	2,000	N/A	25	2,000	
F670-65		176-4XX	7/80	*PST	2,000	N/A	25	2,000	
F620-67	PERT/TIME 2 Under	720	A	*PST	220	90	25	3,725	
F630-67	NOS/BE 1	730			220	90	25	3,725	
F640-67		740			220	90	25	3,725	
F650-67	Requires F6X0-21 or	750			220	90	25	3,725	
F660-67	F6X0-22	760			220	90	25	3,725	
F670-67		176-4XX			220	90	25	3,725	
F620-901	MSSI Version 2.0 under NOS/BE	720	3/80	Std.	5,000	500	20,000	350	
F630-901	MAP III software	730	3/80	Std.	5,000	500	20,000	350	
F640-901	Requires B401-01	740	3/80	Std.	5,000	500	20,000	350	
F650-901		750	3/80	Std.	5,000	500	20,000	350	
F660-901		760	3/80	Std.	5,000	500	20,000	350	
F670-901		176-4xx	3/80	Std.	5,000	500	20,000	350	

Changes Effective 05/01/80 Avail Date Codes * A - Available S - Superseded (Use current product)
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PRODUCT NUMBER	PRODUCT DESCRIPTION	AVAIL DATE	LIC REQ	CHARGES INITIAL FEE	CHARGES MINIMUM/USE MONTHLY/UNIT	CHARGES PAID UP LICENSE	CHARGES CEM SERVICE	CEM END DATE
	*** CDC CYBER 170 MODELS 171, 172, 173, 174, 175, 176/ CYBER 70 MODELS 71, 72, 73, 74/6000 SOFTWARE (ORDER AND/OR PROPOSALS TO NEW CUSTOMERS FOR THE FOLLOWING NOS/BE 1 PRODUCT SET MUST BE REVIEWED AND APPROVED BY THE HOME OFFICE PRIOR TO PROPOSAL OR ORDER ACCEPTANCE.)							
F621- 01	NOS/BE 1 PACKAGE NOTE - IF MAINFRAME CYBER 170 MODEL 176 ORDER F621-76 INSTEAD. IF MAINFRAME CYBER 170 MODEL 175-1XX, 175-2XX OR 175-3XX ORDER F621-86 INSTEAD. INCLUDES NOS/BE 1, COMPASS 3, CYBER RECORD MANAGER 1, ADVANCED ACCESS METHODS 2, FORM 1, UPDATE 1, CYBER LOADER 1 AND 8-BIT SUBROUTINE PACKAGE. REQUIRES F621-02 FOR MAINTENANCE PLUS REQUIRES F621-14 OR F621-15 FOR MAINTENANCE	A	STD	6,410	2,360/ N/A	100,810	1,675	
F621- 02	MAINTENANCE PACKAGE UNDER NOS/BE 1 REQUIRES F621-01 OR F621-76 OR F621-86	A	STD	N/C	N/C/ N/A	N/C	N/A	
F621- 03	CYBER CROSS SYSTEM 1 UNDER NOS/BE 1 PROVIDES FOR MAINTENANCE AND COMPILATION OF COMMUNICATION CONTROL PROGRAM SOFTWARE. REQUIRES F621-01 OR F621-76 OR F621-86	A	STD	570	140/ N/A	6,170	115	
F621- 05	MULTI-MAINFRAME MODULE 1 UNDER NOS/BE 1 PROVIDES FOR LINK COMMUNICATION AND SHARED 844 RMS BETWEEN ONE CYBER 70L/170 AND ONE OTHER 70L/170. REQUIRES F621-01 OR F621-76 OR F621-86	A	STD	570	340/ N/A	14,170	245	
F621- 07	INTERCOM 5 UNDER NOS/BE 1 PROVIDES SUPPORT FOR INTERACTIVE AND REMOTE BATCH ACCESS VIA 255X SUBSYSTEM. REQUIRES F621-01 OR F621-76 OR F621-86 PLUS REQUIRES N222-01 SUCCESSOR TO / F621 04	A	STD	120	680/ N/A	27,320	475	
F621- 08	ALGOL-60 5 UNDER NOS/BE 1 REQUIRES F621-01 OR F621-76 OR F621-86 SUCCESSOR TO / F621 10	12/78	STD	680	280/ N/A	11,880	225	
F621- 09	FORTRAN EXTENDED 5 UNDER NOS/BE 1 NOTE - IF MAINFRAME CYBER 170 MODEL 176, ORDER F621-79 INSTEAD. SUPPORTS A SUPERSET OF 1978 ANSI FORTRAN LANGUAGE SPECIFICATIONS. INCLUDES POST-MORTEM DUMP. REQUIRES F621-01 OR F621-86 PLUS REQUIRES F621-07 OR F621-04 FOR INTERACTIVE USE SUCCESSOR TO / F621- 15, F621- 14	A	STD	120	460/ N/A	18,520	330	
F621- 11	INTERACTIVE BASIC 3 UNDER NOS/BE 1 REQUIRES F621-01 OR F621-76 OR F621-86 PLUS REQUIRES F621-07 OR F621-04 FOR INTERACTIVE USAGE	A	STD	120	260/ N/A	10,520	200	
F621- 13	SORT/MERGE 4 UNDER NOS/BE 1 REQUIRES F621-01 OR F621-76 OR F621-86	A	STD	120	170/ N/A	6,920	130	
F621- 14	FORTRAN EXTENDED 4 UNDER NOS/BE 1 NOTE - IF MAINFRAME CYBER 170 MODEL 176 ORDER F621-77 INSTEAD. REQUIRES F621-01 OR F621-86 PLUS REQUIRES F621-13 FOR SORT PLUS REQUIRES F621-07 OR F621-04 FOR INTERACTIVE USAGE	A	STD	120	260/ N/A	10,520	215	
F621- 15	FORTRAN EXTENDED 4 UNDER NOS/BE 1 NOTE - IF MAINFRAME CYBER 170 MODEL 176 ORDER F621-78 INSTEAD. INCLUDES INTERACTIVE OPTION. REQUIRES F621-01 OR F621-86 PLUS REQUIRES F621-13 FOR SORT PLUS REQUIRES F621-07 OR F621-04 FOR INTERACTIVE USAGE	A	STD	120	460/ N/A	18,520	330	
F621- 16	COBOL 5 UNDER NOS/BE 1 ADDRESSES 1974 ANSI SPECIFICATIONS. INITIAL RELEASE IMPLEMENTS THE HIGHEST LEVEL OF 10 OF THE 12 MODULES DEFINED IN THE SPECIFICATION. THE COMMUNICATIONS MODULE IS NOT INCLUDED AND ONLY A SUBSET OF THE INTER-PROGRAM COMMUNICATIONS IS CONTAINED. REQUIRES F621-13 PLUS REQUIRES F621-07 OR F621-04 FOR INTERACTIVE USAGE PLUS REQUIRES F621-20 OR F621-57 FOR DATA BASE MANAGEMENT SUCCESSOR TO / F621 12	A	STD	140	310/ N/A	12,540	250	
F621- 17	COBOL 4 TO 5 CONVERSION AIDS SYSTEM UNDER NOS/BE 1 REQUIRES F621-01 OR F621-76 OR F621-86	A	STD	N/C	N/C/ N/A	N/C	N/A	
F621- 18	PL/I 1 UNDER NOS/BE 1 PROVIDES A SUBSET OF THE ECMA/ANSI STANDARD PL/I FEATURES. REQUIRES F621-01 OR F621-76 OR F621-86	A	STD	50	490/ N/A	19,420	360	
F621- 19	CYBER INTERACTIVE DEBUG 1 UNDER NOS/BE 1 PROVIDES INTERACTIVE DEBUGGING FACILITIES. REQUIRES F621-04 OR F621-07 PLUS REQUIRES F621-15 OR F621-78	A	STD	120	100/ N/A	4,120	80	
F621- 20	CYBER DATABASE CONTROL SYSTEM 2 UNDER NOS/BE 1 PROVIDES CENTRAL CONTROL OF DATABASE ACCESS, INCLUDING CONCURRENT UPDATE, ENHANCED RECOVERY, SCHEMA/SUBSCHEMA INTERFACE, DATA INDEPENDENCE, VALIDATION, ENCODE/DECODE, DERIVED ITEMS, LOGGING AND DATABASE PROCEDURES. REQUIRES F621-16 PLUS REQUIRES F621-21 SUCCESSOR TO / F621 57	A	STD	530	630/ N/A	25,730	500	
F621- 21	DATA DESCRIPTION LANGUAGE 3 UNDER NOS/BE 1 A SELF-CONTAINED LANGUAGE USED TO PRODUCE SCHEMA AND SUBSCHEMA DATABASE DESCRIPTIONS FOR USE WITH QUERY/UPDATE, COCS 2 AND COBOL 5. INCLUDES DATABASE UTILITIES. REQUIRES F621-13 SUCCESSOR TO / F621 58	A	STD	120	130/ N/A	4,120	85	

SOFTWARE PRODUCTS - CURRENT

PRODUCT NUMBER	PRODUCT DESCRIPTION	AVAIL DATE	LIC REQ	CHARGES INITIAL FEE	CHARGES MINIMUM/USE MONTHLY/UNIT	CHARGES PAID UP LICENSE	CHARGES CEM SERVICE	CEM END DATE
F621- 22	FORTRAN DATABASE FACILITY 1 UNDER NOS/BE 1 PROVIDES DATA MANIPULATION LANGUAGE CAPABILITY FOR FORTRAN APPLICATIONS TO INTERFACE TO CDCS 2 DATABASES. REQUIRES F621-14 OR F621-15 OR F621-77 OR F621-78 PLUS REQUIRES F621-20	12/78	STD	120	100/ N/A	4,120	85	
F621- 23	FORTRAN 4/5 CONVERSION AIDS 1 UNDER NOS/BE 1 REQUIRES F621-14 OR F621-15 OR F621-77 OR F621-78	04/79	STD	N/C	N/C / N/A	N/C	N/A	
F621- 24	EXPORT HIGH SPEED UNDER NOS/BE PROVIDES HIGH SPEED (UP TO 50K BPS) COMMUNICATIONS SUPPORT FOR CDC 1700 EXECUTI IMPORT H. S. SOFTWARE. UTILIZES 6673 OR 6674 DSC FOR CYBER CONNECTION. REQUIRES F621-07 SUCCESSOR TO / F621- 04	A	STD	N/C	N/C / N/A	N/A	N/A	
F621- 27	IMSL 6 UNDER NOS/BE 1 REQUIRES F621-14 OR F621-15 OR F621-77 OR F621-78	07/78	*SPI	500	110/ N/A	14,000	45	
F621- 51	APEX-III OUT-OF-CORE SYSTEM 1 UNDER NOS/BE 1 A HIGH PERFORMANCE LINEAR PROGRAMMING SYSTEM PROVIDING A PRIMAL OPTIMIZER, DEVEX OPTIMIZER, SOLUTION RANGING, AND NUMEROUS ADDITIONAL CAPABILITIES INCLUDING AN OUT-OF-CORE CAPABILITY INCLUDING DISK AND/OR ECS. REQUIRES F621-14 OR F621-15 OR F621-77 OR F621-78 SUCCESSOR TO / F621 50	A	*SPI	2,310	410/ N/A	19,530	330	
F621- 52	APEX-III MIXED INTEGER PROGRAMMING OPTION UNDER NOS/BE 1 PROVIDES A MIXED INTEGER PROGRAMMING CAPABILITY INCLUDING BINARY AND GENERAL INTEGER VARIABLES AND SPECIAL ORDERED SETS, TYPE 1 AND 2. REQUIRES F621-51	A	*SPI	210	320/ N/A	13,650	250	
F621- 53	APEX-III MATRIX REDUCTION OPTION UNDER NOS/BE1 PROVIDES A MATRIX REDUCTION (REDUCE) CAPABILITY TO THE APEX-III PACKAGE INCLUDING REGENERATION OF SOLUTION TO THE ORIGINAL PROBLEM. REQUIRES F621-51	A	*SPI	210	70/ N/A	3,150	60	
F621- 54	APEX-III PARAMETRICS UNDER NOS/BE 1 PROVIDES PARAMETRIC RMS AND PARAMETRIC OBJ CAPABILITIES FOR APEX-III PACKAGE REQUIRES F621-51	A	*SPI	210	70/ N/A	3,150	60	
F621- 55	APT IV 2 UNDER NOS/BE 1 A PRODUCTION SYSTEM FOR THE GENERATION OF APT (AUTOMATIC PROGRAMMED TOOLS) CUTTER LOCATION OUTPUT. HAS THE FOLLOWING FEATURES - SCULPTURED SURFACES, PARAMETRIC SURFACE CAPABILITY INCLUSIVE SUBSCRIPTS LANGUAGE CAPABILITIES (LITERAL STRING, CLPRINT/ON OR IFF) AND BOUNDED GEOMETRY. COMPATIBLE WITH THE ALRP/CAM VERSION OF APT IV (A6V3). REQUIRES F621-14 OR F621-15 OR F621-77 OR F621-78 CDNS ON THIS PRODUCT DOES NOT INCLUDE RIGHTS TO SUCCESSOR PRODUCTS.	A	*SP3	2,100	750/ N/A	42,000	225	
F621- 57	CYBER DATABASE CONTROL SYSTEM 1 UNDER NOS/BE 1 ADDS DATA BASE FEATURES TO THE CONVENTIONAL FILES OF THE CYBER RECORD MANAGER. USING THE DDL-GENERATED SCHEMA AND SUB-SCHEMAS CDCS PROVIDES INDEPENDENCE OF DATA FROM THE PROGRAMS THAT ACCESS OR MANIPULATE IT. IT ALSO PROVIDES FEATURES FOR DATA VALIDATION, ENCODE/DECODE, DERIVED ITEMS, AS WELL AS LOGGING AND DATA BASE UTILITIES FOR RECOVERY/RESTORATION. REQUIRES F621-21 OR F621-58 PLUS REQUIRES F621-12 OR F621-16	A	STD	530	630/ N/A	25,730	500	01/81
F621- 58	DATA DESCRIPTION LANGUAGE 2 UNDER NOS/BE 1 A SEPARATE SELF-CONTAINED LANGUAGE WHICH IS USED TO PRODUCE A DESCRIPTION OF AN ENTIRE DATA BASE (SCHEMA) AND DESCRIPTION OF THE DATA WHICH IS KNOWN TO SPECIFIC PROGRAMS OR USERS (SUB-SCHEMAS). THE DDL COMPILER ACCEPTS SCHEMA AND SUB-SCHEMA SOURCE STATEMENTS WHICH IT CONVERTS TO SCHEMA AND SUB-SCHEMA OBJECT DIRECTORIES. THESE DIRECTORIES ARE THEN CATALOGED AND REFERENCED BY INTERACTIVE QUERY UPDATE USERS AND BY COBOL PROGRAMS USING CDCS. INCLUDES DATA BASE UTILITIES 1. REQUIRES F621-13	A	STD	120	100/ N/A	4,120	85	
F621- 59	GPSS-V 1 UNDER NOS/BE 1 (CHARGEABLE TO ALL CUSTOMERS) GENERAL PURPOSE SIMULATION SYSTEM IS DESIGNED FOR MODELING OF REAL SITUATIONS AS AFFECTED BY CHANGES OVER TIME INTERVALS AND CORRESPONDING EVENTS WHICH OCCUR DURING THE SIMULATION. FEATURES FREE FORMAT INPUT. FLOATING POINT NUMBER CAPABILITIES. NO IMS AVAILABLE. REQUIRES F621-01 OR F621-76 OR F621-86	A	*SPI	110	100/ N/A	4,610	N/A	
F621- 62	QUERY UPDATE 3 UNDER NOS/BE 1 A HIGH LEVEL, ENGLISH-LIKE CONVERSATIONAL LANGUAGE FOR QUERYING AND MANIPULATING DATA FILES ORGANIZED UNDER CYBER RECORD MANAGER WITH MULTIPLE INDEXING. INCLUDES A REPORT WRITER MODULE. REQUIRES F621-21 OR F621-58 PLUS REQUIRES F621-07 OR F621-04 FOR INTERACTIVE USAGE	A	STD	120	320/ N/A	12,920	265	
F621- 63	SIMSCRIPT 3 UNDER NOS/BE 1 (CHARGEABLE TO ALL CUSTOMERS) PRIMARILY FOR SIMULATION PROGRAMMING, THE LANGUAGE MAY BE USED TO DESCRIBE A SITUATION WHICH CHANGES OVER SOME TIME INTERVAL AND TO TEST ITS OPERATION IN COMPARISON TO OTHERS. REQUIRES F621-14 OR F621-15 OR F621-77 OR F621-78	A	STD	680	290/ N/A	13,730	N/A	
F621- 67	PERT/TIME 2 UNDER NOS/BE 1 REQUIRES F621-14 OR F621-15 OR F621-77 OR F621-78	A	STD	200	80/ N/A	3,400	25	

CHANGES EFFECTIVE 05/01/80

AVAIL DATE CODES * A - AVAILABLE S - SUPERSEDED (USE CURRENT PRODUCT)
*LICENSE REQUIRED (SPI/SP3/SPU) SEE PAGE 27/28 OF CONTRACTS SECTION.

SOFTWARE PRODUCTS - CURRENT

PRODUCT NUMBER	PRODUCT DESCRIPTION	AVAIL DATE	LIC REQ	******CHARGES****** INITIAL FEE	MINIMUM/USE MONTHLY/UNIT	PAID UP LICENSE	CER SERVICE	CER END DATE
F621- 68	TOTAL UNIVERSAL 2 UNDER NOS/BE 1 (CHARGEABLE TO ALL CUSTOMERS) DATABASE MANAGEMENT SYSTEM (SINGLE THREAD). PERMITS NETWORK STRUCTURE RELATIONSHIPS BETWEEN DATA FILES. INCLUDES DATA-BASE DEFINITION LANGUAGE (DBDL), DATA MANIPULATION LANGUAGE (DML) AND UTILITIES PACKAGE. REQUIRES F621-01 OR F621-76 OR F621-86 PLUS REQUIRES F621-16 FOR MAINTENANCE CEMS ON THIS PRODUCT DOES NOT INCLUDE RIGHTS TO SUCCESSOR PRODUCTS. SUCCESSOR TO / F621 64	10/78	*SPI	1,000	975/ N/A	35,700	195	
F621- 70	DATA CATALOGUE 2 UNDER NOS/BE 1 REQUIRES F621-13 PLUS REQUIRES F621-16	A	STD	900	450/ N/A	18,900	335	
F621- 76	NOS/BE 1 PACKAGE FOR CYBER 170 MODEL 176 INCLUDES NOS/BE 1, COMPASS 3, CYBER RECORD MANAGER 1, ADVANCED ACCESS METHODS 2, FORM 1, UPDATE 1, CYBER LOADER 1 AND 8-BIT SUBROUTINE PACKAGE. REQUIRES F621-02 PLUS REQUIRES F621-77 OR F621-78 FOR MAINTENANCE	A	STD	12,820	5,910/ N/A	233,220	2,510	
F621- 77	FORTRAN EXTENDED 4 FOR CYBER 170 MODEL 176 UNDER NOS/BE 1 REQUIRES F621-76 PLUS REQUIRES F621-07 OR F621-04 FOR INTERACTIVE USAGE PLUS REQUIRES F621-13 FOR SORT	A	STD	1,420	610/ N/A	25,820	320	
F621- 78	FORTRAN EXTENDED 4 FOR CYBER 170 MODEL 176 UNDER NOS/BE 1 INCLUDES INTERACTIVE OPTION REQUIRES F621-76 PLUS REQUIRES F621-07 OR F621-04 FOR INTERACTIVE USAGE PLUS REQUIRES F621-13 FOR SORT	A	STD	2,490	1,070/ N/A	45,290	560	
F621- 79	FORTRAN EXTENDED 5 FOR CYBER 170 MOD 176 UNDER NOS/BE 1 SUPPORTS A SUPERSET OF 1978 ANSI FORTRAN LANGUAGE SPECIFICATIONS. INCLUDES POST-MORTEM DUMP. REQUIRES F621-76 PLUS REQUIRES F621-07 OR F621-04 FOR INTERACTIVE USE SUCCESSOR TO / F621- 78, F621- 77	A	STD	2,490	1,070/ N/A	45,290	560	
F621- 86	NOS/BE 1 PACKAGE FOR CYBER 170 MODEL 175 INCLUDES NOS/BE 1, COMPASS 3, CYBER RECORD MANAGER 1, ADVANCED ACCESS METHODS 2, FORM 1, UPDATE 1, CYBER LOADER 1 AND 8-BIT SUBROUTINE PACKAGE. REQUIRES F621-02 FOR MAINTENANCE PLUS REQUIRES F621-14 OR F621-15 FOR MAINTENANCE	A	STD	8,800	4,100/ N/A	172,800	2,130	
F621- 88	TIGS 1 UNDER NOS/BE 1 PROVIDES HOST CYBER SUPPORT FOR INTERACTIVE GRAPHICS, WITH TERMINAL INDEPENDENCE PROVIDED BY POST-PROCESSORS TO A NEUTRAL DISPLAY FILE. STANDARD POST-PROCESSORS ARE AVAILABLE BY EITHER OF THE FOLLOWING OPTIONS. OPTION F621-89 OPTION F621-90 ADDITIONAL POST-PROCESSORS ARE AVAILABLE ON A QUOTE FOR SPECIAL SOFTWARE. REQUIRES F621-04 OR F621-07 PLUS F621-14 OR F621-15 OR F621-77 OR F621-78. SUCCESSOR TO / F621 41	07/78	STD	500	270/ N/A	11,300	195	
F621- 89	TEKTRONIX 401X POST-PROCESSOR UNDER TIGS PROVIDES SUPPORT OF TEKTRONIX 401X GRAPHICS TERMINAL VIA THE TERMINAL INDEPENDENT GRAPHICS SYSTEM (TIGS). INTERFACE IS PROVIDED TO THE TIGS NEUTRAL DISPLAY FILE. REQUIRES F621-88 SUCCESSOR TO / F621- 41	07/78	STD	2,000	N/A / N/A	2,000	30	
F621- 91	CDC-795 DIGIGRAPHICS V POST-PROCESSOR UNDER TIGS-NOS/BE PROVIDES SUPPORT OF CDC-795 DIGIGRAPHICS V GRAPHICS TERMINAL VIA THE TERMINAL INDEPENDENT GRAPHICS SYSTEM (TIGS). INTERFACE IS PROVIDED TO THE TIGS NEUTRAL DISPLAY FILE. REQUIRES F621-07, F621-88	A	STD	2,000	N/C / N/A	2,000	30	
F621- 92	CHROMATICS 1599 POST-PROCESSOR UNDER TIGS. REQUIRES F621-88.	07/80	STD	2,000	N/A / N/A	2,000	25	
F621-901	MSSI VERSION 2.0 ON NOS/BE MAP III SOFTWARE WHICH REQUIRES 8431-01.	05/80	STD	5,000	500/ N/A	20,000	350	

CHANGES EFFECTIVE 05/01/80

AVAIL DATE CODES * A - AVAILABLE S - SUPERSEDED (USE CURRENT PRODUCT)
*LICENSE REQUIRED (SPI/SPS/SPU) SEE PAGE 27/29 OF CONTRACTS SECTION.

SOFTWARE PRODUCTS - CURRENT

PRODUCT NUMBER	PRODUCT DESCRIPTION	AVAIL DATE	LIC REQ	INITIAL FEE	MINIMUM/USE MONTHLY/UNIT	PAID UP LICENSE	CEM SERVICE	CEM END DATE
***	DATA ENTRY SOFTWARE							
0203- 01	CYBERDATA OPERATING SYSTEM (COS 3) OPERATES IN THE 970 DATA ENTRY SYSTEM CONTROLLER AND SUPPORTS THE FOLLOWING: KEY ENTRY VIA LOCAL AND REMOTE CYBERDATA KEYSTATION (970-32 AND 970-48X), DISKS, TAPES, COMMUNICATION TO CDC AND IBM, OPTICAL CHARACTER RECOGNITION READERS, PRINTERS, CARD READER AND SUPERVISOR'S CONSOLE. THE ABOVE CAN BE UTILIZED IN VARIOUS COMBINATIONS TO SUPPORT MULTI-MEDIA DATA ENTRY APPLICATIONS. THE PRODUCT INCLUDES MEMORY RESIDENT PORTION PLUS ADDITIONAL MODULES THAT ARE STORED ON DISK AND CALLED UP WHEN REQUIRED. SEVERAL NEW FEATURES HAVE BEEN ADDED TO THIS CYBERDATA RELEASE.	A	STD	N/C	N/C/ N/A	N/C	N/C	
8401- 01	MMCL VERSION 2.0 MAP III SOFTWARE WHICH REQUIRES F621-901 OR F521-901 OR F6X0-901 OR F7X0-901.	05/80	STD	6,500	650/ N/A	26,000	455	

PRODUCT NUMBER	PRODUCT DESCRIPTION	AVAIL DATE	LIC REQ	CHARGES INITIAL FEE	CHARGES MINIMUM/USE MONTHLY/UNIT	CHARGES PAID UP LICENSE	CHARGES CEM SERVICE	CEM END DATE
***	CDC CYBER 18/1700 SOFTWARE							
A622- 01	INTERACTIVE TERMINAL ORIENTED SYSTEM (ITOS) 2 SUPPORTS UP TO 17 CONCURRENT USERS AT INTERACTIVE TERMINALS. INCLUDES EXECUTIVE, TEXT EDITOR, FILE MANAGER 2, USER UTILITIES, PRINT SPOOLING AND ON-LINE CONFIGURE UTILITY. DELIVERY MEDIA IS 50MB STORAGE MODULE DISK PACK. FOR USE WITH SYSTEMS WHICH DO NOT HAVE 9 TRACK MAGNETIC TAPE AS PART OF THE SYSTEM CONFIGURATION. REQUIRES A622-20 SUCCESSOR TO / A325- 14	A	STD	1,500	125/ N/A	2,650	145	
A622- 02	INTERACTIVE TERMINAL ORIENTED SYSTEM (ITOS) 2 SUPPORTS UP TO 17 CONCURRENT USERS AT INTERACTIVE TERMINALS. INCLUDES EXECUTIVE, TEXT EDITOR, FILE MANAGER 2, USER UTILITIES, PRINT SPOOLING AND ON-LINE CONFIGURE UTILITY. FOR USE WITH SYSTEMS WHICH HAVE A 50MB STORAGE MODULE DISK AND A 9 TRACK TAPE AS PART OF THE SYSTEM CONFIGURATION. REQUIRES A622-20 SUCCESSOR TO / A325- 14	A	STD	1,500	125/ N/A	2,650	75	
A622- 03	INTERACTIVE TERMINAL ORIENTED SYSTEM (ITOS) 2 SAME AS A622-01, EXCEPT DELIVERY MEDIA IS 25MB STORAGE MODULE DISK PACK. SUCCESSOR TO / A325- 14	A	STD	1,500	125/ N/A	2,650	145	
A622- 04	INTERACTIVE TERMINAL ORIENTED SYSTEM (ITOS) 2 SAME AS A622-02, EXCEPT FOR USE WITH SYSTEMS WHICH HAVE A 25MB STORAGE MODULE DISK AND A 9 TRACK TAPE AS PART OF THE SYSTEM CONFIGURATION. SUCCESSOR TO / A325- 14	A	STD	1,500	125/ N/A	2,650	75	
A622- 05	INTERACTIVE TERMINAL ORIENTED SYSTEM (ITOS) 2 SAME AS A622-01, EXCEPT DELIVERY MEDIA IS CARTRIDGE DISK PK SUCCESSOR TO / A325- 14	A	STD	1,500	125/ N/A	2,650	107	
A622- 06	INTERACTIVE TERMINAL ORIENTED SYSTEM (ITOS) 2 SAME AS A622-02, EXCEPT FOR USE WITH SYSTEMS WHICH HAVE A CARTRIDGE DISK AND 9 TRACK TAPE AS PART OF THE SYSTEM CONFIGURATION. SUCCESSOR TO / A325- 14	A	STD	1,500	125/ N/A	2,650	75	
A622- 11	COMM 18 AND ITOS 2 HAS ALL OF THE FEATURES OF ITOS 2 (A622-01) PLUS SUPPORTS RJE TERMINAL OPERATION ACTING AS A HASP MULTILEAVING WORK-STATION, OR SIMULATION OF A CDC 200 UT REMOTE BATCH STATION, OR BOTH. COMMUNICATION SUPPORT IS ONE TWO LINES AT A MAXIMUM OF 4800 BPS LINE. READER/PRINTER CODE SET IS 64 ASCII ONLY (026 AND 029). COMMUNICATION CODE SET IS EXTERNAL BCD (200 UT) AND EBCDIC (HASP) DELIVERY MEDIA IS 50MB STORAGE MODULE DISK PACK. FOR USE WITH SYSTEMS WHICH DO NOT HAVE A 9 TRACK TAPE AS PART OF THE SYSTEM CONFIGURATION. REQUIRES A622-20	A	STD	2,500	255/ N/A	6,250	190	
A622- 12	COMM 18 AND ITOS 2 HAS ALL OF THE FEATURES OF ITOS 2 (A622-01) PLUS SUPPORTS RJE TERMINAL OPERATION ACTING AS A HASP MULTILEAVING WORK-STATION, OR SIMULATION OF A CDC 200 UT REMOTE BATCH STATION OR BOTH. COMMUNICATION SUPPORT IS ONE OR TWO LINES AT A MAXIMUM OF 4800 BPS PER LINE. READER/PRINTER CODE SET IS 64 ASCII ONLY (026 AND 029). COMMUNICATION CODE SET IS EXTERNAL BCD (200 UT) AND EBCDIC (HASP). FOR USE WITH SYSTEMS WHICH HAVE A 9 TRACK TAPE AS PART OF THE SYSTEM CONFIGURATION. REQUIRES A622-20	A	STD	2,500	255/ N/A	6,250	120	
A622- 13	COMM 18 AND ITOS 2 SAME AS A622-11 EXCEPT DELIVERY MEDIA IS 25MB STORAGE MODULE DISK PACK.	A	STD	2,500	255/ N/A	6,250	190	
A622- 14	COMM 18 AND ITOS 2 SAME AS A622-12 EXCEPT FOR USE WITH SYSTEMS WHICH HAVE A 25MB STORAGE MODULE DISK AND A 9 TRACK TAPE AS PART OF THE SYSTEM CONFIGURATION.	A	STD	2,500	255/ N/A	6,250	120	
A622- 15	COMM 18 AND ITOS 2 SAME AS A622-11 EXCEPT DELIVERY MEDIA IS CARTRIDGE DISK PACK	A	STD	2,500	255/ N/A	6,250	150	
A622- 16	COMM 18 AND ITOS 2 SAME AS A622-12 EXCEPT FOR USE WITH SYSTEMS WHICH HAVE A CARTRIDGE DISK AND A 9 TRACK TAPE AS PART OF THE SYSTEM CONFIGURATION.	A	STD	2,500	255/ N/A	6,250	120	

PRODUCT NUMBER	PRODUCT DESCRIPTION	AVAIL DATE	LIC REQ	CHARGES INITIAL FEE	CHARGES MINIMUM/USE MONTHLY/UNIT	CHARGES PAID UP LICENSE	CHARGES CEM SERVICE	CEM END DATE
A622- 20	PERIPHERAL DRIVERS 1C UNDER ITOS 2	A	STD	50	N/C / N/A	50	14	
	CONTAINS PERIPHERAL DRIVERS FOR THE FOLLOWING PRODUCTS: 1011-2, 1028-1/1027-30/1027-32/1027-60, 1027-1/1029-30/ 1029-60, 1028-2/1027-3C/1027-32/1027-60, 1028-2/1029-30/ 1029-60, 1043-1/1043-2, 1027-7, 1060-3/1060-4/1060-5/ 1060-6, 1033-1/1033-3/1067-10/1067-20, 1033-2/1066-12/ 1066-14, 1067-1, 1067-2							
	SUCCESSOR TO / A325- 14							
A622- 21	RPG II UNDER ITOS 2	A	STD	100	25/ N/A	300	27	
	THE RPG II COMPILER, RUNTIME AND UTILITIES RUN UNDER ITOS 2. THE SOURCE LANGUAGE IS COMPATIBLE WITH IBM SYSTEM 3 MODEL 10 EXCEPT AS NOTED IN THE REFERENCE MANUAL. RUNTIME MAY BE USED CONCURRENTLY BY MULTIPLE ITCS TERMINALS/USERS. IF PRESENT, COMMERCIAL INSTRUCTION SET IS USED TO IMPROVE EXECUTION SPEED.							
	SUCCESSOR TO / A325- 14							
A622- 22	COBOL 1 UNDER ITOS 2	A	STD	500	150/ N/A	3,500	85	
	ADDRESSES THE 1974 ANSI STANDARD AND IMPLEMENTS THE HIGHEST LEVEL FOR 10 OF THE 12 MODULES DEFINED IN THE STANDARD. THE COMMUNICATIONS MODULE IS NOT INCLUDED AND THE INTER-PROGRAM COMMUNICATION MODULE IS LOW LEVEL. THE RUNTIME MAY BE USED CONCURRENTLY BY MULTIPLE ITOS USERS/TERMINALS.							
A622- 23	FORTRAN 3A UNDER ITOS 2	A	STD	300	N/C / N/A	300	14	
	LANGUAGE SYNTAX IS A SUPERSET OF ANSI BASIC FORTRAN AND A SUBSET OF ANSI FORTRAN. LANGUAGE EXTENSIONS INCLUDE BYTE MANIPULATION AN IN-LINE ASSEMBLY CODE. INCLUDES THE EXECUTION-TIME PACKAGE WITH DOUBLE PRECISION OPTION. OPERATIONAL LIMITATIONS IN THE ITOS USER AREA ARE NOTED IN THE REFERENCE MANUAL.							
	SUCCESSOR TO / A325- 02							
A622- 24	FORTRAN 3B UNDER ITOS 2	A	STD	300	N/C / N/A	300	14	
	LANGUAGE SYNTAX IS A SUPERSET OF ANSI BASIC FORTRAN AND A SUBSET OF ANSI FORTRAN. LANGUAGE EXTENSIONS INCLUDE BYTE MANIPULATION AND IN-LINE ASSEMBLY CODE. INCLUDES THE EXECUTION-TIME PACKAGE WITH DOUBLE PRECISION OPTION. OPERATIONAL LIMITATIONS IN THE ITOS USER ARE ARE NOTED IN THE REFERENCE MANUAL.							
	SUCCESSOR TO / A325- 03							
A622- 25	MACRO ASSEMBLER 3 UNDER ITOS 2	A	STD	300	N/C / N/A	300	14	
	INCLUDES BASIC SET OF SYMBOLIC CYBER 18 MACHINE INSTRUCTIONS PSEUDO INSTRUCTIONS, MACRO INSTRUCTIONS, ASSEMBLY ERROR DIAGNOSTICS, FREE FIELD SOURCE FORMAT, LISTING AND BINARY OUTPUT TO APPROPRIATE UNITS.							
	SUCCESSOR TO / A325- 06							

PRODUCT NUMBER	PRODUCT DESCRIPTION	AVAIL DATE	LIC REQ	CHARGES INITIAL FEE	CHARGES MINIMUM/USE MONTHLY/UNIT	CHARGES PAID UP LICENSE	CHARGES CEM SERVICE	CEM END DATE
***	**CDC CYBER 18/1700 SOFTWARE**							
A325-01	**MASS STORAGE OPERATING SYSTEM 5** INCLUDES MONITOR AND JOB PROCESSOR, MAINTENANCE ROUTINES, DEBUG/CHECKOUT UTILITIES, INSTALLATION FILE MAINTENANCE, AND SYSTEM INITIALIZER. REQUIRES PERIPHERAL DRIVERS, A325-08 AND/OR A325-09 AND/OR REQUIRES A325-10.	A	STD	900	70/ N/A	2,500	60	
A325-02	**FORTRAN 3A UNDER MSOS 5** LANGUAGE SYNTAX IS A SUPERSET OF ANSI BASIC FORTRAN AND A SUBSET OF ANSI FORTRAN LANGUAGE EXTENSIONS INCLUDE BYTE MANIPULATION AND IN-LINE ASSEMBLY CODE. INCLUDES THREE EXECUTION-TIME PACKAGES AND A FORTRAN MULTIPROGRAMMING INTERFACE TO MSOS 5.	A	STD	30	N/C / N/A	30	16	
A325-03	**FORTRAN 3B UNDER MSOS 5** LANGUAGE SYNTAX IS A SUPERSET OF ANSI BASIC FORTRAN AND A SUBSET OF ANSI FORTRAN. LANGUAGE EXTENSIONS INCLUDE BYTE MANIPULATION AND IN-LINE ASSEMBLY CODE. INCLUDES THREE EXECUTION-TIME PACKAGES AND A FORTRAN MULTIPROGRAMMING INTERFACE TO MSOS 5.	A	STD	30	N/C / N/A	30	16	
A325-04	**FILE MANAGER 1 UNDER MSOS 5** GENERAL PURPOSE FILE MANAGER THAT OPERATES AND MAINTAINS BOTH INDEXED AND SEQUENTIAL FILES. PROVIDES SEQUENTIAL INDEXED AND DIRECT METHODS OF RECORD RETRIEVAL AS WELL AS VARIATIONS OF THESE METHODS.	A	STD	30	N/C / N/A	30	16	
A325-05	**AUTRAN 3 UNDER MSOS 5** HIGH LEVEL LANGUAGE ORIENTED TOWARD INDUSTRIAL CONTROL APPLICATIONS PROVIDING PROCEDURAL ARITHMETICAL AND PROCESS SPECIFICATION CAPABILITIES. LANGUAGE PROVIDES FORTRAN AS SUBSET. ALSO INCLUDES SCANNING, ALARMING, CONTROL OF ANALOG/DIGITAL I/O, AND OPERATOR CONSOLE. REQUIRES FORTRAN, A325-02 OR A325-03	A	STD	3,890	260/ N/A	14,290	190	
A325-06	**MACRO ASSEMBLER 3 UNDER MSOS 5** FULL SET OF SYMBOLIC 1700 MACHINE INSTRUCTIONS, PSEUDO INSTRUCTIONS, MACRO INSTRUCTIONS, ASSEMB. ERROR DIAGNOSTICS, FREE FIELD SOURCE FORMAT, LISTING AND BINARY OUTPUT TO APPROPRIATE UNITS.	A	STD	30	N/C / N/A	30	16	
A325-10	**PERIPHERAL DRIVERS 1C UNDER MSOS 5** CONTAINS PERIPHERAL DRIVERS FOR FOLLOWING PRODUCTS - 1811-1, 1828-1/1827-30/65119-1, 1828-1/1829-30/1829-60, 1832-4/1860-72/1860-92, 1833-1/1867-10/1867-20, 1833-5/1865-1/1865-2.	A	STD	110	N/C / N/A	110	16	
A325-11	**MAGNETIC TAPE UTILITIES 2 UNDER MSOS 5** CONTAINS CAPABILITY TO BLOCK/DEBLOCK, TAPE LABELLING, COPY UTILITIES, EBCDIC/ASCII/BCD CONVERSION.	A	STD	30	N/C / N/A	30	16	
A325-12	**RPG II 1 UNDER MSOS 5** PRODUCT IS FUNCTIONALLY AND SOURCE PROGRAM COMPATIBLE WITH IBM SYSTEM 3 RPG II. INCLUDES COMPILER, INTERPRETER, RUN-TIME SUPPORT ROUTINES AND DATA BASE MANAGER. REQUIRES SORT/MERGE 1, A325-13	A	STD	160	35/ N/A	1,560	27	
A325-13	**SORT/MERGE 1 UNDER MSOS 5** PROVIDES FAST COMPREHENSIVE SORT/MERGE/COPY FACILITY FOR TAPE OR SEQUENTIAL DISK FILES. REQUIRES FILE MANAGER 1, A325-04	A	STD	30	N/C / N/A	30	16	
A325-101	**CYBERDATA 5 UNDER MSOS 5 - CARTRIDGE DISK DRIVE** KEY TO DISK APPLICATION PACKAGE. OPERATES ON THE CYBER 18 10M/20 PROCESSORS AND SUPPORTS UP TO 32 KEY ENTRY STATIONS, MASS STORAGE, MAGNETIC TAPES, PRINTERS, CARD READERS AND A SUPERVISOR CONSOLE. PRODUCT INCLUDES MEMORY RESIDENT PORTION PLUS ADDITIONAL MODULES STORED ON DISK WHICH ARE CALLED WHEN REQUIRED. THIS PRODUCT SUPPORTS THE CARTRIDGE DISK MASS STORAGE DEVICE. REQUIRES A325-01, A325-06, A325-10, A325-11	02/80	STD	500	30/ N/A	1,100	20	
A325-102	**CYBERDATA 5 UNDER MSOS 5 - STORAGE MODULE DRIVE** SAME AS A325-101 EXCEPT THAT IT SUPPORTS THE STORAGE MODULE DISK (1867-X) MASS STORAGE SUBSYSTEMS.	02/80	STD	500	30/ N/A	1,100	20	

SOFTWARE PRODUCTS - CURRENT

PRODUCT NUMBER	PRODUCT DESCRIPTION	AVAIL DATE	LIC REQ	******CHARGES****** INITIAL FEE	MINIMUM/USE MONTHLY/UNIT	PAID UP LICENSE	CEM SERVICE	CEM END DATE
***	CDC CYBER 18 SOFTWARE							
A221- 01	CYBER 18 CYBERCREDIT SYSTEM (CCS) 2 A TERMINAL ORIENTED SYSTEM DESIGNED TO ASSIST IN THE DAILY COLLECTION FUNCTIONS OF REVIEWING, UPDATING AND ACTING UPON DELINQUENT ACCOUNTS. GENERATES DELINQUENT MASTER FILE BASED UPON INPUT FROM USER'S HOST ACCOUNTS RECEIVABLE SYSTEM. AUTOMATICALLY ARRANGES ACCOUNTS IN USER SPECIFIED ACTION PRIORITIES. PROVIDES MANAGEMENT REPORTS. SUPPORTS UP TO 20 COLLECTOR TERMINALS AND 24,000 DELINQUENT ACCOUNTS.	A	STD	3,000	300/ N/A	9,000	214	
***	CDC 65144-1 SOFTWARE .							
A129- 01	DISPATCHER TRAINING SIMULATOR SOFTWARE LICENSABLE TO 65144-1 DISPATCHER TRAINING SIMULATOR.	A	STD	N/C	N/A / N/A	39,200	N/A	

DEFINITION: INACTIVE SOFTWARE

Inactive Software products are not to be marketed and are listed for reference only. In most cases, these products have been superseded by a newer version.

1. SUPPORT - CEMS INACTIVE SOFTWARE {Page ii- iv.}

   In most cases, CEM Service is either not available {N/A} or a CEM service end date has been designated for these products. Rights to successor product may apply if an inactive software product is under a current CEM service contract. See page vi of the current software policy section.

2. SUPPORT-NON-CEMS INACTIVE SOFTWARE {PAGES 1-16}

   Support category is at category III for these products and will remain at Category III, {no support available}.

PRODUCT NUMBER	PRODUCT DESCRIPTION	AVAIL DATE	LIC REQ	CHARGES INITIAL FEE	CHARGES MINIMUM/USE MONTHLY/UNIT	CHARGES PAID UP LICENSE	CHARGES CEM SERVICE	CEM END DATE
A325- 07	TIMESHARE 3 UNDER MSOS 5	I	STD	540	85/ N/A	3,940	59	01/82
A325- 08	PERIPHERAL DRIVERS 1A UNDER MSOS 5	I	STD	110	N/C/ N/A	110	N/A	
A325- 09	PERIPHERAL DRIVERS 1B UNDER MSOS 5	A	STD	110	N/C / N/A	110	16	
A325- 14	INTERACTIVE TERMINAL ORIENTED SYSTEM (ITOS) 1	A	STD	1,500	100/ N/A	3,000	70	03/80
A325- 16	ORDER ENTRY/INVOICING 1	I	STD	300	30/ N/A	750	N/A	
A325- 17	ACCOUNTS RECEIVABLE 1	I	STD	250	25/ N/A	570	N/A	
A325- 18	INVENTORY CONTROL 1	I	STD	150	25/ N/A	570	N/A	
A325- 19	ACCOUNTS PAYABLE 1	I	STD	200	25/ N/A	570	N/A	
A325- 20	PAYROLL 1	I	STD	200	25/ N/A	570	N/A	
A325- 21	GENERAL LEDGER 1	I	STD	200	25/ N/A	475	N/A	
A325- 22	ROUTING 1	I	STD	150	23/ N/A	510	N/A	
A325- 23	BILL OF MATERIAL PROCESSOR 1	I	STD	350	30/ N/A	750	N/A	
A325- 24	MATERIAL REQUIREMENTS PLANNING	I	STD	350	30/ N/A	750	N/A	
A325- 25	PURCHASE ORDER PROCESSING 1	I	STD	150	23/ N/A	510	N/A	
A325- 26	PHYSICAL INVENTORY 1	I	STD	100	20/ N/A	240	N/A	
A325- 27	WORK IN PROCESS 1	I	STD	450	35/ N/A	900	N/A	
A325- 32	COBOL 1	I	STD	500	60/ N/A	3,500	40	03/81
A425- 01	REAL TIME OPERATING SYSTEM (RTOS) 3	I	STD	150	55/ N/A	2,350	45	04/82
A425- 02	ASSEMBLER 1 UNDER RTOS 3	I	STD	30	N/C/ N/A	30	15	04/82
A425- 08	PERIPHERAL DRIVERS 1A UNDER RTOS 3	I	STD	110	N/C/ N/A	110	N/A	
A425- 09	PERIPHERAL DRIVERS 1B UNDER RTOS 3	I	STD	110	N/C/ N/A	110	15	04/82
A425- 10	PERIPHERAL DRIVERS 1C UNDER RTOS 3	I	STD	110	N/C/ N/A	110	15	04/82
A425- 11	MAGNETIC TAPE UTILITIES 2 UNDER RTOS 3	I	STD	30	N/C/ N/A	30	15	04/82
***	CDC 1700/DCR SOFTWARE							
A524- 01	TAPE SCOPE 4 PACKAGE	I	STD	N/C	N/C/ N/A	N/C	N/C	08/80
A524- 02	DRAFT 4 UNDER TAPE SCOPE 4	I	STD	N/C	N/C/ N/A	N/C	N/A	
A524- 03	915 GRASP 2 UNDER TAPE SCOPE 4	I	STD	N/C	N/C/ N/A	N/C	N/C	08/80
A524- 04	955/959 GRASP 2 UNDER TAPE SCOPE 4	I	STD	N/C	N/C/ N/A	N/C	N/C	08/80
A524- 05	SYSTEM UTILITY PROCESSOR 1 UNDER TAPE SCOPE 4	I	STD	N/C	N/C/ N/A	N/C	N/C	08/80
A524- 06	929 DRIVE 1 UNDER TAPE SCOPE 4	I	STD	N/C	N/C/ N/A	N/C	N/C	08/80
A524- 07	DRAFT 5 UNDER TAPE SCOPE 4	I	STD	N/C	N/C/ N/A	N/C	N/C	08/80
B102- 01	CYBERCAPTURE OPERATING SYSTEM 2 (CCOS 2)	I	STD	N/C	60/ N/A	2,700	40	01/84
***	CDC GRAPHICS SOFTWARE							
B321- 01	777/IGS TERMINAL RESIDENT 2	I	STD	110	70/ N/A	3,260	55	06/80
B321- 02	777/3D/IGS TERMINAL RESIDENT 2	I	STD	320	100/ N/A	4,820	N/A	01/79
B321- 03	241 GRID GRAPHICS SUBSYSTEM RESIDENT 2	I	STD	120	120/ N/A	5,920	N/A	
B321- 04	777/3D/IGS TERMINAL RESIDENT 2 REQUIRES F621-48 LICENSABLE ON 777 AND 774-2 SUCCESSOR TO / B321 01/ B321 03	I	STD	430	170/ N/A	8,080	130	06/80
***	CDC 3100, 3170, 3200, 3300, 3500 SOFTWARE							
C225- 01	MSOS 5 PACKAGE I	I	STD	630	130/ N/A	5,830	N/A	
C225- 02	MSOS 5 PACKAGE II	I	STD	630	980/ N/A	39,830	N/A	
C225- 04	PERT/TIME (16K) 2 UNDER MSOS 5	I	STD	N/C	N/C/ N/A	N/C	N/A	
C225- 05	ANSI FORTRAN 1 UNDER MSOS 5	I	STD	N/C	N/C/ N/A	N/C	N/A	
C225- 06	ANSI COBOL 2 UNDER MSOS 5	I	STD	110	130/ N/A	5,310	N/A	
C225- 07	MS COBOL (BCO) 4 UNDER MSOS 5	I	STD	N/C	N/C/ N/A	N/C	N/A	
C225- 08	MS COBOL (BOP) 4 UNDER MSOS 5	I	STD	N/C	N/C/ N/A	N/C	N/A	
C225- 09	MASS STORAGE SORT 3 UNDER MSOS 5	I	STD	N/C	N/C/ N/A	N/C	N/A	
C225- 10	TAPE SORT/MERGE 2 UNDER MSOS 5	I	STD	N/C	N/C/ N/A	N/C	N/A	
C225- 11	LISA 1 UNDER MSOS 5	I	STD	N/C	N/C/ N/A	N/C	N/A	
C225- 12	MS FORTRAN 4 UNDER MSOS 5	I	STD	N/C	N/C/ N/A	N/C	N/A	
C225- 13	ALGOL 1 UNDER MSOS 5	I	STD	N/C	N/C/ N/A	N/C	N/A	
C225- 14	ADAPT (32K) 1 UNDER MSOS 5	I	STD	N/C	N/C/ N/A	N/C	N/A	
C225- 15	PERT/TIME (32K) 2 UNDER MSOS 5	I	STD	N/C	N/C/ N/A	N/C	N/A	
C225- 16	PERT/COST 2 UNDER MSOS 5	I	STD	N/C	N/C/ N/A	N/C	N/A	
C225- 17	SAINT 2 UNDER MSOS 5	I	STD	N/C	N/C/ N/A	N/C	N/A	
C225- 18	MSOS UTLITY 1 UNDER MSOS 5	I	STD	N/C	N/C/ N/A	N/C	N/A	
C225- 19	ON-LINE CONTROL SUBSYSTEM 1 UNDER MSOS 5	I	STD	110	110/ N/A	4,510	N/A	
C225- 20	PROFITS 1 UNDER MSOS 5	I	STD	110	110/ N/A	4,510	N/A	
C323- 01	MASTER 4 PACKAGE I	I	STD	1,350	90/ N/A	4,950	65	03/82
C323- 02	MASTER 4 PACKAGE II INCLUDING MASTER 4 WITH MULTIPROCESSING CAPABILITY, COMPASS-33 2, COSY 2, SYSGEN 1, META ASSEMBLER 1, ON-LINE DIAGNOSTICS 2, MASTER UTILITIES 1. FOR USE ONLY ON 3170 AND 3300 WITH TWO IDENTICAL CPU'S. REQUIRES HARDWARE MODIFICATION KIT (10308-2) PLUS REQUIRES ANSI FORTRAN FOR MAINTENANCE.	I	STD	1,690	170/ N/A	8,490	115	03/82
C323- 03	MASTER 4 PACKAGE III INCLUDING MASTER 4 WITH MULTIPROCESSING CAPABILITY, COMPASS-33 2, COSY 2, SYSGEN 1, META ASSEMBLER 1, ON-LINE DIAGNOSTICS 2, MASTER ULTILITIES 1. FOR USE ON A 3500 WITH IDENTICAL CPU'S. REQUIRES HARDWARE MODIFICATION KIT 10309-1 FOR 3504'S OR 10309-2 FOR 3514'S PLUS REQUIRES ANSI FORTRAN FOR MAINTENANCE.	I	STD	1,690	210/ N/A	10,090	150	03/82
C323- 04	ALGOL 1 UNDER MASTER 4	I	STD	N/C	N/C/ N/A	N/C	N/A	
C323- 05	MS COBOL 2 UNDER MASTER 4	I	STD	N/C	N/C/ N/A	N/C	N/A	
C323- 06	MS FORTRAN 3 UNDER MASTER 4	I	STD	N/C	N/C/ N/A	N/C	N/A	
C323- 07	LISA 1 UNDER MASTER 4	I	STD	N/C	N/C/ N/A	N/C	N/A	
C323- 08	MCS-III 1 UNDER MASTER 4	I	STD	100	60/ N/A	2,500	45	03/82
C323- 09	RESPOND EXPORT/IMPORT 1 UNDER MASTER 4	I	STD	N/C	N/C/ N/A	N/C	N/A	
C323- 10	ANSI FORTRAN 1 UNDER MASTER 4	I	STD	N/C	N/C/ N/A	N/C	N/A	
C323- 11	ANSI FORTRAN 2 UNDER MASTER 4	I	STD	680	90/ N/A	4,280	65	03/82
C323- 12	ANSI COBOL 3 UNDER MASTER 4	I	STD	680	90/ N/A	4,280	65	03/82
C323- 13	L-SORT 2 UNDER MASTER 4	I	STD	120	120/ N/A	4,920	N/A	
C323- 14	TAPE SORT/MERGE 3 UNDER MASTER 4	I	STD	120	70/ N/A	2,920	55	03/82
C323- 15	MS SORT 4 UNDER MASTER 4	I	STD	120	70/ N/A	2,920	55	03/82
C323- 16	MARS-III 2 UNDER MASTER 4	I	STD	680	250/ N/A	10,680	180	03/82
C323- 17	PERT PACKAGE 2 UNDER MASTER 4 INCLUDING PERT/TIME 2 PERT/COST 2	I	STD	N/C	N/C/ N/A	N/C	N/A	
C323- 20	LISA 2 UNDER MASTER 4	I	STD	270	70/ N/A	3,070	55	03/82
C323- 21	COMMUNICATIONS CONTROL MODULE SUPPORT SOFTWARE 1 UNDER MASTER 4	I	STD	370	70/ N/A	3,170	55	03/82
C323- 22	TOTAL UNIVERSAL 1 UNDER MASTER 4	I	STD	1,000	850/ N/A	31,000	150	04/81
C323- 23	TOTAL/ATHENA-III 1 UNDER MASTER 4	I	STD	200	110/ N/A	4,600	N/A	
***	BROKERAGE CONTROL SYSTEM SOFTWARE							
C424- 01	BROKERAGE CONTROL SYSTEM (BCS) 4	I	STD	26,970	3,370/ N/A	161,770	N/A	
C424- 02	RETRIEVAL-MARGIN BALANCES 3 UNDER BCS 4	I	STD	1,350	140/ N/A	6,950	N/A	
C424- 03	RETRIEVAL-RESEARCH OPINIONS 3 UNDER BCS 4	I	STD	1,350	140/ N/A	6,950	N/A	
C424- 04	CONFIRMS-FIGURATION 3 UNDER BCS 4	I	STD	13,490	140/ N/A	19,090	N/A	
C424- 05	CONFIRMS-NAME/ADDRESS 3 UNDER BCS 4	I	STD	26,970	140/ N/A	32,570	N/A	
C424- 06	CONFIRMS-SECURITY MASTER 3 UNDER BCS 4	I	STD	6,750	140/ N/A	12,350	N/A	
C424- 07	SECURITY MOVEMENT (CAGE) 3 UNDER BCS 4	I	STD	16,860	140/ N/A	22,460	N/A	
C424- 08	CASH-OVER-THE-WIRE 3 UNDER BCS 4	I	STD	9,440	140/ N/A	15,040	N/A	
C424- 09	OVER-THE-COUNTER QUOTES AND TRADING 3 UNDER BCS 4	I	STD	9,440	140/ N/A	15,040	N/A	
C424- 10	SHORT NAME 1 UNDER BCS 4	I	STD	1,350	140/ N/A	6,950	N/A	
***	CDC CYBER 170 MODELS 171, 172, 173, 174, 175/CYBER 70 MODELS 71, 72, 73, 74/6300 SOFTWARE							
F521- 03	TIME-SHARING MODULE 1 UNDER NOS 1 REQUIRES F521-01 OR F521-86	I	STD	120	810/ N/A	32,520	570	06/80

CHANGES EFFECTIVE 05/01/80

AVAIL DATE CODES * I - INACTIVE

*LICENSE REQUIRED (SP1/SP3/SPU) SEE PAGE 27/28 OF CONTRACTS SECTION.

PRODUCT NUMBER	PRODUCT DESCRIPTION	AVAIL DATE	LIC REQ	CHARGES INITIAL FEE	CHARGES MINIMUM/USE MONTHLY/UNIT	CHARGES PAID UP LICENSE	CHARGES CDM SERVICE	CDM END DATE
E521- 04	TRANSY 1 UNDER NOS 1 REQUIRES E521-93	I	STD	12-	1,92-/ N/A	40,92-	N/A	
E521- 13	COBOL 4 UNDER NOS 1 REQUIRES E521-14 PLUS REQUIRES E521-03 FOR INTERACTIVE USAGE PLUS REQUIRES E521-44 FOR DATA BASE MANAGEMENT	I	STD	12-	310/ N/A	12,52-	105	10/78
E521- 15	ALGOL-60 4 UNDER NOS 1 REQUIRES E521-01 OR E521-86 PLUS REQUIRES E521-03 FOR INTERACTIVE AND ALGOL EDITOR USAGE	I	STD	69-	280/ N/A	11,88-	200	09/80
E521- 1A	APL 1 UNDER NOS 1 REQUIRES E521-01 OR E521-86 PLUS REQUIRES E521-03 FOR INTERACTIVE USAGE	I	STD	68-	268/ N/A	11,08-	N/A	
E521- 1B	SIMULA 1 UNDER NOS 1 REQUIRES E521-01 OR E521-86	I	STD	68-	48-/ N/A	22,28-	N/A	
E521- 19	SIMSCRIPT 3 UNDER NOS 1 (THIRD PARTY SOFTWARE, CHARGEABLE TO ALL CUSTOMERS) REQUIRES E521-12 OR E521-39 OR E521-77 OR E521-78	I	STD	68-	290/ N/A	13,73-	N/A	
E521- 20	PERT/TIME 1 UNDER NOS 1 REQUIRES E521-01 OR E521-86	I	STD	N/C	N/C / N/A	N/C	N/A	
E521- 21	EXPORT/IMPORT-200 1 UNDER NOS 1 REQUIRES E521-01 OR E521-86	I	STD	N/C	N/C / N/A	N/C	55	06/80
E521- 22	MATH SCIENCE LIBRARY 1 UNDER NOS 1 (CHARGEABLE TO ALL CUSTOMERS) REQUIRES E521-12 OR E521-39	I	STD	61-	613/ N/A	28,06-	N/A	
E521- 28	TOTAL UNIVERSAL 1 UNDER NOS 1 (THIRD PARTY SOFTWARE, CHARGEABLE TO ALL CUSTOMERS) REQUIRES E521-01 OR E521-86	I	*SPI	1,C--	85-/ N/A	31,00-	150	10/79
E521- 29	TOTAL-EXTENDED 1 UNDER NOS 1 (THIRD PARTY SOFTWARE, CHARGEABLE TO ALL CUSTOMERS) REQUIRES E521-04 OR E521-6A	I	*SPI	1,-00	94-/ N/A	33,50-	160	10/79
E521- 32	CRSS-V 1 UNDER NOS 1 (THIRD PARTY SOFTWARE, CHARGEABLE TO ALL CUSTOMERS) REQUIRES E521-01 OR E521-86	I	*SPI	11-	1-0/ N/A	4,61-	N/A	
E521- 33	APEX-III BASE SYSTEM 1 UNDER NOS 1	I	*SPI	2,10-	32-/ N/A	15,540	N/A	
E521- 34	APEX-III OUT-OF-CORE SYSTEM 1 UNDER NOS 1 REQUIRES E521-12 OR E521-39 OR E521-77 OR E521-78	I	*SPI	2,31-	41-/ N/A	19,530	295	
E521- 35	APEX-III MIXED INTEGER PROGRAMMING OPTION UNDER NOS 1 REQUIRES E521-34	I	*SPI	21-	32-/ N/A	13,45-	225	
E521- 36	APEX-III MATRIX REDUCTION OPTION UNDER NOS 1 REQUIRES E521-34	I	*SPI	21-	7-/ N/A	3,150	55	
E521- 37	APEX-III PARAMETRICS UNDER NOS 1 REQUIRES E521-34	I	*SPI	21-	70/ N/A	3,150	55	
E521- 38	APEX-III USAGE PACKAGE 1 UNDER NOS 1 REQUIRES E521-12 OR E521-39 OR E521-77 OR E521-78 PLUS REQUIRES E521-52	*	*SPU	N/C	100/C.27-	N/A	310	
E521- 40	ART IV 2 UNDER NOS 1 REQUIRES E521-12 OR E521-39 OR E521-77 OR E521-78 CDMS ON THIS PRODUCT DOES NOT INCLUDE RIGHTS TO SUCCESSOR PRODUCTS.	I	*SP3	2,10-	75-/ N/A	42,00-	200	
E521- 47	LCGT/IGS 2 UNDER NOS 1 REQUIRES E521-03 PLUS REQUIRES E521-12 OR E521-39	I	STD	26-	6-/ N/A	2,96-	N/A	
E521- 49	UNIVOLT 2 UNDER NOS 1 REQUIRES E521-01 OR E521-86	I	STD	3,15-	N/C / N/A	3,15-	N/A	
E521- 52	USAGE ACCOUNTING UTILITY 1 UNDER NOS 1 REQUIRES E521-01 OR E521-86	I	STD	N/C	N/C / N/A	N/C	N/A	
E521- 53	PERT/TIME 2 UNDER NOS 1. REQUIRES E521-12 OR E521-39	I	STD	2--	8-/ N/A	3,40-	20	
E521- 54	TIGS 1 UNDER NOS 1 REQUIRES E521-03 OR E521-0A PLUS REQUIRES E521-12 OR E521-39 OR E521-77 OR E521-78	I	STD	50-	32-/ N/A	13,30-	230	01/81
E521- 70	POSTMAGEN 1 UNDER NOS 1 (THIRD PARTY SOFTWARE, CHARGEABLE TO ALL CUSTOMERS) REQUIRES E521-12 OR E521-39	I	*SPI	1,99-	75-/ N/A	32,000	270	
E521- 72	SIMSCRIPT II.5 UNDER NOS 1 (THIRD PARTY SOFTWARE, CHARGEABLE TO ALL CUSTOMERS)	I	*SPI	5--	40-/ N/A	16,800	250	
E521- 90	SANDERS GRAPHIC 7 POST-PROCESSOR UNDER TIGS REQUIRES E521-0B, E521-8B.	I	STD	2,00-	N/C / N/A	2,00-	25	02/82
E620- 09	INTERCOM 4 UNDER NOS/BE 1 170-720 REQUIRES E620-01 PLUS REQUIRES B221-03 FOR 2550 USAGE	I	STD	12-	580/ N/A	27,32-	475	06/80
E620- 62	SANDERS GRAPHICS - 7 POST-PROCESSOR UNDER TIGS REQUIRES E620-6C	I	STD	2,00-	N/C / N/A	2,00-	25	02/82
***	FOR CYBER 170 MODELS 171, 172, 173, 174, 175, 176/ CYBER 70 MODELS 71, 72, 73, 74/6000 SOFTWARE							
E621- 06	INTERCOM 4 UNDER NOS/BE 1 REQUIRES E621-01 OR E621-76 OR E621-86 PLUS REQUIRES B221-03 FOR 2550 USAGE	I	STD	12-	58-/ N/A	27,32-	475	06/80
E621- 13	ALGOL-6L 4 UNDER NOS/BE 1 REQUIRES E621-01 OR E621-76 OR E621-86 PLUS REQUIRES E621-04 FOR INTERACTIVE USAGE	I	STD	68-	28-/ N/A	11,88-	200	09/80
E621- 17	COBOL 4 UNDER NOS/BE 1 REQUIRES E621-13 PLUS REQUIRES E621-04 FOR INTERACTIVE USAGE PLUS REQUIRES E621-57 FOR DATA BASE MANAGEMENT	I	STD	12-	310/ N/A	12,52-	105	10/78
E621- 40	241 TCS 2 UNDER NOS/BE 1	I	STD	12-	230/ N/A	10,47-	N/A	
E621- 41	TIGS 1 UNDER NOS/BE 1 REQUIRES E621-04 OR E621-07 PLUS REQUIRES E621-14 OR E621-15 OR E621-77 OR E621-78	I	STD	50-	320/ N/A	13,30-	200	01/81
E621- 42	777 IOS 2 UNDER NOS/BE 1 REQUIRES E621-14 OR E621-15 OR E621-77 OR E621-78 PLUS REQUIRES E621-04 OR E621-07 PLUS REQUIRES B321-01	I	STD	84-	26-/ N/A	12,54-	180	06/80
E621- 43	3R OPTION, 777 IOS 2 UNDER NOS/BE 1 REQUIRES E621-42 PLUS REQUIRES B321-02	I	STD	21-	7-/ N/A	3,36-	N/A	
E621- 44	LCGT/IGS 2 UNDER NOS/BE 1 REQUIRES E621-14 OR E621-15 OR E621-77 OR E621-78 PLUS REQUIRES E621-04	I	STD	26-	6-/ N/A	2,96-	N/A	
E621- 45	GODAS 3 UNDER NOS/BE 1	I	STD	29-	20/ N/A	4,33-	N/A	
E621- 47	UNIVOLT 2 UNDER NOS/BE 1 REQUIRES E621-01 OR E621-76 OR E621-86	I	STD	3,15-	N/C / N/A	3,15-	N/A	
E621- 48	777 IOS 2 WITH 3R OPTION UNDER NOS/BE 1 REQUIRES E621-14 OR E621-15 OR E621-77 OR E621-78 PLUS REQUIRES E621-04 OR E621-07 PLUS REQUIRES B321-04	I	STD	1,05-	33-/ N/A	15,90-	235	06/80
E621- 49	APEX-III USAGE PACKAGE 1 UNDER NOS/BE 1 REQUIRES E621-14 OR E621-15 OR E621-77 OR E621-78 PLUS REQUIRES E621-6A	I	*SPU	N/C	100/C.27-	N/A	310	01/82
E621- 50	APEX-III BASE SYSTEM 1 UNDER NOS/BE 1	I	*SPI	2,10-	32-/ N/A	15,540	N/A	

CHANGES EFFECTIVE 03/01/80

AVAIL DATE CODES * I - INACTIVE
*LICENSE REQUIRED (SPI/SP3/SPU) SEE PAGE 27/28 OF CONTRACTS SECTION.

PRODUCT NUMBER	PRODUCT DESCRIPTION		AVAIL DATE	LIC REQ	INITIAL FEE	MINIMUM/USE MONTHLY/UNIT	PAID UP LICENSE	CEM SERVICE	CEM END DATE
					* * * * * * * C H A R G E S * * * * * * *				
F621- 58	CONVERSION AIDS SYSTEM 1 UNDER NOS/BE 1 REQUIRES F621-01 OR F621-76 OR F621-86		I	STD	N/C	N/C / N/A	N/C	N/A	
F621- 60	MATH SCIENCE LIBRARY 1 UNDER NOS/BE 1 (CHARGEABLE TO ALL CUSTOMERS) REQUIRES F621-14 OR F621-15 OR F621-77 OR F621-78		I	STD	610	410/ N/A	28,060	N/A	
F621- 61	PERT/TIME 1 UNDER NOS/BE 1 REQUIRES F621-01 OR F621-76 OR F621-86		I	STD	N/C	N/C / N/A	N/C	N/A	
F621- 64	TOTAL UNIVERSAL 1 UNDER NOS/BE 1 (THIRD PARTY SOFTWARE, CHARGEABLE TO ALL CUSTOMERS) REQUIRES F621-01 OR F621-76 OR F621-86		I	*SPI	1,000	850/ N/A	31,000	150	10/79
F621- 65	TOTAL/ATHENA 1 UNDER NOS/BE 1 (THIRD PARTY SOFTWARE, CHARGEABLE TO ALL CUSTOMERS) REQUIRES F621-64 OR F621-68 PLUS REQUIRES F621-16 FOR MAINTENANCE PLUS REQUIRES F621-07 OR F621-04 FOR INTERACTIVE USAGE		I	*SP3	500	400/ N/A	21,500	100	11/80
F621- 66	USAGE ACCOUNTING UTILITY 1 UNDER NOS/BE 1 REQUIRES F621-01 OR F621-76 OR F621-86		I	STD	N/C	N/C / N/A	N/C	N/A	
F621- 90	SANDERS GRAPHIC 7 POST-PROCESSOR UNDER TIGS REQUIRES F621-07, F621-88.		I	STD	2,000	N/C / N/A	2,000	25	02/82
F63C- 09	INTERCOM 4 UNDER NOS/BE 1	170-770	I	STD	120	680/ N/A	27,320	475	06/80
F63C- 62	SANDERS GRAPHICS - 7 POST-PROCESSOR UNDER TIGS		I	STD	2,000	N/C / N/A	2,000	25	02/82
F65C- 09	INTERCOM 4 UNDER NOS/BE 1	170-750	I	STD	120	680/ N/A	27,320	475	06/80
F65C- 62	SANDERS GRAPHICS - 7 POST-PROCESSOR UNDER TIGS		I	STD	2,000	N/C / N/A	2,000	25	02/82
F66C- 09	INTERCOM 4 UNDER NOS/BE 1	170-760	I	STD	120	680/ N/A	27,320	475	06/80
F66C- 62	SANDERS GRAPHICS - 7 POST-PROCESSOR UNDER TIGS		I	STD	2,000	N/C / N/A	2,000	25	02/82
F67C- 09	INTERCOM 4 UNDER NOS/BE 1	17?-4YY	I	STD	120	680/ N/A	27,320	475	06/80
F67C- 62	SANDERS GRAPHICS - 7 POST-PROCESSOR UNDER TIGS		I	STD	2,000	N/C / N/A	2,000	25	02/82
F72C- 16	TIME-SHARING MODULE 1 UNDER NOS 1 REQUIRES F720-01	170-720	I	STD	120	810/ N/A	32,520	570	06/80
F72C- 17	EXPORT/IMPORT 200 UNDER NOS 1 REQUIRES F720-01	170-720	I	STD	N/C	N/C / N/A	N/C	55	06/80
F72C- 62	SANDERS GRAPHICS-7 POST-PROCESSOR UNDER TIGS REQUIRES F720-60		I	STD	2,000	N/C / N/A	2,000	25	02/82
F73C- 16	TIME-SHARING MODULE 1 UNDER NOS 1	170-730	I	STD	120	810/ N/A	32,520	570	06/80
F73C- 17	EXPORT/IMPORT 200 UNDER NOS 1	170-730	I	STD	N/C	N/C / N/A	N/C	55	06/80
F73C- 62	SANDERS GRAPHICS-7 POST-PROCESSOR UNDER TIGS		I	STD	2,000	N/C / N/A	2,000	25	02/82
F75C- 16	TIME-SHARING MODULE 1 UNDER NOS 1	170-750	I	STD	120	810/ N/A	32,520	570	06/80
F75C- 17	EXPORT/IMPORT 200 UNDER NOS 1	170-750	I	STD	N/C	N/C / N/A	N/C	55	06/80
F75C- 62	SANDERS GRAPHICS-7 POST-PROCESSOR UNDER TIGS		I	STD	2,000	N/C / N/A	2,000	25	02/82
F76C- 16	TIME-SHARING MODULE 1 UNDER NOS 1	170-76.	I	STD	120	810/ N/A	32,520	570	06/80
F76C- 17	EXPORT/IMPORT 200 UNDER NOS 1	170-760	I	STD	N/C	N/C / N/A	N/C	55	06/80
F76C- 62	SANDERS GRAPHICS-7 POST-PROCESSOR UNDER TIGS		I	STD	2,000	N/C / N/A	2,000	25	02/82
F77C- 16	TIME-SHARING MODULE 1 UNDER NOS 1	17?-4YY	I	STD	120	810/ N/A	32,520	570	06/80
F77C- 17	EXPORT/IMPORT 200 UNDER NOS 1	17?-4YY	I	STD	N/C	N/C / N/A	N/C	55	06/80
F77C- 62	SANDERS GRAPHICS-7 POST-PROCESSOR UNDER TIGS		I	STD	2,000	N/C / N/A	2,000	25	02/82
***	CDC CYBER 170 MODEL 176/CYBER 70 MODEL 76/7000 SOFTWARE								
G122- 13	ALGOL-60 4 UNDER SCOPE 2 REQUIRES G122-01		I	STD	750	300/ N/A	12,750	210	09/80
G122- 19	APEX-III BASE SYSTEM 1 UNDER SCOPE 2		I	*SPI	2,100	320/ N/A	15,540	N/A	
H021- 01	GRASP 2 PACKAGE		I	NONE	N/C	N/C / N/A	N/C	N/A	
H021- 02	HIGH SPEED GRASP 3 PACKAGE		I	NONE	N/C	N/C / N/A	N/C	N/A	
H021- 04	KEYPUNCH SIMULATOR 2 PACKAGE		I	STD	N/C	N/C / N/A	N/C	N/C	08/80
H021- 05	NIMP 1 PACKAGE		I	NONE	N/C	N/C / N/A	N/C	N/C	08/80
H021- 06	LIST PROCESSOR 1 PACKAGE		I	NONE	N/C	N/C / N/A	N/C	N/A	
H021- 07	TAS 1		I	NONE	N/C	N/C / N/A	N/C	N/C	08/80
H021- 09	UTILITIES 1 PACKAGE		I	NONE	N/C	N/C / N/A	N/C	N/A	
H021- 10	NIMP 2 PACKAGE		I	NONE	N/C	N/C / N/A	N/C	N/A	
H021- 11	TAS 2		I	STD	N/C	N/C / N/A	N/C	N/C	08/80
H021- 12	COTVE 3 PACKAGE		I	STD	N/C	N/C / N/A	N/C	N/C	08/80
H021- 13	GRASP 3 PACKAGE		I	STD	N/C	N/C / N/A	N/C	N/C	08/80
H021- 14	MONITOR 1		I	STD	N/C	N/C / N/A	N/C	N/C	08/80
***	CDC R&D OPP SOFTWARE								
M121- 01	R&D GRASP 2 PACKAGE		I	STD	N/C	N/C / N/A	N/C	N/A	
M121- 01	OPERATIONS CONTROL SYSTEM (OCS) 1		I	STD	120	70/ N/A	2,920	N/A	
M121- 10	COMMUNICATIONS CONTROL PACKAGE 1 UNDER OCS 1		I	STD	120	110/ N/A	4,520	N/A	
M121- 20	LTIP - LOCAL INTERFACE PACKAGE 1 UNDER OCS 1		I	STD	120	70/ N/A	2,920	N/A	
M121-135	CRT ORIENTED RTIP PKG 1 UNDER OCS 1		I	STD	120	70/ N/A	2,920	N/A	
M121-140	CDC 200UT ORIENTED RTIP PKG 1 UNDER OCS 1		I	STD	120	70/ N/A	2,920	N/A	
M121-145	RSO, RSG ORIENTED RTIP PKG 1 UNDER OCS 1		I	STD	120	70/ N/A	2,920	N/A	
M221- 01	PROGRAM PRODUCTION SYSTEM (PPS) 1		I	STD	120	130/ N/A	5,320	N/A	
M221- 10	USASI FORTRAN UNDER PPS 1		I	STD	120	70/ N/A	2,920	N/A	
M302- 01	BASE DUAL CYBER PMX MODULE		I	STD		530/ N/A		N/A	01/83
M302- 02	BASE DUAL CYBER PMX MODULE		I	STD		430/ N/A		N/A	01/83
M302- 03	BASE DUAL CYBER PMX MODULE		I	STD		590/ N/A		N/A	01/83
M302- 05	BASE SINGLE CYBER PMX MODULE		I	STD		490/ N/A		N/A	01/82
M302- 07	BASE DUAL CYBER PMX MODULE		I	STD		790/ N/A		N/A	01/83
M302- 08	BASE SINGLE CYBER SOFTWARE MODULE		I	STD		490/ N/A		N/A	10/79
M321- 10	LTIP - IBM 360/370 1 UNDER PMX BASE SWITCHING SYSTEM 1		I	STD	960	220/ N/A	9,560	N/A	
M421-110	SINGLE IMX MESSAGE SWITCHING SYSTEM 2		I	STD	1,960	590/ N/A	25,560	N/A	
M421-111	DUAL IMX MESSAGE SWITCHING SYSTEM 2		I	STD	2,940	670/ N/A	29,740	N/A	
V221- 03	COMMUNICATIONS CONTROL PROGRAM (CCP) 1 (INTERACTS WITH NOS/BE 1) REQUIRES F621-04 PLUS REQUIRES F621-03 FOR MAINTENANCE		I	STD	570	70/ N/A	3,370	55	06/79
V221- 01	VDAM 1 UNDER OS/MVT		I	STD	3,260	375/ N/A	17,510	150	03/80
V222- 01	VDAM 2 UNDER OS/MVT		I	STD	3,260	375/ N/A	17,510	300	03/81
V321- 01	VDAM 1 UNDER OS/VS1		I	STD	3,260	375/ N/A	17,510	150	03/80
V322- 01	VDAM 2 UNDER OS/VS1		I	STD	3,260	375/ N/A	17,510	150	03/81
V421- 01	VDAM 1 UNDER OS/VS2 (MVS)		I	STD	3,260	375/ N/A	17,510	150	03/80
V422- 01	VDAM 2 UNDER OS/VS2 (MVS)		I	STD	3,260	375/ N/A	17,510	150	03/81
V521- 01	VDAM 2 UNDER OS/VS2 (SVS)		I	STD	3,260	375/ N/A	17,510	150	03/81
X021- 01	BRIDGE ANALYSIS AND RATING SYSTEM UNDER IBM OS MVT OR MFT		I	SPEC	44,100	N/C / N/A	44,100	N/A	
X321- 10	LTIP - CDC CYBER 1000 1 UNDER IBM 360/370 OS MFT/MVT (RELEASE 20.4)		I	STD	1,300	300/ N/A	13,300	N/A	

CHANGES EFFECTIVE 03/01/80

AVAIL DATE CODES * I - INACTIVE
*LICENSE REQUIRED (SPI/SP3/SPU) SEE PAGE 27/28 OF CONTRACTS SECTION.

PRODUCT NUMBER	PRODUCT DESCRIPTION	M MF D	AVAIL DATE	LIC REQ	SUPPORT EFF DATE	SUPPORT ERLST CAT	SUPPORT ERLST CH-DT	****CHARGES**** INITIAL FEE	MONTHLY ROYALTY	PAID UP LICENSE
A001- 01	915 CRASF 1 PACKAGE	X	I	NONE		III		N/C	N/C	N/A
A001- 02	955 GRASP 1 PACKAGE	X	I	STD		III		N/C	N/C	N/A
A001- 03	936 DITD 1 PACKAGE	X	I	STD		III		N/C	N/C	N/A
A101- 01	4K ASSEMBLY SYSTEM (1711) 1	X	I	NONE		III		N/C	N/C	N/A
A101- 02	4K ASSEMBLY SYSTEM (1713) 1	X	I	NONE		III		N/C	N/C	N/A
A201- 01	UTILITY OS (1713) 1	X	I	NONE		III		N/C	N/C	N/A
A201- 02	UTILITY OS (1711) 1	X	I	NONE		III		N/C	N/C	N/A
A201- 03	MACRO ASSEMBLER 1 UNDER UTILITY OS 1	X	I	NONE		III		N/C	N/C	N/A
A201- 04	TAPE FORTRAN 1 UNDER UTILITY OS (1713) 1	X	I	NONE		III		N/C	N/C	N/A
A201- 05	TAPE FORTRAN 1 UNDER UTILITY OS (1711) 1	X	I	NONE		III		N/C	N/C	N/A
A201- 06	1729 DRIVER 1 UNDER UTILITY OS 1	X	I	NONE		III		N/C	N/C	N/A
A201- 07	1731/601 DRIVER (BUF.) 1 UNDER UTILITY OS 1	X	I	NONE		III		N/C	N/C	N/A
A201- 08	1731/601 DRIVER (UNBUF.) 1 UNDER UTILITY OS 1	X	I	NONE		III		N/C	N/C	N/A
A201- 09	1742 DRIVER 1 UNDER UTILITY OS 1	X	I	NONE		III		N/C	N/C	N/A
A201- 10	1728/430 DRIVER 1 UNDER UTILITY OS 1	X	I	NONE		III		N/C	N/C	N/A
A201- 11	1732 M.T. DRIVER (UNBUF.) 1 UNDER UTILITY OS 1	X	I	NONE		III		N/C	N/C	N/A
***	1700 SOFTWARE									
A301- 01	MSOS 2 PACKAGE MEDIA IS PAPER TAPE.	X	I	NONE		III		N/C	N/C	N/A
A301- 02	COSY 1 UNDER MSOS 2 MEDIA IS PAPER TAPE.	X	I	NONE		III		N/C	N/C	N/A
A301- 03	MACRO ASSEMBLER 2 UNDER MSOS 2 MEDIA IS PAPER TAPE.	X	I	NONE		III		N/C	N/C	N/A
A301- 04	TELETYPE DRIVER (1713) UNDER MSOS 2 MEDIA IS PAPER TAPE.	X	I	NONE		III		N/C	N/C	N/A
A301- 05	FORTRAN 2A UNDER MSOS 2 MEDIA IS PAPER TAPE.	X	I	STD		III		N/C	N/C	N/A
A301- 06	FORTRAN 2B UNDER MSOS 2 MEDIA IS PAPER TAPE.	X	I	STD		III		N/C	N/C	N/A
A301- 07	1732/608-609 DRIVER 2 UNDER MSOS 2 MEDIA IS PAPER TAPE.	X	I	NONE		III		N/C	N/C	N/A
A301- 08	1726/405 DRIVER 1 UNDER MSOS 2 MEDIA IS PAPER TAPE.	X	I	NONE		III		N/C	N/C	N/A
A301- 09	1740/501 DRIVER 1 UNDER MSOS 2 MEDIA IS PAPER TAPE.	X	I	NONE		III		N/C	N/C	N/A
A302- 01	MSOS 2 PACKAGE MEDIA IS 7-TRACK MAGNETIC TAPE.	X	I	NONE		III		N/C	N/C	N/A
A302- 02	COSY 1 UNDER MSOS 2 MEDIA IS 7-TRACK MAGNETIC TAPE.	X	I	NONE		III		N/C	N/C	N/A
A302- 03	MACRO ASSEMBLER 2 UNDER MSOS 2 MEDIA IS 7-TRACK MAGNETIC TAPE.	X	I	NONE		III		N/C	N/C	N/A
A302- 04	TELETYPE DRIVER (1713) UNDER MSOS 2 MEDIA IS 7-TRACK MAGNETIC TAPE.	X	I	NONE		III		N/C	N/C	N/A
A302- 05	FORTRAN 2A UNDER MSOS 2 MEDIA IS 7-TRACK MAGNETIC TAPE.	X	I	STD		III		N/C	N/C	N/A
A302- 06	FORTRAN 2B UNDER MSOS 2 MEDIA IS 7-TRACK MAGNETIC TAPE.	X	I	STD		III		N/C	N/C	N/A
A302- 07	1732/608-609 DRIVER 2 UNDER MSOS 2 MEDIA IS 7-TRACK MAGNETIC TAPE.	X	I	NONE		III		N/C	N/C	N/A
A302- 08	1726/405 DRIVER 1 UNDER MSOS 2 MEDIA IS 7-TRACK MAGNETIC TAPE.	X	I	NONE		III		N/C	N/C	N/A
A302- 09	1740/501 DRIVER 1 UNDER MSOS 2 MEDIA IS 7-TRACK MAGNETIC TAPE.	X	I	NONE		III		N/C	N/C	N/A
A302- 10	AUTRAN 1 UNDER MSOS 2 MEDIA IS DISK PACK.	X	I	STD		III		2,500	300	11,500
A302- 11	CARDIOTEST I 1 UNDER MSOS 2 MEDIA IS DISK PACK.	X	I	STD		III		N/C	N/C	N/A
A302- 12	CARDIOTEST II 1 UNDER MSOS 2 MEDIA IS DISK PACK.	X	I	STD		III		1,000	100	4,000
***	CDC 1700 SOFTWARE									
A303- 01	MSOS 3 PACKAGE MEDIA IS 7-TRACK MAGNETIC TAPE.	X	I	STD		III		300	100	3,300
A303- 02	COSY 1 UNDER MSOS 3 MEDIA IS 7-TRACK MAGNETIC TAPE.	X	I	NONE		III		N/C	N/C	N/A
A303- 03	MACRO ASSEMBLER 2 UNDER MSOS 3 MEDIA IS 7-TRACK MAGNETIC TAPE.	X	I	NONE		III		N/C	N/C	N/A
A303- 04	FORTRAN 2A UNDER MSOS 3 MEDIA IS 7-TRACK MAGNETIC TAPE.	X	I	STD		III		N/C	N/C	N/A
A303- 05	FORTRAN 2B UNDER MSOS 3 MEDIA IS 7-TRACK MAGNETIC TAPE.	X	I	STD		III		N/C	N/C	N/A
A303- 06	AUTRAN 1 UNDER MSOS 3 MEDIA IS DISK PACK.	X	I	STD		III		3,000	360	13,800
A303- 07	CARDIOTEST I 1 UNDER MSOS 3 MEDIA IS DISK PACK.	X	I	STD		III		N/C	N/C	N/A
A303- 08	CARDIOTEST II 1 UNDER MSOS 3 MEDIA IS DISK PACK.	X	I	STD		III		1,000	100	4,000
***	CDC 1700 SOFTWARE									
A304- 01	MSOS 4 PACKAGE	X	I	STD		III		600	120	4,200
A304- 02	FORTRAN 3A UNDER MSOS 4	N/A	I	STD		III		N/C	N/C	N/A
A304- 03	FORTRAN 3B UNDER MSOS 4	N/A	I	STD		III		N/C	N/C	N/A
A304- 05	AUTRAN 2 UNDER MSOS 4 MEDIA IS 7 OR 9 TRACK TAPE OR PUNCHED CARDS.	X	N/A	STD		III		3,000	360	13,800
A304- 07	TIMESHARE 2 UNDER MSOS 4	X	I	STD		III		300	100	3,300
A304- 08	AUTRAN 3 UNDER MSOS 4	X	I	STD		III		3,600	400	15,600
A304- 09	1700 IMPORT HIGH SPEED/274 IGS 2 UNDER MSOS4	X	I	STD		III		460	300	9,460
A304- 10	BES 1 UNDER MSOS 4	N/A	I	STD		III		N/C	100	4,500
A304- 11	1700 IMPORT HIGH SPEED/274 IGS 2 UNDER MSOS 4	N/A	I	STD		III		460	300	9,460
A304- 12	RPG II 1 UNDER MSOS 4	X	I	STD		III		150	50	1,650
A304- 13	SORT/MERGE 1 UNDER MSOS 4	X	I	STD		III		N/C	N/C	N/C
***	CDC CYBER 18/1700 SOFTWARE									
A305- 01	MASS STORAGE OPERATING SYSTEM 5	X	I	STD		III		500	120	4,100
A305- 02	FORTRAN 3A UNDER MSOS 5	X	I	STD		III		N/C	N/C	N/C
A305- 03	FORTRAN 3B UNDER MSOS 5	X	I	STD		III		N/C	N/C	N/C
A305- 04	FILE MANAGER 1 UNDER MSOS 5	X	I	STD		III		N/C	N/C	N/C
A305- 05	AUTRAN 3 UNDER MSOS 5	X	I	STD		III		3,600	400	15,800
A305- 06	MACRO ASSEMBLER 3 UNDER MSOS 5	X	I	STD		III		N/C	N/C	N/C
A305- 07	TIMESHARE 3 UNDER MSOS 5	X	I	STD		III		500	120	4,000
A305- 08	PERIPHERAL DRIVERS 1A UNDER MSOS 5	X	I	STD		III		100	N/C	100
A305- 09	PERIPHERAL DRIVERS 1B UNDER MSOS 5	X	I	STD		III		100	N/C	100
A305- 10	PERIPHERAL DRIVERS 1C UNDER MSOS 5	X	I	STD		III		100	N/C	100
A305- 11	MAGNETIC TAPE UTILITIES 2 UNDER MSOS 5	X	I	STD		III		N/C	N/C	N/C
A305- 12	RPG II 1 UNDER MSOS 5	X	I	STD		III		150	50	1,650
A305- 13	SORT/MERGE 1 UNDER MSOS 5	X	I	STD		III		N/C	N/C	N/C
A401- 01	REDUCED CORE OPERATING SYSTEM 1	X	I	STD		III		330	100	3,330
A402- 01	TAPE SCOPE 2 PACKAGE	X	I	STD		III		N/C	N/C	N/A
A402- 02	TAPE ASSEMBLER 1 UNDER TAPE SCOPE 2	X	I	STD		III		N/C	N/C	N/A
A402- 03	915 SETUP 1 UNDER TAPE SCOPE 2	X	I	STD		III		N/C	N/C	N/A
A402- 04	936 SETUP 1 UNDER TAPE SCOPE 2	X	I	STD		III		N/C	N/C	N/A
A402- 05	955 SETUP 1 UNDER TAPE SCOPE 2	X	I	STD		III		N/C	N/C	N/A
A402- 06	DRAFT 2 UNDER TAPE SCOPE 2	X	I	STD		III		N/C	N/C	N/A
A402- 07	DRAFT 3 UNDER TAPE SCOPE 2	X	I	STD		III		N/C	N/C	N/A
A402- 08	915 DRIVER 1 UNDER TAPE SCOPE 2	X	I	NONE		III		N/C	N/C	N/A

AVAIL DATE CODES * I - INACTIVE
*LICENSE REQUIRED (SPI/SP3/SPU) SEE PAGE 27/28 OF CONTRACTS SECTION.

PRODUCT NUMBER	PRODUCT DESCRIPTION	M MF D	AVAIL DATE	LIC REQ	SUPPORT EFF DATE	SUPPORT ERLST CAT	SUPPORT CH-GT	****CHARGES**** INITIAL FEE	MONTHLY RCYALTY	PAID UP LICENSE
A402- 09	936 DRIVER 1 UNDER TAPE SCOPE 2	X	I	NONE		III		N/C	N/C	N/A
A402- 10	955 DRIVER 1 UNDER TAPE SCOPE 2	X	I	STD		III		N/C	N/C	N/A
A402- 11	1732 M.T. DRIVER 1 (BUF.) UNDER TAPE SCOPE 2	X	I	NONE		III		N/C	N/C	N/A
A402- 12	1732 M.T. DRIVER 1 (UNBUF.) UNDER TAPE SCOPE 2	X	I	NONE		III		N/C	N/C	N/A
A402- 13	955 ASSEMBLER 1 UNDER TAPE SCOPE 2	X	I	STD		III		N/C	N/C	N/A
A403- 01	TAPE SCOPE 3 PACKAGE	N/A	I	STD		III		N/C	N/C	N/C
A403- 02	DRAFT 3 UNDER TAPE SCOPE 3	N/A	I	STD		III		N/C	N/C	N/C
A403- 03	DRAFT 4 UNDER TAPE SCOPE 3	N/A	I	STD		III		N/C	N/C	N/C
A403- 04	915 GRASP 2 UNDER TAPE SCOPE 3	N/A	I	STD		III		N/C	N/C	N/C
A403- 05	955 GRASP 2 UNDER TAPE SCOPE 3	N/A	I	STD		III		N/C	N/C	N/C
A403- 06	SYSTEM UTILITY PROCESSOR 1 UNDER TAPE SCOPE 3	N/A	I	STD		III		N/C	N/C	N/C
A404- 01	REDUCED CDPF OPERATING SYSTEM 2	X	I	STD		III		43C	11C	3,73C
***	CDC CYBER 18/1700 SOFTWARE									
A405- 01	REAL TIME OPERATING SYSTEM (RTOS) 3	X	I	STD		III		140	8C	2,540
A405- 02	ASSEMBLER 1 UNDER RTOS 3	X	I	STD		III		N/C	N/C	N/C
A405- 08	PERIPHERAL DRIVERS 1A UNDER RTOS 3	X	I	STD		III		10C	N/C	10C
A405- 09	PERIPHERAL DRIVERS 1B UNDER RTOS 3	X	I	STD		III		10C	N/C	1CC
A405- 10	PERIPHERAL DRIVERS 1C UNDER RTOS 3	X	I	STD		III		10C	N/C	1CC
A405- 11	MAGNETIC TAPE UTILITIES 2 UNDER RTOS 3	X	I	STD		III		N/C	N/C	N/C
***	CDC 1700/DCP SOFTWARE									
A504- 01	TAPE SCOPE 4 PACKAGE	N/A	I	STD		III		N/C	N/C	N/C
A504- 02	DRAFT 4 UNDER TAPE SCOPE 4	N/A	I	STD		III		N/C	N/C	N/C
A504- 03	915 GRASP 2 UNDER TAPE SCOPE 4	N/A	I	STD		III		N/C	N/C	N/C
A504- 04	955/959 GRASP 2 UNDER TAPE SCOPE 4	N/A	I	STD		III		N/C	N/C	N/C
A504- 05	SYSTEM UTILITY PROCESSOR 1 UNDER TAPE SCOPE 4	N/A	I	STD		III		N/C	N/C	N/C
A504- 06	929 DRIVE 1 UNDER TAPE SCOPE 4	N/A	I	STD		III		N/C	N/C	N/C
A504- 07	DRAFT 4 UNDER TAPE SCOPE 4	N/A	I	STD		III		N/C	N/C	N/C
B101- 01	SOURCE DATA SYSTEM MONITOR	X	I	STD		III		N/C	N/C	N/A
B102- 01		***								
***	CDC 870-2 SOFTWARE									
B202- 01	CYBERDATA OPERATING SYSTEM 2 (CDS 2)	N/A	I	STD		III		N/C	N/C	N/C
***	CDC GRAPHICS SOFTWARE									
B301- 01	777/IGS TERMINAL RESIDENT 2	N/A	I	STD		III		100	5C	2,350
B301- 02	777/3D/TGS TERMINAL RESIDENT 2	20	I	STD		III		300	150	7,05C
B301- 03	241 GRID GRAPHICS SUBSYSTEM RESIDENT 2	N/A	I	STD		III		11C	110	5,06C
***	3CCCL SOFTWARE									
C102- 01	REAL-TIME SCOPE 2 PACKAGE	X	I	NONE		III		N/C	N/C	N/A
C102- 02	PERT/TIME (16K) 2 UNDER REAL-TIME SCOPE 2	X	I	NONE		III		N/C	N/C	N/A
C1C2- 03	PERT/TIME (32K) 2 UNDER REAL-TIME SCOPE 2	X	I	NONE		III		N/C	N/C	N/A
C102- 04	PERT/COST 2 UNDER REAL-TIME SCOPE 2	X	I	NONE		III		N/C	N/C	N/A
C102- 05	ADAPT (16K) 1 UNDER REAL-TIME SCOPE 2	X	I	NONE		III		N/C	N/C	N/A
C102- 06	ADAPT (32K) 1 UNDER REAL-TIME SCOPE 2	X	I	NONE		III		N/C	N/C	N/A
***	3CCOL SOFTWARE									
C204- 01	MSOS 4 PACKAGE	X	I	STD		III		N/C	N/C	N/A
C204- 02	PERT/TIME (16K) 2 UNDER MSOS 4	X	I	NONE		III		N/C	N/C	N/A
C204- 03	ADAPT (16K) 1 UNDER MSOS 4	X	I	NONE		III		N/C	N/C	N/A
C204- 04	ANSI FORTRAN 1 UNDER MSOS 4	X	I	STD		III		N/C	N/C	N/A
C204- 05	SEISMIC DP SUBSYSTEM 1 UNDER MSOS 4	X	I	STD		III		N/C	1CC	3,0CC
C204- 06	ANSI COBOL 2 UNDER MSOS 4	X	I	STD		III		100	12C	3,700
C204- 07	RESPOND/EXPORT/IMPORT 1 UNDER MSOS 4	X	I	STD		III		N/C	N/C	N/A
C204- 08	ON-LINE CONTROL SUBSYSTEM 1 UNDER MSOS 4	X	I	STD		III		360	10C	3,360
C204- 09	PROFITS 1 UNDER MSOS 4	X	I	STD		III		1CC	100	3,1CC
***	CDC 3100, 3170, 3200, 33CC, 3500 SOFTWARE									
C205- 01	MSOS 5 PACKAGE I	X	I	STD		III		600	12C	4,2CC
C205- 02	MSOS 5 PACKAGE II	X	I	STD		III		6CC	930	28,5CC
C205- 03	MSOS 5 PACKAGE III	N/A	I	STD		III		9,600	93C	37,500
C205- 04	PERT/TIME (16K) 2 UNDER MSOS 5	X	I	STD		III		N/C	N/C	N/A
C205- 05	ANSI FORTRAN 1 UNDER MSOS 5	X	I	STD		III		N/C	N/C	N/A
C205- 06	ANSI COBOL 2 UNDER MSOS 5	X	I	STD		III		100	12C	3,700
C205- 07	MS CCBCL (BCD) 4 UNDER MSOS 5	X	I	STD		III		N/C	N/C	N/A
C205- 08	MS COBOL (BCD) 4 UNDER MSOS 5	X	I	STD		III		N/C	N/C	N/A
C205- 09	MASS STORAGE SORT 3 UNDER MSOS 5	X	I	STD		III		N/C	N/C	N/A
C205- 10	TAPE SORT/MERGE 2 UNDER MSOS 5	X	I	STD		III		N/C	N/C	N/A
C205- 11	LISA 1 UNDER MSOS 5	N/A	I	STD		III		N/C	N/C	N/A
C205- 12	MS FORTRAN 4 UNDER MSOS 5	N/A	I	STD		III		N/C	N/C	N/A
C205- 13	ALGOL 1 UNDER MSOS 5	N/A	I	STD		III		N/C	N/C	N/A
C2C5- 14	ADAPT (32K) 1 UNDER MSOS 5	N/A	I	STD		III		N/C	N/C	N/A
C205- 15	PERT/TIME (32K) 2 UNDER MSOS 5	N/A	I	STD		III		N/C	N/C	N/A
C205- 16	PERT/COST 2 UNDER MSOS 5	N/A	I	STD		III		N/C	N/C	N/A
C205- 17	SAINT 2 UNDER MSOS 5	N/A	I	STD		III		N/C	N/C	N/A
C205- 18	MSOS UTILITY 1 UNDER MSOS 5	N/A	I	STD		III		N/C	N/C	N/A
C205- 19	ON-LINE CONTROL SUBSYSTEM 1 UNDER MSOS 5	N/A	I	STD		III		10C	100	3,10C
C205- 20	PROFITS 1 UNDER MSOS 5	N/A	I	STD		III		100	10C	3,100
C301- 01	MASTER 2 PACKAGE	X	I	NONE		III		N/C	N/C	N/A
C301- 02	ANSI FORTRAN 1 UNDER MASTER 2	X	I	NONE		III		N/C	N/C	N/A
C301- 03	META ASSEMBLER 1 UNDER MASTER 2	X	I	NONE		III		N/C	N/C	N/A
C301- 04	PERT PACKAGE 2 UNDER MASTER 2	X	I	NONE		III		N/C	N/C	N/A
C301- 05	MARK IV GRAPHICS 1 UNDER MASTER 2	X	I	NONE		III		N/C	N/C	N/A
***	CDC 3170/3300/3500 SOFTWARE									
C302- 01	MASTER 3 PACKAGE	X	I	STD		III		2,57C	515	18,020
C302- 02	ANSI FORTRAN 1 UNDER MASTER 3	X	I	NONE		III		N/C	N/C	N/A
C302- 03	ANSI FORTRAN 2 UNDER MASTER 3	X	I	STD		III		645	13C	4,545
C302- 04	PERT PACKAGE 2 UNDER MASTER 3	X	I	NONE		III		N/C	N/C	N/A
C302- 05	TAPE SORT/MERGE 3 UNDER MASTER 3	X	I	STD		III		110	11C	3,41C
C302- 06	MS SORT/MERGE 2 UNDER MASTER 3	X	I	STD		III		N/C	5C	1,500
C302- 07	MARK IV GRAPHICS 1 UNDER MASTER 3	X	I	STD		III		N/C	N/C	N/A
C302- 08	L-SORT 1 UNDER MASTER 3	X	I	STD		III		N/C	5C	1,500
C302- 09	MARS III 1 UNDER MASTER 3	X	I	STD		III		5CC	300	9,5CC
C302- 10	MARS III 2 UNDER MASTER 3	X	I	STD		III		645	385	12,195
C302- 11	ANSI COBOL 2 UNDER MASTER 3	X	I	STD		III		645	13C	4,545
C302- 12	L-SORT 2 UNDER MASTER 3	X	I	STD		III		110	110	3,41C
C302- 15	ON-LINE CONTROL SUBSYSTEM 1 UNDER MASTER 3	X	I	STD		III		385	11C	3,685
C302- 16	PROFITS 1 UNDER MASTER 3	X	I	STD		III		110	11C	3,41C
C302- 17	MS SORT 3 UNDER MASTER 3	X	I	STD		III		110	11C	3,41C
***	CDC 3170/3300/35CC SOFTWARE									
C303- 01	MASTER 4 PACKAGE I	X	I	STD		III		1,285	130	5,185
C303- 02	MASTER 4 PACKAGE II	X	I	STD		III		1,605	26C	9,405
C303- 03	MASTER 4 PACKAGE III	X	I	STD		III		1,605	325	11,355
C303- 04	ALGOL 1 UNDER MASTER 4	X	I	STD		III		N/C	N/C	N/A
C303- 05	MS COBOL 2 UNDER MASTER 4	X	I	STD		III		N/C	N/C	N/A
C303- 06	MS FORTRAN 3 UNDER MASTER 4	X	I	STD		III		N/C	N/C	N/A
C303- 07	LISA 1 UNDER MASTER 4	X	I	STD		III		N/C	N/C	N/A
C303- 08	MCS-III 1 UNDER MASTER 4	X	I	STD		III		N/C	N/C	N/A
C303- 09	RESPOND EXPORT/IMPORT 1 UNDER MASTER 4	X	I	STD		III		N/C	N/C	N/A
C303- 10	ANSI FORTRAN 1 UNDER MASTER 4	X	I	STD		III		N/C	N/C	N/A
C303- 11	ANSI FORTRAN 2 UNDER MASTER 4	X	I	STD		III		645	13C	4,545
C303- 12	ANSI COBOL 3 UNDER MASTER 4	X	I	STD		III		645	13C	4,545
C303- 13	L-SORT 2 UNDER MASTER 4	X	I	STD		III		110	110	3,410
C303- 14	TAPE SORT/MERGE 3 UNDER MASTER 4	X	I	STD		III		110	11C	3,410
C303- 15	MS SORT 4 UNDER MASTER 4	X	I	STD		III		110	110	3,410
C303- 16	MARS-III 2 UNDER MASTER 4	X	I	STD		III		645	385	12,195

PRODUCT NUMBER	PRODUCT DESCRIPTION	M MF D	AVAIL DATE	LIC REQ	SUPPORT EFF DATE	SUPPORT ERLST CAT	SUPPORT CH-DT	CHARGES INITIAL FEE	CHARGES MONTHLY ROYALTY	CHARGES PAID UP LICENSE
C303- 17	PERT PACKAGE 2 UNDER MASTER 4 INCLUDING PERT/TIME 2 PERT/COST 2	X	I	STD		III		N/C	N/C	N/A
C303- 20	LISA 2 UNDER MASTER 4	X	I	STD		III		250	100	3,250
C303- 21	COMMUNICATIONS CONTROL MODULE SUPPORT SOFTWARE 1 UNDER MASTER 4	X	I	STD		III		350	110	3,650
***	3000L SOFTWARE									
C401- 01	BROKERAGE CONTROL SYSTEM (BCS) 1	X	I	STD		III		7,000	200	13,000
C401- 02	MESSAGE SWITCH 1 UNDER BCS 1	X	I	STD		III		N/C	300	9,000
C401- 03	ORDER MATCH 1 UNDER BCS 1	X	I	STD		III		N/C	200	6,000
C401- 04	RETRIEVAL 1 UNDER BCS 1	X	I	STD		III		N/C	100	3,000
C401- 05	CONFIRMS 1 UNDER BCS 1	X	I	STD		III		35,000	300	44,000
C401- 06	SECURITY MOVEMENT 1 UNDER BCS 1	X	I	STD		III		12,500	100	15,500
C401- 07	CASH-OVER-THE-WIRE 1 UNDER BCS 1	X	I	STD		III		7,000	100	10,000
C401- 08	SECURITY-OVER-THE-WIRE 1 UNDER BCS 1	X	I	STD		III		3,500	50	5,000
C402- 01	BROKERAGE CONTROL SYSTEM (BSC) 2	X	I	STD		III		7,000	400	19,000
C402- 02	MESSAGE SWITCH 2 UNDER BCS 2	X	I	STD		III		N/C	300	9,000
C402- 03	ORDER MATCH 2 UNDER BCS 2	X	I	STD		III		N/C	200	6,000
C402- 04	RETRIEVAL 2 UNDER BCS 2	X	I	STD		III		N/C	100	3,000
C402- 05	CONFIRMS 2 UNDER BCS 2	X	I	STD		III		35,000	300	44,000
C402- 06	SECURITY MOVEMENT 2 UNDER BCS 2	X	I	STD		III		12,500	100	15,500
C402- 07	CASH-OVER-THE-WIRE 2 UNDER BCS 2	X	I	STD		III		7,000	100	10,000
C402- 08	SECURITY-OVER-THE-WIRE 2 UNDER BCS 2	X	I	STD		III		3,500	50	5,000
C402- 09	OVER-THE-COUNTER 2 UNDER BCS 2	X	I	STD		III		7,000	300	19,000
C403- 01	BROKERAGE CONTROL SYSTEM (BCS) 3	X	I	STD		III		25,680	3,210	121,980
C403- 02	RETRIEVAL-MARGIN BALANCES 3 UNDER BCS 3	X	I	STD		III		1,285	130	5,185
C403- 03	RETRIEVAL-RESEARCH OPINIONS 3 UNDER BCS 3	X	I	STD		III		1,285	130	5,185
C403- 04	CONFIRMS-FIGURATION 3 UNDER BCS 3.	X	I	STD		III		12,840	130	16,740
C403- 05	CONFIRMS-NAME/ADDRESS 3 UNDER BCS 3	X	I	STD		III		25,680	130	29,580
C403- 06	CONFIRMS-SECURITY MASTER 3 UNDER BCS 3	X	I	STD		III		6,420	130	10,320
C403- 07	SECURITY MOVEMENT (CAGE) 3 UNDER BCS 3	X	I	STD		III		16,050	130	19,950
C403- 08	CASH-OVER-THE-WIRE 3 UNDER BCS 3	X	I	STD		III		6,990	130	12,890
C403- 09	OVER-THE-COUNTER QUOTES AND TRADING 3 UNDER BCS 3	X	I	STD		III		8,990	130	12,890
***	BROKERAGE CONTROL SYSTEM SOFTWARE									
C404- 01	BROKERAGE CONTROL SYSTEM (BCS) 4	X	I	STD		III		25,680	3,210	121,980
C404- 02	RETRIEVAL-MARGIN BALANCES 3 UNDER BCS 4	X	I	STD		III		1,285	130	5,185
C404- 03	RETRIEVAL-RESEARCH OPINIONS 3 UNDER BCS 4	X	I	STD		III		1,285	130	5,185
C404- 04	CONFIRMS-FIGURATION 3 UNDER BCS 4	X	I	STD		III		12,840	130	16,740
C404- 05	CONFIRMS-NAME/ADDRESS 3 UNDER BCS 4	X	I	STD		III		25,680	130	29,580
C404- 06	CONFIRMS-SECURITY MASTER 3 UNDER BCS 4	X	I	STD		III		6,420	130	10,320
C404- 07	SECURITY MOVEMENT (CAGE) 3 UNDER BCS 4	X	I	STD		III		16,050	130	19,950
C404- 08	CASH-OVER-THE-WIRE 3 UNDER BCS 4	X	I	STD		III		6,990	130	12,890
C404- 09	OVER-THE-COUNTER QUOTES AND TRADING 3 UNDER BCS 4	X	I	STD		III		8,990	130	12,890
C404- 10	SHORT NAME 3 UNDER BCS 4	X	I	STD		III		1,285	130	5,185
C501- 01	KRONOS III 1 PACKAGE (CHARGEABLE TO ALL CUSTOMERS.) C501-02 MUST BE LICENSED WITH C501-01.	X	I	STD		III		2,570	645	21,520
C501- 02	APPLICATION PACKAGE 1 UNDER KRONOS III 1 C501-01 MUST BE LICENSED WITH C501-02.	X	I	STD		III		N/C	N/C	N/A
***	3400 SOFTWARE									
D101- 01	DISK SCOPE 1 PACKAGE	X	I	NONE		III		N/C	N/C	N/A
D101- 02	PERT/TIME/COST 2 UNDER SCOPE 1	X	I	NONE		III		N/C	N/C	N/A
D101- 03	COM4 2 UNDER SCOPE 1	X	I	NONE		III		N/C	N/C	N/A
D101- 04	NETWORK/FLOW 1 UNDER SCOPE 1	X	I	NONE		III		N/C	N/C	N/A
D201- 01	TAPE SCOPE 3 PACKAGE	X	I	NONE		III		N/C	N/C	N/A
D201- 02	ALGOL 1 UNDER SCOPE 3	X	I	NONE		III		N/C	N/C	N/A
D201- 03	PERT/TIME/COST 2 UNDER SCOPE 3	X	I	NONE		III		N/C	N/C	N/A
D201- 04	COM4 2 UNDER SCOPE 3	X	I	NONE		III		N/C	N/C	N/A
D201- 05	NETWORK/FLOW 1 UNDER SCOPE 3	X	I	NONE		III		N/C	N/C	N/A
D301- 01	DRUM SCOPE 1 PACKAGE	X	I	NONE		III		N/C	N/C	N/A
D401- 01	TAPE SCOPE REDUCED RESIDENT 3 PACKAGE	X	I	NONE		III		N/C	N/C	N/A
***	3600/3800 SOFTWARE									
E101- 01	DISK/DRUM SCOPE 2 PACKAGE	N/A	I	NONE		III		N/C	N/C	N/A
E101- 02	INFOL 1 UNDER SCOPE 2	N/A	I	NONE		III		N/C	N/C	N/A
E101- 03	PERT/TIME 1 UNDER SCOPE 2	N/A	I	NONE		III		N/C	N/C	N/A
E101- 04	PERT/COST 1 UNDER SCOPE 2	N/A	I	NONE		III		N/C	N/C	N/A
E101- 05	APT 2 UNDER SCOPE 2	N/A	I	NONE		III		N/C	N/C	N/A
E101- 06	CDC KWIC 1 UNDER SCOPE 2	N/A	I	NONE		III		N/C	N/C	N/A
E101- 07	NETWORK/FLOW 1 UNDER SCOPE 2	N/A	I	NONE		III		N/C	N/C	N/A
E101- 08	SIMSCRIPT 1 UNDER SCOPE 2	N/A	I	NONE		III		N/C	N/C	N/A
E101- 09	COM4 2 UNDER SCOPE 2	N/A	I	NONE		III		N/C	N/C	N/A
E201- 01	TAPE SCOPE 6 PACKAGE	X	I	NONE		III		N/C	N/C	N/A
E201- 02	INFOL 1 UNDER SCOPE 6	X	I	NONE		III		N/C	N/C	N/A
E201- 03	PERT/TIME 1 UNDER SCOPE 6	X	I	NONE		III		N/C	N/C	N/A
E201- 04	PERT/COST 1 UNDER SCOPE 6	X	I	NONE		III		N/C	N/C	N/A
E201- 05	APT 2 UNDER SCOPE 6	X	I	NONE		III		N/C	N/C	N/A
E201- 06	CDC KWIC 1 UNDER SCOPE 6	X	I	NONE		III		N/C	N/C	N/A
E201- 07	NETWORK/FLOW 1 UNDER SCOPE 6	X	I	NONE		III		N/C	N/C	N/A
E201- 08	SIMSCRIPT 1 UNDER SCOPE 6	X	I	NONE		III		N/C	N/C	N/A
***	6000 SOFTWARE									
F301- 01	SCOPE 3.2 PACKAGE	X	I	NONE		III		N/C	N/C	N/A
F301- 02	BASIC SCOPE 3.2 PRODUCT SET	X	I	NONE		III		N/C	N/C	N/A
F301- 03	MARS VI 1 UNDER SCOPE 3.2	X	I	NONE		III		N/C	N/C	N/A
F301- 04	COBOL 2 UNDER SCOPE 3.2	X	I	NONE		III		N/C	N/C	N/A
F301- 05	1700 IMPORT HIGH SPEED 1 UNDER SCOPE 3.2	X	I	NONE		III		N/C	N/C	N/A
F301- 06	APT 1 UNDER SCOPE 3.2	X	I	NONE		III		N/C	N/C	N/A
F301- 07	FORTRAN EXTENDED 2 UNDER SCOPE 3.2	X	I	NONE		III		N/C	N/C	N/A
F301- 08	FORTRAN EXTENDED 3 UNDER SCOPE 3.2	X	I	STD		III		N/C	200	6,000
F301- 09	COBOL 3 UNDER SCOPE 3.2	X	I	STD		III		N/C	200	6,000
F301- 10	SORT/MERGE 2 UNDER SCOPE 3.2	X	I	NONE		III		N/C	N/C	N/A
F301- 11	SORT/MERGE 3 UNDER SCOPE 3.2	X	I	STD		III		N/C	200	6,000
F301- 12	ALGOL-60 1 UNDER SCOPE 3.2	X	I	NONE		III		N/C	N/C	N/A
F301- 13	ALGOL-60 2 UNDER SCOPE 3.2	X	I	STD		III		500	200	6,500
F301- 14	SIMULA 1 UNDER SCOPE 3.2	X	I	STD		III		N/C	200	6,000
F301- 15	OPTIMA 3 UNDER SCOPE 3.2 (CHARGEABLE TO ALL CUSTOMERS.)	X	I	STD		III		5,000	1,000	35,000
F301- 16	INTERCOM I 1 UNDER SCOPE 3.2	X	I	STD		III		N/C	N/C	N/A
F301- 17	BASIC 1 UNDER SCOPE 3.2	X	I	STD		III		N/C	N/C	N/A
F301- 18	1700 MSOS IMPORT HIGH SPEED 1 UNDER SCOPE 3.2	X	I	STD		III		300	50	1,000
F301- 19	ORPHELIE II 1 UNDER SCOPE 3.2 (CHARGEABLE TO ALL CUSTOMERS.)	X	I	SPEC		III				
	SERVICE CENTER INSTALLATION							20,000	25 PCT	N/A
	NON-SERVICE CENTER INSTALLATION							5,000	1,200	41,000
F301- 21	ORPHELIE MIXED 1 UNDER SCOPE 3.2 (CHARGEABLE TO ALL CUSTOMERS.)	X	I	SPEC		III				
	SERVICE CENTER INSTALLATION							40,000	25 PCT	N/A
	NON-SERVICE CENTER INSTALLATION							7,500	2,200	73,500
F301- 23	TIME CRITICAL MODULE 1 UNDER SCOPE 3.2	X	I	STD		III		N/C	N/C	N/A
F301- 24	INTERACTIVE GRAPHIC EXPORT-274 1 UNDER SCOPE 3.2	X	I	STD		III		N/C	N/C	N/A
F301- 25	1700 INTERACTIVE GRAPHIC IMPORT-274 1 UNDER SCOPE 3.2	X	I	STD		III		N/C	N/C	N/A
***	CDC CYBER 72, 73, 74/6000 SOFTWARE INSTALLED BASE ONLY									
F302- 01	SCOPE 3.3 PACKAGE	X	I	STD		III		3,600	720	25,200

PRODUCT NUMBER	PRODUCT DESCRIPTION	M MF D	AVAIL DATE	LIC REQ	SUPPORT EFF DATE	SUPPORT CAT	SUPPORT EPLST CH-DT	CHARGES INITIAL FEE	CHARGES MONTHLY ROYALTY	CHARGES PAID UP LICENSE
F302- 02	SCOPE 3.3 BASIC PRODUCT SET	X	I	STD		III		N/C	N/C	N/A
F302- 03	1700 IMPORT HIGH SPEED 1 UNDER SCOPE 3.3	X	I	STD		III		N/C	N/C	N/A
F302- 04	APT 2 UNDER SCOPE 3.3	X	I	NONE		III		N/C	N/C	N/A
F302- 05	BASIC 2 UNDER SCOPE 3.3	X	I	STD		III		N/C	N/C	N/A
F302- 06	FORTRAN EXTENDED 3 UNDER SCOPE 3.3	X	I	STD		III		100	240	7,300
F302- 07	COBOL 3 UNDER SCOPE 3.3	X	I	STD		III		100	240	7,300
F302- 08	SORT/MERGE 3 UNDER SCOPE 3.3	X	I	STD		III		100	240	7,300
F302- 09	ALGOL-60 2 UNDER SCOPE 3.3	X	I	STD		III		600	240	7,800
F302- 10	SIMULA 1 UNDER SCOPE 3.3	X	I	STD		III		600	420	13,200
F302- 12	INTERCOM I 2 UNDER SCOPE 3.3	X	I	STD		III		N/C	100	3,000
F302- 13	1700 MSOS IMPORT HIGH SPEED 1 UNDER SCOPE 3.3	X	I	STD		III		360	100	3,360
F302- 14	OPHELIE II 1 UNDER SCOPE 3.3 (CHARGEABLE TO ALL CUSTOMERS)	X	I	SPEC		III				
	SERVICE CENTER INSTALLATION							24,000	25 PCT	N/A
	NON-SERVICE CENTER INSTALLATION							6,000	1,440	49,200
F302- 16	OPHELIE MIXED 1 UNDER SCOPE 3.3 (CHARGEABLE TO ALL CUSTOMERS)	X	I	SPEC		III				
	SERVICE CENTER INSTALLATION							48,000	25 PCT	N/A
	NON-SERVICE CENTER INSTALLATION							9,000	2,640	88,200
F302- 17	TIME CRITICAL MODULE 2 UNDER SCOPE 3.3	X	I	STD		III		100	200	6,100
F302- 18	MARS VI 2 UNDER SCOPE 3.3 (CHARGEABLE TO ALL CUSTOMERS.)	X	I	STD		III		100	800	24,100
F302- 19	INTERACTIVE GRAPHIC EXPORT-274 2 UNDER SCOPE 3.3	X	I	STD		III		100	160	5,500
F302- 20	JOVIAL 1 UNDER SCOPE 3.3 (CHARGEABLE TO ALL CUSTOMERS.)	X	I	STD		III		1,200	300	10,200
F302- 21	1700 INTERACTIVE GRAPHIC IMPORT-274 2 UNDER SCOPE 3.3	X	I	STD		III		100	100	3,100
F302- 22	COMPASS 2 UNDER SCOPE 3.3	X	I	STD		III		N/C	N/C	N/A
F302- 23	INTERCOM 3 UNDER SCOPE 3.3	X	I	STD		III		100	225	6,850
F302- 25	MATH SCIENCE LIBRARY 1 UNDER SCOPE 3.3 (CHARGEABLE TO ALL CUSTOMERS.)	X	I	STD		III		540	540	16,740
F302- 27	CSSL III 1 UNDER SCOPE 3.3 (CHARGEABLE TO ALL CUSTOMERS.)	X	I	STD		III		12,000	300	21,000
F302- 28	ALGOL-60 3 UNDER SCOPE 3.3	X	I	STD		III		600	300	9,600
F302- 29	COBOL 35 UNDER SCOPE 3.3 (CHARGEABLE TO ALL CUSTOMERS.)	X	I	STD		III		1,200	240	8,400
F302- 30	INTERACTIVE GRAPHICS-241 2 UNDER SCOPE 3.3	X	I	STD		III		100	120	3,700
F302- 31	241 GRAPHICS SUBSYSTEM RESIDENT 2 UNDER SCOPE 3.3 THE CHARGES APPLY TO EACH SUBSYSTEM ON WHICH THIS PRODUCT IS LICENSED TO OPERATE	X	I	STD		III		100	100	3,100
F302- 32	SIMSCRIPT 3 UNDER SCOPE 3.3 (CHARGEABLE TO ALL CUSTOMERS.)	X	I	STD		III		600	420	13,200
F302- 38	MPI/STARDYNE 2 UNDER SCOPE 3.3 (CHARGEABLE TO ALL CUSTOMERS.)	X	N/A	SPEC		III		500	$.11 PER SYSTEM SEC	N/A
	MINIMUM								600	
	MAXIMUM								10,000	
F302- 39	SEISMIC DATA PROCESSING SYSTEM 2 UNDER SCOPE 3.3	X	I	STD		III		3,000	480	17,400
F302- 40	TJO 1 UNDER SCOPE 3.3	X	N/A	STD		III		N/C	N/C	N/A
F302- 42	APT/IGS 1 PACKAGE UNDER SCOPE 3.3	X	I	STD		III		N/C	N/C	N/A
F302- 43	APT IV 1 UNDER SCOPE 3.3	X	I	STD		III		600	300	9,600
F302- 44	CDC COMMAND 1 PACKAGE UNDER SCOPE 3.3	X	I	STD		III		840	180	6,240
F302- 45	CBM 1 PACKAGE UNDER SCOPE 3.3	X	I	STD		III		840	240	8,640
F302- 47	GPSS-V 1 UNDER SCOPE 3.3 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	SPEC		III		100	150	4,600
F303- 01	SCOPE 3.4 PACKAGE	X	I	STD		III		5,700	1,750	58,200
F303- 02	MAINTENANCE PACKAGE UNDER SCOPE 3.4	X	I	STD		III		N/C	N/C	N/A
F303- 04	FORTRAN EXTENDED 4 UNDER SCOPE 3.4	X	I	STD		III		110	325	9,860
F303- 05	COBOL 4 UNDER SCOPE 3.4	X	I	STD		III		110	325	9,860
F303- 06	SORT/MERGE 4 UNDER SCOPE 3.4	X	I	STD		III		110	260	7,910
F303- 08	QUERY UPDATE 1 UNDER SCOPE 3.4	X	I	STD		III		100	120	
F303- 09	INTERCOM 4 UNDER SCOPE 3.4	X	I	STD		III		110	260	7,910
F303- 10	PERT/TIME 1 UNDER SCOPE 3.4	X	I	STD		III		N/C	N/C	N/C
F303- 11	SIMSCRIPT 2 UNDER SCOPE 3.4	X	I	STD		III		N/C	N/C	N/A
F303- 12	A231 IMPORT HIGH SPEED 1 UNDER SCOPE 3.4	X	I	STD		III		N/C	N/C	N/A
F303- 13	1700 IMPORT HIGH SPEED 1 UNDER SCOPE 3.4	X	I	STD		III		N/C	N/C	N/A
F303- 14	APT 2 UNDER SCOPE 3.4	X	I	NONE		III		N/C	N/C	N/C
F303- 15	BASIC 2 UNDER SCOPE 3.4	X	I	STD		III		N/C	N/C	N/C
F303- 16	ALGOL-60 3 UNDER SCOPE 3.4	X	I	STD		III		645	325	10,395
F303- 17	SIMULA 1 UNDER SCOPE 3.4	X	I	STD		III		645	450	14,145
F303- 18	1700 MSOS 3 IMPORT HIGH SPEED 1 UNDER SCOPE 3.4	X	I	STD		III		385	110	3,685
F303- 20	1700 MSOS 3 INTERACTIVE GRAPHIC IMPORT 274 2 UNDER SCOPE	X	I	STD		III		110	110	3,410
F303- 21	FORTRAN 2 UNDER SCOPE 3.4	X	I	STD		III		N/C	N/C	N/A
F303- 22	MATH SCIENCE LIBRARY 1 UNDER SCOPE 3.4 (CHARGEABLE TO ALL CUSTOMERS).	X	I	STD		III		580	580	17,980
F303- 23	MARS VI 2 UNDER SCOPE 3.4	X	I	STD		III		110	860	25,510
F303- 27	INTERACTIVE GRAPHICS-241 2 UNDER SCOPE 3.4	X	I	STD		III		110	130	4,010
F303- 28	241 GRAPHICS SUBSYSTEM RESIDENT 2 UNDER SCOPE 3.4 THE CHARGES APPLY TO EACH SUBSYSTEM ON WHICH THIS PRODUCT IS LICENSED TO OPERATE	X	I	STD		III		110	110	3,410
F303- 29	SIMSCRIPT 3 UNDER SCOPE 3.4 (CHARGEABLE TO ALL CUSTOMERS.)	X	I	STD		III		645	450	14,145
F303- 32	APEX II 1 UNDER SCOPE 3.4	X	I	STD		III		7,200	1,800	61,200
F303- 34	CDC COMMAND 1 PACKAGE UNDER SCOPE 3.4	X	I	STD		III		900	195	6,750
F303- 35	CBM 1 PACKAGE UNDER SCOPE 3.4	X	I	STD		III		900	260	8,700
F303- 36	APT IV 1 UNDER SCOPE 3.4	X	I	STD		III		1,605	805	25,755
F303- 37	APEX 1 VERSION 1 UNDER SCOPE 3.4	N/A	I	*SPI		III		1,070	535	25,145
F303- 38	CONVERSION AIDS SYSTEM 1 UNDER SCOPE 3.4	X	I	STD		III		N/C	N/C	N/A
F303- 39	QUERY UPDATE 2 UNDER SCOPE 3.4	X	I	STD		III		110	385	11,660
F303- 40	DDL 1 UNDER SCOPE 3.4	X	I	STD		III		110	110	3,410
F303- 41	ALGOL-60 4 UNDER SCOPE 3.4	X	I	STD		III		645	430	13,545
F303- 42	TOTAL UNIVERSAL 1 UNDER SCOPE 3.4 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	STD		III		1,000	1,000	31,000
F303- 43	GPSS-V 1 UNDER SCOPE 3.4 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	*SPI		III		100	150	6,850
F303- 44	APEX II VERSION 1 UNDER SCOPE 3.4	N/A	I	*SPI		III		6,420	1,230	61,770
F303- 45	LOGT/IGS 1 UNDER SCOPE 3.4	20	I	STD		III		240	80	3,840
F303- 46	GODAS 2 UNDER SCOPE 3.4	20	I	STD		III		260	130	6,110
F303- 47	777/IGS 2 UNDER SCOPE 3.4	20	I	STD		III		800	400	18,800
F303- 48	TOTAL/ATHENA 1 UNDER SCOPE 3.4 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	STD		III		500	500	21,500
F303- 49	3D OPTION, 777/IGS 2 UNDER SCOPE 3.4	20	I	STD		III		200	100	4,700
F303- 51	APT IV 2 UNDER SCOPE 3.4	N/A	I	STD		III		2,000	900	41,050
F303- 52	CSSL III 1 UNDER SCOPE 3.4 (CHARGEABLE TO ALL CUSTOMERS)	X	I	STD		III		12,000	325	21,750
F303- 53	274 IGS 2 UNDER SCOPE 3.4	X	I	STD		III		N/C	25	900
F303- 54	APEX-III BASE SYSTEM 1 UNDER SCOPE 3.4	N/A	I	*SPI		III		2,000	500	23,000
F303- 55	APEX-III CUT OF CORE SYSTEM 1 UNDER SCOPE 3.4	N/A	I	*SPI		III		2,200	650	29,550
F303- 56	APEX-III MIXED INTEGER PROGRAMMING OPTION UNDER SCOPE 3.4	N/A	I	*SPI		III		200	500	21,200
F303- 57	APEX-III MATRIX REDUCTION OPTION UNDER SCOPE 3.4	N/A	I	*SPI		III		200	100	4,400
F303- 58	APEX-III PARAMETRICS UNDER SCOPE 3.4	N/A	I	*SPI		III		200	100	4,400
F303- 60	FORTRAN EXTENDED 4 UNDER SCOPE 3.4	X	I	STD		III		110	645	19,460
F303- 61	MULTI-MAINFRAME MODULE 1 UNDER SCOPE 3.4	N/A	I	STD		III		100	150	5,500

CHANGES EFFECTIVE 03/01/80

AVAIL DATE CODES * I - INACTIVE
*LICENSE REQUIRED (SPI/SP3/SPU) SEE PAGE 27/29 OF CONTRACTS SECTION.

SOFTWARE PRODUCTS - INACTIVE

PRODUCT NUMBER	PRODUCT DESCRIPTION	M MF D	AVAIL DATE	LIC REQ	SUPPORT EFF DATE	SUPPORT ERLST CAT	SUPPORT CH-DT	CHARGES INITIAL FEE	CHARGES MONTHLY ROYALTY	CHARGES PAID LP LICENSE
F303-63	CYBER CROSS SYSTEM 1 UNDER SCOPE 3.4	N/A	I	STD		III		535	215	8,275
F303-65	QUERY UPDATE 3 UNDER SCOPE 3.4	20	I	STD		III		110	500	18,110
F303-66	DATA DESCRIPTION LANGUAGE 2 UNDER SCOPE 3.4	20	I	STD		III		110	150	5,510
F303-67	CYBER DATABASE CONTROL SYSTEM 1 UNDER SCOPE 3.4	20	I	STD		III		500	1,000	36,500
***	CDC CYBER 72, 73, 74/6000 SOFTWARE NEW CUSTOMERS ONLY									
F311-01	SCOPE 3.3 PACKAGE	20	I	STD		III		5,700	1,200	48,500
F311-02	SCOPE 3.3 BASIC PRODUCT SET	N/A	I	STD		III		N/C	N/C	N/A
F311-03	1700 IMPORT HIGH SPEED 1 UNDER SCOPE 3.3	N/A	I	STD		III		N/C	N/C	N/A
F311-04	APT IV 1 UNDER SCOPE 3.3	N/A	I	STD		III		1,500	750	34,250
F311-05	BASIC 2 UNDER SCOPE 3.3	20	I	STD		III		N/C	N/C	N/A
F311-06	FORTRAN EXTENDED 3 UNDER SCOPE 3.3	20	I	STD		III		100	240	8,740
F311-07	COBOL 3 UNDER SCOPE 3.3	20	I	STD		III		100	240	8,740
F311-08	SORT/MERGE 3 UNDER SCOPE 3.3	20	I	STD		III		100	240	8,740
F311-09	ALGOL-60 3 UNDER SCOPE 3.3	20	I	STD		III		600	300	11,400
F311-10	SIMULA 1 UNDER SCOPE 3.3	N/A	I	STD		III		600	420	19,500
F311-11	1700 MSOS IMPORT HIGH SPEED 1 UNDER SCOPE 3.3	20	I	STD		III		360	100	3,960
F311-12	TIME CRITICAL MODULE 1 UNDER SCOPE 3.3	20	I	STD		III		100	200	7,300
F311-13	MARS VI 2 UNDER SCOPE 3.3	20	I	STD		III		100	900	36,100
F311-14	INTERACTIVE GRAPHIC EXPORT-274 2 UNDER SCOPE 3.3	20	I	STD		III		100	180	8,200
F311-15	JOVIAL 1 UNDER SCOPE 3.3 (CHARGEABLE TO ALL CUSTOMERS)	20	I	STD		III		1,200	300	14,700
F311-16	1700 INTERACTIVE GRAPHIC IMPORT-274 2 UNDER SCOPE 3.3	20	I	STD		III		100	100	4,600
F311-17	INTERCOM 3 UNDER SCOPE 3.3	20	I	STD		III		100	600	21,700
F311-18	MATH SCIENCE LIBRARY 1 UNDER SCOPE 3.3 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	STD		III		540	540	24,840
F311-19	CSSL III 1 UNDER SCOPE 3.3	N/A	I	SPEC		III		12,000	300	25,500
F311-20	INTERACTIVE GRAPHIC-241 2 UNDER SCOPE 3.3	20	I	STD		III		100	200	9,100
F311-21	241 GRAPHICS SUBSYSTEM RESIDENT 2 UNDER SCOPE 3.3	20	I	STD		III		100	100	4,600
F311-22	SIMSCRIPT 3 UNDER SCOPE 3.3 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	STD		III		600	420	19,500
F311-23	SEISMIC DATA PROCESSING SUBSYSTEM 2 UNDER SCOPE 3.3	N/A	I	STD		III		3,000	480	24,600
F311-24	CDC COMMAND 1 PACKAGE UNDER SCOPE 3.3	20	I	STD		III		840	180	7,320
F311-25	CBM 1 PACKAGE UNDER SCOPE 3.3	20	I	STD		III		840	240	9,480
***	CDC CYBER 72, 73, 74/6000 SOFTWARE NEW CUSTOMERS ONLY									
F312-01	SCOPE 3.4 PACKAGE	20	I	STD		III		6,100	3,745	140,920
F312-02	MAINTENANCE PACKAGE UNDER SCOPE 3.4	N/A	I	STD		III		N/C	N/C	N/C
F312-03	FORTRAN EXTENDED 4 UNDER SCOPE 3.4	20	I	STD		III		110	405	14,690
F312-04	COBOL 4 UNDER SCOPE 3.4 REQUIRES F312-05 FOR SORT VERB	20	I	STD		III		110	405	14,690
F312-05	SORT/MERGE 4 UNDER SCOPE 3.4	20	I	STD		III		110	260	9,470
F312-07	INTERCOM 4 UNDER SCOPE 3.4	20	I	STD		III		110	1,070	38,630
F312-08	PERT/TIME 1 UNDER SCOPE 3.4	N/A	I	STD		III		N/C	N/C	N/C
F312-09	8231 IMPORT HIGH SPEED 1 UNDER SCOPE 3.4	N/A	I	STD		III		N/C	N/C	N/C
F312-10	1700 IMPORT HIGH SPEED 1 UNDER SCOPE 3.4	N/A	I	STD		III		N/C	N/C	N/C
F312-11	INTERACTIVE BASIC 2 UNDER SCOPE 3.4	20	I	STD		III		110	325	11,810
F312-12	SIMULA 1 UNDER SCOPE 3.4	N/A	I	STD		III		645	450	20,895
F312-13	1700 MSOS 3 IMPORT HIGH SPEED 1 UNDER SCOPE 3.4	20	I	STD		III		385	110	4,345
F312-14	1700 MSOS 3 INTERACTIVE GRAPHIC IMPORT 274 2 UNDER SCOPE 3.4	20	I	STD		III		110	110	5,060
F312-15	MATH SCIENCE LIBRARY 1 UNDER SCOPE 3.4 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	STD		III		580	580	26,680
F312-16	MARS VI 2 UNDER SCOPE 3.4	20	I	STD		III		110	860	38,810
F312-17	INTERACTIVE GRAPHICS-241 2 UNDER SCOPE 3.4	20	I	STD		III		110	215	9,785
F312-18	241 GRAPHICS SUBSYSTEM RESIDENT 2 UNDER SCOPE 3.4	N/A	I	STD		III		110	110	5,060
F312-19	SIMSCRIPT 3 UNDER SCOPE 3.4 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	STD		III		645	450	20,895
F312-20	APEX II 1 UNDER SCOPE 3.4	N/A	I	*SPI		III		6,420	1,230	61,770
F312-21	APEX I 1 UNDER SCOPE 3.4	N/A	I	*SPI		III		1,070	535	25,145
F312-22	CDC COMMAND 1 UNDER SCOPE 3.4	N/A	I	STD		III		890	195	9,665
F312-23	CBM 1 UNDER SCOPE 3.4	N/A	I	STD		III		890	260	12,590
F312-24	APT IV 1 UNDER SCOPE 3.4	N/A	I	STD		III		1,605	805	41,050
F312-25	CONVERSION AIDS SYSTEM 1 UNDER SCOPE 3.4	20	I	STD		III		110	110	4,070
F312-26	QUERY UPDATE 2 UNDER SCOPE 3.4	20	I	STD		III		110	385	13,970
F312-27	DDL 1 UNDER SCOPE 3.4	20	I	STD		III		110	110	4,070
F312-28	ALGOL-60 4 UNDER SCOPE 3.4	20	I	STD		III		645	430	16,125
F312-29	MULTI-MAINFRAME MODULE 1 UNDER SCOPE 3.4	N/A	I	STD		III		535	535	19,795
F312-30	GPSS-V 1 UNDER SCOPE 3.4 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	*SPI		III		100	150	6,650
F312-31	COMPILER PACKAGE 1 UNDER SCOPE 3.4 INCLUDES FORTRAN EXTENDED 4 (F312-03), COBOL 4 (F312-04), ALGOL-60 4 (F312-28), BASIC 2 (F312-11).	20	I	STD		III		535	1,285	46,315
F312-33	CYBER CROSS SYSTEM 1 UNDER SCOPE 3.4	20	I	STD		III		535	215	8,275
F312-34	TOTAL UNIVERSAL 1 UNDER SCOPE 3.4 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	STD		III		1,000	1,000	31,000
F312-35	777/IGS 2 UNDER SCOPE 3.4	20	I	STD		III		800	400	18,800
F312-36	3D OPTION, 777/IGS 2 UNDER SCOPE 3.4	20	I	STD		III		200	100	4,700
F312-37	LCGT/IGS 1 UNDER SCOPE 3.4	20	I	STD		III		240	80	3,640
F312-38	CCDAS 2 UNDER SCOPE 3.4	20	I	STD		III		260	130	6,110
F312-39	APT IV 2 UNDER SCOPE 3.4	N/A	I	STD		III		2,000	900	41,050
F312-40	CSSL III 1 UNDER SCOPE 3.4 (CHARGEABLE TO ALL CUSTOMERS)	20	I	STD		III		12,000	325	21,750
F312-41	274 IGS 2 UNDER SCOPE 3.4	20	I	STD		III		N/C	25	900
F312-42	APEX-III BASE SYSTEM 1 UNDER SCOPE 3.4	N/A	I	*SPI		III		2,600	500	23,000
F312-43	APEX-III CUT-OF-CORE SYSTEM 1 UNDER SCOPE 3.4	N/A	I	*SPI		III		2,200	650	29,550
F312-44	APEX-III MIXED INTEGER PROGRAMMING OPTION UNDER SCOPE 3.4	N/A	I	*SPI		III		200	500	21,200
F312-45	APEX-III MATRIX REDUCTION OPTION UNDER SCOPE 3.4	N/A	I	*SPI		III		200	100	4,400
F312-46	APEX-III PARAMETRICS UNDER SCOPE 3.4	N/A	I	*SPI		III		200	100	4,400
F312-48	FORTRAN EXTENDED 4 UNDER SCOPE 3.4	20	I	STD		III		110	725	26,210
F312-50	QUERY UPDATE 3 UNDER SCOPE 3.4	20	I	STD		III		110	500	18,110
F312-51	DATA DESCRIPTION LANGUAGE 2 UNDER SCOPE 3.4	20	I	STD		III		110	150	5,510
F312-52	CYBER DATABASE CONTROL SYSTEM 1 UNDER SCOPE 3.4	20	I	STD		III		500	1,000	36,500
F312-53	TOTAL/ATHENA 1 UNDER SCOPE 3.4 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	STD		III		500	500	21,500
***	6000 SOFTWARE									
F401-01	KRONOS 1 PACKAGE (CHARGEABLE TO ALL CUSTOMERS.)	X	I	STD		III		4,500	1,200	40,500
F401-02	FORTRAN 2 UNDER KRONOS 1	X	I	NONE		III		N/C	N/C	N/A
F401-03	FORTRAN EXTENDED 2 UNDER KRONOS 1	X	I	NONE		III		N/C	N/C	N/A
F401-04	COBOL 2 UNDER KRONOS 1	X	I	NONE		III		N/C	N/C	N/A
F401-05	SORT/MERGE 2 UNDER KRONOS 1	X	I	NONE		III		N/C	N/C	N/A
F401-06	EXPORT/IMPORT 200 1 UNDER KRONOS 1	X	I	NONE		III		N/C	N/C	N/A
F401-07	SIMSCRIPT 2 UNDER KRONOS 1	X	I	NONE		III		N/C	N/C	N/A
F401-08	APT 2 UNDER KRONOS 1	X	I	NONE		III		N/C	N/C	N/A
F401-09	SIMULA 1 UNDER KRONOS 1	X	I	STD		III		N/C	200	6,000
F401-10	PERT/TIME 1 UNDER KRONOS 1	X	I	NONE		III		N/C	N/C	N/A
F402-01	KRONOS 2 PACKAGE	X	I	STD		III		5,400	1,440	48,600
F402-02	FORTRAN EXTENDED 3 UNDER KRONOS 2	X	I	STD		III		100	240	7,300
F402-03	COBOL 3 UNDER KRONOS 2	X	I	STD		III		100	240	7,300
F402-04	SORT/MERGE 3 UNDER KRONOS 2	X	I	STD		III		100	240	7,300

CHANGES EFFECTIVE 03/01/80

AVAIL DATE CODES * I - INACTIVE
*LICENSE REQUIRED (SPI/SP3/SPU) SEE PAGE 27/28 OF CONTRACTS SECTION.

PRODUCT NUMBER	PRODUCT DESCRIPTION	M MF D	AVAIL DATE	LIC REQ	SUPPORT EFF DATE	SUPPORT EPLST CAT	SUPPORT CH-DT	****CHARGES**** INITIAL FEE	MONTHLY ROYALTY	PAID UP LICENSE
F402- 05	ALGOL-60 2 UNDER KRONOS 2	X	I	STD		III		60C	240	7,80C
F402- 06	EXPORT/IMPORT-200 1 UNDER KRONOS 2	X	I	NONE		III		N/C	N/C	N/A
F402- 07	SIMSCRIPT 2 UNDER KRONOS 2	X	I	NONE		III		N/C	N/C	N/A
F402- 08	APT 2 UNDER KRONOS 2	X	I	NONE		III		N/C	N/C	N/A
F402- 09	SIMULA 1 UNDER KRONOS 2	X	I	STD		III		100	240	7,300
F402- 10	PERT/TIME 1 UNDER KRONOS 2	X	I	NONE		III		N/C	N/C	N/A
F402- 11	MATH SCIENCE LIBRARY 1 UNDER KRONOS 2 (CHARGEABLE TO ALL CUSTOMERS.)	X	I	STD		III		540	540	16,740
F402- 12	SIMSCRIPT 3 UNDER KRONOS 2 (CHARGEABLE TO ALL CUSTOMERS.)	X	N/A	STD		III		60C	420	7,80C
***	CDC CYBER 72, 73, 74/6000 SOFTWARE									
F403- 01	KRONOS 2.1 PACKAGE	X	I	STD		III		6,10C	1,540	52,300
F403- 02	MAINTENANCE PACKAGE 1 UNDER KRONOS 2.1	X	I	STD		III		N/C	N/C	N/A
F403- 03	INTERACTIVE BASIC 2 UNDER KRONOS 2.1	X	I	STD		III		N/C	N/C	N/A
F403- 04	INTERACTIVE FORTRAN 1 UNDER KRONOS 2.1	X	I	STD		III		110	325	9,86C
F403- 05	FORTRAN 2 UNDER KRONOS 2.1	X	I	STD		III		N/C	N/C	N/A
F403- 06	FORTRAN EXTENDED 4 UNDER KRONOS 2.1	X	I	STD		III		11C	325	9,86C
F403- 07	COBOL 4 UNDER KRONOS 2.1	X	I	STD		III		110	325	9,86C
F403- 08	SORT/MERGE 4 UNDER KRONOS 2.1	X	I	STD		III		110	260	7,910
F403- 09	ALGOL-60 4 UNDER KRONOS 2.1	X	I	STD		III		645	325	10,365
F403- 10	SIMSCRIPT 3 UNDER KRONOS 2.1 (CHARGEABLE TO ALL CUSTOMERS.)	X	I	STD		III		645	450	14,145
F403- 11	SIMULA 1 UNDER KRONOS 2.1	X	I	STD		III		645	450	14,145
F403- 12	PERT/TIME 1 UNDER KRONOS 2.1	X	I	STD		III		N/C	N/C	N/A
F403- 13	CYBERLINK 1 UNDER KRONOS 2.1	X	I	STD		III		11C	130	4,010
F403- 14	APL PACKAGE 1 UNDER KRONOS 2.1 THE 2741 REQUIRES USE TO MULTIPLEXER.	X	I	STD		III		645	325	10,395
F403- 15	TRANEX 1 UNDER KRONOS 2.1. FORMERLY IDENTIFIED AS TRANSACTION SUBSYSTEM 1.	X	I	STD		III		110	385	11,66C
F403- 16	APEX 1 VERSION 1 UNDER KRONOS 2.1	N/A	I	*SPI		III		1,07C	535	25,145
F403- 17	MATH SCIENCE LIBRARY 1 UNDER KRONOS 2.1 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	STD		III		580	580	26,680
F403- 18	GPSS-V 1 UNDER KRONOS 2.1 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	*SPI		III		10C	150	6,85C
F403- 19	TOTAL UNIVERSAL 1 UNDER KRONOS 2.1 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	STD		III		1,000	1,000	31,CCC
F403- 20	TOTAL-EXTENDED 1 UNDER KRONOS 2.1	N/A	I	STD		III		1,000	1,100	33,500
F403- 22	LCGT/IGS 1 UNDER KRONOS 2.1	20	I	STD		III		240	80	3,84C
F403- 24	ALGOL 60 4 UNDER KRONOS 2.1	X	I	STD		III		645	43C	16,120
F403- 25	APEX-III BASE SYSTEM 1 UNDER KRONOS 2.1	N/A	I	*SPI		III		2,000	500	23,000
F403- 26	APEX-III OUT OF CORE SYSTEM 1 UNDER KRONOS 2.1	N/A	I	*SPI		III		2,200	65C	29,550
F403- 27	APEX-III MIXED INTEGER PROGRAMMING OPTION UNDER KRONOS 2.1	N/A	I	*SPI		III		200	500	21,200
F403- 28	APEX-III MATRIX REDUCTION OPTION UNDER KRONOS 2.1	N/A	I	*SPI		III		20C	100	4,400
F403- 29	APEX-III PARAMETRICS UNDER KRONOS 2.1	N/A	I	*SPI		III		20C	100	4,40C
F403- 31	FORTRAN EXTENDED 4 UNDER KRONOS 2.1	X	I	STD		III		11C	645	19,46C
F403- 34	TOTAL/ATHENA 1 UNDER KRONOS 2.1	N/A	I	STD		III		500	50C	21,500
***	CDC CYBER 70 MODEL 72, 73, 74/6000 SOFTWARE									
F411- 01	KRONOS 2.1 PACKAGE	20	I	STD		III		6,100	1,930	75,580
F411- 02	MAINTENANCE PACKAGE UNDER KRONOS 2.1	N/A	I	STD		III		N/C	N/C	N/C
F411- 03	INTERACTIVE BASIC 2 UNDER KRONOS 2.1.	20	I	STD		III		110	325	11,810
F411- 04	INTERACTIVE FORTRAN 1 UNDER KRONOS 2.1	20	I	STD		III		110	325	11,810
F411- 05	FORTRAN EXTENDED 4 UNDER KRONOS 2.1	20	I	STD		III		110	405	14,690
F411- 06	COBOL 4 UNDER KRONOS 2.1	20	I	STD		III		11C	405	14,690
F411- 07	SORT/MERGE 4 UNDER KRONOS 2.1	20	I	STD		III		11C	260	9,47C
F411- 08	ALGOL-60 4 UNDER KRONOS 2.1	20	I	STD		III		645	645	16,125
F411- 09	SIMSCRIPT 3 UNDER KRONOS 2.1 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	STD		III		645	45C	20,655
F411- 10	SIMULA 1 UNDER KRONOS 2.1	N/A	I	STD		III		645	45C	20,895
F411- 11	PERT/TIME 1 UNDER KRONOS 2.1	N/A	I	STD		III		N/C	N/C	N/C
F411- 13	APL PACKAGE 1 UNDER KRONOS 2.1	20	I	STD		III		645	405	15,225
F411- 14	TRANEX 1 UNDER KRONOS 2.1	20	I	STD		III		110	1,605	57,650
F411- 15	MATH SCIENCE LIBRARY 1 UNDER KRONOS 2.1 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	STD		III		580	580	26,680
F411- 16	TIME SHARING MODULE 1 UNDER KRONOS 2.1	20	I	STD		III		11C	1,285	46,370
F411- 17	COMPILER PACKAGE 1 UNDER KRONOS 2.1 INCLUDES INTERACTIVE FORTRAN 1 (F411-04), FORTRAN EXTENDED 4 (F411-05), COBOL 4 (F411-06), ALGOL-60 3 (F411-18), INTERACTIVE BASIC 2 (F411-03), APL 1 (F411-13).	20	I	STD		III		535	2,120	76,855
F411- 18	ALGOL-60 3 UNDER KRONOS 2.1	20	I	STD		III		11C	405	14,690
F411- 19	TOTAL UNIVERSAL 1 UNDER KRONOS 2.1 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	STD		III		1,000	1,000	31,CCC
F411- 20	TOTAL-EXTENDED 1 UNDER KRONOS 2.1	N/A	I	STD		III		1,000	1,100	33,5CC
F411- 21	APEX 1 VERSION 1 UNDER KRONOS 2.1	N/A	I	*SPI		III		1,07C	535	25,145
F411- 23	GPSS-V 1 UNDER KRONOS 2.1 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	*SPI		III		10C	150	6,85C
F411- 24	LCGT/IGS 1 UNDER KRONOS 2.1	20	I	STD		III		240	80	3,840
F411- 26	APEX-III BASE SYSTEM 1 UNDER KRONOS 2.1	N/A	I	*SPI		III		2,000	500	23,000
F411- 27	APEX-III OUT-OF-CORE SYSTEM 1 UNDER KRONOS 2.1	N/A	I	*SPI		III		2,200	650	29,550
F411- 28	APEX-III MIXED INTEGER PROGRAMMING OPTION UNDER KRONOS 2.1	N/A	I	*SPI		III		200	500	21,200
F411- 29	APEX-III MATRIX REDUCTION OPTION UNDER KRONOS 2.1	N/A	I	*SPI		III		200	100	4,400
F411- 30	APEX-III PARAMETRICS UNDER KRONOS 2.1	N/A	I	*SPI		III		20C	100	4,40C
F411- 32	FORTRAN EXTENDED 4 UNDER KRONOS 2.1	20	I	STD		III		110	725	26,210
F411- 36	TOTAL/ATHENA 1 UNDER KRONOS 2.1	N/A	I	STD		III		500	500	21,500
***	CDC CYBER 170 MODEL 172, 173, 174, 175/CYBER 70 MODEL 72, 73, 74/6000 SOFTWARE									
F501- 01	NETWORK OPERATING SYSTEM (NOS) 1 PACKAGE	20	I	STD		III		6,10C	1,93C	75,580
F501- 02	MAINTENANCE PACKAGE UNDER NOS 1	N/A	I	STD		III		N/C	N/C	N/C
F501- 03	TIME-SHARING MODULE 1 UNDER NOS 1	20	I	STD		III		110	1,285	46,370
F501- 04	TRANEX 1 UNDER NOS 1	20	I	STD		III		11C	1,605	57,890
F501- 05	MULTI-MAINFRAME MODULE 1 UNDER NOS 1.	N/A	I	STD		III		110	270	9,83C
F501- 06	NETWORK ACCESS METHOD (NAM) 1 UNDER NOS 1 (SEE F501-26)	N/A	I	STD		III		11C	11C	4,070
F501- 07	CONVERSION AIDS SUBSYSTEM 1 UNDER NOS 1	N/A	I	STD		III		N/C	N/C	N/C
F501- 10	QUERY UPDATE 2 UNDER NOS 1	20	I	STD		III		110	385	13,970
F501- 11	DDL 1 UNDER NOS 1	20	I	STD		III		110	110	4,070
F501- 12	FORTRAN EXTENDED 4 UNDER NOS 1 INCLUDES INTERACTIVE OPTION	20	I	STD		III		11C	535	19,370
F501- 13	COBOL 4 UNDER NOS 1	20	I	STD		III		11C	405	14,690
F501- 14	SORT/MERGE 4 UNDER NOS 1	20	I	STD		III		110	260	9,470
F501- 15	ALGOL-60 4 UNDER NOS 1	20	I	STD		III		645	43C	16,125
F501- 16	APL 1 UNDER NOS 1	20	I	STD		III		645	405	15,225
F501- 17	INTERACTIVE BASIC 3 UNDER NOS 1	20	I	STD		III		110	400	14,510
F501- 18	SIMULA 1 UNDER NOS 1	N/A	I	STD		III		645	450	20,895
F501- 19	SIMSCRIPT 3 UNDER NOS 1 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	STD		III		645	450	20,895
F501- 20	PERT/TIME 1 UNDER NOS 1	N/A	I	STD		III		N/C	N/C	N/C
F501- 21	EXPORT/IMPORT-200 1 UNDER NOS 1	20	I	STD		III		N/C	N/C	N/C
F501- 22	MATH SCIENCE LIBRARY 1 UNDER NOS 1 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	STD		III		580	580	26,680
F501- 25	CYBER CROSS SYSTEM 1 UNDER NOS 1	20	I	STD		III		535	215	8,275

CHANGES EFFECTIVE 03/01/80

AVAIL DATE CODES * I - INACTIVE
*LICENSE REQUIRED (SP1/SP3/SPU) SEE PAGE 27/28 OF CONTRACTS SECTION.

PRODUCT NUMBER	PRODUCT DESCRIPTION	M MF D	AVAIL DATE	LIC REQ	SUPPORT EFF DATE	SUPPORT ERLST CAT	SUPPORT CH-DT	****CHARGES**** INITIAL FEE	MONTHLY ROYALTY	PAID UP LICENSE
F501-26	REMOTE BATCH FACILITY (RBF) 1 UNDER NOS 1	20	I	STD		III		110	215	7,650
F501-27	COMPILER PACKAGE UNDER NOS 1 INCLUDES FORTRAN EXTENDED 4 (F501-12), COBOL 4 (F501-13), ALGOL-60 4 (F501-15), INTERACTIVE BASIC 2 (F501-17), APL 1 (F501-16).	20	I	STD		III		535	1,865	67,675
F501-28	TOTAL UNIVERSAL 1 UNDER NOS 1 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	STD		III		1,000	1,000	31,000
F501-29	TOTAL-EXTENDED 1 UNDER NOS 1 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	STD		III		1,000	1,100	33,500
F501-32	GPSS-V 1 UNDER NOS 1 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	*SPI		III		100	150	6,850
F501-33	APEX-III BASE SYSTEM 1 UNDER NOS 1	N/A	I	*SPI		III		2,000	500	23,000
F501-34	APEX-III OUT-OF-CORE SYSTEM 1 UNDER NOS 1	N/A	I	*SPI		III		2,200	650	29,550
F501-35	APEX-III MIXED INTEGER PROGRAMMING OPTION UNDER NOS 1	N/A	I	*SPI		III		200	500	21,200
F501-36	APEX-III MATRIX REDUCTION OPTION UNDER NOS 1	N/A	I	*SPI		III		200	100	4,400
F501-37	APEX-III PARAMETRICS UNDER NOS 1	N/A	I	*SPI		III		200	100	4,400
F501-39	FORTRAN EXTENDED 4 UNDER NOS 1	20	I	STD		III		110	405	14,650
F501-40	APT IV 2 UNDER NOS 1	N/A	I	STD		III		2,000	900	41,050
F501-41	LCGT/IGS 1 UNDER NOS 1.	20	I	STD		III		240	80	3,840
F501-42	QUERY UPDATE 3 UNDER NOS 1	20	I	STD		III		110	500	18,110
F501-43	DATA DESCRIPTION LANGUAGE 2 UNDER NOS 1	20	I	STD		III		110	150	5,510
F501-44	CYBER DATABASE CONTROL SYSTEM 1 UNDER NOS 1	20	I	STD		III		500	1,000	36,500
F501-45	TOTAL/ATHENA 1 UNDER NOS 1 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	STD		III		500	500	21,500
F501-46	COBOL 5 UNDER NOS 1	20	I	STD		III		125	485	17,585
F501-47	LCGT/IGS 2 UNDER NOS 1	20	I	STD		III		240	80	3,840
F501-48	TRANSACTION FACILITY (TAF) 1 UNDER NOS 1	N/A	I	STD		III		110	1,605	57,890
F501-49	UNIPLOT UNDER NOS 1	20	I	STD		III		3,000	N/C	3,000
F501-50	COBOL 4 TO 5 CONVERSION AIDS SYSTEM UNDER NOS 1	N/A	I	STD		III		N/C	N/C	N/C
F511-01	NETWORK OPERATING SYSTEM (NOS) 1 PACKAGE	20	I	STD		III		6,100	1,540	61,540
F511-02	MAINTENANCE PACKAGE UNDER NOS 1	N/A	I	STD		III		N/C	N/C	N/C
F511-03	TIME-SHARING MODULE 1 UNDER NOS 1	N/A	I	STD		III		110	260	9,470
F511-04	TRANEX 1 UNDER NOS 1	20	I	STD		III		110	385	13,970
F511-05	MULTI-MAINFRAME MODULE 1 UNDER NOS 1	N/A	I	STD		III		110	150	5,510
F511-06	NETWORK ACCESS METHOD (NAM) 1 UNDER NOS 1 (SEE F511-26)	N/A	I	STD		III		110	110	4,070
F511-12	FORTRAN EXTENDED 4 UNDER NOS 1 INCLUDES INTERACTIVE OPTION	20	I	STD		III		110	535	19,370
F511-13	COBOL 4 UNDER NOS 1	20	I	STD		III		110	325	11,810
F511-14	SORT/MERGE 4 UNDER NOS 1	20	I	STD		III		110	260	9,470
F511-15	ALGOL-60 4 UNDER NOS 1	20	I	STD		III		645	430	16,125
F511-16	APL 1 UNDER NOS 1	20	I	STD		III		645	325	12,345
F511-17	INTERACTIVE BASIC 3 UNDER NOS 1	20	I	STD		III		110	325	11,810
F511-19	SIMSCRIPT 3 UNDER NOS 1 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	STD		III		645	450	26,895
F511-20	PERT/TIME 1 UNDER NOS 1	N/A	I	STD		III		N/C	N/C	N/C
F511-21	EXPORT/IMPORT-200 1 UNDER NOS 1	20	I	STD		III		N/C	N/C	N/C
F511-22	MATH SCIENCE LIBRARY 1 UNDER NOS 1 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	STD		III		580	580	26,680
F511-25	CYBER CROSS SYSTEM 1 UNDER NOS 1	20	I	STD		III		535	215	8,275
F511-26	REMOTE BATCH FACILITY (RBF) 1 UNDER NOS 1	20	I	STD		III		110	215	7,850
F511-28	TOTAL UNIVERSAL 1 UNDER NOS 1 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	STD		III		1,000	1,000	31,000
F511-29	TOTAL-EXTENDED 1 UNDER NOS 1 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	STD		III		1,000	1,100	33,500
F511-33	APEX-III BASE SYSTEM 1 UNDER NOS 1	N/A	I	*SPI		III		2,000	500	23,000
F511-34	APEX-III OUT-OF-CORE SYSTEM 1 UNDER NOS 1	N/A	I	*SPI		III		2,200	650	29,550
F511-35	APEX-III MIXED INTEGER PROGRAMMING OPTION UNDER NOS 1	N/A	I	*SPI		III		200	500	21,200
F511-36	APEX-III MATRIX REDUCTION OPTION UNDER NOS 1	N/A	I	*SPI		III		200	100	4,400
F511-37	APEX-III PARAMETRICS UNDER NOS 1	N/A	I	*SPI		III		200	100	4,400
F511-39	FORTRAN EXTENDED 4 UNDER NOS 1	20	I	STD		III		110	325	11,810
F511-40	APT IV 2 UNDER NOS 1	N/A	I	STD		III		2,000	900	41,050
F511-41	LCGT/IGS 1 UNDER NOS 1	20	I	STD		III		240	80	3,840
F511-42	QUERY UPDATE 3 UNDER NOS 1	20	I	STD		III		110	500	18,110
F511-43	DATA DESCRIPTION LANGUAGE 2 UNDER NOS 1	20	I	STD		III		110	150	5,510
F511-44	CYBER DATABASE CONTROL SYSTEM 1 UNDER NOS 1	20	I	STD		III		500	1,000	36,500
F511-45	TOTAL/ATHENA 1 UNDER NOS 1 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	STD		III		500	500	21,500
F511-46	COBOL 5 UNDER NOS 1	20	I	STD		III		125	485	17,585
F511-47	LCGT/IGS 2 UNDER NOS 1	20	I	STD		III		240	80	3,840
F511-48	TRANSACTION FACILITY (TAF) 1 UNDER NOS 1	N/A	I	STD		III		110	1,605	57,890
F511-49	UNIPLOT UNDER NOS 1	20	I	STD		III		3,000	N/C	3,000
F511-50	COBOL 4 TO 5 CONVERSION AIDS SYSTEM UNDER NOS 1	N/A	I	STD		III		N/C	N/C	N/C
***	CDC CYBER 72, 73, 74/6000									
F601-01	NOS/BE 1 PACKAGE	20	I	STD		III		5,700	1,750	68,700
F601-02	MAINTENANCE PACKAGE UNDER NOS/BE 1	N/A	I	STD		III		N/C	N/C	N/C
F601-03	CYBER CROSS SYSTEM 1 UNDER NOS/BE 1	20	I	STD		III		535	215	8,275
F601-04	INTERCOM 4 UNDER NOS/BE 1	20	I	STD		III		110	260	9,470
F601-05	MULTI-MAINFRAME MODULE 1 UNDER NOS/BE 1	N/A	I	STD		III		100	150	5,500
F601-10	ALGOL-60 4 UNDER NOS/BE 1	20	I	STD		III		645	430	16,125
F601-11	INTERACTIVE BASIC 3 UNDER NOS/BE 1	20	I	STD		III		110	325	11,810
F601-12	COBOL 4 UNDER NOS/BE 1	20	I	STD		III		110	325	11,810
F601-13	SORT/MERGE 4 UNDER NOS/BE 1	20	I	STD		III		110	260	9,470
F601-14	FORTRAN EXTENDED 4 UNDER NOS/BE 1	20	I	STD		III		110	325	11,810
F601-15	FORTRAN EXTENDED 4 UNDER NOS/BE 1	20	I	STD		III		110	645	23,330
F601-16	COBOL 5 UNDER NOS/BE 1	20	I	STD		III		125	485	17,585
F601-17	COBOL 4 TO 5 CONVERSION AIDS SYSTEM UNDER NOS/BE 1	N/A	I	STD		III		N/C	N/C	N/C
F601-40	741 IGS 2 UNDER NOS/BE 1	20	I	STD		III		110	130	4,790
F601-41	274 IGS 2 UNDER NOS/BE 1	20	I	STD		III		N/C	25	900
F601-42	777 IGS 2 UNDER NOS/BE 1	20	I	STD		III		800	400	18,800
F601-43	3D OPTION, 777 IGS 2 UNDER NOS/BE 1	20	I	STD		III		200	100	4,700
F601-44	LCGT/IGS 2 UNDER NOS/BE 1	20	I	STD		III		240	80	3,840
F601-45	GODAS 3 UNDER NOS/BE 1	20	I	STD		III		260	130	6,110
F601-47	UNIPLOT UNDER NOS/BE 1	20	I	STD		III		3,000	N/C	3,000
F601-50	APEX-III BASE SYSTEM 1 UNDER NOS/BE 1	N/A	I	*SPI		III		2,000	500	23,000
F601-51	APEX-III OUT-OF-CORE SYSTEM 1 UNDER NOS/BE 1	N/A	I	*SPI		III		2,200	650	29,550
F601-52	APEX-III MIXED INTEGER PROGRAMMING OPTION UNDER NOS/BE 1	N/A	I	*SPI		III		200	500	21,200
F601-53	APEX-III MATRIX REDUCTION OPTION UNDER NOS/BE1	N/A	I	*SPI		III		200	100	4,400
F601-54	APEX-III PARAMETRICS UNDER NOS/BE 1	N/A	I	*SPI		III		200	100	4,400
F601-55	APT IV 2 UNDER NOS/BE 1	N/A	I	STD		III		2,000	900	41,050
F601-56	CONVERSION AIDS SYSTEM 1 UNDER NOS/BE 1	N/A	I	STD		III		N/C	N/C	N/C
F601-57	CYBER DATABASE CONTROL SYSTEM 1 UNDER NOS/BE 1	20	I	STD		III		500	1,000	36,500
F601-58	DATA DESCRIPTION LANGUAGE 2 UNDER NOS/BE 1	20	I	STD		III		110	150	5,510
F601-60	MATH SCIENCE LIBRARY 1 UNDER NOS/BE 1 (CHARGEABLE TO ALL CUSTOMERS)	20	I	STD		III		580	580	21,460
F601-61	PERT/TIME 1 UNDER NOS/BE 1	20	I	STD		III		N/C	N/C	N/C
F601-62	QUERY UPDATE 3 UNDER NOS/BE 1	20	I	STD		III		110	500	18,110
F601-63	SIMSCRIPT 3 UNDER NOS/BE 1 (CHARGEABLE TO ALL CUSTOMERS)	20	I	STD		III		645	450	16,845
F601-64	TOTAL UNIVERSAL 1 UNDER NOS/BE 1 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	STD		III		1,000	1,000	31,000

CHANGES EFFECTIVE 03/01/80

AVAIL DATE CODES * I - INACTIVE
*LICENSE REQUIRED (SPI/SP3/SPU) SEE PAGE 27/28 OF CONTRACTS SECTION.

PRODUCT NUMBER	PRODUCT DESCRIPTION	MF D	AVAIL DATE	LIC REQ	SUPPORT EFF DATE	SUPPORT CAT	SUPPORT ERLST CH-DT	CHARGES INITIAL FEE	CHARGES MONTHLY ROYALTY	CHARGES PAID UP LICENSE
F601- 65	TOTAL/ATHENA 1 UNDER NOS/BE 1 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	STD		III		500	500	21,500
***	CDC CYBER 170 MODELS 172, 173, 174, 175/CYBER 7C MODEL 72, 73, 74/6000 SOFTWARE									
F611- 01	NOS/BE 1 PACKAGE	2C	I	STD		III		6,1CC	3,745	140,920
F611- 02	MAINTENANCE PACKAGE UNDER NOS/BE 1	N/A	I	STD		III		N/C	N/C	N/C
F611- 03	CYBER CROSS SYSTEM 1 UNDER NOS/BE 1	20	I	STD		III		535	215	8,275
F611- 04	INTERCOM 4 UNDER NOS/BE 1	20	I	STD		III		110	1,070	38,63C
F611- 05	MULTI-MAINFRAME MODULE 1 UNDER NOS/BE 1	N/A	I	STD		III		535	535	19,795
F611- 10	ALGOL-6C 4 UNDER NOS/BE 1	20	I	STD		III		645	430	16,125
F611- 11	INTERACTIVE BASIC 3 UNDER NOS/BE 1	20	I	STD		III		110	400	14,510
F611- 12	COBOL 4 UNDER NOS/BE 1	20	I	STD		III		110	405	14,690
F611- 13	SORT/MERGE 4 UNDER NOS/BE 1	20	I	STD		III		110	260	9,47C
F611- 14	FORTRAN EXTENDED 4 UNDER NOS/BE 1	20	I	STD		III		110	405	14,690
F611- 15	FORTRAN EXTENDED 4 UNDER NOS/BE 1	20	I	STD		III		110	725	26,210
F611- 16	COBOL 5 UNDER NOS/BE 1	20	I	STD		III		125	485	17,585
F611- 17	COBOL 4 TO 5 CONVERSION AIDS SYSTEM UNDER NOS/BE 1	N/A	I	STD		III		N/C	N/C	N/C
F611- 40	241 IGS 2 UNDER NOS/BE 1	20	I	STD		III		11C	215	9,785
F611- 41	274 IGS 2 UNDER NOS/BE 1	20	I	STD		III		N/C	25	900
F611- 42	777 IGS 2 UNDER NOS/BE 1	20	I	STD		III		80C	400	18,8CC
F611- 43	3D OPTION, 777 IGS 2 UNDER NOS/BE 1	20	I	STD		III		200	100	4,700
F611- 44	LCGT/IGS 2 UNDER NOS/BE 1	20	I	STD		III		240	80	3,840
F611- 45	GODAS 3 UNDER NOS/BE 1	20	I	STD		III		260	130	6,11C
F611- 47	UNIPLOT UNDER NOS/BE 1	20	I	STD		III		3,000	N/C	3,000
F611- 50	APEX-III BASE SYSTEM 1 UNDER NOS/BE 1	N/A	I	*SPI		III		2,CCC	500	23,CCC
F611- 51	APEX-III OUT-CORE SYSTEM 1 UNDER NOS/BE 1	N/A	I	*SPI		III		2,200	650	29,550
F611- 52	APEX-III MIXED INTEGER PROGRAMMING OPTION UNDER NOS/BE 1	N/A	I	*SPI		III		200	500	21,200
F611- 53	APEX-III MATRIX REDUCTION OPTION UNDER NOS/BE1	N/A	I	*SPI		III		200	100	4,400
F611- 54	APEX-III PARAMETRICS UNDER NOS/BE 1	N/A	I	*SPI		III		20C	100	4,4CC
F611- 55	APT IV 2 UNDER NOS/BE 1	N/A	I	STD		III		2,000	900	41,C5C
F611- 56	CONVERSION AIDS SYSTEM 1 UNDER NOS/BE 1	N/A	I	STD		III		N/C	N/C	N/C
F611- 57	CYBER DATABASE CONTROL SYSTEM 1 UNDER NOS/BE 1	20	I	STD		III		500	1,000	36,5CC
F611- 58	DATA DESCRIPTION LANGUAGE 2 UNDER NOS/BE 1	20	I	STD		III		110	150	5,510
F611- 60	MATH SCIENCE LIBRARY 1 UNDER NOS/BE 1 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	STD		III		58C	580	26,68C
F611- 61	PERT/TIME 1 UNDER NOS/BE 1	N/A	I	STD		III		N/C	N/C	N/C
F611- 62	QUERY UPDATE 3 UNDER NOS/BE 1	20	I	STD		III		11C	500	18,11C
F511- 63	SIMSCRIPT 3 UNDER NOS/BE 1 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	STD		III		645	45C	20,895
F611- 64	TOTAL UNIVERSAL 1 UNDER NOS/BE 1 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	STD		III		1,000	1,CCC	31,000
F611- 65	TOTAL/ATHENA 1 UNDER NOS/BE 1 (CHARGEABLE TO ALL CUSTOMERS)	N/A	I	STD		III		500	500	21,5CC
G101- 01	7CCC SCOPE 1 PACKAGE	X	I	STD		III		5,400	1,980	64,800
G101- 02	FORTRAN 1 UNDER 7000 SCOPE 1	X	I	STD		III		100	240	7,300
G101- 03	FORTRAN EXTENDED 1 UNDER 7000 SCOPE 1	X	I	STD		III		N/C	N/C	N/A
***	CDC CYBER 70 MODEL 76/7CCC SOFTWARE									
G102- 01	SCOPE 2 PACKAGE	X	I	STD		III		6,36C	2,825	91,11C
G102- 02	FORTRAN 2 UNDER SCOPE 2	X	I	STD		III		110	260	7,910
G102- 03	FORTRAN EXTENDED 4 UNDER SCOPE 2 (FORMERLY IDENTIFIED AS FORTRAN EXTENDED 2)	X	I	STD		III		120	360	10,920
G102- 04	COBOL 2 UNDER SCOPE 2	X	I	STD		III		120	360	10,920
G102- 05	SORT/MERGE 1 UNDER SCOPE 2	X	I	STD		III		120	285	8,67C
G102- 08	MAINTENANCE PACKAGE 1 UNDER SCOPE 2	X	I	STD		III		N/C	N/C	N/C
G102- 09	SIMSCRIPT 3 UNDER SCOPE 2 (CHARGEABLE TO ALL CUSTOMERS.)	X	I	STD		III		645	450	14,145
G102- 10	APEX II PACKAGE 1 UNDER SCOPE 2	X	I	STD		III		6,000	1,5C0	51,000
G102- 12	APEX 1 VERSION 1 UNDER SCOPE 2	X	I	*SPI		III		1,C7C	535	17,12C
G102- 13	ALGOL-A0 4 UNDER SCOPE 2	X	I	STD		III		710	475	14,960
G102- 14	APT-IV 1 UNDER SCOPE 2	X	I	STD		III		645	325	10,395
G102- 16	APEX II VERSION 1 UNDER SCOPE 2	X	I	STD		III		6,420	1,23C	43,320
G102- 19	APEX-III BASE SYSTEM 1 UNDER SCOPE 2	N/A	I	*SPI		III		2,000	500	23,000
G102- 20	APEX-III OUT-OF-CORE SYSTEM 1 UNDER SCOPE 2	N/A	I	*SPI		III		2,2CC	65C	29,550
G102- 21	APEX-III MIXED INTEGER PROGRAMMING OPTION UNDER SCOPE 2	N/A	I	*SPI		III		200	500	21,200
G102- 22	APEX-III MATRIX REDUCTION OPTION UNDER SCOPE 2	N/A	I	*SPI		III		200	1CC	4,400
G102- 23	APEX-III PARAMETRICS OPTION UNDER SCOPE 2	N/A	I	*SPI		III		200	10C	4,4CC
G102- 25	FORTRAN EXTENDED 4 UNDER SCOPE 2	X	I	STD		III		110	645	19,46C
H001- 01	GRASP 2 PACKAGE	X	I	NONE		III		N/C	N/C	N/A
H001- 02	HIGH SPEED GRASP 1 PACKAGE	X	I	NONE		III		N/C	N/C	N/A
H001- 03	KEYPUNCH SIMULATOR 1 PACKAGE	X	I	NONE		III		N/C	N/C	N/A
H001- 04	KEYPUNCH SIMULATOR 2 PACKAGE	X	I	STD		III		N/C	N/C	N/A
H001- 05	NIMP 1 PACKAGE	X	I	NONE		III		N/C	N/C	N/A
H001- 06	LIST PROCESSOR 1 PACKAGE	X	I	NONE		III		N/C	N/C	N/A
H001- 07	TAS 1	X	I	NONE		III		N/C	N/C	N/A
H001- 08	GRIP 1 PACKAGE	X	I	STD		III		N/C	N/C	N/A
H001- 09	UTILITIES 1 PACKAGE	X	I	NONE		III		N/C	N/C	N/A
H001- 10	NIMP 2 PACKAGE	N/A	I	STD		III		N/C	N/C	N/C
H001- 11	TAS 3	N/A	I	STD		III		N/C	N/C	N/C
H001- 12	DRIVE 3 PACKAGE	N/A	I	STD		III		N/C	N/C	N/C
H001- 13	GRASP 3 PACKAGE	N/A	I	STD		III		N/C	N/C	N/C
H001- 14	MONTOR 1	N/A	I	STD		III		N/C	N/C	N/C
***	CDC 8092 OCP SOFTWARE									
H301- 01	8090 GRASP 2 PACKAGE	N/A	I	STD		III		N/C	N/C	N/C
***	CDC M100C SOFTWARE									
M101- 01	OPERATIONS CONTROL SYSTEM (OCS) 1	X	I	STD		III		100	10C	3,100
M101- 10	COMMUNICATIONS CONTROL PACKAGE 1 UNDER OCS 1	X	I	STD		III		100	15C	4,600
M101- 20	LTIP - LOCAL INTERFACE PACKAGE 1 UNDER OCS 1	X	I	STD		III		100	10C	3,1CC
M101- 30	RTIP - MODEL 28 TTY REMOTE INTERFACE 1 UNDER OCS 1	X	I	STD		III		N/C	10	3CC
M101- 31	RTIP - MODEL 28 TTY REMOTE INTERFACE 1 UNDER OCS 1	X	I	STD		III		N/C	10	300
M101- 35	RTIP - AT+T 83B TTY REMOTE INTERFACE 1 UNDER OCS 1	X	I	STD		III		N/C	10	300
M101- 40	RTIP - AT+T 8101 TTY REMOTE INTERFACE 1 UNDER OCS 1	X	I	STD		III		N/C	10	300
M101- 45	RTIP - MODEL 35 TTY REMOTE INTERFACE 1 UNDER OCS 1	X	I	STD		III		N/C	1C	3CC
M101- 50	RTIP - MODEL 37 TTY REMOTE INTERFACE 1 UNDER OCS 1	X	I	STD		III		N/C	1C	300
M101- 55	RTIP - AT+T 85A TTY REMOTE INTERFACE 1 UNDER OCS 1	X	I	STD		III		N/C	10	3CC
M101- 60	RTIP - AT+T 868 TTY REMOTE INTERFACE 1 UNDER OCS 1	X	I	STD		III		N/C	10	300
M101- 65	RTIP - WL M37 TTY REMOTE INTERFACE 1 UNDER CCS 1	X	I	STD		III		N/C	10	3CC
M101- 70	RTIP - TBX REMOTE INTERFACE 1 UNDER OCS 1	X	I	STD		III		N/C	1C	300
M101- 75	RTIP - TELEX REMOTE INTERFACE 1 UNDER CCS 1	X	I	STD		III		N/C	10	300
M101- 80	RTIP - IBM 2740 REMOTE INTERFACE 1 UNDER OCS 1	X	I	STD		III		N/C	20	6CC
M101- 85	RTIP - IBM 1053 REMOTE INTERFACE 1 UNDER OCS 1	X	I	STD		III		N/C	2C	600
M101- 90	RTIP - CDC 200 REMOTE INTERFACE 1 UNDER CCS 1	X	I	STD		III		N/C	50	1,500
M101- 95	RTIP - CDC 214 REMOTE INTERFACE 1 UNDER CCS 1	X	I	STD		III		N/C	3C	900
M101-100	RTIP - CDC 216 REMOTE INTERFACE 1 UNDER CCS 1	X	I	STD		III		N/C	3C	900
M101-105	RTIP - IBM BSC REMOTE INTERFACE 1 UNDER OCS 1	X	I	STD		III		N/C	5C	1,5CC
M101-106	RTIP - IBM BSC REMOTE INTERFACE 1 UNDER OCS 1	X	I	STD		III		N/C	50	1,500
M101-110	RTIP - IBM 2968 MT REMOTE INTERFACE 1 UNDER OCS 1	X	I	STD		III		N/C	50	1,500
M101-115	RTIP - AT+T INKTRONIC TTY INTERFACE 1 UNDER OCS 1	X	I	STD		III		N/C	1C	300
M101-116	RTIP - AT+T INKTRONIC TTY INTERFACE 1 UNDER OCS 1	X	I	STD		III		N/C	5C	1,500
M101-130	TTY ORIENTED RTIP PKG 1 UNDER OCS 1	X	I	STD		III		100	130	4,CCC
M101-135	CRT ORIENTED RTIP PKG 1 UNDER OCS 1	X	I	STD		III		100	10C	3,100
M101-140	CDC 200 UT ORIENTED RTIP PKG 1 UNDER OCS 1	X	I	STD		III		100	100	3,100
M101-145	BSC, RSG ORIENTED RTIP PKG 1 UNDER OCS 1	X	I	STD		III		100	1CC	3,100
M201- 01	PROGRAM PRODUCTION SYSTEM (PPS) 1	X	I	STD		III		100	180	5,500
M201- 10	USASI FORTRAN UNDER PPS 1	X	I	STD		III		100	100	3,1CC

PRODUCT NUMBER	PRODUCT DESCRIPTION	M MF D	AVAIL DATE	LIC REQ	SUPPORT EFF DATE	SUPPORT CAT	SUPPORT ERLST CH-DT	****CHARGES**** INITIAL FEE	MONTHLY ROYALTY	PAID UP LICENSE
***	CDC 2805 SOFTWARE									
M301- 01	SINGLE PMX BASE SWITCHING SYSTEM 1	X	I	STD		III		2,040	720	23,640
M301- 02	DUAL PMX BASE SWITCHING SYSTEM 1	X	I	STD		III		3,060	860	28,860
M301- 03	TRIPLE PMX BASE SWITCHING SYSTEM 1	X	I	STD		III		4,080	1,000	34,080
M301- 04	QUAD PMX BASE SWITCHING SYSTEM 1	X	I	STD		III		5,100	1,140	35,300
M301- 10	LTIP - IBM 360/370 1 UNDER PMX BASE SWITCHING SYSTEM 1	X	I	STD		III		720	300	9,720
X301- 10	LTIP - CDC CYBER 1CCO 1 UNDER IBM 360/370 OS MFT/MVT (RELEASE 2C.6)	X	I	STD		III		1,080	420	13,680
M301- 21	RTIP - MODEL 2P TTY 1 UNDER PMX BASE SWITCHING SYSTEM 1	X	I	STD		III		N/C	10	300
M301- 24	RTIP - AT+T 83B TTY 1 UNDER PMX BASE SWITCHING SYSTEM 1	X	I	STD		III		N/C	10	300
M301- 33	RTIP - MODEL 33/35 TTY 1 UNDER PMX BASE SWITCHING SYSTEM	X	I	STD		III		N/C	10	300
M301- 34	RTIP - 713-10 TERMINAL 1 UNDER PMX BASE SWITCHING SYSTEM	X	I	STD		III		N/C	10	300
M301- 39	RTIP - AT+T 85A TTY 1 UNDER PMX BASE SWITCHING SYSTEM 1	X	I	STD		III		N/C	10	300
M301- 48	RTIP -WU TWX 1 UNDER PMX BASE SWITCHING SYSTEM 1	X	I	STD		III		N/C	10	300
M301- 56	RTIP - IBM 2740 1 UNDER PMX BASE SWITCHING SYSTEM 1	X	I	STD		III		N/C	20	600
M301- 59	RTIP - IBM 1053 1 UNDER PMX BASE SWITCHING SYSTEM 1	X	I	STD		III		N/C	20	600
M301- 62	RTIP - CDC 711 1 UNDER PMX BASE SWITCHING SYSTEM 1	X	I	STD		III		N/C	30	900
M301- 70	RTIP - IBM RSC 1 UNDER PMX BASE SWITCHING SYSTEM 1	X	I	STD		III		N/C	50	1,500
M301- 71	RTIP - IBM RSC 1 UNDER PMX BASE SWITCHING SYSTEM 1	X	I	STD		III		N/C	50	1,500
M301-121	TELETYPE ORIENTED RTIP PKG 1 UNDER PMX BSS1	X	I	STD		III		100	100	3,100
M301-131	CRT CRIENTED RTCP PKG 1 UNDER PMX BSS1	X	I	STD		III		100	100	3,100
M301-141	ASCII, PROTC CRIENTED RTIP UNDER PMX BSS1	X	I	STD		III		100	100	3,100
M501- 01	PROGRAM PRODUCTION SYSTEM PACKAGE 1	X	I	STD		III		100	270	8,200
***	CDC 2808, 2806, 2805 SOFTWARE									
M601-100	SINGLE PMX MESSAGE SWITCHING SYSTEM 2	N/A	I	STD		III		2,040	1,020	32,640
M601-102	DUAL PMX TRANSPERTATION MODULE 1	N/A	I	STD		III		3,060	1,160	37,860
M601-104	DUAL PMX FINANCIAL MODULE 1	N/A	I	STD		III		3,060	1,160	37,860
M601-106	DUAL PMX SERVICE ORDER MODULE 1	N/A	I	STD		III		3,060	1,160	37,860
M601-108	DUAL PMX INDUSTRIAL MODULE 1	N/A	I	STD		III		3,060	1,160	37,860
M601-110	SINGLE IMX MESSAGE SWITCHING SYSTEM 2	N/A	I	STD		III		1,630	815	26,080
M601-111	DUAL IMX MESSAGE SWITCHING SYSTEM 2	N/A	I	STD		III		2,450	930	30,350
***	CDC 2550-1, 255(-2, 2552-1 SOFTWARE									
N201- 01	COMMUNICATIONS CONTROL PROGRAM (CCP) 3 (INTERACTS WITH NOS 1)	N/A	I	STD		III		535	110	4,350
N201- 02	COMMUNICATIONS CONTROL PROGRAM (CCP) 1 (INTERACTS WITH SCOPE 3.4)	N/A	I	STD		III		535	110	4,390
N201- 03	COMMUNICATIONS CONTROL PROGRAM (CCP) 1 (INTERACTS WITH NOS/BE 1)	N/A	I	STD		III		535	110	4,390
V101- 01	VDAM UNDER IBM OS/MFT	X	I	STD		III		2,435	500	22,235
V201- 01	VDAM UNDER IBM OS/MVT	X	I	STD		III		2,435	500	22,235
V301- 01	VDAM UNDER IBM OS/VS1	X	I	STD		III		2,435	500	22,235
V401- 01	VDAM UNDER IBM OS/VS2 (MVS/JES 2)	X	I	STD		III		2,435	500	22,235
***	NON-CDC SYSTEM SOFTWARE									
X001- 01	BRIDGE ANALYSIS AND RATING SYSTEM UNDER IBM OS MVT OR MFT	X	I	SPEC		III		42,000	N/C	42,000
X001- 02	BARS SPECIAL ENCHANCEMENTS AND SUPPORT	X	I	SPEC		III		9,996	N/C	9,996

ENGINEERING SERVICES EDUCATION
CUSTOMER EDUCATION AND TRAINING

SCOPE

This section applies to U.S. Operations only. Education and training services offered by ES Education are classified as follows:

1. Standard offering Lecture/Laboratory courses in computer maintenance. Subjects include central processors, peripheral equipment and communications equipment manufactured by Control Data Corporation.

2. Quote for Special Training: (QST) courses designed and developed in response to special customer needs.

POLICY

1. No training licenses will be offered.

2. Instructional materials and aids used for classroom training will not be offered for sale, lease or license.

3. Quotes, contracts and enrollment applications must be approved by ES Education centers Operations, 304 North Dale Street, St. Paul, MN 55103 (612/292-2509).

4. Education and training are offered only to end user customers.

PROGRAM PLANNING

The course, description, prerequisites, class maximums, and duration for each course is provided in the applicable course specification sheet. Students should not be enrolled without the stated prerequisites or equivalent experience.

CONTRACTS

Schedule K, Education and Training, Form AA4075 should be used for education and training orders.

Contract classes ordered by means of this document may be standard or nonstandard (QST) and may be conducted at either Control Data Corporation or customer site.

PRICES

The prices for the standard education and training courses are presented in this section of the pricing manual. Offers to customers must be processed by Engineering Services Education Centers Operations.

Class rates for QST, which are taught at Control Data or customer provided facilities, can be obtained by contacting Engineering Services Education Centers Operations.

TRAINING COURSES AT A CUSTOMER'S LOCATION

Training courses can be scheduled for presentation at a customer provided facility. In this case, the customer shall pay all costs of transporting Control Data training personnel, instruction aids, and materials to and from the specified facility and to pay required per diem and lodging expenses for Control Data personnel in accordance with Control Data's Standard Travel Policy.

For each course conducted at a customer provided facility, the customer shall provide without charge to Control Data, satisfactory facilities in which to conduct the training class and shall allow reasonable access to the facility and equipment as necessary for satisfactory class performance.

OVERSUBSCRIBED CLASSES

To ensure the quality of training classes offered and conducted by Control Data Corporation, maximum enrollment limits have been established for all courses. On special occasions and as permitted by the nature of the course to be conducted, the maximum class size specified by Control Data may be exceeded upon mutual agreement between the customer and Control Data prior to commencement of the class. The customer shall agree to pay an additional fee for each student in excess of the Control Data established maximum class complement.

ES EDUCATION TRAINING

Courses offered are listed in this section. They consist of Lecture/Laboratory and individualized training. Subjects include training in theory of operation, preventive maintenance, electrical and mechanical adjustments, troubleshooting and repair of equipment.

The prefix "E" = Special Courses
The prefix "I" = Individualized
The prefix "L" = Lecture: Course without lab time
The prefix "P" = Peripheral: Card reader, card punch, etc.
The prefix "S" = System Maintenance and Report Training
The prefix "T" = Main Frame: Study of computer system
The prefix "W" = Plug Compatible: Adaptable to another company's computer
The prefix "X" = Systems: Consists of about 90% lab time

Product Number	Course Title	Class Maximum*	Duration (Days)*	Price Per Student	
	SELF-STUDY COURSES ***				
E1000	Universal Skills	N/A	27	6,210	***
E1005	C.E. Practices	N/A	3	690	***
E1006	Hand Tools	N/A	2	460	***
E1007	Test Equipment	N/A	2	460	***
E1009	C.E. Administration	N/A	6	1,380	***
E1010	Professional C.E.	N/A	3	690	***
I3121	Introduction to Computer Hardware	N/A	7	1,610	***
I3217	Introduction to Mass Storage Systems	N/A	1	230	***
I5431	OMEGA Introduction to Maintenance	N/A	10	2,300	***
I5455	Oscilloscope Usage	N/A	4	920	***
I5460	Disk Drive Fundamentals	N/A	1	230	***
I5480	CYBER 70/170 Overview (except 176)	N/A	3	690	***
I5485	CYBER Refrigeration	N/A	1	230	***
I5490	CYBER 170 Power	N/A	1	230	***
I5491	CYBER 170 Power	N/A	1	230	***
I5495	CYBER 170 Logic	N/A	2	460	***
				CLASS PRICE	
	1784 COMPUTER SYSTEMS			CDC SITE	CUSTOMER SITE **
P6022	1700 Systems Concepts	6	15	20,250	14,250
T8023	1784 CPU	6	4	5,400	3,800
	CYBER COMPUTER SYSTEMS				
L7005	CYBER 170 Console	6	2	2,700	1,900
L7032	CYBER 176 Overview	8	2	2,700	1,900
L7033	CYBER 176 Logic	8	2	2,700	1,900
L7035	ECS II Theory	8	3	4,050	2,850
L7036	ECS I Theory	8	5	6,750	4,750
L7037	CYBER 7XX ECS Coupler	8	1	1,350	950
L7038	CYBER 74 ECS Coupler	8	2	2,700	1,900
L7039	CYBER 73 ECS Coupler	8	2	2,700	1,900
L7040	CYBER 17X ECS Coupler	8	2	2,700	1,900
P7012	CYBER 170 Peripheral Processor Maintenance	6	15	20,250	14,250
P7013	CYBER 170 CSU Maintenance	6	4	5,400	3,800
P7014	CYBER 170 Models 172/173/174 Central Processor Maintenance	6	17	22,950	16,150
P7016	CYBER 176 PPS Maintenance	8	15	20,250	14,250

* Class duration and maximums may vary for scheduled courses dependent upon location, equipment availability, etc.
** Plus instructor expenses.
*** Only available as part of a contracted course sequence at CDC site.

PRODUCT NUMBER	COURSE TITLE	CLASS MAXIMUM*	DURATION (DAYS)*	CLASS PRICE CDC SITE	CLASS PRICE CUSTOMER SITE **
	CYBER COMPUTER SYSTEMS				
T3008	6000/CYBER 70/CYBER 170 Central Processor Instructions and Floating Point	12	5	6,750	4,750
T3044	CYBER 170 Model 72/73 Computer Maintenance	8	22	29,700	20,900
T3052	6600/CYBER 70 Model 74 Computer Maintenance	8	22	29,700	20,900
T4010	CYBER 176 Systems Concepts	6	7	9,450	6,650
T4011	CYBER 176 PPU Maintenance	8	5	6,750	4,750
T4012	CYBER 176 CPU Maintenance	8	24	32,400	22,800
T5102	CYBER 1000 Maintenance	6	40	54,000	38,000
T6005	CYBER 70 Peripheral Processor Central Memory Maintenance Course	6	28	37,800	26,600
T7002	CYBER 175 Central Memory Control and Central Processing Unit	8	12	16,200	11,400
T8010	2550-2 Host Communication Processor Maintenance	6	10	13,500	9,500
T8033	CYBER 18 Timeshare	6	3	4,050	2,850
T8034	CYBER 18 Machine Language Programming	6	10	13,500	9,500
T8036	1843-2 1 X 8 CLA Maintenance	6	1	1,350	950
T8037	1860-5 Magnetic Controller/Formatter Maintenance	6	3	4,050	2,850
T8039	1828-2 CR/LP/CLA Maintenance	6	2	2,700	1,900
T8085	CYBER 18 Enhanced Instructions	6	3	4,050	2,850
T8090	Advanced CYBER 18 Maintenance	6	8	10,800	7,600
P1012	Peripheral Logic Concepts/405 Card Reader/ 3447 Card Reader Controller	6	7	9,450	6,650
P1021	415-30 Card Punch	6	5	6,750	4,750
P1031	415 Card Punch and 3446 Card Punch Controller	6	6	8,100	5,700
P1035	CYBER 70 415/3446 Card Punch and Controller	6	6	8,100	5,700
P7025	1729-3 Card Reader/Controller	6	2	2,700	1,900
T8065	1829 Card Reader Maintenance	6	2	2,700	1,900
	MAGNETIC TAPE SYSTEMS				
P2089	65X Basic Magnetic Tape Transport	6	7	9,450	6,650
P7028	616 Magnetic Tape Transport	6	4	5,400	3,800
T8070	1860 Magnetic Tape Maintenance	6	5	6,750	4,750
	ROTATING				
P3004	819 High Capacity Drive and FA202 Controller	6	10	13,500	9,500
P7029	Hawk Disk	6	6	8,100	5,700
T8075	1866 CDD Maintenance	6	3	4,050	2,850
T8080	1867 SMD Maintenance	6	5	6,150	4,300

* Class duration and maximums may vary for scheduled courses dependent upon location, equipment availability, etc.
** Plus instructor expenses.
*** Only available as part of a contracted course sequence at CDC site.

PRODUCT NUMBER	COURSE TITLE	CLASS MAXIMUM*	DURATION (DAYS)*	CLASS PRICE CDC SITE	CLASS PRICE CUSTOMER SITE **
	HARD COPY DEVICES				
P4020	Bandshift Printer	6	5	6,750	4,750
P4067	512/3555 Train Printer	6	10	13,500	9,500
P6085	PM70 Matrix Printer	6	3	4,050	2,850
P7026	1742 Line Printer/Controller	6	3	4,050	2,850
	DISPLAY SYSTEMS				
P5002	75X Conversational Display	6	5	6,750	4,750
T8060	1811 Display Maintenance	6	2	2,700	1,900
	SYSTEM COURSES				
K1045	CYBER 70 System Maintenance and Report Training	6	5	6,750	4,750
K1051	CYBER 170 System Troubleshooting Evaluation	6	4	5,400	3,800
K1053	System 17 System Maintenance and Report Training	6	5	6,750	4,750
	SYSTEM 360/370 PLUG COMPATIBLE				
W2003	23122/23142 Disk Subsystem	6	15	20,250	14,250
W2004	33301/38301 Disk Subsystem	6	15	20,250	14,250
W2009	38302/33302 Disk Storage Subsystem	6	20	27,000	19,000
W2011	38302/33302 Disk Storage Subsystem Diff.	6	10	13,500	9,500
W2017	38500 Mass Storage System	6	20	27,000	19,000
W2022	34201/38031 Tape Subsystem (CPI)	6	15	20,250	14,250
W2034	33801 Disk (FMD)	6	8	10,800	7,600
W2065	32111 Printer	6	10	13,500	9,500
W3028	OMEGA 480-2/1 Maintenance	6	10	13,500	9,500

* Class duration and maximums may vary for scheduled courses dependent upon location, equipment availability, etc.
** Plus instructor expenses.
*** Only available as part of a contracted course sequence at CDC site.

INSTITUTE FOR ADVANCED TECHNOLOGY

SECTION I - SEMINARS

Seminars listed in this section are designed for technical and management personnel. Subjects offered include Applied Mathematical and Statistical Science, Management Science and Technology, and Computer Sciences.

Prices listed cover seminar enrollment, course materials and luncheons. All other personal expenditures for transportation, lodging etc., are the students responsibility.

Current data as to course offerings and schedules can be obtained from the:

IAT Course Schedule

or by contacting the Regional Education Manager in your region.

Product Number	Course Title	Duration (Days)	Student Price*
AP 8303	Audit and Control of On-Line Systems	3	485
AP 8304	Systems Auditing	3	485
AR 8205	Data Base Administration and Control	3	485
AR 8201	Data Base Concepts	2	345
AR 8202	Data Base Structures and Access Methods	3	485
AR 8221	Data Dictionary/Directory Systems	2	345
AR 8402	Data Communications Systems	3	485
AR 8407	Distributed Processing Systems	3	485
AP 7012	Forecasting Techniques for Decision Making	3	485
AR 8601	Effective Use and Application of Mini-Computers	3	485
AP 8102	Computer Operations Management	3	485
AP 8103	EDP Operations - Advanced Practices and Procedures	3	485
AP 8112	Hardware and Software for Operations Personnel	2	345
AP 8113	EDP Capacity Planning	3	485
AP 8201	Advanced Programming Techniques	3	485
AP 8108	Software Engineering Techniques	2	345
AR 8501	Structured Design and Documentation Techniques	3	485
AR 8505	Structured Testing	3	485
AP 8104	Effective Analysis and Design of Information Systems	3	485

*Quotation for class prices available on request.

INSTITUTE FOR ADVANCED TECHNOLOGY

SECTION II - COMPUTER SYSTEMS - SOFTWARE AND APPLICATION SERVICES

Courses in this section are offered to provide Software training on CDC Systems. The classes are categorized as follows:

Introductory
Programming Language
Operating Systems (Usage)
Assembly Languages
Operating Systems (Analysis & Work Shops)

Individual student prices represent standard slot/in tuition for classes presented at a CDC facility. Special arrangements can be made for a customer desiring any of these classes at his site. Customer will then pay the class price plus reimbursement of all instructor transportation and living expenses necessary to conduct the class at the customer location. The customer will also provide the necessary computer availability and any special equipment, such as Interactive Terminals, or reimburse CDC for costs in this area. Pricing arrangements for customers desiring any of these classes at a CDC facility include materials, and the cost of CDC computer time and use of company facilities and equipment.

Product Number	Course Title	Class Maximum (Lecture/ Laboratory)	Duration (Days)	Student Price S/I	Customer* Site Cont. Class Price	CDC* Site Cont. Class Price
	Basic Concepts Computer Sys.					
AR 8100	Digital Computer Concepts II	20	10	495	4710	6150
	1700/CYBER 18 Courses					
BA 2000	1700 Introduction	20	2	175	1785	2300
BA 2010	1700 FORTRAN	16	5	300	2935	3795
BA 2020	1700 Foreground FORTRAN	16	5	300	2935	3795
BB 3000	1700 Assembly Language	16	5	440	3280	4140
BB 3010	1700 Assembly Language Workshop	16	3	345	2645	3335
BB 3020	1700 Advanced Coding	16	5	440	3280	4140
BB 4010	1700 MSOS Analysis	16	5	690	3910	4715
BB 4020	1700 MSOS Installation	12	3	575	3105	3795
QB 3010	CYBER 18 ITOS Usage	16	5	440	3280	4140
	3000L Computer Systems					
AR 8100	Digital Computer Concepts II	20	10	495	4710	6150
CA 3000	3000L Compass	16	5	440	3280	4140
CD 3010	3000L Master System Usage	16	5	440	3280	4140
	CYBER 70/170 Computer System I. Courses common to both NOS and NOS/BE					
AR 8100	Digital Computer Concepts II	20	10	495	4710	6150
DA 2010	CYBER COBOL	16	5	300	2935	3795
DA 2020	CYBER FORTRAN	16	5	300	2935	3795
DA 2030	CYBER COBOL (Accelerated)	16	2	175	1785	2300
DA 2040	CYBER FORTRAN (Accelerated)	16	2	175	1785	2300
DA 3000	CYBER Advanced COBOL Workshop	16	5	440	3280	4140
DA 3010	CYBER Advanced FORTRAN Workshop	16	5	440	3280	4140
DA 3020	CYBER CP Compass	16	5	440	3280	4140
DA 3030	CYBER Record Manager Usage	16	3	345	2645	3335
DA 3060	CYBER Record Manager Usage and DMS-170 Concepts	16	5	440	3280	4140

*Plus Instructor Expense, if any.

Product Number	Course Title	Class Maximum (Lecture/ Laboratory)	Duration (Days)	Student Price S/I	Customer* Site Cont. Class Price	CDC* Site Cont. Class Price
DA 3070	CYBER Data Control System (CDCS) and DDL	16	4	395	2965	3740
DA 3080	DMS-170 Query Update and DDL	16	4	395	2965	3745
DA 3090	CYBER APL	16	3	345	2645	3335
DA 4000	CYBER Hardware for Analysts	16	5	690	3910	4715
DA 4020	CYBER Record Manager Analysis	16	3	575	3105	3795
	II. NOS/BE Only Courses					
DA 2000	CYBER 70 Introduction	20	2	175	1785	2300
DA 2050	CYBER Sort/Merge Subsystem	16	2.5	230	2360	3050
DE 2010	NOS/BE Operator Training	12	3	230	2360	3050
DE 3000	CYBER 70/170 NOS/BE Job Con.	16	5	440	3280	4140
DE 3010	CYBER 70/170 NOS/BE Advanced Coding	16	5	440	3280	4140
DE 3040	CYBER 70/170 NOS/BE INTERCOM Usage	16	3	345	2645	3335
DE 4000	CYBER 70/170 NOS/BE System Maintenance and Installation	8	5	690	3910	4715
DE 4010	CYBER 70/170 NOS/BE System Analysis	16	10	1380	7820	9430
DE 4020	CYBER 70/170 NOS/BE PP Compass	16	5	690	3920	4715
DE 4040	CYBER 70/170 NOS/BE INTERCOM Analysis	16	2.5	575	3105	3795
XA 3030	Introduction to CYBER System 2000	16	4	395	2965	3740
XA 3040	Advanced CYBER System 2000	16	4	395	2965	3740
	III. NOS Only Courses					
DA 4000	CYBER Hardware for Analysts	16	5	690	3910	4715
FA 2000	CYBER 170 Introduction	20	2	175	1785	2300
FH 2000	CYBER 170 NOS Interactive Terminal Usage	16	3	230	2360	3050
FH 2010	CYBER 170 NOS Operator Training	16	3	230	2360	3050
FH 3020	CYBER 170 NOS Job Control	16	5	440	3280	4140
FH 3030	CYBER 170 NOS Advanced Coding	16	5	440	3280	4140
FH 4000	CYBER 170 NOS System Installation and Maintenance	12	7	1180	4600	6900
FH 4010	CYBER 170 NOS System Analysis	16	10	1380	7820	9430
FH 4020	CYBER 170 NOS PP Compass	16	5	690	3910	4715
FH 4030	NOS/NAM Analysis	16	3	575	3105	3795
	CYBER 70 MODEL 76, CYBER 170 MODEL 176/, SCOPE 2.1 OPERATING SYSTEM					
AR 8100	Digital Computer Concepts II	20	10	495	4710	6150
DA 2010	CYBER COBOL	16	5	300	2935	3795
DA 2020	CYBER FORTRAN	16	5	300	2935	3795
DA 2030	CYBER COBOL (Accelerated)	16	2	175	1785	2300
DA 2040	CYBER FORTRAN	16	2	175	1785	2300

*Plus Instructor Expense, if any.

Product Number	Course Title	Class Maximum (Lecture/ Laboratory)	Duration (Days)	Student Price S/I	Customer* Site Cont. Class Price	CDC* Site Cont. Class Price
DA 3010	CYBER Advanced FORTRAN Work.	16	5	440	3280	4140
DA 3020	CYBER CP Compass	16	5	440	3280	4140
EA 2000	CYBER 70, MODEL 76/CYBER 170 MODEL 176 Introduction	20	2	175	1785	2300
EG 2010	CYBER 70 Model 76 Operator Training with 7611-11 Station	12	4	265	2650	3425
EG 3000	SCOPE 2.1 Usage	16	5	440	3280	4140
EG 3010	SCOPE 2.1 Application Usage	16	3	345	2645	3335
EG 4000	SCOPE 2.1 Maintenance and Installation Procedures	12	2	405	2360	2850
EG 4010	SCOPE 2.1 Central Analysis	16	5	690	3910	4715
EG 4020	CYBER 70 Model 76/CYBER 170 Model 176 PP Compass	16	2	405	2360	2850
EG 4030	CYBER 70 Model 76/CYBER 170 Model 176 PP Workshop	16	5	690	3910	4715
EG 4040	SCOPE 2.1 Workshop	12	10	1380	7820	9430
	SYSTEM 370 SUPPORT FOR CDC SYSTEMS					
HA 1000	Introduction to S/370	20	5	250	2360	3080
HA 2000	Basic FORTRAN for S/370	16	5	300	2935	3795
HA 2010	FORTRAN IV for S/370 (Workshop) (OS/VS)	16	3	230	2360	3050
HA 2020	Basic COBOL for S/370	16	5	300	2935	3795
HA 2030	S/370 COBOL Coding (Workshop)	16	3	230	2360	3050
HA 2040	S/370 COBOL Coding (Workshop) ANSI COBOL Features	16	3	230	2360	3050
HA 3000	ALC Coding for S/370 (Work.)	16	7	615	4590	5795
HK 3000	S/370 Job Control Language (OS/VS)	16	5	440	4140	3280
HL 3000	System 370 JCL and Utilities	16	7	615	4590	5795
HL 3010	Advanced Coding for 370/OS	16	10	875	6555	8280
HL 4000	OS/VSI Internals and SYSGEN Workshop	16	5	690	3910	4715
HL 4010	370/OS Mass Storage System Usage	16	3	575	3105	3795
	Applications					
JA 3000	CDC PERT	16	3	345	2645	3335
JA 3010	CDC SIMSCRIPT	16	5	440	3280	4140
JA 3020	CDC SYMPL	16	3	345	2645	3335
JA 3040	2550 Communications Control Program (CCP) and Configuration	16	10	875	6555	8280
JA 3050	CDC APT Usage	16	5	440	3280	4140
JA 3060	CYBER TOTAL	16	3	345	2645	3335
JA 3090	TOTAL/ATHENA	16	5	440	3280	4140
JA 3100	PASCAL	16	5	440	3280	4140
JA 3101	TRANEX	16	3	345	2645	3335
JA 3102	SIMULA	16	3	345	2645	3335
JA 3201	255X Host Communication Processor Introduction	16	2	260	1955	2475

*Plus Instructor Expense, if any.

CONTROL DATA MAINTENANCE SERVICE AND SUPPORT POLICY

SCOPE:

This policy is to be implemented in Domestic and International Operations. The maintenance pricing presented here is applicable only in the 48 contiguous United States. Pricing relative to Alaska, any United States possession or International can be obtained from the appropriate area Customer Engineering Manager.

The policies contained herein apply to all commercial customers except Typetronics customers. Information regarding Typetronics policies and procedures can be obtained from the Engineering Services Contracts Department.

The terms and conditions of the current GSA Authorized ADP Schedule shall apply for maintenance service of all equipment maintained under that Schedule. Only authorized agencies of the Government or their designated agents may issue delivery orders under the GSA Authorized ADP Schedule.

GENERAL:

This Maintenance Policy Section is written in three major parts and is presented according to the following organizational structure.

I. Contractual Maintenance Service and Support Policies

- Schedule D
- Schedule E
- Schedule J
- Maintenance Service Amendment
- Non-CDC Equipment

II. Per-Call Maintenance Service and Support Policies

- Per-call Maintenance Service
- OEM Maintenance Support

III. "Other" Maintenance Policies

- Special Services and Pricing
- Sale of Spare Parts, Tools, Test Equipment, Diagnostics and other Maintenance Documentation
- Disk Equipment Maintenance
- Product Group E - Mass Storage File
- Product Group F - 32111/32168
- Product Group G - UMS III
- Licensing of Diagnostic Software
- Inactive Hardware Products
- Maintenance of Equipment Purchased in "As Is" Condition
- Remote Site Spare Parts Charge

Basic Monthly Maintenance prices, together with Extended Maintenance Product Groups are listed in the EDP Systems and Plug Compatible Sections of this manual.

I. CONTRACTUAL MAINTENANCE SERVICE AND SUPPORT POLICIES

SCHEDULE D

Control Data -- Maintenance Service Systems Equipment
(Form AA4073)

General

The prices outlined in the EDP Systems Section of this manual are governed by the terms and conditions set forth in the Maintenance Services Section.

Inspection and Repair

If the equipment to be maintained was not under Control Data responsibility immediately prior to the effective date of the maintenance order, it will be subject to inspection by Control Data without charge provided a subsequent maintenance contract is signed with Control Data. Any repairs deemed necessary as a result of the inspection will be charged to the customer at Control Data's then current rates.

Term of Maintenance Service

The minimum acceptable term of maintenance service is one (1) year from the date service commences. A Quote for Special Maintenance (QSM) is required should a term other than one (1) year be requested. See "Special Services and Pricing" for QSM details.

I. CONTRACTUAL MAINTENANCE SERVICE AND SUPPORT POLICIES
SCHEDULE D (Continued)

Customer Performance of Housekeeping Duties

The Customer shall be instructed in the performance of certain housekeeping duties such as the replacement of printer and typewriter ribbons and paper, cleaning of magnetic tape heads and vacuum chambers, and inspection and cleaning of air filters. Supplies necessary to perform these housekeeping duties shall be provided by the Customer and any special equipment, such as a vacuum cleaner, will be provided by Control Data. Control Data will recommend to the Customer a schedule for the performance of these housekeeping duties.

In those instances where Control Data has to perform the above listed duties, applicable per-call rates shall be charged.

Refurbishment of Customer-Owned Equipment

Charges for maintenance services do not include provision for refurbishment beyond the first year of maintenance service. Control Data may elect not to contractually maintain Customer-owned equipment when, in its opinion, such equipment has reached a condition beyond economical maintenance. In such a situation, Control Data will submit to the Customer a description of the necessary refurbishment, an estimate of the cost, and request Customer's consent to perform the refurbishment. If such refurbishment is not authorized, Control Data may exercise the right to exclude the equipment from the maintenance agreement and upon mutual agreement provide service on a time and materials basis.

Maintenance Credit

A maintenance credit is granted when an equipment becomes inoperative through no fault of the Customer and remains so for twenty-four (24) hours during CONTRACTED workdays. Maximum credit for any calander day may not exceed 1/30th of the monthly maintenance charge. This credit is also granted for each interconnected Control Data component not usable as a result of the breakdown. It is important to note that if the Customer does not contract for weekend coverage, the twenty-four (24) hour clock can not be started or extended into this period.

If the Customer claims a maintenance credit to be applied against other charges, he must do so in writing within ninety (90) days from the date of equipment failure. The written request for the maintenance credit should be directed to the local Control Data office or designated billing point. The request should contain the type and model number(s) of machine(s), date of occurrence, period of downtime, and credit due.

Contracted Periods of Maintenance Service

The Contracted Period of Maintenance (CPM) is defined as the Principal Period of Maintenance (PPM) or any modification made thereto plus any extended optional periods selected. The Basic Monthly Maintenance (BMM) Charge provides for on-call maintenance service during the PPM. Optional extended periods of maintenance service are also available if the systems are located within a Control Data twenty-four (24) hour service area.

EDP Computer Systems

(A system is defined as a combination of Control Data equipments which are interconnected by local signal and power cables to a Control Data central processor unit.)

- Principal Period of Maintenance: This period is nine (9) consecutive hours between 7:00 a.m. and 6:00 p.m. daily, Mondays through Fridays, excluding local holidays.

- Option 1: Extends maintenance service to sixteen (16) consecutive hours per day, Mondays through Fridays, excluding local holidays.

- Option 2: Extends maintenance service to twenty-four (24) hours per day, Mondays through Fridays, excluding local holidays.

I. CONTRACTUAL MAINTENANCE SERVICE AND SUPPORT POLICIES
SCHEDULE D (Continued)

Contracted Periods of Maintenance Service (Continued)

- Modified Principal Period of Maintenance: This period is nine (9) consecutive hours between 5:00 a.m. and 8:00 p.m. daily, Mondays through Fridays, excluding local holidays.

- Saturday and/or Sunday: The hours available on Saturday and/or Sunday are the same as those available Monday through Friday, as described above. It is not necessary that the same maintenance coverage be selected on weekends as selected for weekdays or that Saturday and Sunday coverage be the same, but the maintenance service selected for Saturday or Sunday must be the same on all Saturdays or Sundays. If Saturday and/or Sunday service is selected, indicate the hours of coverage in the blanks provided on the Maintenance Services Amendment.

The above Contracted Periods of Maintenance Service are subject to the following conditions:

- All equipments furnished by Control Data, whether purchased or leased, comprising a system must have the same maintenance plan and periods of maintenance service.

- All Contracted Periods of Maintenance Service include allowances for recognized meal periods.

- The weekday Contracted Periods of Maintenance Service must be the same each day, Monday through Friday.

Any deviations to the options listed (e.g. holiday coverage, modified PPM of more than two (2) hours, etc.) must be supported by a Quote for Special Maintenance (QSM).

Extended Maintenance Charges

Charges for optional extended on-call maintenance service are summarized in the following Table and are percentages of the Basic Monthly Maintenance Charge. The additional maintenance charges depend upon the product group and the option selected. If the Customer selects extended maintenance service, the Maintenance Services Amendment must be completed.

TABLE 1

Extended Maintenance Options (%)

Contracted Periods of On-Call Maintenance Service	Mondays-Fridays				Saturdays				Sundays			
	Product Groups				Product Groups				Product Groups			
	A	B	C	D	A	B	C	D	A	B	C	D
Principal Period	-	-	-	-	4	5	7	8	5	6	8	9
Option 1 (16 hours)	8	12	21	30	6	7	14	16	7	8	15	17
Option 2 (24 hours)	14	20	33	45	8	10	21	24	9	12	22	25
Modified PPM* (2 hours or less)	5	8	10	10	6	7	12	13	6	7	12	13

*Modified Principal Period of Maintenance (PPM) percentages are in lieu of the standard PPM percentages for Saturday and/or Sunday.

Example: Assume that a Customer, whose system is comprised of Product Groups B, C, and D selects the following maintenance coverage: Mondays through Fridays - Option 2; Saturdays - Option 1; Sundays - PPM. The total option percent for each product group would be calculated as follows:

	Product Group B	Product Group C	Product Group D
M-F: Option 2	20%	33%	45%
Saturday: Option 1	7%	14%	16%
Sunday: PPM	6%	8%	9%
Total Option Percent	33%	55%	70%

Instructions for Completion of the Maintenance Services Amendment for Extended Coverage.

1. Enter the option(s) selected in the boxes provided on the face page of the Amendment and indicated the hours selected where applicable.

2. List the system configuration and each product's extended maintenance product group (see price list) in the columns provided on the reverse side of the Amendment.

I. CONTRACTUAL MAINTENANCE SERVICE AND SUPPORT POLICIES
SCHEDULE D (Continued)

Extended Maintenance Charges (Continued)

3. From the face page of Schedule D or Schedule J, obtain each product's Total (not unit) Basic Monthly Maintenance Charge and list same in the appropriate column. (For example, if the product is in product group A, enter the Total Basic Monthly Maintenance Charge for that product in the column entitled "Product Group A Total Basic Monthly Maintenance Charge.")

4. Sum the Total Basic Monthly Maintenance Charges in each product group to obtain the Total Group Basic Monthly Maintenance Charges and enter such charges in the blank provided.

5. Determine the appropriate option percent per product group (see example above) and enter same in the appropriate row. Multiply the Total Group Basic Monthly Maintenance Charges by the option percent to obtain the Group Extended Monthly Maintenance Charges. Enter the resultant charges for each group in the blank provided in the applicable column and in the Summary of Extended Maintenance Charges.

6. Sum the Group Extended Monthly Maintenance Charges enumerated in the Summary of Extended Maintenance Charges to obtain the Total Extended On-Call Monthly Maintenance Charges.

Preventive Maintenance

Preventive Maintenance (PM) will normally be performed during the Principal Period of Maintenance. By mutual agreement and where applicable, PM can be provided outside the PPM but during the Contracted Period of Maintenance. Preventive Maintenance performed outside the CPM, at the Customer's request, will be charged to the Customer at the applicable per-call rates. Per-call rates are found under Paragraph II, "Per-call Maintenance Service."

Remedial Maintenance

Remedial maintenance is that maintenance required due to equipment failure and done on an unscheduled basis. Control Data will staff to provide remedial maintenance service during the Contracted Period of Maintenance (CPM) service. Response time to requests during the CPM will normally be within two (2) hours plus travel time.

When remedial maintenance is required outside the CPM, Control Data will respond to service calls on a manpower availability basis. All remedial maintenance performed outside the CPM, at the Customer's request, is charged to the Customer at the applicable per-call rates. Per-call rates are found under Paragraph II, "Per-call Maintenance Service."

Travel Charges

During the Contracted Period of Maintenance (CPM), travel expenses are billable beyond a fifty (50) mile radius of the nearest Control Data Service Center. When service is performed outside the CPM, all travel expenses are charged to the Customer.

On-Site Maintenance Service

On-site maintenance service is available on a Quote for Special Maintenance (QSM) basis for those customers who, because of the nature of their operation, require the services of an on-site Customer Engineer.

To qualify for principal duty station on-site service, the user is required to pay an on-site QSM surcharge which is based on the coverage required and the number of individuals required to provide such service and to meet the requirement that the BMMC plus any extended coverage charges plus on-site surcharges are equal to or greater than $9,000.00 per shift per month. It is important to note that the assignment of on-site personnel means that the assigned site is their primary work station amd does not imply that Control Data personnel are committed to be in attendance during the entire contracted on-site period. The installation will, however, have priority of the engineer's services. The determination of the number of individuals to be assigned to an installation will be the sole responsibility of Control Data's Engineering Services.

The Engineering Services Pricing and Proposal Support Department will prepare a QSM for on-site service upon approval of the request by the Engineering Services Regional General Manager.

Multiple Systems Discounts

Multiple Systems Discounts are effective only when maintenance service is being performed under the terms and conditions of the Schedule D maintenance contract. The effective date of the appropriate Multiple Systems Discount is based upon the date that the basic monthly maintenance charges for the central computer(s) commence under the terms of Schedule D.

When multiple CDC computer systems, which qualify under this program, are installed in the same room or general area and the cumulative distance between central computers is not more than 1,000 feet, such that they may be maintained concurrently by the same Customer Engineer, the Customer may elect one of the applicable multiple systems maintenance options described below. The final determination that a multiple installation qualifies for one of the Multiple Systems Discount Options described below is the sole responsibility of the Customer Engineering Division.

I. CONTRACTUAL MAINTENANCE SERVICE AND SUPPORT POLICIES
SCHEDULE D (Continued)

Option A Discount Plan

Systems which qualify for Option A

6000/CYBER 72, 73, 74:	72-X, 73-X, 74-X 6214, 6215 6413, 6414, 6415, 6513, 6514 6613, 6614, 6615, 6713, 6714
7600/CYBER 76, 176	76-X, 176-XX 7313-1, 7614-1, 7615-1, 7616-1

The option A discount plan entitles the customer to a discount from the central computer equipment (excluding peripherals) Basic Monthly Maintenance Charge. The Basic Monthly Maintenance Charge, reduced by the appropriate discount under the columns marked Option A in Table 1, is used to determine the charges for any extended on-call maintenance service.

Option B Discount Plan

Systems which qualify for Option B

6000/CYBER 72, 73, 74:	72-X, 73-X, 74-X 6214, 6215 6413, 6414, 6415, 6513, 6514 6613, 6614, 6615, 6713, 6714
7600/CYBER 76, 176	76-X, 176-XX 7313-1, 7614-1, 7615-1, 7616-1

The option B discount plan entitles the customer to extended on-call maintenance service at no additional charge according to the columns marked Option B in Table 1. Additional charges for extended maintenance under Option B may be determined by using Table 2. The Maintenance Product Groups are defined in the Products Division of the Pricing Manual.

Option C Discount Plan

Systems which qualify for Option C

6000/CYBER 70, 170:	72-X, 73-X, 74-X, 171-X, 172-X, 173-X, 174-X, 175-X, 176-X 6214, 6215 6413, 6414, 6415, 6513, 6514 6613, 6614, 6615, 6713, 6714
7600/CYBER 76, 176:	76-X, 176-XX 7313-1, 7614-1, 7615-1, 7616-1

The option C discount plan entitles the customer to a discount on the charges for on-call extended maintenance according to Table 3. The Extended Monthly Maintenance Charge, reduced by the appropriate discount indicated in Table 3, is applicable to all qualified systems.

Option D Discount Plan

Discount plan applies to 65109-01 and 65109-32 only.

Number of Units At One Site	Discount Off Unit BMM Charge (%)
1	0%
2	15%
3	20%
4	25%
5-6	30%
7-9	35%
10 or More	40%

The above density discount is offered on an individual product basis only. Each product must separately qualify for density discount and cannot be mixed with other products to qualify as a cumulative total. For example, if one controller (65109-1) and four memory storage units (65109-32) are installed at any one site, only the memory storage units could qualify for a density discount (25%).

The discount, when applicable, shall ONLY apply to the total basic monthly maintenance charges and NOT to the charges for any extended maintenance service option selected. Extended maintenance charges shall be calculated on the total published BMM charges prior to any applicable discount. All units qualifying for the discount must have the same pricipal period of maintenance (PPM).

The effective date of the appropriate multiple unit discount is based upon the date that the basic monthly maintenance charges for the incremental unit(s) commence under the terms of Schedule D. For example, the first 65109-1 would not be eligible for a discount. Upon the date BMM charges commence for the second unit installed at that site, a fifteen percent discount shall apply to the total BMM charges for both units installed.

Option E Discount Plan

Discount plan applies to 751-10, 751-101, 751-103, 751-104, 752-10, 752-11, 752-20, 752-21, 752-30, 752-31, 752-40, 752-41, 752-201, 752-202, 752-203, 752-204, 752-270, 752-271, 753-10, 753-11, 754-10, 754-20, 755-10, 755-11, 755-20, 755-21, 756-10, 756-11, 756-20, 756-21, 756-201, 756-202, 756-203, 756-204 only.

Number of Units At One Site	Discount off Unit BMM Charge (%)
1 - 6	0%
7 - 15	7%
16 or more	12%

The density discount for 75X products is offered on an individual product and model number basis only. Each model must separately qualify for a density discount and cannot be mixed with other models to qualify as a cumulative total. For example, if twelve (12) 752-10 and five (5) 752-11 are installed at any one site, only the 752-10 would qualify for a density discount (7%).

The discount, when applicable, shall ONLY apply to the total basic monthly maintenance charges and NOT to the charges for any extended maintenance service option selected. Extended maintenance charges shall be calculated on the total published BMM charges prior to any applicable discount. All units qualifying for the discount must have the same principal period of maintenance (PPM).

The effective date of the appropriate multiple 75X unit discount is based upon the date that the basic monthly maintenance charges for the incremental unit(s) commence under the terms of Schedule D. For example, the first six (6) 751-10 at any one site will be eligible for no discount. Upon the BMM charges commence for the seventh unit installed at that site, a seven (7) percent discount shall apply to the total BMM charges for all seven (7) 751-10 units installed.

I. CONTRACTUAL MAINTENANCE SERVICE AND SUPPORT POLICIES
SCHEDULE D (Continued)

TABLE 1

CDC 6000/7000/CYBER 70 MULTIPLE SYSTEMS DISCOUNT SCHEDULE

Number of Central Computers at One Site		OPTION A (Discount off BMM Charge of Central Computer)		OPTION B (On-Call Extended Maintenance Service Provided at No Extra Charge)	
6000/ Models 72, 73, 74	7000/ Model 76, 176	6000/ Models 72, 73, 74	7000/ Model 76, 176	6000/ Models 72, 73, 74	7000/ Model 76, 176
		% Discount	% Discount	Option Avail.	Option Avail.
1 each	0 each	0%	N/A	-	N/A
0	1	N/A	0%	N/A	-
1	1	12 1/2%	0%	Option I	-
2	0	12 1/2%	N/A	Option I	N/A
0	2	N/A	10%	N/A	Option I
2	1	25%	0%	Option II	-
1	2	25%	10%	Option II	Option I
2	2	31%	10%	24/7	Option I
3	0	25%	N/A	Option II	N/A
0	3	N/A	15%	N/A	Option II
3	1	31%	0%	24/7	-
1	3	31%	15%	24/7	Option II
3	2	37%	10%	24/7	Option I
2	3	37%	15%	24/7	Option II
3	3	37%	15%	24/7	Option II
4	0	31%	N/A	24/7	N/A
0	4	N/A	18%	N/A	24/7
4	1	37%	0%	24/7	-
1	4	37%	18%	24/7	24/7
4	2	37%	10%	24/7	Option I
2	4	37%	18%	24/7	24/7
4	3	37%	15%	24/7	Option II
3	4	37%	18%	24/7	24/7
4	4	37%	18%	24/7	24/7
5	0	37%	N/A	24/7	N/A
0	5	N/A	21%	N/A	24/7

OPTION I: On-call service 16 consecutive hours/day, Monday-Friday, exclude local holidays.
OPTION II: On-call service 24 hours/day, Monday-Friday, exclude local holidays.
24/7: On-call service 24 hours/day, 7 days per week, exclude local holidays.

TABLE 2

DETERMINATION OF CDC 6000/7000/CYBER 70 CYBER 176 OPTION B ADDITIONAL EXTENDED ON-CALL MAINTENANCE CHARGES

On-Call Option Provided	On-Call Option Desired	Mondays - Fridays Extended Maintenance Product Group * A	B	C	D	Saturdays Extended Maintenance Product Group * A	B	C	D	Sundays Extended Maintenance Product Group * A	B	C	D
	PPM	--	--	--	--	4%	5%	7%	8%	5%	6%	8%	9%
Option I	Option I	--	--	--	--	6	7	14%	16	7	8	15	17
M - F	Option II	6	8%	12	15%	8	10	21	24	9	12	22	25
	PPM	--	--	--	--	4%	5%	7	8%	5	6	8	9
Option II	Option I	--	--	--	--	6	7	14	16	7	8	15	17
M - F	Option II	--	--	--	--	8	10	21	24	9	12	22	25
	PPM	--	--	--	--	--	--	--	--	--	--	--	--
24/7	Option I	--	--	--	--	--	--	--	--	--	--	--	--
	Option II	--	--	--	--	--	--	--	--	--	--	--	--

* Refer to price list in Products Division of Pricing Manual for a product's extended maintenance product group.

NOTE: For all options, systems of a given class (Class 1: 6000/CYBER 72, 73, 74; Class 2: 7600/CYBER 176, 74 will be covered by the same contracted periods of maintenance service under Options A and B.

I. CONTRACTUAL MAINTENANCE SERVICE AND SUPPORT POLICIES
SCHEDULE B (Continued)

TABLE 3

CDC 6000/7000/CYBER 70, 170 MULTIPLE SYSTEMS DISCOUNT SCHEDULE

No. of 6000/7000/CYBER 70, 170 CPU'S	Discount Off Of Extended Coverage Charges
1	0%
2	25
3	45
4	60
5+	75

Preventive maintenance will be performed consecutively on those systems included under Options B or C during the Contracted Period of Maintenance Service.

EXAMPLE:

Assume that a CYBER Model 72, Model 76, and Model 172 installation consists of Group A, B, C, and D products. Under Option A, the customer is entitled to a 12.5 percent discount off of the Basic Monthly Charge of the central computer for the Model 72. Under Option B, the customer is entitled to Option I for the Model 72. Under Option C, the customer is entitled to a 45 percent discount off charges for Extended Maintenance Coverage for any or all of the systems where extended coverage is selected. If extended coverage is not selected on all systems under Option C, calls outside the CPM for the non-covered systems would be billable at applicable per-call rates.

Zone Pricing

Maintenance Zone Charges are applicable in Schedule B Maintenance Agreements to all products listed in the "EDP Systems" section excluding 3000; 6000; 7000; CYBER Models 1000, 7X and 17X; and STAR systems mainframes/products.

(List of Mainframe product numbers excluded are:
7X-XX, 17X-XX 280X-XX 3104, 3114, 3150, 3174-X, 3204, 3205, 3210, 3215, 3221, 3222, 3304-X 3404, 3504-1, 3514-X, 3604, 3804, 621X-X 640X, 6413 6414, 6415-X, 651X, 6604, 661X, 7601-1, 7613-1, 7614-1, 7615-1, 7616-1, 6507X and STAR. NOTE: X=0-9.)

Also excluded are all products eligible for zone charges but which are physically co-located with (within a maximum of 1,000 feet) and connected to an excluded mainframe/system.

Zone Charges are applied at the greater of $20 or 10% of the published Basic Monthly Maintenance Charge (BMMC) for each twenty-five (25) mile increment beyond the initial fifty (50) mile radius of the Control Data Full Service Center (listed elsewhere in this section) providing the on-call maintenance support. (For example, a BMMC of $100 will become $140 on equipment located 76-100 miles (two zones) from the service center). The actual distance between locations is to be calculated from street address to street address.

A Maintenance Service Amendment (Zone Charge) Form AA5806-1 must be prepared for each new Schedule B which includes products requiring Zone Charges. In certain locations Control Data may have the capability to provide maintenance service using maintenance personnel assigned in that general area. In such situations zone charges may be waived or based on that assigned geographical location for as long as such capability exists. The use of any service location other than a Full Service Center for the application of zone charges must be approved by the Engineering Services Regional General Manager and the Regional Marketing Manager.

SCHEDULE E

Control Data Support of Customer Maintenance Service
(Form AA4074)

Pricing

Under this service agreement, Control Data will provide support of customer maintenance for the Basic Monthly Maintenance charge less 30%.

Inspections and Satisfactory Customer Self-Maintenance

If the equipment was not under Control Data's maintenance responsibility immediately prior to the effective date of the agreement, it will be subject to inspection by Control Data without charge. All costs necessary to bring the equipment up to current Control Data standards will be a customer responsibility.

During the term of the agreement, Control Data may make periodic inspections of the equipment with seven (7) days notice. Any repairs or adjustments then deemed necessary by Control Data must be made by the Customer within thirty (30) days. On termination of maintenance on equipment owned by Control Data or its subsidiary, Control Data may inspect the equipment and it must be brought up to current Control Data standards.

If the Customer is unable to satisfactorily maintain the equipment owned by Control Data or its subsidiary, Control Data may amend the agreement to allow standard Control Data maintenance at the then current terms and rates.

All equipment comprising a system must have the same maintenance plan. A system is defined as a combination of CDC equipment which is interconnected by local Control Data signal and power cables to a Control Data central processor unit. To be eligible for Schedule E coverage, all equipments of a given model number and type installed and utilized at the Customer's site shall be covered by one of Control Data's maintenance plans. All like equipments installed at a site must be covered by the same maintenance plan.

Term of Maintenance Service

The minimum acceptable term of maintenance service is one (1) year from the date service commences. A Quote for Special Maintenance (QSM) is required should a term other than one (1) year be requested. Contact the Marketing Support Department, Engineering Services for QSM details.

Parts, Maintenance Tools, and Documentation

Control Data will provide the necessary tools, test equipment, pertinent documentation and an inventory of parts sufficient to enable the Customer to maintain the system. The parts documentation, tools, and test equipment, etc., furnished by Control Data shall be used by the Customer only in support of the equipment covered under the Schedule E service agreement.

I. CONTRACTUAL MAINTENANCE SERVICE AND SUPPORT POLICIES
SCHEDULE E (Continued)

Parts, Maintenance Tools, and Documentation (Continued)

The local Customer Engineering Branch Manager will formally document the inventory of spare parts, tools, diagnostics, etc., (via CELMO parts listing, test equipment receipt form, etc.) and request written verification from Customer that this documentation is an accurate listing of the actual inventory at Customer's site. At termination of the agreement, the unused parts inventory, all tools and test equipment, diagnostics, etc., as listed in the inventory documentation, must be returned to Control Data properly identified.

The Customer must order replacement parts to maintain the inventory at the initial level established by Control Data. All replacement parts will be obtained from Control Data. Orders for replacement parts shall be directed to, and approved by, the local Customer Engineering Branch Manager.

Control Data shall provide replacement parts at no additional charge for Customer-owned equipment and equipment owned by Control Data or its subsidiary and leased by Customer when replacement is necessary because of normal wear and tear. Parts replaced in Customer-owned equipment due to causes not attributable to normal wear and tear will be charged to the Customer.

All parts and documentation necessary for the installation of Control Data sponsored modifications will be provided by CDC.

Labor and Travel Charges

The Customer shall provide all necessary maintenance labor including labor to install Control Data sponsored modifications. Any labor provided by Control Data (except for free inspections outlined previously) will be charged to the Customer at the Per-call rates found under Paragraph II, "Per-call Maintenance Service."

During Control Data's normal working hours (8 a.m. to 5 p.m., Monday - Friday, excluding local holidays), travel expenses will be charged beyond fifty (50) miles each way from the nearest Control Data service center. Outside Control Data's normal working hours, all travel expenses are charged to the Customer.

Schedule E Maintenance Support Remedy

Control Data's liability to the Customer in providing maintenance support services shall be limited to the replacement of any defective parts furnished and the reperformance of any defective maintenance service provided by Control Data.

SCHEDULE J

Control Data -- Maintenance Service Subsystems Equipment
(Form AA4890)

Contract Availability

The availability of the Schedule J service agreement is limited to:

- The Domestic Operations only
- Plug Compatible Equipment/Data Handling Subsystems
- Non-System Stand-Alone Products (i.e. tape certifiers, tape cleaners)

General

The prices outlined in the EDP SYSTEMS and PLUG COMPATIBLE Sections of this manual are governed by the terms and conditions set forth in the Maintenance Services Section.

1. CONTRACTUAL MAINTENANCE SERVICE AND SUPPORT POLICIES
SCHEDULE J (Continued)

General (Continued)

The following sections are identical to those given for Schedule D. Please refer to the Schedule D policy section for explanations relating to any of the listed areas:

(1) Inspection and Repair

(2) Term of Maintenance Service

(3) Customer Performance of Housekeeping Duties

(4) Refurbishment of Customer-Owned Equipment

(5) Preventive Maintenance

Maintenance Remedy

Control Data's liability to the Customer as a result of providing maintenance services shall be limited to restoring the equipment covered by contract to good operating condition.

Contracted Periods of Maintenance Service

The Contracted Period of Maintenance (CPM) is defined as the Principal Period of Maintenance (PPM) or any modification made thereto plus any extended optional periods selected. The Basic Monthly Maintenance (BMM) Charge provides for on-call maintenance service during the PPM.

Maintenance coverage during the Principal Period of Maintenance is available at all domestic locations. For those customers located within a fifty (50) mile radius of a Control Data twenty-four (24) hour service center specified hereafter and noted with an asterisk, the following extended coverage options may be selected.

- Principal Period of Maintenance: This period is nine (9) consecutive hours between 7:00 a.m. and 6.00 p.m. daily, Mondays through Fridays, excluding local holidays.
- Option 1: Extends maintenance service to sixteen (16) consecutive hours per day, Mondays through Fridays, excluding local holidays.
- Option 2: Extends maintenance service to twenty-four (24) hours per day, Mondays through Fridays, excluding local holidays.
- Modified Principal Period of Maintenance: This period is nine (9) consecutive hours between 5:00 a.m. and 8:00 p.m., Mondays through Fridays, excluding local holidays.
- Saturday and/or Sunday: The hours available on Saturday and/or Sunday are the same as those available Monday through Friday, as described above. It is not necessary that the same maintenance coverage be selected on weekends as selected for weekdays or that Saturday and Sunday coverage be the same, but the maintenance service selected for Saturday or Sunday must be the same on all Saturdays or Sundays. If Saturday and/or Sunday service is selected, indicate the hours of coverage in the blanks provided on the Extended Maintenance Amendment.

The above Contracted Periods of Maintenance Service are subject to the following conditions:

- All like equipments installed at a site must be covered by the same maintenance plan and have the same periods of maintenance service.
- All Contracted Periods of Maintenance Service include allowances for recognized meal periods.
- The weekday Contracted Periods of Maintenance Service must be the same each day, Monday through Friday.

Any deviations to the options listed (e.g. holiday coverage, modified PPM of more than two (2) hours, extended coverage beyond 50 mile radius, etc.) must be supported by a Quote for Special Maintenance (QSM).

Extended Maintenance Charges

Charges for optional extended on-call maintenance service are summarized in the following Table and are percentages of the Basic Monthly Maintenance Charge. The additional maintenance charges depend upon the product group and the option selected. If the Customer selects extended maintenance service, the Extended Coverage Amendment must be completed. NOTE: FOR SCHEDULE J PRODUCTS, THE TABLE IS APPLICABLE ONLY WHEN THE PRODUCT IS LOCATED WITHIN A RADIUS OF FIFTY (50) MILES FROM A CONTROL DATA FULL SERVICE CENTER. Full service centers are those designated with an asterisk in the Service Center List found at the end of the Maintenance Policy Section.

Extended Maintenance Options ($)

Contracted Periods of On-Call Maintenance Service	Mondays-Fridays Product Groups				Saturdays Product Groups				Sundays Product Groups			
	A	B	C	D	A	B	C	D	A	B	C	D
Principal Period	—	—	-	—	4	5	7	8	5	6	8	9
Option 1 (16 hours)	8	12	21	30	6	7	14	16	7	8	15	17
Option 2 (24 hours)	14	20	33	45	8	10	21	24	9	12	22	25
Modified PPM* (2 hours or less)	5	8	10	10	6	7	12	13	6	7	12	13

*Modified Principal Period of Maintenance (PPM) percentages are in lieu of the standard PPM percentages for Saturday and/or Sunday.

Example: Assume that a Customer, whose system is comprised of Product Groups B, C, and D, selects the following maintenance coverage: Mondays through Fridays -- Options 2; Saturdays -- Option 1; Sundays -- PPM. The total option percent for each product group would be calculated as follows:

	Product Group B	Product Group C	Product Group D
M-F: Option 2	20%	33%	45%
Saturday: Option 1	7	14	16
Sunday: PPM	6	8	9
Total Option Percent	33%	55%	70%

Instructions for Completion of the Extended Maintenance Coverage Amendment. See Schedule D policy section for instructions.

I. CONTRACTUAL MAINTENANCE SERVICES AND SUPPORT POLICIES

SCHEDULE J (Continued)

Remedial Maintenance

Remedial maintenance is that maintenance required due to equipment failure and done on an unscheduled basis. Control Data will staff to provide remedial maintenance service during the Contracted Period of Maintenance (CPM) service. Response time to requests during the CPM will normally be within two (2) hours plus travel time.

When remedial maintenance is required outside the CPM, Control Data will respond to service calls on a manpower availability basis. All remedial maintenance performed outside the CPM at the Customer's request, is charged to the Customer at the applicable per-call rates as found under Paragraph II, "Per-call Maintenance Service."

Travel Charges

During the Contracted Period of Maintenance (CPM), travel expenses are billable beyond a fifty (50) mile radius of the nearest Control Data Service Center for service calls on all equipment not already covered by zone charges. When service is performed outside the CPM, all travel expenses are charged to the Customer regardless if the equipment is covered by zone charges.

Zone Pricing

Zone pricing applies to all schedule J maintenace agreements. Under this concept, the published basic monthly maintenance (BMM) prices apply to all sites within a fifty (50) mile radius of a CDC Service Center (listed on page 11). Sites located outside this area are subject to an additional charge equal to the greater of $20 or ten percent (10%) of the BMM charge for each twenty-five (25) mile zone beyond the initial 50 mile zone. For example, a site located one hundred and forty (140) miles from a Service Center would be subject to an additional charge of forty percent (40%).

In certain locations Control Data may have the capability to provide maintenance service using maintenance personnel asigned in that general area. In such situations Zone Charges may be waived or based on that assigned geographical location for as long as such capability exists. The use of any service location other than a Full Service Center for the application of zone charges must be approved by the Engineering Services Regional General Manager and the Regional Marketing Manager.

MAINTENANCE SERVICE AMENDMENT
(Form AA5806)

General

The Maintenance Services Amendment is completed when a customer subscribes to extended maintenance service or modifies his Principal Period of Maintenance or contracts for services of an on-site Customer Engineer.

EXTENDED MAINTENANCE SERVICE

Instructions for completion of the amendment form for extended maintenance service are outlined under Schedule D, Extended Maintenance Charges. It is important to note that the appropriate maintenance schedule be checked (✓) in the preamble to the amendment when filling it out.

MODIFIED PRINCIPAL PERIOD

Completion of the amendment form for modifying the PPM requires checking (✓) the Modified PPM block, the on-call or on-site block and filling in the applicable nine (9) consecutive hours. In the Summary of Monthly Maintenance Charges on the reverse side of the amendment, the charges for this service should be entered in the appropriate space. Calculating the charges for the modified PPM is done in the same manner as described in the instructions for Extended Maintenance Charges under Schedule D. If the PPM is to be modified greater than two (2) hours, a Quote for Special Maintenance (QSM) is required. The Marketing Support Department of Engineering Services will provide the adders to be used in calculating the charges.

ON-SITE MAINTENANCE

Completion of the amendment form for on-site maintenance service requires checking (✓) the PPM box and any applicable extended periods. The appropriate hours should then be filled in on the spaces provided. The reverse side of the form should be completed as set forth in the instructions for Extended Maintenance Charges under Schedule D. The on-call adders given in the applicable table (under Schedule D or Schedule J, whichever applies) should be utilized when the on-site period is to be extended to additional periods. The Marketing Support Department of Engineering Services shall provide the "On-Site Charges" number to be included in the Summary of Monthly Maintenance Charges. This charge is provided on a QSM basis and is dependent on the hours of coverage, site configuration and the number of men required to provide the coverage selected.

I. CONTRACTUAL MAINTENANCE SERVICE AND SUPPORT POLICIES
(Continued)

NON-CDC EQUIPMENT MAINTENANCE SERVICE

The maintenance of non-CDC manufactured equipment is discretionary in nature and offered only in situations where a lead organization in the Engineering Services Division, which has the technical expertise to provide the required maintenance service, can be identified. These organizations and their areas of interest are as follows:

Customer Engineering

Peripheral devices not furnished by Control Data (i.e., plotters, tapes, readers, terminals) used in conjunction with CDC computer systems and CDC marketed plug compatible products.

COMMA Corporation

Non-CDC Computer Systems

Syntonic Technology Incorporated

Minicomputer Systems, Communications/Medical/Industrial electronic equipment.

For further information concerning non-CDC equipment maintenance service, contact the appropriate organization.

Engineering Services
Customer Engineering Services
P.O. Box 0
Minneapolis, Minnesota 55440
Attn: Marketing Support
612/853-3347

COMMA
P.O. Box 0
Minneapolis, Minnesota 55440
Attention: COMMA Marketing, H@S04B
Phone: 612/853-3886

Syntonic Technology Incorporated
7150 Airport Highway
Pennsauken, New Jersey 08109
Attention: Marketing Department, PSNSYN
Phone: 609/663-4840

PART II: PER-CALL MAINTENANCE SERVICE AND SUPPORT POLICIES

Per-Call Maintenance Service

Per-Call Maintenance Service refers to that maintenance service that is requested by a customer on an as needed, unscheduled basis. Per-Call Maintenance Service is charged on the basis of the number of labor hours expended in accomplishing the request plus other applicable charges. The most common Per-Call Maintenance Service is applicable to the following:

- Services performed which are outside the contracted period of maintenance for contracted period of maintenance for contractual customers. (A contractual customer is defined as a customer who contracted under one of the standard maintenance schedules.)
- Services performed for contractual customers which are outside the scope of the contract.
- Services performed on products which are priced as Time and Materials (T&M).
- Services performed om products which are discontinued from standard maintenance agreements and/or priced as Special Time and Materials (ST&M).
- Services provided to customers who own the equipment, but have not entered into a contractual maintenance agreement with Control Data.

Per-Call Maintenance consists of whatever preventive, remedial and/or modification maintenance that is specified at the time of the request by the customer. These services will be provided on a "best efforts" basis. Normal response time will be based on the availability of Engineering Services maintenance personnel with priority being given to those customers who have contracted under a Standard Maintenance Schedule.

To limit Control Data's liability and financial risk and to preclude making unauthorized changes to customer-owned equipment, it is the policy of Control Data to respond only to request for maintenance service placed by the owner of the Control Data equipment. (For purposes of this policy, "Owner" shall be defined as the Purchaser, Lessee, or prime contractors operating Government facilities.) Requests from individuals or organizations other than the Owner should be referred to the equipment owner to place and authorize the maintenance service request. All applicable charges will be invoiced directly to the equipment owner and the service will be furnished in accordance with Control Data's then current terms, conditions, and prices for such services.

PART II: PER-CALL MAINTENANCE SERVICE AND SUPPORT POLICIES
(Continued)

Labor Rates

Per-Call Labor Rates as shown in the "Per Call Hourly Rate Schedule," will be charged portal to portal, computed to the nearest one-half (1/2) hour with a minimum charge based upon a two (2) hour period per person.

Table 1 below defines the hourly rate (per person) for per-call maintenance. The Per-Call rate class of a product is the second character of the product group designator listed in the Product Pricing Sections of this manual.

TABLE I
Per Call Hourly Rate Schedule

	Contractual Customers		Non Contractual Customers
Per Call Rate Class	Hourly Rate Per Person Monday through Friday 7 AM to 6 PM	Hourly Rate Per Person All Other Hours (including Holidays)*	Hourly Rate Per Person All Hours
1	$74/hr.	$85/hr.	$85/hr.
2	64/hr.	76/hr.	76/hr.
3	48/hr.	60/hr.	60/hr.

*Locally observed Control Data holidays

OTHER PER-CALL CHARGES

Travel Charges - Portal to portal travel expenses will be charged to the customer at the current Control Data mileage rate or at the actual cost of round trip commercial transportation between customer's site and Control Data's Service Center. Where applicable, other travel costs, such as per diem, lodging, parking, tools, etc., will be charged to the customer.

Material Charges - Material charges, where applicable, will be charged at the current retail prices plus any other surcharge applicable, i.e., special handling transportation, etc., as defined in the Commercial Parts Catalog.

Surcharges - When in response to a Schedule E or non-contractual customer's request and authorization for service, it is necessary for Control Data to bring in technical support personnel and/or service personnel from a Control Data Service Center other than the Service Center designated by Control Data to service that area, an additional surcharge of $200 per calendar day, or any fraction thereof, will be charged to the customer. Coordination and dispatching of such personnel shall be the responsibility of the Field Support Engineering Operations at Control Data Headquarters, 612/853/5554.

OEM Maintenance Support

Definition: Where maintenance service on CDC OEM products is provided on a per-call (non-contractual) basis, the following policies are applicable in addition to those stated above.

1. Response to requests for service is limited to the OEM customer. End user customers of the OEM customer will be referred to their vendor (i.e., the OEM customer) when requesting service. The District Manager will coordinate the maintenance activities with the OEM customer.

2. Warranty of OEM equipment is the responsibility of the manufacturing division. OEM customers and/or their end user customers will be referred to their respective suppliers, as Customer Engineering does not become involved in arbitrating questions concerning OEM equipment warranty.

3. Parts provided on OEM equipment are handled in the same manner as standard equipment not covered by a maintenance contract. Any parts removed from OEM equipment must be returned to the customer representative who signs the CESR.

4. The manufacturing division has the responsibility for distributing FCO's on OEM equipment, as CED has no way of tracking OEM equipment once it is sold by the OEM customer to his end user customer. However, when requested by the manufacturing division, Customer Engineering Logistics Materials Operations (CELMO) will act in an agency capacity and distribute the OEM FCO's as directed by the manufacturing division.

5. The only documentation available to OEM customers is that documentation made available to CDC customers through Literature Distribution. OEM customers shall not have access to internal documentation such as CE memos and Service Bulletins.

Monthly contractual maintenance service may be available on selected CDC OEM products. For more information on OEM maintenance service and availability, direct inquiries to:

Control Data Corporation
Engineering Services
P.O. Box 0
Minneapolis, Minnesota 55440

PART III: "OTHER" MAINTENANCE POLICIES

SPECIAL SERVICES AND PRICING

Technical Services

Technical Service representatives will be available for assistance on a contractual basis for Control Data installed equipment and interface equipment directly connected to CDC equipment. Prices and work statements are available through the Pricing & Proposal Support Department, Engineering Services.

Quote For Special Maintenance (QSM)

Any maintenance pricing for leased or purchased equipment or any maintenance service not published in the Pricing Manual shall only be provided by having the prior approval of Engineering Services before release. The following are examples of common request for special pricing.

- Equipment modified to operate as part of the total system supplied by another vendor.
- Special equipment or single units installed in a remote location. A remote location is defined as any location in which Control Data standard equipment is installed outside the forty-eight contiguous states or installed in overseas locations noted in the current GSA Schedule which cannot be reasonably maintained from present Control Data Service Centers. (Overseas installations requiring U.S. citizens for service will require special pricing.)
- Non-Control Data equipment.
- Any equipment maintenance price to be requoted; i.e. a special equipment that has been quoted previously to another customer.
- Special non-standard maintenance agreements (e.g. on-site service, modified PPM greater than two hours, etc.)
- Equipment not published in the Pricing Manual and no longer manufactured or actively marketed by Control Data.

Quote For Special Equipment (QSE)

It will be the responsibility of the Developing Division (Systems/Manufacturing to request maintenance prices for each Special Equipment, i.e., QSE's. The minimum information required by Engineering Services to develop a maintenance price for this equipment is:

- Special Equipment designation number (QSE#)
- Customer name
- Installation location(s)
- Description/purpose
- System type
- Quantity
- Recurring manufacturing cost
- Number and type of logic cards
- Diagnostic availability

Maintenance of Discontinued products.

Maintenance Service for those products in the inactive hardware products section designated by double asterisks in the Monthly Maintenance charge column has been discontinued from standard maintenance contracts. These products will be maintained on an unscheduled, Special Time and Material (ST&M) basis subject to the availability of trained Engineering Services personnel and replacement parts.

Maintenance credits for inoperative hardware shall not apply to these products or to interconnected products rendered unusable as a result of a breakdown of these products.

Control Data will not guarantee the continued availability of any maintenance support for products designated as discontinued products.

Charges for ST&M Maintenance Service

Services provided will be charged at the current applicable hourly labor rates as found under Paragraph II, "Per-Call Maintenance Service."

SALE OF SPARE PARTS, TOOLS, TEST EQUIPMENT, MAINTENANCE SOFTWARE AND OTHER MAINTENANCE DOCUMENTATION

Maintenance Aids

Control Data may utilize as part of its maintenance services, proprietary items such as parts, tools, test equipment, maintenance software, technical bulletins, maintenance documentation, etc., generally referred to as Maintenance Aids. These Maintenance Aids are the property of Control Data and are developed for use by trained Control Data maintenance personnel during the performance of contracted maintenance under the terms of a Control Data maintenance services agreement. Upon the termination of contracted maintenance service, these maintenance aids will be removed from the customer's site. Certain of these maintenance aids are available for use by customers of Control Data who have contracted for these items under a support agreement (Schedule E) or for sale or license in accordance with the following policies. Requests for additional information should be directed in writing to:

Control Data Corporation
Engineering Services - HQW04G
P.O. Box 0
Minneapolis, Minnesota 55440

Attention: Manager
Pricing & Proposal Support Department

SALE OF SPARE PARTS, TOOLS, TEST EQUIPMENT,
MAINTENANCE SOFTWARE AND OTHER MAINTENANCE DOCUMENTATION
(Continued)

Spare Parts, Tools and Test Equipment

Control Data offers for sale through Engineering Services spare parts, tools and test equipment to be used for the maintenance of purchased Control Data equipment. Terms, prices and delivery information may be obtained by submitting a written request to:

Control Data Corporation
Commercial Sales
7540 Bush Lake Road
Edina, Minnesota 55435

Maintenance Manuals

Control Data provides one (1) copy of maintenance manuals, including appropriate schematic diagrams for each equipment comprising the Customer's system, provided the system is owned and maintained by the Customer. Control Data will keep the maintenance documentation current only so long as Control Data has uninterrupted maintenance responsibility under the terms of a maintenance service agreement.

FCO Information Service

Control Data offers for sale a Field Change Order (FCO) information subscription service. For an initial subscription fee of $300, Control Data will furnish one (1) copy of the Control Data FCO catalog and provide, during an initial one (1) year period, information describing all Control Data sponsored FCO's, as they are released, and which affect the Customer's equipment. The information service may be extended for optional one (1) year periods for an annual subscription renewal fee of $200.

NOTE: Each subscription shall apply only to Control Data manufactured equipment installed at a single location. Upon request, an additional subscription may be procurred for each different location.

The control and installation of Control Data sponsored FCO's in equipment not covered by a Control Data maintenance services agreement is the responsibility of the owner or his designee. Any such FCO may be purchased through Engineering Services Commercial Parts Sales and will include applicable parts and detailed installation instructions. Requests for the FCO information subscription service should be directed in writing to:

Control Data Corporation
Engineering Services
P.O. Box 0
Minneapolis, Minnesota 55440

Attention: Contracts Department, HQW04L

Maintenance Training

Control Data offers for sale, training courses on the maintenance of its equipment. Details of these offerings are described in the Customer Education and Training Policy Section.

Maintenance Software

Control Data may utilize proprietary maintenance software during the performance of contracted maintenance under the terms of a Control Data maintenance services agreement. Certain of this software is available to Control Data customers on a QSS basis (see "Licensing of Maintenance Software" policy elsewhere in this section for details on the licensing agreement and pricing). Other maintenance software, such as, but not limited to, that contained in the Concurrent Maintenance Library, are intended solely for the use of Control Data in the performance of contracted maintenance service and are not available for license.

Disk Equipment Maintenance

A Disk Pack meeting Control Data specifications damaged as a result of a Drive malfunction will be replaced at no charge to the Customer where the damage is related to a single equipment malfunction. Replacement will be by new or refurbished Control Data Disk Pack. Additional Disk Packs that are damaged by fault or negligence of the Customer or his personnel will be the responsibility of the Customer.

This replacement policy only applies to Disk Packs meeting Control Data Co. specifications where Customer Engineering has maintenance responsibility of the Disk Drive equipment and where the Customer releases the damaged Disk Pack to Control Data. In the event security regulations require the retention or destruction of the damaged Disk Pack, the Customer shall pay all replacement costs. Disk Packs not meeting Control Data specifications that are damaged will be the user's responsibility.

SALE OF SPARE PARTS, TOOLS, TEST EQUIPMENT,
MAINTENANCE SOFTWARE AND OTHER MAINTENANCE DOCUMENTATION
(Continued)

Damage to the Read/Write heads of a Control Data Disk Storage Drive which occurs while utilizing a Disk Pack not meeting Control Data specifications will not be covered under Control Data's warranty or maintenance agreements. Necessary repairs made by Control Data will be charged to the Customer at the standard published prices then in effect for Control Data parts and services.

It will be the responsibility of the supplying vendor to insure that their Disk Packs meet Control Data specifications.

The specifications for certain disk packs require factory recorded information servo tracks, address headers, system flaw information, etc. It is the customer's responsibility to insure that vendors supplying equivalent disk packs meet these specifications.

Effective August 1, 1975, Control Data will, upon customer request, perform the necessary formatting to other vendor supplied disk packs. This service will be performed on-site, outside designated periods of preventive maintenance, at the then current per-call Class I hourly rates. All charges will be billed to the customer via the standard Customer Engineering Service Report (CESR) Form AA5024.

NOTE: The performance of formatting does not in any way constitute certification that non-CDC manufactured disk packs meet Control Data factory specifications. IT REMAINS A CUSTOMER RESPONSIBILITY TO ENSURE THAT ALL CONTROL DATA SPECIFICATIONS ARE MET.

The specification data sheet for Control Data Disk Packs can be obtained from Literature & Distribution Services.

Product Group E - Mass Storage File

"Product Group" Designator "E" pertains only to the 385XX Mass Storage product family. Unique requirements of this designation are as follows:

1. Maintenance service will be offered on a 24/7 on-call basis only. Prices listed reflect the 24/7 charge.

2. Monthly maintenance charges listed are only valid if the following conditions exist:

   A. Installation location must be within a fifty mile radius of a CDC full service center. If not, maintenance zone charges apply.

   B. "VDAM" and "Engineering File" software, as well as "SOLEX" diagnostics must be installed so that they are operational concurrent with hardware installation.

PRODUCT GROUP F - 32111-1 PRINTER

▿Product Group▿ designator ▿F▿ pertains only to the 32111-1 Printer Subsystem and its associated 32161-XX Type Array{s}. Unique requirements of this designation are as follows:

1. The Basic Monthly Maintenance Charge {BMMC} listed for the 32111-1 Printer Subsystem is valid up to fifteen {15} million lines of useage per month. Beyond 15 million lines, there will be a useage premium charge of $20 per million lines in excess of 15 million lines. This useage charge is not applicable to extra 32161-XX Type Arrays.

2. Extended maintenance coverage is only available in E.S. Full Service Center locations. The only extended service option available for the 32111-1 and 32161-XX is 24/7 coverage. The percentage adder for this coverage is 23% over the listed BMMC. Holiday coverage or any other deviation must be handled via QSM {Quote for Special Maintenance}.

PRODUCT GROUP G - UMS-III

▿Product Group▿ designator ▿G▿ pertains only to the 33138 - 148-158-168-031-032-033-AXX plug-compatible memory system. Unique requirements of this designation are as follows:

1. The maintenance prices listed for the memory products, indicated by product group designator ▿G▿, provide for 24/7 on-call service within a fifty {50} mile radius of the Engineering Services Full Service Centers listed in the Maintenance Service section of this manual.

2. Maintenance service outside of the fifty {50} mile radius of E.S. Full Service Centers, will be provided on a 9/5 on-call basis as may be available in various locations. The maintenance price for this service will be twice the 24/7 price listed for these memory products.

3. Maintenance zone charges do not apply to these products.

SALE OF SPARE PARTS, TOOLS, TEST EQUIPMENT, MAINTENANCE SOFTWARE AND OTHER MAINTENANCE DOCUMENTATION

LICENSING OF MAINTENANCE SOFTWARE

Maintenance Software License

All maintenance software that is proprietary to Control Data and available for license, must be licensed when used by non-Control Data personnel by means of a Schedule H Software License agreement. Under this agreement, the maintenance software is licensed on an "AS IS" basis, without warranty. The license does not provide for continued support or subsequent right to any corrections, enhancements, documentation changes or future releases. In those instances where two (2) or more mainframes are installed at the same location, a license is required for each mainframe on which the licensee desires to use the software, regardless of whether the mainframes are electrically connected or are operating in a "standalone" mode.

Maintenance Software

Each maintenance software package is tailored to fit the individual system on which it is licensed. Pricing of each package is quoted separately and on a QSS basis, with the license charge consisting of an "Initial Fee" only. The license charge for each tailored package gives the licensee the right to install and use the maintenance software delivered by Control Data on the mainframe and at the site listed in the Software License. An internal policy exists for pricing to assure consistency. Requests for quotes or additional information should be directed to:

Control Data Corporation
Engineering Services - HQW04G
P.O. Box 0
Minneapolis, Minnesota 55440

Attention: Manager
Pricing & Proposal Support Department

INACTIVE HARDWARE PRODUCTS

No new Control Data maintenance service agreements may be offered on equipment in the inactive category. As long as it is economically feasible, contractual maintenance service will continue to be offered on these products provided they remain under continuous Control Data maintenance responsibility at the original installation site.

Those items for which standard contractual maintenance service is no longer available have been designated by double asterisks in the monthly maintenance charge column in the Pricing Manual. Limited maintenance service may be available on these products (reference the Maintenance of Discontinued Products Policy found elsewhere in this section).

Upon request and subject to the availability of trained personnel, spare parts, etc., Control Data will provide maintenance service on inactive hardware products on a time and materials basis in accordance with our published terms, conditions and charges then in effect for such services to our commercial customers.

MAINTENANCE OF EQUIPMENT PURCHASED IN "AS IS" CONDITION

At times, mature Control Data products are sold and shipped to Customers in an "as is" condition. This equipment must be specifically designated on the contract and customer shipping notice (CSN) as being in an "as is" condition and will bear an orange QA tag. The terms for the sale of such equipment state that the purchase is made F.O.B. - shipping warehouse, and does not include shipping, installation, or maintenance charges.

When this equipment arrives at the Customer location, CDC may be requested to install and maintain it. It is the policy of Engineering Services to provide this type of support on a CESR basis using the then current standard hourly per call rates. Any required maintenance, refurbishment, and/or FCO installations will be provided on a time and material basis. The Customer will not be charged for the inspection of the equipment providing he requests Engineering Services to perform the necessary work. Otherwise, the inspection will be charged according to then current standard hourly per-call rates.

If the Customer requests that the equipment be maintained on a monthly contractual basis with a fixed monthly charge, the following conditions must exist:

1. The equipment must be restored, if necessary, to a good operating condition.
2. Necessary spare parts provisioning must take place.
3. The equipment must be used in a compatible configuration and environment.

Acceptance of the above conditions as being performed shall be at the discretion of the local Customer Engineering Branch Manager. The Basic Monthly Maintenance Charge (BMMC) shall be established by the Pricing & Proposal Support Department of Engineering Services.

REMOTE SITE SPARE PARTS CHARGE

Control Data's published Basic Monthly Maintenance (BMM) prices include a normal complement of spare parts for system installations within the forty-eight (48) contiguous states and Hawaii. When a system is to be installed outside this area and is to be maintained by the U.S. maintenance organization, an additional complement of spare parts will be stocked on-site. This additional remote site complement shall consist of increased quantities of items stocked domestically as well as items held in the Central or Regional warehouses.

Therefore, and in addition to other maintenance charges, a separate service charge for this increased inventory of parts shall apply to each remote site. The monthly charge shall be computed on the basis of 1/48 of the difference between a remote and normal complement of spares as determined by the standard provisionary system.

CUSTOMER ENGINEERING FULL SERVICE CENTERS

The following is an alphabetical listing of Control Data's Customer Engineering Full Service Centers. Extended maintenance service is available for non-system (Schedule J) products only if they are located within a fifty (50) mile radius of the full service centers identified. The following list is subject to change without notice.

ALABAMA

200 West Court Square
Huntsville, AL 35801
Phone: 205/539-9471

CALIFORNIA

8616 La Tijera Boulevard
Los Angeles, CA 90045
Phone: 213/642-2390

2150 Valdez St., Suite 301
Oakland, CA 94612
Phone: 415/834-7116

555 University Avenue
Sacramento, CA 95825
Phone: 916/929-4433

1660 North Hotel Circle
San Diego, CA 92108
Phone: 714/291-7574

425 California Street
San Francisco, CA 94104
Phone: 415/781-4432

15610 Resin Place
Santa Fe Springs, CA 90670
Phone: 213/921-7771

215 Moffett Park Drive
Sunnyvale, CA 94806
Phone: 408/734-6800

COLORADO

2995 Baseline Road
Boulder, CO 80303
Phone: 303/442-6205

7895 East Prentice Avenue
Englewood (Denver) CO 80110
Phone: 303/771-5770

CONNECTICUT

124 Hebron Avenue
Glastonburg, CT 06040
Phone: 203/633-6781

FLORIDA

2550 Douglas Road
Coral Gables (Miami) FL 33134
Phone: 305/444-0251

5427 W. Crenshaw Street
Tampa, FL 33614
Phone: 813/885-2000

GEORGIA

4470 Chamblee - Dunwoody Road
Atlanta, GA 30341
Phone: 404/455-6868

HAWAII

2828 Paa Street
Honolulu, Hawaii 96819
Phone: 808/833-2555

ILLINOIS

2021 Spring Road, Suite 400
Oak Brook (Chicago) IL 60521
Phone: 312/325-3660

INDIANA

6100 North Keystone Avenue
Suite 442
Indianapolis, IN 46220
Phone: 317/251-1401

KANSAS

5700 Broadmoor
Foxridge Towers, Suite 820
Mission (Kansas City) KS 66202
Phone: 913/831-3600

MARYLAND

6003 Executive Boulevard
Rockville (WA D.C.) MD 20852
Phone: 301/468-8000

300 East Joppa Road
Towson (Baltimore) MD 21204
Phone: 301/821-8100

MASSACHUSETTS

60 Hickory Drive
Waltham (Boston) MA 02154
Phone: 617/890-4600

MICHIGAN

23815 Northwestern Highway
Southfield (Detroit) MI 48075
Phone: 313/353-8100

MINNESOTA

4550 West 77th Street
Edina, MN 55435
Phone: 612/884-0143

MISSOURI

343 No. Lindbergh Blvd.
St. Louis, MO 63141
Phone: 314/993-2990

NEBRASKA

2404 Indian Hills Drive
Omaha, NE 68114
Phone: 402/393-1585

NEW JERSEY

700 Rahway Avenue
Union (Newark) NJ 07083
Phone: 201/687-5600

NEW MEXICO

2 Park Central Tower, Suite 900
300 San Mateo Boulevard N.E.
Albuquerque, NM 87110
Phone: 505/265-8741

2101 Trinity Dr., Suite T
Los Alamos, NM 85744
Phone: 505/662-9090

NEW YORK

1202 Troy-Schenectady Avenue
Latham (Albany) NY 12110
Phone: 518/785-3317

401 Broad Hollow Road, Rt. 110
Melville, Long Island, NY 11747
Phone: 516/420/4460

One State Street Plaza
New York, NY 10004
Phone: 212/668-6000

160 Allens Creek Road
Rochester, NY 14618
Phone: 716/271-5970

OHIO

Kenwood Prof. Building
9403 Kenwood Road
Building C, Room 202
Blue Ash (Cincinnati) OH 45242
Phone: 513/761-1150

5755 Granger Road
640 Independence Towers Building
Cleveland, OH 44131
Phone: 216/398-9000

1360 E. Fifth Avenue
Columbus, OH 43219
Phone: 614/224-2324

3131 South Dixie Drive
1000 Cox Plaza, Suite 306
Dayton, OH 45439
Phone: 513/294-1751

OKLAHOMA

3920 North Lincoln
Oklahoma City, OK 73105
Phone: 405/528-7441

4606 East 67th St., Suite 412
Tulsa, OK 74136
Phone: 918/492-3990

OREGON

1675 S.W. Marlow Avenue
Portland, OR 97225
Phone: 503/643-1561

PENNSYLVANIA

65 E. Elizabeth Avenue
Suite 508
Bethlehem, PA 18018
Phone: 215/691-5200

3400 B. Trindle Road
Camp Hill, PA 17011
Phone: 717/737-3574

5 Penn Center Plaza
Philadelphia, PA 19103
Phone: 215/854-1000

1910 Cochran Road
Pittsburgh, PA 15220
Phone: 412/344-6300

TENNESSEE

5050 Poplar Avenue
Memphis, TN 38117
Phone: 901/682-1686

1101 Kermit Drive, Suite 106
Nashville, TN 37217
Phone: 615/361-3663

TEXAS

1005 West 38th
Austin, TX 78705
Phone: 512/454-7701

8585 N. Stemmons Freeway
Room 1101
Dallas, TX 75247
Phone: 214/688-5870

2000 West Loop South
11th Floor
Houston, TX 77027
Phone: 713/965-5532

4538 Centerview Drive
San Antonio, TX 78228
Phone: 512/736-2651

VIRGINIA

Tower Box 63
2101 Executive Drive
Hampton (Norfolk) VI 23666
Phone: 804/838-4000

1004 N. Thompson Street
Richmond, VI 23230
Phone: 804/359-9401

3717 Columbia Pike
Arlington, VI 22204
Phone: 703/979-3445

WASHINGTON

15 Grady Way
Renton (Seattle) WA 98055
Phone: 206/235-3700

WISCONSIN

333 Bishops Way
Suite 156
Brookfield (Milwaukee) WI 53005
Phone: 414/784-3330

FACILITY PLANNING & CONSTRUCTION SERVICES POLICY

It is Control Data policy to offer consulting services to both CDC and non-CDC computer users in the U.S. and International market through the Facility Planning and Construction operation (FP&C). These services cover planning, consulting, design, and construction contracts for computer facilities.

Standard Control Data contracts for these services are available on a time and materials basis. The services may also be offered on a fixed price contractor cost plus fee contract basis with Home Office FP&C management advice and approval.

When these services are offered on a time and materials basis in the 48 contiguous United States, the following hourly labor rates apply. Rates for other areas of the world may be obtained from FP&C and are subject to the availability of personnel for work in those areas.

I.	Program Manager - FP&C Senior Consultant - FP&C	$55 per hour
II.	Project Manager - FP&C Senior Design Engineer - FP&C Consultant - FP&C Architect - FP&C	$50 per hour
III.	Project Engineer - FP&C Site Planning Engineer - FP&C Design Engineer - FP&C	$42 per hour
IV.	Computer Site Technician - FP&C Installation Technician - FP&C Design Technician - FP&C	$38 per hour

In addition to the labor charges as outlined above, the following costs, plus a percentage fee, are chargeable for administration of services provided under a T&M contract. Contact the Regional or Home Office FP&C management for proposal assistance.

1. Travel and per diem
2. Subcontracting services
3. Materials, supplies, equipment and transportation
4. Testing, blueprints, surveys
5. Insurance, bonds, permits, certificates
6. Any other costs not specifically described above which are incurred in completion of the work.

GENERAL INFORMATION

Standard Form Agreement Schedules A (AA4069) and F (AA4078) may be utilized to cover engineering and/or construction services. Other contractual arrangements are available for use on a case-by-case basis. (i.e., Fixed Price contracts on form AA6454, etc.) Contact the appropriate Regional contracts or FP&C offices for assistance.

CDC offers Facility Planning and Construction Services to:

1. Coordinate and schedule the site preparation work with equipment delivery and installation of computer systems.
2. Design and assist during construction of customer's computer environment.

Services are available for the following types of work:

1. Preliminary investigation and studies; cost estimates and reports.
2. Consulting required to determine the feasibility of proposed projects.
3. Consulting in such areas as site security, fire prevention systems, power reliability and enhancement, interior design, and energy management.
4. Design and preparation of construction contract plans and specifications; final cost estimates, and supervision during construction.
5. Assistance in obtaining construction bids and advice regarding award of contract, or total administration of construction.
6. Assistance during construction with interpretation of plans and specifications.
7. Checking shop drawings.
8. Assist in review of construction contractor billings and project completion.

CONTROL DATA

PROFESSIONAL SERVICE PRICING POLICY

SCOPE

This policy is to be implemented in domestic operations only.

POLICY

It is the policy of Control Data to realize appropriate revenue from customer assistance, including consulting services for Professional Services on educational and general PLATO applications, rendered through the Professional Service Division. This assistance is categorized as (1) Direct professional analyst services (Section I and II and (2) Special non-time and material contracts (Section III and IV). Where assistance to the customer results in a marketable Special Software or Courseware Product, it is the policy of Control Data to obtain an irrevocable, nonexclusive, unrestricted, worldwide fully paid license with sublicense rights. Additionally, it is the policy of Control Data to sublicense these products through the use of a Schedule H License or a Courseware License Agreement.

PROCEDURE

I. DIRECT PROFESSIONAL AND EDUCATIONAL ANALYST SERVICES FOR COMMERCIAL CUSTOMERS (Time and Material)

A. Definition

This will include services involved in developing software or courseware, or software or courseware modifications as well as other services such as consulting; systems analysis; and design, installation and maintenance of Software or Courseware packages, etc.

B. Contracts

The following standard T&M contract forms are applicable:

Schedule A - Agreement for Control Data Equipment, Products and Related Services (Form AA4069)

Schedule G - Professional and Support Services (Form AA4076)

Service Order - (Form AA4302)

C. Analyst Rate Schedule

Quantity of Support - $ per man-hour

Job Level	Service Classification	Vol. I	Vol. II	Vol. III	Vol. IV
1	Ex. Consultant	$112.00	$108.00	$106.00	$95.00
2	Sr. Consultant	85.00	82.00	81.00	73.00
3	Consultant	74.00	71.00	69.00	63.00
4	Analyst IV	66.00	64.00	63.00	56.00
5	Analyst III	57.00	55.00	54.00	48.00
6	Analyst II	46.00	44.00	43.00	39.00
7	Analyst I	37.00	36.00	35.00	31.00
8	Programmer/Editor	32.00	31.00	30.00	28.00
9	Application Aide/Coder	28.00	27.00	26.00	24.00
10.	Technician	24.00	23.00	20.00	19.00
11.	Clerk Typist	22.00	21.00	20.00	19.00

DEFINITIONS

Volume Level I (0-149 Hours)
The service of each individual required for a period from zero through 149 hours of work. Billing will be for hours worked calculated to the nearest hour with a minimum charge of three hours per call.

Volume Level II (150-499 Hours)
The service of each individual required for a period from 150 through 499 consecutive hours of work to be performed in eight (8) hour shifts (plus a meal period not to exceed 1 hour per day) within the hours of 7:00 AM to 6:00 PM during normal work weeks, excluding vacation time, sick leave and holidays. A normal work week is defined as five consecutive calendar days of work followed by two days off. The customer will be billed for hours worked calculated to the nearest hour with a minimum charge for a least 150 hours for the service ordered.

Volume Level III (500-999 Hours)
The services of each individual required for a period from 500 through 999 consecutive hours of work to be performed in eight (8) hour shifts (plus a meal period not to exceed 1 hour per day) within the hours of 7:00 AM to 6:00 PM during normal work weeks, excluding vacation time, sick leave and holidays. A normal work week is defined as five consecutive calendar days of work followed by two days off. The customer will be billed for hours worked calculated to the nearest hour with a minimum charge for at least 500 hours for the service ordered.

Volume Level IV (1000-2000 Hours)
The service of each individual required for a period from 1000 through 2000 consecutive hours of work to be performed in eight (8) hour shifts (plus a meal period not to exceed 1 hour per day) within the hours of 7:00 AM to 6:00 PM during normal work weeks, excluding vacation time, sick leave and holidays. A normal work week is defined as five consecutive calendar days of work followed by two days off. The customer will be billed for hours worked calculated to the nearest hour with a minimum charge for at least 1000 hours for the service ordered.

D. Terms and Conditions

The charge for services shall encompass applied labor at the specified hourly rate plus charges associated with shift differentials, overtime premiums, travel time, and reimbursement of travel expense, per diem allowance and cost of temporary lodging.

1. The Service Order shall be executed setting forth the job specifications in sufficient detail to adequately identify the scope and probable duration of the project.

2. The job classification of personnel assigned to the project shall be consistent with the needs of the customer and shall conform to the duties and responsibilities normally associated with that job classification.

3. Non-Standard Work Hours (Shift Differential) Level 5 through 11

In the event the customer requires any portion of the scheduled eight (8) consecutive hours to be within the hours set forth below (during the normal work week), the application rates shall be increased by the percentages shown:

Hours	Percentage Increase
6:00 PM to Midnight	7%
Midnight to 7:00 AM	10%

4. Overtime

On mutual agreement overtime work (work beyond the eight (8) consecutive hours and work performed beyond the normal work week and on holidays) may be performed. Such work will be billed in accordance with the following:

a. Job Level 10 and 11 Personnel: The standard rate plus 25% of the hourly rate for work in excess of eight hours per work shift and for the excess over five consecutive work days. The seventh consecutive day of work and holidays are charged at the standard rate plus 50% of the hourly rate.

b. All Other Categories: The standard Volume I rates apply for all overtime worked.

5. Charges for Travel Expenses

Airline tickets, per diem, mileage and hotel expenses, if any, will be charged in accordance with then current established Control Data policies.

6. Local travel time.

No charge will be made for the first hour of local travel time to and from the customer's location, but any additional travel time will be charged to customer as part of the services rendered.

E. When a customer requests assistance in diagnosing or verifying an error, malfunction or defect in CDC Software Products, it is Control Data's objective to commence such assistance within three normal working days. Responsibility of payment for this service will be borne by either CDC or the customer as defined in article 4 (changes) or article 7 of Contract Schedule H.

F. Software Products Modification

Where the services requested involve modifications to a Licensed Software Product, the customer must also be licensed to use that Software Product. The customer gains ownership of the modification under Schedule G, but since Control Data retains ownership of the portion of the Software Product remaining, the resultant program may be used by the customer only under terms of the License.

G. Services Classification Job Descriptions

Job Level	Job Description
1	Executive Consultant

Applies and/or develops highly advanced technology, scientific principles, or advanced theories or concepts within the individuals field of specialization. Plans and develops programs and objectives requiring a long-range perspective. Has demonstrated professional contributions by professional publications, patents and evidence of general creativity within the field.

2 Sr. Consultant

Develops new theories and principles of the individual's interaction or for solutions to complex business and scientific phenomena within the field. Develops information which extends the existing boundaries of knowledge in the field.

3 Consultant

Provides consulting services in major application areas or industry disciplines from defining system or abstract problems through solution implementation. Analyzes application requirements and objectives in relation to available computational capability. Performs evaluations of data processing operations and systems and develops improvement strategy.

Project Manager

Identifies the goals of a development project, and develops a management plan to achieve those goals. Coordinates resources to execute the plans for the accomplishment of goals within cost and schedule constraints.

Education Consultant

Provides consulting services on education or training problems, from defining the requirement through solution and implementation. Provides analysis and a solution that extend the boundaries of knowledge within a field. Has demonstrated professional contributions by publications and evidence of general creativity within a field.

4 Sr. Systems Design Analyst/Analyst IV

Designs and develops computer operating systems, compilers, and other language translators. Modifies existing systems to provide additional capability requirements; this may include integration of several existing subsystems.

Education Design Specialist

Designs and implements innovative "state-of-the-art" solutions to education and training problems. Analyzes education and training requirements to design creative, effective and efficient solutions. Performs evaluations of training operations and develops improvement strategies.

Education Design Specialist

Performs evaluations of training operations and develops improvement strategies.

5 Analyst III Systems Management Engineer/Project Manager

Formulates statements of management, scientific and business problems; devises procedures for solution of problems by use of electronic data processing systems.

Education Development Specialist III

a. Text

Searches, interprets and analyzes subject matter for the development of text. Provides expertise on both technical and educational levels. Assists in the generation of a design specification by applying sound educational technology.

b. Computer Based Education (CBE)

Analyzes CBE requirements for the design of CBE courseware. Design content presentation methods, flowcharts, lesson flows and programs courseware on a CBE system.

c. Audiovisual

Working from learning objectives, designs a conceptual approach for scripts. Writes the script according to that approach and takes responsibility of the final audiovisual product.

6 Analyst II Systems Analyst/Specialist

a. System Analyst

Devises and prepares layouts for computer systems requirements and develops procedures to process data. Analyzes problems in terms of equipment capability to determine techniques and formulates computer system requirements most feasible for processing data. Prepares problem definition, together with recommendations for equipment needed for its solution, from which the programmer prepares flow chart and computer instructions.

b. Hardware Specialist

Reviews computer software systems and data requirements as well as communications and response needs and devises computer hardware configurations to support them. Analyzes computer programs in terms of computer and communications hardware and develops techniques to improve systems throughout and optimizes hardware utilization.

c. Software Specialist/System Engineer

Reviews computer software systems and data requirements as well as communication and response needs and determines operating systems and languages needed to support them. Analyzes computer programs in terms of hardware and operating system compatibility and utilization. Structures software programs to operate within the constraints of the operating system and the hardware.

d. Information Specialist

Specializes in the application of computer technology to bibliographic and other textual information. Analyzes and develops indexing and abstracting techniques.

e. Automation Specialist

Reviews laboratory experimentation equipment and needs, and determines computer hardware and software support; including digital converters and small real-time computers.

f. Communications Specialist

Technically specialized in the area of data communications and transmission and analyzes computer software systems, data requirements, response times and computer hardware configurations relative to the communications and data transmission requirements.

Education Development Specialist II

a. Text

Develops text learning materials according to a design document; searches, interprets and analyzes subject matter.

b. Computer Based Education

Analyzes CBE requirements based on design specifications. Develops content presentation methods, flowcharts, lesson flows and programs courseware on a CBE system.

c. Audiovisual

Working from learning objectives, designs a conceptual approach for scripts. Writes script according to that approach.

7 Analyst I Senior Programmer

Develops and prepares plans for solution of business, scientific and technical problems. Designs detailed programs, flow charts and diagrams indicating mathematical computations and sequence of machine operations necessary to input and process data and print results. Verifies accurancy and completeness of programs by preparing sample data, and testing them by means of systems acceptance test runs made by operating personnel. Corrects programs errors by revising instructions or altering sequence of operations. Translates detailed flow charts into coded machine instructions, and works in programs within the system.

Education Development Specialist I

a. Text

Develops text activities based on well defined approaches with provided subject matter.

b. Computer Based Education

Develops flowcharts and programs lessons on CBE system based on predefined design and content.

c. Audiovisual

Writes scripts according to predefined conceptual approach.

8 Programmer/Editor

Tests, checks, debugs, revises and refines the computer program as required, to produce the product required by the written specifications. Additionally, documents all procedures used throughout the program to allow the program to be run as a part of the system decumentation to enable a subsequent programmer to make changes as may be required.

Editor

Edits and coordinates the preparation and production of manuals, reports and publications. Performs literary edit to assure grammatical accuracy, consistent organization and style, continuity, and adherence to general editing practices.

9 Application Aide/Coder

Translates detail program flow charts into program coded instruction or translates and converts management and scientific data into suitable form to be processed by the computer system. Develops and revises drawings, documenation and performs other tasks necessary for proper computer system preparation and operation.

10 Technician

Prepares deck setup for job processing on computer system and operates electronic conversion and processing equipment including peripheral devices. Performs operational diagnostics and preventive maintenance checks of system hardware and software. Maintains program library, operation scheduling, and utilization records of equipment (system) usage. Performs other duties, at this job level, as assigned.

11 Clerical

Plans format and page layout, determines type styles, does copy marking and can produce justified copy using variable spaced typewriter for manuals, and other printed documents. Performs layout and special font types for direct OCR input. Performs other duties, at this job level, as assigned.

II. DIRECT PROFESSIONAL ANALYST SERVICES FOR GOVERNMENT END USE CUSTOMERS AUTHORIZED UNDER GENERAL SERVICES ADMINISTRATION (GSA) CONTRACT. (Time and material)

A. For Definitions, Rate Schedule, Terms and Conditions and Service Classifications, Job Descriptions see applicable sections of the current GSA Contract.

III. FIXED PRICE CONTRACTS FOR COMMERCIAL CUSTOMERS

A. Definition

This will include all service contracts accepted by PSD where a standard time and material contract is not appropriate. The key element for this type contract is a well defined "statement of work" and a carefully prepared cost estimate.

B. Contracts

See Regional Contracts Manager for applicable contract Schedules.

IV. NEGOTIATED GOVERNMENT PROPOSALS/CONTRACTS

A. Definition

That business proposed to or contracted for with any federal governmental agency or prime contractor of such agencies (except for GSA delivery orders under the contract or contracts with prime contractors using commercial contract forms).

B. Contracts

Contact Regional Contract Manager for assistance.

C. Management Approval

The following approvals and signatures are required in addition to satisfaction of the Delegation requirements, whenever the following documents are received or submitted under this section. These rules apply regardless of the dollar amount of business.

Document	Approval Required	Signature Required on Document
Proposal	Vice President - U.S. Operations, and G.M. financial Plans and Controls and Regional Contract Manager	Regional General Manager
DD633 Form or similar cost build-up document	Division Controller and Contract Administration	Division Controller or Division Contract Manager
Certificate of current cost or pricing data	Same as above	Same as above
Certification of Cost Accounting Standards	Same as above	Same as above
Contract/Amendments	District/Regional Manager, and Contract Manager	Regional/Division Contract Manager

SUBSYSTEMS PLUG COMP./DATA ENTRY
CURRENT PRODUCTS

PRODUCT MOD		DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OP INSTLMNT 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
4801		OMEGA/480-I GENERAL PURPOSE COMPUTING SYSTEM WITH SPECIFIED MOS MEMORY WHICH IS COMPATIBLE TO IBM 370. PROVIDES HIGH SPEED COMPUTING CAPABILITIES FOR BOTH BUSINESS AND SCIENTIFIC APPLICATIONS. INCLUDES ADVANCED CONTROL PROGRAM SUPPORT, AUDIBLE ALARM, BYTE-ORIENTED OPERAND, ONE BYTE-MULTIPLEXER CHANNEL (256 BYTE-MULTIPLEXER SUB-CHANNELS), TWO BLOCK-MULTIPLEXER CHANNELS (448 BLOCK-MULTIPLEXER SUB-CHANNELS), CHANNEL COMMAND RETRY, CHANNEL INDIRECT ADDRESSING, CLOCK COMPARATOR AND CPU TIMER, CONSOLE FILE, CONTROL REGISTERS, DOUBLE BUFFER, DYNAMIC ADDRESS TRANSLATION, ERROR CHECKING AND CORRECTION (MAIN STORAGE), EXTENDED CONTROL MODE, EXTENDED PRECISION FLOATING POINT, EMERGENCY POWER OFF CONTROL, INTERVAL TIMER, MACHINE CHECK HANDLING, MICROPROGRAM INSTRUCTION RETRY, OS/MOS COMPATIBILITY, PROGRAM EVENT RECORDING, STORAGE PROTECTION (STORE AND FETCH), SYSTEM 370 UNIVERSAL INSTRUCTION SET, TIME-OF-DAY CLOCK, VM ASSIST. OPTIONAL FEATURE INCLUDE THIRD AND FOURTH BLOCK MULTIPLEXER CHANNELS. REQUIRES A COLOR OPTION (69251-5X). AVA OPTIONS 69251 51/69251 52/69251 53/ AVA OPTIONS 69241 54/69251 55/69252 51/ AVA OPTIONS 69252 52/69254 51/69257 51/							
4801	2	OMEGA/480-I 512K INCLUDES 512K BYTES OF MOS MEMORY AVA OPTIONS 69255 526/69255 526/69255 528/	188,000	F	N/A	6,267	SEE CCC	1,320	B/2
4801	4	OMEGA/480-I 1024K INCLUDES 1024K BYTES OF MOS MEMORY AVA OPTIONS 69255 546/69255 548/69257 51/ AVA OPTIONS 69257 53/	203,000	F	N/A	6,767	SEE CCC	1,700	B/2
4801	6	OMEGA/480-I 1536K INCLUDES 1536K BYTES OF MOS MEMORY AVA OPTIONS 69255 548/69257 51/69257 53/	218,000	F	N/A	7,267	SEE CCC	1,815	B/2
4801	8	OMEGA/480-I 2048K INCLUDES 2048K BYTES OF MOS MEMORY AVA OPTIONS 69257 51/69257 53/	233,000	F	N/A	7,767	SEE CCC	1,925	B/2
4802		OMEGA/480-II GENERAL PURPOSE COMPUTER WITH SPECIFIED MOS MEMORY WHICH IS COMPATIBLE TO IBM 370. INCLUDES - ADVANCED CONTROL PROGRAM SUPPORT, AUDIBLE ALARM, BYTE-ORIENTED OPERAND, ONE BYTE-MULTIPLEXER CHANNEL (256 BYTE-MULTIPLEXER SUB-CHANNELS, 4 BLOCK-MULTIPLEXER CHANNELS (448 BLOCK-MULTIPLEXER SUB-CHANNELS), CHANNEL COMMAND RETRY, CHANNEL INDIRECT ADDRESSING, CLOCK COMPARATOR AND CPU TIMER, CONSOLE DISPLAY, CONSOLE FILE, CONTROL REGISTERS, DOUBLE WORD BUFFER, DYNAMIC ADDRESS TRANSLATION, ERROR CHECKING AND CORRECTION (MAIN STORAGE), EXTENDED CONTROL MODE, EXTENDED PRECISION FLOATING POINT, EMERGENCY POWER OFF CONTROL, INTERVAL TIMER, MACHINE CHECK HANDLING, MICROPROGRAM INSTRUCTION RETRY, OS/DOS COMPATIBILITY, PROGRAM EVENT RECORDING, STORAGE PROTECTION (STORE AND FETCH), SYSTEM/370 UNIVERSAL INSTRUCTION SET, TIME-OF-DAY CLOCK. REQUIRES A COLOR OPTION (69251-5X). AVA OPTIONS 69251 91/69252 81/69252 82/ AVA OPTIONS 69257 81/							
4802	2	OMEGA/480-II 1024K INCLUDES 1024K BYTES OF MOS MEMORY AVA OPTIONS 69255 824/69255 826/69255 828/	279,000	F	N/A	9,300	SEE CCC	1,915	B/2
4802	4	OMEGA/480-II 2048K INCLUDES 2048K BYTES OF MOS MEMORY AVA OPTIONS 69255 846/69255 848/	309,000	F	N/A	10,300	SEE CCC	2,165	B/2
4802	6	OMEGA/480-II 3072K INCLUDES 3072K BYTES OF MOS MEMORY AVA OPTIONS 69255 869/	339,000	F	N/A	11,300	SEE CCC	2,305	B/2
4802	8	OMEGA/480-II 4096K INCLUDES 4096K BYTES OF MOS MEMORY	369,000	F	N/A	12,300	SEE CCC	2,490	B/2
4803	2	OMEGA/480-III - 2048K	375,000	F	N/A	N/A	SEE CCC	2,315	B/2
4803	4	OMEGA/480-III - 4096K	437,000	F	N/A	N/A	SEE CCC	2,630	B/2
4803	6	OMEGA/480-III - 5144K	500,000	F	N/A	N/A	SEE CCC	2,880	B/2
4803	8	OMEGA/480-III - 8192K	562,000	F	N/A	N/A	SEE CCC	3,150	B/2
10341		333KK DSU/CAU 50HZ POWER	N/C		N/C	N/C	SEE CCC	N/C	
14031	1	TRAIN PRINTER 1150 LPM, FOR USE WITH THE CDC 28211-10 AND 50 PRINTER CONTROLLERS. PRICE DOES NOT INCLUDE TYPE ARRAY (SEE 14161). RECEIVES FROM 28211 90/ SENDS TO 14161 / AVA OPTIONS 68409 43/68409 47/68409 48/	34,013	C	739	628	SEE CCC	363	D/2
14161		TYPE ARRAY, INTERCHANGEABLE MINIMUM ONE (1) REQUIRED PER PRINTER ORDERED. RIBBON COMPATIBILITY IS NYLON UNLESS OTHERWISE DESIGNATED. RECEIVES FROM 14031 1/28211 21/							

CHANGES EFFECTIVE 05/01/80

SUBSYSTEMS PLUG COMP./DATA ENTRY
CURRENT PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/12MO	CCC BASE 1 YEAR	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
14161	1	TYPE ARRAY, SPECIAL FONT	3,339	C	110	107	SEE CCC	58	D/2
		FIELD INSTALLATION CHARGE	75						
		SPECIFY TYPE FONT DESIRED. FEATURES 68409-44 68409-45 AND 68409-46 MAY BE REQUIRED - CALL PSSD SCHEDULING. LEAD TIME ON SPECIAL FONT IS 16 WEEKS ARO. AVA OPTIONS 68409 44/68409 45/68409 46/							
14161	11	48 CHARACTER SET COMPATIBLE TO IBM PCS/AN2 PREFERRED CHARACTER SET.	3,339	C	110	107	SEE CCC	58	D/2
14161	12	48 CHARACTER SET COMPATIBLE TO IBM PCS/HN2 PREFERRED CHARACTER SET	3,339	C	110	107	SEE CCC	58	D/2
14161	13	48 CHARACTER SET COMPATIBLE TO IBM AN2 CHARACTER SET.	3,339	C	110	107	SEE CCC	58	D/2
14161	14	63 CHARACTER SET COMPATIBLE TO IBM GN2 CHARACTER SET.	3,339	C	110	107	SEE CCC	58	D/2
14161	15	48 CHARACTER SET COMPATIBLE TO IBM HN2 CHARACTER SET	3,339	C	110	107	SEE CCC	58	D/2
14161	16	60 CHARACTER SET COMPATIBLE TO IBM PN2 CHARACTER SET.	3,339	C	110	107	SEE CCC	58	D/2
14161	17	53 CHARACTER SET COMPATIBLE TO IBM QN2 CHARACTER SET.	3,339	C	110	107	SEE CCC	58	D/2
14161	18	58 CHARACTER SET COMPATIBLE TO IBM QNC2 CHARACTER SET.	3,339	C	110	107	SEE CCC	58	D/2
14161	19	52 CHARACTER SET COMPATIBLE TO IBM RN2 CHARACTER SET.	3,339	C	110	107	SEE CCC	58	D/2
14161	20	85 CHARACTER SET COMPATIBLE TO IBM SN5 CHARACTER SET.	3,339	C	110	107	SEE CCC	58	D/2
14161	21	118 CHARACTER SET COMPATIBLE TO IBM TN5 CHARACTER SET.	3,339	C	110	107	SEE CCC	58	D/2
14161	22	42 CHARACTER SET COMPATIBLE TO YN2 CHARACTER SET.	3,339	C	110	107	SEE CCC	58	D/2
14161	23	48 CHARACTER SET COMPATIBLE TO IBM OBA CHARACTER SET. MYLAR RIBBON/OCR COMPATIBLE.	3,339	C	110	107	SEE CCC	58	D/2
14161	24	48 CHARACTER SET COMPATIBLE TO IBM OMA CHARACTER SET. MYLAR RIBBON/OCR COMPATIBLE.	3,339	C	110	107	SEE CCC	58	D/2
14161	25	48 CHARACTER SET COMPATIBLE TO IBM OAA CHARACTER SET. MYLAR RIBBON/USA-OCR-A-1 COMPATIBLE.	3,339	C	110	107	SEE CCC	58	D/2
14161	26	48 CHARACTER SET COMPATIBLE TO IBM OMA CHARACTER SET. CHARACTER STYLE IS ECMA-OCR-1 (1971).	3,339	C	110	107	SEE CCC	58	D/2
28211	21	PRINTER SYSTEM REPLACEMENT FOR IBM 2821-2. CONTROLLER INTEGRATED INSIDE PRINTER CABINET. PRICE DOES NOT INCLUDE TYPE ARRAY (SEE 141611. SENDS TO 14141 / AVA OPTIONS 68409 43/	32,661	C	987	840	SEE CCC	422	C/2
28211	50	PRINTER CONTROLLER CONTROLS TWO (2) 14031 PRINTERS. REPLACEMENT FOR IBM 2821-3 OR 2821-5. SENDS TO 14031 1/ AVA OPTIONS 68409 40/68409 41/68409 42/	22,565	C	771	654	SEE CCC	133	C/2
32111	1	LINE PRINTER SUBSYSTEM AN IBM 1403 COMPATIBLE PRINTER SUBSYSTEM WHICH OPERATES AT 2000 LPM WITH A 48 CHARACTER SET. IT INCLUDES THE FOLLOWING, ONE (1) CL705 PRINT CONSOLE, ONE (1) GJ106 POWER STACKER AND ONE (1) 32161-XX INTERCHANGEABLE TYPE ARRAY WITH AN FF322 CONTROLLER. AVA OPTIONS 32161 66/	67,000	C	1,880	1,710	SEE CCC	810	F/2
32161	X	32111 INTERCHANGEABLE TYPE ARR INTERCHANGEABLE TYPE ARRAY FOR THE 3211-1. A MINIMUM OF ONE IS REQUIRED PER PRINTER ORDERED AND IS INCLUDED IN THE PRINTER PRICE. ADDITIONAL ARRAYS MAY BE ORDERED AT THE PRICES LISTED. OSE ARRAYS ARE ALSO AVAILABLE. OPT APPLIES TO32111 1/							
32161	1	48 CHARACTER SET, AN COMPATIBLE TO IBM AN2 CHARACTER SET	3,500	C	145	125	SEE CCC	81	F/2
32161	2	48 CHARACTER SET, HN COMPATIBLE TO IBM HN2 CHARACTER SET	3,500	C	145	125	SEE CCC	81	F/2
32161	3	63 CHARACTER SET, GN COMPATIBLE TO IBM GN2 CHARACTER SET	3,500	C	145	125	SEE CCC	81	F/2
32161	4	60 CHARACTER SET, PN COMPATIBLE TO IBM PN2 CHARACTER SET	3,500	C	145	125	SEE CCC	81	F/2
32161	5	53 CHARACTER SET, QN COMPATIBLE TO IBM QN2 CHARACTER SET	3,500	C	145	125	SEE CCC	81	F/2

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
32161	6	52 CHARACTER SET, 9N COMPATIBLE TO IBM 9N2 CHARACTER SET	3,500	C	145	125 SEE CCC	81	F/2
32161	7	42 CHARACTER SET, YN COMPATIBLE TO IBM YN2 CHARACTER SET	3,500	C	145	125 SEE CCC	81	F/2
32161	8	48 CHARACTER SET, PCS/AN COMPATIBLE TO IBM PCS/AN2 CHARACTER SET	3,500	C	145	125 SEE CCC	81	F/2
32161	9	58 CHARACTER SET, PCS/MN COMPATIBLE TO IBM PCS/MN2 CHARACTER SET	3,500	C	145	125 SEE CCC	81	F/2
32161	10	58 CHARACTER SET, ONC COMPATIBLE TO IBM ONC2 CHARACTER SET	3,500	C	145	125 SEE CCC	81	F/2
32161	11	48 CHARACTER SET, ON8 (OCR-B) COMPATIBLE TO IBM ON8 CHARACTER SET	3,500	C	145	125 SEE CCC	81	F/2
32161	12	48 CHARACTER SET, ODA (OCR-A) COMPATIBLE TO IBM ODA CHARACTER SET	3,500	C	145	125 SEE CCC	81	F/2
32161	13	48 CHARACTER SET, ONA (OCR-A) COMPATIBLE TO IBM ONA CHARACTER SET	3,500	C	145	125 SEE CCC	81	F/2
32161	14	48 CHARACTER SET, OAA (OCR-A) COMPATIBLE TO IBM OAA CHARACTER SET	3,500	C	145	125 SEE CCC	81	F/2
32161	16	85 CHARACTER SET, SN COMPATIBLE TO IBM SN5 CHARACTER SET	3,500	C	145	125 SEE CCC	81	F/2
32161	17	118 CHARACTER SET, TN COMPATIBLE TO IBM TN5 CHARACTER SET	3,500	C	145	125 SEE CCC	81	F/2
33031	AXX	MEMORY SYSTEM ADD-ON MEMORY SYSTEM FOR ATTACHMENT TO IBM 3031 CPU. PRICE INCLUDES ONE (1) 69144-X CPU ATTACHMENT AND ONE (1) 69148-X INSTALL POSITION WHEN ORDERED CONCURRENTLY WITH THIS MEMORY. ORDER MUST SPECIFY PRODUCT/MODEL NUMBER FOR FEATURES. MEMORY IS FIELD CONVERTIBLE FOR ATTACHMENT TO OTHER PROCESSORS. SEE FEATURE 69145-X. REQUIRES 69144-X AND 69148-X						
33031	A02	1024K BYTE CDC MEMORY SYSTEM	48,800	C	2,805	2,385 SEE CCC	300	B/2
33031	A04	2048K BYTE CDC MEMORY SYSTEM	76,500	C	4,395	3,735 SEE CCC	350	B/2
33031	A06	3072K BYTE CDC MEMORY SYSTEM	104,200	C	5,985	5,085 SEE CCC	400	B/2
33031	A08	4096K BYTE CDC MEMORY SYSTEM	131,900	C	7,575	6,435 SEE CCC	450	B/2
33031	A10	5120K BYTE CDC MEMORY SYSTEM	159,600	C	9,165	7,785 SEE CCC	500	B/2
33031	A12	6144K BYTE CDC MEMORY SYSTEM	187,300	C	10,755	9,135 SEE CCC	550	B/2
33031	A14	7168K BYTE CDC MEMORY SYSTEM	215,000	C	12,345	10,485 SEE CCC	600	B/2
33031	A16	8192K BYTE CDC MEMORY SYSTEM	242,700	C	13,935	11,835 SEE CCC	650	B/2
33031	A18	9216K BYTE CDC MEMORY SYSTEM	283,400	C	16,150	13,735 SEE CCC	700	B/2
33031	A20	10240K BYTE CDC MEMORY SYSTEM	311,100	C	17,740	15,085 SEE CCC	750	B/2
33031	A22	11264K BYTE CDC MEMORY SYSTEM	338,800	C	19,330	16,435 SEE CCC	800	B/2
33031	A24	12288K BYTE CDC MEMORY SYSTEM	366,500	C	20,920	17,785 SEE CCC	850	B/2
33031	A26	13312K BYTE CDC MEMORY SYSTEM	394,200	C	22,510	19,135 SEE CCC	900	B/2
33031	A28	14336K BYTE CDC MEMORY SYSTEM	421,900	C	24,100	20,485 SEE CCC	950	B/2
33032	AXX	MEMORY SYSTEM ADD-ON MEMORY SYSTEM FOR ATTACHMENT TO IBM 3032 CPU. PRICE INCLUDES ONE (1) 69149-X CPU ATTACHMENT AND ONE (1) 69153-X INSTALL POSITION WHEN ORDERED CONCURRENTLY WITH THIS MEMORY. ORDER MUST SPECIFY PRODUCT/MODEL NUMBER FOR FEATURES. MEMORY IS FIELD CONVERTIBLE FOR ATTACHMENT TO OTHER PROCESSORS. SEE FEATURE 69150-X. REQUIRES 69149-X AND 69153-X						
33032	A02	1024K BYTE CDC MEMORY SYSTEM	48,800	C	2,805	2,385 SEE CCC	300	B/2
33032	A04	2048K BYTE CDC MEMORY SYSTEM	76,500	C	4,395	3,735 SEE CCC	350	B/2
33032	A06	3072K BYTE CDC MEMORY SYSTEM	104,200	C	5,985	5,085 SEE CCC	400	B/2
33032	A08	4096K BYTE CDC MEMORY SYSTEM	131,900	C	7,575	6,435 SEE CCC	450	B/2
33032	A10	5120K BYTE CDC MEMORY SYSTEM	159,600	C	9,165	7,785 SEE CCC	500	B/2
33032	A12	6144K BYTE CDC MEMORY SYSTEM	187,300	C	10,755	9,135 SEE CCC	550	B/2
33032	A16	8192K BYTE CDC MEMORY SYSTEM	242,700	C	13,935	11,835 SEE CCC	650	B/2
33032	A20	10240K BYTE CDC MEMORY SYSTEM	311,100	C	17,740	15,085 SEE CCC	750	B/2
33032	A24	12288K BYTE CDC MEMORY SYSTEM	366,500	C	20,920	17,785 SEE CCC	850	B/2
33032	A28	14336K BYTE CDC MEMORY SYSTEM	421,900	C	24,100	20,485 SEE CCC	950	B/2

CHANGES EFFECTIVE 05/01/80

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
33033	AXX	MEMORY SYSTEM ADD-ON MEMORY SYSTEM FOR ATTACHMENT TO IBM 3033 CPU. PRICE INCLUDES ONE (1) 69154-X CPU ATTACHMENT FEATURE WHEN ORDERED CONCURRENTLY WITH THIS MEMORY. ORDER MUST SPECIFY PRODUCT/ MODEL NUMBER FOR FEATURES. MEMORY IS FIELD CONVERTIBLE FOR ATTACHMENT TO OTHER PROCES- SORS. SEE 69155-X. REQUIRES 69154-X AND 69156-X.							
33033	A04	2048K BYTE CDC MEMORY SYSTEM	89,200	C	5,245	4,490	SEE CCC	350	8/2
33033	A08	4096K BYTE CDC MEMORY SYSTEM	144,600	C	8,425	7,150	SEE CCC	450	8/2
33033	A12	6144K BYTE CDC MEMORY SYSTEM	200,000	C	11,605	9,850	SEE CCC	550	8/2
33033	A16	8192K BYTE CDC MEMORY SYSTEM	255,400	C	14,785	12,550	SEE CCC	650	8/2
33033	A20	10240K BYTE CDC MEMORY SYSTEM	310,800	C	17,965	15,250	SEE CCC	750	8/2
33033	A24	12288K BYTE CDC MEMORY SYSTEM	366,200	C	21,145	17,950	SEE CCC	850	8/2
33138	AXX	MEMORY SYSTEM ADD-ON MEMORY SYSTEM FOR ATTACHMENT TO IBM 3138 CPU. PRICE INCLUDES ONE (1) 69125-X CPU ATTACHMENT FEATURE WHEN ORDERED CONCURRENTLY WITH THIS MEMORY. ORDER MUST SPECIFY PRODUCT/ MODEL NUMBER FOR FEATURES. MEMORY IS FIELD CONVERTIBLE FOR ATTACHMENT TO OTHER PROCES- SORS. SEE 69126-X. REQUIRES 69125-X.							
33138	A01	512K BYTE CDC MEMORY SYSTEM	34,950	C	2,010	1,710	SEE CCC	275	8/2
33138	A02	1024K BYTE CDC MEMORY SYSTEM	48,800	C	2,805	2,385	SEE CCC	300	8/2
33138	A03	1536K BYTE CDC MEMORY SYSTEM	62,650	C	3,600	3,060	SEE CCC	325	8/2
33138	A04	2048K BYTE CDC MEMORY SYSTEM	76,500	C	4,395	3,735	SEE CCC	350	8/2
33138	A05	2560K BYTE CDC MEMORY SYSTEM	90,350	C	5,190	4,410	SEE CCC	375	8/2
33138	A06	3072K BYTE CDC MEMORY SYSTEM	104,200	C	5,985	5,085	SEE CCC	400	8/2
33138	A07	3584K BYTE CDC MEMORY SYSTEM	118,500	C	6,780	5,760	SEE CCC	425	8/2

CHANGES EFFECTIVE 05/01/80

PRODUCT MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
33148 AXX	MEMORY SYSTEM ADD-ON MEMORY SYSTEM FOR ATTACHMENT TO IBM 3148 CPU. PRICE INCLUDES ONE (1) 69128-X CPU ATTACHMENT FEATURE WHEN ORDERED CONCURRENTLY WITH THIS MEMORY. ORDER MUST SPECIFY PRODUCT/ MODEL NUMBER FOR FEATURES. MEMORY IS FIELD CONVERTIBLE FOR ATTACHMENT TO OTHER PROCESSORS. SEE 69129-X. REQUIRES 69128-X.						
33148 A01	512K BYTE CDC MEMORY SYSTEM	34,950	C	2,010	1,710 SEE CCC	275	B/2
33148 A02	1024K BYTE CDC MEMORY SYSTEM	48,800	C	2,805	2,385 SEE CCC	300	B/2
33148 A03	1536K BYTE CDC MEMORY SYSTEM	62,650	C	3,600	3,060 SEE CCC	325	B/2
33148 A04	2048K BYTE CDC MEMORY SYSTEM	76,500	C	4,395	3,735 SEE CCC	350	B/2
33148 A05	2560K BYTE CDC MEMORY SYSTEM	90,350	C	5,190	4,410 SEE CCC	375	B/2
33148 A06	3072K BYTE CDC MEMORY SYSTEM	104,200	C	5,980	5,085 SEE CCC	400	B/2
33158 AXX	MEMORY SYSTEM ADD-ON MEMORY SYSTEM FOR ATTACHMENT TO IBM 3158 CPU. PRICE INCLUDES ONE (1) 69131-X CPU ATTACHMENT AND ONE 69138-X INSTALL POSITION WHEN ORDERED CONCURRENTLY WITH THIS MEMORY. ORDER MUST SPECIFY PRODUCT/MODEL NUMBER FOR FEATURES. MEMORY IS FIELD CONVERTIBLE FOR ATTACHMENT TO OTHER PROCESSORS. SEE 69132-X. REQUIRES 69131-X AND 69138-X.						
33158 A02	1024K BYTE CDC MEMORY SYSTEM	42,200	C	2,170	1,850 SEE CCC	300	B/2
33158 A03	1536K BYTE CDC MEMORY SYSTEM	56,050	C	2,965	2,525 SEE CCC	325	B/2
33158 A04	2048K BYTE CDC MEMORY SYSTEM	69,900	C	3,760	3,200 SEE CCC	350	B/2
33158 A05	2560K BYTE CDC MEMORY SYSTEM	83,750	C	4,555	3,875 SEE CCC	375	B/2
33158 A06	3072K BYTE CDC MEMORY SYSTEM	97,600	C	5,350	4,550 SEE CCC	400	B/2
33158 A07	3584K BYTE CDC MEMORY SYSTEM	111,450	C	6,145	5,225 SEE CCC	425	B/2
33158 A08	4096K BYTE CDC MEMORY SYSTEM	125,300	C	6,940	5,900 SEE CCC	450	B/2
33158 A09	4608K BYTE CDC MEMORY SYSTEM	147,150	C	7,995	6,800 SEE CCC	475	B/2
33158 A10	5120K BYTE CDC MEMORY SYSTEM	161,000	C	8,790	7,475 SEE CCC	500	B/2
33158 A11	5632K BYTE CDC MEMORY SYSTEM	174,850	C	9,585	8,150 SEE CCC	525	B/2
33158 A12	6144K BYTE CDC MEMORY SYSTEM	188,700	C	10,380	8,825 SEE CCC	550	B/2
33158 A13	6656K BYTE CDC MEMORY SYSTEM	202,550	C	11,175	9,500 SEE CCC	575	B/2
33158 A14	7168K BYTE CDC MEMORY SYSTEM	216,400	C	11,970	10,175 SEE CCC	600	B/2
33158 A15	7680K BYTE CDC MEMORY SYSTEM	230,250	C	12,765	10,850 SEE CCC	625	B/2
33158 9XX	MEMORY SYSTEM A PERFORMANCE INTERCHANGEABLE MEMORY SYSTEM FOR USE WITH IBM SYSTEM 370 MODEL 158 COMPUTER SYSTEMS. REQUIRED OPTIONS. OPTIONS 69039 AND 69040 MUST BE ORDERED WITH THE CDC 33158-9XX MEMORY UNIT TO FORM A COMPLETE SYSTEM. 69103-X ATTACHED PROCESSOR OPTION REQUIRED ON IBM 3158 AP SYSTEM. AVA OPTIONS 69041 69103XXX 69106 X						
33159 3XX	THE CDC 33159 MEMORY ATTACHES TO AN IBM SYSTEM 370/155 CPU THROUGH A PROCCESSOR SPEED-UP ATTACHMENT FEATURE. THIS FEATURE IS NOT COMPATIBLE WITH ANY MEMORY SYSTEM OTHER THAN CDC 33159. INCREMENTS ABOVE 2048K ARE NOT AVAILABLE ON IBM MODEL I VERSION 0 370/155 PROCESSOR. AVA OPTIONS 68557 1						
33165 6XX	A PERFORMANCE INTERCHANGEABLE MEMORY SYSTEM FOR USE WITH IBM SYSTEM 370/165 COMPUTERS. TOTAL SYSTEM SIZES OVER 4096K ARE AVAILABLE FOR IBM 3165 MODEL II (DAT) ONLY. MEMORY SYSTEMS COMPRISED OF ONLY 33165-6XX MEMORY INCLUDE THE MAIN STORAGE ACCELERATOR (SPEED-UP FEATURE). MIXED MEMORY SYSTEMS (IBM/CDC) ARE NOT CONFIGURED WITH THIS FEATURE. AVA OPTIONS 68502 1 68502 2 68503 1 AVA OPTIONS 68503 2 68504 1 68504 2 AVA OPTIONS 68504 5						
33168 AXX	MEMORY SYSTEM ADD-ON MEMORY SYSTEM FOR ATTACHMENT TO IBM 3168 CPU. PRICE INCLUDES ONE (1) 69139-X CPU ATTACHMENT FEATURE AND ONE (1) 69143-X INSTALL POSITION WHEN ORDERED CONCURRENTLY WITH THIS MEMORY. ORDER MUST SPECIFY PRODUCT/MODEL NUMBER FOR FEATURES. MEMORY IS FIELD CONVERTIBLE FOR ATTACHMENT TO OTHER PROCESSORS. SEE FEATURE 69140-X. REQUIRES 69139-X AND 69143-X						
33168 A02	1024K BYTE CDC MEMORY SYSTEM	48,800	C	2,805	2,385 SEE CCC	300	B/2
33168 A04	2048K BYTE CDC MEMORY SYSTEM	76,500	C	4,395	3,735 SEE CCC	350	B/2
33168 A06	3072K BYTE CDC MEMORY SYSTEM	104,200	C	5,985	5,085 SEE CCC	400	B/2
33168 A08	4096K BYTE CDC MEMORY SYSTEM	131,900	C	7,575	6,435 SEE CCC	450	B/2
33168 A10	5120K BYTE CDC MEMORY SYSTEM	159,600	C	9,165	7,785 SEE CCC	500	B/2
33168 A12	6144K BYTE CDC MEMORY SYSTEM	187,300	C	10,755	9,135 SEE CCC	550	B/2

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
33168	A14	7168K BYTE CDC MEMORY SYSTEM	215,000	C	12,345	10,485 SEE CCC	600	B/2
33168	A16	8192K BYTE CDC MEMORY SYSTEM	242,700	C	13,935	11,835 SEE CCC	650	B/2
33168	A18	9216K BYTE CDC MEMORY SYSTEM	283,400	C	16,150	13,735 SEE CCC	700	B/2
33168	A20	10240K BYTE CDC MEMORY SYSTEM	311,100	C	17,740	15,085 SEE CCC	750	B/2
33168	A22	11264K BYTE CDC MEMORY SYSTEM	338,800	C	19,330	16,435 SEE CCC	800	B/2
33168	A24	12288K BYTE CDC MEMORY SYSTEM	366,500	C	20,920	17,785 SEE CCC	850	B/2
33168	A26	13312K BYTE CDC MEMORY SYSTEM	394,230	C	22,510	19,135 SEE CCC	900	B/2
33168	A28	14336K BYTE CDC MEMORY SYSTEM	421,900	C	24,100	20,485 SEE CCC	950	B/2
33168	A30	15360K BYTE CDC MEMORY SYSTEM	449,630	C	25,690	21,835 SEE CCC	1,000	B/2
33168	2XX	A PERFORMANCE INTERCHANGEABLE MEMORY SYSTEM FOR USE WITH IBM SYSTEM 370/168 COMPUTER SYSTEMS. REQUIRED OPTIONS - 69042-X, 69043-X AND 69044-X. THE PRICE INCLUDES ONE (1) 69043-X (33168 ATTACHMENT KIT) WHEN ORDERED CONCURRENTLY WITH THIS MEMORY. ORDER MUST SPECIFY ATTACHMENT FEATURE PRODUCT AND MODEL NUMBER. NOTE - 33168 MP SYSTEMS ARE LIMITED TO 8MB PER PROCESSOR. AVAILABLE OPTION - 69108-1 OR 69109-2 MUST BE ORDERED IF THE MEMORY IS BEING ATTACHED TO AN IBM UNI-PROCESSOR OR ATTACHED-PROCESSOR AND TOTAL SYSTEM SIZE (CDC + IBM) IS GREATER THAN EIGHT MEGABYTES. AVA OPTIONS 69042 X/69043 X/69044 X/ AVA OPTIONS 69108 X/						
33302	1	DISK STORAGE UNIT CONTAINS A DRIVE FOR ONE DISK PACK. USE CDC 883-62 PACK. ORDER SEPARATELY. FILE ORGANIZATION IS ONE (1) LOGICAL VOLUME OF 200 MB. NOT INTERCHANGEABLE WITH IBM 3330-11. RECEIVES FROM 33332 1/33332 2/	21,000	C	715	510 SEE CCC	99	B/2
33302	11	DISK STORAGE UNIT INTERFACE AND PACK COMPATIBLE WITH IBM 3330 MOD. 11 CONTAINS DRIVE FOR ONE DISK PACK. FILE ORGANIZATION IS ONE (1) LOGICAL VOLUME OF 200 MB. USES CDC 882 PACK, ORDER SEPARATELY. DUAL ACCESS OPTION AVAILABLE. RECEIVES FROM 33332 1/33332 2/ AVA OPTIONS 68490 /69075 1/69093 1/	21,000	C	715	510 SEE CCC	99	B/2
33332		PROVIDES A DEVICE INTERFACE FOR 8 OR 16 33301, 33302-1 OR 33302-11 DSU'S. 33301 MAY BE INTERMIXED WITH EITHER 33302-1 OR 33302-11 COMPATIBLE WITH IBM ISC OR 3830-2, MODEL 145 AND ABOVE. RECEIVES FROM 38302 1/38302 2/38302 3/ RECEIVES FROM 38302 4/38302 5/ SENDS TO 33301 /33302 1/33302 11/						
33332	3	CONTROLLER ADAPTER UNIT PROVIDES ATTACHMENT TO ONE 38302-X SCU OR IBM ISC OR 3830-2 FOR INTERFACE TO 16 DSU'S. AVA OPTIONS 33332 901/33332 902/68427 /	15,100	C	485	420 SEE CCC	34	B/2
33332	4	CONTROLLER ADAPTER UNIT INCLUDES STRING SWITCH OPTION 68427 PROVIDING ATTACHMENT TO TWO 38302 SCU OR IBM ISC OR 3830-2 FOR INTERFACE TO 16 DSU'S. REQUIRES 68428 MEMORY EXPANSION IN 38302 SCU. AVA OPTIONS 33332 901/33332 902/	20,100		665	575 SEE CCC	46	B/2
33332	901	TWO CHANNEL DAF OPTION PERMITS USE OF CDC DUAL ACCESS FEATURE 68490 WHEN ATTACHED TO IBM ISC OR 1 OR 2 CHANNEL 3830-2. IBM CONTROL STORAGE EXTENSION 2150 IS REQUIRED IN ISC OR 3830-2. OPT APPLIES TO33332 1/33332 2/33332 3/ OPT APPLIES TO33332 4/	N/C		N/C	N/C SEE CCC	N/C	
33332	902	FOUR CHANNEL DAF OPTION PERMITS USE OF CDC DUAL ACCESS FEATURE 68490 WHEN ATTACHED TO A 4 CHANNEL 3830-2. IBM CONTROL STORAGE EXTENSION 2150 IS REQUIRED IN 3830-2. OPT APPLIES TO33332 1/33332 2/33332 3/ OPT APPLIES TO33332 4/	N/C		N/C	N/C SEE CCC	N/C	
33501	A2	DISK STORAGE DEVICE CONTAINS TWO DRIVES, TWO DATA MODULES AND A CONTROLLER FOR INTERFACE OF ANY COMBINATION OF UP TO THREE 33501-B2 OR 33501-B2F UNITS. FILE ORGANIZATION OF EACH DRIVE IS ONE VOLUME OF 317.5MB (IBM 3350). RECEIVES FROM IBM ISC/I3830 2/38302 6/ RECEIVES FROM 38302 7/38302 8/ SENDS TO 33501 B2/33501 B2F/ AVA OPTIONS 33801 902/69068 1/69068 2/ AVA OPTIONS 69068 9/69070 3/69071 2/ AVA OPTIONS 69072 1/69082 1/69086 1/ AVA OPTIONS 69087 1/69092 1/69092 2/	33,720	C	963	835 SEE CCC	170	B/2

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OF INSTLMNT 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
33501	B2	DISK STORAGE DEVICE CONTAINS TWO DRIVES AND TWO DATA MODULES. FILE ORGANIZATION OF EACH DRIVE IS ONE VOLUME OF 317.5MB (IBM 3350). RECEIVES FROM 33501 A2/33501 A2F/ AVA OPTIONS 33801 902/69068 3/69068 4/ AVA OPTIONS 69068 6/69071 2/69082 1/ AVA OPTIONS 69086 1/69087 1/	26,240	C	722	626	SEE CCC	128	B/2
33501	C2	DISK STORAGE DEVICE CONTAINS TWO DRIVES, TWO DATA MODULES AND A BACKUP CONTROLLER, WHICH CAN BE MANUALLY ACTIVATED IN THE EVENT OF A2/A2F FAILURE, TO CONTINUE ACCESS TO ALL DRIVES IN THE STRING. FILE ORGANIZATION OF EACH DRIVE IS ONE VOLUME OF 317.5MB (IBM 3350). MUST BE USED IN CONJUNCTION WITH 33501 A2/A2F WITH FEATURE 69072-1 INSTALLED. RECEIVES FROM IBM ISC/I3830 2/38302 6/ RECEIVES FROM 38302 7/38302 8/ SENDS TO 33501 B2/33501 A2F/ AVA OPTIONS 33801 902/69068 1/69068 2/ AVA OPTIONS 69068 5/69070 5/69071 2/ AVA OPTIONS 69082 1/69086 1/69087 1/ AVA OPTIONS 69092 1/69092 2/	33,720	C	963	835	SEE CCC	179	B/2
33501	A2F	DISK STORAGE DEVICE 33501 A2 WITH THE TWO DATA MODULES CONTAINING FIXED HEADS WHICH MAKE A PORTION OF THE STORAGE CAPACITY (1.72MB/SPINDLE) ACCESSIBLE WITHOUT SEEK TIME. RECEIVES FROM IBM ISC/I3830 2/38302 6/ RECEIVES FROM 38302 7/38302 8/ SENDS TO 33501 B2/33501 B2F/ AVA OPTIONS 33801 902/69068 1/69068 2/ AVA OPTIONS 69068 5/69071 3/69072 1/ AVA OPTIONS 69082 1/69086 1/69087 1/	43,920	C	1,284	1,113	SEE CCC	221	B/2
33501	B2F	DISK STORAGE DEVICE 33501 B2 WITH THE TWO DATA MODULES CONTAINING FIXED HEADS WHICH MAKE A PORTION OF THE STORAGE CAPACITY (1.72MB/SPINDLE) ACCESSIBLE WITHOUT SEEK TIME. RECEIVES FROM 33501 A2/33501 A2F/ AVA OPTIONS 33801 902/69068 3/69068 4/ AVA OPTIONS 69068 6/69071 2/69082 1/ AVA OPTIONS 69086 1/69087 1/	36,440	C	1,043	904	SEE CCC	179	B/2
33501	C2F	DISK STORAGE DEVICE 33501 C2 WITH THE TWO DATA MODULES CONTAINING FIXED HEADS WHICH MAKE A PORTION OF THE STORAGE CAPACITY (1.72MB/SPINDLE) ACCESSIBLE WITHOUT SEEK TIME. RECEIVES FROM IBM ISC/I3830 2/38302 6/ RECEIVES FROM 38302 7/38302 8/ SENDS TO 33501 B2/33501 B2F/ AVA OPTIONS 33801 902/69070 5/69082 1/ AVA OPTIONS 69086 1/69087 1/	43,920	C	1,284	1,113	SEE CCC	230	B/2
33502	A2	DISK STORAGE DEVICE CONTAINS TWO DRIVES, TWO DATA MODULES AND A CONTROLLER FOR INTERFACE OF ANY COMBINATION OF UP TO THREE ADDITIONAL 33801 OR 33502-B2 OR 33502-B2F UNITS. FILE ORGANIZATION OF EACH DRIVE IS TWO VOLUMES OF 317.5MB (IBM 3350). RECEIVES FROM IBM ISC/ 3830 2/IBM ISC/ RECEIVES FROM I3830 2/38302 6/38302 7/ RECEIVES FROM 38302 8/ SENDS TO 33502 B2/33502 B2F/33801 B2/ SENDS TO 33801 A2F/ AVA OPTIONS 33801 902/69070 3/69071 2/ AVA OPTIONS 69072 1/69082 1/69092 1/ AVA OPTIONS 69092 2/	47,660	C	1,428	1,241	SEE CCC	220	B/2
33502	B2	DISK STORAGE DEVICE CONTAINS TWO DRIVES AND TWO DATA MODULES FILE ORGANIZATION OF EACH DRIVE IS TWO VOLUMES OF 317.5MB (IBM 3350). RECEIVES FROM 33502 A2/33502 A2F/33801 A2/ RECEIVES FROM 33801 A2F/ AVA OPTIONS 33801 902/69071 2/69082 1/	40,200	C	1,184	1,033	SEE CCC	175	B/2
33502	C2	DISK STORAGE DEVICE CONTAINS TWO DRIVES, TWO DATA MODULES AND A BACKUP CONTROLLER, WHICH CAN BE MANUALLY ACTIVATED IN THE EVENT OF A2 FAILURE, TO CONTINUE ACCESS TO ALL DRIVES IN THE STRING. FILE ORGANIZATION OF EACH DRIVE IS TWO VOLUMES OF 317.5MB (IBM 3350). MUST BE USED IN CONJUNCTION WITH 33801 A2/A2F OR 33502 A2/A2F WITH FEATURE 69072-1 INSTALLED. RECEIVES FROM IBM ISC/ 3830 2/IBM ISC/ RECEIVES FROM I3830 2/38302 6/38302 7/ RECEIVES FROM 38302 8/ SENDS TO 33502 B2/33502 B2/33502 B2F/ SENDS TO 33801 B2/33801 B2F/ AVA OPTIONS 33801 902/69070 5/69071 2/ AVA OPTIONS 69082 1/69092 1/69092 2/	47,680	C	1,428	1,241	SEE CCC	229	B/2

PRODUCT MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
33502 A2F	DISK STORAGE DEVICE 33502 A2 WITH THE TWO DATA MODULES CONTAINING FIXED HEADS WHICH MAKE A PORTION OF THE STORAGE CAPACITY (1.72MB/SPINDLE) ACCESSIBLE WITHOUT SEEK TIME. RECEIVES FROM IBM ISC/ 3830 2/IBM ISC/ RECEIVES FROM 13830 2/38302 6/38302 7/ RECEIVES FROM 38302 8/ SENDS TO 33502 A2/33502 B2F/33801 B2/ SENDS TO 33801 B2F/ AVA OPTIONS 33801 902/69070 3/69071 2/ AVA OPTIONS 69082 1/	57,880	C	1,749	1,519	SEE CCC	274	B/2
33502 B2F	DISK STORAGE DEVICE 33502 B2 WITH THE TWO DATA MODULES CONTAINING FIXED HEADS WHICH MAKE A PORTION OF THE STORAGE CAPACITY (1.72MB/SPINDLE) ACCESSIBLE WITHOUT SEEK TIME. RECEIVES FROM 33502 A2/33502 A2F/33801 A2/ RECEIVES FROM 33401 A2F/ AVA OPTIONS 33801 902/69082 1/	50,400	C	1,509	1,311	SEE CCC	229	B/2
33502 C2F	DISK STORAGE DEVICE 33502 C2 WITH THE TWO DATA MODULES CONTAINING FIXED HEADS WHICH MAKE A PORTION OF THE STORAGE CAPACITY (1.72MB/SPINDLE) ACCESSIBLE WITHOUT SEEK TIME. RECEIVES FROM IBM ISC/ 3830 2/IBM ISC/ RECEIVES FROM 13830 2/38302 6/38302 7/ RECEIVES FROM 38302 8/ SENDS TO 33502 A2/33502 B2F/33801 B2/ SENDS TO 33801 B2F/ AVA OPTIONS 33801 902/	57,880	C	1,749	1,519	SEE CCC	284	B/2
33801 A2	DISK STORAGE DEVICE CONTAINS TWO DRIVES, TWO DATA MODULES, AND A CONTROLLER FOR INTERFACE OF ANY COMBINATION OF UP TO THREE ADDITIONAL 33801-B2, 33801-B2F 33502-B2 OR 33502-B2F UNITS. FILE ORGANIZATION OF EACH DRIVE IS TWO VOLUMES OF 200MB CDC 33302-11 (IBM 3330-11). RECEIVES FROM 38302/IBM 3830-2/IBM ISC. SENDS TO 33801 A2/33801 B2F/ AVA OPTIONS 33801 902/69068 1/69068 2/ AVA OPTIONS 69068 5/69070 1/69071 2/ AVA OPTIONS 69072 1/69082 1/69092 1/ AVA OPTIONS 69092 2/	37,680	C	1,134	984	SEE CCC	170	B/2
33801 B2	DISK STORAGE DEVICE CONTAINS TWO DRIVES AND TWO DATA MODULES. FILE ORGANIZATION OF EACH DRIVE IS TWO VOLUMES OF 200MB CDC 33302-11 (IBM 3330-11). RECEIVES FROM 33801 A2/33801 A2F/ AVA OPTIONS 33801 902/69068 3/69068 4/ AVA OPTIONS 69068 6/69071 2/69082 1/	30,200	C	893	778	SEE CCC	128	B/2
33801 C2	DISK STORAGE DEVICE CONTAINS TWO DRIVES, TWO DATA MODULES, AND A BACKUP CONTROLLER, WHICH CAN BE MANUALLY ACTIVATED IN CASE OF A2 FAILURE, TO CONTINUE 33502 A2/A2F WITH FEATURE 69072-1 INSTALLED. GANIZATION OF EACH DRIVE IS TWO VOLUMES OF 200MB CDC 33302-11 (IBM 3330-11). MUST BE USED IN CONJUNCTION WITH 33801 A2/A2F OR 33502 A2/A2F WITH FEATURE 69072-1 INSTALLED. RECEIVES FROM/38302/IBM 3830-2/IBM ISC. AVA OPTIONS 33801 902/69068 1/69068 2/ AVA OPTIONS 69068 5/69070 1/69071 2/ AVA OPTIONS 69092 1/69092 2/	37,680	C	1,134	984	SEE CCC	179	B/2
33801 A2F	DISK STORAGE DEVICE 33801 A2, WITH THE TWO DATA MODULES CONTAINING FIXED HEADS WHICH MAKE A PORTION OF THE STORAGE CAPACITY (1.24MB/SPINDLE) ACCESSIBLE WITHOUT SEEK TIME. RECEIVES FROM/38302/IBM 3830-2/IBM ISC. SENDS TO 33501 A2/33801 B2F/ AVA OPTIONS 33801 902/69068 1/69068 2/ AVA OPTIONS 69068 5/69070 1/69072 1/ AVA OPTIONS 69092 1/	47,880	C	1,455	1,263	SEE CCC	221	B/2
33801 B2F	DISK STORAGE DEVICE 33801 B2, WITH THE TWO DATA MODULES CONTAINING FIXED HEADS WHICH MAKE A PORTION OF THE STORAGE CAPACITY (1.24MB/SPINDLE) ACCESSIBLE OR 33301 MODE; 1.72MB/SPINDLE IN 3350 MODE) ACCESSIBLE WITHOUT SEEK TIME. RECEIVES FROM 33801 A2/33801 A2F/ AVA OPTIONS 33801 902/69068 3/69068 4/ AVA OPTIONS 69068 6/69082 1/	40,400	C	1,214	1,054	SEE CCC	179	B/2
33801 C2F	DISK STORAGE DEVICE 33801 C2, WITH THE TWO DATA MODULES CONTAINING FIXED HEADS WHICH MAKE A PORTION OF THE STORATE CAPACITY (1.24MB/SPINDLE) ACCESSIBLE WITHOUT SEEK TIME. RECEIVES FROM/38302/IBM 3830-2/IBM ISC. AVA OPTIONS 33801 902/69068 1/69068 2/ AVA OPTIONS 69068 5/69070 1/	47,880	C	1,455	1,263	SEE CCC	230	B/2
33801 901	3380X/ISC FUNCT. DISK PACKAGE ALLOWS ATTACHMENT OF 33501, 33801, AND 33502 DISK STORAGE DEVICES TO IBM INTEGRATED STORAGE CONTROL OR 3830-2 STORAGE CONTROL.	N/C		N/C	N/C	SEE CCC	N/C	

PRODUCT MOD		DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINT PROD GRP
33801	902	HARDWARE ANALYSIS PROGRAM CUSTOMER OPERATED DIAGNOSTIC TOOL WHICH PERMITS THE OPERATOR TO PERFORM A QUICK ANALYSIS OF THE DEVICE AND STORAGE MEDIA. REPLACEMENT FOR IAM AP-1. OPT APPLIES TO/33501 /33502 /33801 /	N/C		N/C	N/C SEE CCC	N/A	
34201	4	MAGNETIC TAPE DRIVE A SINGLE CAPSTAN, 100 IPS MAGNETIC TAPE DRIVE AUTOMATIC REEL LATCH, POWER WINDOW, AUTOMATIC THREADING AND FLIP-DOWN TAPE PATH ARE STANDARD. RECEIVES FROM 38031 / AVA OPTIONS 68410 7/68410 19/68410 29/	13,230	C	325	276 SEE CCC	89	B/2
34201	5	MAGNETIC TAPE DRIVE A SINGLE CAPSTAN, 125 IPS MAGNETIC TAPE DRIVE AUTOMATIC REEL LATCH, POWER WINDOW, AUTOMATIC THREADING AND FLIP-DOWN TAPE PATH ARE STANDARD. RECEIVES FROM 38031 / AVA OPTIONS 68410 7/68410 19/68410 29/	13,950	C	367	311 SEE CCC	99	B/2
34201	7	MAGNETIC TAPE DRIVE A SINGLE CAPSTAN, 200 IPS MAGNETIC TAPE DRIVE AUTOMATIC REEL LATCH, POWER WINDOW, AUTOMATIC THREADING AND FLIP-DOWN TAPE PATH ARE STANDARD. RECEIVES FROM 38031 / AVA OPTIONS 68410 7/68410 19/68410 29/	15,840	C	436	371 SEE CCC	119	B/2
38031		MAGNETIC TAPE CONTROLLER PROVIDES CONTROL AND DATA HANDLING CAPABILITY FOR 1-8 CDC 34201-X MAGNETIC TAPE DRIVES. RECEIVES FROM IAM 360/IAP 370/ SENDS TO 34201 4/34201 5/34201 7/ AVA OPTIONS 68411 7/68411 13/68411 12/ AVA OPTIONS 68411 13/68411 14/68411 20/ AVA OPTIONS 68411 70/	21,240	C	511	434 SEE CCC	145	B/2
38301	901	38301/33302-11 ATTACHMENT PERMITS ATTACHMENT OF 33302-11 DSUMS TO THE 38301 STORAGE CONTROL. UP TO 9 33301/33302-11 DSUMS MAY BE ATTACHED TO EACH STORAGE CONTROL DAF 33302-11MS CAN BE SHARED BETWEEN TWO 38301MS. OPT APPLIES TO/38301 /	N/C		N/C	N/C SEE CCC	N/C	
38302		**STORAGE CONTROL UNIT** INCLUDES MEMORY AND CHANNEL CONNECTION TO BLOCK MULTIPLEX CHANNEL. BASIC 4K MEMORY CONTROLS UP TO TWO 33332 CONTROLLER ADAPTER UNIT (CAU). OPTION 68428 EXPANDS MEMORY TO 6K ALLOWING CONTROL OF ANY COMBINATION OF UP TO FOUR 33332 CAU. 360 SELECTOR CHANNEL OPERATION, STRING SWITCH, FOUR CHANNEL OR DUAL ACCESS OPERATION. OPTIONS 68426-X PERMIT ATTACHMENT TO ADDITIONAL CHANNELS. OPTIONS 68642-X PERMIT ATTACHMENT TO 360/50/65/75/91 SELECTOR CHANNELS. OPTIONS 69056-1 (8K MEMORY AND 69055-1 IN CONJUNCTION WITH 6842F PERMIT ATTACHMENT OF ANY COMBINATION OF UP TO FOUR CAU OR 33901/A2/A2F. ALL OPTIONS ARE FIELD INSTALLABLE. SENDS TO 33332 1/33332 2/33332 3/ SENDS TO 33337 4/33801 A2/33801 C2/ SENDS TO 33851 A2F/33801 C2F/ AVA OPTIONS 38302 901/						
38302	6	STORAGE CONTROL UNIT INCLUDES 8K OF MEMORY, REGISTER EXTENSION OPTION 69055-1, 33801 ATTACHMENT CAPABILITY AND CONNECTION TO ONE CHANNEL. AVA OPTIONS 68426 1/68426 3/	43,400	C	1,525	1,327 SEE CCC	162	B/2
38302	7	STORAGE CONTROL UNIT INCLUDES 8K OF MEMORY, REGISTER EXTENSION OPTION 69055-1, 33801 ATTACHMENT CAPABILITY AND SECOND CHANNEL CONNECTION TO SAME OR DIFFERENT CPU. AVA OPTIONS 68426 3/	46,800	C	1,675	1,457 SEE CCC	174	B/2
38302	8	STORAGE CONTROL UNIT INCLUDES 8K OF MEMORY, REGISTER EXTENSION OPTION 69055-1, 33801 ATTACHMENT CAPABILITY AND FOUR CHANNEL CONNECTION TO SAME OR DIFFERENT CPU.	50,200	C	1,825	1,587 SEE CCC	186	B/2
38302	901	33901/3350X FUNCTIONAL DISK PK REQUIRED FOR EACH 38302 STORAGE CONTROL UNIT TO ATTACH 33801/3350X-A2/A2F UNITS OF 33332 CONTROLLER ADAPTER UNITS. OPT APPLIES TO/38302 /	N/C		N/C	N/C SEE CCC	N/C	
38501	2	MASS STORAGE ADAPTER PROVIDES CONTROL AND DATA EXCHANGE FOR 38510 MASS STORAGE FILE(S). CAPABLE OF ADDRESSING EIGHT MASS STORAGE DEVICES, I.E., MSTMS AND CSUMS. REQUIRES A COLOR OPTION (69009-X). RECEIVES FROM 38302 3/38302 4/38302 5/ SENDS TO 38510 17/69023 2/ AVA OPTIONS 69008 X/69016 1/	129,130	C	3,734	3,245 SEE CCC	613	E/2

CHANGES EFFECTIVE 05/01/80

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/12MO	CCC BASE SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
38510	17	MASS STORAGE FILE CONTAINS ONE CARTRIDGE STORAGE UNIT CAPABLE OF HOLDING 2000 CARTRIDGES AND TWO MASS STORAGE TRANSPORTS. INCLUDES 500 CARTRIDGES. REQUIRES A COLOR OPTION (69009-X). RECEIVES FROM 38501 2/ AVA OPTIONS 69005 1/69006 1/69009 X/ AVA OPTIONS 69011 1/69023 2/	229,239	C	5,743	4,994 SEE CCC	1,101	E/2
68311		DAISY CHAIN MODIFICATION TO 23121 DSU TO ALLOW DAISY CHAIN CAPABILITY WITH THE 23122 DSU. OPT APPLIES TO23121 /	N/C		N/C	N/C SEE CCC	N/A	
68312		RED PAINT MODIFICATION FLAME RED PAINT OPTION FOR PLUG COMPATIBLE CONTROLLER. INCLUDES FRONT AND REAR DOOR. OPT APPLIES TO23141 /23142 /	N/C		N/C	N/C SEE CCC	N/A	
68313		YELLOW PAINT MODIFICATION SUN YELLOW PAINT OPTION FOR PLUG COMPATIBLE CONTROLLER. INCLUDES FRONT AND REAR DOOR. OPT APPLIES TO23141 /23142 /	N/C		N/C	N/C SEE CCC	N/A	
68314		RED PAINT/WINDOW MODIFICATION FLAME RED PAINT OPTION FOR DSUMS. INCLUDES WINDOW, FRONT, AND REAR DOOR. OPT APPLIES TO23121 /23122 /	N/C		N/C	N/C SEE CCC	N/A	
68315		YELLOW PAINT/WINDOW MODIFICA. SUN YELLOW PAINT OPTION FOR DSUMS. INCLUDES WINDOW, FRONT, AND REAR DOOR. OPT APPLIES TO23121 /23122 /	N/C		N/C	N/C SEE CCC	N/A	
68409	40	READER PUNCH ATTACHMENT	2,494	C	53	45 SEE CCC	15	C/2
		FIELD INSTALLATION CHARGE	275					
		FOR ATTACHMENT OF IBM 2540 CARD READER PUNCH TO 28211-10,OR 28211-50 PRINTER CONTROLLERS. AVA OPTIONS 68409 41/68409 42/ OPT APPLIES TO28211 50/						
68409	41	PUNCH FEED READ FEATURE	2,195	C	46	39 SEE CCC	N/C	
		FIELD INSTALLATION CHARGE	56					
		USED WHEN CDC FEATURE 68409-40 AND THE IBM 2540 WITH IBM FEATURE ARE SPECIFIED. OPT APPLIES TO28211 50/68409 40/						
68409	42	COLUMN BINARY FEATURE	3,990	C	84	71 SEE CCC	N/C	
		FIELD INSTALLATION CHARGE	28					
		USED WHEN CDC FEATURE 68409-40 AND THE IBM FEATURE 1990 FOR THE IBM 2821 ARE SPECIFIED. OPT APPLIES TO28211 50/68409 40/						
68409	43	FORMAT TAPE PUNCH USED TO PUNCH VERTICAL FORMAT TAPES FOR USE ON CDC 14031 AND 28211-21 PRINTERS. OPT APPLIES TO14031 1/28211 21/	473		N/A	N/A SEE CCC	T AND M	/2
68409	44	SPECIAL CHARACTERS	N/A		N/A	N/A SEE CCC	N/A	
		A ONE TIME INSTALLATION CHARGE	130					
		SINGLE CHARACTER DESIGN CHARGE FOR SPECIAL CHARACTERS. LEAD TIME 4 MONTHS ARO. AVA OPTIONS 68409 45/68409 46/ OPT APPLIES TO14161 1/						
68409	45	UNIQUE SINGLE SLUG TOOLING	N/A		N/A	N/A SEE CCC	N/A	
		A ONE TIME INSTALLATION CHARGE	170					
		PER SLUG TOOLING CHARGE (INCLUDES SLUG DOCUMENTATION). LEAD TIME FOUR MONTHS ARO. SUBSTITUTION OR INITIAL NEW SLUGS ARE FACTORY INSTALLED ONLY. REPLACEMENT SLUGS ARE FIELD INSTALLABLE. OPT APPLIES TO14161 1/68409 44/						
68409	46	UNIQUE ARRAY DOCUMENTATION	N/A		N/A	N/A SEE CCC	N/A	
		A ONE TIME INSTALLATION CHARGE	260					
		LEAD TIME FOUR MONTHS ARO. SUBSTITUTION OR INITIAL NEW DESIGNED SLUGS ARE FACTORY INSTALLED ONLY. REPLACEMENT SLUGS ARE FIELD OPT APPLIES TO14161 1/68409 44/						
68409	47	UCB 240 CHARACTER LOAD REQUIRED WHEN HASP OR GRASP SOFTWARE IS USED TO PROPERLY LOAD 288 CHARACTER FORMATS INTO BUFFER. OPT APPLIES TO14031 1/	824	C	69	46 SEE CCC	17	D/2
68409	48	LINE COUNTER OPTION ADVANCES ONE DIGIT PER 100 LINES COUNTED. OPT APPLIES TO14031 1/	446	C	37	25 SEE CCC	11	D/2
68410	7	SEVEN TRACK FEATURE ALLOWS READ AND WRITE OPERATION UNDER PROGRAM CONTROL AT EITHER 556 BPI NRZI OR 800 BPI NRZI. OPT APPLIES TO34201 4/34201 5/34201 7/	2,700	C	33	29 SEE CCC	43	B/2

SUBSYSTEMS PLUG COMP./DATA ENTRY
CURRENT PRODUCTS

PRODUCT NUM		DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT SALE 1 YEAR	CCC BASE 3YR/12MO	5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
68410	19	1600 BPI FEATURE ALLOWS READ AND WRITE OPERATION AT 1600 BPI 9 TRACK PHASE ENCODED. OPT APPLIES TO34201 4/34201 5/34201 7/	2,430	C	54	46	SEE CCC	25	B/2
68410	29	800/1600 BPI FEATURE ALLOWS READ AND WRITE OPERATION UNDER PROGRAM CONTROL AT EITHER 800 BPI NRZI OR 1600 BPI PHASE ENCODED. OPT APPLIES TO34201 4/34201 5/34201 7/	3,330	C	57	49	SEE CCC	43	B/2
68411	2	TWO CHANNEL FEATURE ALLOWS ATTACHMENT OF THE 38031 CONTROLLER TO A SECOND IBM 340-370 CHANNEL PROVIDING AN ALTERNATE PATH TO EACH ATTACHED TAPE DRIVE. OPT APPLIES TO38031 /	4,500	C	140	119	SEE CCC	7	B/2
68411	10	SINGLE DENSITY FEATURE ALLOWS OPERATION OF UP TO 8 CDC 34201 MAGNETIC TAPE DRIVES WITH 1600 BPI (FEATURE 68410-19). OPT APPLIES TO38031 /	N/C		N/C	N/C	SEE CCC	N/C	
68411	12	TWO CONTROL SWITCH THE 2X8 CONFIGURATION ALLOWS TWO 38301 TAPE CONTROLLERS ACCESS TO 1-8, 34201 TAPE DRIVES THROUGH A SINGLE 68411-12 TWO CONTROL SWITCH. ALL DRIVES MUST BE CONNECTED TO A SINGLE CONTROLLER. THE 2X16 CONFIGURATION ALLOWS TWO 38031 TAPE CONTROLLERS ACCESS TO 1-16, 34201 TAPE DRIVES THROUGH TWO 68411-12. EACH 38031 CONTROLLER MUST BE EQUIPPED WITH THE PROPER DENSITY FEATURE FOR EACH 34201 DRIVE TO WHICH IT HAS ACCESS. THESE SWITCHES ALLOW SIMULTANEOUS ACCESS TO ANY TWO TAPE DRIVES. OPT APPLIES TO38031 /	6,750	C	161	154	SEE CCC	18	B/2
68411	13	THREE CONTROL SWITCH THE 3X8 CONFIGURATION ALLOWS THREE 38031 TAPE CONTROLLERS ACCESS TO 1-8, 34201 TAPE DRIVES THROUGH A SINGLE 68411-13. ALL DRIVES MUST BE CONNECTED TO A SINGLE CONTROLLER. THE 3X16 CONFIGURATION ALLOWS THREE 38031 TAPE CONTROLLERS ACCESS TO 1-16, 34201 TAPE DRIVES THROUGH TWO 68411-13. EACH 38031 CONTROLLER MUST BE EQUIPPED WITH THE PROPER DENSITY FEATURE FOR EACH 34201 DRIVE TO WHICH IT HAS ACCESS. THESE SWITCHES ALLOW SIMULTANEOUS ACCESS TO ANY THREE TAPE DRIVES. OPT APPLIES TO38031 /	7,470	C	226	193	SEE CCC	25	B/2
68411	14	FOUR CONTROL SWITCH THE 4X8 CONFIGURATION ALLOWS FOUR 38031 TAPE CONTROLLERS ACCESS TO 1-8 DRIVES THROUGH A SINGLE 68411-14. ALL DRIVES MUST BE CONNECTED TO A SINGLE CONTROLLER. THE 4X16 CONFIGURATION ALLOWS FOUR 38301 TAPE CONTROLLERS ACCESS TO 1-16 34201 TAPE DRIVES THROUGH TWO 68411-14. EACH 38031 CONTROLLER MUST BE EQUIPPED WITH THE PROPER DENSITY FEATURE FOR EACH 34201 DRIVE TO WHICH IT HAS ACCESS. THESE SWITCHES ALLOW SIMULTANEOUS ACCESS TO ANY FOUR TAPE DRIVES. OPT APPLIES TO38031 /	8,100	C	271	231	SEE CCC	25	B/2
68411	20	DUAL DENSITY FEATURE ALLOWS OPERATION OF UP TO 8 CDC 34201 MAGNETIC TAPE DRIVES WITH 1600 BPI (FEATURE 68410-19) OR 800/1600 BPI (FEATURE 68410-29). OPT APPLIES TO38031 /	1,800	C	69	58	SEE CCC	4	B/2
68411	70	SEVEN TRACK FEATURE ALLOWS OPERATION OF UP TO 8 CDC 34201 MAGNETIC TAPE DRIVES WITH 7 TRACK 556/800 BPI (FEATURE 68410-7). REQUIRES ADDITION OF 68411-20 DUAL DENSITY FEATURE. OPT APPLIES TO38031 /	2,500	C	69	58	SEE CCC	4	B/2
68411	104	FAST CHANNEL ADAPTER ADAPTER OPTION FOR IBM 2880 OR FASTER CHANNELS. REQUIRED ON 38031 CONTROLLER WHEN ATTACHING TO IBM 2890 OR FASTER CHANNELS. OPT APPLIES TO38301 /	440	C	14	12	SEE CCC	11	B/2
68426	1	TWO CHANNEL SWITCH OPTION PERMITS A SCU TO BE ATTACHED TO A SECOND BLOCK MULTIPLEX CHANNEL. ANY CHANNEL CAN OPERATE OR RESERVE ANY ONE OF THE ON-LINE DSUMS. BOTH CHANNELS CANNOT SELECT THE CONTROLLER SIMULTANEOUSLY. FIELD INSTALLABLE. OPT APPLIES TO38302 6/	3,400	C	150	130	SEE CCC	13	B/2
68426	3	FOUR CHANNEL SWITCH OPTION PERMITS A SCU TO BE ATTACHED TO A THIRD AND FOUTH BLOCK MULTIPLEX CHANNEL. 38302-6 REQUIRES TWO CHANNEL SWITCH OPTION 68426-1. ANY CHANNEL CAN OPERATE OR RESERVE ANY OF THE ON-LINE DSUMS. ONLY ONE CHANNEL CAN SELECT THE CONTPOLLER AT ANY ONE TIME. FIELD INSTALLABLE. OPT APPLIES TO38302 7/	3,400	C	150	130	SEE CCC	13	B/2
68426	5	TWO CHANNEL SWITCH OPTION REPLACES TWO CHANNEL SWITCH OPTION 68426-2 IN ANY 38302-2 OR 38302-4 FIELD UPGRADED TO A 38302-7. OPT APPLIES TO38302 /38302 2/38302 4/	3,400	C	150	130	SEE CCC	13	B/2

CHANGES EFFECTIVE 05/01/80

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
68426	6	FOUR CHANNEL SWITCH OPTION REPLACES FOUR CHANNEL SWITCH OPTION 68426-4 IN ANY 38302-5 FIELD UPGRADED TO A 38302-8. OPT APPLIES TO38302 /38302 5/	3,400	C	150	130	SEE CCC	13	B/2
68427		STRING SWITCH OPTION PERMITS TWO DATA PATH ENTRY INTO THE 33332 CAU. EITHER PATH CAN OPERATE OR RESERVE ANY ONE OF THE ON-LINE DSUMS BUT CANNOT SELECT SIMULTANEOUSLY. REQUIRES 68428 MEMORY EXPANSION FEATURE (OR 6K MEMORY) IN EACH 38302 SCU WITH 68427 STRING SWITCH OPTION. FIELD INSTALLABLE. OPT APPLIES TO33332 1/33332 2/	5,000	C	180	155	SEE CCC	13	B/2
68455		DUAL ACCESS FEATURE ALLOWS A 38301 TWO CHANNEL CONTROLLER TO ACCESS 33301 DSUMS WITH DUAL ACCESS FEATURE. OPT APPLIES TO38301 /	N/C		N/C	N/C	SEE CCC	N/A	
68480	1	YELLOW PAINT MODIFICATION SUN YELLOW PAINT OPTION FOR THE STORAGE CONTROL UNIT. INCLUDES FRONT AND REAR DOORS. OPT APPLIES TO38302 /	N/C		N/C	N/C	SEE CCC	N/A	
68480	2	RED PAINT MODIFICATION FLAME RED PAINT OPTION FOR THE STORAGE CONTROL UNIT. INCLUDES FRONT AND REAR DOORS. OPT APPLIES TO38302 /	N/C		N/C	N/C	SEE CCC	N/A	
68480	3	GRAY PAINT MODIFICATION GRAY PAINT OPTION FOR THE STORAGE CONTROL UNIT. INCLUDES FRONT AND REAR DOORS. OPT APPLIES TO38302 /	N/C		N/C	N/C	SEE CCC	N/A	
68490		DUAL ACCESS FEATURE	1,000	C	32	26	SEE CCC	N/C	
		FIELD INSTALLATION CHARGE	100						
		ALLOWS TWO PORT ENTRY INTO EACH DSU FROM TWO DIFFERENT PATHS FIELD INSTALLABLE IN 33302-11 AND FACTORY INSTALLABLE IN 33301. REQUIRES 68428 MEMORY EXPANSION IN 38302. OPT APPLIES TO33301 /33302 11/							
68557	1	DAT COMPATIBILITY FEATURE ALLOWS ATTACHMENT OF CDC 33159 MEMORY SYSTEM TO IBM SYSTEM 370 MODEL 155-II CPU (CPU EQUIPPED WITH IBM DYNAMIC ADDRESS TRANSLATION (DAT) FEATURE). NOTE - THERE IS A ONE-TIME CHARGE (VARIABLE WITH SYSTEM CONFIGURATION) APPLICABLE WHEN CONVERTING AN EXISTING CDC 33159 INSTALLATION TO IBM DYNAMIC ADDRESS TRANSLATION (DAT). OPT APPLIES TO33159 1XX/33159 3XX/	N/C		N/C	N/C	SEE CCC	N/C	
68570	1	YELLOW PAINT MODIFICATION SUN YELLOW PAINT OPTION FOR THE STORAGE CONTROL. INCLUDES FRONT AND SIDE PANELS. OPT APPLIES TO38301 /	N/C		N/C	N/C	SEE CCC	N/A	
68570	3	RED PAINT MODIFICATION FLAME RED PAINT OPTION FOR THE STORAGE CONTROL. INCLUDES FRONT AND SIDE PANELS. OPT APPLIES TO38301 /	N/C		N/C	N/C	SEE CCC	N/A	
68571	1	YELLOW PAINT MODIFICATION SUN YELLOW PAINT OPTION FOR CAUMS AND DSUMS. INCLUDES A FRONT PANEL. OPT APPLIES TO33301 /33302 1/33302 11/ OPT APPLIES TO33332 /	N/C		N/C	N/C	SEE CCC	N/A	
68571	2	RED PAINT MODIFICATION FLAME RED PAINT OPTION FOR CAUMS AND DSUMS. INCLUDES A FRONT PANEL. OPT APPLIES TO33301 /33302 1/33302 11/ OPT APPLIES TO33332 /	N/C		N/C	N/C	SEE CCC	N/A	
68602	1	360/50/65 ATTACHMENT PERMITS ATTACHMENT OF A 38302 SCU TO A 360/50/65 SELECTOR CHANNEL. FOR SYSTEMS WITH 800 BPI TAPE UNITS. REQUIRES 68428 MEMORY EXPANSION. OPT APPLIES TO38302 3/38302 4/38302 5/	N/C		N/C	N/C	SEE CCC	N/C	
68602	2	360/50/65 ATTACHMENT PERMITS ATTACHMENT OF A 38302 SCU TO A 360/50/65 SELECTOR CHANNEL. FOR SYSTEMS WITH 1600 BPI TAPE UNITS. REQUIRES 68428 MEMORY. EXPANSION. OPT APPLIES TO38302 3/38302 4/38302 5/	N/C		N/C	N/C	SEE CCC	N/C	
69005	1	MST DUAL PATH OPTION	2,150	C	74	60	SEE CCC	27	E/2
		FIELD INSTALLATION CHARGE	250						
		ALLOWS THE CONNECTION OF ONE MASS STORAGE TRANSPORT OF A 38510-16 OR ONE 69023-1 MST TO TWO 38501-1 MASS STORAGE ADAPTERS WHICH PROVIDES A DUAL PATH FOR A MST BY MEANS OF DYNAMIC SWITCHING BETWEEN 38501-1 MSAMS. OPT APPLIES TO38510 16/38510 17/69023 1/ OPT APPLIES TO69023 2/							

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
69006	1	CART. STOR. UNIT ALT. PATH OPT	5,000	C	154	135	SEE CCC	27	E/2
		FIELD INSTALLATION CHARGE	500						
		ALLOWS THE CONNECTION OF THE CSU IN A 38510-16 MSF TO TWO 38501-1 MASS STORAGE ADAPTERS WHICH PROVIDES AN ALTERNATE PATH FOR A CSU BY MEANS OF SWITCHING BETWEEN 38501-1 MSA'S. OPT APPLIES T038510 16/38510 17/							
69007	1	SKY BLUE CABINET COLOR OPT APPLIES T069023 2/	N/C		N/C	N/C	SEE CCC	N/C	
69007	2	SUN YELLOW CABINET COLOR OPT APPLIES T069023 2/	N/C		N/C	N/C	SEE CCC	N/C	
69007	3	FLAME RED CABINET COLOR OPT APPLIES T069023 2/	N/C		N/C	N/C	SEE CCC	N/C	
69007	4	LIGHT GRAY CABINET COLOR OPT APPLIES T069023 2/	N/C		N/C	N/C	SEE CCC	N/C	
69007	5	DARK GRAY CABINET COLOR OPT APPLIES T069023 2/	N/C		N/C	N/C	SEE CCC	N/C	
69007	6	CLOUD WHITE CABINET COLOR OPT APPLIES T069023 2/	N/C		N/C	N/C	SEE CCC	N/C	
69008	1	SKY BLUE CABINET COLOR OPT APPLIES T038501 2/	N/C		N/C	N/C	SEE CCC	N/C	
69008	2	SUN YELLOW CABINET COLOR OPT APPLIES T038501 2/	N/C		N/C	N/C	SEE CCC	N/C	
69008	3	FLAME RED CABINET COLOR OPT APPLIES T038501 2/	N/C		N/C	N/C	SEE CCC	N/C	
69008	4	LIGHT GRAY CABINET COLOR OPT APPLIES T038501 2/	N/C		N/C	N/C	SEE CCC	N/C	
69008	5	DARK GRAY CABINET COLOR OPT APPLIES T038501 2/	N/C		N/C	N/C	SEE CCC	N/C	
69008	6	CLOUD WHITE CABINET COLOR OPT APPLIES T038501 2/	N/C		N/C	N/C	SEE CCC	N/C	
69009	1	SKY BLUE CABINET COLOR OPT APPLIES T038510 17/	N/C		N/C	N/C	SEE CCC	N/C	
69009	2	SUN YELLOW CABINET COLOR OPT APPLIES T038510 17/	N/C		N/C	N/C	SEE CCC	N/C	
69009	3	FLAME RED CABINET COLOR OPT APPLIES T038510 17/	N/C		N/C	N/C	SEE CCC	N/C	
69009	4	LIGHT GRAY CABINET COLOR OPT APPLIES T038510 17/	N/C		N/C	N/C	SEE CCC	N/C	
69009	5	DARK GRAY CABINET COLOR OPT APPLIES T038510 17/	N/C		N/C	N/C	SEE CCC	N/C	
69009	6	CLOUD WHITE CABINET COLOR OPT APPLIES T038510 17/	N/C		N/C	N/C	SEE CCC	N/C	
69011	1	POWER DISTRIBUTION UNIT 50HZ POWER DISTRIBUTION UNIT REQUIRED FOR ALL 50HZ 38510-16 MASS STORAGE FILES AND 69023-1 MST'S. SUPPORTS A MAXIMUM OF 5 DEVICES (1 CART. STOR. UNIT AND 4 MST'S). OPT APPLIES T038510 17/69023 2/	N/C		N/C	N/C	SEE CCC	N/C	
69016	1	SIXTEEN DEVICE OPTION	49,665	C	1,436	1,249	SEE CCC	221	E/2
		FIELD INSTALLATION CHARGE	980						
		CAPABLE OF ADDRESSING SIXTEEN MASS STORAGE DEVICES. OPT APPLIES T038501 1/							
69023	2	MASS STORAGE TRANSPORT OPTION	67,080	C	1,938	1,685	SEE CCC	449	E/2
		FIELD INSTALLATION CHARGE	375						
		PROVIDES EXPANSION CAPABILITY FOR A 38510-17 MASS STORAGE FILE BY ADDING ONE OR (MAXIMUM OF) TWO 69023-2 MASS STORAGE TRANSPORT OPTIONS. REQUIRES A COLOR OPTION (69007-X). AVA OPTIONS 69005 1/69007 X/69011 1/ OPT APPLIES T038510 17/							
69026	1	ADDRESS RECONFIGURATION FEATUR	N/C		N/C	N/C	SEE CCC	N/A	B/2
		FIELD INSTALLATION CHARGE	2,300						
		(FOR CDC 33145-9XX/6XX MEMORY SYSTEMS ONLY) THIS FEATURE ALLOWS FAILING PORTIONS OF MEMORY (CDC, IRM OR BOTH) TO BE TAKEN OFF-LINE. THEREBY ALLOWING PROCESSING TO CONTINUE UTILIZING THE REMAINING PORTION OF UNAFFECTED MAIN MEMORY.							
69036		MEMORY SYSTEM CONVERSION CONVERTS CDC 33158-5XX/6XX SERIES MEMORY UNIT TO A CDC 3316R-1XX SERIES MEMORY UNIT. REQUIRES SPECIAL CONTRACT PROVISIONS.							
69036	1	1024K BYTE UNIT	48,000		N/A	N/A	SEE CCC	N/C	

CHANGES EFFECTIVE 05/01/80

SUBSYSTEMS PLUG COMP./DATA ENTRY
CURRENT PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
69036	2	2048K BYTE UNIT	53,200		N/A N/A	SEE CCC	N/C	
69036	3	3072K BYTE UNIT	58,400		N/A N/A	SEE CCC	N/C	
69036	4	4096 BYTE UNIT	63,600		N/A N/A	SEE CCC	N/C	
69036	5	5120K BYTE UNIT	68,800		N/A N/A	SEE CCC	N/C	
69036	6	6144K BYTE UNIT	74,000		N/A N/A	SEE CCC	N/C	
69036	7	7168K BYTE UNIT	79,200		N/A N/A	SEE CCC	N/C	
69054	1	EXPANDED CONTROL STORE FEATURE INCLUDES EXPANDED CONTROL STORAGE TO ATTACH 33801 DISK STORAGE DEVICES TO THE 38302 STORAGE CONTROL UNIT. OPT APPLIES TO 38302	5,960	C	220	190 SEE CCC	12	8/2
69055	1	REGISTER EXPANSION FEATURE INCLUDES REGISTER MODIFICATION TO ATTACH 33801 DISK STORAGE DEVICES TO THE 38302 STORAGE CONTROL UNIT. OPT APPLIES TO 38302	640	C	20	17 SEE CCC	4	8/2
69057	1	33332 ISC ATTACHMENT STANDARD OPTION ALLOWING SUPPORT OF 33332/ 33301/33302 PRODUCTS WHEN ATTACHING TO THE IBM ISC OR IBM 3030-2. OPT APPLIES TO 33332	N/C		N/C	N/C SEE CCC	N/A	
69060	1	WYE TO DELTA POWER CONVERSION POWER OPTION FOR CONNECTING 230V DELTA POWER TO 50 HZ UNITS. REQUIRED FOR 38302 SUBSYSTEM INSTALLATION IN NORWAY. OPT APPLIES TO 33332	N/C		N/C	N/C SEE CCC	N/A	
69068	1	SUN YELLOW PAINT MODIFICATION OPT APPLIES TO 33801 A2 33801 C2 33801A2F OPT APPLIES TO 33801C2F	N/C		N/C	N/C SEE CCC	N/C	
69068	2	FLAME RED PAINT MODIFICATION OPT APPLIES TO 33801 A2 33801 C2 33801A2F OPT APPLIES TO 33801C2F	N/C		N/C	N/C SEE CCC	N/C	
69068	3	SUN YELLOW PAINT MODIFICATION OPT APPLIES TO 33801 B2 3380182F	N/C		N/C	N/C SEE CCC	N/C	
69068	4	FLAME RED PAINT MODIFICATION OPT APPLIES TO 33801 B2 3380182F	N/C		N/C	N/C SEE CCC	N/C	
69068	5	GRAY PAINT MODIFICATION OPT APPLIES TO 33801 A2 33801 C2 33801A2F OPT APPLIES TO 33801C2F	N/C		N/C	N/C SEE CCC	N/C	
69068	6	GRAY PAINT MODIFICATION OPT APPLIES TO 33801 B2 3380182F	N/C		N/C	N/C SEE CCC	N/C	
69070	3	STRING SWITCH FEATURE ALLOWS A2/A2F DISK STORAGE DEVICES TO BE ATTACHED TO A SECOND STORAGE CONTROL UNIT. FIELD INSTALLABLE. OPT APPLIES TO 33501 A2 33501A2F 33502 A2 OPT APPLIES TO 33502A2F 33801 A2 33801A2F	4,700	C	133	115 SEE CCC	10	8/2
69070	5	STRING SWITCH FEATURE ALLOWS C2/C2F DISK STORAGE DEVICES TO BE ATTACHED TO A SECOND STORAGE CONTROL UNIT. FIELD INSTALLABLE. OPT APPLIES TO 33501 C2 33501C2F 33502 C2 OPT APPLIES TO 33502C2F 33801 C2 33801C2F	4,700	C	133	115 SEE CCC	10	8/2

CHANGES EFFECTIVE 05/01/80

SUBSYSTEMS PLUG COMP./DATA ENTRY
CURRENT PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
69071	2	FIXED HEAD CONVERSION	10,200		300	260 SEE CCC	51	
		FIELD INSTALLATION CHARGE	6,250					
		ALLOWS 33501/33801/33502 A2, B2 OR C2 UNITS TO BE FIELD UPGRADED TO 33501/33801/33502 OPT APPLIES TO 33801 A2 33801 B2 33801 C2						
69072	1	A2/C2 COMPATIBILITY FEATURE CAN BE ADDED TO A 33501 A2/A2F, 33801 A2/A2F, OR 33502 A2/A2F TO ALLOW UTILIZATION OF A 33501 C2/C2F, 33801 C2/C2F, OR 33502 C2/C2F TO THEIR RESPECTIVE STRINGS. OPT APPLIES TO 33801 A2 33801A2F	375	C	11	9 SEE CCC	2	B/2
69075	1	PACK COVER INTERLOCK WILL NOT ALLOW OPENING OF THE TOP COVER UNTIL PACK HAS STOPPED SPINNING. FIELD INSTALLABLE. OPT APPLIES TO 33302 11	1,130	C	20	17 SEE CCC	N/C	
69076	1	360 SELECTOR CHANNEL ATTACHMNT PERMITS ATTACHMENT OF 38301 SUBSYSTEM TO IBM 360/50/65/67 OPERATING UNDER DOS/RS. OPT APPLIES TO 38301	N/C		N/C	N/C SEE CCC	N/C	
69082	1	DUAL ACCESS FEATURE	2,735	C	93	81 SEE CCC	15	B/2
		FIELD INSTALLATION CHARGE	100					
		ALLOWS TWO PORT ENTRY INTO EACH 33501, 33801, INSTALLABLE. OPT APPLIES TO 33801 A2 33801 B2 33801A2F OPT APPLIES TO 33801B2F						
69083	1	33801-33502 UPGRADE ALLOWS FIELD UPGRADE OF 400MB 33801 UNITS TO 635MB 33502 UNITS. OPT APPLIES TO 33501 C2 33501C2F 33801 A2 OPT APPLIES TO 33801 B2 33801A2F 33801B2F	10,000	C	275	240 SEE CCC	35	B/2
69084	3	3330X/ISC DIAGNOSTICS CONTAINS MICRODIAGNOSTICS NECESSARY FOR MAINTENANCE OF 33301 AND 33302 DISK STORAGE DEVICES ATTACHED TO THE IBM INTEGRATED STORAGE CONTROL OR 3830-2 STORAGE CONTROL.	N/C		N/C	N/C SEE CCC	N/A	
69084	4	3330X/38302 DIAGNOSTICS CONTAINS MICRODIAGNOSTICS NECESSARY FOR MAINTENANCE OF 33301 AND 33302 DISK STORAGE DEVICES ATTACHED TO THE 38302 SCU. OPT APPLIES TO 38302	N/C		N/C	N/C SEE CCC	N/C	
69086	1	33501-33801 UPGRADE ALLOWS FIELD UPGRADE OF 317.5MB 33501 UNITS TO 400MB 33801 UNITS. OPT APPLIES TO 33501 A2 33501 B2 33501 C2 OPT APPLIES TO 33501A2F 33501B2F 33501C2F	3,960	C	160	140 SEE CCC	N/C	B/2
69087	1	33501-33502 UPGRADE ALLOWS FIELD UPGRADE OF 317.5MB 33501 UNITS TO 635MB 33502 UNITS. OPT APPLIES TO 33501 A2 33501 B2 33501 C2 OPT APPLIES TO 33501A2F 33501B2F 33501C2F	13,960	C	435	380 SEE CCC	35	B/2
69088	1	33301/33302-11 DAF OPTION REQUIRED FOR EACH 33302 11 ATTACHED TO A 38301 STORAGE CONTROL WHEN DUAL ACCESS OPTION 68490 IS ALSO BEING USED. OPT APPLIES TO 33302 11	N/C		N/C	N/C SEE CCC	N/C	
69092	1	16/8 DRIVE DAF OPTION THIS OPTION ALLOWS THE SELECTION OF EITHER 8 OR 16 DRIVE MODE DURING DAF OPERATION. FOR USE WITH 33501/33502/33801 A2/C2 UNITS WHICH ALSO HAVE THE STRING SWITCH FEATURE INSTLLD. OPT APPLIES TO 33501 A2 33501 C2 33502 A2 OPT APPLIES TO 33502 C2 33801 A2 33801 C2	N/C		N/C	N/C SEE CCC	N/A	
69092	2	16/8 DRIVE DAF OPTION THIS OPTION ALLOWS THE SELECTION OF EITHER 8 OR 16 DRIVE MODE DURING DAF OPERATION. FOR USE WITH 33501/33502/33801 A2/C2 UNITS WHICH DO NOT HAVE THE STRING SWITCH FEATURE INSTLLD OPT APPLIES TO 33501 A2 33501 C2 33502 A2 OPT APPLIES TO 33502 C2 33801 A2 33801 C2	N/C		N/C	N/C SEE CCC	N/A	
69093	1	DAF INTERRUPT OPTION	175	C	6	5 SEE CCC	N/A	
		FIELD INSTALLATION CHARGE	250					
		CORRECTS 066 WAIT STATES PING PONG PROBLEM WHICH OCCURS WHEN OPERATING THE 33302-11 UNDER MVS RELEASE 3.7 AND ABOVE. OPT APPLIES TO 33302 11						

CHANGES EFFECTIVE 05/01/80

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
69125	X	REQUIRED FOR ATTACHMENT OF 33138-AXX MEMORY TO IBM 3138 CPU. FEATURE IS PROVIDED AT NO CHARGE IF ORDERED CONCURRENTLY WITH 33138-AXX MEMORY SYSTEM OR WITH CONVERSION FEATURE 69126-X.						
69125	1	STANDARD ATTACHMENT	N/A		N/A N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	5,000					
69125	2	2314 COMPATIBLE ATTACHMENT	N/A		N/A N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	5,000					
69126	X	REQUIRED FOR CONVERTING MEMORY FROM MODELS INDICATED TO 33138-AXX. ONE-TIME CHARGE IS APPLICABLE FOR SUCH CONVERSION AND ATTACHMENT FEATURE 69125-X MUST ALSO BE ORDERED.						
69126	1	CONVERT 33148-AXX TO 33138-AXX	N/A		N/A N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	14,000					
69126	2	CONVERT 33158-AXX TO 33138-AXX	N/A		N/A N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	14,000					
69126	3	CONVERT 33168-AXX TO 33138-AXX	N/A		N/A N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	14,000					
69126	4	CONVERT 33031-AXX TO 33138-AXX	N/A		N/A N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	14,000					
69126	5	CONVERT 33032-AXX TO 33138-AXX	N/A		N/A N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	14,000					
69126	6	CONVERT 33033-AXX TO 33138-AXX	N/A		N/A N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	14,000					
69127	X	REQUIRED FOR ATTACHMENT OF 33138-AXX MEMORY TO IBM 3138 CPU FOR BOUNDARIES LISTED BELOW. NOTE THAT 69127-1 IS A PREREQUISITE FOR 69127-2						
69127	1	TOTAL SIZE 1 TO 2 MEG TOTAL SYSTEM MEMORY SIZE (CDC + IBM) GREATER THAN 1MB BUT LESS THAN OR EQUAL TO 2MB.	750	C	30 25	SEE CCC	N/C	
69127	2	TOTAL SIZE OVER 2 MEG TOTAL SYSTEM MEMORY SIZE (CDC + IBM) OVER 2MB REQUIRES 69127-1.	750	C	30 25	SEE CCC	N/C	
69128	X	REQUIRED FOR ATTACHMENT OF 33148-AXX MEMORY TO IBM 3148 CPU. FEATURE IS PROVIDED AT NO CHARGE IF ORDERED CONCURRENTLY WITH 33148-AXX MEMORY SYSTEM OR WITH CONVERSION FEATURE 69129-X.						
69128	1	STANDARD ATTACHMENT	N/A		N/A N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	5,000					

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
69129	X	REQUIRED FOR CONVERTING MEMORY FROM THE MODEL INDICATED TO 33148-AXX. ONE TIME CHARGE IS APPLICABLE FOR SUCH CONVERSION AND ATTACHMENT FEATURE 69128-X MUST ALSO BE ORDERED.							
69129	1	CONVERT 33138-AXX TO 33148-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	14,000						
69129	2	CONVERT 33158-AXX TO 33148-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	14,000						
69129	3	CONVERT 33168-AXX TO 33148-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	14,000						
69129	4	CONVERT 33031-AXX TO 33148-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	14,000						
69129	5	CONVERT 33032-AXX TO 33148-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	14,000						
69129	6	CONVERT 33033-AXX TO 33148-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	14,000						
69130	X	REQUIRED FOR ATTACHMENT OF 33148-AXX MEMORY TO IBM 3148 CPU FOR BOUNDARIES LISTED BELOW.							
69130	1	1MB IBM TOTAL SIZE OVER 2MB 1MB IBM MEMORY AND TOTAL SYSTEM MEMORY SIZE (CDC + IBM) OVER 2MB.	1,500	C	60	50	SEE CCC	N/C	
69130	2	2MB IBM TOTAL SIZE OVER 2MB 2MB IBM MEMORY AND TOTAL SYSTEM MEMORY SIZE (CDC + IBM) OVER 2MB.	1,500	C	60	50	SEE CCC	N/C	
69131	X	REQUIRED FOR ATTACHMENT OF 33158-AXX MEMORY TO IBM 3158 CPU. FEATURE INCLUDED AT NO CHARGE IF ORDERED CONCURRENTLY WITH 33158-AXX MEMORY SYSTEM OR WITH CONVERSION FEATURE 69132-X.							
69131	1	STANDARD UNIPROCESSOR ATTACHMT	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	10,000						
69131	2	ATTACHED PROCESSOR ATTACHMENT	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	10,000						
69131	3	MULTIPROCESSOR MOD I ATTACHMNT	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	10,000						
69131	4	MULTIPROCESSOR MOD III ATTCHMT	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	10,000						
69132	X	CONVERSION TO 33158-AXX REQUIRED FOR CONVERTING MEMORY FROM MODELS INDICATED TO 33158-AXX. ONE TIME CHARGE IS APPLICABLE FOR SUCH CONVERSION AND ATTACHMENT FEATURE 69131-X MUST ALSO BE ORDERED.							
69132	1	CONVERT 33138-AXX TO 33158-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	18,000						
69132	2	CONVERT 33148-AXX TO 33158-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	18,000						
69132	3	CONVERT 33168-AXX TO 33158-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	18,000						
69132	4	CONVERT 33031-AXX TO 33158-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	18,000						
69132	5	CONVERT 33032-AXX TO 33158-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	18,000						
69132	6	CONVERT 33033-AXX TO 33158-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	18,000						

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
69134	X	3158-AXX 2 MEG FEATURE REQUIRED WHEN THE IBM MEMORY SIZE IS LESS THAN OR EQUAL TO 2MB AND THE TOTAL SYSTEM MEMORY SIZE (CDC + IBM) IS GREATER THAN 2MB.							
69134	1	UNIPROCESSOR MOD I	750	C	30	25	SEE CCC	N/C	
69134	2	UNIPROCESSOR MOD III	750	C	30	25	SEE CCC	N/C	
69134	3	ATTACHED PROCESSOR MOD I	1,500	C	60	50	SEE CCC	N/C	
69134	4	ATTACHED PROCESSOR MOD III	1,500	C	60	50	SEE CCC	N/C	
69134	5	MULTIPROCESSOR MOD I	1,500	C	60	50	SEE CCC	N/C	
69134	6	MULTIPROCESSOR MOD III	1,500	C	60	50	SEE CCC	N/C	
69135	X	33158-AXX AP FEATURE REQUIRED FOR ATTACHMENT OF CDC 33158-AXX TO IBM 3158 ATTACHED PROCESSOR SYSTEMS. SPECIAL QUOTE REQUIRED FOR INSTALLATION ON EXISTING CDC SYSTEMS.							
69135	1	CDC INCREMENT UP TO 1.0M	2,500	C	90	80	SEE CCC	N/C	
69135	2	CDC INCREMENT UP TO 2.0M	3,500	C	135	120	SEE CCC	N/C	
69135	3	CDC INCREMENT UP TO 3.0M	4,500	C	180	160	SEE CCC	N/C	
69135	4	CDC INCREMENT UP TO 4.0M	5,500	C	225	200	SEE CCC	N/C	
69135	5	CDC INCREMENT UP TO 5.0M	6,500	C	270	240	SEE CCC	N/C	
69135	6	CDC INCREMENT UP TO 6.0M	7,500	C	315	280	SEE CCC	N/C	
69135	7	CDC INCREMENT UP TO 7.0M	8,500	C	360	320	SEE CCC	N/C	
69135	8	CDC INCREMENT UP TO 7.5M	9,500	C	405	360	SEE CCC	N/C	
69136	X	33158-AXX MP FEATURE REQUIRED FOR ATTACHMENT OF CDC 33158-AXX TO IBM 3158 MULTIPROCESSOR SYSTEMS. SEE CONFIGURATOR (VOLUME II) FOR ALLOWABLE CONFIGURATIONS. ORDER ONE PER CDC MEMORY SYSTEM PER INCREMENT SPECIFIED BELOW. SPECIAL QUOTE REQUIRED FOR INSTALLATION ON EXISTING CDC SYSTEMS.							
69136	1	CDC INCR UP TO 1.0M, MOD I	2,500	C	90	80	SEE CCC	N/C	
69136	2	CDC INCR UP TO 1.0M, MOD III	2,500	C	90	80	SEE CCC	N/C	
69136	3	CDC INCR UP TO 2.0M, MOD I	3,500	C	135	120	SEE CCC	N/C	
69136	4	CDC INCR UP TO 2.0M, MOD III	3,500	C	135	120	SEE CCC	N/C	
69136	5	CDC INCR UP TO 3.0M, MOD I	4,500	C	180	160	SEE CCC	N/C	
69136	6	CDC INCR UP TO 3.0M, MOD III	4,500	C	180	160	SEE CCC	N/C	
69136	7	CDC INCR UP TO 3.5M, MOD I	5,500	C	225	200	SEE CCC	N/C	
69136	8	CDC INCR UP TO 3.5M, MOD III	5,500	C	225	200	SEE CCC	N/C	
69137	X	REQUIRED FOR ATTACHMENT WHEN IBM MEMORY SIZE IS 3MB OR GREATER							
69137	1	UNIPROCESSOR 3MB IBM OR OVER	4,500	C	165	150	SEE CCC	N/C	
69137	2	ATTACHED PROC 3MB IBM OR OVER	4,500	C	165	150	SEE CCC	N/C	
69138	X	33158-AXX INSTALL POSITION REQUIRED TO INDICATE DESIRED POSITION FOR PHYSICAL ATTACHMENT OF MEMORY. SEE SITE PLANNING KIT FOR DESCRIPTION. FEATURE PROVIDED AT NO CHARGE WHEN ORDERED CONCURRENTLY WITH MEMORY SYSTEM.							
69138	1	POSITION 03A	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	1,500						
69138	2	POSITION 03D	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	1,500						
69139	X	REQUIRED FOR ATTACHMENT OF 33168-AXX MEMORY TO IBM 3168 CPU. FEATURE IS PROVIDED AT NO CHARGE IF ORDERED CONCURRENTLY WITH 33168-AXX MEMORY SYSTEM OR WITH CONVERSION FEATURE 69140-X.							
69139	1	STANDARD UNIPROCESSOR ATTACHMT	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	10,000						
69139	2	ATTACHED PROCESSOR ATTACHMENT	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	10,000						
69139	3	MULTIPROCESSOR ATTACHMENT	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	10,000						

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
69140	X	FEATURE REQUIRED FOR CONVERTING MEMORY MODELS INDICATED TO 33168-AXX. ONE-TIME CHARGE IS APPLICABLE FOR SUCH CONVERSION AND ATTACHMENT FEATURE 69139-X MUST ALSO BE ORDERED.							
69140	1	CONVERT 33138-AXX TO 33168-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	33,000						
69140	2	CONVERT 33148-AXX TO 33168-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	33,000						
69140	3	CONVERT 33158-AXX TO 33168-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	33,000						
69140	4	CONVERT 33031-AXX TO 33168-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	20,000						
69140	5	CONVERT 33032-AXX TO 33168-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	20,000						
69140	6	CONVERT 33033-AXX TO 33168-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	33,000						
69142	X	REQUIRED WHEN TOTAL SYSTEM SIZE (CDC + IBM) EXCEEDS 8MB. NOTE THAT 3168 MULTIPROCESSOR SYSTEMS CANNOT EXCEED 8MB PER PROCESSOR.							
69142	1	UNIPROCESSOR OVER 8MB	12,500	E	475	430	SEE CCC	N/C	G/2
69142	2	ATTACHED PROCESSOR OVER 8MB	15,000	E	555	500	SEE CCC	N/C	
69143	X	33168-AXX INSTALL POSITION REQUIRED TO INDICATE DESIRED POSITION FOR PHYSICAL ATTACHMENT OF MEMORY. SEE SITE PLANNING KIT FOR DESCRIPTION. FEATURE PROVIDED AT NO CHARGE WHEN ORDERED CONCURRENTLY WITH MEMORY SYSTEM.							
69143	1	POSITION 08	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	1,500						
69143	2	POSITION 02A	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	1,500						
69143	3	POSITION 02B	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	1,500						
69143	4	POSITION 22	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	1,500						
69144	X	REQUIRED FOR ATTACHMENT OF 33031-AXX MEMORY TO IBM 3031 CPU. FEATURE IS PROVIDED AT NO CHARGE IF ORDERED CONCURRENTLY WITH 33031-AXX MEMORY SYSTEM OR WITH CONVERSION FEATURE 69145-X.							
69144	1	STANDARD UNIPROCESSOR ATTACHMT	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	10,000						
69145	X	REQUIRED FOR CONVERTING THE MEMORY MODELS INDICATED TO 33031-AXX. ONE TIME CHARGE IS APPLICABLE FOR SUCH CONVERSION AND ATTACHMENT FEATURE 69144-X MUST ALSO BE ORDERED.							
69145	1	CONVERT 33138-AXX TO 33031-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	34,500						
69145	2	CONVERT 33148-AXX TO 33031-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	34,500						
69145	3	CONVERT 33158-AXX TO 33031-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	34,500						
69145	4	CONVERT 33168-AXX TO 33031-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	20,000						

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
69145	5	CONVERT 33032-AXX TO 33031-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	20,000						
69145	6	CONVERT 33033-AXX TO 33031-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	34,500						
69147	X	REQUIRED WHEN TOTAL SYSTEM SIZE (CDC + IBM) EXCEEDS 6MB. NOTE THAT 69147-1 IS A PREREQUISITE FOR 69147-2.							
69147	1	TOTAL SYS SIZE EQ 7MB OR 8MB	5,000	E	190	170	SEE CCC	N/C	
69147	2	TOTAL SYS SIZE OVER 8MB REQUIRES 69147-1	11,500	E	430	390	SEE CCC	N/C	
69148	X	33031 INSTALL POSITION REQUIRED TO INDICATE THE DESIRED POSITION FOR PHYSICAL LOCATION OF THE MEMORY. SEE THE SITE PLANNING KIT FOR DESCRIPTION. FEATURE PROVIDED AT NO CHARGE WHEN ORDERED CONCURRENTLY WITH MEMORY SYSTEM.							
69148	1	POSITION 03A	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	1,500						
69148	2	POSITION 03D	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	1,500						
69149	X	REQUIRED FOR ATTACHMENT OF 33032-AXX MEMORY TO IBM 3032 CPU. FEATURE IS PROVIDED AT NO CHARGE IF ORDERED CONCURRENTLY WITH 33032-AXX MEMORY SYSTEM OR WITH CONVERSION FEATURE 69150-X.							
69149	1	STANDARD UNIPROCESSOR ATTACHMT	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	10,000						
69150	X	FEATURE REQUIRED FOR CONVERTING THE MEMORY MODELS INDICATED TO 33032-AXX. ONE-TIME CHARGE IS APPLICABLE FOR SUCH CONVERSION AND ATTACHMENT. FEATURE 69149-X MUST ALSO BE ORDERED.							
69150	1	CONVERT 33130-AXX TO 33032-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	34,500						
69150	2	CONVERTS 33148-AXX TO 33032-AX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	34,500						
69150	3	CONVERT 33158-AXX TO 33032-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	34,500						
69150	4	CONVERT 33168-AXX TO 33032-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	20,000						
69150	5	CONVERT 33031-AXX TO 33032-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	20,000						
69150	6	CONVERT 33033-AXX TO 33032-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	34,500						
69152	X	REQUIRED WHEN TOTAL SYSTEM SIZE (CDC + IBM) EXCEEDS 6MB. NOTE THAT 69152-1 IS A PREREQUISITE FOR 69152-2.							
69152	1	TOTAL SYS SIZE EQ 7MB OR 8MB	5,000	C	190	170	SEE CCC	N/C	
69152	2	TOTAL SYSTEM SIZE OVER 8MB REQUIRES 69152-1	7,700	C	290	260	SEE CCC	N/C	
69153	X	REQUIRED TO INDICATE THE DESIRED POSITION FOR PHYSICAL LOCATION OF THE MEMORY. SEE THE SITE PLANNING KIT FOR DESCRIPTION. FEATURE PROVIDED AT NO CHARGE WHEN ORDERED CONCURRENTLY WITH MEMORY SYSTEM.							
69153	1	POSITION 02A	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	1,500						
69153	2	POSITION 02C	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	1,500						

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
69154	X	33033-AXX CPU ATTACHMENT REQUIRED FOR ATTACHMENT OF 33033-AXX TO IBM 3033 CPU. FEATURE IS PROVIDED AT NO CHARGE IF ORDERED CONCURRENTLY WITH 33033-AXX MEMORY SYSTEM OR WITH CONVERSION FEATURE 69155-X. OPT APPLIES TO/33033 AXX							
69154	1	STANDARD UNIPROCESSOR ATTACHMT	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	10,000						
69155	X	CONVERSION TO 33033-AXX FEATURE REQUIRED FOR CONVERTING MEMORY MODELS INDICATED TO 33033-AXX. ONE-TIME CHARGE IS APPLICABLE FOR SUCH CONVERSION AND ATTACHMENT FEATURE 69154-X MUST ALSO BE ORDERED. OPT APPLIES TO/33033-AXX							
69155	1	CONVERT 33130-AXX TO 33033-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	48,500						
69155	2	CONVERT 33140-AXX TO 33033-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	48,500						
69155	3	CONVERT 33150-AXX TO 33033-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	48,500						
69155	4	CONVERT 33160-AXX TO 33033-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	37,500						
69155	5	CONVERT 33031-AXX TO 33033-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	37,500						
69155	6	CONVERT 33032-AXX TO 33033-AXX	N/A		N/A	N/A	SEE CCC	N/C	
		A ONE TIME INSTALLATION CHARGE	37,500						
69156	X	33033-AXX TOTAL SYSTEM SIZE REQUIRED FOR ATTACHMENT OF 33033-AXX MEMORY TO IBM 3033 CPU FOR THE BOUNDARIES LISTED BELOW OPT APPLIES TO/33033 AXX							
69156	1	4MB IBM AND TOTAL EQ 6 OR 8MB FEATURE PROVIDED AT NO CHARGE WHEN ORDERED CONCURRENTLY WITH 33033-AXX MEMORY SYSTEM.	3,000	C	110	100	SEE CCC	N/C	
69156	2	6MB IBM AND TOTAL EQUAL TO 8MB FEATURE PROVIDED AT NO CHARGE WHEN ORDERED CONCURRENTLY WITH 33033-AXX MEMORY SYSTEM.	1,500	C	55	50	SEE CCC	N/C	
69156	3	TOTAL SIZE OVER 8MB	12,500	C	475	430	SEE CCC	N/C	
69251	51	BLUE COLOR OPT APPLIES TO 4801 X/	N/C		N/C	N/C	SEE CCC	N/A	
69251	52	RED COLOR OPT APPLIES TO 4801 X/	N/C		N/C	N/C	SEE CCC	N/A	
69251	53	GRAY COLOR OPT APPLIES TO 4801 X/	N/C		N/C	N/C	SEE CCC	N/A	
69251	54	YELLOW COLOR OPT APPLIES TO 4801 X/	N/C		N/C	N/C	SEE CCC	N/A	
69251	55	WHITE COLOR OPT APPLIES TO 4801 X/	N/C		N/C	N/C	SEE CCC	N/A	
69251	81	BLUE COLOR OPT APPLIES TO 4802 X/	N/A		N/A	N/A	SEE CCC	N/A	
69251	82	RED COLOR OPT APPLIES TO 4802 X/	N/C		N/A	N/A	SEE CCC	N/A	
69251	83	GRAY COLOR OPT APPLIES TO 4802 X/	N/C		N/A	N/A	SEE CCC	N/A	
69251	84	YELLOW COLOR OPT APPLIES TO 4802 X/	N/C		N/A	N/A	SEE CCC	N/A	
69251	85	WHITE COLOR OPT APPLIES TO 4802 X/	N/C		N/A	N/A	SEE CCC	N/A	
69252	51	CONSOLE WITH PRINTER/KEYBOARD PLACED TO THE RIGHT OF THE MAINTENANCE PANEL. OPT APPLIES TO 4801 X/	N/C		N/A	N/A	SEE CCC	N/A	
69252	52	CONSOLE WITH PRINTER/KEYBOARD PLACED TO THE LEFT OF THE MAINTENANCE PANEL. OPT APPLIES TO 4801 X/	N/C		N/A	N/A	SEE CCC	N/A	
69252	81	CONSOLE TABLE PLACED TO THE RIGHT OF MAINTENANCE PANEL. OPT APPLIES TO 4802 X/	N/C		N/A	N/A	SEE CCC	N/A	
69252	82	CONSOLE TABLE PLACED TO THE LEFT OF MAINTENANCE PANEL. OPT APPLIES TO 4802 X/	N/C		N/A	N/A	SEE CCC	N/A	

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
69254	91	BLOCK MULTIPLEXER CHANNELS ADDS THIRD AND FOURTH BLOCK MULTIPLEXER CHANNELS. OPT APPLIES TO 4801 X/	10,000	F	N/A	333	SEE CCC	32	8/2
69254	91	ADDITIONAL BLOCK MPLX CH ADDS FIFTH BLOCK MULTIPLEXER CHANNEL.	7,500	F	N/A	N/A	SEE CCC	16	8/2
69255	5YX	4801-X MOS MEMORY INCREMENT MOS MEMORY INCREMENT FOR OMEGA/480-I SPECIFIED AS FOLLOWS - SECOND DIGIT OF MODEL NUMBER (Y) SPECIFIES ORGINAL MEMORY SIZE AS MULTIPLE OF 256K, THIRD DIGIT (Z) SPECIFIES THE ENDING MEMORY SIZE AS MULTIPLE OF 256K. EXAMPLE - FROM 512K TO 2048K IS SPECIFIED AS 69255-528.							
69255	524	512K BYTE MEMORY EXPANDS 512K MEMORY TO 1024K TOTAL BY ADDING A 512K BYTE INCREMENT. OPT APPLIES TO 4801 2/	22,500	F	N/A	750	SEE CCC	380	8/2
69255	526	1024K BYTE MEMORY EXPANDS 512K MEMORY TO 1536K TOTAL BY ADDING A 1024K BYTE INCREMENT. OPT APPLIES TO 4801 2/	45,000	F	N/A	1,500	SEE CCC	495	8/2
69255	528	1536K BYTE MEMORY EXPANDS 512K MEMORY TO 2048K TOTAL BY ADDING A 1536K BYTE INCREMENT. OPT APPLIES TO 4801 2/	67,500	F	N/A	2,250	SEE CCC	605	8/2
69255	546	512K BYTE MEMORY EXPANDS 1024K MEMORY TO 1536K TOTAL BY ADDING A 512K BYTE INCREMENT. OPT APPLIES TO 4801 4/	22,500	F	N/A	750	SEE CCC	115	8/2
69255	548	1024K BYTE MEMORY EXPANDS 1024K MEMORY TO 2048K TOTAL BY ADDING A 1024K BYTE INCREMENT. OPT APPLIES TO 4801 4/	45,000	F	N/A	1,500	SEE CCC	225	8/2
69255	568	512K BYTE MEMORY EXPANDS 1536K MEMORY TO 2048K TOTAL BY ADDING A 512K BYTE INCREMENT. OPT APPLIES TO 4801 6/	22,500	F	N/A	750	SEE CCC	110	8/2
69255	8YZ	4802-X MOS MEMORY INCREMENT MOS MEMORY INCREMENT FOR OMEGA/480-II SPECIFIED AS FOLLOWS - SECOND DIGIT OF MODEL NUMBER (Y) SPECIFIES ORIGINAL MEMORY SIZE AS A 69255-826. THESE MOS MEMORY INCREMENTS ALSO MULTIPLE OF 512K, THIRD DIGIT (Z) SPECIFIES THE ENDING MEMORY SIZE AS A MULTIPLE OF 512K. EXAMPLE - FROM 1024K TO 3072K IS SPECIFIED AS APPLY TO A 4801-X WHICH HAS INCORPORATED THE							
69255	824	1024K BYTE MEMORY EXPANDS A 1024K BYTE MEMORY TO 2048K TOTAL BY ADDING AN INCREMENT OF 1024K BYTES. OPT APPLIES TO 4802 2/	45,000	F	N/A	1,500	SEE CCC	250	8/2
69255	826	2048K BYTE MEMORY EXPANDS A 1024K BYTE MEMORY TO 3072K TOTAL BY ADDING AN INCREMENT OF 2048K BYTES. AVA OPTIONS 4802 2/	90,000	F	N/A	3,000	SEE CCC	390	8/2
69255	828	3072K BYTE MEMORY EXPANDS A 1024K BYTE MEMORY TO 4096K TOTAL BY ADDING AN INCREMENT OF 3072K BYTES. AVA OPTIONS 4802 2/	135,000	F	N/A	4,500	SEE CCC	575	8/2
69255	846	1024K BYTE MEMORY EXPANDS A 2048K BYTE MEMORY TO 3072K TOTAL BY ADDING AN INCREMENT OF 1024K BYTES. AVA OPTIONS 4802 4/	45,000	F	N/A	1,500	SEE CCC	140	8/2
69255	848	2048K BYTE MEMORY EXPANDS A 2048K BYTE MEMORY TO 4096K TOTAL BY ADDING AN INCREMENT OF 2048K BYTES. AVA OPTIONS 4802 4/	90,000	F	N/A	3,000	SEE CCC	325	8/2
69255	868	1024K BYTE MEMORY EXPANDS A 3072K BYTE MEMORY TO 4096K TOTAL BY ADDING AN INCREMENT OF 1024K BYTES, AVA OPTIONS 4802 6/	45,000	F	N/A	1,500	SEE CCC	185	8/2
69255	924	2048K BYTE MEMORY EXPANDS A 2048K BYTE MEMORY TO 4096K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.	90,000	F	N/A	N/A	SEE CCC	315	8/2
69255	926	4096K BYTE MEMORY EXPANDS A 2048K BYTE MEMORY TO 6144K BYTES BY ADDING AN INCREMENT OF 4096K BYTES.	180,000	F	N/A	N/A	SEE CCC	656	8/2
69255	928	6144K BYTE MEMORY EXPANDS A 2048K BYTE MEMORY TO 8192K BYTES BY ADDING AN INCREMENT OF 6144K BYTES.	270,000	F	N/A	N/A	SEE CCC	835	8/2
69255	946	2048K BYTE MEMORY EXPANDS A 4096K BYTE MEMORY TO 6144K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.	90,000	F	N/A	N/A	SEE CCC	290	8/2
69255	948	4096K BYTE MEMORY EXPANDS A 4096K BYTE MEMORY TO 8192K BYTES BY ADDING AN INCREMENT OF 4096K BYTES.	180,000	F	N/A	N/A	SEE CCC	520	8/2
69255	968	2048K BYTE MEMORY EXPANDS A 6144K BYTE MEMORY TO 8192K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.	90,000	F	N/A	N/A	SEE CCC	270	8/2

SUBSYSTEMS PLUG COMP./DATA ENTRY
CURRENT PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
69257	52	OMEGA 4801 TO 4802 UPGRADE FIELD INSTALLABLE UPGRADE. CONVERSION INCLUDES PROCESSOR SPEED-UP, CRT CONSOLE AND THIRD AND FOURTH CHANNELS. OPT APPLIES TO 4801 8/	120,000	F	N/A	4,000	SEE CCC	240	B/2
69257	53	480-I PRINTER UPGRADE KEYBOARD CONSOLE USED AS A HARD COPY OPTION ON 480-II. REQUIRES OPTION 69257-51 BE INSTALLED. OPT APPLIES TO 4801 4/ 4801 6/ 4801 8/	3,000	F	N/A	100	SEE CCC	30	B/2
69257	54	OMEGA 4801 TO 4802 UPGRADE FIELD INSTALLABLE UPGRADE. CONVERSION INCLUDES PROCESSOR SPEED-UP AND CRT CONSOLE. IT DOES NOT INCLUDE THIRD AND FOURTH CHANNELS REQUIRED OPTION 69254-51 MUST BE INSTALLED PRIOR TO THIS OPTION. OPT APPLIES TO 4801 8/	110,000	F	N/A	3,700	SEE CCC	208	B/2
69257	56	OMEGA 4801 TO 4802 UPGRADE FIELD INSTALLABLE UPGRADE. CONVERSION INCLUDES PROCESSOR SPEED-UP, CRT CONSOLE AND THIRD AND FOURTH CHANNELS. OPT APPLIES TO 4801 4/	120,000	F	N/A	4,000	SEE CCC	215	B/2
69257	58	OMEGA 4801 TO 4802 UPGRADE FIELD INSTALLABLE UPGRADE. CONVERSION INCLUDES PROCESSOR SPEED-UP AND CRT CONSOLE. IT DOES NOT INCLUDE THIRD AND FOURTH CHANNELS REQUIRED OPTION 69254-51 MUST BE INSTALLED PRIOR TO THIS OPTION. OPT APPLIES TO 4801 4/	110,000	F	N/A	3,700	SEE CCC	183	B/2
69257	82	OMEGA 4802 TO 4803 UPGRADE INCLUDES PROCESSOR SPEED-UP AND CONSOLE CHNGE FIELD INSTALLABLE UPGRADE. CONVERSION OPT APPLIES TO 4802 4/	120,000	F	N/A	N/A	SEE CCC	150	B/2
69257	83	OMEGA 4802 TO 4803 UPGRADE FIELD INSTALLABLE UPGRADE. CONVERSION INCLUDES PROCESSOR SPEED-UP AND CONSOLE CHNGE	120,000	F	N/A	N/A	SEE CCC	140	B/2
69257	91	HARD COPY OUTPUT PRINTS AT 120 CPS UNDER SYSTEM CONTROL PROGRM OPT APPLIES TO 4803 X/	8,500	F	N/A	283	SEE CCC	30	B/2

CHANGES EFFECTIVE 05/01/80

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
23030		IBM 360/30 MEMORY EXPANSION A PERFORMANCE INTERCHANGEABLE MEMORY SYSTEM FOR USE WITH IBM SYSTEM/360 MODEL 30 COMPUTERS. STORAGE CAPACITY IS AVAILABLE IN INCREMENTS TO 128K BYTES. 1.5 OR 2.0 MICROSECOND CYCLE TIME DEPENDING ON SPEED OF THE CPU. UPRIGHT CABINETS UNLESS DESCRIPTION NOTES OTHERWISE. AVA OPTIONS 60395 /							
23031	40	32K TO 64K MEMORY EXPANSION EXPANDS A 32K CPU TO 64K BYTES BY ADDING AN INCREMENT OF 32K BYTES. DISK HEIGHT CABINET.	LIST RESALE	17,979 8,825	F	603	512 SEE CCC	93	B/2
23032	13	8K TO 64K MEMORY EXPANSION EXPANDS AN 8K CPU TO 64K BYTES BY ADDING AN INCREMENT OF 56K BYTES.	LIST RESALE	25,506 10,750	F	855	727 SEE CCC	112	B/2
23032	14	8K TO 96K MEMORY EXPANSION EXPANDS AN 8K CPU TO 96K BYTES BY ADDING AN INCREMENT OF 88K BYTES.	LIST RESALE	31,512 13,750	F	1,058	898 SEE CCC	170	B/2
23032	15	8K TO 128K MEMORY EXPANSION EXPANDS AN 8K CPU TO 128K BYTES BY ADDING AN INCREMENT OF 120K BYTES.	LIST RESALE	42,939 16,750	F	1,440	1,223 SEE CCC	204	B/2
23032	22	16K TO 64K MEMORY EXPANSION EXPANDS A 16K CPU TO 64K BYTES BY ADDING AN INCREMENT OF 48K BYTES.	LIST RESALE	21,723 10,000	F	729	619 SEE CCC	105	B/2
23032	23	16K TO 96K MEMORY EXPANSION EXPANDS A 16K CPU TO 96K BYTES BY ADDING AN INCREMENT OF 80K BYTES.	LIST RESALE	28,587 13,000	F	959	814 SEE CCC	159	B/2
23032	24	16K TO 128K MEMORY EXPANSION EXPANDS A 16K CPU TO 128K BYTES BY ADDING AN INCREMENT OF 112K BYTES.	LIST RESALE	40,131 16,000	F	1,346	1,143 SEE CCC	196	B/2
23032	40	32K TO 64K MEMORY EXPANSION EXPANDS A 32K CPU TO 64K BYTES BY ADDING AN INCREMENT OF 32K BYTES.	LIST RESALE	17,979 8,825	F	603	512 SEE CCC	83	B/2
23032	41	32K TO 96K MEMORY EXPANSION EXPANDS A 32K CPU TO 96K BYTES BY ADDING AN INCREMENT OF 64K BYTES.	LIST RESALE	29,074 11,500	F	977	829 SEE CCC	142	B/2
23032	42	32K TO 128K MEMORY EXPANSION EXPANDS A 32K CPU TO 128K BYTES BY ADDING AN INCREMENT OF 96K BYTES.	LIST RESALE	34,359 14,500	F	1,152	979 SEE CCC	179	B/2
23032	50	64K TO 98K MEMORY EXPANSION EXPANDS A 64K CPU TO 98K BYTES BY ADDING AN INCREMENT OF 32K BYTES.	LIST RESALE	17,979 8,825	F	603	512 SEE CCC	107	B/2
23032	51	64K TO 128K MEMORY EXPANSION EXPANDS A 64K CPU TO 128K BYTES BY ADDING AN INCREMENT OF 64K BYTES.	LIST RESALE	29,094 11,500	F	977	829 SEE CCC	142	B/2
23040		IBM 360/40 MEMORY SYSTEM A PERFORMANCE INTERCHANGEABLE MEMORY SYSTEM FOR USE WITH IBM SYSTEM/360 MODEL 40 COMPUTERS. STORAGE CAPACITY IS AVAILABLE IN INCREMENTS TO 448K BYTES. THE MEMORY SYSTEM OPERATES AT THE CYCLE TIME OF THE CPU.							
23041	40	32K TO 64K MEMORY EXPANSION EXPANDS A 32K CPU TO 64K BYTES BY ADDING AN INCREMENT OF 32K BYTES.	LIST RESALE	17,979 8,825	F	603	512 SEE CCC	83	B/2
23041	42	32K TO 128K MEMORY EXPANSION EXPANDS A 32K CPU TO 128K BYTES BY ADDING AN INCREMENT OF 96K BYTES.	LIST RESALE	34,359 14,500	F	1,152	979 SEE CCC	134	B/2
23041	43	32K TO 192K MEMORY EXPANSION EXPANDS A 32K CPU TO 192K BYTES BY ADDING AN INCREMENT OF 160K BYTES.	LIST RESALE	49,491 20,500	F	1,661	1,410 SEE CCC	205	B/2
23041	44	32K TO 256K MEMORY EXPANSION EXPANDS A 32K CPU TO 256K BYTES BY ADDING AN INCREMENT OF 224K BYTES.	LIST RESALE	69,225 26,500	F	2,322	1,972 SEE CCC	250	B/2
23041	51	64K TO 128K MEMORY EXPANSION EXPANDS A 64K CPU TO 128K BYTES BY ADDING AN INCREMENT OF 64K BYTES.	LIST RESALE	29,094 11,500	F	977	829 SEE CCC	114	B/2
23041	52	64K TO 192K MEMORY EXPANSION EXPANDS A 64K CPU TO 192K BYTES BY ADDING AN INCREMENT OF 128K BYTES.	LIST RESALE	45,747 17,500	F	1,535	1,303 SEE CCC	176	B/2

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
23041	53	64K TO 256K MEMORY EXPANSION	LIST RESALE	59,280 23,500	F	1,989	1,689	SEE CCC	239	B/2
		EXPANDS A 64K CPU TO 256K BYTES BY ADDING AN INCREMENT OF 192K BYTES.								
23041	70	128K TO 192K MEMORY EXPANSION	LIST RESALE	29,094 11,500	F	977	829	SEE CCC	114	B/2
		EXPANDS A 128K CPU TO 192K BYTES BY ADDING AN INCREMENT OF 64K BYTES.								
23041	71	128K TO 256K MEMORY EXPANSION	LIST RESALE	45,747 17,500	F	1,535	1,303	SEE CCC	176	B/2
		EXPANDS A 128K CPU TO 256K BYTES BY ADDING AN INCREMENT OF 128K BYTES.								
23042	80	192K TO 256K MEMORY EXPANSION	LIST RESALE	29,094 11,500	F	977	829	SEE CCC	114	B/2
		EXPANDS A 192K CPU TO 256K BYTES BY ADDING AN INCREMENT OF 64K BYTES.								
23042	81	192K TO 384K MEMORY EXPANSION	LIST RESALE	59,280 23,500	F	1,989	1,689	SEE CCC	336	B/2
		EXPANDS A 192K CPU TO 384K BYTES BY ADDING AN INCREMENT OF 192K BYTES.								
23042	90	256K TO 384K MEMORY EXPANSION	LIST RESALE	45,747 17,500	F	1,535	1,303	SEE CCC	275	B/2
		EXPANDS A 256K CPU TO 384K BYTES BY ADDING AN INCREMENT OF 128K BYTES.								
23042	91	256K TO 448K MEMORY EXPANSION	LIST RESALE	59,280 23,500	F	1,989	1,689	SEE CCC	336	B/2
		EXPANDS A 256K CPU TO 448K BYTES BY ADDING AN INCREMENT OF 192K BYTES.								
23043	45	32K TO 384K MEMORY EXPANSION	LIST RESALE	108,732 44,000	F	3,648	3,098	SEE CCC	483	B/2
		EXPANDS A 32K CPU TO 384K BYTES BY ADDING AN INCREMENT OF 352K BYTES.								
23043	46	32K TO 448K MEMORY EXPANSION	LIST RESALE	128,544 50,000	F	4,311	3,662	SEE CCC	547	B/2
		EXPANDS A 32K CPU TO 448K BYTES BY ADDING AN INCREMENT OF 416K BYTES.								
23043	54	64K TO 384K MEMORY EXPANSION	LIST RESALE	98,865 41,000	F	3,317	2,817	SEE CCC	458	B/2
		EXPANDS A 64K CPU TO 384K BYTES BY ADDING AN INCREMENT OF 320K BYTES.								
23043	55	64K TO 448K MEMORY EXPANSION	LIST RESALE	110,638 47,000	F	3,980	3,380	SEE CCC	513	B/2
		EXPANDS A 64K CPU TO 448K BYTES BY ADDING AN INCREMENT OF 384K BYTES.								
23043	72	128K TO 384K MEMORY EXPANSION	LIST RESALE	79,170 35,000	F	2,655	2,256	SEE CCC	439	B/2
		EXPANDS A 128K CPU TO 384K BYTES BY ADDING AN INCREMENT OF 256K BYTES.								
23043	73	128K TO 448K MEMORY EXPANSION	LIST RESALE	98,865 41,000	F	3,317	2,817	SEE CCC	457	B/2
		EXPANDS A 128K CPU TO 448K BYTES BY ADDING AN INCREMENT OF 320K BYTES.								
23043	82	192K TO 448K MEMORY EXPANSION	LIST RESALE	79,170 35,000	F	2,655	2,256	SEE CCC	399	B/2
		EXPANDS A 192K CPU TO 448K BYTES BY ADDING AN INCREMENT OF 256K BYTES.								
23050		IBM 360/50 MEMORY SYSTEM A PERFORMANCE INTERCHANGEABLE MEMORY SYSTEM FOR USE WITH IBM SYSTEM/360 MODEL 50 COMPUTERS. STORAGE CAPACITY IS AVAILABLE IN INCREMENTS TO 1024K BYTES. THE MEMORY SYSTEM OPERATES AT THE CYCLE TIME OF THE CPU.								
23051	71	128K TO 256K MEMORY EXPANSION	LIST RESALE	48,555 15,000	F	1,629	1,383	SEE CCC	186	B/2
		EXPANDS A 128K CPU TO 256K BYTES BY ADDING AN INCREMENT OF 128K BYTES.								
23051	72	128K TO 384K MEMORY EXPANSION	LIST RESALE	75,543 25,000	F	2,534	2,152	SEE CCC	344	B/2
		EXPANDS A 128K CPU TO 384K BYTES BY ADDING AN INCREMENT OF 256K BYTES.								
23051	74	128K TO 512K MEMORY EXPANSION	LIST RESALE	94,302 35,000	F	3,164	2,687	SEE CCC	504	B/2
		EXPANDS A 128K CPU TO 512K BYTES BY ADDING AN INCREMENT OF 384K BYTES.								
23051	90	256K TO 384K MEMORY EXPANSION	LIST RESALE	48,555 15,000	F	1,629	1,383	SEE CCC	186	B/2
		EXPANDS A 256K CPU TO 384K BYTES BY ADDING AN INCREMENT OF 128K BYTES.								
23051	92	256K TO 512K MEMORY EXPANSION	LIST RESALE	75,543 25,000	F	2,534	2,152	SEE CCC	344	B/2
		EXPANDS A 256K CPU TO 512K BYTES BY ADDING AN INCREMENT OF 256K BYTES.								
23051	101	384K TO 512K MEMORY EXPANSION	LIST RESALE	48,555 15,000	F	1,629	1,383	SEE CCC	186	B/2
		EXPANDS A 384K CPU TO 512K BYTES BY ADDING AN INCREMENT OF 128K BYTES.								

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
23051	102	384K TO 768K MEMORY EXPANSION	LIST	94,302	F	3,074	2,687	SEE CCC	504	B/2
			RESALE	35,000						
		EXPANDS A 384K CPU TO 768K BYTES BY ADDING AN INCREMENT OF 384K BYTES.								
23052	93	256K TO 768K MEMORY EXPANSION	LIST	121,290	F	4,068	3,456	SEE CCC	664	B/2
			RESALE	45,000						
		EXPANDS A 256K CPU TO 768K BYTES BY ADDING AN INCREMENT OF 512K BYTES.								
23052	120	512K TO 768K MEMORY EXPANSION	LIST	75,543	F	2,534	2,152	SEE CCC	344	B/2
			RESALE	25,000						
		EXPANDS A 512K CPU TO 768K BYTES BY ADDING AN INCREMENT OF 256K BYTES.								
23052	121	512K TO 1024K MEMORY EXPANSION	LIST	121,290	F	4,068	3,456	SEE CCC	664	B/2
			RESALE	45,000						
		EXPANDS A 512K CPU TO 1024K BYTES BY ADDING AN INCREMENT OF 512K BYTES.								
23053	75	128K TO 768K MEMORY EXPANSION	LIST	145,548	F	4,883	4,147	SEE CCC	839	B/2
			RESALE	55,000						
		EXPANDS A 128K CPU TO 768K BYTES BY ADDING AN INCREMENT OF 640K BYTES.								
23053	76	128K TO 1024K MEMORY EXPANSION	LIST	199,485	F	6,692	5,683	SEE CCC	1,154	B/2
			RESALE	75,000						
		EXPANDS A 128K CPU TO 1024K BYTES BY ADDING AN INCREMENT OF 896K BYTES.								
23053	94	256K TO 1024K MEMORY EXPANSION	LIST	175,071	F	5,873	4,985	SEE CCC	997	B/2
			RESALE	65,000						
		EXPANDS A 256K CPU TO 1024K BYTES BY ADDING AN INCREMENT OF 768K BYTES.								
23053	103	384K TO 1024K MEMORY EXPANSION	LIST	145,548	F	4,883	4,147	SEE CCC	839	B/2
			RESALE	55,000						
		EXPANDS A 384K CPU TO 1024K BYTES BY ADDING AN INCREMENT OF 640K BYTES.								
23065		IBM 360/65 MEMORY SYSTEM								
		A PERFORMANCE INTERCHANGEABLE MEMORY SYSTEM FOR USE IN PLACE OF IBM 2365 MODEL 2 MEMORIES STORAGE CAPACITY IS AVAILABLE IN INCREMENTS OF 256K BYTES. UTILIZED ON IBM SYSTEM/360 MODEL 65.								
23065	10	OK TO 256K MEMORY EXPANSION	LIST	74,530	F	2,381	2,022	SEE CCC	506	B/2
			RESALE	52,000						
		EXPANDS A OK CPU TO 256K BYTES BY ADDING AN INCREMENT OF 256K BYTES.								
23065	11	256K TO 512K MEMORY EXPANSION	LIST	74,530	F	2,381	2,022	SEE CCC	506	B/2
			RESALE	52,000						
		EXPANDS A 256K CPU TO 512K BYTES BY ADDING AN INCREMENT OF 256K BYTES.								
23065	12	512K TO 768K MEMORY EXPANSION	LIST	74,530	F	2,381	2,022	SEE CCC	506	B/2
			RESALE	52,000						
		EXPANDS A 512K CPU TO 768K BYTES BY ADDING AN INCREMENT OF 256K BYTES.								
23065	13	768K TO 1024K MEMORY EXPANSION	LIST	74,530	F	2,381	2,022	SEE CCC	506	B/2
			RESALE	52,000						
		EXPANDS A 768K CPU TO 1024K BYTES BY ADDING AN INCREMENT OF 256K BYTES.								
23065	14	1024K TO 1280K MEMORY EXPAN.	LIST	74,530	F	2,381	2,022	SEE CCC	506	B/2
			RESALE	52,000						
		EXPANDS A 1024K CPU TO 1280K BYTES BY ADDING AN INCREMENT OF 256K BYTES.								
23065	20	OK TO 512K MEMORY EXPANSION	LIST	119,925	F	4,023	3,417	SEE CCC	846	B/2
			RESALE	68,000						
		EXPANDS A OK CPU TO 512K BYTES BY ADDING AN INCREMENT OF 512K BYTES.								
23065	21	256K TO 768K MEMORY EXPANSION	LIST	119,925	F	4,023	3,417	SEE CCC	846	B/2
			RESALE	68,000						
		EXPANDS A 256K CPU TO 768K BYTES BY ADDING AN INCREMENT OF 512K BYTES.								
23065	22	512K TO 1024K MEMORY EXPANSION	LIST	119,925	F	4,023	3,417	SEE CCC	846	B/2
			RESALE	68,000						
		EXPANDS A 512K CPU TO 1024K BYTES BY ADDING AN INCREMENT OF 512K BYTES.								
23065	23	768K TO 1280K MEMORY EXPANSION	LIST	119,925	F	4,023	3,417	SEE CCC	846	B/2
			RESALE	68,000						
		EXPANDS A 768K CPU TO 1280K BYTES BY ADDING AN INCREMENT OF 512K BYTES.								
23065	24	1024K TO 1536K MEMORY EXPAN.	LIST	119,925	F	4,023	3,417	SEE CCC	846	B/2
			RESALE	68,000						
		EXPANDS A 1024K CPU TO 1536K BYTES BY ADDING AN INCREMENT OF 512K BYTES.								
23065	30	OK TO 768K MEMORY EXPANSION	LIST	176,826	F	5,931	5,038	SEE CCC	1,184	B/2
			RESALE	84,000						
		EXPANDS A OK CPU TO 768K BYTES BY ADDING AN INCREMENT OF 768K BYTES.								
23065	31	256K TO 1024K MEMORY EXPANSION	LIST	176,826	F	5,931	5,038	SEE CCC	1,184	B/2
			RESALE	84,000						
		EXPANDS A 256K CPU TO 1024K BYTES BY ADDING AN INCREMENT OF 768K BYTES.								

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PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
23065	32	512K TO 1280K MEMORY EXPANSION	LIST	176,826	F	5,931	5,038	SEE CCC	1,184	B/2
			RESALE	84,000						
		EXPANDS A 512K CPU TO 1280K BYTES BY ADDING AN INCREMENT OF 768K BYTES.								
23065	33	768K TO 1536K MEMORY EXPANSION	LIST	176,826	F	5,931	5,038	SEE CCC	1,184	B/2
			RESALE	84,000						
		EXPANDS A 768K CPU TO 1536K BYTES BY ADDING AN INCREMENT OF 768K BYTES.								
23065	34	1026K TO 1792K MEMORY EXPAN.	LIST	176,826	F	5,931	5,038	SEE CCC	1,184	B/2
			RESALE	84,000						
		EXPANDS A 1024K CPU TO 1792K BYTES BY ADDING AN INCREMENT OF 768K BYTES.								
23065	40	OK TO 1024K MEMORY EXPANSION	LIST	220,974	F	7,412	6,296	SEE CCC	1,522	B/2
			RESALE	100,000						
		EXPANDS A OK CPU TO 1024K BYTES BY ADDING AN INCREMENT OF 1024K BYTES.								
23065	41	256K TO 1280K MEMORY EXPANSION	LIST	220,974	F	7,412	6,296	SEE CCC	1,522	B/2
			RESALE	100,000						
		EXPANDS A 256K CPU TO 1280K BYTES BY ADDING AN INCREMENT OF 1024K BYTES.								
23065	42	512K TO 1536K MEMORY EXPANSION	LIST	220,974	F	7,412	6,296	SEE CCC	1,522	B/2
			RESALE	100,000						
		EXPANDS A 512K CPU TO 1536K BYTES BY ADDING AN INCREMENT OF 1024K BYTES.								
23065	43	768K TO 1792K MEMORY EXPANSION	LIST	220,974	F	7,412	6,296	SEE CCC	1,522	B/2
			RESALE	100,000						
		EXPANDS A 768K CPU TO 1792K BYTES BY ADDING AN INCREMENT OF 1024K BYTES.								
23065	44	1024K TO 2048K MEMORY EXPAN.	LIST	220,974	F	7,412	6,296	SEE CCC	1,522	B/2
			RESALE	100,000						
		EXPANDS A 1024K CPU TO 2048K BYTES BY ADDING AN INCREMENT OF 1024K BYTES.								
23065	50	OK TO 1280K MEMORY EXPANSION	LIST	284,154	F	9,531	8,096	SEE CCC	1,863	B/2
			RESALE	152,000						
		EXPANDS A OK CPU TO 1280K BYTES BY ADDING AN INCREMENT OF 1280K BYTES.								
23065	51	256K TO 1536K MEMORY EXPANSION	LIST	284,154	F	9,531	8,096	SEE CCC	1,863	B/2
			RESALE	152,000						
		EXPANDS A 256K CPU TO 1536K BYTES BY ADDING AN INCREMENT OF 1280K BYTES.								
23065	52	512K TO 1792K MEMORY EXPANSION	LIST	284,154	F	9,531	8,096	SEE CCC	1,863	B/2
			RESALE	152,000						
		EXPANDS A 512K CPU TO 1792K BYTES BY ADDING AN INCREMENT OF 1280K BYTES.								
23065	53	768K TO 2048K MEMORY EXPANSION	LIST	284,154	F	9,531	8,096	SEE CCC	1,863	B/2
			RESALE	152,000						
		EXPANDS A 768K CPU TO 2048K BYTES BY ADDING AN INCREMENT OF 1280K BYTES.								
23065	54	1024K TO 2304K MEMORY EXPAN.	LIST	284,154	F	9,531	8,096	SEE CCC	1,863	B/2
			RESALE	152,000						
		EXPANDS A 1024K CPU TO 2304K BYTES BY ADDING AN INCREMENT OF 1280K BYTES.								
23065	60	OK TO 1536K MEMORY EXPANSION	LIST	340,899	F	11,435	9,712	SEE CCC	2,202	B/2
			RESALE	168,000						
		EXPANDS A OK CPU TO 1536K BYTES BY ADDING AN INCREMENT OF 1536K BYTES.								
23065	61	256K TO 1792K MEMORY EXPANSION	LIST	340,899	F	11,435	9,712	SEE CCC	2,202	B/2
			RESALE	168,000						
		EXPANDS A 256K CPU TO 1792K BYTES BY ADDING AN INCREMENT OF 1536K BYTES.								
23065	62	512K TO 2048K MEMORY EXPANSION	LIST	340,899	F	11,435	9,712	SEE CCC	2,202	B/2
			RESALE	168,000						
		EXPANDS A 512K CPU TO 2048K BYTES BY ADDING AN INCREMENT OF 1536K BYTES.								
23065	63	768K TO 2304K MEMORY EXPANSION	LIST	340,899	F	11,435	9,712	SEE CCC	2,202	B/2
			RESALE	168,000						
		EXPANDS A 768K CPU TO 2304K BYTES BY ADDING AN INCREMENT OF 1536K BYTES.								
23065	64	1024K TO 2560K MEMORY EXPAN.	LIST	340,899	F	11,435	9,712	SEE CCC	2,202	B/2
			RESALE	168,000						
		EXPANDS A 1024K CPU TO 2560K BYTES BY ADDING AN INCREMENT OF 1536K BYTES.								
23065	70	OK TO 1792K MEMORY EXPANSION	LIST	397,800	F	13,343	11,333	SEE CCC	2,541	B/2
			RESALE	184,000						
		EXPANDS A OK CPU TO 1792K BYTES BY ADDING AN INCREMENT OF 1792K BYTES.								
23065	71	256K TO 2048K MEMORY EXPANSION	LIST	397,800	F	13,343	11,333	SEE CCC	2,541	B/2
			RESALE	184,000						
		EXPANDS A 256K CPU TO 2048K BYTES BY ADDING AN INCREMENT OF 1792K BYTES.								
23065	72	512K TO 2304K MEMORY EXPANSION	LIST	397,800	F	13,343	11,333	SEE CCC	2,541	B/2
			RESALE	184,000						
		EXPANDS A 512K CPU TO 2304K BYTES BY ADDING AN INCREMENT OF 1792K BYTES.								

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
23065	73	768K TO 2560K MEMORY EXPANSION EXPANDS A 768K CPU TO 2560K BYTES BY ADDING AN INCREMENT OF 1792K BYTES.	LIST RESALE	397,800 184,000	F	13,343	11,333	SEE CCC	2,541	B/2
23065	74	1024K TO 2816K MEMORY EXPAN. EXPANDS A 1024K CPU TO 2816K BYTES BY ADDING AN INCREMENT OF 1792K BYTES.	LIST RESALE	397,800 184,000	F	13,343	11,333	SEE CCC	2,541	B/2
23065	80	OK TO 2048K MEMORY EXPANSION EXPANDS A OK CPU TO 2048K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.	LIST RESALE	441,909 200,000	F	14,823	12,590	SEE CCC	2,882	B/2
23065	81	256K TO 2304K MEMORY EXPANSION EXPANDS A 256K CPU TO 2304K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.	LIST RESALE	441,909 200,000	F	14,823	12,590	SEE CCC	2,882	B/2
23065	82	512K TO 2560K MEMORY EXPANSION EXPANDS A 512K CPU TO 2560K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.	LIST RESALE	441,909 200,000	F	14,823	12,590	SEE CCC	2,882	B/2
23065	83	768K TO 2816K MEMORY EXPANSION EXPANDS A 768K CPU TO 2816K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.	LIST RESALE	441,909 200,000	F	14,823	12,590	SEE CCC	2,882	B/2
23065	84	1024K TO 3072K MEMORY EXPAN. EXPANDS A 1024K CPU TO 3072K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.	LIST RESALE	441,909 200,000	F	14,823	12,590	SEE CCC	2,882	B/2
23065	90	OK TO 2304K MEMORY EXPANSION EXPANDS A OK CPU TO 2304K BYTES BY ADDING AN INCREMENT OF 2304K BYTES.	LIST RESALE	512,859 252,000	F	17,204	14,612	SEE CCC	3,221	B/2
23065	91	256K TO 2560K MEMORY EXPANSION EXPANDS A 256K CPU TO 2560K BYTES BY ADDING AN INCREMENT OF 2304K BYTES.	LIST RESALE	512,859 252,000	F	17,204	14,612	SEE CCC	3,221	B/2
23065	92	512K TO 2816K MEMORY EXPANSION EXPANDS A 512K CPU TO 2816K BYTES BY ADDING AN INCREMENT OF 2304K BYTES.	LIST RESALE	512,859 252,000	F	17,204	14,612	SEE CCC	3,221	B/2
23065	93	768K TO 3072K MEMORY EXPANSION EXPANDS A 768K CPU TO 3072K BYTES BY ADDING AN INCREMENT OF 2304K BYTES.	LIST RESALE	512,859 252,000	F	17,204	14,612	SEE CCC	3,221	B/2
23065	94	1024K TO 3328K MEMORY EXPAN. EXPANDS A 1024K CPU TO 3328K BYTES BY ADDING AN INCREMENT OF 2304K BYTES.	LIST RESALE	512,859 252,000	F	17,204	14,612	SEE CCC	3,221	B/2
23065	100	OK TO 2560K MEMORY EXPANSION EXPANDS A OK CPU TO 2560K BYTES BY ADDING AN INCREMENT OF 2560K BYTES.	LIST RESALE	561,873 268,000	F	18,846	16,008	SEE CCC	3,559	B/2
23065	101	256K TO 2816K MEMORY EXPANSION EXPANDS A 256K CPU TO 2816K BYTES BY ADDING AN INCREMENT OF 2560K BYTES.	LIST RESALE	561,873 268,000	F	18,846	16,008	SEE CCC	3,559	B/2
23065	102	512K TO 3072K MEMORY EXPANSION EXPANDS A 512K CPU TO 3072K BYTES BY ADDING AN INCREMENT OF 2560K BYTES.	LIST RESALE	561,873 268,000	F	18,846	16,008	SEE CCC	3,559	B/2
23065	103	768K TO 3328K MEMORY EXPANSION EXPANDS A 768K CPU TO 3328K BYTES BY ADDING AN INCREMENT OF 2560K BYTES.	LIST RESALE	561,873 268,000	F	18,846	16,008	SEE CCC	3,559	B/2
23065	104	1024K TO 3584K MEMORY EXPAN. EXPANDS A 1024K CPU TO 3584K BYTES BY ADDING AN INCREMENT OF 2560K BYTES.	LIST RESALE	561,873 268,000	F	18,846	16,008	SEE CCC	3,559	B/2
23065	110	OK TO 2816K MEMORY EXPANSION EXPANDS A OK CPU TO 2816K BYTES BY ADDING AN INCREMENT OF 2816K BYTES.	LIST RESALE	618,735 284,000	F	20,754	17,628	SEE CCC	3,898	B/2
23065	111	256K TO 3072K MEMORY EXPANSION EXPANDS A 256K CPU TO 3072K BYTES BY ADDING AN INCREMENT OF 2816K BYTES.	LIST RESALE	618,735 284,000	F	20,754	17,628	SEE CCC	3,898	B/2
23065	112	512K TO 3328K MEMORY EXPANSION EXPANDS A 512K CPU TO 3328K BYTES BY ADDING AN INCREMENT OF 2816K BYTES.	LIST RESALE	618,735 284,000	F	20,754	17,628	SEE CCC	3,544	B/2
23065	113	768K TO 3584K MEMORY EXPANSION EXPANDS A 768K CPU TO 3584K BYTES BY ADDING AN INCREMENT OF 2816K BYTES.	LIST RESALE	618,735 284,000	F	20,754	17,628	SEE CCC	3,898	B/2

CHANGES EFFECTIVE 05/01/80

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
23065	114	1024K TO 3840K MEMORY EXPAN.	LIST RESALE	618,735 284,000	F	20,754	17,628	SEE CCC	3,898	B/2
		EXPANDS A 1024K CPU TO 3840K BYTES BY ADDING AN INCREMENT OF 2816K BYTES.								
23065	120	0K TO 3072K MEMORY EXPANSION	LIST RESALE	662,883 300,000	F	22,235	18,886	SEE CCC	4,238	B/2
		EXPANDS A 0K CPU TO 3072K BYTES BY ADDING AN INCREMENT OF 3072K BYTES.								
23065	121	256K TO 3328K MEMORY EXPANSION	LIST RESALE	662,883 300,000	F	22,235	18,886	SEE CCC	4,238	B/2
		EXPANDS A 256K CPU 3328K BYTES BY ADDING AN INCREMENT OF 3072K BYTES.								
23065	122	512K TO 3584K MEMORY EXPANSION	LIST RESALE	662,883 300,000	F	22,235	18,886	SEE CCC	4,238	B/2
		EXPANDS A 512K CPU TO 3584K BYTES BY ADDING AN INCREMENT OF 3072K BYTES.								
23065	123	768K TO 3840K MEMORY EXPANSION	LIST RESALE	662,883 300,000	F	22,235	18,886	SEE CCC	4,238	B/2
		EXPANDS A 768K CPU TO 3840K BYTES BY ADDING AN INCREMENT OF 3072K BYTES.								
23065	124	1024K TO 4096K MEMORY EXPAN.	LIST RESALE	662,883 300,000	F	22,235	18,886	SEE CCC	4,238	B/2
		EXPANDS A 1024K CPU TO 4096K BYTES BY ADDING AN INCREMENT OF 3072K BYTES.								
23065	130	0K TO 3328K MEMORY EXPANSION	LIST RESALE	726,063 352,000	F	24,354	20,686	SEE CCC	4,578	B/2
		EXPANDS A 0K CPU TO 3328K BYTES BY ADDING AN INCREMENT OF 3328K BYTES.								
23065	131	256K TO 3584K MEMORY EXPANSION	LIST RESALE	726,063 352,000	F	24,354	20,686	SEE CCC	4,578	B/2
		EXPANDS A 256K CPU TO 3584K BYTES BY ADDING AN INCREMENT OF 3328K BYTES.								
23065	132	512K TO 3840K MEMORY EXPANSION	LIST RESALE	726,063 352,000	F	24,354	20,686	SEE CCC	4,578	B/2
		EXPANDS A 512K CPU TO 3840K BYTES BY ADDING AN INCREMENT OF 3328K BYTES.								
23065	133	768K TO 4096K MEMORY EXPANSION	LIST RESALE	726,063 352,000	F	24,354	20,686	SEE CCC	4,578	B/2
		EXPANDS A 768K CPU TO 4096K BYTES BY ADDING AN INCREMENT OF 3328K BYTES.								
23065	140	0K TO 3584K MEMORY EXPANSION	LIST RESALE	782,808 368,000	F	26,258	22,302	SEE CCC	4,916	B/2
		EXPANDS A 0K CPU TO 3584K BYTES BY ADDING AN INCREMENT OF 3584K BYTES.								
23065	141	256K TO 3840K MEMORY EXPANSION	LIST RESALE	782,808 368,000	F	26,258	22,302	SEE CCC	4,916	B/2
		EXPANDS A 256K CPU TO 3840K BYTES BY ADDING AN INCREMENT OF 3584K BYTES.								
23065	142	512K TO 4096K MEMORY EXPANSION	LIST RESALE	782,808 368,000	F	26,258	22,302	SEE CCC	4,916	B/2
		EXPANDS A 512K CPU TO 4096K BYTES BY ADDING AN INCREMENT OF 3584K BYTES.								
23065	150	0K TO 3840K MEMORY EXPANSION	LIST RESALE	837,709 384,000	F	28,166	23,923	SEE CCC	5,255	B/2
		EXPANDS A 0K CPU TO 3840K BYTES BY ADDING AN INCREMENT OF 3840K BYTES.								
23065	151	256K TO 4096K MEMORY EXPANSION	LIST RESALE	837,709 384,000	F	28,166	23,923	SEE CCC	5,255	B/2
		EXPANDS A 256K CPU TO 4096K BYTES BY ADDING AN INCREMENT OF 3840K BYTES.								
23065	160	0K TO 4096K MEMORY EXPANSION	LIST RESALE	883,857 400,000	F	29,646	25,181	SEE CCC	5,595	B/2
		EXPANDS A 0K CPU TO 4096K BYTES BY ADDING AN INCREMENT OF 4096K BYTES.								
23121		DISK STORAGE UNITS	LIST RESALE	10,400 4,000	C	227	193	SEE CCC	101	A/2
		CONTAINS 29,176K EIGHT BIT BYTES OF RANDOM ACCESS MASS STORAGE, 35 MS AVERAGE POSITIONING TIME. RECEIVES FROM 23141 /23142 /								
23122		DISK STORAGE UNIT	LIST RESALE	12,600 6,500	C	312	265	SEE CCC	109	A/2
		CONTAINS 58,352K EIGHT BIT BYTES IN TWO LOGICAL UNITS OF 29,176K BYTES EACH, 25 MS AVERAGE POSITIONING TIME. RECEIVES FROM 23142 /								
23141		MULTIPLE DISK SUBSYSTEM CONTR.	LIST RESALE	28,000 10,000	C	1,135	965	SEE CCC	163	A/2
		PROVIDES CONTROL FOR UP TO 8 PLUS ONE OFF-LINE 23121 DISK STORAGE UNIT. COMPATIBLE REPLACEMENT FOR ANY IBM 2314 DISK ACCESS STORAGE FACILITY. SENDS TO 23121 / AVA OPTIONS 68209 /								

PRODUCT MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
23142	MULTIPLE DISK SUBSYSTEM CONTR.	LIST	35,000	C	1,415	1,205	SEE CCC	178	A/2
		RESALE	15,000						
	PROVIDES CONTROL FOR UP TO 8 PLUS ONE OFF-LINE 23122 OR 23121 DISK STORAGE UNIT. NO CHARGE SPO 68311 REQUIRED ON EACH 23121 DSU WHEN 23121 DSU IS INTERMIXED WITH 23122 DSU ON A 23142. COMPATIBLE WITH BOTH IBM SYSTEM/360 AND IBM SYSTEM/370 SELECTOR CHANNELS.								
	SENDS TO 23121 /23122 /								
	AVA OPTIONS 68219 /								
27801 10	BATCH TERMINAL CONTROLLER	LIST	13,015	E	360	280	SEE CCC	129	D/2
		RESALE	13,015						
	PROCESSOR WITH 16K BYTES OF R/W MEMORY, COMMUNICATION LINE ADAPTER, OPERATOR PANEL, KEYBOARD/DISPLAY, CARD READER SUPPORT STRUCTURE WITH MODEM SHELF, HARDWARE-CYCLIC ENCODER, AND IBM 2780 (MODEL 1) EMULATION CONTROLWARE. COMMUNICATES WITH ANOTHER EQUIVALENT 2780 TERMINAL OR A CENTRAL SITE THAT SUPPORTS 2780 TERMINALS. COMMUNICATION IS SYNCHRONOUS, TWO WAY ALTERNATE, TWO WIRE OR FOUR WIRE, AT 1200 TO 9600 BPS. INTERFACE IS RS232-C/CCITT V24 COMPATIBLE.								
	SENDS TO 27801 11/27801 12/27801 21/								
	SENDS TO 27801 22/27801 25/								
	AVA OPTIONS 27801 91/27801 92/								
27801 11	CARD READER	LIST	2,940	E	80	66	SEE CCC	44	D/2
		RESALE	2,940						
	PHOTOELECTRICALLY READS 300 CARDS/MINUTE, 80 COLUMN CARDS. CARD HOPPER CAPACITY, 1000. CARD STACKER CAPACITY, 1500. TABLE TOP MOUNTING.								
	RECEIVES FROM 27801 10/								
27801 12	CARD READER	LIST	4,410	E	130	107	SEE CCC	53	D/2
		RESALE	4,410						
	PHOTOELECTRICALLY READS 600 CARDS/MINUTE, 80 COLUMN CARDS. CARD HOPPER CAPACITY, 1000. CARD STACKER CAPACITY, 1500. TABLE TOP MOUNTING.								
	RECEIVES FROM 27801 10/								
27801 21	LINE PRINTER	LIST	10,435	E	258	217	SEE CCC	220	D/2
		RESALE	10,435						
	QUIETIZED DRUM PRINTER WITH TWO POSITION PAPER SHIFT. PRINTS 300 LINES PER MINUTE WITH 63 PRINTING CHARACTERS PLUS SPACE, 80 COLUMNS.								
	RECEIVES FROM 27801 10/								
27801 22	LINE PRINTER	LIST	11,340	E	304	251	SEE CCC	247	D/2
		RESALE	11,340						
	QUIETIZED DRUM PRINTER WITH TWO POSITION PAPER SHIFT. PRINTS 300 LINES PER MINUTE WITH 63 PRINTING CHARACTERS PLUS SPACE, 136 COLUMNS.								
	RECEIVES FROM 27801 10/								
27801 25	LINE PRINTER	LIST	20,370	E	596	492	SEE CCC	314	D/2
		RESALE	20,370						
	QUIETIZED DRUM PRINTER, PRINTS 600 LINES PER MINUTE WITH 63 PRINTING CHARACTERS PLUS SPACE 136 COLUMNS.								
	RECEIVES FROM 19415 1/27801 10/								
27801 91	200 UT EMULATION	LIST	2,625	E	100	97	SEE CCC	10	D/2
		RESALE	2,625						
	PROVIDES 200 UT EMULATION CONTROLWARE (LOADED VIA THE CARD READER) AND A KEYBOARD/EXPANDED DISPLAY, WHICH MUST REPLACE THE KEYBOARD/DISPLAY, PROVIDED WITH THE 27801-10 TERMINAL CONTROLLER. THE DISPLACED KEYBOARD/DISPLAY MUST BE RETURNED TO CONTROL DATA CORPORATION. COMMUNICATION IS SYNCHRONOUS, 2-WAY ALTERNATE 2 WIRE OR 4 WIRE, AT 1200-9600 BPS.								
	OPT APPLIES TO27801 10/								
27801 92	IBM 3780 EMULATION OPTION	LIST	N/C		N/C	N/C	SEE CCC	N/C	
		RESALE	N/C						
	PROVIDES IBM 3780 EMULATION CONTROLWARE (LOADED VIA THE CARD READER). ALLOWS COMMUNICATION WITH ANOTHER EQUIVALENT 3780 TERMINAL OR A CENTRAL SITE THAT SUPPORTS 3780 TERMINALS. COMMUNICATION IS SYNCHRONOUS, 2-WAY ALTERNATE, 2 WIRE OR 4 WIRE, AT 1200-9600 BPS.								
	OPT APPLIES TO27801 10/								
28211 10	PRINTER CONTROLLER	LIST	24,567	C	524	445	SEE CCC	65	C/2
		RESALE	10,766						
	CONTROLS ONE 14031 PRINTER. REPLACEMENT FOR IBM 2821-1 OR 2821-2.								
	AVA OPTIONS 69409 40/68409 41/68409 42/								
33031 XXX	MEMORY SYSTEM								
	A PERFORMANCE INTERCHANGEABLE MEMORY SYSTEM FOR USE WITH IBM 3031 COMPUTER SYSTEMS. REQUIRED OPTIONS - 69109-X AND 69110-X. THE PRICE INCLUDES ONE (1) 69109-X (33031 ATTACHMENT KIT) WHEN ORDERED CONCURRENTLY WITH THIS MEMORY. ORDER MUST SPECIFY ATTACHMENT FEATURE PRODUCT AND MODEL NUMBER.								
	AVA OPTIONS 69109 X 69110 X 69111 X								
33031 101	1024K BYTE CDC MEMORY SYSTEM	LIST	75,000	E	2,600	2,125	SEE CCC	362	B/2
		RESALE	47,000						
33031 102	2048K BYTE CDC MEMORY SYSTEM	LIST	136,000	E	3,975	3,250	SEE CCC	509	B/2
		RESALE	74,000						
33031 103	3072K BYTE CDC MEMORY SYSTEM	LIST	197,000	E	5,350	4,375	SEE CCC	656	B/2
		RESALE	101,000						
33031 104	4096K BYTE CDC MEMORY SYSTEM	LIST	258,000	E	6,725	5,500	SEE CCC	830	B/2
		RESALE	128,000						

PRODUCT MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/12MO	SALE 5 YEAR		MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
33031 105	5120K BYTE CDC MEMORY SYSTEM	LIST	319,000	E	8,100	6,625	SEE CCC	1,008	B/2
		RESALE	155,000						
33031 106	6144K BYTE CDC MEMORY SYSTEM	LIST	380,000	E	9,475	7,750	SEE CCC	1,192	B/2
		RESALE	182,000						
33032 XXX	MEMORY SYSTEM A PERFORMANCE INTERCHANGEABLE MEMORY SYSTEM FOR USE WITH IBM 3032 COMPUTER SYSTEMS. REQUIRED OPTIONS - 69112-X AND 69113-X. THE PRICE INCLUDES ONE (1) 69112-X (33032 ATTACHMENT KIT) WHEN ORDERED CONCURRENTLY WITH THIS MEMORY. ORDER MUST SPECIFY ATTACHMENT FEATURE PRODUCT AND MODEL NUMBER AVA OPTIONS 69112 X/69113 X/69114/X								
33032 101	1024K BYTE CDC MEMORY SYSTEM	LIST	75,000	E	2,600	2,125	SEE CCC	362	B/2
		RESALE	47,000						
33032 102	2048K BYTE CDC MEMORY SYSTEM	LIST	136,000	E	3,975	3,250	SEE CCC	509	B/2
		RESALE	74,000						
33032 103	3072K BYTE CDC MEMORY SYSTEM	LIST	197,000	E	5,350	4,375	SEE CCC	656	B/2
		RESALE	101,000						
33032 104	4096K BYTE CDC MEMORY SYSTEM	LIST	258,000	E	6,725	5,500	SEE CCC	830	B/2
		RESALE	128,000						
33032 106	6144K BYTE CDC MEMORY SYSTEM	LIST	380,000	E	9,475	7,750	SEE CCC	1,192	B/2
		RESALE	182,000						
33032 108	8192K BYTE CDC MEMORY SYSTEM	LIST	502,000	E	12,225	10,000	SEE CCC	1,515	B/2
		RESALE	236,000						
33032 110	10240K BYTE CDC MEMORY SYSTEM	LIST	624,000	E	14,975	12,250	SEE CCC	1,795	B/2
		RESALE	290,000						
33032 112	12288K BYTE CDC MEMORY SYSTEM	LIST	746,000	E	17,725	14,500	SEE CCC	2,075	B/2
		RESALE	344,000						
33032 114	14336K BYTE CDC MEMORY SYSTEM	LIST	868,000	E	20,475	16,750	SEE CCC	2,355	B/2
		RESALE	398,000						
33101 2XX	MEMORY SYSTEM A PERFORMANCE INTERCHANGEABLE MEMORY SYSTEM A PERFORMANCE INTERCHANGEABLE MEMORY SYSTEM FOR USE WITH IBM SYSTEM 370 MODEL 135 COMPUTER SYSTEMS. PRICE INCLUDES ONE 69045-5XX ATTACHMENT FOR 3135 WHEN ORDERED CONCURRENTLY WITH THIS MEMORY. ORDER MUST SPECIFY ATTACHMENT FEATURE PRODUCT AND MODEL NUMBER OF ATTACHMENT. MAINTENANCE PRICE LISTED IS FOR TARGET CITIES ONLY. SEE POLICY PAGE V.								
33101 202	256K BYTE CDC MEMORY SYSTEM	LIST	44,000	E	N/A	N/A	SEE CCC	230	B/2
		RESALE	40,000						
33101 203	384K BYTE CDC MEMORY SYSTEM	LIST	57,500	E	N/A	N/A	SEE CCC	280	B/2
		RESALE	45,000						
33101 204	512K BYTE CDC MEMORY SYSTEM	LIST	71,000	E	N/A	N/A	SEE CCC	330	B/2
		RESALE	50,000						
33101 205	640K BYTE CDC MEMORY SYSTEM	LIST	84,500	E	N/A	N/A	SEE CCC	390	B/2
		RESALE	55,000						
33101 206	768K BYTE CDC MEMORY SYSTEM	LIST	98,000	E	N/A	N/A	SEE CCC	430	B/2
		RESALE	60,000						
33101 207	896K BYTE CDC MEMORY SYSTEM	LIST	111,500	E	N/A	N/A	SEE CCC	480	B/2
		RESALE	65,000						
33101 208	1024K BYTE CDC MEMORY SYSTEM	LIST	125,000	E	N/A	N/A	SEE CCC	530	B/2
		RESALE	70,000						
33101 209	1152K BYTE CDC MEMORY SYSTEM	LIST	138,500	E	N/A	N/A	SEE CCC	615	B/2
		RESALE	75,000						
33101 210	1280K BYTE CDC MEMORY SYSTEM	LIST	152,000	E	N/A	N/A	SEE CCC	665	B/2
		RESALE	80,000						
33101 211	1408K BYTE CDC MEMORY SYSTEM	LIST	165,500	E	N/A	N/A	SEE CCC	715	B/2
		RESALE	85,000						
33101 212	1536K BYTE CDC MEMORY SYSTEM	LIST	179,000	E	N/A	N/A	SEE CCC	765	B/2
		RESALE	90,000						
33101 213	1664K BYTE CDC MEMORY SYSTEM	LIST	192,500	E	N/A	N/A	SEE CCC	815	B/2
		RESALE	95,000						
33101 214	1792K BYTE CDC MEMORY SYSTEM	LIST	207,000	E	N/A	N/A	SEE CCC	865	B/2
		RESALE	100,000						
33101 215	1920K BYTE CDC MEMORY SYSTEM	LIST	220,500	E	N/A	N/A	SEE CCC	915	B/2
		RESALE	105,000						
33101 216	2048K BYTE CDC MEMORY SYSTEM	LIST	233,000	E	N/A	N/A	SEE CCC	965	B/2
		RESALE	110,000						
33101 3XX	MEMORY SYSTEM A PERFORMANCE INTERCHANGEABLE MEMORY SYSTEM FOR USE WITH IBM SYSTEM 370 MODEL 138 COMPUTER SYSTEM. PRICE INCLUDES ONE 69045-6XX ATTACHMENT FOR 3138 WHEN ORDERED CONCURRENTLY WITH THIS MEMORY. ORDER MUST SPECIFY ATTACHMENT FEATURE PRODUCT AND MODEL NUMBER OF ATTACHMENT. MAINTENANCE PRICE LISTED IS FOR TARGET CITIES ONLY. SEE POLICY PAGE V.								
33101 301	256K BYTE CDC MEMORY SYSTEM	LIST	42,100	E	N/A	N/A	SEE CCC	230	B/2
		RESALE	30,000						
33101 302	512K BYTE CDC MEMORY SYSTEM	LIST	52,300	E	N/A	N/A	SEE CCC	330	B/2
		RESALE	40,000						

PRODUCT MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT SALE 1 YEAR	CCC BASE 3YR/	5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
33101 303	768K BYTE CDC MEMORY SYSTEM	LIST RESALE	67,500 50,000	E	N/A	N/A	SEE CCC	430	B/2
33101 304	1024K BYTE CDC MEMORY SYSTEM	LIST RESALE	82,600 60,000	E	N/A	N/A	SEE CCC	530	B/2
33101 305	1280K BYTE CDC MEMORY SYSTEM	LIST RESALE	100,000 70,000	E	N/A	N/A	SEE CCC	630	B/2
33101 306	1536K BYTE CDC MEMORY SYSTEM	LIST RESALE	117,800 80,000	E	N/A	N/A	SEE CCC	730	B/2

33101 4XX MEMORY SYSTEM
A PERFORMANCE INTERCHANGEABLE MEMORY SYSTEM FOR USE WITH IBM SYSTEM 370 MODEL 145-1,145-2 COMPUTER SYSTEMS.
PRICE INCLUDES ONE 69045-7XX ATTACHMENT FOR 3145 WHEN ORDERED CONCURRENLY WITH THIS MEMORY SYSTEM. ORDER MUST SPECIFY ATTACHMENT FEATURE PRODUCT AND MODEL NUMBER.
MAINTENANCE PRICE LISTED IS FOR TARGET CITIES ONLY. SEE POLICY PAGE V.

33101 402	256K BYTE CDC MEMORY SYSTEM	LIST RESALE	46,750 46,500	E	N/A	N/A	SEE CCC	265	B/2
33101 403	384K BYTE CDC MEMORY SYSTEM	LIST RESALE	59,750 51,500	E	N/A	N/A	SEE CCC	315	B/2
33101 404	512K BYTE CDC MEMORY SYSTEM	LIST RESALE	73,250 56,500	E	N/A	N/A	SEE CCC	365	B/2
33101 405	640K BYTE CDC MEMORY SYSTEM	LIST RESALE	86,750 61,500	E	N/A	N/A	SEE CCC	415	B/2
33101 406	768K BYTE CDC MEMORY SYSTEM	LIST RESALE	100,250 66,500	E	N/A	N/A	SEE CCC	465	B/2
33101 407	896K BYTE CDC MEMORY SYSTEM	LIST RESALE	113,750 71,500	E	N/A	N/A	SEE CCC	515	B/2
33101 408	1042K BYTE CDC MEMORY SYSTEM	LIST RESALE	127,250 76,500	E	N/A	N/A	SEE CCC	565	B/2
33101 409	1125K BYTE CDC MEMORY SYSTEM	LIST RESALE	140,750 81,500	E	N/A	N/A	SEE CCC	650	B/2
33101 410	1280K BYTE CDC MEMORY SYSTEM	LIST RESALE	154,250 86,500	E	N/A	N/A	SEE CCC	700	B/2
33101 411	1408K BYTE CDC MEMORY SYSTEM	LIST RESALE	167,750 91,500	E	N/A	N/A	SEE CCC	750	B/2
33101 412	1536K BYTE CDC MEMORY SYSTEM	LIST RESALE	181,250 96,500	E	N/A	N/A	SEE CCC	800	B/2
33101 413	1664K BYTE CDC MEMORY SYSTEM	LIST RESALE	194,750 101,500	E	N/A	N/A	SEE CCC	850	B/2
33101 414	1792K BYTE CDC MEMORY SYSTEM	LIST RESALE	209,250 106,500	E	N/A	N/A	SEE CCC	900	B/2
33101 415	1920K BYTE CDC MEMORY SYSTEM	LIST RESALE	222,750 111,500	E	N/A	N/A	SEE CCC	950	B/2
33101 416	2048K BYTE CDC MEMORY SYSTEM	LIST RESALE	235,250 116,500	E	N/A	N/A	SEE CCC	1,000	B/2
33101 418	2304K BYTE CDC MEMORY SYSTEM	LIST RESALE	262,250 126,500	E	N/A	N/A	SEE CCC	1,100	B/2
33101 420	2560K BYTE CDC MEMORY SYSTEM	LIST RESALE	289,250 136,500	E	N/A	N/A	SEE CCC	1,200	B/2
33101 422	2816K BYTE CDC MEMORY SYSTEM	LIST RESALE	316,250 146,500	E	N/A	N/A	SEE CCC	1,300	B/2
33101 424	3072K BYTE CDC MEMORY SYSTEM	LIST RESALE	343,250 156,500	E	N/A	N/A	SEE CCC	1,400	B/2
33101 426	3328K BYTE CDC MEMORY SYSTEM	LIST RESALE	370,250 166,500	E	N/A	N/A	SEE CCC	1,500	B/2
33101 428	3584K BYTE CDC MEMORY SYSTEM	LIST RESALE	407,250 176,500	E	N/A	N/A	SEE CCC	1,600	B/2
33101 430	3840K BYTE CDC MEMORY SYSTEM	LIST RESALE	424,250 186,500	E	N/A	N/A	SEE CCC	1,700	B/2

33101 5XX MEMORY SYSTEM
A PERFORMANCE INTERCHANGEABLE MEMORY SYSTEM FOR USE WITH IBM SYSTEM 370 MODEL 148 COMPUTER SYSTEM.
PRICE INCLUDES ONE 69045-8XX ATTACHMENT FOR 3148 WHEN ORDERED CONCURRENTLY WITH THIS MEMORY SYSTEM. ORDER MUST SPECIFY ATTACHMENT FEATURE PRODUCT AND MODEL NUMBER.
MAINTENANCE PRICE LISTED IS FOR TARGET CITIES ONLY. SEE POLICY PAGE V.

33101 501	256K BYTE CDC MEMORY SYSTEM	LIST RESALE	44,000 30,000	E	N/A	N/A	SEE CCC	265	B/2
33101 502	512K BYTE CDC MEMORY SYSTEM	LIST RESALE	54,300 40,000	E	N/A	N/A	SEE CCC	365	B/2

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
33101	503	768K BYTE CDC MEMORY SYSTEM	LIST	69,600	E	N/A	N/A	SEE CCC	465	B/2
			RESALE	50,000						
33101	504	1024K BYTE CDC MEMORY SYSTEM	LIST	84,700	E	N/A	N/A	SEE CCC	965	B/2
			RESALE	60,000						
33101	505	1536K BYTE CDC MEMORY SYSTEM	LIST	119,500	E	N/A	N/A	SEE CCC	800	B/2
			RESALE	80,000						
33101	506	2048K BYTE CDC MEMORY SYSTEM	LIST	154,500	E	N/A	N/A	SEE CCC	1,000	B/2
			RESALE	100,000						
33101	507	2560K BYTE CDC MEMORY SYSTEM	LIST	189,000	E	N/A	N/A	SEE CCC	1,200	B/2
			RESALE	120,000						
33101	508	3072K BYTE CDC MEMORY SYSTEM	LIST	223,500	E	N/A	N/A	SEE CCC	1,400	B/2
			RESALE	140,000						
33101	8XX	MEMORY SYSTEM								
		A PERFORMANCE INTERCHANGEABLE MEMORY SYSTEM FOR USE WITH THE IBM 3033 CENTRAL PROCESSOR. PRICE INCLUDES ONE (1) 69120-301 OR 69120-302 ATTACHMENT KIT WHEN ORDERED CONCURRENTLY WITH MEMORY UNIT. ORDER MUST SPECIFY ATTACHMENT FEATURE PRODUCT AND MODEL NUMBER.									
		AVA OPTIONS 69120301 69120302 69120303								
		AVA OPTIONS 69120342 69120344 69120362								
33101	802	2048K BYTE CDC MEMORY SYSTEM	LIST	134,500	E	4,500	3,600	SEE CCC	800	B/2
			RESALE	100,000						
33101	804	4096K BYTE CDC MEMORY SYSTEM	LIST	234,500	E	7,300	6,000	SEE CCC	1,230	B/2
			RESALE	180,000						
33101	806	6144K BYTE CDC MEMORY SYSTEM	LIST	334,500	E	10,100	8,400	SEE CCC	1,590	B/2
			RESALE	260,000						
33101	808	8192K BYTE CDC MEMORY SYSTEM	LIST	434,500	E	12,900	10,800	SEE CCC	1,920	B/2
			RESALE	340,000						
33135		MEMORY SYSTEM								
		A PERFORMANCE INTERCHANGEABLE MEMORY SYSTEM FOR USE WITH THE IBM SYSTEM 370 MODEL 135. NOTE - MAINTENANCE PRICES APPLY ONLY TO FULL SERVICE CENTER CITIES. MAINTENANCE PRICES FOR OTHER LOCATIONS ARE AVAILABLE ON A QUOTE FOR SPECIAL MAINTENANCE (OSM) BASIS ONLY.									
33135	101	96K TO 192K MEMORY EXPANSION	LIST	48,080	E	1,540	1,339	SEE CCC	105	B/2
			RESALE	35,625						
		EXPANDS A 96K CPU TO 192K BYTES BY ADDING AN INCREMENT OF 96K BYTES.								
33135	102	96K TO 240K MEMORY EXPANSION	LIST	68,800	E	2,234	1,916	SEE CCC	147	B/2
			RESALE	41,500						
		EXPANDS A 96K CPU TO 240K BYTES BY ADDING AN INCREMENT OF 144K BYTES.								

CHANGES EFFECTIVE 05/01/80

PRODUCT MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
33135 103	96K TO 320K MEMORY EXPANSION EXPANDS A 96K CPU TO 320K BYTES BY ADDING AN INCREMENT OF 224K BYTES.	LIST RESALE	91,200 55,375	E	2,920	2,539	SEE CCC	216	B/2
33135 104	96K TO 384K MEMORY EXPANSION EXPANDS A 96K CPU TO 384K BYTES BY ADDING AN INCREMENT OF 288K BYTES.	LIST RESALE	106,000 60,000	E	3,393	2,951	SEE CCC	271	B/2
33135 105	96K TO 480K MEMORY EXPANSION EXPANDS A 96K CPU TO 480K BYTES BY ADDING AN INCREMENT OF 384K BYTES.	LIST RESALE	128,200 78,500	E	4,105	3,569	SEE CCC	355	B/2
33135 106	96K TO 256K MEMORY EXPANSION EXPANDS A 96K CPU TO 256K BYTES BY ADDING AN INCREMENT OF 160K BYTES.	LIST RESALE	75,880 50,750	E	2,431	2,112	SEE CCC	161	B/2
33135 111	144K TO 240K MEMORY EXPANSION EXPANDS A 144K CPU TO 240K BYTES BY ADDING AN INCREMENT OF 96K BYTES.	LIST RESALE	48,080 35,625	E	1,540	1,339	SEE CCC	105	B/2
33135 112	144K TO 384K MEMORY EXPANSION EXPANDS A 144K CPU TO 384K BYTES BY ADDING AN INCREMENT OF 240K BYTES.	LIST RESALE	90,000 55,375	E	2,884	2,508	SEE CCC	229	B/2
33135 113	144K TO 512K MEMORY EXPANSION EXPANDS A 144K CPU TO 512K BYTES BY ADDING AN INCREMENT OF 368K BYTES.	LIST RESALE	113,400 78,500	E	3,631	3,157	SEE CCC	340	B/2
33135 121	192K TO 320K MEMORY EXPANSION EXPANDS A 192K CPU TO 320K BYTES BY ADDING AN INCREMENT OF 128K BYTES.	LIST RESALE	54,520 41,500	E	1,751	1,519	SEE CCC	132	B/2
33135 122	192K TO 384K MEMORY EXPANSION EXPANDS A 192K CPU TO 384K BYTES BY ADDING AN INCREMENT OF 192K BYTES.	LIST RESALE	68,900 50,750	E	2,209	1,921	SEE CCC	189	B/2
33135 123	192K TO 512K MEMORY EXPANSION EXPANDS A 192K CPU TO 512K BYTES BY ADDING AN INCREMENT OF 320K BYTES.	LIST RESALE	106,000 69,250	E	3,224	2,802	SEE CCC	301	B/2
33135 130	240K TO 384K MEMORY EXPANSION EXPANDS A 240K CPU TO 384K BYTES BY ADDING AN INCREMENT OF 144K BYTES.	LIST RESALE	69,200 41,500		N/A	N/A	SEE CCC	147	B/2
33135 131	240K TO 512K MEMORY EXPANSION EXPANDS A 240K CPU TO 512K BYTES BY ADDING AN INCREMENT OF 272K BYTES.	LIST RESALE	96,280 60,000	E	2,848	2,477	SEE CCC	257	B/2
33135 140	256K TO 384K MEMORY EXPANSION EXPANDS A 256K CPU TO 384K BYTES BY ADDING AN INCREMENT OF 128K BYTES.	LIST RESALE	54,520 41,500		N/A	N/A	SEE CCC	145	B/2
33135 141	256K TO 512K MEMORY EXPANSION EXPANDS A 256K CPU TO 512K BYTES BY ADDING AN INCREMENT OF 256K BYTES.	LIST RESALE	89,220 60,000	E	2,585	2,245	SEE CCC	244	B/2
33135 3XX	A PERFORMANCE INTERCHANGEABLE MEMORY SYSTEM FOR USE WITH THE IBM SYSTEM 370 MODEL 135. NOTE - MAINTENANCE PRICES APPLY ONLY TO FULL SERVICE CENTER CITIES. MAINTENANCE PRICES FOR OTHER LOCATIONS ARE AVAILABLE ON A QUOTE FOR SPECIAL MAINTENANCE (OSM) BASIS ONLY.								
33135 300	96 K TO 144K MEMORY EXPANSION EXPANDS A 96K CPU TO 144K BYTES BY ADDING AN INCREMENT OF 48K BYTES.	LIST RESALE	34,950 29,750		N/A	N/A	SEE CCC	105	B/2
33135 301	96 K TO 192K MEMORY EXPANSION EXPANDS A 96K CPU TO 192K BYTES BY ADDING AN INCREMENT OF 96K BYTES.	LIST RESALE	40,100 35,625		N/A	N/A	SEE CCC	105	B/2
33135 302	96 K TO 240K MEMORY EXPANSION EXPANDS A 96K CPU TO 240K BYTES BY ADDING AN INCREMENT OF 144K BYTES.	LIST RESALE	48,750 41,500		N/A	N/A	SEE CCC	147	B/2
33135 303	96 K TO 320K MEMORY EXPANSION EXPANDS A 96K CPU TO 320K BYTES BY ADDING AN INCREMENT OF 224K BYTES.	LIST RESALE	66,050 55,375		N/A	N/A	SEE CCC	216	B/2
33135 304	96 K TO 384K MEMORY EXPANSION EXPANDS A 96K CPU TO 384K BYTES BY ADDING AN INCREMENT OF 288K BYTES.	LIST RESALE	74,700 60,000		N/A	N/A	SEE CCC	271	B/2
33135 305	96 K TO 480K MEMORY EXPANSION EXPANDS A 96K CPU TO 480K BYTES BY ADDING AN INCREMENT OF 384K BYTES.	LIST RESALE	92,000 78,500		N/A	N/A	SEE CCC	355	B/2

PRODUCT MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
33135 306	96 K TO 256K MEMORY EXPANSION	LIST	57,400		N/A	N/A	SEE CCC	161	B/2
		RESALE	50,750						
	EXPANDS A 96K CPU TO 256K BYTES BY ADDING AN INCREMENT OF 160K BYTES.								
33135 307	96 K TO 512K MEMORY EXPANSION	LIST	100,650		N/A	N/A	SEE CCC	396	B/2
		RESALE	87,750						
	EXPANDS A 96K CPU TO 512K BYTES BY ADDING AN INCREMENT OF 416K BYTES.								
33135 308	96 K TO 288K MEMORY EXPANSION	LIST	57,400		N/A	N/A	SEE CCC	189	B/2
		RESALE	50,750						
	EXPANDS A 96K CPU TO 288K BYTES BY ADDING AN INCREMENT OF 192K BYTES.								
33135 310	144K TO 192K MEMORY EXPANSION	LIST	34,950		N/A	N/A	SEE CCC	105	B/2
		RESALE	29,750						
	EXPANDS A 144K CPU TO 192K BYTES BY ADDING AN INCREMENT OF 48K BYTES.								
33135 311	144K TO 240K MEMORY EXPANSION	LIST	40,100		N/A	N/A	SEE CCC	105	B/2
		RESALE	35,625						
	EXPANDS A 144K CPU TO 240K BYTES BY ADDING AN INCREMENT OF 96K BYTES.								
33135 312	144K TO 384K MEMORY EXPANSION	LIST	66,050		N/A	N/A	SEE CCC	228	B/2
		RESALE	55,375						
	EXPANDS A 144K CPU TO 384K BYTES BY ADDING AN INCREMENT OF 240K BYTES.								
33135 313	144K TO 512K MEMORY EXPANSION	LIST	92,000		N/A	N/A	SEE CCC	340	B/2
		RESALE	78,500						
	EXPANDS A 144K CPU TO 512K BYTES BY ADDING AN INCREMENT OF 368K BYTES.								
33135 314	144K TO 256K MEMORY EXPANSION	LIST	48,750		N/A	N/A	SEE CCC	132	B/2
		RESALE	41,500						
	EXPANDS A 144K CPU TO 256K BYTES BY ADDING AN INCREMENT OF 112K BYTES.								
33135 315	144K TO 320K MEMORY EXPANSION	LIST	57,400		N/A	N/A	SEE CCC	189	B/2
		RESALE	50,750						
	EXPANDS A 144K CPU TO 320K BYTES BY ADDING AN INCREMENT OF 176K BYTES.								
33135 316	144K TO 288K MEMORY EXPANSION	LIST	48,750		N/A	N/A	SEE CCC	147	B/2
		RESALE	41,500						
	EXPANDS A 144K CPU TO 288K BYTES BY ADDING AN INCREMENT OF 144K BYTES.								
33135 317	144K TO 480K MEMORY EXPANSION	LIST	83,350		N/A	N/A	SEE CCC	313	B/2
		RESALE	69,250						
	EXPANDS A 144K CPU TO 480K BYTES BY ADDING AN INCREMENT OF 336K BYTES.								
33135 321	192K TO 320K MEMORY EXPANSION	LIST	48,750		N/A	N/A	SEE CCC	132	B/2
		RESALE	41,500						
	EXPANDS A 192K CPU TO 320K BYTES BY ADDING AN INCREMENT OF 129K BYTES.								
33135 322	192K TO 384K MEMORY EXPANSION	LIST	57,400		N/A	N/A	SEE CCC	189	B/2
		RESALE	50,750						
	EXPANDS A 192K CPU TO 384K BYTES BY ADDING AN INCREMENT OF 192K BYTES.								
33135 323	192K TO 512K MEMORY EXPANSION	LIST	83,350		N/A	N/A	SEE CCC	301	B/2
		RESALE	69,250						
	EXPANDS A 192K CPU TO 512K BYTES BY ADDING AN INCREMENT OF 320K BYTES.								
33135 324	192K TO 240K MEMORY EXPANSION	LIST	34,950		N/A	N/A	SEE CCC	105	B/2
		RESALE	29,750						
	EXPANDS A 192K CPU TO 240K BYTES BY ADDING AN INCREMENT OF 48K BYTES.								
33135 325	192K TO 256K MEMORY EXPANSION	LIST	40,100		N/A	N/A	SEE CCC	105	B/2
		RESALE	35,625						
	EXPANDS A 192K CPU TO 256K BYTES BY ADDING AN INCREMENT OF 64K BYTES.								
33135 326	192K TO 288K MEMORY EXPANSION	LIST	40,100		N/A	N/A	SEE CCC	105	B/2
		RESALE	35,625						
	EXPANDS A 192K CPU TO 288K BYTES BY ADDING AN INCREMENT OF 96K BYTES.								
33135 327	192K TO 480K MEMORY EXPANSION	LIST	74,700		N/A	N/A	SEE CCC	271	B/2
		RESALE	60,000						
	EXPANDS A 192K CPU TO 480K BYTES BY ADDING AN INCREMENT OF 288K BYTES.								
33135 330	240K TO 384K MEMORY EXPANSION	LIST	48,750		N/A	N/A	SEE CCC	147	B/2
		RESALE	41,500						
	EXPANDS A 240K CPU TO 384K BYTES BY ADDING AN INCREMENT OF 144K BYTES.								
33135 331	240K TO 512K MEMORY EXPANSION	LIST	74,700		N/A	N/A	SEE CCC	248	B/2
		RESALE	60,000						
	EXPANDS A 240K CPU TO 512K BYTES BY ADDING AN INCREMENT OF 272K BYTES.								
33135 332	240K TO 288K MEMORY EXPANSION	LIST	34,950		N/A	N/A	SEE CCC	105	B/2
		RESALE	29,750						
	EXPANDS A 240K CPU TO 288K BYTES BY ADDING AN INCREMENT OF 48K BYTES.								

PRODUCT MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT SALE 1 YEAR	CCC BASE 3YR/12MO	5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
33135 333	240K TO 320K MEMORY EXPANSION	LIST	40,100		N/A	N/A	SEE CCC	135	B/2
		RESALE	35,625						
	EXPANDS A 240K CPU TO 320K BYTES BY ADDING AN INCREMENT OF 80K BYTES.								
33135 334	240K TO 480K MEMORY EXPANSION	LIST	66,050		N/A	N/A	SEE CCC	229	B/2
		RESALE	55,375						
	EXPANDS A 240K CPU TO 480K BYTES BY ADDING AN INCREMENT OF 240K BYTES.								
33135 340	256K TO 384K MEMORY EXPANSION	LIST	48,750		N/A	N/A	SEE CCC	145	B/2
		RESALE	41,500						
	EXPANDS A 256K CPU TO 384K BYTES BY ADDING AN INCREMENT OF 128K BYTES.								
33135 341	256K TO 512K MEMORY EXPANSION	LIST	74,700		N/A	N/A	SEE CCC	244	B/2
		RESALE	60,000						
	EXPANDS A 256K CPU TO 512K BYTES BY ADDING AN INCREMENT OF 256K BYTES.								
33135 342	256K TO 288K MEMORY EXPANSION	LIST	34,950		N/A	N/A	SEE CCC	105	B/2
		RESALE	29,750						
	EXPANDS A 256K CPU TO 288K BYTES BY ADDING AN INCREMENT OF 32K BYTES.								
33135 343	256K TO 320K MEMORY EXPANSION	LIST	40,100		N/A	N/A	SEE CCC	105	B/2
		RESALE	35,625						
	EXPANDS A 256K CPU TO 320K BYTES BY ADDING AN INCREMENT OF 64K BYTES.								
33135 344	256K TO 480K MEMORY EXPANSION	LIST	66,050		N/A	N/A	SEE CCC	216	B/2
		RESALE	55,375						
	EXPANDS A 256K CPU TO 480K BYTES BY ADDING AN INCREMENT OF 224K BYTES.								
33135 350	320K TO 512K MEMORY EXPANSION	LIST	57,400		N/A	N/A	SEE CCC	189	B/2
		RESALE	50,750						
	EXPANDS A 320K CPU TO 512K BYTES BY ADDING AN INCREMENT OF 192K BYTES.								
33135 351	320K TO 384K MEMORY EXPANSION	LIST	40,100		N/A	N/A	SEE CCC	105	B/2
		RESALE	35,625						
	EXPANDS A 320K CPU TO 384K BYTES BY ADDING AN INCREMENT OF 64K BYTES.								
33135 352	320K TO 480K MEMORY EXPANSION	LIST	57,400		N/A	N/A	SEE CCC	163	B/2
		RESALE	50,750						
	EXPANDS A 320K CPU TO 480K BYTES BY ADDING AN INCREMENT OF 160K BYTES.								
33135 360	384K TO 512K MEMORY EXPANSION	LIST	48,750		N/A	N/A	SEE CCC	132	B/2
		RESALE	41,500						
	EXPANDS A 384K CPU TO 512K BYTES BY ADDING AN INCREMENT OF 128K BYTES.								
33135 361	384K TO 480K MEMORY EXPANSION	LIST	40,100		N/A	N/A	SEE CCC	105	B/2
		RESALE	35,625						
	EXPANDS A 384K CPU TO 480K BYTES BY ADDING AN INCREMENT OF 96K BYTES.								
33135 401	96K TO 576K MEMORY UNIT	LIST	97,000		N/A	N/A	SEE CCC	484	B/2
		RESALE	97,000						
	EXPANDS A 96K BYTE CPU TO 576K BYTES TOTAL SYSTEM BY ADDING A 480K BYTE CDC UNIT.								
33135 402	96K TO 672K MEMORY UNIT	LIST	121,600		N/A	N/A	SEE CCC	555	B/2
		RESALE	121,600						
	EXPANDS A 96K BYTE CPU TO 672K BYTES TOTAL SYSTEM BY ADDING A 576K BYTE CDC UNIT.								
33135 403	96K TO 768K MEMORY UNIT	LIST	135,200		N/A	N/A	SEE CCC	632	B/2
		RESALE	135,200						
	EXPANDS A 96K BYTE CPU TO 768K BYTES TOTAL SYSTEM BY ADDING A 672K BYTE CDC UNIT.								
33135 404	TO MEMORY UNIT	LIST	148,800		N/A	N/A	SEE CCC	707	B/2
		RESALE	148,800						
	EXPANDS A 96K BYTE CPU TO 864K BYTES TOTAL SYSTEM BY ADDING A 768K BYTE CDC UNIT.								
33135 405	96K TO 960K MEMORY UNIT	LIST	162,400		N/A	N/A	SEE CCC	780	B/2
		RESALE	162,400						
	EXPANDS A 96K BYTE CPU TO 960K BYTES TOTAL SYSTEM BY ADDING A 864K BYTE CDC UNIT.								
33135 406	96K TO 1024K MEMORY UNIT	LIST	176,000		N/A	N/A	SEE CCC	830	B/2
		RESALE	176,000						
	EXPANDS A 96K BYTE CPU TO 1024K BYTES TOTAL SYSTEM BY ADDING A 928K BYTE CDC UNIT.								
33135 411	144K TO 576K MEMORY UNIT	LIST	87,750		N/A	N/A	SEE CCC	484	B/2
		RESALE	87,750						
	EXPANDS A 144K BYTE CPU TO 576K BYTES TOTAL SYSTEM BY ADDING A 432K BYTE CDC UNIT.								
33135 412	144K TO 672K MEMORY UNIT	LIST	114,800		N/A	N/A	SEE CCC	522	B/2
		RESALE	114,800						
	EXPANDS A 144K BYTE CPU TO 672K BYTES TOTAL SYSTEM BY ADDING A 528K BYTE CDC UNIT.								
33135 413	144K TO 768K MEMORY UNIT	LIST	128,400		N/A	N/A	SEE CCC	596	B/2
		RESALE	128,400						
	EXPANDS A 144K BYTE CPU TO 768K BYTES TOTAL SYSTEM BY ADDING A 624K BYTE CDC UNIT.								

PRODUCT MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
33135 414	144K TO 864K MEMORY UNIT	LIST	142,000		N/A	N/A	SEE CCC	693	B/2
		RESALE	142,000						
	EXPANDS A 144K BYTE CPU TO 864K BYTES TOTAL SYSTEM BY ADDING A 720K BYTE CDC UNIT.								
33135 415	144K TO 960K MEMORY UNIT	LIST	155,600		N/A	N/A	SEE CCC	743	B/2
		RESALE	155,600						
	EXPANDS A 144K BYTE CPU TO 960K BYTES TOTAL SYSTEM BY ADDING A 816K BYTE CDC UNIT.								
33135 416	144K TO 1024K MEMORY UNIT	LIST	169,200		N/A	N/A	SEE CCC	792	B/2
		RESALE	169,200						
	EXPANDS A 144K BYTE CPU TO 1024K BYTES TOTAL SYSTEM BY ADDING A 880K BYTE CDC UNIT.								
33135 421	192K TO 576K MEMORY UNIT	LIST	78,500		N/A	N/A	SEE CCC	440	B/2
		RESALE	78,500						
	EXPANDS A 192K BYTE CPU TO 576K BYTES TOTAL SYSTEM BY ADDING A 384K BYTE CDC UNIT.								
33135 422	192K TO 672K MEMORY UNIT	LIST	97,000		N/A	N/A	SEE CCC	484	B/2
		RESALE	97,000						
	EXPANDS A 192K BYTE CPU TO 672K BYTES TOTAL SYSTEM BY ADDING A 480K BYTE CDC UNIT.								
33135 423	192K TO 768K MEMORY UNIT	LIST	121,600		N/A	N/A	SEE CCC	558	B/2
		RESALE	121,600						
	EXPANDS A 192K BYTE CPU TO 768K BYTES TOTAL SYSTEM BY ADDING A 576K BYTE CDC UNIT.								
33135 424	192K TO 864K MEMORY UNIT	LIST	135,200		N/A	N/A	SEE CCC	632	B/2
		RESALE	135,200						
	EXPANDS A 192K BYTE CPU TO 864K BYTES TOTAL SYSTEM BY ADDING A 672K BYTE CDC UNIT.								
33135 425	192K TO 960K MEMORY UNIT	LIST	148,800		N/A	N/A	SEE CCC	707	B/2
		RESALE	148,800						
	EXPANDS A 192K BYTE CPU TO 960K BYTES TOTAL SYSTEM BY ADDING A 768K BYTE CDC UNIT.								
33135 426	192K TO 1024K MEMORY UNIT	LIST	162,400		N/A	N/A	SEE CCC	755	B/2
		RESALE	162,400						
	EXPANDS A 192K BYTE CPU TO 1024K BYTES TOTAL SYSTEM BY ADDING A 832K BYTE CDC UNIT.								
33135 431	240K TO 576K MEMORY UNIT	LIST	69,250		N/A	N/A	SEE CCC	429	B/2
		RESALE	69,250						
	EXPANDS A 240K BYTE CPU TO 576K BYTES TOTAL SYSTEM BY ADDING A 336K BYTE CDC UNIT.								
33135 432	240K TO 672K MEMORY UNIT	LIST	87,750		N/A	N/A	SEE CCC	484	B/2
		RESALE	87,750						
	EXPANDS A 240K BYTE CPU TO 672K BYTES TOTAL SYSTEM BY ADDING A 432K BYTE CDC UNIT.								
33135 433	240K TO 768K MEMORY UNIT	LIST	114,800		N/A	N/A	SEE CCC	522	B/2
		RESALE	114,800						
	EXPANDS A 240K BYTE CPU TO 768K BYTES TOTAL SYSTEM BY ADDING A 528K BYTE CDC UNIT.								
33135 434	240K TO 864K MEMORY UNIT	LIST	128,400		N/A	N/A	SEE CCC	596	B/2
		RESALE	128,400						
	EXPANDS A 240K BYTE CPU TO 864K BYTES TOTAL SYSTEM BY ADDING A 624K BYTE CDC UNIT.								
33135 435	240K TO 960K MEMORY UNIT	LIST	142,000		N/A	N/A	SEE CCC	693	B/2
		RESALE	142,000						
	EXPANDS A 240K BYTE CPU TO 960K BYTES TOTAL SYSTEM BY ADDING A 720K BYTE CDC UNIT.								
33135 436	240K TO 1024K MEMORY UNIT	LIST	155,600		N/A	N/A	SEE CCC	719	B/2
		RESALE	155,600						
	EXPANDS A 240K BYTE CPU TO 1024K BYTES TOTAL SYSTEM BY ADDING A 794K BYTE CDC UNIT.								
33135 441	256K TO 576K MEMORY UNIT	LIST	69,250		N/A	N/A	SEE CCC	428	B/2
		RESALE	69,250						
	EXPANDS A 256K BYTE CPU TO 576K BYTES TOTAL SYSTEM BY ADDING A 320K BYTE CDC UNIT.								
33135 442	256K TO 672K MEMORY UNIT	LIST	87,750		N/A	N/A	SEE CCC	464	B/2
		RESALE	87,750						
	EXPANDS A 256K BYTE CPU TO 672K BYTES TOTAL SYSTEM BY ADDING A 416K BYTE CDC UNIT.								
33135 443	256K TO 768K MEMORY UNIT	LIST	114,800		N/A	N/A	SEE CCC	508	B/2
		RESALE	114,800						
	EXPANDS A 256K BYTE CPU TO 768K BYTES TOTAL SYSTEM BY ADDING A 512K BYTE CDC UNIT.								
33135 444	256K TO 864K MEMORY UNIT	LIST	128,400		N/A	N/A	SEE CCC	583	B/2
		RESALE	128,400						
	EXPANDS A 256K BYTE CPU TO 864K BYTES TOTAL SYSTEM BY ADDING A 608K BYTE CDC UNIT.								
33135 445	256K TO 960K MEMORY UNIT	LIST	142,000		N/A	N/A	SEE CCC	657	B/2
		RESALE	142,000						
	EXPANDS A 256K BYTE CPU TO 960K BYTES TOTAL SYSTEM BY ADDING A 704K BYTE CDC UNIT.								
33135 446	256K TO 1024K MEMORY UNIT	LIST	148,800		N/A	N/A	SEE CCC	707	B/2
		RESALE	148,800						
	EXPANDS A 256K BYTE CPU TO 1024K BYTES TOTAL SYSTEM BY ADDING A 768K BYTE CDC UNIT.								

PRODUCT MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT SALE 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
33135 451	320K TO 576K MEMORY UNIT	LIST RESALE	60,000 60,000		N/A	N/A	SEE CCC	371	B/2
	EXPANDS A 320K BYTE CPU TO 576K BYTES TOTAL SYSTEM BY ADDING A 256K BYTE CDC UNIT.								
33135 452	320K TO 672K MEMORY UNIT	LIST RESALE	78,500 78,500		N/A	N/A	SEE CCC	459	B/2
	EXPANDS A 320K BYTE CPU TO 672K BYTES TOTAL SYSTEM BY ADDING A 352K BYTE CDC UNIT.								
33135 453	320K TO 768K MEMORY UNIT	LIST RESALE	97,000 97,000		N/A	N/A	SEE CCC	484	B/2
	EXPANDS A 320K BYTE CPU TO 768K BYTES TOTAL SYSTEM BY ADDING A 448K BYTE CDC UNIT.								
33135 454	320K TO 864K MEMORY UNIT	LIST RESALE	121,600 121,600		N/A	N/A	SEE CCC	534	B/2
	EXPANDS A 320K BYTE CPU TO 864K BYTES TOTAL SYSTEM BY ADDING A 544K BYTE CDC UNIT.								
33135 455	320K TO 960K MEMORY UNIT	LIST RESALE	135,200 135,200		N/A	N/A	SEE CCC	608	B/2
	EXPANDS A 320K BYTE CPU TO 960K BYTES TOTAL SYSTEM BY ADDING A 640K BYTE CDC UNIT.								
33135 456	320K TO 1024K MEMORY UNIT	LIST RESALE	142,000 142,000		N/A	N/A	SEE CCC	657	B/2
	EXPANDS A 320K BYTE CPU TO 1024K BYTES TOTAL SYSTEM BY ADDING A 704K BYTE CDC UNIT.								
33135 461	384K TO 576K MEMORY UNIT	LIST RESALE	50,750 50,750		N/A	N/A	SEE CCC	316	B/2
	EXPANDS A 384K BYTE CPU TO 576K BYTES TOTAL SYSTEM BY ADDING A 192K BYTE CDC UNIT.								
33135 462	384K TO 672K MEMORY UNIT	LIST RESALE	60,000 60,000		N/A	N/A	SEE CCC	399	B/2
	EXPANDS A 384K BYTE CPU TO 672K BYTES TOTAL SYSTEM BY ADDING A 288K BYTE CDC UNIT.								
33135 463	384K TO 768K MEMORY UNIT	LIST RESALE	78,500 78,500		N/A	N/A	SEE CCC	460	B/2
	EXPANDS A 384K BYTE CPU TO 768K BYTES TOTAL SYSTEM BY ADDING A 384K BYTE CDC UNIT.								
33135 464	384K TO 864K MEMORY UNIT	LIST RESALE	97,000 97,000		N/A	N/A	SEE CCC	494	B/2
	EXPANDS A 384K BYTE CPU TO 864K BYTES TOTAL SYSTEM BY ADDING A 480K BYTE CDC UNIT.								
33135 465	384K TO 960K MEMORY UNIT	LIST RESALE	121,600 121,600		N/A	N/A	SEE CCC	558	B/2
	EXPANDS A 384K BYTE CPU TO 960K BYTES TOTAL SYSTEM BY ADDING A 576K BYTE CDC UNIT.								
33135 466	384K TO 1024K MEMORY UNIT	LIST RESALE	135,200 135,200		N/A	N/A	SEE CCC	608	B/2
	EXPANDS A 384K BYTE CPU TO 1024K BYTES TOTAL SYSTEM BY ADDING A 640K BYTE CDC UNIT.								
33135 471	512K TO 576K MEMORY UNIT	LIST RESALE	35,625 35,625		N/A	N/A	SEE CCC	233	B/2
	EXPANDS A 512K BYTE CPU TO 576K BYTES TOTAL SYSTEM BY ADDING A 64K BYTE CDC UNIT.								
33135 472	512K TO 672K MEMORY UNIT	LIST RESALE	50,750 50,750		N/A	N/A	SEE CCC	289	B/2
	EXPANDS A 512K BYTE CPU TO 672K BYTES TOTAL SYSTEM BY ADDING A 160K BYTE CDC UNIT.								
33135 473	512K TO 768K MEMORY UNIT	LIST RESALE	60,000 60,000		N/A	N/A	SEE CCC	371	B/2
	EXPANDS A 512K BYTE CPU TO 768K BYTES TOTAL SYSTEM BY ADDING A 256K BYTE CDC UNIT.								
33135 474	512K TO 864K MEMORY UNIT	LIST RESALE	78,500 78,500		N/A	N/A	SEE CCC	435	B/2
	EXPANDS A 512K BYTE CPU TO 864K BYTES TOTAL SYSTEM BY ADDING A 352K BYTE CDC UNIT.								
33135 475	512K TO 960K MEMORY UNIT	LIST RESALE	97,000 97,000		N/A	N/A	SEE CCC	484	B/2
	EXPANDS A 512K BYTE CPU TO 960K BYTES TOTAL SYSTEM BY ADDING A 448K BYTE CDC UNIT.								
33135 476	512K TO 1024K MEMORY UNIT	LIST RESALE	114,800 114,800		N/A	N/A	SEE CCC	509	B/2
	EXPANDS A 512K BYTE CPU TO 1024K BYTES TOTAL SYSTEM BY ADDING A 512K BYTE CDC UNIT.								
33145	1XX/2XX MEMORY SYSTEM A PERFORMANCE INTERCHANGEABLE MEMORY SYSTEM FOR USE WITH IBM SYSTEM/370 MODEL 145 COMPUTERS.								
33145 141	256K TO 512K MEMORY EXPANSION	LIST RESALE	106,218 55,000	E	2,163	1,880	SEE CCC	244	B/2
	EXPANDS A 256K IBM MODEL H CPU TO 512K BY ADDING AN INCREMENT OF 256K BYTES.								
33145 142	256K TO 768K MEMORY EXPANSION	LIST RESALE	188,888 89,000	E	3,760	3,271	SEE CCC	467	B/2
	EXPANDS A 256K IBM MODEL H CPU TO 768K BY ADDING AN INCREMENT OF 512K BYTES.								
33145 143	256K TO 1024K MEMORY EXPANSION	LIST RESALE	263,756 123,000	E	5,907	5,138	SEE CCC	690	B/2
	EXPANDS A 256K IBM MODEL H CPU TO 1024K BY ADDING AN INCREMENT OF 768K BYTES.								

PRODUCT MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
33145 144	256K TO 1280K MEMORY EXPANSION	LIST	178,000	E	8,606	7,532 SEE CCC	910	B/2
		RESALE	178,000					
	EXPANDS A 256K BYTE IBM MODEL H CPU TO 1280K BY ADDING AN INCREMENT OF 1024K BYTES.							
33145 145	256K TO 1536K MEMORY EXPANSION	LIST	212,000	E	10,259	8,923 SEE CCC	1,070	B/2
		RESALE	212,000					
	EXPANDS A 256K BYTE IBM MODEL H CPU TO 1536K BY ADDING AN INCREMENT OF 1280K BYTES.							
33145 146	256K TO 1768K MEMORY EXPANSION	LIST	246,000	E	12,041	10,473 SEE CCC	1,260	B/2
		RESALE	246,000					
	EXPANDS A 256K BYTE IBM MODEL H CPU TO 1768K BY ADDING AN INCREMENT OF 1536K BYTES.							
33145 147	256K TO 2048K MEMORY EXPANSION	LIST	280,000	E	14,013	12,188 SEE CCC	1,404	B/2
		RESALE	280,000					
	EXPANDS A 256K BYTE IBM MODEL H CPU TO 2048K BY ADDING AN INCREMENT OF 1792K BYTES.							
33145 241	256K TO 512K MEMORY EXPANSION	LIST	106,218	E	2,163	1,880 SEE CCC	244	B/2
		RESALE	55,000					
	EXPANDS A 256K IBM MODEL H2 CPU TO 512K BY ADDING AN INCREMENT OF 256K BYTES.							
33145 242	256K TO 768K MEMORY EXPANSION	LIST	188,888	E	3,760	3,271 SEE CCC	467	B/2
		RESALE	89,000					
	EXPANDS A 256K IBM MODEL H2 CPU TO 768K BY ADDING AN INCREMENT OF 512K BYTES.							
33145 243	256K TO 1024K MEMORY EXPANSION	LIST	263,736	E	5,907	5,138 SEE CCC	690	B/2
		RESALE	123,000					
	EXPANDS A 256K IBM MODEL H2 CPU TO 1024K BY ADDING AN INCREMENT OF 768 K BYTES.							
33145 244	256K TO 1280K MEMORY EXPANSION	LIST	178,000	C	8,606	7,532 SEE CCC	910	B/2
		RESALE	178,000					
	EXPANDS A 256K BYTE IBM MODEL H2 CPU TO 1280K BY ADDING AN INCREMENT OF 1024K BYTES.							
33145 245	256K TO 1536K MEMORY EXPANSION	LIST	212,000	E	10,259	8,923 SEE CCC	1,070	B/2
		RESALE	212,000					
	EXPANDS A 256K BYTE IBM MODEL H2 CPU TO 1536K BY ADDING AN INCREMENT OF 1280K BYTES.							
33145 246	256K TO 1768K MEMORY EXPANSION	LIST	246,000	E	12,041	10,473 SEE CCC	1,260	B/2
		RESALE	246,000					
	EXPANDS A 256K BYTE IBM MODEL H2 CPU TO 1768K BY ADDING AN INCREMENT OF 1536K BYTES.							
33145 247	256K TO 2048K MEMORY EXPANSION	LIST	280,000	E	14,013	12,188 SEE CCC	1,404	B/2
		RESALE	280,000					
	EXPANDS A 256K BYTE IBM MODEL H2 CPU TO 2048K BY ADDING AN INCREMENT OF 1792K BYTES.							
33145 3XX	MEMORY SYSTEM							
	A PERFORMANCE INTERCHANGEABLE MEMORY SYSTEM FOR USE WITH IBM SYSTEM/370 MODEL 145 COMPUTERS. EACH MODEL INCLUDES THE REQUIRED HARDWARE TO ATTACH AND INTERFACE WITH THE SPECIFIED NATIVE IBM MEMORY. CDC SERIES 3XX ATTACHES TO IBM 370/145 MOD I.							
33145 330	256K TO 384K MEMORY EXPANSION	LIST	54,200	E	1,736	1,509 SEE CCC	212	B/2
		RESALE	40,000					
	EXPANDS A 256K CPU TO 384K BYTES BY ADDING AN INCREMENT OF 128K BYTES TO A MODEL H.							
33145 331	256K TO 512K MEMORY EXPANSION	LIST	73,800	E	2,184	1,900 SEE CCC	220	B/2
		RESALE	55,000					
	EXPANDS A 256K CPU TO 512K BYTES BY ADDING AN INCREMENT OF 256K BYTES TO A MODEL H.							
33145 332	256K TO 768K MEMORY EXPANSION	LIST	130,000	E	3,852	3,348 SEE CCC	380	B/2
		RESALE	89,000					
	EXPANDS A 256K CPU TO 768K BYTES BY ADDING AN INCREMENT OF 512K BYTES TO A MODEL H.							
33145 333	256K TO 1024K MEMORY EXPANSION	LIST	203,600	E	6,031	5,243 SEE CCC	570	B/2
		RESALE	123,000					
	EXPANDS A 256K CPU TO 1024K BYTES BY ADDING AN INCREMENT OF 768K BYTES TO A MODEL H.							
33145 334	256K TO 1280K MEMORY EXPANSION	LIST	253,200	E	8,106	7,050 SEE CCC	714	B/2
		RESALE	162,000					
	EXPANDS A 256K CPU TO 1280K BYTES BY ADDING AN INCREMENT OF 1024K BYTES TO AN IBM MODEL H							
33145 335	256K TO 1536K MEMORY EXPANSION	LIST	314,800	E	10,079	8,765 SEE CCC	872	B/2
		RESALE	221,000					
	EXPANDS A 256K CPU TO 1536K BYTES BY ADDING AN INCREMENT OF 1280K BYTES TO A MODEL H.							
33145 336	256K TO 1792K MEMORY EXPANSION	LIST	376,400	E	12,051	10,480 SEE CCC	1,021	B/2
		RESALE	246,000					
	EXPANDS A CPU TO BYTES BY ADDING AN INCREMENT OF 1536K BYTES TO A MODEL H.							
33145 337	256K TO 2048K MEMORY EXPANSION	LIST	438,000	E	14,023	12,195 SEE CCC	1,177	B/2
		RESALE	280,000					
	EXPANDS A 256K CPU TO 2048K BYTES BY ADDING AN INCREMENT OF 1792K BYTES TO A MODEL H.							
33145 341	384K TO 512K MEMORY EXPANSION	LIST	62,800	E	2,014	1,751 SEE CCC	264	B/2
		RESALE	45,000					
	EXPANDS A 384K CPU TO 512K BYTES BY ADDING AN INCREMENT OF 128K BYTES TO A MODEL HG.							

PRODUCT MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
33145 342	384K TO 768K MEMORY EXPANSION	LIST	112,600	E	3,337	2,899	SEE CCC	324	B/2
		RESALE	79,000						
	EXPANDS A 384K CPU TO 768K BYTES BY ADDING AN INCREMENT OF 384K BYTES TO A MODEL H6.								
33145 343	384K TO 1024K MEMORY EXPANSION	LIST	159,400	E	4,723	4,105	SEE CCC	457	B/2
		RESALE	111,000						
	EXPANDS A 384K CPU TO 1024K BYTES BY ADDING AN INCREMENT OF 640K BYTES TO A MODEL H6.								
33145 344	384K TO 1280K MEMORY EXPANSION	LIST	222,400	E	7,117	6,190	SEE CCC	667	B/2
		RESALE	150,000						
	EXPANDS A 384K CPU TO 1280K BYTES BY ADDING AN INCREMENT OF 896K BYTES TO A MODEL H6.								
33145 352	512K TO 768K MEMORY EXPANSION	LIST	79,300	E	2,539	2,209	SEE CCC	273	B/2
		RESALE	60,000						
	EXPANDS A 512K CPU TO 768K BYTES BY ADDING AN INCREMENT OF 256K BYTES TO A MODEL I.								
33145 353	512K TO 1024K MEMORY EXPANSION	LIST	129,600	E	3,837	3,337	SEE CCC	380	B/2
		RESALE	94,000						
	EXPANDS A 512K CPU TO 1024K BYTES BY ADDING AN INCREMENT OF 512K BYTES TO A MODEL I.								
33145 354	512K TO 1280K MEMORY EXPANSION	LIST	191,600	E	6,134	5,335	SEE CCC	570	B/2
		RESALE	133,000						
	EXPANDS A 512K CPU TO 1280K BYTES BY ADDING AN INCREMENT OF 768K BYTES TO A MODEL I.								
33145 355	512K TO 1536K MEMORY EXPANSION	LIST	253,200	E	8,106	7,050	SEE CCC	714	B/2
		RESALE	167,500						
	EXPANDS A 512K CPU TO 1536K BYTES BY ADDING AN INCREMENT OF 1024K BYTES TO A MODEL I.								
33145 4XX	MEMORY SYSTEM								
	A PERFORMANCE INTERCHANGEABLE MEMORY SYSTEM FOR USE WITH IBM SYSTEM/370 MODEL 145 COMPUTERS. EACH MODEL INCLUDES THE REQUIRED HARDWARE TO ATTACH AND INTERFACE WITH THE SPECIFIED NATIVE IBM MEMORY. CDC SERIES 4XX ATTACHES TO IBM 370/145 MOD II								
33145 430	256K TO 384K MEMORY EXPANSION	LIST	54,200	F	1,736	1,509	SEE CCC	212	B/2
		RESALE	40,000						
	EXPANDS A 256K CPU TO 384K BYTES BY ADDING AN INCREMENT OF 128K BYTES TO A MODEL H2.								
33145 431	256K TO 512K MEMORY EXPANSION	LIST	73,800	F	2,184	1,900	SEE CCC	220	B/2
		RESALE	55,000						
	EXPANDS A 256K CPU TO 512K BYTES BY ADDING AN INCREMENT OF 256K BYTES TO A MODEL H2.								
33145 432	256K TO 768K MEMORY EXPANSION	LIST	130,000	E	3,952	3,348	SEE CCC	380	B/2
		RESALE	89,000						
	EXPANDS A 256K CPU TO 768K BYTES BY ADDING AN INCREMENT OF 512K BYTES TO A MODEL H2.								
33145 433	256K TO 1024K MEMORY EXPANSION	LIST	203,800	F	6,031	5,242	SEE CCC	570	B/2
		RESALE	123,000						
	EXPANDS A 256K CPU TO 1024K BYTES BY ADDING AN INCREMENT OF 768K BYTES TO A MODEL H2.								
33145 434	256K TO 1280K MEMORY EXPANSION	LIST	253,200	E	8,106	7,050	SEE CCC	714	B/2
		RESALE	162,000						
	EXPANDS A 256K CPU TO 1280K BYTES BY ADDING AN INCREMENT OF 1024K BYTES TO A MODEL H2.								
33145 435	256K TO 1536K MEMORY EXPANSION	LIST	314,800	E	10,079	8,765	SEE CCC	872	B/2
		RESALE	221,000						
	EXPANDS A 256K CPU TO 1536K BYTES BY ADDING AN INCREMENT OF 1280K BYTES TO MODEL H2.								
33145 436	256K TO 1792K MEMORY EXPANSION	LIST	376,400	E	12,051	10,480	SEE CCC	1,021	B/2
		RESALE	246,000						
	EXPANDS A 256K CPU TO 1792K BYTES BY ADDING AN INCREMENT OF 1536K BYTES TO A MODEL H2.								
33145 437	256K TO 2048K MEMORY EXPANSION	LIST	438,000	E	14,023	12,195	SEE CCC	1,177	B/2
		RESALE	280,000						
	EXPANDS A 256K CPU TO 2048K BYTES BY ADDING AN INCREMENT OF 1792K BYTES TO A MODEL H2.								
33145 441	384K TO 512K MEMORY EXPANSION	LIST	62,800	F	2,014	1,751	SEE CCC	264	B/2
		RESALE	45,000						
	EXPANDS A 384K CPU TO 512K BYTES BY ADDING AN INCREMENT OF 128K BYTES TO A MODEL H62.								
33145 442	384K TO 768K MEMORY EXPANSION	LIST	112,600	E	3,337	2,899	SEE CCC	324	B/2
		RESALE	79,000						
	EXPANDS A 384K CPU TO 768K BYTES BY ADDING AN INCREMENT OF 384K BYTES TO A MODEL H62.								
33145 443	384K TO 1024K MEMORY EXPANSION	LIST	159,400	E	4,723	4,105	SEE CCC	457	B/2
		RESALE	111,000						
	EXPANDS A 384K CPU TO 1024K BYTES BY ADDING AN INCREMENT OF 640K BYTES TO A MODEL H62.								
33145 444	384K TO 1280K MEMORY EXPANSION	LIST	222,400	E	7,117	6,190	SEE CCC	667	B/2
		RESALE	150,000						
	EXPANDS A 384K CPU TO 1280K BYTES BY ADDING AN INCREMENT OF 896K BYTES TO A MODEL H62.								
33145 445	384K TO 1536K MEMORY EXPANSION	LIST	284,000	E	9,090	7,905	SEE CCC	807	B/2
		RESALE	195,000						
	EXPANDS A 384K CPU TO 1536K BYTES BY ADDING AN INCREMENT OF 1152K BYTES TO A MODEL H62.								

PRODUCT MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
33145 446	384K TO 1792K MEMORY EXPANSION EXPANDS A 384K CPU TO 1792K BYTES BY ADDING AN INCREMENT OF 1408 BYTES TO A MODEL HG2.	LIST RESALE	345,600 229,000	E	11,062	9,620	SEE CCC	942	B/2
33145 447	384K TO 2048K MEMORY EXPANSION EXPANDS A 384K CPU TO 2048K BYTES BY ADDING AN INCREMENT OF 1664K BYTES TO MODEL HG2.	LIST RESALE	407,200 263,000	E	13,045	11,335	SEE CCC	1,098	B/2
33145 452	512K TO 768K MEMORY EXPANSION EXPANDS A 512K CPU TO 768K BYTES BY ADDING AN INCREMENT OF 256K BYTES TO A MODEL I2.	LIST RESALE	79,300 60,000	E	2,539	2,209	SEE CCC	273	B/2
33145 453	512K TO 1024K MEMORY EXPANSION EXPANDS A 512K CPU TO 1024K BYTES BY ADDING AN INCREMENT OF 512K BYTES TO A MODEL I2.	LIST RESALE	129,600 94,000	E	3,835	3,337	SEE CCC	380	B/2
33145 454	512K TO 1280K MEMORY EXPANSION EXPANDS A 512K CPU TO 1280K BYTES BY ADDING AN INCREMENT OF 768K BYTES TO A MODEL I2.	LIST RESALE	191,600 133,000	E	6,134	5,335	SEE CCC	570	B/2
33145 455	512K TO 1536K MEMORY EXPANSION EXPANDS A 512K CPU TO 1536K BYTES BY ADDING AN INCREMENT OF 1024K BYTES TO A MODEL I2.	LIST RESALE	253,200 167,000	E	8,106	7,050	SEE CCC	714	B/2
33145 456	512K TO 1792K MEMORY EXPANSION EXPANDS A 512K CPU TO 1792K BYTES BY ADDING AN INCREMENT OF 1280K BYTES TO A MODEL I2.	LIST RESALE	314,800 212,000	E	10,079	8,765	SEE CCC	872	B/2
33145 457	512K TO 2048K MEMORY EXPANSION EXPANDS A 512K CPU TO 2048K BYTES BY ADDING AN INCREMENT OF 1536K BYTES TO A MODEL I2.	LIST RESALE	376,400 246,000	E	12,051	10,480	SEE CCC	1,021	B/2
33145 463	768K TO 1024K MEMORY EXPANSION EXPANDS A 768K CPU TO 1024K BYTES BY ADDING AN INCREMENT OF 256K BYTES TO A MODEL IH2.	LIST RESALE	79,300 60,000	E	2,539	2,209	SEE CCC	273	B/2
33145 464	768K TO 1280K MEMORY EXPANSION EXPANDS A 768K CPU TO 1280K BYTES BY ADDING AN INCREMENT OF 512K BYTES TO A MODEL IH2.	LIST RESALE	136,000 99,000	E	4,352	3,785	SEE CCC	380	B/2
33145 465	768K TO 1536K MEMORY EXPANSION EXPANDS A 768K CPU TO 1536K BYTES BY ADDING AN INCREMENT OF 768K BYTES TO A MODEL IH2.	LIST RESALE	191,600 133,000	E	6,134	5,335	SEE CCC	570	B/2
33145 466	768K TO 1792 MEMORY EXPANSION EXPANDS A 768K CPU TO 1792K BYTES BY ADDING AN INCREMENT OF 1024K BYTES TO A MODEL IH2.	LIST RESALE	253,200 167,000	E	8,106	7,050	SEE CCC	715	B/2
33145 467	768K TO 2048K MEMORY EXPANSION EXPANDS A 768K CPU TO 2048K BYTES BY ADDING AN INCREMENT OF 1280K BYTES TO A MODEL IH2.	LIST RESALE	314,800 212,000	E	10,079	8,765	SEE CCC	872	B/2
33145 474	1024K TO 1280K MEMORY EXPAN. EXPANDS A 1024K CPU TO 1280K BYTES BY ADDING AN INCREMENT OF 256K BYTES TO A MODEL J2.	LIST RESALE	91,200 65,000	E	2,699	2,394	SEE CCC	273	B/2
33145 475	1024K TO 1536K MEMORY EXPAN. EXPANDS A 1024K CPU TO 1536K BYTES BY ADDING AN INCREMENT OF 512K BYTES TO A MODEL J2.	LIST RESALE	136,000 99,000	E	4,352	3,785	SEE CCC	380	B/2
33145 476	1024K TO 1792K MEMORY EXPAN. EXPANDS A 1024K CPU TO 1792K BYTES BY ADDING AN INCREMENT OF 768K BYTES TO A MODEL J2.	LIST RESALE	191,600 133,000	E	6,134	5,335	SEE CCC	570	B/2
33145 477	1024K TO 2048K MEMORY EXPAN. EXPANDS A 1024K CPU TO 2048K BYTES BY ADDING AN INCREMENT OF 1024K BYTES TO A MODEL J2.	LIST RESALE	253,200 167,000	E	8,106	7,050	SEE CCC	649	B/2
33145 486	1536K TO 1792K MEMORY EXPAN. EXPANDS A 1536K CPU TO 1792K BYTES BY ADDING AN INCREMENT OF 256K BYTES TO A MODEL J12.	LIST RESALE	91,200 65,000	E	2,699	2,384	SEE CCC	248	B/2
33145 487	1536K TO 2048K MEMORY EXPAN. EXPANDS A 1536K CPU TO 2048K BYTES BY ADDING AN INCREMENT OF 512K BYTES TO A MODEL J12.	LIST RESALE	136,000 99,000	E	4,352	3,785	SEE CCC	345	B/2
33155 5XX	MEMORY SYSTEM A PERFORMANCE INTERCHANGEABLE MEMORY SYSTEM FOR USE WITH IBM SYSTEM/370 MODEL 155 COMPUTERS. FUNCTIONALLY INTERCHANGEABLE WITH 6XX, BUT 5XX AND 6XX CANNOT BE INTERMIXED ON THE SAME SYSTEM. AVA OPTIONS 68500 1/68500 2/68501 1/ AVA OPTIONS 68501 2/								
33155 501	512K MEMORY INCREMENT	LIST RESALE	105,018 70,000	F	2,755	2,479	SEE CCC	543	B/2
33155 502	768K MEMORY INCREMENT	LIST RESALE	134,094 87,500	F	4,345	3,910	SEE CCC	723	B/2

PRODUCT NUM	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
33155 503	1024K MEMORY INCREMENT	LIST	158,862	F	5,101	4,591 SEE CCC	902	B/2
		RESALE	105,000					
33155 504	1536K MEMORY INCREMENT	LIST	223,821	F	7,477	6,729 SEE CCC	1262	B/2
		RESALE	155,000					
33155 505	2048K MEMORY INCREMENT	LIST	295,804	F	10,051	9,046 SEE CCC	1543	B/2
		RESALE	205,000					
33155 506	2560K MEMORY INCREMENT	LIST	380,296	F	13,847	12,462 SEE CCC	1818	B/2
		RESALE	270,000					
33155 507	3072K MEMORY INCREMENT	LIST	429,381	F	14,506	13,055 SEE CCC	2113	B/2
		RESALE	305,000					
33155 508	3584K MEMORY INCREMENT	LIST	497,632	F	17,080	15,372 SEE CCC	2388	B/2
		RESALE	355,000					
33155 509	4096K MEMORY INCREMENT	LIST	556,291	F	18,565	16,708 SEE CCC	2670	B/2
		RESALE	405,000					
33155 6XX	MEMORY SYSTEMS							
	A PERFORMANCE INTERCHANGEABLE MEMORY SYSTEM FOR USE WITH IBM SYSTEM 370 MODEL 155 COMPUTERS. FUNCTIONALLY INTERCHANGEABLE WITH 5XX, BUT 5XX AND 6XX CANNOT BE INTERMIXED ON SAME SYSTEM.							
	AVA OPTIONS 68500 3/68500 4/68501 3/							
	AVA OPTIONS 69501 4/							
33155 601	512K BYTE MEMORY SYSTEM	LIST	105,018	F	2,755	2,479 SEE CCC	543	B/2
		RESALE	70,000					
33155 602	768K BYTE MEMORY SYSTEM	LIST	134,094	F	4,345	3,910 SEE CCC	723	B/2
		RESALE	87,500					
33155 603	1024K BYTE MEMORY SYSTEM	LIST	158,862	F	5,101	4,591 SEE CCC	902	B/2
		RESALE	105,000					
33155 604	1536K BYTE MEMORY SYSTEM	LIST	223,821	F	7,477	6,729 SEE CCC	1262	B/2
		RESALE	155,000					
33155 605	2048K BYTE MEMORY SYSTEM	LIST	295,804	F	10,051	9,046 SEE CCC	1543	B/2
		RESALE	205,000					
33155 606	2560K BYTE MEMORY SYSTEM	LIST	380,296	F	13,847	12,462 SEE CCC	1818	B/2
		RESALE	270,000					
33155 607	3072K BYTE MEMORY SYSTEM	LIST	429,381	F	14,506	13,055 SEE CCC	2113	B/2
		RESALE	305,000					
33155 608	3584K BYTE MEMORY SYSTEM	LIST	497,632	F	17,080	15,372 SEE CCC	2388	B/2
		RESALE	355,000					
33155 609	4096K BYTE MEMORY SYSTEM	LIST	556,291	F	18,565	16,708 SEE CCC	2670	B/2
		RESALE	405,000					
33158	MEMORY SYSTEM							
	A PERFORMANCE INTERCHANGEABLE MEMORY SYSTEM FOR USE WITH IBM SYSTEM/370 MODEL 158 COMPUTERS. EACH MODEL INCLUDES THE NECESSARY HARDWARE TO ATTACH TO AND INTERFACE WITH THE SPECIFIED NATIVE IBM MEMORY.							
	69101-X ATTACHED PROCESSOR OPTION REQUIRED ON IBM 3158 AP SYSTEM.							
	AVA OPTIONS 69027 1/69101 X/69104 X/							
33158 261	512K TO 1024K MEMORY EXPANSION	LIST	115,000	E	1,870	1,700 SEE CCC	357	B/2
		RESALE	51,000					
33158 262	512K TO 1536K MEMORY EXPANSION	LIST	175,650	E	3,300	3,000 SEE CCC	462	B/2
		RESALE	90,000					
	EXPANDS A 512K CPU TO 1536K BYTES BY ADDING AN INCREMENT OF 1024K BYTES.							
33158 263	512K TO 2048K MEMORY EXPANSION	LIST	263,475	E	4,730	4,300 SEE CCC	491	B/2
		RESALE	129,000					
	EXPANDS A 512K CPU TO 2048K BYTES BY ADDING AN INCREMENT OF 1536K BYTES.							
33158 264	512K TO 3072K MEMORY EXPANSION	LIST	439,125	E	7,590	6,900 SEE CCC	627	B/2
		RESALE	207,000					
	EXPANDS A 512K CPU TO 3072K BYTES BY ADDING AN INCREMENT OF 2560K BYTES.							
33158 265	512K TO 2560K MEMORY EXPANSION	LIST	351,300	E	6,160	5,600 SEE CCC	567	B/2
		RESALE	168,000					
33158 266	512K TO 3584K MEMORY EXPANSION	LIST	526,950	E	9,020	8,200 SEE CCC	695	B/2
		RESALE	246,000					
	EXPANDS A 512K CPU TO 3584K BYTES BY ADDING AN INCREMENT OF 3072K BYTES.							
33158 300	1024K TO 1536K MEMORY EXPAN.	LIST	115,000	E	1,870	1,700 SEE CCC	357	B/2
		RESALE	51,000					
33158 301	1024K TO 2048K MEMORY EXPAND.	LIST	175,650	E	3,300	3,000 SEE CCC	462	B/2
		RESALE	90,000					
	EXPANDS A 1024K CPU TO 2048K BYTES BY ADDING AN INCREMENT OF 1024K BYTES.							

SUBSYSTEMS PLUG COMP./DATA ENTRY
RESALE PRODUCTS ACTIVE

PRODUCT MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
33158 302	1024K TO 3072K MEMORY EXPAND.	LIST	351,300	E	6,160	5,600 SEE CCC	567	B/2
		RESALE	168,000					
	EXPANDS A 1024K CPU TO 3072K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.							
33158 303	1024K TO 4096K MEMORY EXPAND.	LIST	526,950	E	9,020	8,200 SEE CCC	695	B/2
		RESALE	246,000					
	EXPANDS A 1024K CPU TO 4096K BYTES BY ADDING AN INCREMENT OF 3072K BYTES.							
33158 304	1024K TO 2560K MEMORY EXPANS.	LIST	263,475	E	4,730	4,300 SEE CCC	491	B/2
		RESALE	129,000					
	EXPANDS A 1024K CPU TO 2560K BYTES BY ADDING AN INCREMENT OF 1536K BYTES.							
33158 305	1024K TO 3584K MEMORY EXPANS.	LIST	439,125	E	7,590	6,900 SEE CCC	627	B/2
		RESALE	207,000					
	EXPANDS A 1024K CPU TO 3584K BYTES BY ADDING AN INCREMENT OF 2560K BYTES.							
33158 350	1536K TO 2048K MEMORY EXPAN.	LIST	115,000	E	1,870	1,700 SEE CCC	357	B/2
		RESALE	51,000					
33158 351	1536K TO 3072K MEMORY EXPAND.	LIST	263,475	E	4,730	4,300 SEE CCC	491	B/2
		RESALE	129,000					
	EXPANDS A 1536K CPU TO 3072K BYTES BY ADDING AN INCREMENT OF 1536K BYTES.							
33158 352	1536K TO 4096K MEMORY EXPAND.	LIST	439,125	E	7,590	6,900 SEE CCC	627	B/2
		RESALE	207,000					
	EXPANDS A 1536K CPU TO 4096K BYTES BY ADDING AN INCREMENT OF 2560K BYTES.							
33158 353	1536K TO 2560K MEMORY EXPANS.	LIST	175,650	E	3,300	3,000 SEE CCC	462	B/2
		RESALE	90,000					
	EXPANDS A 1536K CPU TO 2560K BYTES BY ADDING AN INCREMENT OF 1024K BYTES.							
33158 354	1536K TO 3584K MEMORY EXPANS.	LIST	351,300	E	6,160	5,600 SEE CCC	567	B/2
		RESALE	168,000					
	EXPANDS A 1536K CPU TO 3584K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.							
33158 400	2048K TO 3072K MEMORY EXPAND.	LIST	175,650	E	3,300	3,000 SEE CCC	462	B/2
		RESALE	90,000					
	EXPANDS A 2048K CPU TO 3072K BYTES BY ADDING AN INCREMENT OF 1024K BYTES.							
33158 401	2048K TO 4096K MEMORY EXPAND.	LIST	351,300	E	6,160	5,600 SEE CCC	567	B/2
		RESALE	168,000					
	EXPANDS A 2048K CPU TO 4096K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.							
33158 402	2048K TO 2560K MEMORY EXPANS.	LIST	115,000	E	1,870	1,700 SEE CCC	357	B/2
		RESALE	51,000					
	EXPANDS A 2048K CPU TO 2560K BYTES BY ADDING AN INCREMENT OF 512K BYTES.							
33158 403	2048K TO 3584K MEMORY EXPANS.	LIST	263,475	E	4,730	4,300 SEE CCC	491	B/2
		RESALE	129,000					
	EXPANDS A 2048K CPU TO 3584K BYTES BY ADDING AN INCREMENT OF 1536K BYTES.							
33158 5XX	MEMORY SYSTEM A PERFORMANCE INTERCHANGEABLE MEMORY SYSTEM FOR USE WITH IBM SYSTEM 370 MODEL 158 COMPUTER SYSTEMS. MODEL 500 SERIES ATTACHES TO AND INTERFACES WITH SYSTEMS HAVING 512K, 1024K, 1536K, AND 2048K BYTES. MODEL 600 SERIES ATTACHES TO AND INTERFACES WITH SYSTEMS HAVING 3072K OR 4096K BYTES OF NATIVE IBM MEMORY. 69102-X ATTACHED PROCESSOR OPTION REQUIRED ON IBM 3158 AP SYSTEM. AVA OPTIONS 69102 X/69105 X/							
33158 501	512K TO 1024K MEMORY EXPANS.	LIST	94,000	E	1,120	912 SEE CCC	324	B/2
		RESALE	20,500					
	EXPANDS A 512K CPU TO 1024K BYTES BY ADDING AN INCREMENT OF 512K BYTES.							
33158 502	512K TO 1536K MEMORY EXPANS.	LIST	130,000	E	1,800	1,475 SEE CCC	420	B/2
		RESALE	32,500					
	EXPANDS A 512K CPU TO 1536K BYTES BY ADDING AN INCREMENT OF 1024K BYTES.							
33158 503	512K TO 2048K MEMORY EXPANS.	LIST	185,000	E	2,488	2,038 SEE CCC	446	B/2
		RESALE	44,500					
	EXPANDS A 512K CPU TO 2048K BYTES BY ADDING AN INCREMENT OF 1536K BYTES.							
33158 504	512K TO 2560K MEMORY EXPANS.	LIST	240,000	E	3,175	2,600 SEE CCC	515	B/2
		RESALE	56,500					
	EXPANDS A 512K CPU TO 2560K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.							
33158 505	512K TO 3072K MEMORY EXPANS.	LIST	295,000	E	3,863	3,163 SEE CCC	570	B/2
		RESALE	68,500					
	EXPANDS A 512K CPU TO 3072K BYTES BY ADDING AN INCREMENT OF 2560K BYTES.							
33158 506	512K TO 3584K MEMORY EXPANS.	LIST	350,000	E	4,550	3,725 SEE CCC	631	B/2
		RESALE	80,500					
	EXPANDS A 512K CPU TO 3584K BYTES BY ADDING AN INCREMENT OF 3072K BYTES.							

CHANGES EFFECTIVE 05/01/80

PRODUCT MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
33158 507	512K TO 4096K MEMORY EXPANS.	LIST	405,000	E	5,238	4,288	SEE CCC	691	B/2
		RESALE	92,500						
	EXPANDS A 512K CPU TO 4096K BYTES BY ADDING AN INCREMENT OF 3584K BYTES.								
33158 511	512K TO 5120K MEMORY EXPANS.	LIST	515,000	E	6,613	5,413	SEE CCC	835	B/2
		RESALE	116,500						
	EXPANDS A 512K CPU TO 5120K BYTES BY ADDING AN INCREMENT OF 4608K BYTES.								
33158 513	512K TO 6144K MEMORY EXPANS.	LIST	625,000	F	7,988	6,538	SEE CCC	1,002	B/2
		RESALE	140,500						
	EXPANDS A 512K CPU TO 6144K BYTES BY ADDING AN INCREMENT OF 5632K BYTES.								
33158 515	512K TO 7168K MEMORY EXPANS.	LIST	735,000	E	9,363	7,663	SEE CCC	1,170	B/2
		RESALE	164,500						
	EXPANDS A 512K CPU TO 7168K BYTES BY ADDING AN INCREMENT OF 6656K BYTES.								
33158 517	512K TO 8192K MEMORY EXPANS.	LIST	845,000	E	10,738	8,788	SEE CCC	1,339	B/2
		RESALE	188,500						
	EXPANDS A 512K CPU TO 8192K BYTES BY ADDING AN INCREMENT OF 7680K BYTES.								
33158 521	1024K TO 1536K MEMORY EXPANS.	LIST	94,000	E	1,120	912	SEE CCC	324	B/2
		RESALE	20,500						
	EXPANDS A 1024K CPU TO 1536K BYTES BY ADDING AN INCREMENT OF 512K BYTES.								
33158 522	1024K TO 2048K MEMORY EXPANS.	LIST	130,000	E	1,800	1,475	SEE CCC	420	B/2
		RESALE	32,500						
	EXPANDS A 1024K CPU TO 2048K BYTES BY ADDING AN INCREMENT OF 1024K BYTES.								
33158 523	1024K TO 2560K MEMORY EXPANS.	LIST	185,000	E	2,488	2,038	SEE CCC	446	B/2
		RESALE	44,500						
	EXPANDS A 1024K CPU TO 2560K BYTES BY ADDING AN INCREMENT OF 1536K BYTES.								
33158 524	1024K TO 3072K MEMORY EXPANS.	LIST	240,000	E	3,175	2,600	SEE CCC	515	B/2
		RESALE	56,500						
	EXPANDS A 1024K CPU TO 3072K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.								
33158 525	1024K TO 3584K MEMORY EXPANS.	LIST	295,000	E	3,863	3,163	SEE CCC	570	B/2
		RESALE	68,500						
	EXPANDS A 1024K CPU TO 3584K BYTES BY ADDING AN INCREMENT OF 2560K BYTES.								
33158 526	1024K TO 4096K MEMORY EXPANS.	LIST	350,000	E	4,550	3,725	SEE CCC	631	B/2
		RESALE	80,500						
	EXPANDS A 1024K CPU TO 4096K BYTES BY ADDING AN INCREMENT OF 3072K BYTES.								
33158 528	1024K TO 5120K MEMORY EXPANS.	LIST	460,000	E	5,925	4,850	SEE CCC	750	B/2
		RESALE	104,500						
	EXPANDS A 1024K CPU TO 5120K BYTES BY ADDING AN INCREMENT OF 4096K BYTES.								
33158 532	1024K TO 6144K MEMORY EXPANS.	LIST	570,000	E	7,300	5,975	SEE CCC	919	B/2
		RESALE	128,500						
	EXPANDS A 1024K CPU TO 6144K BYTES BY ADDING AN INCREMENT OF 5120K BYTES.								
33158 534	1024K TO 7168K MEMORY EXPANS.	LIST	680,000	E	8,675	7,100	SEE CCC	1,087	B/2
		RESALE	152,500						
	EXPANDS A 1024K CPU TO 7168K BYTES BY ADDING AN INCREMENT OF 6144K BYTES.								
33158 536	1024K TO 8192K MEMORY EXPANS.	LIST	790,000	E	10,050	8,225	SEE CCC	1,255	B/2
		RESALE	176,500						
	EXPANDS A 1024K CPU TO 8192K BYTES BY ADDING AN INCREMENT OF 7168K BYTES.								
33158 541	1536K TO 2048K MEMORY EXPANS.	LIST	94,000	E	1,120	912	SEE CCC	324	B/2
		RESALE	20,500						
	EXPANDS A 1536K CPU TO 2048K BYTES BY ADDING AN INCREMENT OF 512K BYTES.								
33158 542	1536K TO 2560K MEMORY EXPANS.	LIST	130,000	E	1,800	1,475	SEE CCC	420	B/2
		RESALE	32,500						
	EXPANDS A 1536K CPU TO 2560K BYTES BY ADDING AN INCREMENT OF 1024K BYTES.								
33158 543	1536K TO 3072K MEMORY EXPANS.	LIST	185,000	E	2,488	2,038	SEE CCC	446	B/2
		RESALE	44,500						
	EXPANDS A 1536K CPU TO 3072K BYTES BY ADDING AN INCREMENT OF 1536K BYTES.								
33158 544	1536K TO 3584K MEMORY EXPANS.	LIST	240,000	E	3,175	2,600	SEE CCC	515	B/2
		RESALE	56,500						
	EXPANDS A 1536K CPU TO 3584K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.								
33158 545	1536K TO 4096K MEMORY EXPANS.	LIST	295,000	E	3,863	3,163	SEE CCC	570	B/2
		RESALE	68,500						
	EXPANDS A 1536K CPU TO 4096K BYTES BY ADDING AN INCREMENT OF 2560K BYTES.								
33158 547	1536K TO 5120K MEMORY EXPANS.	LIST	405,000	E	5,238	4,288	SEE CCC	691	B/2
		RESALE	92,500						
	EXPANDS A 1536K CPU TO 5120K BYTES BY ADDING AN INCREMENT OF 3584K BYTES.								

CHANGES EFFECTIVE 05/01/80

PRODUCT MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
33158 551	1536K TO 6144K MEMORY EXPANS.	LIST	515,000	E	6,613	9,413 SEE CCC	835	B/2
	EXPANDS A 1536K CPU TO 6144K BYTES BY ADDING AN INCREMENT OF 4608K BYTES.	RESALE	116,500					
33158 553	1536K TO 7168K MEMORY EXPANS.	LIST	625,000	E	7,988	6,538 SEE CCC	1,002	B/2
	EXPANDS A 1536K CPU TO 7168K BYTES BY ADDING AN INCREMENT OF 5632K BYTES.	RESALE	140,500					
33158 555	1536K TO 8192K MEMORY EXPANS.	LIST	735,000	E	9,363	7,663 SEE CCC	1,170	B/2
	EXPANDS A 1536K CPU TO 8192K BYTES BY ADDING AN INCREMENT OF 6656K BYTES.	RESALE	164,500					
33158 561	2048K TO 2560K MEMORY EXPANS.	LIST	94,000	E	1,120	912 SEE CCC	324	B/2
	EXPANDS A 2048K CPU TO 2560K BYTES BY ADDING AN INCREMENT OF 512K BYTES.	RESALE	20,500					
33158 562	2048K TO 3072K MEMORY EXPANS.	LIST	130,000	E	1,800	1,475 SEE CCC	420	B/2
	EXPANDS A 2048K CPU TO 3072K BYTES BY ADDING ANINCREMENT OF 1024K BYTES.	RESALE	32,500					
33158 563	2048K TO 3584K MEMORY EXPANS.	LIST	185,000	E	2,488	2,038 SEE CCC	446	B/2
	EXPANDS A 2048K CPU TO 3584K BYTES BY ADDING AN INCREMENT OF 1536K BYTES.	RESALE	44,500					
33158 564	2048K TO 4096K MEMORY EXPANS.	LIST	240,000	E	3,175	2,600 SEE CCC	515	B/2
	EXPANDS A 2048K CPU TO 4096K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.	RESALE	56,500					
33158 566	2048K TO 5120K MEMORY EXPANS.	LIST	350,000	E	4,550	3,725 SEE CCC	631	B/2
	EXPANDS A 2048K CPU TO 5120K BYTES BY ADDING AN INCREMENT OF 3072K BYTES.	RESALE	80,500					
33158 568	2048K TO 6144K MEMORY EXPANS.	LIST	460,000	E	5,925	4,850 SEE CCC	750	B/2
	EXPANDS A 2048K CPU TO 6144K BYTES BY ADDING AN INCREMENT OF 4096K BYTES.	RESALE	104,500					
33158 572	2048K TO 7168K MEMORY EXPANS.	LIST	570,000	E	7,300	5,975 SEE CCC	919	B/2
	EXPANDS A 2048K CPU TO 7168K BYTES BY ADDING AN INCREMENT OF 5120K BYTES.	RESALE	128,500					
33158 574	2048K TO 8192K MEMORY EXPANS.	LIST	680,000	E	8,675	7,100 SEE CCC	1,087	B/2
	EXPANDS A 2048K CPU TO 8192K BYTES BY ADDING AN INCREMENT OF 6144K BYTES.	RESALE	152,500					
33158 601	3072K TO 3584K MEMORY EXPANS.	LIST	94,000	E	1,285	1,062 SEE CCC	385	B/2
	EXPANDS A 3072K CPU TO 3584K BYTES BY ADDING AN INCREMENT OF 512K BYTES.	RESALE	25,000					
33158 602	3072K TO 4096K MEMORY EXPANS.	LIST	130,000	E	1,965	1,625 SEE CCC	442	B/2
	EXPANDS A 3072K CPU TO 4096K BYTES BY ADDING AN INCREMENT OF 1024K BYTES.	RESALE	37,000					
33158 604	3072K TO 5120K MEMORY EXPANS.	LIST	240,000	E	3,340	2,750 SEE CCC	515	B/2
	EXPANDS A 3072K CPU TO 5120K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.	RESALE	61,000					
33158 606	3072K TO 6144K MEMORY EXPANS.	LIST	350,000	E	4,715	3,875 SEE CCC	631	B/2
	EXPANDS A 3072K CPU TO 6144K BYTES BY ADDING AN INCREMENT OF 3072K BYTES.	RESALE	85,000					
33158 608	3072K TO 7168K MEMORY EXPANS.	LIST	460,000	E	6,090	5,000 SEE CCC	763	B/2
	EXPANDS A 3072K CPU TO 7168K BYTES BY ADDING AN INCREMENT OF 4096K BYTES.	RESALE	109,000					
33158 612	3072K TO 8192K MEMORY EXPANS.	LIST	570,000	E	7,465	6,125 SEE CCC	938	B/2
	EXPANDS A 3072K CPU TO 8192K BYTES BY ADDING AN INCREMENT OF 5120K BYTES.	RESALE	133,000					
33158 622	4096K TO 5120K MEMORY EXPANS.	LIST	130,000	E	1,965	1,625 SEE CCC	442	B/2
	EXPANDS A 4096K CPU TO 5120K BYTES BY ADDING AN INCREMENT OF 1024K BYTES.	RESALE	37,000					
33158 624	4096K TO 6144K MEMORY EXPANS.	LIST	240,000	E	3,340	2,750 SEE CCC	515	B/2
	EXPANDS A 4096K CPU TO 6144K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.	RESALE	61,000					
33158 626	4096K TO 7168K MEMORY EXPANS.	LIST	350,000	E	4,715	3,875 SEE CCC	631	B/2
	EXPANDS A 4096K CPU TO 7168K BYTES BY ADDING AN INCREMENT OF 3072K BYTES.	RESALE	85,000					
33158 628	4096K TO 8192K MEMORY EXPANS.	LIST	460,000	E	6,090	5,000 SEE CCC	763	B/2
	EXPANDS A 4096K CPU TO 8192K BYTES BY ADDING AN INCREMENT OF 4096K BYTES.	RESALE	109,000					

SUBSYSTEMS PLUG COMP./DATA ENTRY
RESALE PRODUCTS ACTIVE

PRODUCT MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
33158 7XX	MEMORY SYSTEMS ATTACHES TO AND INTERFACES WITH IBM SYSTEM 370 MODEL 158 COMPUTER SYSTEMS WITH 512K, 1024K, 1536K AND 2048K BYTES OF NATIVE IBM MEMORY. 69102-X ATTACHER PROCESSOR OPTION REQUIRED ON IBM 3158 AP SYSTEM. AVA OPTIONS 69102 X/							
33158 701	512K TO 1024K MEMORY EXPANS. EXPANDS A 512K CPU TO 1024K BYTES BY ADDING AN INCREMENT OF 512K BYTES.	LIST RESALE	63,000 20,500		N/A	N/A SEE CCC	324	B/2
33158 702	512K TO 1536K MEMORY EXPANS. EXPANDS A 512K CPU TO 1536K BYTES BY ADDING AN INCREMENT OF 1024K BYTES.	LIST RESALE	90,000 32,500		N/A	N/A SEE CCC	420	B/2
33158 703	512K TO 2048K MEMORY EXPANS. EXPANDS A 512K CPU TO 2048K BYTES BY ADDING AN INCREMENT OF 1536K BYTES.	LIST RESALE	127,500 44,500		N/A	N/A SEE CCC	446	B/2
33158 704	512K TO 2560K MEMORY EXPANS. EXPANDS A 512K CPU TO 2560K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.	LIST RESALE	165,000 56,500		N/A	N/A SEE CCC	515	B/2
33158 705	512K TO 3072K MEMORY EXPANS. EXPANDS A 512K CPU TO 3072K BYTES BY ADDING AN INCREMENT OF 2560K BYTES.	LIST RESALE	202,500 68,500		N/A	N/A SEE CCC	570	B/2
33158 706	512K TO 3584K MEMORY EXPANS. EXPANDS A 512K CPU TO 3584K BYTES BY ADDING AN INCREMENT OF 3072K BYTES.	LIST RESALE	240,000 80,500		N/A	N/A SEE CCC	631	B/2
33158 707	512K TO 4096K MEMORY EXPANS. EXPANDS A 512K CPU TO 4096K BYTES BY ADDING AN INCREMENT OF 3584K BYTES.	LIST RESALE	277,500 92,500		N/A	N/A SEE CCC	671	B/2
33158 711	512K TO 5120K MEMORY EXPANS. EXPANDS A 512K CPU TO 5120K BYTES BY ADDING AN INCREMENT OF 4608K BYTES.	LIST RESALE	352,500 116,500		N/A	N/A SEE CCC	835	B/2
33158 713	512K TO 6144K MEMORY EXPANS. EXPANDS A 512K CPU TO 6144K BYTES BY ADDING AN INCREMENT OF 5632K BYTES.	LIST RESALE	427,500 140,500		N/A	N/A SEE CCC	1,002	B/2
33158 715	512K TO 7168K MEMORY EXPANS. EXPANDS A 512K CPU TO 7168K BYTES BY ADDING AN INCREMENT OF 6656K BYTES.	LIST RESALE	502,500 164,500		N/A	N/A SEE CCC	1,170	B/2
33158 717	512K TO 8192K MEMORY EXPANS. EXPANDS A 512K CPU TO 8192K BYTES BY ADDING AN INCREMENT OF 7680K BYTES.	LIST RESALE	577,500 188,500		N/A	N/A SEE CCC	1,339	B/2
33158 721	1024K TO 1536K MEMORY EXPANS. EXPANDS A 1024K CPU TO 1536K BYTES BY ADDING AN INCREMENT OF 512K BYTES.	LIST RESALE	63,000 20,500		N/A	N/A SEE CCC	324	B/2
33158 722	1024K TO 2048K MEMORY EXPANS. EXPANDS A 1024K CPU TO 2048K BYTES BY ADDING AN INCREMENT OF 1024K BYTES.	LIST RESALE	90,000 32,500		N/A	N/A SEE CCC	420	B/2
33158 723	1024K TO 2560K MEMORY EXPANS. EXPANDS A 1024K CPU TO 2560K BYTES BY ADDING AN INCREMENT OF 1536K BYTES.	LIST RESALE	127,500 44,500		N/A	N/A SEE CCC	446	B/2
33158 724	1024K TO 3072K MEMORY EXPANS. EXPANDS A 1024K CPU TO 3072K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.	LIST RESALE	165,000 56,500		N/A	N/A SEE CCC	515	B/2
33158 725	1024K TO 3584K MEMORY EXPANS. EXPANDS A 1024K CPU TO 3584K BYTES BY ADDING AN INCREMENT OF 2560K BYTES.	LIST RESALE	202,500 68,500		N/A	N/A SEE CCC	570	B/2
33158 726	1024K TO 4096K MEMORY EXPANS. EXPANDS A 1024K CPU TO 4096K BYTES BY ADDING AN INCREMENT OF 3072K BYTES.	LIST RESALE	240,000 80,500		N/A	N/A SEE CCC	631	B/2
33158 728	1024K TO 5120K MEMORY EXPANS. EXPANDS A 1024K CPU TO 5120K BYTES BY ADDING AN INCREMENT OF 4096K BYTES.	LIST RESALE	315,000 104,500		N/A	N/A SEE CCC	750	B/2
33158 732	1024K TO 6144K MEMORY EXPANS. EXPANDS A 1024K CPU TO 6144K BYTES BY ADDING AN INCREMENT OF 5120K BYTES.	LIST RESALE	390,000 128,500		N/A	N/A SEE CCC	919	B/2
33158 734	1024K TO 7168K MEMORY EXPANS. EXPANDS A 1024K CPU TO 7168K BYTES BY ADDING AN INCREMENT OF 6144K BYTES.	LIST RESALE	465,000 152,500		N/A	N/A SEE CCC	1,087	B/2

CHANGES EFFECTIVE 05/01/80

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
33158	736	1024K TO 8192K MEMORY EXPANS.	LIST	540,000		N/A	N/A	SEE CCC	1,255	B/2
			RESALE	176,500						
		EXPANDS A 1024K CPU TO 8192K BYTES BY ADDING AN INCREMENT OF 7169K BYTES.								
33158	741	1536K TO 2048K MEMORY EXPANS.	LIST	63,000		N/A	N/A	SEE CCC	324	B/2
			RESALE	20,500						
		EXPANDS A 1536K CPU TO 2048K BYTES BY ADDING AN INCREMENT OF 512K BYTES.								
33158	742	1536K TO 2560 MEMORY EXPANS.	LIST	90,000		N/A	N/A	SEE CCC	420	B/2
			RESALE	32,500						
		EXPANDS A 1536K CPU TO 2560K BYTES BY ADDING AN INCREMENT OF 1024K BYTES.								
33158	743	1536K TO 3072K MEMORY EXPANS.	LIST	127,500		N/A	N/A	SEE CCC	446	B/2
			RESALE	44,500						
		EXPANDS A 1536K CPU TO 3072K BYTES BY ADDING AN INCREMENT OF 1536K BYTES.								
33158	744	1536K TO 3584K MEMORY EXPANS.	LIST	165,000		N/A	N/A	SEE CCC	515	B/2
			RESALE	56,500						
		EXPANDS A 1536K CPU TO 3584K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.								
33158	745	1536K TO 4096K MEMORY EXPANS.	LIST	202,500		N/A	N/A	SEE CCC	570	B/2
			RESALE	68,500						
		EXPANDS A 1536K CPU TO 4096K BYTES BY ADDING AN INCREMENT OF 2560K BYTES.								
33158	747	1536K TO 5120K MEMORY EXPANS.	LIST	277,500		N/A	N/A	SEE CCC	671	B/2
			RESALE	92,500						
		EXPANDS A 1536K CPU TO 5120K BYTES BY ADDING AN INCREMENT OF 3584K BYTES.								
33158	751	1536K TO 6144K MEMORY EXPANS.	LIST	352,500		N/A	N/A	SEE CCC	835	B/2
			RESALE	116,500						
		EXPANDS A 1536K CPU TO 6144K BYTES BY ADDING AN INCREMENT OF 4608K BYTES.								
33158	753	1536K TO 7168K MEMORY EXPANS.	LIST	427,500		N/A	N/A	SEE CCC	1,002	B/2
			RESALE	140,500						
		EXPANDS A 1536K CPU TO 7168K BYTES BY ADDING AN INCREMENT OF 5632K BYTES.								
33158	755	1536K TO 8192K MEMORY EXPANS.	LIST	502,500		N/A	N/A	SEE CCC	1,170	B/2
			RESALE	164,500						
		EXPANDS A 1536K CPU TO 8192K BYTES BY ADDING AN INCREMENT OF 6656K BYTES.								
33158	761	2048K TO 2560K MEMORY EXPANS.	LIST	63,000		N/A	N/A	SEE CCC	324	B/2
			RESALE	20,500						
		EXPANDS A 2048K CPU TO 2560K BYTES BY ADDING AN INCREMENT OF 512K BYTES.								
33158	762	2048K TO 3072K MEMORY EXPANS.	LIST	90,000		N/A	N/A	SEE CCC	420	B/2
			RESALE	32,500						
		EXPANDS A 2048K CPU TO 3072K BYTES BY ADDING AN INCREMENT OF 1024K BYTES.								
33158	763	2048K TO 3584K MEMORY EXPANS.	LIST	127,500		N/A	N/A	SEE CCC	446	B/2
			RESALE	44,500						
		EXPANDS A 2048K CPU TO 3584K BYTES BY ADDING AN INCREMENT OF 1536K BYTES.								
33158	764	2048K TO 4096K MEMORY EXPANS.	LIST	165,000		N/A	N/A	SEE CCC	515	B/2
			RESALE	56,500						
		EXPANDS A 2048K CPU TO 4096K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.								
33158	766	2048K TO 5120K MEMORY EXPANS.	LIST	240,000		N/A	N/A	SEE CCC	631	B/2
			RESALE	80,500						
		EXPANDS A 2048K CPU TO 5120K BYTES BY ADDING AN INCREMENT OF 3072K BYTES.								
33158	768	2048K TO 6144K MEMORY EXPANS.	LIST	315,000		N/A	N/A	SEE CCC	750	B/2
			RESALE	104,500						
		EXPANDS A 2048K CPU TO 6144K BYTES BY ADDING AN INCREMENT OF 4096K BYTES.								
33158	772	2048K TO 7168K MEMORY EXPANS.	LIST	390,000		N/A	N/A	SEE CCC	919	B/2
			RESALE	128,500						
		EXPANDS A 2048K CPU TO 7168K BYTES BY ADDING AN INCREMENT OF 5120K BYTES.								
33158	774	2048K TO 8192K MEMORY EXPANS.	LIST	465,000		N/A	N/A	SEE CCC	1,087	B/2
			RESALE	152,500						
		EXPANDS A 2048K CPU TO 8192K BYTES BY ADDING AN INCREMENT OF 6144K BYTES.								
33158	8XX	MEMORY SYSTEMS ATTACHES TO AND INTERFACES WITH IBM SYSTEM 370 MODEL 158 COMPUTER SYSTEM WITH 3072K AND 4096K BYTES OF NATIVE IBM MEMORY. 69102-X ATTACHED PROCESSOR OPTION REQUIRED ON IBM 3158 AP SYSTEM. AVA OPTIONS 69102 XXX/								
33158	801	3072K TO 3584K MEMORY EXPANS.	LIST	67,700		N/A	N/A	SEE CCC	385	B/2
			RESALE	25,000						
		EXPANDS A 3072K CPU TO 3584K BYTES BY ADDING AN INCREMENT OF 512K BYTES.								
33158	802	3072K TO 4096K MEMORY EXPANS.	LIST	94,700		N/A	N/A	SEE CCC	442	B/2
			RESALE	37,000						
		EXPANDS A 3072K CPU TO 4096K BYTES BY ADDING AN INCREMENT OF 1024K BYTES.								

SUBSYSTEMS PLUG COMP./DATA ENTRY
RESALE PRODUCTS ACTIVE

PRODUCT MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
33158 804	3072K TO 5120K MEMORY EXPANS.	LIST	169,700		N/A	N/A	SEE CCC	515	B/2
		RESALE	61,000						
	EXPANDS A 3072K CPU TO 5120K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.								
33158 806	3072K TO 6144K MEMORY EXPANS.	LIST	244,700		N/A	N/A	SEE CCC	631	B/2
		RESALE	85,000						
	EXPANDS A 3072K CPU TO 6144K BYTES BY ADDING AN INCREMENT OF 3072K BYTES.								
33158 808	3072K TO 7168K MEMORY EXPANS.	LIST	319,700		N/A	N/A	SEE CCC	763	B/2
		RESALE	109,000						
	EXPANDS A 3072K CPU TO 7168K BYTES BY ADDING AN INCREMENT OF 4096K BYTES.								
33158 812	3072K TO 8192K MEMORY EXPANS.	LIST	394,700		N/A	N/A	SEE CCC	958	B/2
		RESALE	133,000						
	EXPANDS A 3072K CPU TO 8192K BYTES BY ADDING AN INCREMENT OF 5120K BYTES.								
33158 822	4096K TO 5120K MEMORY EXPANS.	LIST	94,700		N/A	N/A	SEE CCC	442	B/2
		RESALE	37,000						
	EXPANDS A 4096K CPU TO 5120K BYTES BY ADDING AN INCREMENT OF 1024K BYTES.								
33158 824	4096K TO 6144K MEMORY EXPANS.	LIST	169,700		N/A	N/A	SEE CCC	515	B/2
		RESALE	61,000						
	EXPANDS A 4096K CPU TO 6144K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.								
33158 826	4096K TO 7168K MEMORY EXPANS.	LIST	244,700		N/A	N/A	SEE CCC	631	B/2
		RESALE	85,000						
	EXPANDS A 4096K CPU TO 7168K BYTES BY ADDING AN INCREMENT OF 3072K BYTES.								
33158 828	4096K TO 8192K MEMORY EXPANS.	LIST	319,700		N/A	N/A	SEE CCC	763	B/2
		RESALE	109,000						
	EXPANDS A 4096K CPU TO 8192K BYTES BY ADDING AN INCREMENT OF 4096K BYTES.								
33158 901	512K BYTE CDC MEMORY SYSTEM	LIST	51,000	E	1,120	912	SEE CCC	324	B/2
		RESALE	25,500						
33158 902	1024K BYTE CDC MEMORY SYSTEM	LIST	96,000	E	1,800	1,475	SEE CCC	420	B/2
		RESALE	39,000						
33158 903	1536K BYTE CDC MEMORY SYSTEM	LIST	129,000	E	2,488	2,038	SEE CCC	446	B/2
		RESALE	52,500						
33158 904	2048K BYTE CDC MEMORY SYSTEM	LIST	169,000	E	3,175	2,600	SEE CCC	515	B/2
		RESALE	66,000						
33158 905	2560K BYTE CDC MEMORY	LIST	207,000	E	3,863	3,163	SEE CCC	570	B/2
		RESALE	79,500						
33158 906	3072K BYTE CDC MEMORY SYSTEM	LIST	246,000	E	4,550	3,725	SEE CCC	631	B/2
		RESALE	93,000						
33158 907	3584K BYTE CDC MEMORY SYSTEM	LIST	285,000	E	5,238	4,288	SEE CCC	691	B/2
		RESALE	106,500						
33158 908	4096K BYTE CDC MEMORY SYSTEM	LIST	324,000	E	5,925	4,850	SEE CCC	750	B/2
		RESALE	120,000						
33158 909	4608K BYTE CDC MEMORY SYSTEM	LIST	363,000	E	6,613	5,413	SEE CCC	835	B/2
		RESALE	133,500						
33158 910	5120K BYTE CDC MEMORY SYSTEM	LIST	402,000	E	7,300	5,975	SEE CCC	919	B/2
		RESALE	147,000						
33158 911	5632K BYTE CDC MEMORY SYSTEM	LIST	441,000	E	7,988	6,538	SEE CCC	1,002	B/2
		RESALE	160,500						
33158 912	6144K BYTE MEMORY SYSTEM	LIST	480,000	E	8,675	7,100	SEE CCC	1,097	B/2
		RESALE	174,000						
33158 913	6656K BYTE MEMORY SYSTEM	LIST	519,000	E	9,363	7,663	SEE CCC	1,170	B/2
		RESALE	187,500						
33158 914	7168K BYTE CDC MEMORY SYSTEM	LIST	558,000	E	10,050	8,225	SEE CCC	1,255	B/2
		RESALE	201,000						
33158 915	7680K BYTE CDC MEMORY SYSTEM	LIST	597,000	E	10,738	8,788	SEE CCC	1,339	B/2
		RESALE	214,500						
33159 1XX	MEMORY SYSTEM								
	THE CDC 33159 MEMORY SYSTEM ATTACHES TO AN IBM SYSTEM 370 MODEL 155 CPU THROUGH A PROCESSOR SPEED-UP ATTACHMENT FEATURE. THIS FEATURE IS NOT COMPATIBLE WITH ANY MEMORY SYSTEM OTHER THAN CDC 33159. INCREMENTS ABOVE 2048K ARE NOT AVAILABLE ON IBM MODEL I, VERSION 0 370/155 PROCESSORS. AVA OPTIONS 68557 1/								
33159 101	1024K MEMORY EXPANSION	LIST	208,000	F	8,665	6,935	SEE CCC	821	B/2
		RESALE	160,000						
33159 102	1536K MEMORY EXPANSION	LIST	259,000	F	10,790	8,635	SEE CCC	1,147	B/2
		RESALE	192,500						
33159 103	2048K MEMORY EXPANSION	LIST	310,000	F	12,915	10,335	SEE CCC	1,403	B/2
		RESALE	225,000						
33159 104	3072K MEMORY EXPANSION	LIST	478,000	F	19,915	15,935	SEE CCC	1,921	B/2
		RESALE	385,000						
33159 105	4096K MEMORY EXPANSION	LIST	579,000	F	24,125	19,300	SEE CCC	2,427	B/2
		RESALE	450,000						

CHANGES EFFECTIVE 05/01/80

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
33159	301	1024K BYTE MEMORY EXPANSION	LIST	145,000	E	N/A	N/A	SEE CCC	821	B/2
			RESALE	60,000						
33159	302	1536K BYTE MEMORY EXPANSION	LIST	180,000	E	N/A	N/A	SEE CCC	1,147	B/2
			RESALE	76,000						
33159	303	2048K BYTE MEMORY EXPANSION	LIST	215,000	E	N/A	N/A	SEE CCC	1,403	B/2
			RESALE	92,000						
33159	304	3072K BYTE MEMORY EXPANSION	LIST	285,000	E	N/A	N/A	SEE CCC	1,921	B/2
			RESALE	124,000						
33159	305	4096K BYTE MEMORY EXPANSION	LIST	355,000	E	N/A	N/A	SEE CCC	2,427	B/2
			RESALE	156,000						
33165	5XX	MEMORY SYSTEM								
		A PERFORMANCE INTERCHANGEABLE MEMORY SYSTEM FOR USE WITH IBM SYSTEM/370 MODEL 165 COMPUTERS. TOTAL SYSTEM SIZES OVER 4096K ARE AVAILABLE FOR IBM 3165 MODEL II (DAT) ONLY.								
		AVA OPTIONS 68502 1/68502 2/68503 1/								
		AVA OPTIONS 68503 2/68504 1/68504 2/								
		AVA OPTIONS 68504 5/69032 1/69032 2/								
		AVA OPTIONS 69032 3/69032 4/69032 5/								
		AVA OPTIONS 69032 6/								
33165	503	1024K MEMORY INCREMENT	LIST	158,962	F	5,101	4,591	SEE CCC	827	B/2
			RESALE	140,000						
33165	505	2048K MEMORY INCREMENT	LIST	295,804	F	10,031	9,046	SEE CCC	1,378	B/2
			RESALE	215,000						
33165	507	3072K MEMORY INCREMENT	LIST	429,381	F	14,506	13,055	SEE CCC	1,746	B/2
			RESALE	295,000						
33165	509	4096K MEMORY INCREMENT	LIST	556,291	F	19,565	16,708	SEE CCC	2,030	B/2
			RESALE	380,000						
33165	511	5120K BYTE MEMORY INCREMENT	LIST	715,153		N/A	N/A	SEE CCC	2,415	B/2
			RESALE	520,000						
33165	513	6144K BYTE MEMORY INCREMENT	LIST	852,095		N/A	N/A	SEE CCC	2,699	B/2
			RESALE	595,000						
33165	515	7168K BYTE MEMORY INCREMENT	LIST	985,672		N/A	N/A	SEE CCC	2,983	B/2
			RESALE	675,000						
33165	517	8192K BYTE MEMORY INCREMENT	LIST	1,112,582		N/A	N/A	SEE CCC	3,266	B/2
			RESALE	760,000						
33165	601	1024K BYTE MEMORY EXPANSION	LIST	145,000	E	N/A	N/A	SEE CCC	827	B/2
			RESALE	165,000						
33165	602	2048K BYTE MEMORY EXPANSION	LIST	215,000	E	N/A	N/A	SEE CCC	1,378	B/2
			RESALE	197,000						
33165	603	3072K BYTE MEMORY EXPANSION	LIST	285,000	E	N/A	N/A	SEE CCC	1,746	B/2
			RESALE	229,000						
33165	604	4096K BYTE MEMORY EXPANSION	LIST	355,000	E	N/A	N/A	SEE CCC	2,030	B/2
			RESALE	261,000						
33165	605	5120K BYTE MEMORY EXPANSION	LIST	425,000	E	N/A	N/A	SEE CCC	2,415	B/2
			RESALE	293,000						
33165	606	6144K BYTE MEMORY EXPANSION	LIST	495,000	E	N/A	N/A	SEE CCC	2,699	B/2
			RESALE	325,000						
33165	607	7168K BYTE MEMORY EXPANSION	LIST	565,000	E	N/A	N/A	SEE CCC	2,983	B/2
			RESALE	357,000						
33165	608	8192K BYTE MEMORY EXPANSION	LIST	635,000	E	N/A	N/A	SEE CCC	3,266	B/2
			RESALE	389,000						
33168	1XX	MEMORY SYSTEM								
		A PERFORMANCE INTERCHANGEABLE MEMORY SYSTEM FOR USE WITH IBM SYSTEM 370 MODEL 168 COMPUTERS. EACH MODEL INCLUDES THE NECESSARY HARDWARE TO ATTACH AND INTERFACE WITH THE SPECIFIED NATIVE IBM MEMORY.								
		AVA OPTIONS 69108 X/								
33168	111	1024K TO 2048K MEMORY EXPANS.	LIST	130,000	E	2,600	2,125	SEE CCC	362	B/2
			RESALE	41,000						
		EXPANDS A 1024K CPU TO 2048K BYTES BY ADDING AN INCREMENT OF 1024K BYTES.								
33168	112	1024K TO 3072K MEMORY EXPANS.	LIST	240,000	E	3,975	3,250	SEE CCC	509	B/2
			RESALE	65,000						
		EXPANDS A 1024K CPU TO 3072K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.								
33168	113	1024K TO 4096K MEMORY EXPANS.	LIST	350,000	E	5,350	4,375	SEE CCC	656	B/2
			RESALE	89,000						
		EXPANDS A 1024K CPU TO 4096K BYTES BY ADDING AN INCREMENT OF 3072K BYTES.								
33168	114	1024K TO 5120K MEMORY EXPANS.	LIST	460,000	E	6,725	5,500	SEE CCC	830	B/2
			RESALE	113,000						
		EXPANDS A 1024K CPU TO 5120K BYTES BY ADDING AN INCREMENT OF 4096K BYTES.								
33168	115	1024K TO 6144K MEMORY EXPANS.	LIST	570,000	E	8,100	6,625	SEE CCC	1,008	B/2
			RESALE	137,000						
		EXPANDS A 1024K CPU TO 6144K BYTES BY ADDING AN INCREMENT OF 5120K BYTES.								

SUBSYSTEMS PLUG COMP./DATA ENTRY
RESALE PRODUCTS ACTIVE

PRODUCT MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
33168 116	1024K TO 7168K MEMORY EXPANS.	LIST	680,000	E	9,475	7,750	SEE CCC	1,192	B/2
		RESALE	161,000						
	EXPANDS A 1024K CPU TO 7168K BYTES BY ADDING AN INCREMENT OF 6144K BYTES.								
33168 117	1024K TO 8192K MEMORY EXPANS.	LIST	790,000	F	10,850	8,875	SEE CCC	1,375	B/2
		RESALE	185,000						
	EXPANDS A 1024K CPU TO 8192K BYTES BY ADDING AN INCREMENT OF 7168K BYTES.								
33168 118	1024K TO 9216K MEMORY EXPANS.	LIST	900,000	F	12,225	10,000	SEE CCC	1,515	B/2
		RESALE	209,000						
	EXPANDS A 1024K CPU TO 9216K BYTES BY ADDING AN INCREMENT OF 8192K BYTES.								
33168 121	2048K TO 3072K MEMORY EXPANS.	LIST	130,000	E	2,600	2,125	SEE CCC	362	B/2
		RESALE	41,000						
	EXPANDS A 2048K CPU TO 3072K BYTES BY ADDING AN INCREMENT OF 1024K BYTES.								
33168 122	2048K TO 4096K MEMORY EXPANS.	LIST	240,000	E	3,975	3,250	SEE CCC	509	B/2
		RESALE	65,000						
	EXPANDS A 2048K CPU TO 4096K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.								
33168 123	2048K TO 5120K MEMORY EXPANS.	LIST	350,000	E	5,350	4,375	SEE CCC	656	B/2
		RESALE	89,000						
	EXPANDS A 2048K CPU TO 5120K BYTES BY ADDING AN INCREMENT OF 3072K BYTES.								
33168 124	2048K TO 6144K MEMORY EXPANSIO	LIST	460,000	E	6,725	5,500	SEE CCC	830	B/2
		RESALE	113,000						
	EXPANDS A 2048K CPU TO 6144K BYTES BY ADDING AN INCREMENT OF 4096K BYTES.								
33168 125	2048K TO 7168K MEMORY EXPANS.	LIST	570,000	E	8,100	6,625	SEE CCC	1,009	B/2
		RESALE	137,000						
	EXPANDS A 2048K CPU TO 7168K BYTES BY ADDING AN INCREMENT OF 5120K BYTES.								
33168 126	2048K TO 8192K MEMORY EXPANS.	LIST	680,000	E	9,475	7,750	SEE CCC	1,192	B/2
		RESALE	161,000						
	EXPANDS A 2048K CPU TO 8192K BYTES BY ADDING AN INCREMENT OF 6144K BYTES.								
33168 127	2048K TO 9216K MEMORY EXPANS.	LIST	790,000	E	10,850	8,875	SEE CCC	1,375	B/2
		RESALE	185,000						
	EXPANDS A 2048K CPU TO 9216K BYTES BY ADDING AN INCREMENT OF 7168K BYTES.								
33168 128	2048K TO 10240K MEMORY EXPANS.	LIST	900,000	E	12,225	10,000	SEE CCC	1,515	B/2
		RESALE	209,000						
	EXPANDS A 2048K CPU TO 10240K BYTES BY ADDING AN INCREMENT OF 8192K BYTES.								
33168 131	3072K TO 4096K MEMORY EXPANS.	LIST	130,000	E	2,600	2,125	SEE CCC	362	B/2
		RESALE	41,000						
	EXPANDS A 3072K CPU TO 4096K BYTES BY ADDING AN INCREMENT OF 1024K BYTES.								
33168 132	3072K TO 5120K MEMORY EXPANS.	LIST	240,000	E	3,975	3,250	SEE CCC	509	B/2
		RESALE	65,000						
	EXPANDS A 3072K CPU TO 5120K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.								
33168 133	3072K TO 6144K MEMORY EXPANS.	LIST	350,000	E	5,350	4,375	SEE CCC	656	B/2
		RESALE	89,000						
	EXPANDS A 3072K CPU TO 6144K BYTES BY ADDING AN INCREMENT OF 3072K BYTES.								
33168 134	3072K TO 7168K MEMORY EXPANS.	LIST	460,000	E	6,725	5,500	SEE CCC	830	B/2
		RESALE	113,000						
	EXPANDS A 3072K CPU TO 7168K BYTES BY ADDING AN INCREMENT OF 4096K BYTES.								
33168 135	3072K TO 8192K MEMORY EXPANS.	LIST	570,000	E	8,100	6,625	SEE CCC	1,009	B/2
		RESALE	137,000						
	EXPANDS A 3072K CPU TO 8192K BYTES BY ADDING AN INCREMENT OF 5120K BYTES.								
33168 136	3072 TO 9216K MEMORY EXPANS.	LIST	680,000	E	9,475	7,750	SEE CCC	1,192	B/2
		RESALE	161,000						
	EXPANDS A 3072K CPU TO 9216K BYTES BY ADDING AN INCREMENT OF 6144K BYTES.								
33168 137	3072K TO 10240K MEMORY EXPANS.	LIST	790,000	E	10,850	8,875	SEE CCC	1,375	B/2
		RESALE	185,000						
	EXPANDS A 3072K CPU TO 10240K BYTES BY ADDING AN INCREMENT OF 7168K BYTES.								
33168 138	3072K TO 11264K MEMORY EXPANS.	LIST	900,000	E	12,225	10,000	SEE CCC	1,515	B/2
		RESALE	209,000						
	EXPANDS A 3072K CPU TO 11264K BYTES BY ADDING AN INCREMENT OF 8192K BYTES.								
33168 141	4096K TO 5120K MEMORY EXPANS.	LIST	130,000	E	2,600	2,125	SEE CCC	362	B/2
		RESALE	41,000						
	EXPANDS A 4096K CPU TO 5120K BYTES BY ADDING AN INCREMENT OF 1024K BYTES.								
33168 142	4096K TO 6144K MEMORY EXPANS.	LIST	240,000	E	3,975	3,250	SEE CCC	509	B/2
		RESALE	65,000						
	EXPANDS A 4096K CPU TO 6144K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.								

CHANGES EFFECTIVE 05/01/80

PRODUCT MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
33168 143	4096K TO 7168K MEMORY EXPANS.	LIST	350,000	E	5,350	4,375	SEE CCC	656	8/2
		RESALE	89,000						
	EXPANDS A 4096K CPU TO 7168K BYTES BY ADDING AN INCREMENT OF 3072K BYTES.								
33168 144	4096K TO 8192K MEMORY EXPANS.	LIST	460,000	E	6,725	5,500	SEE CCC	830	8/2
		RESALE	113,000						
	EXPANDS A 4096K CPU TO 8192K BYTES BY ADDING AN INCREMENT OF 4096K BYTES.								
33168 145	4096K TO 9216K MEMORY EXPANS.	LIST	570,000	E	8,100	6,625	SEE CCC	1,008	8/2
		RESALE	137,000						
	EXPANDS A 4096K CPU TO 9216K BYTES BY ADDING AN INCREMENT OF 5120K BYTES.								
33168 146	4096K TO 10240K MEMORY EXPANS.	LIST	680,000	E	9,475	7,750	SEE CCC	1,192	8/2
		RESALE	161,000						
	EXPANDS A 4096K CPU TO 10240K BYTES BY ADDING AN INCREMENT OF 6144K BYTES.								
33168 147	4096K TO 11264K MEMORY EXPANS.	LIST	790,000	E	10,850	8,875	SEE CCC	1,375	8/2
		RESALE	185,000						
	EXPANDS A 4096K CPU TO 11264K BYTES BY ADDING AN INCREMENT OF 7168K BYTES.								
33168 148	4096K TO 12288K MEMORY EXPANS.	LIST	900,000	E	12,225	10,000	SEE CCC	1,515	8/2
		RESALE	209,000						
	EXPANDS A 4096K CPU TO 12288K BYTES BY ADDING AN INCREMENT OF 8192K BYTES.								
33168 151	5120K TO 6144K MEMORY EXPANS.	LIST	130,000	E	2,600	2,125	SEE CCC	362	8/2
		RESALE	41,000						
	EXPANDS A 5120K CPU TO 6144K BYTES BY ADDING AN INCREMENT OF 1024K BYTES.								
33168 152	5120K TO 7168K MEMORY EXPANS.	LIST	240,000	E	3,975	3,250	SEE CCC	509	8/2
		RESALE	65,000						
	EXPANDS A 5120K CPU TO 7168K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.								
33168 153	5120K TO 8192K MEMORY EXPANS.	LIST	350,000	E	5,350	4,375	SEE CCC	656	8/2
		RESALE	89,000						
	EXPANDS A 5120K CPU TO 8192K BYTES BY ADDING AN INCREMENT OF 3072K BYTES.								
33168 154	5120K TO 9216K MEMORY EXPANS.	LIST	460,000	E	6,725	5,500	SEE CCC	830	8/2
		RESALE	113,000						
	EXPANDS A 5120K CPU TO 9216K BYTES BY ADDING AN INCREMENT OF 4096K BYTES.								
33168 155	5120K TO 10240K MEMORY EXPANS.	LIST	570,000	E	8,100	6,625	SEE CCC	1,008	8/2
		RESALE	137,000						
	EXPANDS A 5120K CPU TO 10240K BYTES BY ADDING AN INCREMENT OF 5120K BYTES.								
33168 156	5120K TO 11264K MEMORY EXPANS.	LIST	680,000	E	9,475	7,750	SEE CCC	1,192	8/2
		RESALE	161,000						
	EXPANDS A 5120K CPU TO 11264K BYTES BY ADDING AN INCREMENT OF 6144K BYTES.								
33168 157	5120K TO 12288K MEMORY EXPANS.	LIST	790,000	E	10,850	8,875	SEE CCC	1,375	8/2
		RESALE	185,000						
	EXPANDS A 5120K CPU TO 12288K BYTES BY ADDING AN INCREMENT OF 7168K BYTES.								
33168 158	5120K TO 13312K MEMORY EXPANS.	LIST	900,000	E	12,225	10,000	SEE CCC	1,515	8/2
		RESALE	209,000						
	EXPANDS A 5120K CPU TO 13312K BYTES BY ADDING AN INCREMENT OF 8192K BYTES.								
33168 161	6144K TO 7168K MEMORY EXPANS.	LIST	130,000	E	2,600	2,125	SEE CCC	362	8/2
		RESALE	41,000						
	EXPANDS A 6144K CPU TO 7168K BYTES BY ADDING AN INCREMENT OF 1024K BYTES.								
33168 162	6144 TO 8192K MEMORY EXPANS.	LIST	240,000	E	3,975	3,250	SEE CCC	509	8/2
		RESALE	65,000						
	EXPANDS A 6144K CPU TO 8192K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.								
33168 163	6144K TO 9216K MEMORY EXPANS.	LIST	350,000	E	5,350	4,375	SEE CCC	656	8/2
		RESALE	89,000						
	EXPANDS A 6144K CPU TO 9216K BYTES BY ADDING AN INCREMENT OF 3072K BYTES.								
33168 164	6144K TO 10240K MEMORY EXPANS.	LIST	460,000	E	6,725	5,500	SEE CCC	830	8/2
		RESALE	113,000						
	EXPANDS A 6144K CPU TO 10240K BYTES BY ADDING AN INCREMENT OF 4096K BYTES.								
33168 165	6144K TO 11264K MEMORY EXPANS.	LIST	570,000	E	8,100	6,625	SEE CCC	1,008	8/2
		RESALE	137,000						
	EXPANDS A 6144K CPU TO 11264K BYTES BY ADDING AN INCREMENT OF 5120K BYTES.								
33168 166	6144K TO 12288K MEMORY EXPANS.	LIST	680,000	E	9,475	7,750	SEE CCC	1,192	8/2
		RESALE	161,000						
	EXPANDS A 6144K CPU TO 12288K BYTES BY ADDING AN INCREMENT OF 6144K BYTES.								
33168 167	6144K TO 13312K MEMORY EXPANS.	LIST	790,000	E	10,850	8,875	SEE CCC	1,375	8/2
		RESALE	185,000						
	EXPANDS A 6144K CPU TO 13312K BYTES BY ADDING AN INCREMENT OF 7168K BYTES.								

PRODUCT MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
33168 168	6144K TO 14336K MEMORY EXPANS.	LIST	900,000	E	12,225	10,000 SEE CCC	1,515	B/2
		RESALE	209,000					
	EXPANDS A 6144K CPU TO 14336K BYTES BY ADDING AN INCREMENT OF 8192K BYTES.							
33168 171	7168K TO 8192K MEMORY EXPANS.	LIST	130,000	E	2,600	2,125 SEE CCC	362	B/2
		RESALE	41,000					
	EXPANDS A 7168K CPU TO 8192K BYTES BY ADDING AN INCREMENT OF 1024K BYTES.							
33168 172	7168K TO 9216K MEMORY EXPANS.	LIST	240,000	E	3,975	3,250 SEE CCC	509	B/2
		RESALE	65,000					
	EXPANDS A 7168K CPU TO 9216K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.							
33168 173	7168K TO 10240K MEMORY EXPANS.	LIST	350,000	E	5,350	4,375 SEE CCC	656	B/2
		RESALE	89,000					
	EXPANDS A 7168K CPU TO 10240K BYTES BY ADDING AN INCREMENT OF 3072K BYTES.							
33168 174	7168K TO 11264K MEMORY EXPANS.	LIST	460,000	E	6,725	5,500 SEE CCC	830	B/2
		RESALE	113,000					
	EXPANDS A 7168K CPU TO 11264K BYTES BY ADDING AN INCREMENT OF 4096K BYTES.							
33168 175	7168K TO 12288K MEMORY EXPANS.	LIST	570,000	E	8,100	6,625 SEE CCC	1,008	B/2
		RESALE	137,000					
	EXPANDS A 7168K CPU TO 12288K BYTES BY ADDING AN INCREMENT OF 5120K BYTES.							
33168 176	7168K TO 13312K MEMORY EXPANS.	LIST	680,000	E	9,475	7,750 SEE CCC	1,192	B/2
		RESALE	161,000					
	EXPANDS A 7168K CPU TO 13312K BYTES BY ADDING AN INCREMENT OF 6144K BYTES.							
33168 177	7168K TO 14336K MEMORY EXPANS.	LIST	790,000	E	10,850	8,875 SEE CCC	1,375	B/2
		RESALE	185,000					
	EXPANDS A 7168K CPU TO 14336K BYTES BY ADDING AN INCREMENT OF 7168K BYTES.							
33168 178	7168K TO 15360K MEMORY EXPANS.	LIST	900,000	E	12,225	10,000 SEE CCC	1,515	B/2
		RESALE	209,000					
	EXPANDS A 7168K CPU TO 15360K BYTES BY ADDING AN INCREMENT OF 8192K BYTES.							
33168 181	8192K TO 9216K MEMORY EXPANS.	LIST	130,000	E	2,600	2,125 SEE CCC	362	B/2
		RESALE	41,000					
	EXPANDS AN 8192K CPU TO 9216K BYTES BY ADDING AN INCREMENT OF 1024K BYTES.							
33168 182	8192K TO 10240K MEMORY EXPANS.	LIST	240,000	E	3,975	3,250 SEE CCC	509	B/2
		RESALE	65,000					
	EXPANDS AN 8192K CPU TO 10240K BYTES BY ADDING AN INCREMENT OF 2048K BYTES.							
33168 183	8192K TO 11264K MEMORY EXPANS.	LIST	350,000	E	5,350	4,375 SEE CCC	656	B/2
		RESALE	89,000					
	EXPANDS AN 8192K CPU TO 11264K BYTES BY ADDING AN INCREMENT OF 4096K BYTES.							
33168 184	8192K TO 12288K MEMORY EXPANS.	LIST	460,000	E	6,725	5,500 SEE CCC	830	B/2
		RESALE	113,000					
	EXPANDS AN 8192K CPU TO 12288K BYTES BY ADDING AN INCREMENT OF 4096K BYTES.							
33168 185	8192K TO 13312K MEMORY EXPANS.	LIST	570,000	E	8,100	6,625 SEE CCC	1,008	B/2
		RESALE	137,000					
	EXPANDS AN 8192K CPU TO 13312K BYTES BY ADDING AN INCREMENT OF 5120K BYTES.							
33168 186	8192K TO 14336K MEMORY EXPANS.	LIST	680,000	E	9,475	7,750 SEE CCC	1,192	B/2
		RESALE	161,000					
	EXPANDS AN 8192K CPU TO 14336K BYTES BY ADDING AN INCREMENT OF 6144K BYTES.							
33168 187	8192K TO 15360K MEMORY EXPANS.	LIST	790,000	E	10,850	8,875 SEE CCC	1,375	B/2
		RESALE	185,000					
	EXPANDS AN 8192K CPU TO 15360K BYTES BY ADDING AN INCREMENT OF 7168K BYTES.							
33168 188	8192K TO 16384K MEMORY EXPANS.	LIST	900,000	E	12,225	10,000 SEE CCC	1,515	B/2
		RESALE	209,000					
	EXPANDS AN 8192K CPU TO 16384K BYTES BY ADDING AN INCREMENT OF 8192K BYTES.							
33168 201	1024K BYTE CDC MEMORY SYSTEM	LIST	75,000	E	2,600	2,125 SEE CCC	362	B/2
		RESALE	47,000					
33168 202	2048K BYTE CDC MEMORY SYSTEM	LIST	136,000	E	3,975	3,250 SEE CCC	509	B/2
		RESALE	74,000					
33168 203	3072K BYTE CDC MEMORY SYSTEM	LIST	197,000	E	5,350	4,375 SEE CCC	656	B/2
		RESALE	101,000					
33168 204	4096K BYTE CDC MEMORY SYSTEM	LIST	258,000	E	6,725	5,500 SEE CCC	830	B/2
		RESALE	128,000					
33168 205	5120K BYTE CDC MEMORY SYSTEM	LIST	319,000	E	8,100	6,625 SEE CCC	1,008	B/2
		RESALE	155,000					
33168 206	6144K BYTE CDC MEMORY SYSTEM	LIST	380,000	E	9,475	7,750 SEE CCC	1,192	B/2
		RESALE	182,000					
33168 207	7168K BYTE CDC MEMORY SYSTEM	LIST	441,000	E	10,850	8,875 SEE CCC	1,375	B/2
		RESALE	209,000					
33168 208	8192K BYTE CDC MEMORY SYSTEM	LIST	502,000	E	12,225	10,000 SEE CCC	1,515	B/2
		RESALE	236,000					

CHANGES EFFECTIVE 05/01/80

SUBSYSTEMS PLUG COMP./DATA ENTRY
RESALE PRODUCTS ACTIVE

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
33168	209	9216K BYTE CDC MEMORY SYSTEM	LIST RESALE	563,000 263,000	E	13,603	11,125	SEE CCC	1,655	B/2
33168	210	10240K BYTE CDC MEMORY SYSTEM	LIST RESALE	624,000 290,000	E	14,975	12,250	SEE CCC	1,795	B/2
33168	211	11264K BYTE CDC MEMORY SYSTEM	LIST RESALE	685,000 317,003	E	16,350	13,375	SEE CCC	1,935	B/2
33168	212	12288K BYTE CDC MEMORY SYSTEM	LIST RESALE	746,000 344,000	E	17,725	14,500	SEE CCC	2,075	B/2
33168	213	13312K BYTE CDC MEMORY SYSTEM	LIST RESALE	807,000 N/A	E	33,000	29,700	SEE CCC	2,215	B/2
33168	214	14336K BYTE CDC MEMORY SYSTEM	LIST RESALE	868,000 398,000	E	20,475	16,750	SEE CCC	2,355	B/2
33168	215	15360K BYTE CDC MEMORY SYSTEM	LIST RESALE	929,000 425,000	E	21,850	17,875	SEE CCC	2,495	B/2
33301		DISK STORAGE, UNIT (DSU)	LIST RESALE	10,000 10,000	C	378	298	SEE CCC	99	B/2
		CONTAINS A DRIVE FOR ONE DISK PACK. USES CDC 879 OR EQUIVALENT IBM 3336-1 PACK, WHICH MUST BE ORDERED SEPARATELY. DUAL ACCESS OPTION AVAILABLE. 100 MB CAPACITY. RECEIVES FROM 33332 1/33332 2/38301 / AVA OPTIONS 68490 /								
33332	1	CONTROLLER ADAPTER UNIT	LIST RESALE	13,100 13,100	C	420	365	SEE CCC	34	B/2
		PROVIDES ATTACHMENT TO ONE 38302-X SCU OR IBM ISC OR 3830-2 FOR INTERFACE TO 8 DSU'S. AVA OPTIONS 33332 901/33332 902/68427 /								
33332	2	CONTROLLER ADAPTER UNIT	LIST RESALE	18,100 18,100	C	600	520	SEE CCC	46	B/2
		INCLUDES STRING SWITCH OPTION 68427 PROVIDING ATTACHMENT TO TWO 38302 SCU OR IBM ISC/3830-2 UNITS. INTERFACES TO 8 DSU'S. REQUIRES 68428 MEMORY EXPANSION IN 38302 SCU. AVA OPTIONS 33332 901/33332 902/								
38301		STORAGE CONTROL UNIT	LIST RESALE	34,000 25,000	C	1,150	1,000	SEE CCC	148	B/2
		CONTROLS UP TO EIGHT 33301 DISK STORAGE UNITS COMPATIBLE REPLACEMENT FOR IBM 3830. ONE CHANNEL CONNECTION. RECEIVES FROM BLOCK MULTIPLEXOR CHANNEL. SENDS TO 33301 / AVA OPTIONS 38301 901/68389 /69076 1/								
38302	1	STORAGE CONTROL UNIT	LIST RESALE	38,000 30,400	C	1,010	880	SEE CCC	134	B/2
		INCLUDES 4K MEMORY AND CONNECTION TO ONE CHANNEL. AVA OPTIONS 68426 2/68426 4/68428 /								
38302	2	STORAGE CONTROL UNIT	LIST RESALE	42,260 33,800	C	1,160	1,010	SEE CCC	146	B/2
		INCLUDES 4K MEMORY AND SECOND CHANNEL CONNECTION TO THE SAME OR DIFFERENT CPU. AVA OPTIONS 68426 4/68428 /								
38302	3	STORAGE CONTROL UNIT	LIST RESALE	46,000 36,800	C	1,285	1,120	SEE CCC	146	B/2
		INCLUDES 6K MEMORY AND CONNECTION TO ONE CHANNEL. AVA OPTIONS 68426 2/68426 4/68602 1/ AVA OPTIONS 68602 2/69054 1/69055 1/								
38302	4	STORAGE CONTROL UNIT	LIST RESALE	50,260 40,200	C	1,435	1,250	SEE CCC	158	B/2
		INCLUDES 6K MEMORY AND SECOND CHANNEL CONNECTION TO THE SAME OR DIFFERENT CPU. AVA OPTIONS 68426 4/68602 1/68602 2/ AVA OPTIONS 69054 1/69055 1/								
38302	5	STORAGE CONTROL UNIT	LIST RESALE	54,520 43,600	C	1,585	1,380	SEE CCC	170	B/2
		INCLUDES 6K MEMORY AND FOUR CHANNEL CONNECTIONS TO THE SAME OR DIFFERENT CPU. AVA OPTIONS 68602 1/68602 2/69054 1/ AVA OPTIONS 69055 1/								
38501	1	MASS STORAGE ADAPTER	LIST RESALE	129,130 129,130	C	3,490	3,033	SEE CCC	613	E/2
		PROVIDES CONTROL AND DATA EXCHANGE FOR 38510 MASS STORAGE FILE(S). CAPABLE OF ADDRESSING EIGHT MASS STORAGE DEVICES, I.E., MSTM'S AND CSUM'S. REQUIRES A COLOR OPTION (69008-X). RECEIVES FROM 38302 3/38302 4/38302 5/ SENDS TO 38510 16/69023 1/ AVA OPTIONS 69016 1/								
38510	16	MASS STORAGE FILE	LIST RESALE	229,335 229,335	C	5,367	4,667	SEE CCC	1,101	E/2
		CONTAINS ONE CARTRIDGE STORAGE UNIT CAPABLE OF HOLDING 2,000 CARTRIDGES AND TWO MASS STORAGE TRANSPORTS. INCLUDES 500 CARTRIDGES. RECEIVES FROM 38501 1/ AVA OPTIONS 69005 1/69006 1/69023 1/								

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
68205		TWO CHANNEL SWITCH	LIST RESALE	2,500 2,500	C	147	125	SEE CCC	N/C	
		ALLOWS TIME SHARED ACCESS AND DATA TRANSFER BETWEEN THE CONTROLLER AND ANY TWO SELECTOR CHANNELS. OPT APPLIES T023141 /								
68210		TWO CHANNEL SWITCH	LIST RESALE	2,500 2,500	C	147	125	SEE CCC	N/C	
		ALLOWS TIME SHARED ACCESS AND DATA TRANSFER BETWEEN THE CONTROLLER AND ANY TWO SELECTOR CHANNELS. OPT APPLIES T023142 /								
68389		TWO CHANNEL SWITCH	LIST RESALE	4,500 4,000	C	162	138	SEE CCC	14	B/2
		ALLOWS A 38901 CONTROLLER TO BE ATTACHED TO A SECOND BLOCK MULTIPLEXOR CHANNEL ON THE SAME OR DIFFERENT CPU. EITHER CHANNEL CAN OPERATE OR RESERVE ANY ONE OF THE ON-LINE DSUMS. BOTH CHANNELS CANNOT SELECT THE CONTROLLER SIMULTANEOUSLY. OPT APPLIES T038301 /								
68395		ROS FEATURE	LIST RESALE	6,452 6,452	F	270	228	SEE CCC	N/C	
		THE ROS FEATURE IS NECESSARY ON ALL OUT-BOUND UNITS NOT HAVING IBM FLOATING POINT. IBM MAINTENANCE ON CPUMS WITH CDC OUT-OF-BOUND CORE WILL BE BEST EFFORT BASIS WITH FLOATING POINT AND FULL STANDARD MAINTENANCE WITH ROS FEATURE. OPT APPLIES T023030 /								
68426	2	TWO CHANNEL SWITCH OPTION	LIST RESALE	4,260 3,400	C	155	130	SEE CCC	13	B/2
		PERMITS A 38302 SCU TO BE ATTACHED TO A SECOND BLOCK MULTIPLEX CHANNEL. EITHER CHANNEL CAN OPERATE OR RESERVE ANY ONE OF THE ON-LINE DSUMS. BOTH CHANNELS CANNOT SELECT THE CONTROLLER SIMULTANEOUSLY. FIELD INSTALLABLE. OPT APPLIES T038302 1/38302 3/								
68426	4	FOUR CHANNEL SWITCH OPTION	LIST RESALE	4,260 3,400	C	150	130	SEE CCC	13	B/2
		PERMITS A 38302 SCU TO BE ATTACHED TO A THIRD AND FOURTH BLOCK MULTIPLEX CHANNEL. ANY CHANNEL CAN OPERATE OR RESERVE ANY ONE OF THE ON-LINE DSUMS. ONLY ONE CHANNEL CAN SELECT THE CONTROLLER AT ONE TIME. REQUIRES 68428 MEMORY EXPANSION FEATURE AND 68426-2 TWO CHANNEL SWITCH. FIELD INSTALLABLE. OPT APPLIES T038302 2/38302 4/								
68428		MEMORY EXPANSION FEATURE	LIST RESALE	8,000 6,400	C	275	240	SEE CCC	12	B/2
		EXPANDS 38302 STORAGE CONTROL UNIT MEMORY BY 2K TO A MAXIMUM OF 6K FOR FUNCTIONAL AND DIAGNOSTIC PROGRAMS. THE 6K MEMORY IS REQUIRED WHEN THE SUBSYSTEM INCLUDES THE 68426-4 FOUR CHANNEL SWITCH OPTION OR EXCEEDS 16 LOGICAL VOLUMES OR EXCEEDS TWO (2) 33332 CONTROLLER ADAPTER UNITS OR 68427 STRING SWITCH OPTION IS INSTALLED IN ANY OF 33332 CONTROLLER ADAPTER UNITS. FIELD INSTALLABLE. OPT APPLIES T038302 1/38302 2/								
68500	1	SAU ENHANCEMENT	LIST RESALE	11,000 10,000	F	245	221	SEE CCC	N/C	
		EXPANDS A IBM SAU "PORT" TO ALLOW ATTACHMENT AND ADDRESSING OF 2048K BYTES OF CDC 33155 MEMORY. IBM MEMORY CAN NOT BE ATTACHED TO TO THIS FEATURE NOTE-THERE IS A ONE-TIME CHARGE (VARIABLE WITH SYSTEM CONFIGURATION) APPLICABLE WHEN CONVERTING TO IBM DYNAMIC ADDRESS TRANSLATION FEATURE (DAT). OPT APPLIES T033155 5XX/								
68500	2	SAU ENHANCEMENT-DAT COMPATIBLE	LIST RESALE	11,000 10,000	F	245	221	SEE CCC	N/A	B/2
		IDENTICAL FUNCTION AS 68500-1 EXCEPT COMPATIBLE WITH IBM DYNAMIC ADDRESS TRANSLATION FEATURE (DAT). OPT APPLIES T033155 5XX/								
68500	3	SAU ENHANCEMENT	LIST RESALE	11,000 10,000	F	245	221	SEE CCC	N/A	B/2
		EXPANDS AN IBM SAU "PORT" TO ALLOW ATTACHMENT AND ADDRESSING OF 2048K BYTES OF CDC 33155 MEMORY. IBM MEMORY CANNOT BE ATTACHED TO THIS FEATURE. NOTE - THERE IS A ONE-TIME CHARGE (VARIABLE WITH SYSTEM CONFIGURATION) APPLICABLE WHEN CONVERTING TO IBM DYNAMIC ADDRESS TRANSLATION FEATURE (DAT). OPT APPLIES T033155 6XX/								
68500	4	SAU ENHANCEMENT-DAT COMPATIBLE	LIST RESALE	11,000 10,000	F	245	221	SEE CCC	N/A	B/2
		IDENTICAL FUNCTION AS 68500-3 EXCEPT COMPATIBLE WITH IBM DYNAMIC ADDRESS TRANSLATION FEATURE (DAT). OPT APPLIES T033155 6XX/								

SUBSYSTEMS PLUG COMP./DATA ENTRY
RESALE PRODUCTS ACTIVE

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
68501	1	OUT-OF-BOUNDS-EXPANSION ALLOWS EXPANSION OF THE IBM 370/155 SYSTEM FROM 2048K BYTES OF IBM MAIN MEMORY UP TO A MAXIMUM OF 4096K BYTES OF CDC 33155 MAIN MEMORY. NOTE-THERE IS A ONE-TIME CHARGE (VARIABLE WITH SYSTEM CONFIGURATION) APPLICABLE WHEN CONVERTING TO IBM DYNAMIC ADDRESS TRANSLATION FEATURE (DAT). OPT APPLIES TO33155 5XX/	LIST RESALE	22,000 20,000	F	490	441 SEE CCC	N/C	
68501	2	OUT-OF-BOUNDS EXP.-DAT COMPAT. IDENTICAL FUNCTION AS 68501-1 EXCEPT COMPATIBLE WITH IBM DYNAMIC ADDRESS TRANSLATION FEATURE (DAT). OPT APPLIES TO33155 5XX/	LIST RESALE	22,000 20,000	F	490	441 SEE CCC	N/A	B/2
68501	3	OUT-OF-BOUNDS EXPANSION ALLOWS EXPANSION OF THE IBM 370/155 SYSTEM FROM 2048K BYTES OF IBM MAIN MEMORY UP TO A MAXIMUM OF 4096K BYTES OF CDC 33155 MAIN MEMORY. NOTE - THERE IS A ONE-TIME CHARGE (VARIABLE WITH SYSTEM CONFIGURATION) APPLICABLE WHEN CONVERTING TO IBM DYNAMIC ADDRESS TRANSLATION FEATURE (DAT). OPT APPLIES TO33155 6XX/	LIST RESALE	22,000 20,000	F	490	441 SEE CCC	N/A	B/2
68501	4	OUT-OF-BOUNDS EXP.-DAT COMPAT. IDENTICAL FUNTION AS 68501-3 EXCEPT COMPATIBLE WITH IBM DYNAMIC ADDRESS TRANSLATION FEATURE (DAT). OPT APPLIES TO33155 6XX/	LIST RESALE	22,000 20,000	F	490	441 SEE CCC	N/A	B/2
68502	1	SCU ENHANCEMENT FEATURE EXPANDS AN IBM SCU "PORT" TO ALLOW ATTACHMENT AND ADDRESSING OF 3072K BYTES OF CDC 33165 MEMORY. IBM MEMORY CANNOT BE ATTACHED TO THIS FEATURE. NOTE - THERE IS A ONE-TIME CHARGE (VARIABLE WITH SYSTEM CONFIGURATION) APPLICABLE WHEN CONVERTING TO IBM DYNAMIC ADDRESS TRANSLATION FEATURE (DAT). OPT APPLIES TO33165 5XX/	LIST RESALE	11,000 11,000	F	N/A	N/A SEE CCC	N/C	B/2
68502	2	SCU ENHANCE. FEATURE-DAT COMP. IDENTICAL FUNCTION AS 68502-1 EXCEPT COMPATIBLE WITH IBM DYNAMIC ADDRESS TRANSLATION FEATURE (DAT). OPT APPLIES TO33165 5XX/	LIST RESALE	11,000 11,000	F	N/A	N/A SEE CCC	N/A	B/2
68503	1	SCU ADDED PORT ADDS ONE SCU "PORT" TO AN IBM 3165 CPU HAVING 1 OR 2 IBM PORTS. ALLOWS ADDRESSING AND ATTACHMENT OF A CDC 33165 MEMORY SYSTEM OF UP TO 3072K BYTES. NOTE - THERE IS A ONE-TIME CHARGE (VARIABLE WITH SYSTEM CONFIGURATION) APPLICABLE WHEN CONVERTING TO IBM DYNAMIC ADDRESS TRANSLATION FEATURE (DAT). OPT APPLIES TO33165 5XX/	LIST RESALE	15,000 15,000	F	N/A	N/A SEE CCC	N/C	
68503	2	SCU ADDED PORT FEA.-DAT COMP. IDENTICAL FUNCTION AS 68503-1 EXCEPT COMPATIBLE WITH IBM DYNAMIC ADDRESS TRANSLATION FEATURE (DAT). OPT APPLIES TO33165 5XX/	LIST RESALE	15,000 15,000	F	N/A	N/A SEE CCC	N/A	B/2
68504	1	OUT-OF-BOUNDS EXPANSION ALLOWS EXPANSION OF THE IBM 3165 CPU FROM 3072K BYTES OF IBM MAIN MEMORY UP TO A MAXIMUM OF 4096K BYTES UTILIZING CDC 33165 MAIN MEMORY. THIS FEATURE INCLUDES 68502 AND 68503 WHERE REQUIRED. NOTE - THERE IS A ONE-TIME CHARGE (VARIABLE WITH SYSTEM CONFIGURATION) APPLICABLE WHEN CONVERTING TO IBM DYNAMIC ADDRESS TRANSLATION FEATURE (DAT). OPT APPLIES TO33165 5XX/	LIST RESALE	22,000 22,000	F	N/A	N/A SEE CCC	N/C	
68504	2	OUT-OF-BOUND EXPAN.-DAT COMP. IDENTICAL FUNCTION AS 68504-1 EXCEPT COMPATIBLE WITH IBM DYNAMIC ADDRESS TRANSLATION FEATURE (DAT). OPT APPLIES TO33165 5XX/	LIST RESALE	22,000 22,000	F	N/A	N/A SEE CCC	N/A	B/2
68504	5	OUT-OF-BOUNDS (OVER 4MB) ALLOWS EXPANSION OF IBM 3165 CPU BEYOND 4096K BYTES OF MEMORY. MAXIMUM IBM MEMORY ALLOWED IS 2048K BYTES. FEATURE AVAILABLE FOR IBM MOD II (DAT) CPU ONLY. PRE-REQUISITE FEATURE 68504-2 IS NOT INCLUDED AND MUST BE ORDERED SEPARATELY. OPT APPLIES TO33165 5XX/33165 6XX/	LIST RESALE	50,000 50,000	E	N/A	N/A SEE CCC	200	B/2

CHANGES EFFECTIVE 05/01/80

PRODUCT MOD		DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
69023	1	MASS STORAGE TRANSPORT OPTION	LIST RESALE	67,080 67,080	C	1,811	1,575	SEE CCC	449	E/2
		FIELD INSTALLATION CHARGE		375						
		PROVIDES EXPANSION CAPABILITY FOR A 38510-16 MASS STORAGE FILE BY ADDING ONE OR (MAXIMUM OF) TWO 69023-1 MASS STORAGE TRANSPORT OPTIONS. AVA OPTIONS 69005 1/ OPT APPLIES TO38510 16/								
69027	1	ADDRESS RECONFIGURATION	LIST RESALE	N/C N/C		N/C	N/C	SEE CCC	N/A	
		A ONE TIME INSTALLATION CHARGE		4,000						
		(FOR CDC 3315A-2XX/3XX/4XX MEMORY SYSTEMS). THIS FEATURE ALLOWS FAILING PORTIONS OF MAIN STORAGE TO BE TAKEN OFF-LINE, THEREBY ALLOWING PROCESSING TO CONTINUE ON THE UNAFFECTED PORTIONS. THIS FEATURE OPERATES ON BOTH IBM AND CDC MAIN STORAGE. OPT APPLIES TO33158 / MAIN STORAGE ACCELERATOR FEATURE								
69032		ENHANCES SYSTEM PERFORMANCE BY PROVIDING ACCELERATED ACCESS (ON BOTH "READ"AND "WRITE" OPERATIONS) BETWEEN THE IBM 3165 CPU AND CDC 33165 MEMORY. THIS FEATURE CAN ONLY BE UTILIZED ON SYSTEMS WITH ONLY CDC 33165 MEMORY. NOTE - THERE IS A ONE-TIME CHARGE (VARIABLE WITH SYSTEM CONFIGURATION) APPLICABLE WHEN CONVERTING TO IBM DYNAMIC ADDRESS TRANSLATION FEATURE (DAT). OPT APPLIES TO33165 9XX/								
69032	1	1024K OR 2048K BYTE (MOD I)	LIST RESALE	25,000 25,000	F	1,325	1,150	SEE CCC	N/A	
69032	2	3072K OR 4096K BYTE (MOD I)	LIST RESALE	50,000 50,000	F	2,650	2,300	SEE CCC	N/A	
69032	3	1024K OR 2048K BYTE (MOD II)	LIST RESALE	25,000 25,000	F	1,325	1,150	SEE CCC	N/A	
69032	4	3072K OR 4096K BYTE (MOD II)	LIST RESALE	50,000 50,000	F	2,650	2,300	SEE CCC	N/A	
69032	5	5120K OR 6144 BYTE (MOD II)	LIST RESALE	75,000 75,000		N/A	N/A	SEE CCC	N/C	
69032	6	7168K OR 8192K BYTE (MOD II)	LIST RESALE	100,000 100,000		N/A	N/A	SEE CCC	N/C	
69039	X	ATTACHMENT TO IBM CPU MEMORY LEVEL OPT APPLIES TO 331580XX								
69039	1	512K BYTE IBM CPU	LIST RESALE	N/C N/C		N/C	N/C	SEE CCC	N/C	
69039	2	1024K BYTE IBM CPU	LIST RESALE	N/C N/C		N/C	N/C	SEE CCC	N/C	
69039	3	1536K BYTE IBM CPU	LIST RESALE	N/C N/C		N/C	N/C	SEE CCC	N/C	
69039	4	2048K BYTE IBM CPU	LIST RESALE	N/C N/C		N/C	N/C	SEE CCC	N/C	
69039	5	3072K BYTE IBM CPU	LIST RESALE	5,250 4,500	E	165	150	SEE CCC	N/C	
69039	6	4096K BYTE IBM CPU	LIST RESALE	5,250 4,500	E	165	150	SEE CCC	N/C	
69040	X	ATTACHMENT TO IBM SYSTEM TYPE OPT APPLIES TO 331580XX								
69040	1	IBM 3158 MODEL I SINGLE PROCES	LIST RESALE	N/C N/C		N/C	N/C	SEE CCC	N/C	
69040	4	IBM 3158 MODEL III SINGLE PROC	LIST RESALE	N/C N/A		N/C	N/C	SEE CCC	N/C	
69041		MEMORY SYSTEM CONVERSION CONVERTS CDC 33158-9XX SERIES MEMORY UNIT TO A CDC 33168-2XX SERIES MEMORY UNIT. REQUIRES SPECIAL CONTRACT PROVISIONS.								
69041	1	1024K BYTE UNIT	LIST RESALE	48,000 48,000		N/A	N/A	SEE CCC	N/C	
69041	2	2048K BYTE UNIT	LIST RESALE	53,200 53,200		N/A	N/A	SEE CCC	N/C	
69041	3	3072K BYTE UNIT	LIST RESALE	58,400 58,400		N/A	N/A	SEE CCC	N/C	
69041	4	4096K BYTE UNIT	LIST RESALE	63,600 63,600		N/A	N/A	SEE CCC	N/C	
69041	5	5120K BYTE UNIT	LIST RESALE	68,800 68,800		N/A	N/A	SEE CCC	N/C	
69041	6	6144K BYTE UNIT	LIST RESALE	74,000 74,000		N/A	N/A	SEE CCC	N/C	
69041	7	7168K BYTE UNIT	LIST RESALE	79,200 79,200		N/A	N/A	SEE CCC	N/C	
69042	X	ATTACHMENT TO IBM CPU MEMORY LEVEL. OPT APPLIES TO 331602XX								
69042	1	1024K BYTE IBM CPU	LIST RESALE	N/C N/A		N/C	N/C	SEE CCC	N/C	
69042	2	2048K BYTE IBM CPU	LIST RESALE	N/C N/A		N/C	N/C	SEE CCC	N/C	
69042	3	3072K BYTE IBM CPU	LIST RESALE	N/C N/A		N/C	N/C	SEE CCC	N/C	

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT CCC BASE 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	MAINTENANCE PROD GRP
69042	4	4096K BYTE IBM CPU	LIST	N/C		N/C	N/C	SEE CCC	N/C	
			RESALE	N/A						
69042	5	5120K BYTE IBM CPU	LIST	N/C		N/C	N/C	SEE CCC	N/C	
			RESALE	N/A						
69042	6	6144K BYTE IBM CPU	LIST	N/C		N/C	N/C	SEE CCC	N/C	
			RESALE	N/A						
69042	7	7168K BYTE IBM CPU	LIST	N/C		N/C	N/C	SEE CCC	N/C	
			RESALE	N/A						
69042	8	8192K BYTE IBM CPU	LIST	N/C		N/C	N/C	SEE CCC	N/C	
			RESALE	N/A						
69043	X	33168 ATTACHMENT KIT A ONE-TIME CHARGE IS APPLICABLE FOR CONVERSION AND ATTACHMENT WHEN CONVERTING TO A 33168-2XX FROM A 33031-1XX OR 33032-1XX. OPT APPLIES TO 33168ZXX								
69043	1	33168 STANDARD ATTACHMENT KIT	LIST	N/C		N/C	N/C	SEE CCC	N/C	
			RESALE	N/A						
		A ONE TIME INSTALLATION CHARGE		12,000						
69043	2	33168 MP ATTACHMENT KIT	LIST	N/C		N/C	N/C	SEE CCC	N/C	
			RESALE	N/A						
		A ONE TIME INSTALLATION CHARGE		12,000						
69043	3	33168 AP ATTACHMENT KIT	LIST	N/C		N/C	N/C	SEE CCC	N/C	
			RESALE	N/A						
		A ONE TIME INSTALLATION CHARGE		12,000						
69044	X	PHYSICAL LOCATION OF CDC MEMORY UNIT OPT APPLIES TO 33168ZXX								
69044	1	STANDARD 08 FRAME	LIST	N/C		N/C	N/C	SEE CCC	N/C	
			RESALE	N/A						
		A ONE TIME INSTALLATION CHARGE		1,500						
		CAN BE UTILIZED WITH MODEL I OR III SINGLE, MULTI-, OR ATTACHED PROCESSOR								
69044	2	OPTIONAL 02A FRAME	LIST	N/C		N/C	N/C	SEE CCC	N/C	
			RESALE	N/A						
		A ONE TIME INSTALLATION CHARGE		1,500						
		CAN BE UTILIZED WITH MODEL I OR III SINGLE OR MULTI-PROCESSOR ONLY.								
69044	3	OPTIONAL 02B FRAME	LIST	N/C		N/C	N/C	SEE CCC	N/C	
			RESALE	N/A						
		A ONE TIME INSTALLATION CHARGE		1,500						
		CAN BE UTILIZED WITH MODEL I OR III SINGLE PROCESSOR ONLY.								
69045	5XX	PROVIDES INTERFACE FOR ATTACHING 33101-XXX MEMORY SYSTEMS TO IBM 370/135 CPU.								
69045	500	FROM UNDER 512K TO 512K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
			RESALE	10,750						
69045	501	FROM ALL SIZES TO OVER 512K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
			RESALE	10,750						
69045	6XX	PROVIDES INTERFACE FOR ATTACHING 33101-XXX MEMORY SYSTEMS TO IBM 370/138 CPU.								
69045	600	FROM 512K TO 768 OR 1024K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
			RESALE	10,750						
69045	601	FROM 512K TO 1280 OR 1536K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
			RESALE	10,750						
69045	602	FROM 512K TO 1792 OR 2048K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
			RESALE	10,750						
69045	603	FROM 512K TO 2560K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
			RESALE	10,750						
69045	610	FROM 1024K TO 1280,1536,1792,	LIST	10,750		N/A	N/A	SEE CCC	N/C	
			RESALE	10,750						
69045	611	FROM 1024K TO 1280,1536,1792,	LIST	10,750		N/A	N/A	SEE CCC	N/C	
			RESALE	10,750						
69045	7XX	PROVIDES INTERFACE FOR ATTACHING 33101-XXX MEMORY SYSTEMS TO IBM 370/145 CPU.								
69045	700	FROM 256K TO 384 OR 512K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
			RESALE	10,750						
69045	701	FROM 256K TO 768 OR 1024K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
			RESALE	10,750						
69045	702	FROM 256K TO 1280K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
			RESALE	10,750						
69045	703	FROM 256K TO 1536,1792, OR 20	LIST	10,750		N/A	N/A	SEE CCC	N/C	
			RESALE	10,750						
69045	704	FROM 256K TO 2304K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
			RESALE	10,750						
69045	705	FROM 256K TO 2560,2816,3072,	LIST	10,750		N/A	N/A	SEE CCC	N/C	
			RESALE	10,750						
69045	706	FROM 256K TO 3584,3840, OR 40	LIST	10,750		N/A	N/A	SEE CCC	N/C	
			RESALE	10,750						
69045	710	FROM 384K TO 512K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
			RESALE	10,750						
69045	711	FROM 384K TO 768 OR 1024K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
			RESALE	10,750						

SUBSYSTEMS PLUG COMP./DATA ENTRY
RESALE PRODUCTS ACTIVE

PRODUCT MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
69045 712	FROM 384K TO 1280K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 713	FROM 384K TO 1536,1792, OR 20	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 714	FROM 384K TO 2304K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 715	FROM 384K TO 2560,2816,3072,	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 716	FROM 384K TO 3584,3840,4096K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 720	FROM 512K TO 768,1024K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 721	FROM 512 TO 1280K	LIST	N/A		N/A	N/A	SEE CCC	N/A	
		RESALE	10,750						
69045 722	FROM 512K TO 1536K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 723	FROM 512K TO 1792,2048K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 724	FROM 512K TO 2304 OR 2560K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 725	FROM 512K TO 2816,3072,3328,3	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 726	FROM 512K TO 3840 OR 4096K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 730	FROM 768K TO 1024K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 731	FROM 768K TO 1280,1536,1792K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 732	FROM 768K TO 2048K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 733	FROM 768K TO 2304,2560,2816K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 734	FROM 768K TO 3072,3328,3584,3	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 735	FROM 768K TO 4096K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 740	FROM 1024K TO 1280,1536,1792,	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 741	FROM 1024K TO 2304,2560,2816,	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 742	FROM 1024K TO 3328,3584,3840,	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 750	FROM 1536K TO 1280,1536,1792,	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 751	FROM 1536K TO 2304,2560K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 752	FROM 1536K TO 2816,3072,3328,	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 753	FROM 1536K TO 3840,4096K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 760	FROM 2048K TO 2304,2560,2816,	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 761	FROM 2048K TO 3328,3584,3840,	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 8XX	PROVIDES INTERFACE FOR ATTACHING 33101-XXX MEMORY SYSTEMS TO IBM 370/148 CPU.								
69045 800	FROM 1024K TO 1280,1536,1792,	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 801	FROM 1024K TO 2560,3072K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 802	FROM 1024K TO 3584,4096K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 810	FROM 2048K TO 2560,3072K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69045 811	FROM 2048K TO 3584,4096K	LIST	10,750		N/A	N/A	SEE CCC	N/C	
		RESALE	10,750						
69070 1	STRING SWITCH FEATURE	LIST	7,350	C	133	115	SEE CCC	12	B/Z
		RESALE	4,700						
	ALLOWS DISK STORAGE DEVICES TO BE ATTACHED TO A SECOND STORAGE CONTROL UNIT. OPT APPLIES TO33801 42/33801 C2/33801 A2F/ OPT APPLIES TO33801 C2F/								
69101	33158 ATTACHED PROCESSOR OPT REQUIRED FOR INSTALLATION OF CDC 33158-2XX/ 3XX/4XX MEMORY ON IBM 3158 AP. SPECIAL QUOTE REQUIRED FOR INSTALLATION OF OPTION. FOR CDC INCREMENTS SPECIFIED BELOW. OPT APPLIES TO33158 2XX/33158 3XX/33158 4XX/								

CHANGES EFFECTIVE 05/01/80

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
69101	1	0.5M OR 1.0M INCREMENT	LIST RESALE	2,500 2,500	E	90	80	SEE CCC	40	B/2
69101	2	1.5M OR 2.0M INCREMENT	LIST RESALE	4,000 4,000	E	145	130	SEE CCC	40	B/2
69101	3	2.5M OR 3.0M INCREMENT	LIST RESALE	5,500 5,500	E	200	180	SEE CCC	40	B/2
69102		33158 ATTACHED PROCESSOR OPT REQUIRED FOR INSTALLATION OF CDC 33158-5XX/6XX/7XX/8XX MEMORY ON IBM 3158 AP. SPECIAL QUOTE REQUIRED FOR INSTALLATION OF OPTION. FOR CDC INCREMENTS SPECIFIED BELOW. OPT APPLIES TO33158 5XX/33158 6XX/33158 7XX/ OPT APPLIES TO33158 8XX/								
69102	1	0.5M OR 1.0M INCREMENT	LIST RESALE	2,500 2,500	E	90	80	SEE CCC	44	B/2
69102	2	1.5M OR 2.0M INCREMENT	LIST RESALE	4,000 4,000	E	145	130	SEE CCC	44	B/2
69102	3	2.5M OR 3.0M INCREMENT	LIST RESALE	5,500 5,500	E	200	180	SEE CCC	44	B/2
69102	4	3.5M OR 4.0M INCREMENT	LIST RESALE	7,000 7,000	E	255	230	SEE CCC	44	B/2
69102	5	4.5M OR 5.0M INCREMENT	LIST RESALE	8,500 8,500	E	310	280	SEE CCC	44	B/2
69102	6	5.5M OR 6.0M INCREMENT	LIST RESALE	10,000 10,000	E	365	330	SEE CCC	44	B/2
69102	7	6.5M OR 7.0M INCREMENT	LIST RESALE	11,500 11,500	E	420	380	SEE CCC	44	B/2
69102	8	7.5M INCREMENT	LIST RESALE	13,000 13,000	E	475	430	SEE CCC	44	B/2
69103		33158 ATTACHED PROCESSOR UNIT REQUIRED FOR INSTALLATION OF CDC 33158-9XX MEMORY ON IBM 3158 AP. SPECIAL QUOTE REQUIRED FOR INSTALLATION OF OPTION. FOR CDC INCREMENTS SPECIFIED BELOW. OPT APPLIES TO 331589XX								
69103	1	0.5M OR 1.0M INCREMENT	LIST RESALE	2,500 2,500	E	90	80	SEE CCC	40	B/2
69103	2	1.5M OR 2.0M INCREMENT	LIST RESALE	4,000 3,500	E	145	130	SEE CCC	40	B/2
69103	3	2.5M OR 3.0M INCREMENT	LIST RESALE	5,500 4,500	E	200	180	SEE CCC	40	B/2
69103	4	3.5M OR 4.0M INCREMENT	LIST RESALE	7,000 5,500	E	255	230	SEE CCC	40	B/2
69103	5	4.5M OR 5.0M INCREMENT	LIST RESALE	8,500 6,500	E	310	280	SEE CCC	40	B/2
69103	6	5.5M OR 6.0M INCREMENT	LIST RESALE	10,000 7,500	E	365	330	SEE CCC	40	B/2
69103	7	6.5M OR 7.0M INCREMENT	LIST RESALE	11,500 8,500	E	420	380	SEE CCC	40	B/2
69103	8	7.5M INCREMENT	LIST RESALE	13,000 9,500	E	475	430	SEE CCC	40	B/2
69104	X	33158 MP OPTION REQUIRED FOR ATTACHMENT OF CDC 33158-2XX/3XX/4XX MEMORY TO IBM 3158 MP SYSTEMS. ORDER ONE FEATURE PER CDC MEMORY CABINET PER CDC INCREMENT SPECIFIED BELOW. SPECIAL QUOTE REQUIRED FOR INSTALLATION ON EXISTING CDC SYSTEMS. OPT APPLIES TO33158 2XX/33158 3XX/33158 4XX/								
69104	1	CDC INCREMENT OF 0.5M OR 1.0M	LIST RESALE	2,500 2,500	E	90	80	SEE CCC	40	B/2
69104	2	CDC INCREMENT OF 1.5M OR 2.0M	LIST RESALE	4,000 4,000	E	145	130	SEE CCC	40	B/2
69104	3	CDC INCREMENT OF 2.5M OR 3.0M	LIST RESALE	5,500 5,500	E	200	180	SEE CCC	40	B/2
69105	X	33158 MP OPTION REQUIRED FOR ATTACHMENT OF CDC 33158-5XX/6XX/7XX/8XX MEMORY TO IBM 3158 MP SYSTEMS. SEE CONFIGURATOR IN VOLUME II FOR ALLOWABLE CONFIGURATIONS. ORDER ONE FEATURE PER CDC MEMORY CABINET PER CDC INCREMENT SPECIFIED BELOW. SPECIAL QUOTE REQUIRED FOR INSTALLATION ON EXISTING CDC SYSTEMS. OPT APPLIES TO33158 5XX/33158 6XX/33158 7XX/ OPT APPLIES TO33158 8XX/								
69105	1	CDC INCREMENT OF 0.5M OR 1.0M	LIST RESALE	2,500 2,500	E	90	80	SEE CCC	44	B/2
69105	2	CDC INCREMENT OF 1.5M OR 2.0M	LIST RESALE	4,000 4,000	E	145	130	SEE CCC	44	B/2
69105	3	CDC INCREMENT OF 2.5M OR 3.0M	LIST RESALE	5,500 5,500	E	200	180	SEE CCC	44	B/2
69105	4	CDC INCREMENT OF 3.5M	LIST RESALE	7,000 7,000	E	255	230	SEE CCC	44	B/2
69106	X	REQUIRED FOR ATTACHMENT OF CDC 33158-9XX MEMORY TO IBM 3158 MP SYSTEMS. SEE CONFIGURATOR IN VOLUME II FOR ALLOWABLE CONFIGURATIONS. ORDER ONE FEATURE PER CDC MEMORY CABINET PER CDC INCREMENT SPECIFIED BELOW. SPECIAL QUOTE REQUIRED FOR INSTALLATION ON EXISTING CDC SYSTEMS. OPT APPLIES TO33158 9XX/								
69106	1	CDC INCREMENT OF 0.5M OR 1.0M	LIST RESALE	2,500 2,500	E	90	80	SEE CCC	40	B/2
69106	2	CDC INCREMENT OF 1.5M OR 2.0M	LIST RESALE	4,000 3,500	E	145	130	SEE CCC	40	B/2

PRODUCT	MOD	DESCRIPTION		PURCHASE PRICE	CONV PLAN	MONTHLY LEASE PRICE OR INSTLMNT 1 YEAR	CCC BASE 3YR/12MO	SALE 5 YEAR	MAINTENANCE MONTHLY CHARGE	PROD GRP
69106	3	CDC INCREMENT OF 2.5M OR 3.0M	LIST RESALE	5,500 4,500	E	200	180	SEE CCC	40	B/2
69106	4	CDC INCREMENT OF 3.5M	LIST RESALE	7,000 5,500	E	255	230	SEE CCC	40	B/2
69108	1	33168 8-MEG FEATURE REQUIRED WHEN CDC 33168 MEMORY IS ATTACHED TO IBM 3168 SINGLE PROCESSOR MODELS AND TOTAL SYSTEM SIZE IS GREATER THAN 8 MEGABYTES. OPT APPLIES TO33168 1XX/33168 2XX/	LIST RESALE	15,000 12,500	E	550	500	SEE CCC	90	B/2
69108	2	33168 8-MEG FEATURE REQUIRED WHEN CDC 33168 MEMORY IS ATTACHED TO IBM 3168 ATTACHED PROCESSOR MODEL AND TOTAL SYSTEM SIZE IS GREATER THAN 8 MEGABYTES. OPT APPLIES TO33168 1XX/33168 2XX/	LIST RESALE	18,500 15,000	E	680	620	SEE CCC	80	B/2
69109	1	33031 STANDARD ATTACHMENT KIT OPT APPLIES TO 33031 1XX	LIST RESALE	N/C N/C		N/C	N/C	SEE CCC	N/C	B/2
69110	X	A ONE TIME INSTALLATION CHARGE IBM 3031 MEMORY ATTACH A ONE-TIME CHARGE IS APPLICABLE FOR CONVERSION AND ATTACHMENT WHEN CONVERTING TO A 33031-1XX FROM A 33168-2XX OR 33032-1XX. OPT APPLIES TO 33031 1XX		12,000						
69110	2	2048K BYTE IBM CPU	LIST RESALE	N/C N/C		N/C	N/C	SEE CCC	N/C	B/2
69110	3	3072K BYTE IBM CPU	LIST RESALE	N/C N/C		N/C	N/C	SEE CCC	N/C	B/2
69110	4	4096K BYTE IBM CPU	LIST RESALE	N/C N/C		N/C	N/C	SEE CCC	N/C	B/2
69110	5	5120K BYTE IBM CPU	LIST RESALE	N/C N/C		N/C	N/C	SEE CCC	N/C	B/2
69110	6	6144K BYTE IBM CPU	LIST RESALE	N/C N/C		N/C	N/C	SEE CCC	N/C	B/2
69111	X	REQUIRED WHEN THE TOTAL SYSTEM SIZE (CDC + IBM) IS GREATER THAN SIX MEGABYTES. OPT APPLIES TO33031 1XX/								
69111	1	33031 OVER 6M/STD FEATURE	LIST RESALE	5,000 5,000	E	190	170	SEE CCC	30	B/2
69112	X	IBM 3032 MEMORY ATTACHMENT OPT APPLIES TO 33032 1XX								
69112	1	33032 STANDARD ATTACHMENT KIT	LIST RESALE	N/C N/C		N/C	N/C	SEE CCC	N/C	B/2
69113	X	A ONE TIME INSTALLATION CHARGE IBM 3032 MEMORY LEVEL A ONE TIME CHARGE IS APPLICABLE FOR CONVERSION AND ATTACHMENT WHEN CONVERTING TO A 33032-1XX FROM A 33168-2XX OR 33031-1XX. OPT APPLIES TO 33032 1XX		12,000						
69113	2	2048K BYTE IBM CPU	LIST RESALE	N/C N/C		N/C	N/C	SEE CCC	N/C	B/2
69113	4	4096K BYTE IBM CPU	LIST RESALE	N/C N/C		N/C	N/C	SEE CCC	N/C	B/2
69113	6	6144K BYTE IBM CPU	LIST RESALE	N/C N/C		N/C	N/C	SEE CCC	N/C	B/2
69114	X	REQUIRED WHEN THE TOTAL SYSTEM SIZE (CDC + IBM) IS GREATER THAN SIX MEGABYTES. NOTE THAT 69114-1 IS A PRE-REQUISITE FOR 69114-2. OPT APPLIES TO33032 1XX/								
69114	1	33032 TOTAL SIZE EQ 7 OR 8 MB	LIST RESALE	5,000 5,000	E	190	170	SEE CCC	30	B/2
69114	2	33032 TOTAL SIZE OVER 8 MB	LIST RESALE	7,000 7,000	E	290	260	SEE CCC	50	B/2
69120	3XX	PROVIDES INTERFACE FOR ATTACHING 33101-8XX MEMORY SYSTEMS TO IBM 3033 CPU. FACTORY INSTALLED ONLY. OPT APPLIES TO33101 802/33101 804/								
69120	301	STANDARD ATTACHMENT KIT PROVIDES INTERFACE FOR INCREASING FROM 4MB IBM TO 6 OR 8MB TOTAL. OPT APPLIES TO33101 802/33101 804/	LIST RESALE	N/C N/C		N/C	N/C	SEE CCC	N/C	
69120	302	STANDARD ATTACHMENT KIT PROVIDES INTERFACE FOR INCREASING FROM 6MB IBM TO 8MB TOTAL. OPT APPLIES TO33101 802/	LIST RESALE	N/C N/C		N/C	N/C	SEE CCC	N/C	
69120	303	OUT-OF-BOUNDS FEATURE PROVIDES INTERFACE FOR INCREASING FROM 4MB, 6MB OR 8MB IBM TO 10MB, 12MB, 14MB OR 16MB TOTAL. OPT APPLIES TO33101 802/33101 804/33101 806/ OPT APPLIES TO33101 808/	LIST RESALE	15,000 15,000	E	600	500	SEE CCC	80	B/2

SUBSYSTEMS PLUG COMP./DATA ENTRY
INACTIVE PRODUCTS

PRODUCT	MOD	DESCRIPTION	PURCHASE PRICE	CONV PLAN	RESALE PRICE	MONTHLY LEASE PRICE 1 YEAR	MONTHLY LEASE PRICE CCC BASE 3YR/12MO	MAINTENANCE MONTHLY CHARGE	PROD GRP
615	73	MAGNETIC TAPE TRANSPORT	5,775	B	N/A	174	168	118	D/3
615	93	MAGNETIC TAPE TRANSPORT	7,350	B	N/A	189	184	138	D/3
906	1	DOCUMENT READER SYSTEM	44,500	C	44,500	1,399	1,329	1,378	D/1
906	2	DOCUMENT READER SYSTEM	64,050	C	64,050	1,659	1,577	1,159	D/1
906	3	DOCUMENT READER SYSTEM	64,050	C	64,050	1,659	1,577	1,159	D/1
906	5	DOCUMENT + PAGE READER SYSTEM	130,463	C	130,463	4,006	3,232	2,432	D/1
906	6	DOCUMENT + PAGE READER SYSTEM	130,463	C	130,463	4,006	3,232	2,432	D/1
915		OCR PAGE READER	52,947	C	52,947	1,434	1,095	908	D/1
921	1	OCR DOCUMENT READER	29,925	C	29,925	966	918	561	D/1
929	1	OCR DOCUMENT READER	86,108	C	86,108	2,390	2,090	745	D/1
929	7	OCR DOCUMENT READER SYSTEM	113,712	C	113,712	3,170	2,760	1,146	D/1
929	9	OCR DOCUMENT READER SYSTEM	113,712	C	113,712	3,170	2,760	1,161	D/1
955	1	OCR PAGE AND DOCUMENT READER	128,385	C	128,385	2,795	2,710	1,375	D/1
959	1	OCR PAGE AND DOCUMENT READER	139,072	C	139,072	3,860	3,280	1,445	D/1
959	2	OCR PAGE AND DOCUMENT READER	139,072	C	139,072	3,860	3,280	1,445	D/1
959	71	OCR SYSTEM	168,328	C	168,328	4,670	3,970	1,046	D/1
959	72	OCR SYSTEM	168,328	C	168,328	4,670	3,970	1,046	D/1
959	91	OCR SYSTEM	168,328	C	168,328	4,670	3,970	1,862	D/1
959	92	OCR SYSTEM	168,328	C	168,328	4,670	3,970	1,862	D/1
1732	2	MAGNETIC TAPE CONTROLLER	5,250	B	N/A	180	176	48	D/3
1735		PAGE READER CONTROLLER	10,553	C	10,553	352	349	54	D/3
1784	1	COMPUTER, 900 NANOSECONDS	11,160	B	11,160	402	372	126	D/3
1784	2	COMPUTER, 630 NANOSECOND	13,643	B	13,643	491	455	153	D/3
3195		PAGE READER CONTROLLER	21,704	A	21,704	510	503	60	C/1
3254	2	OCR LINE PRINTER WITH CONTROL	43,407	A	12,000	846	829	513	C/1
8022		PAGE READER CONTROLLER	5,300	C	2,000	125	77	55	D/3
8092	R	TELEPROGRAMMER-4K	24,380	C	7,100	445	261	219	D/3
8096		INPUT/OUTPUT TELETYPEWRITER	4,455	C	1,905	120	71	81	D/3
10197	1	OCR-A ALPHANUMERIC FONT	6,180	C	6,180	150	125	80	D/2
10197	R	407-1 NUMERIC FONT	1,954	C	1,854	75	50	44	D/2
10198	1	MARK READ FORMAT A	5,099	C	5,099	165	150	93	D/2
10200	1	RABINOW CHARACTER MATRIX	2,337	C	2,337	74	72	49	D/2
		FIELD INSTALLATION CHARGE	277						
10202	1	MARKING PEN	869	C	868	28	27	51	D/1
		FIELD INSTALLATION CHARGE	138						
10203	1	HANDPRINT RECOGNITION OPTION	33,390	C	33,390	738	722	178	D/1
		FIELD INSTALLATION CHARGE	1,386						
10204	1	JOURNAL TAPE OPTION	9,594	C	9,594	258	250	85	D/1
10205	1	ON-LINE CHARACTER CORRECTION	8,904	C	8,904	210	200	59	D/1
		FIELD INSTALLATION CHARGE	554						
10206	1	MIRROR IMAGE OPTION	919	C	919	53	52	16	D/1
		FIELD INSTALLATION CHARGE	69						
10209	1	SIZE IV OPTION	2,226	C	2,226	80	79	27	D/1
10212	1	IBM 407-1 NUMERIC MATRIX	3,339	C	3,339	131	128	48	D/1
		FIELD INSTALLATION CHARGE	277						
10213	1	SELFCHECK 7R MATRIX OPTION	3,339	C	3,339	131	128	48	D/1
		FIELD INSTALLATION CHARGE	277						
10214	1	E13B MATRIX OPTION	3,339	C	3,339	131	128	48	D/1
		FIELD INSTALLATION CHARGE	277						
10275	1	OCR-A SIZE I,IV NUMERIC MATRIX	1,260	C	1,260	42	40	48	D/1
10284	1	FORMAT A	5,198	C	5,198	174	170	72	D/1
10284	2	FORMAT B	5,198	C	5,198	174	170	72	D/1
10300	1	PHASE ENCODING OPTION	1,575	B	1,575	45	44	15	D/1
10324	1	ENTRY STATION DESK	225	C	N/A	10	8	N/C	
33101	102	256K BYTE CDC MEMORY UNIT	36,500	E	N/A	1,404	1,222	200	B/2
33101	104	512K BYTE CDC MEMORY UNIT	63,000	E	N/A	2,423	2,108	300	B/2
33101	106	768K BYTE CDC MEMORY UNIT	90,000	E	N/A	3,462	3,012	400	B/2
33101	130	3840K BYTE CDC MEMORY UNIT	414,000	F	N/A	15,923	13,853	1,600	B/2
33155	100	OK TO 512K MEMORY EXPANSION	123,000	F	123,000	3,000	2,727	624	B/2
33155	101	OK TO 768K MEMORY EXPANSION	156,060	F	156,060	4,590	4,173	833	B/2
33155	102	OK TO 1024K	181,764	F	181,764	5,346	4,860	1,041	B/2
33155	103	OK TO 1536K MEMORY EXPANSION	262,548	F	262,548	7,722	7,020	1,459	B/2
33155	104	OK TO 2048K MEMORY EXPANSION	350,064	F	350,064	10,296	9,360	1,878	B/2
33155	105	OK TO 3072K MEMORY EXPANSION	501,534	F	501,534	14,751	13,410	2,713	B/2
33155	106	OK TO 4096K MEMORY EXPANSION	639,540	F	639,540	18,810	17,100	3,548	B/2
33155	261	512K TO 1024K MEMORY EXPANSION	123,000	F	123,000	3,000	2,727	624	B/2
33155	262	512K TO 1536K MEMORY EXPANSION	181,764	F	181,764	5,346	4,860	1,041	B/2
33155	263	512K TO 2048K MEM	262,548	F	262,548	7,722	7,020	1,459	B/2
33155	264	512K TO 3072K MEMORY EXPANSION	479,128	F	479,128	14,092	12,811	2,303	B/2
33155	265	512K TO 4096K MEMORY EXPANSION	589,050	F	589,050	17,325	15,750	3,130	B/2
33155	300	1024K TO 1536K MEMORY EXPAN.	123,000	F	123,000	3,000	2,727	624	B/2
33155	301	1024K TO 2048K MEMORY EXPAN.	181,764	F	181,764	5,346	4,860	1,041	B/2
33155	302	1024K TO 3072K MEMORY EXPAN.	350,064	F	350,064	10,296	9,360	1,878	B/2
33155	303	1024K TO 4096K MEMORY EXPAN.	501,534	F	501,534	14,751	13,410	2,713	B/2
33155	350	1536K TO 2048K MEMORY EXPAN.	123,000	F	123,000	3,000	2,727	624	B/2
33155	351	1536K TO 3072K MEMORY EXPAN.	262,548	F	262,548	7,722	7,020	1,459	B/2
33165	100	OK TO 512K MEMORY EXPANSION	123,000	F	123,000	3,000	2,727	684	B/2
33165	102	OK TO 1024K MEMORY EXPANSION	181,764	F	181,764	5,346	4,860	1,142	B/2
33165	103	OK TO 1536K MEMORY EXPANSION	262,548	F	262,548	7,722	7,020	1,601	B/2
33165	104	OK TO 2048K MEMORY EXPANSION	350,064	F	350,064	10,296	9,360	2,060	B/2
33165	105	OK TO 3072K MEMORY EXPANSION	501,534	F	501,534	14,751	13,410	2,977	B/2
33165	106	OK TO 4096K MEMORY EXPANSION	639,540	F	639,540	18,810	17,100	3,894	B/2
33165	300	1024K TO 1536K MEMORY EXPAN.	123,000	F	123,000	3,000	2,727	684	B/2
33165	301	1024K TO 2048K MEMORY EXPAN.	181,764	F	181,764	5,346	4,860	1,142	B/2
33165	302	1024K TO 3072K MEMORY EXPAN.	350,064	F	350,064	10,296	9,360	2,060	B/2
33165	303	1024K TO 4096K MEMORY EXPAN.	501,534	F	501,534	14,751	13,410	2,977	B/2
33165	400	2048K TO 3072K MEMORY EXPAN.	181,764	F	181,764	5,346	4,860	1,142	B/2
33165	401	2048K TO 4096K MEMORY EXPAN.	350,064	F	350,064	10,296	9,360	2,060	B/2
33302	2	DISK STORAGE UNIT	22,600	C	22,600	615	520	109	B/2
34201	10	MAGNETIC TAPE SUBSYSTEM	36,860	C	N/A	1,142	970	242	B/2
34201	11	MAGNETIC TAPE	11,400	C	N/A	353	300	104	B/2
34201	12	MAGNETIC TAPES	20,520	C	N/A	635	540	180	B/2
34201	3A2	MAGNETIC TAPES AND CONTROLLER	27,100	C	N/A	1,030	875	282	B/2
34201	381	MAGNETIC TAPE TRANSPORT	9,300	C	N/A	353	300	121	B/2
34201	382	MAGNETIC TAPE TRANSPORTS	15,800	C	N/A	600	510	211	B/2
38510	2	MASS STORAGE FILE	154,000	E	N/A	N/A	4,667	1,101	E/2
68410	22	DUAL DENSITY 1600/800 BPI	N/C	C	N/A	N/C	N/C	N/C	
69002	1	DUAL PATH OPTION	3,300	E	N/A	N/A	100	80	E/2
69045	100	FROM ALL SIZES TO 512K OR LESS	8,000	E	N/A	308	268	140	B/2
69045	300	FROM 256K TO 384K, 512K	10,250	E	N/A	394	343	175	B/2
69045	301	FROM 256K TO 768K, 1024K	10,250	E	N/A	394	343	175	B/2
69120	342	FROM IBM 4096K TO 6144K	N/C		N/A	N/C	N/C	N/C	
69120	344	FROM IBM 4096K TO 8192K	N/C		N/A	N/C	N/C	N/C	
69120	362	FROM IBM 6144K TO 8192K	N/C		N/A	N/C	N/C	N/C	
69257	51	OMEGA/480-I TO 480-II UPGRADE	125,000		N/A	N/A	N/A	N/A	
69257	55	OMEGA 4801 TO 4803 UPGRADE	200,000	F	N/A	7,667	6,667	390	B/2
69257	57	OMEGA 4801 TO 4803 UPGRADE	190,000	F	N/A	7,283	6,333	358	B/2
69257	81	HARD COPY OUTPUT	7,500	F	N/A	288	250	30	B/2

CHANGES EFFECTIVE 05/01/80

CONFIGURATORS

INTRODUCTION

CYBER 170 configurators are divided into two operating systems: 1. NOS {pages 1-34}. NOS/BE {pages 35-end}. Each operating system is formatted into four parts. In each section only supported hardware is shown. Check product sections for additional options. The following are descriptions of the sections.

I. OPERATING SYSTEM HARDWARE

These pages list the hardware requirements {minimum, basic, options} for the operating system.

II. HARDWARE DIAGRAMS

The allowable hardware is presented in diagrams that are grouped by function. The groups in order of presentation are:

- Mainframe Options
- Rotating Mass Storage
- Magnetic Tape
- Local Unit Record Equipment
- Remote Unit Record Equipment

III. SOFTWARE PRODUCT SET

A description of the active members of the product set are found in this section. Items such as memory requirements are highlighted.

IV. AVAILABLE DOCUMENTATION

Listed is documentation now available or planned.

All documentation is handled through Literature and Distribution Services.

In addition, publication number 60481000 available from Literature and Distribution Services will serve as a guide for users who wish to determine which revision levels of software documents were available at certain Programming System Report {PSR} levels during the life of the operating systems.

BASIC MAINFRAMES SUPPORTED BY NOS

BASIC 720 MAINFRAME

- 1 - Unified CPU
- Compare Move Unit (CMU)
- 98K CM
- 10 PPU's
- 12 I/O Channels
- Operator's Console
- 1 - Data Channel Converters

BASIC 730 MAINFRAME

- 1 - Unified CPU
- Compare Move Unit (CMU)
- 131K CM
- 10 PPU's
- 12 I/O Channels
- Operator's Console
- 1 - Data Channel Converters

Basic 750 Mainframe

- 1 - Multi-Function CPU
- 131K CM
- 10 PPU's
- 12 I/O Console
- Operator's Console
- 1 - Data Channel Converters

Basic 760 Mainframe

- 1 - Multi-Function CPU
- 131K High Speed CM
- 10 PPU's
- 12 I/O Channels
- Operator's Console
- 1 - Data Channel Converter

Basic 176-4XX Mainframe

- 1 - Multi-Function CPU
- 131K CM
- 10 PPU's
- 12 I/O Channels
- Operator's Console
- 1 - Data Channel Convertor

Mainframe Options* Supported by NOS

	720	730	750	760	176-4XX
CPU Upgrades	X	X	X		
Additional CPU	X	X			
Additional CM to 262K	X	X	X	X	X
Additional PPU's and I/O Channels	X	X	X	X	X
**CYBER 176 PP's and I/O Multiplexer					X

*See mainframe configuration diagrams for option numbers.
**Future NOS support planned for up to 6 CYBER 176 PP's.

NOS General Operating System Hardware Requirements

Minimum Batch Requirements

CYBER Basic Mainframe
- One Line Printer
- One Card Reader
- Two Tape Units
- Rotating Disk Storage
  - One 844-21 with one 881 (1 drive)
    or
  - One 885

Options for Specific Installation Requirements

Mainframe
- Alternate Mainframes
- CM Additions
- CPU Upgrade
- Additional CPU's
- Extended Core Storage or Extended Memory
- Additional PPU's and I/O Channels

Peripherals
- Tape Units
- Line Printers
- Card Equipment
- Rotating Mass Storage
- Communication Equipment
- Remote CRT's
- Remote Line Printers
- Remote Card Reader
- Remote Teletypewriters

Minimum System Rules

- One of the two Tape Units is used for initial loading (system deadstart).

  Once the system has been deadstarted, the two tape units may be used for either system work 9 e.g. loading/dumping job queues) or user applications.

- The system can reside only on disk storage of the same type. Minimum disk capacity to support batch processing is 60 million characters. The system itself occupies approximately 2.1 million characters. It is estimated that nearly 58 million characters of disk space is needed for the system and product set working space. Additional disk space will be required for permanent files and to provide transaction and/or time-sharing services.

- The system uses two PPU's on a fulltime or dedicated basis. The remaining PPU's are either dynamically allocated to system and subsystem tasks or dedicated to a subsystem such as IAF (Interactive Facility).

- Each CDC CYBER Model 720, 730, 750, 760, and 176-4XX includes one Operator Display Console and one Data Channel Converter.

- The system requirements for a line printer may be satisfied by a 200UT Compatible Terminal (734-1, CY18-5, etc.) Printer and 2550 communication hardware. The terminal printer must be located near the mainframe.

- The system requirement for a card reader may be satisfied by a terminal card reader provided the installation is willing to forfeit the capability to read binary card decks. It should be noted that certain peripherals require that binary controlware be loaded from either a card reader or specific type of tape units.

- The system requirement for a card reader to load controlware may be satisfied with a 7152-1 Disk/Tape controller with a nine track magnetic tape unit.

- If a field upgrade from a 6000 or CY70 CPU to a CY-170 or CY-170/700 is made and existing peripherals /ECS remain on site, new channel cables must be ordered. The appropriate part numbers are:

19191600	65 foot cable
52675100	5 foot pigtail

Smallest Practical System

To provide a practical batch processing system tape units and disk storage units must be added to the minimum batch peripheral requirements.

To provide remote batch, time-sharing, and transaction processing capabilities network processing hardware (255X) and terminals must be added to the minimum batch peripheral requirements.

Practical memory guidelines for various processing environments are listed below:

Processing Environment	Subsystem Required	Memory Requirement
Combination*:		
Batch	--	98K
Remote Batch	NAM and RBF	
Time-Sharing or Transaction	NAM and IAF or NAM and TAF	
Combination*:		
Batch		
Remote Batch	NAM and RBF	
Time-Sharing	NAM and IAF	131K
Transaction	NAM and TAF	
Data Base Control	CDCS	

*Only one copy of NAM required for a combination.

Alternate Mainframes

- NOS will support multi-mainframe mixtures consisting of 720, 730, 750, 760 and older CYBER models. CYBER 176-4XX and older CYBER 176 models are not supported in a multi-mainframe environment.

- NOS only supports four mainframes in a multi-mainframe environment or a maximum of three if DDP accesses to ECS are used.

NOS Control Point Requirements

NOS can control the execution of up to a combination of 23 subsystems and application jobs at control points in central memory at once. Each control point has a corresponding table in central memory allocated to it. The control point number is a function of its table location. The control point is utilized to facilate bookkeeping. That is, central memory, ECS, CPU, PPU's, channels, and peripherals are all assigned to control point; consequently to utilize these hardware resources a application job or subsystem must be assigned a control point.

Control points are time-shared among all active jobs in the system. Active application jobs not at a control point have been rolled out to disk storage. The scheduler controls the amount of time (memory time slice) an application job can remain at a control point.

Control points are not time-shared among subsystems. Once a subsystem is assigned a control point, the time it remains at the control point is regulated by the computer operator or the subsystem itself.

The subsystems supported by NOS on the CYBER 170 Models 700's are listed below:

Subsystem	Control Point Required
BATCH I/O (Unit Record Support)	1
MAGNET (1/2" Tape Support)	1
NAM (Network Access Method)	1
IAF (Interactive Facility)	1
TAF (Transaction Facility)	1
RBF (Remote Batch Facility)	1
MSS (Mass Storage Subsystem)	1
CDCS (CYBER Database Control System)	1

The total available control points for application jobs is equal to 23 minus the number required for all subsystems to be made available to users of the installation's computer.

NOS Memory Requirements

- All numbers in this section are given in decimal.
- NOS requires approximately 21K of central memory for system residence. Although the system can be demonstrated occuping only 7K words of central memory for residence, systems in the field typically require 21K as a minimum.
- Selected parts of system residence can be stored in ECS or EM.
- System libraries may be distributed between ECS/EM, CM, and RMS. If a DDP is available, PPU routines from a PPU library in ECS will be loaded directly from ECS into a PPU. If a DDP is not available, PPU routines are transfered from ECS to CM, then from CM to a PPU.
- NOS central memory residence requirements vary with the number of control points selected and hardware configuration. The amount of central memory that should be allocated to NOS is dependent upon the configuration and work characterics of the installation.
- The 21K NOS residence system will support the following configuration:

  Configuration

  - 1X CYBER 170-720 (98K)
  - 10X PPU
  - 1X Display Console
  - 2X 580-20 Line Printer
  - 1X 3447-2/405 Card Reader
  - 2X Channels of Tape Equipment
    - 2X 7021-32 Controller
    - 2X 677-4 Tapes
    - 2X 679-4 Tapes
    - 2X 679-7 Tapes
  - 2X Channels of Mass Storage
    - 2X 7155 Controller (844 option on the controller)
    - 2X 844-44 Disk Drives
    - 2X 885 Disk Drives (four spindles)

  System Characterics

  - 17 control points selected
  - BACHIO Subsystem included as part of 21K residence
  - MAGNET Subsystem included as part of 21K residence
  - Certain PPU prgrams in a central memory library included as part of 21K residence

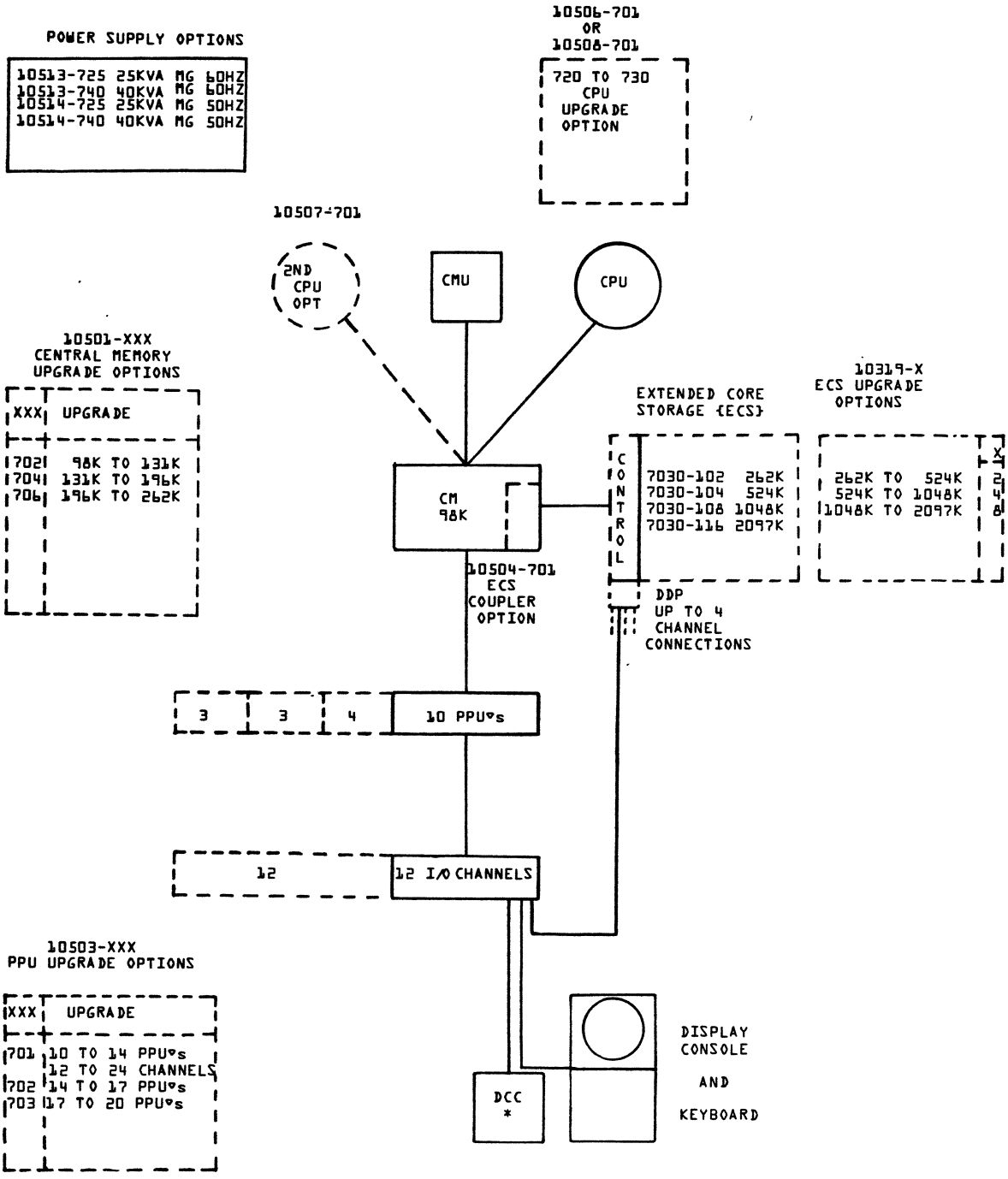
NOS Subsystem Memory Requirement

Subsystem	Central Memory Requirements
BATCHIO	101 + 528CR + 272CP + 528LP + 1040LX (Note 1)
MAGNET	1K + (26*tape units)
NAM	11K + (20*interactive terminal + 150*batch terminal)
RBF	7K + (10*ports) + (150*active terminal)
TAF	26K
MSS	10K
CDCS	8.2K to 14.2K
IAF	6800 + (22 * Maximum Number of Active Terminals)

Note 1: CR - Number active card reader
CP - Number active card punches
LP - Number active printers (without 596-6 print train)
LX - Number active printers (with 596-6 print train)

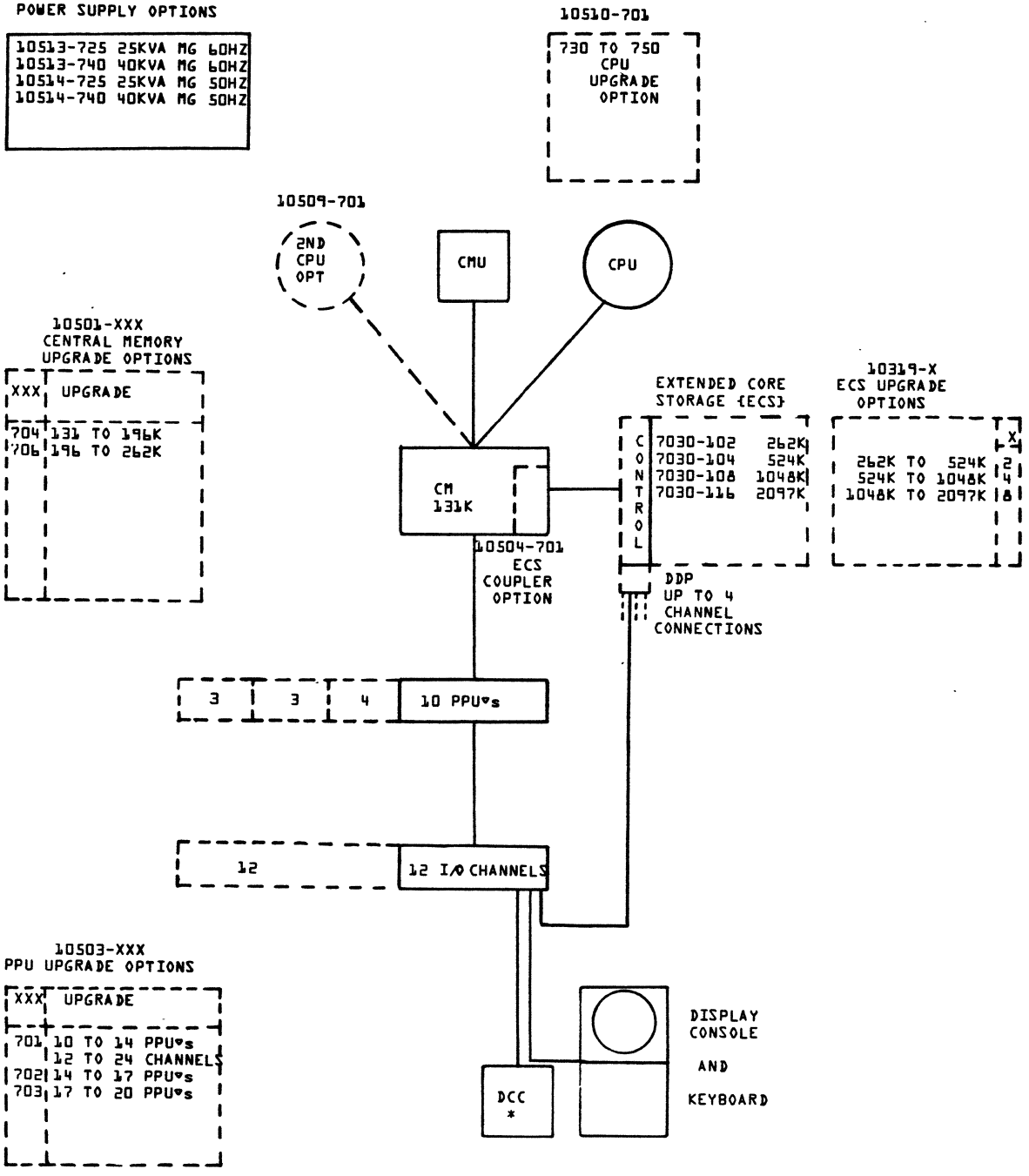
Product Number	Product or Subproduct Name	Minimum Memory Requirements (Decimal Value)
F7X0-01	CYBER LOADER	1700
	COMPASS	20500
	FORM	16400
	UPDATE	16400
	8-BIT SUBROUTINE PACKAGE	5200
F7XO-02	MAINTENANCE PACKAGE	28700
F7XO-21	FORTRAN 4.0	23100
F7XO-23	COBOL 5.0	24600
F7XO-24	INTERACTIVE BASIC	12300
F7XO-27	SORT/MERGE	16400
F7XO-40	CYBER DATA BASE CONTROL	8200
F7XO-41	DATA DESCRIPTION LANGUAGE	16400
F7XO-42	QUERY UPDATE	25600
F7XO-104	SIMSCRIPT II.5	20500

CDC CYBER 170 MODEL 720
CONFIGURATOR



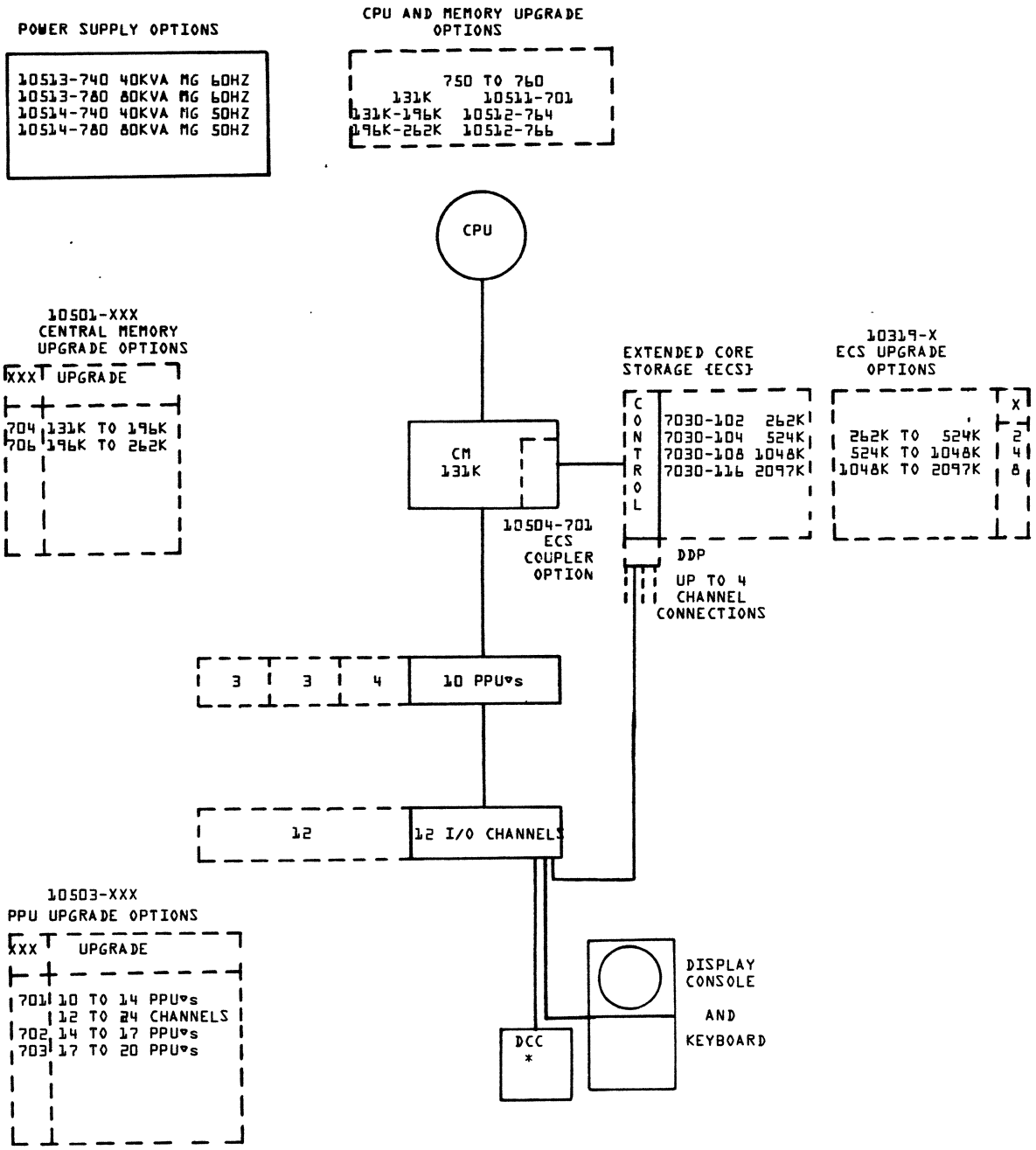
* DCC - DATA CHANNEL CONVERTER TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE TO THE CYBER 170 SERIES.

CDC CYBER 170 MODEL 730
CONFIGURATOR



* DCC - DATA CHANNEL CONVERTER TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE TO THE CYBER 170 SERIES.

CDC CYBER 170 MODEL 750
CONFIGURATOR

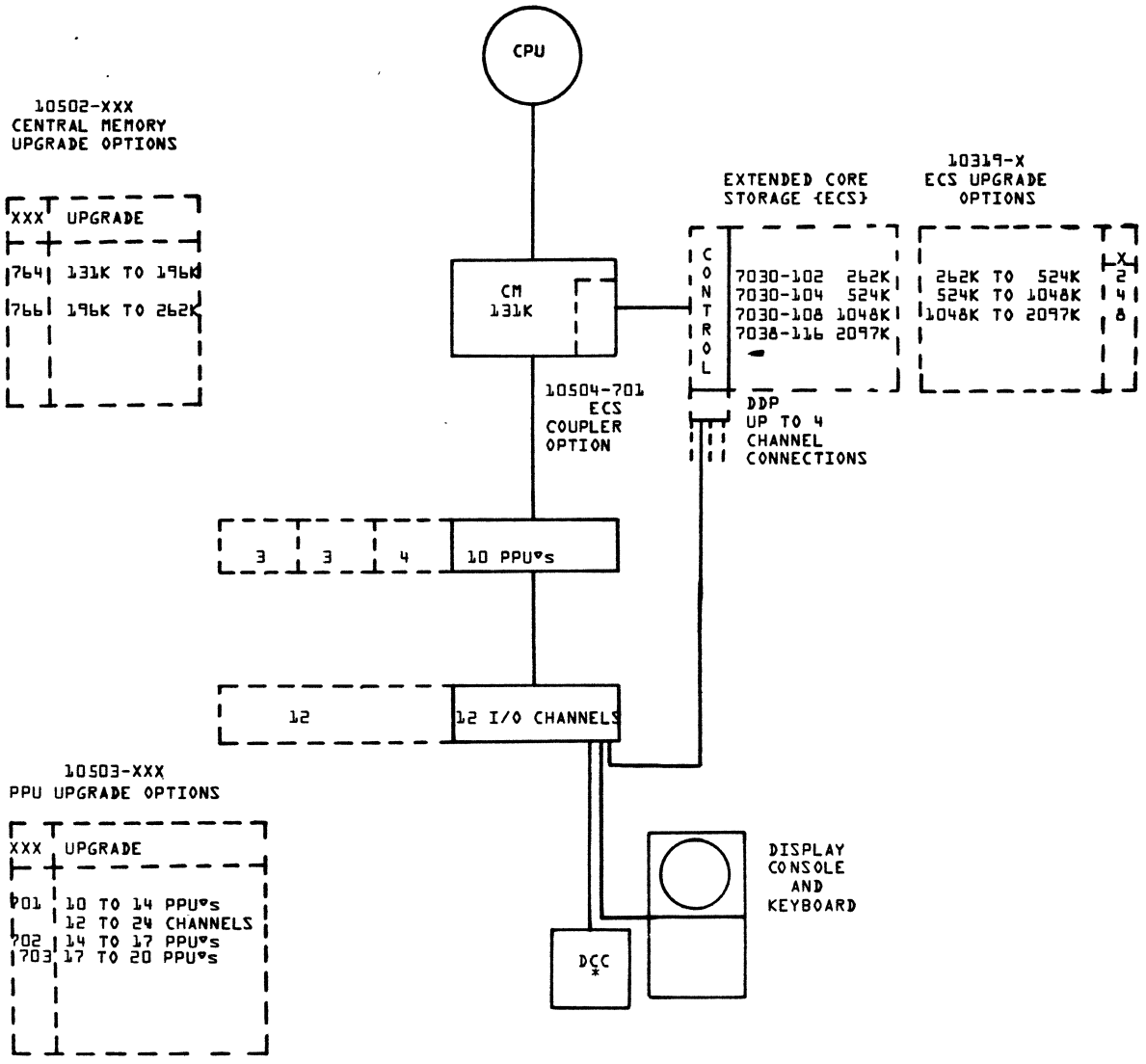


* DCC - DATA CHANNEL CONVERTER TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE TO THE CYBER 170 SERIES.

CDC CYBER 170 MODEL 760
CONFIGURATOR

POWER SUPPLY OPTIONS

10513-740 40 KVA MG 60HZ
10513-780 80 KVA MG 60HZ
10514-740 40 KVA MG 50HZ
10514-780 80 KVA MG 50HZ



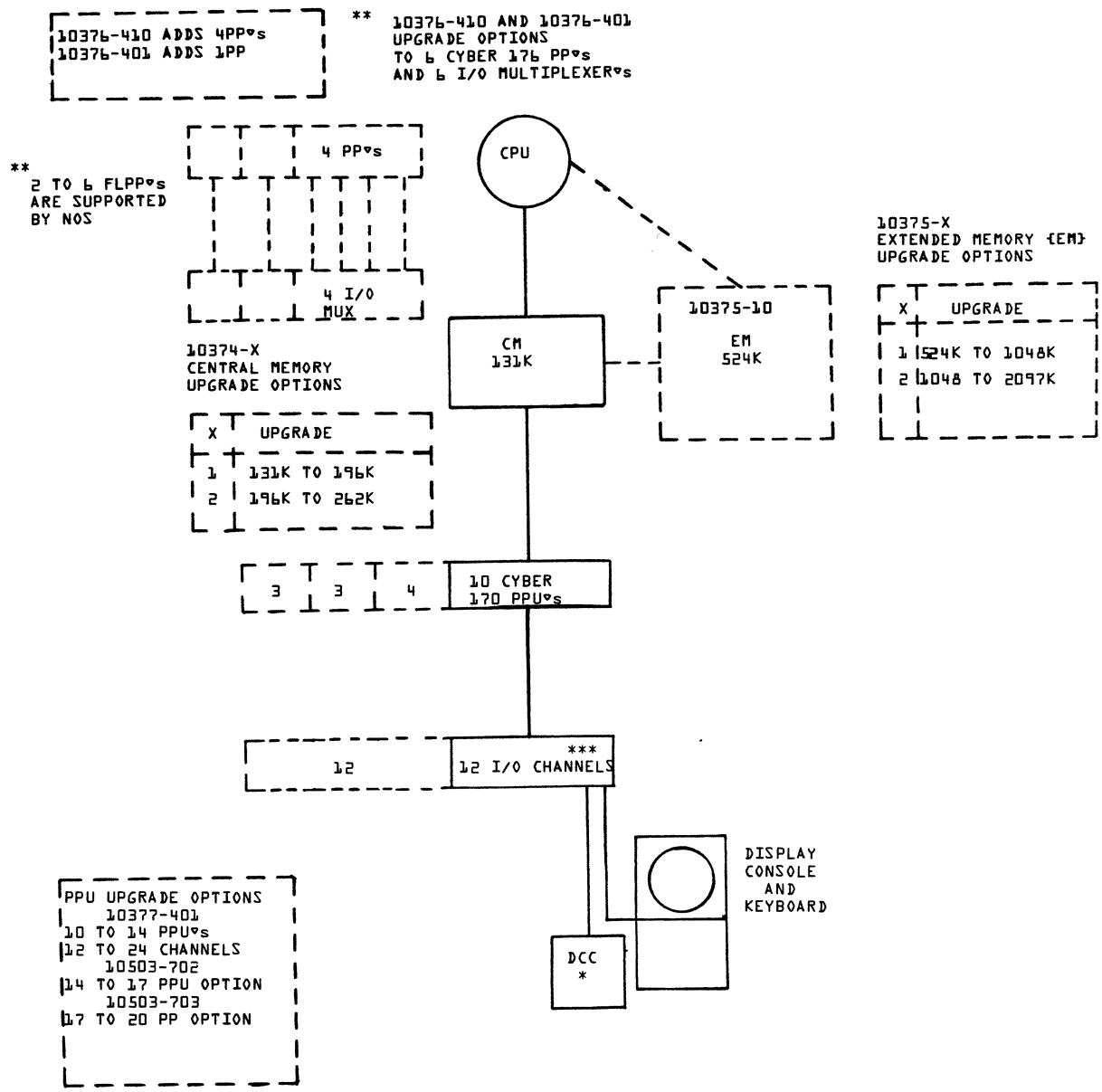
* DCC - CHANNEL CONVERTER TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE TO THE CYBER 170 SERIES.

CDC CYBER 170 MODEL 176-4XX CONFIGURATOR

NOTE: REQUIRED POWER INCLUDED.

176-4XX
MEMORY CONFIGURATIONS

XX	CM	EM
08	131K	
12	196K	
16	262K	
21	131K	524K
22	131K	1048K
24	131K	2097K
31	198K	524K
32	198K	1048K
34	198K	2097K
41	262K	524K
42	262K	1048K
44	262K	2097K

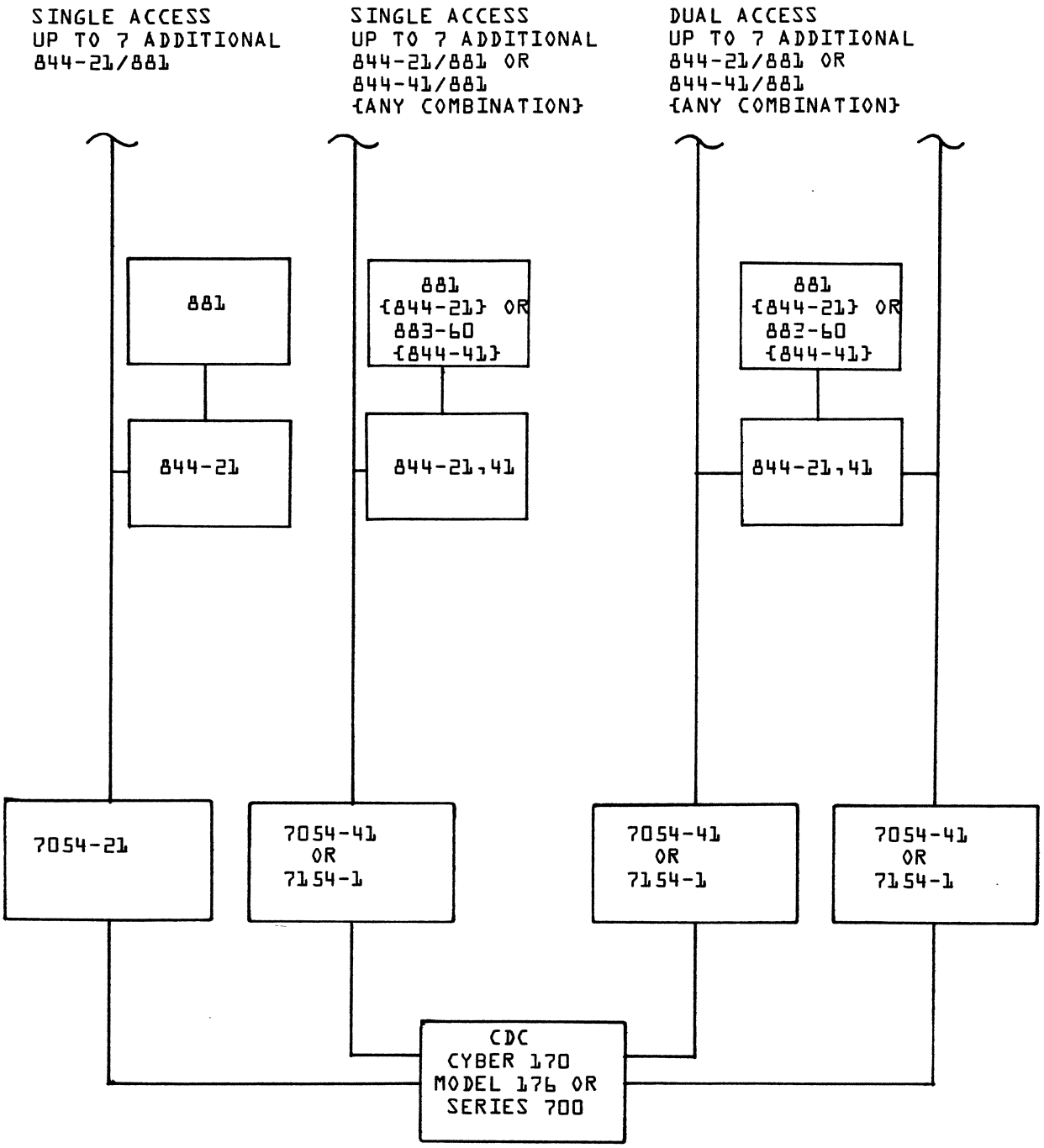


* DCC - DATA CHANNEL CONVERTER TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE TO THE CYBER 170 SERIES.

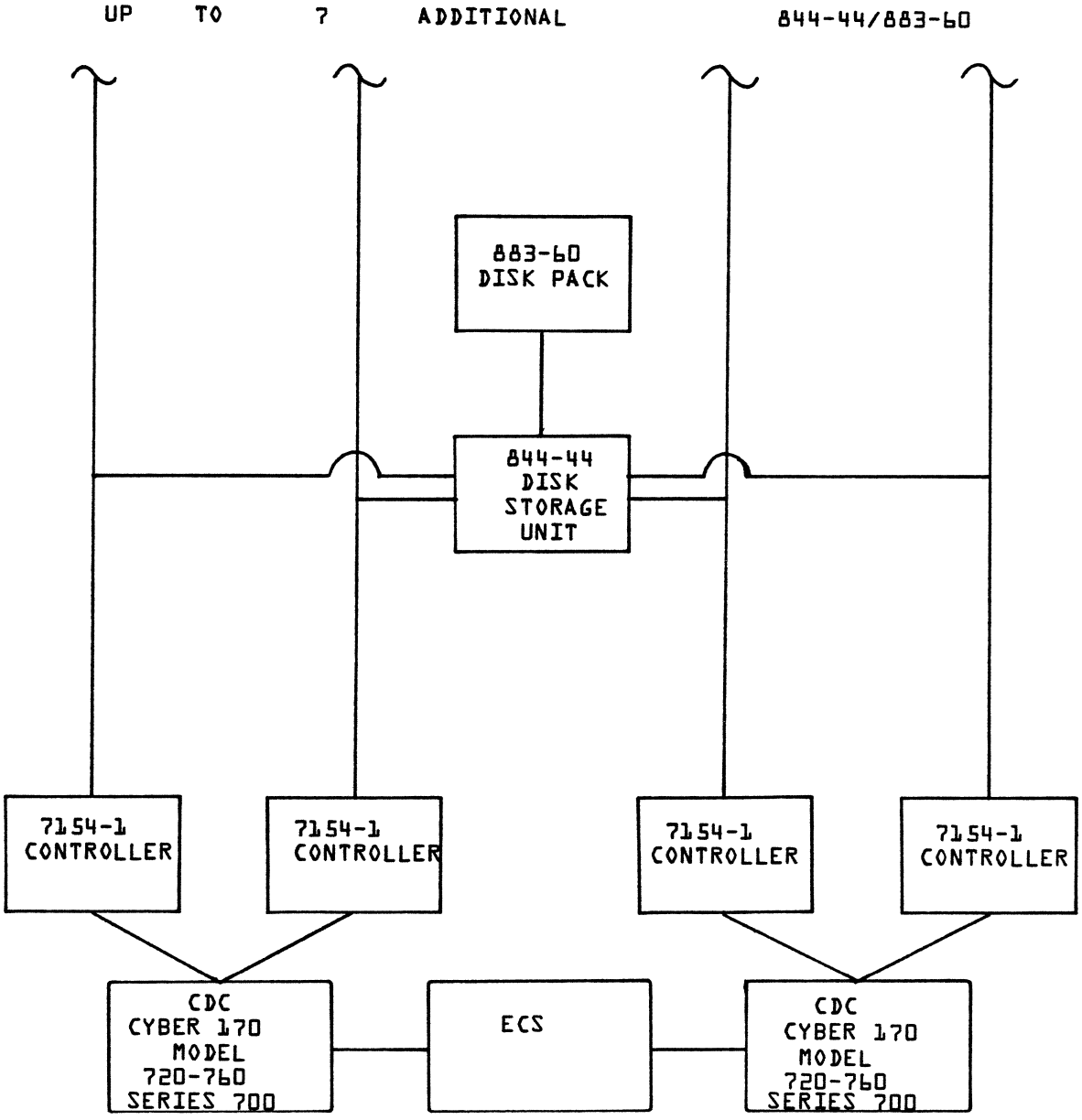
** STANDARD NOS SUPPORT OF THE CYBER 176 PPU'S IS PLANNED. SUPPORT ON A QSS BASIS IS AVAILABLE 1Q80.

*** CHANNEL 0 IS DEDICATED TO CONNECTING THE SCANNER CHANNEL.

DISK STORAGE SUBSYSTEM
7X54/844-21, 41

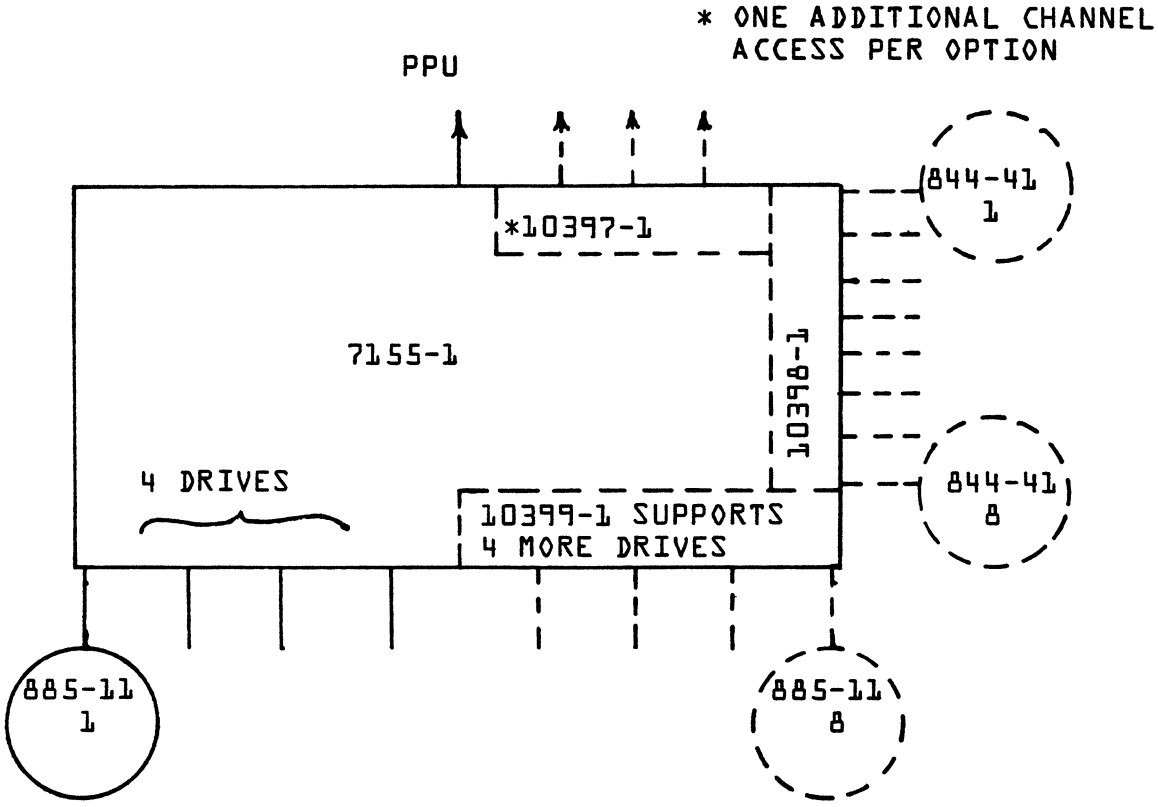


REMOVABLE DISK STORAGE
7154-1/844-44



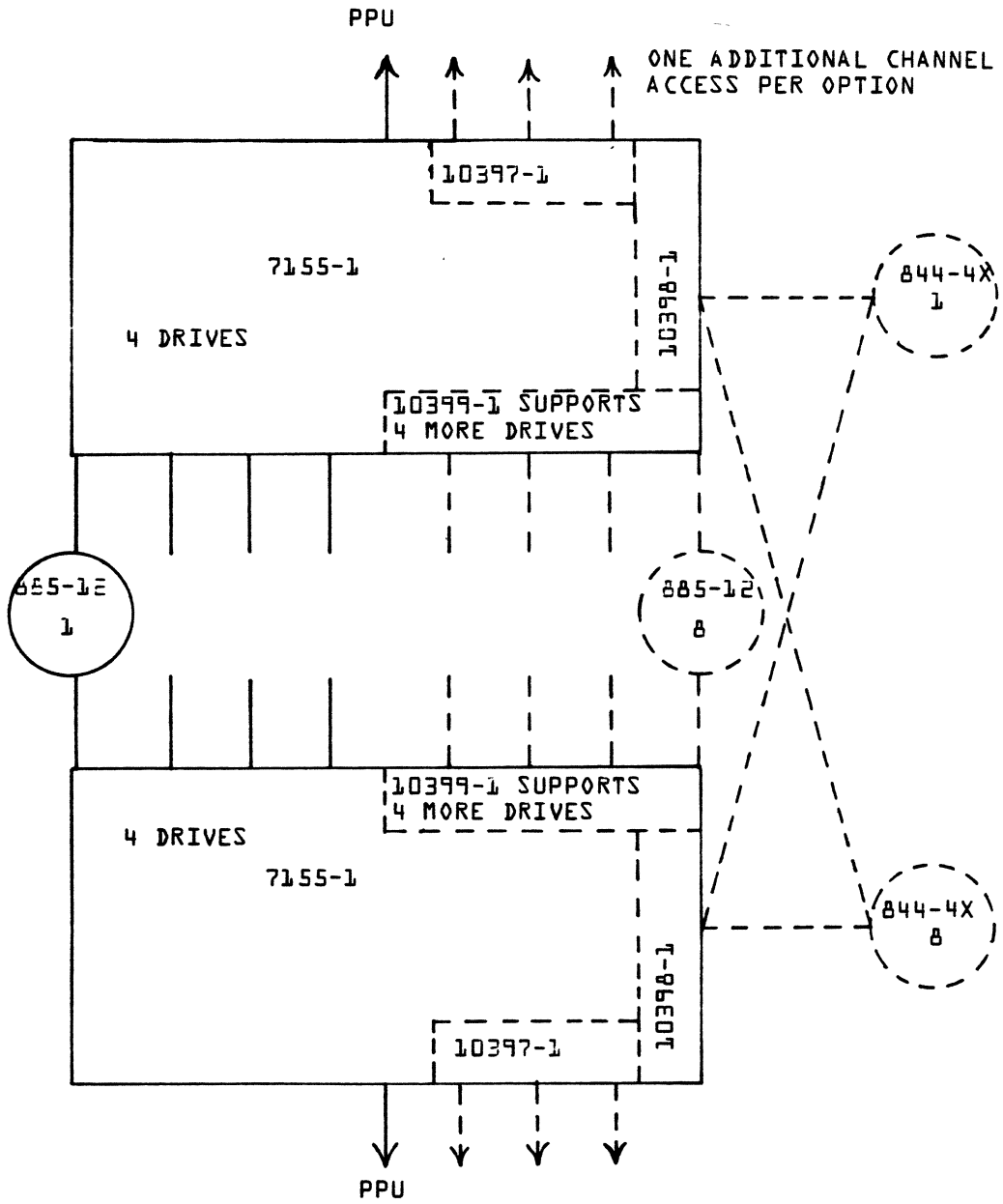
NOTES:
- THIS CONFIGURATOR ONLY SHOWS ONE OF MANY WAYS HOW 844-44's CAN BE USED IN A MULTI-MAINFRAME ENVIRONMENT.
- CYBER 176-4XX DOES NOT SUPPORT MULTI-MAINFRAME.
- ALL NOS MULTI-MAINFRAME SHARED DISK CONFIGURATIONS REQUIRE ECS.
- A 7154-2, -3 OR -4 COULD BE SUBSTITUTED FOR ONE OR MORE OF THE CONTROLLERS IN THE ABOVE DIAGRAM TO ALLOW MULTIPLE CHANNEL ACCESS TO THAT CONTROLLER (MAXIMUM OF TWO CHANNELS FROM ONE MAINFRAME - ONLY ONE RECOMMENDED PER MAINFRAME).

SINGLE DRIVE ACCESS SUBSYSTEM



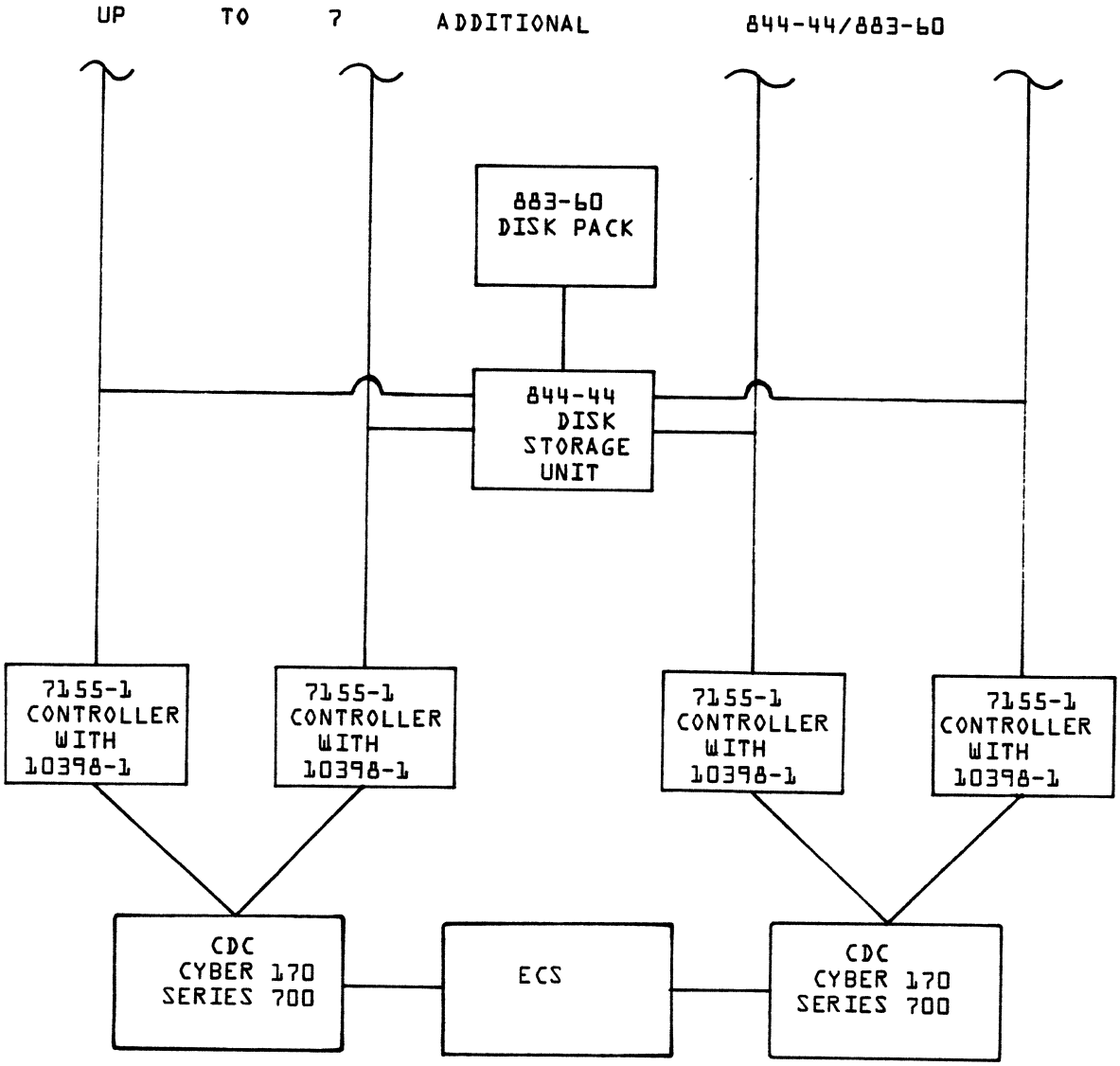
NOTE: EACH 885-11 DRIVE (DISK STORAGE UNIT) CONTAINS TWO SPINDLES, EACH 844-41 CONTAINS ONE SPINDLE.

DUAL DRIVE ACCESS SUBSYSTEM



NOTE: EACH 885-11 DRIVE (DISK STORAGE UNIT) CONTAINS TWO SPINDLES, EACH 844-41 CONTAINS ONE SPINDLE.

REMOVABLE DISK STORAGE
7155-1/844-44



NOTES:
- THIS CONFIGURATOR ONLY SHOWS ONE OF MANY WAYS THAT 844's CAN BE USED IN A MULTI-MAINFRAME ENVIRONMENT.
- CYBER 176-4XX DOES NOT SUPPORT MULTI-MAINFRAME.
- ALL NOS MULTI-MAINFRAME SHARED DISK CONFIGURATIONS REQUIRE ECS.
- FROM ONE TO THREE 10397-1 OPTIONS COULD BE ADDED TO ONE OR MORE OF THE CONTROLLERS IN THE ABOVE DIAGRAM TO ALLOW MULTIPLE CHANNEL ACCESS TO THAT CONTROLLER (MAXIMUM OF TWO CHANNELS FROM ONE MAINFRAME - ONLY ONE RECOMMENDED PER MAINFRAME).

DISK STORAGE CONFIGURATION OPTIONS SUMMARY

Controller	Disk Storage Unit 844-2Y	844-4Y	885-1Y
7054-2Z	X		
7054-4Z	X	X	
7154-Z	X	X	
7155-1		(Requires Option)	X

Controller and Disk Storage Unit Configuration Matrix

- See the Disk Storage Unit table for values of Y.
- See the Disk Controller table for values of Z.

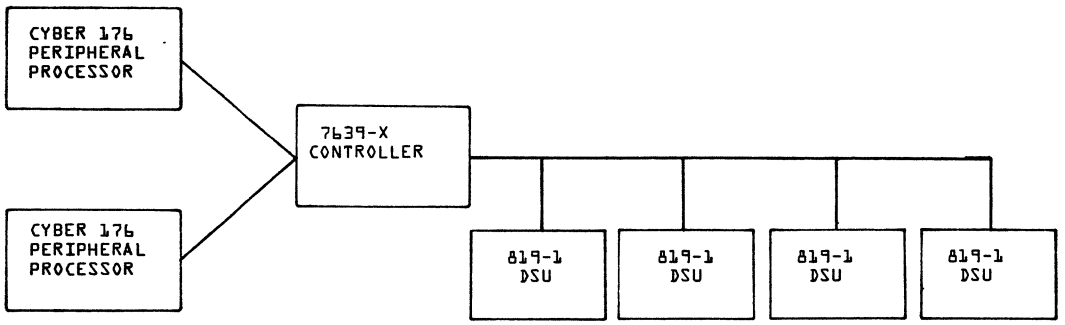
Disk Controller	Channels of Access	Transfer Mode
7054-21	1	Half Track
-22	2	
7054-41	1	Half Track
-42	2	
7154-1	1	Half Track or Full Track
-2	2	
-3	3	
-4	4	
7155-1	1	Half Track (844's or 885's)
One 10387-1 Option	2	Full Track (844's)
Two 10397-1 Options	3	Full Track (885's only on 170
Three 10397-1 Options	4	Series 700 or 176-4XX models)

Disk Controller Number, Channels of Access, and Transfer Mode Relationships

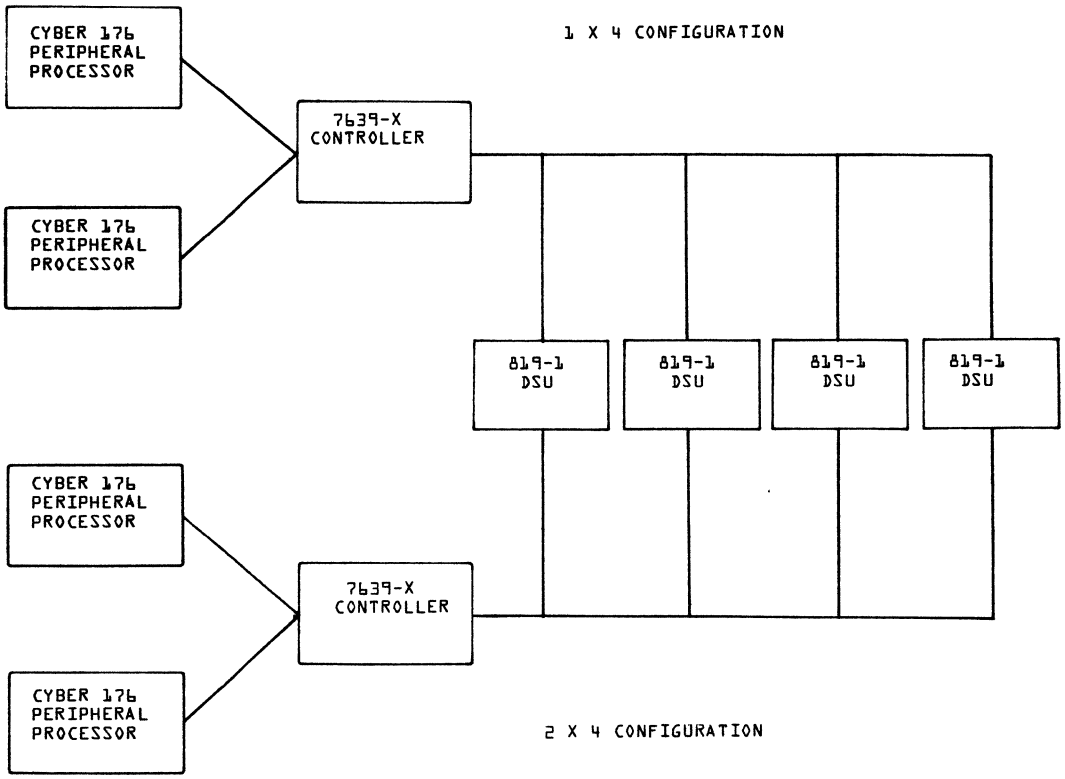
Disk Storage Unit	Controller Accesses	Track Density
844-2	2	200 TPI
-21	2	
844-41	2	400 TPI
-44	4	
885-11	1	662 TPI
-12	2	

Disk Storage Unit, Spindle Controller Accesses, and Track Density Relationships

CYBER 176-4XX 819-1 DISK STORAGE (NOTES 5 & 6)



1 X 4 CONFIGURATION



2 X 4 CONFIGURATION

NOTES : NOS FUTURE SUPPORT PLANS (SUPPORT ON QSS BASIS IS AVAILABLE 4Q79)

(1) NOS WILL SUPPORT A MAXIMUM OF TWELVE 819-1 DRIVES.

(2) CYBER 176-4XX WILL SUPPORT THE FOLLOWING 819-1 ACCESSES:

THREE 1 X 4 CONFIGURATIONS OR
ONE 1 X 4 CONFIGURATION AND ONE 2 X 4 CONFIGURATION

(3) EACH 1 X 4 819-1 ACCESS REQUIRES TWO HI-SPEED MULTIPLEXER CHANNELS.

(4) EACH 2 X 4 819-1 ACCESS REQUIRES FOUR HI-SPEED MULTIPLEXER CHANNELS.

(5) 819 REQUIRES EXTENDED MEMORY OPTION 10375-X AND INITIAL PERIPHERAL PROCESSOR UNIT 10376-410.

(6) CYBER 176-4XX ALSO REQUIRES A MINIMUM OF ONE 7154 OR 7155 AND ONE 844-XX, OR ONE 7155 AND ONE 885.

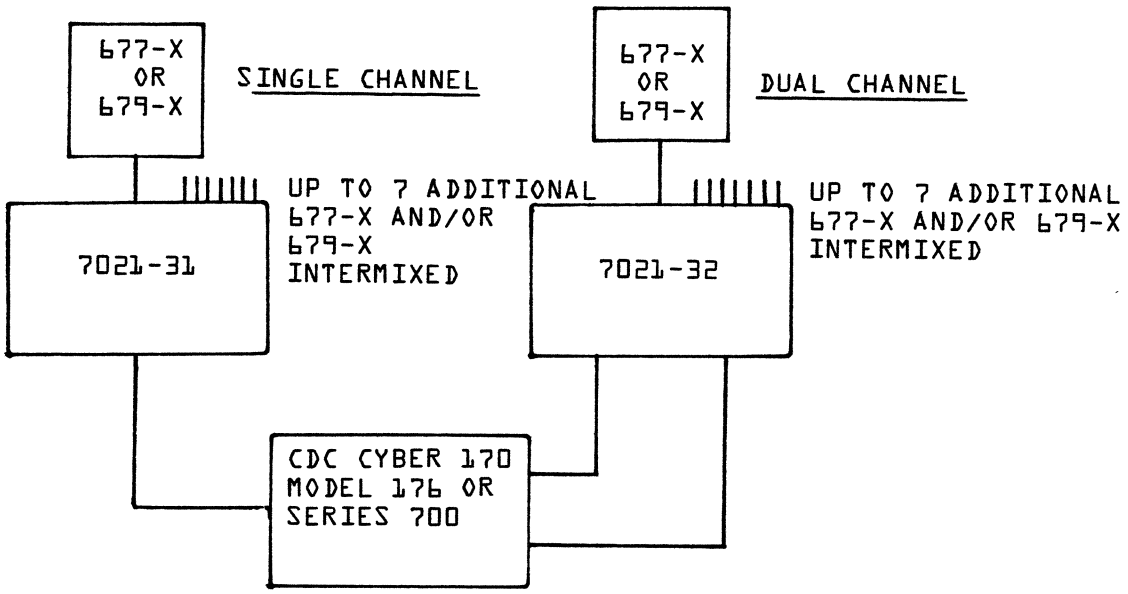
67X MAGNETIC TAPE SUBSYSTEM

7 TRACK

677-2 556/800 BPI NRZI, 100 IPS
677-3 556/800 BPI NRZI, 150 IPS
677-4 556/800 BPI NRZI, 200 IPS

9 TRACK

679-2 800 BPI NRZI AND 1600 BPI PE, 100 IPS
679-3 800 BPI NRZI AND 1600 BPI PE, 150 IPS
679-4 800 BPI NRZI AND 1600 BPI PE, 200 IPS
679-5 6250 BPI GCR AND 1600 BPI PE, 100 IPS
679-6 6250 BPI GCR AND 1600 BPI PE, 150 IPS
679-7 6250 BPI GCR AND 1600 BPI PE, 200 IPS

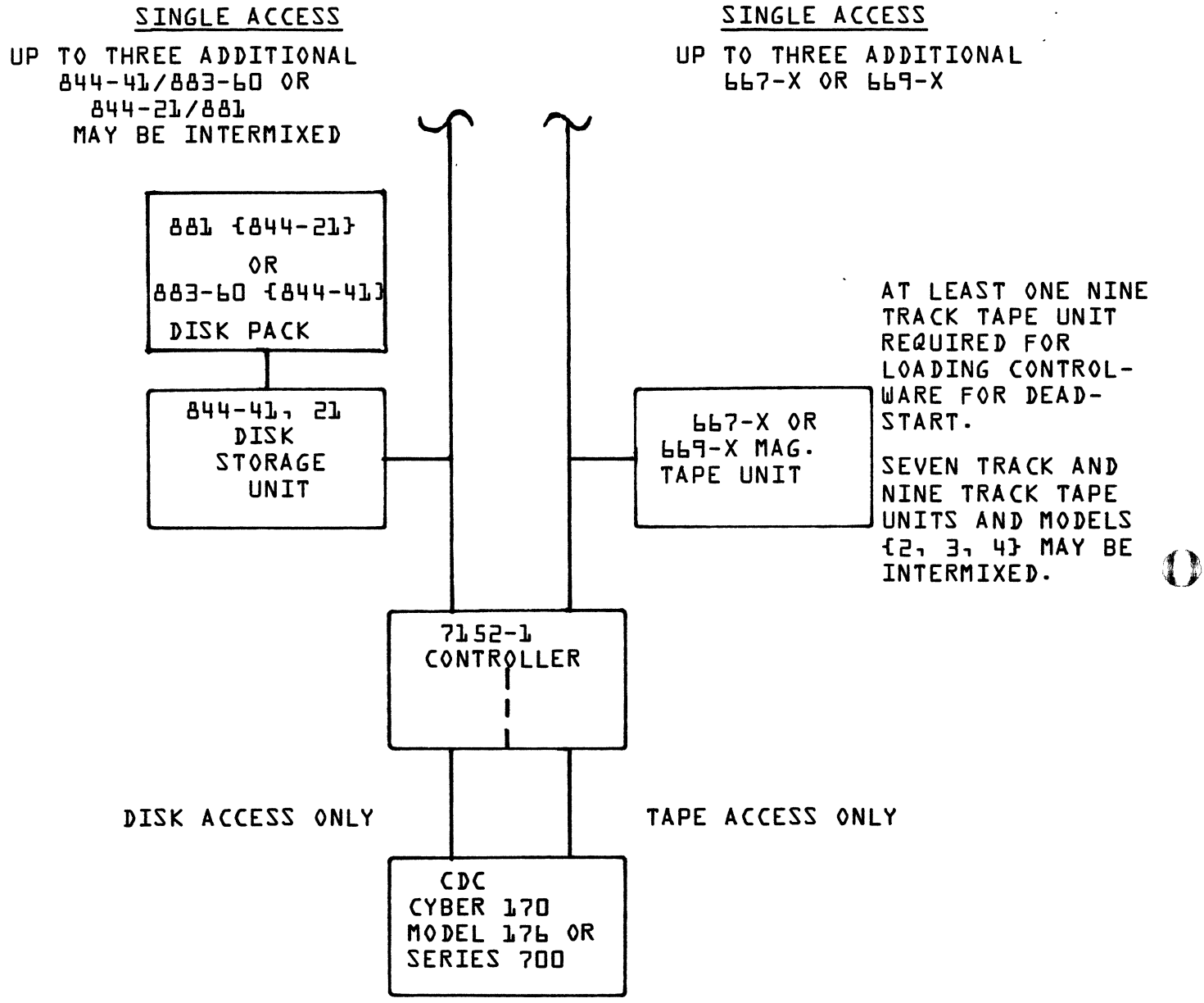


NOTE: 7 TRACK AND 9 TRACK TAPE UNITS CAN BE INTERMIXED SYSTEM CONFIGURATION RESTRICTIONS ARE DETERMINED BY THE DATA-TRANSFER RATES OF THE TAPE UNITS.

- NRZI AND P.E. RECORDING
  - A UNIT OF ANY SPEED MAY BE USED ON ANY CYBER 170, CYBER 70 OR 6000 CONFIGURATION, ASSUMING NO MORE THAN TWO OTHER DEVICES ARE DAISY-CHAINED ON THE CHANNEL AHEAD OF THE CONTROLLER.

- GCR RECORDING
  - 200 IPS NOT ALLOWED ON 6000 OR CYBER 70. MUST BE FIRST ON CYBER 170 CHANNEL. NOT ALLOWED IF MAC SWITCH USED {60144-X OR 10329-X}.
  - 150 IPS MUST BE FIRST OR SECOND ON EITHER CYBER 170, CYBER 70 OR 6000 CHANNEL.
  - 100 IPS MUST BE FIRST OR SECOND ON CYBER 70 OR 6000 CHANNEL. MUST BE FIRST, SECOND OR THIRD ON CYBER 170 CHANNEL.

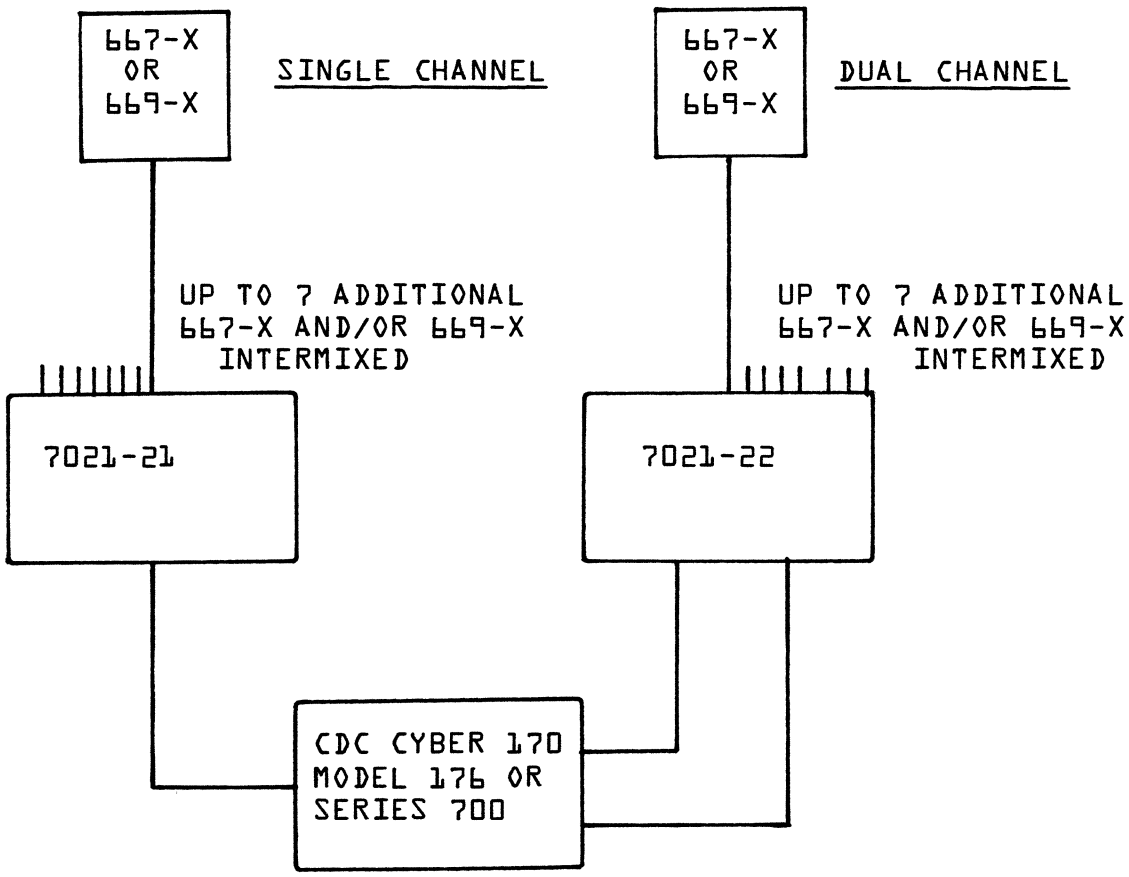
DISK STORAGE/MAGNETIC TAPE
7152-1/844/66X



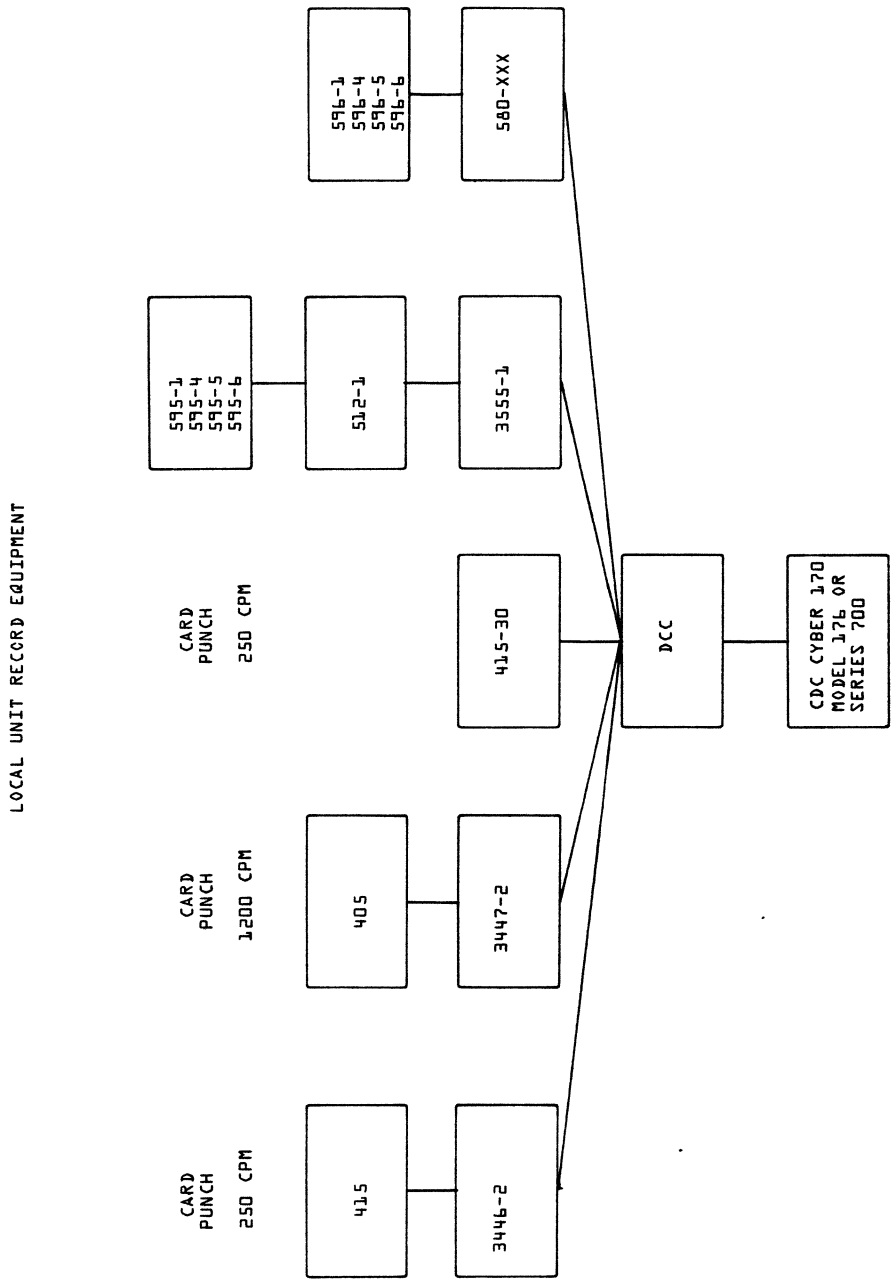
MAGNETIC TAPE SUBSYSTEM

7-TRACK 7/9-TRACK INTERMIXED OR 9-TRACK

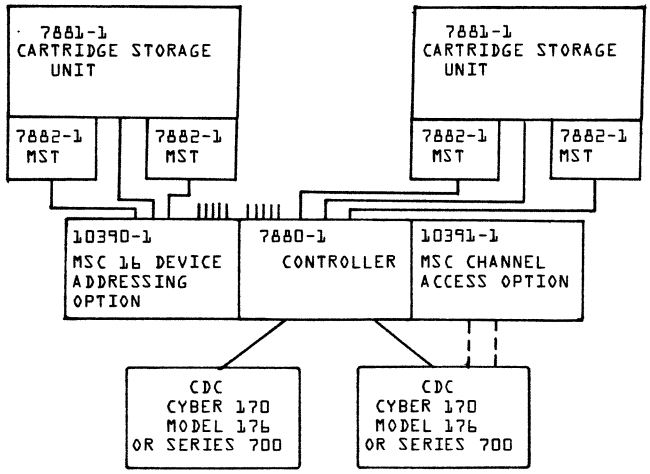
NOTES:
667-X: 667-2, 667-3, 667-4 {7-TRACK}
669-X: 669-2, 669-3, 669-4 {9-TRACK}



7-TRACK AND 9-TRACK TAPE UNITS AND MODELS {2,3,4} MAY BE INTERMIXED.


LOCAL UNIT RECORD EQUIPMENT
CARD PUNCH 250 CPM
CARD PUNCH 1200 CPM
CARD PUNCH 250 CPM
415
405
596-1
596-4
596-5
596-6
595-1
595-4
595-5
595-6
3446-2
3447-2
415-30
512-1
3555-1
580-XXX
DCC
CDC CYBER 170
MODEL 176 OR
SERIES 700

MASS STORAGE FACILITY (MSF)



NOTES

- THE NOS SOFTWARE SUPPORT, FOR THE EQUIPMENT SHOWN IN THE ABOVE DIAGRAM, WILL BE INITIALLY AVAILABLE AFTER INCORPORATION OF THE CORRECTIVE CODE RELEASE (CCR) FOLLOWING NOS 1.4.

- 7882-1 MASS STORAGE TRANSPORTS (MST)

  - A MINIMUM OF TWO MST UNITS PER 7881-1 CSU; A MAXIMUM OF FOUR MST UNITS PER CSU.

- 7880-1 CONTROLLER

  - UP TO FOUR 7880-1'S PER CHANNEL.
  - CAN BE CONNECTED TO UP TO TWO CYBER 170'S OR FOUR IF THE 7880-1 HAS THE 10391-1 OPTION; HOWEVER, THE SOFTWARE WILL ONLY SUPPORT ONE CYBER 170 ACCESSING THE SAME 7880-1 OVER THE SAME PERIOD OF TIME; THE CONNECTIONS TO THE OTHER CYBER 170'S SHOULD ONLY BE USED FOR BACK-UP PURPOSES.
  - EACH 7880-1 CAN CONTROL UP TO 8 DEVICES (EACH DEVICE BEING A 7882-1 MST OR A 7881-1 CSU); THE 10390-1 OPTION (FOR THE 7880-1) PROVIDES CONTROL FOR UP TO 8 ADDITIONAL DEVICES.

- THE INITIAL SOFTWARE SUPPORT UNDER NOS WILL NOT SUPPORT THE 10393-1 CSU ALTERNATE PATH OPTION OR THE 10392-1 MST ALTERNATE PATH OPTION WITHOUT A SYSTEM RESTART.

- MINIMUM CONFIGURATION

  THE MINIMUM CONFIGURATION SUPPORTED IS A CYBER 170-720, ONE 7880-1 CONTROLLER, ONE 7881-1 CARTRIDGE STORAGE UNIT, AND TWO 7882-1 MASS STORAGE UNITS (MST). (SEE THE MINIMUM CONFIGURATION FOR NOS 1 DESCRIBED PREVIOUSLY FOR A LIST OF THE OTHER PERIPHERAL EQUIPMENT REQUIRED).

- MAXIMUM CONFIGURATION

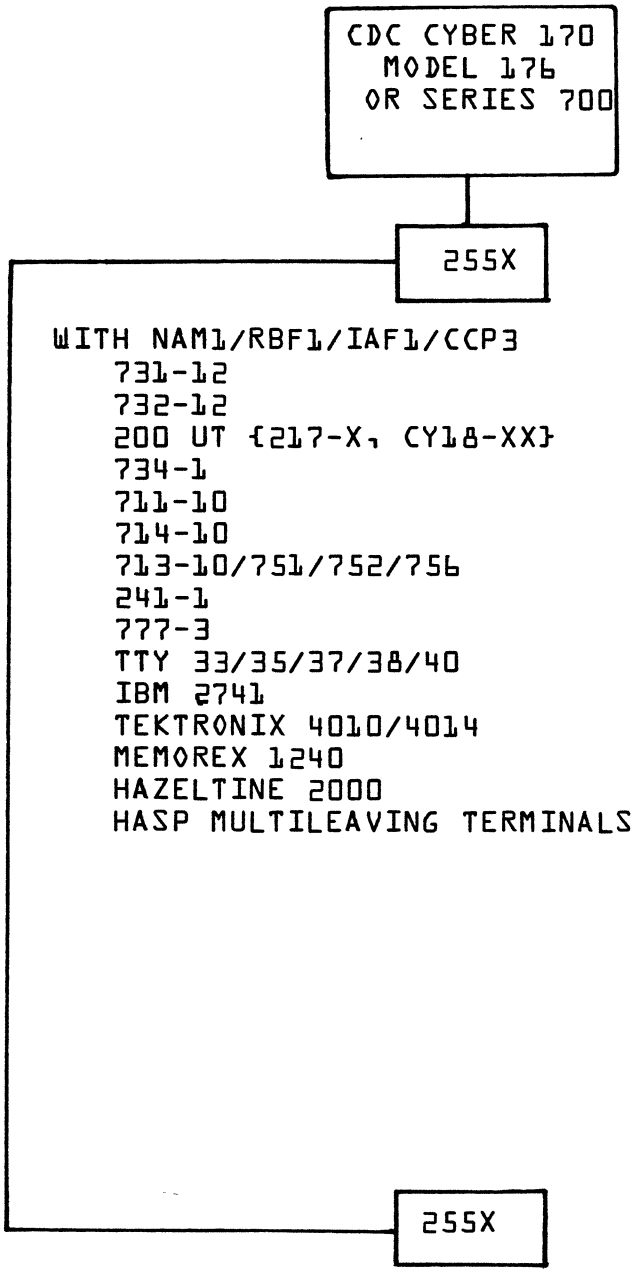
  THE MAXIMUM CONFIGURATION (OF MSF EQUIPMENT) SUPPORTED IS FIVE 7881-1 CSU'S AND SIX 7880-1 CONTROLLERS.

- MULTI-MAINFRAME CONFIGURATION

  - THE CYBER 170 MODEL 176-4XX IS NOT SUPPORTED FOR MULTI-MAINFRAME ACCESS TO THE MSF.
  - MULTI-MAINFRAME ACCESS TO THE MSF SUPPORTS TWO TO FOUR MAINFRAMES.
  - ONLY ONE CYBER 170 (IN A MULTI-MAINFRAME CONFIGURATION) DIRECTLY CONTROLS OR ACCESSES THE MSF EQUIPMENT. (HOWEVER THIS CONTROL CAN BE TRANSFERRED TO ANOTHER MAINFRAME, DIRECTLY LINKED TO THE MSF, IF NECESSARY.) ALL OTHER MAINFRAMES IN THE MULTI-MAINFRAME CONFIGURATION SEND OR RECEIVE DATA TO THE MSF EQUIPMENT INDIRECTLY USING SHARED 'ROTATING' MASS STORAGE (E.G. 844-21). THEREFORE ALL CYBER 170'S IN A MULTI-MAINFRAME CONFIGURATION, WHICH WILL 'SHARE' THE MSF EQUIPMENT, MUST ALSO SHARE 'ROTATING' MASS STORAGE AND ECS.
  - IN A MULTI-MAINFRAME CONFIGURATION WITH SHARED ROTATING MASS STORAGE, ALL MSF EQUIPMENT MUST BE DRIVEN FROM A SINGLE MAINFRAME.

COMMUNICATION SUBSYSTEMS & TERMINALS SUPPORTED

NOS 1



AS REMOTE
NODE SAME
TERMINALS
AS ABOVE
ARE SUPPORTED

REFER TO COMMUNICATION SUBSYSTEMS SECTION FOR SPECIFIC CONFIGURATION AND FEATURE SUPPORT DETAILS.

CYBER 170 SERIES 700 SOFTWARE PRODUCT SET DESCRIPTION FOR ALL NOS PRODUCTS

PRODUCT NUMBER	PRODUCT & SUBPRODUCT NAME	VERSION NUMBER	ARH *	DESCRIPTION
F720-01 F730-01 F750-01 F760-01 F770-01	NOS Network Operating System	1		NOS (Network Operating System) is a collection of interelated programs that manage the CYBER 170 hardware resources and provide services to users. The design of NOS is oriented to distribute the processing capabilities among a large network of terminal users while simultaneously providing traditional local batch services. NOS requires 7X0-02 and either F7X0-21 or F7X0-22 for maintenance.
	COMPASS	3		COMPASS, a subproduct of NOS, provides a comprehensive assembler language for writing CPU and PPU programs. CPU programs can be absolute or relocatable. Symbolic machine instructions provide for expressing all hardware functions. Pseudo instructions control the assembler processing and include versatile, extensive macro and micro facilities.
	CYBER RECORD MANAGER/ BASIC ACCESS METHODS	1		CRM, a subproduct of NOS, provides a general purpose package to perform basic I/O tasks for users. CRM supports both sequential and word addressable file organizations.
	CYBER LOADER	1		The CYBER LOADER, a subproduct of NOS, provides the following loading capabilities: Core Image Loading, Object Module Loading, Basic Loading, Segmentation, and Overlay Generation. User control of the CYBER LOADER is via either Control Statements, User Program Calls, or Loader Object Directives.
	COMMON MEMORY MANAGER	1		CMM, a subproduct of NOS, provides dynamic memory management of the space allocated to a user's job.
	CYBER CONTROL LANGUAGE	1		CCL, a subproduct of NOS provides the capability to control the sequence in which the control cards are processed.
	UPDATE	1		UPDATE, a subproduct of NOS, provides a means of maintaining source decks in a conveniently updatable, compressed format.
	8 BIT SUBROUTINE PACKAGE	1	*	A subproduct of NOS designed to enable a FORTRAN or COBOL programmer to read, write, and manipulate sequential files and data using 8-bit character sets. Supports IBM 360/370 sequential format (tape) files, EBCDIC and ASCII punched card decks. I/O routines enable translation between external and internal data types and character sets, and operate on a record-by-record basis. A set of utility routines manipulate character strings in Display Code, ASCII, and EBCDIC. Complete character set translation and mixed character set string comparison routines are provided. Two additional routines allow improved file utilization; they compress 8-bit data from internal working form to a more compact form for storage, then expand it again. Additional Required Hardware: 9-Track Tape Transports

LEGEND ARH (Additional Required Hardware) An asterisk in this column indicates hardware in addition to the minimum computer hardware is required. Additional hardware required is indicated under description of product.

CYBER 170 SERIES 700 SOFTWARE PRODUCT SET DESCRIPTION FOR ALL NOS PRODUCTS

PRODUCT NUMBER	PRODUCT & SUBPRODUCT NAME	VERSION NUMBER	ARH *	DESCRIPTION
	FORM	1		A NOS subproduct conversion aid for converting from one file organization to another. FORM, for example, may be used to convert a SYSTEM/360 file organization to a CYBER file organization or to convert a CYBER CRM direct file organization to an indexed sequential organization.
F720-02 F730-02 F750-02 F760-02 F770-02	MAINTENANCE PACKAGE	1		A maintenance package that includes a collection of programs used in the installation and maintenance of NOS and its product set. The Maintenance Package requires F7X0-01.
F720-03 F730-03 F750-03 F760-03 F770-03	MULTI-MAINFRAME	1		This feature is designed to provide a mechanism by which up to four computers (6000/CYBER 70/CYBER 170) may access shared mass storage devices. This allows the mainframe to share permanent files residing on such devices. Each mainframe on the complex may operate in shared mode or in stand alone mode; however, two machines may not access the same device unless both are in shared mode. A device is considered shared if it can be accessed by more than one of the mainframes. It need not be accessible to all the mainframes in the complex. ECS will be used as the means and media for controlling shared mass storage and inter-mainframe communications. Multi-mainframe capability is not supported on a CYBER 176-4XX. Note - Capability does not include shared I/O queues. Multi-mainframes capability requires F7X0-01. Additional Required Hardware: ECS
F720-04 F730-04 F750-04 F760-04 F770-04	MASS STORAGE SYSTEM	1	*	The MSS provides the software necessary to support the Mass Storage Facility (MSF). Mass Storage System requires F7X0-01. Additional Required Hardware: MSF
F720-10 F730-10 F750-10 F760-10 F770-10	NETWORK ACCESS METHOD	1	*	The Network Access Method (NAM) provides a generalized method for CYBER 70/170 system facilities and user application programs to access a telecommunications network. NAM provides the CYBER 70/170 interface with the CCP 3 program running and user application programs to transmit messages to the communications network in several modes - transparent, virtual terminal/display code, and virtual terminal/ASCII code. Transparent mode allows the user application program or system facility to control the operation of a terminal completely while the virtual terminal modes free these programs of the necessity to provide the majority of the terminal control codes - only display code or ASCII code messages need to be accommodated. NAM interfaces terminals to the Remote Batch Facility (RBF), Interactive Facility (IAF) and Transaction Facility (TAF), NAM requires F7X0-01 and N221-01. Additional Hardware Required: 255X

LEGEND ARH (Additional Required Hardware) An asterisk in this column indicates hardware in addition to the minimum computer hardware is required. Additional hardware required is indicated under description of product.

CYBER 170 SERIES 700 SOFTWARE PRODUCT SET DESCRIPTION FOR ALL NOS PRODUCTS

PRODUCT NUMBER	PRODUCT & SUBPRODUCT NAME	VERSION NUMBER	ARH *	DESCRIPTION
F720-11 F730-11 F750-11 F760-11 F770-11	INTERACTIVE FACILITY	1		Interactive Facility (IAF) provides interactive terminal services. IAF requires F7X0-10.
F720-12 F730-12 F750-12 F760-12 F770-12	REMOTE BATCH FACILITY	1		The Remote Batch Facility (RBF) provides for batch file transmission between a remote Mode 4A terminal or HASP multileaving terminal and the job queue maintained by the host operating system on rotating mass storage. With RBF, the user send data files to the input queues and receives data files from the output queues. RBF performs character conversion and mapping and allows the user to control the disposition and transmission of his files through a terminal command language. RBF also supplies the user with status information concerning his files and devices. RBF requires F7X0-10.
F720-13 F730-13 F750-13 F760-13 F770-13	TRANSACTION FACILITY	1		Product provides a general purpose transaction facility that coexists with the other NOS subsystems. A Transaction is defined as a request by a terminal to perform a predefined operation (or series of operations) called a task. TAF provides interface and communication procedures enabling it to utilized the network access method for synchronous transaction terminal communications. TAF supports interfaces to COMPASS, COBOL 5 and FORTRAN 4 products. TAF requires F7X0-10.
F720-14 F730-14 F750-14 F760-14 F770-14	NETWORK UTILITIES	1		The major element of Network Utilities 1 under NOS 1 is the Network Product Stimulator. The Stimulator is a test package that allows a controlled message load to be presented to the CYBER network software without the use of external communications equipment. The Stimulator consists of a script compiler, a stimulator and a data reduction post processor. Network Utilities requires F7X0-10.
F720-15 F730-15 F750-15 F760-15 F770-15	CYBER CROSS SYSTEM	1		The CYBER CROSS System, which executes on a CYBER 170 under NOS, permits the generation of binary code which can be loaded and executed on a CYBER 18 or 255X.
F720-18 F730-18 F750-18 F760-18 F770-18	MESSAGE CONTROL SYSTEM	1		Provides for COBOL 5 programs the ability to communicate with local and remote communications devices. It allows a given program to communicate with single or multiple terminals and multiple programs to communicate with a single terminal or multiple terminals. It places messages in output queues which are sent to their destination via NAM, and it obtains messages from sources via NAM and places them in input queues to be requested by a COBOL program. It may invoke specific COBOL applications in response to some event, and it maintains the capability to enable or disable queues. The CYBER CROSS SYSTEM requires F7X0-01.
F720-20 F730-20 F750-20 F760-20 F770-20	FORTRAN EXTENDED	5		FORmula TRANslator (FORTRAN) allows programs to be written in a mathematical-type language. It was originally conceived for use on scientific problems but is now widely adapted for most commercial problems as well. The FORTRAN EXTENDED compiler produces highly optimized binary code. FORTRAN EXTENDED is a superset of full ANSI specifications developed by the FORTRAN Standards Committee X3J3. This version upgrades the compiler to the new FORTRAN ANS 1978 specifications and adds the interactive debug package (IDP) FORTRAN EXTENDED requires F7X0-01 and F7X0-11 if interactive usage is desired.

LEGEND ARH (Additional Required Hardware) An asterisk in this column indicates hardware in addition to the minimum computer hardware is required. Additional hardware required is indicated under description of product.

CYBER 170 SERIES 700 SOFTWARE PRODUCT SET DESCRIPTION FOR ALL NOS PRODUCTS

PRODUCT NUMBER	PRODUCT & SUBPRODUCT NAME	VERSION NUMBER	ARH *	DESCRIPTION
F720-21 F730-21 F750-21 F760-21 F770-21	FORTRAN EXTENDED	4		FORmula TRANslator compiler which complies with ANSI-66 specification and produces highly optimized binary code. FORTRAN EXTENDED requires F7X0-01 and F7X0-11 if interactive usage is desired.
F720-22 F730-22 F750-22 F760-22 F770-22	FORTRAN EXTENDED	4		FORmula TRANslator complier version 4 (F7X0-21) that includes an interactive option. F7X0-01 and F7X0-10 are required.
F720-23 F730-23 F750-23 F760-23 F770-23	COBOL	5		COmmon Business Oriented Language is a compiler designed for commercial data processing. The COBOL 5.0 compiler addresses the 1974 ANSI specifications. The initial release implements the highest level of 10 of the 12 modules defined in the specification. The COMMUNICATIONS module is not included and only a subset of the low-level of the INTER-PROGRAM COMMUNICATIONS is included. COBOL 5 is a companion product to COBOL 4 and as such is not fully compatible with its predecessor. A COBOL 4 to COBOL 5 conversion aids program exists which can be use to help bridge the gap. In addition to addressing the 1974 specification, COBOL 5 includes the following added capabilities: o Direct Access, Actual Key and Word Address file organizations. o Secondary (for ECS access) and Common storage sections. o INITIALIZE verb to set Data Division items to initial values. o Floating point numeric literals. o Variable length records. o Ability to set and clear sense switches. o File Organizations other than sequential in the GIVING phrase of SORT or MERGE. o Ability to change collating sequences dynamically with the SET statement. o QUOTE IS APOSTROPHE can be specified to change the quote character. o Duplicate alternate keys can be ordered by prime key. o FILLER can be used anywhere in a record. o Ability to set character codes for files. o COMP-1 and COMP-2 converted to readable format with signs for DISPLAY. F7X0-27 is required plus F7X0-11 if interactive usage is required and F7X0-40 if data base management control is desired.

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CYBER 170 SERIES 700 SOFTWARE PRODUCT SET DESCRIPTION FOR ALL NOS PRODUCTS

PRODUCT NUMBER	PRODUCT & SUBPRODUCT NAME	VERSION NUMBER	ARH *	DESCRIPTION
F720-24 F730-24 F750-24 F760-24 F770-24	INTERACTIVE BASIC	3		Beginner's All-purpose Symbolic Instruction Code is a procedure-level computer language that is well-suited for time-sharing. The BASIC subsystem enables both novice and experienced programmers to readily create and execute interactive programs in time sharing environment. This version of INTERACTIVE BASIC provides many capabilities not available in BASIC 2. For example, word addressable random I/O, enhanced print formatting, multiple argument and multiple line user defined functions, extended string variable names, a string concatenation operator, logical connective operators and access to external non-BASIC subroutines and full use of the escape code ASCII extended character set. BASIC requires F7X0-01 and F7X0-11.
F720-25 F730-25 F750-25 F760-25 F770-25	APL	2		A Programming Language is a versatile language providing a direct means for problem solving by students, engineers, scientists, educators, and businessmen. It is used interactively on typewriter or cathode ray terminal (CRT). APL version 2 is characterized by high efficiency, an advance file system, a complete set of system functions, error trapping capability, and a batch facility. APL requires F7X0-11.
F720-26 F730-26 F750-26 F760-26 F770-26	PL/I	1		Programming Language/I has some features characterized by FORTRAN and incorporates some of the best features of other languages, such as string manipulation, data structures, and extensive editing capabilities. This version is a non-optimizing compiler for an upwards compatible subset of the ANSI/ECMA Language. Missing features will include the DEFAULT statement, aggregate operations and data directed I/O. PL/I requires F7X0-01.

LEGEND ARH (Additional Required Hardware) An asterisk in this column indicates hardware in addition to the minimum computer hardware is required. Additional hardware required is indicated under description of product.

CYBER 170 SERIES 700 SOFTWARE PRODUCT SET DESCRIPTION FOR ALL NOS PRODUCTS

PRODUCT NUMBER	PRODUCT & SUBPRODUCT NAME	VERSION NUMBER	ARH *	DESCRIPTION
F720-27 F730-27 F750-27 F760-27 F770-27	SORT/MERGE	4		The SORT/MERGE product is a special application program that accepts input from tape or disk and constructs, according to user specifications, sort output on tape or disk. This product can be used for sort only, merge only, and sort-and-merge operations. This version provides increased speed, improved reliability and an interface with the CYBER RECORD MANAGER. OPERATING OPTIONS DISK o Additional disks will provide improved: - Speed o Two additional tapes will provde improved: - Speed o Three tapes can be used for disk overflow, others for input or output. o Addition core will provide improved: - Speed TAPE o Two additional tapes are required o More additional tapes will provide improved: - Speed o Additional core will provide improved: - Speed o Tapes can be assigned to disk. F7X0-01 is required.
F720-29 F730-29 F750-29 F760-29 F770-29	CYBER INTERACTIVE DEBUG	1		This product will prove interactive, symbolic level, debugging capabilities such as: - Conditional breakpoints and traps for temporarily suspending program execution. - Program suspension via terminal interrupts. - Commands to interrogate and change program memory. - Commands to restart program execution at any given point. F7X0-01 is required.
F720-30 F730-30 F750-30 F760-30 F770-30	ALGOL-60	5		ALGOrithmic Language is the international data processing language used to express problems solving formulas. The ALGOL compiler supports the full ALGOL-60 language specification and includes the Knuth I/O specifications. It does not include all of the language extensions or interactive capabilities of ALGOL-60 4. It does support automatic field length management and performance is better than ALGOL-60 4. F7X0-01 is required.
F720-31 F730-31 F750-31 F760-31 F770-31	IMSL	6		International Mathematical and Statistical Library.
F720-32 F730-32 F750-32 F760-32 F770-32	FORTRAN 4/5 CONVERSION AID	1		Conversion aid for converting from FORTRAN 4 to 5.

LEGEND ARH (Additional Required Hardware) An asterisk in this column indicates hardware in addition to the minimum computer hardware is required. Additional hardware required is indicated under description of product.

CYBER 170 SERIES 700 SOFTWARE PRODUCT SET DESCRIPTION FOR ALL NOS PRODUCTS

PRODUCT NUMBER	PRODUCT & SUBPRODUCT NAME	VERSION NUMBER	ARH *	DESCRIPTION
F720-40 F730-40 F750-40 F760-40 F770-40	CYBER DATA BASE CONTROL SYSTEM	2		CDCS 2 under NOS allows multiple independent programs (at separate user control points) to concurrently update a data base using the Indexed Sequential and Multiple Index Processor access methods of CRM with lockout control at the logical record level. It provides data privacy at the file level. F7X0-01, and F7X0-23 or F7X0-43 are required.
F720-41 F730-41 F750-41 F760-41 F770-41	DATA DESCRIPTION LANGUAGE	3		DDL 3 under NOS is an extension of DDL 2 including support of Area-Level privacy and improved data independence between application programs and COBOL subschema compilation. DDL 3 generates record mapping code to improve CDCS 2 record mapping performance. F7X0-27 is required.
F720-42 F730-42 F750-42 F760-42 F770-42	QUERY/UPDATE	3		This product replaces all the capabilities of QU 2 and brings with it a major breakthrough in performance and power. Using the Boolean List Processor, it interfaces directly to CRM's Multiple Index Capability to provide optional accessability of qualifying records via alternate access paths and indexes. The report writer capability has also been enhanced by a "compile" option in addition to its normal interpretive mode. Additional features are (1) crossfile relationships (2) degree of commodity with CDCS 1 for enhanced recovery (3) query only capability making use of IS, DA and MIP read-only packages of CRM (4) character-string processing. F7X0-41 is required and F7X0-11 if interactive usage is desired.
F720-43 F730-43 F750-43 F760-43 F770-43	FORTRAN DATA BASE FACILITY	1		The FORTRAN Data Base Facility provides FORTRAN users access to DMS-170. FDBF consists of three components: A FORTRAN subschema compiler, a preprocessor to the FORTRAN compiler, and a set of routines to provide the interface to a FORTRAN application program and CDCS.
F720-44 F730-44 F750-44 F760-44 F770-44	TOTAL UNIVERSAL	2		A data base management system developed by Cincom systems, Inc. embodies a network data structure philosophy. Relatiohships from one file may be made on a direct basis to other files within the data base using a chaining/threading technique. Files may be managed on an integrated basis within one data base. TOTAL includes a Data Base Definition Language (DBDL) which is used to describe and declare the data base and a Data Manipulation Language (DML) which functions in conjunction with the following host languages: (COBOL, FORTRAN and COMPASS) at the CALL or MACRO level. It is modular and evolutionary in design and use, provides a significant degree of data independence, and eliminates data redundancy, permits data reliability, ensures data integrity reliability and data base recovery. Also achieves optimum performance and efficiency through input/output buffer pool sharing and the eliminiation of external directories and indexes. TOTAL UNIVERSAL runs within the users field length. TOTAL UNIVERSAL requires F7X0-01 plus F7X0-23 (COBOL5)for maintenance.

LEGEND ARH (Additional Required Hardware) An asterisk in this column indicates hardware in addition to the minimum computer hardware is required. Additional hardware required is indicated under description of product.

CYBER 170 SERIES 700 SOFTWARE PRODUCT SET DESCRIPTION FOR ALL NOS PRODUCTS

PRODUCT NUMBER	PRODUCT & SUBPRODUCT NAME	VERSION NUMBER	ARH *	DESCRIPTION
F720-47 F730-47 F750-47 F760-47 F770-47	INFORMATION MANAGEMENT FACILITY	1		Information Management Facility (IMF) is an information base modeling tool which can be used as a production information base management system in many cases. IMF conforms to the architecture stated in the American National Standard Institute (ANSI) SPARC study on data base management system. IMF has the ability to support hierarchical views and/or network views of the information base. IMF interfaces to FORTRAN, COBOL and Query Update. The precompiler approach is used to support these languages and provide error checking of the IMF requests. IMF embodies a three-schema architecture (conceptual, internal, and external) that distinguishes it from existing data base management systems. IMF includes a data description language (DDL) used to describe the conceptual schema, a logical description of the information to be managed by IMF. IMF operates under Network Operating System on CYBER 70/170/6000 in batch, remote-batch and timesharing modes. A training class for a maximum of 20 customer personnel consisting of 15 instructor days will be provided at the customer's facilities at no additional charges. Information Analysis Seminar - A five-day course designed to provide full understanding of the Information Analysis methodology and the new ENALIM diagramming technique. The course covers the fundamentals of information system design. Participants will be taught how to analyze sentences bearing information object name types, sentence types and constraints and will build ENALIM diagram. Information Base Usage - A five-day course emphasizing the practical implementation of Information Analysis using IMF. Tutorials will include a review of Information Analysis methodology, the three-schema architecture for Information Management Systems, principles of navigation and program design. Students are trained in compiling sentence base conceptual schemas, internal schemas and navigational external schemas. Participants will also write Data Manupulation Language (DML) update and retrieval programs and study precompilation features and utilities. Prototype Development Workshop - A five-day course designed to provide a practical application of IA and IMF. It will involve intensive use of IMF including Query Update to load, test, and verify the information base.
F720-60 F730-60 F750-60 F760-60 F770-60	TERMINAL INDEPENDENT GRAPHICS SYSTEM	1		Terminal Independent Graphics Systems (TIGS) is a general purpose subrountine package providing display generation in either two dimensional mode (2D) or three dimensional mode (3D) and interaction capability for a general class of graphics terminals. Primary design objectives were transportability, maintainability and ease of use. Features supported by TIGS 1 include line, arc, multi-line plot, text and dot primitives with resettable attributes such as line style, character size, intensity, font, color, transformation matrix, etc. The package uses virtual devices such as locators, keyboards, picking devices and function keys which can represent a wide range of physical devices. TIGS 1 support 2D and 3D viewing transformations for clipping and window to viewport mapping and coordinate transformations.

LEGEND ARH (Additional Required Hardware) An asterisk in this column indicates hardware in addition to the minimum computer hardware is required. Additional hardware required is indicated under description of product.

CYBER 170 SERIES 700 SOFTWARE PRODUCT SET DESCRIPTION FOR ALL NOS PRODUCTS

PRODUCT NUMBER	PRODUCT & SUBPRODUCT NAME	VERSION NUMBER	ARH *	DESCRIPTION
				A device independent neutral display file which contains information describing all segments, pictures, windows and viewports is used. The file may be saved and used in a later job with a differet display device. The neutral display file concept also permits attributes (e.g. line style, font, etc.) to be respecified without the redefinition of the segment. Version 1.0 of TIGS has been implemented to run on Control Data 6000 series, CYBER 70 series and CYBER 170 series computers under NOS/BE. A TIGS 1 post-processor is also required for installation and operation of this product. TIGS requires F7X0-10, F7X0-21, or F7X0-22, and F7X0-61 or F7X0-62.
F720-61 F730-61 F750-61 F760-61 F770-61	TEKTRONIX 401X POST-PROCESSOR	1		Tektronix 401X post-processor is a subroutine package providing display generation and interaction with the Tektronix 4006 and 4010-4015. The display is produced from the neutral display file generated by the TIGS 1 pre-processor. Locators supported are the cross-hairs and tablet. F7X0-60 is required.
F720-62 F730-62 F750-62 F770-62	SANDERS GRAPHICS 7 POST-PROCESSOR F760-62			The Sanders Post-Processor for the Terminal Independent Graphics System (TIGS) is a Sanders Graphic 7 intelligent refresh graphics terminal. The post-processor routines read graphics information from a pre-processor generated Neutral Display (NDF) and produce the appropriate commands with, when sent to the Sanders terminal, cause the graphics information to be displayed. The minimum hardware configuration necessary to utilize this post-processor consists of a CRT display, a terminal controller, unit, and an alphanumeric keyboard with function keys. The controller unit must be equipped with an asynchronous interface board and a 4K ROM board containing Sanders GSS4 firmware. Refresh memory consists of 8K words, expandable to 24K words. Hardware options supported are lightpen and trackball (or joystick) locators, and a hardcopy unit. Features supported by the Sanders post-processor include selective erase, four hardware line styles, four hardware character sizes, eight intensity levels, highlighting and 90° character rotation. Communication is supported at baud rates of 800 or 1200 in asynchronous mode. F7X0-60 is required.
F720-63 F730-63 F750-63 F760-63 F770-63	CDC-795 DIGIGRAPHICS V POST-PROCESSOR			The CDC-795 Post-Processor for the Terminal Independent Graphics System (TIGS) is a subroutine package which interfaces to a CDC-795 DIGIGRAPHICS intelligent refresh graphics terminal. The post-processor routines read graphics information from a pre-processor generated Neutral Display (NDF) and produce the appropriate commands with, when sent to the CDC-795 terminal, cause the graphics information to be displayed.

LEGEND ARH (Additional Required Hardware) An asterisk in this column indicates hardware in addition to the minimum computer hardware is required. Additional hardware required is indicated under description of product.

CYBER 170 SERIES 700 SOFTWARE PRODUCT SET DESCRIPTION FOR ALL NOS PRODUCTS

PRODUCT NUMBER	PRODUCT & SUBPRODUCT NAME	VERSION NUMBER	ARH *	DESCRIPTION
				The minimum hardware configuration necessary to utilize this post-processor consists of a CRT display, a terminal controller, unit, and an alphanumeric keyboard with function keys. The controller unit must be equipped with an asynchronous interface board and a 4K ROM board containing Sanders GSS4 firmware. Refresh memory consists of 8K words, expandable to 24K words. Hardware options supported are lightpen and trackball (or joystick) locators, and a hardcopy unit. Features supported by the Sanders post-processor include selective erase, four hardware line styles, four hardware character sizes, eight intensity levels, highlighting and 90° character rotation. Communication is supported at baud rates of 800 or 1200 in asynchronous mode. F7X0-60 is required.
F720-70 F730-70 F750-70 F760-70 F770-70	UNIPLOT 3	3		The UNIPLOT 3 plotting system consists of three components: o A set of neutral picture routines o A neutral picture file o A post-processor These components communicate via files of a standard format. The neutral plot routines are called by application programs in the same manner as standard CalComp routines. Instead of producing a file that directly drives a CalComp plotter, the routines produce a neutral picture file. The UNIPLOT post-processor can then be instructed to read the neutral picutre file, operate on the graphics data in various ways, and produce a file that will be displayed or plotted on any supported user-selected device. The neutral plot routines provide compatibility with standard CalComp interface calls plus additional CDC plotting capabilities. Standard routines include: PLOT (PLOTS, FACTOR, WHERE, NEWPEN), SYMBOL, NUMBER, SCALE, AXIS, and LINE. Optional plot routine extensions are also available: o Error code return o Dashed and dotted lines o Invoked use of scale and offset o Picture rotation o Curve generation (arcs and cubic interpolation) o Plot size and orientation control o Drawing and figure definition o Mirroring o Optional metric units UNIPLOT 3 requires F7X0-71 and/or F7X0-72, and/or F7X0-73.

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CYBER 170 SERIES 700 SOFTWARE PRODUCT SET DESCRIPTION FOR ALL NOS PRODUCTS

PRODUCT NUMBER	PRODUCT & SUBPRODUCT NAME	VERSION NUMBER	ARH *	DESCRIPTION
F720-71 F730-71 F750-71 F760-71 F770-71	CALCOMP 906 POST-PROCESSOR UNDER UNIPLOT	3		The UNIPLOT 3 CalComp 906 Post-Processor contains device dependent code to drive the CalComp 906 controller and compatible plotter. Pictures are produced from the neutral picture file by UNIPLOT 3 in conjunction with the CalComp 906 device dependent code. CALCOMP 906 requires F7X0-70.
F720-72 F730-72 F750-72 F760-72 F770-72	HOUSTON INSTRUMENT BTC-7 POST PROCESSOR UNDER UNIPLOT	3		The UNIPLOT 3 Houston Instrument BTC-7 Post-Processor contains device dependent code to drive the Houston Instrument BTC-7 controller and compatible plotter. Pictures are produced from the neutral picture file by UNIPLOT 3 in conjunction with the Houston Instrument BTC-7 device dependent code. The post-processor requires F7X0-70.
F720-73 F730-73 F750-73 F760-73 F770-73	TEKTRONIX 401X POST-PROCESSOR UNDER UNIPLOT	3		The UNIPLOT 3 Tektronix 401X Post-Processor contains device dependent code to drive the Tektronix terminal. Pictures are produced from the neutral picture file by UIPLOT 3 in conjunction with the Tektronix device dependent code. The post-processor requires F7X0-70.
F720-80 F730-80 F750-80 F760-80 F770-80	CONVERSION AIDS SUBSYSTEM 2	1		Conversion aids are a set of programs that will convert 3000L ANSI COBOL and FORTRAN SOURCE to the current CYBER 170 product set levels. Data files are also converted. Conversion aids requires F7X0-01.
F720-81 F730-81 F750-81 F760-81 F770-81	NOS SCOPE 2 STATION	1	*	Provides for link communication between one CYBER 70L/170/7X0 and one 7600, CYBER 70 Model 176 or CYBER 170 Model 176 running SCOPE 2. Link communications allow transmittal of NOS resident permanent files and linked operator displays and commands. Tape staging from/to the CYBER 70L and interface to the SCOPE 2 connected I/O feature are also provided. The NOS-SCOPE 2 station will support a single link to SCOPE 2. SCOPE 2 will support up to three stations (any combination of NOS-SCOPE 2 Stations and NOS/BE Enhanced Stations) per FLPP. The minimum required field length for a "representative job" is 14K octal for spooling INPUT, OUTPUT, PUNCH files. Additional required hardware: The hardware must be linked via a 6683-2 and 7683-1 coupler pair.
F720-82 F730-82 F750-82 F760-82 F770-82	NOS/BE to NOS CONVERSION	1		The Conversion Aid consists of three utilities, each of which only runs on NOS: LOADBE - Designed to load a single specific permanent file from a NOS/BE DUMPF archive tape onto NOS mass storage. Options are provided to change the file name, user permissions, file category, file type, etc. This utility loads a single file per call.

LEGEND ARH (Additional Required Hardware) An asterisk in this column indicates hardware in addition to the minimum computer hardware is required. Additional hardware required is indicated under description of product.

CYBER 170 SERIES 700 SOFTWARE PRODUCT SET DESCRIPTION FOR ALL NOS PRODUCTS

PRODUCT NUMBER	PRODUCT & SUBPRODUCT NAME	VERSION NUMBER	ARH *	DESCRIPTION
				BELOAD Developed for the site operations staff, this utility can load multiple files from a NOS/BE DUMPF archive tape onto NOS mass storage. Files are assigned to the user name(s) specified. Additional options, similar to those of LOADBE, exist on a per file basis.
				HELPBE Provides a handy on-line interactive reference of NOS equivalent to NOS/BE INTERCOM and EDITOR commands and job control statements. The interactive terminal user supplies a NOS/BE command and HELPBE returns the NOS equivalent and a brief description of available keywords.
F720-101 F730-101 F750-101 F760-101 F770-101	GPSS-V	3		General purpose simulation system is designed for modeling of real situations as affected by changes over time intervals and corresponding events which occur during the simulation. Features free format input. Floating point number capabilities. No IMS available. F7X0-01 is required.
F720-102 F730-102 F750-102 F760-102 F770-102 F799-102	APEX-III USAGE PACKAGE	1		APEX III is a program for the solution of linear programming problems. These problems involve the minimization or maximization of a linear function subject to equality or inequality constraints. A large number of common optimization problems may be formulated as linear programming problems, e.g., refinery scheduling, distribution and optimization, warehouse location, optimal planning. F7X0-21 or F7X0-22 is required. The product set is composed of four products: 1. Out-of-Core Subsystem. The Base System plus an out-of-core capability of using extended core storage, large core memory, or disk, as additional storage. 2. Mixed Integer Programming. Provides a mixed integer programming capability including binary and general integer variables and special ordered sets, Type 1 and 2. 3. Matrix Reduction. Provides a matrix reduction (reduce) capability to the APEX III package including regeneration of solution to the original problem. 4. Parametrics Option. Provides the capabiliy of varying the requirements vector or the cost function as a linear function of two requirements vectors or cost functions.

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CYBER 170 SERIES 700 SOFTWARE PRODUCT SET DESCRIPTION FOR ALL NOS PRODUCTS

PRODUCT NUMBER	PRODUCT & SUBPRODUCT NAME	VERSION NUMBER	ARH *	DESCRIPTION
F720-103 F730-103 F750-103 F760-103 F770-103 F799-103	PDS/MAGEN	1		PDS/MaGen is a complete, yet easy-to-learn, matrix generation and report writing system. PDS/MaGen interfaces with and complements the APEX-III linear programming product and aids the user in generating models without regard to the syntax, formats and repetitious data entry requirements characteristic of linear programming programs. PDS/MaGen allows the user freedom to focus efforts on the structure of the problem and to significantly reduce mod development time and cost. Additional features and benefits of PDS/MaGen are: o Generation of linear programming matrices in MPS format for access by APEX-III o Database generation and maintenance o User-tailored report generation (by accessing the APEX-III solution) o A data structure that is independent of generator programs making it easier to execute multiple runs of varying size and/or detail o Low core requirements (only non-zero data elements are stored internally) o In-core operation for fast execution PDS/MaGen was developed by and is proprietary to Haverly Systems, Inc. PDS/MaGen requires F7X0-21 or F7X0-22.
F720-104 F730-104 F750-104 F760-104 F770-104 F799-104	SIMSCRIPT	4.2		SIMSCRIPT II.5 is a powerful, general purpose scientific programming language. Although it was developed primarily for discrete event simulation programming, it is equallyu well-suited for non-simulation programming. Features of interest to the general user include: o Flexible, free-form syntax o I/O statements similar to those of FORTRAN o Partial block structure for structured programming o Recursive subroutine capabilities o Report generator facilites o A sophisticated data structure concept with a world view composed of entries, atrributes and sets. In addition, FORTRAN EXTENDED subroutines can be incorporated into SIMSCRIPT II.5 programs and vice-versa. The SIMSCRIPT II.5 system has two different methods for building simulation models. The one most familiar to simulation programmers uses special kinds of entites known as event notices which re scheduled at appropriate times during the simulation. Alternately, the simulation model can be based on processes and resources. In either case, a wide variety of statistical functions, including random table look-up, enable the user to simulate most situations quite realistically. F7X0-01 is required.

LEGEND ARH (Additional Required Hardware) An asterisk in this column indicates hardware in addition to the minimum computer hardware is required. Additional hardware required is indicated under description of product.

CYBER 170 SERIES 700 SOFTWARE PRODUCT SET DESCRIPTION FOR ALL NOS PRODUCTS

PRODUCT NUMBER	PRODUCT & SUBPRODUCT NAME	VERSION NUMBER	ARH *	DESCRIPTION
F720-105 F730-105 F750-105 F760-105 F770-105 F799-105 F799-105	APT-IV	2		A production system for the generation of APT (Automatic Programmed Tools) cutter location output. Has the following features: sculptured surfaces, parametric surface capability, inclusive subscripts, language capabilities (literal string, CL print/on or off) and bounded geomentry. Compatible with the ALRP/CAMI version of APT IV (A4V3). F7X0-21 or F7X0-22 is required.
F720-131 F730-131 F750-131 F760-131 F770-131	PERT/TIME	2		PERT/TIME uses a time-oriented network structure to produce a variety of reports reflecting the actual and scheduled progress of a project. F7X0-21 or F7X0-22 is required.

/sPR1317A-09, Disk

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NOS 1 PUBLICATIONS

NOS OPERATING SYSTEM

NOS 1

RM (VOL. 1 APPLICATION PROGRAMMERS)	60435400
RM (VOL. 2 COMPASS APPLICATION PROGRAMMERS)	60445300
OG	60435600
IH	60435700
IN (APPLICATION PROGRAMMERS)	60436000
IN (SYSTEM PROGRAMMERS)	60449200
RM (SYSTEM MAINTENANCE)	60455380
RM (ADMINISTRATOR AND OPERATOR FACILITY)	60480100

MODIFY

RM	60450100
IN	60450200

BATCH

UG	60536300

NOS 1 ON-LINE MAINTENANCE SOFTWARE

RM	60454200

UPDATE

RM	60449900
IN	60450000

CYBER COMMON UTILITIES

RM	60495600

COMMON MEMORY MANAGER

RM	60499200

CONVERSION AIDS SYSTEM 2

RM	19265358

NOS 1 PRODUCT SET

DATA COMMUNICATIONS

TIME-SHARING USER'S

RM	60435500
UG	60436400
IN (TERMINAL USER'S)	60435800

TEXT EDITOR

RM	60436100

EXPORT/IMPORT

RM	60436200

TAF/TS 1

RM	60453000
UG	60436500
RM (DATA MANAGER)	60453100
RM (CYBER RECORD MANAGER DATA MANAGER	60456700

XEDIT 3

RM	60455730

COMMUNICATIONS CONTROL PROGRAM 3

RM	60471400
OG	60471700
DH	60471500

NETWORK ACCESS METHOD 1

RM	60499500

NETWORK DEFINITION LANGUAGE

RM	60480000

NETWORK PRODUCT STIMULATORS

RM	60480500

REMOTE BATCH FACILITY

RM	60499600

IAF 1

RM	60455250
UG	60455260
TN (TERMINAL USER'S)	60455270

TAF 1

RM	60455340
UG	60455360
RM (DATA MANAGER)	60455350
RM (CYBER RECORD MANAGER DATA MANAGER)	60456710

SUPPORT PROGRAMS

CYBER CROSS SYSTEM

RM	96836000
RM PASCAL COMPILER	96836100
RM MACRO COMPILER	96836500
RM MICRO COMPILER	96836400
DH	96836300
RM LINK EDITOR	60471200

CONVERSION AIDS (COBOL 4 TO COBOL 5)

RM	19265021

8-BIT SUBROUTINES

RM	60495500

CYBER RECORD MANAGER

RM (BASIC ACCESS METHODS)	60495700
UG (BASIC ACCESS METHODS)	60495800
UG (FORTRAN)	60495900
UG (COBOL)	60446000
RM (ADVANCED ACCESS METHODS	60499300
UG (ADVANCED ACCESS METHODS	60499400
UG (MULTIPLE INDEX PROCESSOR)	60480900

SORT/MERGE 4

RM	60497500
UG	60482900
IN	60497600

IMSL 6

GIM	60456380

COMPILERS

ALGOL 5

RM	60481600

APL 2

RM	60454000

BASIC 3

RM	19983900
SC	60482800

COBOL 5

RM	60497100
IN	60497300
UG	60497200
DH	60482500
UG (REPORT WRITER)	60496900

COMPASS 3

RM	60492600
IN	60492800
SC	60493000

FORTRAN EXTENDED 4

RM	60497800
UG	60499700
UG (DEBUG)	60498000
RM (COMMON LIBRARY MATH ROUTINES)	60498200
IN	60497900

SIFT

PSB	60496500

SYMPL 1	
RM	60496400
IN	60482600
PL/I	
RM	60388100
DATA MANAGEMENT	
DMS-170	
RM (CDCS 1)	60498700
GIM	60498900
UG (DATA ADMINISTRATOR)	60499100
PSB (RELATIONAL DATA BASE)	60480700
DATA BASE UTILITIES	
RM	6049800
DDL 2	
RM (VOL. I)	60498400
RM (VOL. II-COBOL)	60498500
RM (VOL. III-QU)	60498600
RM (CDCS 2)	60481800
DDL 3	
RM (VOL. I)	60481900
RM (VOL. II-COBOL)	60482000
RM (VOL. III-QU)	60482100
FORTRAN DATA BASE FACILITY 1	
RM	60482200
FORM	
RM	60496200
QUERY UPDATE 3	
RM	60498300
UG	60387700
UG (PROGRAMMERS)	60499000
NOS/BE 1 APPLICATIONS	
APT IV	
RM	17326900
UNIPLOT	
RM/UG	60454730
GPSSV	
GIM	84003900
RM	76078800
BEGINNING GRAPHICS	
UG	76077300
LCGT/IGS	
RM	76079100
UG	76077400
DATA HANDLER	
RM	17322100
APPLICATIONS EXECUTIVE	
RM	17322200
APEX III	
RM	76070000
SIMSCRIPT 3	
RM	60368500
TOTAL UNIVERSAL	
RM	76070300
PERT/TIME 2	
RM	60456030
TIGS 1	
RM	60455940
UG	60456040
IN	60456360
GRAPHICS PRODUCT FAMILY	
GIM	76077000

/cPR1332A-09, Disk 0015A

The abbreviations used for manual types are as follows:

Card	Code Card
DH	Diagnostic Handbook
GIM	General Information Manual
IH	Installation Handbook
IN	Instant
OG	Operator's Guide
PSB	Programming Systems Bulletin
RM	Reference
SC	Summary Card
SPRM	System Programmer's Reference Manual
UG	User's Guide

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BASIC MAINFRAMES SUPPORTED BY NOS/BE

BASIC 720 MAINFRAME

- 1 - Unified CPU
- Compare Move Unit (CMU)
- 98K CM
- 10 PPU's
- 12 I/O Channels
- Operator's Display Console
- 1 - Data Channel Converters

BASIC 730 MAINFRAME

- 1 - Unified CPU
- Compare Move Unit (CMU)
- 131K CM
- 10 PPU's
- 12 I/O Channels
- Operator's Console
- 1 - Data Channel Converters

Basic 750 Mainframe

- 1 - Multi-Function CPU
- 131K CM
- 10 PPU's
- 12 I/O Console
- Operator's Console
- 1 - Data Channel Converters

Basic 760 Mainframe

- 1 - Multi-Function CPU
- 131K High Speed CM
- 10 PPU's
- 12 I/O Channels
- Operator's Console
- 1 - Data Channel Converter

Basic 176-4XX Mainframe

- 1 - Multi-Function CPU
- 131K CM
- 10 PPU's
- 12 I/O Channels
- Operator's Console
- 1 - Data Channel Convertor

Mainframe Options* Supported by NOS

	720	730	750	760	176-4XX
CPU Upgrades	X	X	X		
Additional CPU	X	X			
Additional CM to 262K	X	X	X	X	X
Extended Core Storage (ECS) to 2097K)	X	X	X	X	
Extended Memory (EM) to 2097K)					X
Additional CYBER 170 PPU's and Channels	X	X	X	X	X
CYBER 176 PP's and I/O Multiplexer					X

*See mainframe configuration diagrams for option numbers.

NOS/BE
GENERAL OPERATING SYSTEM REQUIREMENTS

Minimum Batch Requirements

CYBER Basic Mainframe
- One Line Printer
- Two Tape Units
- Rotating Mass Storage
  - One 844-21 with one 881
    or
    One 844-4X with one 883-60
    or
    One 885
- One Card Reader

Options For Specific Installation Requirements

Mainframe
- Alternate Mainframes
- CM Additions
- CPU Upgrade
- Additional CPU
- Extended Core Storage (ECS)
- Additional PPU's and I/O Channels

Peripherals
- Tape Units
- Line Printers
- Card Equipment
- Rotating Mass Storage
- Communication Equipment
- Remote CRT's
- Remote Line Printers
- Remote Card Readers
- Remote Teletypewriters

Minimum Systems Rules

- All memory values are expressed in decimal.
- One of two Tape Units is used for initial loading.
- During normal running, the Tape Units may be used for temporary storage and for Input and/or Output Queues.

- 885 or 844-4X may be added or may replace the minimum standard 844-21. The system can reside on any mixed device types. Minimum capacity to support standard batch processing is 60 million characters. (The system itself occupies approximately 1.4 million characters.)

- System uses three PPU's on a dedicated basis. The remaining are used on a dynamic pool basis.

- Each CDC CYBER Model 720, 730, 750, 760 and 176-4XX includes one operator display console and one data channel converter.

- For Model 176, Rotating Mass storage connected to CYBER 170 PPU is required for CSME.

- The system requirement for a line printer may be satisfied with a 200 UT Compatible terminal (734-1, CYBER 18-5, etc.) with a line printer that is physically located with the central computer and is driven through a 6671 or 2550 communications subsystem.

- A terminal card reader may be used to input source decks to the sytem but cannot be used to input binary decks.

- The system requirement for a card reader to load controlware may be satisfied witha 7152-1 Disk/Tape Controller with a nine track tape unit.

Basic System and Loader Residence

- Operating system residence for the unconfigured system is approximately 11300 words.

- The unconfigured system is defined as:

  1 CPU
  10 PPU's
  No INTERCOM
  Minimum Library CM Resident
  XJ not used

  Includes space for:

  8 Control Points
  Each additional control point will require 232 words

  3 Controllers
  Each additional controller will require 16 words

  8 Tape Units
  Each additional tape unit will require 16 words

  6 RMS devices (with standard 844 RBR size)
  Each aadditinal RMS device will require 32 - 64 words

- When ECS is included in the system, an additional 512 words plus 1024 words per CM buffer is required in the operating system residence. In addition, 20,000 words are required in the direct access area of ECS.

- For each RMS device type which is not used, the operating system residence may be decreased by 100 words.

- Temporary CM usage during loading is a minimum of 3712 words plus variable length tables generated during the loading.

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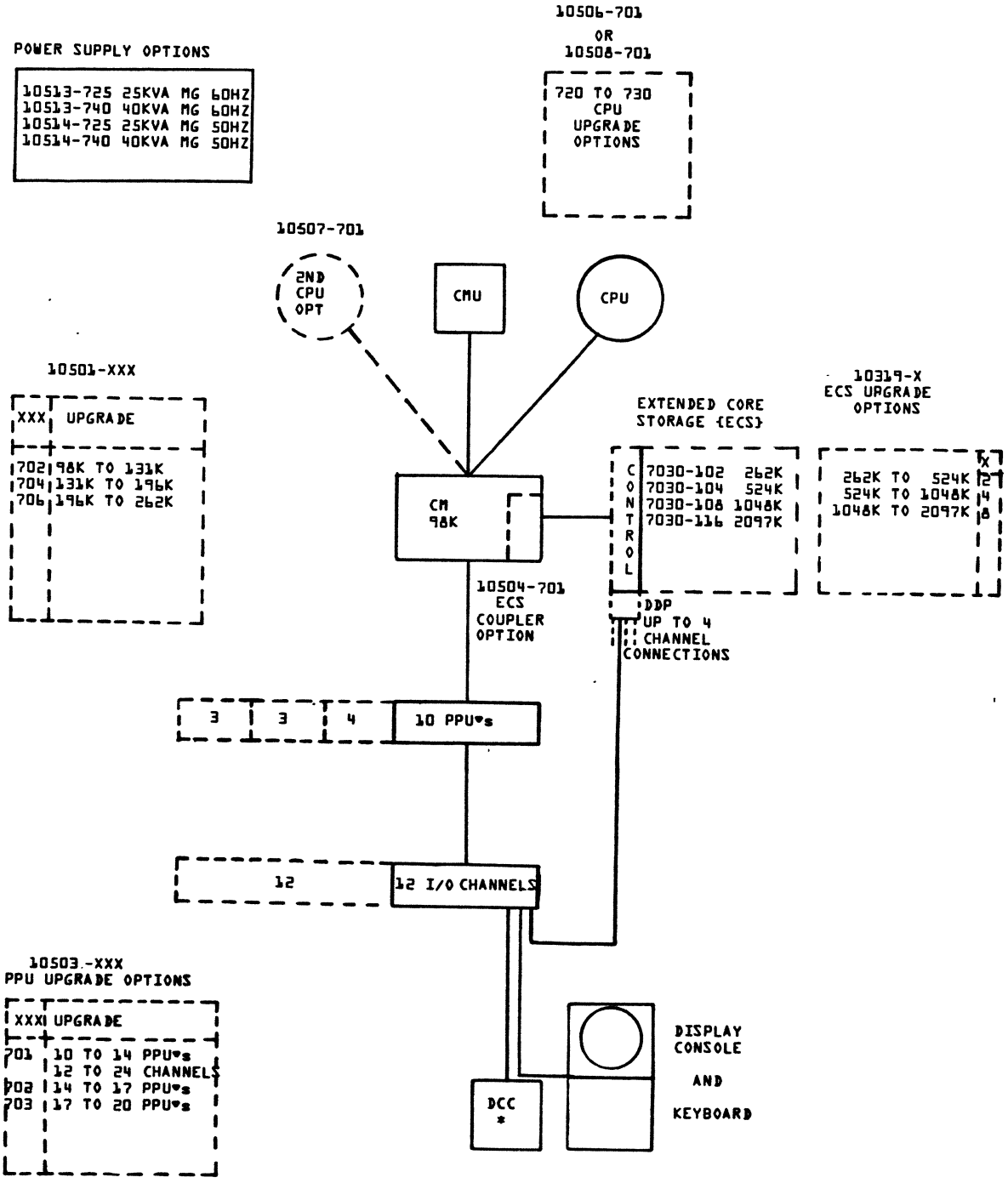
NOS/BE Product and Subproduct Memory Requirements

Product Number	Product or Subproduct Name	Minimum Memory Requirements (Decimal Value)
FLXO-01	CYBER LOADER	1700
	COMPASS	20500
	FORM	16400
	UPDATE	16400
	8-BIT SUBROUTINE PACKAGE	5200
FLXO-02	MAINTENANCE PACKAGE	28700
FLXO-21	FORTRAN 4.0	23100
FLXO-23	COBOL 5.0	24600
FLXO-24	INTERACTIVE BASIC	12300
FLXO-27	SORT/MERGE	16400
FLXO-40	CYBER DATA BASE CONTROL	8200
FLXO-41	DATA DESCRIPTION LANGUAGE	16400
FLXO-42	QUERY UPDATE	25600
	SIMSCRIPT II.5	20500

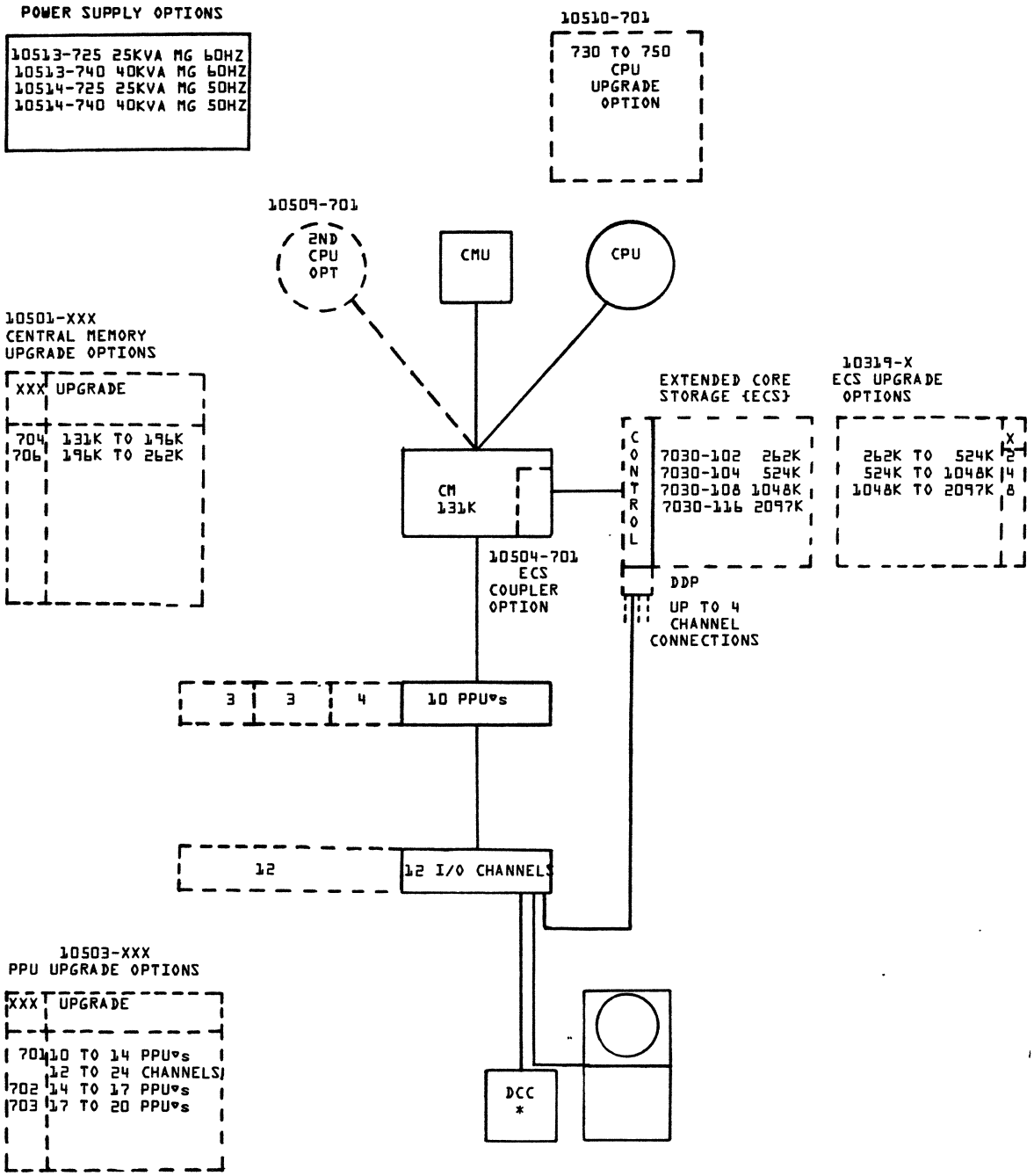
/PR1309A-09

CDC CYBER 170 MODEL 720
CONFIGURATOR



* DCC - DATA CHANNEL CONVERTER TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE TO THE CYBER 170 SERIES.

CDC CYBER 170 MODEL 730
CONFIGURATOR



* DCC - DATA CHANNEL CONVERTER TO ALLOW 300 SERIES PERIPHERALS TO INTERFACE TO THE CYBER 170 SERIES.

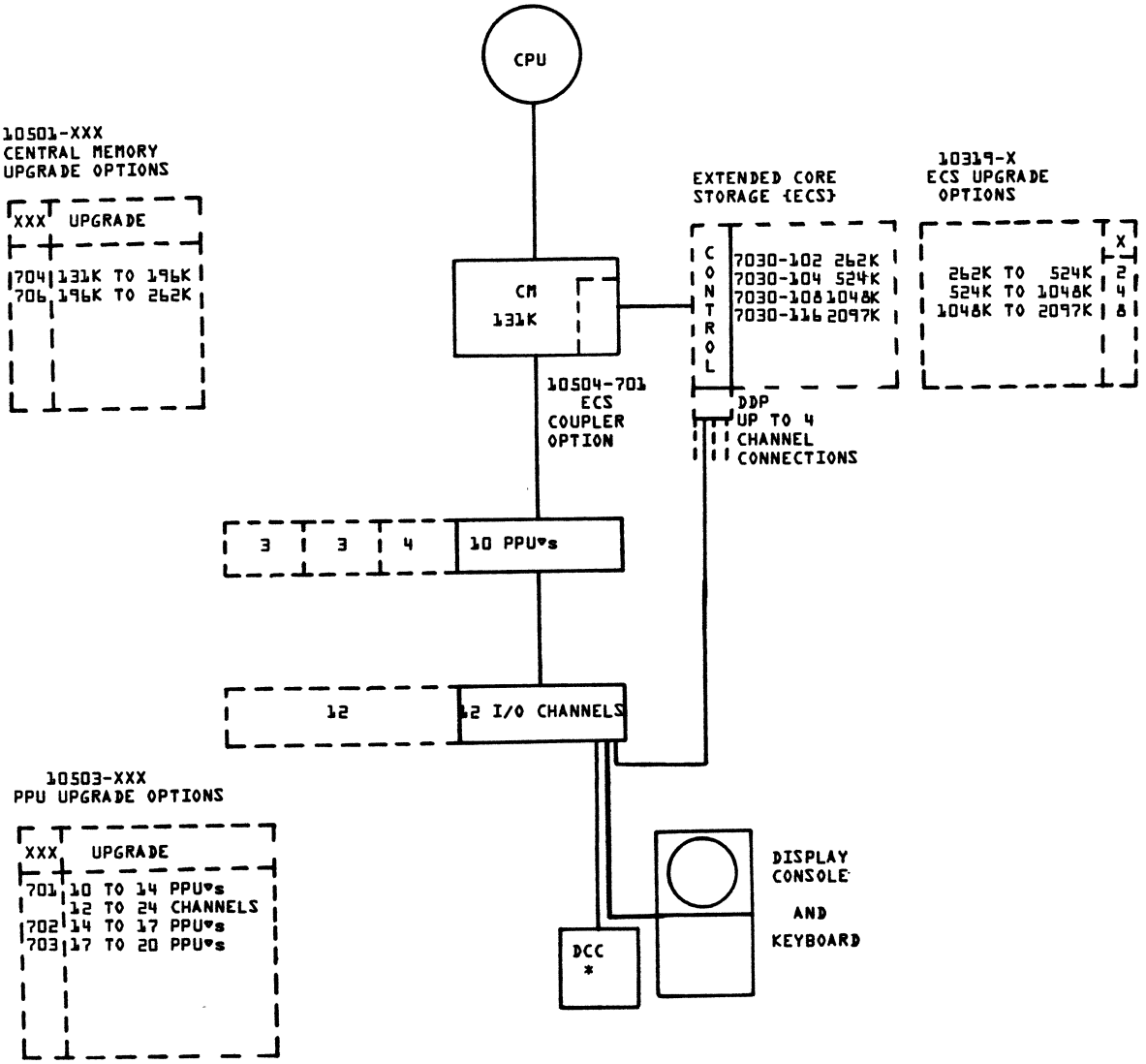
CDC CYBER 170 MODEL 750
CONFIGURATOR

POWER SUPPLY OPTIONS

10513-740	40KVA MG 60HZ
10513-780	80KVA MG 60HZ
10514-740	40KVA MG 50HZ
10514-780	80KVA MG 50HZ

CPU AND MEMORY UPGRADE OPTIONS

750 TO 760	
131K	10511-701
131K-196K	10512-764
196K-262K	10512-766

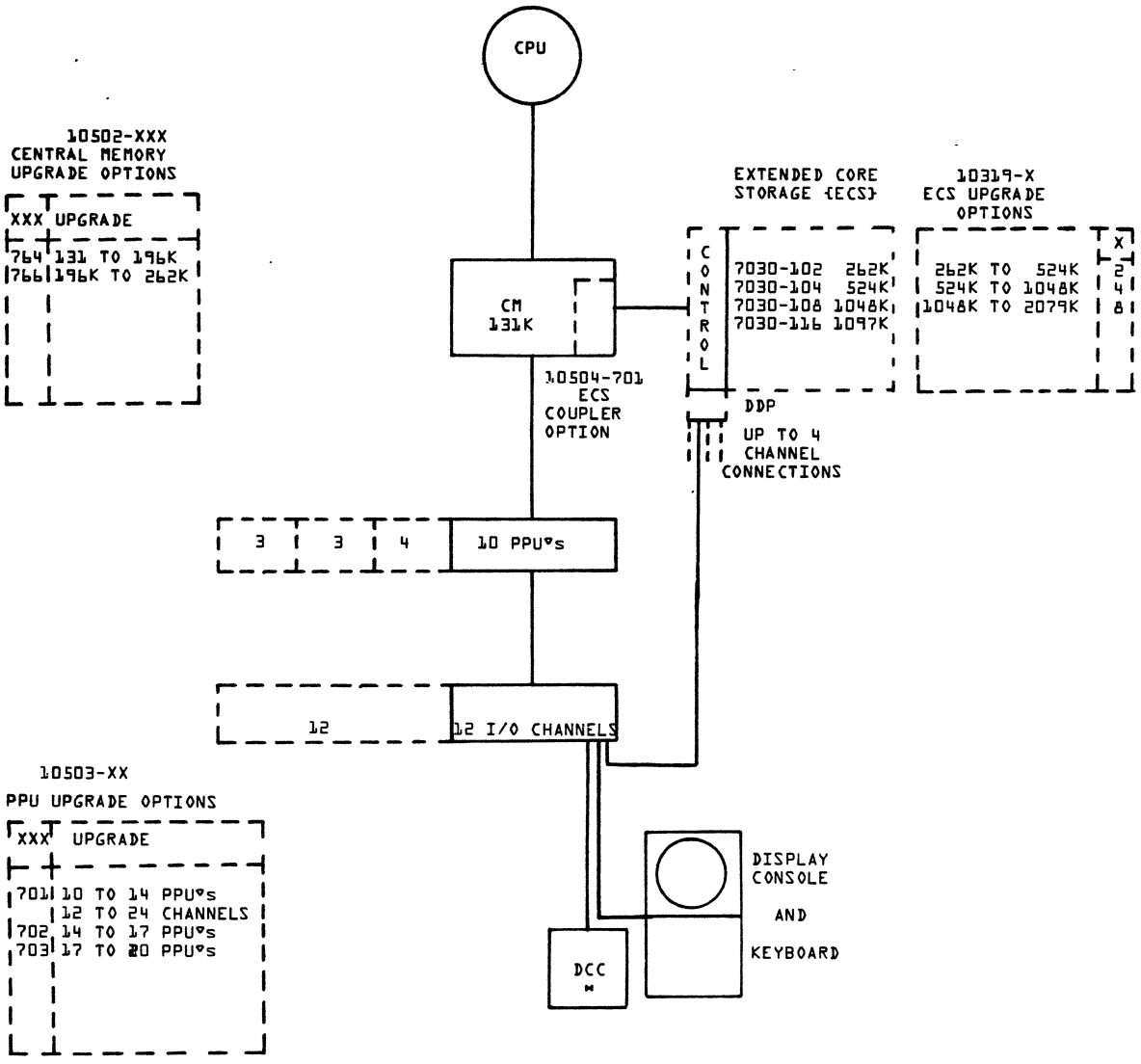


* DCC - DATA CHANNEL CONVERTER TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE TO THE CYBER 170 SERIES.

CDC CYBER 170 MODEL 760 CONFIGURATOR

POWER SUPPLY OPTIONS

10513-740 40KVA MG 60HZ
10513-780 80KVA MG 60HZ
10514-740 40KVA MG 50HZ
10514-780 80KVA MG 50HZ



* DC C - DATA CHANNEL CONVERTER TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE TO THE CYBER 170 SERIES.

CDC CYBER 170 MODEL 176-4XX CONFIGURATOR

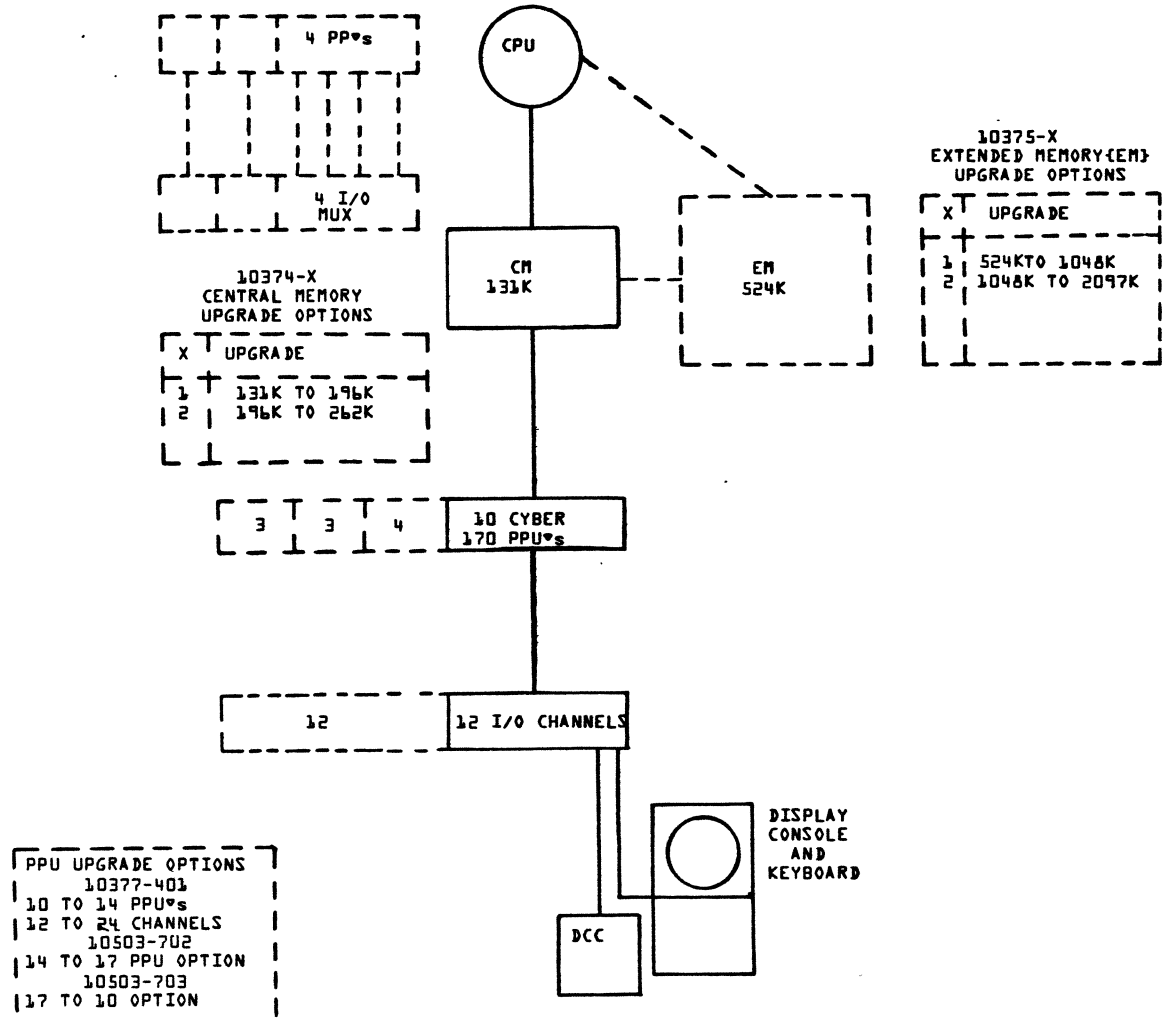
NOTE: REQUIRED POWER INCLUDED.

176-4XX MEMORY CONFIGURATIONS

XX	CM	EM
08	131K	
12	196K	
16	262K	
21	131K	524K
22	131K	1048K
24	131K	2097K
31	196K	524K
32	196K	1048K
34	196K	2097K
41	262K	524K
42	262K	1048K
44	262K	2097K

10376-410 AND 10376-401 UPGRADE OPTIONS TO 6 CYBER 176 PP's AND 6 I/O MULTIPLEXER

10376-410 ADDS 4PP's
10376-401 ADDS 1 PP

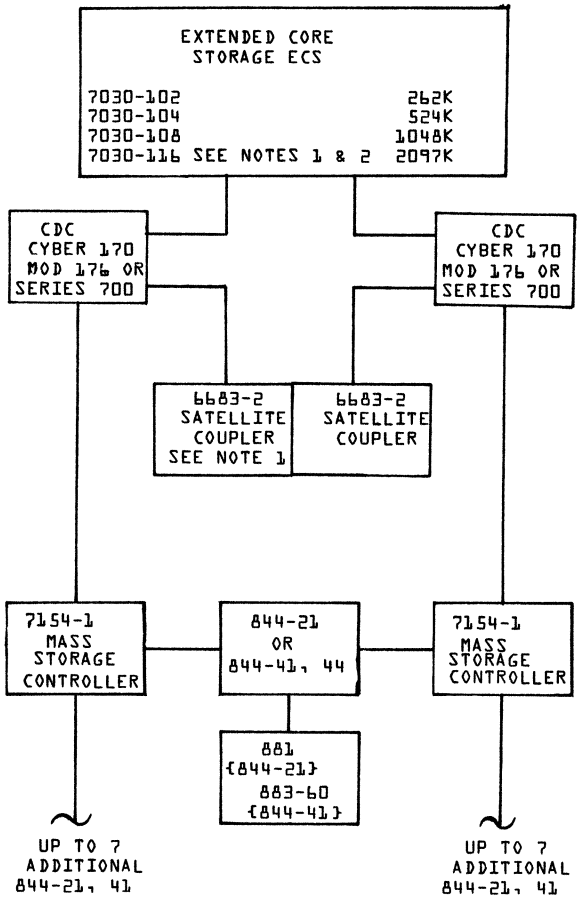


PPU UPGRADE OPTIONS
10377-401
10 TO 14 PPU's
12 TO 24 CHANNELS
10503-702
14 TO 17 PPU OPTION
10503-703
17 TO 10 OPTION

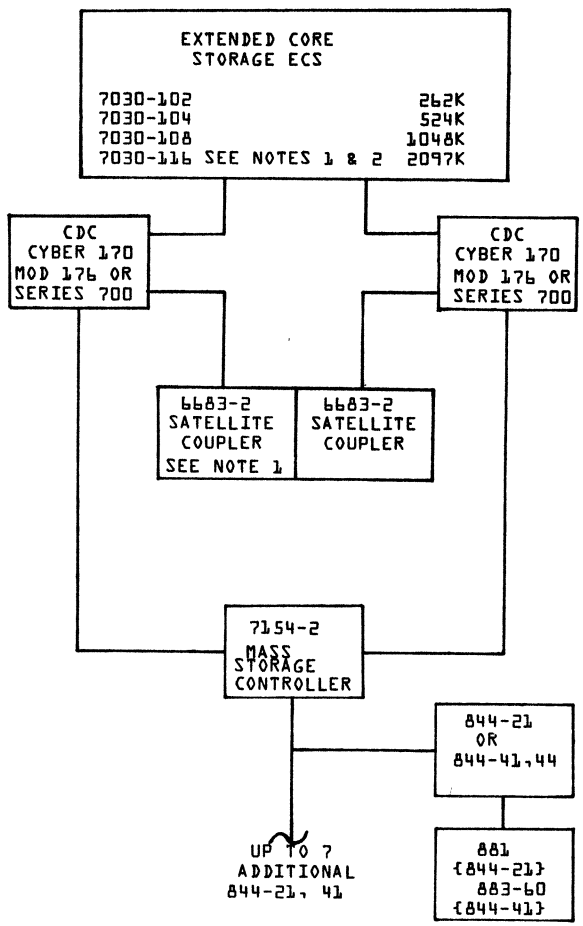
DCC - DATA CHANNEL CONVERTER TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE TO THE CYBER 170 SERIES.

CYBER 170 MULTI-MAINFRAME CONFIGURATOR (NOTE - 1)

WITH TWO 7154 CONTROLLERS



WITH ONE 7154 CONTROLLER

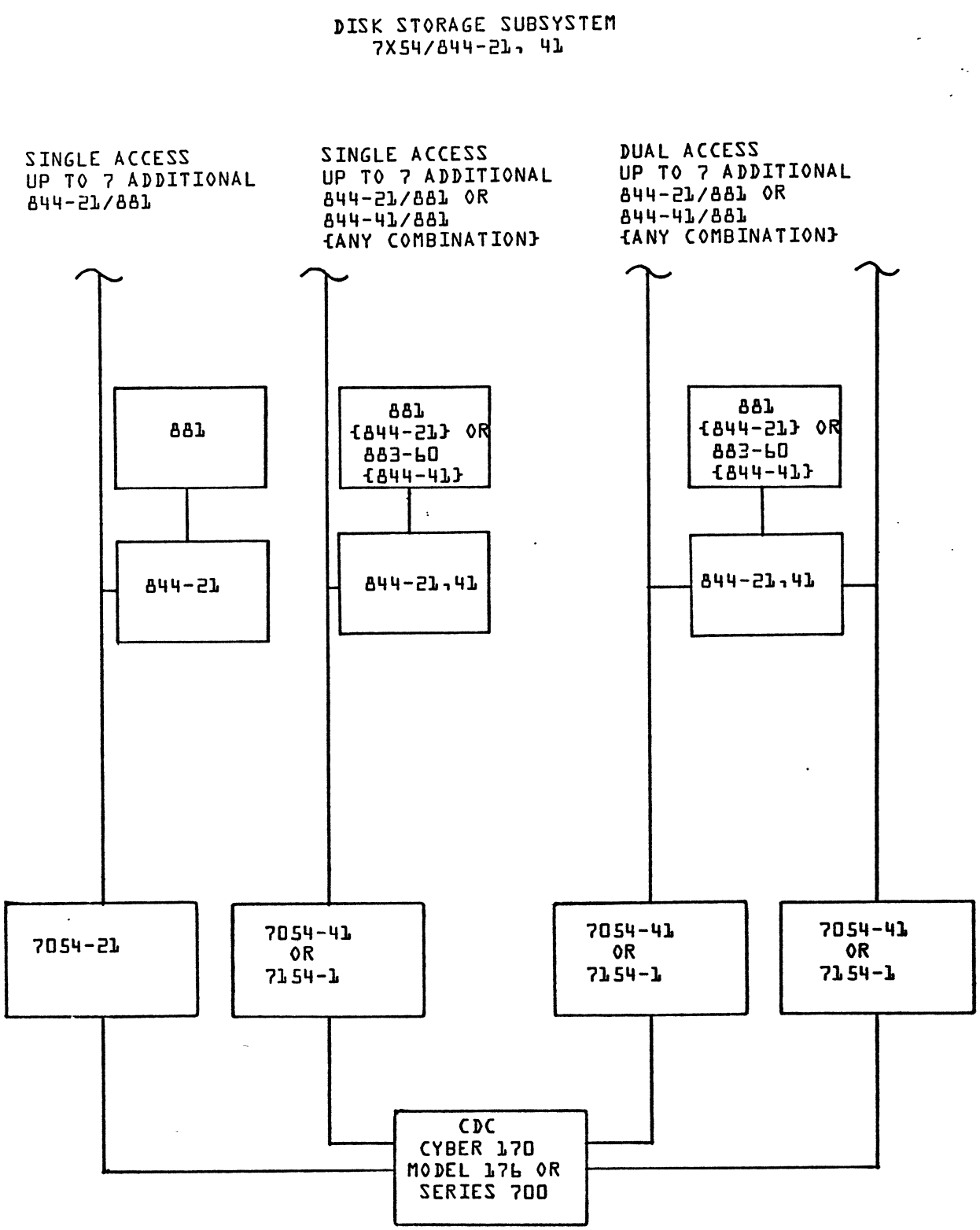


NOTE 1: MINIMUM ONE RMS DRIVE REQUIRED PER MAINFRAME AS NON-SHARED SYSTEM DEVICE. SHARED RMS AND SYMMETRIC LINK ARE INDEPENDENT FEATURES PACKAGED TOGETHER FOR THE MMF MODULE. SHARED RMS DOES NOT REQUIRE ECS OR 6683-2's. SYMMETRIC LINK REQUIRES EITHER ECS OR 6683-2's (BOTH MAY BE USED).

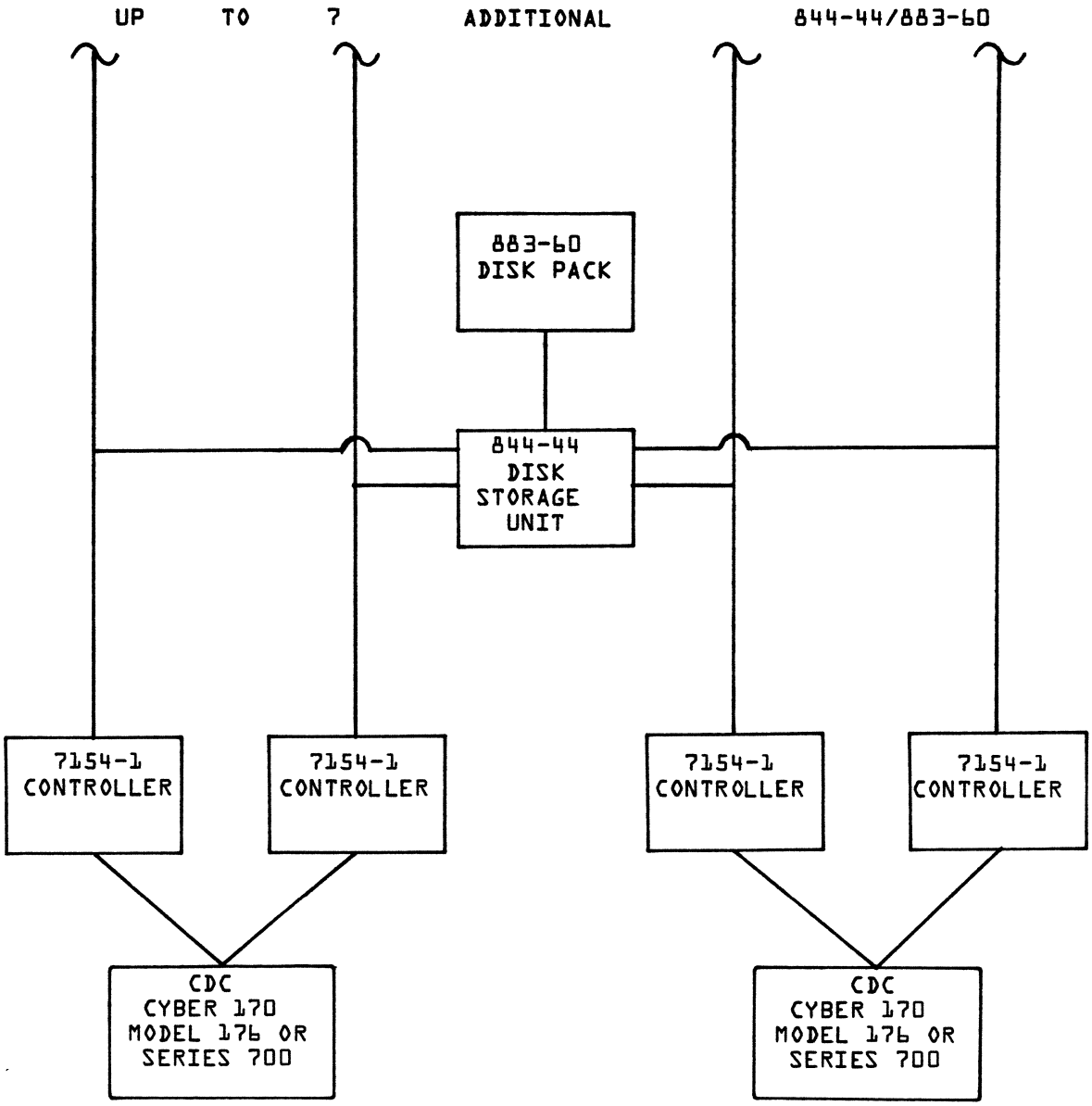
NOTE 2: ECS IS NOT AVAILABLE ON CYBER 176-4XX MAINFRAME CONFIGURATIONS - USE 6683-2 CONFIGURATION INSTEAD.

NOTE 3: THIS CONFIGURATOR ONLY SHOWS TWO OF MANY WAYS THAT 844's CAN BE USED IN A MULTI-MAINFRAME ENVIRONMENT.

DISK STORAGE SUBSYSTEM
7X54/844-21, 41



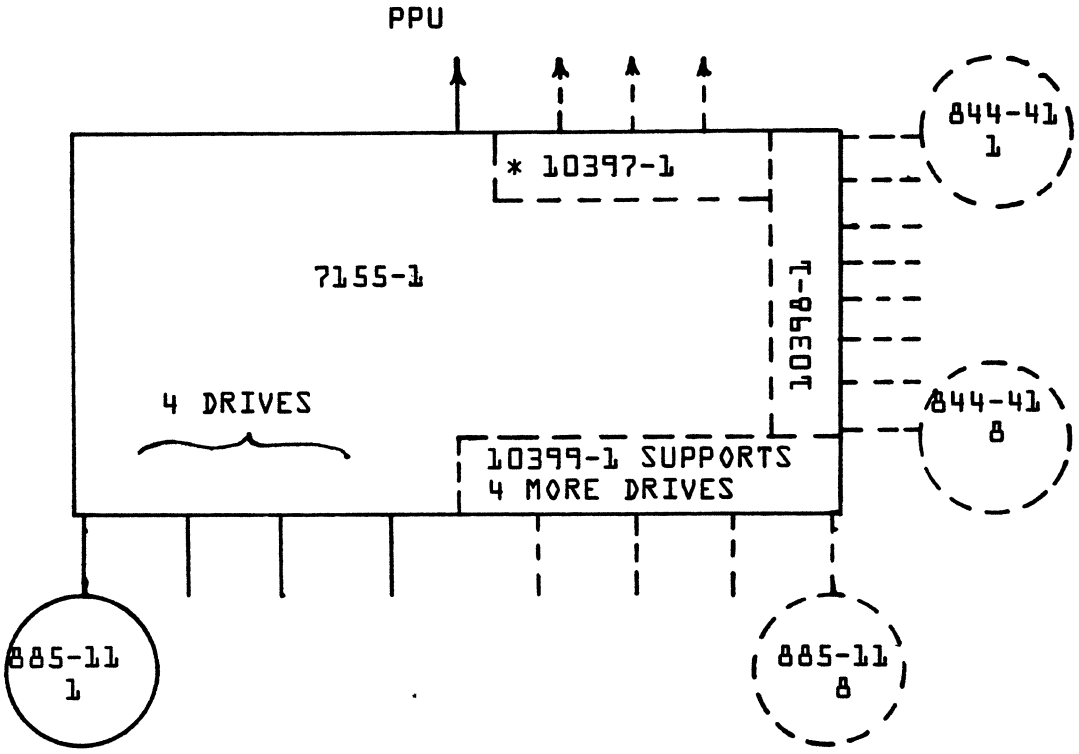
REMOVABLE DISK STORAGE
7154-1/844-44



NOTES:
- IF THE CONTROLLERS ARE USED IN A DUAL ACCESS CONFIGURATION, ALL DRIVES CONNECTED TO ONE CONTROLLER MUST BE CONNECTED TO THE OTHER CONTROLLER.
- THIS DIAGRAM ONLY SHOWS ONE OF MANY WAYS THAT 844's CAN BE USED IN A MULTI-MAINFRAME ENVIRONMENT.

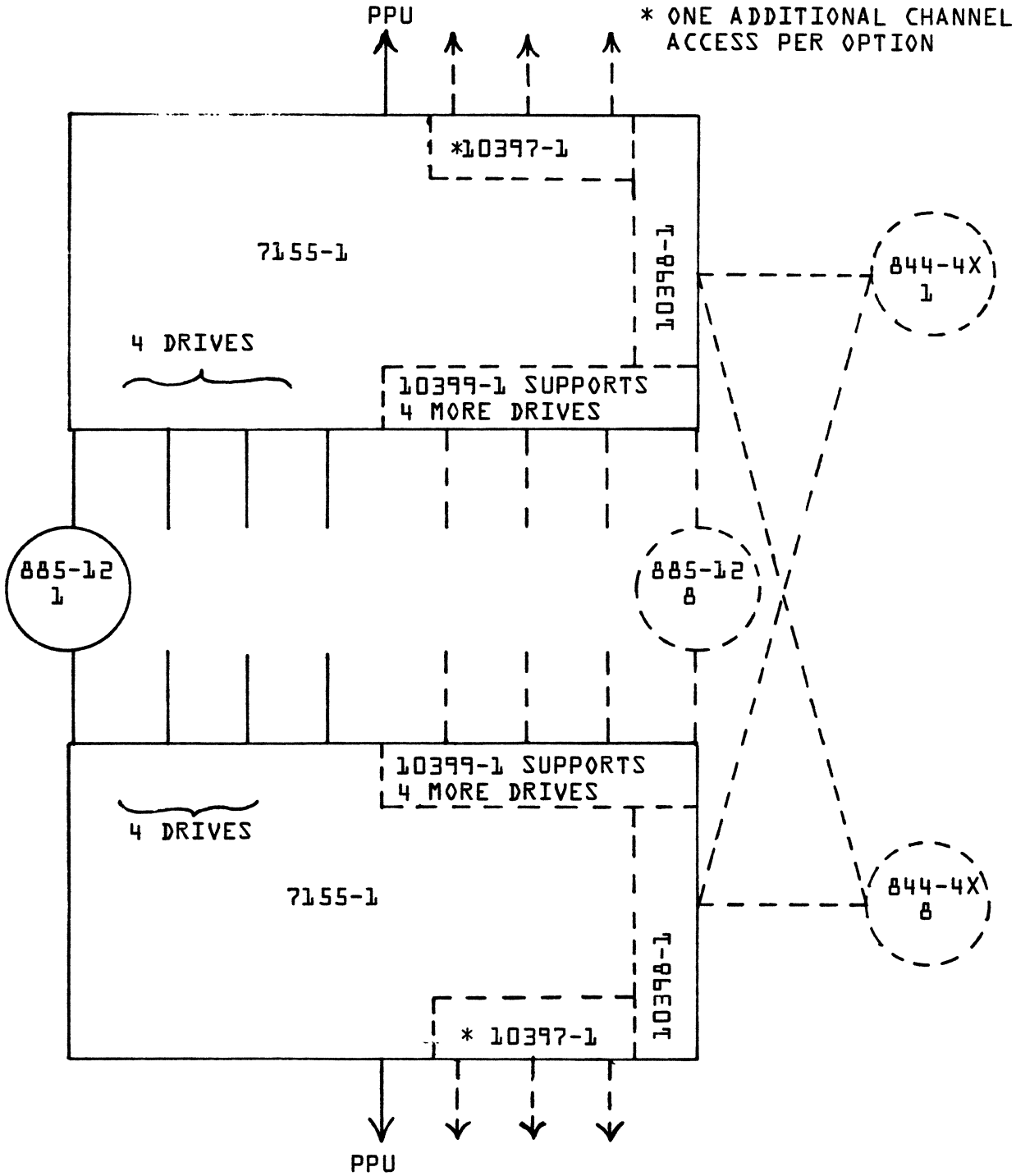
SINGLE DRIVE ACCESS SUBSYSTEM

* ONE ADDITIONAL CHANNEL ACCESS PER OPTION



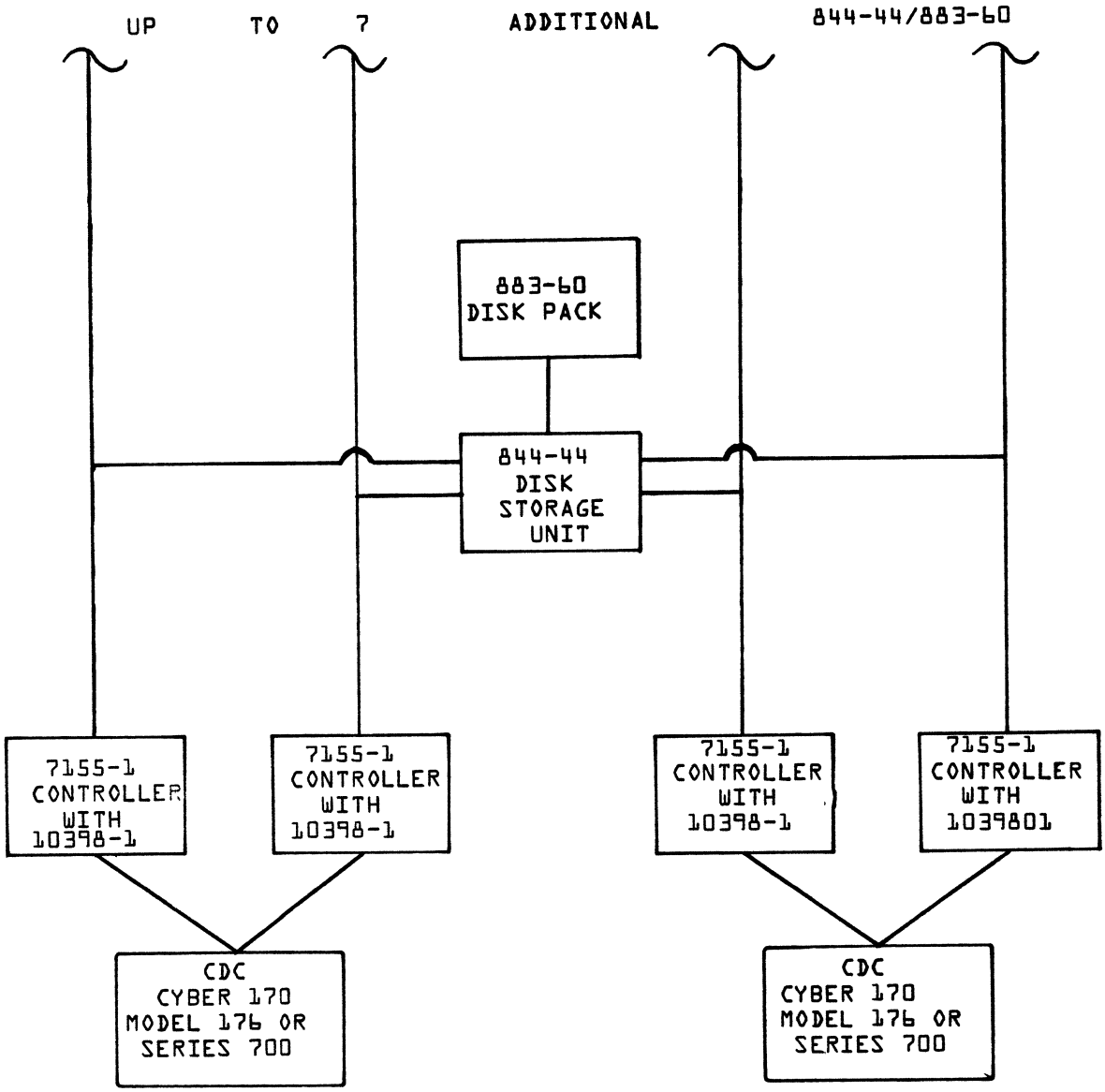
NOTE:
- EACH 885-11 DRIVE (DISK STORAGE UNIT) CONTAINS TWO SPINDLES, EACH 844-41 CONTAINS ONE SPINDLE.
- CHECK WITH EDP SYSTEMS MARKETING ON AVAILABILITY OF NOS/BE SUPPORT PRIOR TO JANUARY 1980 (SOME COMBINATIONS MAY NOT BE SUPPORTED UNTIL THEN).

DUAL DRIVE ACCESS SYBSYSTEM



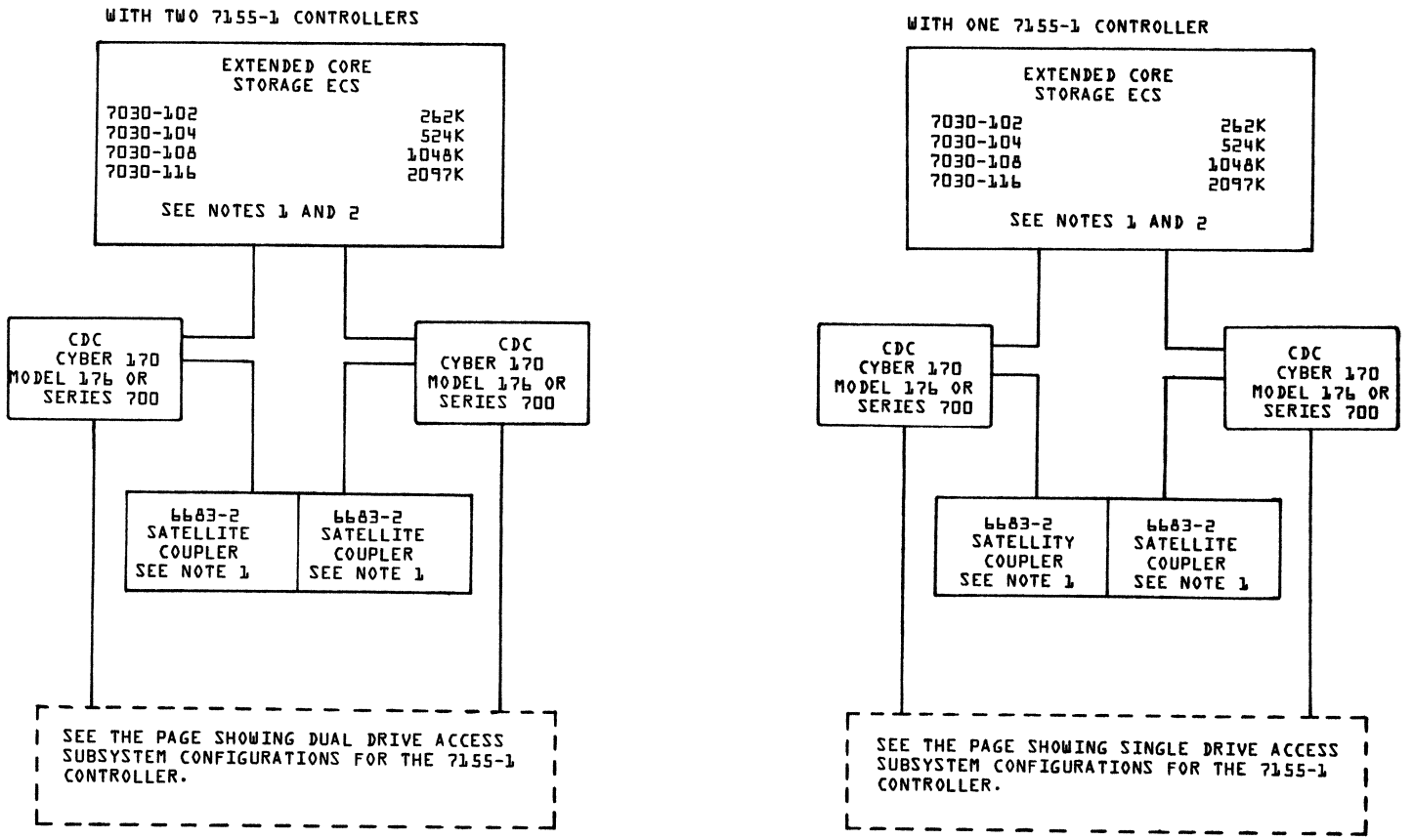
NOTE:
- EACH 885-11 DRIVE (DISK STORAGE UNIT) CONTAINS TWO SPINDLES, EACH 844-41 CONTAINS ONE SPINDLE.
- CHECK WITH EDP SYSTEMS MARKETING ON AVAILABILITY OF NOS/BE SUPPORT PRIOR TO JANUARY 1980 (SOME COMBINATIONS MAY NOT BE SUPPORTED UNTIL THEN).

REMOVABLE DISK STORAGE
7155-1/844-44



NOTES:
- IF TWO CONTROLLERS ARE USED IN A DUAL ACCESS CONFIGURATION, ALL DRIVES CONNECTED TO ONE CONTROLLER MUST BE CONNCETED TO THE OTHER CONTROLLER.
- THIS CONFIGURATOR ONLY SHOWS ONE OF MANY WAYS 844's CAN BE USED IN A MULTI-MAINFRAME ENVIRONMENT.

CYBER 170 MULTI-MAINFRAME CONFIGURATION (NOTE - 1)



NOTE 1: MINIMUM ONE RMS DRIVE REQUIRED PER MAINFRAME AS NON-SHARED SYSTEM DEVICE. SHARED RMS AND SYMMETRIC LINK ARE INDEPENDENT FEATURES PACKAGED TOGETHER FOR THE MMF MODULE. SHARED RMS DOES NOT REQUIRE EITHER ECS OR 6683-2's. SYMMETRIC LINK REQUIRES EITHER ECS OR 6683-2's (BOTH MAY BE USED).
NOTE 2: ECS IS NOT AVAILABLE ON CYBER 176-4XX MAINFRAME CONFIGURATIONS - USE 6683-2 CONFIGURATION INSTEAD.
NOTE 3: THIS CONFIGURATOR ONLY SHOWS TWO OF MANY WAYS THAT 844's CAN BE USED IN A MULTI-MAINFRAME ENVIRONMENT.

DISK STORAGE CONFIGURATION OPTIONS SUMMARY

Controller	Disk Storage Unit 844-2Y	844-4Y	885-1Y
7054-2Z	X		
7054-4Z	X	X	
7154-Z	X	X	
7155-1		(Requires Option)	X

Controller and Disk Storage Unit Configuration Matrix

- See the Disk Storage Unit table for values of Y.
- See the Disk Controller table for values of Z.

Disk Controller	Channels of Access	Transfer Mode
7054-21	1	Half Track
-22	2	
7054-41	1	Half Track
-42	2	
7154-1	1	Half Track or Full Track
-2	2	
-3	3	
-4	4	
7155-1	1	Full Track
One 10387-1 Option	2	
Two 10397-1 Options	3	
Three 10397-1 Options	4	

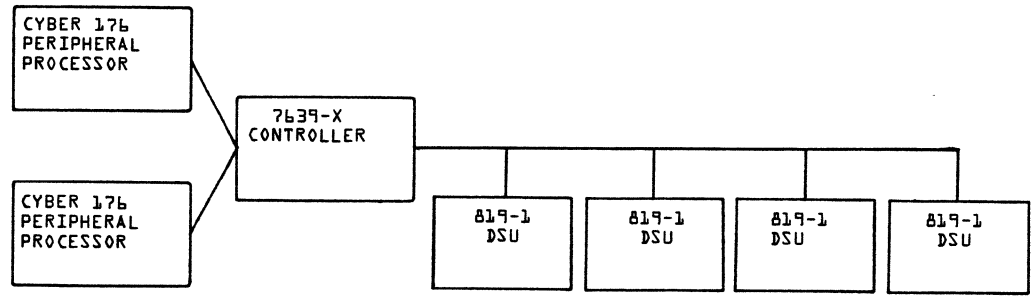
Disk Controller Number, Channels of Access, and Transfer Mode Relationships

Disk Storage Unit	Controller Accesses	Track Density
844-2	2	200 TPI
-21	2	
844-41	2	400 TPI
-44	4	
885-11	1	662 TPI
-12	2	

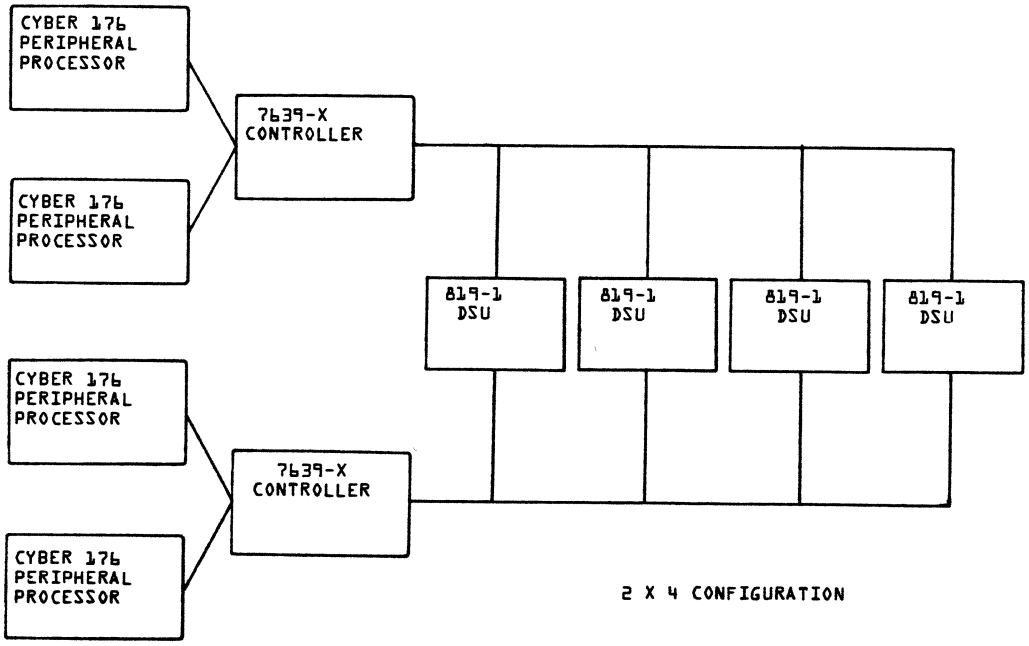
Disk Storage Unit, Spindle Controller Accesses, and Track Density Relationships

/cPR1309A-09

CYBER 176-4XX 819-1 DISK STORAGE (NOTES 5 & 6)



1 X 4 CONFIGURATION



2 X 4 CONFIGURATION

NOTES

(1) NOS/BE WILL SUPPORT A MAXIMUM OF TWELVE 819-1 DRIVES.

(2) CYBER 176-4XX WILL SUPPORT THE FOLLOWING 819-1 ACCESSES:

THREE 1 X 4 CONFIGURATIONS OR
ONE 1 X 4 CONFIGURATION AND ONE 2 X 4 CONFIGURATION

(3) EACH 1 X 4 819-1 ACCESS REQUIRES TWO HI-SPEED MULTIPLEXER CHANNELS.

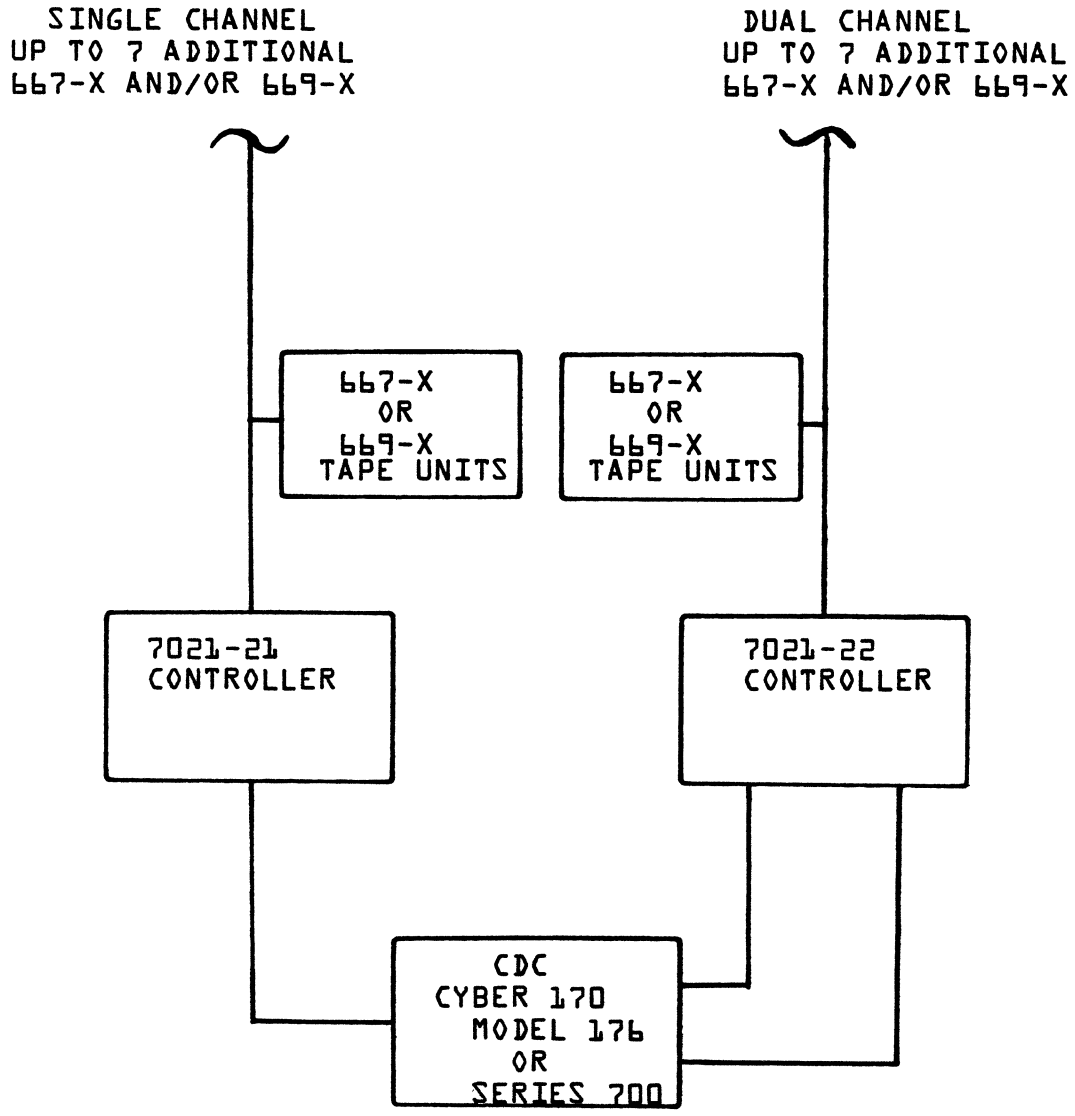
(4) EACH 2 X 4 819-1 ACCESS REQUIRES FOUR HI-SPEED MULTIPLEXER CHANNELS.

(5) 176-4XX. 819 REQUIRES EXTENDED MEMORY OPTION 10375-10 AND INITIAL PERIPHERAL PROCESSOR UNIT 10376-410 ON 176-408 412, 416 MODELS.

(6) CYBER 176-4XX ALSO REQUIRES A MINIMUM OF ONE 7154 OR 7155 AND ONE 844-XX OR ONE 7155 AND ONE 885.

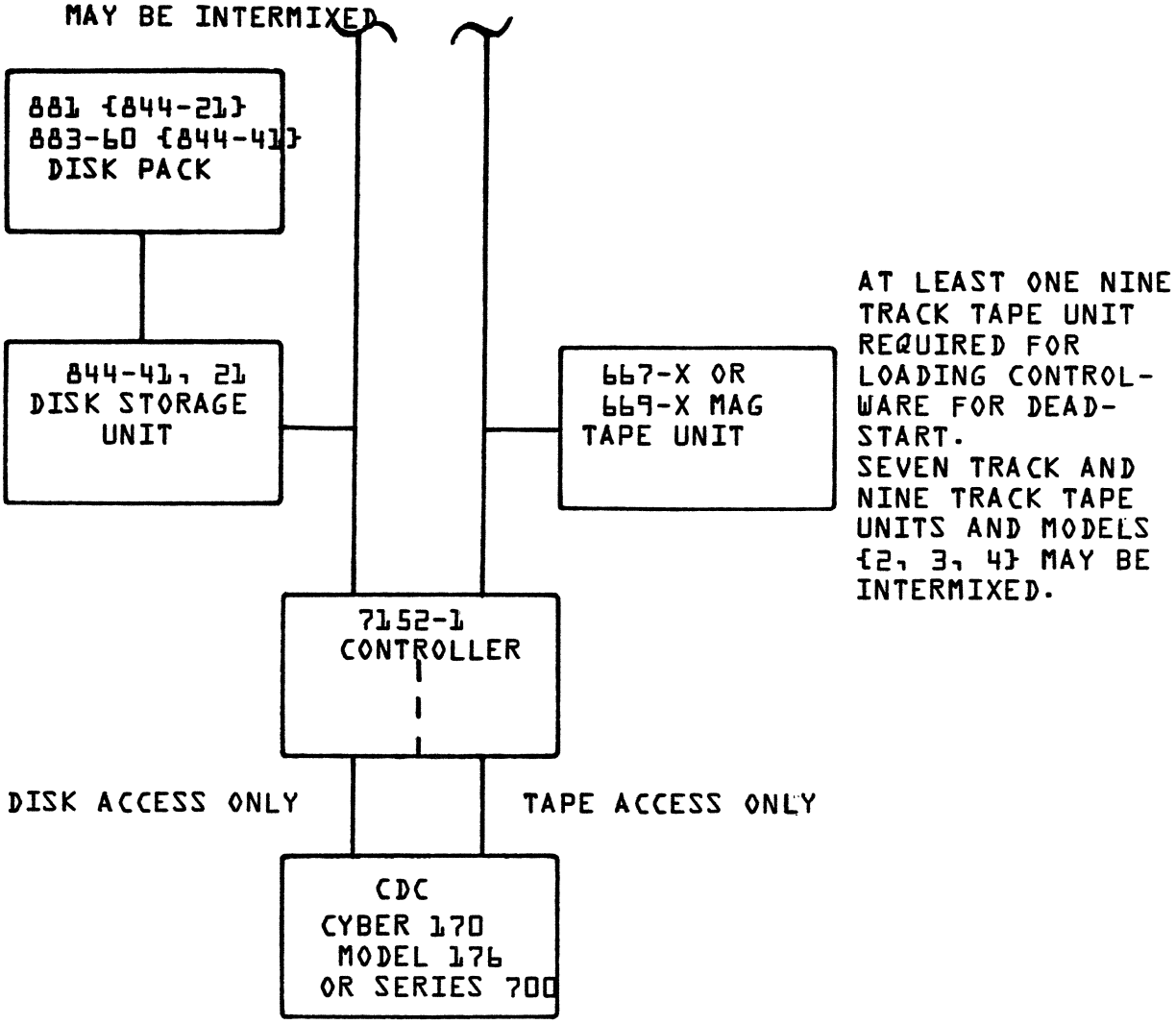
MAGNETIC TAPE
7-TRACK OR 7-TRACK/9-TRACK INTERMIXED OR 9-TRACK

NOTES:
667-X: 667-2, 667-3, 667-4 (7-TRACK)
669-X: 669-2, 669-3, 669-4 (9-TRACK)



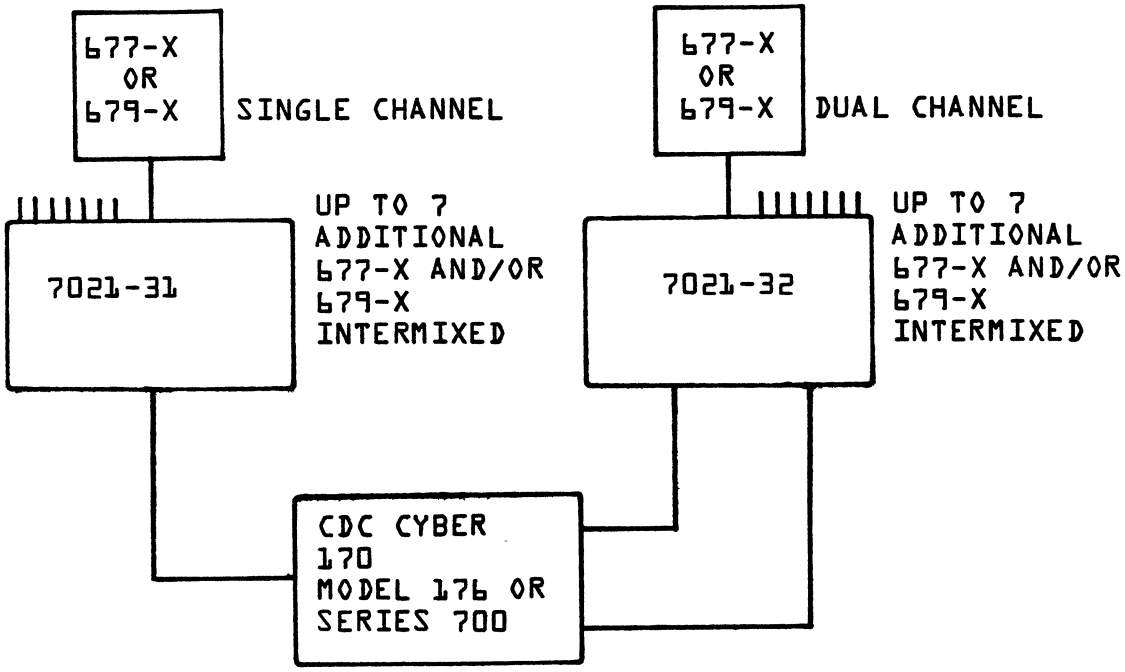
7-TRACK AND 9-TRACK TAPE UNITS AND MODELS (2, 3, 4) MAY BE INTERMIXED.

DISK STORAGE/MAGNETIC TAPE
7152-1/844/66X



67X MAGNETIC TAPE SYBSYSTEM

7 TRACK	9 TRACK
677-2 556/800 BPI NRZI, 100 IPS	679-2 800 BPI NRZI AND 1600 BPI PE, 100 IPS
677-3 556/800 BPI NRZI, 150 IPS	679-3 800 BPI NRZI AND 1600 BPI PE, 150 IPS
677-4 556/800 BPI NRZI, 200 IPS	679-4 800 BPI NRZI AND 1600 BPI PE, 200 IPS
	679-5 6250 BPI GCR AND 1600 BPI PE, 100 IPS
	679-6 6250 BPI GCR AND 1600 BPI PE, 150 IPS
	679-7 6250 BPI GCR AND 1600 BPI PE, 200 IPS

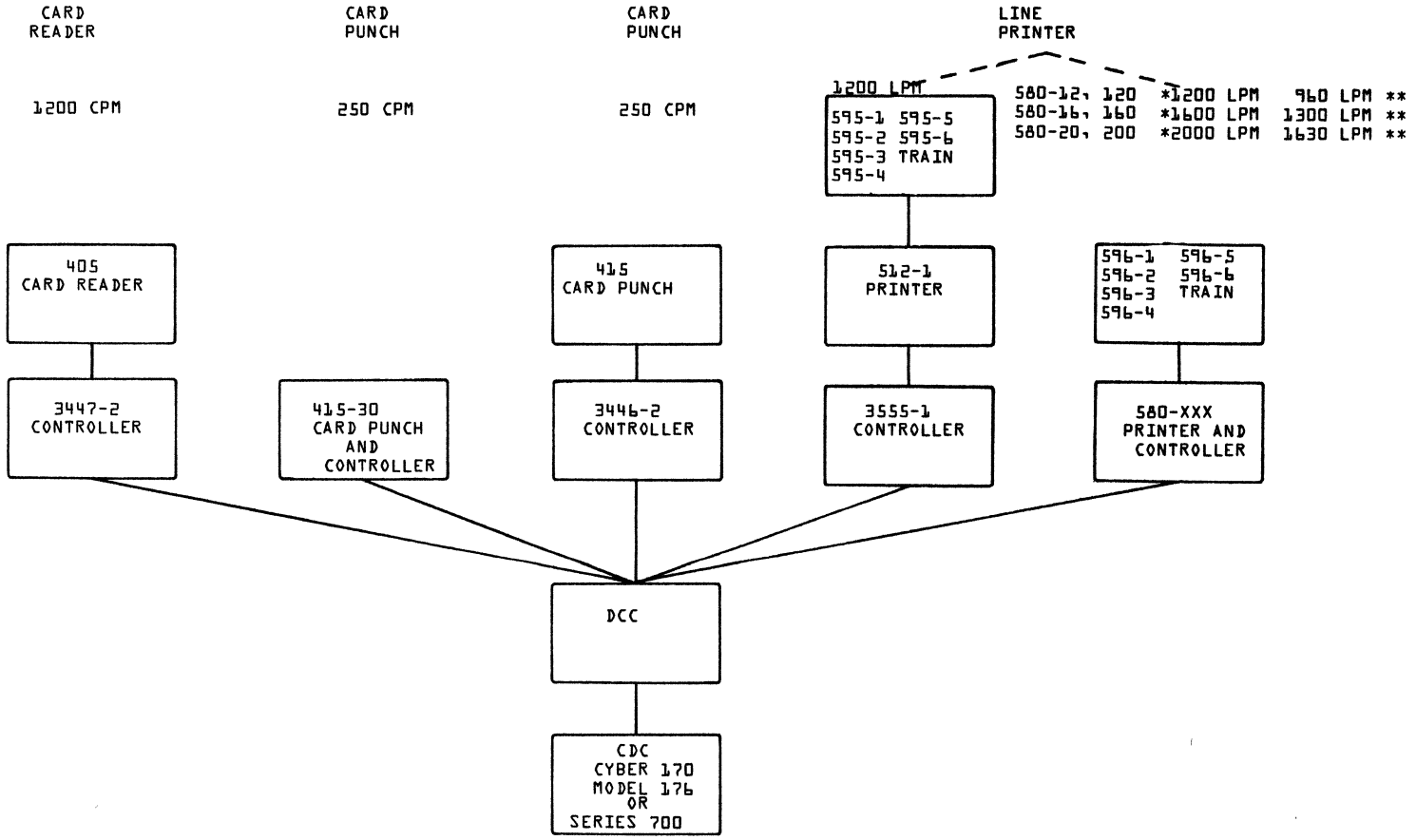


NOTE: 7 TRACK AND 9 TRACK TAPE UNITS CAN BE INTERMIXED SYSTEM CONFIGURATION RESTRICTIONS ARE DETERMINED BY THE DATA-TRANSFER RATES OF THE TAPE UNITS.

- NRZI AND PE RECORDING
  - A UNIT OF ANY SPEED MAY BE USED ON ANY CYBER 170, CYBER 70 OR 6000 CONFIGURATION, ASSUMING NO MORE THAN TWO OTHER DEVICES ARE DAISY-CHAINED ON THE CHANNEL AHEAD OF THE CONTROLLER.

- GCR RECORDING
  - 200 IPS NOT ALLOWED ON 6000 OR CYBER 70. MUST BE FIRST ON CYBER 170 CHANNEL. NOT ALLOWED IF MAC SWITCH USED {10329-X OR 60144-X}.
  - 150 IPS MUST BE FIRST OR SECOND ON EITHER CYBER 170, CYBER 70 OR 6000 CHANNEL.
  - 100 IPS MUST BE FIRST OR SECOND ON CYBER 70 OR 600 CHANNEL. MUST BE FIRST, SECOND OR THIRD ON CYBER 170 CHANNEL.

LOCAL UNIT RECORD EQUIPMENT

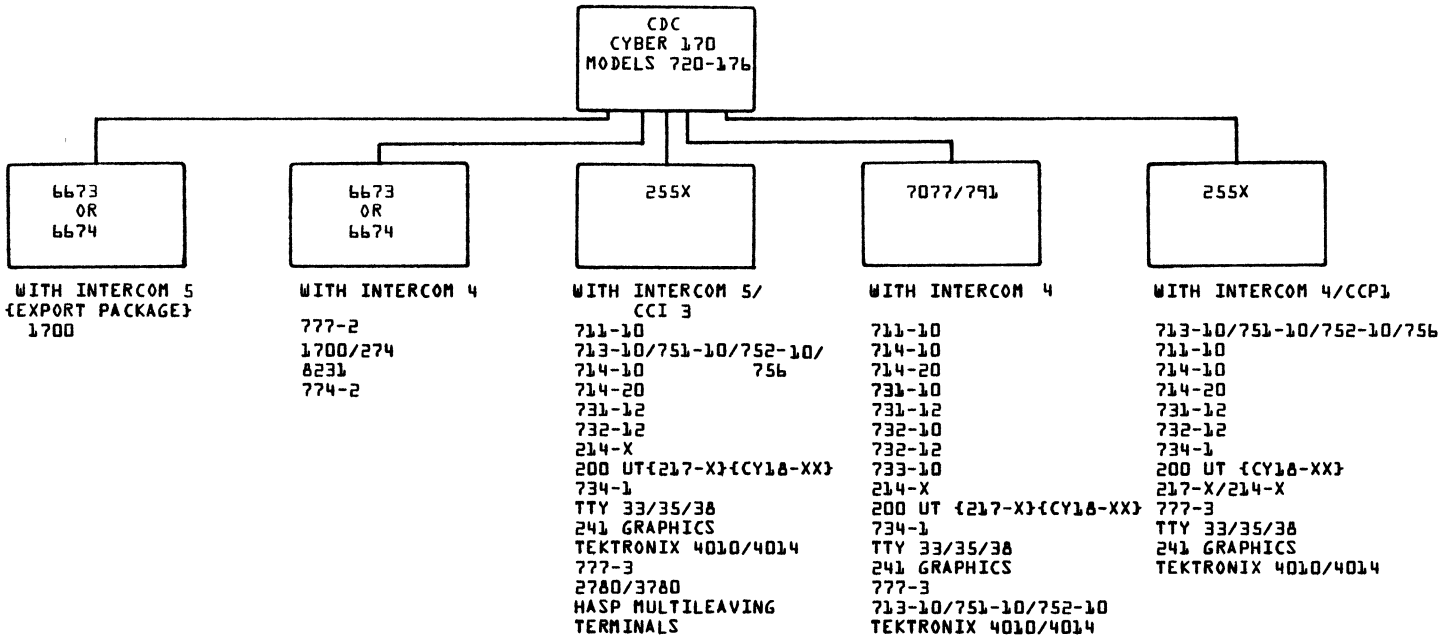


* THE SPEEDS ARE ONLY POSSIBLE W/48 CHARACTER SET.

** THE SPEEDS ARE POSSIBLE W/64 CHARACTER SET.

COMMUNICATION SUBSYSTEMS & TERMINALS SUPPORTED

NOS/BE 1



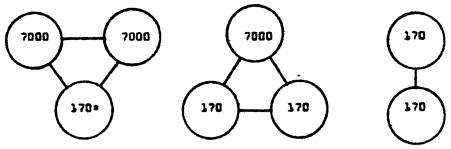
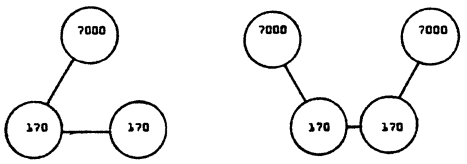
REFER TO COMMUNICATION SUBSYSTEMS SECTION FOR SPECIFIC CONFIGURATION AND FEATURE SUPPORT DETAILS.

CYBER 170 SERIES 700 SOFTWARE PRODUCT SET DESCRIPTION FOR ALL NOS/BE 1 PRODUCTS

PRODUCT NUMBER	PRODUCT & SUBPRODUCT NAME	VERSION NUMBER	ARH	DESCRIPTION
F620-01 F630-01 F650-01 F660-01 F670-01	NOS/BE Network Operating System Batch Environment	1		NOS/BE (Network Operating System - Batch Environment) is a collection of interelated programs that manage the CYBER 170 hardware resources and provide services to users. The design of NOS/BE is oriented towards providing a comprehensive set of batch processing capabilities while supporting a limited network of terminal users. NOS/BE requires F6X0-02 and F6X0-21 or F6X0-22 for maintenance.
	COMPASS	3		COMPASS, a subproduct of NOS/BE, provides a comprehensive assembler language for writing CPU and PPU programs.
	CYBER RECORD MANAGER/ BASIC ACCESS METHODS	1		CRM, a subproduct of NOS/BE, provides a general purpose package to perform basic I/O tasks for users. CRM supports both sequential and word addressable file organizations.
	CYBER LOADER	1		The CYBER LOADER, a subproduct of NOS/BE, provides the following loading capabilities: Core Image Loading, Object Module Loading, Basic Loading, Segmentation, and Overlay Generation. User control of the CYBER LOADER is via either Control Statements, User Program Calls, or Loader Object Directives.
	COMMON MEMORY MANAGER	1		CMM, a subproduct of NOS/BE, provides dynamic memory management of the space allocated to a user's job.
	CYBER CONTROL LANGUAGE	1		CCL, a subproduct of NOS/BE provides the capability to control the sequence in which the control cards are processed.
	UPDATE	1		UPDATE, a subproduct of NOS/BE, provides a means of maintaining source decks in a conveniently updatable, compressed format.
	8 BIT SUBROUTINE PACKAGE	1	*	A subproduct of NOS/BE designed to enable a FORTRAN or COBOL programmer to read, write, and manipulate sequential files and data using 8-bit character sets. Supports IBM 360/370 sequential format (tape) files, EBCDIC and ASCII punched card decks, and extended character set (95-character ASCII) print files. I/O routines enable translation between external and internal data types and character sets, and operate on a record-by-record basis. A set of utility routines manipulate character strings in Display Code, ASCII, and EBCDIC. Complete character set translation and mixed character set string comparison routines are provided. Two additional routines allow improved file utilization; they compress 8-bit data from internal working form to a more compact form for storage, then expand it again. Nine track tape units are required to read/write EBCDIC or ASCII characters on tape.

LEGEND ARH (Additional Required Hardware) An asterisk in this column indicates hardware in addition to the minimum computer hardware is required. Additional hardware required is indicated under description of product.

CYBER 170 SERIES 700 SOFTWARE PRODUCT SET DESCRIPTION FOR ALL NOS/BE 1 PRODUCTS

PRODUCT NUMBER	PRODUCT & SUBPRODUCT NAME	VERSION NUMBER	ARH	DESCRIPTION
	FORM	1		A NOS/BE subproduct conversion aid for converting from one file organization to another. FORM, for example, may be used to convert a SYSTEM/360 file organization to a CYBER file organization or to convert a CYBER CRM direct file organization to an indexed sequential organization.
F620-02 F630-02 F650-02 F660-02 F670-02	MAINTENANCE PACKAGE	1		A maintenance package that includes a collection of programs used in the installation and maintenance of NOS/BE and its product set. The Maintenance Package requires F6X0-01.
F620-03 F630-03 F650-03 F660-03 F670-03	MULTI-MAINFRAME	1	*	Provides for link communication between one CYBER 70L/170 and one other CYBER 70L/170 or to one other CYBER 70L/170 and a CYBER 76 or 176 running SCOPE 2. Provides for sharing permanent files on 844 RMS between two CYBER 70L/170's. The shared 844 or 885 RMS feature has been implemented to enable the sharing of permanent files between up to 4 CYBER 70L/170 mainframes. However, this feature has only been tested and validated on a 2 mainframe configuration. Link communications uses concepts of logical identifiers, allows transmittal of permanent files, linked operator displays and commands, and load leveling between systems. Linking hardware may be via 6683-2 coupler pairs or 500K minimum ECS or both. Configurations supported by the Link Interface can be considered in two categories - those which are fully supported and those which are supported with restricted capabilities. These are illustrated below. FIG. 1 - FULLY SUPPORTED CONFIGURATIONS  * THIS IS A STATION CAPABILITY ONLY FIG. 2 - CONFIGURATIONS WITH RESTRICTED CAPABILITIES  THE CYBER 170*s CAN BE REPLACED BY CYBER 71, 72, 73, 74*s OR BY 6000*s. The distinction between full support and restricted capabilities is due to the lack of full direct connections in the latter case. Specifically, files cannot be automatically routed to a mainframe which is not directly connected to the mainframe where the files are located. Similarly, the status of jobs running in a non-directly connected mainframe cannot be displayed or modified by the operator. Multi-mainframe capability requires F6X0-01. Additional Required Hardware ECS.

LEGEND ARH (Additional Required Hardware) An asterisk in this column indicates hardware in addition to the minimum computer hardware is required. Additional hardware required is indicated under description of product.

CYBER 170 SERIES 700 SOFTWARE PRODUCT SET DESCRIPTION FOR ALL NOS/BE 1 PRODUCTS

PRODUCT NUMBER	PRODUCT & SUBPRODUCT NAME	VERSION NUMBER	ARH	DESCRIPTION
F620-10 F630-10 F650-10 F660-10 F670-10	INTERCOM	5	*	INTERCOM 5 is externally compatible with INTERCOM 4. INTERCOM 5 provides reduced core requirements when running remote batch jobs which improves as the number of active remote devices increases. In conjunction with CCI3, asynchronous terminals are supported up to 9600 BPS. 2780/3780 terminals and HASP protocol are supported in addition to the Mode 4 (200 UT) protocol. Only 255X communication equipment is supported. o Required Hardware A CYBER system meeting the minimum requirements for NOS/BE with one dedicated PPU and channel plus a 2550 subsystem with appropriate communications linkage. o Hardware Supported: o 2550-2, 2551-X o Terminals: (See Hardware Diagrams for allowable configuration) CDC Model 713 Conversational Display Terminal or Model 33, 35 37 or 38 Teletype terminal with optional paper tape reader and punch. Model 711, 714 or 214-11, 214-12, 217-12, 217-13, 217-14 display terminal. 200 Users Terminals - ANSI or BCD (217-X, CY18-XX). 711-10 requires 711-102. 734-1 Batch Terminal 241 Graphics Terminal. Medium Speed Batch Terminal - 732-12. Low Speed Batch Terminal -731-12 777-3 Cybergraphics Terminal. Tektronic 4010/4014 Low Cost Graphic Terminals. 2780/3780 Terminals. HASP Work Station. o Additional Required Hardware: A maximum of six PPU's with dedicated channels and multiplexers. 255X INTERCOM requires F6X0-01 and N222-01.
F620-15 F630-15 F650-15 F660-15 F670-15	CYBER CROSS SYSTEM	1		The CYBER CROSS System, which executes on a CYBER 170 under NOS/BE, permits the generation of binary code which can be executed on a CYBER 18 or 255X. The CYBER CROSS SYSTEM requires F6X0-01.
F620-20 F630-20 F650-20 F660-20 F670-20	FORTRAN EXTENDED	5		FORmula TRANslator (FORTRAN) allows programs to be written in a mathematical-type language. It was originally conceived for use on scientific problems but is now widely adapted for most commercial problems as well. The FORTRAN EXTENDED compiler produces highly optimized binary code. FORTRAN EXTENDED is a superset of full ANSI specifications developed by the FORTRAN Standards Committee X3J3. This version upgrades the compiler to the new FORTRAN ANS 1978 specifications and adds the interactive debug package (IDP) FORTRAN EXTENDED requires F6X0-01 and F6X0-10 if interactive usage is desired.
F620-21 F630-21 F650-21 F660-21 F670-21	FORTRAN EXTENDED	4		FORmula TRANslator compiler which complies with ANSI-66 specification and produces highly optimized binary code. FORTRAN EXTENDED requires F6X0-01 and F6X0-10 if interactive usage is desired.

LEGEND ARH (Additional Required Hardware) An asterisk in this column indicates hardware in addition to the minimum computer hardware is required. Additional hardware required is indicated under description of product.

CYBER 170 SERIES 700 SOFTWARE PRODUCT SET DESCRIPTION FOR ALL NOS/BE 1 PRODUCTS

PRODUCT NUMBER	PRODUCT & SUBPRODUCT NAME	VERSION NUMBER	ARH	DESCRIPTION
F620-22 F630-22 F650-22 F660-22 F670-22	FORTRAN EXTENDED	4		FORmula TRANslator complier version 4 (F6X0-21) that includes an interactive option. F6X0-01 and F6X0-10 are required.
F620-23 F630-23 F650-23 F660-23 F670-23	COBOL	5		COmmon Business Oriented Language is a compiler designed for commercial data processing. The COBOL 5.0 compiler addresses the 1974 ANSI specifications. The initial release implements the highest level of 10 of the 12 modules defined in the specification. The COMMUNICATIONS module is not included and only a subset of the low-level of the INTER-PROGRAM COMMUNICATIONS is included. COBOL 5 is a companion product to COBOL 4 and as such is not fully compatible with its predecessor. A COBOL 4 to COBOL 5 conversion aids program exists which can be use to help bridge the gap (F621-17). In addition to addressing the 1974 specification, COBOL 5 includes the following added capabilities: o Direct Access, Actual Key and Word Address file organizations. o Secondary (for ECS access) and Common storage sections. o INITIALIZE verb to set Data Division items to initial values. o Floating point numeric literals. o Variable length records. o Ability to set and clear sense switches. o File Organizations other than sequential in the GIVING phrase of SORT or MERGE. o Ability to change collating sequences dynamically with the SET statement. o QUOTE IS APOSTROPHE can be specified to change the quote character. o Duplicate alternate keys can be ordered by prime key. o FILLER can be used anywhere in a record. o Ability to set character codes for files. o COMP-1 and COMP-2 converted to readable format with signs for DISPLAY. F6X0-27 is required plus F6X0-10 if interactive usage is required and F6X0-40 if data base management control is desired.

LEGEND ARH (Additional Required Hardware) An asterisk in this column indicates hardware in addition to the minimum computer hardware is required. Additional hardware required is indicated under description of product.

CYBER 170 SERIES 700 SOFTWARE PRODUCT SET DESCRIPTION FOR ALL NOS/BE 1 PRODUCTS

PRODUCT NUMBER	PRODUCT & SUBPRODUCT NAME	VERSION NUMBER	ARH	DESCRIPTION
F620-24 F630-24 F650-24 F660-24 F670-24	INTERACTIVE BASIC	3		Beginner's All-purpose Symbolic Instruction Code is a procedure-level computer language that is well-suited for time-sharing. The BASIC subsystem enables both novice and experienced programmers to readily create and execute interactive programs in time sharing environment. This version of INTERACTIVE BASIC provides many capabilities not available in BASIC 2. For example, word addressable random I/O, enhanced print formatting, multiple argument and multiple line user defined functions, extended string variable names, a string concatenation operator, logical connective operators and access to external non-BASIC subroutines. BASIC requires F6X0-01 and F6X0-10.
F620-26 F630-26 F650-26 F660-26 F670-26	PL/I	1		Programming Language/I has some features characterized by FORTRAN and incorporates some of the best features of other languages, such as string manipulation, data structures, and extensive editing capabilities. This version is a non-optimizing compiler for an upwards compatible subset of the ANSI/ECMA Language. Missing features will include the DEFAULT statement, aggregate operations and data directed I/O. PL/I requires F6X0-01.
F620-27 F630-27 F650-27 F660-27 F670-27	SORT/MERGE	4		The SORT/MERGE product is a special application program that accepts input from tape or disk and constructs, according to user specifications, sort output on tape or disk. This product can be used for sort only, merge only, and sort-and-merge operations. This version provides increased speed, improved reliability and an interface with the CYBER RECORD MANAGER. OPERATING OPTIONS DISK o Additional disks will provide improved: - Speed o Two additional tapes will provide improved: - Speed o Three tapes can be used for disk overflow, others for input or output. TAPE o Two additional tapes are required o More additional tapes will provide improved: - Speed o Additional core will provide improved: - Speed o Tapes can be assigned to disk. F6X0-01 is required.

LEGEND ARH (Additional Required Hardware) An asterisk in this column indicates hardware in addition to the minimum computer hardware is required. Additional hardware required is indicated under description of product.

CYBER 170 SERIES 700 SOFTWARE PRODUCT SET DESCRIPTION FOR ALL NOS/BE 1 PRODUCTS

PRODUCT NUMBER	PRODUCT & SUBPRODUCT NAME	VERSION NUMBER	ARH	DESCRIPTION
F620-29 F630-29 F650-29 F660-29 F670-29	CYBER INTERACTIVE DEBUG	1		This product will prove interactive, symbolic level, debugging capabilities such as: - Conditional breakpoints and traps for temporarily suspending program execution. - Program suspension via terminal interrupts. - Commands to interrogate and change program memory. - Commands to restart program execution at any given point. F6X0-01 is required.
F620-30 F630-30 F650-30 F660-30 F670-30	ALGOL-60	5		ALGOrithmic Language is the international data processing language used to express problems solving formulas. The ALGOL compiler supports the full ALGOL-60 language specification and includes the Knuth I/O specifications. It does not include all of the language extensions or interactive capabilities of ALGOL-60 4. It does support automatic field length management and performance is better than ALGOL-60 4. F6X0-01 is required.
F620-31 F630-31 F650-31 F660-31 F670-31	IMSL	6		International Mathematical and Statistical Library.
F620-32 F630-32 F650-32 F660-32 F670-32	FORTRAN 4/5 CONVERSION AID	1		Conversion aid for converting from FORTRAN 4 to 5.
F620-40 F630-40 F650-40 F660-40 F670-40	CYBER DATA BASE CONTROL SYSTEM	2		CDCS 2 under NOS/BE 1 allows multiple independent programs (at separate user control points) to concurrently update a data base using the Indexed Sequential and Multiple Index Processor access methods of CRM with lockout control at the logical record level. It provides data privacy at the file level. F6X0-01, F6X0-41, and F6X0-23 or F6X0-43 are required.
F620-41 F630-41 F650-41 F660-41 F670-41	DATA DESCRIPTION LANGUAGE	3		DDL 3 under NOS/BE 1 is an extension of DDL 2 including support of Area-Level privacy and improved data independence between application programs and COBOL subschema compilation. DDL 3 generates record mapping code to improve CDCS 2 record mapping performance. F6X0-27 is required.
F620-42 F630-42 F650-42 F660-42 F670-42	QUERY/UPDATE 1	3		This product replaces all the capabilities of QU 2 and brings with it a major breakthrough in performance and power. Using the Boolean List Processor, it interfaces directly to CRM's Multiple Index Capability to provide optional accessability of qualifying records via alternate access paths and indexes. The report writer capability has also been enhanced by a "compile" option in addition to its normal interpretive mode. Additional features are (1) crossfile relationships (2) degree of commodity with CDCS 1 for enhanced recovery (3) query only capability making use of IS, DA and MIP read-only packages of CRM (4) character-string processing. F6X0-41 is required and F6X0-10 if interactive usage is desired.

LEGEND ARH (Additional Required Hardware) An asterisk in this column indicates hardware in addition to the minimum computer hardware is required. Additional hardware required is indicated under description of product.

CYBER 170 SERIES 700 SOFTWARE PRODUCT SET DESCRIPTION FOR ALL NOS/BE 1 PRODUCTS

PRODUCT NUMBER	PRODUCT & SUBPRODUCT NAME	VERSION NUMBER	ARH	DESCRIPTION
F620-43 F630-43 F650-43 F660-43 F670-43	FORTRAN DATA BASE FACILITY	1		The FORTRAN Data Base Facility provides FORTRAN users access to DMS-170. FDBF consists of three components: A FORTRAN subschema compiler, a preprocessor to the FORTRAN compiler, and a set of routines to provide the interface to a FORTRAN application program and CDCS.
F620-44 F630-44 F650-44 F660-44 F670-44	TOTAL UNIVERSAL	2		A data base management system developed by Cincom systems, Inc. embodies a network data structure philosophy. Relatiohships from one file may be made on a direct basis to other files within the data base using a chaining/threading technique. Files may be managed on an integrated basis within one data base. TOTAL includes a Data Base Definition Language (DBDL) which is used to describe and declare the data base and a Data Manipulation Language (DML) which functions in conjunction with the following host languages: (COBOL, FORTRAN and COMPASS) at the CALL or MACRO level. It is modular and evolutionary in design and use, provides a significant degree of data independence, and eliminates data redundancy, permits data reliability, ensures data integrity reliability and data base recovery. Also achieves optimum performance and efficiency through input/output buffer pool sharing and the eliminiation of external directories and indexes. TOTAL UNIVERSAL runs within the users field length. TOTAL UNIVERSAL requires F6X0-01 plus F6X0-23 for maintenance.
F620-60 F630-60 F650-60 F660-60 F670-60	TERMINAL INDEPENDENT GRAPHICS SYSTEM	1		Terminal Independent Graphics Systems (TIGS) is a general pupose subrountine package providing display generation in either two dimensional mode (2D) or three dimensional mode (3D) and interaction capability for a general class of graphics terminals. Primary design objectives were transportability, maintainability and ease of use. Features supported by TIGS 1 include line, arc, multi-line plot, text and dot primitives with resettable attributes such as line style, character size, intensity, font, color, transformation matrix, etc. The package uses virtual devices such as locators, keyboards, picking devices and function keys which can represent a wide range of physical devices. TIGS 1 support 2D and 3D viewing transformations for clipping and window to viewport mapping and coordinate transformations. A device independent neutral display file which contains information describing all segments, pictures, windows and viewports is used. The file may be saved and used in a later job with a differet display device. The neutral display file concept also permits attributes (e.g. line style, font, etc.) to be respecified without the redefinition of the segment. Version 1.0 of TIGS has been implemented to run on Control Data 6000 series, CYBER 70 series and CYBER 170 series computers under NOS/BE. A TIGS 1 post-processor is also required for installation and operation of this product. TIGS requires F6X0-10, F6X0-21, or F6X0-22, and F6X0-61 or F6X0-62.

LEGEND ARH (Additional Required Hardware) An asterisk in this column indicates hardware in addition to the minimum computer hardware is required. Additional hardware required is indicated under description of product.

CYBER 170 SERIES 700 SOFTWARE PRODUCT SET DESCRIPTION FOR ALL NOS/BE 1 PRODUCTS

PRODUCT NUMBER	PRODUCT & SUBPRODUCT NAME	VERSION NUMBER	ARH	DESCRIPTION
F620-61 F630-61 F650-61 F660-61 F670-61	TEKTRONIX 401X POST-PROCESSOR	1		Tektronix 401X post-processor is a subroutine package providing display generation and interaction with the Tektronix 4006 and 4010-4015. The display is produced from the neutral display file generated by the TIGS 1 pre-processor. Locators supported are the cross-hairs and tablet. F6X0-60 is required.
F620-62 F630-62 F650-62 F660-62 F670-62	SANDERS GRAPHICS 7 POST-PROCESSOR			The Sanders Post-Processor for the Terminal Independent Graphics System (TIGS) is a subroutine package which interfaces to a Sanders Graphic 7 intelligent refresh graphics terminal. The post-processor routines read graphics information from a pre-processor generated Neutral Display (NDF) and produce the appropriate commands with, when sent to the Sanders terminal, cause the graphics information to be displayed. F6X0-60 is required.

LEGEND ARH (Additional Required Hardware) An asterisk in this column indicates hardware in addition to the minimum computer hardware is required. Additional hardware required is indicated under description of product.

NOS/BE 1 PUBLICATIONS

NOS/BE 1 OPERATING SYSTEM

NOS/BE 1	60493800
RM	60493900
OG	60493900
DH	60494400
SPRM	60494100
UG	60494000
IH (APPLICATIONS SOFTWARE)	76071100
RM (ON-LINE MAINTENANCE SOFTWARE	60453900
IH	60494300
LOADER	
RM	60429800
IN	60450000
CYBER COMMON UTILITIES	
RM	60495600
COMMON MEMORY MANAGER	
RM	60499200

DATA COMMUNICATIONS

INTERCOM 4	
RM	60494600
UG (SCED)	60494800
INTERACTIVE PROCEDURE GUIDE	60495200
RM (MUJ CAP)	60494700
UG (FTN)	60495000
UG (COBOL)	60495100
INTERACTIVE COMMAND SUMMARY	60495300
REMOTE BATCH UG	60495400
REMOTE BATCH COMMAND SUMMARY	60495400
INTERCOM 5	
RM	60455010
UG (FTN)	60455950
UG (COBOL)	60455960
INTERACTIVE COMMAND SUMMARY	60455840
REMOTE BATCH UG	60455890
RM (MUJ CAP)	60456070
COMMUNICATIONS CONTROL PROGRAM 1	
RM	60470000
OG	60470100
DH	60570200
COMMUNICATIONS CONTROL FOR INTERCOM PROGRAM 3	
RM	60471150
DH	60471180

SUPPORT PROGRAMS

CYBER CROSS SYSTEM	
RM	96836000
RM PASCAL COMPILER	96836100
RM MACRO COMPILER	96836500
RM MICRO COMPILER	96836400
DH	96836300
RM LINK EDITOR	60471200
CONVERSION AIDS (COBOL 4 TO COBOL 5)	
RM	19265021
8-BIT SUBROUTINES	
RM	60495500
CYBER RECORD MANAGER	
RM (BASIC ACCESS METHODS)	60495700
UG (BASIC ACCESS METHODS)	60495800
UG (FORTRAN)	60495900
UG (COBOL)	60446000
RM (ADVANCED ACCESS METHODS	60499300
UG (ADVANCED ACCESS METHODS	60499400
UG (MULTIPLE INDEX PROCESSOR)	60480900
SORT/MERGE 4	
RM	60497500
UG	60482900
IN	60497600
PROGRAMMING REFERENCE AIDS	60158600
IMSL 6	
GIM	60456380

COMPILERS

ALGOL 5	
RM	60481600
APL 2	
RM	60454000
BASIC 3	
RM	19983900
SC	60482800
COBOL 5	
RM	60497100
IN	60597300
UG	60597200
DH	60482500
UG (REPORT WRITER)	60496900
COMPASS 3	
RM	60492600
IN	60492800
SC	60493000
FORTRAN EXTENDED 4	
RM	60497800
UG	60499700
UG (DEBUG)	60498000
RM (COMMON LIBRARY MATH ROUTINES)	60498200
IN	60497900
SIFT	
PSB	60496500
SYMPL 1	
RM	60496400
IN	60482600
PL/I	
RM	60388100

DATA MANAGEMENT

DMS-170	
RM (CDCS 1)	60498700
GIM	60498900
UG (DATA ADMINISTRATOR)	60499100
PSB (RELATIONAL DATA BASE)	60480700
DATA BASE UTILITIES	
RM	6049800
DDL 2	
RM (VOL. I)	60498400
RM (VOL. II-COBOL)	60498500
RM (VOL. III-QU)	60498600
RM (CDCS 2)	60481800
DDL 3	
RM (VOL. I)	60481900
RM (VOL. II-COBOL)	60482000
RM (VOL. III-QU)	60482100
FORTRAN DATA BASE FACILITY 1	
RM	60482200
FORM	
RM	60496200

QUERY UPDATE 3	
RM	60498300
UG	60387700
UG (PROGRAMMERS)	60499000

NOS/BE 1 APPLICATIONS

APT IV	
RM	17326900
UNIPLOT	
RM/UG	60454730
GPSSV	
GIM	84003900
RM	76078800
777 IGS	
RM	17321800
UG	17322500
GIM	17322400
UG (REMOTE JOB ENTRY)	76077200
BEGINNING GRAPHICS	
UG	76077300
LCGT/IGS	
RM	76079100
UG	76077400
DATA HANDLER	
RM	17322100
APPLICATIONS EXECUTIVE	
RM	17322200
APEX III	
RM	76070000
SIMSCRIPT 3	
RM	60368500
TOTAL UNIVERSAL	
RM	76070300
PERT/TIME 2	
RM	60456030
777/3D IGS	
RM	17326500
TIGS 1	
RM	60455940
UG	60456040
IN	60456360
GRAPHICS PRODUCT FAMILY	
GIM	76077000

The abbreviations used for manual types are as follows:

Card	Code Card
DH	Diagnostic Handbook
GIM	General Information Manual
IH	Installation Handbook
IN	Instant
OG	Operator's Guide
PSB	Programming Systems Bulletin
RM	Reference
SC	Summary Card
SPRM	System Programmer's Reference Manual
UG	User's Guide

/cPR1248A-09, Disk

CONFIGURATORS

INTRODUCTION

CYBER 170 configurators are divided into three operating systems:
1. NOS (pages 1-36 2. NOS/BE (pages 37-72 3. SCOPE 2.1 (Pages 73-end). Each operating system is formatted into four parts. For each operation system only supported hardware is shown. Check individual hardware product sections for additional options. The following are descriptions of the operating system sections.

I. OPERATING SYSTEM HARDWARE

These pages list the hardware requirements (minimum, basic, options) for the operating system.

II. HARDWARE DIAGRAMS

The allowable hardware is presented in diagrams that are grouped by function. The groups in order of presentation are:

- Mainframe Options
- Rotating Mass Storage
- Magnetic Tape
- Local Unit Record Equipment
- Remote Unit Record Equipment

III. SOFTWARE PRODUCT SET

A description of the active members of the product set are found in this section. Items such as memory requirements are highlighted.

IV. AVAILABLE DOCUMENTATION

Listed is documentation now available or planned.

All documentation is handled through Literature and Distribution Services.

In addition, publication number 60481000 available from Literature and Distribution Services will serve as a guide for users who wish to determine which revision levels of software documents were available at certain Programming System Report (PSR) levels during the life of the operating systems.

OPERATING SYSTEM HARDWARE REQUIREMENTS

Minimum System

- o 171-4
- o One Line Printer
- o One card Reader
- o Two Tape Units
- o Rotating Mass Storage
- - One 844-21 with one 881 (1 drive)
  or
- - One 844-41 with one 883-60
  or
  One 885

Options

- o Alternate Mainframes
- o CM Additions
- o CPU Upgrade
- o Additional CPU'S
- o Extended Core Storage
- o PPU/I/O Channels
- o Tape Units
- o Line Printers
- o Card Equipment
- o Rotating Mass Storage
- o Communication Equipment
- o Remote CRT's
- o Line printers
  Card equipment
- o Remote Teletypewriters
- o 171 CMU Upgrade
- o 171 Data Channel Converters

Minimum System Rules

- o Core requirements for minimum/viable systems are stated below and are based on the following definitions:

  Minimum

  The absolute minimum memory configuration required to operate the system. It is unlikely that this configuration could be applied to practical applications, except in very special circumstances.

  Viable

  The smallest memory configuration which should be assumed in the normal case. This configuration will support a reasonable performance level.

Minimum and viable configurations were defined for various software configurations as follows:

	Minimum	Viable
NOS/TELEX	65K	65K
NOS/NAM/RBF/IAF	65K	98K
NOS/NAM/RBF/IAF/CDCS 2	98K	131K

- One of the two Tape Units is used for initial loading.
- During normal running, the Tape Units may be used for temporary storage of Input and/or Output Queues.
- The system can reside only on devices of the same type. Minimum capacity to support standard batch processing is 60 million characters. (The system itself occupies approximately 2.1 million characters.) Additional space may be required for time sharing, permanent files and transaction processing.
- The system uses two PPU's on a full-time basis. The remaining PPU's are used on a dynamic pool basis, unless the Time Sharing Subsystem, E/1200 Subsystem or NAM is active. In this case, a PPU is dedicated for each subsystem.
- Each CDC CYBER 170 Model 172, 173, 174 or 175 includes one Operator Display Console and two Data Channel Converters. These Data Channel Converters are equivalent to 6681's.
- Note: Model 171 does not include any data channels converters and Model 176 includes only one date channel converter.
- The System Requirement for a Line Printer may be satisfied with a 200 UT Compatible Terminal (734-1, CY 18-5, etc.) printer that is physically located with the central computer and is driven through a 6671 or 2550 communications subsystem.
- A terminal card reader may be used to input source decks to the system but cannot be used to input binary decks.
- The system requirement for a card reader to load controlware may be satisfied with a 7152-1 Disk/Tape controller with a nine track magnetic tape unit.

In general, the minimum configuration will only support one (1) operating system mode (Batch, Time-Sharing etc.) at a time.

With the release of NOS 1.3, 32K systems are no longer supported.

If NOS 1 is used with a mainframe containing 49K central memory, (hardware configurations offered prior to 12/761, Network Products and IXGEN (a CRM 1 conversion utility) cannot be executed or maintained in a 49K system.

BASIC 171-X MAINFRAME

- o 1-Unified CPU
- o 65K to 262K CM
- o 10 PPU's
- o 12 I/O Channels
- o Operators Console

BASIC 172-X MAINFRAME

- o 1-Unified CPU
- o Compare Move Unit (CMU)
- o 65K to 292K CM
- o 10 PPU's
- o 12 I/O Channels
- o Operator's Console
- o 2 - Data Channel Converters

BASIC 173-X MAINFRAME

- o 1-Unified CPU with speed up option
- o Compare Move Unit (CMU)
- o 98K to 262K CM
- o 10 PPU's
- o 12 I/O Channels
- o Operator's Console
- o 2 - Data Channel Converters

OPERATING SYSTEM HARDWARE REQUIREMENTS
(Continued)

BASIC 171-X MAINFRAME

- o 2 - Unified CPU's with speed up options
- o Compare Move Unit (CMU)
- o 98K to 262K CM
- o 10 PPU's
- o 12 I/O Channels
- o Operator's Console
  2- Data Channel Converters

BASIC 172-X MAINFRAME

- o 1 - Multifunction CPU
- o 131K to 262K CM
- o 10 PPU's
- o 12 I/O Channels
- o 12 I/O Channels
- o Operator's Console
  2 - Data Channel
- o Converters

BASIC 173-X MAINFRAME

- o 1 - Multifunction CPU
- o 131K to 262K CM
- o OK to 2097K Extended Memory
- o 10-CYBER 170 PPU's
- o 12-CYBER 170 I/O Channels
- o 0-4 CYBER 176 PPU's
- o 0-4 Hi-Speed I/O Multiplexer Channels
- o Operators Console
- o 1-Data Channel Converter

Basic System and Loader Residence

- Operating System minimum residence is approximately 7,000 CM words. A typical system is approximately 20,600 CM words.
- ECS is supported by the system and is allocated and treated similarly to a mass storage device. Selected parts of the system can be stored in ECS. If a DDP is available, PPU routines resident in ECS will be loaded through it.
- NOS only supports 4 mainframes in a multi-mainframe environment. CYBER 176 is not supported in a multimainframe environment.
- The Operating System Residence is increased by the following amounts for optinal equipment and features:

Mass Storage

	TRT	MST	ECS (32n + 16 words per device) where n = number of 125K increments
844-XX	(410 + 16) words per device*		*Device may contain 1-8 spindles.
885	(420 + 16_ words per device**		**Device may contain from 1-3 spindles.

TRT - Track Reservation Table
MST - Mass Storage Table

Remote batch E/I 200

9700_{10} — for 16 200 UT Type Terminals, all active

This FL is required only when the Remote Batch System is active. Requires one full-time dedicated PPU from the dynamic pool.

Local Batch Executive

101 Words
528 CR + 272 CP + 528 LP + 1040 LX

If no Active Devices
CR - Number Active Card Readers
CP - Number Active Card Punches
LP - Number Active Line Printers (without 596-6 print train)
LX - Number Active Line Printers (with 596-6 print train)

This FL is required only when the Local Batch System is active. The FL expands as devicesd are serviced and contracts when servicing is complete.

Time Sharing Executive (TELEX)

4000_{10} + 9M + 14A

MX - maximum ports to service
A - number of active ports

This FL is required only when the Time Sharing Subsystem is active. Requires one full-time dedicated PPU from the dynamic pool.

Transaction executive (Transaction Facility)

Field length: $25,600_{10}$ including data manager and average table sizes.

The transaction subsystem allows transaction input from the same terminals which are currently supported by the time-sharing subsystem.

NETWORK PRODUCTS (NAM, RBF)

NAM (NIP) = 12000_{10} words
RBF = 12000_{10}

for 12 batch terminals; all but 1000 words are swappable

INTERACTIVE FACILITY (IAF)

6800 + 22T

T = number of terminals specified at initialization.

OPERATING SYSTEM HARDWARE REQUIREMENTS
(Continued)

Loader

Temporary CM usage during loading is a minimum of 1700_{10} words plus variable-length tables generated during the loading dependent on program size.

Magnetic Tape Executive

$826_{10} + (26_{10} \times A)$ A - number of units

Alternate Mainframes

The following Mainframe/CM combinations are supported by NOS 1

CM Size	Model 171 CPU	Model 172 CPU	Model 173 CPU	Model 174 CPU	Model 175 CPU	Model 176 CPU
49K	---	172-3*	---	---	---	---
65K	171-4	172-4	173-4*	174-4*	---	---
98K	171-6	172-6	173-6	174-6	---	---
131K	171-8	172-8	173-8	174-8	175-108,208,308	176-8,21,22,24
196K	171-12	172-12	173-12	174-12	175-112,212,312	176-12,31,32,34
262K	171-16	172-16	173-16	174-16	175-116,216,316	176-16,41,42,44

*Early Production only (Prior to 12/76)

CENTRAL MEMORY ADDITIONS

- Model 171 Upgrade Rules for CM: (10317-1 also as required)
  171-4 plus 10312-6 gives 171-6
  171-6 plus 10312-8 gives 171-8
  171-8 plus 10312-12 gives 171-12
  171-12 plus 10312-16 gives 171-16

- Model 172 Upgrade Rules for CM: (10317-1 also as required)
  172-2 plus 10312-3 gives 172-3
  172-3 plus 10312-4 gives 172-4
  172-4 plus 10312-6 gives 172-6
  172-6 plus 10312-8 gives 172-8
  172-8 plus 10312-12 gives 172-12
  172-12 plus 10312-16 gives 172-16

- Model 173 Upgrade Rules for CM: (10317-1 also as required)

  173-4 plus 10312-6 gives 173-6
  173-6 plus 10312-8 gives 173-8
  173-8 plus 10312-12 gives 173-12
  173-12 plus 10312-16 gives 173-16

- Model 174 Upgrade Rules for CM:
  174-4 plus 10312-6 gives 174-6
  174-6 plus 10312-8 gives 174-8
  174-8 plus 10312-12 gives 174-12
  174-12 plus 10316-12 gives 174-16

- Model 175 Upgrade Rules for CM:
  175-108, 208 plus 10313-12 gives 175-112, 212
  175-112, 212 plus 10313-16 gives 175-116, 216
  175-308 plus 10313-112 gives 175-312
  175-312 plus 10313-116 gives 175-316

- Model 176 Upgrade Rules for CM:
  176-8, 21, 22, 23 plus 10374-1 gives 176-12, 31, 32, 34
  176-12, 31, 32, 34, plus 10374-2 gives 176-16, 41, 42, 44

- Model 176 Upgrade Rules for EM (Extended Memory):
  176-8, 12, 16, plus 10375-10 gives first 524K
  176-21, 31, 41 (524K) plus 10375-1 gives 176-22, 32, 42, (1M)
  176-22, 32, 42 (1M) plus 10375-2 gives 176-24, 34, 44, (2M)

CPU Upgrades

- Model 171 performance can be increased by adding a compare move unit (10380-X) or a second central processor (10382-X) or by upgrading the CPU into a model 172 (10380-1, plus 10381-1, plus 10331-2, plus 10383-1).

  171-X plus 10380-1, 10381-2 and 10383-1 gives 172-X
  171-X plus 10382-X gives Dual CPU 171-X
  Dual CPU 171-X plus 10380-2, 10381-1, 10281-2, 64047-X and 10383-2 gives dual CPU 172-X

- Model 172 performance can be increased by adding a second central processor (10384-1 or by upgrading the CPU to a model 173 or 174 (10316-1 or 10385-1).

  172-X plus 10316-1 gives 173-X
  172-X plus 10384-1 gives Dual CPU 172-X
  Dual CPU 172-X plus 10385-1 gives 174-X

- Model 173 performance can be increased by addition of a CPU to become a model 174 (10316-2)

- The above are all field upgrades.

- The upgrading from a model 173 or 174 to a model 175 requires a Mainframe exchange.

  174-1XX plus 10426-1 gives 175-2XX level performance
  175-2XX plus 10427-X gives 175-3XX level performance

- The upgrading from a model 173, 174 or 175 to a model 176 requires a mainframce exchange.

- Addition of 10376-10 and 10375-10 options upgrades a 176-8, 12, 16 to a respective 176-21, 31, 41.

PPU - I/O Channel Options

- The basic model 171, 172, 173, 174, 175 or 176 contains 10 PPU's and 12 I/O Channels.

- Model 171, 172, 173, and 174 Upgrade Rules

  10314-1 Adds 4 PPU's and 12 I/O Channels to 10 PPU, 12 I/O Channel System

  10314-2 Adds 4 PPU's to 14 PPU 24 I/O Channel System

  10314-3 Adds 3 PPU's to 17 PPU 24 I/O Channel System

  Model 175 Upgrade Rules

  10314-151 Adds 4 PPU"s and 12 I/O Channels to 10 PPU, 12 I/O Channel System

  10314-152 Adds 3 PPU's to 14 PPU, 24 I/O Channel System

  10314-153 Adds 3 PPU's to 17 PPU, 24 I/O Channel System

- Model 176 Upgrade Rules

  10377-1 Adds 4 Cyber 170 PPU's and 12 I/O Channels to 10 PPU, 12 I/O Channel System.

  10314-52 Adds 3 Cyber 170 PPU's to 17 PPU 24 I/O Channel System

  10319-53 Adds 3 Cyber 170 PPU's to 17 PPU 24 I/O Channel System

  10376-10 Adds initial 4 PP's and 4 Mux Channels to 176-8, 12, 16

  10376-1 Adds 1 Cyber 176 PP allowing expansion from 4 PP system to 6 PP system.

  10348-1 Adds 2 Hi-Speed I/O Multiplexewr Channel allowing expansion from 4 Hi-Speed I/O Multiplexer Channels to 6 Hi-Speed Channels

Optional Extended Core Storage

- The Basic 7030-1XX ECS unit contains the necessary controller and one Distributed Data Path (DDP).

- A 10318-X Coupler must be ordered for each mainframe connecting to ECS.

- Growth of the basic 7030-1XX may be achieved by the addition of ECS Storage Increments (10319-X).

- Supported Options

ECS Words	Model	Upgrade Rules for ECS Words
262K	7030-102	7030-102 plus 10319-2 gives 7030-104
524K	7030-104	7030-104 plus 10319-4 gives 7030-108
1048K	7030-108	7030-108 plus 10319-8 gives 7030-116
2096K	7030-116	

The DDP in the basic 7030-1XX ECS unit is supported. One additional buffer registar for a maximum of two per mainframe is supported by the software (Option 10280-10).

The DDP in the 7030-X is not supported.

OPERATING SYSTEM HARDWARE REQUIREMENTS
(Continued)

Tape Units

- See Hardware Diagrams for supported configurations.
- See "Minimum System Rules" for alternate uses of Tape Units.
- NOS 1 may be dead-started from either 7-track or 9-track units.
- 67X and 66X must be on different channels.
- 67X 200 IPS units are only supported at 2X PPU speed.
- In order to dead-start from 66X equipment must be on channels 12, 13, 32, or 33. A card reader must also be on one of the above channels, but not the one the 66X is on.

Line Printers

- See Hardware Diagrams for supported local and remote cdonfigurations.
- A 596-X Train must be ordered with each 580 Printer. (where X = 1, 5 or 6)
- The 580-1XX (Programmable Format Control) is supported by NOS 1.

Card Equipment

- See Hardware Diagram for supported local and remote configurations.
- The Card Reader Buffer size is 512 words and the Card Punch Buffer size is 256 words. These Buffers may be changed by an installation modification.

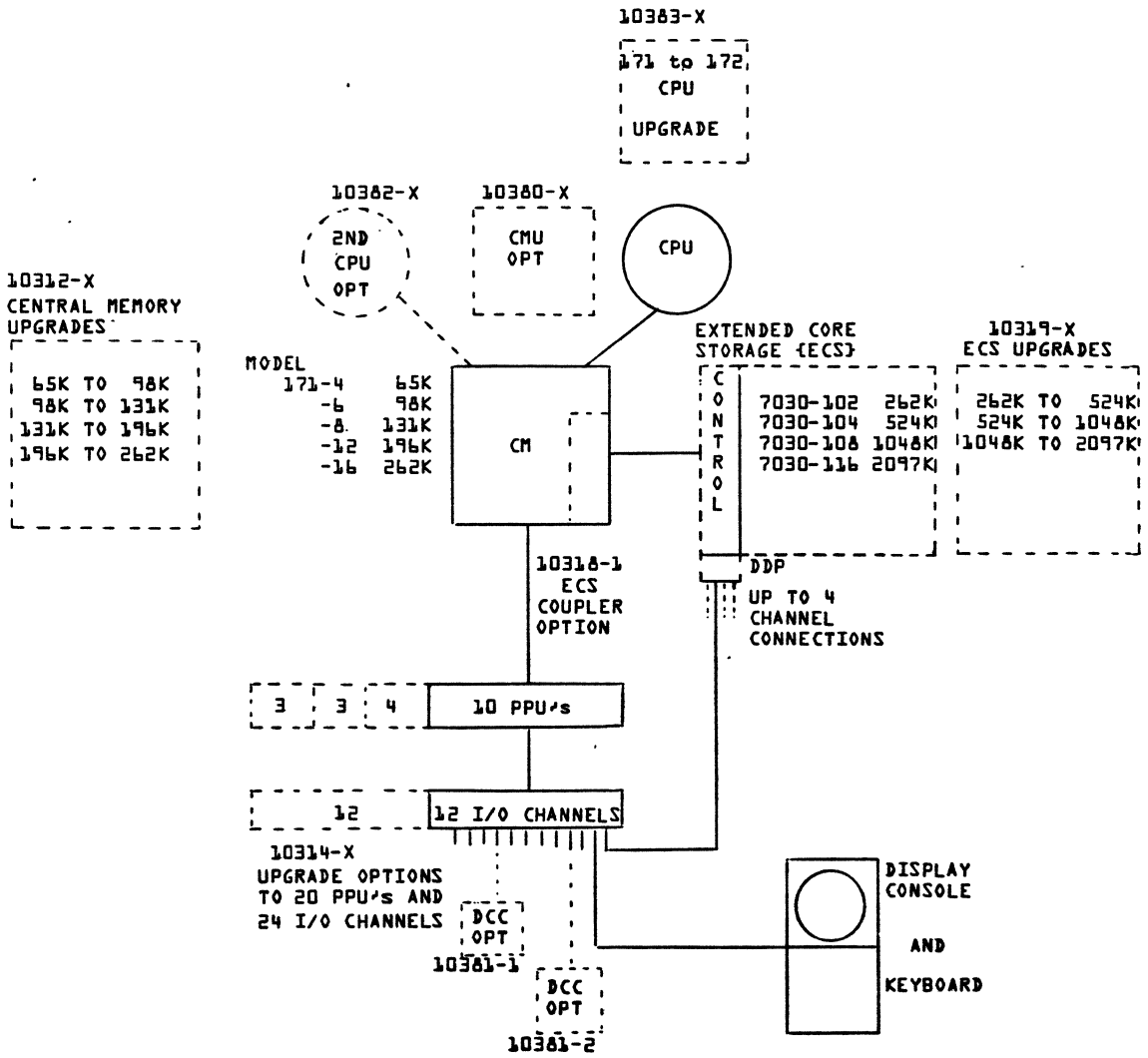
Hardware Restrictions

- Only a single 6681-2 may be used on a data channel.
- A DDP cannot have a 6681-2 prior to it, on the same channel.
- Maximum of 8-667X multiplexers for time-sharing use. (X - 1 or 6).
- Maximum of one 6671 multiplexer for remote batch.
- Maximum of four 2551 for Network Products.
- Maximum of 20 unit record devices driven trhough the local batch executive. Each eight devices requires a PPU.
- Maximum of four tape channels per mainframe.
- Maximum of 31 logical mass storage devices.

/spr4155-09

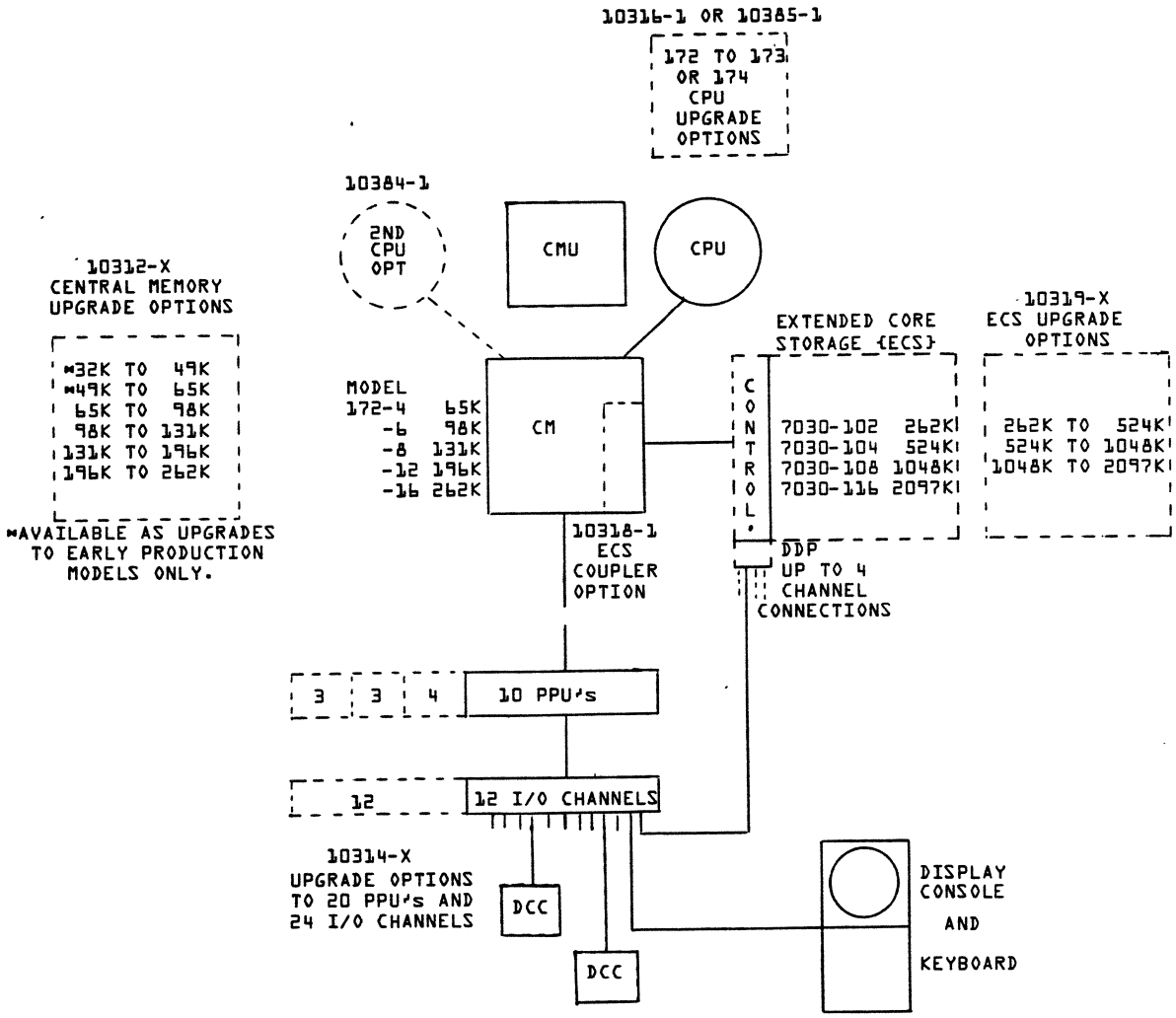
/spr4155-09-5

CDC CYBER 170 MODEL 171
CONFIGURATOR



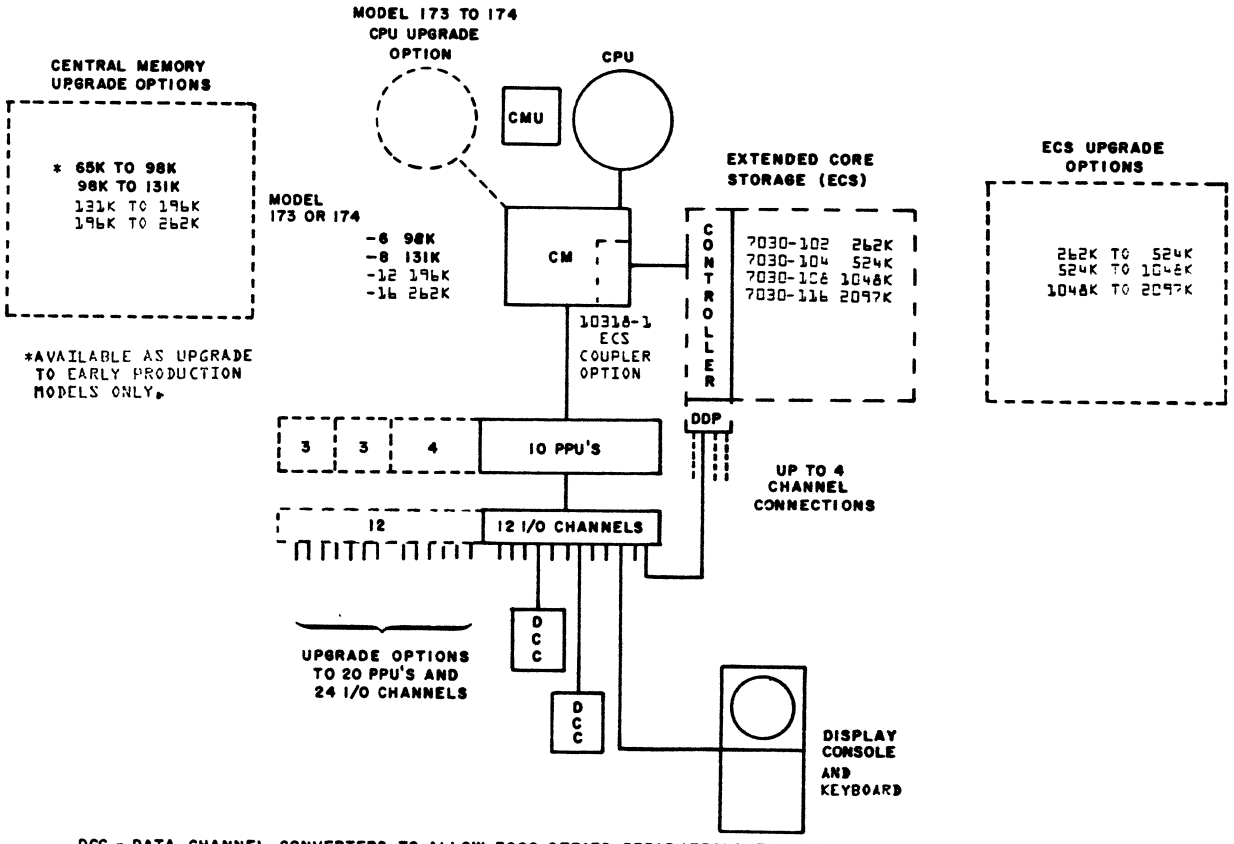
OPTIONAL DCC - DATA CHANNEL CONVERTERS TO ALLOW 3000 SERIES PERIPHERALS
TO INTERFACE THE CYBER 170 MODEL 171

CDC CYBER 170 MODEL 172
CONFIGURATOR



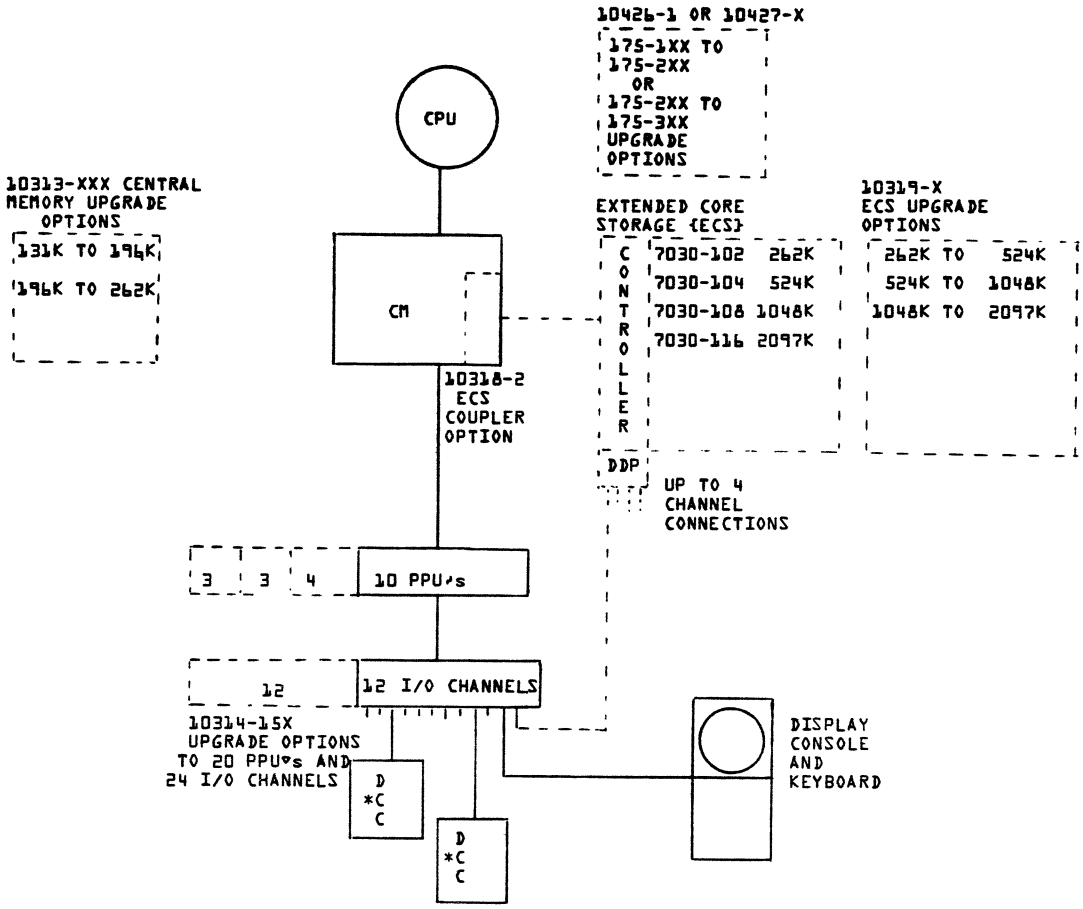
DCC - DATA CHANNEL CONVERTERS TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE TO THE CYBER 170 SERIES.

CDC CYBER 170 MODEL 173 AND 174
CONFIGURATOR



DCC - DATA CHANNEL CONVERTERS TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE THE CYBER 170 SERIES.

CDC CYBER 170 MODELS 175-1XX, 2XX, 3XX CONFIGURATOR



*DCC - DATA CHANNEL CONVERTORS TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE TO THE CYBER 170 SERIES

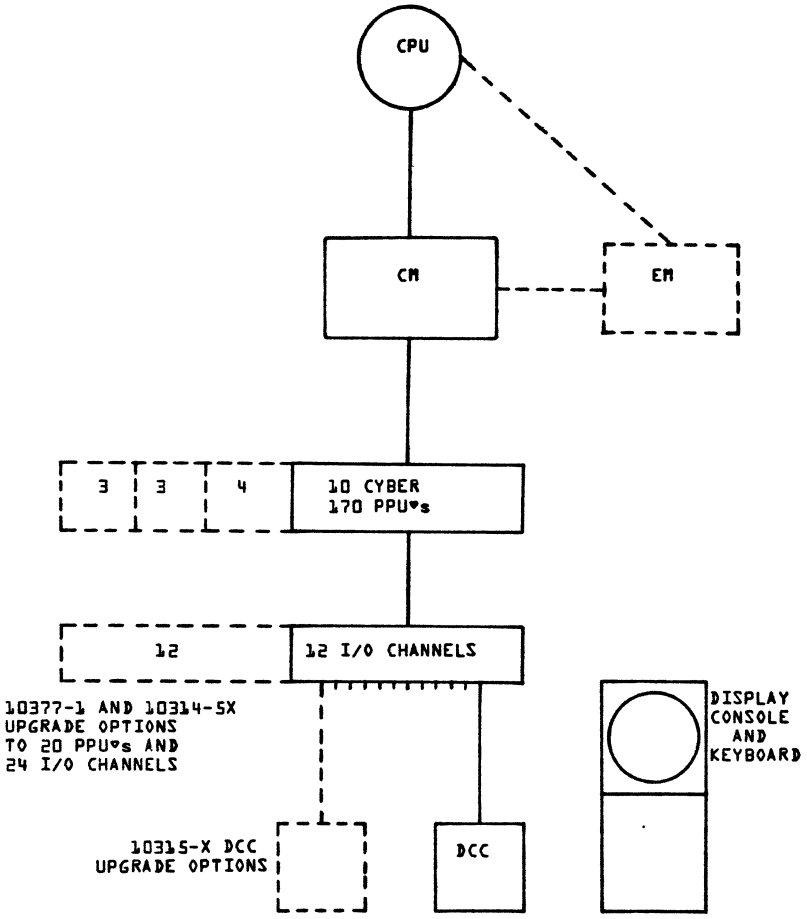
CENTRAL MEMORY

MODELS	CM
175-108, 208, 308	131K
175-112, 212, 312	196K
175-116, 216, 316	262K

CM OPTIONS

MODELS	FROM	TO	OPTION
175-108, 208	131K	196K	10313-12
175-112, 212	196K	262K	10313-16
175-308	131K	196K	10313-112
175-312	196K	262K	10313-116

CDC CYBER 170 MODELS 176-8, 12, 16 CONFIGURATOR



MODELS

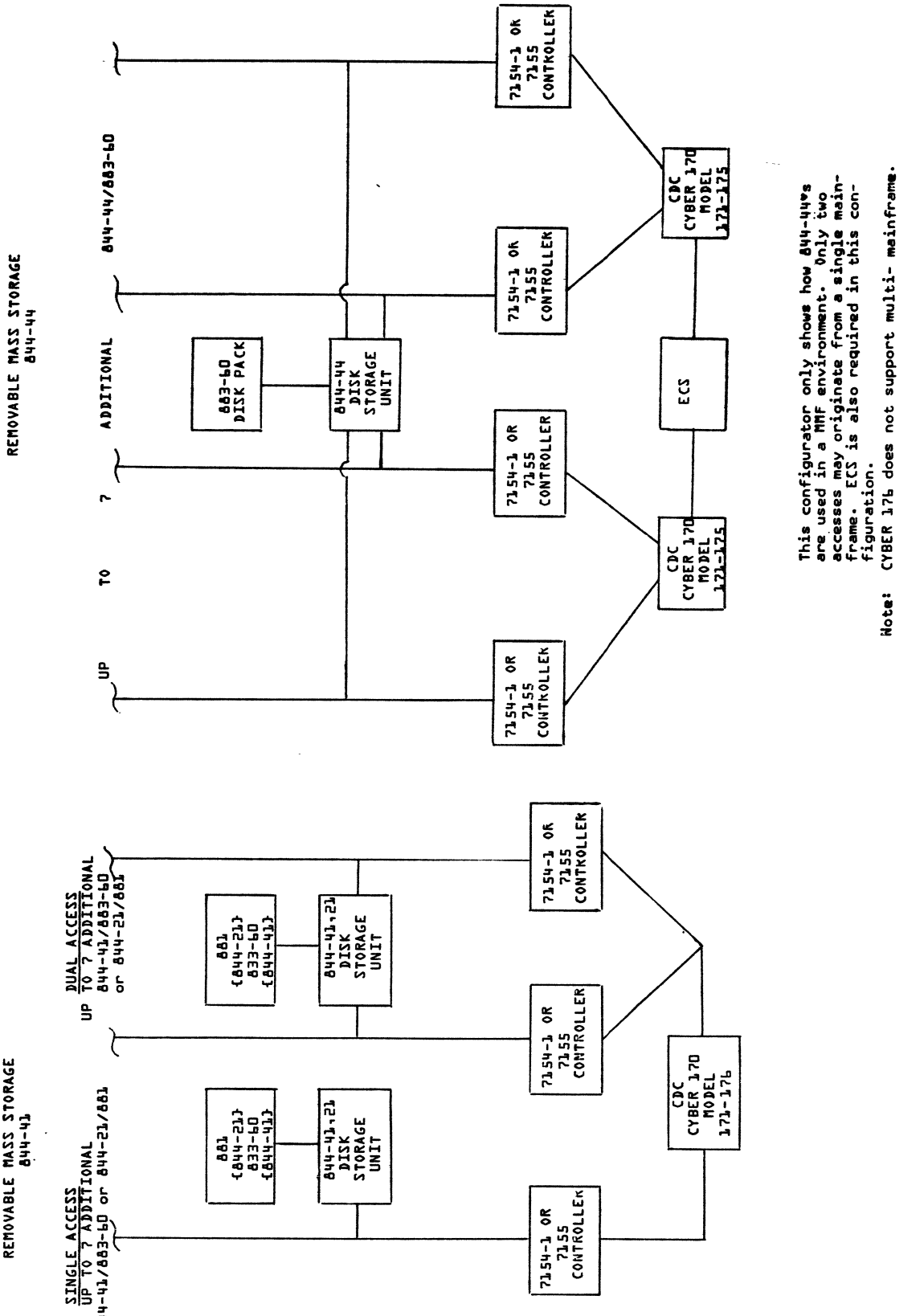
MODEL	CM
176-8	131K
176-12	196K
176-16	262K

CM OPTIONS

131 TO 196K	10374-1
196K TO 262K	10374-2

EM (EXTENDED MEMORY) OPTIONS

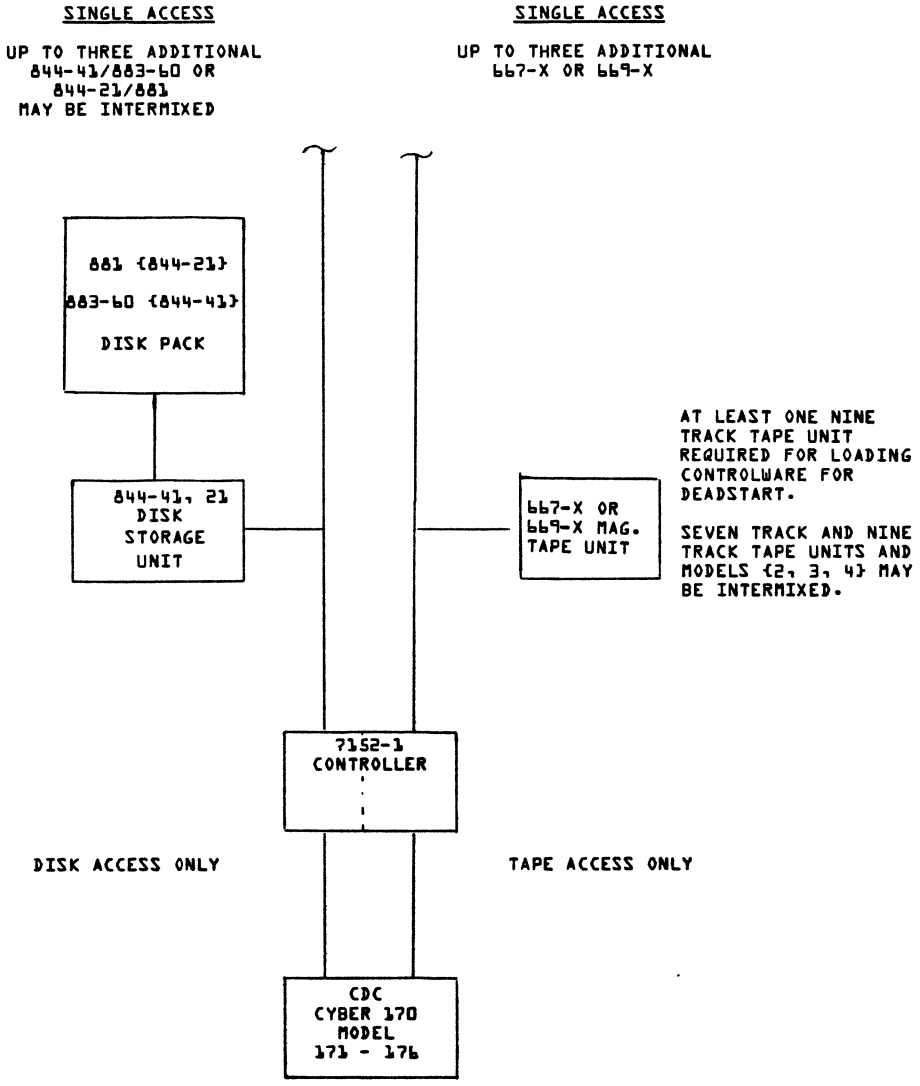
0K TO 524K	10375-10
524 TO 1048K	10375-1
1048K TO 2097K	10375-2



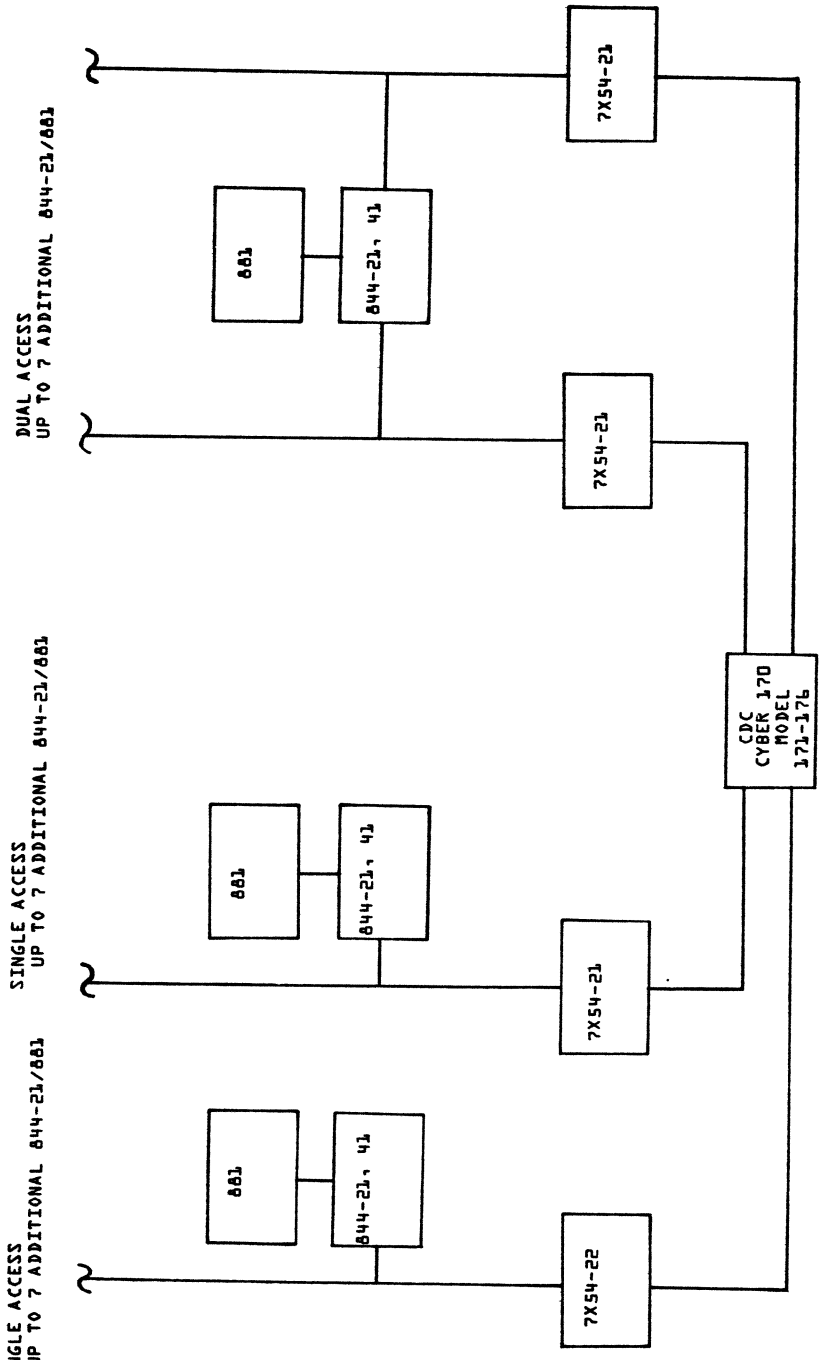
This configurator only shows how 844-44's are used in a MMF environment. Only two accesses may originate from a single mainframe. ECS is also required in this configuration.

Note: CYBER 176 does not support multi- mainframe.

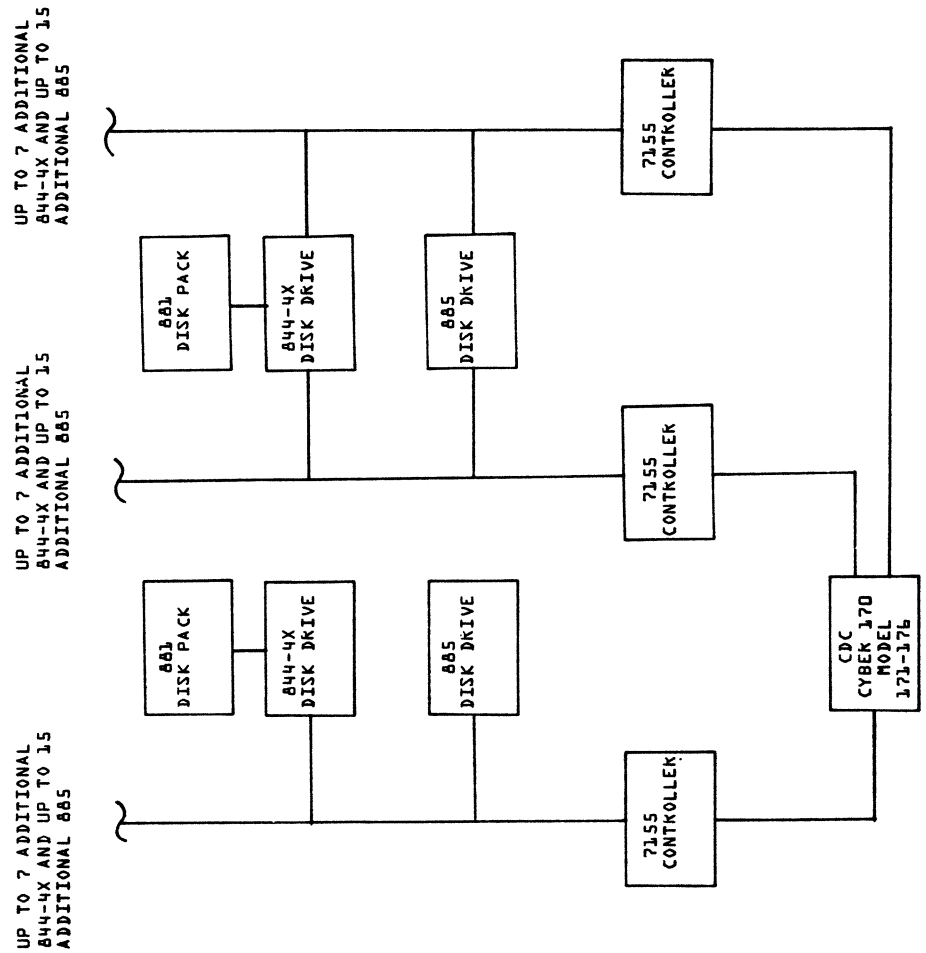
MASS STORAGE/MAGNETIC TAPE
7152-1/844/66X



MASS STORAGE SUBSYSTEM
7X54-X/844-21, 41



MASS STORAGE SUBSYSTEM
7155/885

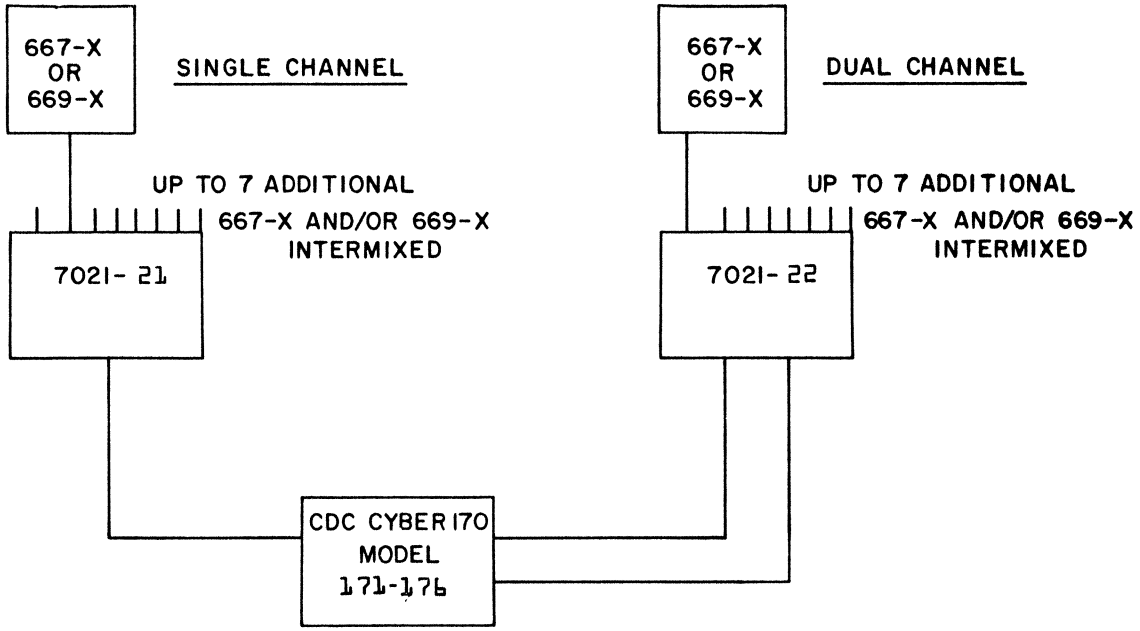


MAGNETIC TAPE SUBSYSTEM

7-TRACK, 7/9-TRACK INTERMIXED OR 9-TRACK

NOTES

667-X: 667-2, 667-3, 667-4 (7-TRACK)
669-X: 669-2, 669-3, 669-4 (9-TRACK)



7-TRACK AND 9-TRACK TAPE UNITS AND MODELS (2,3,4) MAY BE INTERMIXED

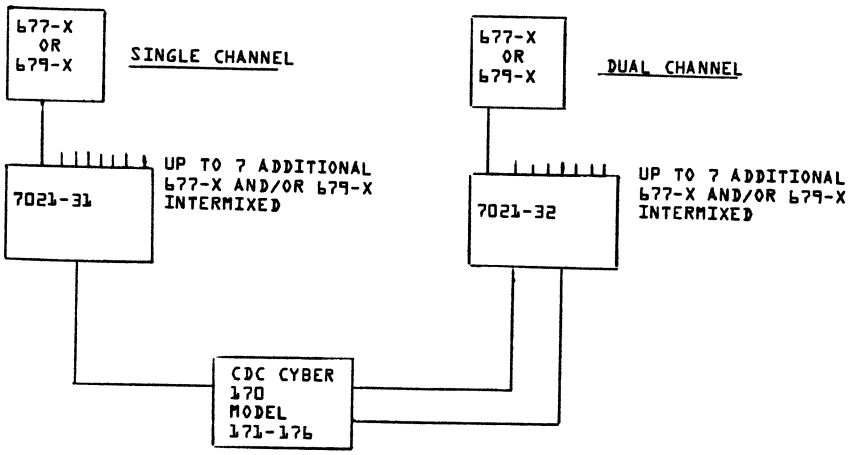
67X MAGNETIC TAPE SUBSYSTEM

7 TRACK

677-2 556/800 BPI NRZI, 100 IPS
677-3 556/800 BPI NRZI, 150 IPS
677-4 556/800 BPI NRZI, 200 IPS

9 TRACK

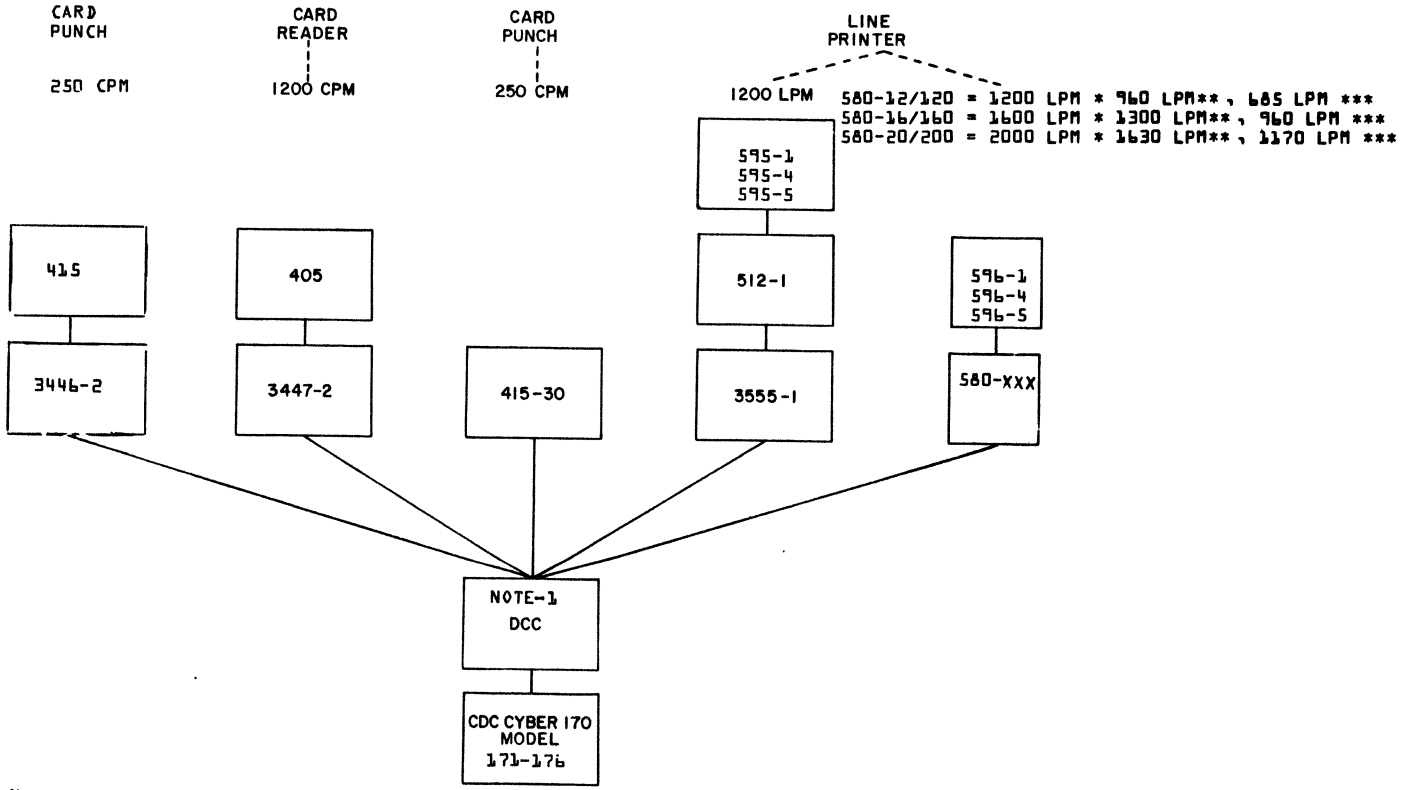
679-2 800 BPI NRZI and 1600 BPI PE, 100 IPS
679-3 800 BPI NRZI and 1600 BPI PE, 150 IPS
679-4 800 BPI NRZI and 1600 BPI PE, 200 IPS
679-5 6250 BPI GCR and 1600 BPI PE, 100 IPS
679-6 6250 BPI GCR and 1600 BPI PE, 150 IPS
679-7 6250 BPI GCR and 1600 BPI PE, 200 IPS



NOTE: 7 TRACK AND 9 TRACK TAPE UNITS CAN BE INTERMIXED
System configuration restrictions are determined by the data-transfer rates of the tape units.

- NRZI and P.E. Recording
  -A unit of any speed may be used on any CYBER 170, CYBER 70 or 6000 configuration, assuming no more than two other devices are daisy-chained on the channel ahead of the controller.
- GCR Recording
  -200 IPS not allowed on 6000 or CYBER 70. Must be first on CYBER 170 channel. not allowed if MAC switch used (60144-X or 10329-X).
  -150 IPS must be first or second on either CYBER 170, CYBER 70 or 6000 channel.
  -100 IPS must be first or second on CYBER 70 or 6000 channel. Must be first, second or third on CYBER 170 channel.

LOCAL UNIT RECORD EQUIPMENT



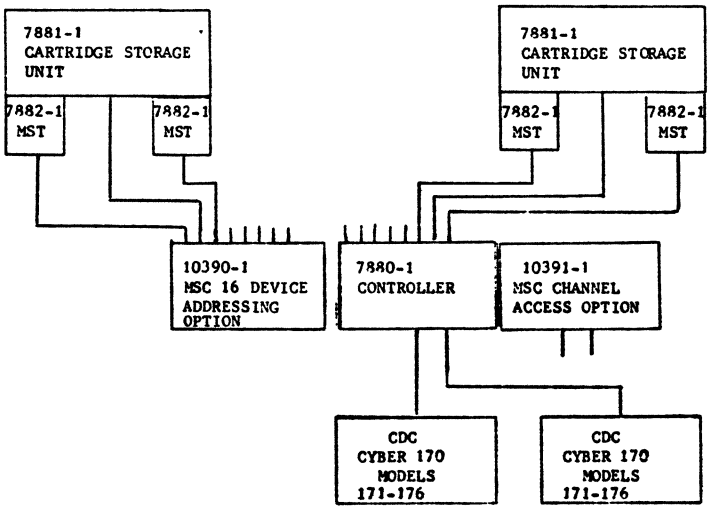
Note: - 1 Model 171 Requires
Option 10381-X

* Speeds are only possible with 48 character set

** Speeds are possible with 64 character set

* * Speeds are possible with 96 character set.

MASS STORAGE FACILITY (MSF)



NOTES

- The NOS software support, for the equipment shown in the above diagram, will be initially available under NOS 1.4.

- 7882-1 Mass Storage Transports (MST)

  - A minimum of two MST units per 7881-1 CSU; a maximum of four MST units per CSU.

- 7880-1 Controller

  - Up to four 7880-1's per channel.

  - Can be connected to up to two CYBER 170's or four if the 7880-1 has the 10391-1 option; however, the software will only support one CYBER 170 accessing the same 7880-1 over the same period of time; the connections to the other CYBER 170's should only be used for back-up purposes.

  - Each 7880-1 can control up to 8 devices (each device being a 7882-1 MST or a 7881-1 CSU); the 10390-1 option (for the 7880-1) provides control for up to 8 additional devices.

- The initial software support under NOS will not support the 10393-1 CSU Alternate Path Option or the 10392-1 MST Alternate Path Option without a system restart.

- Minimum Configuration

  The minimum configuration supported is a CYBER 171, one 7880-1 Controller, one 7881-1 Cartridge Storage Unit, and two 7882-1 Mass Storage Units (MST). (See the minimum configuration for NOS 1 described previously for a list of the other peripheral equipment required).

- Maximum Configuration

  The maximum configuration (of MSF equipment) supported is five 7881-1 CSU's and six 7880-1 Controllers.

- Multi-mainframe Configuration

  - The CYBER 176 is not supported for multi-mainframe access to the MSF.

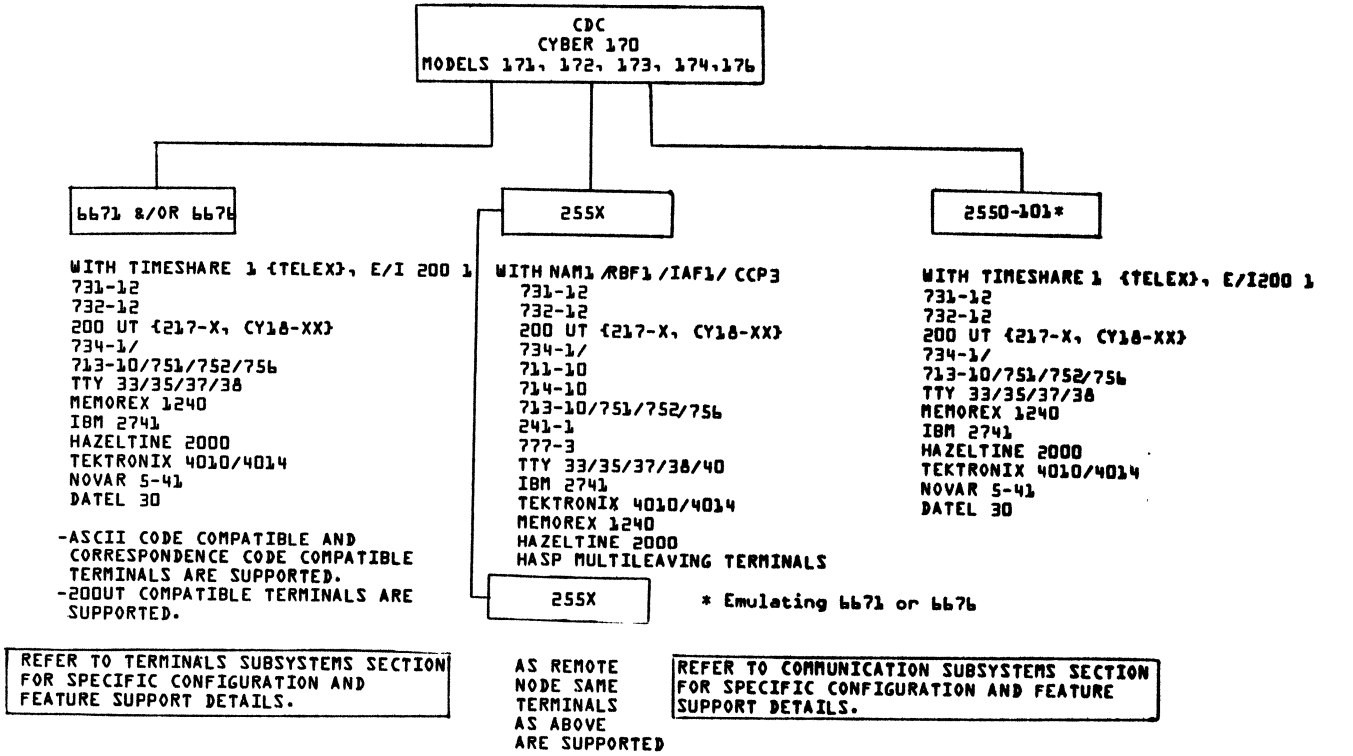
  - Multi-mainframe access to the MSF supports two to four mainframes.

  - Only one CYBER 170 (in a multi-mainframe configuration) directly controls or accesses the MSF equipment. (However this control can be transferred to another mainframe, directly linked to the MSF, if necessary.) All other mainframes in the multi-mainframe configuration send or receive data to the MSF equipment indirectly using shared mass storage (e.g. 844-21). Therefore all CYBER 170's in a multi-mainframe configuration, which will "share" the MSF equipment, must also share "rotating" mass storage and ECS.

  - In a multi-mainframe configuration with shared rotating mass storage, all MSF equipment must be driven from a single mainframe.

COMMUNICATION SUBSYSTEMS & TERMINALS SUPPORTED

NOS 1



COMPUTER SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATION CR NOS 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
NETWORK OPERATING SYSTEM F521-01 (CY171-174) F521086 (CY175-1xx, 2xx, 3xx)	1		Includes MODIFY 1 and UPDATE 1.	NOS is the basic system software that coordinates all other system software, user programs, operator communication nd hardware action. Input and scheduling jobs, compilation, assembly, execution and output of all programs submitted to the computing system, as well as the allocation of system resources for these job and programs, are monitored and controlled by the operating system. Although oriented towards the support of large numbers of remote terminals, NOS retains the normal monitoring and control functions of most operating systems. In addition to interactive processing capabilities, the system supports the local and remote batch processing capabilities of the CDC CYBER 170. The Network Operating System permits the speed, computational capability, and data management effectiveness of the central computer system to be distributed to an unprecedented number of users.
COMPASS	3		Included in operating system.	COMPASS provides a comprehensive assembler language for writing CPU and PPU PROGRAMS for 6000, CYBER 70 and CYBER 170 series systems. CPU programs can be absolute or relocatable. Symbolic machine instructions provide for expressing all hardware functions. Pseudo instructions control the assembler processing and include versatile, extensive macro and micro facilities.
CYBER RECORD MANAGER/ BASIC ACCESS METHODS	1		Included in operating system.	Provides a general purpose I/O package to perform all basic I/O tasks. Supports sequential and word addressable file organization.
8-bit Subroutine Package		See Description	Included in operating system. Typical field length 20_{10}K.	A group of routines designed to enable a FORTRAN or COBOL programmer to read, write, and manipulate sequential files and data using 8-bit character sets. Supports IBM 360/370 sequential format (tape) files, EBCDIC and ASCII punched card decks. I/O routines enable translation between external and internal data types and character sets, and operate on a record-by-record basis. A set of utility routines manipulate character strings in Display Code, ASCII, and EBCDIC. Complete character set translation and mixed character set string comparison routines are provided. two additional routines allow improved file utilization; they compress 8-bit data from internal working form to a more compact form for storage, then expand it again. Additional Supported Hardware 650-X Tape Transport

COMPUTER SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATION CR NOS 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
FORM	1			A general purpose File Organzier/Record Manager utility that permits selection, manipulation, copying and reformatting capabilties on files and records. FORM also contains a module that permits conversion between 6000 and System/360 file and record formats. It is supported as a User Library product.
MAINTENANCE PACKAGE F521-02	1			A maintenance package that includes a collection of programs used in the installation and maintenance of NOS 1 and its product set.
CYBER LOADER	1		Included in operating system.	The CYBER LOADER is an integral part of the NOS 1 Operating System. The user is offered these types of loading: Core Image Loading, Object Module Loading, Basic Loading, Segmentation, Overlay Generation. The user controls the CYBER LOADER through Control Statements, User Calls, and LOADER Object Directives.
UPDATE	1		Included in operating system. **Field length: 40_8K.	UPDATE provides a means of maintaining source decks in conveniently updatable compressed format. With UPDATE directives and control card optins, the user directs the process of creating a program library, correcting it, and copying the updated programs to file for subsequent use by assemblers and compilers.
MULTI-MAINFRAME F521-05	1ECS			This feature is designed to provide a mechanism by which up to four computers (6000/CYBER 70/CYBER 170) may access shared mass storage devices. This allows the mainframes to share permanent files residing on such devices. Each mainframe on the complex may operate in shared mode or in stand alone mode; however, two machines may not access the same device unless both are in shared mode. A device is considered shared if it can be accessed by more than one of the mainframes. It need not be accessible to all the mainframes in the complex. ECS is used as the means and media for controlling shared mass storage and inter-maionframe communications. Multi-mainframe is not supported on CYBER 176. While the multi-mainframe shared files capability is designed to support up to four computers, this release will be evaluated using only two computer systems and therefore a QSS is required for three or more computers.

COMPUTER SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATION CR NOS 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
NETWORK ACCESS METHOD F521-06	1255X		NIP(dedicated) - 12_{10}K. AIP (user control pt.) = 1_{10}K NS (swappable) = 8_{10}K CS (swappable) = 10_{10}K + 10 per connected terminal	The Network Access Method (NAM) provides a generalized method for CYBER 70/170 system facilities and user application programs to access a telecommunications network. NAM provides the CYBER 70/170 interface with the CCP 3 program running and user application programs to transmit messages to the communications network in several modes - transparent, virtual terminal/display code, and virtual terminal/ASCII code. Transparent mode allows the user application program or system facility to control the operation of a terminal completely while the virtual terminal modes free these programs of the necessity to provide the majority of the terminal control codes - only display code or ASCII code messages need to be accommodated. NAM provides an interface for the Remote Batch Facility, Interactive Facility (IAF) and Transaction Facility (TAF).
CONVERSION AIDS SYSTEM F521-07		1		Provides automated conversion capability of application programs and files for 3000L MASTER and MSOS FORTRAN (MS and ANSI) to FORTRAN EXTENDED 4.
INTERACTIVE FACILITY F521-08	1		For field length requirement, see operating system hardware requirements.	TAF 1 under NOS 1 provides interactive services with the Network Access Method and 2550s. The diversity, type and speed of terminals supported is enhanced over that of TELEX.
PL/I F521-09	1			This version is a non-optimizing compiler for an upwards compatible subset of the ANSI/ECMA Language. Missing features will include the DEFAULT statement, aggregate operations and data-directed I/O.
ALGOL 5 F521-11	5			The ALGOL compiler supports the full ALGOL-60 language specification and includes the Knuth I/O specification. It does not include all the language extensions or interactive capabilities of ALGOL-60 V4. It does rapport automatic field length management and performance is better than ALGOL 60-4.
FORTRAN EXTENDED F521-12	4		**Field length: 55_8K. Includes Interactive Option with Single Pass Compile Capability	Includes all the features of FORTRAN EXTENDED 4 plus interactive capability at execution time.

COMPUTER SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATION CR NOS 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
SORT/MERGE F521-14	4		**Field length: 40_8K.	The SORT/MERGE product is a special application program that accepts input from tape or disk and constructs, according to user specifications, sorted output on tape or disk. This product can be used for sort-only, merge-only and sort-and-merge operations. This version provides increased speed, imporved reliability and an interface with the CYBER RECORD MANAGER. OPERATING OPTIONS
		- None	-Disk option	DISK - Additional disks will provide improved: o Speed - Two additional tapes will provide improved: o Speed - Additional core will provide improved: o Speed - Three tapes can be used for disk overflow, others for input or output.
		- 2 tapes	-Tape Option	TAPE - Two additional tapes are required. - More additonal tapes will provide improved: o Speed - Additional core will provide impoved: o Speed - Tapes can be assigned to disk.
INTERACTIVE BASIC F521-17	3		**Field Length: 30_8K.	The BASIC subsystem enables both novice and experienced programmers to readily create and execute interactive programs in time sharing environment. This version of interactive BASIC provides many capabilities not available in BASIC 2.1. For example, word addressable random I/O, enhanced print formatting, multiple argument and multiple line user defined functions, extended string variable names, a string concatenation operator, logical connective operators, access to external non-BASIC subroutines, and full use of the escape code ASCII extended character set.
NETWORK UTILITIES F521-23	1			The major element of Network Utilities 1 under NOS 1 is the Network Product Stimulator. The Stimulator is a test package that allows a controlled message load to be presented to the CYBER network software without the use of external communications equipment. The Stimulator consists of a script compiler, a stimulator and a data reduction post processor.
XEDIT F521-24	3			Enhanced interactive text file editing system for time sharing users.
CYBER CROSS SYSTEM F521-25	1			Provides for maintenance and compilation of Communication Control Program software.

COMPUTER SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATION CR NOS 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
REMOTE BATCH FACILITY F521-26	1		RBF (dedicated = 1_{10}K RBF (swappable) = 11_{10}K	The Remote Batch Facility (RBF) provides for batch file transmission between a remote Mode 4A terminal or HASP multileaving terminal and the job queue maintained by the host operating system on rotating mass storage. With RBF, the user sends data files to the input queues and receives data files from the output queues. RBF performs character conversion and mapping and allows the user to control the disposition and transmission of his files through a terminal command language. RBF also supplies the user with status information concerning his files and devices.
TOTAL UNIVERSAL F521-28	1			A data base management system developed by CINCOM System, Inc., which embodies a network data structure philosophy. Relationships from one file may be made on a direct basis to other files within the data base using a chaining threading technique. Files may be managed on an integrated basis within one data base. TOTAL includes a Data Base definition Language (DBDL) which is used to describe and declare the data base and a Data Manipulation Language (DML) which functions in conjunction with the following host languages (COBOL, FORTRAN, and COMPASS), at the CALL or MACRO level. It is modular and evoluntionary in design and use; provides a significant degree of data independence; can eliminate data redundancy; permits data relatability; ensures data integrity, reliability, and data base recovery; and achieves optimum performance and efficiency through input/output buffer pool sharing and the elimation of external directories and indexes. TOTAL Universal runs within the user's field length.
TOTAL EXTENDED F521-29	1			Data Base Management System. (Transaction Multi-Thread). Permits network structure relationships between data files and concurrent access/update to a data base by multiple transaction tasks. Includes a Data Base Definition Language (DBDL) and a Data Manipulation Language (DML) which functions with COBOL, FORTRAN and COMPASS. Includes TOTAL UNIVERSAL.
CYBER DATABASE CONTROL SYSTEM F521-30	2			CDCS 2 under NOS 1 allows multiple indenpendent programs (at spearate user control points) to concurrently update a data base using the Indexed Sequential and Multiple Index Processor access methods of CRM with lockout control at the logical record level. It provides data privacy at the file level.

COMPUTER SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATION CR NOS 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
DATA DESCRIPTION LANGUAGE F521-31	3			DDL 3 under NOS 1, is an extension of DDL 2 including support of Area-Level privacy and improved data independence between application programs and COBOL subscheme compilations. DDL 1 generates record mapping code to improve CDCS 2 record mapping performance.
GPSS-V F521-32	1			General purpose simulation system designed for modeling of real situations as affected by changes over time intervals and corresponding events which occur during the simulation. Features free format input and floating point number capabilities. No Internal Maintenance Specifications are available.
APEX-III F521-34 thru F521-38				APEX III is a program for the solution of linear programming problems. These problems involve the minimization or maximization of a linear function subject to equality or inequality constraints. A large number of common optimization problems may be formulated as linear programming problems, e.g., refinery scheduling, distribution nd optimization, warehouse location, optimal planning. Requires FORTRAN EXTENDED 4.
				The product set is composed of four products:
APEX-III OUT-OF-CORE SYSTEM F521-34	1			1. Out-of-Core Subsystem. The Base System plus an out-of-core capability of using extended core storage, large core memory, or disk, as additional storage.
APEX-III MIXED INTEGER PROGRAMMING OPTION F521-35	1			2. Mixed Integer Programming. Provides a mixed integer programming capability including binary and general integrer variables and special ordered sets, Type 1 and 2. Requires out-of-core subsystem.
APEX-III MATRIX REDUCTION OPTION F521-36	1			3. Matrix Reduction. Provides a matrix reduction (reduce) capability to the APEX III package including regeneration of solution to the original problem. Required out-of-core subsystem.
APEX-III PARAMETRICS F521-37	1			4. Parametrics Option. Provides the capability of varying the requirements vector or the cost function as a linear function of two requirements vectors or cost functions. Requires out-of-core subsystem.
FORTRAN EXTENDED F521-39	4			FORTRAN Extended 4 without the Interactive option.

COMPUTER SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATION CR NOS 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
APT IV F521-40	2			A production system for the generation of APT (Automatic Programmed Tools) cutter location output. Has the following features: sculptured surfaces, parametric surface capability, inclusive subscripts, language capabilities (literal string, CL print/on or off) and bounded geometry. Compatible with the ALRP/CAMI version of APT IV (A4V3).
INTERACTIVE DEBUG PACKAGE F521-41	1			This package will provide interactive, symbolic level, debugging capabilities such as: - Conditional breakpoints and traps for temporarily suspending program execution. - Program suspension via terminal interrupts. - Commands to interrogate and change program memory. - Commands to restart program execution at any given point.
QUERY UPDATE F521-42	3		**Field length: 62_8K (non-MIP updating), 71_8K (MIP updating) plus buffers	This product replaces all the capabilities of OU 2 and brings with it a major breakthrough in performance and power. Using the Boolean List Processor, it interfaces directly to CRM's Multiple Index Capability to provide optional accessability of qualifying records via alternate access paths and indexes. The report writer capability has also been enhanced by a "compile" option in additon to its normal interpretive mode. Additional features are: 1. Cross-file relationsips. 2. Degree of commonality with CDCS 1 for enhanced recovery. 3. QUERY-only capability making use of IS, DA and MIP read-only packages of CRM. 4. Character-string processing.
DATA DESCRIPTION LANGUAGE F521-43	2		**Field length: 40_8K plus buffers	DDL 2 allows for the specification of a data base schema as well as COBOL and QUERY UPDATE subschemas for use in a data base environment. These are used at execution time by QU, COBOL and CDCS to provide data independence, logging information, data validation, processing of relations, and criteria for invocation of data base procedures.
TOTAL/ATHENA F521-45	1		-Requires TOTAL UNIVERSAL 2 -COBOL 5 based	High level interactive batch, retrieval/update facility for Total dAta Base Management system. Permits data or record selection from multiple TOTAL files based on multiple selection criteria. Includes a report writer and plot generator.

COMPUTER SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATION CR NOS 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
COBOL F521-46	5		**Field length: 60_8K -Requires SORT/MERGE 4 F521-14	The COBOL 5.0 compiler addresses the 1974 ANSI specifications. The initial release implements the highest level of 10 of the 12 modules defined in he specification. The COMMUNICATIONS module is not included and only a subset of the low-level of the INTER-PROGRAM COMMUNICATIONS is included. COBOL 5 is a companion product to COBOL 4 and as such is not fully compatible with its predessor. A COBOL 4 to COBOL 5 conversion aids program exists which can be used to help bridge the gap (F521-50). In addition to addressing the 1974 specification, COBOL 5 includes the following added capabilities: o Direct access, actual Key and Word Address file organizations. o Secondary (for ECS access) and Common storage sections. o INITIALIZE verb to set Data Division items to initial values. o Floating point numeric literals. o Variable length records. o Ability to set and clear sense switches. o File Organizations other than sequential in the GIVING phrase of SORT or MERGE. o COMP-1 and COMP-2 usage. o Ability to change collating sequences dynamically with he SET statement. o QUOTE IS APOSTROPHE can be specified to change the quote character. o Duplicate alternate keys can be ordered by prime key. o FILLER can be used anywhere is a record. o Ability to set character codes for files. o COMP-1 and COMP-2 converted to readable format with signs for DISPLAY.
TRANSACTION FACILITY F521-48	1			Product provides a general purpose transaction facility that coexists with he other NOS subsystems. A Transaction is defined as a request by a terminal to perform a predefined operation (or series of operations) called a task. TAF 1 provides interface and communication procedures enabling it to utilize the network access method for synchronous transaction terminal communications. Product is implemented in such a way as to allow installations unable to utilize NAM to still be able to run asynchronous terminals with a TELEX interface. Includes mode 4 transaction terminal support.
COBOL 4 to 5 CONVERSION AIDS F521-50	1			Provides conversion aids for COBOL 4 to 5 conversion.

COMPUTER SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATION CR NOS 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
APL F521-51	2		**Field length: 30_8K (includes a 1K Workspace) Successor to/F521-16.	Programming language for the advanced scientific user as well as the occasional user with little or no previous experience with computers. Faster and more powerful than the standard languages, quick to program and easier to learn and use. APL 2 is a new implementation of the APL language. The interpreter is characterized high efficiency, an advanced file system, a complete set of system functions, error trapping capability and a true batch facility.
PERT/TIME F521-53	2			Uses a time oriented network structure to produce a variety of reports reflecting the actual and scheduled progress of a project.
NOS FOR CYBER 175 F521-86				See F521-01 for description.
COMMUNICATION CONTROL PROGRAM N221-01	3		See Communication Section for 255X memory usage	The Communications Control Program (CCP) is the software resident in the 255X Communications Processor. This software provides basic operating system functions for the 2550 as well as interfacing the 2550 to the CYBER 70/170 host computer, blocking messages and processing terminal protocols. CCP 3 processes the MODE 4 protocol (used by 200 UT, 711-10, 714, 731-12, 731-1, etc.), asynchronous protocols and HASP multileaving protocol. CCP 3 also contains statistical data gathering and enhanced on-line diagnostics capabilities. CCP 3 supports remote 2551.
LINK INTERFACE PROGRAM N221-02	1			Provides support for communication between local and remote node 255X processors using HDLC protocol. The remote node processors must also be operating with CCP 3.
NOS FOR CYBER 176 F521-76				See F521-01 for description.
CYBER Record Manager/Advanced Access Methods	2			Initial AAM consists of capsules to process IS, AK ans DA files and a multiple-index processor (MIP). Extended AAM consists of a new index sequential processor and a new MIP as well as several utilities.
FORTRAN	5			This product consists of a FORTRAN compiler, common code generator (CCG), FORTRAN library, and interactive debug package (IDP). It implemented a superset of the full ANSI language developed by the FORTRAN standards committee X3J3.
FORTRAN 4 to FORTRAN 5 Conversion Aid				Converts FTN 4 source programs to FTN5.
IMSL 6 F521-27			Requires F521-12 or F521-39	The International Mathematical and Statistical Library is a collection of FORTRAN subroutines and functional subprograms in the areas of mathematics and statistics.
TOTAL UNIVERSAL F521-55	2		Same as F521-28	Same as F521-28

COMPUTER SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATION CR NOS 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
TOTAL EXTENDED F521-56	2		Same as F521-29	Same as F521-29
PDS/MaGen F521-70	1			PDS/MaGen is a complete, yet easy-to-learn, matrix generation and report writing system. PDS/MaGen interfaces with and complements the APEX-III linear programming product and aids the user in generating models without regard to the syntax, formats and repetitious data entry requirements characteristic of linear programming programs. PDS/MaGen allows the user freedom to focus efforts on the structure of the problem and to significantly reduce mod development time and cost. Additional features and benefits of PDS/MaGen are: o Generation of linear programming matrices in MPS format for access by APEX-III o Database generation and maintenance o User-tailored report generation (by accessing the APEX-III solution) o A data structure that is independent of generator programs making it easier to execute multiple runs of varying size and/or detail o Low core requirements (only non-zero data elements are stored internally) o In-core operation for fast execution PDS/MaGen was developed by and is proprietary to Haverly Systems Inc.

COMPUTER SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATION CR NOS 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
SIMSCRIPT II.5 F521-72	4.2			SIMSCRIPT II.5 is a powerful, general purpose scientific programming language. Although it was developed primarily for discrete event simulation programming, it is equally well-suited for non-simulation programming. Features of interest ot the general user include: o Flexible, free-form syntax o I/O statements similar to those of FORTRAN o Partial block structure for structured programming o Recursive subroutine capabilities o Report generator facilities o A sophisticated data structure concept with a world view composed of entities, attributes and sets. In addition, FORTRAN EXTENDED subroutines can be incorporated into SIMSCRIPT II.5 programs and vice-versa. The SIMSCRIPT II.5 system has two different methods for building simulation models. The one most familiar to simulation programmers uses special kinds of entities known as event notices which are scheduled at approprite times during the simulation. SIMSCRIPT has a built-in timing routine to handle the scheudling. Alternately, the simulation model can be based on processes and resources. In either case, a wide variety of statistical functions, including random table look-up, enable the user to simulate most situations quite realistically.

COMPUTER SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATION CR NOS 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
TIGS F521-88	1			Terminal Independent graphics System (TIGS) is a general purpose subroutine package providing display generation in either two dimensional mode (2D) or three dimensional mode (3D) and interaction capability for a general class of graphics terminals. Primary design objectives were transportability, maintainability and ease of use. Features supported by TIGS 1 include line, are, multi-line plot, text and dot primitives with resettable attributes such as line style, character size, intensity, font, color, transformation matrix, etc. The package uses virtual devices such as locators, keyboards, picking devices and function keys which can represent a wide range of physical devices. TIGS 1 supports 2D and 3D viewing transformations for clipping and window to viewport mapping and coordinate transformations.
TELTRONIX 401X POST-PROCESSOR UNDER TIGS F521-89	1			A device independent neutral display file which contains information describing all segments, pictures, windows and viewports is used. The file may be saved and used in a later job with a different display device. The neutral display file concept also permits attributes (e.g. line style, font, etc.) to be respecified without the redefinition of the segment. Version 1.0 of TIGS has been implemented to run on Control Data 6000 series, CYBER 70 series and CYBER 170 series computers under NOS 1. A TIGS 1 post-processor is also required for installation and opertin of this product. This product has been separated from a combined TIGS 1 Pre-processor/Tektronix Post-processor (Product no. F521-54).

COMPUTER SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATION CR NOS 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
SANDERS GRAPHIC 7 POST-PROCESSOR UNDER TIGS F521-90	1			Tektronix 401X post-processor is a subroutine package providing display generation and interaction with the Tektronix 4006 and 4010-4015. The display is produced from the neutral display file generated by the TIGS 1 pre-processor. Locators supported are the cross-hairs and tablet.
CALCOMP 906 POST-PROCESSOR UNDER UNIPLOT F521-96	3			The Sanders Post-Processor for the Terminal Independent Graphics System (TIGS) is a subroutine package which interfaces to a Sanders Graphic 7 intelligent refresh graphics terminal. The post-processor routines read graphics information rom a pre-processor-generated Neutral Display File (NDF) and produce the appropriate commands which, when sent to the Sanders terminal, cause the graphics information to be displayed. The minimum hardware configuration necessary to utilize this post-processor consists of a CRT display, a terminal controller unit, and an alphanumeric keyboard with function keys. The controller unit must be equipped with an asynchronous interface board and a 4K ROM board containing Sanders GSS4 firmware. REfresh memory consists of SK words, expandable to 24K words. Hardware options supported are lightpen and trackball (or joystick) locators, and a hardcopy unit. Features supported by the Sanders post-processor include selective erase, four hardware line styles, four hardware character sizes, eight intensity levels, highlighting, and 90° character rotation. Communication is supported at based rates of 300 or 1200 in asynchronous mode.
HOUSTON INSTRUMENT BTC-7 POST-PROCESSOR UNDER UNIPLOT F521-97	3			The UNIPLOT 3 CalComp 906 Post-Processor device dependent code to drive the CalComp 906 controller and compatible plotter. Pictures are produced from the neutral picture file by UNIPLOT 3 in conjuction with the CalComp 906 device dependent code.
TEKTRONIX 401X POST-PROCESSOR UNDER UNIPLOT F521-98	3			The UNIPLOT 3 Houston Instrument BTC-7 Post-Processor contains device dependent code to drive the Houston Instrument BTC-7 controller and comptible plotter. Pictures are produced from the neutral picture file by UNIPLOT 3 in conjunction with the Houston Instrument BTC-7 device dependent code.

COMPUTER SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATION CR NOS 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
UNIPLOT F521-99 /spr4182-09, 4184-09	#			The UNIPLOT 3 Tektronix 401X Post-Processor contains device dependent code to drive the Tektronix terminal. Pictures are produced from the neutral picture file by UNIPLOT 3 in conjunction with the Tektronix device dependent code.

NOS 1 PUBLICATIONS

NOS OPERATING SYSTEM	
NOS 1	
RM (VOL. 1 APPLICATION PROGRAMMERS)	60435400
RM (VOL. 2 COMPASS APPLICATION PROGRAMMERS)	60445300
OG	60435600
IH	60435700
IN (APPLICATION PROGRAMMERS)	60436000
IN (SYSTEM PROGRAMMERS)	60449200
RM (SYSTEM MAINTENANCE)	60455380
RM (ADMINISTRATOR AND OPERATOR FACILITY)	60480100
MODIFY	
RM	60560100
IN	60450200
BATCH	
UG	60536300
NOS 1 ON-LINE MAINTENANCE SOFTWARE	
RM	60454200
UPDATE	
RM	60454200
IN	60450000
CYBER COMMON UTILITIES	
RM	60495600
COMMON MEMORY MANAGER	
RM	60499200
CONVERSION AIDS SYSTEM 2	
RM	19265358
NOS 1 PRODUCT SET	
DATA COMMUNICATIONS	
TIME-SHARING USER'S	
RM	60435500
UG	60436400
IN (TERMINAL USER'S)	60435800
TEXT EDITOR	
RM	60436100
EXPORT/IMPORT	
RM	60436200
TAF/TS 1	
RM	60453000
UG	60436500
RM (DATA MANAGER)	60453100
RM (CYBER RECORD MANAGER DATA MANAGER	60456700
XEDIT 3	
RM	60455730
COMMUNICATIONS CONTROL PROGRAM 3	
RM	60471400
OG	60471700
DH	60471500
NETWORK ACCESS METHOD 1	
RM	60499500
NETWORK DEFINITION LANGUAGE	
RM	60480000
NETWORK PRODUCT STIMULATORS	
RM	604805000
REMOTE BATCH FACILITY	
RM	60499600
IAF 1	
RM	60455250
UG	60455260
TN (TERMINAL USER'S)	60455270
TAF 1	
RM	60455340
UG	60455360
RM (DATA MANAGER)	60455350
RM (CYBER RECORD MANAGER DATA MANAGER)	60456710
SUPPORT PROGRAMS	
CYBER CROSS SYSTEM	
RM	96836000
RM PASCAL COMPILER	96836100
RM MACRO COMPILER	96836500
RM MICRO COMPILER	96836400
DH	96836300
RM LINK EDITOR	60471200
CONVERSION AIDS (COBOL 4 TO COBOL 5)	
RM	19265021
8-BIT SUBROUTINES	
RM	60495500
CYBER RECORD MANAGER	
RM (BASIC ACCESS METHODS)	60495700
UG (BASIC ACCESS METHODS)	60495800
UG (FORTRAN)	60495900
UG (COBOL)	60446000
RM (ADVANCED ACCESS METHODS	60499300
UG (ADVANCED ACCESS METHODS	60499400
UG (MULTIPLE INDEX PROCESSOR)	60480900
SORT/MERGE 4	
RM	60497500
UG	60482900
IN	60497600
IMSL 6	
GIM	60456380
COMPILERS	
ALGOL 5	
RM	60481600
APL 2	
RM	60454000
BASIC 3	
RM	19983900
SC	60482800
COBOL 5	
RM	60497100
IN	60597300
UG	60597200
DH	60482500
UG (REPORT WRITER)	60496900
COMPASS 3	
RM	60492600
IN	60492800
SC	60493000
FORTRAN EXTENDED 4	
RM	60497800
UG	60499700
UG (DEBUG)	60498000
RM (COMMON LIBRARY MATH ROUTINES)	60498200
IN	60497900
SIFT	
PSB	60496500

SYMPL 1
RM 60496400
IN 60482600

PL/I
RM 60388100

DATA MANAGEMENT

DMS-170
RM (CDCS 1) 60498700
GIM 60498900
UG (DATA ADMINISTRATOR) 60499100
PSB (RELATIONAL DATA BASE) 60480700

DATA BASE UTILITIES
RM 6049800

DDL 2
RM (VOL. I) 60498400
RM (VOL. II-COBOL) 60498500
RM (VOL. III-QU) 60498600
RM (CDCS 2) 60481800

DDL 3
RM (VOL. I) 60481900
RM (VOL. II-COBOL) 60482000
RM (VOL. III-QU) 60482100

FORTRAN DATA BASE FACILITY 1
RM 60482200

FORM
RM 60496200

QUERY UPDATE 3
RM 60498300
UG 60387700
UG (PROGRAMMERS) 60499000

NOS/BE 1 APPLICATIONS

APT IV
RM 17326900

UNIPLOT
RM/UG 60454730

GPSSV
GIM 84003900
RM 76078800

BEGINNING GRAPHICS
UG 76077300

LCGT/IGS
RM 76079100
UG 76077400

DATA HANDLER
RM 17322100

APPLICATIONS EXECUTIVE
RM 17322200

APEX III
RM 76070000

SIMSCRIPT 3
RM 60368500

TOTAL UNIVERSAL
RM 76070300

PERT/TIME 2
RM 60456030

TIGS 1
RM 60455940
UG 60456040
IN 60456360

GRAPHICS PRODUCT FAMILY
GIM 76077000

The abbreviations used for manual types are as follows:

Card	Code Card
DH	Diagnostic Handbook
GIM	General Information Manual
IH	Installation Handbook
IN	Instant
OG	Operator's Guide
PSB	Programming Systems Bulletin
RM	Reference
SC	Summary Card
SPRM	System Programmer's Reference Manual
UG	User's Guide

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OPERATING SYSTEM HARDWARE REQUIREMENTS

Minimum System

- 171-4
- One Line Printer
- One Card Reader

- Two Tape Units
- Rotating Mass Storage
- Two 841-12 with four 871's {4 drives}
  or
- One 844-21 with one 881 {1 drive}
  or
- One 844-41 with one 883-60

Options

- Alternate Mainframes
- CM Additions
- CPU Upgrade
- Additional CPU'S
- Extended Core Storage
- PPU/I/O Channels
- Tape Units
- Line Printers
- Card Equipment
- Rotating Mass Storage
- Communication Equipment
- Remote CRT's
  - Line Printers
  - Card Equipment
- Remote Teletypewriters
- 171 CMU Upgrade
- 171 Data Channel Converters

Minimum System Rules

- One of the two Tape Units is used for initial loading.
- During normal running, the Tape Units may be used for temporary storage of Input and/or Output Queues.
- 841-XX may be added or may replace the minimum 844-21. The system can reside only on devices of the same type. Minimum capacity to support standard batch processing is 60 million characters. {The system itself occupies approximately 2.1 million characters.} Additional space may be required for time sharing, permanent files and transaction processing.
- The system uses two PPU's on a full-time basis. The remaining PPU's are used on a dynamic pool basis, unless the Time Sharing Subsystem or E/I200 Subsystem is active. In this case, a PPU is dedicated for each subsystem.
- Each CDC CYBER 170 Model 172, 173, 174 or 175 includes one Operator Display Console and two Data Channel Converters. These Data Channel Converters are equivalent to 6681's.
- Note: Model 171 does not include any data channels converters.
- The System Requirement for a Line Printer may be satisfied with a 200 UT Compatible Terminal {734-1, 18- 5, etc.} printer that is physically located with the central computer and is driven through a 6671 or 2550 communications subsystem.
- A terminal card reader may be used to input source decks to the system but cannot be used to input binary decks.
- The system requirement for a card reader to load controlware may be satisfied with a 7152-1 Disk/Tape controller with a nine track magnetic tape unit.

NOTE: Modifications to NOS 1 are required to permit its operation on a 32K system. To accomplish this, modifications are required to CMRDECK {tape sizes, number of control points, buffer sizes; etc.} and LIBDECK {central memory resident programs} at deadstart time.

In general, the minimum configuration will only support one {1} operating system mode {Batch, Time-Sharing etc.} at a time.

If NOS 1 is used with a mainframe containing a 32K or 49K central memory, {hardware configurations offered prior to 12/76} the following limitations apply to the installation, maintenance , and execution of the NOS Product Set on the System:

1. ALGOL 4 cannot be maintained in a 32K system. It will execute.
2. The FORTRAN Extended 4 DEBUG feature must be excluded from the FORTRAN Extended 4 product in order for it to be maintained and executed in a 32K system.
3. PERT/TIME , SYMPL 1 and APEX III will not execute in a 32K system.
4. All of the above products can execute and be maintained in a 49K system.
5. Network Products and IXGEN {a CRM 1 conversion itility} cannot be executed or maintained in a 32K or 49K system.

BASIC 171-X M/F

- 1-Unified CPU
- 65K to 262K CM
- 10 PPU's
- 12 I/O Channels
- Operators Console

BASIC 172-X MAINFRAME

- 1- Unified CPU
- Compare Move Unit {CMU}
- 65K to 262K CM
- 10 PPU's
- 12 I/O Channels
- Operator's Console
- 2 - Data Channel Converters

BASIC 173-X MAINFRAME

- 1 - Unified CPU with speed up option
- Compare Move Unit {CMU}
- 98K to 262K CM
- 10 PPU's
- 12 I/O Channels
- Operator's Console
- 2 - Data Channel Converters

OPERATING SYSTEM HARDWARE REQUIREMENTS (Continued)

Basic 174-X Mainframe

- 2 - Unified CPU's with speed up options
- Compare Move Unit (CMU)
- 98K to 262K CM
- 10 PPU's
- 12 I/O Channels
- Operator's Console
- 2 - Data Channel Converters

Basic 175-XXX Mainframe

- 1 - Multi-function CPU
- 131K to 262K CM
- 10 PPU's
- 12 I/O Channels
- Operator's Console
- 2 - Data Channel Converters

Basic System and Loader Residence

- Operating System minimum residence is 7,000 CM words.
- ECS is supported by the system and is allocated and treated similarly to a mass storage device. Selected parts of the system can be stored in ECS. If a DDP is available, PPU routines resident in ECS will be loaded through it.

- The Operating System Residence is increased by the following amounts for optional equipment and features:

Mass Storage

	TRT	MST
841-X	(400 + 16) words per device*	
844-XX	(410 + 16) words per device	

ECS (32n + 16 words per device
where n = number of 125K increments

*Device may contain from 1-8 spindles.

TRT - Track Reservation Table
MST - Mass Storage Table

Remote Batch E/I 200

1408_{10} + (15 x A) words

A - number of active terminal buffers. The maximum number of buffers per active terminal is two.

This FL is required only when the Remote Batch System is active. Requires one full-time dedicated PPU from the dynamic pool.

Local Batch Executive

131 Words
520 CR + 136 CP + 520 LP + 64 (N+1)

If no Active Devices
CR - Number Active Card Readers
CP - Number Active Card Punches
LP - Number Active Line Printers
N - Total Number of Active Devices

This FL is required only when the Local Batch System is active. These buffer sizes can be increased or decreased by modifying the system.

Time Sharing Executive (TELEX)

3136_{10} + (9A + 16B + 16C) words

A - maximum ports to service
B - number of active ports
C - Number of terminals busy with data

This FL is required only when the Time Sharing Subsystem is active. Requires one full-time dedicated PPU from the dynamic pool.

Transaction Executive (Transaction Facility)

Field length: $13,400_{10}$ including data manager and average table sizes.

The transaction subsystem allows transaction input from the same terminals which are currently supported by the time-sharing subsystem.

NETWORK PRODUDUCTS (NAM, RBF)

NAM (NIP) = 7000_{10} words
RBF = 7000_{10} + 10C + 150A

A = Numbers of Active Terminals
C = Number of Connected Terminals

Batch Data Manager

4096_{10} + A words

A - buffer space for data manager buffers. An assembly constant with default value of 3072_{10} words.

TRANEX data manager plus interfaces to batch programs.

INTERACTIVE FACILITY (IAF)

5300_{10} + 9C + 6A

A = Number of Active Terminals
C = Number of Connected Terminals

OPERATING SYSTEM HARDWARE REQUIREMENTS
(Continued)

Loader

Temporary CM usage during loading is a minimum of 1700_{10} words plus variable-length tables generated during the loading dependent on program size.

Magnetic Tape Executive

$747_{10} + 22_{10} \times A$) A - number of units

Alternate Mainframes

The following Mainframe/CM combinations are supported by NOS 1

CM Size	Model 171 CPU	Model 172 CPU	MODEL 173 CPU	MODEL 174 CPU	MODEL 175 CPU
32K	---	172-2*	---	---	---
48K	---	172-3*	---	---	---
65K	171-4	172-4	173-4*	174-4*	---
98K	171-6	172-6	173-6	174-6	---
131K	171-8	172-8	173-8	174-8	175-108, 208, 308
196K	171-12	172-12	173-12	174-12	175-112, 212, 312
262K	171-16	172-16	173-16	174-16	175-116, 216, 316

*Early Production only (Prior to 12/76)

CENTRAL MEMORY ADDITIONS

- Model 171 Upgrade Rules for CM:
  (10317-1 Also as Required)
  171-4 Plus 10312-6 gives 171-6
  171-6 Plus 10312-8 gives 171-8
  171-8 Plus 10312-12 gives 171-12
  171-12 Plus 10312-16 gives 171-16

- Model 172 Upgrade Rules for CM: (10317-1 also as requred)
  172-2 plus 10312-3 gives 172-3
  172-3 plus 10312-4 gives 172-4
  172-4 plus 10312-6 gives 172-6
  172-6 plus 10312-8 gives 172-8
  172-8 plus 10312-12 gives 172-12
  172-12 plus 10312-16 gives 172-16

- Model 173 Upgrade Rules for CM: (10317-1 also as required)

  173-4 plus 10312-6 gives 173-6
  173-6 plus 10312-8 gives 173-8
  173-8 plus 10312-12 gives 173-12
  173-12 plus 10312-16 gives 173-16

- Model 174 Upgrade Rules for CM:

  174-4 plus 10312-6 gives 174-6
  174-6 plus 10312-8 gives 174-8

  174-8 plus 10312-12 gives 174-12
  174-12 plus 10312-16 gives 174-16

- Model 175 Upgrade Rules for CM:

  175-108, 208 plus 10313-12 gives 175-112, 212
  175-112, 212 plus 10313-16 gives 175-116, 216
  175-308 plus 10313-112 gives 175-312
  175-312 plus 10313-116 gives 175-316

CPU Upgrades

- Performance may be increased by adding a compare/move unit to a model 171 or by adding a second central processor to a Model 171 or Model 172 or by upgrading the CPU from a Model 171 to a Model 172 or from a Model 172 to a Model 173, or from a Model 173 to a Model 174.
  171-X Plus 10380-1, 10381-1, 10381-2 and 10383-1 gives 172-X, 171-X Plus 10382-X gives Dual CPU 171-X
  172-X plus 10316-1 gives 173-X 173-X plus 10316-2 gives 174-X
  172-X plus 10384-1 gives Dual CPU 172-X, Dual CPU 172-X plus 10385-1 gives 174-X
  Dual CPU 171-X plus 10380-2, 10381-1, 10381-2, 65047-X, and 10383-2 gives dual CPU 172-X
- These are a field upgrades

- The upgrading from a Model 173 or 174 to a Model 175 requires a mainframe exchange.

- 175-1XX plus 10426-1 gives 175-2XX level performance
  175-2XX plus 10427-X gives 175-3XX level performance

OPERATING SYSTEM HARDWARE REQUIREMENTS
(Continued)

PPU - I/O Channel Options

- The basic Model 171, 172, 173, 174 or 175 contains 10 PPU's and 12 I/O Channels.

- Model 171, 172, 173 and 174 Upgrade Rules

  10314-1 Adds 4 PPU's and 12 I/O Channels to 10 PPU, 12 I/O Channel System.

  10314-2 Adds 3 PPU's to 14 PPU, 24 I/O Channel System.

  10314-3 Adds 3 PPU's to 17 PPU, 24 I/O Channel System.

- Model 175-1XX, 2XX, 3XX Upgrade Rules

  10314-151 Adds 4 PPU's and 12 I/O Channels to 10 PPU, 12 I/O Channel System.

  10314-152 Adds 3 PPU's to 14 PPU, 24 I/O Channel System.

  10314-153 Adds 3 PPU's to 17 PPU, 24 I/O Channel System.

Optional Extended Core Storage

- The Basic 7030-1XX ECS unit contains the necessary controller and one Distributed Data Path (DDP).

- A 10318-X Coupler must be ordered for each mainframe connecting to ECS.

- Growth of the Basic 7030-1XX may be achieved by the addition of ECS Storage Increments (10319-X).

- Supported Options

ECS Words	Model	Upgrade Rules for ECS Words
262K	7030-102	7030-102 plus 10319-2 gives 7030-104
524K	7030-104	7030-104 plus 10319-4 gives 7030-108
1048K	7030-108	7030-108 plus 10319-8 gives 7030-116
2096K	7030-116	

The DDP in the Basic 7030-1XX ECS unit is supported. One additional buffer register is supported by the software (Option 10280-10).

- The DDP in the 7030-X is not supported.

Tape Units

- See Hardware Diagrams for supported configurations.

- See "Minimum System Rules" for alternate uses of Tape Units.

- NOS 1 may be dead-started from either 7-track or 9-track units.

- In the Hardware Diagrams, the 66X's may be replaced with 65X's.

- 65X and 66X must be on different channels.

- In order to dead-start from 66X the 66X equipment must be on channels 12, 13, 32 or 33 A card reader must also be on one of the above channels, but not the one the 66X is on.

- Dead-start from 65X requires a 65X to be on channels 12, 13, 32, or 33.

Line Printers

- See Hardware Diagrams for supported local and remote configurations.

- A 595-X Train must be ordered with each 512 Printer.

- A 596-X Train must be ordered with each 580 Printer.

- Drivers are provided within the system to support the 512 and 580 Printer.

- The Printer Buffer size within the released system is 512 words. This Buffer size may be changed by an installation modification.

- The 580XXX (Programmable Format Control) is supported by NOS 1.

Card Equipment

- See Hardware Diagram for supported local and remote configurations.

- The Card Reader Buffer size is 512 words and the Card Punch Buffer size is 256 words. These Buffers may be changed by an installation modification.

Hardware Restrictions

- Only a single 6681-2 may be used on a data channel. See additional comments under tapes.

- A DDP cannot have a 6681-2 prior to it, on the same channel.

- A Maximum of 8-667X multiplexers for time-sharing use. (X = 1 or 6).

- Maximum of one 6671 multiplexer for remote batch.

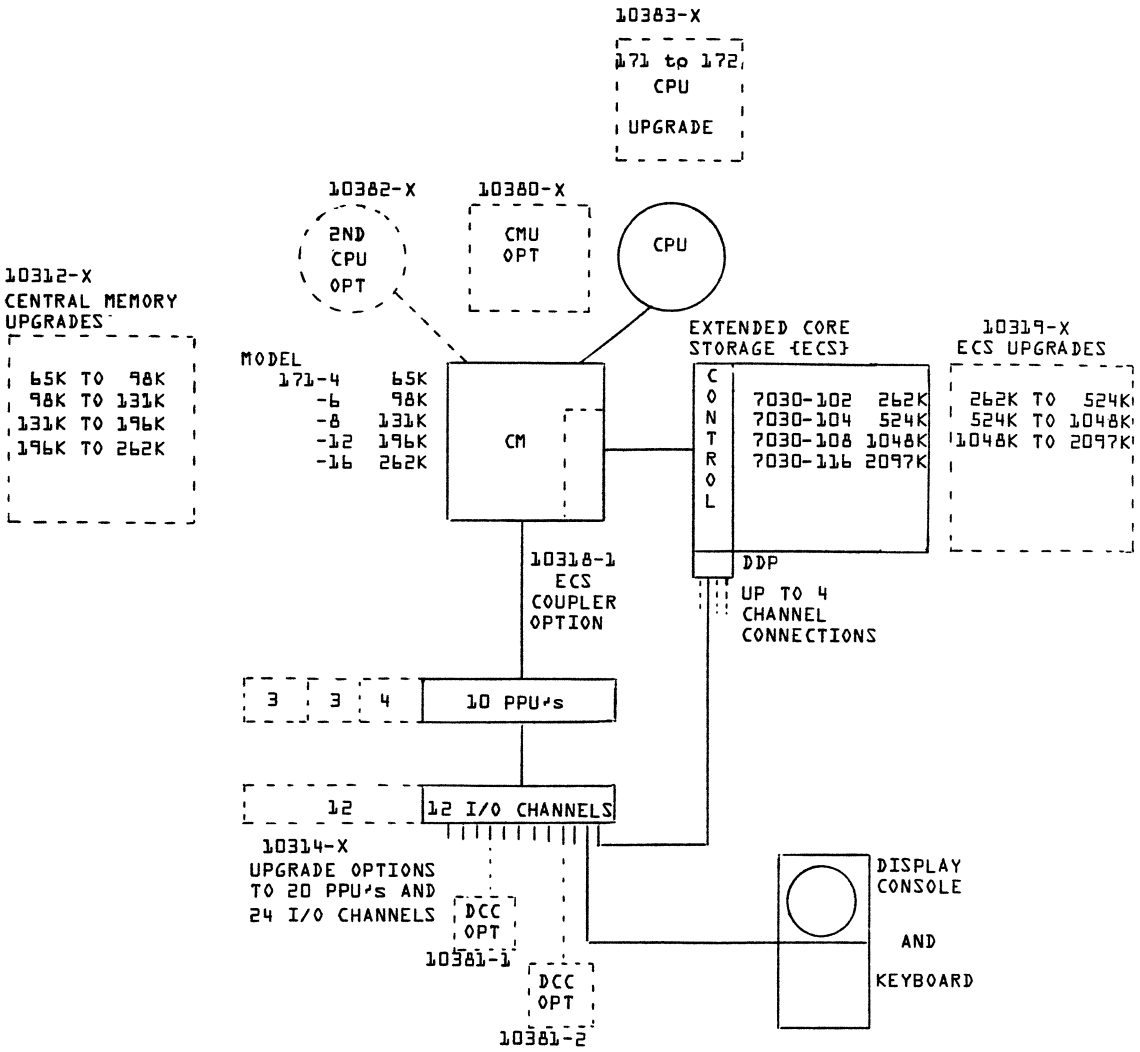
- Maximum of four 2551 or two 2552 for Network products.

- Maximum of 20 unit record devices driven through the local batch executive. Each eight devices requires a PPU.

- Maximum of four tape channels per mainframe.

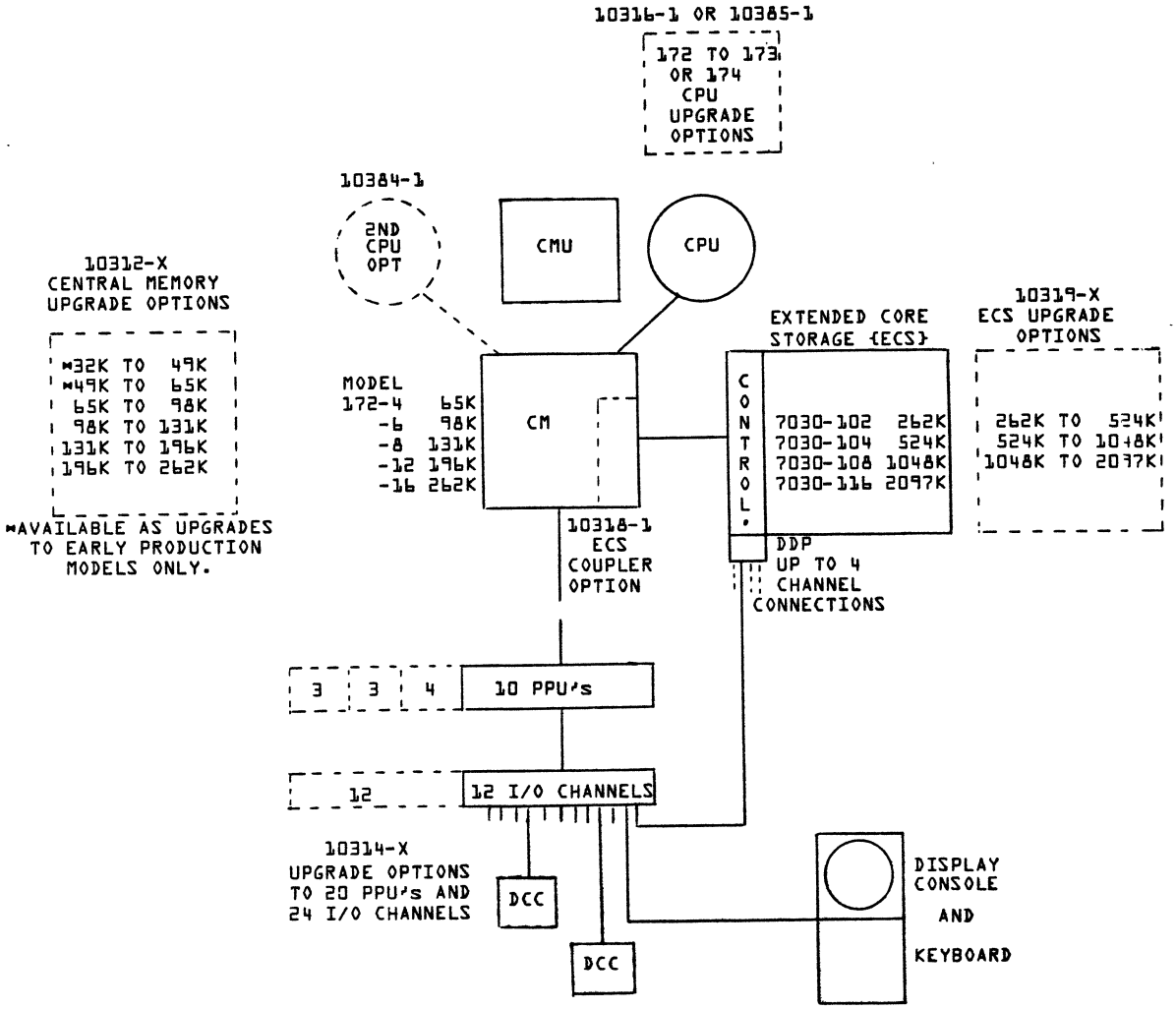
- Maximum of 32 logical mass storage devices.

CDC CYBER 170 MODEL 171
CONFIGURATOR



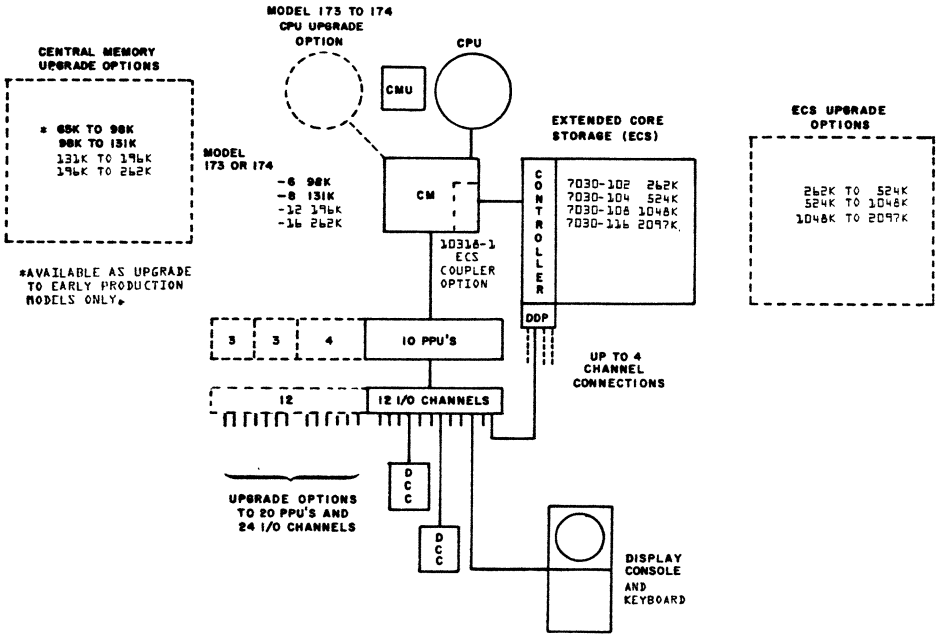
OPTIONAL DCC - DATA CHANNEL CONVERTERS TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE THE CYBER 170 MODEL 171

CDC CYBER 170 MODEL 172
CONFIGURATOR



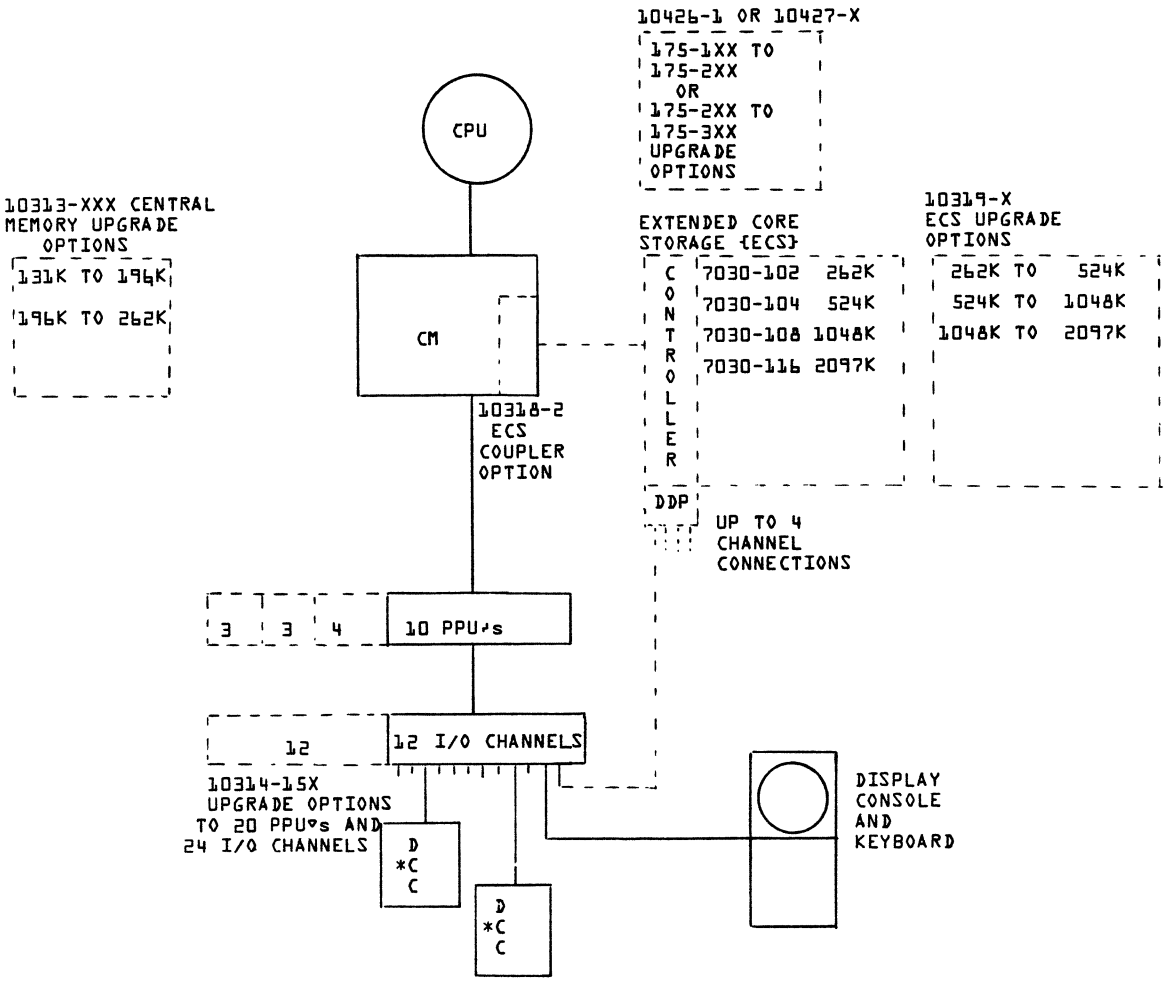
DCC - DATA CHANNEL CONVERTERS TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE TO THE CYBER 170 SERIES.

CDC CYBER 170 MODEL 173 AND 174
CONFIGURATOR



DCC - DATA CHANNEL CONVERTERS TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE THE CYBER 170 SERIES.

CDC CYBER 170 MODELS 175-1XX, 2XX, 3XX CONFIGURATOR



*DCC - DATA CHANNEL CONVERTORS TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE TO THE CYBER 170 SERIES

CENTRAL MEMORY

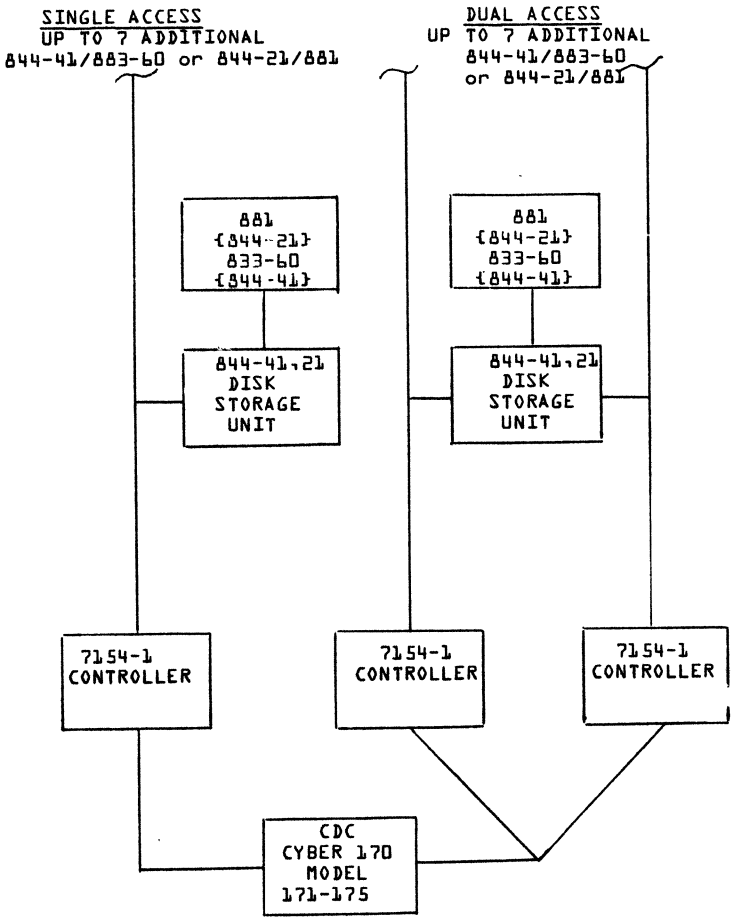
MODELS	CM
175-108, 208, 308	131K
175-112, 212, 312	196K
175-116, 216, 316	262K

CM OPTIONS

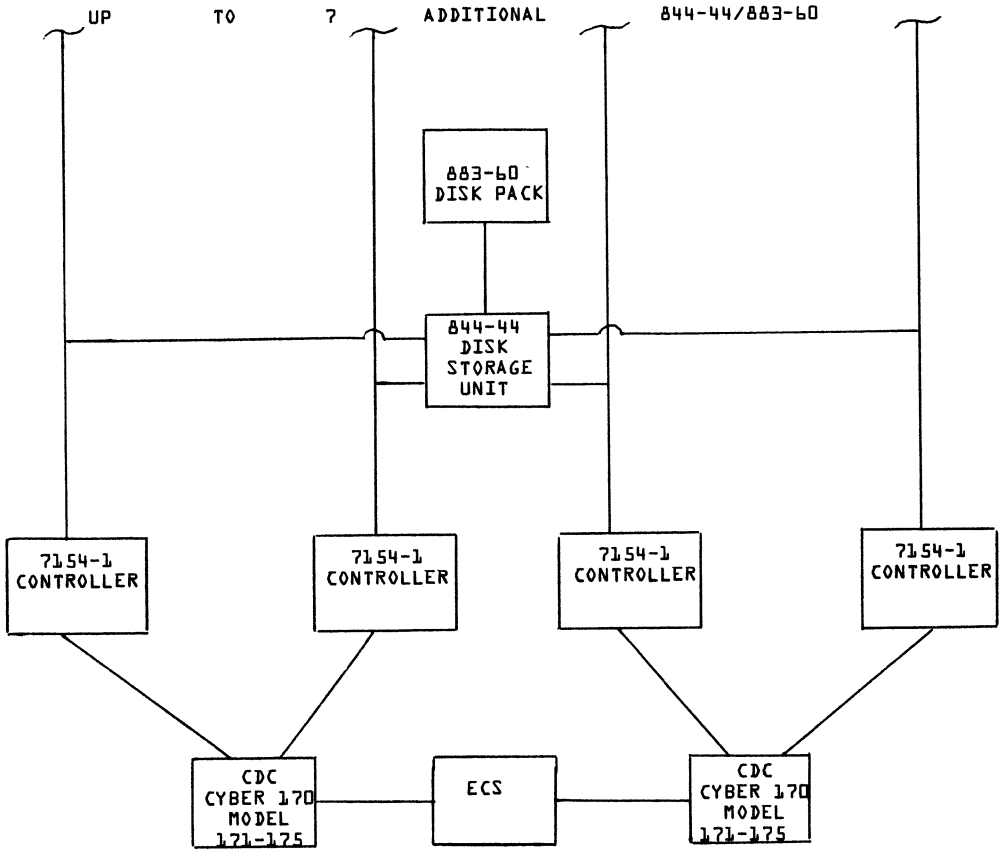
MODELS	FROM	TO	OPTION
175-108, 208	131K	196K	10313-12
175-112, 212	196K	262K	10313-16
175-308	131K	196K	10313-112
175-312	196K	262K	10313-116

MASS STORAGE SUBSYSTEM
7054-X/844-21
DUAL ACCESS
UP TO 7 ADDITIONAL 844-21/881
SINGLE ACCESS
UP TO 7 ADDITIONAL 844-21/881
SINGLE ACCESS
UP TO 7 ADDITIONAL 844-2/881
881
844-21
7054-21
7054-22
CDC CYBER 170 MODEL 171-175
MASS STORAGE SUBSYSTEM
3553-1/841-11, 12, 21, 22
Dual Access
Up 2 Additional 841-21 For A Total of 4
Single Access
Up To 2 Additional
841-12 For A Total of 4
871 Disk Pack
841-22 Disk-Drive
841-12 Disk-Drive
3553-1 Controller
DCC
CDC CYBER 170 MODEL 171-175

REMOVABLE MASS STORAGE
844-41

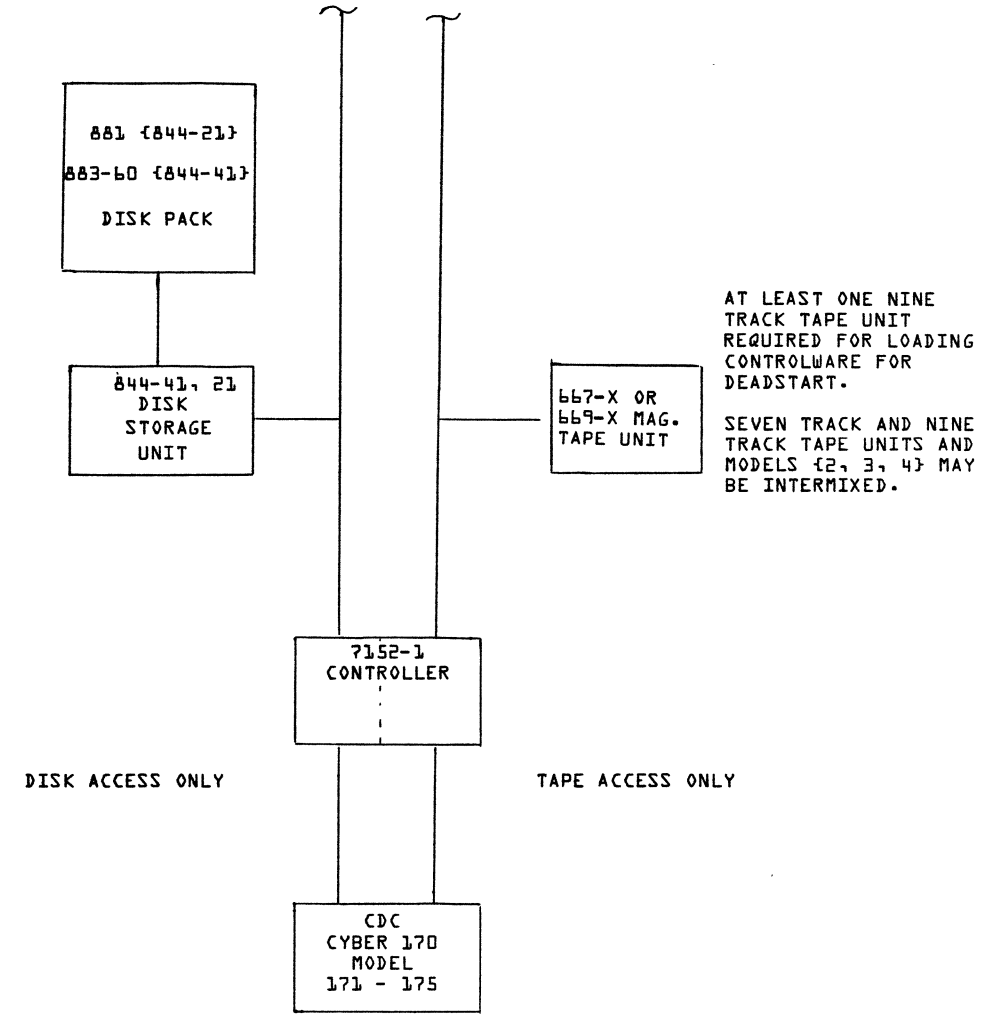


REMOVABLE MASS STORAGE
844-44



This configurator only shows how 844-44's are used in a MMF environment. Only two accesses may originate from a single mainframe. ECS is also required in this configuration.

MASS STORAGE/MAGNETIC TAPE
7152-1/844/66X



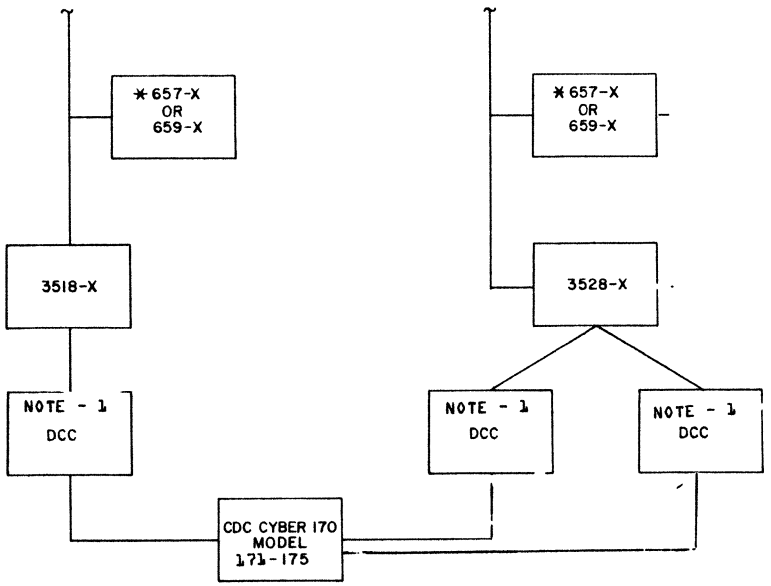
MAGNETIC TAPE

7-TRACK OR 7-TRACK/9-TRACK INTERMIXED OR 9-TRACK

657-X 657-X/659-X 659-X

NOTES

*657-X: 657-1, 657-2, 657-3, 657-4
*659-X: 659-2, 659-3, 659-4
3518-X: 3518-1, 3518-2, 3518-3
3528-X: 3528-1, 3528-2, 3528-3



*7-TRACK & 9-TRACK TAPE UNITS AND MODELS (1, 2, 3, 4) MAY BE INTERMIXED (NOTE 659-X TAPE UNITS REQUIRE THAT A 3518-2, 3518-3, 3528-2, OR 3528-3 BE INSTALLED)

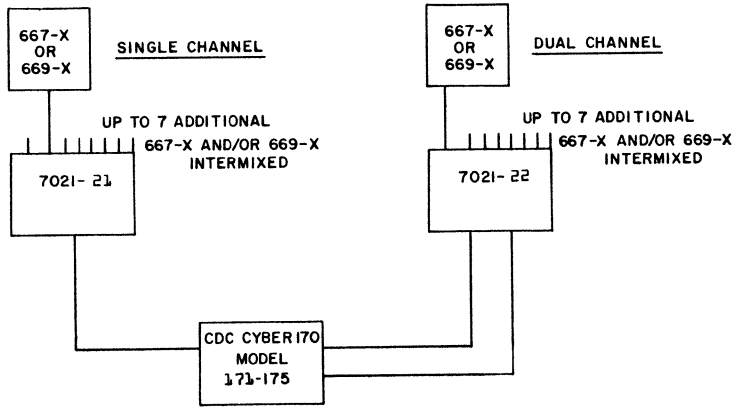
NOTE - 1 MODEL 171 REQUIRES OPTION 10381-X

MAGNETIC TAPE SUBSYSTEM

7-TRACK, 7/9-TRACK INTERMIXED OR 9-TRACK

NOTES

667-X: 667-2, 667-3, 667-4 (7-TRACK)
669-X: 669-2, 669-3, 669-4 (9-TRACK)



7-TRACK AND 9-TRACK TAPE UNITS AND MODELS (2,3,4) MAY BE INTERMIXED

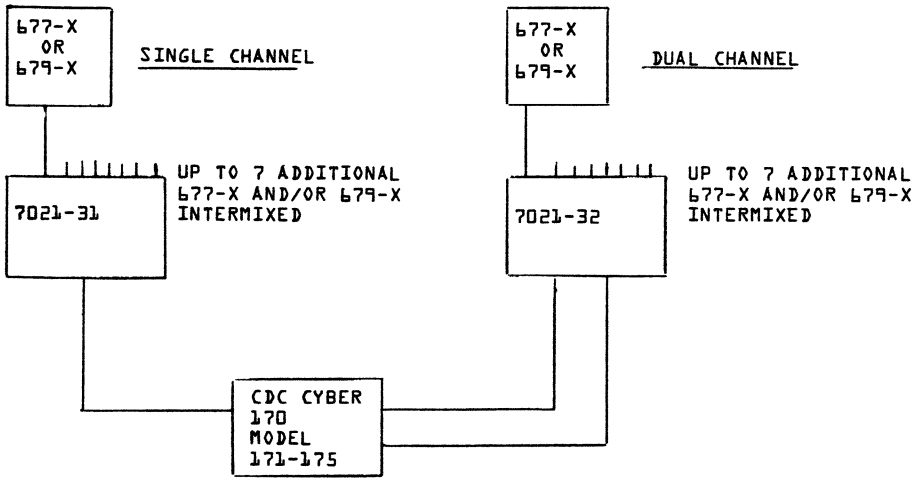
67X MAGNETIC TAPE SUBSYSTEM

7 TRACK

677-2 556/800 BPI NRZI, 100 IPS
677-3 556/800 BPI NRZI, 150 IPS
677-4 556/800 BPI NRZI, 200 IPS

9 TRACK

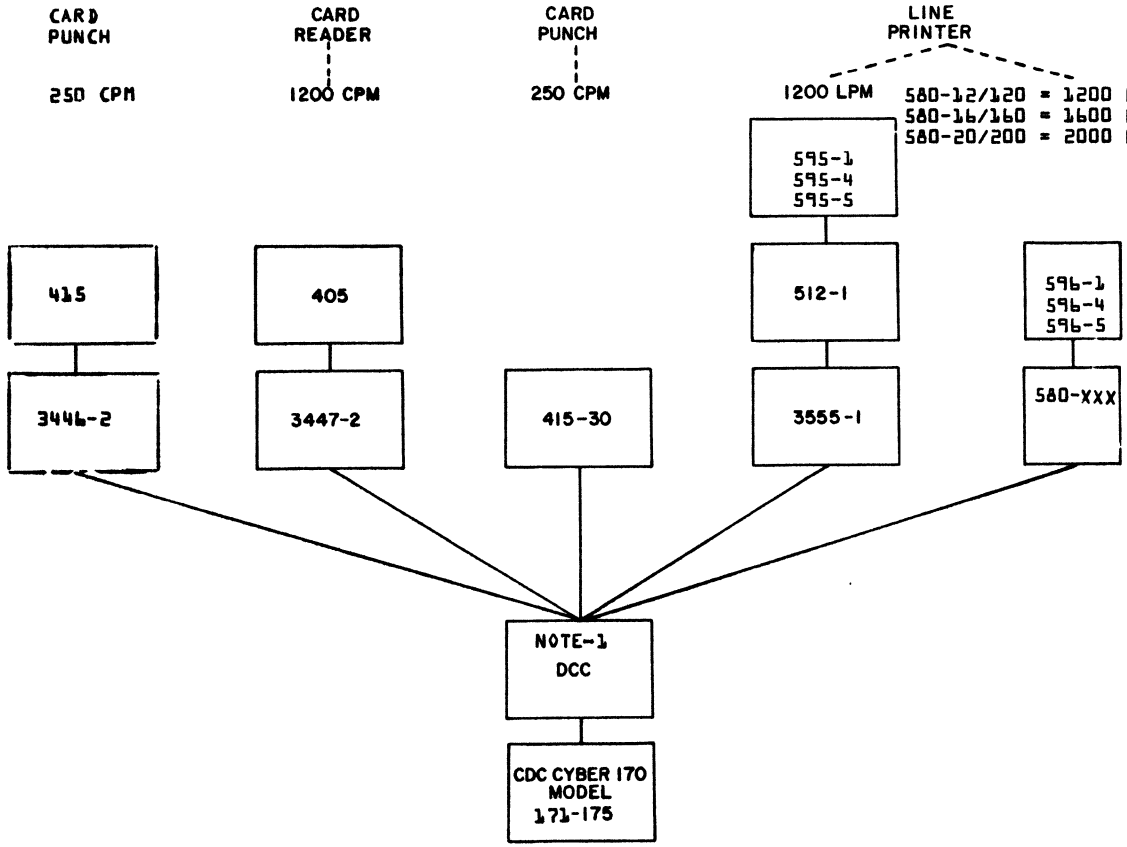
679-2 800 BPI NRZI and 1600 BPI PE, 100 IPS
679-3 800 BPI NRZI and 1600 BPI PE, 150 IPS
679-4 800 BPI NRZI and 1600 BPI PE, 200 IPS
679-5 6250 BPI GCR and 1600 BPI PE, 100 IPS
679-6 6250 BPI GCR and 1600 BPI PE, 150 IPS
679-7 6250 BPI GCR and 1600 BPI PE, 200 IPS



NOTE: 7 TRACK AND 9 TRACK TAPE UNITS CAN BE INTERMIXED
System configuration restrictions are determined by the data-transfer rates of the tape units.

- NRZI and P.E. Recording
  -A unit of any speed may be used on any CYBER 170, CYBER 70 or 6000 configuration, assuming no more than two other devices are daisy-chained on the channel ahead of the controller.
- GCR Recording
  -200 IPS not allowed on 6000 or CYBER 70. Must be first on CYBER 170 channel.
  not allowed if MAC switch used (60144-X or 10329-X).
  -150 IPS must be first or second on either CYBER 170, CYBER 70 or 6000 channel.
  -100 IPS must be first or second on CYBER 70 or 6000 channel. Must be first, second or third on CYBER 170 channel.

LOCAL UNIT RECORD EQUIPMENT

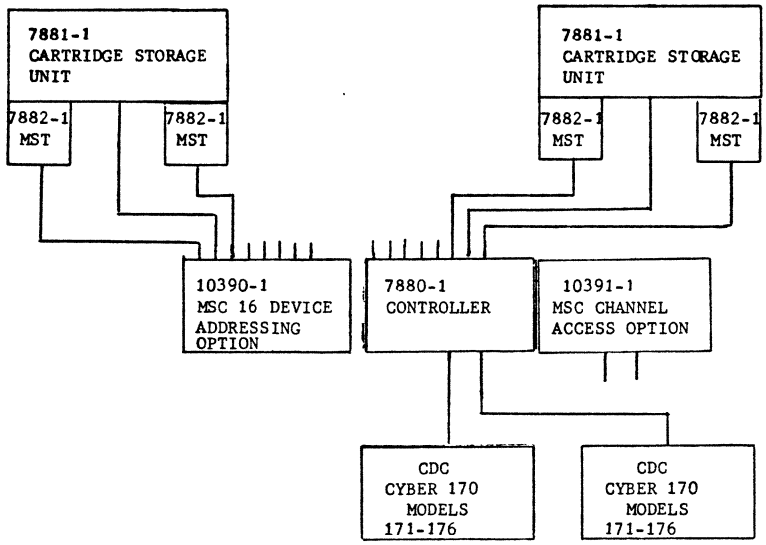


Note: - 1 Model 171 Requires Option 60386-X

* Speeds are only possible with 48 character set

** Speeds are possible with 64 character set

MASS STORAGE FACILITY (MSF)



NOTES

- The NOS software support, for the equipment shown in the above diagram, will be initially available under NOS 1.4.

- 7882-1 Mass Storage Transports (MST)

  - A minimum of two MST units per 7881-1 CSU; a maximum of four MST units per CSU.

- 7880-1 Controller

  - Up to four 7880-1's per channel.

  - Can be connected to up to two CYBER 170's or four if the 7880-1 has the 10391-1 option; however, the software will only support one CYBER 170 accessing the same 7880-1 over the same period of time; the connections to the other CYBER 170's should only be used for back-up purposes.

  - Each 7880-1 can control up to 8 devices (each device being a 7882-1 MST or a 7881-1 CSU); the 10390-1 option (for the 7880-1) provides control for up to 8 additional devices.

- The initial software support under NOS will not support the 10393-1 CSU Alternate Path Option or the 10392-1 MST Alternate Path Option.

- Minimum Configuration

  The minimum configuration supported is a CYBER 171, one 7880-1 Controller, one 7881-1 Cartridge Storage Unit, and two 7882-1 Mass Storage Units (MST). (See the minimum configuration for NOS 1 described previously for a list of the other peripheral equipment required).

- Maximum Configuration

  The maximum configuration (of MSF equipment) supported is five 7881-1 CSU's and six 7880-1 Controllers.

- Multi-mainframe Configuration

  - The CYBER 176 is not supported for multi-mainframe access to the MSF.

  - Multi-mainframe access to the MSF supports two to four mainframes.

  - Only one CYBER 170 (in a multi-mainframe configuration) directly controls or accesses the MSF equipment. (However this control can be transferred to another mainframe, directly linked to the MSF, if necessary.) All other mainframes in the multi-mainframe configuration send or receive data to the MSF equipment indirectly using shared mass storage (e.g. 844-21). Therefore all CYBER 170's in a multi-mainframe configuration, which will "share" the MSF equipment, must also share "rotating" mass storage and ECS.

  - In a multi-mainframe configuration with shared rotating mass storage, all MSF equipment must be driven from a single mainframe.

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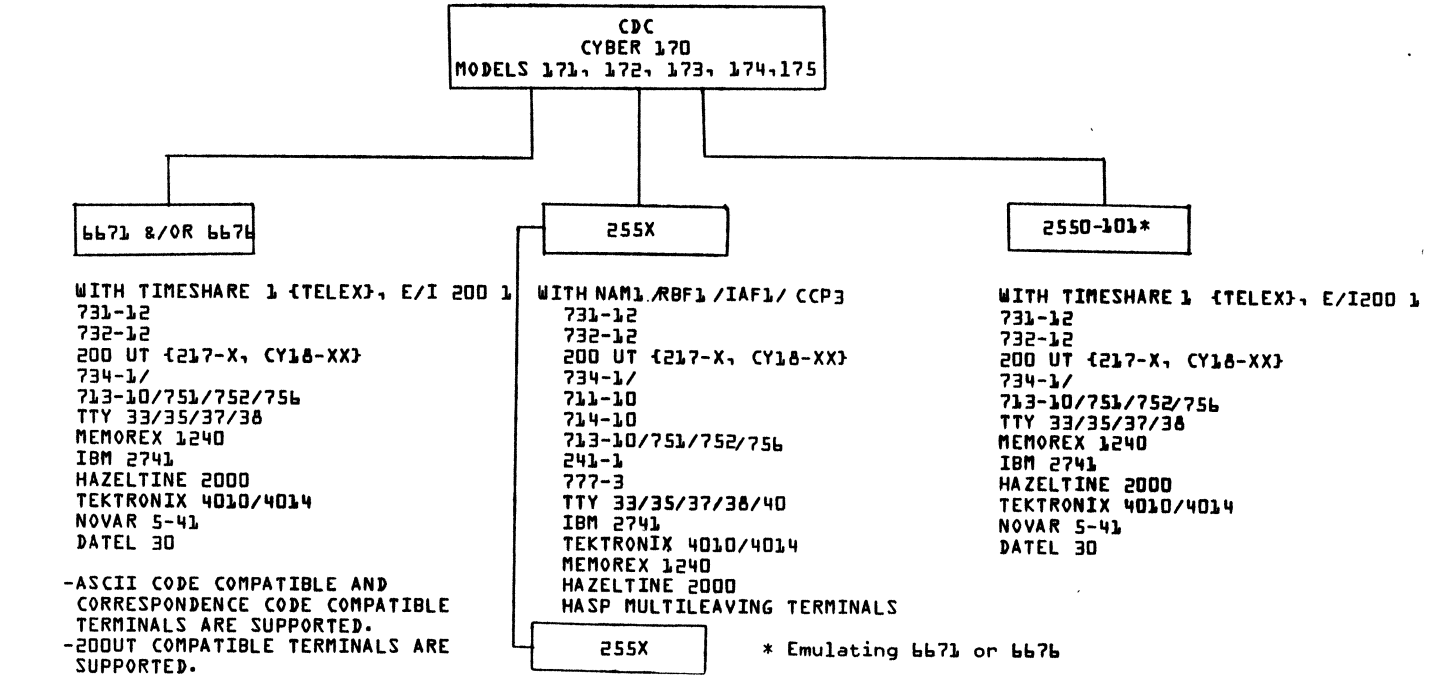
COMMUNICATION SUBSYSTEMS & TERMINALS SUPPORTED

NOS 1



COMPUTER	SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATOR FOR NOS 1	

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
NETWORK OPERATING SYSTEM FS21-01 (CY171-174) FS21-86 (CY175-1XX, 2XX, 3XX)	1		Includes MODIFY 1 and UPDATE 1.	NETWORK OPERATING SYSTEM (NOS) 1 provides the batch subsystem capabilities that enable the execution of jobs submitted from remote batch terminals and local card readers. For batch applications this subsystem includes the COMPASS 3 assembler, the CYBER RECORD MANAGER (BAM) package, and the ADVANCED ACCESS METHODS (AAM) package.
COMPASS	3		Included in operating system.	COMPASS provides a comprehensive assembler language for writing CPU and PPU PROGRAMS for 6000, CYBER 70 and CYBER 170 series systems. CPU programs can be absolute or relocatable. Symbolic machine instructions provide for expressing all hardware functions. Pseudo instructions control the assembler processing and include versatile, extensive macro and micro facilities.
CYBER RECORD MANAGER/ BASIC ACCESS METHODS	1		Included in operating system.	Provides a general purpose I/O package to perform all basic I/O tasks. Supports sequential and word addressable file organization.
8-Bit Subroutine Package		See Description	Included in operating system. Typical field length 12_8K to 15_8K.	A group of routines designed to enable a FORTRAN or COBOL programmer to read, write, and manipulate sequential files and data using 8-bit character sets. Supports IBM 360/370 sequential format (tape) files, EBCDIC and ASCII punched card decks. I/O routines enable translation between external and internal data types and character sets, and operate on a record-by-record basis. A set of utility routines manipulate character strings in Display Code, ASCII, and EBCDIC. Complete character set translation and mixed character set string comparison routines are provided. Two additional routines allow improved file utilization; they compress 8-bit data from internal working form to a more compact form for storage, then expand it again. Additional Supported Hardware 659-X Tape Transport
FORM				A general purpose File Organizer/Record Manager utility that permits selection, manipulation, copying and reformatting capabilities on files and records. FORM also contains a module that permits conversion between 6000 and System/360 file and record formats. It is supported as a User Library product.
MAINTENANCE PACKAGE FS21-02	1			A maintenance package that includes a collection of programs used in the installation and maintenance of NOS 1 and its product set.
CYBER LOADER	1		Included in Operating System. For field length requirement see Operating System Hardware Configurators.	The CYBER LOADER is an integral part of the NOS 1 Operating System. The user is offered these types of loading: Core Image Loading, Object Module Loading, Basic Loading, Segmentation, Overlay Generation. The user controls the CYBER LOADER through Control Statements. User Calls, and LOADER Object Directives.
UPDATE	1		Included in Operating System. ** Field length: 40_8K.	UPDATE provides a means of maintaining source decks in conveniently updatable compressed format. With UPDATE directives and control card options, the user directs the process of creating a program library, correcting it, and copying the updated programs to a compile file for subsequent use by assemblers and compilers.
MULTI-MAINFRAME FS21-05	1			"This feature is designed to provide a mechanism by which up to four computers (6000/CYBER 70/CYBER 170) may access shared mass storage devices. This allows the mainframes to share permanent files residing on such devices. Each mainframe on the complex may operate in shared mode or in stand alone mode; however, two machines may not access the same device unless both are in shared mode. A device is considered shared if it can be accessed by more than one of the mainframes. It need not be accessible to all the mainframes in the complex. ECS will be used as the means and media for controlling shared mass storage and inter-mainframe communications." While the multi-mainframe shared files capability is designed to support up to four computers, this release will be evaluated using only two computer systems and therefore a QSS is required for three or more computers. NOTE - Capability does not include shared I/O queues.
NETWORK ACCESS METHOD FS21-06	1	255X	NIP (dedicated) = 6_{10}K +20 per connected interactive terminal +10 per connected batch terminal +140 per active batch device AIP (user control pt.) = 1_{10}K NS (swappable) = 3_{10}K CS (swappable) = 5_{10}K +10 per connected terminal	The Network Access Method (NAM) provides a generalized method for CYBER 70/170 system facilities and user application programs to access a telecommunications network. NAM provides the CYBER 70/170 interface with the CCP 3 program running and user application programs to transmit messages to the communications network in several modes - transparent, virtual terminal/display code, and virtual terminal/ASCII code. Transparent mode allows the user application program or system facility to control the operation of a terminal completely while the virtual terminal modes free these programs of the necessity to provide the majority of the terminal control codes - only display code or ASCII code messages need to be accommodated. This release of NAM provides an interface for the Remote Batch Facility, Interactive Facility (IAF) and Transaction Facility (TAF).
CONVERSION AIDS SYSTEM FS21-07	1			Provides automated conversion capability of application programs and files for 3000L MASTER and MSOS FORTRAN (MS and ANSI) to FORTRAN EXTENDED 4.
INTERACTIVE FACILITY FS21-08	1		IAF (dedicated) = 5.3_{10}K +9 per connected interactive terminal +6 per active interactive terminal	IAF 1 under NOS 1 is based upon a version of the TELEX Timesharing System to provide interactive services with the Network Access Method and 2550s. The diversity, type and speed of terminals supported is enhanced over that of TELEX.
PL/I FS21-09	1			This version is a non-optimizing compiler for an upwards compatible subset of the ANSI/ECMA Language. Missing features will include the DEFAULT statement, aggregate operations and data-directed I/O.

GENERAL NOTES

** Minimum field length to process a "Representative Job"

LEGEND * INDICATED HARDWARE IS IN ADDITION TO THE "MINIMUM REQUIRED MACHINE HARDWARE" SHOWN IN THE OPERATING SYSTEM CONFIGURATOR NO ENTRY IN THIS COLUMN INDICATES THAT THE PRODUCT WILL OPERATE WITHIN THE OPERATING SYSTEM REQUIREMENTS

COMPUTER	SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATOR FOR NOS 1	

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
ALGOL 5 FS21-11	5			The ALGOL compiler supports the full ALGOL-60 language specification and includes the Knuth I/O specification. It does not include all the language extensions or interactive capabilities of ALGOL-60 V4. It does support automatic field length management and performance is better than ALGOL 60-4.
FORTRAN EXTENDED FS21-12	4		** Field length: 55_8K. Includes Interactive Option with Single Pass Compile Capability.	Includes all the features of FORTRAN EXTENDED 4 plus interactive capability at execution time.
SORT/MERGE FS21-14	4		** Field length: 40_8K.	The SORT/MERGE product is a special application program that accepts input from tape or disk and constructs, according to user specifications, sorted output on tape or disk. This product can be used for sort-only, merge-only and sort-and-merge operations. This version provides increased speed, improved reliability and an interface with the CYBER RECORD MANAGER. OPERATING OPTIONS
		- None	- Disk option	DISK - Additional disks will provide improved: • Speed - Two additional tapes will provide improved: • Speed - Additional core will provide improved: • Speed - Three tapes can be used for disk overflow, others for input or output.
		- 2 Tapes	- Tape Option	TAPE - Two additional tapes are required. - More additional tapes will provide improved: • Speed - Additional core will provide improved: o Speed - Tapes can be assigned to disk.
INTERACTIVE BASIC FS21-17	3		** Field length: 30_8K.	The BASIC subsystem enables both novice and experienced programmers to readily create and execute interactive programs in time sharing environment. This version of interactive BASIC provides many capabilities not available in BASIC 2.1. For example, word addressable random I/O, enhanced print formatting, multiple argument and multiple line user defined functions, extended string variable names, a string concatenation operator, logical connective operators, access to external non BASIC subroutines, and full use of the escape code ASCII extended character set.
SIMSCRIPT 1.5 FS21-19	3		** Field length: 50_8K. - Requires either FORTRAN compilers object time routines	Developed primarily for Simulation programming; the language may be used to describe a situation which changes over some time interval and to test its operation in comparison to others.
NETWORK UTILITIES FS21-23	1			The major element of Network Utilities 1 under NOS 1 is the Network Product Stimulator. The Stimulator is a test package that allows a controlled message load to be presented to the CYBER network software without the use of external communications equipment. The Stimulator consists of a script compiler, a stimulator and a data reduction post processor.
XEDIT FS21-24	3			Enhanced interactive text file editing system for time sharing users.
CYBER CROSS SYSTEM FS21-25	1			Provides for maintenance and compilation of Communication Control Program software.
REMOTE BATCH FACILITY FS21-26	1		RBF (dedicated) = 1_{10}K RBF (swappable) = 6_{10}K +10 per connected batch terminal +150 per active batch terminal	The Remote Batch Facility (RBF) provides for batch file transmission between a remote Mode 4A terminal or HASP multileaving terminal and the job queue maintained by the host operating system on rotating mass storage. With RBF, the user sends data files to the input queues and receives data files from the output queues. RBF performs character conversion and mapping and allows the user to control the disposition and transmission of his files through a terminal command language. RBF also supplies the user with status information concerning his files and devices.
TOTAL UNIVERSAL I FS21-28	1			A data base management system developed by CINCOM Systems, Inc., which embodies a network data structure philosophy. Relationships from one file may be made on a direct basis to other files within the data base using a chaining/threading technique. Files may be managed on an integrated basis within one data base. TOTAL includes a Data Base Definition Language (DBDL) which is used to describe and declare the data base and a Data Manipulation Language (DML) which functions in conjunction with the following host languages (COBOL, FORTRAN, and COMPASS), at the CALL or MACRO level. It is modular and evolutionary in design and use; provides a significant degree of data independence; can eliminate data redundancy; permits data relatability; ensures data integrity, reliability, and data base recovery; and achieves optimum performance and efficiency through input/output buffer pool sharing and the elimination of external directories and indexes. TOTAL Universal runs within the user's field length.
TOTAL EXTENDED FS21-29	1			Data Base Management System. (Transaction Multi-Thread). Permits network structure relationships between data files and concurrent access/update to a data base by multiple transaction tasks. Includes a Data Base Definition Language (DBDL) and a Data Manipulation Language (DML) which functions with COBOL, FORTRAN and COMPASS. Includes TOTAL UNIVERSAL.
CYBER DATABASE CONTROL SYSTEM FS21-30	2			CDCS 2 under NOS 1 allows multiple independent programs (at separate user control points) to concurrently update a data base using the Indexed Sequential and Multiple Index Processor access methods of CRM with lockout control at the logical record level. It provides data privacy at the file level.

GENERAL NOTES

** Minimum field length to process a "Representative Job"

LEGEND * INDICATED HARDWARE IS IN ADDITION TO THE "MINIMUM REQUIRED MACHINE HARDWARE" SHOWN IN THE OPERATING SYSTEM CONFIGURATOR NO ENTRY IN THIS COLUMN INDICATES THAT THE PRODUCT WILL OPERATE WITHIN THE OPERATING SYSTEM REQUIREMENTS

COMPUTER	SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATOR FOR NOS 1	

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
DATA DESCRIPTION LANGUAGE F521-31	3			DDL 3 under NOS 1 is an extension of DDL 2 including support of Area-Level privacy and improved data independence between application programs and COBOL subschema compilations. DDL 3 generates record mapping code to improve CDCS 2 record mapping performance.
GPSS-V F521-32	1			General purpose simulation system designed for modeling of real situations as affected by changes over time intervals and corresponding events which occur during the simulation. Features free format input and floating point number capabilities. No Internal Maintenance Specifications are available.
APEX-III F521-34 THRU F521-38			APEX-III USAGE PACKAGE F521-38 CONTAINS OUT-OF-CORE, MIXED INTEGER, MATRIX REDUCTION AND PARAMETRICS FEATURES	APEX III is a program for the solution of linear programming problems. These problems involve the minimization or maximization of a linear function subject to equality or inequality constraints. A large number of common optimization problems may be formulated as linear programming problems, e.g., refinery scheduling, distribution and optimization, warehouse location, optimal planning. Requires FORTRAN EXTENDED 4. The product set is composed of four products: 1. Out-of-Core Subsystem. The Base System plus an out-of-core capability of using extended core storage, large core memory, or disk, as additional storage. 2. Mixed Integer Programming. Provides a mixed integer programming capability including binary and general integer variables and special ordered sets, Type 1 and 2. Requires out-core subsystem. 3. Matrix Reduction. Provides a matrix reduction (reduce) capability to the APEX III package including regeneration of solution to the original problem. Requires out-core subsystem. 4. Parametrics Option. Provides the capability of varying the requirements vector or the cost function as a linear function of two requirements vectors or cost functions. Requires out-core subsystem.
APEX-III OUT-OF-CORE SYSTEM F521-34	1			
APEX-III MIXED INTEGER PROGRAMMING OPTION F521-35	1			
APEX-III MATRIX REDUCTION OPTION F521-36	1			
APEX-III PARAMETRICS F521-37	1			
FORTRAN EXTENDED F521-39	4			FORTRAN Extended 4 without the Interactive option.
APT IV F521-40	2		- Requires FORTRAN EXTENDED	A production system for the generation of APT (Automatic Programmed Tools) cutter location output. Has the following features: sculptured surfaces, parametric surface capability, inclusive subscripts, language capabilities (literal string, CL print/on or off) and bounded geometry. Compatible with the ALRP/CAMI version of APT IV (A4V3).
INTERACTIVE DEBUG PACKAGE F521-41	1			This package will provide interactive, symbolic level, debugging capabilities such as: - Conditional breakpoints and traps for temporarily suspending program execution. - Program suspension via terminal interrupts. - Commands to interrogate and change program memory. - Commands to restart program execution at any given point.
QUERY UPDATE F521-42	3		** Field length: 62_8K (non-MIP updating), 71_8K (MIP updating) plus buffers	This product replaces all the capabilities of QU 2 and brings with it a major breakthrough in performance and power. Using the Boolean List Processor, it interfaces directly to CRM's Multiple Index Capability to provide optional accessability of qualifying records via alternate access paths and indexes. The report writer capability has also been enhanced by a "compile" option in addition to its normal interpretive mode. Additional features are: 1. Cross-file relationships. 2. Degree of commonality with CDCS 1 for enhanced recovery. 3. QUERY-only capability making use of IS, DA and MIP read-only packages of CRM. 4. Character-string proces- ing.
DATA DESCRIPTION LANGUAGE F521-43	2		** Field length: 40_8K plus buffers	DDL 2 allows for the specification of a data base schema as well as COBOL and QUERY UPDATE subschemas for use in a data base environment. These are used at execution time by QU, COBOL and CDCS to provide data independence, logging information, data validation, processing of relations, and criteria for invocation of data base procedures.
CYBER DATABASE CONTROL SYSTEM F521-44	1		** Field length: 20_8K to 34_8K - Plus users program, CRM and buffers.	The nucleus of the DMS 170 Data Management System, CDCS is the central traffic controller in a data base environment and includes Data Base Utilities 1. It provides the COBOL user with five basic functions: 1. Full data independence through a CODASYL system of schema and subschema as described in the Data Description Language (DDL 2). 2. Central control of logging and recovery in conjunction with Data Base Utilities (DBU 1) included in CDCS. 3. Central monitoring of data base activity in order to invoke data base procedures as specified in the Data Description Language (DDL 2). 4. Validation of data before being stored in the data base according to user-defined validity checks. 5. Processing of relations which link records across files. Field length for representative user job calling CDCS and processing one IS file: Load 103_8K Execute 64_8K Field length includes user program and CRM.
DATA BASE UTILTIES			** Field length: 75_8K	Included in DDL 2 and DDL 3.
TOTAL/ATHENA F521-45	1		- Requires TOTAL UNIVERSAL	High level interactive/batch, retrieval/update facility for Total Data Base Management system. Permits data or record selection from multiple TOTAL files based on multiple selection criteria. Includes a report writer and plot generator.

GENERAL NOTES

** Minimum field length to process a "Representative Job"

LEGEND * INDICATED HARDWARE IS IN ADDITION TO THE "MINIMUM REQUIRED MACHINE HARDWARE" SHOWN IN THE OPERATING SYSTEM CONFIGURATOR. NO ENTRY IN THIS COLUMN INDICATES THAT THE PRODUCT WILL OPERATE WITHIN THE OPERATING SYSTEM REQUIREMENTS

COMPUTER	SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATOR FOR NOS 1	

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
COBOL F521-46	5		** Field length: 60_8K - Requires SORT/MERGE 4 F521-14	The COBOL 5.0 compiler addresses the 1974 ANSI specifications. The initial release implements the highest level of 10 of the 12 modules defined in the specification. The COMMUNICATIONS module is not included and only a subset of the low-level of the INTER-PROGRAM COMMUNICATIONS is included. COBOL 5 is a companion product to COBOL 4 and as such is not fully compatible with its predessor. A COBOL 4 to COBOL 5 conversion aids program exists which can be used to help bridge the gap (F521-50). In addition to addressing the 1974 specification, COBOL 5 includes the following added capabilities: o Direct Access, Actual Key and Word Address file organizations. o Secondary (for ECS access) and Common storage sections. o INITIALIZE verb to set Data Division items to initial values. o Floating point numeric literals. o Variable length records. o Ability to set and clear sense switches. o File Organizations other than sequential in the GIVING phrase of SORT or MERGE. o COMP-1 and COMP-2 usage. o Ability to change collating sequences dynamically with the SET statement. o QUOTE IS APOSTROPHE can be specified to change the quote character. o Duplicate alternate keys can be ordered by prime key. o FILLER can be used anywhere in a record. o Ability to set character codes for files. o COMP-1 and COMP-2 converted to readable format with signs for DISPLAY.
TRANSACTION FACILITY F521-48	1			Product provides a general purpose transaction facility that coexists with the other NOS subsystems. A Transaction is defined as a request by a terminal to perform a predefined operation (or series of operations) called a task. TAF 1 provides interface and communication procedures enabling it to utilize the network access method for synchronous transaction terminal communications. Product is implemented in such a way as to allow installations unable to utilize NAM to still be able to run asynchronous terminals with a Telex interface, as is done with TRANEX 1. Includes mode 4 transaction terminal support.
UNIPLOT F521-49	2			Provides for creation previewing and modification of files for display or plotting. Device independence provided by post-processors to a neutral plot file.
COBOL 4 to 5 CONVERSION AIDS F521-50	1			Provides conversion aids for COBOL 4 to 5 conversion.
APL F521-51	2		** Field length: 30_8K (includes a 1K Workspace) Successor to/F521-16.	Programming language for the advanced scientific user as well as the occasional user with little or no previous experience with computers. Faster and more powerful than the standard languages, quick to program and easier to learn and use. APL 2 is a new implementation of the APL language. The interpreter is characterized high efficiency, an advanced file system, a complete set of system functions, error trapping capability and a true batch facility. For further details refer to Software Availability Bulletin *174 dated December 2, 1976.
PERT/TIME F521-53	2			Uses a time oriented network structure to produce a variety of reports reflecting the actual and scheduled progress of a project.
TIGS F521-54	1			Provides interactive graphics capabilities with terminal independence provided via post-processors to a neutral display file. Initial release includes post-processor to Tektronix 401X terminals.
NOS FOR CYBER 175 F521-86				See F521-01 for description.
COMMUNICATION CONTROL PROGRAM N221-01	3		See Communication Section for 255X memory usage	The Communications Control Program (CCP) is the software resident in the 255X Communications Processor. This software provides basic operating system functions for the 2550 as well as interfacing the 2550 to the CYBER 70/170 host computer, blocking messages and processing terminal protocols. CCP 3 processes the Mode $ protocol (used by 200 UT, 711-10, 714, 731-12, 731-1, etc.), asynchronous protocols and HASP multileaving protocol. CCP 3 also contains statistical data gathering and enhanced on-line diagnostics capabilities. CCP 3 supports remote 2551.
LINK INTERFACE PROGRAM N221-02	1			Provides support for communication between local and remote node 255X processors using HDLC protocol. The remote node processors must also be operating with CCP 3.

GENERAL NOTES

** Minimum field length to process a "Representative Job"

LEGEND * INDICATED HARDWARE IS IN ADDITION TO THE "MINIMUM REQUIRED MACHINE HARDWARE" SHOWN IN THE OPERATING SYSTEM CONFIGURATOR NO ENTRY IN THIS COLUMN INDICATES THAT THE PRODUCT WILL OPERATE WITHIN THE OPERATING SYSTEM REQUIREMENTS

NOS 1
PUBLICATIONS

NOS 1 OPERATING SYSTEM	
NOS 1	
RM (Vol. I Application Programmers)	60435400
RM (Vol. II COMPASS Application Programmers)	60445300
RM (On-Line Maintenance Software)	60454200
OG	60435600
GIM	60435900
IH	60435700
IN (Application Programmers)	60436000
IN (System Programmers)	60449200
RM (Administrator and Operator Facility)	60480100
Loader	
RM	60429800
IN	60449800
SIFT	
RM	60358500
PSB	60496500
MODIFY	
RM	60450100
IN	60450200
UPDATE	
RM	60449900
IN	60450000
CYBER Common Utilities	
RM	60495600
Common Memory Manager	
RM	60499200
NOS 1 PRODUCT SET	
Data Communications	
Time Share	
RM	60435500
UG	60436400
IN (Terminal User)	60435800
Text Editor	
RM	60436100
Export/Import	
RM	60436200
Communications Control Program 3	
RM	60471400
OG	60471700
DH	60471500
Network Access Method 1	
RM	60499500
Network Definition Language	
RM	60480000
Remote Batch Facility	
RM	60499600
TAF 1	
RM	60453000
RM (Data Manager)	60453100
TRANEX 1/TAF 1	
UG	60436500
TRANEX 1	
RM	60407900
Support Programs	
CYBER CROSS System	
RM	96836000
RM PASCAL Compiler	96836100
RM Macro Compiler	96836500
RM Micro Compiler	96836400
DH	96836300
RM Link Editor	60471200
3000L to CYBER 70 Conversion Aids	
FORTRAN	19980600
COBOL	19980700
UG	19980900
COBOL 4 to COBOL 5 Conversion Aids	
RM	19265021
8-Bit Subroutines	
RM	60495500
CYBER Record Manager	
RM	60495700
UG	60495800
UG (FORTRAN)	60495900
UG (COBOL)	60446000
UG (ALGOL)	60496700
SORT/MERGE	
RM	60497500
IN	60497600
Compilers	
ALGOL 4	
RM	60496600
APL 2	
RM	60454000
BASIC	
RM	19983900
COBOL 4	
RM	60496800
IN	60497000
COBOL 5	
RM	60497100
UG	60497200
IN	60497300
UG Report Writer	60496900
COMPASS	
RM	60492600
IN	60492800
FORTRAN Extended 4	
RM	60497800
UG (Debug)	60498000
RM (Common Library Math Routines)	60497900
IN	60497900
SIMULA	
RM	60234800
SYMPL	
RM	60496400
Data Management	
DMS-170	
RM (CDCS 1)	60498700
GIM	60498900
UG (Data Administrator)	60499100
PSB (Relational Data Base)	60480700
Data Base Utilities	
RM	60498800
DDL 2	
RM (Vol. I)	60498400
RM (Vol. II - COBOL)	60498500
RM (Vol. III - QU)	60498600
RM (DDL/QU)	60359200
FORM	
RM	60496200
Query Update 3	
RM	60498300
UG	60387700
UG (Programmers)	60499000
NOS 1 APPLICATIONS	
APT IV	
RM	17326900
GPSS V	
RM	76078800
GIM	84003900
LCGT/IGS 2	
RM	76079100
UG	76077400
PERT/TIME	
RM	60133600
TOTAL	
RM	76070300
TOTAL/ATHENA	
UIM	84000090
UNIPLOT	
RM/UG	60454730
SIMSCRIPT	
RM	60358500
APEX III	
RM	76070000

LEGEND

RM	REFERENCE MANUAL
OG	OPERATOR'S GUIDE
UG	USER'S GUIDE
SPRM	SYSTEM PROGRAMMERS REFERENCE MANUAL
IN	INSTANT
GIM	GENERAL INFORMATION MANUAL
IH	INSTALLATION HANDBOOK
PSB	PROGRAMMING SYSTEM BULLETIN
DH	DIAGNOSTIC HANDBOOK

NOTE

THE AVAILABILITY OF THE MANUALS LISTED ABOVE MUST BE VERIFIED IN THE "LITERATURE AND DISTRIBUTION SERVICES CATALOG"

OPERATING SYSTEM HARDWARE REQUIREMENTS FOR NOS/BE

Minimum System

- 171-4
- One Line Printer
- Two Tape Units
- Rotating Mass storage
- - One 844-21 with one 881
  or
  - One 844-4X with one 883-60
  or
  - One 885
- One Card Reader

Options

- Alternate Mainframes
- CM Additions
- CPU Upgrade
- Additional CPU
- Extended Core Storage (ECS)
- PPU/I/O Channels
- Tape Units
- Line Printers
- Card Equipment
- Rotating Mass Storage
- Communication Equipment
- Remote CRT's
  Line Printers
  Card Equipment
- Remote Teletypewriters
- 171 CMU Upgrade
- 171 Data channel Converters

Minimum System Rules

- One of two Tape Units is used for initial loading.
- During normal running, the Tape Units may be used for temporary storage and for Input and/or Output Queues.
- 885 or 844-4X may be added or may replace the minimum standard 844-21. The system can reside on any mixed device types. Minimum capacity to support standard batch processing is 60 million characters. (The system itself occupies approximately 1.4 million charactrers.)
- System uses three PPU's on a dedicated basis. The remaining are used on a dynamic pool basis.
- Each CDC CYBER 170 Model 172, 173, 174, or 175 includes one operator display console and two data channel converters. The data channel converters are equivalent to 6681's. Model 171 includes display console, but no data channel converters. Model 176 includes display console and one data channel converter.
- For Model 176, Rotating Mass storage connected to CYBER 170 PPU is required CSME (734-1, CYBER 18-5, etc.) with a line printer that is physically located with the central computer and is driven through a 6671 or 2550 communications subsystem.
- A terminal card reader may be used to input source decks to the system but cannot be used to input binary decks.
- The system requirement for a card reader to load controlware may be satisfied with a 7152-1 Disk/Tape Controller with a nine track tape unit.

Basic 171-X Mainframe

- 1 - Unifeid CPU
- 65K to 262K
- 10 PPU's
- 12 I/O Channels
- Operator's Console

Basic 172-X Mainframe

- 1 - Unified CPU
- Compare Move Unit (CMU)
- 65K to 262K CM
- 10 PPU's
- Operator's Display Console
- 2 - Data Channel Converters

Basic 173-X Mainframe

- 1 - Unifed CPU with speed up option
- Compare Move Unit (CMU)
- 98K to 262K
- 10 PPP's
- 12 I/O Channels
- Operator's Console
- 2 - Data Channel converters

Basic 174-X Mainframe

- 2 - Unified CPU's with speed up options
- Compare Move Unit (CMU)
- 98K to 262K CM
- 10 PPU's
- 12 I/O Channels
- Operator's Console
- 2 - Data channel Converters

Basic 175-XXX Mainframe

- 1 - Multi-Function CPU
- 131K to 262K CM
- 10 PPU's
- 12 I/O Channels
- Operator's Console
- 2 - Data Channel Converters

Basic 176-XX Mainframe

- 1 - Multifunction CPU
- 131K to 262K CM
- OK to 2097K Extended Memory
- 10-CYBER 170 PPU's
- 12-CYBER 170 I/O Channels
- 0-4 CYBER 176 PP's
- 0-4 HI-Speed I/O Multiplexer Channels
- Operators console
- 1-Data channel Converter

Basic System and Loader Residence

- Operating system residence for the unconfigured system is approximately 25000_8 words.
- - The unconfigured system is defined as:

    1 CPU
    10 PPU's
    No INTERCOM
    Minimum Library CM Resident
    XJ not used

  - The unconfigured system includes space for:

    8 Control Points
      Each additional control point will require 300_8 words
    3 Controllers
      Each additional controller will require 20_8 words
    8 Tape Units
      Each additional tape unit will require 20_8 words
    6 RMS devices (with standard 844 RBR size)
      Each additional RMS device will require 40_8 - 100_8 words

- When ECS is included in the system, an additional 1000_8 words plus 2000_8 words are required in one direct access area of ECS.

- For each RMS device type which is not used, the operating system residence may be decreased by 144_8 words.

- Temporary CM usage during loading is a minimum of 7000_8 words plus variable length tables generated during the loading.

OPERATING SYSTEM HARDWARE REQUIREMENTS

Alternate Mainframes

- The following Mainframe/CPU/CM combinations are supported by NOS/BE.

NOTE: NOS/BE will not operte on less than 65K core.

CM SIZE	MODEL 171 CPU	MODEL 172 CPU	MODEL 173 CPU	MODEL 174 CPU	MODEL 175 CPU	MODEL 176 CPU
65K	171-4	172-4	173-4*	174-4		
98K	171-6	172-6	173-6	174-6		
131K	171-8	172-8	173-8	174-8	175-108,208,308	176-8,21,22,24
196K	171-12	172-12	173-12	174-12	175-112,212,312	176-12,31,32,34
262K	171-16	172-16	173-16	174-16	175-116,216,316	176-16,41,42,44

* Early Production only (Prior to 12/76)

Central Memory Additions

- Model 171 Upgrade Rules for CM: (10317-1 also as required)

  171-4 plus 10312-6 gives 171-6
  171-6 plus 10312-8 gives 171-8
  171-8 plus 10312-12 gives 171-12
  171-12 plus 10212-6 gives 171-16

- Model 172 Upgrade Rules for CM: (10317-1 also as required)

  172-3 plus 10312-4 gives 172-4
  172-4 plus 10312-6 gives 172-6
  172-6 plus 10312-8 gives 172-8
  172-8 plus 10312-12 gives 172-12
  172-12 plus 10312-16 gives 172-16

- Model 173 Upgrade Rules for CM: (10317-1 also as required)

  173-4 plus 10312-6 gives 173-6
  173-6 plus 10312-8 gives 173-8
  173-8 plus 10312-12 gives 173-12
  173-12 plus 10312-16 gives 173-16

- Model 174 Upgrade Rules for CM:

  174-4 plus 10312-6 gives 174-6
  174-6 plus 10312-8 gives 174-8
  174-8 plus 10312-12 gives 174-12
  174-12 plus 10312-16 gives 174-16

- Model 175 Upgrade Rules for CM:

  175-108, 108 plus 10313-12 gives 175-112, 212
  175-112, 212 plus 10213-16 gives 175-166, 216

  175-308 plus 10313-112 gives 175-312

- Model 176 Upgrade Rules for CM:
  176-8,21,22,23 plus 10374-1 gives 176-12, 31, 32, 34
  176-12,31,32,34, plus 10374-2 gives 176-16, 41, 42, 44

- Model 176 Upgrade Rules for EM (Extended Memory)

  176-8,12,16, plus 10375-10 gives first 524K
  176-21,31,41 (524K) plus 10375-1 gives
  176-22,32,42 (1M)
  176-22,32,42 (1M) plus 10375-2 gives
  176-24,34,44 (2M)

CPU Upgrades

- Model 171 performance can be increased by adding a compare move unit (10380-X) or a second central processor (10382-X) or by upgrading the CPU into a model 172 (10380-1, plus 10381-1, plus 10381-2, plus 10383-1).

- Model 172 performance can be increased by adding a second central processor (10384-1) or by upgrading the CPU to a model 173 or 174 (10316-1 or 10385-1).

- Model 173 performance can be increased by upgradfing the CPU to a model 174 (10316-2).

- The upgrading from a model 173 or 174 to a model 175 requires a Mainframe exchange.

  175-1XX plus 10426-1 gives 175-2XX level performance
  175-2XX plus 10427-X gives 175-3XX level performance

- The upgrading from a model 173, 174 or 175 to a model 176 requires a mainframe exchange.

- Addition of 10376-10 options upgrades a 176-8, 12, 16 to a respective 176-21, 31, 41.

PPU - I/O Channel Options

- The basic model 171, 172, 173 and 174, 175 or 176 contains 10 PPU's and 12 I/O Channels.

- Model 171, 172, 172 and 174 Upgrade Rules

  10314-1 Adds 4 PPU's and 12 I/O Channels to 10 PPU, 12 I/O Channel System

  10314-2 Adds 3 PPU's to 12 PPU, 24 I/O Channel System

  10314-3 Adds 3 PPU's to 17 PPU, 24 I/O Channel System

  Model 175 Upgrade Rules

  10314-151 Adds 4 PPU's and 12 I/O Channels to 10 PPU, 12 I/O Channel System

  10314-152 Adds 3 PPU's to 14 PPU, 24 I/O Channel System

  10314-153 Adds 3 PPU's to 17 PPU, 24 I/O Channel System

  Model 176 Upgrade Rules

  10377-1 Adds 4 Cyber 170 PPU's and 12 I/O Channels to 10 PPU, 12 I/O Channel System.

  10314-52 Adds 3 Cyber 170 PPU's to 17 PPU 24 I/O Channel System

  10314-53 Adds 3 Cyber 170 PPU's to 17 PPU 24 I/O Channel System

  10376-10 Adds initial 4 PP's and 4 MUX channels to 176-8, 12, 16

  10376-1 Adds 1 Cyber 176 PP allowing expansion from 4 PP system to 6 PP system.

  10348-1 Adds 1 Hi-Speed I/O Multiplexer Channel allowing expansion from 4 Hi-Speed I/O Multiplexer Channels to 6 Hi-Speed Channels.

Optional Extended Core Storage

- The Basic 7030-1XX ECS unit contains the necessary controller and one Distributed Data Path (DDP).

- A 10318-X Coupler must be ordered for each mainframe connecting ECS.

- Growth of the Basic 7030-1XX may be achieved by the addition of ECS Storage Increments (10319) and/or additional DDP Registers.

- Supported Configurations:

ECS Words	Model	Upgrade Rules for ECS Words
262K	7030-102	7030-102 plus 10319-2 gives 7030-104
524K	7030-104	7030-104 plus 10319-4 gives 7030-108
1048K	7030-108	7030-108 plus 10319-8 gives 7030-116

- Each 7030-1XX contains one DDP Register. Upgrade Rules for DDP Registers are:

  10280-10 Up to a maximum of three additional Registers for a total of four.

- ECS/DDP Option is not available on Model 176.

- The DDP in the 7030-X is not supported.

- When ECS is installed on the system an additional Operating System Residence of 6K actual to 14K actual is required; however, equivalent number of CM words can be reduced by storing the CM resident PP/CP routines in ECS.

Tape Units

- See Hardware Diagrams for supported configurations.
- See 'Minimumn System Rules' for alternate uses of Tape Units.
- NOS/BE 1 may be dead-started from either 7 track or 9 track units.
- Use of 6681-2 will reduce performance compared to the use of the 6684 except on 3518/28 controllers.
- There may be only one type of Data Channel Converter (6684-X or 6681-2) per I/O Channel. Any Dual Access Tape Controller must be connected through one type of Data Channel Converter (i.e., all 6684-X or all 6681-2).
- The 6684-X operates in two modes:
  - Conversion Mode (for Tape Units)
  - Non-Conversion Mode (i.e., 6681 Mode)
- 64 Character Set System requires a 6684-2 to provide Hardware Conversion for Tape Units; however, full 64 Character Set Software Conversion is provided when either a 6681-2 is used or a 6684-1 is used in 6681 Mode.

Line Printers

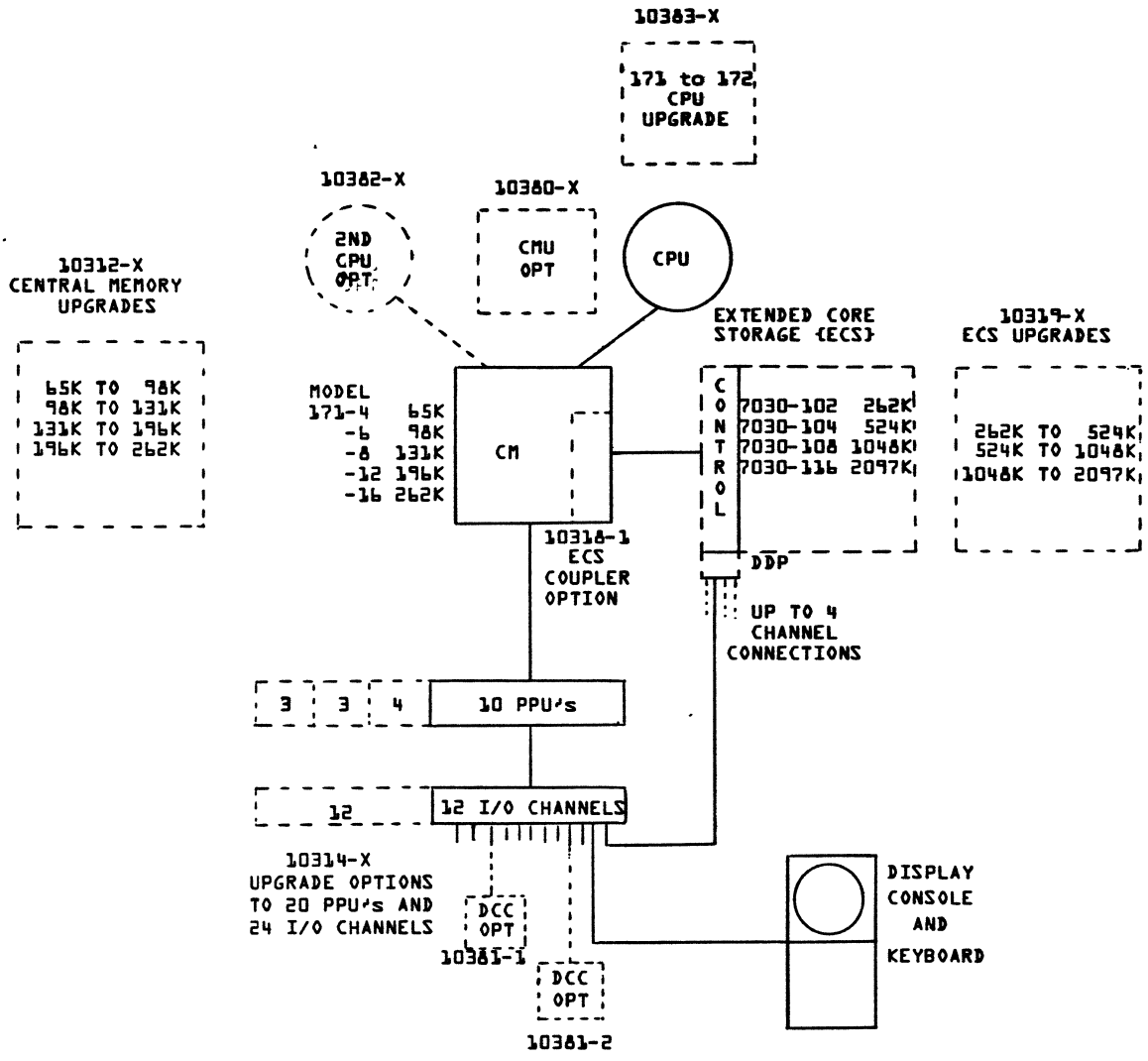
- See Hardware Diagrams for supported local and remote configurations.
- A 595-X Train must be ordered with each 512 Printer, 733-100 Printer or 733-10 station.
- A 596-X Train must be ordered with each 580 Printer.
- Drivers are provided within the system to support the 580, and 512 Printers.
- The Printer Buffer size within the released system is 401_8 words. This Buffer may be increased by an installation modification.
- The 580-1XX (Programmable Format Control) is supported.

Card Equipment

- See Hardware Diagram for supported local and remote configuration.
- The Card Reader Buffer size and card Punch Buffer size within the released system is 401_8 words. This Buffer may be increased by an installation modification.

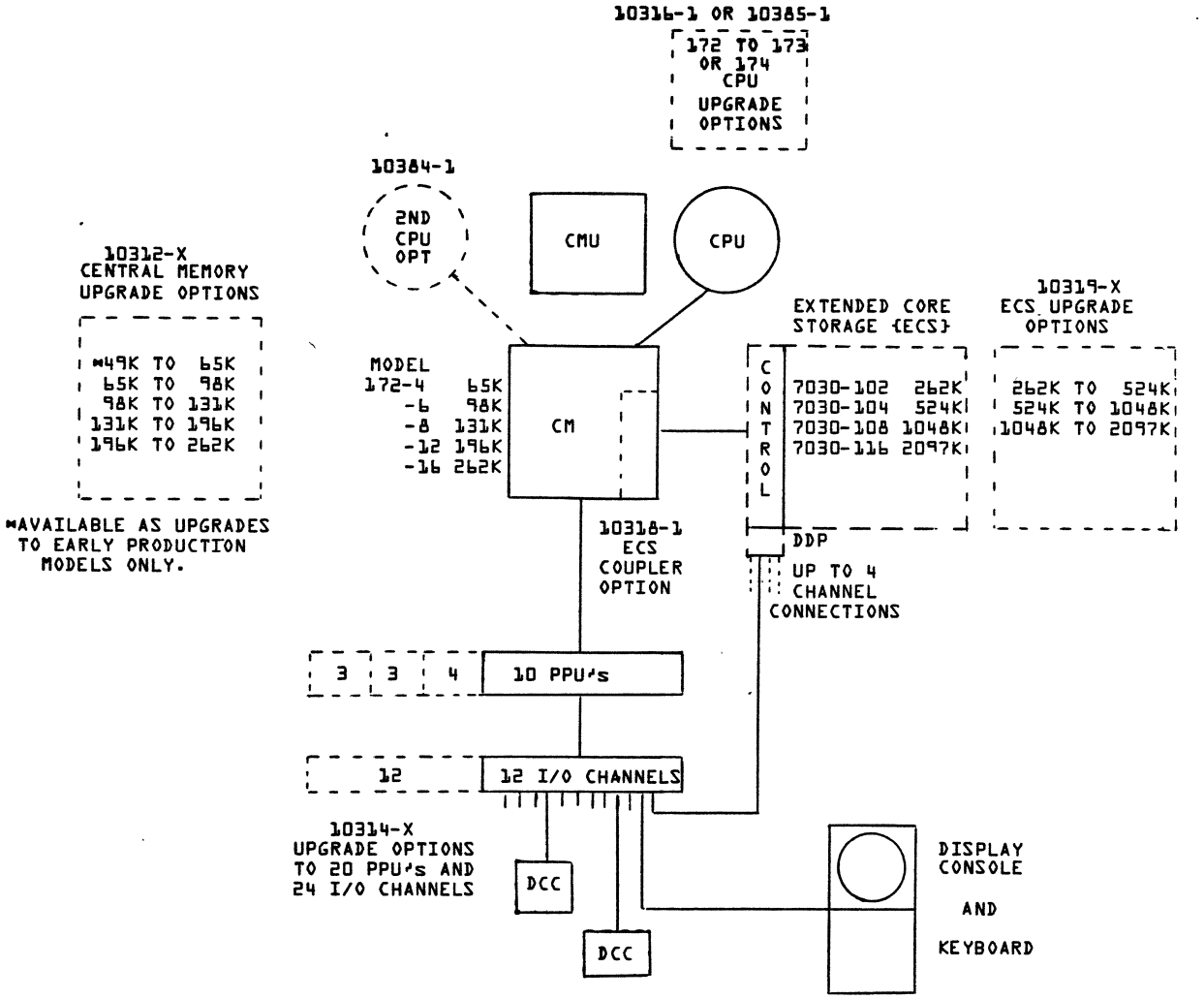
/sPR4198-09

CDC CYBER 170 MODEL 171
CONFIGURATOR



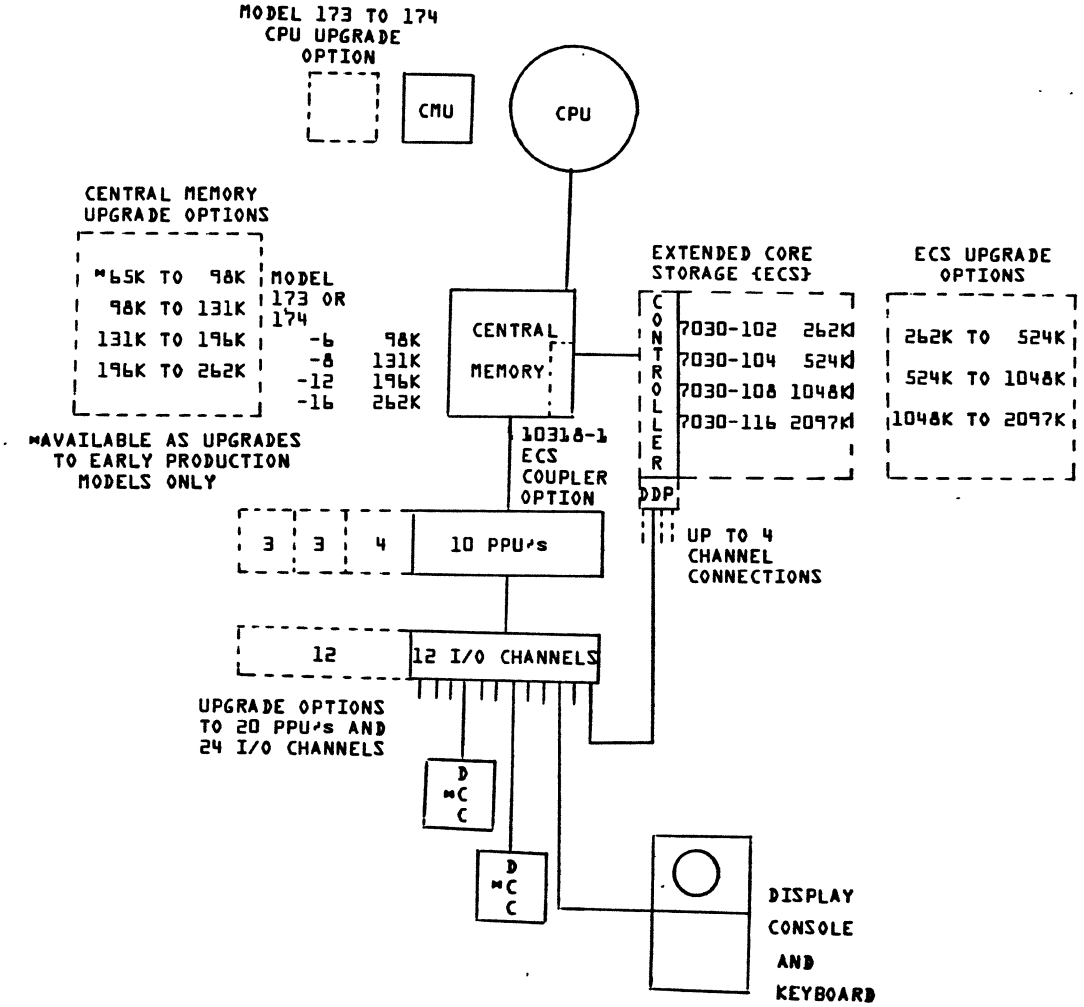
OPTIONAL DCC - DATA CHANNEL CONVERTERS TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE THE CYBER 170 MODEL 171.

CDC CYBER 170 MODEL 172
CONFIGURATOR



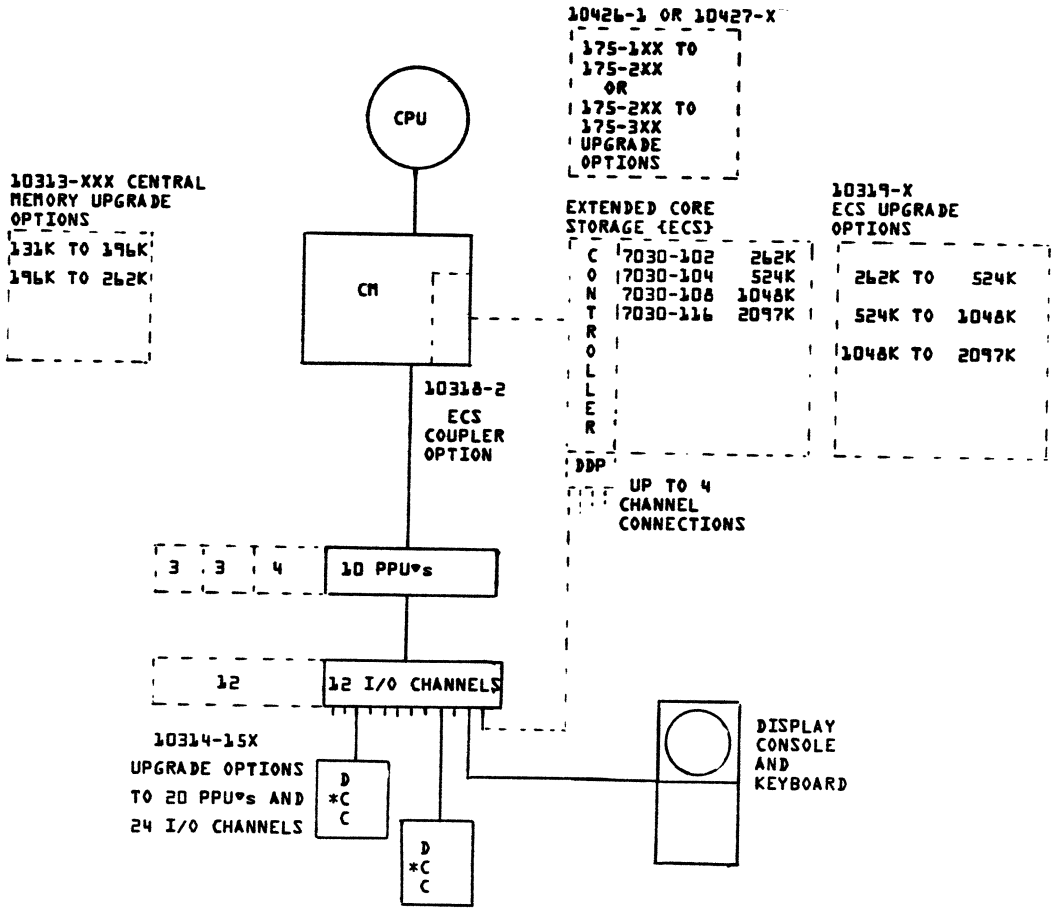
DCC - DATA CHANNEL CONVERTERS TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE TO THE CYBER 170 SERIES.

CDC CYBER 170 MODEL 173 AND 174 CONFIGURATOR



* DCC - DATA CHANNEL CONVERTERS TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE TO THE CYBER 170 SERIES

CDC CYBER 170 MODELS 175-1XX, 2XX, 3XX CONFIGURATOR



* DCC - DATA CHANNEL CONVERTORS TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE TO THE CYBER 170 SERIES

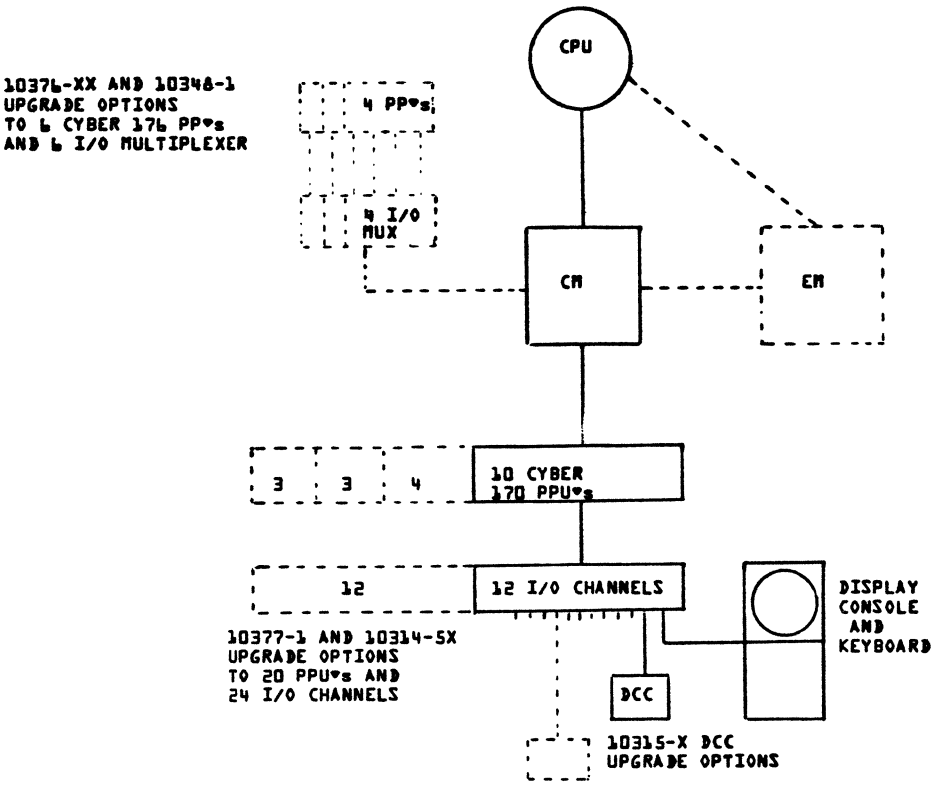
CENTRAL MEMORY

MODELS	CM
175-108, 208, 308	131K
175-112, 212, 312	196K
175-116, 216, 316	262K

CM OPTIONS

MODELS	FROM	TO	OPTION
175-108, 208	131K	196K	10313-12
175-112, 212	196K	262K	10313-16
175-308	131K	196K	10313-112
175-312	196K	262K	10313-116

CDC CYBER 170 MODELS
176-8, 12, 16 CONFIGURATOR



MODELS

MODEL	CM
176-8	131K
176-12	196K
176-16	262K

CM OPTIONS

131K TO 196K	10374-1
196K TO 262K	10374-2

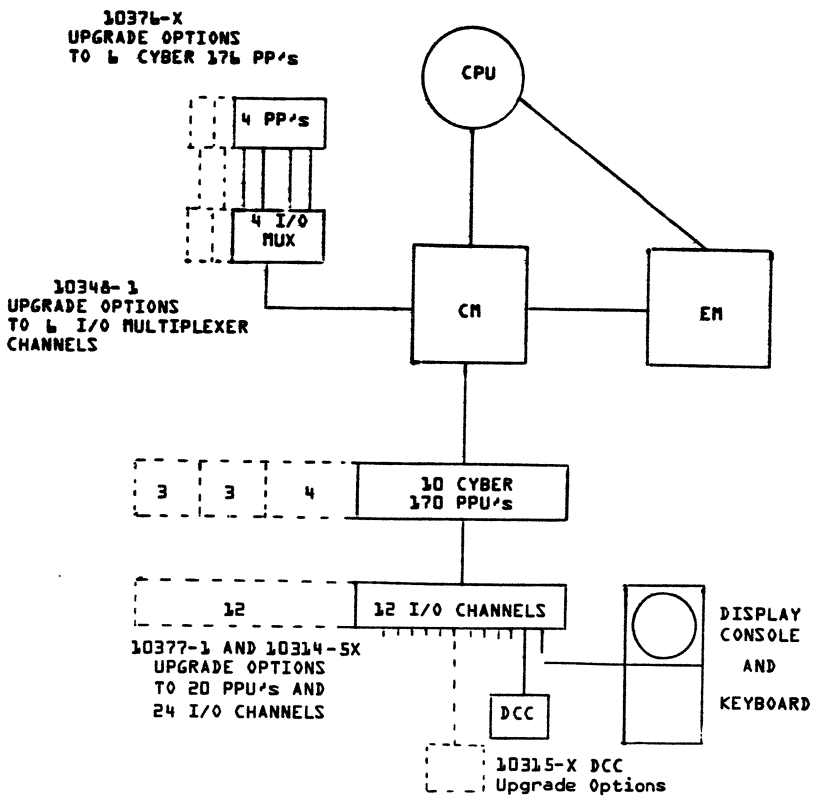
EM (EXTENDED MEMORY) OPTIONS

0K TO 524K	10375-10
524K TO 1048K	10375-1
1048K TO 2097K	10375-2

NOTES

1. ADDITION of 10376-10 AND 10375-10 OPTIONS UPGRADES A 176-8,-12,-16 TO A RESPECTIVE 176-21,-31,-41.
2. SEE NEXT PAGE FOR 176-2X,-3X,-4X BASIC CONFIGURATIONS.

CDC CYBER 170 MODEL 176-2X,-3X,-4X CONFIGURATOR



MODELS

MODEL	CM	EM (EXTENDED MEMORY)
176-21	131K	524K
176-22	131K	1048K
176-24	131K	2097K
176-31	196K	524K
176-32	196K	1048K
176-34	196K	2097K
176-41	262K	524K
176-42	262K	1048K
176-44	262K	2097K

CM OPTIONS

131K TO 196K	10374-1
196K TO 262K	10374-2

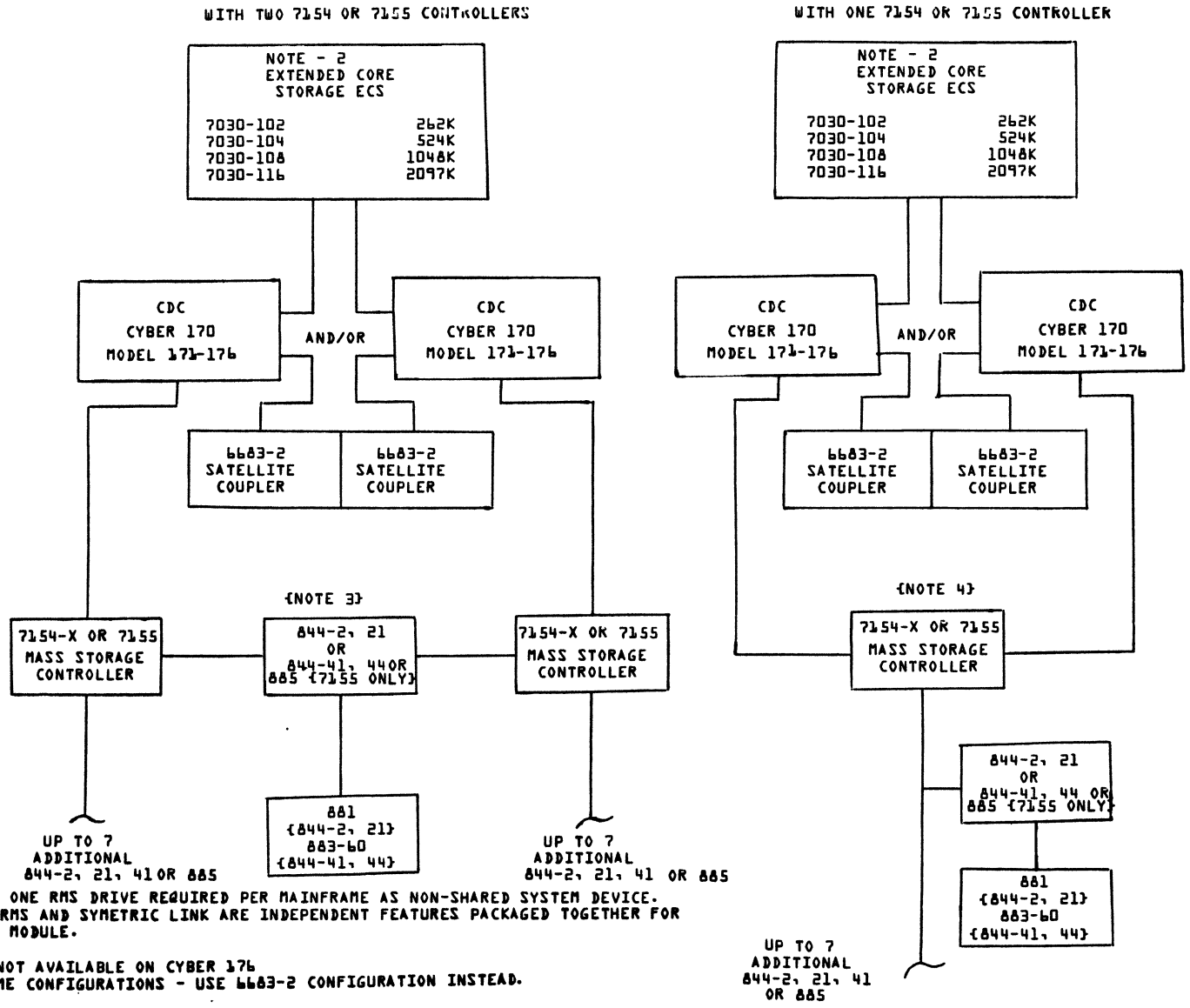
EM OPTIONS

524K TO 1048K	10375-1
1048K TO 2097K	10376-1

CYBER 76/CYBER 176 CONVERSION OPTIONS

CYBER 76 TO CYBER 176	10378-1
7602-1 TO 10376-1	10379-1

CYBER 170 MULTI-MAINFRAME CONFIGURATOR (NOTE - 1)



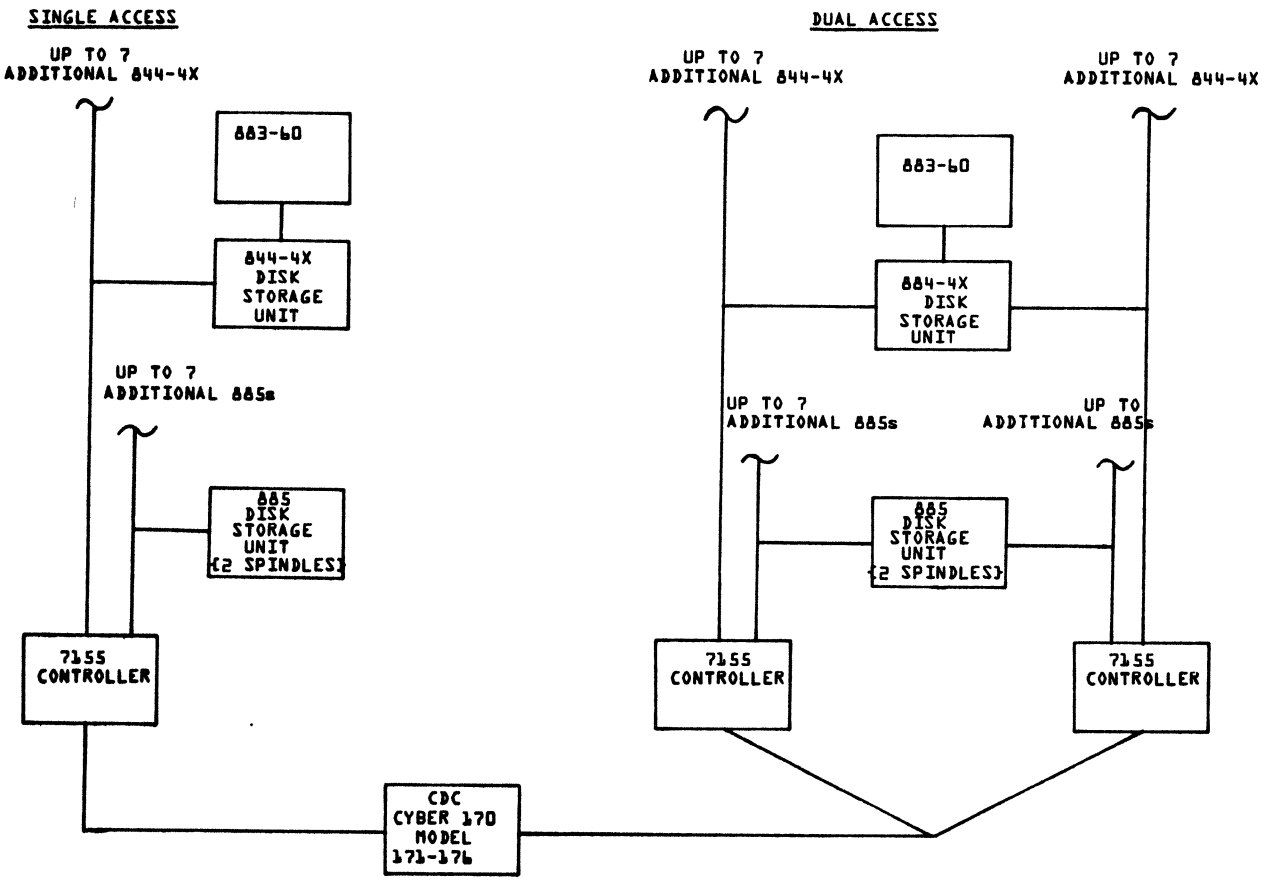
NOTE-1: MINIMUM ONE RMS DRIVE REQUIRED PER MAINFRAME AS NON-SHARED SYSTEM DEVICE. SHARED RMS AND SYMETRIC LINK ARE INDEPENDENT FEATURES PACKAGED TOGETHER FOR THE MMF MODULE.

NOTE-2 ECS IS NOT AVAILABLE ON CYBER 176 MAINFRAME CONFIGURATIONS - USE 6683-2 CONFIGURATION INSTEAD.

NOTE 3: 844-2, 21 CANNOT BE RUN WITH A 7155 CONTROLLER.

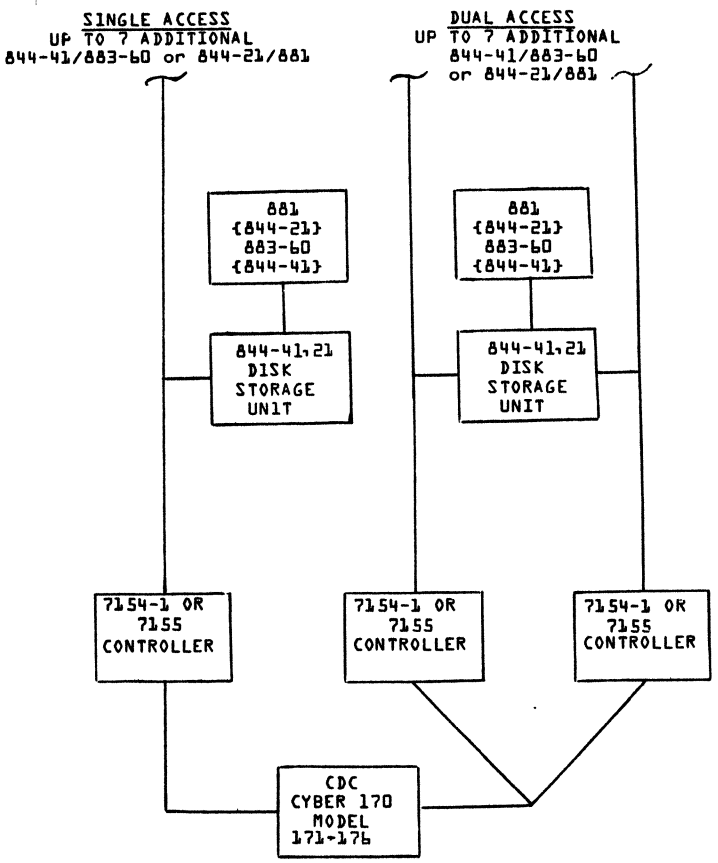
MASS STORAGE SUBSYSTEM
3553-1/841-11, 12, 21, 22
Dual Access
Up 2 Additional 841-22 For A Total Of 4
Single Access
Up To 2 Additional
841-12 For A Total Of 4
871 Disk Pack
841-12 Disk-Drive
841-22 Disk-Drive
3553-1 Controller
DCC
NOTE - 1
CDC CYBER 170 MODEL 171- 176
NOTE -2
NOTE - 1 REQUIRES OPTION 10381-X ON MODEL 171
NOTE - 2 CYBER 176 REQUIRES A MINIMUM 844 SUBSYSTEM BE INCLUDED IN ITS CONFIGURATION
IF TWO CONTROLLERS ARE USED IN A DUAL ACCESS CONFIGURATION, ALL DRIVES CONNECTED TO ONE CONTROLLER MUST BE CONNECTED TO THE OTHER CONTROLLER.

FIXED MODULE MASS STORAGE (885)/REMOVABLE 844-4X



NOTE 1 - A 7X54 CAN BE SUBSTITUTED TO DUAL ACCESS 844's. HOWEVER, 885's IN THIS CASE COULD NOT BE ATTACHED TO THE 7155.
NOTE 2 - THESE CONFIGURATIONS ASSUME FULLY EXPANDED 7155's. SEE 7155 HARDWARE CONFIGURATOR.
NOTE 3 - FULL TRACK 844 REQUIRES 2X PP SPEED. FULL TRACK 885 REQUIRES APPROPRIATE GSE's.

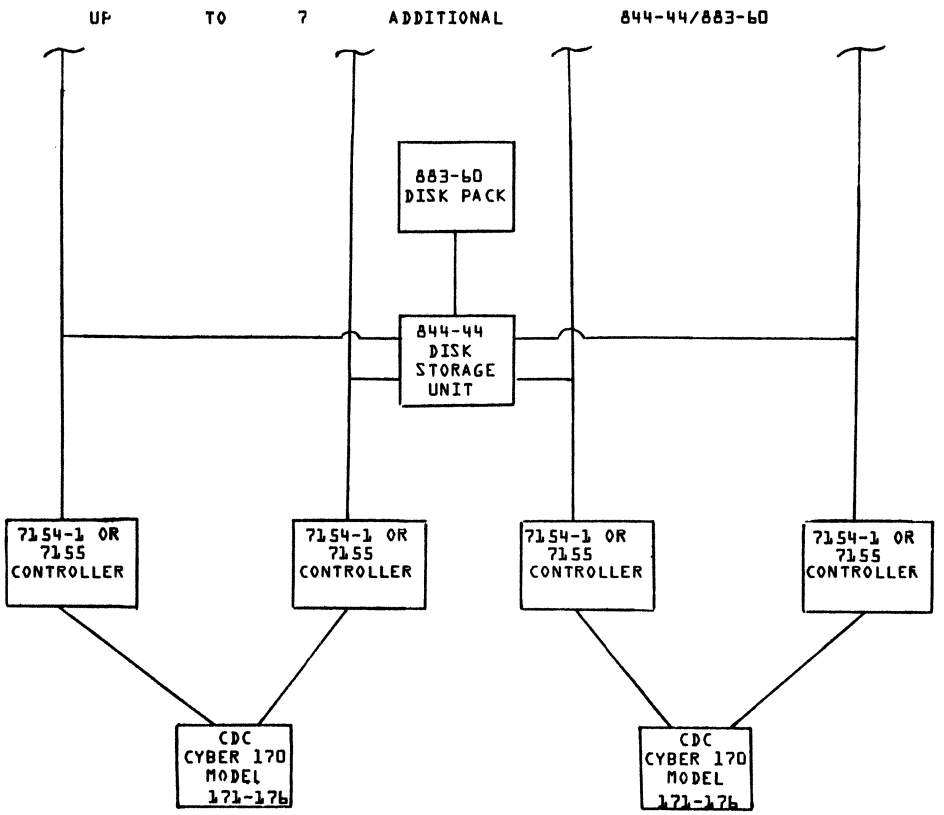
REMOVABLE MASS STORAGE
844-41



FULL TRACKING REQUIRES 2X PPU SPEED.

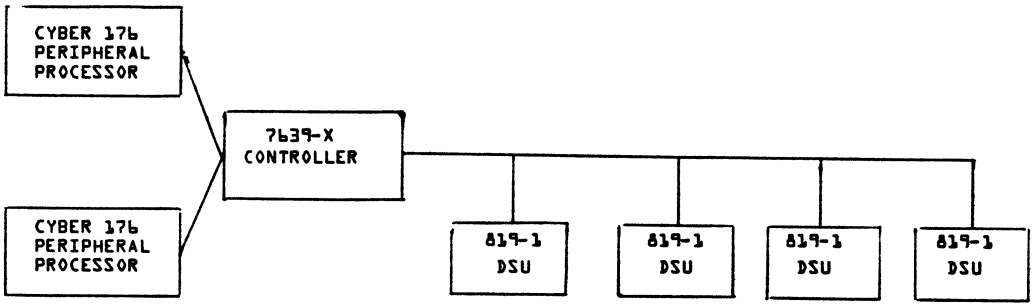
7155 DOES NOT SUPPORT 844-21 DISK STORAGE UNIT.

REMOVABLE MASS STORAGE
844-44

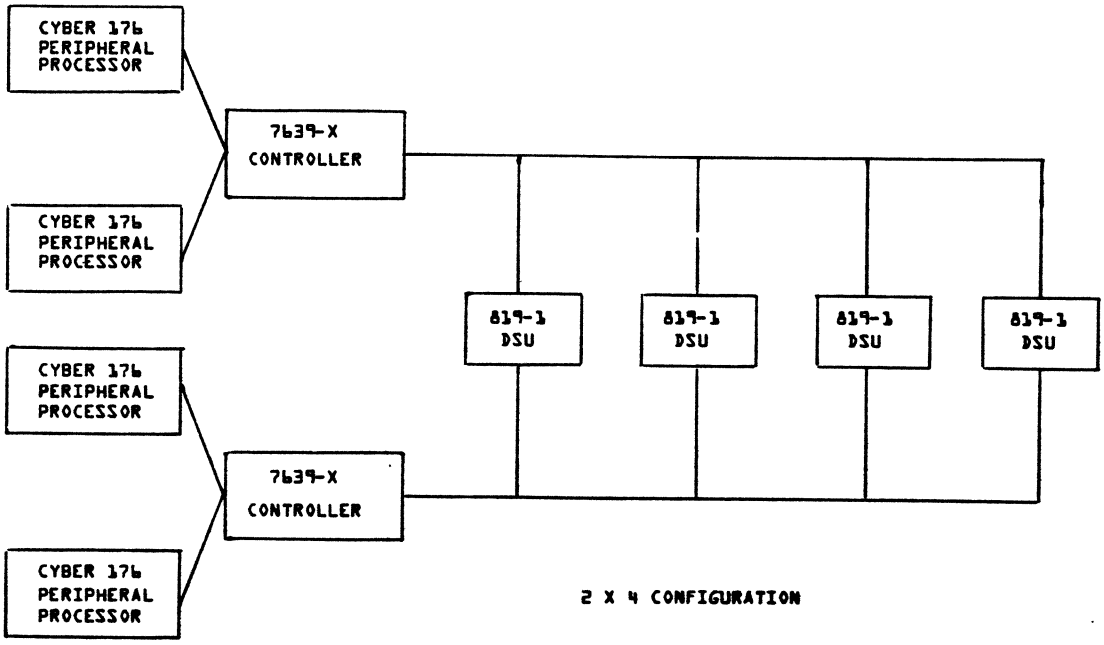


FULL TRACKING REQUIRES 2X PPU SPEED.

CYBER 176-2X,-3,-4X MASS STORAGE (NOTES 5 AND 6)
819-1



1 X 4 CONFIGURATION



2 X 4 CONFIGURATION

NOTES

(1) NOS/BE WILL SUPPORT A MAXIMUM OF TWELVE 819-1 DRIVES.

(2) CYBER 176 WILL SUPPORT THE FOLLOWING 819-1 ACCESSES:

THREE 1 X 4 CONFIGURATIONS OR
ONE 1 X 4 CONFIGURATION AND ONE 2 X 4 CONFIGURATION

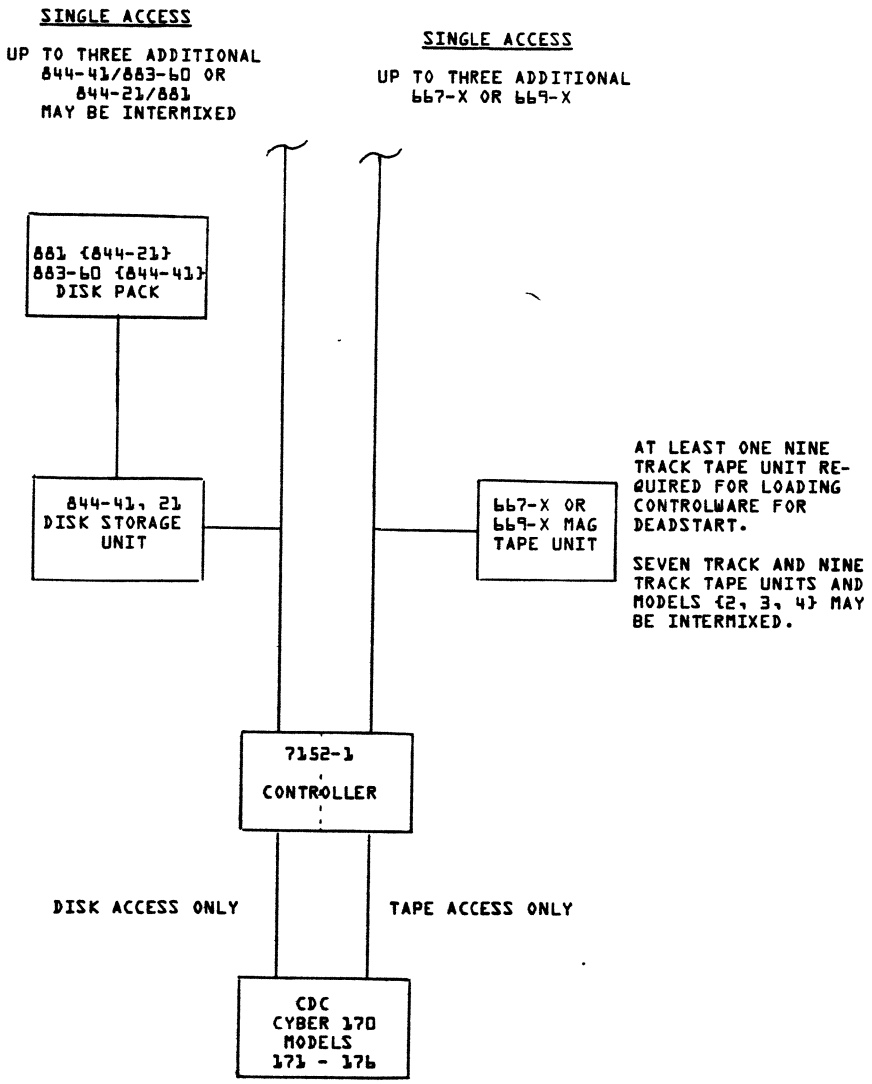
(3) EACH 1 X 4 819-1 ACCESS REQUIRES TWO HI-SPEED MULTIPLEXER CHANNELS.

(4) EACH 2 X 4 819-1 ACCESS REQUIRES FOUR HI-SPEED MULTIPLEXER CHANNELS.

(5) 176-2X,-3X, 4X MODELS ONLY. 819 HCD REQUIRES EXTENDED MEMORY OPTION 10375-10 AND INITIAL PERIPHERAL PROCESSOR UNIT 10376-10 ON 176-8,-12,-16 MODELS.

(6) CYBER 176 ALSO REQUIRES A MINIMUM OF ONE 7154 OR 7155 AND ONE 844-XX OR ONE 7155 AND ONE 885.

MASS STORAGE/MAGNETIC TAPE
7152-1/844/66X

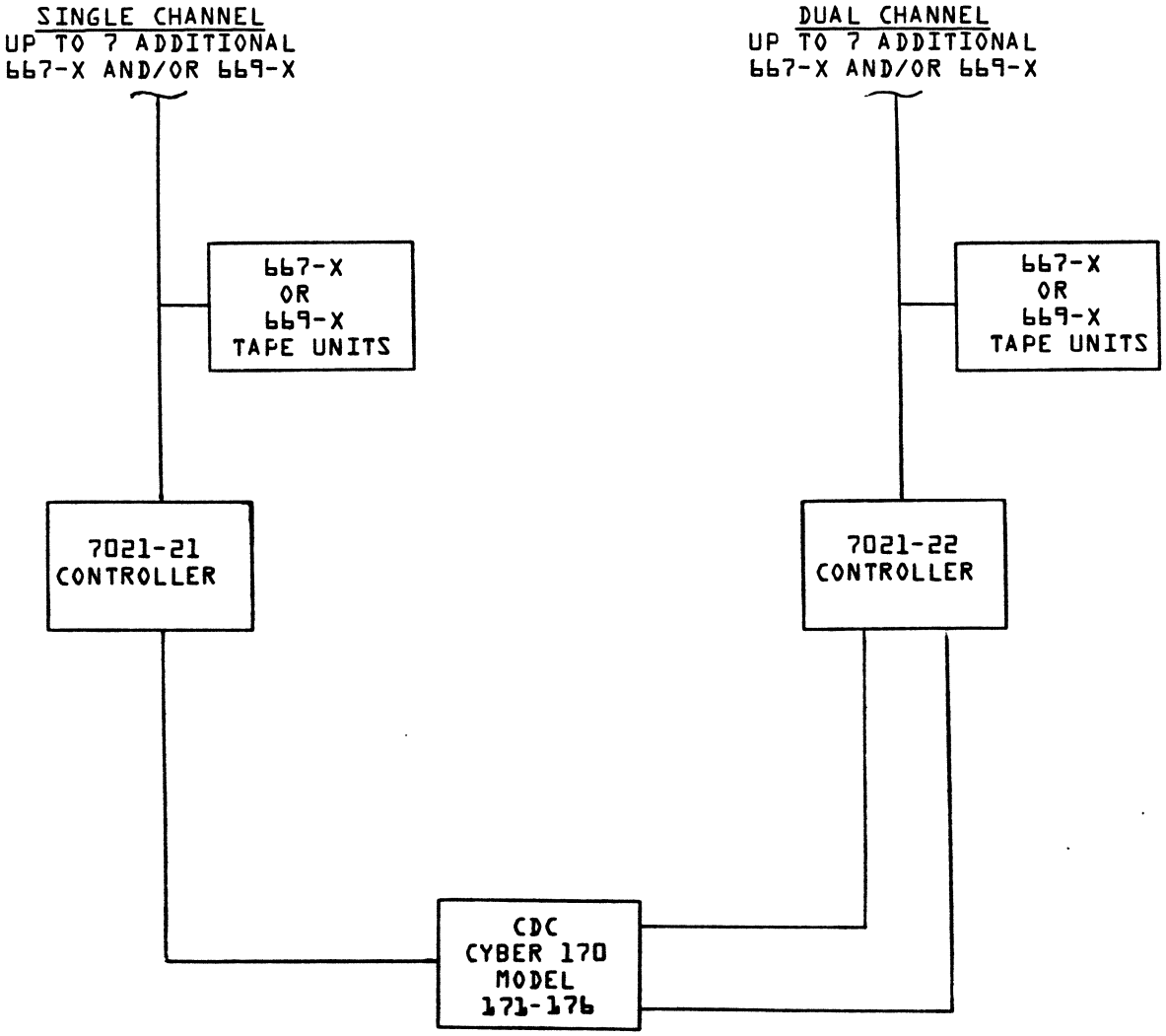


MAGNETIC TAPE
7-TRACK OR 7-TRACK/9-TRACK INTERMIXED OR 9-TRACK

667-X 667-X/669-X 669-X

NOTES:

667-X: 667-2, 667-3, 667-4 {7-TRACK}
669-X: 669-2, 669-3, 669-4 {9-TRACK}



7-TRACK AND 9-TRACK TAPE UNITS AND MODELS {2, 3, 4} MAY BE INTERMIXED.

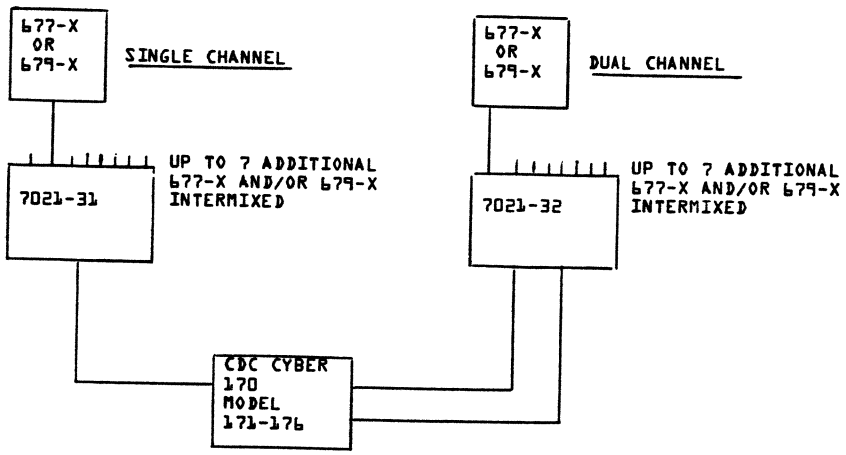
67X MAGNETIC TAPE SUBSYSTEM

7 TRACK

677-2 556/800 BPI NRZI, 100 IPS
677-3 556/800 BPI NRZI, 150 IPS
677-4 556/800 BPI NRZI, 200 IPS

9 TRACK

679-2 800 BPI NRZI and 1600 BPI PE, 100 IPS
679-3 800 BPI NRZI and 1600 BPI PE, 150 IPS
679-4 800 BPI NRZI and 1600 BPI PE, 200 IPS
679-5 6250 BPI GCR and 1600 BPI PE, 100 IPS
679-6 6250 BPI GCR and 1600 BPI PE, 150 IPS
679-7 6250 BPI GCR and 1600 BPI PE, 200 IPS

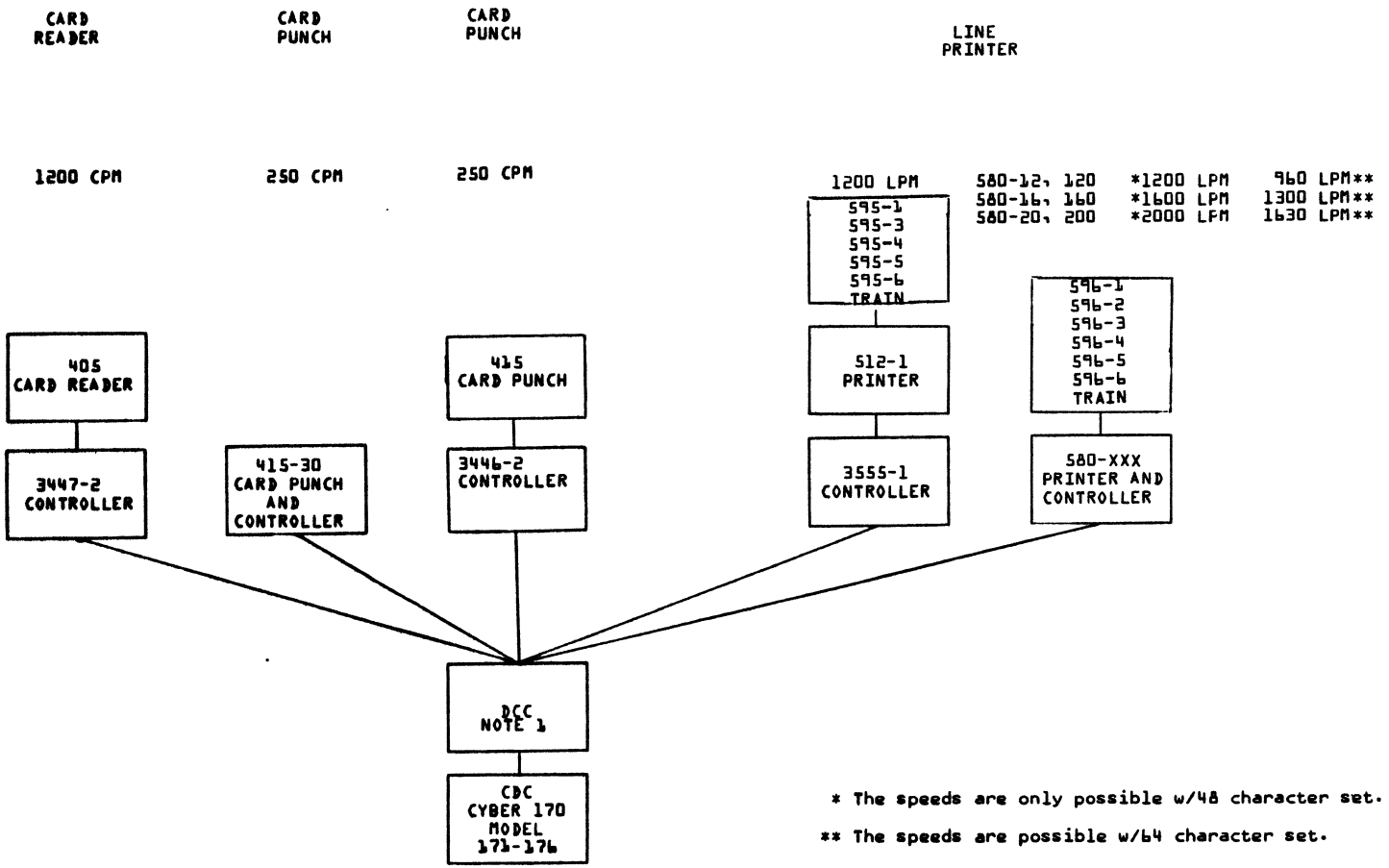


NOTE: 7 TRACK AND 9 TRACK TAPE UNITS CAN BE INTERMIXED
System configuration restrictions are determined by the data-transfer rates of the tape units.

- NRZI and P.E. Recording
  -A unit of any speed may be used on any CYBER 170, CYBER 70 or 6000 configuration, assuming no more than two other devices are daisy-chained on the channel ahead of the controller.

- GCR Recording
  -200 IPS not allowed on 6000 or CYBER 70. Must be first on CYBER 170 channel. not allowed if MAC switch used (10329-X or 60144-X).
  -150 IPS must be first or second on either CYBER 170, CYBER 70 or 6000 channel.
  -100 IPS must be first or second on CYBER 70 or 6000 channel. Must be first, second or third on CYBER 170 channel.

LOCAL UNIT RECORD EQUIPMENT



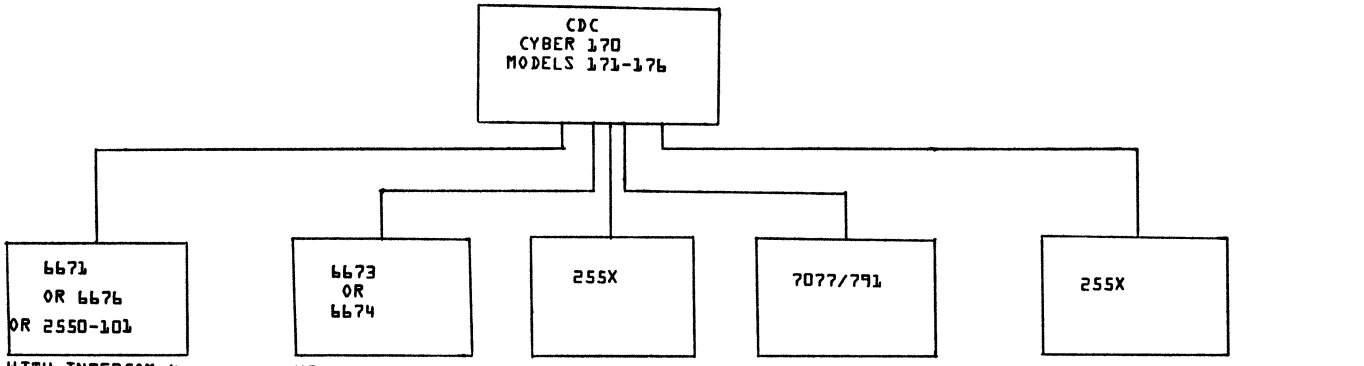
* The speeds are only possible w/48 character set.

** The speeds are possible w/64 character set.

NOTE 1: MODEL 171 REQUIRES
OPTION 10381-X

COMMUNICATION SUBSYSTEMS & TERMINALS SUPPORTED

NOS/BE 1



WITH INTERCOM 4
711-10
713-10/751-10/752-10/756
714-10
714-20
731-12
732-12
214-X
200 UT {217-X}{CY18-XX}
734-1
TTY 33/35/38
241 GRAPHICS
TEKTRONIX 4010/4014
777-3

WITH INTERCOM 4
777-2
1700/274
8231
774-2

WITH INTERCOM 5/
EXPORT
1700

WITH INTERCOM 5/
CCI 3
711-10
713-10/751-10/752-10/
714-10 756
714-20
731-12
732-12
214-X
200 UT{217-X}{CY18-XX}
734-1
TTY 33/35/38
241 GRAPHICS
TEKTRONIX 4010/4014
777-3
2780/3780
HASP MULTILEAVING
TERMINALS

WITH INTERCOM 4
711-10
714-10
714-20
731-10
731-12
732-10
732-12
733-10
214-X
200 UT{217-X}{CY18-XX}
734-1
TTY 33/35/38
241 GRAPHICS
777-3
713-10/751-10/752-10
TEKTRONIX 4010/4014

WITH INTERCOM 4/CCP1
713-10/751-10/752-10/756
711-10
714-10
714-20
731-12
732-12
734-1
200 UT {CY18-XX}
217-X/214-X
777-3
TTY 33/35/38
241 GRAPHICS
TEKTRONIX 4010/4014

REFER TO TERMINAL SUBSYSTEMS SECTION FOR SPECIFIC CONFIGURATION AND FEATURE SUPPORT DETAILS.

REFER TO COMMUNICATION SUBSYSTEMS SECTION FOR SPECIFIC CONFIGURATION AND FEATURE SUPPORT DETAILS.

COMPUTER SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATION NOS/BE 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
NOS/BE F621-01	1		See Operating System Hardware Configurator	The Batch Environment Network Operating System (NOS/BE) is on operating system for the CONTROL DATA CYBER 170 series, the CYBER 70 Models 71-74, and the 6000 series computers.
CYBER 170 MODELS 171-174 only. CYBER 176 REQUIRES F621-76 INSTEAD OF ABOVE. CYBER 175-1XX, 2XX 3XX REQUIRES F621-86			-Minimum Central Memory is 65K. -Requires Maintenance Package and	NOS/BE is the basic system software that coordinates all other system software, user programs, operator communication and hardware action. Input and scheduling jobs, compilation, assembly, execution and output of all programs submitted to the computing system, as well as the allocation of system resources for these jobs and programs, are montored and controlled by the operating system. NOS/BE offers a wide variety of standard functions that can be utilized by system programs written in the COMPASS assembly language and by user jobs. It also supports software packages known as the NOS/BE Product Set. NOS/BE is a multiprogramming, multiprocessing operating system. Many jobs can be in the system in various states of processing. It is not necessary for a job to complete before another job begins execution. Up to 15 system or user jobs can be in central memory simultaneously, using the central processor hardware at different intervals. Each job in central memory gains access to the central processor alternately with other jobs until execution is complete. However, due to the speed of the central processor and to the use of a job scheduler, a multiprogramming environment exists. This environment is controlled by the operating system such that the resources available to all jobs are used efficiently. Included with the Operating System are the following products: CYBER RECORD MANAGER, BASIC ACCESS METHODS, ADVANCED ACCESS METHODS, FORM, COMPASS, UPDATE, CYBER LOADER, and "8-BIT" SUBROUTINE PACKAGE.
			-Uses CMU when available	Supports sequential and word addressable file organizations.
FORM	1		-Included in Operating System	A general purpose File Organizer/ Record Manager utility that permits selection, manipulation, copying, and reformatting capabilities on files and records.
			**Field length: 52$_8$K, including CYBER RECORD MANAGER	FORM also contains a module that permits conversion between CYBER/ 6000 and System/360 file and record formats.

COMPUTER SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATION NOS/BE 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
COMPASS	3		-Included in Operating System ** Field length: 50_8K	COMPASS provides a comprehensiove assembler language for writing CPU and PPU programs for all 6000, CYBER 170 series systems. CPU programs can be absolute or relocatable. Symbolic machine instructions provide for expressing all hardware functions. Pseudo instructions control the assembler processing and include versatile, extensive macro and micro facilities.
CYBER LOADER	1		-Included in Operating System	COMPASS provides a comprehensive assembler language for writing CPU and PPU programs for all 6000, CYBER 70, and CYBER 170 series systems. CPU programs can be absolute or relocatable. Symbolic machine instructions provide for expressing all hardware functions. Pseudo instructions control the assembler processing and include versatile, extensive macro and micro facilities.
CYBER LOADER	1		-Included in Operating System -For field length requirement see Operating System Hardware Configurations	The CYBER LOADER is an integral part of the NOS/BE 1 Operating System. The user is offered these these types of loading: Core Image Loading, Object Module Loading, Basic Loading, Segmentation, Overlay Generation. The user controls the CYBER LOADER through Control Statements, User Calls, and LOADER Object Directives.
UPDATE	1		-Included in Operating System -**Field length: 40_8K	UPDATE provides a means of maintaining source decks in conveniently updatable compressed format. With UPDATE directives and control card options, the user directs the process of creating a program library, correcting it, and copying the updated programs to a file for subsequent use by assemblers and compilers.
8-BIT SUBROUTINE		See Description	-Included in Operating System **Field length: 15_8K	A group of routines designed to enable a FORTRAN or COBOL programmer to read, write, and manipulate sequential files and data using 8-bit character sets. Supports IBM 360/370 sequential formal (tape) files, EBCDIC and ASCII punched card decks, and extended character set (95-character ASCII) print files. I/O routines enable translation between external and internal data types and character sets, and operate on a record-by-record basis. A set of utility routines manipulate character strings in Display Code, ASCII, and EBCDIC. Complete character set translation and mixed character set string comparison routines are provided. Two additional routines allow improved file utilization; they compress 8-bit data from internal working form to a more compact form for storage, then expand it again.

COMPUTER SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATION NOS/BE 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
				Additional Supported Hardware 595-6 Print Train (95 Graphics) 659-X Tape Transport
MAINTENANCE PACKAGE F621-02			**Field length: 70_8K (for SYMPL)	The Maintenance Package is a collection of programs necessary to install and maintain the Operating System and Product Set. SYMBL, a high-level system programming language, is part of the Maintenance Package.
CYBER CROSS SYSTEM F621-03	1			Provides for maintenance and compilation of Communication Control Software.
MULTI-MAINFRAME MODULE F621-05	1	See Description	-Includes the CDC CYBER STATION **Required field length: 26_8K	Provides for link communication between one CYBER 70L/170 and one Other CYBER 70L/170 or to one other CYBER 70L/170 and a CYBER 76 or 176 running SCOPE 2. Link communications to a SCOPE 2 system are described in the SCOPE 2 configurator. Provides for sharing permanent files on 844 RMS between two CYBER 70L/170's. The shared 844 or 885 RMS feature has been implemented to enable the sharing of permanent files between two 4 CYBER 70L/170 mainframes. However, this feature has only been tested and validated on a 2 mainframe configuration. Link communications uses concepts of logical identifiers, allows transmittal of permanent files, linked operator displays and commands, and load leveling between systems. Linking hardware may be via 6683-2 coupler pairs or 500K minimum ECS or both. When two CYBER 170's are configured with shared RMS devices, load leveling between the two systems is supported without 6683-2 couplers or ECS as a link. Transmittal of permanent files and linked operator displays and commands require link hardware. Configurations supported by the Link Interface can be considered in two categories - those which are fully supported and those which are supported with restricted capabilities. These are illustrated below.

COMPUTER SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATION NOS/BE 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
				Fig. 1 - Fully Supported Configurations
				Fig. 2 - Configurations with Restricted Capabilities
				The CYBER 170's can be replaced by CYBER 71, 72, 73, 74's or by 6000's. The distinction between full support and restricted capabilities is due to the lack of full direct connections in the latter case. Specifically, files cannot be automatically routed to a mainframe which is not directly connected to the mainframe where the files are located. Similarly, the status of jobs running in a non-directly connected mainframe cannot be displayed or modified by the operator.
INTERCOM F621-07	5	-255X	-See Communications and Terminal sections for support detail	INTERCOM 5 is externally compatible with INTERCOM 4. INTERCOM 5 provides reduced core requirements when running remote batch jobs which improvesas the number of active remote devices increases. In conjunction with CCI 3 asynchronous terminals are supported up to 9600 BPS. 2780/1780 terminasl and HASP protocol are supported in addition to the Mode 4 (2000 UT) protocol. Only 255X communication equipment is supported. o Required Hardware: A CYBER system meeting the minimum requirements for NOS/BE WITH ONE DEDICATED PPU and channel plus a 2550 subsystem with appropriate communications linkage o Hardware Supported: 2550-2, 2551-X o Terminals: (See Hardware Diagrams for allowable configuration) CDC Model 713 Conversational Display Terminal or Model 33, 35, 37 or 38 Teletype terminal with optinal paper tape reader and punch. Model 711, 714 or 214-11, 214-12, 217-11, 217-12, 217-13, 217-14 display terminal

COMPUTER SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATION NOS/BE 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
				200 users terminas - ANSI or BCK (217-X, CY18-XX). 711-10 requires 711-102. 734-1 Batch Terminal. 241 Graphics Terminal Medium Speed Batch Terminal. - 732-12 Low Speed Batch Terminal. - 732-12. 777-3 Cybergraphics Terminal. TEktronic 4010/4014 Low Cost Graphic Terminals. 2780/3270 Terminals. HASP Work Station. o Additional Hardware: A maximum of six PPU's with dedicated channels and multiplexers
ALGOL-60 F621-08	5			The ALGOL compiler supports the full ALGOL-60 language specifications and includes the Knuth I/O specifications. It does not include all the language extensions or interactive capabilities of ALGOL-60 4. It does support atuomatic field length management and performance is better than ALGOL-60 4.
INTERACTIVE BASIC F621-11	3		**Field length: 30_8K	The BASIC subsystem enables both novice and experienced programmers to readily create and execute interactive programs in time sharing environment. This version of INTERACTIVE BASIC provides many capabilities not available in BASIC 2. For example, word addressable random I/O, enhanced print formatting, multiple argument and multiple line user defined functions, extended string variable names, a string concatenation operator, logical connective operators and access to external non BASIC subroutines.
SORT/MERGE F621-13	4		**Field length: 40_8K	Provides significantly increased speed, improved reliability, use of new hardware instructions, 7000 compatibility, and an interface with CYBER RECORD MANAGER 1.
		-2 Tapes	-Tape Option	
		-None	-Disk Option	OPERATING OPTIONS DISK o Additional disks will provide improved: - Speed o Two additional tapes will provide improved: - Speed o Additional core will provide improved: - Speed o Three tapes can be used for disk overflow, others for input or output.

COMPUTER SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATION NOS/BE 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
				TAPE o Two additional tapes are required o More additional tapes will provide improved: - Speed Additional core will provide improved: - Speed Tapes can be assigned to disk.
FORTRAN EXTENDED F621-14	4			ANSI-66 Fortran compatible.
FORTRAN EXTENDED F621-15 CYBER 171-175 MODELS ONLY. CYBER 176 REQUIRES F621-77 or F621-78 INSTEAD OF F621-14 OR F621-15	4		-Includes Single Pass Compile Capability	Includes all the features of FORTRAN EXTENDED 4 plus Interactive Option Compiler
COBOL F621-16	5		**Field Length: -Requires SORT/ MERGE 4	The COBOL 5.0 compiler addresses the 1974 ANSI specifications. The initial release implements the highest level of 10 of the 12 modules defined in the specification. The COMMUNICATIONS module is not included and only a subset of the low-level of the INTER-PROGRAM COMMUNICATIONS is included. COBOL 5 is a companion product to COBOL 4 and as such is not fully compatible with its predecessor. A COBOL 4 to COBOL 5 conversion aids program exists which can be used to help bridge the gap. (F621-17). In addition to addressing the 1974 specification, COBOL 5 includes the following added capabilities: o Direct Access, Actual Key and Word Address file organizations. o Secondary (for ECS access) and Common storage sections. o INITALIZE verb to set Data Division items to initial values. o Floating point numeric literals o Variable length records. o Ability to set and clear sense switches. o File Organizations other than sequential in the GIVING phrase of SORT or MERGE. o Ability to change collating sequences dynamically with the SET statement. o QUOTE is APOSTROPHIC can be specified to change the quote character. o Duplicate alternate keys can be ordered by prime key. o FILLER can be used anywhere in a record. o Ability to set character codes for files. o COMP-1 and COMP-2 converted to readable format with signs for DISPLAY.

COMPUTER SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATION NOS/BE 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
PL/I F621-18	1			This version is a non-optimizing compiler for an upwards compatible subset of the ANSI/ECMA Language. Missing features will include the DEFAULT statement, aggregate operations and data directed I/O.
INTERACTIVE DEBUG PACKAGE F621-19	1			This product will provide interactive, symbolic level, debugging capabilities such as: - Conditional breakpoints and traps for temporarily suspending program execution. - Program suspension via terminal interrupts. - Commands to interrogate and change program memory. - Commands to restart program execution at any given point.
CYBER DATABASE CONTROL SYSTEM F621-20	2			CDCS 2 under NOS/BE 1 allows multiple independent programs (at separate user control points) to concurrently update a data base using the Indexed Sequential and Multiple Index Processor access methods of CRM with lockout control at the logical record level. It provides data privacy at the file level.
DATA DESCRIPTION LANGUAGE F621-21	3			DDS 3 under NOS/BE 1 is an extension of DDL 2 including support of Area-Level privacy and improved data independence between application programs and COBOL subschema compilatins. DDL 3 generates record mapping code to omprove CDCS 2 record mapping performance.
777/IGS CYBERGRAPHICS (HOST SOFTWARE) F621-42	2	See Description	-Requires B321-01	Provides Host CYBER Software support for the 777 CYBER GRAPHICS terminal and the 774-2 Digigraphic IV Console with controller using the 667/6674 multiplexer. Supports full graphic and interactive capabilities and optional remote batch input/output.
777/IGS TERMINAL RESIDENT B321-01	2	See Description		Provides resident controller software support for the 777 CYBER GRAPHICS terminal and for the controller of 774-2 Digigraphic IV Console. Supports full graphic, interactive, and optinal remote batch input/output capabilities of the 777 and 774-2.
777/IGS 2 with 3D OPTION F621-48	2	See Description	-Requires B321-04	Same as F621-42. Provides both 2D and 3D capabilities.
777/3D/IGS TERMINAL RESIDENT	2			Same as B321-01. Provides both 2D and 3D capabilities

COMPUTER SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATION NOS/BE 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
APEX III F621-49 thru F621-54	1			APEX III is a program for the solution of linear programming problems. These problems involve the minimination or maximimation of a linear function subject to equality of inequality constraints. A large number of common optimization problems may be formulated as linear programming problems, e.g., refinery scheduling distribution and optimization, warehouse location, optimal planning. Requires FORTRAN EXTENDED 4. The product set is composed of four products: 1. Out-of-Core Subsystem. The Base System plus an out-of-core capability of using extended core storage, large core memory, or disk, as additional storage. 2. Mixed Integer Programming. Provides a mixed integer programming capability including binary and general integer variables and special ordered sets, Type 1 and 2. Requires out-core subsystem. 3. Matrix REduction. Provides a matrix reduction (reduce) capability to the APEX III package including regeneration of solution to the original problem. Requires out-core subsystem. 4. Parametrics Option. Provides the capability of varying the requirements vector or the cost function as a linear function of two requirements vectors or cost functions. Requires out-core subsystem.
APT IV F621-55	2		-Requires FORTRAN EXTENDED	A production system for the genera tion of APT (Automatic Programmed Tools) cutter location output. Has the following features: sculptured surfaces, parametric surface capability, inclusive subscripts, language capabilities (literal string, CL print/on or off) and bounded geometry. Compatible with the ALRP/CAMI version of APT IV (A4V3).
DATA DESCRIPTION LANGUAGE F621-58	2		**Field length: 40_8K plus buffers	DDS 2 allows for the specification of a data base schema as well as COBOL and QUERY UPDATE subschemas for use in a data base environment. These are used at execution time by QU, COBOL and CDCS to provide data independence, logging information, data validation, processing of relations, and criteria for invocation of data base procedures. Includes Data Base Utilities (DBU).

COMPUTER SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATION NOS/BE 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
GPSS-V F621-59	1			General purpose simulation system is designed for modeling of real situations as affected by changes over time intervals and corresponding events which occur during the simulation. Features free format input. Floating point number capabilities. No IMS available.
QUERY UPDATE F621-62	3		**Field length: 62_8K (non-MIP updating) plus buffers	This product replaces all the capabilities of OU 2 and brings with it a major breakthrough in performance and power. Using the Boolean List Processor, it interfaces directly to CRM's Multiple Index Capability to provide optional accessability of qualifying records via alternate access paths and indexes.
			71_8K (MIP updating)	The report writer capability has also been enhanced by a "compile" option in addition to its normal interpretive mode. Additional features are (1) cross-file relationships (2) degree of commodity with CDCS 1 for enhanced recovery (3) query only capability making use of IS, DA and MIP read-only packages of CRM (4) character-string processing.
SIMSCRIPT I.5 F621-63	3		**Field length: 50_8K -Requires either FORTRAN compilers object time routines.	Developed primarily for simulation programming; the language may be used to describe a situation which changes over some time interval and to test its operation in comparison to others.
TOTAL UNIVERSAL F621-64	1			A data base management system developed data structure philosophy. Relationships from one file may be made on a direct basis to other files within the data base using a chaining/threading technique. Files may be managed on an integrated basis within one data base. TOTAL includes a Data base Definition Language (DBDL) which is used to describe and declare the data base and a Data Manipulation Language (DML) which functions in conjunction with the following host language: (COBOL, FORTRAN and COMPASS) at the CALL or MACRO level. It is modular and evolutionary in design and use, provides a significatn degree of data independence, can eliminate data redundancy, permits data relatability, ensures data integrity reliability and data base recovery. Also achieves optimum performance and efficiency through input/output buffer pool sharing and the elimiation of external directories and indexes. TOTAL UNIVERSAL runs within the users field length.

COMPUTER SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATION NOS/BE 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
TOTAL/ATHENA F621-65	1		-Requires TOTAL UNIVERSAL 2 -COBOL 5 Based	High level interactive/batch, retrieval update facility for Total Data Base Management system. Permits data or record selection from multiple TOTAL files based on multiple selection criteria. Includes a report writer and plot generator.
PERT/TIME F621-67	2	-16 Core -3 Tapes	**Minimum field length: 72_8K -Recommended field lengths: 100_8K -One additional tape will provide improved: - Speed	Uses a time-oriented network structure to produce a variety of reports reflecting the actual and scheduled progress of a project.
TOTAL UNIVERSAL	2			See F621-64 for description
NOS/BE FOR CYBER 176 F621-76	1			See F621-01 for description. Also includes 819 support.
FORTRAN EXTENDED FOR CYBER 176 F621-77	4			Fortran level II arrays can be resident in extended memory.
FORTRAN EXTENDED FOR CYBER 176 F621-78	4		-Includes Interactive option	Fortran Level II arrays can be resident in extended memory.
NOS/BE FOR CYBER 175-1XX, 2XX, 3XX F621-86	1			See F621-01 for description.
COMMUNICATION CONTROL/for INTERCOM N222-01	3	-255X		The Communications Control for INTERCOM provides the system software residing in the 255X processor. This software manages the transmission of messages between a host processor and the communications network. Interfaces only to INTERCOM 5, Asychronous terminals are supported to 9600 bps. Mode 4 (200 UT), 2780/3780 terminals and HASP protocol are supported. Auto terminal detect is provided.
CYBER RECORD MANAGER/ADVANCED ACCESS METHODS	2			Initial AAM consists of capsules to process IS, AK and DA files and a multiple-index processor (MIP). Extended AAM consists of a new index sequential processor and a new MIP as well as several utilities.
FORTRAN	5			This product consists of a FORTRAN compiler, common code generator (CCG), FORTRAN library, and interactive debug package (IDP). It implemented a superset of thje full ANSI language developed by the FORTRAN standards committee X3J3.

COMPUTER SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATION NOS/BE 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
FORTRAN 4 to FORTRAN 5 CONVERSION AID				Converts FTN 4 source programs to FTN5.
IMSL6			-Requires F621-14, F621-15, F,621-77 or F621-78	The International Mathematics and Statistical Library is a collection of FORTRAN subroutines and functional subprograms in the areas of mathematics and statistics.
TIGS F621-88	1			Terminal Independe Graphics System (TIGS) is a general purpose subroutine package providing display generation in either two dimensional mode (2D) or three dimensional mode (3D) and interaction capability for a general class of graphics terminals. Primary design objectives were transportability, maintainability and ease of use. Features supported by TIGS 1 include line, are, multi-line plot, text and dot primitives wtih resettable attributes such as line style, character size, intensity, font, color, transformation matrix, etc. The package uses virtual devices such as locators, keyboards, picking devices and function keys which can represent a wide range of physical devices. TIGS 1 supports 2D and 3D viewing transformations for clipping and window to viewport mapping and coordinate transformations. A device independent neutral display file which contains information describing all segments, pictures, windows and viewports is used. The file may be saved and used in a later job with different display device. The neutral display file concept also permits attributes (e.g. line style, font, etc.) to be respecified without the redefinition of the segment. Version 1.0 of TIGS has been implemented to run on Control Data 6000 series, CYBER 70 series and CYBER 170 series computers under NOS/BE. A TIGS 1 post-processor is also required for installation and operation of this product. This product has been separated from a combined TIGS 1 Pre-processor/Tektronix Post-processor (Product no. F621-41.
TEKTRONIX 401X POST-PROCESSOR UNDER TIGS F621-89				Tektronix 401X post-processor is a subroutine package providing display generation and interaction with the Tektronix 4006 and 4010-4015. The display is produced from the neutral display file generated by the TIGS 1 pre-processor. Locators supported are the cross-hairs and tablet.

COMPUTER SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATION NOS/BE 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
SANDERS GRAPHIC 7 POST-PROCESSOR UNDER TIGS F621-90	1			The Sanders Post-Processor for the Terminal Independent Graphics System (TIGS) is a subroutine package which interfaces to a Sanders Graphic 7 intelligent refresh graphics terminal. The post-processor routines read graphics information from a pre-processor-generated Neutral Display File (NDF) and produce the appropriate commands which, when sent to the Sanders terminal, cause the graphics information to be displayed. The minimum hardware configuration necessary to utilize this post-processor consists of a CRT display, a terminal controller unit, and an alphanumeric keyboard with function keys. The controller unit must be equipped with an asynchronous interface board and a 4K ROM board containing Sanders GSS4 firmware. REfresh memory consists of 8K words, expandable to 24K words. Hardware options supported are lightpen and trackball (or joystick) locators, and a hardcopy unit.

/sPR4221-09

NOS/BE 1 PUBLICATIONS

NOS/BE 1 OPERATING SYSTEM

NOS/BE 1	60493800
RM	60493900
OG	60493900
DH	60494400
SPRM	60494100
UG	60494000
IH (APPLICATIONS SOFTWARE)	76071100
RM (ON-LINE MAINTENANCE SOFTWARE	60453900
IH	60494300
LOADER	
RM	60429800
IN	60450000
CYBER COMMON UTILITIES	
RM	60495600
COMMON MEMORY MANAGER	
RM	60499200

DATA COMMUNICATIONS

INTERCOM 4	
RM	60494600
UG (SCED)	60494800
INTERACTIVE PROCEDURE GUIDE	60495200
RM (MUJ CAP)	60494700
UG (FTN)	60495000
UG (COBOL)	60495100
INTERACTIVE COMMAND SUMMARY	60495300
REMOTE BATCH UG	60495400
REMOTE BATCH COMMAND SUMMARY	60495400
INTERCOM 5	
RM	60455010
UG (FTN)	60455950
UG (COBOL)	60455960
INTERACTIVE COMMAND SUMMARY	60455840
REMOTE BATCH UG	60455890
RM (MUJ CAP)	60456070
COMMUNICATIONS CONTROL PROGRAM 1	
RM	60470000
OG	60470100
DH	60570200
COMMUNICATIONS CONTROL FOR INTERCOM PROGRAM 3	
RM	60471150
DH	60471180

SUPPORT PROGRAMS

CYBER CROSS SYSTEM	
RM	96836000
RM PASCAL COMPILER	96836100
RM MACRO COMPILER	96836500
RM MICRO COMPILER	96836400
DH	96836300
RM LINK EDITOR	60471200
CONVERSION AIDS (COBOL 4 TO COBOL 5)	
RM	19265021
8-BIT SUBROUTINES	
RM	60495500
CYBER RECORD MANAGER	
RM (BASIC ACCESS METHODS)	60495700
UG (BASIC ACCESS METHODS)	60495800
UG (FORTRAN)	60495900
UG (COBOL)	60446000
RM (ADVANCED ACCESS METHODS	60499300
UG (ADVANCED ACCESS METHODS	60499400
UG (MULTIPLE INDEX PROCESSOR)	60480900
SORT/MERGE 4	
RM	60497500
UG	60482900
IN	60497600
PROGRAMMING REFERENCE AIDS	60158600
IMSL 6	
GIM	60456380

COMPILERS

ALGOL 5	
RM	60481600
APL 2	
RM	60454000
BASIC 3	
RM	19983900
SC	60482800
COBOL 5	
RM	60497100
IN	60597300
UG	60597200
DH	60482500
UG (REPORT WRITER)	60496900
COMPASS 3	
RM	60492600
IN	60492800
SC	60493000
FORTRAN EXTENDED 4	
RM	60497800
UG	60499700
UG (DEBUG)	60498000
RM (COMMON LIBRARY MATH ROUTINES)	60498200
IN	60497900
SIFT	
PSB	60496500
SYMPL 1	
RM	60496400
IN	60482600
PL/I	
RM	60388100

DATA MANAGEMENT

DMS-170	
RM (CDCS 1)	60498700
GIM	60498900
UG (DATA ADMINISTRATOR)	60499100
PSB (RELATIONAL DATA BASE)	60480700
DATA BASE UTILITIES	
RM	6049800
DDL 2	
RM (VOL. I)	60498400
RM (VOL. II-COBOL)	60498500
RM (VOL. III-QU)	60498600
RM (CDCS 2)	60481800
DDL 3	
RM (VOL. I)	60481900
RM (VOL. II-COBOL)	60482000
RM (VOL. III-QU)	60482100
FORTRAN DATA BASE FACILITY 1	
RM	60482200
FORM	
RM	60496200

QUERY UPDATE 3	
RM	60498300
UG	60387700
UG (PROGRAMMERS)	60499000
NOS/BE 1 APPLICATIONS	
APT IV	
RM	17326900
UNIPLOT	
RM/UG	60454730
GPSSV	
GIM	84003900
RM	76078800
777 IGS	
RM	17321800
UG	17322500
GIM	17322400
UG (REMOTE JOB ENTRY)	76077200
BEGINNING GRAPHICS	
UG	76077300
LCGT/IGS	
RM	76079100
UG	76077400
DATA HANDLER	
RM	17322100
APPLICATIONS EXECUTIVE	
RM	17322200
APEX III	
RM	76070000
SIMSCRIPT 3	
RM	60368500
TOTAL UNIVERSAL	
RM	76070300
PERT/TIME 2	
RM	60456030
777/3D IGS	
RM	17326500
TIGS 1	
RM	60455940
UG	60456040
IN	60456360
GRAPHICS PRODUCT FAMILY	
GIM	76077000

The abbreviations used for manual types are as follows:

Card	Code Card
DH	Diagnostic Handbook
GIM	General Information Manual
IH	Installation Handbook
IN	Instant
OG	Operator's Guide
PSB	Programming Systems Bulletin
RM	Reference
SC	Summary Card
SPRM	System Programmer's Reference Manual
UG	User's Guide

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OPERATING SYSTEM HARDWARE REQUIREMENTS FOR NOS/BE

Minimum System

- 171-4
- One Line Printer
- Two Tape Units
- Rotating Mass Storage
- - One 844-21 with one 881
  or
  - Two 841-12's with four 871's
  or
  - One 844-4X with one 883-60
- One Card Reader

Options

- Alternate Mainframes
- CM Additions
- CPU Upgrade
- Additional CPU
- Extended Core Storage (ECS)
- PPU/I/O Channels
- Tape Units
- Line Printers
- Card Equipment
- Rotating Mass Storage
- Communication Equipment
- Remote CRT's
  Line Printers
  Card Equipment
- Remote Teletypewriters
- 171 CMU Upgrade
- 171 Data Channel Converters

Minimum System Rules

- One of two Tape Units is used for initial loading.
- During normal running, the Tape Units may be used for temporary storage and for Input and/or Output Queues.
- 841 or 844-4X may be added or may replace the minimum standard 844-21. The system can reside on any mixed device types. Minimum capacity to support standard batch processing is 60 million characters. (The system itself occupies approximately 1.4 million characters.)
- System uses three PPU's on a dedicated basis. The remaining are used on a dynamic pool basis.
- Each CDC CYBER 170 Model 172, 173, 174, or 175 includes one operator display console and two data channel converters. The data channel converters are equivalent to 6681's. Model 171 includes display console, but no data channel converters. Model 176 includes display console and one data channel converter.
- For Model 176, Rotating Mass storage connected to CYBER 170 PPU is required for SMM.
- The system requirement for a line printer may be satisfied with a 200 UT Compatible terminal (734-1, 18-5, etc.) with a line printer that is physically located with the central computer and is driven through a 6671 or 2550 communications subsystem.
- A terminal card reader may be used to input source decks to the system but cannot be used to input binary decks.
- The system requirement for a card reader to load controlware may be satisfied with a 7152-1 Disk/Tape Controller with a nine track tape unit.

Basic 171-X Mainframe

- 1 - Unified CPU
- 65K to 262K CM
- 10 PPU's
- 12 I/O Channels
- Operator's Console

Basic 172-X Mainframe

- 1 - Unified CPU
- Compare Move Unit (CMU)
- 65K to 262K CM
- 10 PPU's
- 12 I/O Channels
- Operator's Display Console
- 2 - Data Channel Converters

Basic 173-X Mainframe

- 1 - Unified CPU with speed up option
- Compare Move Unit (CMU)
- 98K to 262K
- 10 PPU's
- 12 I/O Channels
- Operator's Console
- 2 - Data Channel Converters

Basic 174-X Mainframe

- 2 - Unified CPU's with speed up options
- Compare Move Unit (CMU)
- 98K to 262K CM
- 10 PPU's
- 12 I/O Channels
- Operator's Console
- 2 - Data Channel Converters

Basic 175-XXX Mainframe

- 1 - Multi-Function CPU
- 131K to 262K CM
- 10 PPU's
- 12 I/O Channels
- Operator's Console
- 2 - Data Channel Converters

Basic 176-XX Mainframe

- 1 - Multifunction CPU
- 131K to 262K CM
- 0K to 2097K Extended Memory
- 10-CYBER 170 PPU's
- 12-CYBER 170 I/O Channels
- 0-4 CYBER 176 PP's
- 0-4 HI-Speed I/O Multiplexer Channels
- Operators Console
- 1-Data Channel Converter

Basic System and Loader Residence

- Operating system residence for the unconfigured system is slightly less than 25000_8 words.

- - The unconfigured system is defined as:

  1 CPU
  10 PPU's
  No INTERCOM
  Minimum Library CM Resident
  XJ not used

  - Includes space for:

  8 Control Points
  Each additional control point will require 350_8 words

  3 Controllers
  Each additional controller will require 20_8 words

  8 Tape Units
  Each additional tape unit will require 20_8 words

  6 RMS devices (with standard 844 RBR size)
  Each additional RMS device will require 40_8 - 100_8 words

- When ECS is included in the system, an additional 1000_8 words plus 2000_8 words per CM buffer is required in the operating system residence. In addition, $20,000_8$ words are required in the direct access area of ECS.

- For each RMS device type which is not used, the operating system residence may be decreased by 144_8 words.

- Temporary CM usage during loading is a minimum of 7200_8 words plus variable length tables generated during the loading.

OPERATING SYSTEM HARDWARE REQUIREMENTS

Alternate Mainframes

- The following Mainframe/CPU/CM combinations are supported by NOS/BE.

NOTE: NOS/BE will not operate on less than 49K core.

CM SIZE	MODEL 171 CPU	MODEL 172 CPU	MODEL 173 CPU	MODEL 174 CPU	MODEL 175 CPU	MODEL 176 CPU
49K	----	172-3*	----	----	----	---
65K	171-4	172-4	173-4 *	174-4*		---
98K	171-6	172-6	173-6	174-6		---
131K	171-8	172-8	173-8	174-8	175-108,208,308	176-8,21,22,24
196K	171-12	172-12	173-12	174-12	175-112,212,312	176-12,31,32,34
262K	171-16	172-16	173-16	174-16	175-116,216,316	176-16,41,42,44

* Early Production only (Prior to 12/76)

Central Memory Additions

- Model 171 Upgrade Rules for CM:
  (10317-1 also as required)

  171-4 plus 10312-6 gives 171-6
  171-6 plus 10312-8 gives 171-8
  171-8 plus 10312-12 gives 171-12
  171-12 plus 10312-16 gives 171-16

- Model 172 Upgrade Rules for CM:
  (10317-1 also as required)

  172-3 plus 10312-4 gives 172-4
  172-4 plus 10312-6 gives 172-6
  172-6 plus 10312-8 gives 172-8
  172-8 plus 10312-12 gives 172-12
  172-12 plus 10312-16 gives 172-16

- Model 173 Upgrade Rules for CM:
  (10317-1 also as required)

  173-4 plus 10312-6 gives 173-6
  173-6 plus 10312-8 gives 173-8
  173-8 plus 10312-12 gives 173-12
  173-12 plus 10312-16 gives 173-16

- Model 174 Upgrade Rules for CM:

  174-4 plus 10312-6 gives 174-6
  174-6 plus 10312-8 gives 174-8
  174-8 plus 10312-12 gives 174-12
  174-12 plus 10312-16 gives 174-16

- Model 175 Upgrade Rules for CM:

  175-108, 208 plus 10313-12 gives 175-112, 212
  175-112, 212 plus 10313-16 gives 175-116, 216
  175-308 plus 10313-112 gives 175-312
  175-312 plus 10313-116 gives 175-316

- Model 176 Upgrade Rules for CM:

  176-8, 21, 22, 23 plus 10374-1 gives 176-12, 31 32, 34
  176-12, 31, 32, 34, plus 10374-2 gives 176-16, 41, 42, 44

- Model 176 Upgrade Rules for EM (Extended Memory):

  176-8, 12, 16, plus 10375-10 gives first 524K
  176-21, 31, 41 (524K) plus 10375-1 gives 176-22, 32, 42 (1M)
  176-22, 32, 42 (1M) plus 10375-2 gives 176-24, 34, 44 (2M)

CPU Upgrades

- Model 171 performance can be increased by adding a compare move unit (10380-X) or a second central processor (10382-X) or by upgrading the CPU into a model 172 (10380-1 , plus 10381-1, plus 10381-2, plus 10383-1).
- Model 172 performance can be increased by adding a second central processor (10384-1) or by upgrading the CPU to a model 173 or 174 (10316-1 or 10385-1).
- Model 173 performance can be increased by upgrading the CPU to a model 174 (10316-2).
- The upgrading from a model 173 or 174 to a model 175 requires a Mainframe exchange.

  175-1XX plus 10426-1 gives 175-2XX level performance
  175-2XX plus 10427-X gives 175-3XX level performance

- The upgrading from a model 173, 174 or 175 to a model 176 requires a mainframe exchange.

- Addition of 10376-10 and 10375-10 options upgrades a 176-8, 12, 16 to a respective 176-21, 31, 41.

PPU - I/O Channel Options

- The basic model 171, 172, 173, 174, 175 or 176 contains 10 PPU's and 12 I/O Channels.

- Model 171, 172, 173 and 174 Upgrade Rules

  10314-1 Adds 4 PPU's and 12 I/O Channels to 10 PPU, 12 I/O Channel System

  10314-2 Adds 3 PPU's to 14 PPU, 24 I/O Channel System.

  10314-3 Adds 3 PPU's to 17 PPU, 24 I/O Channel System

Model 175 Upgrade Rules

10314-151 adds 4 PPU's and 12 I/O Channels to 10 PPU, 12 I/O Channel System

10314-152 Adds 3 PPU's to 14 PPU, 24 I/O Channel System

10314-153 Adds 3 PPU's to 17 PPU, 24 I/O Channel System

OPERATING SYSTEM HARDWARE REQUIREMENTS

PPU - I/O Channel Options (continued)

- Model 176 Upgrade Rules

10377-1 Adds 4 Cyber 170 PPU's and 12 I/O Channels to 10 PPU, 12 I/O Channel System.

10314-52 Adds 3 Cyber 170 PPU's to 17 PPU 24 I/O Channel system

10314-53 Adds 3 Cyber 170 PPU's to 17 PPU 24 I/O Channel System

10376-10 Adds initial 4 PP's and 4 Mux channels to 176-8, 12, 16

10376-1 Adds 1 Cyber 176 PP allowing expansion from 4 PP system to 6 PP system.

10348-1 Adds 1 Hi-Speed I/O Multiplexer Channel allowing expansion from 4 Hi-Speed I/O Multiplexer Channels to 6 Hi-Speed Channels.

Optional Extended Core Storage

- The Basic 7030-1XX ECS unit contains the necessary controller and one Distributed Data Path (DDP)
- A 10318-X Coupler must be ordered for each mainframe connecting ECS.
- Growth of the Basic 7030-1XX may be achieved by the addition of ECS Storage Increments (10319) and/or additional DDP Registers.
- Supported Configurations:

ECS Words	Model	Upgrade Rules for ECS Words
262K	7030-102	7030-102 plus 10319-2 gives 7030-104
524K	7030-104	7030-104 plus 10319-4 gives 7030-108
1048K	7030-108	7030-108 plus 10319-8 gives 7030-116
2097K	7030-116	

- Each 7030-1XX contains one DDP Register. Upgrade Rules for DDP Registers are:

  10280-10 Up to a maximum of three additional Registers for a total of four.

- ECS/DDP Option is not available on Model 176.
- The DDP in the 7030-X is not supported.

Tape Units

- See Hardware Diagrams for supported configurations.
- See "Minimum System Rule" for alternate uses of Tape Units.
- NOS/BE 1 may be dead-started from either 7 track or 9 track units.
- Use of 6681-2 will reduce performance compared to the use of the 6684 except on 3518/28 controllers.
- There may be only one type of Data Channel Converter (6684-X or 6681-2) per I/O Channel. Any Dual Access Tape Controller must be connected through one type of Data Channel Converter (i.e., all 6684-X or all 6681-2).
- The 6684-X operates in two modes:
  - Conversion Mode (For Tape Units)
  - Non-Conversion Mode (i.e., 6681 Mode)
- 64 Character Set System requires a 6684-2 to provide Hardware Conversion for Tape Units; however, full 64 Character Set Software Conversion is provided when either a 6681-2 is used or a 6684-1 is used in 6681 Mode.

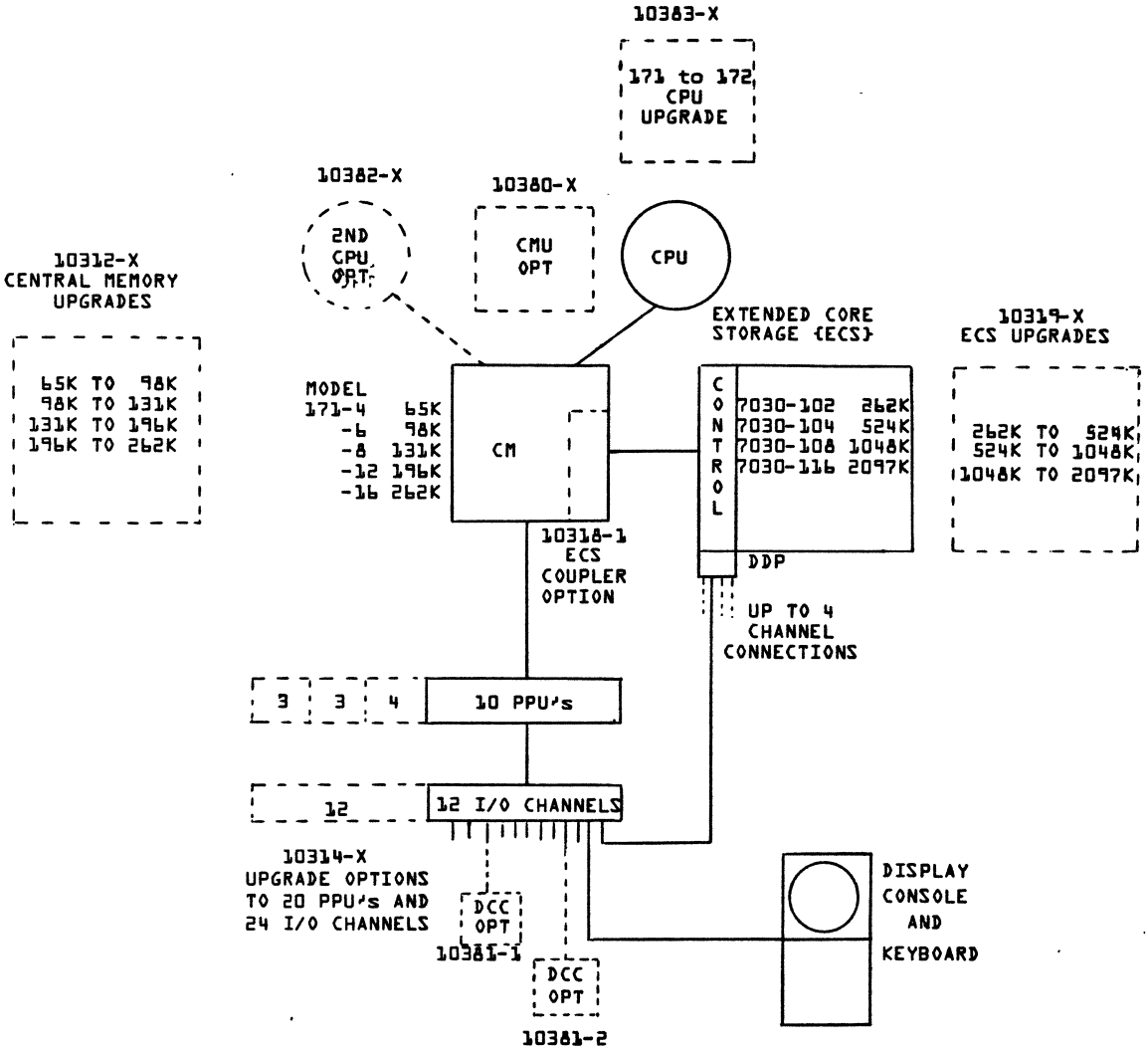
Line Printers

- See Hardware Diagrams for supported local and remote configurations.
- A 595-X Train must be ordered with each 512 Printer, 733-110 Printer or 733-10 Station.
- A 596-X Train must be ordered with each 580 Printer.
- Drivers are provided within the system to support the 580, and 512 Printers.
- The Printer Buffer size within the released system is 401_8 words. This Buffer may be increased by an installation modification.
- The 580-1XX (Programmable Format Control) is supported.

Card Equipment

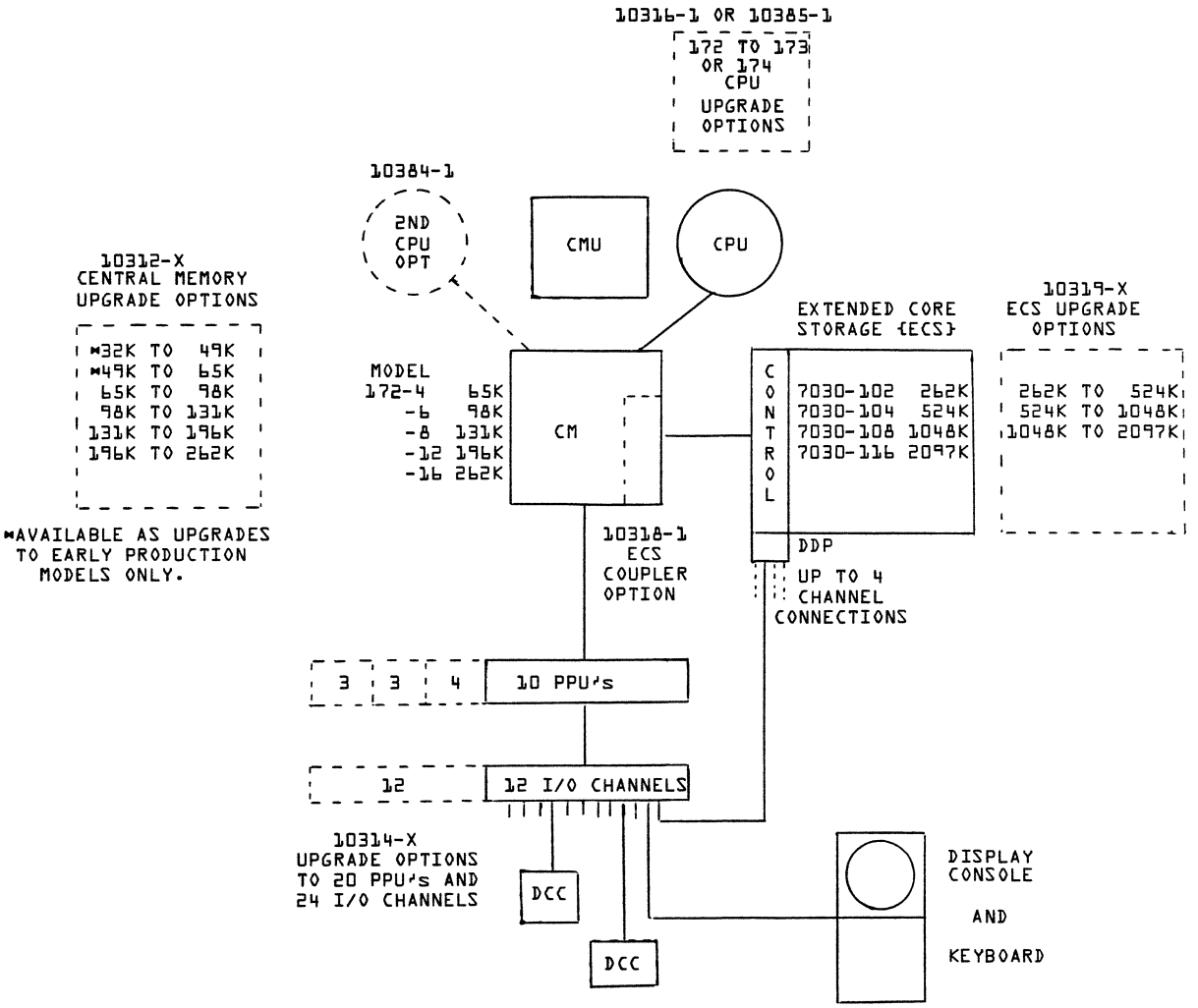
- See Hardware Diagram for supported local and remote configuration.
- The Card Reader Buffer size and Card Punch Buffer size within the released system is 401_8 words. This Buffer may be increased by an installation modification.

CDC CYBER 170 MODEL 171
CONFIGURATOR



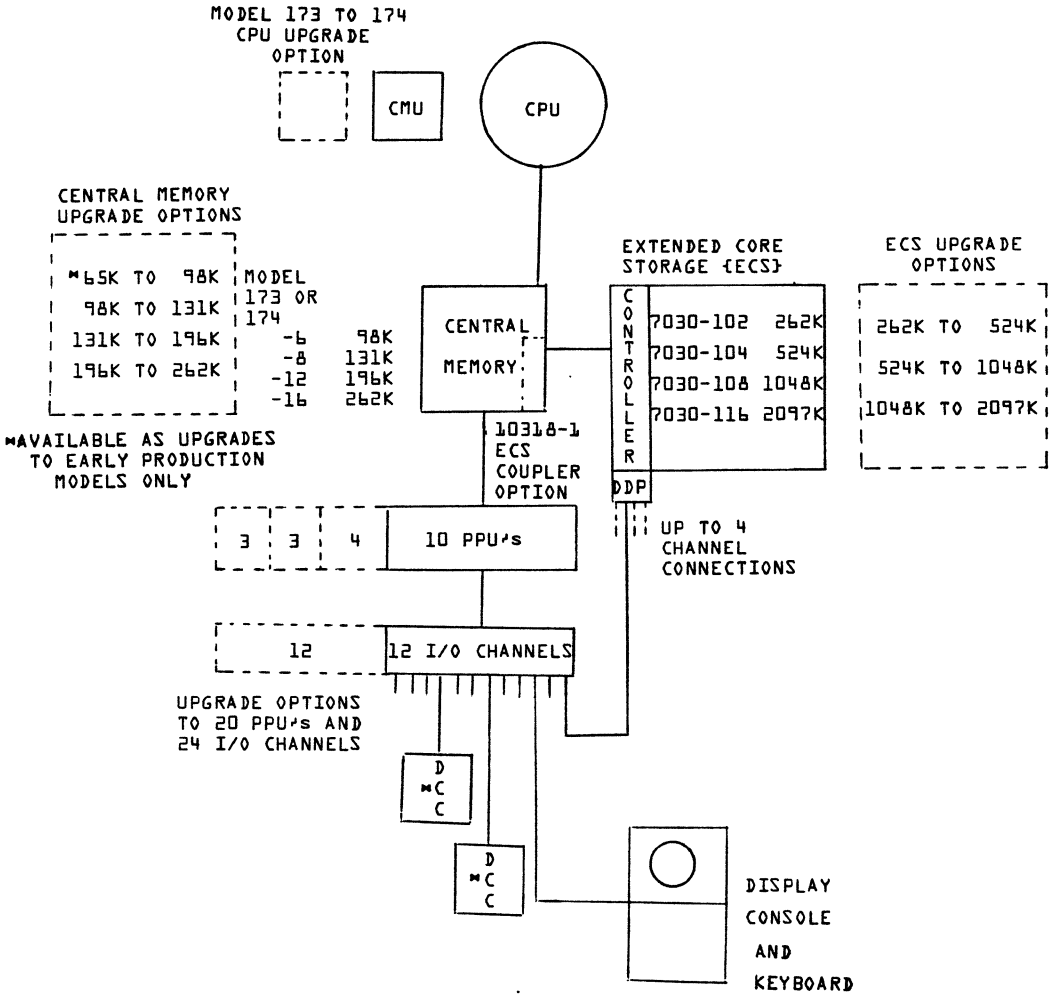
OPTIONAL DCC - DATA CHANNEL CONVERTERS TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE THE CYBER 170 MODEL 171.

CDC CYBER 170 MODEL 172
CONFIGURATOR



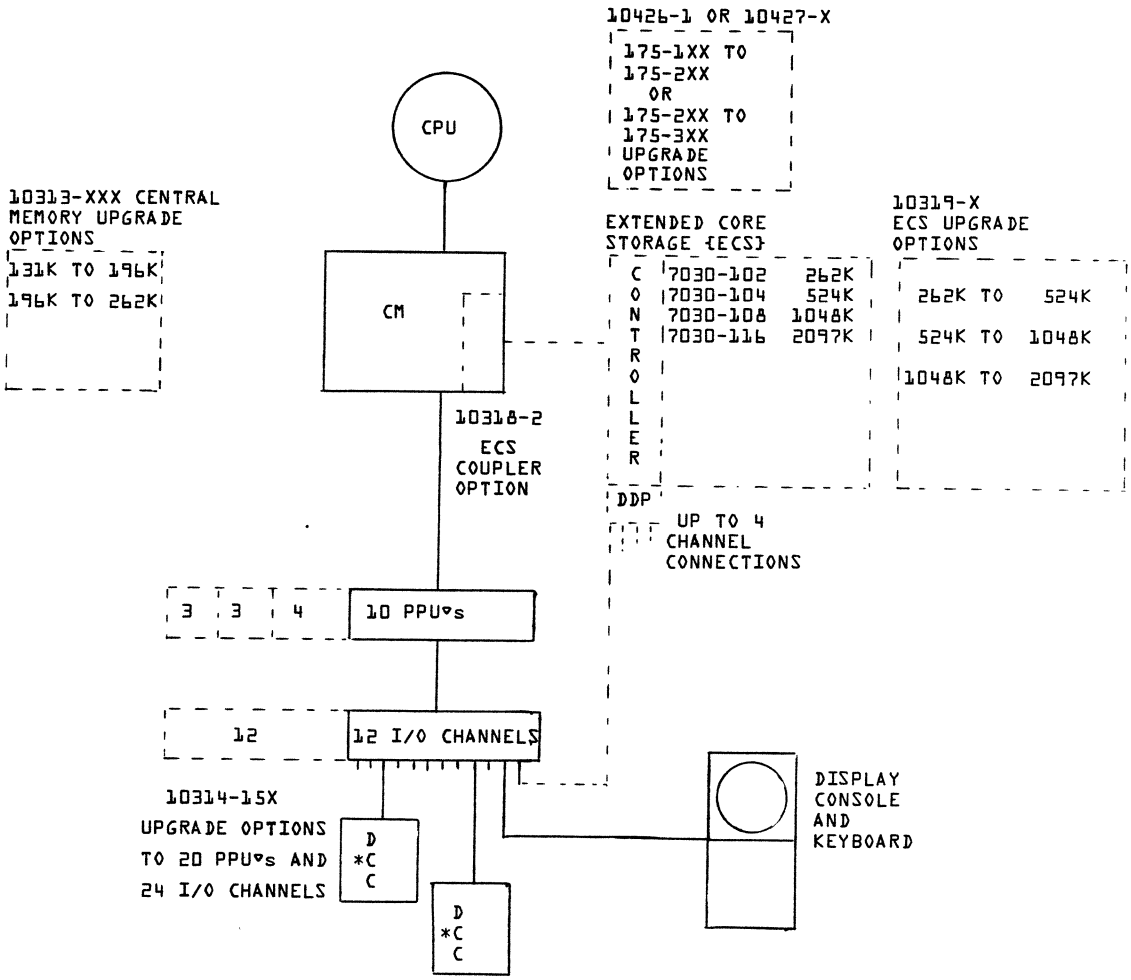
DCC - DATA CHANNEL CONVERTERS TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE TO THE CYBER 170 SERIES.

CDC CYBER 170 MODEL 173 AND 174 CONFIGURATOR



* DCC - DATA CHANNEL CONVERTERS TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE TO THE CYBER 170 SERIES

CDC CYBER 170 MODELS 175-1XX,
2XX, 3XX CONFIGURATOR



* DCC - DATA CHANNEL CONVERTORS TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE TO THE CYBER 170 SERIES

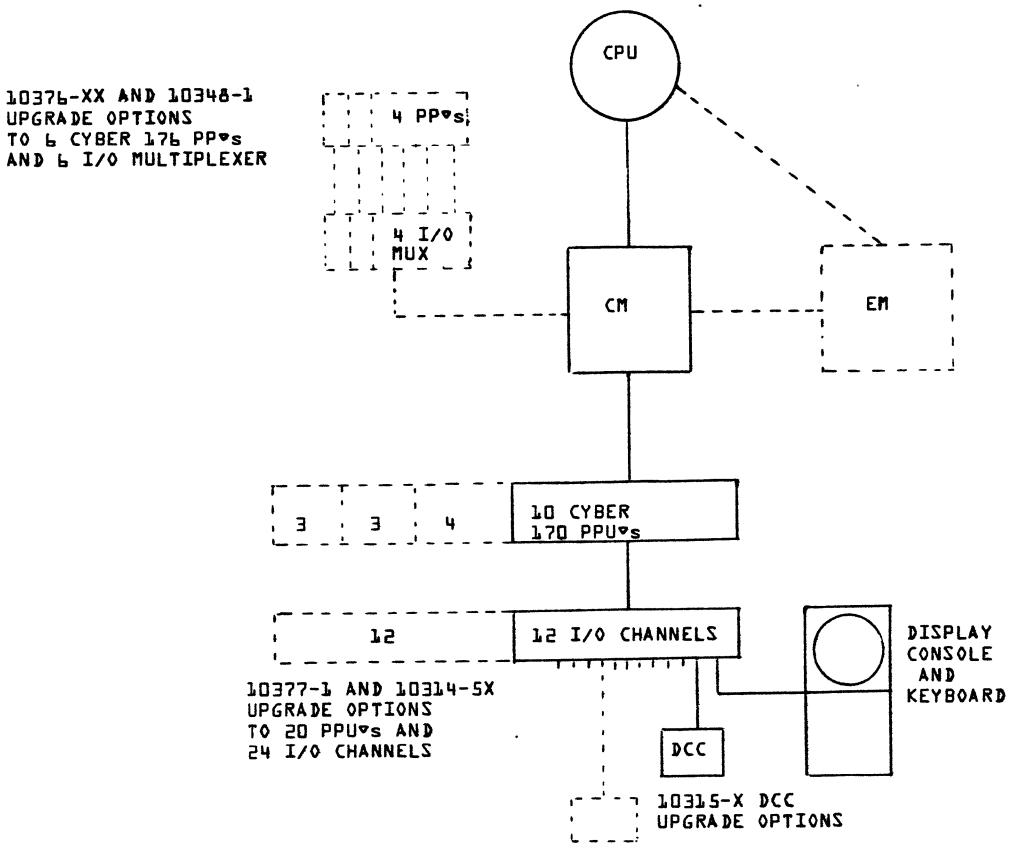
CENTRAL MEMORY

MODELS	CM
175-108, 208, 308	131K
175-112, 212, 312	196K
175-116, 216, 316	262K

CM OPTIONS

MODELS	FROM	TO	OPTION
175-108, 208	131K	196K	10313-12
175-112, 212	196K	262K	10313-16
175-308	131K	196K	10313-112
175-312	196K	262K	10313-116

CDC CYBER 170 MODELS
176-8, 12, 16 CONFIGURATION



MODELS

MODEL	CM
176-8	131K
176-12	196K
176-16	262K

CM OPTIONS

131K TO 196K	10374-1
196K TO 262K	10374-2

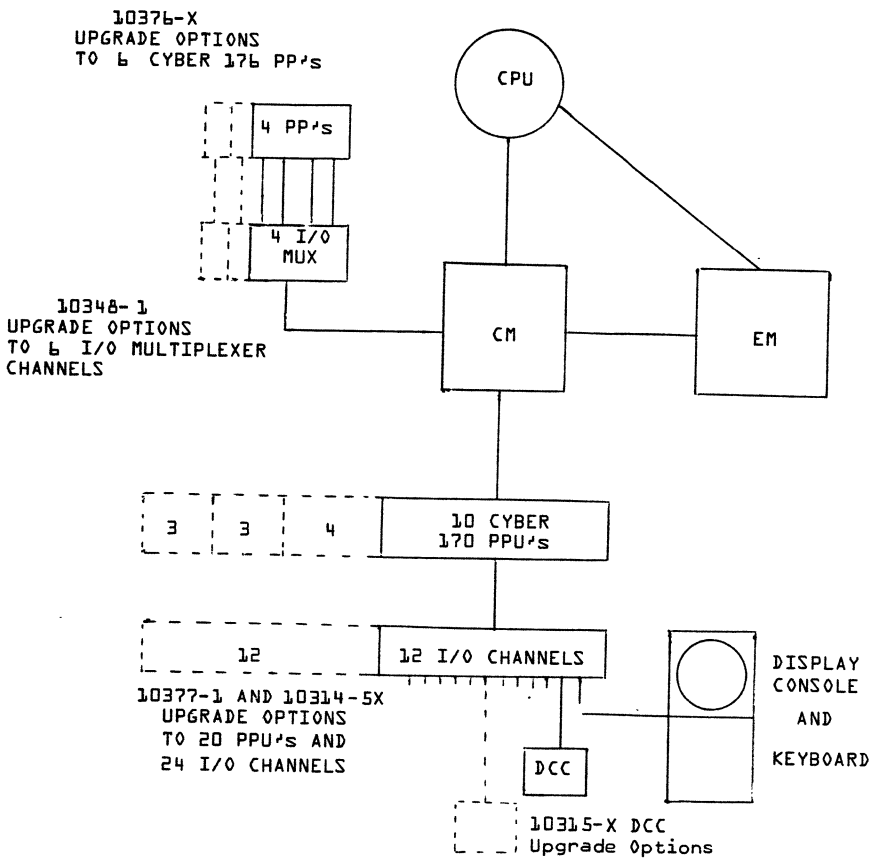
EM (EXTENDED MEMORY) OPTIONS

0K TO 524K	10375-10
524K TO 1048K	10375-1
1048K TO 2097K	10375-2

NOTES

1. ADDITION of 10376-10 AND 10375-10 OPTIONS UPGRADES A 176-8,-12,-16 TO A RESPECTIVE 176-21,-31,-41.
2. SEE NEXT PAGE FOR 176-2X,-3X,-4X BASIC CONFIGURATIONS.

CDC CYBER 170 MODEL 176-2X,-3X,-4X CONFIGURATIONS



MODELS

MODEL	CM	EM (EXTENDED MEMORY)
176-21	131K	524K
176-22	131K	1048K
176-24	131K	2097K
176-31	198K	524K
176-32	198K	1048K
176-34	198K	2097K
176-41	262K	524K
176-42	262K	1048K
176-44	262K	2097K

CM OPTIONS

131K TO 196K	10374-1
196K TO 262K	10374-2

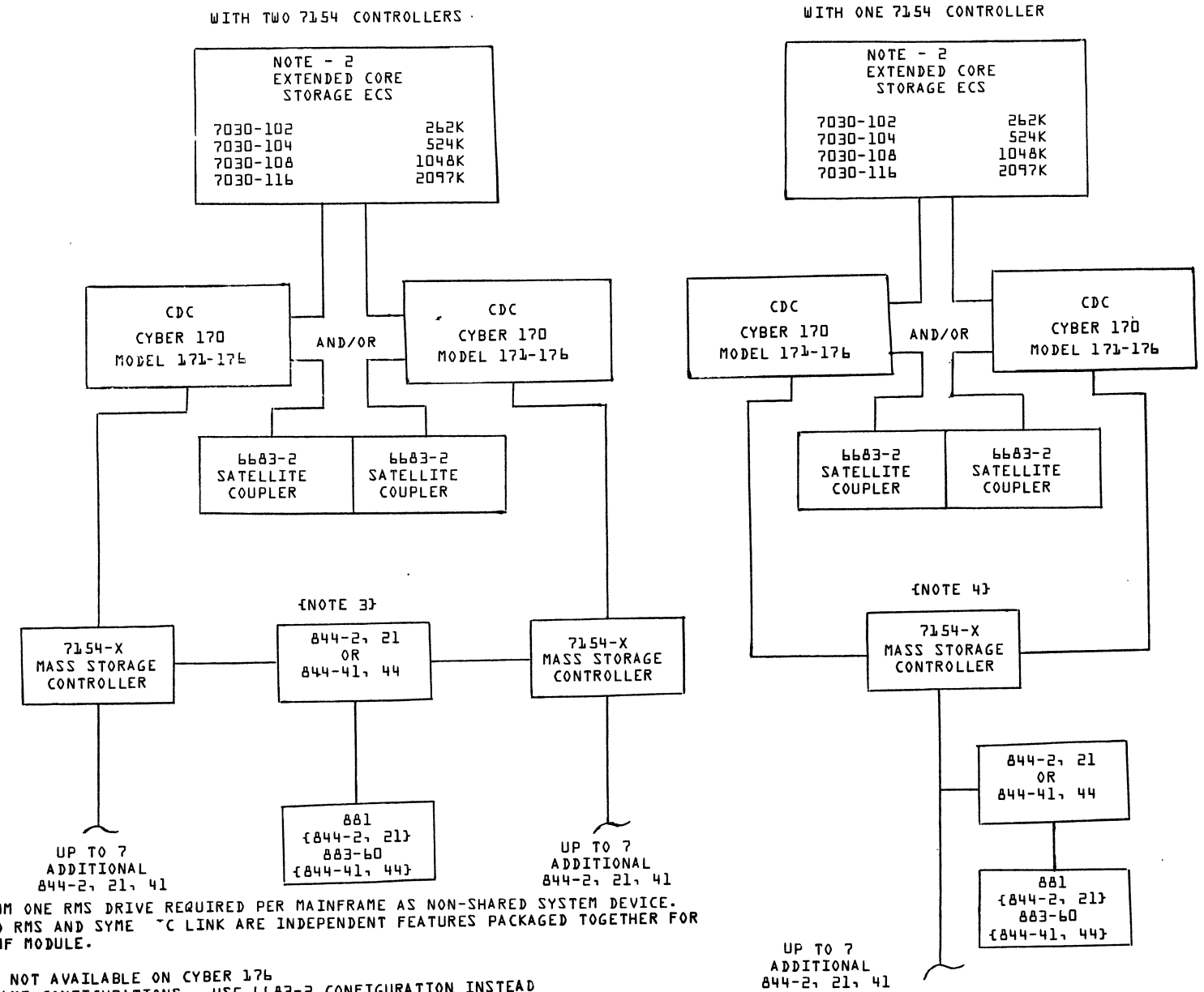
EM OPTIONS

524K TO 1048K	10375-1
1048K TO 2097K	10376-1

CYBER 76/CYBER 176 CONVERSION OPTIONS

CYBER 76 TO CYBER 176	10378-1
7602-1 TO 10376-1	10379-1

CYBER 170 MULTI-MAINFRAME CONFIGURATOR (NOTE - 1)

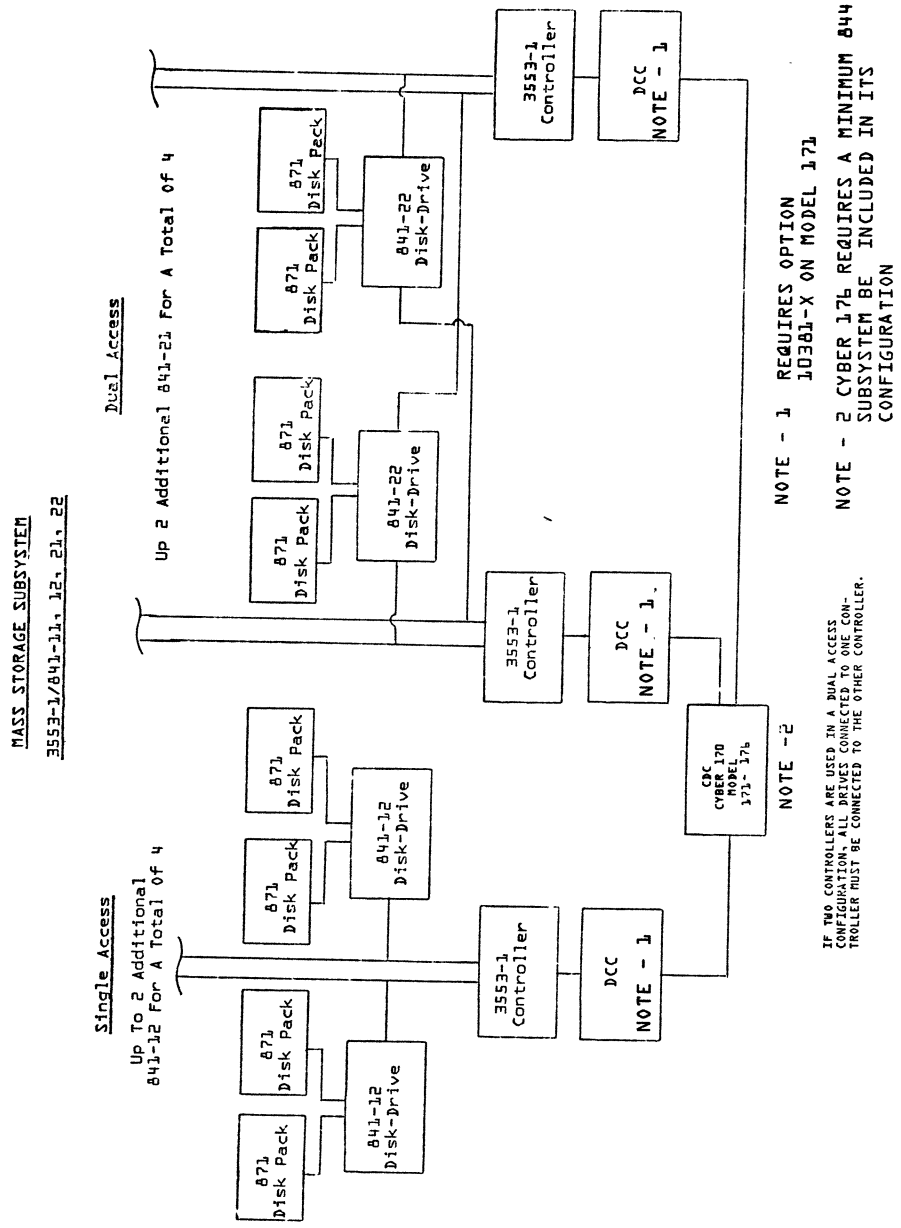


NOTE-1: MINIMUM ONE RMS DRIVE REQUIRED PER MAINFRAME AS NON-SHARED SYSTEM DEVICE. SHARED RMS AND SYME ~C LINK ARE INDEPENDENT FEATURES PACKAGED TOGETHER FOR THE MMF MODULE.

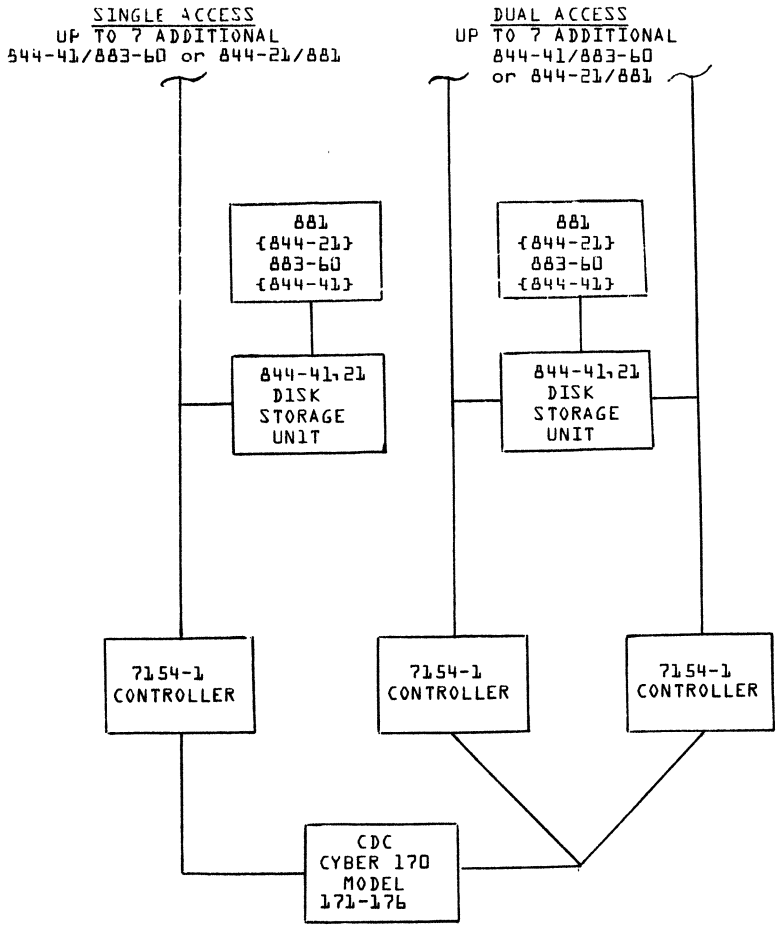
NOTE-2 ECS IS NOT AVAILABLE ON CYBER 176 MAINFRAME CONFIGURATIONS - USE 6683-2 CONFIGURATION INSTEAD

NOTE 3 IF A 7X54 CONTROLLER IS NOT SHARED WITH ANOTHER MAINFRAME, THEN 844 DRIVES CAN BE CONNECTED IN ANY CONFIGURATION (SHARED, NOT SHARED, SINGLE CHANNEL ACCESS, MULTI CHANNEL ACCESS, OTHER CONTROLLER ACCESS).

NOTE 4 IF A 7X54 CONTROLLER IS SHARED WITH ANOTHER MAINFRAME, THEN ALL DRIVES CONNECTED TO THAT CONTROLLER AND DEFINED IN A GIVEN MAINFRAME MUST HAVE IDENTICAL CHANNEL DEFINITIONS FOR THAT MAINFRAME. NOTE THAT ALL DRIVES CONNECTED NEED NOT BE DEFINED AND ALL DRIVES DEFINED NEED NOT BE DESIGNATED AS SHARED.


MASS STORAGE SUBSYSTEM
3553-1/841-11, 12, 21, 22
Dual Access
Up 2 Additional 841-21 For A Total of 4
Single Access
Up To 2 Additional
841-12 For A Total of 4
871 Disk Pack
841-22 Disk-Drive
841-12 Disk-Drive
3553-1 Controller
DCC
NOTE - 1
CDC CYBER 170 MODEL 171- 176
NOTE -2
NOTE - 1 REQUIRES OPTION 10381-X ON MODEL 171
NOTE - 2 CYBER 176 REQUIRES A MINIMUM 844 SUBSYSTEM BE INCLUDED IN ITS CONFIGURATION
IF TWO CONTROLLERS ARE USED IN A DUAL ACCESS CONFIGURATION, ALL DRIVES CONNECTED TO ONE CONTROLLER MUST BE CONNECTED TO THE OTHER CONTROLLER.

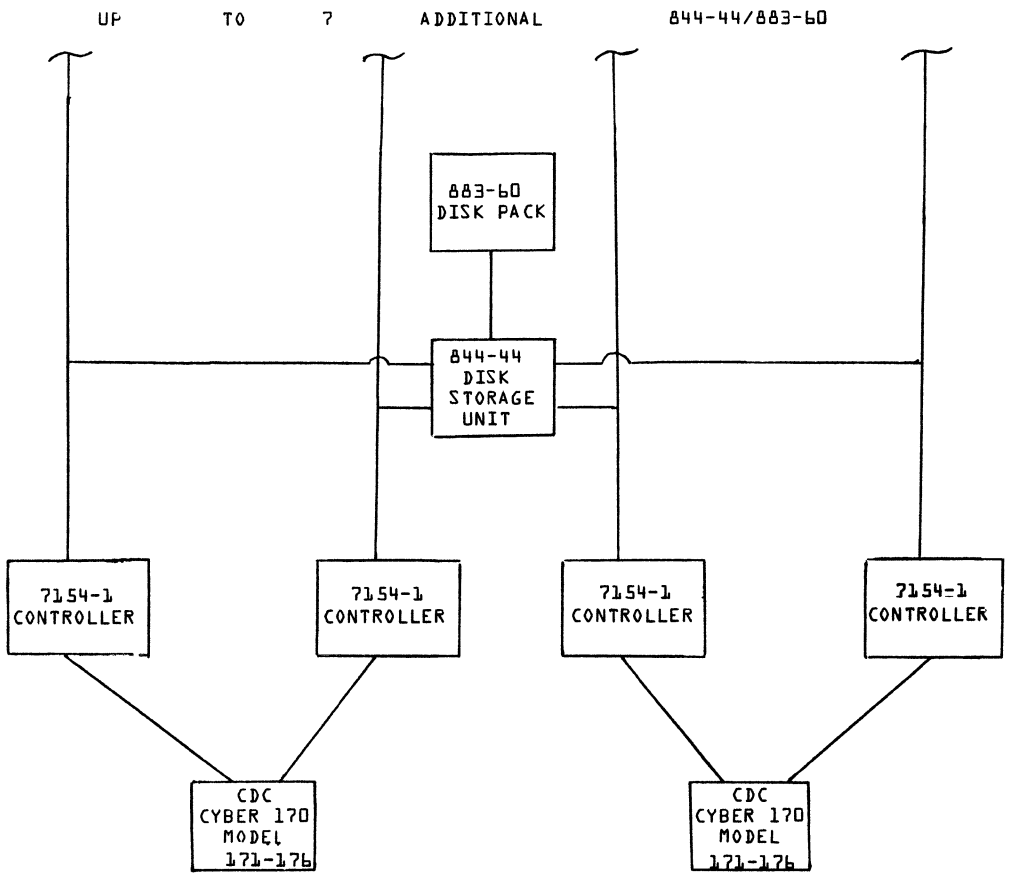
REMOVABLE MASS STORAGE
844-41



IF TWO CONTROLLERS ARE USED IN A DUAL ACCESS CONFIGURATION, ALL DRIVES CONNECTED TO ONE CONTROLLER MUST BE CONNECTED TO THE OTHER CONTROLLER. FULL TRACKING REQUIRES 2X PPU SPEED

ALSO SEE NOTES 3 AND 4 ON MULTI-MAINFRAME CONFIGURATOR PAGE IF USED IN A MULTI-MAINFRAME CONFIGURATION.

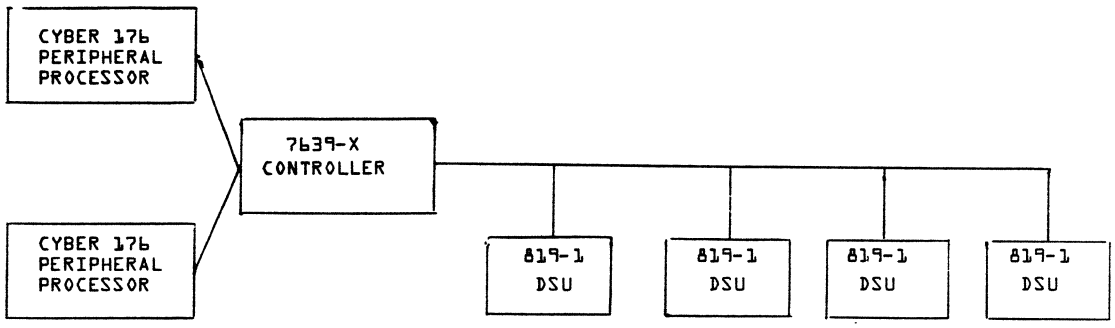
REMOVABLE MASS STORAGE
844-44



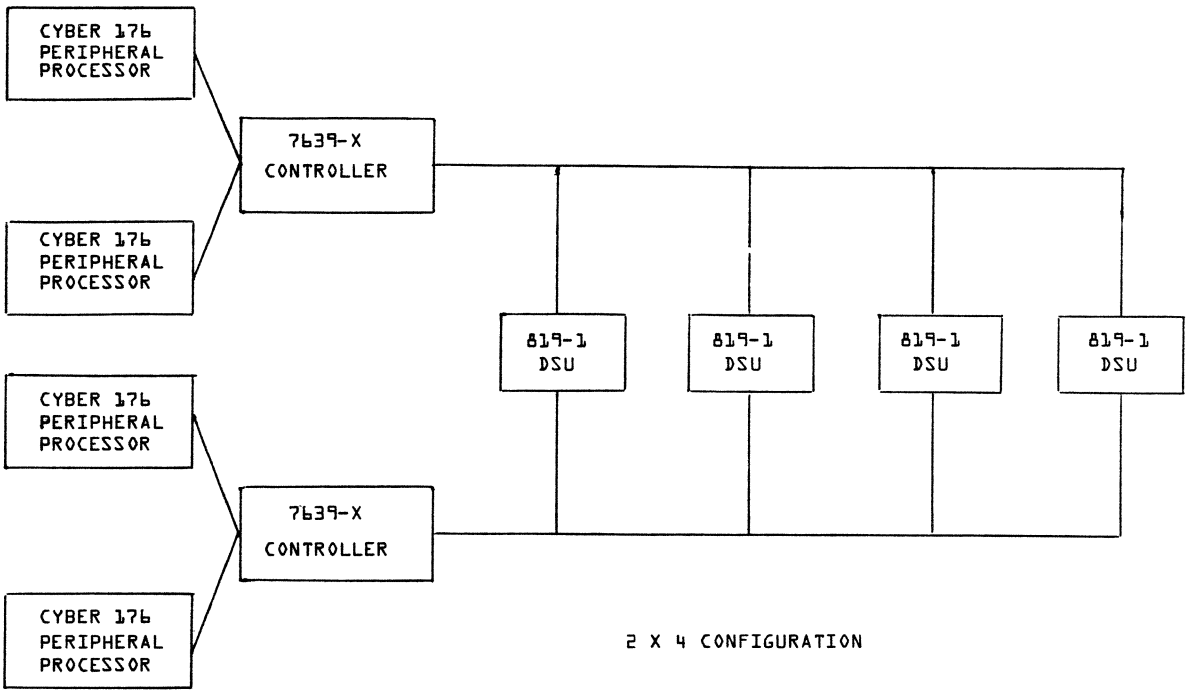
IF TWO CONTROLLERS ARE USED IN A DUAL ACCESS CONFIGURATION, ALL DRIVES CONNECTED TO ONE CONTROLLER MUST BE CONNECTED TO THE OTHER CONTROLLER. FULL TRACKING REQUIRES 2X PPU SPEED.

ALSO SEE NOTES 3 AND 4 ON MULTI-MAINFRAME CONFIGURATOR PAGE IF USED IN A MULTI-MAINFRAME CONFIGURATION.

CYBER 176-2X,-3,-4X MASS STORAGE (NOTE -5)
819-1



1 X 4 CONFIGURATION



2 X 4 CONFIGURATION

NOTES

(1) NOS/BE WILL SUPPORT A MAXIMUM OF TWELVE 819-1 DRIVES.

(2) CYBER 176 WILL SUPPORT THE FOLLOWING 819-1 ACCESSES:

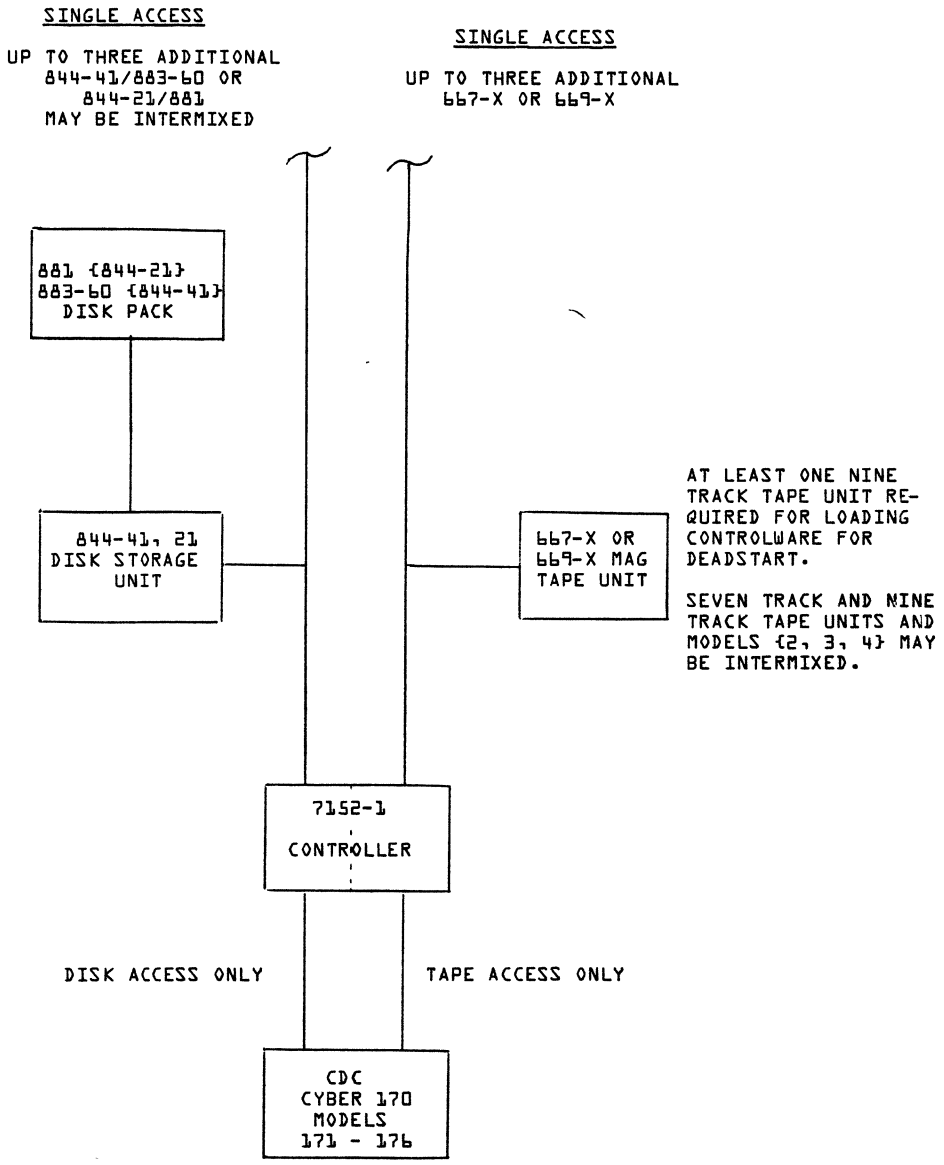
THREE 1 X 4 CONFIGURATIONS OR
ONE 1 X 4 CONFIGURATION AND ONE 2 X 4 CONFIGURATION

(3) EACH 1 X 4 819-1 ACCESS REQUIRES TWO HI-SPEED MULTIPLEXER CHANNELS.

(4) EACH 2 X 4 819-1 ACCESS REQUIRES FOUR HI-SPEED MULTIPLEXER CHANNELS.

(5) 176-2X,-3X, 4X MODELS ONLY. 819 HCD REQUIRES EXTENDED MEMORY OPTION 10375-10 AND INITIAL PERIPHERAL PROCESSOR UNIT 10376-10 ON 176-8,-12,-16 MODELS.

MASS STORAGE/MAGNETIC TAPE
7152-1/844/66X



MAGNETIC TAPE
7-TRACK OR 7-TRACK/9-TRACK INTERMIXED OR 9-TRACK

657-X 657-X/659-X 659-X

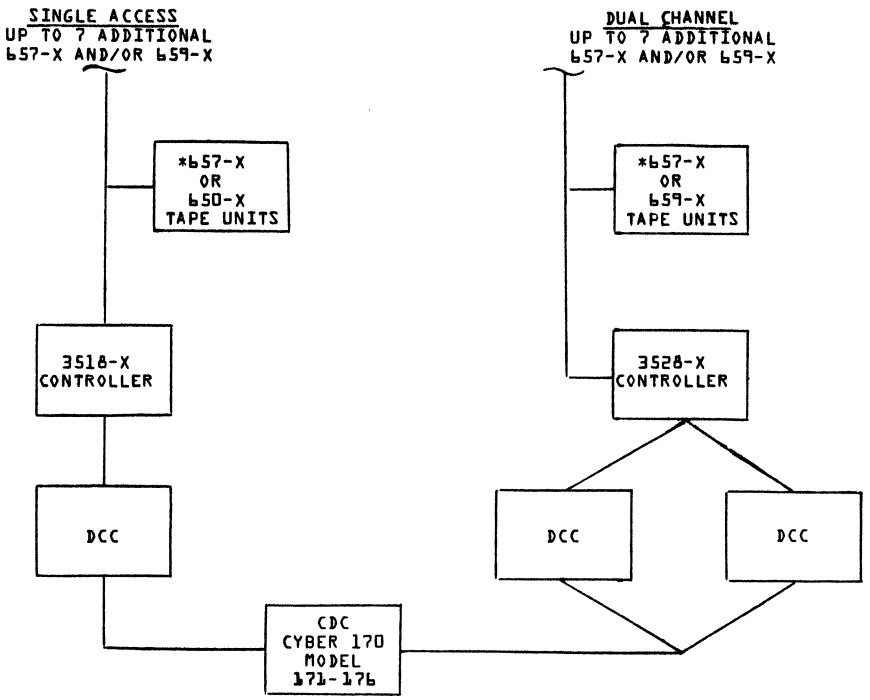
NOTES:

*657-X: 657-1, 657-2, 657-3, 657-4 (7-TRACK)
*659-X: 659-1, 659-2, 659-3, 659-4 (9-TRACK)
3518-X: 3518-1, 3518-2, 3518-3
3528-X: 3528-1, 3528-2, 3528-3

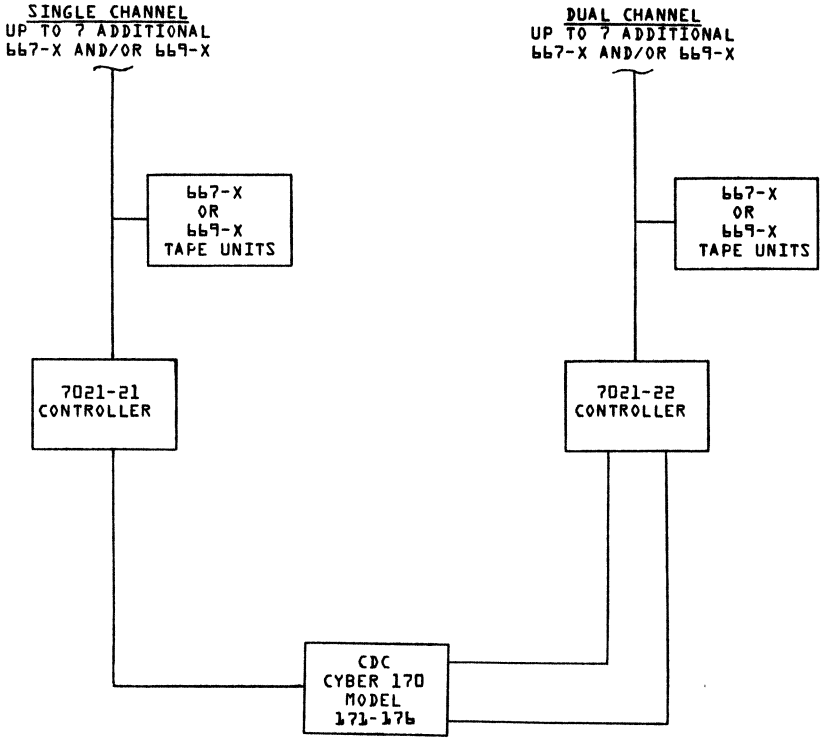
667-X 667-X/669-X 669-X

NOTES:

667-X: 667-2, 667-3, 667-4 (7-TRACK)
669-X: 669-2, 669-3, 669-4 (9-TRACK)



* 7-TRACK AND 9-TRACK TAPE UNITS AND MODELS (1, 2, 3, 4) MAY BE INTERMIXED. (NOTE: 659-X TAPE UNITS REQUIRE THAT A 3518-2, 3518-3, 3528-2 OR 3528-3 BE INSTALLED.)



7-TRACK AND 9-TRACK TAPE UNITS AND MODELS (2, 3, 4) MAY BE INTERMIXED.

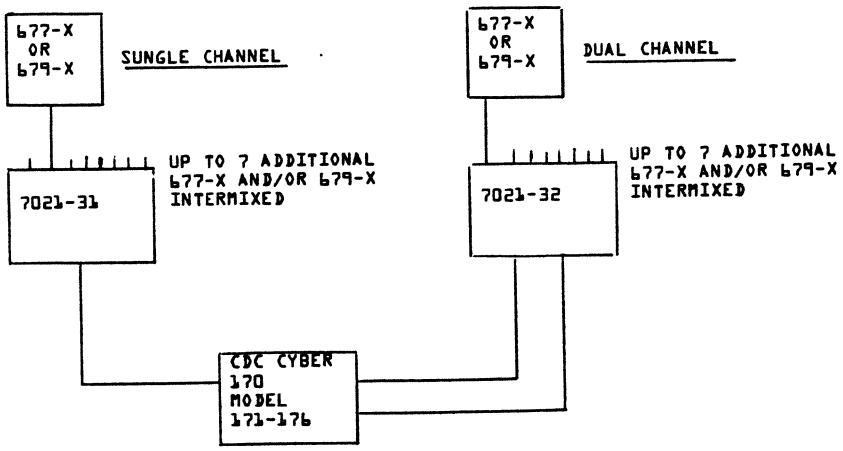
67X MAGNETIC TAPE SUBSYSTEM

7 TRACK

677-2 556/800 BPI NRZI, 100 IPS
677-3 556/800 BPI NRZI, 150 IPS
677-4 556/800 BPI NRZI, 200 IPS

9 TRACK

679-2 800 BPI NRZI and 1600 BPI PE, 100 IPS
679-3 800 BPI NRZI and 1600 BPI PE, 150 IPS
679-4 800 BPI NRZI and 1600 BPI PE, 200 IPS
679-5 6250 BPI GCR and 1600 BPI PE, 100 IPS
679-6 6250 BPI GCR and 1600 BPI PE, 150 IPS
679-7 6250 BPI GCR and 1600 BPI PE, 200 IPS

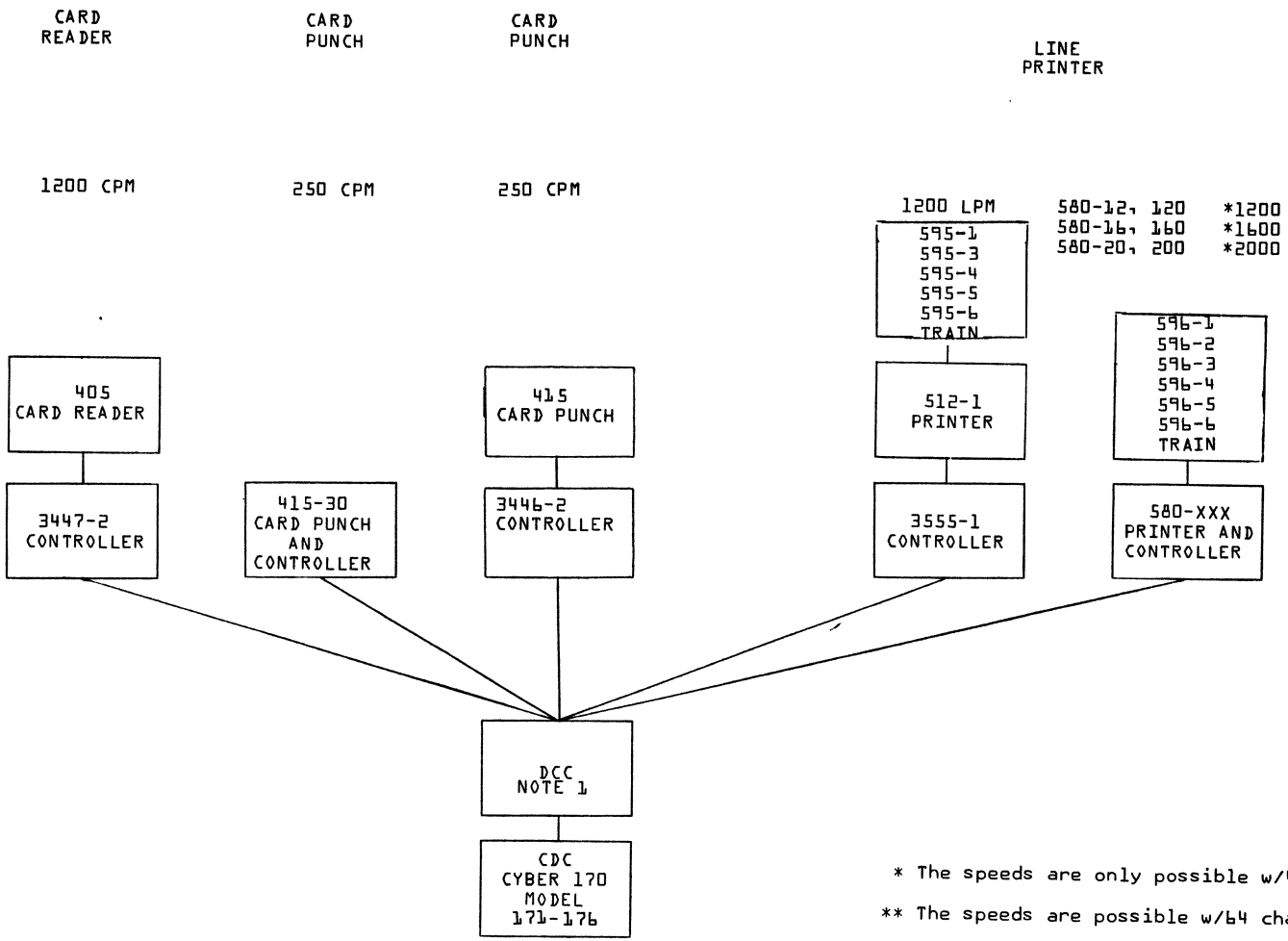


NOTE: 7 TRACK AND 9 TRACK TAPE UNITS CAN BE INTERMIXED
System configuration restrictions are determined by the data-transfer rates of the tape units.

- NRZI and P.E. Recording
  -A unit of any speed may be used on any CYBER 170, CYBER 70 or 6000 configuration, assuming no more than two other devices are daisy-chained on the channel ahead of the controller.

- GCR Recording
  -200 IPS not allowed on 6000 or CYBER 70. Must be first on CYBER 170 channel.
  not allowed if MAC switch used {10329-X or 60144-X}.
  -150 IPS must be first or second on either CYBER 170, CYBER 70 or 6000 channel.
  -100 IPS must be first or second on CYBER 70 or 6000 channel. Must be first, second or third on CYBER 170 channel.

LOCAL UNIT RECORD EQUIPMENT



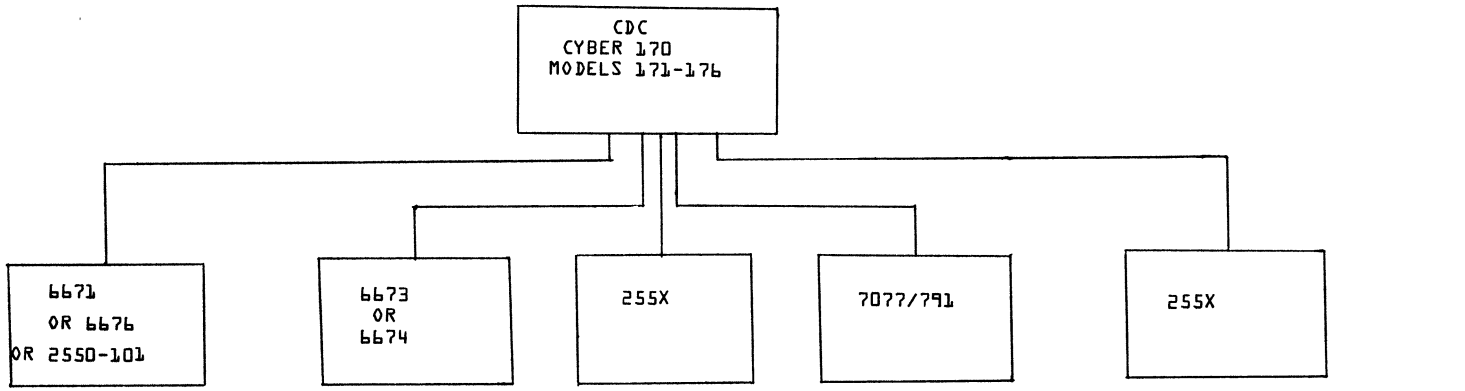
* The speeds are only possible w/48 character set.

** The speeds are possible w/64 character set.

NOTE 1: MODEL 171 REQUIRES OPTION 10381-X

COMMUNICATION SUBSYSTEMS & TERMINALS SUPPORTED

NOS/BE 1



WITH INTERCOM 4
711-10
713-10/751-10/752-10/756
714-10
714-20
731-12
732-12
214-X
200 UT {217-X}{CY18-XX}
734-1
TTY 33/35/38
241 GRAPHICS
TEKTRONIX 4010/4014
773-3

WITH INTERCOM 4
777-2
1700/274
8231
774-2

WITH INTERCOM 5/
CCI 3
711-10
713-10/751-10/752-10/
714-10 756
714-20
731-12
732-12
214-X
200 UT{217-X}{CY18-XX}
734-1
TTY 33/35/38
241 GRAPHICS
TEKTRONIX 4010/4014
777-3
2780/3780
HASP MULTILEAVING
TERMINALS

WITH INTERCOM 4
711-10
714-10
714-20
731-10
731-12
732-10
732-12
733-10
214-X
200 UT{217-X}{CY18-XX}
734-1
TTY 33/35/38
241 GRAPHICS
777-3
713-10/751-10/752-10
TEKTRONIX 4010/4014

WITH INTERCOM 4/CCP1
713-10/751-10/752-10/756
711-10
714-10
714-20
731-12
732-12
734-1
200 UT {CY18-XX}
217-X/214-X
777-3
TTY 33/35/38
241 GRAPHICS
TEKTRONIX 4010/4014

REFER TO TERMINAL SUBSYSTEMS SECTION FOR SPECIFIC CONFIGURATION AND FEATURE SUPPORT DETAILS.

REFER TO COMMUNICATION SUBSYSTEMS SECTION FOR SPECIFIC CONFIGURATION AND FEATURE SUPPORT DETAILS.

COMPUTER	SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATOR FOR NOS/BE 1	

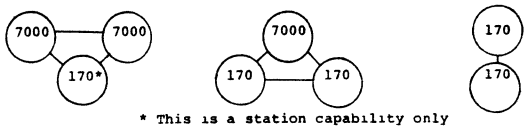
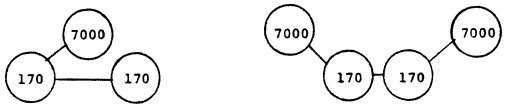
SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
NOS/BE FL21-01 CYBER 170 MODELS 171 - 174 ONLY. CYBER 176 REQUIRES FL21-76 INSTEAD OF ABOVE. CYBER 175-1XX, 2XX, 3XX REQUIRES FL21-86	1		See Operating System Hardware Configurator. - Minimum Central Memory is 49K. - Requires Maintenance Package and FORTRAN EXTENDED - Uses CMU when available	NOS/BE 1 provides a comprehensive set of batch processing capabilities. When used with Intercom 4 the system provides a comprehensive set of time sharing and remote batch capabilities. Operating System Minimum Residence is between 22K octal and 25K octal CM words. The exact figure is dependent on how the system is installed (e.g., number of control points, size of system buffers, etc.) When ECS is installed on the system an additional Operating System Residence of 6K octal to 14K octal is required: however, equivalent number of CM words can be reduced by storing the CM resident PP/CP routines in ECS. For each type of disk drive or file used in the system, the Operating System Residence is increased by 144 octal words per device type. Included with the Operating System are the following products: CYBER RECORD MANAGER, BASIC ACCESS METHODS, ADVANCED ACCESS METHODS, FORM, COMPASS, UPDATE, CYBER LOADER, and "8-BIT" SUBROUTINE PACKAGE. Supports sequential and word addressable file organizations.
FORM	1		- Included in Operating System ** Field length: 52_8K to 40_8K, including CYBER RECORD MANAGER	A general purpose File Organizer/Record Manager utility that permits selection, manipulation, copying, and reformatting capabilities on files and records. FORM also contains a module that permits conversion between CYBER/6000 and System/360 file and record formats.
COMPASS	3		- Included in Operating System ** Field length: 50_8K	COMPASS provides a comprehensive assembler language for writing CPU and PPU programs for all 6000, CYBER 70, and CYBER 170 series systems. CPU programs can be absolute or relocatable. Symbolic machine instructions provide for expressing all hardware functions. Pseudo instructions control the assembler processing and include versatile, extensive macro and micro facilities.
CYBER LOADER	1		- Included in Operating System - For field length requirement see Operating System Hardware Configurators	The CYBER LOADER is an integral part of the NOS/BE 1 Operating System. The user is offered these types of loading: Core Image Loading, Object Module Loading, Basic Loading, Segmentation, Overlay Generation. The user controls the CYBER LOADER through Control Statements. User Calls, and LOADER Object Directives.
UPDATE	1		- Included in Operating System ** Field length: 40_8K	UPDATE provides a means of maintaining source decks in conveniently updatable compressed format. With UPDATE directives and control card options, the user directs the process of creating a program library, correcting it, and copying the updated programs to a compile file for subsequent use by assemblers and compilers.
8-BIT SUBROUTINE PACKAGE		See Description	- Included in Operating System ** Field length: 12_8K to 15_8K	A group of routines designed to enable a FORTRAN or COBOL programmer to read, write, and manipulate sequential files and data using 8-bit character sets. Supports IBM 360/370 sequential format (tape) files, EBCDIC and ASCII punched card decks, and extended character set (95-character ASCII) print files. I/O routines enable translation between external and internal data types and character sets, and operate on a record-by-record basis. A set of utility routines manipulate character strings in Display Code, ASCII, and EBCDIC. Complete character set translation and mixed character set string comparison routines are provided. Two additional routines allow improved file utilization; they compress 8-bit data from internal working form to a more compact form for storage, then expand it again. Additional Supported Hardware: 595-6 Print Train (95 Graphics) 659-X Tape Transport
MAINTENANCE PACKAGE FL21-02			** Field length: 70_8K (for SYMPL)	The Maintenance Package is a collection of programs necessary and sufficient to install and maintain the Operating System and Product Set. SYMPL, a high-level system programming language, is part of the Maintenance Package.
CYBER CROSS SYSTEM FL21-03	1			Provides for maintenance and compilation of Communication Control Program Software.
MULTI-MAINFRAME MODULE FL21-05	1	See Description	- Includes the CYBER 76 NOS/BE 1 STATION ** Required field length: 26_8K	Provides for link communication between one CYBER 70L/170 and one other CYBER 70L/170 or to one other CYBER 70L/170 and a CYBER 76. Provides for sharing permanent files on 844 RMS between two CYBER 70L/170's. The shared 844 RMS feature has been implemented to enable the sharing of permanent files between UP to 4 CYBER 70L/170 mainframes. However, this feature has only been tested and validated on a dual configuration. Link communications uses concepts of logical identifiers, allows transmittal of permanent files, linked operator displays and commands, and load leveling between systems. Linking hardware may be via 6683-2 coupler pairs or 5000K minimum ECS or both. Configurations supported by the Link Interface can be considered in two categories - those which are fully supported and those which are supported with restricted capabilities. These are illustrated below. CONTINUED NEXT PAGE

GENERAL NOTES

** Minimum field length to process a "Representative Job"

LEGEND * INDICATED HARDWARE IS IN ADDITION TO THE "MINIMUM REQUIRED MACHINE HARDWARE" SHOWN IN THE OPERATING SYSTEM CONFIGURATOR NO ENTRY IN THIS COLUMN INDICATES THAT THE PRODUCT WILL OPERATE WITHIN THE OPERATING SYSTEM REQUIREMENTS

COMPUTER	SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATOR FOR NOS BE 1	

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
MULTI-MAINFRAME MODULE FL621-05 CONTINUED				Fig. 1 - Fully Supported Configurations  * This is a station capability only Fig. 2 - Configurations with Restricted Capabilities  The CYBER 170's can be replaced by CYBER 71, 72, 73, 74's or by 6000's. The distinction between full support and restricted capabilities is due to the lack of full direct connections in the latter case. Specifically, files cannot be automatically routed to a mainframe which is not directly connected to the mainframe where the files are located. Similarly, the status of jobs running in a non-directly connected mainframe cannot be displayed or modified by the operator.
INTERCOM FL621-07	5		- See Communication and Terminal sections for support detail	INTERCOM 5 is externally compatible with INTERCOM 4. INTERCOM 5 provides reduced core requirements when running remote batch jobs which improves as the number of active remote devices increases. In conjunction with CCP 4B, asynchronous terminals are supported up to 9600 BPS. 2780/3780 terminals and HASP protocol are supported in addition to the Mode 4 (200 UT) protocol. Only 255X communication equipment is supported. o Required Hardware: A CYBER system meeting the minimum requirements for NOS/BE with one dedicated PPU and channel plus a 2550 subsystem with appropriate communications linkage. o Hardware Supported: o 2550-2, 2551-X o Terminals: (See Hardware Diagrams for allowable configuration) CDC Model 713 Conversational Display Terminal or Model 33, 35, 37 or 38 Teletype terminal with optional paper tape reader and punch. Model 711, 714 or 214-11, 214-12, 217-11, 217-12, 217-13, 217-14 display terminal. 200 users terminals - ANSI or BCD (217-X, CY18-XX). 711-10 requires 711-102. 734-1 Batch Terminal. 241 Graphics Terminal. Medium Speed Batch Terminal. - 732-12 Low Speed Batch Terminal. - 731-12 777-3 Cybergraphics Terminal. Tektronic 4010/4014 Low Cost Graphic Terminals. 2780/3780 Terminals. HASP Work Station. o Additional Hardware: A maximum of six PPU's with dedicated channels and multiplexors.
ALGOL-60 FL621-08	5			The ALGOL compiler supports the full ALGOL-60 language specification and includes the Knuth I/O specifications. It does not include all the language extensions or interactive capabilities of ALGOL-60 4. It does support automatic field length management and performance is better than ALGOL-60 4.
INTERACTIVE BASIC FL621-11	3		** Field length: 30_8K	The BASIC subsystem enables both novice and experienced programmers to readily create and execute interactive programs in time sharing environment. This version of INTERACTIVE BASIC provides many capabilities not available in BASIC 2. For example, word addressable random I/O, enhanced print formatting, multiple argument and multiple line user defined functions, extended string variable names, a string concatenation operator, logical connective operators and access to external non BASIC subroutines.
SORT/MERGE FL621-13	4	- 2 Tapes - None	** Field length: 40_8K - Tape Option - Disk Option	Provides significantly increased speed, improved reliability, use of new hardware instructions, 7000 compatibility, and an interface with CYBER RECORD MANAGER 1. OPERATING OPTIONS DISK o Additional disks will provide improved: - Speed o Two additional tapes will provide improved: - Speed o Additional core will provide improved: - Speed o Three tapes can be used for disk overflow, others for input or output.

CONTINUED NEXT PAGE

GENERAL NOTES

** Minimum field length to process a "Representative Job"

LEGEND * INDICATED HARDWARE IS IN ADDITION TO THE "MINIMUM REQUIRED MACHINE HARDWARE" SHOWN IN THE OPERATING SYSTEM CONFIGURATOR. NO ENTRY IN THIS COLUMN INDICATES THAT THE PRODUCT WILL OPERATE WITHIN THE OPERATING SYSTEM REQUIREMENTS.

COMPUTER	SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATOR FOR NOS/BE 1	

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
SORT/MERGE F621-13 CONTINUED				TAPE • Two additional tapes are required • More additional tapes will provide improved: - Speed • Additional core will provide improved: - Speed • Tapes can be assigned to disk.
FORTRAN EXTENDED F621-14	4			ANSI-66 Fortran compatible.
FORTRAN EXTENDED F621-15 CYBER 171-175 MODELS ONLY. CYBER 176 REQUIRES F621-77 OR F621-78 INSTEAD OF F621-14 OR F621-15	4		- Includes Single Pass Compile Capability	Includes all the features of FORTRAN EXTENDED 4 plus Interactive Option Compiler
COBOL F621-16	5		** Field length: 60_8K - Requires SORT/MERGE 4	The COBOL 5.0 compiler addresses the 1974 ANSI specifications. The initial release implements the highest level of 10 of the 12 modules defined in the specification. The COMMUNICATIONS module is not included and only a subset of the low-level of the INTER-PROGRAM COMMUNICATIONS is included. COBOL 5 is a companion product to COBOL 4 and as such is not fully compatible with its predecessor. A COBOL 4 to COBOL 5 conversion aids program exists which can be used to help bridge the gap. (F621-17). In addition to addressing the 1974 specification, COBOL 5 includes the following added capabilities: • Direct Access, Actual Key and Word Address file organizations. • Secondary (for ECS access) and Common storage sections. • INITIALIZE verb to set Data Division items to initial values. • Floating point numeric literals. • Variable length records. • Ability to set and clear sense switches. • File Organizations other than sequential in the GIVING phrase of SORT or MERGE. • Ability to change collating sequences dynamically with the SET statement. • QUOTE IS APOSTROPHE can be specified to change the quote character. • Duplicate alternate keys can be ordered by prime key. • FILLER can be used anywhere in a record. • Ability to set character codes for files. • COMP-1 and COMP-2 converted to readable format with signs for DISPLAY.
PL/I F621-18	1			This version is a non-optimizing compiler for an upwards compatible subset of the ANSI/ECMA Language. Missing features will include the DEFAULT statement, aggregate operations and data directed I/O.
INTERACTIVE DEBUG PACKAGE F621-19	1			This product will provide interactive, symbolic level, debugging capabilities such as: - Conditional breakpoints and traps for temporarily suspending program execution. - Program suspension via terminal interrupts. - Commands to interrogate and change program memory. - Commands to restart program execution at any given point.
CYBER DATABASE CONTROL SYSTEM F621-20	2			CDCS 2 under NOS/BE 1 allows multiple independent programs (at separate user control points) to concurrently update a data base using the Indexed Sequential and Multiple Index Processor access methods of CRM with lockout control at the logical record level. It provides data privacy at the file level.
DATA DESCRIPTION LANGUAGE F621-21	3			DDL 3 under NOS/BE 1 is an extension of DDL 2 including support of Area-Level privacy and improved data independence between application programs and COBOL subschema compilations. DDL 3 generates record mapping code to improve CDCS 2 record mapping performance.
TIGS F621-41	1			Provides interactive graphics capabilities with terminal independence provided via post-processors to a neutral display file. Initial release includes post-processor to Tektronix 401X terminals.
777/IGS CYBER GRAPHICS (HOST SOFTWARE) F621-42	2	See Description	- Requires B321-01	Provides Host CYBER Software support for the 777 CYBER GRAPHICS terminal and the 774-2 Digigraphic IV Console with controller using the 6673/6674 multiplexer. Supports full graphic and interactive capabilities and optional remote batch input/output.
777/IGS TERMINAL RESIDENT B321-01	2	See Description		Provides resident controller software support for the 777 CYBER GRAPHICS terminal and for the controller of 774-2 Digigraphic IV Console. Supports full graphic, interactive, and optional remote batch input/output capabilities of the 777 and 774-2.
777/IGS 3D OPTION F621-43	2	See Description	- Requires F621-42 B321-01, B321-02	A compatible option for 777/IGS users can construct and interact with three-dimensional pictures using the same types of techniques as used in 777/IGS. The routines for two-dimensional IGS are unchanged by 3D/IGS. Call to 3D/IGS can be mixed with 777/IGS to permit both 2D and 3D operations to be performed in the same application.
UNIPLOT† F621-47	1			Provides for creating, previewing and modification of files for display or plotting. Device independence provided by post-processors to a neutral plot file.
APEX III F621-49 Thru F621-54	1			APEX III is a program for the solution of linear programming problems. These problems involve the minimization or maximization of a linear function subject to equality or inequality constraints. A large number of common optimization problems may be formulated as linear programming problems, e.g., refinery scheduling, distribution and optimization, warehouse location, optimal planning. Requires FORTRAN EXTENDED 4.

CONTINUED NEXT PAGE

GENERAL NOTES

** Minimum field length to process a "Representative Job"

LEGEND * INDICATED HARDWARE IS IN ADDITION TO THE "MINIMUM REQUIRED MACHINE HARDWARE" SHOWN IN THE OPERATING SYSTEM CONFIGURATOR NO ENTRY IN THIS COLUMN INDICATES THAT THE PRODUCT WILL OPERATE WITHIN THE OPERATING SYSTEM REQUIREMENTS

COMPUTER | **SOFTWARE PRODUCT SET** DESCRIPTION AND HARDWARE CONFIGURATOR FOR NOS/BE 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
APEX III CONTINUED				The product set is composed of four products: 1. Out-of-Core Subsystem. The Base System plus an out-of-core capability of using extended core storage, large core memory, or disk, as additional storage. 2. Mixed Integer Programming. Provides a mixed integer programming capability including binary and general integer variables and special ordered sets, Type 1 and 2. Requires out-core subsystem. 3. Matrix Reduction. Provides a matrix reduction (reduce) capability to the APEX III package including regeneration of solution to the original problem. Requires out-core subsystem. 4. Parametrics Option. Provides the capability of varying the requirements vector or the cost function as a linear function of two requirements vectors or cost functions. Requires out-core subsystem.
APT IV F621-55	2		- Requires FORTRAN EXTENDED	A production system for the generation of APT (Automatic Programmed Tools) cutter location output. Has the following features: sculptured surfaces, parametric surface capability, inclusive subscripts, language capabilities (literal string, CL print/on or off) and bounded geometry. Compatible with the ALRP/CAMI version of APT IV (A4V3).
CYBER DATABASE CONTROL SYSTEM F621-57	1		** Field length: 20_8K to 34_8K - Plus users program, CRM and buffers	The nucleus of the DMS 170 Data Management System, CDCS is the central traffic controller in a data base environment and includes Data Base Utilities 1. It provides the COBOL user with five basic functions: 1. Full data independence through a CODASYL system of schema and subschema as described in the Data Description Language (DDL 2). 2. Central control of logging and recovery in conjunction with Data Base Utilities (DBU 1) included in DDL 2. 3. Central monitoring of data base activity in order to invoke data base procedures as specified in the Data Description Language (DDL 2). 4. Validation of data before being stored in the data base according to user-defined validity checks. 5. Processing of relations which link records across files. Field length for representative user job calling CDCS and processing one IS file: Load 103_8K. Execute 64_8K. Field length includes user program and CRM.
DATA DESCRIPTION LANGUAGE F621-58	2		** Field length: 40_8K plus buffers	DDL 2 allows for the specification of a data base schema as well as COBOL and QUERY UPDATE subschemas for use in a data base environment. These are used at execution time by QU, COBOL and CDCS to provide data independence, logging information, data validation, processing of relations, and criteria for invocation of data base procedures. Includes Data base Utilities (DBU).
GPSS-V F621-59	1			General purpose simulation system is designed for modeling of real situations as affected by changes over time intervals and corresponding events which occur during the simulation. Features free format input. Floating point number capabilities. No IMS available.
QUERY UPDATE F621-62	3		** Field length: 62_8K (non-MIP updating) plus buffers 71_8K (MIP updating)	This product replaces all the capabilities of QU 2 and brings with it a major breakthrough in performance and power. Using the Boolean List Processor, it interfaces directly to CRM's Multiple Index Capability to provide optional accessability of qualifying records via alternate access paths and indexes. The report writer capability has also been enhanced by a "compile" option in addition to its normal interpretive mode. Additional features are (1) cross-file relationships (2) degree of commodity with CDCS 1 for enhanced recovery (3) query only capability making use of IS, DA and MIP read-only packages of CRM (4) character-string processing.
SIMSCRIPT F621-63	3		** Field length: 50_8K - Requires either FORTRAN compilers object time routines.	Developed primarily for simulation programming; the language may be used to describe a situation which changes over some time interval and to test its operation in comparison to others.
TOTAL UNIVERSAL F621-64	1			A data base management system developed by Cincom Systems, Inc. embodies a network data structure philosophy. Relationships from one file may be made on a direct basis to other files within the data base using a chaining/threading technique. Files may be managed on an integrated basis within one data base. TOTAL includes a Data Base Definition Language (DBDL) which is used to describe and declare the data base and a Data Manipulation Language (DML) which functions in conjunction with the following host languages: (COBOL, FORTRAN and COMPASS) at the CALL or MACRO level. It is modular and evolutionary in design and use, provides a significant degree of data independence, can eliminate data redundancy, permits data relatability, ensures data integrity reliability and data base recovery. Also achieves optimum performance and efficiency through input/output buffer pool sharing and the elimination of external directories and indexes. TOTAL UNIVERSAL runs within the users field length.
TOTAL/ATHENA F621-65	1		- Requires TOTAL UNIVERSAL	High level interactive/batch, retrieval/update facility for Total Data Base Management system. Permits data or record selection from multiple TOTAL files based on multiple selection criteria. Includes a report writer and plot generator.

GENERAL NOTES

** Minimum field length to process a "Representative Job"

LEGEND * INDICATED HARDWARE IS IN ADDITION TO THE "MINIMUM REQUIRED MACHINE HARDWARE" SHOWN IN THE OPERATING SYSTEM CONFIGURATOR. NO ENTRY IN THIS COLUMN INDICATES THAT THE PRODUCT WILL OPERATE WITHIN THE OPERATING SYSTEM REQUIREMENTS.

COMPUTER	SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATOR FOR NOS/BE 1 F621	

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
PERT/TIME F621-67	2	- 16K Core - 3 Tapes	** Minimum field length: 72_8K - Recommended field lengths: 100_8K - One additional tape will provide improved: - Speed	Uses a time-oriented network structure to produce a variety of reports reflecting the actual and scheduled progress of a project.
NOS/BE FOR CYBER 176 F621-76	1			See F621-01 for description.
FORTRAN EXTENDED FOR CYBER 176 F621-77	4			Fortran level II arrays can be resident in extended memory.
FORTRAN EXTENDED FOR CYBER 176 F621-78	4		- Includes Interactive option	Fortran level II arrays can be resident in extended memory.
NOS/BE FOR CYBER 175-1XX, 2XX, 3XX F621-86	1			See F621-01 for description.
COMMUNICATION CONTROL/ INTERCOM PROGRAM N222-01	3			The Communications Control/INTERCOM Program provides the system software residing in the 2550 processor. This software manages the transmission of messages between a host processor and the communications network. Interfaces only to INTERCOM 5, Asynchronous terminals are supported to 9600 bps. Mode 4 (200 UT), 2780/3780 terminals and HASP protocol are supported. Auto terminal defect is provided.

GENERAL NOTES

LEGEND * INDICATED HARDWARE IS IN ADDITION TO THE "MINIMUM REQUIRED MACHINE HARDWARE" SHOWN IN THE OPERATING SYSTEM CONFIGURATOR NO ENTRY IN THIS COLUMN INDICATES THAT THE PRODUCT WILL OPERATE WITHIN THE OPERATING SYSTEM REQUIREMENTS

NOS/BE 1
PUBLICATIONS

NOS/BE 1 OPERATING SYSTEM	
NOS/BE 1	
RM	60493800
SPRM	60494100
OG	60493900
IH	60494300
IH Addendum for C176	60454830
DH	60494400
UG	60494000
RM (On-Line Maintenance Software)	60453900
IH (Applications Software)	76071100
RM (On-Line Diagnostics)	60364800
SIFT	
PSB	60496500
Station	
OG/RM	60494200
Loader	
RM	60429800
IN	60449800
Update	
RM	60449900
IN	60450000
CYBER Common Utilities	
RM	60495600
Common Memory Manager	
RM	60499200
NOS/BE 1 Product Set	
Data Communications	
INTERCOM 4	
RM	60494600
UG (SCED)	60494800
Interactive Procedure Guide	60495200
RM (MUJ CAP)	60494700
UG (FTN)	60495000
UG (COBOL)	60495100
Interactive Command Summary	60495300
Remote Batch Command Summary	60495400
Communications Control Program 1	
RM	60470000
OG	60470100
DH	60470200
Support Programs	
CYBER CROSS System 1	
RM	96836000
RM PASCAL Compiler	96836100
RM Marco Assembler	96836500
RM Micro Assembler	96836400
DH	96836300
RM Link Editor	60471200
GIM	96836200
3000L to CYBER 70 Conversion Aids 1	
FORTRAN	19980600
COBOL	19980700
UG	19980900
COBOL 4 to COBOL 5 Conversion Aids	
RM	19265021
8-Bit Subroutines	
RM	60495500
CYBER Record Manager	
RM	60495700
UG	60495800
UG (FORTRAN)	60495900
UG (COBOL)	60496000
UG (ALGOL)	60496700
SORT/MERGE 4	
RM	60497500
IN	60497600
MATH Science Library	
RM	60327500
Compilers	
ALGOL 4	
RM	60496600
BASIC 3	
RM	19983900
COBOL 4	
RM	60496800
IN	60497000
COBOL 5	
RM	60497100
UG	60497200
IN	60497300
UG Report Writer	60496900
COMPASS 3	
RM	60492600
IN	60492800
FORTRAN Extended 4	
RM	60497800
UG (Debug)	60498000
RM (Common Library Math Routines)	60498200
IN	60497900
SYMPL 1	
RM	60496400
Data Management	
DMS-170	
RM (CDCS 1)	60498700
GIM	60498900
UG (Data Administrator)	60499100
PSB (Relational Data Base)	60480700
Data Base Utilities	
RM	60498800
DDL 2	
RM (Vol. I)	60498400
RM (Vol. II - COBOL)	60498500
RM (Vol. III - QU)	60498600
RM (DDL/QU)	60359200
FORM	
RM	60496200
Query Update 3	
RM	60498300
UG	60387700
UG (Programmers)	60499000
NOS/BE 1 APPLICATIONS	
APT IV	
RM	17326900
UNIPLOT	
RM/UG	60454730
GPSS V	
RM	76078800
GIM	84003900
241 IGS	
RM	17307300
274 IGS	
RM	60358800
OG	17303100
GIM	44616700
UG	44629300
777 IGS	
RM	17321800
OG	17322600
GIM	17322400
UG	17322500
777/3D IGS	
RM	17326500
LCGT/IGS	
RM	17322800
GIM	17322700
RM (Data Handler)	17322100
RM (Applications Executive)	17322200
APEX III	
RM	76070000
SIMSCRIPT 1.5	
RM	60358500
TOTAL Universal	
RM	76070300
PERT/TIME	
RM	60133600
GODAS	
UG/RM (BASIC GODAS)	76076200
UG/RM (Display Dialog S/S)	76076300
UG/RM (TEMPLATE S/S)	76076400
UG/RM (Plotting S/S)	76076500
UG/RM (3D Drawing S/S)	76076600
UG/RM (Direct Drawing)	76076700

LEGEND

RM	REFERENCE MANUAL
OG	OPERATOR'S GUIDE
UG	USER'S GUIDE
SPRM	SYSTEM PROGRAMMERS REFERENCE MANUAL
IN	INSTANT
GIM	GENERAL INFORMATION MANUAL
IH	INSTALLATION HANDBOOK
PSB	PROGRAMMING SYSTEM BULLETIN
DH	DIAGNOSTIC HANDBOOK

NOTE

THE AVAILABILITY OF THE MANUALS LISTED ABOVE MUST BE VERIFIED IN THE "LITERATURE AND DISTRIBUTION SERVICES CATALOG"

OPERATING SYSTEM HARDWARE REQUIREMENT FOR SCOPE 2.1

Minimum System

- 176-21
- One Station
- - 6000/CYBER 70/170 Computer Station
- On-Line Rotating Mass Storage (RMS)
- - 819-1/21 with 7639-1

or

- - Four - 844-XX with 7X54

NOTE: One 7054/7154/844-XX, one 7021/7611/66X Tape Subsystem run CMSE (Card Reader and Tape can be shared with station).

Minimum Station

6000/CDC CYBER 70
Computer Station: 1-Model 72-72
1-7683-1
1-6683
Plus NOS/BE Minimum Hardware

CDC CYBER 170
Computer Station: 1-Model 171-12
1-7683-1
1-6683-2
Plus NOS/BE Minimum Hardware

Options

- CM/EM Additons
- CYBER 170 PPU's
- CYBER 176 PP's
- CYBER 170 I/O Channels
- CYBER 176 I/O Multiplexer Channels

- Multiple Stations
- On-Line Rotating Mass Storage
- On-Line Magnetic Tapes
- Station Peripherals
- Station Communiation Equipment
- Multiple CYBER 170 Model 176 Link

Basic CYBER 176 Mainframe

- Multifunction CPU
- 131K CM
- 524K to 2097K EM (Extended Memory)
- 10 CYBER 170 PPU's
- 12 CYBER 176 I/O Channels
- 4 CYBER 176 PP's
- 4 CYBER 176 I/O Multiplexer Channels
- Operator's Console
- One Data Channel Converter (DCC)
- 1 7054/7154/7654/844-XX Disk {to run CMSE}
- 1 3447/405 card reader {can be shared with station}
- 1 7021/7622/66X Tape {can be shared with station}

I/O Channel Usage Rules

Channels 2 and 3, 4 and 5, 6 and 7 must be configures as channel pairs with a single combined CM I/O buffer, referred to as paired high speed channels.

Channels 10 through 17, must be configures as single channels with an input and output buffer for each channel.

1. The followng is the channel availability and addition rules:
   - 4 CYBER 176 I/O multiplexer Channels (High Speed) are part of the basic mainframe
   - In addition to the above, optional high speed or normal channels may be added one at a time as follows:
     - Up to 8 high speed channels {Option 10238-1) may be added on channels 6_8 through 15_8 for a total 12.
     - Up to two Normal channels (Option 10348-2 may be added on channels 16_8 and 17_8
2. 844-2/21 with 7654-1/21 requires a CYBER 176 PP channel modification (Option 10293-2). Only Channels 10_8 through 15_8 may be used.
3. 819-1/21 MCD Mass Storage Subsystems require paired high speed channels (on Channels 2 through 7).
4. 6000/CDC CYBER stations or a multiple CYBER 170 Model 176 link require a single high speed or normal channel. This means stations can only be connected (not paired) to channels 10 through 17_8.
5. Magnetic tape controllers require one or two high speed or normal channels. This means magnetic tape controllers can only be connected (not paired) to channels 20 through 17_8. A 7622-1 magnetic tape controller requires a PPU channel modification, standard option 10293-2, for each channel used.

CYBER 176 PP Usage Rules

1. 7622-1 Magnetic Tape Controllers require one CYBER 176 PP.

2. 7622-2 Magnetic Tape Controllers require two CYBER 176 PP's.

3. A combination of one, two, or three 6000/CDC CYBER Stations or multiple CYBER 170 Model 176 links can connect to each CYBER 176 PP.

4. 844-2/21 requires one CYBER PP for Single access mode operation or two PP's for dual access operation.

5. 819-1/21 requires two CYBER 176 PP's for each single access mode operation. The maximum number of single data accesses is three and drives is twelve (limited by the available paired high speed I/O multiplexer channels).

On-Line Mass storage Usage Rules

1. Minimum Rotating Mass Storage
   4 - 844-2 or 844-21/7654-1 or 7654-21 and 4 881's or
   1 - 819-1 or 819-21/7639-1

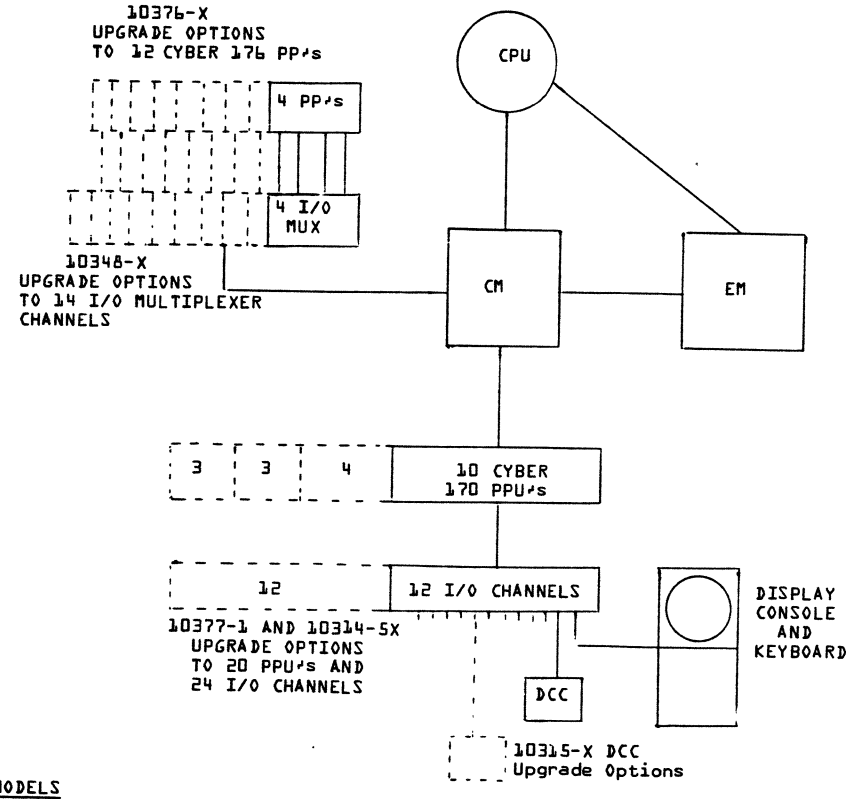
2. 844-2/21's may be installed in dual or single access mode. Dual access mode requires two I/O multiplexer channels. Single access mode requires one I/O channel. Standard option 10293-2 is required for each date stream used.

3. 819's may be installed in a single or dual access mode. Single access mode requires two paried high speed multiplexer I/O channels. Dual access mode requires four paired high speed I/O multiplexer channels. The time shared access feature of the 7639 controller is not supported by Scope 2.1.

4. The number of paired high speed I/O multiplexer channel limits the number of 819's that may be installed on a model 176. (Refer to I/O channel usage rules).

5. The number of 844's that may be installed on Model 176 by the 6 channels that may be used. (Refer to I/O Channel Usage Rules). A software restriction in SCOPE 2.1 limits the number of 844 drives by the number of on-line tape/disk drives that can be supported.

CDC CYBER 170 MODELS 176-2X
CONFIGURATIONS



MODELS

MODEL	CM	EM (EXTENDED MEMORY)
176-21	131K	524K
176-22	131K	1048K
176-24	131K	2097K

NOTES

1. 176-8,-12, -16 ARE NOT SUPPORTED BY SCOPE 2.1
2. SCOPE 2.1 ONLY SUPPORTS 131K CM.

EM OPTIONS

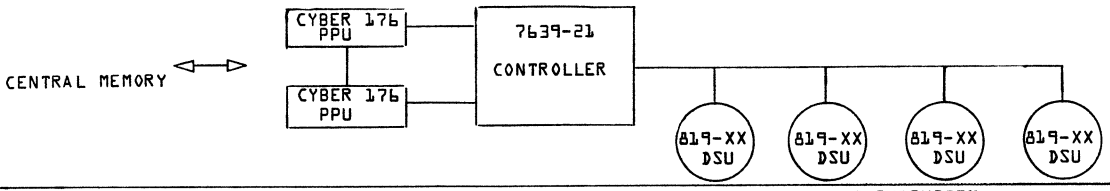
524K TO 1048K	10375-1
1048K TO 2097K	10376-1

CYBER 76/CYBER 176 CONVERSION OPTIONS

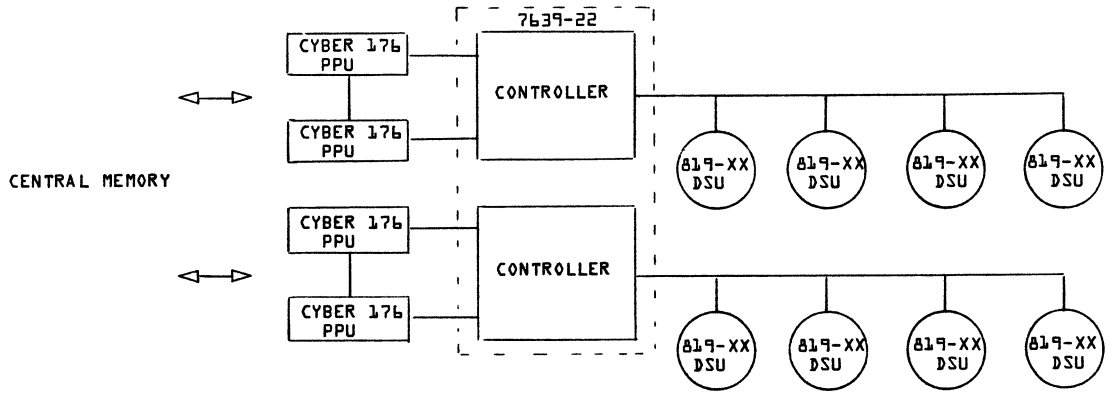
CYBER 76 to CYBER 176	10378-1
7602-1 TO 10376-1	10379-1

7639-21/22
DISK STORAGE UNIT CONTROLLERS

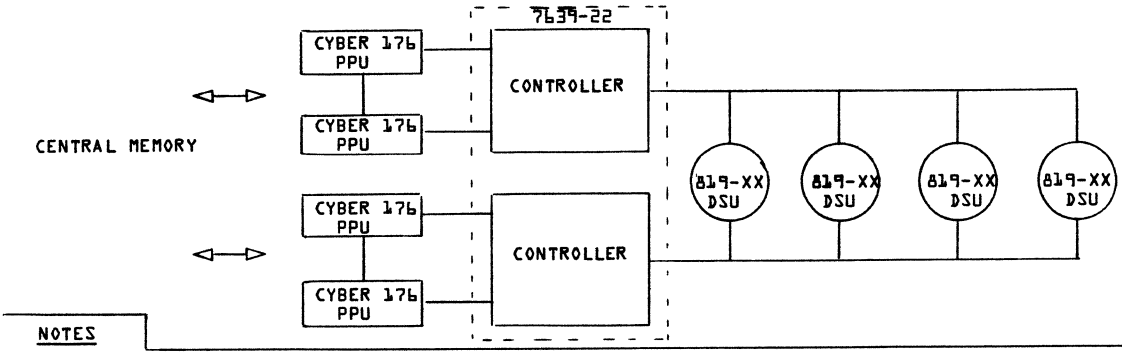
CONFIGURATION (1): SINGLE DATA STREAM 7639-21 DISK STORAGE SUBSYSTEM



CONFIGURATION (2): TWO SINGLE DATA STREAMS 7639-22 DISK STORAGE SUBSYSTEM



CONFIGURATION (3) DUAL DATA STREAM 7639-22 DISK STORAGE SUBSYSTEM



NOTES

(1) MAXIMUM NUMBER OF 819-1/11/21 DRIVES SUPPORTED IS DEPENDENT UPON THE CONFIGURATION(S) SELECTED. CYBER 176 WILL SUPPORT THE FOLLOWING CONFIGURATIONS:

THREE SINGLE DATA STREAMS OR
ONE SINGLE DATA STREAM AND ONE DUAL DATA STREAM

EXAMPLES - THREE SINGLE DATA STREAMS CONFIGURED AS IN (1) ABOVE WOULD SUPPORT A MAXIMUM OF 12 DRIVES.

(2) EACH SINGLE DATA STREAM REQUIRES TWO HI-SPEED MULTIPLEXER CHANNELS.

(3) EACH DUAL DATA STREAM REQUIRES FOUR HI-SPEED MULTIPLEXER CHANNELS.

MASS STORAGE
ON-LINE
819-XX (NOTE 3)

MASS STORAGE
REMOVABLE
844-2 OR 844-21

SINGLE ACCESS

UP TO 3 ADDITIONAL 819-XX

819-XX DSU

7639-21 CONTROLLER

2 PPU ON 2 HIGH - SPEED CHANNELS

DUAL ACCESS (NOTE 2)

UP TO 3 ADDITIONAL 819-XX

819-XX DSU Note-2

7639-22 CONTROLLER

2 PPU ON 2 HIGH - SPEED CHANNELS

2 PPU ON 2 HIGH - SPEED CHANNELS

CDC CYBER 170 MODEL 176

SINGLE ACCESS

UP TO 7 ADDITIONAL 844-2 or 844-21/881

881

844-2 or 844-21

Note-1 7654-1, 21

PPU

CDC CYBER 170 MODEL 176

DUAL ACCESS Note-2

UP TO 7 ADDITIONAL 844-2 or 844-21/881

881

Note-2 844-2 or 844-21

Note-1 7654-1,21

Note-1 7654-1,21

PPU

PPU

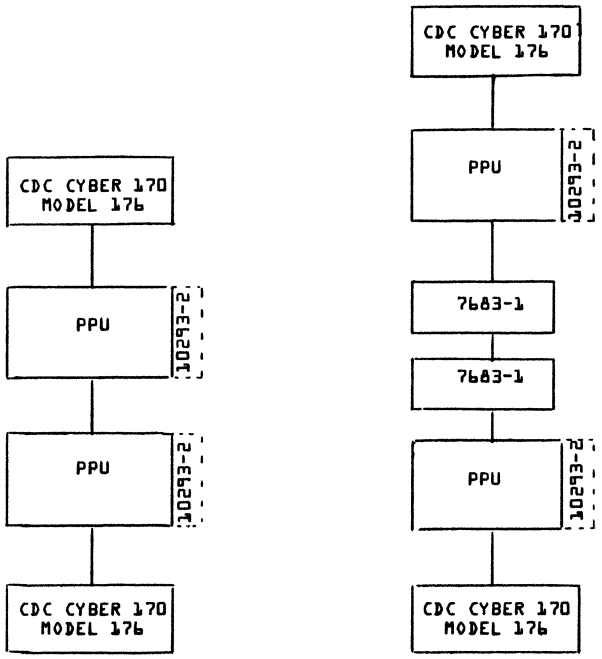
NOTES:

(1) SECOND ACCESS IS AVAILABLE FOR ATTACHMENT TO A SECOND PPU IF DESIRED FOR REDUNDANCY. OPTION 10293-1 IS REQUIRED FOR EACH PPU USED. THIS DOES NOT IMPLY SIMULTANEOUS USE OF BOTH CHANNELS.

(2) A SOFTWARE RESTRICTION REQUIRES THAT ALL 819-XX or 844-2/21 UNITS IN A DUAL ACCESS (2 X N) CONFIGURATION BE SELECTABLE FROM BOTH CONTROLLERS WITH THE SAME PHYSICAL DISK ADDRESS. A UNIT CANNOT BE CONNECTED TO ONE CONTROLLER ONLY IN A DUAL ACCESS CONFIGURATION.

(3) ONE DUAL ACCESS 819-XXCONFIGURATION OR TWO SINGLE ACCESS 819-XX CONFIGURATION ARE ALLOWED ON A 7639-22 CONTROLLER BUT NOT BOTH.

MULTIPLE CYBER 170 MODEL 176 LINK

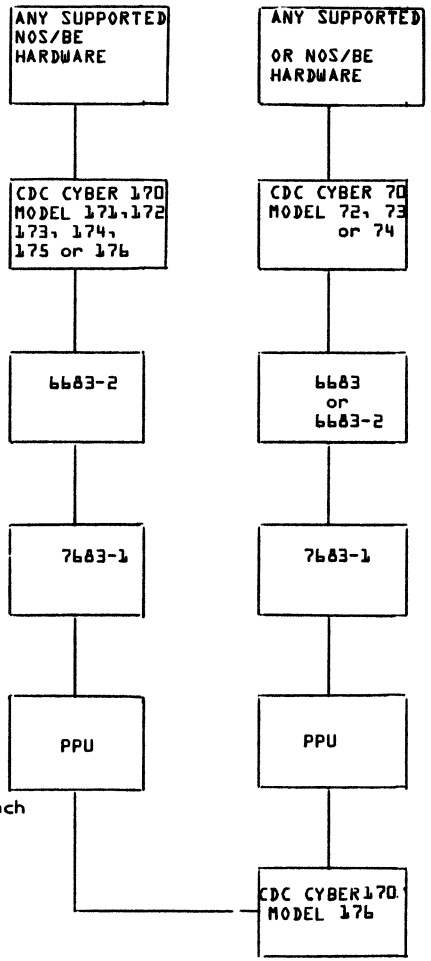


1. Standard option 10293-2, PPU channel modification is required for each PPU when the cable distance between the PPUs exceeds 100 feet but does not exceed 180 feet.

2. Two 7683-1's are required when the cable distance between the PPUs exceeds 180 feet, but does not exceed 1200 feet. With standard option 10293-2 in each PPU and two 7683-1's, the distance may be up to 1360 feet.

LOCAL UNIT RECORD EQUIPMENT

CDC CYBER STATION



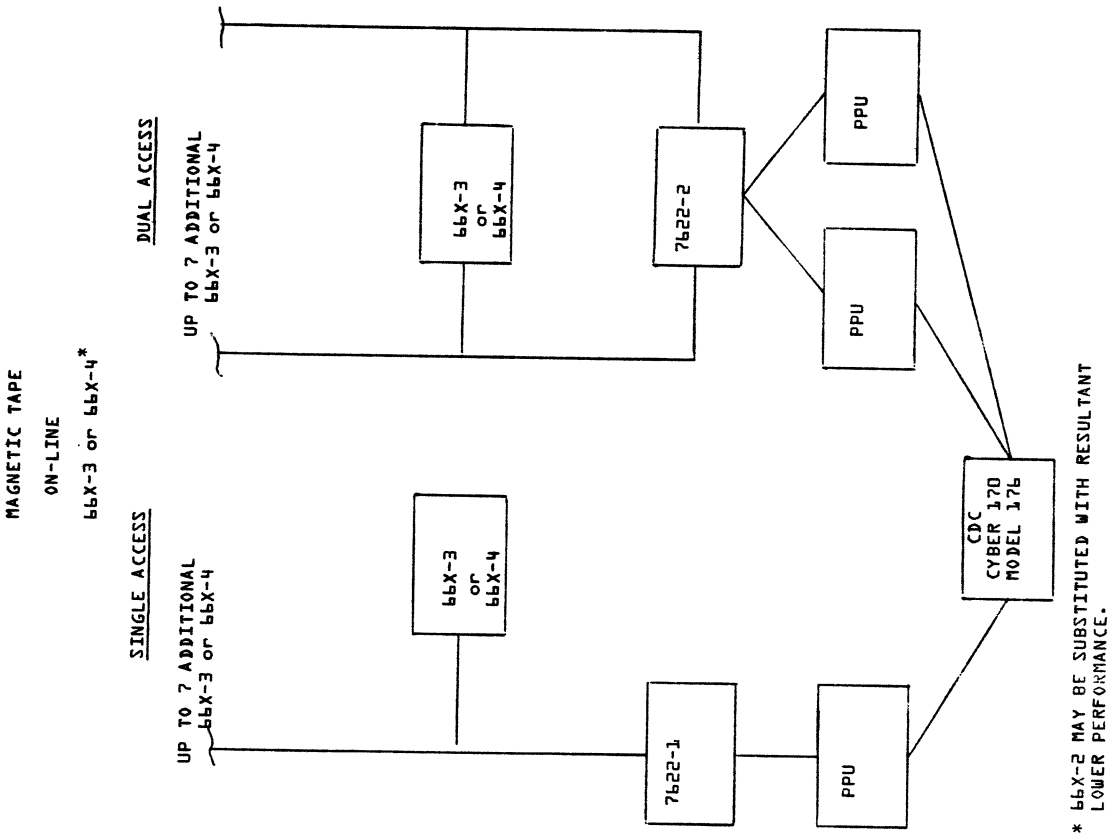
MINIMUM STATION

- o 7683-1
- o 6683 or 6683-2
- o CDC CYBER 70/170 MODEL 72, 73 or 74/ 172, 173, 174, 175 or 176
- o MINIMUM NOS/BE HARDWARE *

OPTIONS

- o ADDITIONAL NOS/BE HARDWARE*

* SEE NOS/BE HARDWARE CHARTS



* 66X-2 MAY BE SUBSTITUTED WITH RESULTANT LOWER PERFORMANCE.

COMPUTER SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATION NOS/BE 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
SCOPE 2 G122-01	2.1		See operating System Hardware Configurator for SCOPE 2.1 G122-05 Requires G122-08, G122-03, G122-05	Multi-programming operating system with fast interrupt response time, LCM buffer management, a generalized station interface, and record manager. Its multi-programs jobs in SCM, SSM, LCM or LCME and the system disk. The supported internal code and file data structures are 6-bit display cost. Job initiation is on installation defined job class basis basis (job priority by default) while job execution is on a time-slicing basis within an input and output wait and priority discipline. I/O station support includes the 6000/CDC CYBER 71, 73, 74, and CYBER 170 Station, which provides the ability to laod job files, and dispose of output using local and communications facilities to drive both local and remote unit record equipment. Tape staging, 6000/CDC CYBER 72, 73, 74 and CYBER 170 permanent file access and communications capability are also provided by the 6000/CDC CYBER72, 73, 74, and CYBER 170 Station. (Station software is not included in the basic operating system package.) A system dayfile is maintained at central for time-accounting purposes. A recovery capability through a deadstart exists consisting of recovery of input/output queues, permanent files and memory or rolled jobs. Library maintenance routines, loader facilities and utility functions are included in the system. Magnetic tape I/O is supported on-line or may be staged into the system from the 6000/CDC CYBER 72, 73, 74 and CYBER 170 Station. In all cases the maximum block size is user-specified and limited by memory buffers available to the tape driver. ANSI labelled and unlabelled files are supported. Nine-channel tape interchange is supported by conversion to a 6-bit display code at the driver level. Magnetic tape formats are basically those of the 6000/CDC CYBER 72, 73, 74, and CYBER 170. Compatibility is directed towards the NOS/BE 6000/CDC CYBER 72, 73, 74, and CYBER 170 operating system. The Record Manager provides for generalized logical record/file management capability for both user and product set programs. Refer to the current S.A.B. for the latest SCOPE 2.1 released System. (SCOPE 2.1.5 Level 285 12/78).

COMPUTER SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATION NOS/BE 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
UPDATE				UPDATE is the maintenance system for SCOPE 2.1.
COMPASS	3		Included in Operating System Package. **Field Length: 42K CM 30_8K EM	A successor product to CDC CYBER 76 COMPASS 2.0 that assembles code for the central processor or a peripheral unit and that is a common product with 6000/CDC CYBER 72, 73, 74 and CYBER 170 COMPASS 3.
6000/CDC CYBER STATION(a)			Requires NOS/BE. Either a 6000 or CDC CYBER 70 Models 72-74, or CYBER 170 system may be a station.	This station provides the ability to load job files, stage tape files, access output from SCOPE 2 jobs, provide system-operator interaction, and use the remote batch comminication facilities of the 6000/CDC CYBER 72, 73, 74 or CYBER 170 (NOS/BE via INTERCOM).
FORTRAN EXTENDED G122-03	4		**Field length: 55_9K CM.	An extension of the CDC CYBER 76 FORTRAN EXTENDED 2.0 compiler which provides improved optimization and is a common product with 6000/CDC CYBER 72, 73, 74 and CYBER 170 FORTRAN EXTENDED 4 compiler. This product is required for maintenance of SCOPE 2.
COBOL G122-04	2		Requires G122-05, SORT/MERGE 1 **Field Length: 40_8K CM.	A data processing language that satisifies the ANSI COBOL X3.J4 requirements and in addition has language extensions to accommodate memory hierarchy such as SCM and LCM. The CODASYL subprogram capability is included and object code optimization is provided as an optional feature. The compiler may be used in an "ANSI only" mode. Mass storage lable processing, user magnetic tape label processing and multi-file/multi-volume capabilities are also provided.
SORT/MERGE G122-05	1			A flexible set of sort and merge routines capable of running in a multi-programming environment. It can be used by programs assembled in COMPASS, by the COBOL SORT Verb, or by a stand-alone control card system. This product is required for the SCOPE 2 permanent file audit utility and or operation of SCOPE 2 Permanent File archiving capability.
MAINTENANCE PACKAGE G122-08				The CDC CYBER 176 maintenance package is a collection of programs necessary to install and maintain the CDC CYBER 176 SCOPE 2 Operating System and Product Set.
SYMPL			**Field Length: 70_8K SCM	SMYPL is a programming language designed for use in writing compilers and system software. It is similar to JOVIAL which was derived from ALGOL-58.

COMPUTER SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATION NOS/BE 1

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
SIMSCRIPT G122-09	3		Requires G122-03 FORTRAN Extended	Consolidated Analysis Centers, Inc. (CACI) prepared this CDC version of SIMSCRIPT I.5. SIMSCRIPT is a language designed to simulate a real situation that changes over a time interval. Timing routine is automatically generated to track simulated time and call user routines at their scheduled times. Requires COMPASS and FORTRAN EXTENDED. No IMS is available. Chargeable to all customers.
ALGOL-60 G122-13	4	**Field Length: 60_8K SCM		A compiler that processes the ECMA/ANSI ALGOL 60 standard language and has the following features: o Upward compatible with ALGOL 3 (but has no interactive capability) o Common product with ALGOL 4.0 under NOS/BE o ECS/LCM array processing o Overlay capability o Extensive compile and execution time diagnostics o Object time symbolic dump, corss reference map, snap-trace capabilities o COMPASS and FORTRAN links o Improved execution time performance versus ALGOL 3
APEX-III				The product set is composed of four products:
APEX-III OUT-OF-CORE SYSTEM G122-20	1			1. Out-of-Core Subsystem. The Base System plus an out-of-core capability of using extended core storage, large core memory, or disk, as additional storage.
APEX-III MIXED INTEGER PROGRAMMING OPTION G122-21	1			2. Mixed Integer Programming. Provides a mixed integer programming capability including binary and general integer variables and special ordered sets, Type 1 and 2. Requires out-core subsystem.
APEX-III REDUCTION OPTION G122-22	1			3. Matrix Reduction. Provides a matrix reduction (reduce) capability to the APEX III package including regeneration of solution to the original problem. Requires out-core subsystem.
APEX-III G122-25	4		Includes Single Pass Compile	In addition to FORTRAN EXTENDED 4 (G122-03) includes Single Pass Option.
IMSL6 G122-27			Requires G122-03 or G122-25	The Mathematical and Statistical Library is a collection of FORTRAN subroutines and functional subprograms in the areas of mathematics and statistics.

SCOPE 2 Operating System	
SCOPE 2	
RM	60342600
UG	60372600
IH	60426100
OG	60455090
DH	60344100
Loader 1	
RM	60454780
SCOPE 2 Record Manager	
RM	60454690
On-Line Maintenance Program	
RM	60406200
CYBER 70L/170 Station	
O/RM	60494200
UPDATE	
RM	60448899
IN	60450000
SMM 3 (CYBER 70 model 76 and 176)	
RM	60373900
OG	60373800
CYBER 17X MSL Vol. 1	
RM	60495600
Common Products	
ALGOL 4	
RM	60496600
COBOL 2	
RM	60384200
COMPASS 3	
RM	60492600
IN	60492800
SC	60493000
FORTRAN Extended 4	
RM	60497800
IN	60497900
UG	60499700
UG (Debug)	60498000
Common Math Library	
RM	60498200
SORT/MERGE 4	
RM	60497500
IN	60497600
SYMPL 1	
RM	60496400
UG	60499800
IN	60482600
Applications Products	
Applications	
IH	76071100
APEX III	
RM	76070000
SIMSCRIPT I.5 3	
RM	97400200

LEGEND

RM	Reference Manual
OG	Operator's Guide
UG	User Guide
IN	Instant
GIM	General Information Manual
IH	Installation Handbook
PSB	Programming System Bulletin
DH	Diagnostic Handbook
SC	Summary Card
O/RM	Operator's/Reference Manual

/sPR4229-09

CONFIGURATORS

CYBER 70 configurators are divided into two operating systems: 1. NOS/BE 1 (pages 1-6) 2. NOS 1 (pages 7-end). Only the 'Operating System Hardware' sections are included. For Hardware Diagrams, Software Product Set Descriptions and Available Documentation refer to CYBER 170 configurators for NOS/BE 1 and NOS 1.

OPERATING SYSTEM HARDWARE REQUIREMENTS

Minimum System

- 72-13 OR 72-14*
- One Line Printer
- One Card Printer
- Two Tape Units
- Rotating Mass Storage
- - One 844-21 with one 881
  or
  - One 844-41 with one 883-60
  or
  - One 885

Options

- Alternate Mainframes
- CM Additions
- CPU Upgrade
- Additional CPU
- Extended Core Storage (ECS)
- PPU/I/O Channels
- Tape Units
- Line Printers
- Card Equipment
- Rotating Mass Storage
- Communication Equipment
- Remote CRT's
  Line Printers
  Card Equipment

Minimum System Rules

- Minimum System requires 65K of central memory.
- One of the two Tape Units is used for initial loading.
- During normal running, the Tape Units may be used for temporary storage and for Input and/or Output Queues.
- The System can reside on any mixed deivce types. Minimum capacity to support standard batch processing is 60 million characters. (The system itself occupies approximately 1.4 million characters.)
- System uses three PPU's on a dedicated basis. The remaining are used on a dynamic pool basis.
- Each CDC CYBER 70 Model 71, 72, 73 or 74 includes one operator display console and two data channel converters. The data channel converters are equivalent to 6681's.

Basic 71-1X Mainframe

- Unified CPU
- 65K to 131K CM
- 10 PPU
- 12 I/O Channels
- Interlock Register (ILR)
- Operator's Display Console
- 2 - Data Channel Converters

Basic 72-1X or 73-1X Mainframe

- Unified CPU
- Compare Move Unit (CMU)
- 65K to 131K CM
- 10 PPU
- 12 I/O Channels
- Interlock Register (ILR)
- Operator's Display Console
- 2 - Data Channel Converters

Basic 74-1X Mainframe

- 1 - Multi-function CPU
- 65K, 98K, 131K, CM
- 10 PPU's
- 12 I/O Channels
  Interlock Register (ILR)
- Operator's Console
- 2 - Data Channel Converters

Basic 71-2X Mainframe

- 2 - Unified CPU's
- 65K to 131K CM
- 10 PPU
- 12 I/O Channels
- Interlock Register (ILR)
- Operator's Display Console
- 2 - Data Channel Converters

Basic 72-2X or 73-2X Mainframe

- 2- Unified CPU's
- Compare Move Unit (CMU)
- 65K, 98K or 131K CM
- 10 PPU's
- 12 I/O Channels
- Interlock Register (ILR)
- Operator's Console
- 2 - Data Channel Converters

Basic 74-2X Mainframe

- 1 - Multi-function CPU
- 1 - Unified CPU
- 65K, 98K or 131K CM
- 10 PPU's
- 12 I/O Channels
- Interlock Register (ILR)
- Operator's Console
- 2 - Data Channel Converters

Basic System and Loader Residence

- Operating system residence for the unconfigured system is approximately $25{,}000_8$ words.

  - The unconfigured system is defined as:
    1 CPU
    10 PPU's
    No INTERCOM
    Minimum Library CM Resident
    XJ not used
  - and includes space for:
    8 Control Points
    Each additional control point will require 350_8 words

    3 Controllers
    Each additional controller will require 20_8 words

    8 Tape Units
    Each additional controller will require 20_8 words

    6 RMS devices (with standard 844 RBR size)
    Each additional RMS device will require 40_8 - 100_8 words

/sPR4229-09

OPERATING SYSTEM HARDWARE REQUIREMENTS

(continued)

- When ECS is included in the system, an additional 1000_8 words plus 2000_8 words per CM buffer is required in the operating system residence. In addition, $20,000_8$ words are required in the direct access area of ECS.
- For each type of disk drive or file not used as a system device(s), the operating system residence may be decreased by 144_8 words per device type.
- Temporary CM usage during loading is a minimum of 7200_8 words plus variable length tables generated during the loading.

Alternate Mainframes

- The following Mainframe/CPU/CM combinations are supported by Operating System.
  NOTE: Operating System will not operate on less than 65K core.

	Model 71		Model 72		Model 73		Model 74	
CM Size	Single CPU	Dual CPU	Single CPU	Dual CPU	Single CPU	Dual CPU	Single CPU	Dual CPU
65K	71-14	71-24	72-14	72-24	73-14	73-24	74-14	74-24
98K	71-16	71-26	72-16	72-26	73-16	73-26	74-16	74-26
131K	71-18	71-28	72-18	72-28	73-18	73-28	74-18	74-28

Central Memory Additions

- Model 71 Upgrade Rules for CM:

  71-14 plus 10371-1 gives 71-16
  71-16 plus 10371-2 gives 71-18
  71-24 plus 10371-1 gives 71-26
  71-26 plus 10371-2 gives 71-28

- Model 72 Upgrade Rules for CM:

  72-13 plus 10264-2 gives 72-14
  72-14 plus 10264-3 gives 72-16
  72-16 plus 10264-4 gives 72-18
  72-24 plus 10264-3 gives 72-26
  72-26 plus 10264-4 gives 72-28

- Model 73 Upgrade Rules for CM:

  73-13 plus 10264-2 gives 73-14
  73-14 plus 10264-3 gives 73-16
  73-16 plus 10264-4 gives 73-18
  73-24 plus 10264-3 gives 73-26
  73-26 plus 10264-4 gives 73-28

- Model 74 Upgrade Rules for CM:

  74-14 plus 10265-3 gives 74-16
  74-16 plus 10265-4 gives 74-18
  74-24 plus 10265-3 gives 74-26
  74-26 plus 10265-4 gives 74-28

CPU Upgrades

- Performance may be increased by upgrading the CPU from a Model 72 to a Model 73.

  72-1X plus 10272-1 gives 73-1X
  72-2X plus 10272-2 gives 73-2X

  This is a field upgrade.

- The upgrading from a Model 73 to a Model 74 requires a mainframe exchange.

Additional CPU

- Models 71, 72, and 73 Systems will offer increased performance by the addition of a second CPU

FROM	TO	
71-1X	71-2X	(10270-4)
72-1X	72-2X	(10270-1)
73-1X	73-2X	(10270-2)

- On Models 72 and 73, the Compare Move Unit on the single CPU system is shared by the additional second CPU.

OPERATING SYSTEM
HARDWARE REQUIREMENT

(continued)

PPU - I/O Channel Options

- The basic model 71, 72, 73 or 74 contains 10 PPU's and 12 I/O Channels.
- Model 71 Upgrades Rules

From	To	Option
PPU/Channel	PPU/Channel	
10/12	14/24	10372-1
14/24	17/24	10372-2
17/24	20/24	10372-3

- Model 72 and 73 Upgrades Rules

From	To	Option
PPU/Channel	PPU/Channel	
10/12	14/24	10268-1
14/24	17/24	10268-2
17/24	20/24	10268-3

- Model 74 Upgrade Rules

From	To	Option
PPU/Channel	PPU/Channel	
10/12	14/24	10269-1
14/24	17/24	10269-2
17/24	20/24	10269-3

Optional Extended Core Storage

- A 10355-X Coupler must be ordered with each mainframe connecting to ECS.
- The Basic 7030-X ECS unit contains the necessary controller and one Distributed Data Path (DDP)
- Growth of the Basic 7030-X may be achieved by the addition of ECS Storage Increments (10271) and/or additional DDP's
- Supported Configurations:

ECS Words	Model
125K	7030-1
250K	7030-2
500K	7030-4
1M	7030-8
2M	7030-16

Upgrade Rules for ECS Words

7030-1 plus 10271-1 gives 7030-2
7030-2 plus 10271-2 gives 7030-4
7030-4 plus 10271-4 gives 7030-8
7030-8 plus 10271-8 gives 7030-16

- Each 7030-X contains one DDP. Upgrade rules for DDP's are:

10266-1 adds the second DDP
10266-2 adds the third DDP
10266-3 adds the fourth DDP

Note: The 7030-X will not support the intermix of CY 170 and CY70/6000 systems via the 6642-1 DDP.

Tape Units

- See Hardware Diagrams for supported configurations.
- See "Minimum System Rules" for alternate uses of Tape Units.
- NOS/BE may be dead-started from either 7 track or 9 track units.

Line Printers

- See Hardware Diagrams for supported local and remote configurations.
- A 595-X Train must be ordered with each 512 Printer, 733-110 Printer or 733-10 Station.
- A 596-X Train must be ordered with each 580 Printer.
- Drivers are provided within the system to support the 580 and 512 Printers.
- The Printer Buffer size within the released system is 401_8 words. This Buffer may be increased by an installation modification.
- The 580-XXX (Programmable Format Control) is supported.

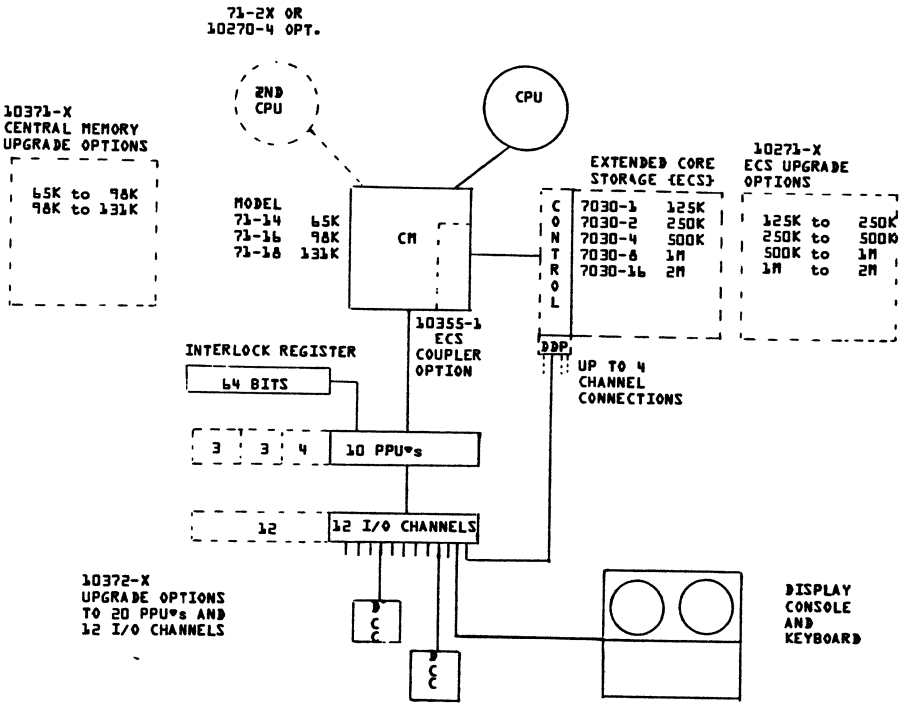
Card Equipment

- See Hardware Diagram for supported local and remote configuration.
- The Card Reader Buffer size and the Card Punch Buffer size within the released system is 401_8 words. This Buffer may be increased by an installation modification.

Hardware Restrictions

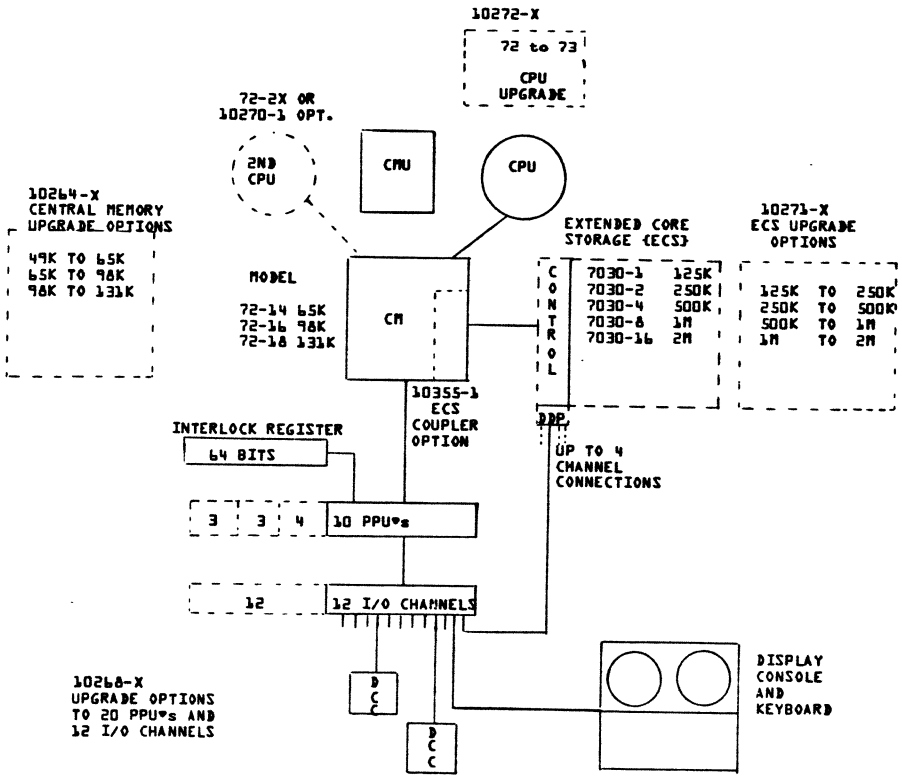
- Only a single 6681 or 6684 may be used on a data channel. 6681's and 6684's may be used interchangeably.
- A DDP cannot have a 6681/6684 prior to it, on the same channel.

CDC CYBER 70 MODEL 71
CONFIGURATOR



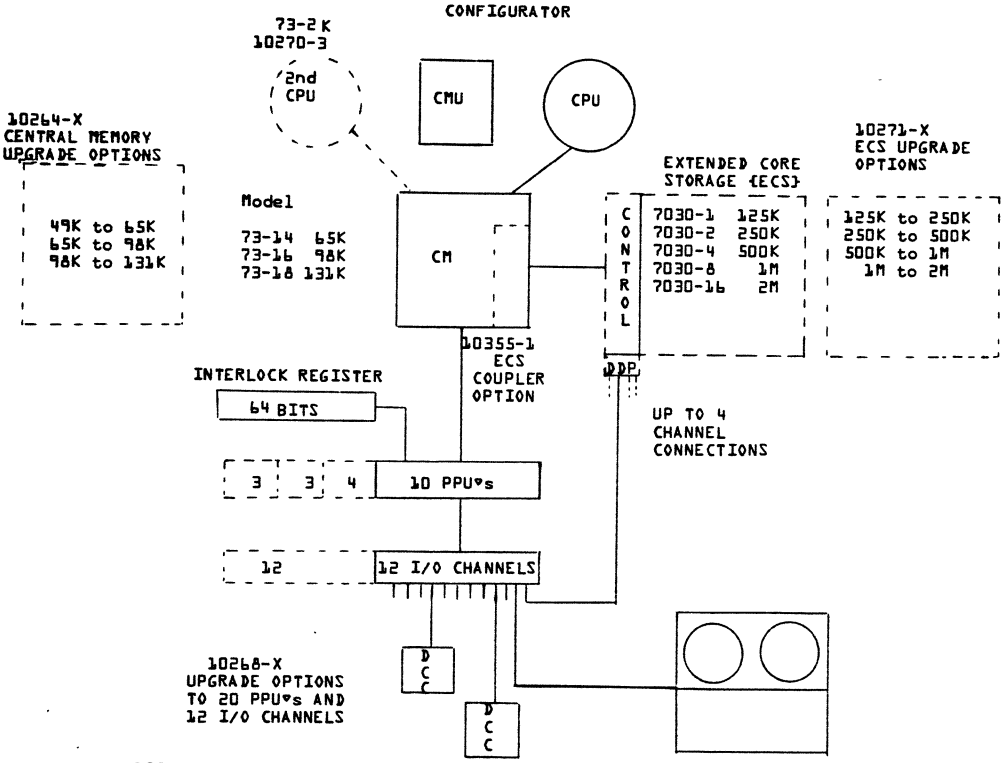
DCC - DATA CHANNEL CONVERTERS TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE TO CYBER 70 SERIES

CDC CYBER 70 MODEL 72
CONFIGURATION



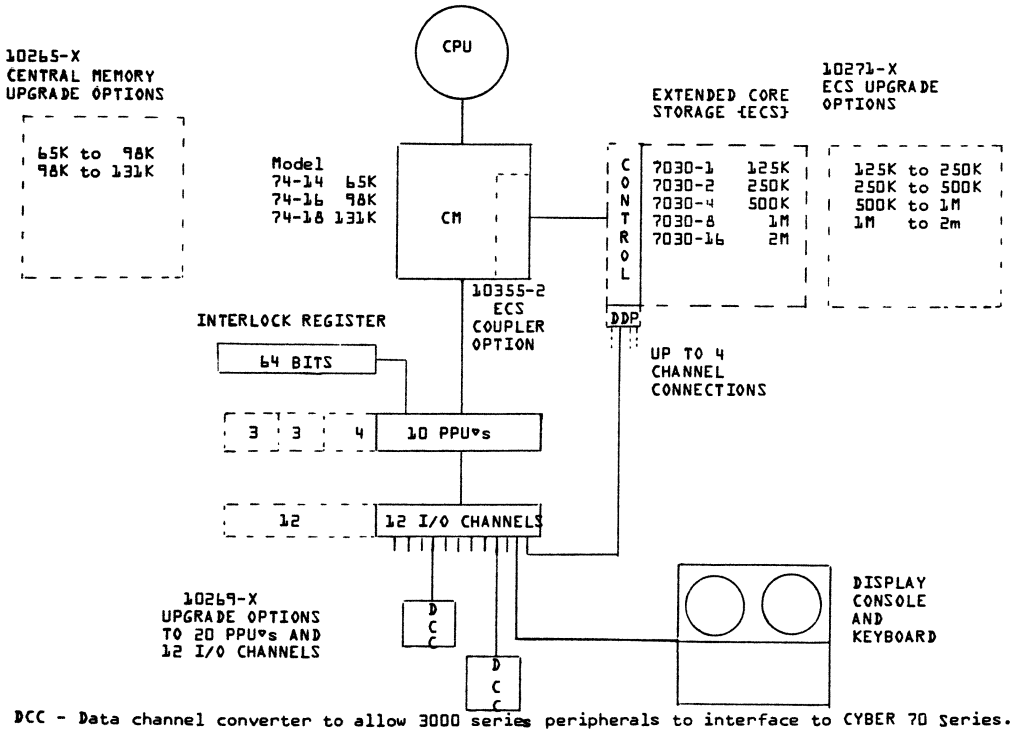
DCC - DATA CHANNEL CONVERTERS TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE TO CYBER 70 SERIES

CDC CYBER 70 MODEL 73
CONFIGURATOR



DCC - Data channel converter to allow 3000 series peripherals to interface to CYBER 70 Series.

CDC CDC CYBER 70 MODEL 74
CONFIGURATOR



DCC - Data channel converter to allow 3000 series peripherals to interface to CYBER 70 Series.

FOR HARDWARE DIAGRAMS, SOFTWARE PRODUCT SET DESCRIPTIONS AND AVAILABLE DOCUMENTATION REFER TO NOS/BE CONFIGURATORS IN THE CYBER 170 SECTION.

/PR53-09I

OPERATING SYSTEM HARDWARE REQUIREMENTS

Minimum System

- 72-12 OR 71-14
- One Line Printer
- One Card Reader

- Two Tape Units
- Rotating Mass Storage
  - One 844-2/21 with one 881
    or
  - One 885

Options

- Alternate Mainframes
- CM Additions
- CPU Upgrade
- Additional CPU's
- Extended Core Storage
- PPU/I/O Channels
- Tape Units
- Line Printers
- Card Equipment
- Rotating Mass Storage
- Communication Equipment
- Remote CRT's
  - Line Printers
  - Card Equipment
- Remote Teletypewriters

Minimum System Rules

- One of the two Tape Units is used for initial loading.
- During normal running, the Tape Units may be used for temporary storage and for Input and/or Output Queues.
- The system can reside only on devices of the same type. Minimum capacity to support standard batch processing is 60 million characters. (The system itself occupies approximately 2.1 million characters.) Additional space may be required for the timesharing, permanent files and transaction processing.
- The system uses two PPU's on a full-time basis. The remaining PPU's are used on a dynamic pool basis, unless the Time Sharing Subsystem or Remote Batch Subsystem are active. In this case, a PPU is dedicated for each subsystem.
- Each CDC CYBER 70 Model 71, 72, 73 or 74 includes one Operator Display Console and two Data Channel Converters. These Data Channel Converters are equivalent to 6681's.

NOTE: In general, the minimum 49K configuration will only support one (1) subsystem (BATCH IO, Remote Batch, or NOS Time-Sharing Subsystem) at a time. Additional memory is needed in the system to run more than one (1) subsystem at a time. In order to run Network Products, 65K memory minimum configuration is required.

Basic 71-1X Mainframe

- Unified CPU
- 65K to 131K CM
- 10 PPU
- 12 I/O Channels
- Interlock Register (ILR)
- Operator's Display Console
- 2 - Data Channel Converters

Basic 72-1X or 73-1X Mainframe

- Unified CPU
- Compare Move Unit (CMU)
- 32K to 131K CM
- 10 PPU
- 12 I/O Channels
- Interlock Register (ILR)
- Operator's Display Console
- 2 - Data Channel Converters

Basic 74-1X Mainframe

- 1 - Multi-Function CPU
- 32K to 131K CM
- 10 PPU's
- 12 I/O Channels
- Interlock Register (ILR)
- Operator's Console
- 2 - Data Channel Converters

OPERATING SYSTEM HARDWARE REQUIREMENTS

(continued)

Basic 71-2X Mainframe

- 2 - Unified CPU's
- 65K to 131K CM
- 10 PPU
- 12 I/O Channels
- Interlock Register (ILR)
- Operator's Display Console
- 2 - Data Channel Converters

Basic 72-2X or 73-2X Mainframe

- 2 - Unified CPU's
- Compare Move Unit (CMU)
- 65K, 98K or 131K CM
- 10 PPU's
- 12 I/O Channels
- Interlock Register (ILR)
- Operator's Console
- 2 - Data Channel Converters

Basic 74-2X Mainframe

- 1 - Multi-Function CPU
- 1 - Unified CPU
- 65K, 98K or 131K CM
- 10 PPU's
- 12 I/O Channels
- Interlock Register (ILR)
- Operator's Console
- 2 - Data Channel Converters

Basic System and Loader Residence

- Operating System minimum residence is approximately $7{,}000_8$ CM words.
- ECS is supported by the system and is allocated and treated similarly to a mass storage device. Selected parts of the system can be stored in ECS. If a DDP is available, PPU routines resident in ECS will be loaded through it.

Alternate Mainframes

The following Mainframe/CPU/CM combinations are supported by NOS 1

	MODEL 72		MODEL 73		MODEL 74		MODEL 71	
CM Size	Single CPU	Dual CPU	Single CPU	Dual CPU	Single CPU	Dual CPU	Single CPU	Dual CPU
49K	72-12	--	73-13	--	74-13	--	--	--
65K	72-14	72-24	73-14	73-24	74-14	74-24	71-14	71-24
98K	72-16	72-26	73-16	73-26	74-16	74-26	71-16	71-26
131K	72-18	72-28	73-18	73-28	74-18	74-28	71-18	71-28

Central Memory Additions

- Model 71 Upgrade Rules for CM:

  71-14 plus 10371-1 gives 71-16
  71-16 plus 10371-2 gives 71-18
  71-24 plus 10371-1 gives 71-26
  71-26 plus 10371-2 gives 71-28

- Model 72 Upgrade Rules for CM:

  72-12 plus 10264-1 gives 72-13
  72-13 plus 10264-2 gives 72-14
  72-14 plus 10264-3 gives 73-16
  72-16 plus 10264-4 gives 73-18
  72-24 plus 10264-3 gives 72-26
  72-26 plus 10264-4 gives 72-28

- Model 73 Upgrade Rules for CM:

  73-12 plus 10264-1 gives 73-13
  73-13 plus 10264-2 gives 73-14
  73-14 plus 10264-3 gives 73-16
  73-16 plus 10264-4 gives 73-18
  73-24 plus 10264-3 gives 73-26
  73-26 plus 10264-4 gives 73-28

- Model 74 Upgrade Rules for CM:

  74-14 plus 10265-3 gives 74-16
  74-16 plus 10265-4 gives 74-18
  74-24 plus 10265-3 gives 74-26
  74-26 plus 10265-4 gives 74-28

CPU Upgrades

- Performance may be increased by upgrading the CPU from a Model 72 to a Model 73.

  72-1X plus 10272-1 gives 73-1X
  72-2X plus 10272-2 gives 73-2X

  This is a field upgrade.

- The upgrading from a Model 73 to a Model 74 requires a mainframe exchange.

Additional CPU

- Models 71, 72 and 73 Systems will offer increased performance by the addition of a second CPU.

FROM	TO	
71-1X	71-2X	(10270-4)
72-1X	72-2X	(10270-1)
73-1X	73-2X	(10270-2)

OPERATING SYSTEM HARDWARE REQUIREMENTS

(continued)

- On Models 72 and 73, the Compare Move Unit on the Single CPU system is shared by the additional second CPU.

PPU - I/O Channel Options

- The basic Model 71, 72, 73 or 74 contains 10 PPU's and 12 I/O Channels.

- Model 72 and 73 Upgrade Rules 72-XX and 73-XX

10268-1	Adds 4 PPU's and 12 I/O channels to 10 PPU, 12 I/O channel system.
10268-2	Adds 3 PPU's to 14 PPU, 24 I/O channel system.
10268-3	Adds 3 PPU's to 17 PPU, 24 I/O channel system.

- Model 74 Upgrade Rules 74-XX

10269-1	Adds 4 PPU's and 12 I/O channels to 10 PPU, 12 I/O channel system.
10269-2	Adds 3 PPU's to 14 PPU, 24 I/O channel system.
10269-3	Adds 3 PPU's to 17 PPU, 24 I/O channel system.

- Model 71 Upgrade Rules

10372-1	Adds 4 PPU's and 12 I/O channels to 10 PPU, 12 I/O channel system.
10372-2	Adds 3 PPU's to 14 PPU, 24 I/O channel system.
10372-3	Adds 3 PPU's to 17 PPU, 24 I/O channel system.

Optional Extended Core Storage

- A 10355-X Coupler must be ordered with each mainframe connecting to ECS.
- The Basic 7030-X ECS unit contains the necessary controller and one Distributed Data Path (DDP).
- Growth of the Basic 7030-X may be achieved by the addition of ECS Storage Increments (10271-X).
- Supported Options

ECS Words	Model	Upgrade Rules for ECS Words
125K	7030-1	7030-1 plus 10271-1 gives 7030-2
250K	7030-2	7030-2 plus 10271-2 gives 7030-4
500K	7030-4	7030-4 plus 10271-4 gives 7030-8
1M	7030-8	7030-8 plus 10271-8 gives 7030-16
2M	7030-16	

The DDP in the Basic 7030-X ECS unit is supported. One additional buffer register is supported by the software (Option 10266-1).

Tape Units

- See Hardware Diagrams for supported configurations.
- See "Minimum System Rules" for alternate uses of Tape Units.
- NOS 1 may be dead-started from 66X or 67X Tape Units.

Line Printers

- See Hardware Diagrams for supported local and remote configurations.
- A 596-X Train must be ordered with each 580 Printer. (where X=1, 5 or 6)
- The 580-XXX (Programmable Format Control) is supported by NOS 1.

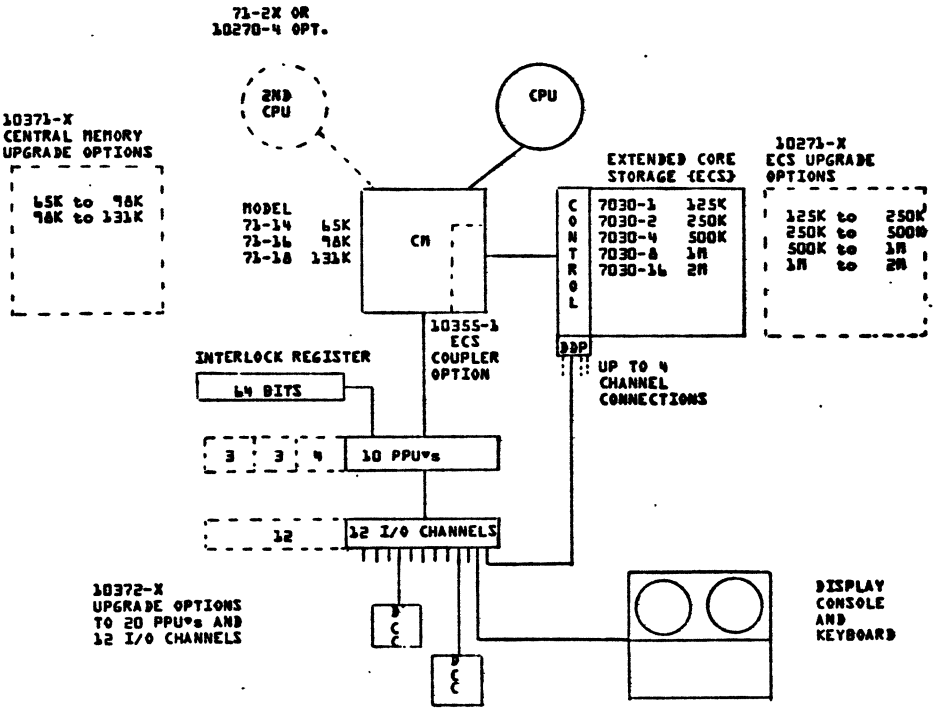
Card Equipment

- See Hardware Diagram for supported local and remote configurations.
- The Card Reader Buffer size is 512 and the Card Punch Buffer size is 256 words. These Buffers may be changed by an installation modification.

Hardware Restrictions

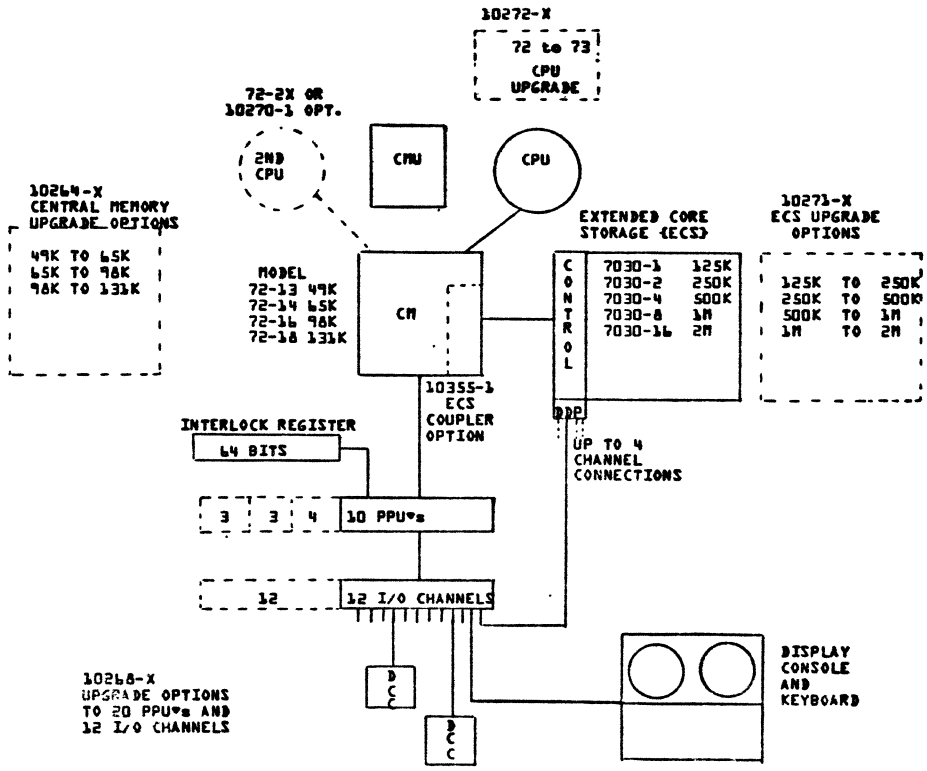
- Only a single 6681 or 6684 may be used on a data channel. 6681's and 6684's may be used interchangeably.
- A DDP cannot have a 6681/6684 prior to it, on the same channel.

CDC CYBER 70 MODEL 71
CONFIGURATOR



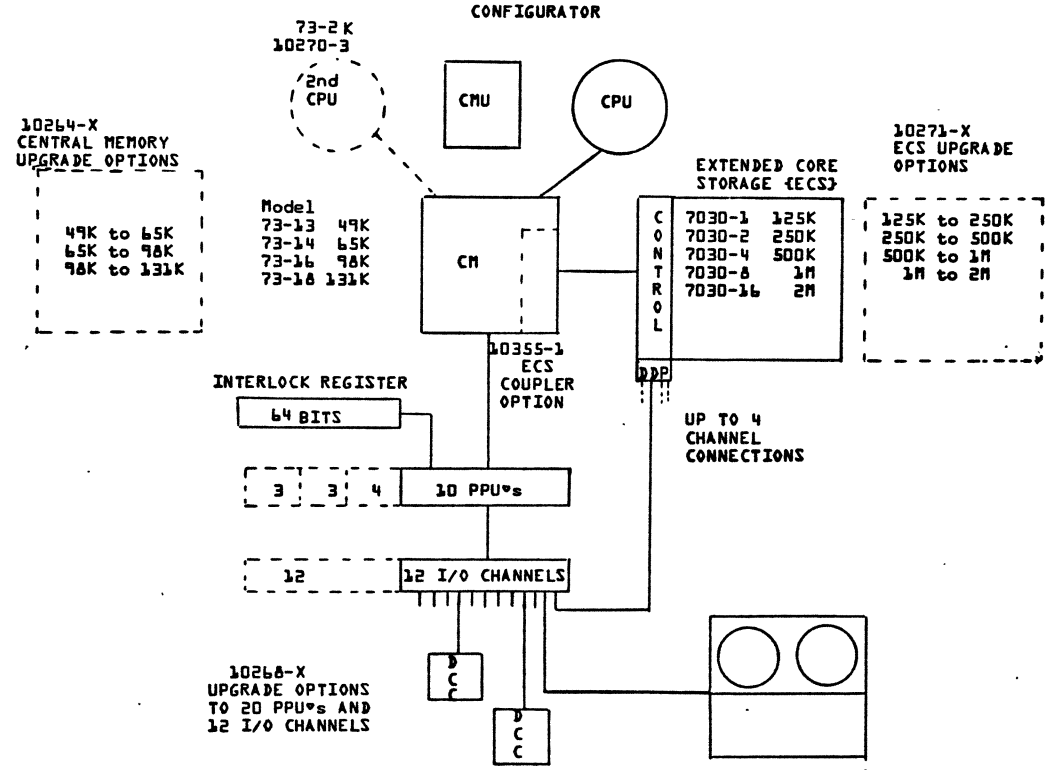
DCC - DATA CHANNEL CONVERTERS TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE TO CYBER 70 SERIES

CDC CYBER 70 MODEL 72
CONFIGURATION



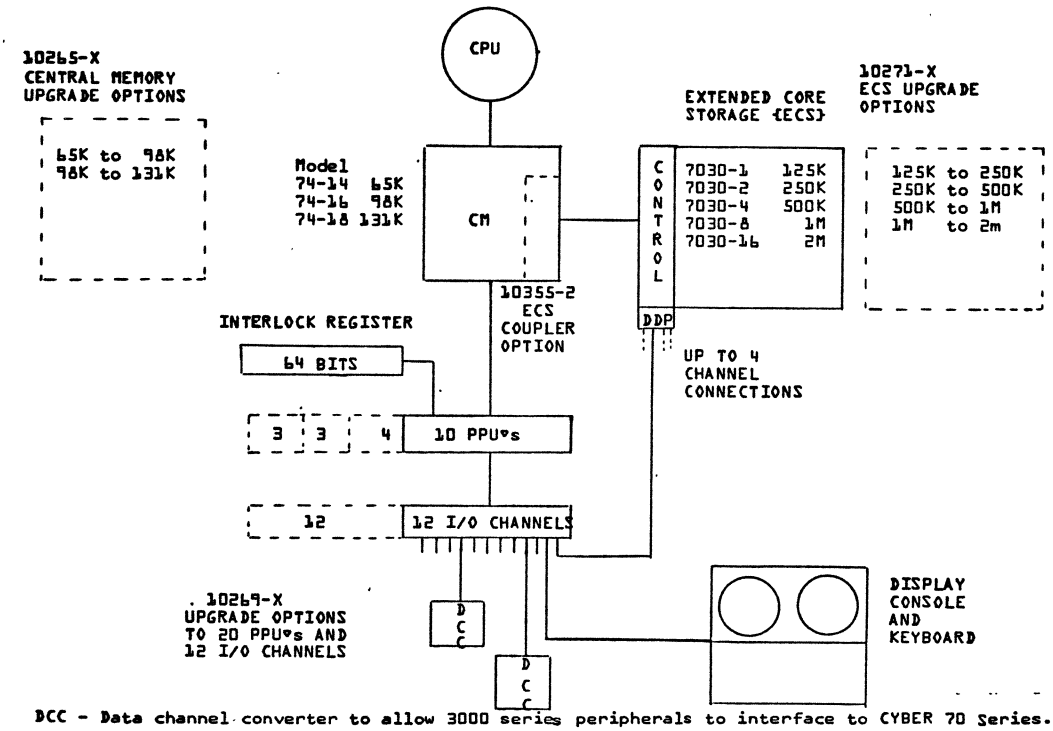
DCC - DATA CHANNEL CONVERTERS TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE TO CYBER 70 SERIES

CDC CYBER 70 MODEL 73
CONFIGURATOR



DCC - Data channel converter to allow 3000 series peripherals to interface to CYBER 70 Series.

CDC CDC CYBER 70 MODEL 74
CONFIGURATOR



DCC - Data channel converter to allow 3000 series peripherals to interface to CYBER 70 Series.

FOR HARDWARE DIAGRAMS, SOFTWARE PRODUCT SET DESCRIPTIONS AND CHART OF AVAILABLE DOCUMENTATION REFER TO NOS 1 CONFIGURATORS IN CYBER 170 SECTION.

OPERATING SYSTEM HARDWARE REQUIREMENTS

Minimum System

- 72-13 OR 71-14*
- One Line Printer
- One Card Printer
- Two Tape Units
- Rotating Mass Storage
  - Two 841-12's with four 871's
    or
  - One 844-21 with one 881

Options

- Alternate Mainframes
- CM Additions
- CPU Upgrade
- Additional CPU
- Extended Core Storage (ECS)
- PPU/I/O Channels
- Tape Units
- Line Printers
- Card Equipment
- Rotating Mass Storage
- Communication Equipment
- Remote CRT's
  - Line Printers
  - Card Equipment

* Starting with NOS/BE 1.3, the minimum central memory supported is 65K. The only exception is systems operating as NOS/BE stations to 7000 SCOPE systems, which will operate in 49K central memory.

Minimum System Rules

- One of the two Tape Units is used for initial loading.
- During normal running, the Tape Units may be used for temporary storage and for Input and/or Output Queues.
- 841-X may be added or may replace the minimum standard 844-21. The System can reside on any mixed device types. Minimum capacity to support standard batch processing is 60 million characters. (The system itself occupies approximately 1.4 million characters.)
- System uses three PPU's on a dedicated basis. The remaining are used on a dynamic pool basis.
- Each CDC CYBER 70 Model 71, 72, 73 or 74 includes one operator display console and two data channel converters. The data channel converters are equivalent to 6681's.

Basic 71-1X Mainframe

- Unified CPU
- 65K to 131K CM
- 10 PPU
- 12 I/O Channels
- Interlock Register (ILR)
- Operator's Display Console
- 2 - Data Channel Converters

Basic 72-1X or 73-1X Mainframe

- Unified CPU
- Compare Move Unit (CMU)
- 49K to 131K CM
- 10 PPU
- 12 I/O Channels
- Interlock Register (ILR)
- Operator's Display Console
- 2 - Data Channel Converters

Basic 74-1X Mainframe

- 1 - Multi-function CPU
- 65K, 98K, 131K, CM
- 10 PPU's
- 12 I/O Channels
- Interlock Register (ILR)
- Operator's Console
- 2 - Data Channel Converters

Basic 71-2X Mainframe

- 2 - Unified CPU's
- 65K to 131K CM
- 10 PPU
- 12 I/O Channels
- Interlock Register (ILR)
- Operator's Display Console
- 2 - Data Channel Converters

Basic 72-2X or 73-2X Mainframe

- 2 - Unified CPU's
- Compare Move Unit (CMU)
- 65K, 98K or 131K CM
- 10 PPU's
- 12 I/O Channels
- Interlock Register (ILR)
- Operator's Console
- 2 - Data Channel Converters

Basic 74-2X Mainframe

- 1 - Multi-function CPU
- 1 - Unified CPU
- 65K, 98K or 131K CM
- 10 PPU's
- 12 I/O Channels
- Interlock Register (ILR)
- Operator's Console
- 2 - Data Channel Converters

Basic System and Loader Residence

- Operating system residence for the unconfigured system is slightly less than $25,000_8$ words.
  - The unconfigured system is defined as:

    1 CPU
    10 PPU's
    No INTERCOM
    Minimum Library CM Resident
    XJ not used

  - Includes space for:

    8 Control Points
    Each additional control point will require 350_8 words

    3 Controllers
    Each additional controller will require 20_8 words

    8 Tape Units
    Each additional tape unit will require 20_8 words

    6 RMS devices (with standard 844 RBR size)
    Each additional RMS device will require 40_8 - 100_8 words

OPERATING SYSTEM HARDWARE REQUIREMENTS

(continued)

- When ECS is included in the system, an additional 1000_8 words plus 2000_8 words per CM buffer is required in the operating system residence. In addition, $20,000_8$ words are required in the direct access area of ECS.
- For each type of disk drive or file not used as a system device(s), the operating system residence may be decreased by 144_8 words per device type.
- Temporary CM usage during loading is a minimum of 7200_8 words plus variable length tables generated during the loading.

Alternate Mainframes

- The following Mainframe/CPU/CM combinations are supported by Operating System.
  NOTE: Operating System will not operate on less than 65K core, except as a 7000 station

	Model 71		Model 72		Model 73		Model 74	
CM Size	Single CPU	Dual CPU	Single CPU	Dual CPU	Single CPU	Dual CPU	Single CPU	Dual CPU
49K	-	-	72-13	-	72-13	-	-	-
65K	71-14	71-24	72-14	72-24	73-14	73-24	74-14	74-24
98K	71-16	71-26	72-16	72-26	73-16	73-26	74-16	74-26
131K	71-18	71-28	72-18	72-28	73-18	73-28	74-18	74-28

Central Memory Additions

- Model 71 Upgrade Rules for CM:

  71-14 plus 10371-1 gives 71-16
  71-16 plus 10371-2 gives 71-18
  71-24 plus 10371-1 gives 71-26
  71-26 plus 10371-2 gives 71-28

- Model 72 Upgrade Rules for CM:

  72-13 plus 10264-2 gives 72-14
  72-14 plus 10264-3 gives 72-16
  72-16 plus 10264-4 gives 72-18
  72-24 plus 10264-3 gives 72-26
  72-26 plus 10264-4 gives 72-28

- Model 73 Upgrade Rules for CM:

  73-13 plus 10264-2 gives 73-14
  73-14 plus 10264-3 gives 73-16
  73-16 plus 10264-4 gives 73-18
  73-24 plus 10264-3 gives 73-26
  73-26 plus 10264-4 gives 73-28

- Model 74 Upgrade Rules for CM:

  74-14 plus 10265-3 gives 74-16
  74-16 plus 10265-4 gives 74-18
  74-24 plus 10265-3 gives 74-26
  74-26 plus 10265-4 gives 74-28

CPU Upgrades

- Performance may be increased by upgrading the CPU from a Model 72 to a Model 73.

  72-1X plus 10272-1 gives 73-1X
  72-2X plus 10272-2 gives 73-2X

  This is a field upgrade.

- The upgrading from a Model 73 to a Model 74 requires a mainframe exchange.

Additional CPU

- Models 71, 72, and 73 Systems will offer increased performance by the addition of a second CPU

FROM	TO	
71-1X	71-2X	(10270-4)
72-1X	72-2X	(10270-1)
73-1X	73-2X	(10270-2)

- On Models 72 and 73, the Compare Move Unit on the single CPU system is shared by the additional second CPU.

OPERATING SYSTEM
HARDWARE REQUIREMENT

(continued)

PPU - I/O Channel Options

- The basic model 71, 72, 73 or 74 contains 10 PPU's and 12 I/O Channels.
- Model 71 Upgrades Rules

From	To	Option
PPU/Channel	PPU/Channel	
10/12	14/24	10372-1
14/24	17/24	10372-2
17/24	20/24	10372-3

- Model 74 Upgrade Rules

From	To	Option
PPU/Channel	PPU/Channel	
10/12	14/24	10269-1
14/24	17/24	10269-2
17/24	20/24	10269-3

- Model 72 and 73 Upgrades Rules

From	To	Option
PPU/Channel	PPU/Channel	
10/12	14/24	10268-1
14/24	17/24	10268-2
17/24	20/24	10268-3

Optional Extended Core Storage

- A 10355-X Coupler must be ordered with each mainframe connecting to ECS.
- The Basic 7030-X ECS unit contains the necessary controller and one Distributed Data Path (DDP)
- Growth of the Basic 7030-X may be achieved by the addition of ECS Storage Increments (10271) and/or additional DDP's
- Supported Configurations:

ECS Words	Model
125K	7030-1
250K	7030-2
500K	7030-4
1M	7030-8
2M	7030-16

Upgrade Rules for ECS Words

7030-1 plus 10271-1 gives 7030-2
7030-2 plus 10271-2 gives 7030-4
7030-4 plus 10271-4 gives 7030-8
7030-8 plus 10271-8 gives 7030-16

- Each 7030-X contains one DDP. Upgrade rules for DDP's are:

  10266-1 adds the second DDP
  10266-2 adds the third DDP
  10266-3 adds the fourth DDP

Note: The 7030-X will not support the intermix of CY 170 and CY70/6000 systems via the 6642-1 DDP.

Tape Units

- See Hardware Diagrams for supported configurations.
- See 'Minimum System Rule' for alternate uses of Tape Units.
- NOS/BE may be dead-started from either 7 track or 9 track units.

Line Printers

- See Hardware Diagrams for supported local and remote configurations.
- A 595-X Train must be ordered with each 512 Printer, 733-110 Printer or 733-10 Station.
- A 596-X Train must be ordered with each 580 Printer.
- Drivers are provided within the system to support the 580 and 512 Printers.
- The Printer Buffer size within the released system is 401_8 words. This Buffer may be increased by an installation modification.
- The 580-XXX (Programmable Format Control) is supported.

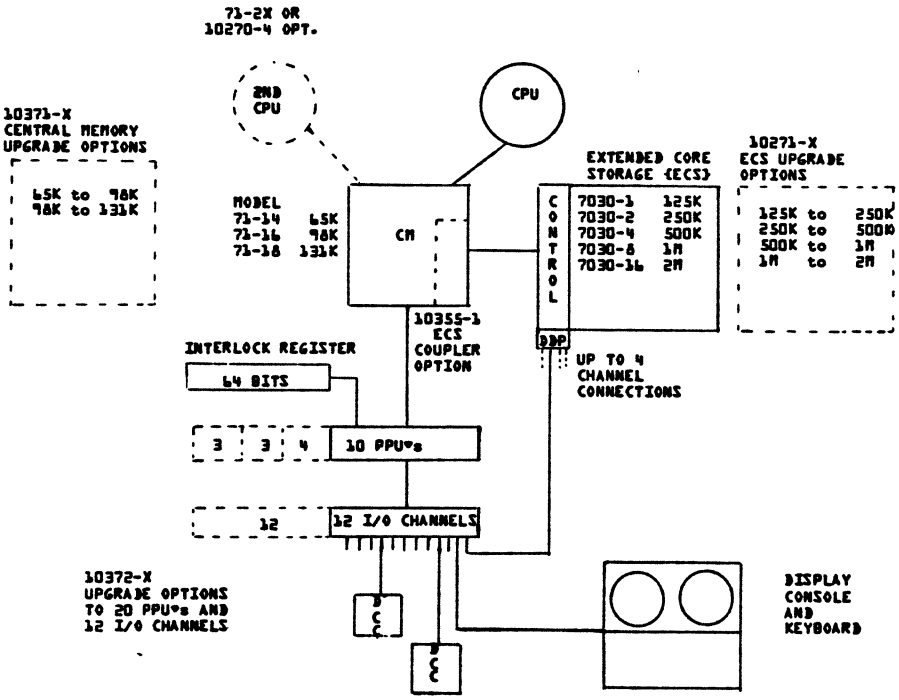
Card Equipment

- See Hardware Diagram for supported local and remote configuration.
- The Card Reader Buffer size and the Card Punch Buffer size within the released system is 401 words. This Buffer may be increased by an installation modification.

Hardware Restrictions

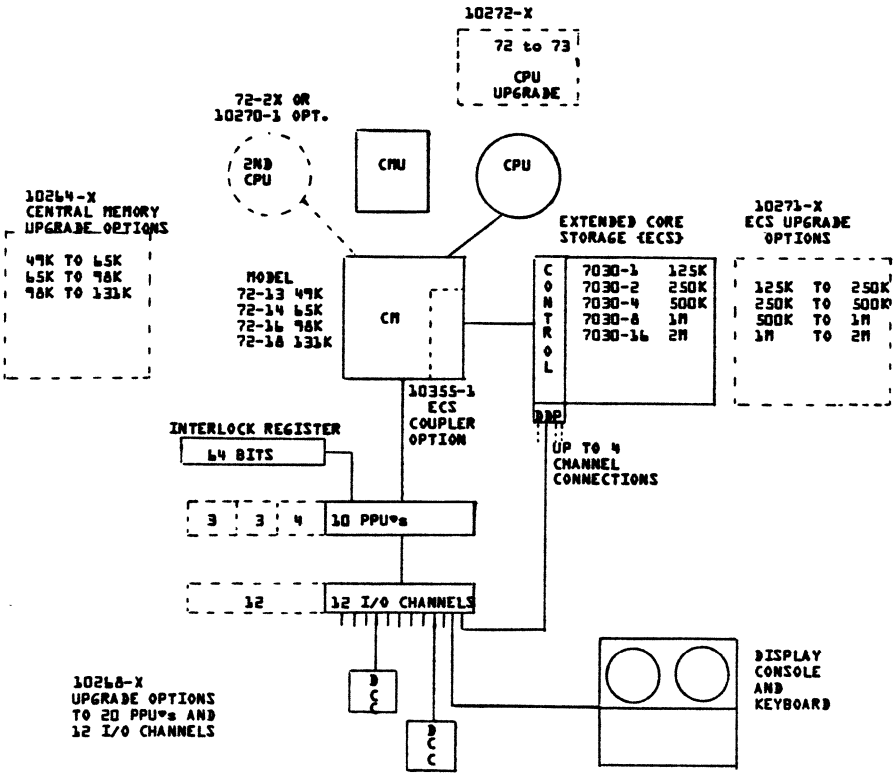
- Only a single 6681 or 6684 may be used on a data channel. 6681's and 6684's may be used interchangeably.
- A DDP cannot have a 6681/6684 prior to it, on the same channel.

CDC CYBER 70 MODEL 71
CONFIGURATOR



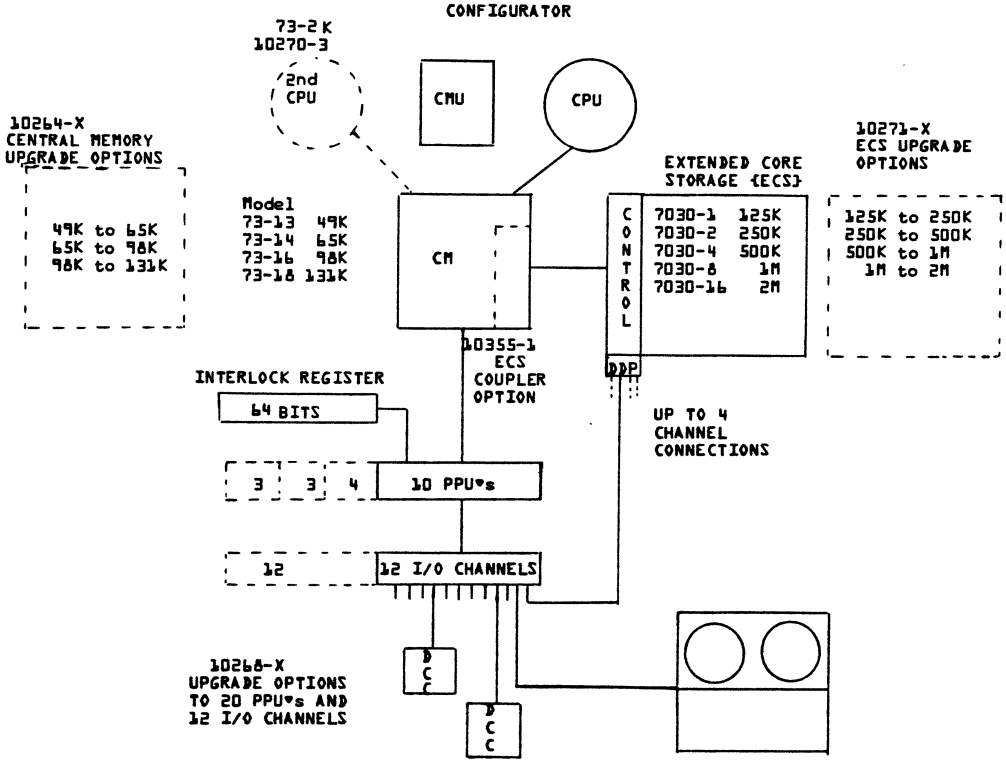
DCC - DATA CHANNEL CONVERTERS TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE TO CYBER 70 SERIES

CDC CYBER 70 MODEL 72
CONFIGURATION



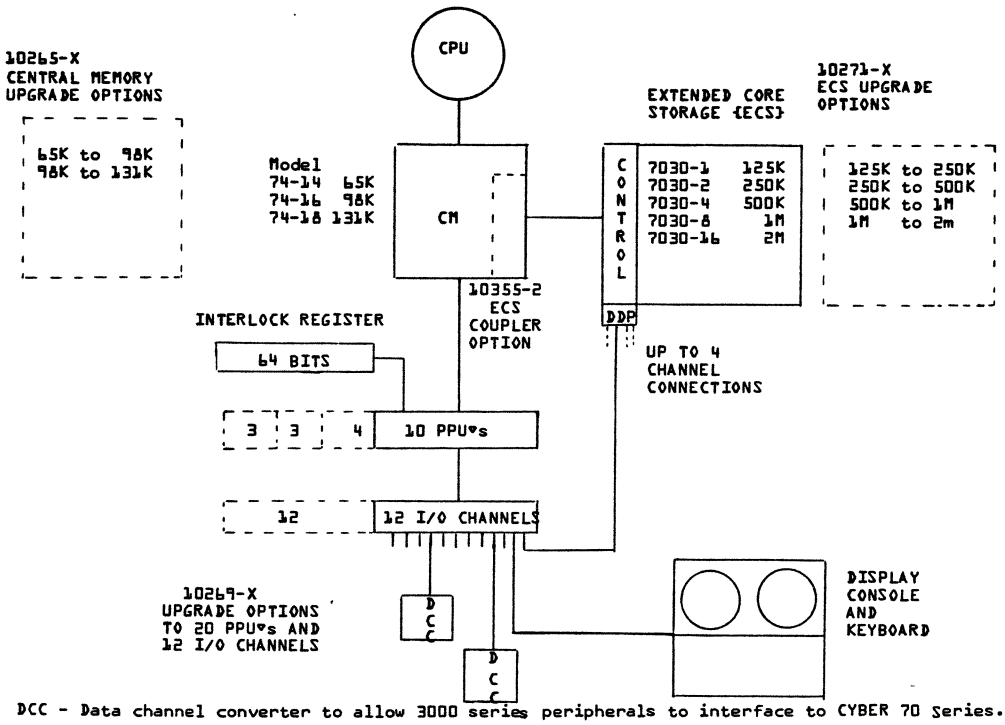
DCC - DATA CHANNEL CONVERTERS TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE TO CYBER 70 SERIES

CDC CYBER 70 MODEL 73
CONFIGURATOR



DCC - Data channel converter to allow 3000 series peripherals to interface to CYBER 70 Series.

CDC CDC CYBER 70 MODEL 74
CONFIGURATOR



DCC - Data channel converter to allow 3000 series peripherals to interface to CYBER 70 Series.

FOR HARDWARE DIAGRAMS, SOFTWARE PRODUCT SET DESCRIPTIONS AND AVAILABLE DOCUMENTATION REFER TO NOS/BE CONFIGURATORS IN THE CYBER 170 SECTION.

OPERATING SYSTEM HARDWARE REQUIREMENTS

Minimum System

- o 72-12 OR 71-14
- o One Line Printer
- o One Card Reader

- o Two Tape Units
- o Rotating Mass Storage
  - Two 841-12's with four 871's
    or
  - One 844-2/21 with one 881

Options

- o Alternate Mainframes
- o CM Additions
- o CPU Upgrade
- o Additional CPU's
- o Extended Core Storage
- o PPU/I/O Channels
- o Tape Units
- o Line Printers
- o Card Equipment
- o Rotating Mass Storage
- o Communication Equipment
- o Remote CRT's
  - Line Printers
  - Card Equipment
- o Remote Teletypewriters

Minimum System Rules

- One of the two Tape Units is used for initial loading.
- During normal running, the Tape Units may be used for temporary storage and for Input and/or Output Queues.
- 841-X may be added or may replace the minimum 844-2/21. The system can reside only on devices of the same type. Minimum capacity to support standard batch processing is 60 million characters. (The system itself occupies approximately 2.1 million characters.) Additional space may be required for time sharing, permanent files, and transaction processing.

- The system uses two PPU's on a full-time basis. The remaining PPU's are used on a dynamic pool basis, unless the Time Sharing Subsystem or Remote Batch Subsystem are active. In this case, a PPU is dedicated for each subsystem.
- Each CDC CYBER 70 Model 71, 72, 73 or 74 includes one Operator Display Console and two Data Channel Converters. These Data Channel Converters are equivalent to 6681's.

NOTE: The released NOS 1 system must be tailored to run on a 32K system. To accomplish this, modifications are required to CMRDECK (tape sizes, number of control points, buffer sizes, etc.) and LIBDECK (central memory resident programs) at deadstart time.

In general, the minimum configuration will only support one (1) subsystem (BATCH IO, Remote Batch, NOS Transaction Subsystem or NOS Time-Sharing Subsystem) at a time. Additional memory is needed in the system to run more than one (1) subsystem at a time.

If NOS 1 is used with a mainframe containing a 32K or 49K central memory, the following limitations apply to the installation, maintenance, and execution of the NOS Product Set on the system:

1. ALGOL 4 cannot be maintained in a 32K system. It will execute.

2. The FORTRAN Extended 4 DEBUG feature must be excluded from the FORTRAN Extended product in order for it to be maintained and executed in a 32K system.

3. PERT/TIME 1, SYMPL 1, APEX I and APEX III will not execute in a 32K system.

4. All of the above products can execute and be maintained on a 49K system.

5. Network Products and IXGEN (a CRM 1 conversion utility) cannot be executed or maintained in a 32K or 49K system.

Basic 71-1X Mainframe

- o Unified CPU
- o 65K to 131K CM
- o 10 PPU
- o 12 I/O Channels
- o Interlock Register (ILR)
- o Operator's Display Console
- o 2 - Data Channel Converters

Basic 72-1X or 73-1X Mainframe

- o Unified CPU
- o Compare Move Unit (CMU)
- o 32K to 131K CM
- o 10 PPU
- o 12 I/O Channels
- o Interlock Register (ILR)
- o Operator's Display Console
- o 2 - Data Channel Converters

Basic 74-1X Mainframe

- o 1 - Multi-Function CPU
- o 32K to 131K CM
- o 10 PPU's
- o 12 I/O Channels
- o Interlock Register (ILR)
- o Operator's Console
- o 2 - Data Channel Converters

OPERATING SYSTEM HARDWARE REQUIREMENTS

(continued)

Basic 71-2X Mainframe

- 2 - Unified CPU's
- 65K to 131K CM
- 10 PPU
- 12 I/O Channels
- Interlock Register (ILR)
- Operator's Display Console
- 2 - Data Channel Converters

Basic 72-2X or 73-2X Mainframe

- 2 - Unified CPU's
- Compare Move Unit (CMU)
- 65K, 98K or 131K CM
- 10 PPU's
- 12 I/O Channels
- Interlock Register (ILR)
- Operator's Console
- 2 - Data Channel Converters

Basic 74-2X Mainframe

- 1 - Multi-Function CPU
- 1 - Unified CPU
- 65K, 98K or 131K CM
- 10 PPU's
- 12 I/O Channels
- Interlock Register (ILR)
- Operator's Console
- 2 - Data Channel Converters

Basic System and Loader Residence

- Operating System minimum residence is $7{,}000_8$ CM words.
- ECS is supported by the system and is allocated and treated similarly to a mass storage device. Selected parts of the system can be stored in ECS. If a DDP is available, PPU routines resident in ECS will be loaded through it.

Alternate Mainframes

The following Mainframe/CPU/CM combinations are supported by NOS 1

	MODEL 72		MODEL 73		MODEL 74		MODEL 71	
CM Size	Single CPU	Dual CPU	Single CPU	Dual CPU	Single CPU	Dual CPU	Single CPU	Dual CPU
32K	72-12	--	73-12	--	74-12	--	--	--
49K	72-12	--	73-13	--	74-13	--	--	--
65K	72-14	72-24	73-14	73-24	74-14	74-24	71-14	71-24
98K	72-16	72-26	73-16	73-26	74-16	74-26	71-16	71-26
131K	72-18	72-28	73-18	73-28	74-18	74-28	71-18	71-28

Central Memory Additions

- Model 71 Upgrade Rules for CM:

  71-14 plus 10371-1 gives 71-16
  71-16 plus 10371-2 gives 71-18
  71-24 plus 10371-1 gives 71-26
  71-26 plus 10371-2 gives 71-28

- Model 72 Upgrade Rules for CM:

  72-12 plus 10264-1 gives 72-13
  72-13 plus 10264-2 gives 72-14
  72-14 plus 10264-3 gives 73-16
  72-16 plus 10264-4 gives 73-18
  72-24 plus 10264-3 gives 72-26
  72-26 plus 10264-4 gives 72-28

- Model 73 Upgrade Rules for CM:

  73-12 plus 10264-1 gives 73-13
  73-13 plus 10264-2 gives 73-14
  73-14 plus 10264-3 gives 73-16
  73-16 plus 10264-4 gives 73-18
  73-24 plus 10264-3 gives 73-26
  73-26 plus 10264-4 gives 73-28

- Model 74 Upgrade Rules for CM:

  74-14 plus 10265-3 gives 74-16
  74-16 plus 10265-4 gives 74-18
  74-24 plus 10265-3 gives 74-26
  74-26 plus 10265-4 gives 74-28

CPU Upgrades

- Performance may be increased by upgrading the CPU from a Model 72 to a Model 73.

  72-1X plus 10272-1 gives 73-1X
  72-2X plus 10272-2 gives 73-2X

  This is a field upgrade.

- The upgrading from a Model 73 to a Model 74 requires a mainframe exchange.

Additional CPU

- Models 71, 72 and 73 Systems will offer increased performance by the addition of a second CPU.

FROM	TO	
71-1X	71-2X	(10270-4)
72-1X	72-2X	(10270-1)
73-1X	73-2X	(10270-2)

OPERATING SYSTEM HARDWARE REQUIREMENTS

(continued)

- On Models 72 and 73, the Compare Move Unit on the Single CPU system is shared by the additional second CPU.

PPU - I/O Channel Options

- The basic Model 71, 72, 73 or 74 contains 10 PPU's and 12 I/O Channels.

- Model 72 and 73 Upgrade Rules 72-XX and 73-XX

10268-1	Adds 4 PPU's and 12 I/O channels to 10 PPU, 12 I/O channel system.
10268-2	Adds 3 PPU's to 14 PPU, 24 I/O channel system.
10268-3	Adds 3 PPU's to 17 PPU, 24 I/O channel system.

- Model 74 Upgrade Rules 74-XX

10269-1	Adds 4 PPU's and 12 I/O channels to 10 PPU, 12 I/O channel system.
10269-2	Adds 3 PPU's to 14 PPU, 24 I/O channel system.
10269-3	Adds 3 PPU's to 17 PPU, 24 I/O channel system.

- Model 71 Upgrade Rules

10372-1	Adds 4 PPU's and 12 I/O channels to 10 PPU, 12 I/O channel system.
10372-2	Adds 3 PPU's to 14 PPU, 24 I/O channel system.
10372-3	Adds 3 PPU's to 17 PPU, 24 I/O channel system.

Optional Extended Core Storage

- A 10355-X Coupler must be ordered with each mainframe connecting to ECS.

- The Basic 7030-X ECS unit contains the necessary controller and one Distributed Data Path (DDP).

- Growth of the Basic 7030-X may be achieved by the addition of ECS Storage Increments (10271-X).

- Supported Options

ECS Words	Model	Upgrade Rules for ECS Words
125K	7030-1	7030-1 plus 10271-1 gives 7030-2
250K	7030-2	7030-2 plus 10271-2 gives 7030-4
500K	7030-4	7030-4 plus 10271-4 gives 7030-8
1M	7030-8	7030-8 plus 10271-8 gives 7030-16
2M	7030-16	

The DDP in the Basic 7030-X ECS unit is supported. One additional buffer register is supported by the software (Option 10266-1).

Tape Units

- See Hardware Diagrams for supported configurations.

- See 'Minimum System Rule' for alternate uses of Tape Units.

- NOS 1 may be dead-started from 66X or 65X Tape Units.

Line Printers

- See Hardware Diagrams for supported local and remote configurations.

- A 596-X Train must be ordered with each 580 Printer.

- A 595-X Train must be ordered with each 512 Printer.

- Deivers are provided within the system to support the 580 and 512 Printers.

- The Printer Buffer size within the released system is 512 words. This Buffer size may be changed by an installation modification.

- The 580-XXX (Programmable Format Control) is supported by NOS 1.

Card Equipment

- See Hardware Diagram for supported local and remote configurations.

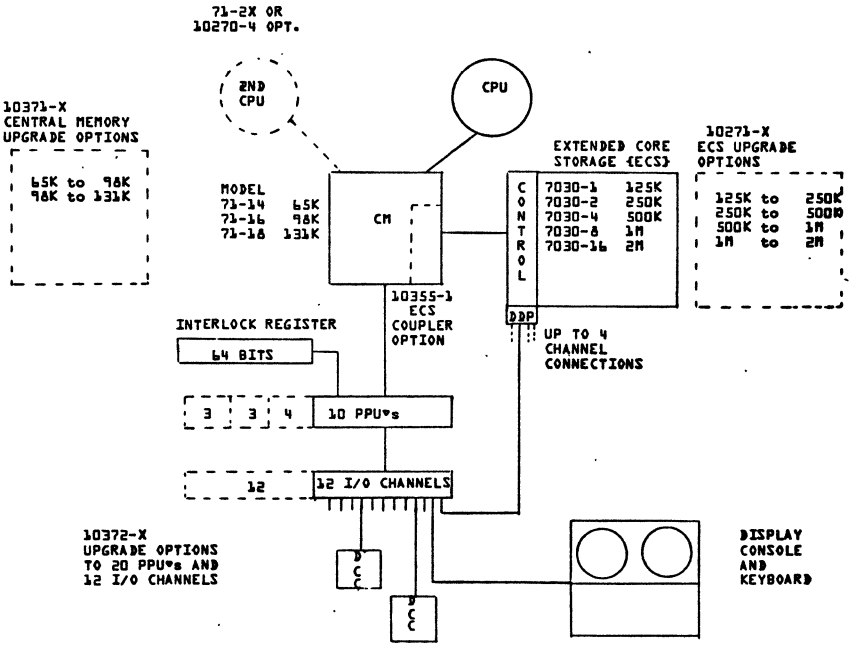
- The Card Reader Buffer size is 512 and the Card Punch Buffer size is 256 words. These Buffers may be changed by an installation modification.

Hardware Restrictions

- Only a single 6681 or 6684 may be used on a data channel. 6681's and 6684's may be used interchangeably.

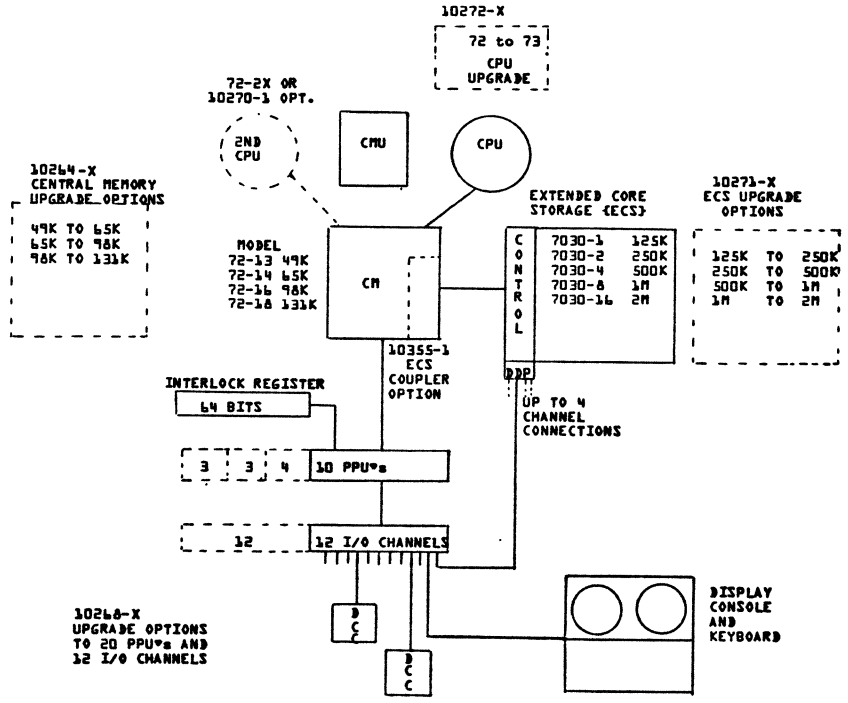
- A DDP cannot have a 6681/6684 prior to it, on the same channel.

CDC CYBER 70 MODEL 71
CONFIGURATOR



DCC - DATA CHANNEL CONVERTERS TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE TO CYBER 70 SERIES

CDC CYBER 70 MODEL 72
CONFIGURATION



DCC - DATA CHANNEL CONVERTERS TO ALLOW 3000 SERIES PERIPHERALS TO INTERFACE TO CYBER 70 SERIES

CONFIGURATORS

ONLY THE ▼OPERATING SYSTEM HARDWARE▼ SECTION IS INCLUDED.

FOR HARDWARE DIAGRAMS, SOFTWARE PRODUCT SET DESCRIPTIONS AND AVAILABLE DOCUMENTATION REFER TO CYBER 170 CONFIGURATORS FOR SCOPE 2.1.

OPERATING SYSTEM HARDWARE HARDWARE REQUIREMENTS FOR SCOPE 2.1

Minimum System

- 76-1X
- One Station*
  - 6000/CDC CYBER Computer Station
- On-Line Rotating Mass Storage (RMS)
  - Four - 844-2/21 with 7654-1 and four 881
    or
  - One - 819-21 with 7639-21

Options

- SSM/SCM/LCME Additions
- PPU's
- Additional I/O Channels
- Multiple Stations
- On-Line Rotating Mass Storage
- On-Line Magnetic Tapes
- Station Peripherals
- Station Communication Equipment
- Multiple CYBER 70 Model 76 Link

* Minimum Station

6000/CDC CYBER 70 Computer Station:
1 - Model 72-73
1 - 7683-1
1 - 6683
Plus NOS/BE Minimum Hardware

CDC CYBER 170 Computer Station:
1 - Model 172-12
1 - 7683-1
1 - 6683-2
Plus NOS/BE Minimum Hardware

Basic (76-1X) Mainframe (with SCM memory)

- CPU
- 32K or 65K SCM
- 256,000 or 512,000 LCM
- Maintenance Control Unit (MCU)
- Includes: Card Reader
  CRT/Keyboard
- 4 - Paired High Speed I/O Channel with 4-PPU's
- 2 - Normal I/O Channels with 2-PPU's
- 1 - Normal I/O Channel

or

Basic 76-1X Mainframe (with SSM memory)

- CPU
- 65K SSM with 256,000 or 512,000 LCM or 131K SSM with 512,000 LCM
- Maintenance Control Unit
- Includes: Card Reader
  CRT/Keyboard
- 7 I/O Channels (normal or high speed)
- 6 PPU's

I/O Channel Usage Rules

Channels 2 and 3, 4 and 5, or 6 and 7 must be configured as channel pairs with a single combined SCM or SSM I/O buffer, referred to as paired high speed channels.

Channels 1, or 10 through 17_8 must be configured as single channels with an SCM or SSM input and output buffer for each channel.

Only channels 10_8 - 15_8 may be modified by standard option 10293-1 (for SCM systems).

1. The following is the channel availability and addition rules for systems with small core memory (SCM):

   76-1X

   1 - MCU Channel
   4 - Paired High Speed Channels
   3 - Normal Channel

   76-1X with 7606-1

   1 - MCU Channel
   6 - Paired High Speed Channel
   5 - Normal Channel

   76-1X with 7606-2

   1 - MCU Channel
   4 - Paired High Speed Channel
   6 - Normal Channel
   1 - Real Time Channel Reservation

OPERATING SYSTEM HARDWARE
HARDWARE REQUIREMENTS
FOR
SCOPE 2.1

76-1X with 7606-1 and 7606-2

1 - MCU Channel
6 - Paired High Speed Channel
8 - Normal Channel
1 - Real Time Channel Reservation

2. The following is the channel availability and addition rules for systems with semiconductor memory (SSM):

76-1X

1 - MCU Channel
7 - I/O Channels (High Speed or Normal)

In addition to the above basic mainframe, optional high speed or normal channels may be added one at a time as follows:

High Speed Channels (standard option 10348-1) may be added on channels 2 through 15_8, up to a maximum of 12.

Normal Channels (standard option 10348-2) may be added on channels 1, 16_8, or 17_8 up to a maximum of 3.

3. 844-2 with 7654-1 require a modified low speed channel on systems with SCM memory (standard option 10293-1). On systems with SSM memory, a PPU channel modification is required (standard option 10293-2). Only channels 10_8 through 15_8 may be used.

4. 819 mass storage subsystems require paired high speed channels (on channels 2 through 7).

5. 6000/CDC CYBER stations or a multiple CYBER 70 model 76 link require a single high speed or normal channel. This means stations can only be connected (not paired) to channels 1 or 10 through 17_8.

6. Magnetic tape controllers require one or two high speed or normal channels. This means magnetic tape controllers can only be connected (not paired) to channels 10 through 17_8.

A 7622-1 magnetic tape controller requires a PPU channel modification, standard option 10293-2, for each channel used.

PPU Usage Rules

1. 7618-1 and 7622-1 Magnetic Tape Controller requires one PPU.

2. 7628-1 and 7622-2 Magnetic Tape Controller requires two PPU's.

3. A combination of one, two, or three 6000/CDC CYBER stations or multiple CYBER 70 Model 76 links can connect to each PPU.

4. 844-2 requires one PPU for single data stream operation or two PPU's for dual data stream operation.

5. 819-1 requires two PPU's for each single data stream operation. The maximum number of data streams is three and drives is six (limited by the available paired high speed I/O channels.)

On-Line Mass Storage Usage Rules

1. Minimum Rotating Mass Storage

1 - 7638-1 or
4 - 844-2 or 844-21/7654-1 and 2 881's or
1 - 819-21/7639-21

2. 7638-1's may be installed in dual or single data stream. Dual data stream requires four paired high speed I/O channels. Single data stream requires two paired high speed I/O channels.

3. 844's may be installed in dual or single data stream. Dual data stream requires two I/O channels. Single data stream requires one I/O channel. Standard option 10293-1 (for SCM memory systems) or standard option 10293-2 (for SSM systems) is required for each data stream used.

4. 819's may be installed in single data stream. Each data stream requires two paired high speed I/O channels. The time shared access feature of the 7639 controller is not supported by SCOPE 2.

5. The number of paired high speed I/O channel limits the number of 819's that may be installed on a Model 76. (Refer to I/O Channel Usage Rules.

6. The number of 844's that may be installed on Model 76 is limited by the 6 channels that may be used. (Refer to I/O Channel Usage Rules). A software restriction limits the number of 844 drives by the number of on-line tape/disk drives that can be supported which is 63.

OPERATING SYSTEM HARDWARE HARDWARE REQUIREMENTS FOR SCOPE 2.1

SCM/LCM Addition Rules

The four memory combinations of SCM and LCM are comprised of the following mainframes and options.

SCM	LCM							
65K	512,000	76-18	or	76-16 7609-1	or	76-14 7608-1	or	76-12 7608-1 7609-1
32K	512,000	76-16	or	76-12 7608-1				
65K	256,000	7614	or	76-12 7609-1				
32K	256,000	76-12						

SSM/LCM Addition Rules

SSM	LCM			
131K	512,000	76-142	76-122 10331-2	76-121 10332-1 10331-2
65K	512,000	76-122	76-121 10332-1	
65K	256,000	76-121		

PPU Addition Rules

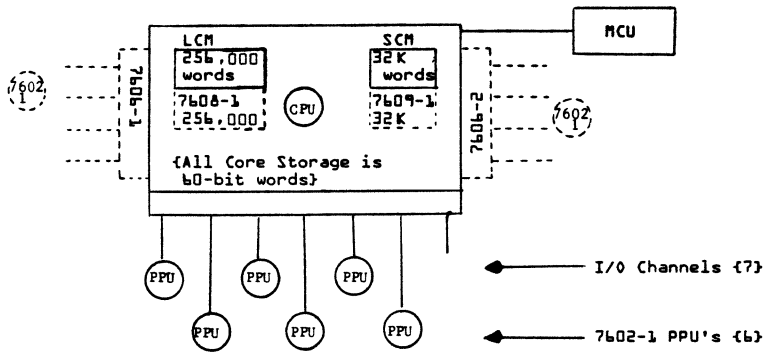
1 - Up to seven additional PPU's may be added to the basic mainframe.

2 - Each PPU requires an assigned (not shared) I/O channel.

3 - PPU's may be added one at a time until a total of 13 PPU's are on the system.

CDC

CYBER 70 MODEL 76
CPU 76-12, 76-14, 76-16, 76-18
CONFIGURATOR



Memory Options

7608-1
256,000 LCM
{Total of 512,000 LCM per 76-1X}

7609-1
32K SCM
{Total of 65K SCM per 76-1X}

Mainframes

76-18 {65K SCM/512,000 LCM}
76-14 {65K SCM/256,000 LCM}
76-16 {32K SCM/512,000 LCM}
76-12 {32K SCM/256,000 LCM}

Each mainframe includes:

- CPU
- 7 I/O Channels
- 6 Peripheral Processors {PPU}
- Maintenance Control Unit {MCU} which includes:
  - Card Reader
  - CRT Display

I/O Options

7606-1
4 additional I/O Channels
{Adds paired high speed channels 2 & 3 and normal channels 13 & 14}

7606-2
Additional I/O Channels
{Adds normal channels 15, 16 and 17 and Real Time channel 1 }

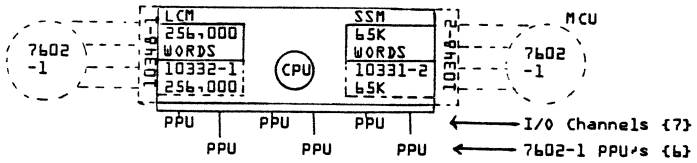
7602-1
PPU
{Total of 13 PPU's per 76-1X, 1 PPU per I/O Channel}

10293-1
High Speed Channel Modification
{Modifies a normal channel, channels 10-15 only}

10293-2
PPU channel Modification

*Dotted lines indicate options

CDC
CYBER 70 MODEL 76
CPU 76-121, 76-122, 76-142
CONFIGURATOR



MEMORY OPTIONS

10332-1
256,000 LCM
{Total of 512,000 LCM per 76-1XX}

10331-2
65K SSM
{Total of 131K SSM per 76-1XX}
Available only with 512,000 LCM

MAINFRAMES

76-142 {131K SSM/512,000 LCM}
76-122 {65K SSM/512,000 LCM}
76-121 {65K SSM/256,000 LCM}

Each mainframe includes:

- CPU
- 7 I/O Channels
- 6 Peripheral Processors {PPU}
- Maintenance Control Unit {MCU} which includes
  - Card Reader
  - CRT Display

I/O OPTIONS

10348-1
Additional high speed I/O channel
any of channels 2-15

10348-2
Additional normal I/O channel
any of channels 1, 16, 17

7602-1
PPU
{Total of 13 PPU's per 76-1X, 1 PPU per I/O channel}

10293-2
PPU Channel Modification

* Dotted lines indicate options.

FOR HARDWARE DIAGRAMS, SOFTWARE PRODUCT SET DESCRIPTIONS AND AVAILABLE DOCUMENTATION REFER TO SCOPE 2.1 CONFIGURATORS IN CYBER 170 SECTION.

CONFIGURATORS

Only the 'Operating System Hardware' section for NOS/BE 1 is included. For Hardware Diagrams, Software Product Set Descriptions and Available Documentation refer to appropriate operating system in CYBER 170 section.

OPERATING SYSTEM HARDWARE

HARDWARE REQUIREMENTS FOR NOS/BE 1

Minimum System

- 6400 with 10 PPU
- 65K CM*
- Display Console
- Data Channel Converters
- One Line Printer
- One Card Reader
- One Card Punch
- Two Tape Units
- Rotating Mass Storage
  - One 844-2/21 with one 872 or 881
    or
  - One 884-41 with one 892-60
    or
  - One 885

Options

- Alternate Mainframe
- CM Additions
- CPU Upgrade
- Additional CPU
- Extended Core Storage
- PPU/I/O Channels
- Tape Units
- Line Printers
- Card Equipment
- Rotating Mass Storage
- Communication Equipment
- Remote CRT's
  Line Printers
  Card Equipment

Minimum System Rules

- Minimum system requires 65K of central memory.
- One of the two Tape Units is used for initial loading.
- During normal running, the Tape Units may be used for temporary storage and for Input and/or Output Queues.
- The system can reside on any mixed device types. Minimum capacity to support standard batch processing is 60 million characters.
  (The system itself occupies approximately 1.4 million characters.)
- System uses three PPU's on a full-time basis. The remaining are used on a dynamic pool basis.
- Each CDC 6000 Computer requires one 6612 operator display console and one or more 6681 Data Channel Converters, which must be ordered separately.

Basic 6400 Mainframe

- Unified CPU
- 65K to 131K CM
- 10 or 20 PPU
- 12 or 24 Channels

Basic 6600 Mainframe

- 1 - Multi-Function CPU
- 65K to 131K CM
- 10 or 20 PPU's
- 12 or 24 I/O Channels

Basic 6500 Mainframe

- 2 - Unified CPU's
- 65K, 98K or 131K CM
- 10 or 20 PPU's
- 12 or 24 I/O Channels

Basic 6700 Mainframe

- 1 - Multi-Function CPU
- 1 - Unified CPU
- 65K, 98K or 131K CM
- 10 or 20 PPU's
- 12 or 24 I/O Channels

Basic System & Loader Residence (Refer to CY170 Configurators)

Alternate Mainframes

	6400	6500	6600	6700
	Single CPU	Dual CPU	Single CPU	Dual CPU
CM Size				
65K	6414	6514	6614	6714
98K	(6414) (10178-1)	(6514) (10178-1)	(6614) (10189-1)	(6714) (10180-1)
131K	6413	6513	6613	6713

o 6400 Upgrade Rules for CM:

32K to 49K	6415	plus	10177-2	gives	(6415) (10177-2)
49K to 65K	(6415) (10177-1)	plus	10177-2	gives	6414
65K to 98K	6414	plus	10178-1	gives	(6414) (10178-1)
98K to 131K	(6414) (10178-1)	plus	10178-2	gives	6413

NOTE: NOS/BE no longer supports systems of less than 65K.

o 6500 Upgrade Rules for CM:

65K to 98K	6514	plus	10178-1	gives	(6514) (10178-1)
98K to 131K	(6514) (10178-1)	plus	10178-2	gives	6513

o 6600 Upgrade Rules for CM:

65K to 98K	6614	plus	10180-1	gives	(6614) (10180-1)
98K to 131K	(6614) (10180-1)	plus	10180-2	gives	6613

Additional CPU

o 6400 will offer increased performance by the addition of a second CPU:

6413 plus 10117 gives 6513
6414 plus 10117 gives 6514

PPU - I/O Channel Options

o The basic 6400, 6500, 6600 and 6700 contain 10 PPU's and 12 I/O Channels

o 6400 Upgrade Rules:

10/12	20/24	6413 plus 10173-8 6414 plus 10173-9

o 6500 Upgrade Rules:

10/12	20/24	6513 plus 10173-6 6514 plus 10173-7

Optional Extended Core Storage

o To attach ECS, all systems must be upgraded to 6X13, 6X14, or 6X15 mainframes.

o The basic 663X-2 ECS module contains the necessary controller. Price includes CEJ/MEJ and CMAP options if they are ordered and installed concurrently with the first ECS module (or upgrade).

o The controller may access up to four 6000 or CDC CYBER 72, 73, 74 systems.

o Supported configurations:

ECS Words	Model
125K	6633-2
250K	6634-2
500K	6635-2
1M	6636-2
2M	(2) 6636-2

- Upgrade Rules

125K to 250K	6633-2 plus 10122-1	gives 6634-2
250K to 500K	6634-2 plus 10122-2	gives 6635-2
500K to 1M	6635-2 plus 10122-3	gives 6636-2
1M to 2M	6636-2 plus 6636-2	gives (2) 6636-2

- Distributive Data Path (DDP)

The basic controller does not contain any DDP's. Upgrade Rules are:

6642-1 adds the first
10280-1 adds the second
10280-2 adds the third
10280-3 adds the fourth

Note: The 6633-2 will not support the intermix of CYBER 170 and CYBER 70/6000 systems via the 6642-1 DDP.

Tape Units

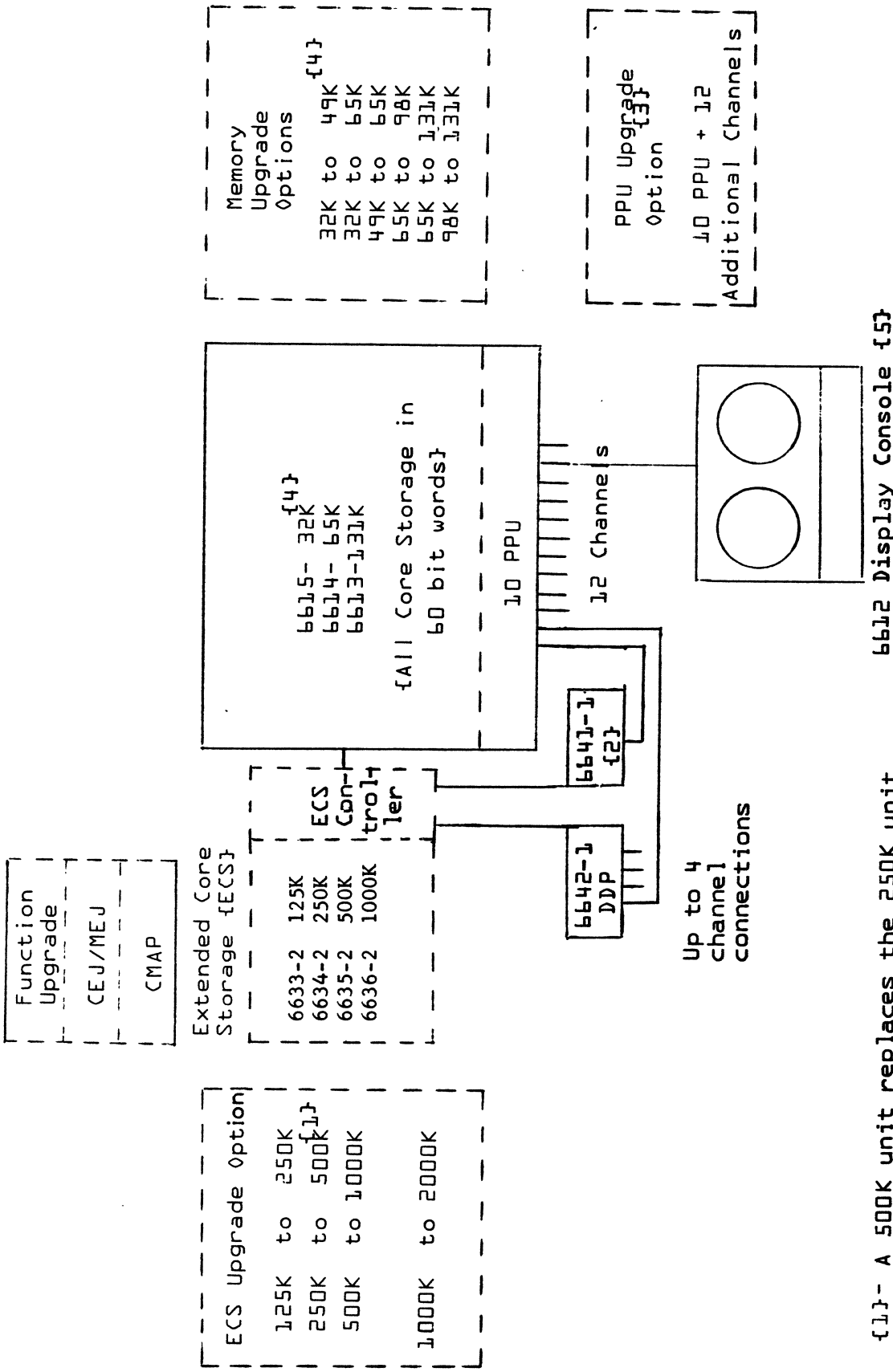
- See Hardware Diagrams for supported configurations.
- See "Minimum System Rules" for alternate uses of Tape Units.
- NOS/BE 1 may be dead-started from either 7 track or 9 track units.
- There may be only one type of Data Channel Converter (6684-X or 6681) per I/O channel. Any Dual Access Tape Controller must be connected through one type of Data Channel Converter (i.e., all 6684-X or all 6681).

Line Printers

- See Hardware Diagrams for supported local and remote configurations.
- A 595-X Train must be ordered with each 512-1 Printer, 733-110 Printer or 733-10 Station.
- A 596-X Train must be ordered with each 580 Printer.
- Drivers are provided within the system to support the 512-1 and 580 Printers.
- The Printer Buffer size within the released system is 401_8 words. This Buffer may be increased by an installation modification.
- The 580-XXX (Programmable Format Control) is supported.

Card Equipment

- See Hardware Diagram for supported local and remote configuration.
- The Card Reader Buffer size and the Card Punch Buffer size within the released system is 401_8 words. This Buffer may be increased by an installation modification.



(1)- A 500K unit replaces the 250K unit
(2)- QSS Support only
(3)- Factory Installable only Serial #0 to #102
(4)- NOS/BE 1 Requires 65K
(5)- Required-not included with Central Processor

FOR HARDWARE DIAGRAMS, SOFTWARE
PRODUCT SET DESCRIPTIONS, AND
CHART OF AVAILABLE DOCUMENTATION
REFER TO THE NOS/BE 1 CONFIGURATOR
IN THE CYBER 170 SECTION.

/PR53-09I

OPERATING SYSTEM HARDWARE

HARDWARE REQUIREMENTS FOR NOS/BE 1

Minimum System

- o 6400 with 10 PPU
- o 49K CM*
- o Display Console
- o Data Channel Converters
- o One Line Printer
- o One Card Reader
- o One Card Punch
- o Two Tape Units
- o Rotating Mass Storage
  - One 841-3 with four 871's
    or
  - One 844-2/21 with one 872

Options

- o Alternate Mainframe
- o CM Additions
- o CPU Upgrade
- o Additional CPU
- o Extended Core Storage
- o PPU/I/O Channels
- o Tape Units
- o Line Printers
- o Card Equipment
- o Rotating Mass Storage
- o Communication Equipment
- o Remote CRT's
  - Line Printers
  - Card Equipment

* Starting with NOS/BE 1.3, the minimum central memory supported is 65K. The only exception is systems operating as NOS/BE stations to 7000 SCOPE Systems which will operate in 49K central memory.

Minimum System Rules

- o One of the two Tape Units is used for initial loading.
- o During normal running, the Tape Units may be used for temporary storage and for Input and/or Output Queues.
- o An 841-X may replace the minimum 844-2/21. The system can reside on any mixed device types. Minimum capacity to support standard batch processing is 60 million characters. (The system itself occupies approximately 1.4 million characters.)
- o System uses three PPU's on a full-time basis. The remaining are used on a dynamic pool basis.
- o Each CDC 6000 Computer requires one 6612 operator display console and one or more 6681 Data Channel Converters, which must be ordered separately.

Basic 6400 Mainframe

- o Unified CPU
- o 49K to 131K CM
- o 10 or 20 PPU
- o 12 or 24 Channels

Basic 6600 Mainframe

- o 1 - Multi-Function CPU
- o 49K to 131K CM
- o 10 or 20 PPU's
- o 12 or 24 I/O Channels

Basic 6500 Mainframe

- o 2 - Unified CPU's
- o 65K, 98K or 131K CM
- o 10 or 20 PPU's
- o 12 or 24 I/O Channels

Basic 6700 Mainframe

- o 1 - Multi-Function CPU
- o 1 - Unified CPU
- o 65K, 98K or 131K CM
- o 10 or 20 PPU's
- o 12 or 24 I/O Channels

Basic System & Loader Residence (Refer to CY170 Configurators)

Alternate Mainframes

	6400 Single CPU	6500 Dual CPU	6600 Single CPU	6700 Dual CPU
CM Size				
65K	6414	6514	6614	6714
98K	(6414) (10178-1)	(6514) (10178-1)	(6614) (10189-1)	(6714) (10180-1)
131K	6413	6513	6613	6713

/PR53-09I

o 6400 Upgrade Rules for CM:

32K to 49K	6415	plus	10177-2	gives	(6415) (10177-2)
49K to 65K	(6415) (10177-1)	plus	10177-2	gives	6414
65K to 98K	6414	plus	10178-1	gives	(6414) (10178-1)
98K to 131K	(6414) (10178-1)	plus	10178-2	gives	6413

o 6500 Upgrade Rules for CM:

65K to 98K	6514	plus	10178-1	gives	(6514) (10178-1)
98K to 131K	(6514) (10178-1)	plus	10178-2	gives	6513

o 6600 Upgrade Rules for CM:

65K to 98K	6614	plus	10180-1	gives	(6614) (10180-1)
98K to 131K	(6614) (10180-1)	plus	10180-2	gives	6613

Additional CPU

o 6400 will offer increased performance by the addition of a second CPU:

6413 plus 10117 gives 6513
6414 plus 10117 gives 6514

PPU - I/O Channel Options

o The basic 6400, 6500, 6600 and 6700 contain 10 PPU's and 12 I/O Channels

o 6400 Upgrade Rules:

10/12	20/24	6413 plus 10173-8 6414 plus 10173-9

o 6500 Upgrade Rules:

10/12	20/24	6513 plus 10173-6 6514 plus 10173-7

Optional Extended Core Storage

o To attach ECS, all systems must be upgraded to 6X13, 6X14, or 6X15 mainframes.

o The basic 663X-2 ECS module contains the necessary controller. Price includes CEJ/MEJ and CMAP options if they are ordered and installed concurrently with the first ECS module (or upgrade).

o The controller may access up to four 6000 or CDC CYBER 72, 73, 74 systems.

o Supported configurations:

ECS Words	Model
125K	6633-2
250K	6634-2
500K	6635-2
1M	6636-2
2M	(2) 6636-2

o Upgrade Rules

125K to 250K	6633-2 plus 10122-1	gives 6634-2
250K to 500K	6634-2 plus 10122-2	gives 6635-2
500K to 1M	6635-2 plus 10122-3	gives 6636-2
1M to 2M	6636-2 plus 6636-2	gives (2) 6636-2

o Distributive Data Path (DDP)

The basic controller does not contain any DDP's. Upgrade Rules are:

6642-1 adds the first
10280-1 adds the second
10280-2 adds the third
10280-3 adds the fourth

Note: The 6633-2 will not support the intermix of CY 170 and CY70/6000 systems via the 6642-1 DDP.

Tape Units

o See Hardware Diagrams for supported configurations.

o See 'Minimum System Rule' for alternate uses of Tape Units.

o NOS/BE 1 may be dead-started from either 7 track or 9 track units.

o There may be only one type of Data Channel Converter (6684-X or 6681) per I/O channel. Any Dual Access Tape Controller must be connected through one type of Data Channel Converter (i.e., all 6684-X or all 6681).

Line Printers

o See Hardware Diagrams for supported local and remote configurations.

o A 595-X Train must be ordered with each 512-1 Printer, 733-110 Printer or 733-10 Station.

o A 596-X Train must be ordered with each 580 Printer.

o Drivers are provided within the system to support the 512-1 and 580 Printers.

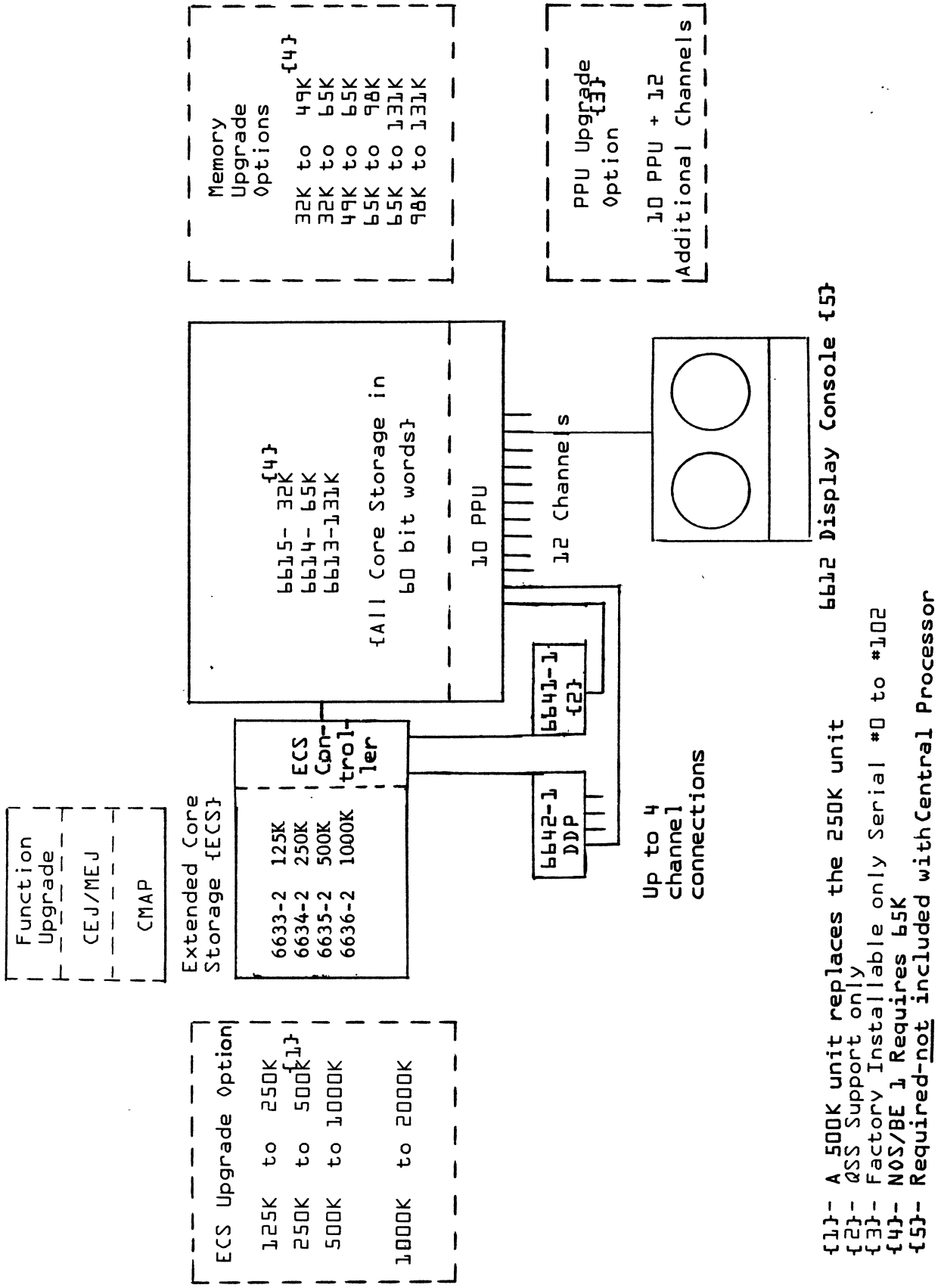
o The Printer Buffer size within the released system is 401 words. This Buffer may be increased by an installation modification.

o The 580-XXX (Programmable Format Control) is supported.

Card Equipment

o See Hardware Diagram for supported local and remote configuration.

o The Card Reader Buffer size and the Card Punch Buffer size within the released system is 401 words. This Buffer may be increased by an installation modification.

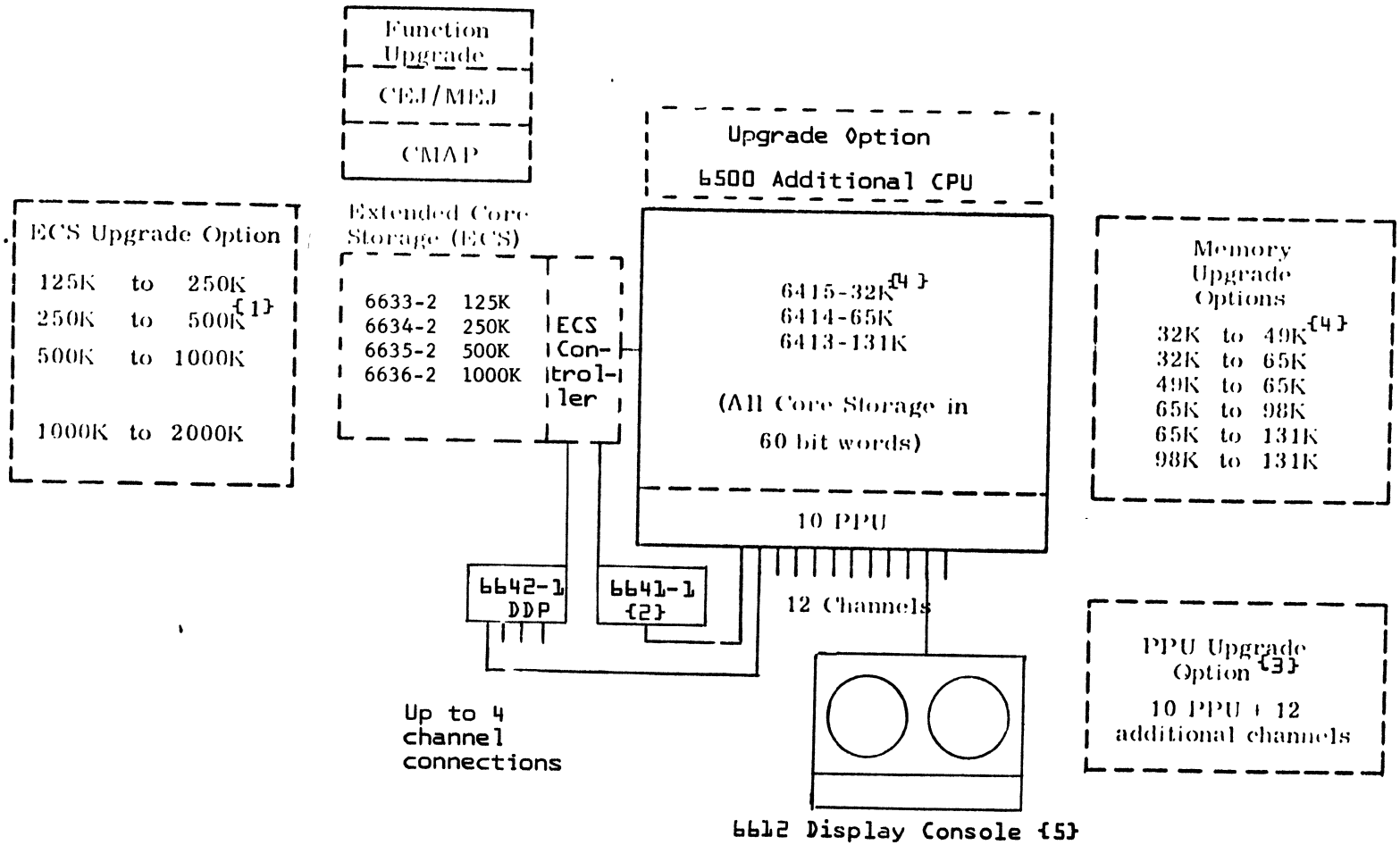


(1)- A 500K unit replaces the 250K unit
(2)- QSS Support only
(3)- Factory Installable only Serial #0 to #102
(4)- NOS/BE 1 Requires 65K
(5)- Required-not included with Central Processor

For allowable peripheral configurations - refer to the CYBER 170 configurator section.

/PR53-09I

6400 CONFIGURATOR



{1} - A 500K unit replaces the 250K unit
{2} - QSS Support only
{3} - Factory Installable only Serial #0 to #102
{4} - NOS/BE 1 Requires 65K
{5} - Required-not included withCentral Processor

3800 SYSTEM TYPE

Summary of Features

- Forty-eight bit word length plus three bit parity checking.
- Storage Module of 32,768 forty-eight bit words expandable in 32,768 word modules up to 262,144 forty-eight bit words.
- One to four Communication Modules may utilize from one to eight by-directional data channels each.
- Up to eight control and/or peripheral devices can be attached to each bi-directional data channel.
- Code compatible with Control Data 1604 Computer except for three 1604 I/O instructions.
- Code compatible with 3600.
- Instructions lookahead.

Typical Applications

Large Scale Scientific Problems
Real-time Systems
Computer Centers
Data Processing Systems

36/3800 COMPUTER — SOFTWARE PRODUCT SET CONFIGURATOR FOR

OPERATING SYSTEM PRODUCT NAME		TAPE SCOPE	DISK/DRUM SCOPE				
PRODUCT	NUMBER	6201-01	6101-01				
	VERSION	6	2				
RELEASE STATUS		A	A				

PRODUCT NUMBER (a)	VER	VAR	PRODUCT NAME	RELEASE STATUS	S/L	RELEASE STATUS	S/L	RELEASE STATUS	S/L	RELEASE STATUS	S/L	RELEASE STATUS	S/L	RELEASE STATUS	S/L
	5		COMPASS	A		A									
	5		FORTRAN	A		A									
	4		COBOL	A		A									
	1	A	SIMSCRIPT	A		///									
	1	B	SIMSCRIPT	A		A									
	2		APT (64)	A		A									
	1		INFOL	A		A									
	1		ALGOL	A		A									
	1		ALGOL-60	A		A									
	2		SORT II	A		A									
	2		CDM-4	///		A									
	1		CDCKWIC	A		A									
	1		NETWORK FLOW	A		A									
	1		PERT/TIME	A		A									
	1		PERT/COST	A		A									

NOTES (a) See the appropriate operating system section for product number

LEGEND

STATUS CODES:

A — SOFTWARE IS AVAILABLE NOW.
X — SOFTWARE WILL BE PROVIDED. SCHEDULE TO BE ANNOUNCED.
/// — STANDARD SOFTWARE WILL NOT BE PROVIDED.
DATE — DATE ENTERED IS PRODUCT AVAILABILITY DATE.
QSS — REQUIRED TO GET CHARACTERISTICS, AVAILABILITY AND COST.
BLANK — SOFTWARE AVAILABILITY STATUS HAS NOT BEEN DETERMINED.

SEE THE SOFTWARE SECTION OF THE PRICING MANUAL FOR SUPPORT LEVEL.

36/3800 COMPUTER	**OPERATING SYSTEM HARDWARE** CONFIGURATOR FOR TAPE SCOPE/6201-01 VERSION 6	

THIS DEFINES THE REQUIRED AND OPTIONAL ALLOWABLE HARDWARE FOR THE OPERATING SYSTEM INDICATED IN THE HEADING OF THIS PAGE

HARDWARE REQUIREMENTS

INSTRUCTIONS.

THE ENTRY(S) WITHIN THE MATRIX INDICATES THE REQUIRED HARDWARE DEVICES FOR THE SYSTEM LOGICAL UNITS.

	REQUIRED UNITS					OPTIONAL			
	STANDARD INPUT	STANDARD OUTPUT	STANDARD PUNCH	SYSTEM LIBRARY	SYSTEM SCRATCH	LOAD & GO	ACCOUNTING	SATELLITE OP	AUXILIARY SCRATCH
TAPE UNITS	1 OR 1	1 OR	1 OR	1	1	1	1		1
CARD READER	1								
CARD PUNCH			1				1		
LINE PRINTER		1							
PAPER TAPE PUNCH							1		

NOTE: Additional core will generally enhance the capability of the operating system

CHANNELS

MINIMUM REQUIRED BY OPERATING SYSTEM	2
OPTIONAL FOR AUGMENTED PERFORMANCE	1

CORE REQUIREMENTS

MINIMUM REQUIRED MACHINE CORE SIZE	32K

OPERATING SYSTEM CORE

BASIC RESIDENCE	5600 (c)
I/O SYSTEM	0
SPECIAL FEATURES	
DRIVERS	SEE ALLOWABLE HARDWARE
LOADERS (TEMPORARY REQ)	3230

CORE NOT AVAILABLE FOR USER PROGRAMS

NOT AVAILABLE DURING LOADING

ALLOWABLE HARDWARE

CENTRAL PROCESSOR

PROCESSING OPTIONS

STATUS	///	///
MODEL	3810	3811
TYPE	DUAL ACC	MULTI-PROG

CHANNELS

STATUS	A	///	///	A	///
MODEL	3606	3607	3608	3806	3816
TYPE	12-bit	24-bit	48-bit	AUGMENTED	PRIORITY

PERIPHERAL EQUIPMENT DRIVERS

TAPE DRIVES

STATUS/DRVR NO	A	A	A
MODEL	604	606	607
CONTROLLER	A	A, B	A, B
CORE REQ	INCLUDED	INCLUDED	INCLUDED

A				B		
	3228	3229	3423	3624	3625	

LINE PRINTER

STATUS/DRVR NO	A	A	///		A
MODEL	501	505	512		1612
CONTROLLER	3252-3659	3256-3659	3555		3655
CORE REQ	INCLUDED	INCLUDED			INCLUDED

CARD READER

STATUS/DRVR NO	A
MODEL	405
CONTROLLER	3447-3649
CORE REQ	66

CARD PUNCH

STATUS/DRVR NO	A
MODEL	415
CONTROLLER	3446-3644
CORE REQ	36

DISC DRIVES

STATUS/DRVR NO	///	///	///
MODEL	852	853	854
CONTROLLER	3232	3234	3234
CORE REQ			

DISC FILES

			(b)
STATUS/DRVR NO	///	///	A
MODEL	813	814	828
CONTROLLER	3234	3234	3623-35
CORE REQ			171

DRUMS

A	
863	
3436-3637	
132	

NOTES

36XX controllers recommended for all units

(b) Discontinued Hardware
(c) Includes high core library table of contents.

LEGEND

STATUS CODES

A ——SOFTWARE IS AVAILABLE NOW
X ——SOFTWARE WILL BE PROVIDED SCHEDULE TO BE ANNOUNCED.
// ——STANDARD SOFTWARE WILL NOT BE PROVIDED.
DATE——DATE ENTERED IS PRODUCT AVAILABILITY DATE.
QSS——REQUIRED TO GET CHARACTERISTICS, AVAILABILITY AND COST.
BLANK—SOFTWARE AVAILABILITY STATUS HAS NOT BEEN DETERMINED.

36/3800 COMPUTER	SOFTWARE PRODUCT SET HARDWARE CONFIGURATOR FOR TAPE SCOPE / E201-01 VERSION 6	

THIS DEFINES THE REQUIRED AND OPTIONAL HARDWARE FOR THE PRODUCT SET OPERATING UNDER THE OPERATING SYSTEM INDICATED IN THE HEADING OF THIS PAGE

SOFTWARE PRODUCT NAME/NO.	VER	VAR	OPERATING OPTION	ADDITIONAL HARDWARE OVER AND ABOVE THE OPERATING SYSTEM REQUIREMENTS — REQUIRED HARDWARE ** CHANNELS	REQUIRED HARDWARE ** CORE *	REQUIRED HARDWARE ** PERIPHERAL	OPTIONAL HARDWARE CHANNELS A	OPTIONAL HARDWARE CORE B	OPTIONAL HARDWARE PERIPHERAL C	PERFORMANCE IMPROVEMENTS SPEED	PERFORMANCE IMPROVEMENTS PROBLEM CAPACITY	PERFORMANCE IMPROVEMENTS OPERATING CAPABILITIES	SPECIFIC NOTES
COMPASS E201-01	5		Assemble Load & Go			 1 tape {b}			C 1 tape with COSY option	C		C	
FORTRAN E201-01	5		Compile only Load & Go			1 tape {a} 2 tapes 1{a} + 1{b}				A			
COBOL E201-01	4		Compile only Load & Go			1 tape {a} 2 tapes 1{a} + 1{b}				A			
SIMSCRIPT E201-08	1	A	Compile only Load & Go			 1 tape {b}	A	B	C 3 tapes	A B		C	
SIMSCRIPT E201-08	1	B	Compile only Load & Go		32K	 1 tape {b}	A	B	C 3 tapes	A B		C	Internal revision of first phase to enhance reliability, and provide for operation on up to 131K core systems.
APT {64K} E201-05	2				32K	3 tapes 2{a} + 1{c}	A		C 4 tapes {a}	A		C	APT Version 2 is compatible with APT Long Range Program Version 8.
	2												
INFOL E201-02	1					2 tapes {e}	A		C1 2 tapes {a} C2 1 tape {f}	A	C2	C1	
ALGOL E201-01	1		Compile only Load & Go			1 tape {a} 2 tapes 1{a} + 1{b}	A			A			
ALGOL-60 E201-01	1							B	1 tape {d}	B			
SORT II E201-01	2		Balanced Merge			4 tapes {a}	A		C 12 tapes in increments of 2 {a}	A C	C		
SORT II E201-01	2		Polyphase Merge			3 tapes {a}	A		C 13 tapes in increments of 1 {a}	A C	C		
									C				

GENERAL NOTES

{a} Scratch tapes
{b} Load & Go Unit {See OP/System Hardware Requirements}
{c} Overlay tape
{d} Segment tape
{e} User Input & Output tapes
{f} Special Output

LEGEND A, B, C — THESE LETTERS IN THE PERFORMANCE IMPROVEMENT COLUMNS INDICATE THAT THE OPTIONAL HARDWARE REFERENCED BY THOSE LETTERS WILL GIVE THE INDICATED KIND OF IMPROVEMENT THERE IS NO SEQUENTIAL PREFERENCE ATTACHED TO THE LETTERS A, B, C

* — INDICATED CORE FIGURE IS IN ADDITION TO THE "MINIMUM REQUIRED MACHINE CORE SIZE" SHOWN IN OPERATING SYSTEM CONFIGURATOR

** — NO ENTRY UNDER REQUIRED HARDWARE INDICATES THAT THE PRODUCT WILL OPERATE WITH OPERATING SYSTEM REQUIREMENTS

36/3800 COMPUTER	**SOFTWARE PRODUCT SET HARDWARE** CONFIGURATOR FOR TAPE SCOPE/ E201-01 VERSION 6

THIS DEFINES THE REQUIRED AND OPTIONAL HARDWARE FOR THE PRODUCT SET OPERATING UNDER THE OPERATING SYSTEM INDICATED IN THE HEADING OF THIS PAGE

SOFTWARE PRODUCT			OPERATING OPTION	ADDITIONAL HARDWARE OVER AND ABOVE THE OPERATING SYSTEM REQUIREMENTS									SPECIFIC NOTES
				REQUIRED HARDWARE **			OPTIONAL HARDWARE						
										PERFORMANCE IMPROVEMENTS			
NAME/NO.	VER	VAR		CHANNELS	CORE *	PERIPHERAL	CHANNELS A	CORE B	PERIPHERAL C	SPEED	PROBLEM CAPACITY	OPERATING CAPABILITIES	
CDCKWIC E201-06	1					2 tapes {a}			C 2 tapes {a}			C	
NETWORK FLOW E201-07	1								C 3 tapes {a}	C	C		
PERT/TIME E201-03	1					5 tapes	A		C 2 tapes {a}	A C			
PERT/COST E201-04	1					6 tapes	A		C 2 tapes	A C			

GENERAL NOTES

{a} Scratch tapes

LEGEND A, B, C — THESE LETTERS IN THE PERFORMANCE IMPROVEMENT COLUMNS INDICATE THAT THE OPTIONAL HARDWARE REFERENCED BY THOSE LETTERS WILL GIVE THE INDICATED KIND OF IMPROVEMENT THERE IS NO SEQUENTIAL PREFERENCE ATTACHED TO THE LETTERS A, B, C

* — INDICATED CORE FIGURE IS IN ADDITION TO THE "MINIMUM REQUIRED MACHINE CORE SIZE" SHOWN IN OPERATING SYSTEM CONFIGURATOR

** — NO ENTRY UNDER REQUIRED HARDWARE INDICATES THAT THE PRODUCT WILL OPERATE WITH OPERATING SYSTEM REQUIREMENTS

36/3800 COMPUTER	**OPERATING SYSTEM HARDWARE** CONFIGURATOR FOR DISK/DRUM SCOPE/E101-01 VERSION 2	

THIS DEFINES THE REQUIRED AND OPTIONAL ALLOWABLE HARDWARE FOR THE OPERATING SYSTEM INDICATED IN THE HEADING OF THIS PAGE

HARDWARE REQUIREMENTS

HARDWARE REQUIREMENTS

INSTRUCTIONS.

THE ENTRY(S) WITHIN THE MATRIX INDICATES THE REQUIRED HARDWARE DEVICES FOR THE SYSTEM LOGICAL UNITS.

	REQUIRED UNITS					OPTIONAL			
	STANDARD INPUT	STANDARD OUTPUT	STANDARD PUNCH	SYSTEM LIBRARY	SYSTEM SCRATCH	LOAD & GO	ACCOUNTING	AUX. LIBRARY	DRUM OVERFLOW
TAPE UNITS	1 OR			1(d) OR		1 OR	1 OR	1(d)	1
CARD READER	1(a)			1(a)					
CARD PUNCH			1(b)				1(b) OR		
LINE PRINTER		1 or 2(c)					1(c)		
DRUM WORDS (e)	and 30K (j)	and 200K or 250K	and 10K	and 150K (j)	60K (f)	32K	and 35K		

CHANNELS

MINIMUM REQUIRED BY OPERATING SYSTEM	1-3606 & 1-3806
OPTIONAL FOR AUGMENTED PERFORMANCE	1-3606

CORE REQUIREMENTS

MINIMUM REQUIRED MACHINE CORE SIZE	32K (1)

OPERATING SYSTEM CORE

BASIC RESIDENCE	7200
I/O SYSTEM	1100
SPECIAL FEATURES: INTERNAL ACCOUNTING, DEBUGGING, ASSEMBLY OPTIONS, RESIDENT BACKGROUNDS, PERIPHERAL PROGRAMS, AUXILIARY FAMILY BUFFERS	4750
DRIVERS	SEE ALLOWABLE HARDWARE
LOADERS (TEMPORARY REQ)	3640

CORE NOT AVAILABLE FOR USER PROGRAMS

NOT AVAILABLE DURING LOADING

LEGEND

STATUS CODES

A —— SOFTWARE IS AVAILABLE NOW
X —— SOFTWARE WILL BE PROVIDED SCHEDULE TO BE ANNOUNCED.
/// —— STANDARD SOFTWARE WILL NOT BE PROVIDED
DATE —— DATE ENTERED IS PRODUCT AVAILABILITY DATE.
QSS —— REQUIRED TO GET CHARACTERISTICS, AVAILABILITY AND COST.
BLANK — SOFTWARE AVAILABILITY STATUS HAS NOT BEEN DETERMINED.

ALLOWABLE HARDWARE

CENTRAL PROCESSOR

PROCESSING OPTIONS

STATUS	///	///				
MODEL	3810	3811				
TYPE	DUAL ACCESS	MULTI-PROG.				

CHANNELS

STATUS	A	///	///	A	A	
MODEL	3606	3607	3608	3806	3816	
TYPE	12-bit	24-bit	48-bit	AUGMENTED	PRIORITY	

PERIPHERAL EQUIPMENT DRIVERS

TAPE DRIVES

						(m)
STATUS/DRVR NO	A	A	A	///	///	A
MODEL	604	606	607	608	609	65X
CONTROLLER	A	A, B	A, B	3128	3121	3518-3528
CORE REQ	INCLUDED	INCLUDED	INCLUDED			

A	3228	3229	3423	B	3624	3625

LINE PRINTER

					(l)	
STATUS/DRVR NO	A	A	A	A	A	
MODEL	501	505	1612	512	3254	
CONTROLLER	3256-3659	3256-3659	3655	3555	INCLUDED	
CORE REQ	INCLUDED	INCLUDED	INCLUDED	INCLUDED		

CARD READER

STATUS/DRVR NO	A		
MODEL	405		
CONTROLLER	3447 & 3649		
CORE REQ	INCLUDED		

DISPLAY

(k)	
A	
3291	
INCLUDED	

CARD PUNCH

STATUS/DRVR NO	A		
MODEL	415		
CONTROLLER	3446-3644		
CORE REQ	63		

DRUMS

(b)	
A	///
863	865
3436-3637	3637
INCLUDED	

DISC DRIVES

STATUS/DRVR NO	///	///	A
MODEL	852	853	854
CONTROLLER	3232	3234	3234
CORE REQ			

DISC DRIVES

(n)	
A	
841	
3553-2	

DISC FILES

STATUS/DRVR NO	A	A	QSS
MODEL	813	814	828
CONTROLLER	3234	3234	3632-35
CORE REQ	70	70	70

DISC FILES

A	
821	
3553-2	

NOTES

(a) -- (d) May be same unit.
(e) Storage dynamically allocated. Figures are representative.
(f) Size is program dependent.
(h) 320 words will be required for each additional drum.
(l) Same driver as 501 except for function code change.
(m) 657 required for software maintenance and autoload.
(n) Driver only provided

(i) MSIO is an assembly option which requires 64K for the operating system and complete product set. If MSIO features are not included in E040*2, only 32K is required (except as noted), and the 1620 shown above may be deleted.
(j) Drum words required regardless of tape unit or card reader.
(k) Replaces console typewriter I/O function without hardcopy unless dumped from mass storage.

36/3800 COMPUTER	**SOFTWARE PRODUCT SET HARDWARE** CONFIGURATOR FOR DRUM SCOPE/ E101-01 ~~VERSION~~ 2	

THIS DEFINES THE REQUIRED AND OPTIONAL HARDWARE FOR THE PRODUCT SET OPERATING UNDER THE OPERATING SYSTEM INDICATED IN THE HEADING OF THIS PAGE

SOFTWARE PRODUCT NAME/NO.	VER	VAR	OPERATING OPTION	ADDITIONAL HARDWARE OVER AND ABOVE THE OPERATING SYSTEM REQUIREMENTS — REQUIRED HARDWARE ** CHANNELS	CORE *	PERIPHERAL	OPTIONAL HARDWARE CHANNELS A	CORE B	PERIPHERAL C	PERFORMANCE IMPROVEMENTS SPEED	PROBLEM CAPACITY	OPERATING CAPABILITIES	SPECIFIC NOTES
COMPASS E101-01	5		Assemble Load & Go			Load & Go Unit {d}							
FORTRAN E101-01	5		Compile only Load & Go			Load & Go Unit {d}		B		B			
COBOL E101-01	4		Compile only Load & Go			Load & Go Unit {d}							
SIMSCRIPT E101-08	1	B	Compile only Load & Go		32K	1 tape {d}							Internal revision of first phase to enhance reliability, and provide for operation on up to 131K core systems.
APT E101-05	2				32K {a}	1 tape {b}			C 2 tapes or equiv. drum space {e}			C	APT Version 2 is compatible with APT Long Range Program Version 8.
INFOL E101-02	1				32K {a}	2 tapes {c}	A		C1 2 tapes or equiv. drum space {e} C2 1 tape {f}	A	C2	C1	
ALGOL E101-01	1		Compile only Load & Go			load & Go Unit {d}							
ALGOL-60 E101-01	1							B	1 tape {h}	B			
SORT II E101-01	2		Balanced Merge			4 tapes or equiv. drum space	A		C up to 16 tapes total or equiv. drum space {increments of 2} {e}	A C	C		
SORT II E101-01	2		Polyphase Merge			3 tapes or equiv. drum space	A		C up to 16 tapes total or equiv. drum space {increments of 1} {e}	A C	C		
CDM-4 ~~E101-09~~	2					3 tapes		B	C 2 tapes or equiv. drum space {e}	B	C		
CDCKWIC E101-06	1								C 5 tapes or equiv. drum space {e}			C	
NETWORK FLOW ~~E101-07~~	1								C 3 tapes or equiv. drum space {e}	C	C		
	1												

GENERAL NOTES

{a} This product requires a total of 64K core regardless of the inclusion of MSIO in the operating system.
{b} Overlay tape
{c} User Input & Output
{d} See OP/System Hardware Requirements; may be tape or drum.
{e} Scratch Units
{f} Special Output tape
{h} Segment tape

LEGEND A, B, C — THESE LETTERS IN THE PERFORMANCE IMPROVEMENT COLUMNS INDICATE THAT THE OPTIONAL HARDWARE REFERENCED BY THOSE LETTERS WILL GIVE THE INDICATED KIND OF IMPROVEMENT. THERE IS NO SEQUENTIAL PREFERENCE ATTACHED TO THE LETTERS A, B, C.

* — INDICATED CORE FIGURE IS IN ADDITION TO THE "MINIMUM REQUIRED MACHINE CORE SIZE" SHOWN IN OPERATING SYSTEM CONFIGURATOR

** — NO ENTRY UNDER REQUIRED HARDWARE INDICATES THAT THE PRODUCT WILL OPERATE WITH OPERATING SYSTEM REQUIREMENTS

36/3800 COMPUTER	SOFTWARE PRODUCT SET HARDWARE CONFIGURATOR FOR DRUM SCOPE/ E101-01 VERSION 2	

THIS DEFINES THE REQUIRED AND OPTIONAL HARDWARE FOR THE PRODUCT SET OPERATING UNDER THE OPERATING SYSTEM INDICATED IN THE HEADING OF THIS PAGE

SOFTWARE PRODUCT			OPERATING OPTION	ADDITIONAL HARDWARE OVER AND ABOVE THE OPERATING SYSTEM REQUIREMENTS									SPECIFIC NOTES
				REQUIRED HARDWARE **			OPTIONAL HARDWARE			PERFORMANCE IMPROVEMENTS			
NAME/NO.	VER	VAR		CHANNELS	CORE *	PERIPHERAL	CHANNELS A	CORE B	PERIPHERAL C	SPEED	PROBLEM CAPACITY	OPERATING CAPABILITIES	
PERT/TIME E101-03	1				32K {a}	2 tapes, 1 drum or 5 tapes	A		C 2 tapes	A C			
PERT/COST E101-04	1				32K {a}	3 tapes, 1 drum or 6 tapes	A		C 2 tapes	A C			

GENERAL NOTES

{a} This product requires a total of 64K of core regardless of the inclusion of MSIO in the operating system.

LEGEND

A, B, C — THESE LETTERS IN THE PERFORMANCE IMPROVEMENT COLUMNS INDICATE THAT THE OPTIONAL HARDWARE REFERENCED BY THOSE LETTERS WILL GIVE THE INDICATED KIND OF IMPROVEMENT. THERE IS NO SEQUENTIAL PREFERENCE ATTACHED TO THE LETTERS A, B, C

* — INDICATED CORE FIGURE IS IN ADDITION TO THE "MINIMUM REQUIRED MACHINE CORE SIZE" SHOWN IN OPERATING SYSTEM CONFIGURATOR

** — NO ENTRY UNDER REQUIRED HARDWARE INDICATES THAT THE PRODUCT WILL OPERATE WITH OPERATING SYSTEM REQUIREMENTS

SOFTWARE PRODUCT DESCRIPTIONS

TAPE SCOPE — E201-01

A comprehensive operating system which processes jobs, controls input/output operations, and handles interrupt processing. It includes facilities for debugging, program correction and library maintenance. Input/output operations take the form of macro instructions which refer to logical units; SCOPE associates to logical unit designations with the proper physical units to perform the operations.

Documents	Pub. No.	Status
General Information	60132200	A
Reference	60053300B	A
Instant	60059000A	A
Extensions ADB	60171300	A

DISK/DRUM SCOPE — E101-01

Incorporates all the features of Tape SCOPE and, in addition, allows concurrent operation of background programs. Unless specified otherwise, standard systems units and programmer output units are assumed to be on the drum. It also includes macro instruction capability to access and process data files on disk or other forms of mass storage.

Documents	Pub. No.	Status
General Information	60131000	A
Reference	60059200A	A
(Revision)	60059200B	A
Instant	60131600A	A
Background Prgs. ADB	60137900	A
Drum/Tape SCOPE ADB	60137500	A
SCOPE/MSIO Op. Guide ADB	60175000A	A
MSIO Reference	60174800A	A

COMPASS — E101-01, E201-01

Comprehensive assembly system which runs under control of Tape and Drum SCOPE systems. COMPASS provides mnemonic machine operation codes, symbolic addressing, assembly directing pseudo instructions, and programmer defined and library defined macro instructions.

Documents	Pub. No.	Status
General Information Tape	60131800	A
Reference	60052500C	A
Instant, Tape	60056500A	A

SIMSCRIPT — E101-08, E201-08

Developed primarily for simulation programming. The language may be used to describe a situation which changes over some time interval and tests its operation for comparison.

Documents	Pub. No.	Status
General Information	60133000	A
Reference	60134600	A
Instant	60133500	A

FORTRAN — E101-01, E201-01

A scientific problem-oriented compiling language. It includes most of the features of FORTRAN II and FORTRAN IV, plus certain features unique to the Control Data system.

The system manipulates real, double-precision and complex floating point quantities, and integer, logical, and Hollerith integer quantities.

COBOL — E101-01, E201-01

A business oriented data processing language based on the specifications set forth in the DOD reference publication on COBOL 61, Extended. The COBOL compiler reduces compiling time and produces efficiently operating object programs.

Documents	Pub. No.	Status
General Information	60170900	A
Reference	60170500	A
Instant	60057400A	A

INFOL — E101-02, E201-02

A language for generalized information storage and retrieval applications. It facilitates the establishment, maintenance and interrogation of files of variable length data such as titles and abstracts. It is designed for use by persons not having conventional programming experience.

Documents	Pub. No.	Status
General Information	60132400	A
Reference	60170300	A
Instant	60173600	A

ALGOL — E101-01, E201-01

A compilation system which accepts the algorithmic language defined in the ALGOL-60 Revised Report in the Communications of the ACM, 1963, Vol. 6. This system was developed in cooperation with the Mathematics Division of the Oak Ridge National Laboratory.

Documents	Pub. No.	Status
Reference ADB	60084800A	A
Instant	60131700	A

ALGOL-60 — E101-01, E201-01

Similar to C140; in addition, input/output procedures include the IFIPS set and the complete ACM set.

Documents	Pub. No.	Status
General Information	60173300	A
Reference	60179400	A
Generic Reference	60214900	A

APT — E101-01, E201-01

A system that prepares paper tape instructions for numerically controlled machine tools. The APT language allows specifications of the geometric properties of a part to be machined and the operations involved in producing the part.

Documents	Pub. No.	Status
General Information	60131500	A
Reference	60132800	A
Supplement ADB	60192900	A

SORT-FF — E101-01, E201-01

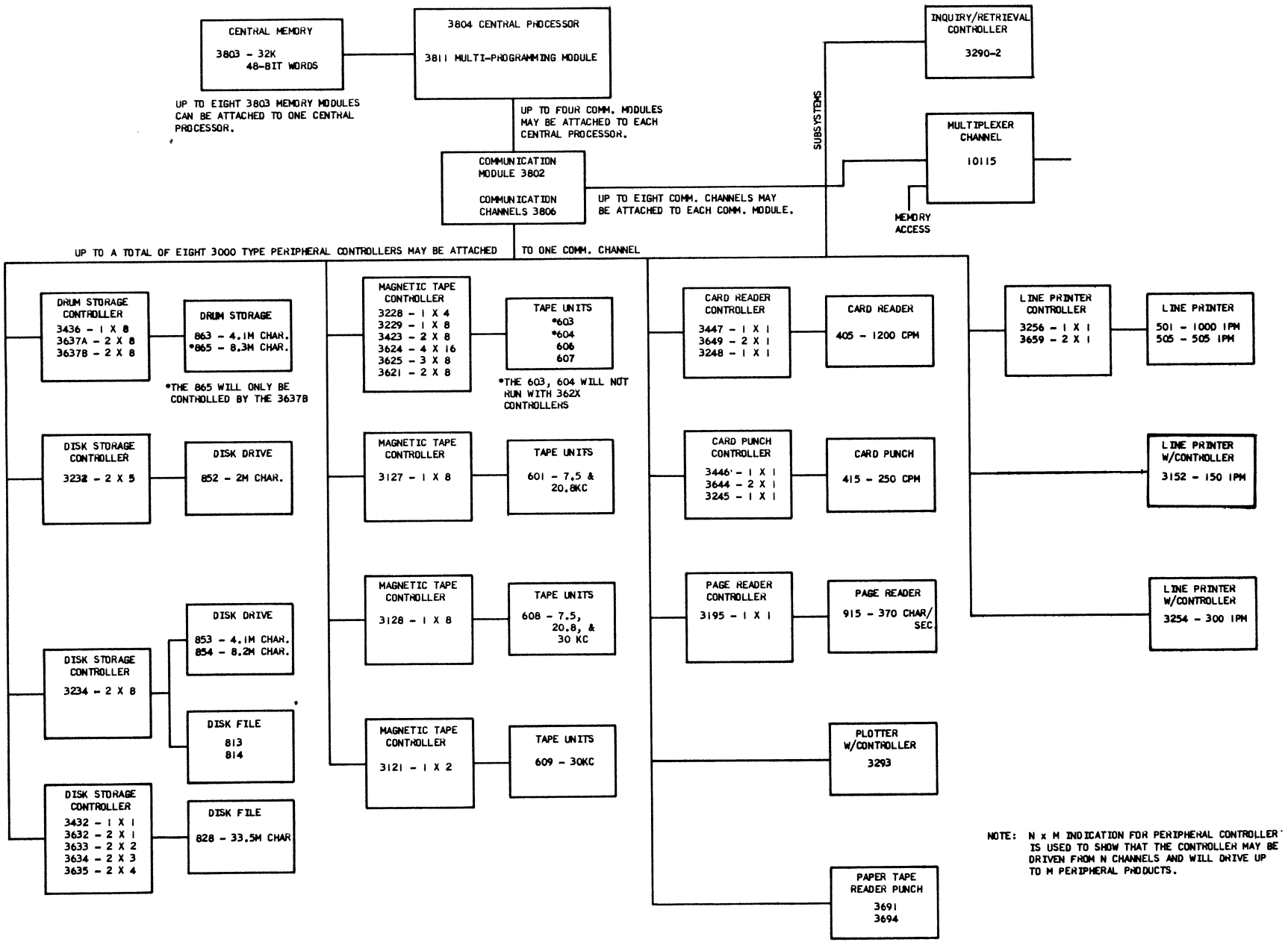
Produces a sequenced file of data records from random input. The internal sort uses the selection replacement technique and may, at the programmer's option, distribute strings on tape for either a poly-phase or balance merge. Facilities are available to enter own code subroutines for execution during sort/merge operations.

Documents	Pub. No.	Status
General Information	60058600	A
Reference	60058500D	A

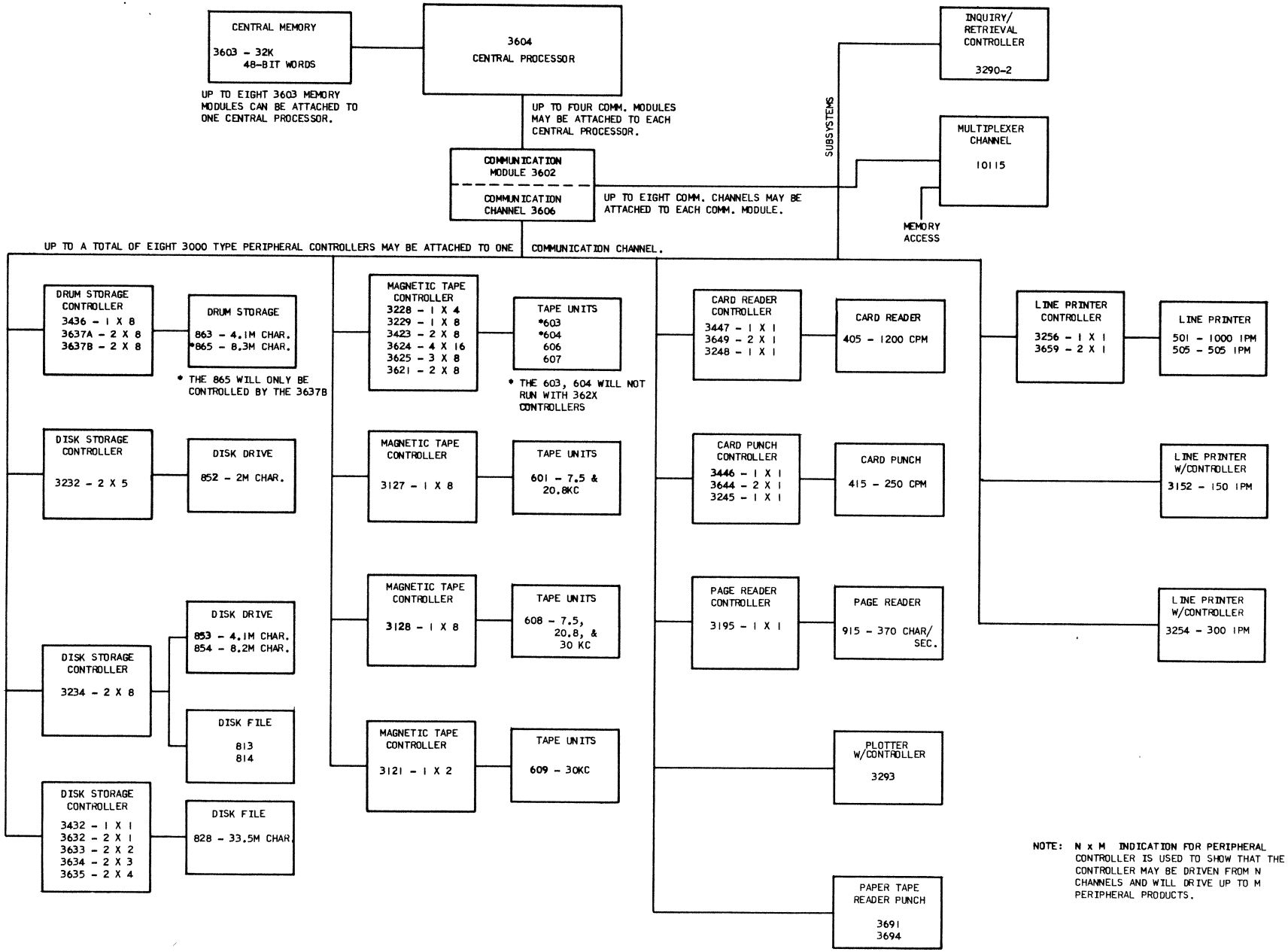
SOFTWARE PRODUCT DESCRIPTIONS

PRODUCT NAME	PRODUCT NO.	DESCRIPTION
CDM4	E101-09	A linear programming system which may also be used to solve certain systems of non-linear equations using a separable programming algorithm. Output is in the form of a printed report. Documents — Pub. No. — Status Reference, Drum — 60177000 — A
CDCKWIC	~~E101-06~~ E201-06	Produces an index in which the titles of documents, reports, and papers are permuted so that there is one entry in the index for each word in the title. Documents — Pub. No. — Status Reference ADB — 60175300 — A
NETWORK FLOW	~~E101-07~~ E201-07	Solves network problems including the classic transportation problem. Transhipment and backshipment as well as source to destination shipments are efficiently handled by the algorithm. Documents — Pub. No. — Status Reference — 60130500 — A
PERT/TIME	~~E101-03~~ E201-03	Utilizes a time-oriented network structure to produce a variety of reports reflecting the actual and scheduled progress of a project. PERT is especially useful in developmental applications where there are unknown or unpredictable factors. Documents — Pub. No. — Status General Information — 60170400 — A Reference, PERT/TIME — 60170800 — A
PERT/COST	E101-04 E201-04	Utilizes a cost-oriented work breakdown structure to provide a variety of reports on actual and estimated costs over the life of a project. This system is equivalent to the Air Force PERT/COST program. Documents — Pub. No. — Status General Information — 60170400 — A Reference — 60214800 — A

3800 HARDWARE CONFIGURATOR



NOTE: N x M INDICATION FOR PERIPHERAL CONTROLLER IS USED TO SHOW THAT THE CONTROLLER MAY BE DRIVEN FROM N CHANNELS AND WILL DRIVE UP TO M PERIPHERAL PRODUCTS.



NOTE: N x M INDICATION FOR PERIPHERAL CONTROLLER IS USED TO SHOW THAT THE CONTROLLER MAY BE DRIVEN FROM N CHANNELS AND WILL DRIVE UP TO M PERIPHERAL PRODUCTS.

3400 SYSTEM TYPE

Summary of Features:

- 48-bit word length plus 3-bit parity checking
- 1.5 microseconds - memory cycle time
- choice of minimum 16,384 word storage or standard 32,768 word memory
- Bi-directional I/O channels - 1 to 4 buffered channels with direct access to core storage. Up to 8 peripheral devices can be attached to each channel.
- 24 and 48-bit I/O channels available for special applications
- Character load and store instructions
- Upward code compatible with 3600

Typical Applications

Large scale scientific systems
Computer Centers
Educational institutions
Control systems

3400 COMPUTER — **SOFTWARE PRODUCT SET** CONFIGURATOR FOR ALL STANDARD PRODUCTS

OPERATING SYSTEM PRODUCT NAME		TAPE SCOPE	DRUM SCOPE	TAPE SCOPE REDUCED RESIDENT	DISK SCOPE		
PRODUCT	NUMBER	D~~201~~-01	D~~301~~-01	D~~401~~-01	D101-01		
	VERSION	3	1	3	1		
RELEASE STATUS		A	A	A	A		

PRODUCT NUMBER (c)	VER	VAR	PRODUCT NAME	RELEASE STATUS	S/L	RELEASE STATUS	S/L	RELEASE STATUS	S/L	RELEASE STATUS	S/L	RELEASE STATUS	S/L	RELEASE STATUS	S/L
	2		COMPASS	A		A		A		A					
	1		FORTRAN	A		A		A		A					
	3		COBOL	A		A		A		A					
	1		ALGOL	A		A		A		///					
	2		GPIO	A		A		A		A					
	2		SORT III	A		A		A		A					
	2		CDM-4	A		///		///		A					
	1														
	2		PERT TIME/COST	A		///		///		A					
	1		NETWORK FLOW	A		///		///		A					

NOTES

(b) Distribution of this product is through FOCUS.
(c) See the appropriate operating system section for product number

LEGEND

STATUS CODES:

A — SOFTWARE IS AVAILABLE NOW.
X — SOFTWARE WILL BE PROVIDED. SCHEDULE TO BE ANNOUNCED.
/// — STANDARD SOFTWARE WILL NOT BE PROVIDED.
DATE — DATE ENTERED IS PRODUCT AVAILABILITY DATE.
QSS — REQUIRED TO GET CHARACTERISTICS, AVAILABILITY AND COST.
BLANK — SOFTWARE AVAILABILITY STATUS HAS NOT BEEN DETERMINED.

See the Software Section of the Pricing Manual for Support Level

3400 COMPUTER	**OPERATING SYSTEM HARDWARE** CONFIGURATOR FOR TAPE SCOPE/D201-01 VERSION 3	

THIS DEFINES THE REQUIRED AND OPTIONAL ALLOWABLE HARDWARE FOR THE OPERATING SYSTEM INDICATED IN THE HEADING OF THIS PAGE

HARDWARE REQUIREMENTS

HARDWARE REQUIREMENTS

INSTRUCTIONS

THE ENTRY(S) WITHIN THE MATRIX INDICATES THE REQUIRED HARDWARE DEVICES FOR THE SYSTEM LOGICAL UNITS.

	REQUIRED UNITS					OPTIONAL		
	STANDARD INPUT	STANDARD OUTPUT	STANDARD PUNCH	SYSTEM LIBRARY	SYSTEM SCRATCH	ACCOUNTING	LOAD & GO	AUXILIARY LIB. UNIT
TAPE UNITS	1	1	1	1	1	1	1	1
CARD READER	OR 1	OR	OR			OR		
CARD PUNCH			1			1		
LINE PRINTER		1						

CHANNELS

MINIMUM REQUIRED BY OPERATING SYSTEM	1-3406
OPTIONAL FOR AUGMENTED PERFORMANCE	Up to 3 Additional

CORE REQUIREMENTS

MINIMUM REQUIRED MACHINE CORE SIZE	32K

off-line system

OPERATING SYSTEM CORE	
BASIC RESIDENCE	5370
I/O SYSTEM	0
SPECIAL FEATURES	0
DRIVERS	SEE ALLOWABLE HARDWARE
LOADERS (TEMPORARY REQ)	1400

CORE NOT AVAILABLE FOR USER PROGRAMS

NOT AVAILABLE DURING LOADING

ALLOWABLE HARDWARE

CENTRAL PROCESSOR

PROCESSING OPTIONS						
STATUS	A					
MODEL	3410					
TYPE	Flt. Pt.					

CHANNELS						
STATUS	A	///	///	A	///	
MODEL	3406	3407	3408	3416	3417	
TYPE	12 bit	24 bit	48 bit	AUGMENTED	DIR ACCESS	

PERIPHERAL EQUIPMENT DRIVERS

TAPE DRIVES						
STATUS/DRVR NO	A	A				
MODEL	604	607				
CONTROLLER	A	A B				
CORE REQ	INCLUDED	INCLUDED				

A	3228	3229	3423	B	3624	3625	

LINE PRINTER						
STATUS/DRVR NO	A	A	///	///		
MODEL	501	505	512	3254		
CONTROLLER	3256, 3659	3256,3659	3555	INCLUDED		
CORE REQ	134	134				

CARD READER			
STATUS/DRVR NO	A		
MODEL	405		
CONTROLLER	3447, 3649		
CORE REQ	215		

PLOTTERS		
	A	
	3293	
	INCLUDED	
	63	

CARD PUNCH			
STATUS/DRVR NO	A		
MODEL	415		
CONTROLLER	3446, 3644		
CORE REQ.	125		

DRUMS		
	///	
	863	
	3436, 3637	

DISC DRIVES			
STATUS/DRVR NO	///	///	
MODEL	852	853, 854	
CONTROLLER	3232	3234	
CORE REQ			

DISC DRIVE		
	///	
	841	
	3553	

DISC FILES			
STATUS/DRVR NO	///	///	///
MODEL	813	814	821
CONTROLLER	3234	3234	3553
CORE REQ			

P/T RDR-PUNCH		
	A	
	3691	
	INCLUDED	
	88	

NOTES

LEGEND

STATUS CODES

A —— SOFTWARE IS AVAILABLE NOW.
X —— SOFTWARE WILL BE PROVIDED. SCHEDULE TO BE ANNOUNCED.
/// —— STANDARD SOFTWARE WILL NOT BE PROVIDED
DATE —— DATE ENTERED IS PRODUCT AVAILABILITY DATE.
QSS —— REQUIRED TO GET CHARACTERISTICS, AVAILABILITY AND COST.
BLANK —— SOFTWARE AVAILABILITY STATUS HAS NOT BEEN DETERMINED.

3400 COMPUTER	SOFTWARE PRODUCT SET HARDWARE CONFIGURATOR FOR TAPE SCOPE/ D201-01 VERSION 3	

THIS DEFINES THE REQUIRED AND OPTIONAL HARDWARE FOR THE PRODUCT SET OPERATING UNDER THE OPERATING SYSTEM INDICATED IN THE HEADING OF THIS PAGE

SOFTWARE PRODUCT			OPERATING OPTION	ADDITIONAL HARDWARE OVER AND ABOVE THE OPERATING SYSTEM REQUIREMENTS								SPECIFIC NOTES
				REQUIRED HARDWARE **			OPTIONAL HARDWARE					
										PERFORMANCE IMPROVEMENTS		
NAME/NO.	VER	VAR		CHANNELS	CORE *	PERIPHERAL	CHANNELS A	CORE B	PERIPHERAL C	SPEED	PROBLEM CAPACITY	OPERATING CAPABILITIES	
COMPASS ~~D201-~~01	2		Assemble						C 1 tape for COSY updating or ref. dictionary			C	
			Load & Go			1 tape {b}							
FORTRAN ~~D201-~~01	1		Compile only			1 tape {a}			C 1 tape for reference dictionary			C	
			Load & Go			2 tapes {a} {b}							
COBOL D201-01	3		Compile only										
			Load & Go			1 tape {b}							
ALGOL D201-02	1		Compile only			1 tape {a}							
			Load & Go			2 tapes {a} {b}							
GPID D201-01	2												
SORT III ~~D201-~~01	2					3 tapes {a}	A		C up to 16 tapes {a}	A C	C		
CDM-4 D201-04	2					5 tapes {a}	A			A			
PERT TIME/ COST ~~D201-~~03	2					5 tapes 1 {d} + 4 {a}	A		C 2 tapes {a}	A C			
NETWORK FLOW D201-05	1								C 3 tapes {a}	C	C		

GENERAL NOTES
{a} Scratch
{b} Load & Go Unit {See OP/System Hardware Requirements}
{c} Segment Tape
{d} Overlay Tape

LEGEND
A,B,C — THESE LETTERS IN THE PERFORMANCE IMPROVEMENT COLUMNS INDICATE THAT THE OPTIONAL HARDWARE REFERENCED BY THOSE LETTERS WILL GIVE THE INDICATED KIND OF IMPROVEMENT THERE IS NO SEQUENTIAL PREFERENCE ATTACHED TO THE LETTERS A, B, C

* — INDICATED CORE FIGURE IS IN ADDITION TO THE "MINIMUM REQUIRED MACHINE CORE SIZE" SHOWN IN OPERATING SYSTEM CONFIGURATOR

** — NO ENTRY UNDER REQUIRED HARDWARE INDICATES THAT THE PRODUCT WILL OPERATE WITH OPERATING SYSTEM REQUIREMENTS

3400 COMPUTER — OPERATING SYSTEM HARDWARE CONFIGURATOR FOR DRUM SCOPE/ D301-01 VERSION 1

THIS DEFINES THE REQUIRED AND OPTIONAL ALLOWABLE HARDWARE FOR THE OPERATING SYSTEM INDICATED IN THE HEADING OF THIS PAGE.

HARDWARE REQUIREMENTS

HARDWARE REQUIREMENTS

INSTRUCTIONS:

THE ENTRY(S) WITHIN THE MATRIX INDICATES THE REQUIRED HARDWARE DEVICES FOR THE SYSTEM LOGICAL UNITS.

	REQUIRED UNITS					OPTNL				
	STANDARD INPUT	STANDARD OUTPUT	STANDARD PUNCH	SYSTEM LIBRARY	SYSTEM SCRATCH	ACCOUNTING	SCRATCH	LOAD & GO		
TAPE UNITS							1 OR	1 OR		
CARD READER	1 AND									
CARD PUNCH			1 and							
LINE PRINTER		1 AND								
DRUM - WORDS	50K	150K	50K	120K	2K		60K	40K		

CHANNELS

MINIMUM REQUIRED BY OPERATING SYSTEM	1 3416 and 1 3406
OPTIONAL FOR AUGMENTED PERFORMANCE	2 3406

CORE REQUIREMENTS

MINIMUM REQUIRED MACHINE CORE SIZE	32K

OPERATING SYSTEM CORE

BASIC RESIDENCE	7040	CORE NOT AVAILABLE FOR USER PROGRAMS
I/O SYSTEM	0	
SPECIAL FEATURES	0	
DRIVERS	SEE ALLOWABLE HARDWARE	
LOADERS (TEMPORARY REQ.)	1400	NOT AVAILABLE DURING LOADING

ALLOWABLE HARDWARE

CENTRAL PROCESSOR

PROCESSING OPTIONS

STATUS	A
MODEL	3410
TYPE	Flt. Pt.

CHANNELS

STATUS	A	///	///	A	///
MODEL	3406	3407	3408	3416	3417
TYPE	12 bit	24 bit	48 bit	Augmented	Dir Access

PERIPHERAL EQUIPMENT DRIVERS

TAPE DRIVES

STATUS/DRVR NO	A	A
MODEL	604	607
CONTROLLER	A►	A► B►
CORE REQ	Included	Included

A► 3228 | 3229 | 3423

B► 3624 | 3625

LINE PRINTER

STATUS/DRVR NO	A	A
MODEL	501	505
CONTROLLER	3256,3659	3256,3659
CORE REQ	Included	Included

CARD READER

STATUS/DRVR NO	A
MODEL	405
CONTROLLER	3447,3649
CORE REQ	Included

CARD PUNCH

STATUS/DRVR NO	A
MODEL	415
CONTROLLER	3446,3644
CORE REQ	Included

DISK DRIVES

STATUS/DRVR NO	///	///
MODEL	852	853,854
CONTROLLER	3232	3234
CORE REQ		

DISK FILES

STATUS/DRVR NO	///	///
MODEL	813	814
CONTROLLER	3234	3234
CORE REQ		

DRUMS

STATUS/DRVR NO	A
MODEL	863
CONTROLLER	3436,3637
CORE REQ	Included

P/T RDR-PUNCH

STATUS/DRVR NO	A
MODEL	3691
CONTROLLER	Included
CORE REQ	88

PLOTTERS

	A
	3293
	Included
	63

NOTES

LEGEND

STATUS CODES

A —SOFTWARE IS AVAILABLE NOW
X —SOFTWARE WILL BE PROVIDED. SCHEDULE TO BE ANNOUNCED.
/// —STANDARD SOFTWARE WILL NOT BE PROVIDED

DATE —DATE ENTERED IS PRODUCT AVAILABILITY DATE
QSS —REQUIRED TO GET CHARACTERISTICS, AVAILABILITY AND COST.
BLANK—SOFTWARE AVAILABILITY STATUS HAS NOT BEEN DETERMINED

3400 COMPUTER	SOFTWARE PRODUCT SET HARDWARE CONFIGURATOR FOR DRUM SCOPE/ D301-01 VERSION 1	

THIS DEFINES THE REQUIRED AND OPTIONAL HARDWARE FOR THE PRODUCT SET OPERATING UNDER THE OPERATING SYSTEM INDICATED IN THE HEADING OF THIS PAGE

SOFTWARE PRODUCT			OPERATING OPTION	ADDITIONAL HARDWARE OVER AND ABOVE THE OPERATING SYSTEM REQUIREMENTS									SPECIFIC NOTES
				REQUIRED HARDWARE **			OPTIONAL HARDWARE						
										PERFORMANCE IMPROVEMENTS			
NAME/NO.	VER	VAR		CHANNELS	CORE *	PERIPHERAL	CHANNELS A	CORE B	PERIPHERAL C	SPEED	PROBLEM CAPACITY	OPERATING CAPABILITIES	
COMPASS D301-01	2		Assemble Load & Go			Load & Go Unit {a}	A		C 1 logical unit {tape or drum} for COSY update	A		C	
FORTRAN D301-01	1		Compile only Load & Go			Load & Go Unit {a}	A			A			
COBOL D301-01	3		Compile only Load & Go			Load & Go Unit {a}							
ALGOL D301-01	1		Compile only Load & Go			Load & Go Unit {a}							
GPIO D301-01	2						A			A			
SORT III D301-01	3					3 logical units tapes or add. drum	A		C up to 16 tape units	A C	C		

GENERAL NOTES
{a} See Operating System Hardware Requirements {Load & Go Unit}; may be tape or drum
{b} Segment Tape

LEGEND A, B, C — THESE LETTERS IN THE PERFORMANCE IMPROVEMENT COLUMNS INDICATE THAT THE OPTIONAL HARDWARE REFERENCED BY THOSE LETTERS WILL GIVE THE INDICATED KIND OF IMPROVEMENT THERE IS NO SEQUENTIAL PREFERENCE ATTACHED TO THE LETTERS A, B, C

* — INDICATED CORE FIGURE IS IN ADDITION TO THE "MINIMUM REQUIRED MACHINE CORE SIZE" SHOWN IN OPERATING SYSTEM CONFIGURATOR

** — NO ENTRY UNDER REQUIRED HARDWARE INDICATES THAT THE PRODUCT WILL OPERATE WITH OPERATING SYSTEM REQUIREMENTS

3400 COMPUTER — OPERATING SYSTEM HARDWARE CONFIGURATOR FOR TAPE SCOPE REDUCED RESIDENT/0401-01 VERSION 3

THIS DEFINES THE REQUIRED AND OPTIONAL ALLOWABLE HARDWARE FOR THE OPERATING SYSTEM INDICATED IN THE HEADING OF THIS PAGE

HARDWARE REQUIREMENTS

INSTRUCTIONS:

THE ENTRY(S) WITHIN THE MATRIX INDICATES THE REQUIRED HARDWARE DEVICES FOR THE SYSTEM LOGICAL UNITS.

	REQUIRED UNITS					OPTL.		
	STANDARD INPUT	STANDARD OUTPUT	STANDARD PUNCH	SYSTEM LIBRARY	SYSTEM SCRATCH	ACCOUNTING	LOAD & GO	AUXILIARY LIB UNIT
TAPE UNITS	1 OR	1{a} OR	1{a} OR	1	1	1{a} OR	1	1
CARD READER	1							
CARD PUNCH			1{b}			1{b}		
LINE PRINTER		1						

CHANNELS

MINIMUM REQUIRED BY OPERATING SYSTEM	1-3406
OPTIONAL FOR AUGMENTED PERFORMANCE	Up to 3 Additional

CORE REQUIREMENTS

MINIMUM REQUIRED MACHINE CORE SIZE	32K

OPERATING SYSTEM CORE (off-line system)

BASIC RESIDENCE	4180	CORE NOT AVAILABLE FOR USER PROGRAMS
I/O SYSTEM	0	
SPECIAL FEATURES	0	
DRIVERS	SEE ALLOWABLE HARDWARE	
LOADERS (TEMPORARY REQ.)	1400	NOT AVAILABLE DURING LOADING

ALLOWABLE HARDWARE

CENTRAL PROCESSOR

PROCESSING OPTIONS						
STATUS	A					
MODEL	3410					
TYPE	Flt. Pt.					

CHANNELS						
STATUS	A	///	///	A	///	
MODEL	3406	3407	3408	3416	3417	
TYPE	12 bit	24 bit	48 bit	Augmented	Dir Access	

PERIPHERAL EQUIPMENT DRIVERS

TAPE DRIVES						
STATUS/DRVR NO	A	A				
MODEL	604	607				
CONTROLLER	A►	A► B►				
CORE REQ	Included	Included				

A►				B►		
	3228	3229	3423		3624	3625

LINE PRINTER						
STATUS/DRVR NO	A	A				
MODEL	501	505				
CONTROLLER	3256,3659	3256,3659				
CORE REQ.	134	134				

CARD READER				PLOTTERS		
STATUS/DRVR NO	A				A	
MODEL	405				3293	
CONTROLLER	3447,3649				Included	
CORE REQ	215				63	

CARD PUNCH						
STATUS/DRVR NO	A					
MODEL	415					
CONTROLLER	3446,3644					
CORE REQ	125					

DISK DRIVES						
STATUS/DRVR NO	///	///				
MODEL	852	853,854				
CONTROLLER	3232	3234				
CORE REQ						

DISK FILES						
STATUS/DRVR NO	///	///				
MODEL	813	814				
CONTROLLER	3234	3234				
CORE REQ.						

DRUMS						
STATUS/DRVR NO	///					
MODEL	863					
CONTROLLER	3436,3637					
CORE REQ						

P/T RDR-PUNCH						
STATUS/DRVR NO	A					
MODEL	3691					
CONTROLLER	Included					
CORE REQ	88					

NOTES
{a} May be same {tape} unit if peripheral processor available
{b} May be same unit

LEGEND

STATUS CODES

A —SOFTWARE IS AVAILABLE NOW
X —SOFTWARE WILL BE PROVIDED. SCHEDULE TO BE ANNOUNCED.
/// —STANDARD SOFTWARE WILL NOT BE PROVIDED.

DATE —DATE ENTERED IS PRODUCT AVAILABILITY DATE
QSS —REQUIRED TO GET CHARACTERISTICS, AVAILABILITY AND COST.
BLANK—SOFTWARE AVAILABILITY STATUS HAS NOT BEEN DETERMINED.

3400 COMPUTER	**SOFTWARE PRODUCT SET HARDWARE** CONFIGURATOR FOR TAPE SCOPE REDUCED RESIDENT/ D4Q1-01 V4	

THIS DEFINES THE REQUIRED AND OPTIONAL HARDWARE FOR THE PRODUCT SET OPERATING UNDER THE OPERATING SYSTEM INDICATED IN THE HEADING OF THIS PAGE

SOFTWARE PRODUCT NAME/NO.	VER	VAR	OPERATING OPTION	ADDITIONAL HARDWARE OVER AND ABOVE THE OPERATING SYSTEM REQUIREMENTS — REQUIRED HARDWARE** CHANNELS	REQUIRED HARDWARE** CORE*	REQUIRED HARDWARE** PERIPHERAL	OPTIONAL HARDWARE CHANNELS A	OPTIONAL HARDWARE CORE B	OPTIONAL HARDWARE PERIPHERAL C	PERFORMANCE IMPROVEMENTS SPEED	PERFORMANCE IMPROVEMENTS PROBLEM CAPACITY	PERFORMANCE IMPROVEMENTS OPERATING CAPABILITIES	SPECIFIC NOTES
COMPASS D401-01	2		Assemble						C 1 tape for COSY updating or ref. dictionary			C	
			Load & Go			1 tape {b}							
FORTRAN D401-01	1		Compile only			1 tape {b}			C 1 tape for reference dictionary				
			Load & Go			2 tapes {a} {b}						C	
COBOL D401-01	3		Compile only										
			Load & Go			1 tape {b}							
ALGOL D401-01	1		Compile only			1 tape {a}							
			Load & Go			2 tapes {a} {b}							
GPIO D401-01	2												
SORT III D401-01	2					3 tapes {a}	A		C up to 16 tapes {a}	A C	C		

GENERAL NOTES

{a} Scratch
{b} Load & Go Unit {See OP/System Hardware Requirements}
{c} Segment Tape
{d} Overlay Tape

LEGEND A, B, C — THESE LETTERS IN THE PERFORMANCE IMPROVEMENT COLUMNS INDICATE THAT THE OPTIONAL HARDWARE REFERENCED BY THOSE LETTERS WILL GIVE THE INDICATED KIND OF IMPROVEMENT. THERE IS NO SEQUENTIAL PREFERENCE ATTACHED TO THE LETTERS A, B, C

* — INDICATED CORE FIGURE IS IN ADDITION TO THE "MINIMUM REQUIRED MACHINE CORE SIZE" SHOWN IN OPERATING SYSTEM CONFIGURATOR

** — NO ENTRY UNDER REQUIRED HARDWARE INDICATES THAT THE PRODUCT WILL OPERATE WITH OPERATING SYSTEM REQUIREMENTS.

3400 COMPUTER	**OPERATING SYSTEM HARDWARE** CONFIGURATOR FOR DISK SCOPE/D101-01 VERSION 1	

THIS DEFINES THE REQUIRED AND OPTIONAL ALLOWABLE HARDWARE FOR THE OPERATING SYSTEM INDICATED IN THE HEADING OF THIS PAGE

HARDWARE REQUIREMENTS

HARDWARE REQUIREMENTS

INSTRUCTIONS

THE ENTRY(S) WITHIN THE MATRIX INDICATES THE REQUIRED HARDWARE DEVICES FOR THE SYSTEM LOGICAL UNITS.

	REQUIRED UNITS					
	STANDARD INPUT	STANDARD OUTPUT	STANDARD PUNCH	SYSTEM LIBRARY	SYSTEM SCRATCH	
DISK UNITS				1	1	
TAPE UNITS				1		
CARD READER	1					
CARD PUNCH			1			
LINE PRINTER		1				
CONSOLE TYPEWRITER						

CHANNELS

MINIMUM REQUIRED BY OPERATING SYSTEM	3-3406
OPTIONAL FOR AUGMENTED PERFORMANCE	UP TO 1 ADDITIONAL

CORE REQUIREMENTS

MINIMUM REQUIRED MACHINE CORE SIZE	32K

OPERATING SYSTEM CORE	
BASIC RESIDENCE	7168
I/O SYSTEM	0
SPECIAL FEATURES	0
DRIVERS	SEE ALLOWABLE HARDWARE
LOADERS (TEMPORARY REQ)	1400

CORE NOT AVAILABLE FOR USER PROGRAMS

NOT AVAILABLE DURING LOADING

ALLOWABLE HARDWARE

CENTRAL PROCESSOR

PROCESSING OPTIONS						
STATUS	A					
MODEL	3410					
TYPE	FLT. PT.					

CHANNELS						
STATUS	A	///	///	A	///	
MODEL	3406	3407	3408	3416	3417	
TYPE	12 BIT	24 BIT	48 BIT	AUGMENTED	DIR ACCESS	

PERIPHERAL EQUIPMENT DRIVERS

TAPE DRIVES						
STATUS/DRVR NO	A	A	A			
MODEL	603/604	606/607	608			
CONTROLLER	A	A	B			
CORE REQ.	INCLUDED	INCLUDED	INCLUDED			

A	3228	3229	3423	B	3128		

LINE PRINTER						
STATUS/DRVR NO	A	A	///	///		
MODEL	501	505	512	3254		
CONTROLLER	3256, 3659	3256, 3659	3555	INCLUDED		
CORE REQ	INCLUDED	INCLUDED				

CARD READER				PLOTTERS		
STATUS/DRVR NO	A				///	
MODEL	405				3293	
CONTROLLER	3447, 3649				INCLUDED	
CORE REQ.	INCLUDED					

CARD PUNCH				P/T RDR-PUNCH		
STATUS/DRVR NO	A				///	
MODEL	415				3691	
CONTROLLER	3446, 3644				INCLUDED	
CORE REQ	INCLUDED					

DISC DRIVES						
STATUS/DRVR NO	A	///	///			
MODEL	854	853	841			
CONTROLLER	3234	3234	3553			
CORE REQ	INCLUDED					

DISC FILES						
STATUS/DRVR NO	///	///	///			
MODEL	813	814	821			
CONTROLLER	3234	3234	3553			
CORE REQ						

NOTES

LEGEND

STATUS CODES

A —— SOFTWARE IS AVAILABLE NOW.
X —— SOFTWARE WILL BE PROVIDED SCHEDULE TO BE ANNOUNCED.
/// —— STANDARD SOFTWARE WILL NOT BE PROVIDED.
DATE —— DATE ENTERED IS PRODUCT AVAILABILITY DATE.
QSS —— REQUIRED TO GET CHARACTERISTICS, AVAILABILITY AND COST.
BLANK — SOFTWARE AVAILABILITY STATUS HAS NOT BEEN DETERMINED.

3400 COMPUTER	**SOFTWARE PRODUCT SET HARDWARE** CONFIGURATOR FOR DISK SCOPE/D101-01 VERSION 1	

THIS DEFINES THE REQUIRED AND OPTIONAL HARDWARE FOR THE PRODUCT SET OPERATING UNDER THE OPERATING SYSTEM INDICATED IN THE HEADING OF THIS PAGE

SOFTWARE PRODUCT NAME/NO.	VER	VAR	OPERATING OPTION	ADDITIONAL HARDWARE OVER AND ABOVE THE OPERATING SYSTEM REQUIREMENTS — REQUIRED HARDWARE ** CHANNELS	REQUIRED HARDWARE ** CORE *	REQUIRED HARDWARE ** PERIPHERAL	OPTIONAL HARDWARE CHANNELS A	OPTIONAL HARDWARE CORE B	OPTIONAL HARDWARE PERIPHERAL C	PERFORMANCE IMPROVEMENTS SPEED	PERFORMANCE IMPROVEMENTS PROBLEM CAPACITY	PERFORMANCE IMPROVEMENTS OPERATING CAPABILITIES	SPECIFIC NOTES
COMPASS D101-01	2		Assemble / Load & Go			1 tape (b)			C 1 tape for COSY updating or ref. dictionary			C	
FORTRAN ~~D401~~-01	1		Compile only / Load & Go			1 tape (a) / 2 tapes (a) (b)			C 1 tape for reference dictionary			C	
COBOL D101-01	3		Compile only / Load & Go			1 tape (b)							
GPIO ~~D401~~-01	2												
SORT III D101-01	2					3 tapes (a)	A		C up to 16 tapes (a)	A C	C		
~~[illegible]~~													
CDM-4 ~~D401~~-03	2					5 tapes (a)	A			A			
PERT TIME/ COST D101-02	2					5 tapes 1 (d) + 4 (a)	A		C 2 tapes (a)	A C			
NETWORK FLOW D101-04	1								C 3 tapes (a)	C	C		

GENERAL NOTES
(a) Scratch
(b) Load & Go Unit (See OP/System Hardware Requirements)
(c) Segment Tape
(d) Overlay Tape

LEGEND A, B, C — THESE LETTERS IN THE PERFORMANCE IMPROVEMENT COLUMNS INDICATE THAT THE OPTIONAL HARDWARE REFERENCED BY THOSE LETTERS WILL GIVE THE INDICATED KIND OF IMPROVEMENT THERE IS NO SEQUENTIAL PREFERENCE ATTACHED TO THE LETTERS A, B, C

* — INDICATED CORE FIGURE IS IN ADDITION TO THE "MINIMUM REQUIRED MACHINE CORE SIZE" SHOWN IN OPERATING SYSTEM CONFIGURATOR

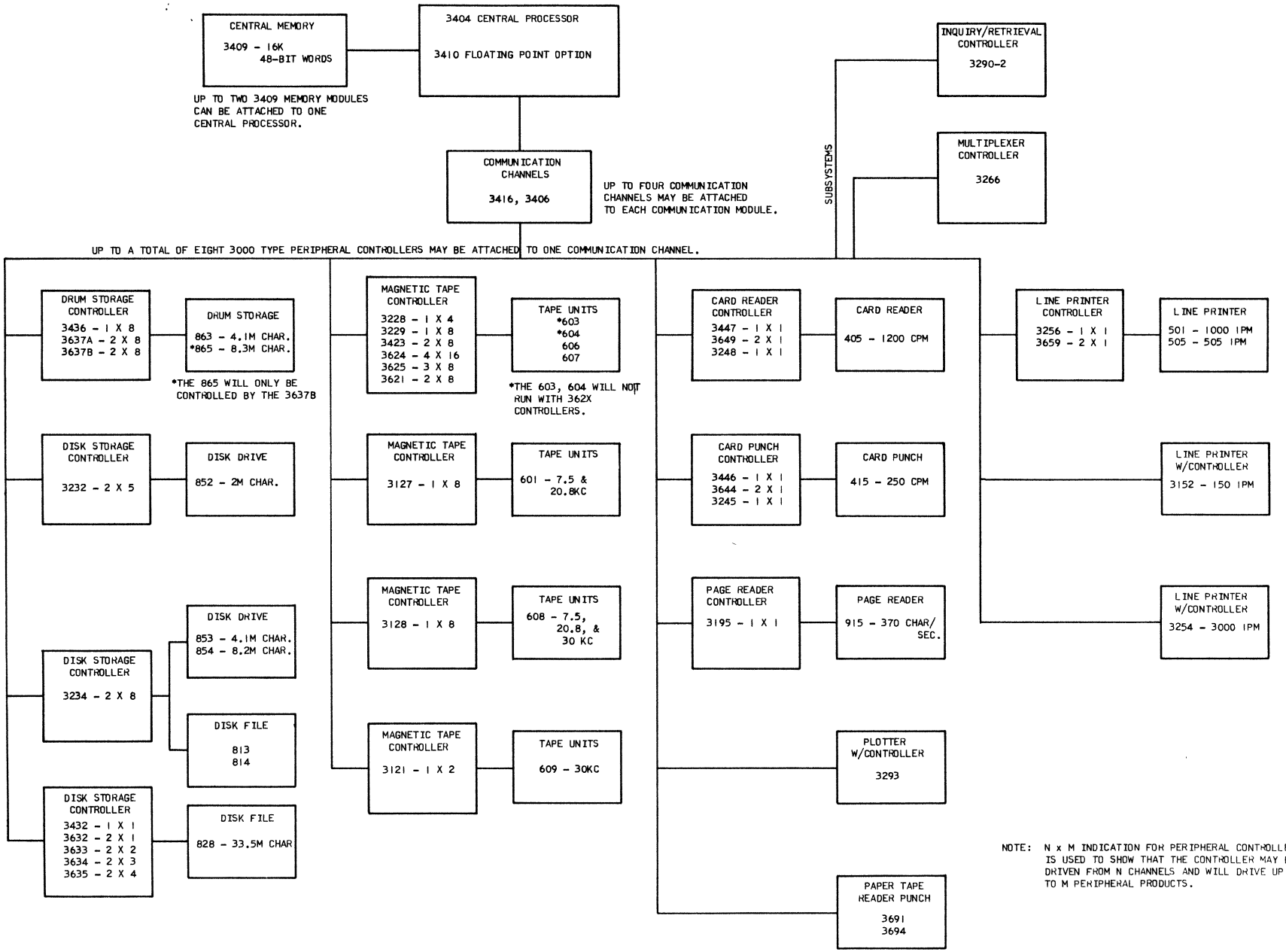
** — NO ENTRY UNDER REQUIRED HARDWARE INDICATES THAT THE PRODUCT WILL OPERATE WITH OPERATING SYSTEM REQUIREMENTS

SOFTWARE PRODUCT DESCRIPTIONS

PRODUCT NAME	PRODUCT NO.	DESCRIPTION
TAPE SCOPE	D201-01	A comprehensive operating system which processes jobs, controls input/output operations, and handles interrupt processing. It includes facilities for debugging, program corrections, and library maintenance. Input/output operations take the form of macro instructions which refer to logical units: SCOPE associates the logical unit designation with the proper physical unit and performs the operation. Documents — Pub. No. — Status General Information — 60055600B — A SCOPE/COMPASS Ref. — 60057800A — A Reference Additions ADB — 60137200 — A Op. Guide Version 3.0 — 60134200 — A Lib. Prep. ADB — 60137300 — A Instant — 60059000A — A
DRUM SCOPE	D301-01	Incorporates all of the features of TAPE SCOPE, and in addition allows concurrent operation of background programs. Unless specified otherwise, standard system units and programmer output units are assumed to be on the drum. Documents — Pub. No. — Status General Information — 60131900 — A Op. Guide ADB — 60171900 — A SCOPE/COMPASS Reference — 60170100 — A
TAPE SCOPE	D401-01	Reduced Resident is a subset of TAPE SCOPE, which makes more core area available for object programs. Certain features such as tape labeling, dynamic unit assignment, etc., are deleted to provide the extra area.
DISK SCOPE	D[illegible]01	A comprehensive operating system incorporating most of the features of Tape SCOPE except labeling. Unless otherwise specified, standard system units and programmer output units are assumed to be on DISK. Provides for backgrounding of both Printer and Punch. Reference documentation is available from Resale Systems Division.
COMPASS	D101-01 D201-01 D301-01 D401-01	A comprehensive assembly system, provides mnemonic machine operation codes, symbolic addressing, assembly directing pseudo instructions, and programmer defined or library macro instructions. Documents — Pub. No. — Status General Information — 60055700A — A Tape SCOPE/COMPASS — 60057800A — A Drum SCOPE/COMPASS — 60170100 — A Additions to REF ADB — 60137200 — A
ALGOL	D201-02 D301-01 D401-01	A compilation system which accepts the algorithmic language defined in the ALGOL-60 Revised Report in the Communications of the ACM, 1963, Vol. 6. This system was developed in cooperation with the Mathematics Division of the Oak Ridge National Laboratory. Documents — Pub. No. — Status 3400/3600 ADB — 60084800A — A Instant — 60131700 — A

PRODUCT NAME	PRODUCT NO.	DESCRIPTION
FORTRAN	D101-01 D201-01 D301-01 D401-01	A scientific problem-oriented compiling language. It includes most of the features of FORTRAN and FORTRAN IV plus certain features unique to Control Data FORTRAN systems. The system manipulates real, double-precision, and complex. Documents — Pub. No. — Status General Information — 60055500 — A Reference — 60132900A — A Instant — 60057500B — A Lib. Routines — 60057200 — A
COBOL	D101-01 D201-01 D301-01 D401-01	A data processing language based on the specifications set forth in the DOD reference on COBOL-61, Extended. The COBOL compiler reduces compiling time and produces efficiently operating object programs. Documents — Pub. No. — Status General Information — 60170900 — A Reference — 60170500 — A Instant — 60057400A — A
GPIO	D101-01 D201-01 D301-01 D401-01	Simplifies I/O assembly language programming and includes versatile data handling macros. Efficient buffering optimizes the use of memory space and decreases processing time. Documents — Pub. No. — Status General Information — 60058900 — A Reference — 60059400A — A
SORT III	D101-01 D201-01 D301-01 D401-01	Produces a sequenced file of data records from random input. The internal SORT uses the selection replacement technique which can distribute strings on tape for a polyphase merge with rewind overlapped, or for an unbalanced merge, at the programmer's option. Documents — Pub. No. — Status Reference — 60059800A — A
CDM4	D101-03 D201-04	A linear programming system. Output is in the form of a printed report. Documents — Pub. No. — Status Reference — 60132300 — A
PERT/TIME/ COST	D101-02 D201-03	Utilizes a time-oriented network structure to produce a variety of reports reflecting the actual and scheduled progress of a project. PERT/COST utilizes a cost-oriented work breakdown structure to produce a variety of reports on actual and estimated cost over the life of a project. PERT is especially useful in development applications where there are unknown or unpredictable factors. Documents — Pub. No. — Status Reference Version 2.0 — 60059500 — A Extensions TAB — 60139100 — A
NETWORK FLOW	D101-04 D201-05	Solves network problems including the classic transportation problem. Transhipment and backshipment as well as source to destination shipments are efficiently handled by the algorithm. Documents — Pub. No. — Status Reference — 60130500 — A

3400 HARDWARE CONFIGURATOR



NOTE: N x M INDICATION FOR PERIPHERAL CONTROLLER IS USED TO SHOW THAT THE CONTROLLER MAY BE DRIVEN FROM N CHANNELS AND WILL DRIVE UP TO M PERIPHERAL PRODUCTS.

CONFIGURATORS

INTRODUCTION

3000L configurators are divided into two operating systems: 1. MASTER 2. MSOS. Each operating system is formatted into four parts. In each section only supported hardware is shown. Check product sections for additional options. The following are descriptions of the sections.

I. OPERATING SYSTEM HARDWARE

These pages list the minimum hardware requirements for the operating system.

II. HARDWARE DIAGRAMS

The allowable hardware is presented in diagrams that are grouped by function. The groups in order of presentation are:

- Mainframe Options
- Rotating Mass Storage
- Magnetic Tape
- Local Unit Record Equipment
- Communication Equipment

III. SOFTWARE PRODUCT SET

A description of the members of the product set are found in this section. Items such as memory requirements are highlighted.

IV. AVAILABLE DOCUMENTATION

Presented in the form of an organization chart, is documentation now available or planned.

All documentation is handled through Literature and Distribution Services.

I. OPERATING SYSTEM HARDWARE REQUIREMENTS

Minimum System

- CPU

3170	3300	3500
- 3174-1	- 3304	- 3514-3
- 3172-81	- 3311	- 3502-98
- 3177-2	- 3302-81	- Two 3507
	- 3306/3307	

- One Line Printer
- One Card Reader
- Two Tape Units
- Rotating Mass Storage
  - One 841-11 with one 871 Disk Pack

    OR
  - One 844-21 with one 881 Disk Pack

    OR
  - One 844-41 with one 883-60 Disk Pack

Options

- Additional Memory
- CPU Upgrades
- Additional CPU
- Additional Communication (I/O) Channels
- Floating Point Hardware Option
- BDP Hardware Option
- Storage Access Option
- Tape Units
- Line Printers
- Card Equipment
- Rotating Mass Storage
- Communication Equipment

General System Rules

- The system can reside only on devices of the same type. Minimum capacity to support standard batch processing is 12 million characters. (The minimum system library and directory occupies approximately 4.7 million characters.) Additional space may be required for additional performance or permanent files.
- Memory configuration of 96K or more is recommended when using communication equipment. Minimum core recommended for Dual Processor configuration is 131K words.
- Dual Processor Configuration (Multi-Processing) is available by adding second identical CPU (CPU must have the same FP, MP, and BDP) and necessary storage access options. It is highly recommended that the two CPU's be similarly configured (etc. - same number of channels for each CPU and connected through channel transfer switches). Go MODE/SDL option and two (2) Associated Processor Interrupt Cables (P/N 182019XX) required. Requires additional storage access option for each memory module.
- Up to a total of eight (8) 3000 type peripheral controllers may be attached to each 24 bit or 12 bit Communication Channel.
- Systems are upward compatible from 3170.
- Each model 3170, 3300, or 3500 includes one operator console typewriter. Typewriter may be replaced by Special Product 65135-X (3000 SRA Console Adapter), 752-10 and 755-11 or 753-11.
- Additional Line Printers will provide increased throughput.
- Additional communication channels may be provided for increased I/O throughput.

- Memory is expandable in 16K word increments on Models 3170 and 3300, and 32K word increments on Model 3500. General performance improvements are realized with additional memory up to 262K words total. NOTE: Model 3170 has a maximum memory limitation of 131K words.

Basic System and Loader Residence

	Core Not Available For User Programs
o Basic Resident Operating System (includes required drivers, see below)	27,700 words
o Operating System Core/Job (includes BLOCKER/DEBLOCKER and JOB MONITOR)	2,048
o Real Time	150
o Floating Point (without hardware)	564
o Loader (not available during loading)	4,096

- The Operating System Residence is increased by the following amounts for optional equipment.

  Mass Storage - Drivers are provided within the system to support 841-XX, 844-21 and 844-4X.

  Tape Units - Drivers are provided within the system to support 65X and 66X. NOTE: 659-3/4 and 669-3/4 supported on 3500 only.

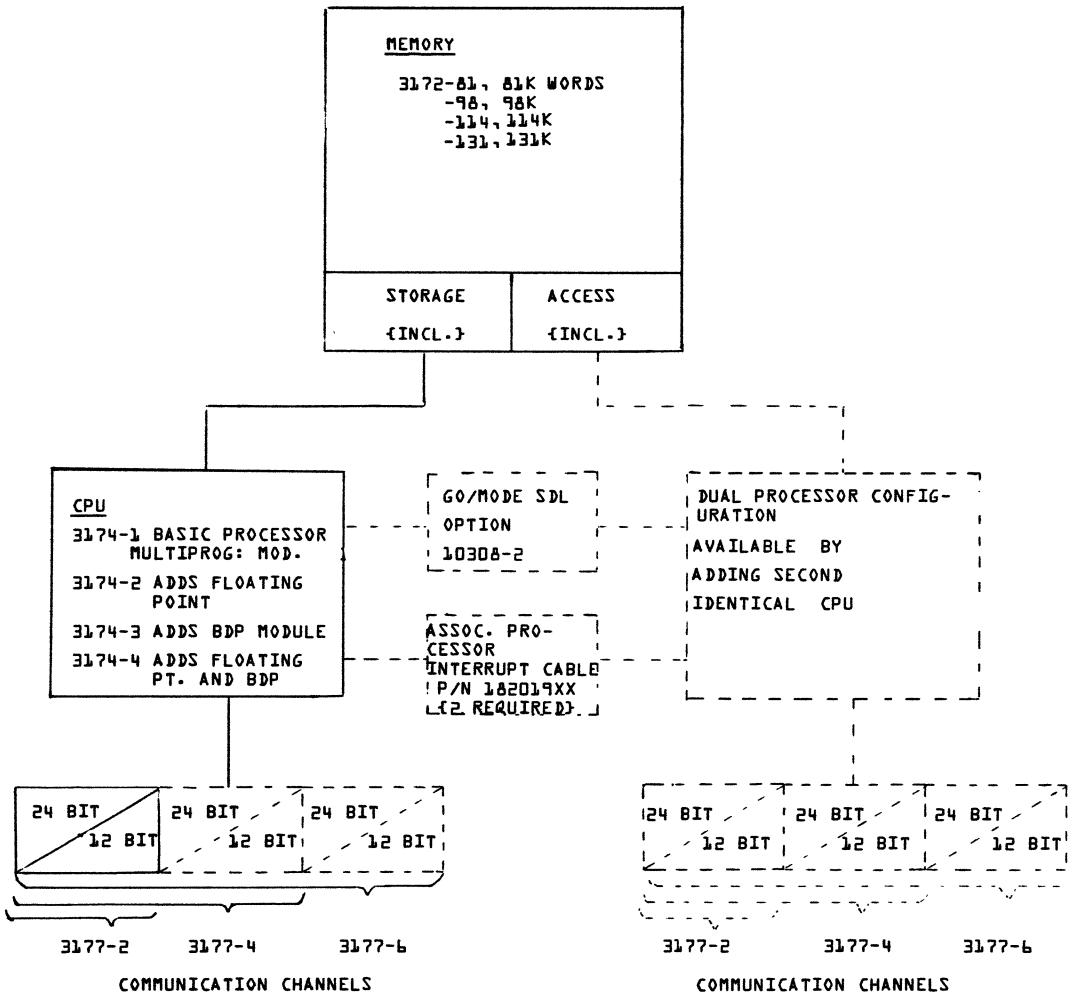
  Line Printers - Drivers are provided within the system to support 512 and 580. The 580-XXX (programmable format control) is supported by MASTER 4 level 427.

  Card Equipment - Drivers are provided within the system to support 405 and 415.

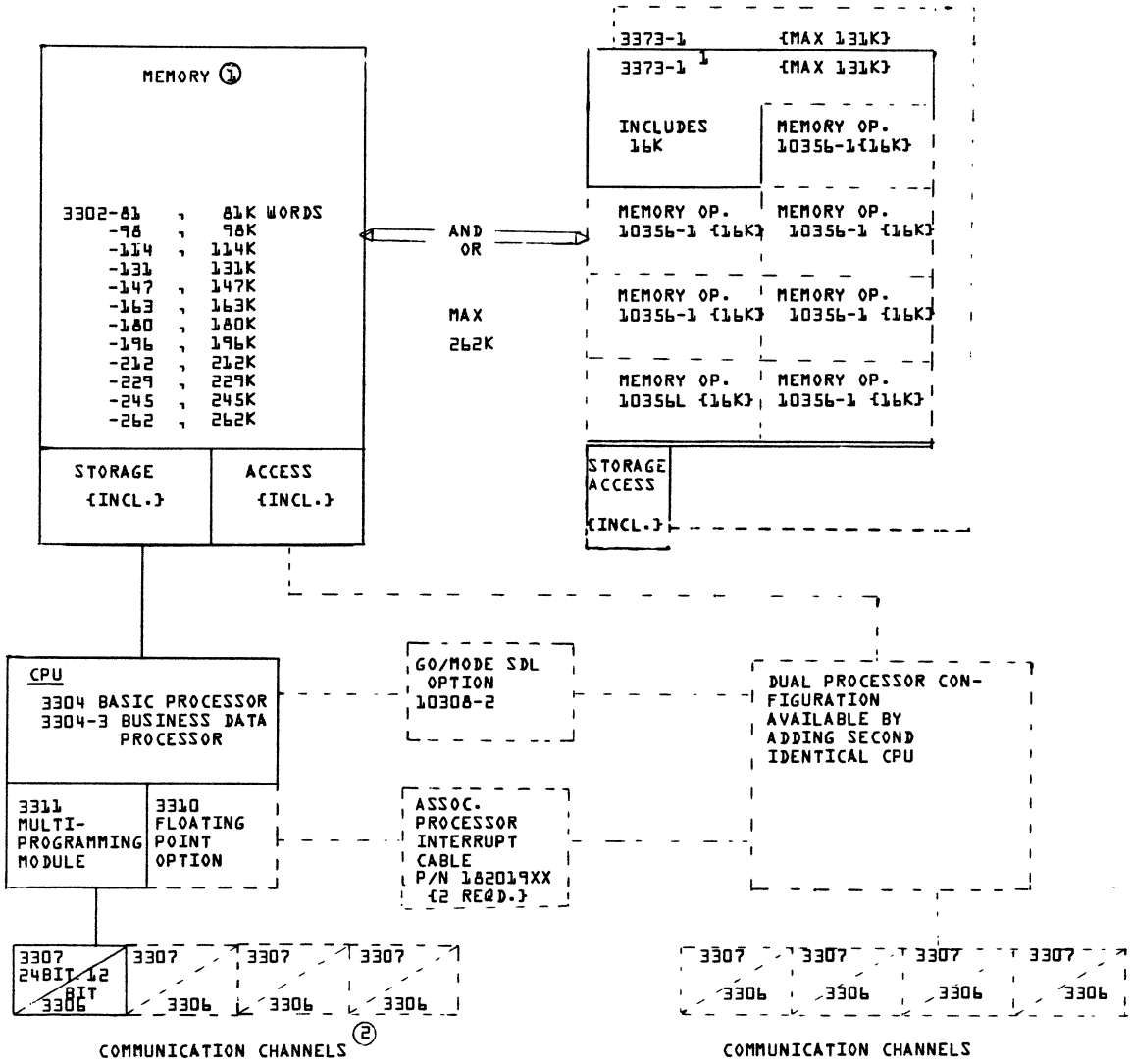
  Communication Equipment - Drivers and buffer sizes are in addition to the basic system residence.

II. HARDWARE DIAGRAMS

3174 MAINFRAMES

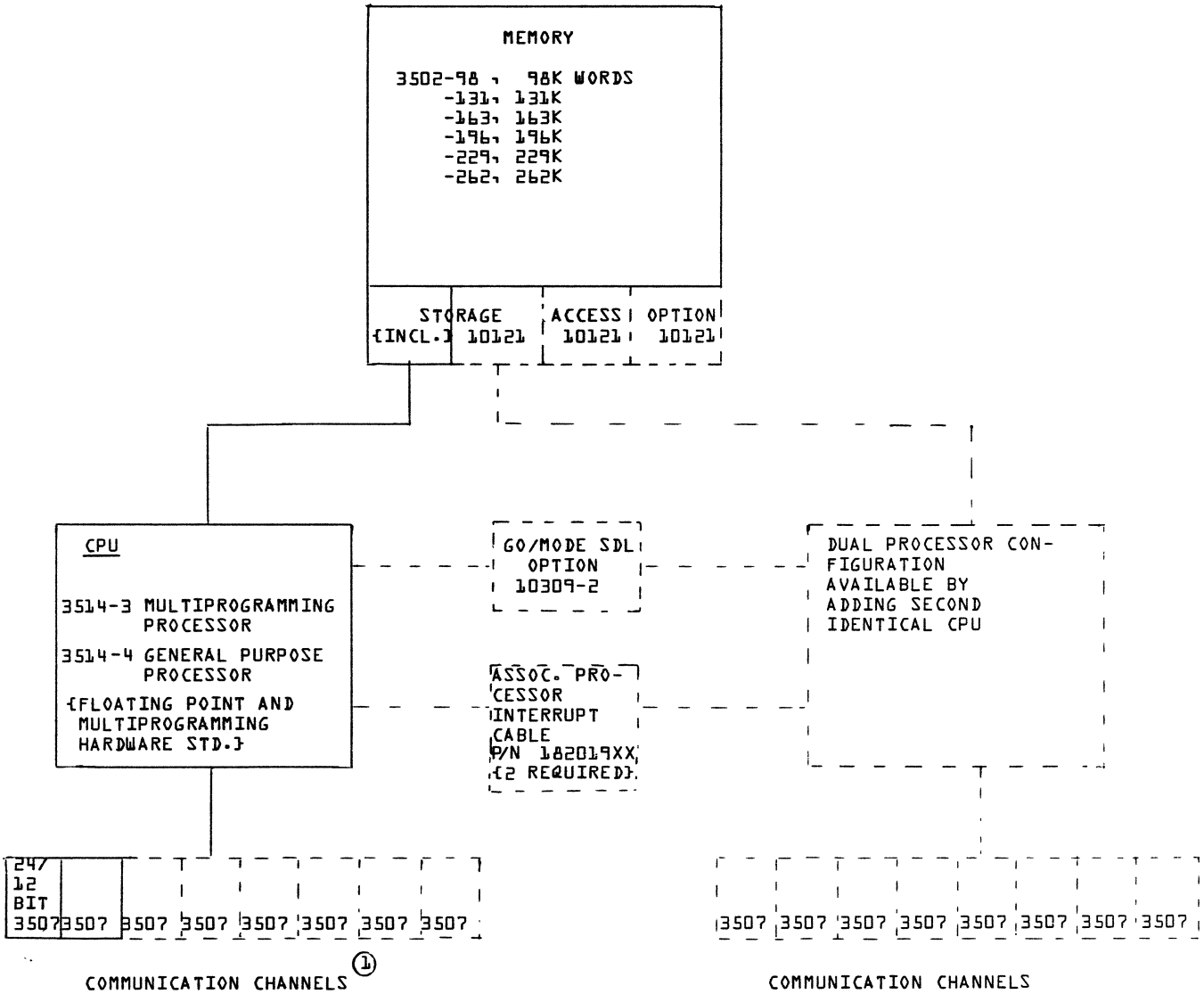


3304 MAINFRAMES



NOTE: 1. 3302 AND 3373 MEMORY MAY BE INTERMIXED ON THE SAME SYSTEM. THE 3373 MEMORY WILL SUPPORT SINGLE CPU ACCESS ONLY.
2. 3307/3306 COMM. CHANNELS MUST BE CONFIGURED AS A PAIR.

3514 MAINFRAMES

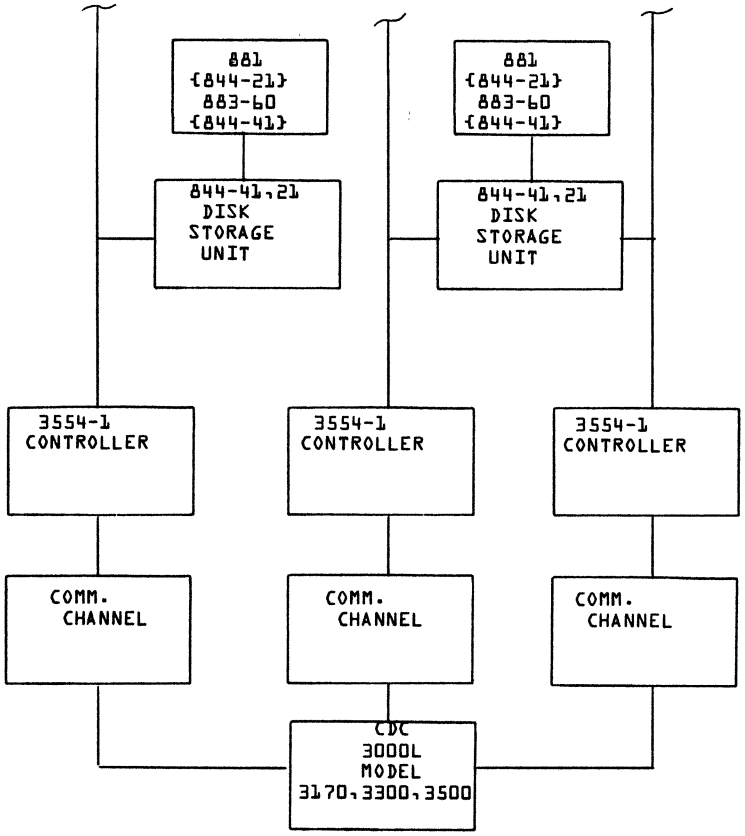


NOTE: 1. COMM. CHANNELS ARE 24 OR 12 BIT MODE SELECTABLE VIA HARDWARE SWITCH.

MASS STORAGE SUBSYSTEM
844-41, 21

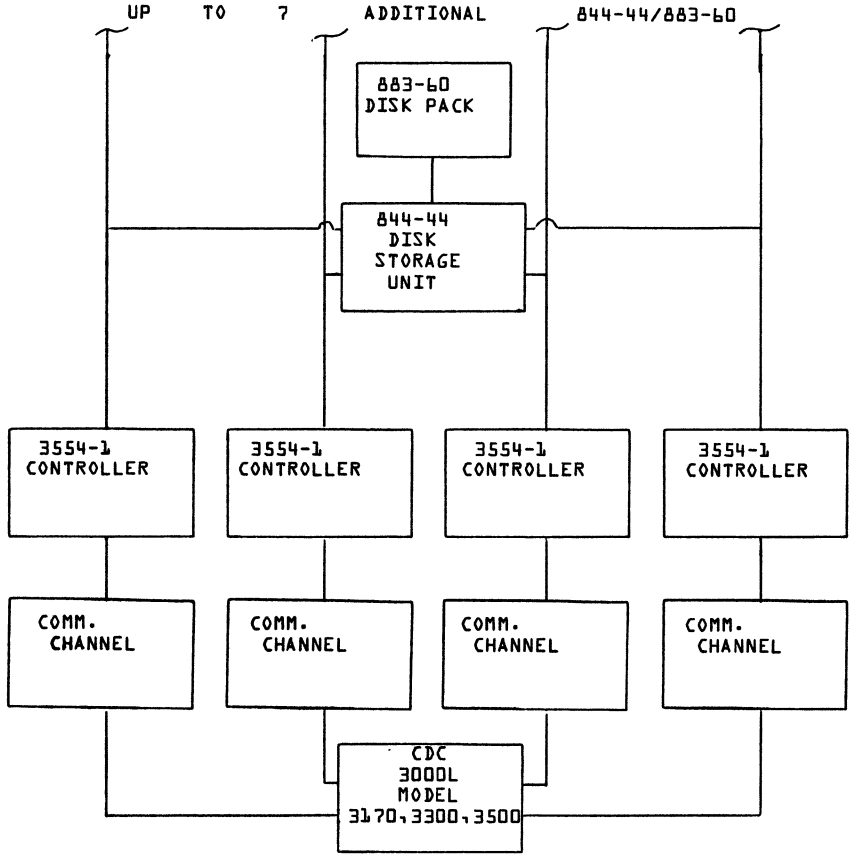
SINGLE ACCESS
UP TO 7 ADDITIONAL
844-41/883-60 or 844-21/881

DUAL ACCESS
UP TO 7 ADDITIONAL
844-41/883-60
or 844-21/881



MASS STORAGE SUBSYSTEM
844-44

NOTE: SPECIAL SUPPORT ONLY



NOTES:

1. COMMUNICATION CHANNELS MUST BE 24 BIT.
2. IF TWO CONTROLLERS ARE USED IN A DUAL ACCESS CONFIGURATION, ALL DRIVES CONNECTED TO ONE CONTROLLER MUST BE CONNECTED TO THE OTHER CONTROLLER.
3. 3170, 3300 SUPPORTS 2 TO 1 INTERLACE "HALF TRACKING"
4. 3500 SUPPORTS 1 TO 1 INTERLACE "FULL TRACKING"
5. 844-41 STANDARD SUPPORT AVAILABLE ONLY UNDER MASTER 4.2

MASS STORAGE SUBSYSTEM

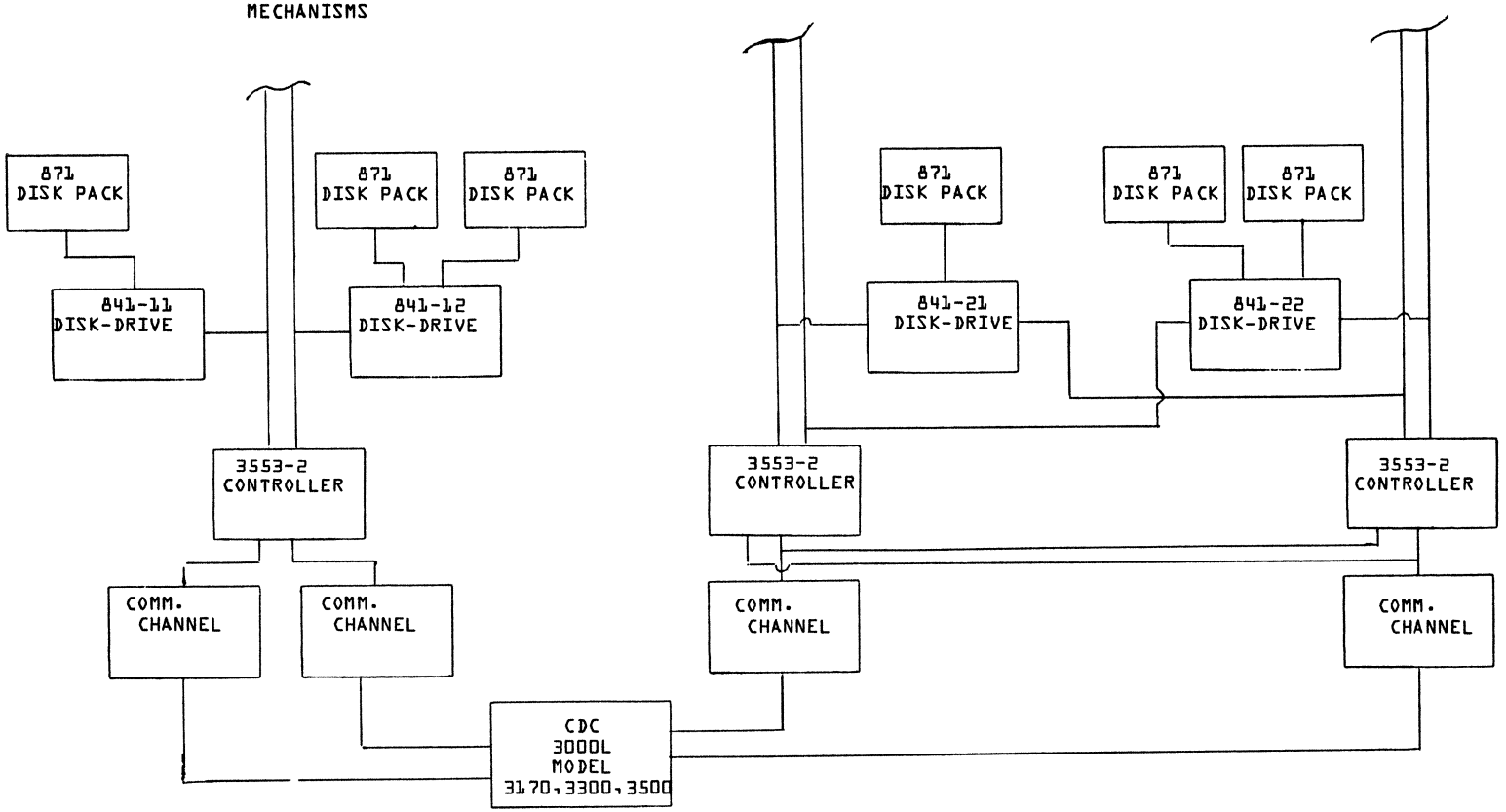
3553-2/841-11, 12, 21, 22

SINGLE ACCESS

UP TO EIGHT (8) ACCESS MECHANISMS

DUAL ACCESS

UP TO EIGHT (8) ACCESS MECHANISMS



NOTES:

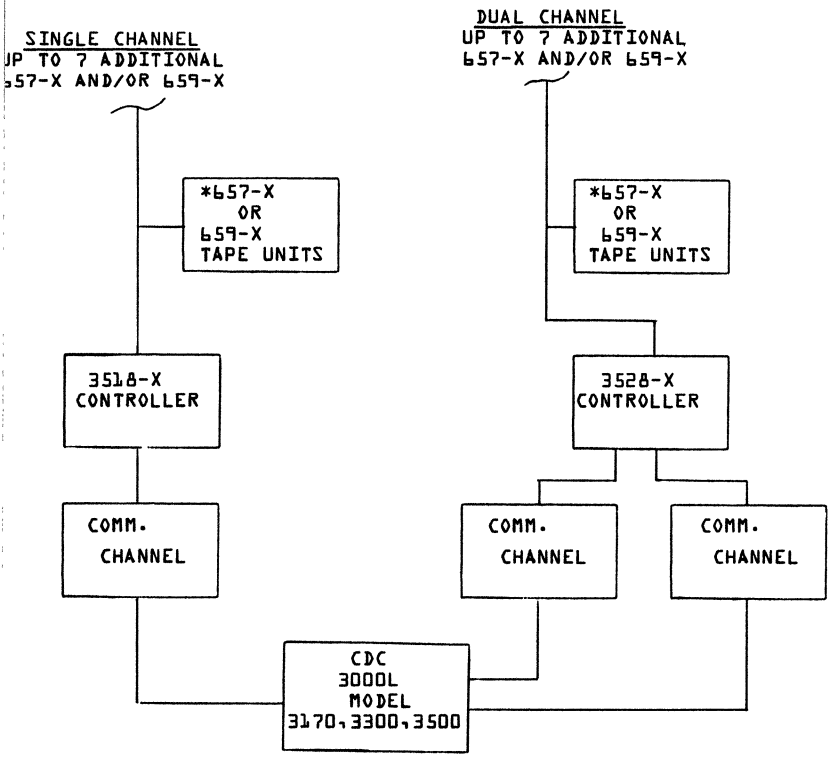
1. IF TWO CONTROLLERS ARE USED IN A DUAL ACCESS CONFIGURATION, ALL DRIVES CONNECTED TO ONE CONTROLLER MUST BE CONNECTED TO THE OTHER CONTROLLER.
2. COMMUNICATION CHANNELS MUST BE 24 BIT

MAGNETIC TAPE
7-TRACK OR 7-TRACK/9-TRACK INTERMIXED OR 9-TRACK

657-X 657-X/659-X 659-X {NOTE-1}

NOTES:

657-X: 657-1, 657-2, 657-3, 657-4 {7-TRACK}
659-X: 659-1, 659-2, 659-3, 659-4 {9 TRACK} {NOTE-2}
3518-X: 3518-1, 3518-2, 3518-3
3528-X: 3528-1, 3528-2, 3528-3



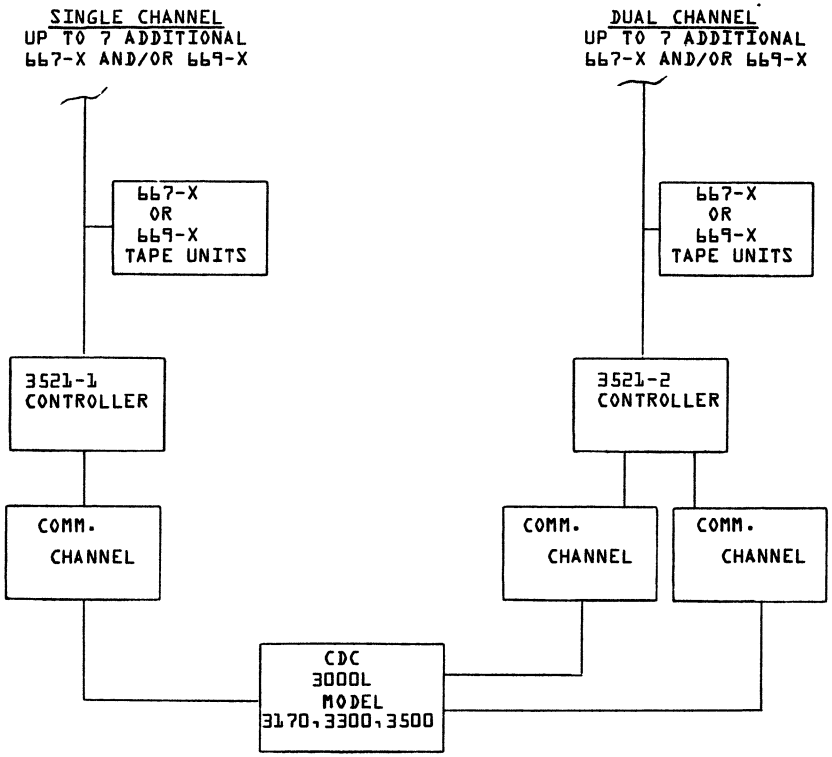
NOTES:

1. 7-TRACK AND 9-TRACK TAPE UNITS AND MODELS {1, 2, 3, 4} MAY BE INTERMIXED. {NOTE: 659-X TAPE UNITS REQUIRE THAT A 3518-2, 3518-3, 3528-2 OR 3528-3 BE INSTALLED.}
2. 659-3,-4 AVAILABLE ONLY ON 3500 SYSTEM

667-X 667-X/669-X 669-X {NOTE-3 &5}

NOTES:

667-X: 667-2, 667-3, 667-4 {7-TRACK}
669-X: 669-2, 669-3, 669-4 {9-TRACK} {NOTE-4}



NOTES:

3. 7-TRACK AND 9-TRACK TAPE UNITS AND MODELS {2, 3, 4} MAY BE INTERMIXED.
4. 669-3,-4 AVAILABLE ONLY ON 3500 SYSTEM
5. 667-4 AND 669-2 ON 3300 SYSTEM MUST BE DEDICATED TO CHANNEL 0 OR 4.

LOCAL UNIT RECORD EQUIPMENT

CARD READER

1200 CPM

NOTES
3447-X: 3447, 3447-2
3446-X: 3446, 3446-2

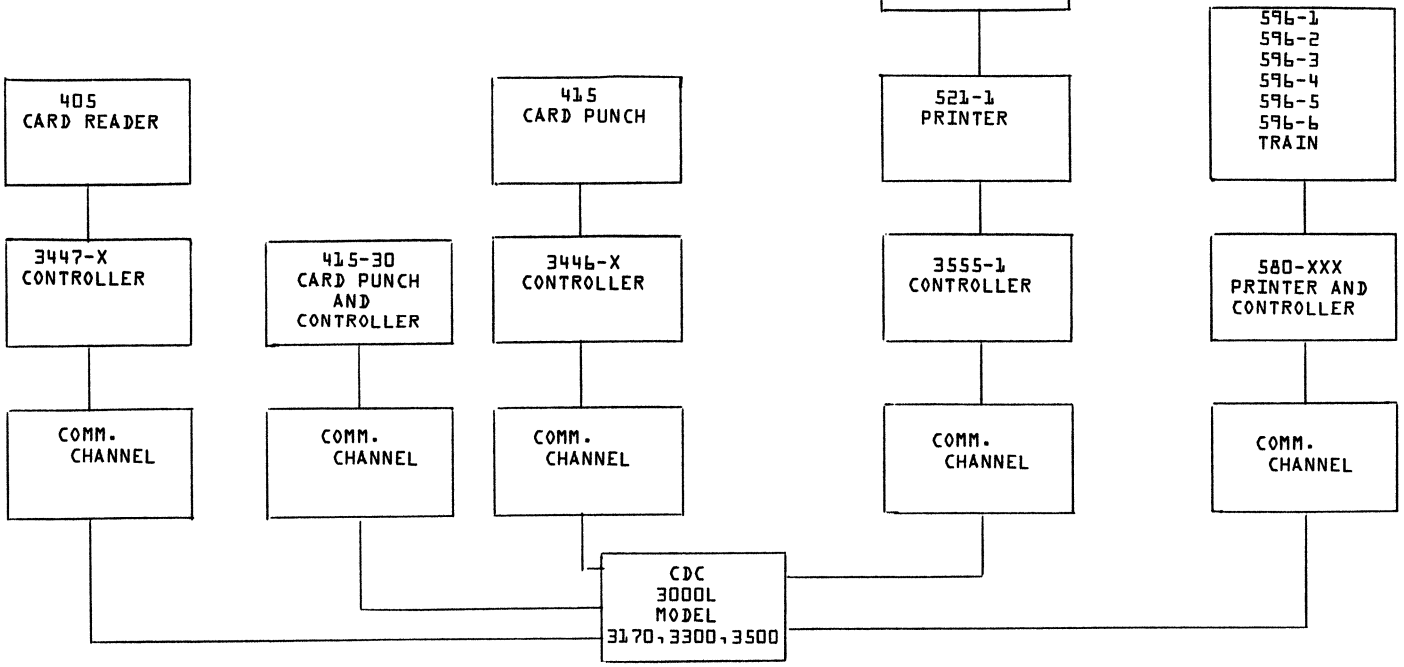
CARD PUNCH

250 CPM

LINE PRINTER

1200 LPM

580-12, 120	*1200 LPM	960 LPM**	685 LPM ***
580-16, 160	*1600 LPM	1300 LPM**	960 LPM ***
580-20, 200	*2000 LPM	1630 LPM**	1170 LPM ***



* These speeds are only possible w/48 character set.

** These speeds are possible w/64 character set.

*** These speeds are possible w/96 character set.

Communication Subsystem

Both the 3X16 Multiplexer and 2550 Communication Subsystems operate from a 3170, 3300, or 3500 Computer System with a configuration satisfying the requirement of the appropriate level of MASTER.

RESPOND EXPORT/IMPORT and the associated hardware provides the capability of submitting jobs from remotely located card reader stations into the system batch processing job stack. Job results are transmitted to remotely located printer stations the same way the results are processed for the local station. Voice grade communication lines are required. RESPOND interfaces directly with 3X16 Multiplexer and indirectly via MCS III for either 3X16 Multiplexer or 2550 front-end processor.

Hardware

3X16 Multiplexer (see configurator this section). 2550 communication subsystem (see communication configurator section).

MCS III (Message Control System III) and the associated hardware provides a general purpose data communication software product for terminals under MASTER. MCS III, being a multiaccess sub-operating system within MASTER, can be looked upon as a mini-operating system that controls all of its own functions, but uses MASTER core and I/O for processing.

Hardware

Central Site:

3X16 Multiplexer (see configurator this section)
2550 Communication Subsystem (see communication configurator section)

Remote Site:

Asynchronous

Teletypes Models 33/35
713-10
751-10
752-10

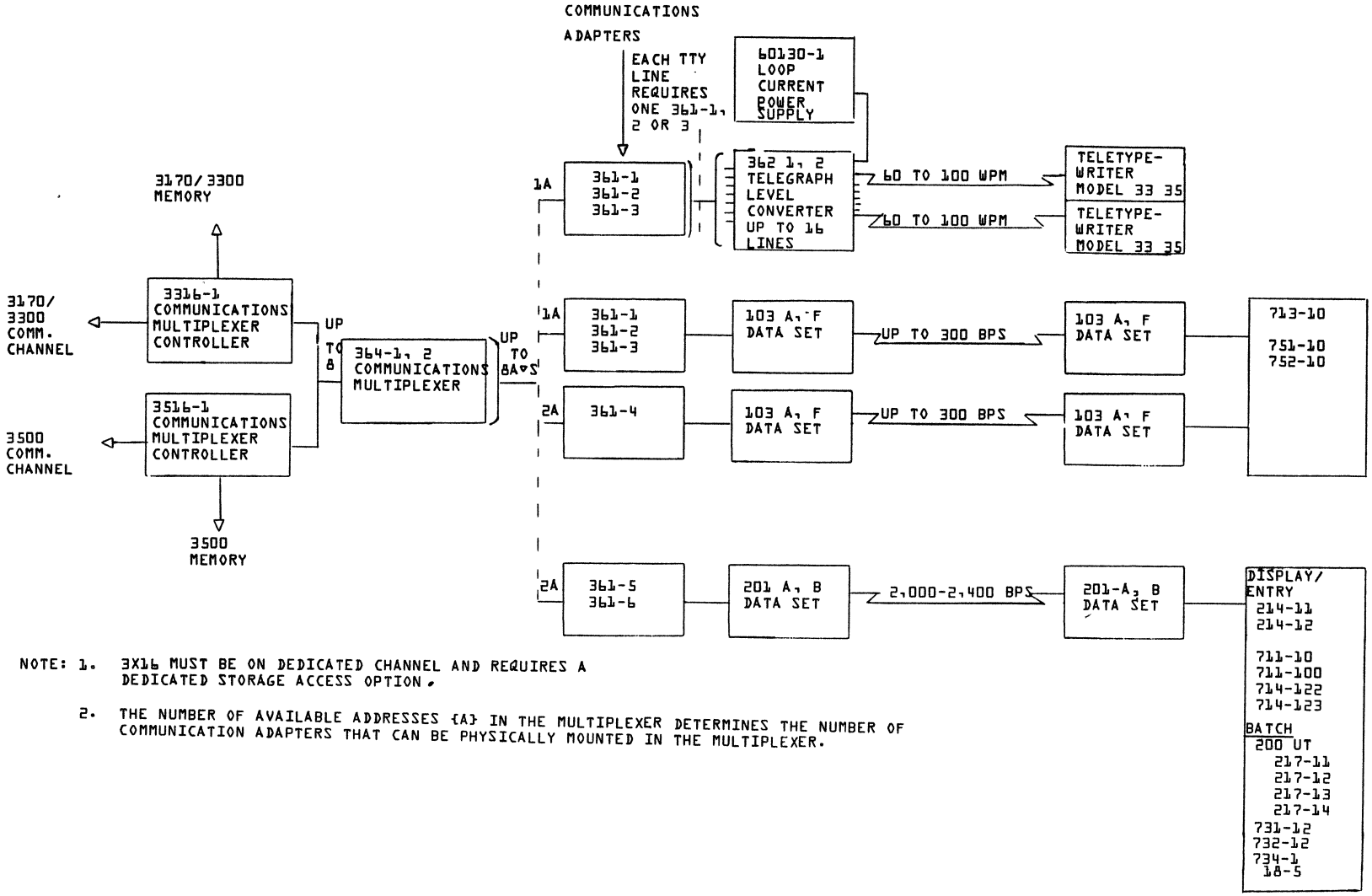
Synchronous (Display/Entry)

214-11
214-12
711-10
711-100
714-122
714-123

Synchronous (Batch)

18-5
200UT
217-11, 12, 13, 14
731-12
732-12
734-1

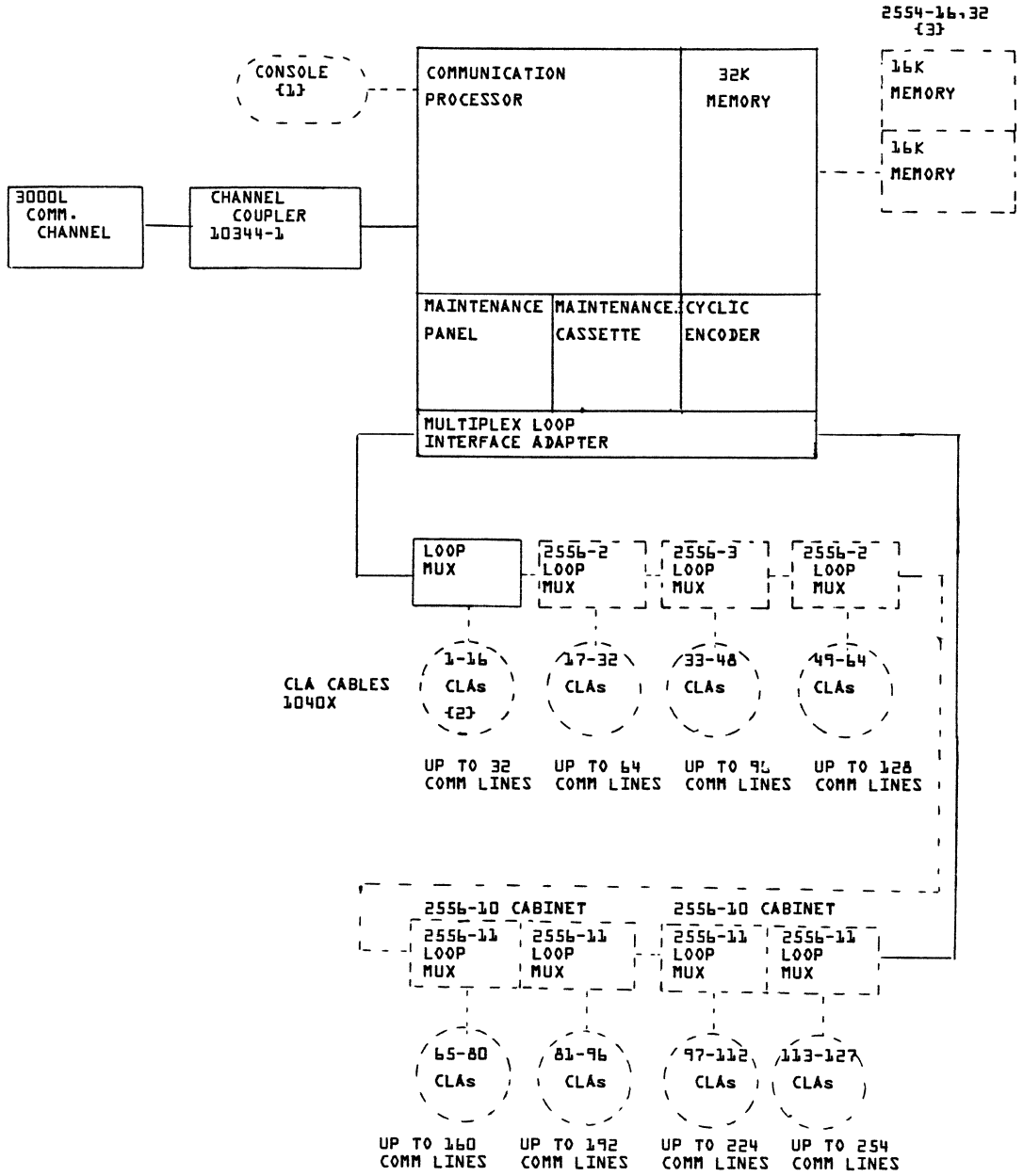
MCS-III SYSTEM CONFIGURATION
36X COMM. SUBSYSTEM WITH
COMMON CARRIER FACILITIES



NOTE: 1. 3X16 MUST BE ON DEDICATED CHANNEL AND REQUIRES A DEDICATED STORAGE ACCESS OPTION.

2. THE NUMBER OF AVAILABLE ADDRESSES (A) IN THE MULTIPLEXER DETERMINES THE NUMBER OF COMMUNICATION ADAPTERS THAT CAN BE PHYSICALLY MOUNTED IN THE MULTIPLEXER.

MCS III SYSTEM CONFIGURATION
2550-2 NETWORK PROCESSING UNIT



LEGEND:

_____ SYSTEM ELEMENTS IN BASIC 2550-2 PRODUCT

--------- REQUIRED AND/OR OPTIONAL UNITS WHICH MUST BE SEPARATELY SPECIFIED BY PRODUCT NUMBER.

NOTES:
(1) CONSOLE REQUIRED, BUT MUST BE SPECIFIED. SELECT 752-10, 713-10 OR EQUIVALENT.
(2) SELECT 256X CLA's AS REQUIRED (ONE OR TWO COMM LINES PER CLA DEPENDING ON TYPE).
(3) MAXIMUM OF 32K ADDITIONAL MEMORY (IN INCREMENTS OF 16K or 32K) FOR A TOTAL 64K.

REFER TO COMMUNICATION SUBSYSTEMS SECTION FOR SPECIFIC CONFIGURATION AND FEATURE SUPPORT DETAILS.

COMPUTER	SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATOR FOR MASTER VERSION 4	

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
MASTER C323-01	4			MASTER 4 Package I (multiprogramming) for use only on 3170, 3300, or 3500 with a single CPU. MASTER 4 is a highly versatile multiprogramming, multiaccess system that takes advantage of the executive mode and multiprogramming capabilities of CONTROL DATA 3170, 3300, and 3500 Computer Systems. MASTER permits multiaccess on-line input/output concurrent with real-time and conventional batch processing. The system includes such features as: time slicing; a centralized, file-oriented, I/O control system; protection of files and programs; dynamic memory capability; program segmentation; job scheduling and sequencing; task suspension; dynamic load balancing; file back-up capabilities; removable mass storage capabilities; on-line diagnostics; supports a full complement of peripheral equipment; and has a wide variety of product set members. Requires ANSI FORTRAN (C323-10 or C323-11) for maintenance purposes.
MASTER C323-02	4			MASTER 4 Package II (multiprogramming, multiprocessing) for use only on 3170 or 3300 with two identical CPUs. MASTER 4 Package II includes all of the capabilities and features of product number C323-01 (MASTER 4 Package 1) plus the support of multiprocessing for 3170/3300 Computer Systems. The multiprocessing feature supports two identical CPUs and shares core memory. Portions of the system executive are shared by both CPUs, therefore, only one copy of the system executive is resident. Optionally, multiprocessing installations can be symmetrically configured with up to eight data channels from each CPU to the peripheral equipment, thus providing an independent data path from each CPU to each peripheral controller. The multiprocessing feature requires no changes to application programs, operational procedures, or job control language, and has complete compatibility with existing software at both the source and object levels. Requires ANSI FORTRAN (C323-10 or C323-11) for maintenance purposes.
MASTER C323-03	4			MASTER 4 Package III (multiprogramming, multiprocessing) for use only on a 3500 with two identical CPUs. MASTER 4 Package III includes all of the capabilities and features of product number C323-02 but instead provides support of multiprocessing for 3500 Computer Systems. Requires ANSI FORTRAN (C323-10 or C323-11) for maintenance purposes.
COMPASS	2		No Simulation Packages for BCD or BDP provided at object time. Included in operating system.	Designed to process coding for the Control Data 3170, 3300 and 3500. It is a comprehensive assembly system providing mnemonic machine operation codes, symbolic addressing, assembly-directing pseudo instructions, and programmer-defined macro instructions.
COSY	2		Included in operating system.	Processes program decks in compressed symbolic form. COSY allows input and output files in mass storage.
SYSGEN	1		Included in operating system.	The SYStem GENerator (SYSGEN) program automates the installation and maintenance of the MASTER library, which contains all MASTER operating system subroutines and tasks.
META ASSEMBLER	1		Included in operating system.	This Meta Assembler will provide such features as 1) high degree of syntactic freedom, 2) list declarations and functional procedures, 3) intrinsic and extrinsic functions, 4) generalized expressions, 5) symbol redefinition of linkages to other subprograms and to compiler generated routines.
MASTER ON-LINE DIAGNOSTICS	2		Included in operating system.	MASTER Operating System contains the product, "ON-LINE DIAGNOSTICS" which minimizes the impact to the operating system from hardware errors, to furnish maintenance personnel with information about the error and to allow a more orderly approach to repairing the malfunction. These on-Line Diagnostics programs are multi-programmable, run in program state, usually resides on an auxiliary library and can be initiated from the card reader, tape-in (TPIN) tape or via operator command (EC10).
UTILITIES	1		Included in operating system	A comprehensive set of utility routines to facilitate transfer of data from one storage media to another. Functions include copying blocks of data, verifying blocks of data, copying various format logical records and verifying the same.
ALGOL C323-04	1			A compiler accepting an algorithmic language defined in the ALGOL-60 Revised Report in the Communications of the ACM, 1963, Vol. 6. Input/Output procedures are those of the IFIP set and the complete ACM set.
MASS STORAGE COBOL C323-05	2	BDP Option		Provides all of the features of COBOL and uses mass storage for compilation. Version 2 of MASS STORAGE COBOL contains mass storage statements and allows object programs to use mass storage.
MASS STORAGE FORTRAN C323-06	3			Allows compilation and execution of FORTRAN programs using mass storage devices.
LINKED INDEX SEQUENTIAL ACCESS(LISA) C323-07	1	16K		Linked Index Sequential Access (LISA) is a system for creating and handling indexed sequential files. Indexed sequential files are mass storage files providing fast sequential processing plus an index structure providing rapid random accessing. Moreover, provision is made for addition without rewriting the entire file.

GENERAL NOTES

LEGEND * INDICATED HARDWARE IS IN ADDITION TO THE "MINIMUM REQUIRED MACHINE HARDWARE" SHOWN IN THE OPERATING SYSTEM CONFIGURATOR NO ENTRY IN THIS COLUMN INDICATES THAT THE PRODUCT WILL OPERATE WITHIN THE OPERATING SYSTEM REQUIREMENTS

COMPUTER	SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATOR FOR MASTER VERSION 4	

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
MCS III C323-08	1	3290 or 3X16 or 2550-2	Requires C323-20 if command processor is used. Requires C323-21 for 2550 support. All mass storage files accessed by the command processor must be in LISA version 2 format.	The Message Control System III (MCS-III) is a general purpose data communication software product for terminals that are used with Control Data 3170, 3300, and 3500 Computer Systems. MCS-III, being a multiaccess suboperating system (MASOS) within the MASTER Operating System can be looked upon as a minioperating system that controls all of its own functions, but uses MASTER core and I/O for processing. Its primary purposes are: 1) to send data to or receive data from a device or application via 2550 HOST Communication Processor, (2550 requires communication Control Module Support Software, C303-21) 3X16 Multiplexer, or a 3290 Controller. 2) Form that data into a message, store it in a queue. 3) Send the message from the queue to its destination. MCS-III provides the following capabilities: o Interface software to utilize terminals either directly with one another, or for ANSI COBOL, ANSI FORTRAN, and COMPASS programs. o Batch job processing from terminals. o A command processor from which to build and manipulate central site mass storage files from terminals. Terminals Supported by MCS-III MCS-III supports those terminals driven by the 3290 controllers, those driven by the 3316/3516 communications multiplexer, and those driven by the 2550 Host Communication Processor. Please refer to the MCS-III System configeration on page 4. Command Processor The command processor consists of a set of routines to create, update, and use mass storage files from a terminal. These routines process a set of terminal commands called the file manipulator language. The command processor is an optional feature of MCS-III that may be selected during environment initialization of MCS-III. If selected, LISA version 2 must be available on the library, and the system suspension option must be selected. The command processor runs as a set of tasks under the MCS-III MASOS job. These tasks are given a specific amount of the core scheduled by MCS-III. This core is used for multitasking whenever possible. Standard Applications Supported by MCS-III MCS-III supports the following standard applications. REJEN The remote job entry application (REJEN) allows jobs to be submitted from a terminal site to the central site computer for batch processing. MCSU The message control system utility (MCSU) is a special application that allows the central site operator to perform specific functions and to allow terminal user to communicate with the central site. DUT1 The display utility 1 (DUT1) provides the user with a method of testing terminals. MARS MCS-III provides an interface task that allows the terminal user to interface with the MARS-III data manager. Command Processor - is the new product released with MCS-III VI.4 and is considered a replacement for RESPOND
RESPOND EXPORT/IMPORT C323-09	1	(b) (d) 200UT, 216-4,214 or 3290-2 w/211-1's	The card reader and printer on the 200 user terminal are not supported by RESPOND only. 216-2 may be used in off-line mode only.	The 3300/3500 MASTER EXPORT/IMPORT system provides the capability of submitting jobs from remotely located card reader stations into the system batch processing job stack. Job results are transmitted to remotely located printer stations the same way the results are processed for the local (at the computer) station. Voice grade communication lines are used.
ANSI FORTRAN C323-10 C323-11	 1 2		Floating point hardware. Auxiliary library requirements to utilize both MS FORTRAN and ANSI FORTRAN.	Based on ANSI x3.9 - 1966 Standard and will allow compilation and execution using mass storage devices.
ANSI COBOL C323-12	3	BDP Option	BDP hardware is used during compilation and execution. Mass Storage is used during compilation and may be used by object programs during execution. Includes ANSI tape label capability.	This compiler is based on the USA Standard Cobol as approved by USASI on August 23, 1968, and defined in publication USAS X3.23-1968. All eight modules are implemented at the HI LEVEL. LISA source verbs have been included in the COBOL language set. The following extensions, requested by DOD and USAF, are implemented: identifier series in arithmetic statements, READ INTO, WRITE FROM, FILE Name Series in USE, RENAMING, ADD without TO or GIVING, and OPEN INPUT-OUTPUT. A set of the object time routines operate in a truly REENTRANT or NON-REENTRANT mode. This offers core reductions, reduced object time routine sizes, optimized coding and increased system throughput. An interface to Mass Storage Sort 4 has also been implemented.

GENERAL NOTES

(b) Core usage for "T" Terminal buffers/tables is 320T rounded up to the next 2K multiple. The driver for the 3316 and/or 3290 is also required.

(d) Core usage for "T" 200 USER Terminal buffers/tables is 1710T rounded up to the next 2K multiple. The drivers for the 3316 and 200 USER Terminal are also required.

LEGEND * INDICATED HARDWARE IS IN ADDITION TO THE "MINIMUM REQUIRED MACHINE HARDWARE" SHOWN IN THE OPERATING SYSTEM CONFIGURATOR NO ENTRY IN THIS COLUMN INDICATES THAT THE PRODUCT WILL OPERATE WITHIN THE OPERATING SYSTEM REQUIREMENTS

COMPUTER	SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATOR FOR MASTER VERSION 4	

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
L-SORT MASTER C323-13	1			Provides a mass storage tag sorting capability utilizing multi-tasking to take full advantage of I/O compute overlap. It has features (i.e., tape input, variable length records, user exits) similar to those of mass storage capacity extension features whereby magnetic tape is used as a secondary intermediate storage device in case insufficient mass storage to sort the entire file is available.
TAPE SORT/MERGE C323-14	3	4 Tape Drives	Up to 16 tape drives. Includes ANSI tape label capability.	Produces a sequenced file of data records from a random sequenced or reverse-sequenced input. The internal phase makes use of the replacement selection sorting technique; the external phase may be either a balanced or polyphase merge. The user has the option to enter own-code subroutines during the program.
MASS STORAGE SORT C323-15	4		Additional mass storage. Includes ANSI tape label capability. Does not include TAG Sorting.	Produces a sequenced file of data records from random, sequenced or reverse-sequenced input. The entering of own-code subroutines during program execution is permitted. Work file management and optimization of blocking, extended sorting capabilities, multiprogramming throughput enhancements and interfacing to ANSI COBOL 3 have been implemented.
MARS III C323-16	2	16K abs. min. 4 tape drives.	suggest 2 additional mag tapes. Detail analysts of core requirements recommended for each application. 96K total recommended minimum when on-line terminals are utilized. (See MARS III functional core configurator table.)	MARS III is a comprehensive data management software system for the CONTROL DATA 3170, 3300 and 3500 computer systems. Through the use of MARS, a data base can be established to serve a variety of application programs. Designed primarily for the business environment, MARS III provides both batch and on-line query/update and report generation facilities. Multiple users located at terminals communicate with the system via a simple but powerful query/update language. MARS III is composed of related components or subsystems designed for modular systems use. The major subsystems and attendant features are: 1. DATA BASE MANAGEMENT SUBSYSTEM Data Base Management routines provide, through control cards, COMPASS, ANSI FORTRAN and ANSI COBOL, the user with the capability to: • Define or delete data files, indexes, encode/decode, and data validation tables by user program calls or control cards. • Convert to a MARS III file any file not already in MARS III format, but which can be read by a user's program task. • Reformat MARS III data files. • Determine the block and record number of records in the data file through an index search. • Retrieve data elements from selected records. • Add, delete, and update data elements in records in a data file without concern about the physical structure of the records. Data Base Management maintenance routines automatically update the associated indexes when maintenance is applied to a data file. • Assign privacy codes to data files and data elements to protect against unauthorized access to data. 2. QUERY/UPDATE SUBSYSTEM The Query/Update subsystem provides a simple, powerful query/update language containing both procedural and control language statements for retrieval of information from a data file. This English-like query language provides the following: • Conditional and Boolean expressions using the relational operators Equal To, Greater Than, Less Than, Greater Than or Equal To, Less Than or Equal To, Not Equal, and Between; and the Boolean connectives AND, OR, and AND NOT. • Arithmetic and statistical operators: SUM, DIF, MUL, DIV, TOTALn, TALLYn, AVERn, and COUNTn. A null character is provided for insertion into records to avoid erroneous arithmetic or statistical results because of a non-existent quantity. • Subtotals, using the FORMAT verb. FORMAT also contains sub-verbs providing user specification of titles, headings, and trailer information in a specially-formatted report. • A MATRIX verb for powerful, simple output of summary reports. Totals, percent calculation, and averages can be presented in matrix form without listing individual data items. • A LIST verb for system-formatted output. • IF and GO TO control verbs. • Protection of privileged or classified data at the element and file levels. • SORT verb for ordering query/update results. • UPDATE verbs to: - add new records to a data file - delete records from a data file - modify data elements in an existing record in a data file - modify, add or delete occurrences of a repeating data set to or from an existing record in a data file.

CONTINUED NEXT PAGE

GENERAL NOTES

LEGEND * INDICATED HARDWARE IS IN ADDITION TO THE "MINIMUM REQUIRED MACHINE HARDWARE" SHOWN IN THE OPERATING SYSTEM CONFIGURATOR NO ENTRY IN THIS COLUMN INDICATES THAT THE PRODUCT WILL OPERATE WITHIN THE OPERATING SYSTEM REQUIREMENTS

COMPUTER	SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATOR FOR MASTER VERSION 4	

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
MARS III C323-16 Continued				3. MULTI-ACCESS SUBSYSTEM The Multi-Access Subsystem allows the user to submit on-line query/updates, data extractor requests, or execute a user program from both local and remote terminals, as well as batch queries from a local card reader. Besides providing for submission and modification of query text from a remote terminal, the Multi-Access Subsystem contains a set of control commands which provide the following features: • Capability to resequence query text. • Saving of a complete or partial query for later execution. • Display of query text, diagnostics, or results. • A query STATUS request. • Text editing for query correction and parameters in saved queries. • A priority system for query execution. • Request for execution of non-query programs in the user library. • A PARAM command to supply parameters to non-query programs. • A quick command for execution of pre-compiled query/updates. In addition, the Multi-Access Subsystem provides protection of privileged or classified data at the terminal hardware and file level. 4. DATA EXTRACTOR SUBSYSTEM The Data Extractor Subsystem provides efficient data file processing for reports which cannot be produced practically by the Query/Update Subsystem. Features of the Data Extractor include: • Capability to produce a single report using data from several data files. • User extraction library from which the Data Extractor automatically initiates recurring, periodic reports. • Priority system with operator control. • Selectable user option for external processing of extracted data by a user-prepared program. • Each data file is processed only once for all report data extracted.
PERT PACKAGE C323-17	2	$1x10^6$ char. mass storage or one tape drive	Up to $8x10^6$ characters Mass Storage (Maximum problem) additional tape drives (a). Three tape drives with $6x10^6$ characters Mass Storage recommended.	PERT/TIME - Utilizes a time-oriented network structure to provide a variety of reports reflecting the actual and scheduled progress of a project. PERT/COST - Utilizes a cost-oriented breakdown structure to provide a variety of reports on actual and estimated costs over the life of a project.
LISA 2 C323-20	2		Recovery feature requires at least one tape drive with read backward capability.	LISA V2 is a set of modular routines capable of creating and maintaining both random and index sequential mass storage files. In providing both random and sequential file organizations, the Improved processing time capabilities associated with random files can be realized while still permitting usage of the same package by the sequential file user. Build, find, insert, delete, replace, and update functions may be performed. The block lockout feature is provided which allows more than one task or job to access (share) a file. Restart and recovery features are also permitted.
COMMUNICATION CONTROL MODULE SUPPORT SOFTWARE C323-21	1		Requires MCS III 1 C323-08	Provides communications control and supporting functions for the 2550-2 host communications processor. Includes down line load module and dynamic configuration capabilities for the 2550, selective dump module and controlware modification modules, and a 2550 driver.
TOTAL UNIVERSAL C323-22	1		- REQUIRES MASTER LEVEL 426	A data base management system developed by Cincom Systems, Inc. embodies a network data structure philosophy. Relationships from one file may be made on a direct basis to other files within the data base using a chaining/threading technique. Files may be managed on an integrated basis within one data base. TOTAL includes a Data Base Definition Language (DBDL) which is used to describe and declare the data base and a Data Manipulation Language (DML) which functions in conjunction with the following host languages: (COBOL, FORTRAN and COMPASS) at the CALL, ENTER, or Macro level. It is modular and evolutionary in design and use, provides a significant degree of data independence, can eliminate data redundancy, permits data reliability, ensures data integrity reliability and data base recovery. Also achieves optimum performance and efficiency through input/output buffer pool sharing and the elimination of external directories and indexes. TOTAL Universal runs within the users field length.
TOTAL/ATHENA - III C323/23	1		- REQUIRES TOTAL UNIVERSAL C323-22 - REQUIRES MCS-III C323-08 - REQUIRES MASTER LEVEL 432	High level interactive/batch, retrieval/update facility for Total Data Base Management system. Permits data or record selection from multiple TOTAL files based on multiple selection criteria. Includes a report writer.

GENERAL NOTES

LEGEND * INDICATED HARDWARE IS IN ADDITION TO THE "MINIMUM REQUIRED MACHINE HARDWARE" SHOWN IN THE OPERATING SYSTEM CONFIGURATOR NO ENTRY IN THIS COLUMN INDICATES THAT THE PRODUCT WILL OPERATE WITHIN THE OPERATING SYSTEM REQUIREMENTS

IV. MASTER 4 AVAILABLE DOCUMENTATION

- Operating System

MASTER 4	RM	60415100
	OG	60415200
	DH	60415500
	UG	60425700
	IN	60426000
	LGM	60415400
	IH	60415300

- Compilers

MS FORTRAN 3	RM	60057600
ANSI FORTRAN 2	RM	60281400
ALGOL 1	RM	60371800
MS COBOL 2	RM	60192000
ANSI COBOL 3	RM	60417800

- Assemblers

COMPASS 2	RM	60236800
	IN	60176700
META 1	RM	60236400

- Communications Systems

MCS III 1	RM	60282400
	IN	60448500
Respond Export/ Import 1	RM	60372300

- Data Management

LISA 2	RM	60447900
MARS III 2	RM	60372700
	UG	60372800
TOTAL	RM	60454790
ATHENA	RM	60454820

- Applications

Tape Sort 3	RM	60282100
MS Sort 4	RM	60418000
L-Sort 2	RM	60343500
Pert Cost 2	RM	60132500
Pert Time 2	RM	60131100

- Utilities

Master Utilities 1	RM	60418900

LEGEND

RM	Reference Manual
OG	Operator's Guide
UG	User's Guide
IN	Instant
IH	Installation Handbook
DH	Diagnostic Handbook
LGM	Library Generation Manual

NOTE:

The availability of the manuals listed above must be verified in the "Literature and Distribution services Catalog".

I. OPERATING SYSTEM HARDWARE REQUIREMENTS

Minimum System

	3100	3200	3170	3300	3500
o CPU	- 3114 - 3113 - 3106 (2)	- 3204 - 3209	- 3174-1 - 3172-16 - 3177-2	- 3304 - 3514-1 - 3302-16 - 3306 (2)	- 3502-32 - 3507 (2)

- o One Line Printer
- o One Card Reader
- o Two Tape Units
- o Rotating Mass Storage
  - One 841-11 with one 871

Options

- o Additional Memory
- o CPU Upgrades
- o Additional Communication (I/O) Channels
- o Floating Point Hardware Option
- o BDP Hardware Option
- o Tape Units
- o Line Printers
- o Card Equipment
- o Rotating Mass Storage
- o Communication Equipment

General System Rules

- o The system can reside only on devices of the same type. Minimum capacity to support standard batch processing is two spindles (the system itself occupies approximately 4 million characters). Additional space may be required for additional performance and/or permanent files.
- o Memory configuration of 48K or 65K is available only on 3170, 3300, or 3500.
- o Minimum required core is as follows:

Batch only	16K
Standard/Memory Protect	32K
Extended	48K/65K

- o Up to a total of eight (8) 3000 type peripheral controllers may be attached to each 24 bit or 12 bit Communication Channel.
- o Systems are upward compatible from 3100.
- o Each model 3100, 3200, 3170, 3300, or 3500 includes one operator console typewriter. Typewriter may be replaced by Special Product 65135-X (3000 SRA Console Adapter), 752-10 and 755-11 or 753-11.
- o Additional Line Printers will provide increased throughput.
- o Additional communication channels may be provided for increased I/O throughput.
- o Memory is expandable in 16K word increments on Models 3100, 3200, 3170, and 3300, and 32K word increments on Model 3500. General performance improvements are realized with additional memory up to 65K words total. NOTE: Model 3100 and 3200 has a maximum memory limitation of 32K words.

Basic System and Loader Residence

	Core Not Available For User Programs
o Basic Resident Operating System (includes required drivers, see below)	
- Batch Processing Only	5,200 words
- Standard	5,632
- Memory Protect	5,994
- Extended	6,400
o Floating Point (without Hardware)	415

Basic System and Loader Residence

	Core Not Available For User Programs
o Loader (not available during loading)	6,000

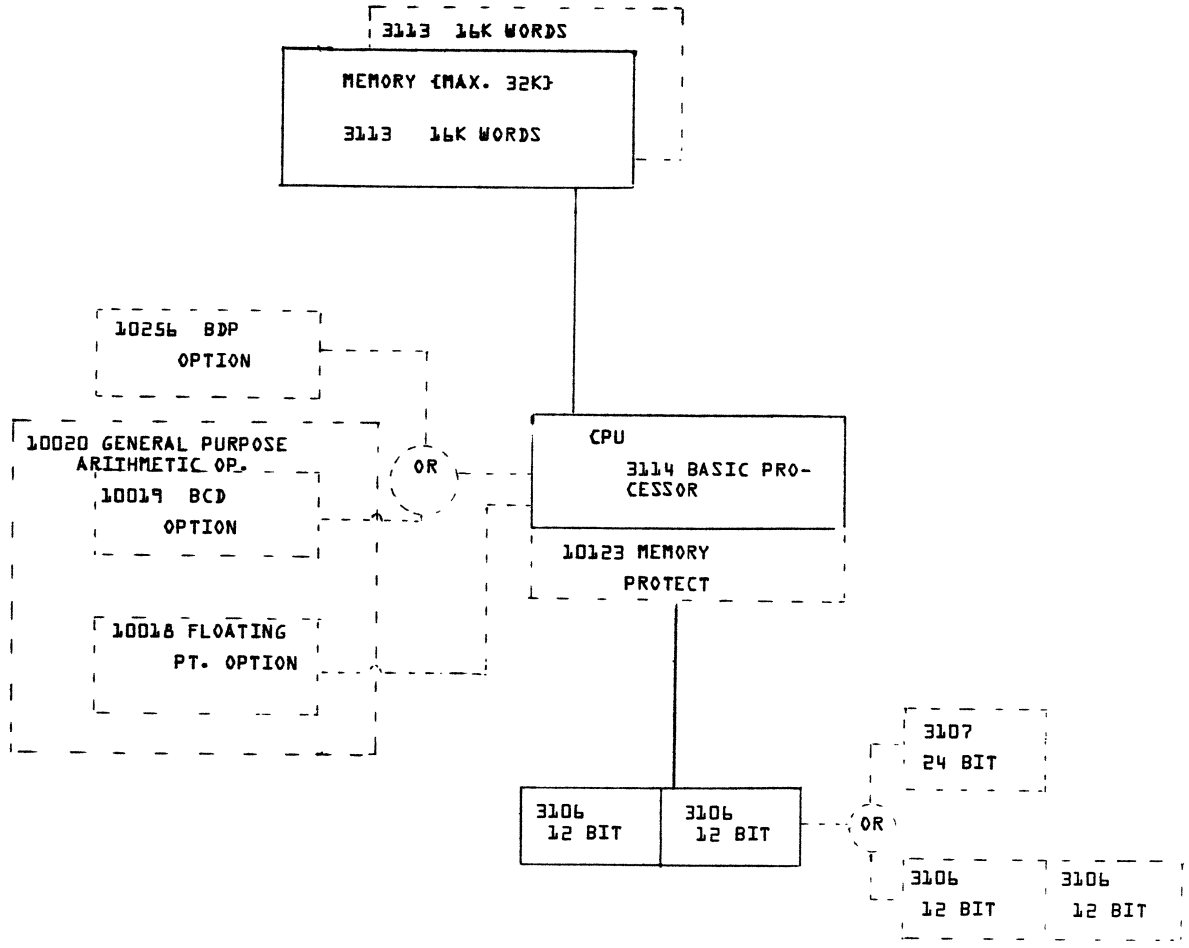
o Drivers (Required)

Drivers are provided within the system to support 841-XX, 60X and 65X, 512 and 580-XX, 405 and 415.

o Communication Equipment - Drivers and buffer sizes are in addition to the basic system residence.

II. HARDWARE DIAGRAMS

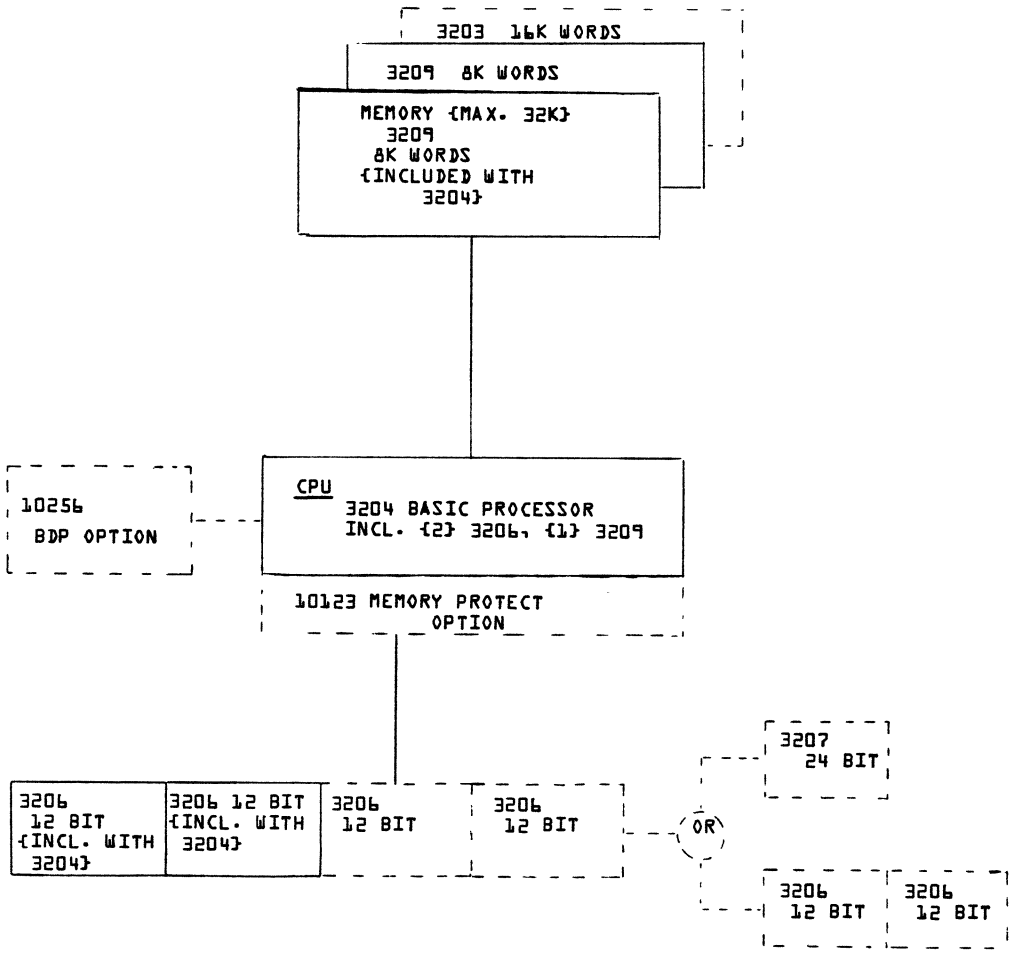
3114 MAINFRAME



COMMUNICATION CHANNELS

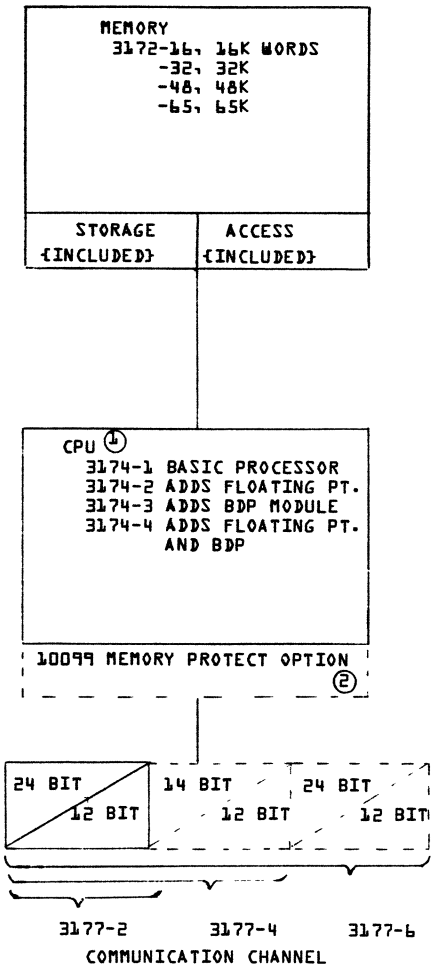
NOTE: 3150 SYSTEM CONSISTS OF:
3114, 3113, (2) 3106, 3107, 3248/405, 3234/(2) 854, 3254

3204 MAINFRAME



COMMUNICATION CHANNELS

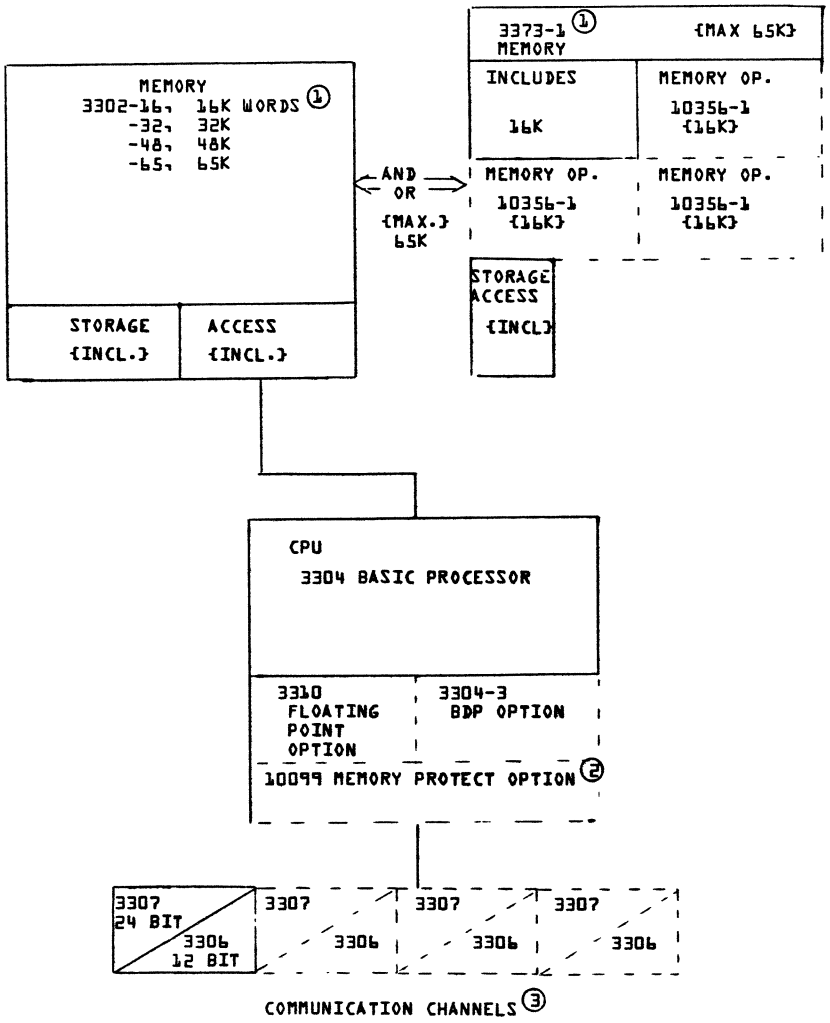
3174 MAINFRAMES



NOTE: 1. 3170 SYSTEM INCLUDES MULTIPROGRAMMING MODULE WHICH MUST BE DISABLED FOR MSOS.

2. REQUIRED ON MAINFRAMES WITH SERIAL NUMBER 93 AND BELOW. INCLUDED IN MAINFRAMES WITH SERIAL NUMBERS GREATER THAN 93, BUT MUST BE ENABLED FOR MSOS 5.

3304 MAINFRAME

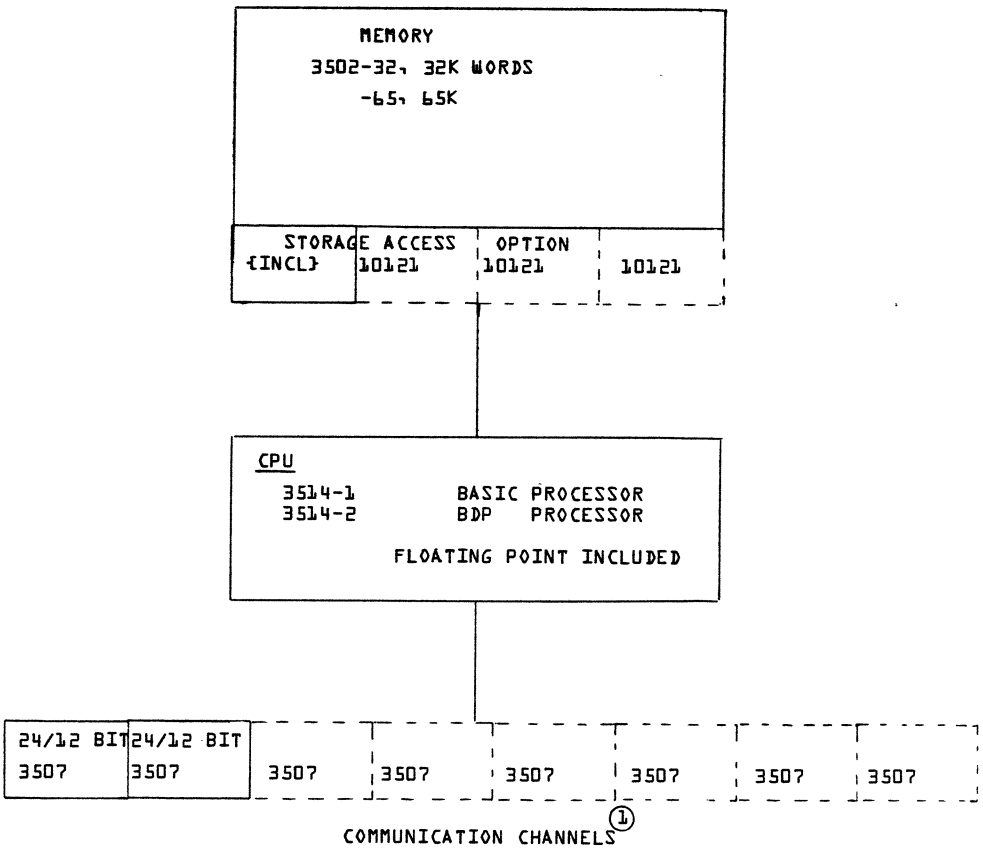


NOTE: 1. 3302 AND 3373 MEMORY MAY BE INTERMIXED ON THE SAME SYSTEM. THE 3373 MEMORY WILL SUPPORT SINGLE CPU ACCESS ONLY.

2. REQUIRED ON MAINFRAMES WITH SERIAL NUMBER 93 AND BELOW. INCLUDED IN MAINFRAMES WITH SERIAL NUMBERS GREATER THAN 93, BUT MUST BE ENABLED FOR MSOS 5.

3. 3307/3306 COMM. CHANNELS MUST BE CONFIGURED AS A PAIR.

3514 MAINFRAMES

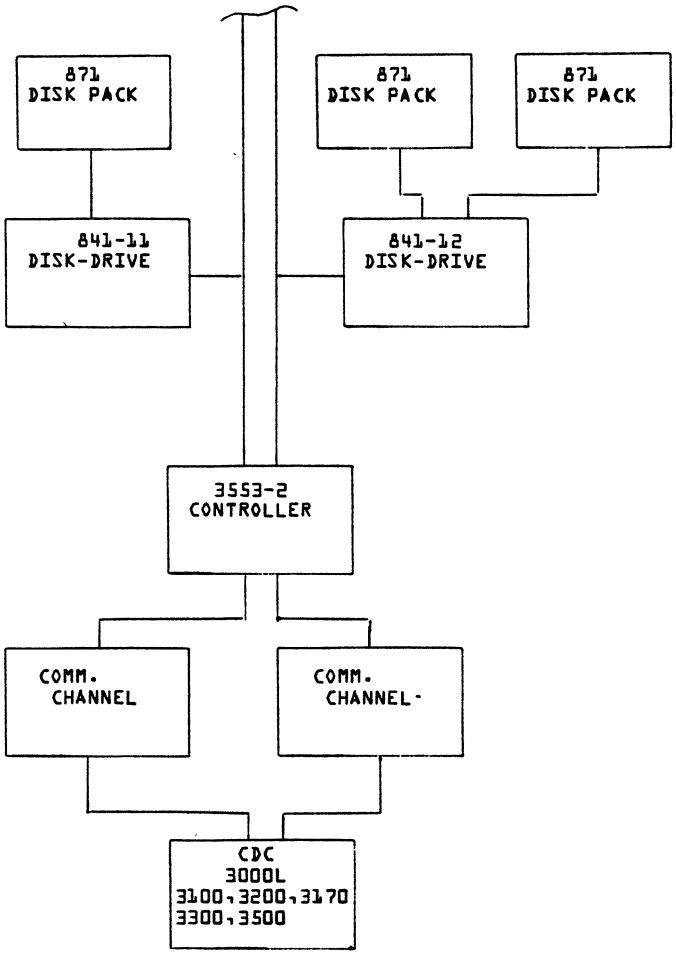


NOTE: 1. COMM. CHANNELS ARE 24 BIT OR 12 BIT MODE SELECTABLE VIA HARDWARE SWITCH.

MASS STORAGE SUBSYSTEM
3553-2/841-11, 12

SINGLE ACCESS

UP TO EIGHT (8) ACCESS MECHANISMS



NOTES:

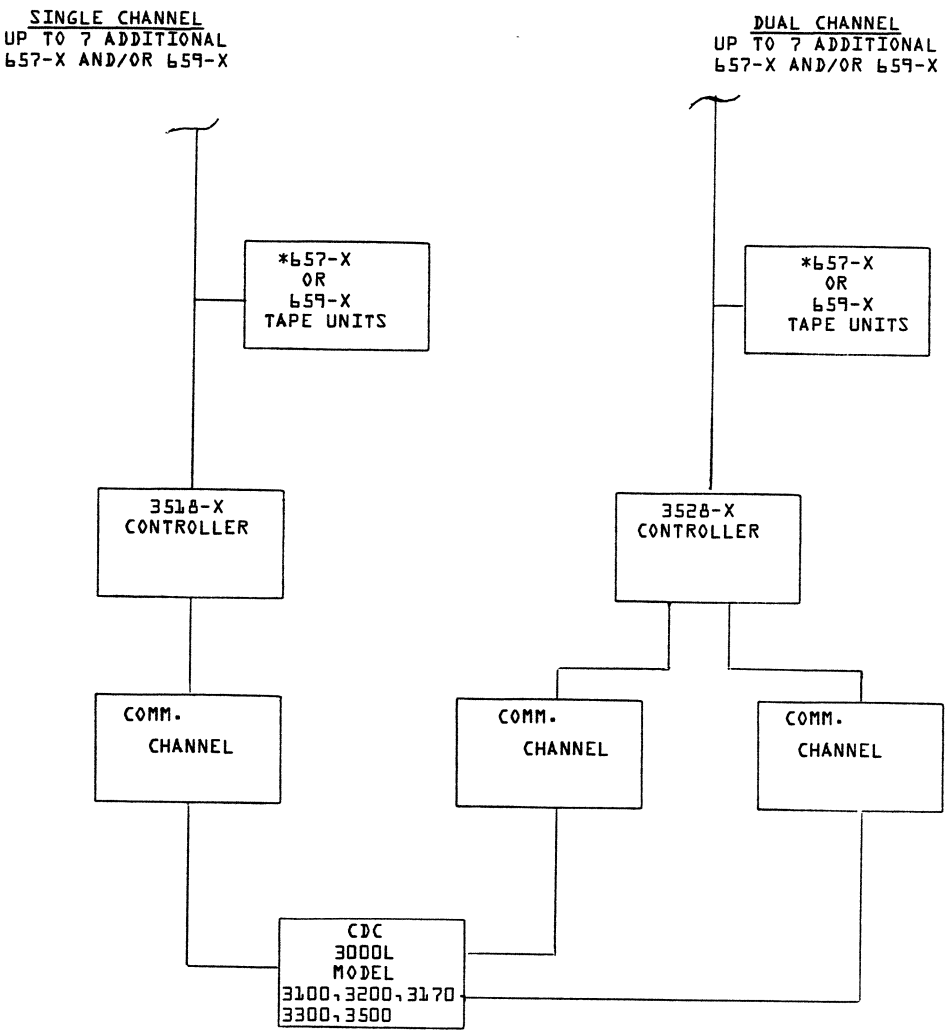
1. COMMUNICATION CHANNELS MUST BE 24 BIT

MAGNETIC TAPE
7-TRACK OR 7-TRACK/9-TRACK INTERMIXED OR 9-TRACK

657-X	657-X/659-X	659-X

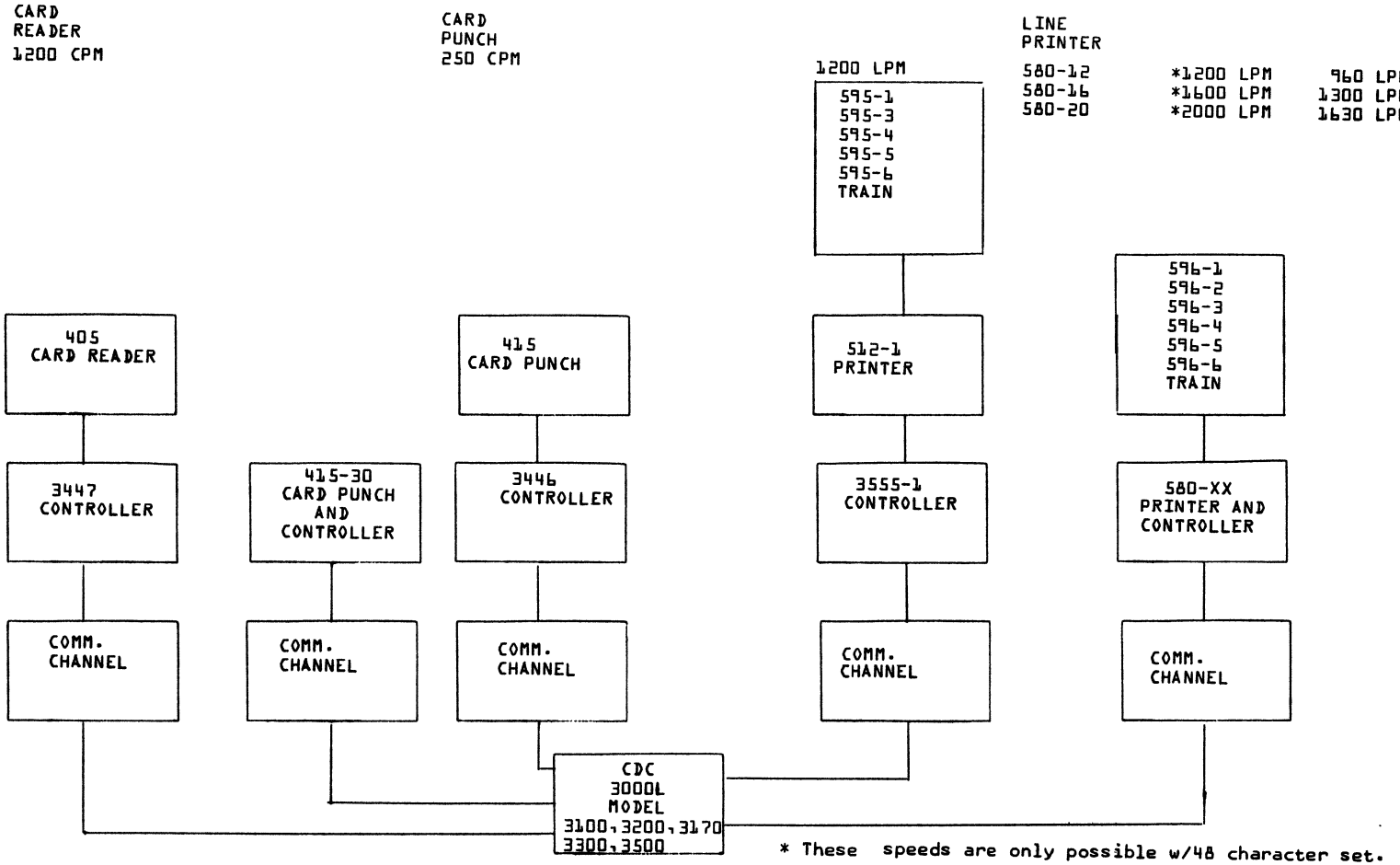
NOTES:

*657-X:	657-1,	657-2,	657-3,	657-4	{7-TRACK}
*659-X:	659-1,	659-2,	659-3,	659-4	{9-TRACK}
3518-X:	3518-1,	3518-2,	3518-3		
3528-X:	3528-1,	3528-2,	3528-3		



* 7-TRACK AND 9-TRACK TAPE UNITS AND MODELS {1, 2, 3, 4} MAY BE INTERMIXED. {NOTE: 659-X TAPE UNITS REQUIRE THAT A 3518-2, 3518-3, 3528-2 OR 3528-3 BE INSTALLED.}

LOCAL UNIT RECORD EQUIPMENT



* These speeds are only possible w/48 character set.

** These speeds are possible w/64 character set.

3170/3300/3500 COMPUTER	**SOFTWARE PRODUCT SET** DESCRIPTION AND HARDWARE CONFIGURATOR FOR MSOS VERSION 5	

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
MASS STORAGE OPERATING SYSTEM (MSOS)	5		Memory protect option (100993) must be installed and enabled in mainframe with serial numbers 93 and below. Included in mainframe with serial number greater than 93 and only needs to be enabled.	MSOS 5 is a mass storage based 5 Partition Operating System, supporting BATCH and up to four priority programs simultaneously. MSOS 5 supports a full complement of peripheral equipment. MSOS 5 includes such features as centralized interrupt and I/O file handling, Automatic Peripheral Control, resident system error recovery, and dynamic priority partitions. Real time program requirements such as Process Control and Communications, are typically well suited to MSOS 5 Priority Partition structure. MSOS 5 supports a wide variety of applications, such as business and scientific languages, file maintenance, machine tool, PERT, and 1401 simulation.
C225-01	5			MSOS 5 PACKAGE I (STANDARD/MEMORY PROTECT) for use on 32K or less core storage 3100/3200/3300/3500. MSOS 5 PACKAGE I supports STANDARD or MEMORY PROTECT variants in a 32K core storage environment, or STANDARD variant in a 16K environment (without Priority Program capability). This product can be used on CONTROL DATA® 3100/3200/3300/3500 Computer Systems. Requires MSOS UTILITY 1 under MSOS 5 (C225-18) for maintenance purposes.
C225-02	5			MSOS 5 PACKAGE II (EXTENDED) for use only on 49K or 65K core storage 3170/3300/3500 MSOS 5 PACKAGE II supports the extension of memory to 49K or 65K words of core storage. PACKAGE II is for use on CONTROL DATA® 3170/3300/3500 computer systems employing toggle switch memory protect hardware. Memory utilization may be configured to allow either 16K for BATCH and 32K for Priority Programs and System; 32K for BATCH AND 16K for Priority Programs and System; or 32K for BATCH and 32K for Priority Programs and System. Requires MSOS UTILITY 1 under MSOS 5 (C225-18) for maintenance purposes.
COMPASS	3		Included in Operating System	Designed to process coding for the Control Data 3100, 3150, 3200, 3300 and 3500. It is a comprehensive assembly system providing mnemonic machine operation codes, symbolic addressing, assembly-directing pseudo instructions, and programmer-defined macro instructions.
COSY C225-01, -02	3		Included in Operating System	Processes program decks in compressed symbolic form. COSY allows input and output files in mass storage.
MSIO C225-02, -02	5		Included in Operating System	MSIO is a file-oriented input/output system consisting of logical record processing facilities such as blocking, deblocking, buffering, and updating.
PRELIB	5		Included in Operating System	A library generation and maintenance tool for MSOS. PRELIB allows the manipulation and addition of programs on the system library.
PRELIB EDIT	5		Included in Operating System	A library source material maintenance tool, allowing manipulation of binary decks.
APC	1		Included in Operating System	A priority program running under MSOS 5.0 in any priority partition. Provides automatic mass storage queuing of standard input/output and punch files. Features include: - Dual printer support - Forms alignment - Tape input, output or punch on demand - Accounting for lines and cards processed - Circular queues - Restart - Queue bypass scheme - Reposition queue pointers - Operator response minimal
PERT TIME (16K) C225-04	2	0.2×10^6 char. mass storage	Up to 6×10^6 characters Mass Storage (maximum problem) additional tape drives Variant B uses 16K core. 3 tape drives with minimum 6×10^6 characters mass storage recommended.	Utilizes a time-oriented network structure to provide a variety of reports reflecting the actual and scheduled progress of a project.
ANSI FORTRAN C225-05	1		BDP Hardware. Operates as an overlay program. Requires 32K system. USER priority of less than 2360 words are allowed. May be placed on an Aux Lib but must be run under same conditions as generated.	Based on ANSI x 3.9 - 1966 standard and will allow compilation and execution using mass storage devices.
ANSI COBOL C225-06	2	BDP Module 10256-X	BDP Hardware.	This compiler is based on the USA Standard Cobol as approved by USASI on August 23, 1968, and defined in publication USAS X3.23-1968. Version 1 implements the Nucleus, Table Handling, Sort, Sequential Access, Random Access, Report Writer, and Library Modules at the HI LEVEL. The SEGMENTATION module is at a NULL LEVEL. Version 2 implements all eight modules at the HI LEVEL. LISA Source Verbs have been included in the COBOL Language Set. The following extensions, requested by DOD and USAF, are implemented: identifier series in arithmetic statements, READ INTO, WRITE FROM, File Name Series in USE, RENAMING, ADD without TO or GIVING, and OPEN INPUT-OUTPUT. BDP hardware is used during compilation and execution. Mass Storage is used during compilation and may be used by object programs during execution.

GENERAL NOTES

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3170/3300/3500 COMPUTER	**SOFTWARE PRODUCT SET** DESCRIPTION AND HARDWARE CONFIGURATOR FOR MSOS VERSION 5.	

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
MASS STORAGE COBOL C225-07	4		Object Time Mass Storage I/O. Variant B uses BCD Simulation Package.	Provides all of the features of COBOL and uses mass storage for compilation.
MASS STORAGE COBOL C225-08	4	BDP hardware required.	Object Time Mass Storage I/O. Variant A requires BDP Hardware.	Provides all of the features of COBOL and uses mass storage for compilation.
MASS STORAGE SORT C225-09	3			Similar to the tape SORT except that disk storage is used during intermediate merge processing. The SORT may optionally employ a tag sorting method.
TAPE SORT/MERGE C225-10	2	3 tape drives.	Up to 16 tape drives.	Produces a sequenced file of data records from a random input. The internal phase makes use of the replacement selection sorting technique; the external phase may be either a balanced or polyphase merge. The user has the option to enter own-code subroutines during the program.
LINKED INDEX SEQ. ACCESS (LISA) C225-11	1			Linked Index Sequential Access (LISA) is a system for creating and handling indexed sequential files. Indexed sequential files are mass storage files providing fast sequential processing plus an index structure providing rapid random accessing. Moreover, provision is made for addition without rewriting the entire file.
MASS STORAGE FORTRAN C225-12	4		Uses Floating Point Option or Software Simulation Package.	Provides all of the features of FORTRAN and allows compilation and execution using mass storage devices.
ALGOL C225-13	1		Uses Floating Point Option or Software Simulation Package.	A compiler accepting an algorithmic language defined in the ALGOL-60 Revised Report in the Communications of the ACM, 1963, Vol. 6. Input/Output procedures are those of the IFIP set and the complete ACM set.
ADAPT C225-14	1		Uses Floating Point Option or Software Simulation Package.	A system that prepares instructions for numerically controlled machine tools. The ADAPT language allows specification of the geometric properties of a part to be machined and the operations involved in producing the part. ADAPT is a subset of the more complex APT system.
PERT/TIME (32K) C225-15	2	0.2×10^6 char. mass storage	Up to 6×10^6 characters Mass Storage (maximum problem) additional tape drives. Variant C requires 32K core. 3 tape drives with minimum of 4x10 character mass storage recommended.	Utilizes a time-oriented network structure to provide a variety of reports reflecting the actual and scheduled progress of a project.
PERT/COST C225-15	2	2×10^6 char. mass storage	Up to 8×10^6 characters Mass Storage (maximum problem) additional tape drives. 3 tape drives with minimum 6×10^6 characters mass storage recommended.	Utilizes a cost-oriented breakdown structure to provide a variety of reports on actual and estimated costs over the life of a project.
SAINT C225-17	2		Additional core and peripheral devices as required to simulate a given 1401 or 1460. Disk operations will be simulated on a QSS basis only.	A simulator that allows execution of the object program decks prepared for the 1401 and 1460 computers. Disk operations will be simulated on a QSS basis only.
MSOS UTILITY C225-18	1	Tapes as required to perform desired functions	Operates as a normal batch job performing peripheral operations.	A peripheral processing package which allows transfer of data between peripheral units and storage media. Includes BAD TRACK/VFLD programs.
ON-LINE CONTROL SYSTEM C225-19	1			Operates as priority program; provides user with capability to write COBOL applications for data collection and retrieval from local or remote terminals.
PROFITS C225-20	1		Requires MSOS On-Line Control Systems written in MS COBOL (BDP).	On-line manufacturing information system. Operates from a common data base providing data files and reports for order processing, engineering, requirements planning, production control, procurement and accounting functions.

GENERAL NOTES

LEGEND * INDICATED HARDWARE IS IN ADDITION TO THE "MINIMUM REQUIRED MACHINE HARDWARE" SHOWN IN THE OPERATING SYSTEM CONFIGURATOR. NO ENTRY IN THIS COLUMN INDICATES THAT THE PRODUCT WILL OPERATE WITHIN THE OPERATING SYSTEM REQUIREMENTS

IV. AVAILABLE DOCUMENTATION

MSOS 5 Product Set Documentation

o Operating System		
MSOS 5	RM	60410600
	IH	60410800
	OG	60410700
	DH	60410900
	IN	60411000
o Compilers		
ANSI FORTRAN 1	RM	60281400
MS FORTRAN 4	RM	60057600
ALGOL 1	RM	60371800
ANSI COBOL 2	RM	60417900
MS COBOL 4	RM	60191100
o Assemblers		
COMPASS 3	RM	60236800
	IN	60176700
o Data Management		
LISA 1	RM	60236900
o Applications		
SORT 3	RM	60281500
PERT COST 2	RM	60132500
PERT TIME 2	RM	60131100
ADAPT 1	RM	60173400
PROFITS 1	RM	59158200
	OG	59158300
	IH	59159600
On-Line Control System 1	RM	59158800
o Utilities		
COSY 3	RM	60207300
SAINT 2	RM	60213700

LEGEND

RM	Reference Manual
IH	Installation Handbook
OG	Operator's Guide
DH	Diagnostic Handbook
IN	Instant
(1)	Includes both TAPE SORT and MS SORT

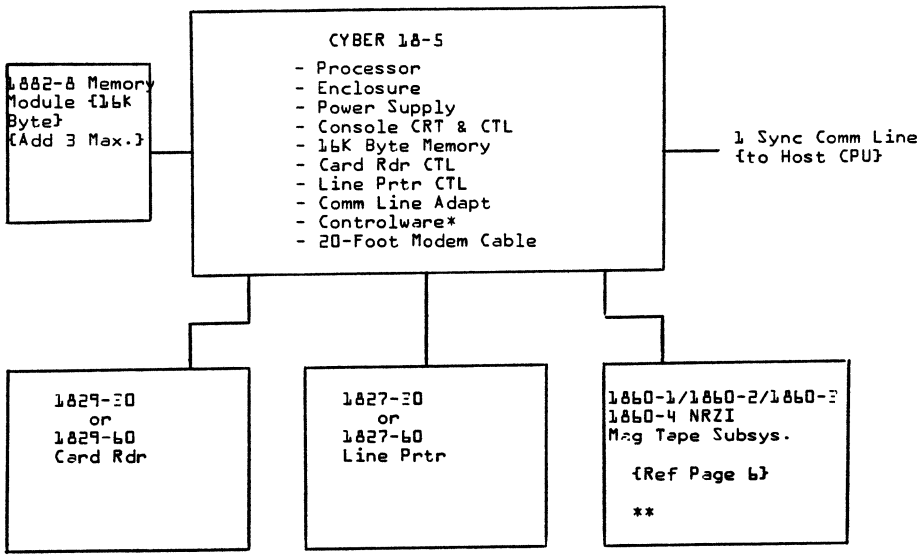
NOTE:

The availability of the manuals listed above must be verified in the "Literature and Distribution Services Catalog".

FOR INTERNAL USE ONLY

TABLE OF CONTENTS

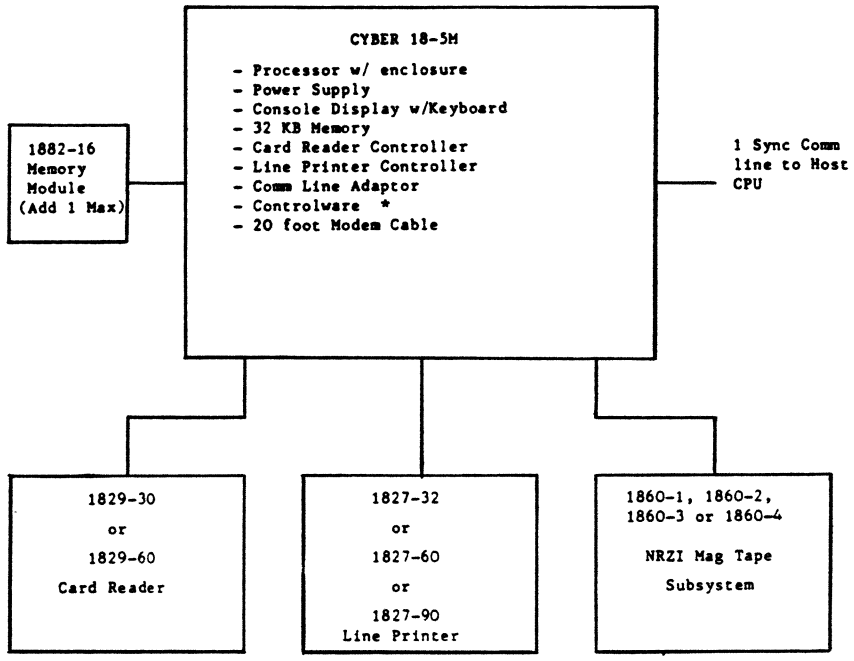
CYBER 18-5 HARDWARE CONFIGURATOR



* CUSTOMER SELECTED OPTION FOR CDC 200 UT, IBM 2780 OR IBM 3780 EMULATION

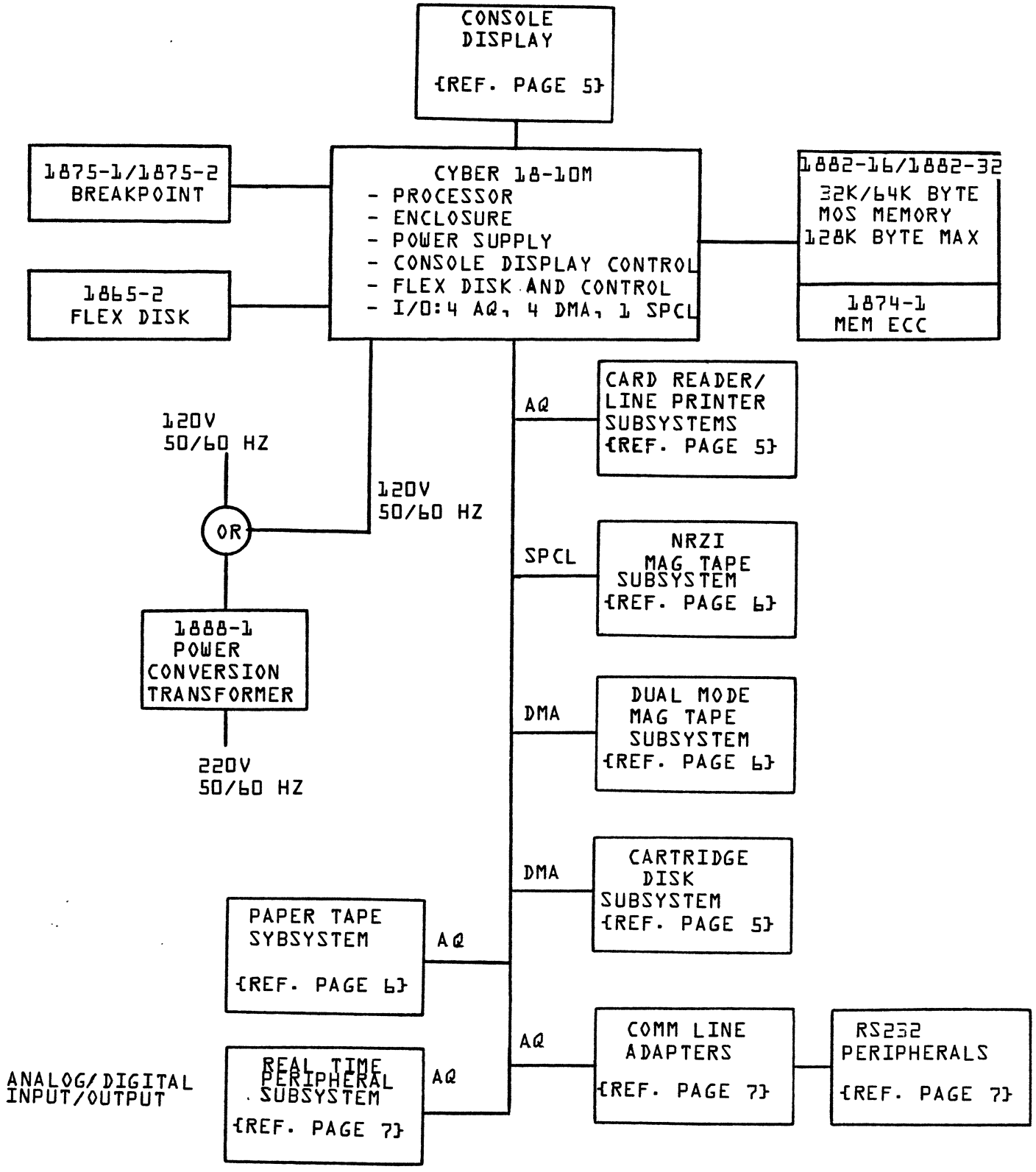
** REQUIRES ONE 1882-8 MEMORY MODULE ADDITION FOR CONTROLWARE TO UTILIZE TYPES

CYBER 18-5M HARDWARE CONFIGURATOR

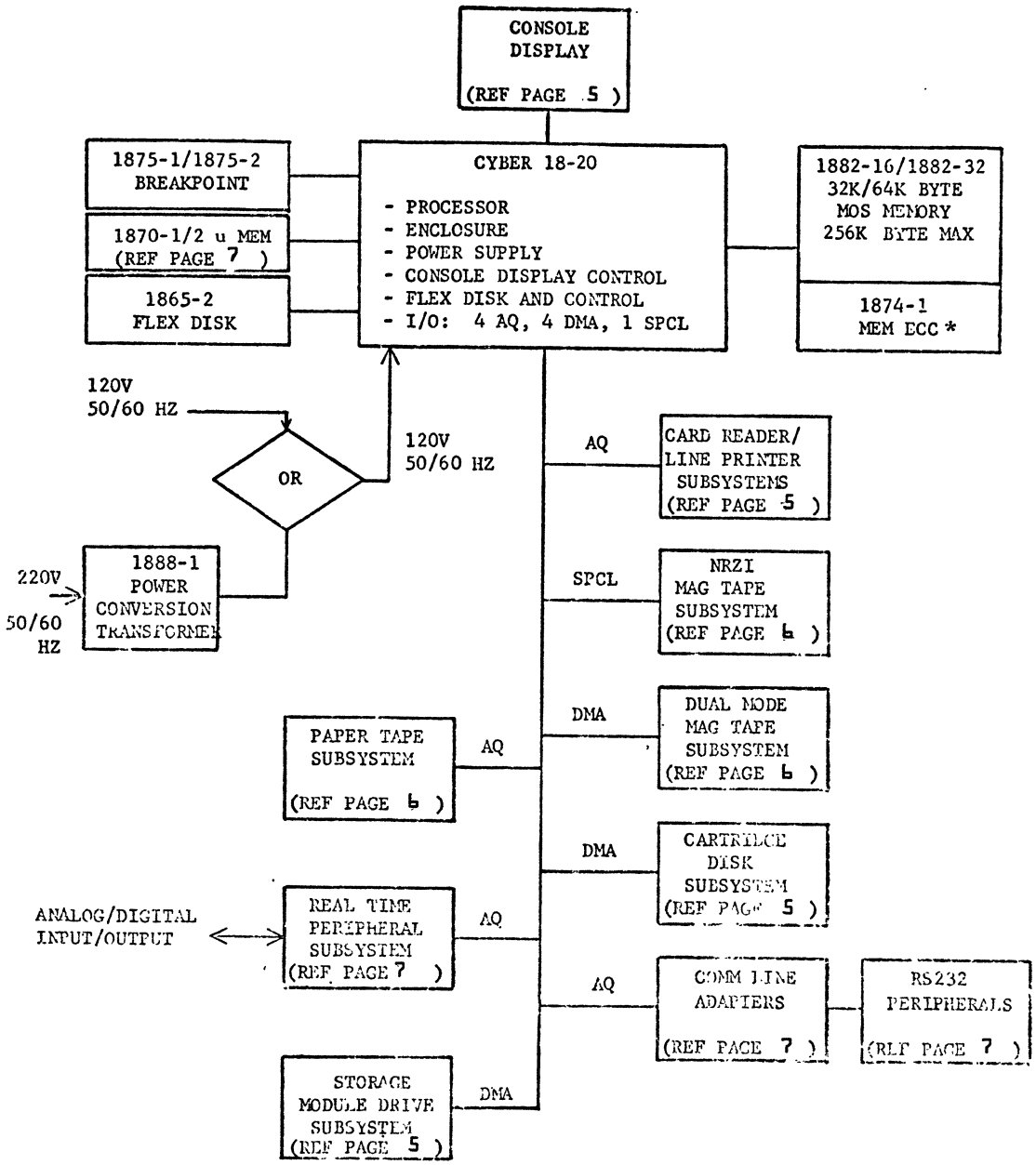


* Customer selected option for CDC 200 UT, IBM 2780 or IBM 3780 Emulation

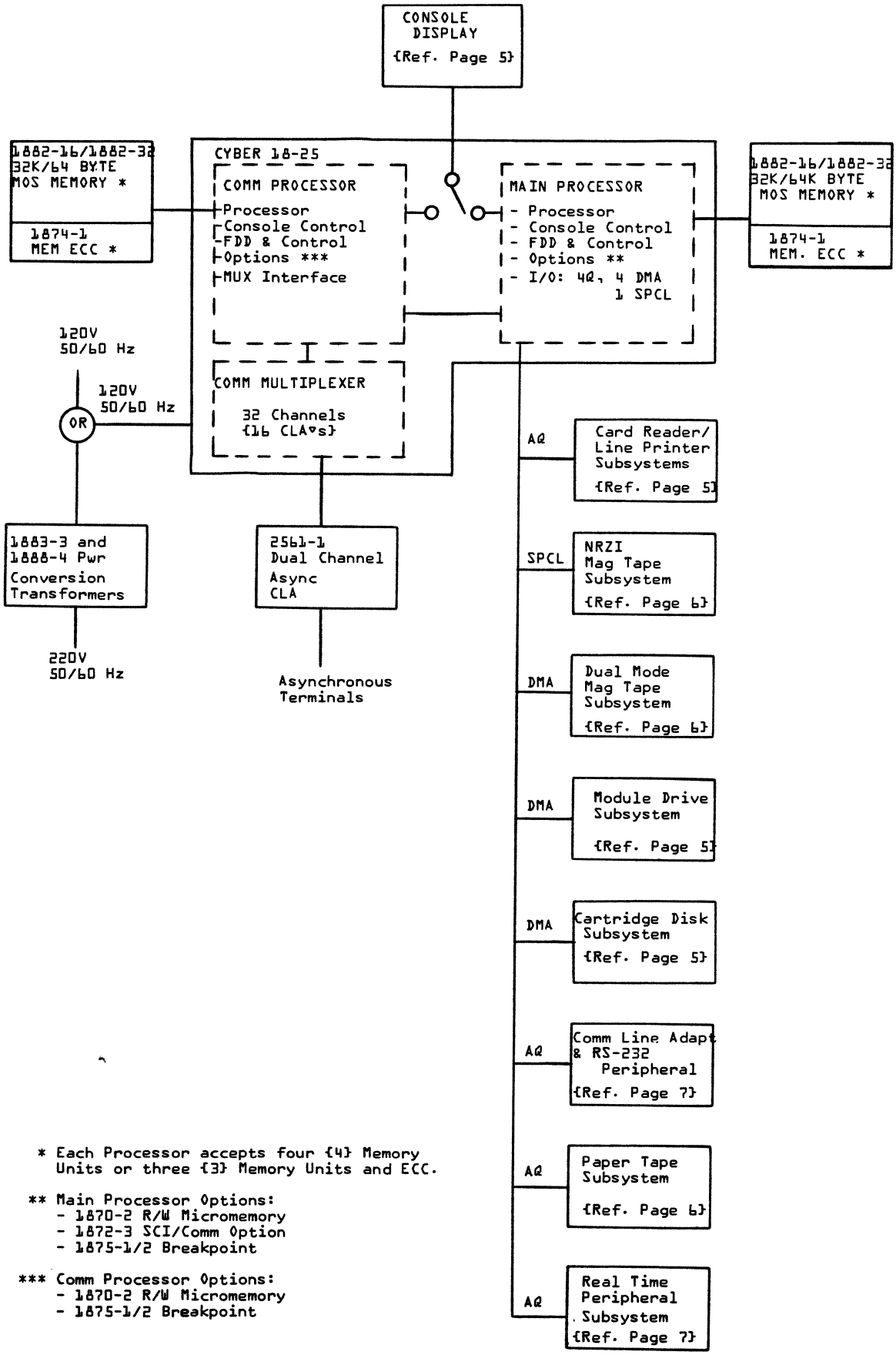
CYBER 18-10M HARDWARE CONFIGURATOR



CYBER 18-20 HARDWARE CONFIGURATOR



* INSTALLATION OF ECC LIMITS MEMORY TO 192K BYTES.

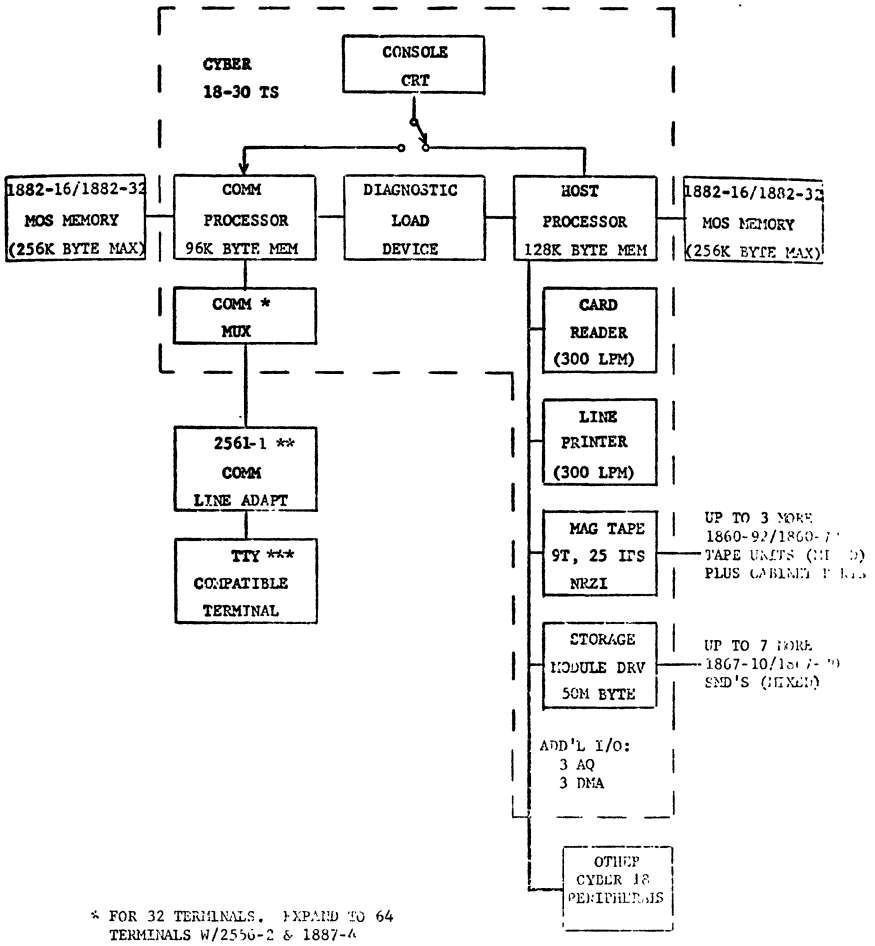


* Each Processor accepts four {4} Memory Units or three {3} Memory Units and ECC.

** Main Processor Options:
- 1870-2 R/W Micromemory
- 1872-3 SCI/Comm Option
- 1875-1/2 Breakpoint

*** Comm Processor Options:
- 1870-2 R/W Micromemory
- 1875-1/2 Breakpoint

CYBER 18-30 HARDWARE CONFIGURATOR



* FOR 32 TERMINALS, EXPAND TO 64 TERMINALS W/2556-2 & 1887-4

** ONE 2561-1 FOR EACH 2 TERMINALS

*** 752-10 CRT DISPLAY OR EQUIVALENT

ADDITIONAL PERIPHERALS

Any of the peripheral subsystems below may be connected to the CYBER 18-30 host processor limited by the available controller locations in CPU (3 AQ and 3 DMA). These peripherals may or may not be supported by the Timeshare 3 software. Refer to the software configurators.

- Card Reader/Line Printer Subsystems
- Dual Mode Magnetic Tape Subsystems
- Cartridge Disk Subsystem
- Comm Line Adapters and RS232 Peripherals
- Paper Tape Subsystem
- Real Time Peripheral Subsystem
- Flexible Disk Drive Subsystem

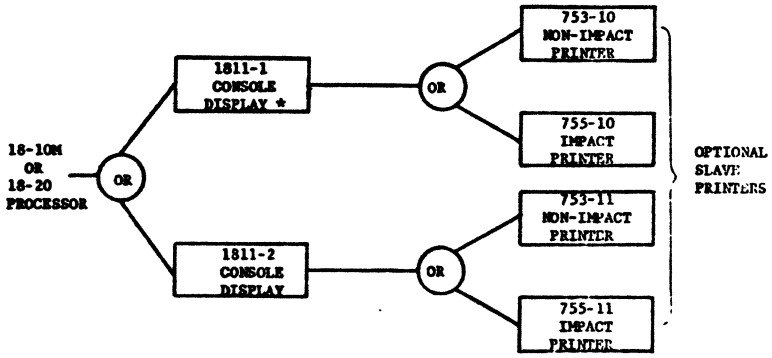
TAPE UNIT/COMMUNICATION MULTIPLEXER EXPANSION

Addition of the communications multiplexer (2556-2) for second group of 32 terminals and the addition of tape units (1866-72/1866-92), both require 1887-4 racks. Racks can be shared. Rack parts for expansion are as follows:

Expansion	Rack Parts Required
COMM MUX	1887-4
1 Tape Unit	1887-4, 1860-200
2 Tape Unit	1887-4, 1860-200, 1860-201
3 Tape Unit	(2) 1887-4, (2) 1860-200, 1860-201
COMM MUX & 1 Tape	1887-4, 1860-200
COMM MUX & 2 Tape	(2) 1887-4, 1860-200, 1860-201
COMM MUX & 3 Tape	(2) 1887-4, (2) 1860-200, 1860-201

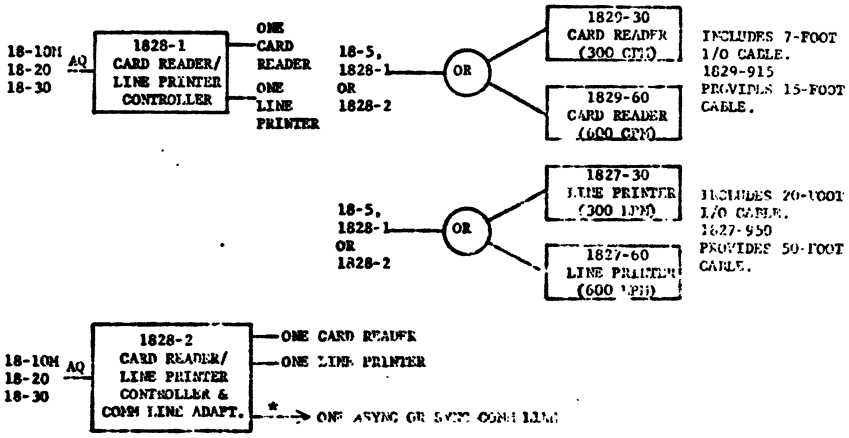
CYBER 18 PERIPHERAL CONFIGURATORS

CONSOLE DISPLAYS



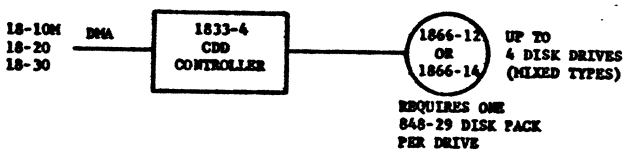
* 1811-1 REQUIRED ON 18-10M/18-20 IF 1890-X EMULATION CONTROLWARE IS USED.

CARD READER/LINE PRINTER SUBSYSTEM

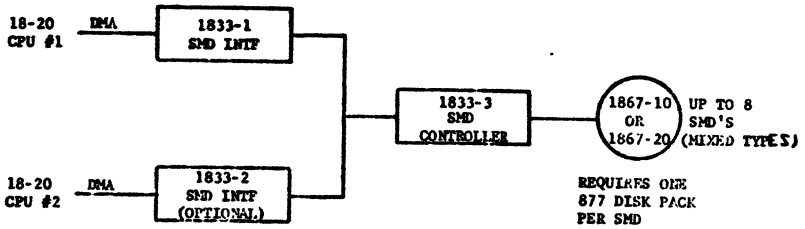


* ONE 20-FOOT MODEM CABLE PROVIDED. 1843-950 PROVIDES 50-FOOT MODEM CABLE. 1843-901 PROVIDES ADAPTER TO CONFIGURE 751/752 CRT TO MODEM CABLE.

CARTRIDGE DISK SUBSYSTEM

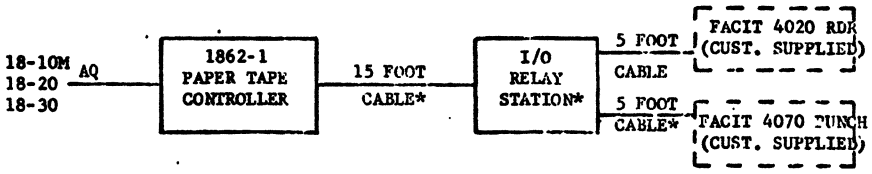


STORAGE MODULE DRIVE SUBSYSTEM



CYBER 18 PERIPHERAL CONFIGURATORS

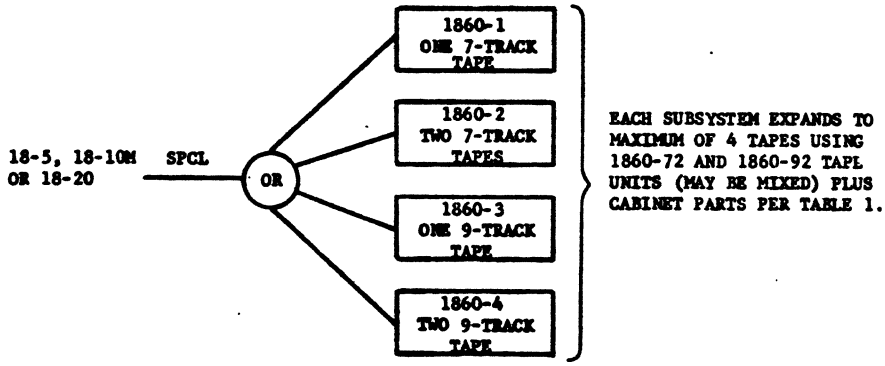
PAPER TAPE SUBSYSTEM



* PROVIDED AS PART OF 1862-1

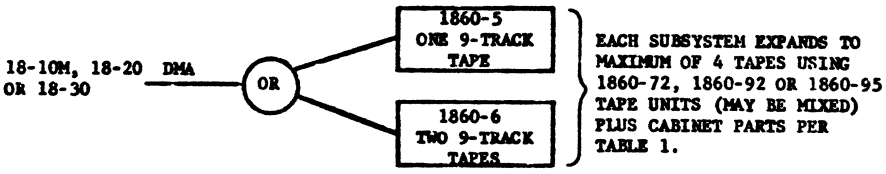
NOTE: I/O RELAY STATION REQUIRES MOUNTING IN CUSTOMER SUPPLIED CABINET WITH READER AND PUNCH. REQUIRES 5 INCHES OF 19-INCH RETMA MOUNTING SPACE.

NRZI MAG TAPE SUBSYSTEMS



ALL SUBSYSTEMS CONSIST OF TAPE UNIT(S), CABINET, CONTROLLER & CABLES

DUAL MODE MAG TAPE SUBSYSTEM



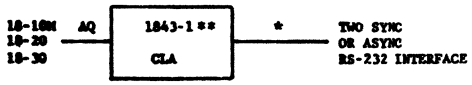
SUBSYSTEMS CONSIST OF TAPE UNIT(S), CABINET, CONTROLLER AND CABLES

TAPE SUBSYSTEM CABINET EXPANSION (TABLE 1)

SUBSYSTEM EXPANDED	TAPE UNITS BEING ADDED		
	1	2	3
1860-1 1860-3 1860-5	1860-201	1887-4 1860-200 1860-201	1887-4 1860-200 (2) 1860-201
1860-2 1860-4 1860-6	1887-4 1860-200	1887-4 1860-200 1860-201	

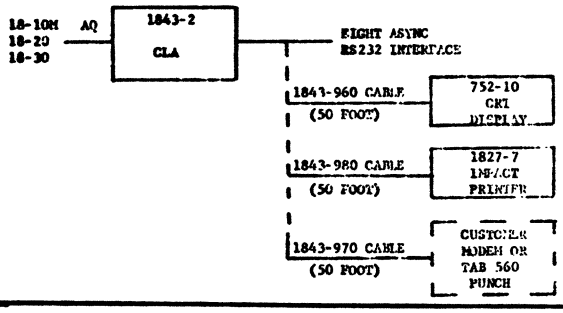
CYBER 18 PERIPHERAL CONFIGURATORS

COMM LINE ADAPTERS & RS232 PERIPHERALS

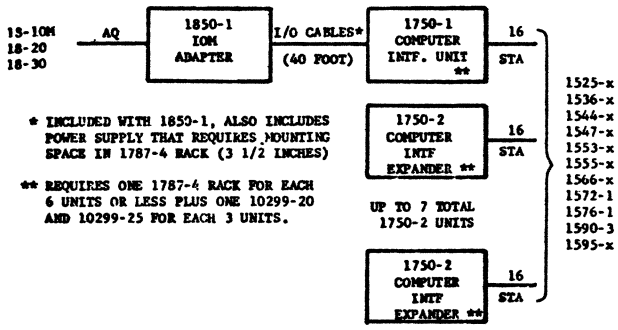


* ONE 20-FOOT MODEM CABLE PROVIDED. 1843-950 PROVIDES 50-FOOT MODEM CABLE. 1843-901 PROVIDES ADAPTER TO CONNECT 751/752 CRT TO MODEM CABLE.

** 1843-1 required on 18-10M, 20, 30 if the 1690-X Emulation Controlware is used.



REAL-TIME (1500 IOM) PERIPHERAL SUBSYSTEMS

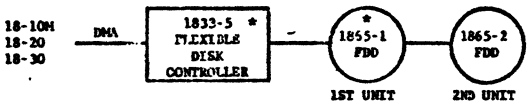


* INCLUDED WITH 1850-1, ALSO INCLUDES POWER SUPPLY THAT REQUIRES MOUNTING SPACE IN 1787-4 RACK (3 1/2 INCHES)

** REQUIRES ONE 1787-4 RACK FOR EACH 6 UNITS OR LESS PLUS ONE 10299-20 AND 10299-25 FOR EACH 3 UNITS.

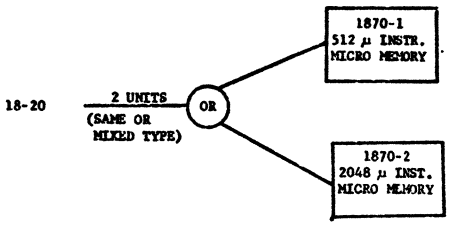
FOR DETAILS OF SUBSYSTEM CONFIGURATION SEE "A/D" SECTION, VOLUME II OF PRICING MANUAL.

FLEXIBLE DISK DRIVE SUBSYSTEM



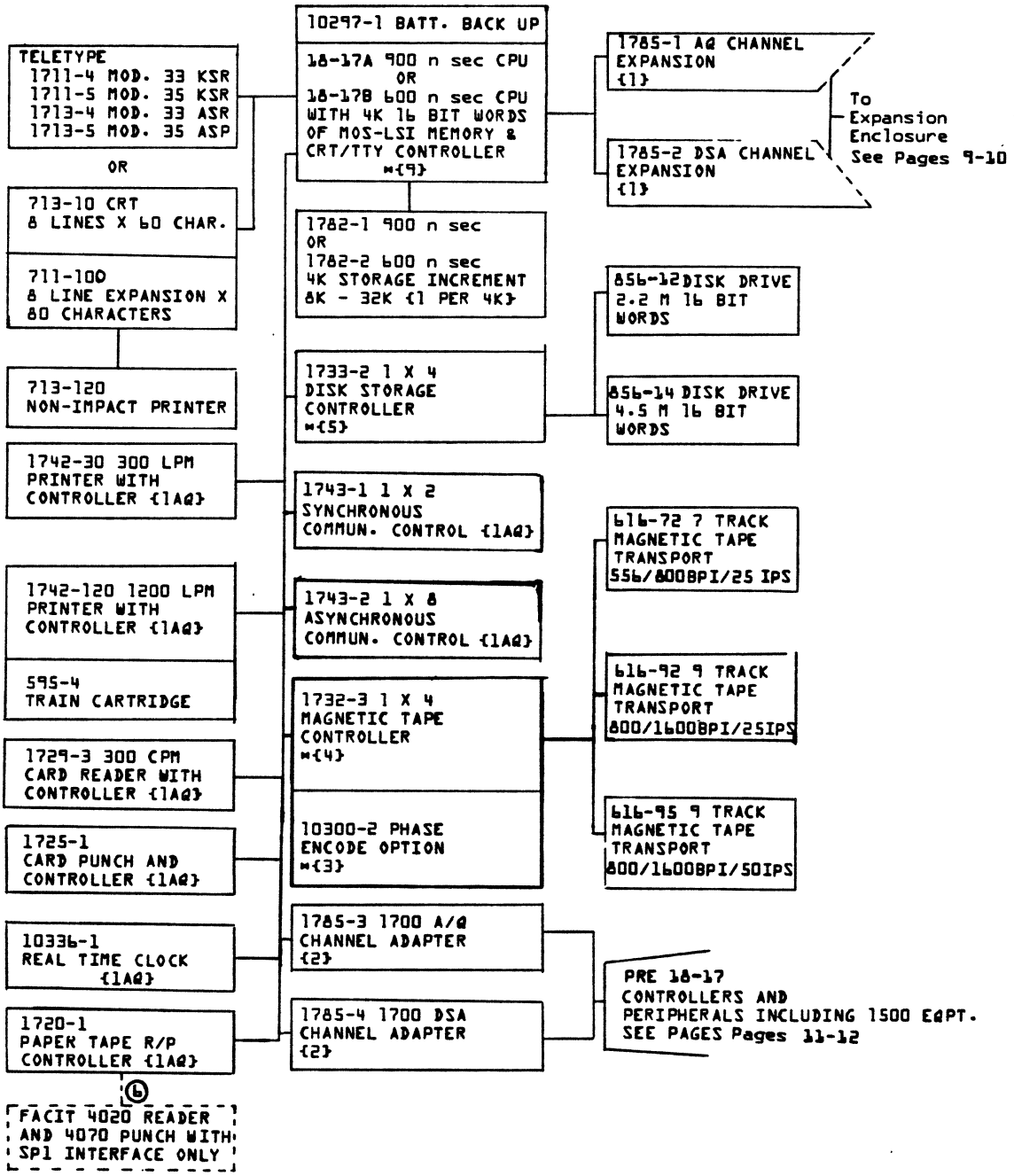
* 18-10M & 18-20 PROCESSOR INCLUDES ONE FDD AND CONTROLLER FOR DIAGNOSTIC LOADING. CONTROLLER CAN BE UPGRADED TO 1833-5 BY OPTION 10XXX.

READ/WRITE MICRO-MEMORY



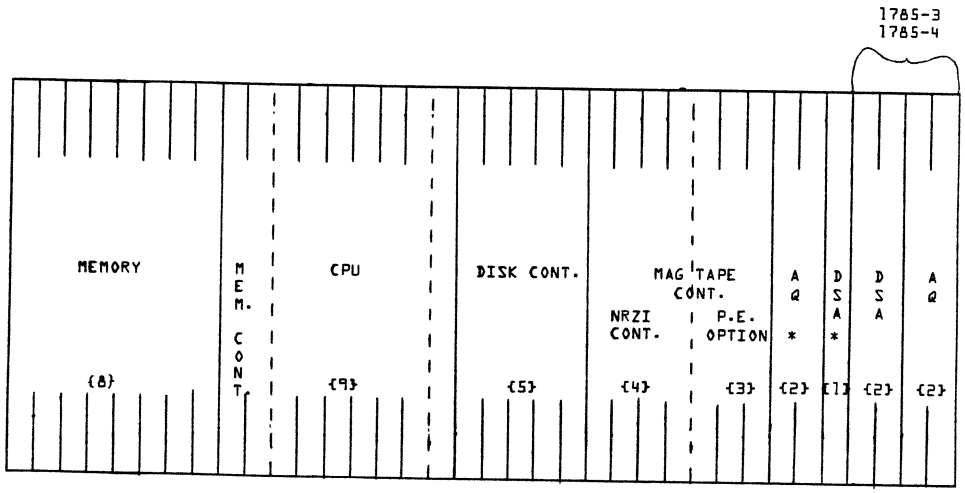
18-17 MAINFRAME ENCLOSURE CONFIGURATOR

4K-32K



NOTES

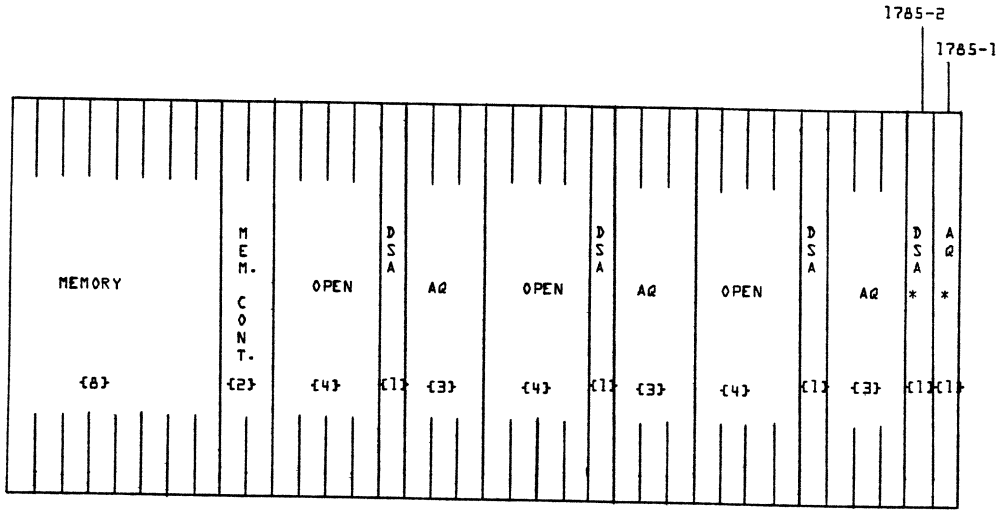
1. Mainframe Enclosure contains 36 card slots for CPU and controllers.
2. Products marked with * use dedicated card slots in Mainframe Enclosure only. Other modules may use card slots in either Mainframe Enclosure or Expansion Enclosure.
3. Numbers inside { } indicate number of card slots and channel type occupied in Mainframe Enclosure.
4. 1785-1 and 1785-2 use one card slot in the Mainframe Enclosure and one in the Expansion Enclosure. See page 20.
5. No driver exists for 1743-1 Synchronous Comm. Control.
6. The 4020 and 4070 are not provided by CDC and must be obtained by the customer directly from FACIT.



FRONT VIEW

18-17 MAINFRAME ENCLOSURE LOCATION ASSIGNMENTS

* ANY AQ AND DSA SLOT CAN BE USED, BUT THESE TWO SLOTS ARE THE "STANDARD" LOCATIONS



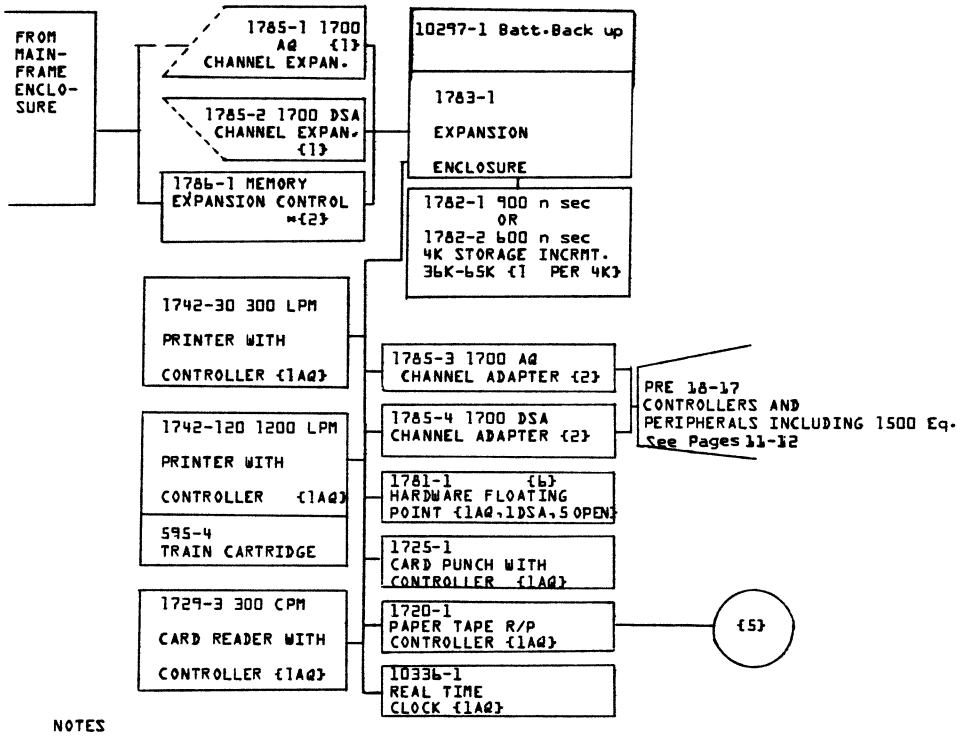
FRONT VIEW

1783-1 EXPANSION ENCLOSURE LOCATION ASSIGNMENTS

* ANY AQ AND DSA SLOT CAN BE USED, BUT THESE TWO SLOTS ARE THE "STANDARD" LOCATIONS

1783-1 EXPANSION ENCLOSURE CONFIGURATION

36K - 65K

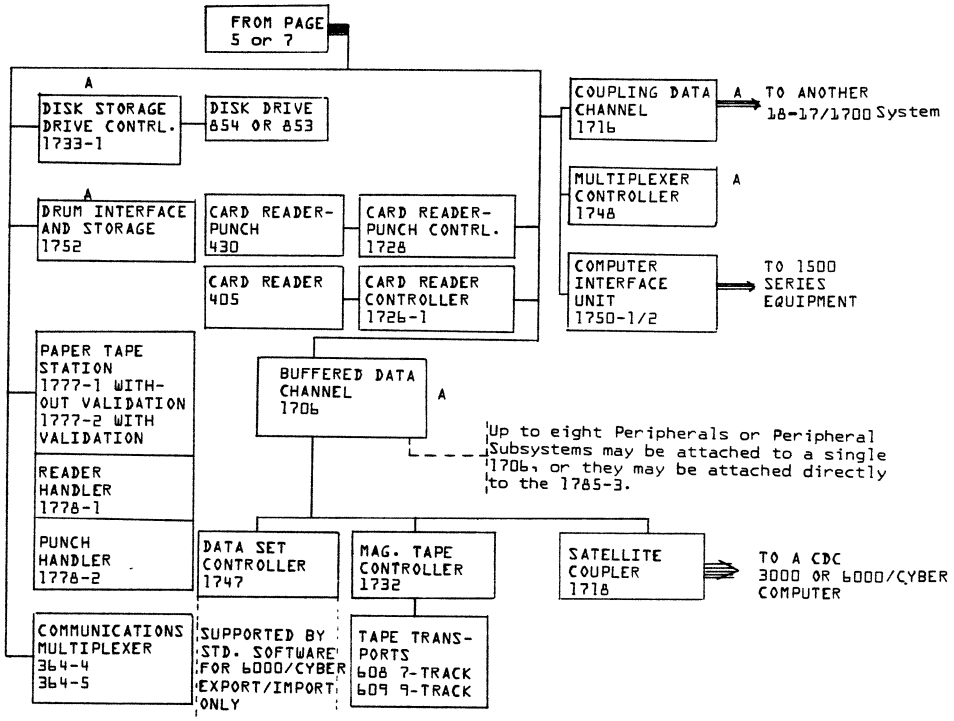


NOTES

1. Expansion Enclosure contains 36 card slots for memory and controllers.
2. Products marked with * use dedicated card slots in Expansion Enclosure only. Other modules may use card slots in either Mainframe Enclosure or Expansion Enclosure.
3. Numbers inside { } indicate number of card slots and channel type occupied in Expansion Enclosure.
4. 1785-1 and 1785-2 use one card slot in the Mainframe Enclosure and one in the Expansion Enclosure. See Page 20.
5. The 1720-1 Paper Tape Reader/Punch Controller interfaces to the facit 4020 Reader and 4070 Punch with SP1 interface only. The 4020 and 4070 are not provided by CDC and must be obtained by the customer directly from FACIT-ADDO INC. or their sales representative.
6. The 1781-1 Hardware Floating Point unit plugs into the 1783-1 Expansion Enclosure only and requires 1DSA, 1AQ and 5 open positions. {Slots 23, 22, 21, 18-15 or slots 15, 14, 13, 10-7}

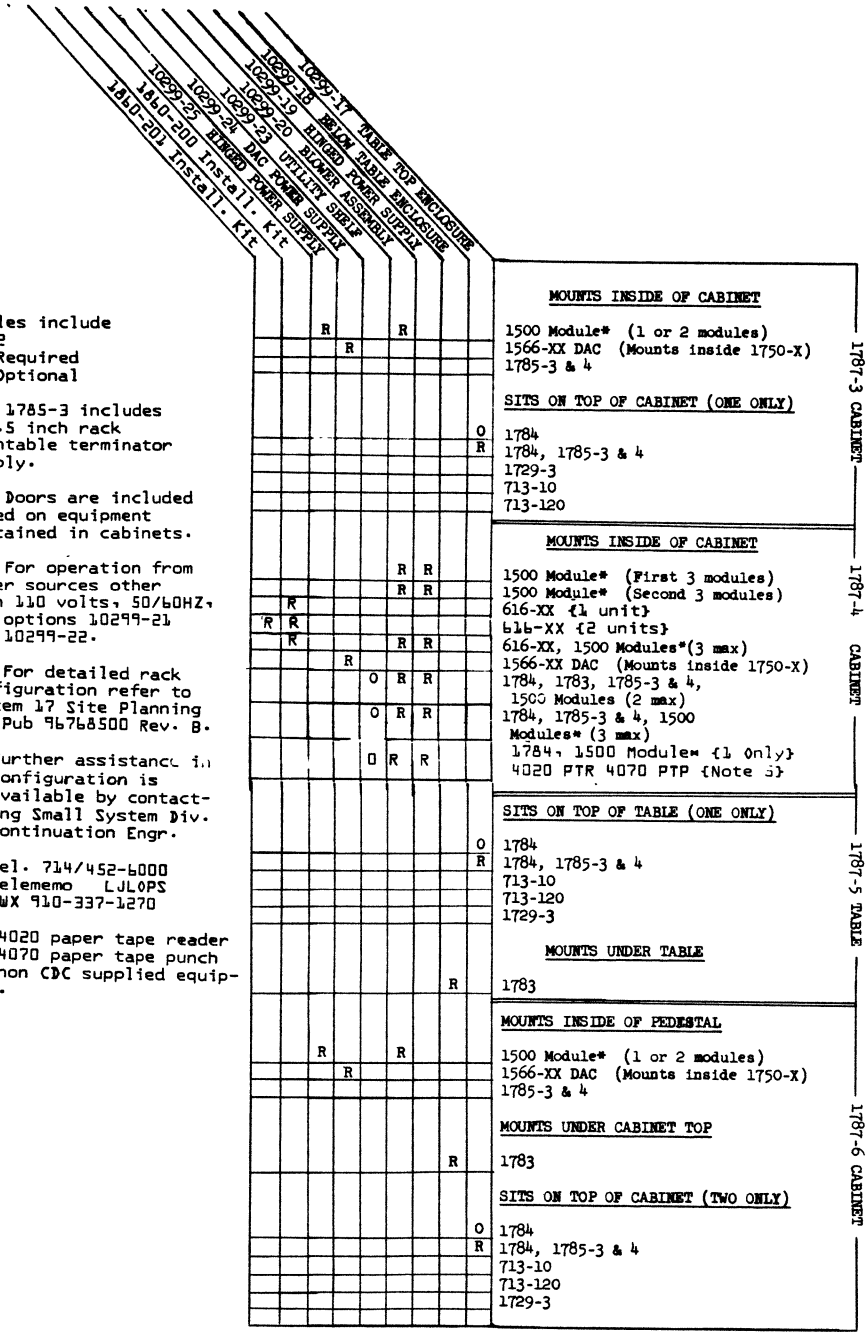
18-17 HARDWARE CONFIGURATOR

NOTE: Contact responsible division for availability of hardware, supported software and diagnostics.



A - THESE EQUIPMENTS REQUIRE BOTH A 1785-3 AND 1785-4. ALL OTHER EQUIPMENTS SHOWN ON THIS PAGE REQUIRE A 1785-3 ONLY.

18-17 SYSTEM CABINET CONFIGURATION



*1500 Modules include 1750-1, -2

KEY: R = Required
0 = Optional

NOTE: 1. 1785-3 includes a 3.5 inch rack mountable terminator supply.

2. Doors are included based on equipment contained in cabinets.

3. For operation from power sources other than 110 volts, 50/60HZ, see options 10299-21 and 10299-22.

4. For detailed rack configuration refer to system 17 Site Planning Kit Pub 96768500 Rev. B.

A) Further assistance in configuration is available by contacting Small System Div. Continuation Engr.

Tel. 714/452-6000
Telememo LJL0PS
TWX 910-337-1270

5. 4020 paper tape reader and 4070 paper tape punch are non CDC supplied equipment.

CYBER 18 MSOS 5/MSOS 5 PRODUCT SET

SOFTWARE CONFIGURATOR

A. ORDERING PROCEDURE

Each software order for MSOS 5/MSOS 5 Product Set must be accompanied by a completed MSOS Ordering Bulletin, CDC Publication No. 96769490A. The Ordering Bulletin is available from Literature and Distribution Services. Each system will be configured as specified in the completed Ordering Bulletin and the MSOS 5 Install materials will be produced.

B. Standard Products available under MSOS 5 (A325-01):

- o Fortran 3A (A325-02)
- o Fortran 3B (A325-03)
- o File Manager 1 (A325-04)
- o Autran 3 (A325-05)
- o Macro Assembler (A325-06)
- o Peripheral Driver 1B (A325-09)
- o Peripheral Driver 1C (A325-10)
- o Magnetic Tape Utilities (A325-11)
- o RPG II V.1 (A325-12)
- o Sort/Merge 1 (A325-13)

C. Peripherals Supported (A325-09) by MSOS System (CYBER 18-17).

Teletypes

1711-4, 1711-5, 1713-4, 1713-5

Paper Tape Reader/Punch

1720-1

Card Punches

1725-1

Magnetic Tapes

1732-3/616-72/616-92/616-95/10300-2

Analog/Digital

1544-x
1553-x
1555-x
1566-x
1547-x
1572-1
1595-
1576

CRTS

713-10/711-100/713-120

Disk Units

1733-2/856-2/856-4
1733-2/856-12/856-14

Line Printers

1742-30
1742-120

Communication

1743-2

Hardware Floating Point

1781-1

Real Time Clock

10336-1

Peripherals supported by MSOS 5 (CYBER 18-10M,20)

Devices for which drivers are available in peripheral drivers 1C software product number A325-10 are as follows:

CRT

1811-1
1811-2

Line Printers

1828-1/1827-32/1827-60
1828-2/1827-32/1827-60
1843-2/1827-7

CLA

1843-2

Card Readers

1828-1/1829-30/1829-60
1828-2/1829-30/1829-60

Mag Tapes

1860-1/-2/-3/-4/-5/-6

Disk Units

1833-1/-2/-3/1867-10/1867-20
1833-5/1865-1/1865-2
1833-4/1866-12/1866-14

CYBER 18 RTOS 3/RTOS 3 PRODUCT SET

SOFTWARE CONFIGURATOR

A. ORDERING PROCEDURE

Each software order for RTOS 3/RTOS 3 Product Set must be accompanied by a completed RTOS Ordering Bulletin, CDC Bulletin, CDC Publication No. 96769550. The ordering Bulletin is available from Literature and Distribution Services. Each system will be configured as specified in the completed Ordering Bulletin and the RTOS 3 Install Materials will be produced.

B. Standard Products available under RTOS 3 (A425-01)

- o Assembler 1 (A425-02)
- o Peripheral Driver 1A (A425-08)
- o Peripheral Drivers 1B (A425-09)
- o Peripheral Drivers 1C (A425-10)
- o Mag Tape Utilities (A425-11)

C. Peripheral Device Support

Peripherals supported by RTOS (CYBER 18-17)

Drivers supported in peripheral drivers 1B software product number A425-09 for the CYBER 18-17 computer system are as follows:

Teletypes

1711-4, 1711-5, 1713-4, 1713-5

Papertape Reader/Punch

1720-1

Card Punches

1725-1

Magnetic Tapes

1732-3/616-72/616-92/616-95/10300-2

Analog/Digital

1544-x
1553-x
1555-x
1566-x
1547-x
1572-1
1595
1576

CRTS

713-10/711-100/713-120

Disk Units

*1733-2/856-2/856-4
*1733-2/856-12/856-14

Line Printers

1742-30
1742-120

Communication

1743-2

Hardware Floating Point

1781-1

Real Time Clock

10336-1

Peripherals supported by RTOS (CYBER 18-10M, 20)

Devices supported in peripheral drivers 1C software product number A425-10 for the CYBER 18-10M/20 computer system are as follows:

CRT

1811-1
1811-2

Mag Tapes

1860-1/-2/-3/-4/-5/-6

CLA

1843-2

Card Readers

1828-1,-2/1829-30/-60

Line Printers

1828-1, -2/1827-32/-60

Disk Units

*1833-1/-2/-3/1867-10/1867-20
*1833-5/1865-1/1865-2
*1833-4/1866-12/1866-14

*Peripheral devices only, cannot be used as system disk.

TIMESHARE 3

SOFTWARE CONFIGURATOR

A. ORDERING PROCEDURE

1. Standard Orders

Each software order (data form/CRAF) for a Timeshare 3 system must be accompanied by a Timeshare 3 order form. This order form is a part of the MSOS 5 Ordering Bulletin (Publication 96769490B) which is available from CDC Literature and Distribution Services (MPSLDS). Those ordering Timeshare 3 should be concerned with the Timeshare section of the Ordering Bulletin and should follow the instructions for filling out the Timeshare 3 order form.

2. Special Orders

Each system configuration that requires options not included on the order form or not discussed later in this configurator, will require special customization. These special orders, if required, must have special work defined and quoted in advance. Requests for this work are to be directed to the following:

Mail: Control Data Corporation
Programming Services
4455 Eastgate Mall
La Jolla, CA 92037

TWX: Programming Services - LJLOPS

Phone: 714-452-6328

B. SOFTWARE PRODUCTS

1. Required Products

Each Timeshare 3 system contains the following software products. A licensing agreement with the customer lists only Timeshare 3 (A325-07) and optional products.

Product Number	Product
A325-01	MSOS 5
A325-03	FORTRAN 3B under MSOS 5
A325-04	File Manager 1 under MSOS 5
A325-10	Peripheral Drivers 1C under MSOS 5

2. Optional Products

The following products are optional in a Timeshare 3 system. If any of these products are desired, they must also be included in the customer licensing agreement.

Product Number	Product
A325-06	Macro Assembler 3 under MSOS 5
A325-12	RPG II 1 under MSOS 5
A325-13	Sort/Merg 1 under MSOS 5

C. HARDWARE

1. Required Hardware

The Timeshare 3 software system requires a CYBER 18-30 Timeshare system as defined in Volume I of the Pricing Manual. In addition, one half of a 2561-1 Communications Line Adapter and one 751-10 Display Terminal (or equivalent) is required for each of up to 32 terminals in the basic Timeshare system.

2. Optional Hardware

The following hardware is optional in a Timeshare 3 system:

a. Up to 7 additional SMD disk units - any combination of 1867-10/11 or 1867-20/21 drives.

b. Up to 3 additional 1860-92 magnetic tape drives.

Note that additional 1887-4 Equipment Cabinets will be required for the tape drives and 1860-200/201 Installation Kits.

c. Up to 16 additional 2561-1 Communications Line Adapters with up to 32 additional 751-10 (or equivalent) Display Terminals.

Note that systems that exceed a total of sixteen 2561-1 units will require one 2556-2 Communications Line Expansion Unit and one additional 1887-4 Equipment Cabinet.

d. 1843-1 Communications Line Adapter

This equipment is required if 200 User Terminal Emulation is to be utilized in the Timeshare 3 system. In addition, the customer must provide the data set and modem equipment for this operation as a 200 UT.

e. 1882-16/-32 MOS Main Memory Storage Units to increase memory in the communications processor from 96K bytes (standard) up to 256K bytes and in the Timeshare processor from 128K bytes (standard) up to 256K bytes.

f. One additional 1870-1/-2 micromemory option.

g. 1875-1 Breakpoint Controller with/w/o 1875-2 Breakpoint Panel.

h. One 1847-1 ECC MOS Array in each processor.

Note that presence of an 1874-1 unit in a processor reduces its memory capacity to 192K bytes.

D. SOFTWARE OPTIONS AND CONSIDERATIONS

1. The required (minimum) hardware system does not provide for concurrent local batch (background) processing and allows for only one terminal user to reside in execution memory at one time. In order to add concurrent batch processing, an additional 64K bytes of memory is required in the Timeshare processor.

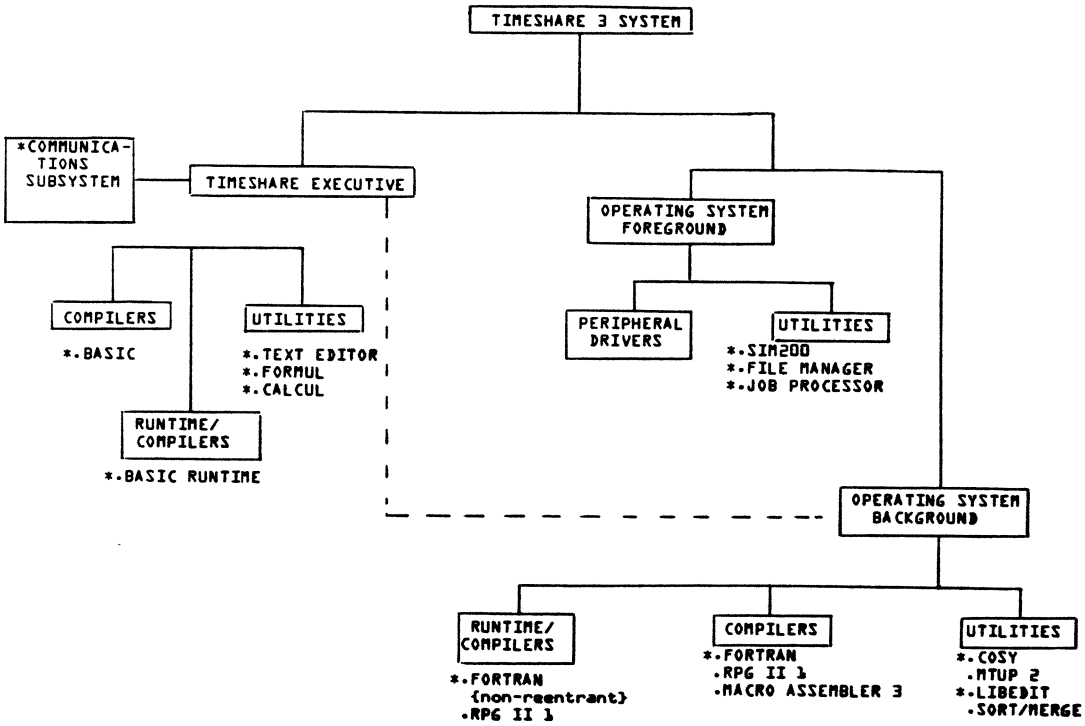
   The minimum hardware system will accommodate local batch processing or Timeshare terminal users but not concurrent operation of both.

2. The standard Timeshare system supports terminal line speeds of 110, 150, 300, 600, and 1200 baud.

3. The following table should be used as a guide in relating quantity of system terminals to processor memory:

No. of Terminals	Memory (K bytes) Timeshare Proc.	Comm. Proc.
1-8	128	96
9-16	192	96
17-24	224	96
25-32	256	128
33-40	256	192
41-64	256	256

4. The system uses 32K sectors of mass storage plus 64K sectors per Timeshare user (32K for scratch file space, 32K for permanent file space).



*Included in Basic System

ITOS 2 SOFTWARE CONFIGURATOR

A. STANDARD SOFTWARE PRODUCTS

1. Required Products

ITOS 2 and COMM 18 2/ITOS 2 require Product No. A622-20 Peripheral Drivers 1C under ITOS 2. The ITOS 2 Products A622-01/06 contains all the necessary operating system modules and executive routines. Sort/Merge, Text Editor, File Manager, and utilities are included as part of the ITOS Standard Product. A separate order and licensing agreement is required for Peripheral Drivers 1C under ITOS 2.

2. Optional Products

The following standard products are supported under ITOS 2. If any of these products are desired, they must also be included in the customer license agreement.

Product No.	Product Name	CEMS
A622-21	RPGII 2 Under ITOS 2	Yes
A622-22	COBOL 1 Under ITOS 2	Yes
A622-23	FORTRAN 3A Under ITOS 2	Yes
A622-24	FORTRAN 3B Under ITOS 2	Yes
A622-25	MACRO ASSEMBLER 3 under ITOS 2	Yes
A622-11/16	COMM 18 2 and ITOS 2	Yes

Notes:
1. A622-22 COBOL 1 under ITOS 2 requires the use of the 1872-3 SCIENTIFIC/COMMERCIAL instruction set.
2. A622-11/16 COMM 18 and ITOS 2 require the addition of the 10442-1 CHARACTER MODE ADT/PAGE MEMORY option for CYBER 18-10M/20 mainframes with serial numbers below 3102 and 18-30 mainframes with serial numbers below 2027.
3. A622-11/16 COMM 18 and ITOS 2 requires the addition of the 1843-1 Dual Channel Comm Line Adapter or the 1828-2 CR/LP/Comm Line Adapter.

B. HARDWARE

18-10M System

1. Required Hardware (minimum)

- 18-10M Processor
- One 1811-2 Operator Console
- One 1833-4 Cartridge Disk Controller
- One 1866-14 Cartridge Disk Drive
- Two 1882-32 MOS Main Memory Storage Unit
- One of the following Line Printer combinations:
  a. 1828-1, -2 Card Reader/Line Printer Controller with 1827-32/1827-60 Line Printer
  b. 1843-2 Communications Line Adapter with 1827-7 Impact Printer

B. HARDWARE (CONTINUED)

18-10M System(Continued)

2. Optional Hardware

- 752-10 Display Terminals up to a maximum of eight (8) (7 if Impact Printer option is selected)
- 1866-14 Cartridge Disk Drives up to a maximum of four (4)
- 1829-30/1829-60 Card Reader (requires 1828-1, -2 Card Reader/ Line Printer Controller if not already in configuration)
- 1860-1/1860-2/1860-3/1860-4/1860-5/1860-6 Magnetic Tape Subsystem up to a maximum of one controller and four (4) drives.
- One 1843-2 8-channel Communication Line Adapter (only one (1) allowed per system)
- 1872-3 Commercial Instruction Set Option

18-20 System

1. Required Hardware (minimum)

- 18-20 Processor
- One 1811-2 Operator Console
- One of following Line Printer combinations:
  a. 1828-1, -2 Card Reader/Line Printer Controller with 1827-32/ 1827-60 Line Printer
  b. 1843-2 Communication Line Adpater with 1827-7 Impact Printer
- Two 1882-32 MOS Main Memory Storage Unit
- One of the following Storage Module Drive combinations:
  a. 1867-1/1867-2 Storage Module Drive Subsystem and one 1867-10, -20 Storage Module Drive (Total of two drives)
  b. 1833-1 Storage Module Drive Interface, 1833-3 Storage Module Drive Controller, two 1867-10, -20 Storage Module Drives

NOTE: IF AN 1860-3, -4, -5, -6 MAGNETIC TAPE SUBSYSTEM IS INCLUDED IN THE CONFIGURATION, THE REQUIREMENT FOR TWO STORAGE MODULE DRIVES IS REDUCED TO ONE (1).

- One STO 10428-1 Transform Board (for serial numbers below 2000)

2. Optional Hardware

- 752-10 Display Terminals or 1827-7 Impact Printers up to a combined total of 16.
- 1860-1/1860-2/1860-3/1860-4/1860-5/1860-6 Magnetic Tape Subsystem up to a maximum of one controller and four (4 drives)
- 1882-32 MOS Main Memory Storage up to a maximum of four (4)
- Two 1843-2 8-channel Communication Line Adapters
- If 1867-1, -2 Storage Module Drive Subsystem is selected, up to three (3) additional 1867-10, -20 Storage Module Drives
- If 1833-1/1833-3 Storage Module Drive Interface/Controller is selected, up to eight (8) total Storage Module Drives.
- 1872-3 Commercial Instruction Set Option
- 1829-30/1829-60 Card Reader (requires 1828-1, -2 Card Reader/Line printer controller, if not already in configuration)

C. ITOS OPTIONS AND CONSIDERATIONS

Following are examples of minimum main memory requirements to support the optional software products available under ITOS 2 with the minimum required hardware. The minimum configuration used to calculate table values is defined as an SMD basic system or SMD/COMM18 basic system where specifically noted and includes one 300/600 LPM line printer and two storage module drives. The number of display terminals and amount of main memory included is specified in the table.

Additional main memory may be required if optional peripheral equipment is configured into a particular system. Section C.3 contains information that an analyst can use to determine the actual main memory requirements for a specific system configuration which is not defined by a table entry.

1. Main Memory Requirements - ITOS 2 Product Set

TOTAL SIZE KB	USED BY ITOS KB	MAX USER SIZE KB	AVAIL TO USERS KB	MAX NO. OF CRT'S	ASSEM	FTN 3A/B COMPILER	RPGII 2 COM-PILER	COBOL 1 COM-PILER	CONC COMM18 2	CONC. BATCH
128	56	64	72	9	YES	FTN3B	YES	YES	NO	NO
128	56	32	72	9	YES	FTN3B	YES	NO	NO	YES
128	64	36	64	9	YES	FTN3B	YES	YES	YES	NO
160	60	64	100	13	YES	FTN3B	YES	YES	NO	NO
160	60	32	100	13	YES	FTN3B	YES	YES	NO	YES
160	64	64	96	13	YES	FTN3B	YES	YES	YES	NO
160	64	36	96	13	YES	FTN3B	YES	NO	YES	YES
192	60	64	132	13	YES	FTN3B	YES	YES	NO	YES
192	64	64	128	13	YES	FTN3B	YES	YES	YES	NO
192	64	64	128	13	YES	FTN3B	YES	NO	YES	YES
256	60	64	196	17	YES	FTN3B	YES	YES	NO	YES
256	64	64	192	13	YES	FTN3B	YES	YES	YES	NO
256	64	64	192	13	YES	FTN3B	YES	NO	YES	YES

It must be understood that future enhancements in ITOS releases may cause an increase in memory requirements and resulting reduction in maximum user size.

C. ITOS OPTIONS AND CONSIDERATIONS (CONTINUED)

1. Continued

Explanation of Table Headings

TOTAL SIZE KB	Total Available Physical Main Memory
USED BY ITOS KB	Min. Main Memory used by System S/W
MAX USER SIZE KB	Max. User Program size including runtime routines
AVAIL TO USERS KB	Total size of User Area without concurrent Batch and without concurrent COMM 18 2 running
MAX NO OF CRT'S	Max. number of terminals allowed including master console
ASSEM	Macro assembler allowed
FTN3A/3B	FORTRAN 3A or FORTRAN 3B allowed
RPGII 2	RPGII 2 allowed
CONC COMM 18 2	'YES' implies an SMD/COMM 18 2 basic system supporting concurrent COMM 18 2 operation (provides for worst case 28KB, See list of COMM 18 sizes). 'NO' implies an SMD basic system.
CONC BATCH	Concurrent Batch allowed (see list of Batch sizes)
COBOL	COBOL 1.0 allowed

NOTES AND LIMITATIONS

CDD mass storage devices are 3 to 4 times slower than SMD devices and CDD capacity limits actual number of programs and files.

Non-concurrent Batch operation is available for all configurations.

Non-concurrent COMM 18 operation is available for all configurations.

The maximum user size must be large enough to accommodate the largest user program with associated subroutines plus the runtime used to execute it.

Runtime Sizes

Assembler (ASSEM 3)	0 KB
FORTRAN 3A/3B w/o Double Precision (maximum)	20 KB
FORTRAN 3A/3B Double Precision (maximum)	32 KB
RPGII 2 without commercial option, all features	32 KB
RPGII 2 with commercial option, all features	28 KB
RPGII 2 with commercial option, limited features	20 KB
COBOL 1	20 KB

C. ITOS OPTIONS AND CONSIDERATIONS (CONTINUED)

1. Continued

Batch Area Sizes

Concurrent Batch requires that the user areas be at least as big as the largest Compiler/Batch program.

Concurrent Batch uses space only when active but reduces the maximum allowed size of user programs.

Concurrent Batch for ASSEM/FTN3A/RPGII	20 KB
Concurrent Batch for ASSEM/FTN3B/RPGII	32 KB
Concurrent Batch for ASSEM/FTN3B/RPGII/COBOL	64 KB

COMM 18 2 Sizes

Concurrent COMM 18 uses space only when active but reduces the maximum allowed size of user programs.

1 - HASP	20 KB
1 - 200 UT	12 KB
2 - HASP	24 KB
2 - 200 UT	16 KB
1 - 200 UT and 1 - HASP	28 KB

2. Mass Storage Requirements (approximate)

a. Operating System	1900 KB
b. Systems Files	400 KB
c. Compiler Options	
1) RPGII	200 KB
2) FORTRAN and Assembler	460 KB
3) Required Scratch	300 KB
d. COMM 18	100 KB

3. System Size Calculations

To determine the main memory requirements of any standard ITOS 2 system variant, given a specific set of configuration options, do the following:

a) Determine the main memory required to establish the configuration options. Do this by adding all memory increments for selected CONFIG options using Table 1.

C. ITOS OPTIONS AND CONSIDERATIONS (CONTINUED)

3. Continued

TABLE 1

MEMORY INCREMENTS FOR

CONFIGURATION OPTIONS

OPTION	SIZE IN BYTES
COBOL Support	210
Card Reader	274
NRZI 9-Track Magnetic Tape	92 per unit
NRZI 7-Track Magnetic Tape	92 per unit + 516
Dual Mode 9-Track Magnetic Tape	86 per unit
Dual Mode 7-Track Magnetic Tape	86 per unit + 516
Remote ITOS Terminals 1-3	730 per terminal
Remote ITOS Terminals 4-16	506 per terminal
300/600 LPM Line Printer	938
Impact Line Printer (Matrix)	1102
System Card Punch	302
Card Punch Workstation	296 per unit
Impact Printer Workstation	276 per unit
Storage Module Drive (exclude first unit)	462 per unit
Cartridge Disk Drive (exclude first unit)	586 per unit
Magnetic Tape in System	440
Main Memory Selection	
96 KB	20
128 KB	36
160 KB	52
192 KB	68
224 KB	84
256 KB	100
Minimum System Constant (always required)	1310

b) Add the total from (3a) to the appropriate system base size from Table 2.

TABLE 2

BASE MEMORY SIZES FOR

STANDARD ITOS 2 SYSTEMS

SYSTEM VARIANT	SMD	CDD	COMM18/SMD	COMM18/CDD
System Base Size in bytes	48,192	46,560	54,592	53,088

C. ITOS OPTIONS AND CONSIDERATIONS (CONTINUED)

3. Continued

c) Round up the total from (3b) to the next 4096 byte increment. Do this by dividing 4096 into the total from (3b). Add one to the quotient if a non-zero remainder exists. Multiply the adjusted quotient by four. The result is the amount of main memory used by ITOS in KB and corresponds to the values in the second column of Memory Requirements Table in section C.1.

Example:

Given that (3b) = 52,350 bytes

Then value of (3c) = (52350/4096 rounded) * 4

= (12r 3198 rounded) * 4

= 13 * 4 = 52 KB

Caution: If the value of (3c) exceeds 64 KB, the desired options cannot be configured using a standard ITOS 2 system.

CYBERCREDIT CCS 2 SOFTWARE CONFIGURATOR

A. ORDERING PROCEDURE

Each Software Order (dataform/CRAF) for a CYBERCREDIT system must be submitted via standard software ordering procedure. Reference Order Information Package (OIP) No. 1 for order detail.

The CCS 2 Software supports all required hardware; therefore, no custom configuring is needed.

B. STANDARD SOFTWARE PRODUCT

CCS 2 is a complete system including the operating system, application software and an Installation Test Kit. The following materials comprise the CCS 2 products.

Cassettes - for use with an 18-30 system

1. DTLP Deadstart - NRZI Cassette
2. DTLP Deadstart - Phase Encode Cassette
3. ODS Level II SMD Disk Formatter Cassette

Floppy Disks (FDD) - for use with an 18-25 system

1. DTLP Deadstart - NRZI FDD
2. DTLP Deadstart - Phase Encode FDD
3. ODS Level II SMD Disk Formatter FDD

Magnetic Tapes

1. DTLP Tape10.
2. Update Catalog Tape (ASCII)
3. Update Catalog Tape (EBCDIC)
4. ITK Tape #1, Reload of SYSVOL
5. ITK Tape #2, Reload of CDD01
6. ITK Tape #3, Scratch tape for TRANFL save
7. ITK Tape #4, UPDATE TEST
8. ITK Tape #5, Scratch tape for History Output
9. ITK Tape #6, UPDATE TEST - Reactivate inactive accounts
10. ITK Tape #7, UPDATE 400 - Nonfinancial update
11. ITK Tape #8, UPDATE 500 - Financial update promise to pay
12. ITK Tape #9, UPDATE 500 - Financial update payment stack
13. ITK Tape #10, FILE INITIALIZATION - initializesd files before parameterization

C. HARDWARE

1. Minimum System Hardware Requirement

1 - CYBER 18-25 - See Note 1 Description		* - 752-202	Terminal Keyboard
4 - 1882-32	64 KB Memory Modules	* - 755-21	Matrix Printer
1 - 1882-16	32KB Memory Module	1 - 1860-X	Mag Tape Subsystem (1 Mag tape) - See Note 1
1 - 1867-2	Disk Subsystem (50 MB)	1 - 1827-32	300 LPM Printer
1 - 1867-20	Disk Drive (50 MB)	1 - 1828-1	CR/LPR Controller
* - 2561-1	CLA Controllers	1 - 1811-2	Console Display
* - 752-30	Terminal Display		

Note * = Number determined by user requirements
Note 1 = 7 Track Mag Tape Subsystems are not supported under CCS2.

2. Maximum Hardware

1 - CYBER 18-25 - See Note 1 Description		1 - 755-21	Matrix Printer
8 - 1882-32	64 KB Memory Modules	* - 1860-X	Mag Tape Subsystems (Max = 2 M.T. units) See Note 1 above
1 - 1867-2	Disk Subsystem (50 MB)		
3 - 1867-20	Disk Drives (50 MB)		
14- 2561-1	CLA Controllers	1 - 1827-32	300 LPM Printer
28- 752-30	Terminal Displays	1 - 1828-1	CR/LPR Controller
28- 752-202	Terminal Keyboards	1 - 1811-2	Console Display

Note * = Reference CYBER 18 hardware configurator for definition of expanded Mag Tape configurations.

3. Optional Hardware

- o 1827-60 600 LPM Printer
- o 1829-30/60 300/600 Card Reader

Note 1

The CYBER 18-25 consists of the following items:

- o Main Processor
- o Communications Processor
- o Multiplexer for comm line adapters
- o Floppy Disk (FDD) and controller for each processor
- o 2K Instruction Micromemory for each processor
- o Inter-processor linkage
- o Operator Control Panel
- o Desk-type enclosure and power supplies for processors
- o Vertical rack and power supply for multiplexer

CYBERCREDIT CCS 2 SOFTWARE CONFIGURATOR (Continued)

D. CONFIGURATION SELECTION

Disks Required

Complete the CCS 2 Disk Sizing Worksheet included in this configurator to calculate a particular user's requirements.

A total of three 50 MB Disks on a CCS system is recommended if the delinquent account base is greater than 12000.

Memory Required

288KB memory is required to utilize the CCS 2 Software product.

Terminal response times are improved by expanding memory up to the maximum configuration listed in Paragraph C.2.

/sPR5512-09

CCS 2.0 DISK SIZING WORKSHEET

This worksheet generates an approximation of the number of SMD's required. Since the actual files must reside on only one drive, if the number of bytes estimated is within 20% of the maximum another drive might be required.

INPUTS — VALUE

A - Number of Delinquent Accounts (Maximum 24000) _____

C - Number of Collectors _____

D - Average number of days an account is on the Master file. _____

H - Number of months account to remain in on-line History _____

T - Number of months account to remain in on-line archives _____

STEPS

1. Calculate number of days for activity record storage capacity (F).

   $F = .08 * A/C$ = _____

2. Complete Table — BYTES

   a. Normal account storage = 3600*A = _____

   b. Activity File = $\left\lceil \frac{D-F}{F} \right\rceil$ *580*A = _____

   c. On-line History = $\frac{A}{\left\lceil \frac{D}{30} \right\rceil}$ * 800*H = _____

   d. On-Line Archives = $\frac{A}{\left\lceil \frac{D}{30} \right\rceil}$ * 100*T = _____

   e. System and minor CCS File overhead = 11,000,000

   f. Add 2a-e for estimate of total CCS 2 Disk Requirements = _____

Note for 2b, c, d

If the quantities of $\frac{D-F}{F}$ or $\frac{D}{30}$ compute with fractional results then round them up to the next highest integer.

CYBER 18 Computer	COMPUTER	**SOFTWARE PRODUCT SET** DESCRIPTION AND HARDWARE CONFIGURATOR FOR RTOS 3	

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
Real time operating system/ A425-01	3			The memory resident real time operating system is for Cyber 18-5, 18-5,18-10M Cyber 18-17, or Cyber 18-20 computer system. RTOS 3 is compatible with MSOS 5 and uses the same input-output drivers. RTOS 3 includes monitor, job processor, binary loader, system initializer, system library routines, and copy/load utilities. Documents: — Pub. No: — Avail. at LDS RTOS 3 Reference Manual (18-10/20) — 96769500 — A. ROTS 3 Reference Manual (18-17) — 96769560 — A. RTOS 3 General Info. Manual — 96769520 — TBD RTOS 3 Instant (18-10/10M/20 — 96769530 — TBD RTOS 3 Instant (18-17) — 96769580 — TBD RTOS 3 Installation Handbook (18-10) — 96769510 — A RTOS 3 Installation Handbook (18-17) — 96769570 — A RTOS 3 Ordering bulletin — 96769550 — A
Assembler Under RTOS/A425-02	1			Includes capability to assemble 1700 operation codes. Does not include a macro capability. Documents: — Pub. No. — Avail. at LDS: RTOS 3 Assembler 1 Reference Manual — 96769540 — A
Peripheral Drivers under MSOS/A425-08	1A			Includes peripheral drivers and small computer maintenance monitor diagnostics for following products - 1711-1, 1721, 1739-1, 1740/501 1711-2, 1722, 1729/405, 1742-1 1713-1, 1777/1778, 1726/1706/405, 1731/601 1713-2, 1733-1/853/854, 1728/430, 1731/1706/1601 1713-3, 1738/853/854, 1729-2, 1732-1/608/609 1732-1/1706/608/609, 1745/1706/211 Driver only 1751, 1744/1706/274 Driver only 1752, 1572 364-4/361-1, 1573 364-4/361-4 1747/1706 Driver only Documentation: — Pub. No: — Avail. at LDS: Peripheral Drive 1A/1B/1C Reference Manual — 96769390 — Available
Peripheral Drivers under RTOS 3/A425-09	1B			Includes peripheral drivers and amall computer maintenance monitor diagnostics for the following products. - 1711-4, 1711-5, 1713-4, 1713-5, 713-10/711-100/713-120, 1720-1, 1733-2/856-2/856-4, 1733-2/, 856-12/856-14, 1729-3. 1725-1, 1742-30, 1742-120, 1732-2/615-73/615-93/ 10300-1, 1732-3/616-72/616-92/616-95/10300-2, 1743-2, 1501-x/1525-3, 1536-2/1525-3, 1544-x, 1553-x, 1555-x, 1566, 1547, 1595, 1572-1, 1781-1, 1575, 10336-1. Documentation: — Pub. No: — Avail. Peripheral Drivers 1A/1B/1C Reference Manual — 96769390 — A
Peripheral Drivers under RTOS/A425-10	1C			Includes peripheral drivers for the following products - 1811-1, 1828-1/1827-30/65119-1, 1828-1/1829-30/1829-60, 1832-4/ 1860-72/1860-92. Documentation: — Pub. No. — Avail. Peripheral Drivers 1A/1B/1C Manual — 96769390 — A
Magnetic tape Utilities under RTOS/A425-11	2			Includes, capability to block/deblock, tape labeling, copy utilities and EBCDIC/ASCII/BCD Conversation. Documentation: — Pub. No. — Avail. Magnetic tape utility Reference Manual — 96768400 — A

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COMPUTER	SOFTWARE PRODUCT SET DESCRIPTION AND HARDWARE CONFIGURATOR FOR MSOS 5	

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
Mass storage operating system/ A325-01	5			MSOS is a real-time multiprogramming operating system for use on CYBER 18-20, 18-30, 18-17 systems with mass storage. Provides for foreground/background system operation using a dynamically allocatable core memory area. Includes job processor, system initializer, system maintenance routines, on line/off-line debugging tools, on-line diagnostics. Documents: — Pub. No: — Avail. MSOS 5 Reference Manual — 96769400 — A Diagnostic Handbook — 96769550 — 3/77 INSTANT — 96769530 — 3/77 Installation Handbook — 96769410 — A General Information Manual — 96769520 — 3/77 Ordering Bulletin — 96769490 — A
Mass Storage FORTRAN Under MSOS/A325-02	3A			FORTRAN 3A is a super-set ASA Basic Fortran and a sub-set of ASA Fortran (FORTRAN IV). Provides extensions in BYTE manipulation. Includes multiprogramming FORTRAN Library routines that enable foreground execution of FORTRAN programs at multiple priority levels and communication with the MSOS 5 monitor. FORTRAN 3A requires a smaller background execution area than FORTRAN 3B but has a slower compilation speed than FORTRAN 3B. Documents: — Pub. No: — Avail. Reference Manual — 60362000 — A General Information — 39519900 — A
Mass Storage FORTRAN under MSOS/A325-03	3B			FORTRAN 3B is a superset of ASA Basic FORTRAN and a subset of a ASA FORTRAN (FORTRAN IV). Provides extensions in BYTE manipulation. Includes multiprogramming FORTRAN Library routines that enable foreground execution of FORTRAN programs at multiple priority levels and communication with the MSOS 5 monitor. FORTRAN 3B requires a larger background execution area than FORTRAN 3A but has a faster compilation speed than FORTRAN 3A. FORTRAN 3B requires the use of MSOS 5. Documents: — Pub. No: — Avail. Reference Manual — 60362000 — A General Information Manual — 39519900 — A Data Sheet — 20120500 — A
File Manager Under MSOS/A325-04	3			Includes general purpose File Manager that operates and maintains both indexed and sequential files. Provides sequential indexed and direct methods of record retrieval as well as variations of these methods. Documentation: — Pub. No: — Avail. Reference Manual — 39520600 — A
AUTRAN/A325-05			CYBER 18-17 only	AUTRAN 3 is a complete software system for batch sequencing or continuous process control. It is designed to allow a process engineer to easily specify and control his process using either or both of the self documenting compilers. The system also includes a large number of preprogrammed algorithms and operator functions. The following detailed features were added by the AUTRAN 3 release. • An I/O interface which is independent of I/O equipment and compatible with new 1500 hardware drivers. • The capability to output user defined text in place of OPEN or CLOSED for digital points. • A more flexible LOG supervisory statement. • Standardization of CRT Demand Function Display formats. • Allow multi-use of CRT console by providing a sign on/sign off feature. AUTRAN 3 runs in the real time environment of the CYBER 18-17 MSOS 5 Operating System. Documents: — Pub. No: — Avail. Reference Manual — 96729800 — A Installation Handbook — 96729600 — A User's Guide — 96729700 — A

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CYBER 18 Computer | COMPUTER | **SOFTWARE PRODUCT SET** DESCRIPTION AND HARDWARE CONFIGURATOR FOR MSOS 5

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
Macro Assembler under MSOS/A325-06	3			Includes full set of symbolic 1700 machine instructions, pseudo instructions, macro instructions, assemb. error diagnostics, free field source format, listing and binary output to appropriate units. Documentation: — Pub. No: — Avail. Macro Assembler Reference Manual — 60361900 — A
Timeshare under MSOS 5/A325-07	3			Supports up to 64 concurrent users at remote interactive terminals. Access capability is provided to host processors through the 200 UT Simulation Package. Includes text editor, extended basic compiler interpreter. Timeshare variants of the following are provided: MSOS 5, File Manager 1, and Peripheral Driver 1C. Documentation: — Pub. No: — Avail. Timeshare 3 Reference Manual — 96768000 — 3/77 * Timeshare 3 Instant — 96768200 — TBD * Preliminary Reference Manuals Available at LJLOPS.
Peripheral Drivers under MSOS/A325-08	1A			Includes peripheral drivers and small computer maintenance monitor diagnostics for following products - 1711-1, 1711-2, 1713-1, 1713-2, 1713-3, 1721, 1722, 1777/1778, 1733-1/853/854, 1738/853/854, 1739-1, 1729/405, 1726/1706/405, 1728/430, 1729-2, 1740/501, 1742-1, 1731/601, 1731/1706/1601, 1732-1/608/609, 1732-1/1706/608/609, 1745/1706/211 Driver only, 1751, 1744/1706/274 Driver only, 1752, 1572, 364-4/361-1, 1573, 364-4/361-4, 1747/1706 Driver only Documentation: — Pub. No: — Avail. at LDS: Peripheral Drive 1A/1B/1C Reference Manual — 96769390 — Available
Peripheral Drivers under MSOS A/325-09	1B			Includes peripheral drivers and small computers maintenance monitor diagnostics for the following products - 1711-4, 1711-5, 1713-4, 1713-5, 713-10/711-100/713-120, 1720-1, 1733-2/856-2/865-4, 1733-2/856-12/856-14, 1729-3, 1725-1, 1742-30, 1742-120, 1732-2/615-73/615-93/10300-1, 1732-3/616-72/616-92/616-95/10300-2, 1743-2, 1501-X/1525-3, 1536-2/1525-3, 1544-8, 1553-X, 1555-X, 1566, 1547, 1572-1, 1595, 1576, 1781-1, 10336-1 Documentation: — Pub. No. — Avail. at LDS: Peripheral Drivers 1A/1B/1C Reference Manual — 96769390 — Available
Peripheral Drivers Under MSOS/ A 325-10	1C			Includes Peripheral drivers for following products -- 1811-1, 1828-1/1827-30/65119-1, 1828-1/1829-60, 1832-4/1860-72/1860-92, 1833-1/1867-10/1867-20, 1833-5/1865-1/1865-2. Documentation — Pub. No. — Avail. at LDS Peripheral Drivers Ref. Manual — 96769390 — Available

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CYBER 18 Computer	COMPUTER	**SOFTWARE PRODUCT SET** DESCRIPTION AND HARDWARE CONFIGURATOR FOR	MSOS 5	

SOFTWARE PRODUCT NAME/NUMBER	VERSION	ADDITIONAL HARDWARE REQUIRED *	SPECIFIC NOTES	DESCRIPTION
Magnetic Tape Utilities Under MSOS/ A325-11	2			Includes capability to block/deblock, tape labelling, copy utilities, EBCDIC/ASCII/BCD Conversion. Documentation — Pub. No. — Avail. at LDS: Mag. Tape Utilities Proc. Ref. Manual — 96768400 — Available
RPG II Under MSOS/ A325-12	1			Product is functionally and source program compatible with IBM System 3 RPG II. Includes compiler, interpreter, runtime support routines and data base manager. Documentation — Pub. No. — Avail. at LDS: RPG II 1 Ref. Manual — 96769000 — Avail.
Sort/Merge Under MSOS/A325-13				Provides fast comprehensive sort/merge/copy facility for tape or sequential disk files. Documentation — Pub. No. — Avail. at LDS: Sort/Merge Ref. Manual — 96769260 — Available
CYBER CROSS SUPPORT SYSTEM/ F621-03/F521-25	1	CYBER 70/ CYBER 170	System runs under NOS/BE or NOS	Cross support system gives the capability of generating Cyber 18 Macro or Micro code/data on a large Cyber Host machine. Includes pascal compiler, macro assembler micro assembler, library maintenance program and link editor. Documentation — Pub. No. — Avail. at LDS: Cyber Cross System Ref. Manual — 96836000 — Avail. Pascal Ref. Manual — 96836100 — Avail. Cyber Cross System G.I.M — 96836200 — Avail. Cyber Cross System Diag. Handbook — 96836500 — Avail. Micro Assembler Ref. Manual — 96836400 — Avail. Macro Assembler Ref. Manual — 96836500 — Avail. Link Editor and Library Maintenance Reference Manual — 60471200 — Avail.

GENERAL NOTES
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8090 SYSTEM TYPE

Summary of Features

Stored program, general purpose digital computer, parallel mode of operation, single address logic. 8192 words of magnetic core storage (expansible to 16,384; 24,576; or 32,768 words.)
Buffered input-output, internal and external interrupt.
Optional arithmetic unit with 27-bit precision arithmetic allowing eight digit FORTRAN format.
Completely solid state.
Low power consumption.
Extremely high reliability.
Wide temperature and humidity range.

Typical Applications

On-Line Process Control
Real-Time Applications
Scientific Calculations using FORTRAN
Civil Engineering Problems
Biomedical Experimentation and Analysis
Commercial Data Processing
Data Acquisition and Reduction
Peripheral Processing
Optical Character Reading

MINIMUM HARDWARE REQUIREMENTS FOR 8090 SOFTWARE SYSTEMS

SOFTWARE SYSTEM	MINIMUM HARDWARE REQUIREMENT*				
	8081	161	Magnetic Tapes	Paper Tape Reader and Punch	Card Reader and Card Punch
OSAS - A	1			Required	
OSAS	1			Required	
160A FORTRAN	1		2	Required	
160 FORTRAN	1			Required	
SICOM	1			Required	
AUTOCOMM	1		1	Required	
INTERFOR	1			Required	
160A CARD FORTRAN	1			Required	Required
CEPS	1	1		Required	

* NOTE: 1. Minimum systems listed above may restrict ease of operation and/or types of output. For guidance in selecting a recommended system, consult the appropriate reference manual.

2. Each system must also include any controllers and/or synchronizers which may be required.

Software Descriptions

Since the 8K 8090 is completely program compatible with the 160A, all 160A software will operate on the 8081. In addition, the complete 160A program library is also available to 8090 users.

OSAS/OSAS-A is a symbolic assembler providing fully symbolic coding, automatic address correspondence, code-error checking, and listing of source and object program.

160/160-A FORTRAN includes a compiler, a sub-routine library, and an interpreter. This system uses the FORTRAN-II language.

SICOM is a general purpose interpretive system utilizing floating point arithmetic. The SICOM library includes many arithmetic and trigonometric sub-routines.

INTERFOR is an interpretive programming system for the 8090 Computer. It contains a symbolic assembler (FLAP), a binary program loader (FLOADER), a library of sub-routines, and an interpreter.

CEPS is a programming system for solving civil engineering problems on the 8090 Computer.

AUTOCOMM is designed for commercial data processing applications.

8090 SYSTEM TYPE

Hardware Product List

COMPUTER

8081	Basic 8K Computer
8083	Arithmetic Unit
8084	Auxiliary Memory - 8K
8085	Storage Option - 8K
3681	Data Channel Converter
3682	Satellite Coupler

STORAGE

8951	Drum Memory Unit - 32K
8952	Drum Memory Unit - 65K
8047	Disk Pack Controller - 1x5
852	Disk Storage Drive
850	Disk Pack
8070	Magnetic Tape Controller - 1x8
601	Magnetic Tape Transport, 37.5 ips
162-3	Magnetic Tape Synchronizer - 1x8
604	Magnetic Tape Transport, 75 ips
8170	Magnetic Tape Controller - 1x8
608	Magnetic Tape Transport, 37.5 ips

PUNCHED

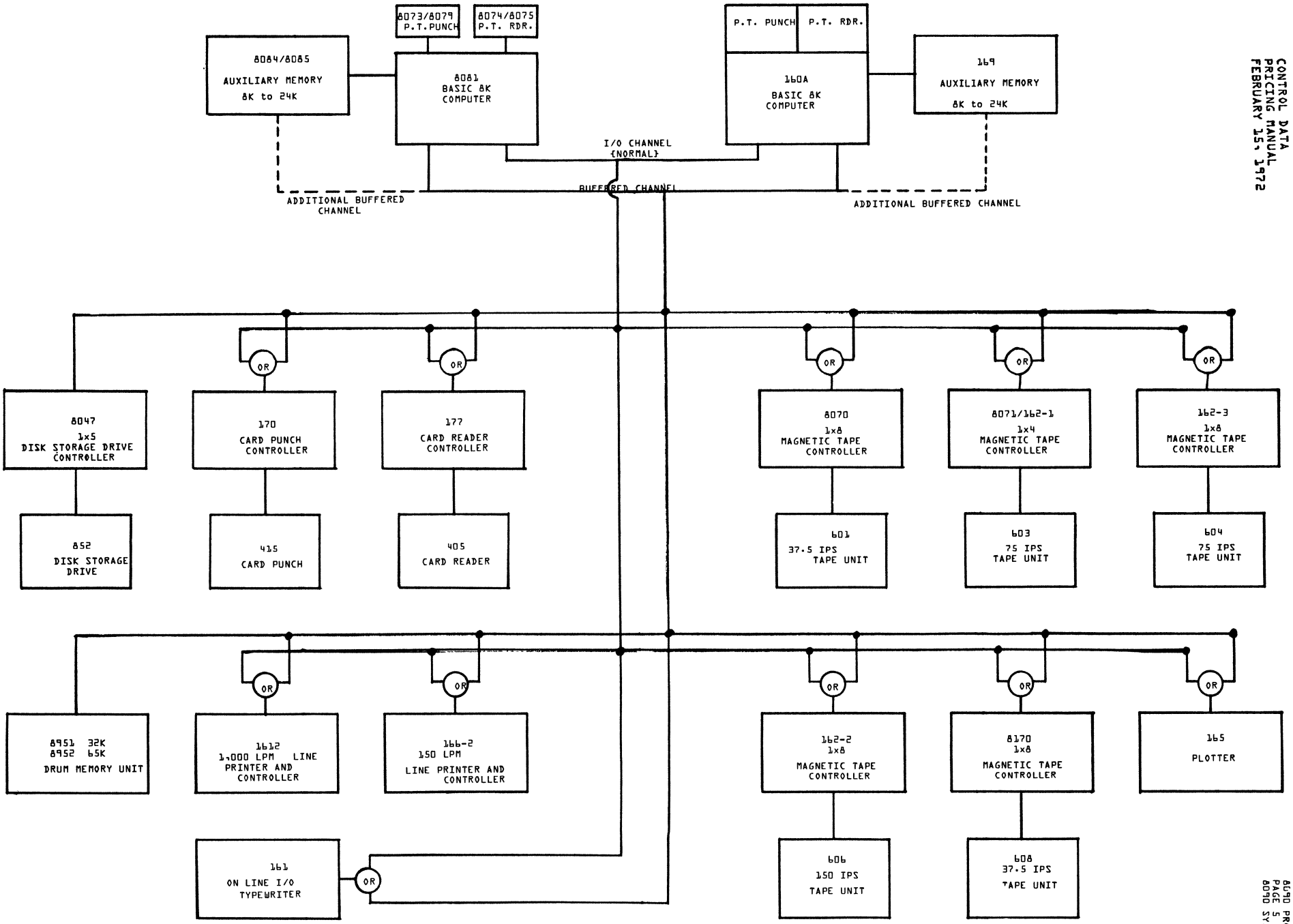
8073	Paper Tape Perforator - 63.3 cps
8074	Paper Tape Reader - 350 cps
8075	Paper Tape Reader - 120 cps
8079	Paper Tape Punch - 120 cps
170	Card Punch Controller - 1x1
415	Card Punch - 250 cpm (80 col.)
177	Card Reader Controller - 1x1
405	Card Reader - 1200 cpm (80 col.)

PRINTED

161	On-Line Input/Output Typewriter
165-2	Incremental Plotter
1611	Line Printer Controller - 1x1
501	High Speed Line Printer, 1000 lpm
505	Line Printer, 500 lpm
166-2	Line Printer, 150 lpm

PERIPHERAL SUBSYSTEMS

Communications	See Communications Section
Data Collection	See Data Collection Section
Analog/Digital	See Analog/Digital Section
Display	See Display Section



8090/160A CONFIGURATION

TERMINAL CONFIGURATIONS

TERMINALS SUPPORTED BY OPERATING SYSTEM

TERMINALS	OPERATING SYSTEM							
	6000/CYBER 70/CYBER 170						3000L	
	NOS R4 NAM 1 RBF 1 IAF 1 TAF 1 CCP 3	NOS R3 NAM 1 RBF 1 TAF 1 CCP 3	NOS TELEX 1,2 E/I 200 1	NOS/BE INTERCOM 5 CCI 3	NOS/BE INTERCOM 4 CCP 1	NOS/BE INTERCOM 4 667X 7077/791	MASTER	MSOS
I. Time Sharing/ALPHA Numeric								
711-10	Yes	TAF ONLY	No	Yes	Yes*	Yes	Yes	No
713-10/751/752/756	Yes	No	Yes	Yes	Yes	Yes	Yes	No
714-10	Yes	TAF ONLY	No	Yes*	Yes*	Yes	Yes	No
214-X	Yes	TAF ONLY	No	Yes	Yes	Yes	Yes	No
714-20	Yes	TAF ONLY	No	Yes	Yes*	Yes	Yes	No
714-30/714/40	Yes	TAF ONLY	No	Yes*	Yes*	Yes	Yes	No
IBM 2741	Yes	No	Yes	No	No	No	No	No
II. Batch/Remote Job Entry								
217-X	Yes	Yes*	Yes	Yes	Yes	Yes	Yes	No
731-10	No	No	No	No	No	791 ONLY	No	No
731-12	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
732-10	No	No	No	No	No	791 ONLY	No	No
732-12	Yes	Yes*	Yes	Yes	Yes	Yes	Yes	No
733-10	No	No	No	No	No	791 ONLY	No	No
734-1	Yes	Yes*	Yes	Yes	Yes	Yes	Yes	No
2780/3780	No	No	No	Yes	No	No	No	No
CY18-XX	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Hasp Multileaving Terminals	Yes	No	No	Yes	No	No	No	No
III. Graphics								
777-2	No	No	No	No	No	6673/4 ONLY	No	No
774-2	No	No	No	No	No	6673/4 ONLY	No	No
241-1	Yes	No	No	Yes	Yes	Yes	No	No
274	No	No	No	No	No	Yes	No	No
Tektronix 4010/4014	Yes	No	Yes	Yes	Yes	Yes	No	No
777-3	No	No	No	Yes	Yes	Yes	No	No

* = Reference configuration notes on the following pages for constraints of operating system.

KEY: X FEATURE NOT AVAILABLE ON TERMINAL
Y SUPPORT AVAILABLE
N NO SUPPORT
(N) SEE EXPLANATORY NOTE

ASYNCHRONOUS TERMINAL SUPPORT

FEATURE OF TERMINAL	NOS/BE 1 INTERCOM 4 CCP 1.0			NOS 1 TELEX			NOS 1 NETWORK PRODUCTS R4 - CCP 4			NOS/BE INTERCOM 5 CCI 3			MASTER V4 - 3000L		
	713	751/756	752	713	751/756	752	713	751/756	752	713	751/756	752	713	751/756*	752*
80 char/line	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Lines/display (8/713, 24/751/752/756	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
33 Control Codes	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Displayable Symbols (95/713, 63/95-751/752/756)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y (1)	Y (1)
ASCII Code, X3.4-1968	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y (1)	Y	Y
Transmission Rate															
713 75 bps	N	X	X	N	X	X	N	X	X	N	X	X	N	X	X
713, 751/752/756 110 bps	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
713, 751/752/756 150 bps	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
751/752/756 200 bps	X	N	N	X	N	N	X	N	N	X	N	N	X	N	N
713, 751/752/756 300 bps	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
751/752/756 600 bps	X	Y (2)	Y (2)	X	N	N	X	Y	Y	X	Y	Y	X	Y	Y
751/752/756 1200 bps	X	Y (2)	Y (2)	X	N	N	X	Y	Y	X	Y	Y	X	Y	Y
751/752/756 1800 bps	X	N	N	X	N	N	X	Y	Y	X	N	N	X	N	N
751/752/756 2400 bps	X	N	N	X	N	N	X	Y	Y	X	Y	Y	X	Y	Y
751/752/756 4800 bps	X	N	N	X	N	N	X	Y	Y	X	Y	Y	X	Y	Y
751/752/756 9600 bps	X	N	N	X	N	N	X	Y	Y	X	Y	Y	X	Y	Y
Half Duplex (Terminal to Modem and Display)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Full Duplex (Echoplex Only)	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y
Parity - Odd, Even, None, Zero	Y (3)	Y (3)	Y (3)	Y (7)	Y (7)	Y (7)	Y	Y	Y	Y	Y	Y	Y (7)	Y	Y
Modems															
713, 751/752/756 Bell 103	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
713, 752 Bell 113	Y	X	Y	Y	X	Y	Y	X	Y	Y	X	Y	Y	X	Y
713, 751/752/756 Bell 202	N	N	N	Y (6)	Y (6)	Y (6)	Y (6)	Y (6)	Y (6)	N	N	N	Y (6)	Y (6)	Y (6)
Circuit Assurance (751/752/756)	X	N	N	X	N	N	X	N	N	X	N	N	X	N	N
Character Mode Transmission	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Line Mode Transmission (Characters to CR)	X	N	X	X	Y (11)	X	X	Y	X	X	N	X	X	Y	X
Block Mode Transmission (STX to ETX/EOT-Send	X	Y (12)	X	X	Y (11)	X	X	Y	X	X	Y (12)	X	X	Y	X
Page Display Mode (751/756 Block Mode)	Y	Y	Y	Y (8)	Y	Y (8)	Y	Y	Y	Y	Y	Y	Y	Y	Y
Scroll Display Mode	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Inverse Video (Multi-Line Fields)	Y (4)	X	X	Y (1)	X	X	Y (1)	X	X	Y (4)	Y	Y	Y (1)	X	X
Reduced Brightness and Blink(One Line Field)	X	X	Y (4)	X	X	Y (1)	X	X	Y (1)	X	X	Y (4)	X	X	X
Reduced Brightness & Blink(Multi-Line Field)	X	Y (4)	X	X	Y (1)	X	X	Y (1)	X	X	Y (1)	X	X	N	X
Protected Formats (Switch Control)	X	Y (4)	X	X	N	X	X	Y (1)	X	X	Y (1)	X	X	N	X
Cursor Address/Sense (Switch Control)	X	Y (4)	Y (4)	X	N	N	X	Y (1)	N	X	Y (1)	Y (4)	X	N	N
Tabulation	X	Y (4)	X	X	Y (9)	X	X	Y (1)	X	X	Y (1)	X	X	N	X
Backspace (From Mainframe)	Y (4)	Y (4)	Y	N	Y (1)	Y (1)	N	Y (1)	Y (1)	Y (4)	Y	Y	Y	Y	Y
Line Clear (From Mainframe)	Y (4)	X	Y (4)	N	X	N	Y (1)	X	Y (1)	Y (4)	X	Y (4)	Y (1)	X	Y (1)
Auto LF on CR	X	X	N	X	X	N	X	X	N	X	X	N	X	X	N
Support Non-Impact Printer	Y (5)	Y (5)	Y (5)	Y (5)	Y (5)	Y (5)	Y (5)	Y (5)	Y (5)	Y (5)	Y (5)	Y (5)	Y (5)	Y	Y
Support Impact Printer	X	Y (5)	Y (5)	X	Y (5)	Y (5)	X	Y (5)	Y (5)	X	Y (5)	Y (5)	X	Y	Y
Unconditional Auto Print (Switch Control)	X	Y (4)	X	X	N	X	X	Y	X	X	Y	X	X	Y	X
Support of Cassette	X	Y (10)	X	X	Y (10)	X	X	Y (10)	X	X	Y (10)	X	X	Y (10)	X
Answer Back Option	X	Y (4)	X	X	Y	X	X	N	X	X	Y	X	X	N	X
Multidrop Option	X	N	X	X	N	X	X	N	X	X	N	X	X	N	X
Current Loop Option	X	N	N	X	N	N	X	N	N	X	N	N	X	N	N

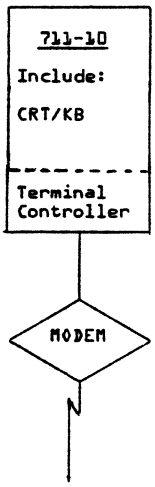
(1). User can send characters to control
(2). Full duplex only; Vadic modem compatibility, available only via 2550
(3). Even parity generated.
(4). Usable only by selecting ASCII-256 mode with user developed software.
(5). Locally controlled (slaved to CRT).
(6). Half duplex only and lost data is possible.
(7). Odd, even, none.
(8). Only a line per page.
(9). Application (i.e., Editor) provide tabs.
(10) Considered as paper tape.
(11). Receive only (Block Mode can be effected by an extra key stroke)
(12). User must hit CR and SEND to transmit the block (otherwise the last line appears incomplete)

*751/752/756 support via 3X11 is same as 713 support.
751/752/756 support via 2550 is as indicated.

I

TIME SHARING/ALPHA NUMERIC

711-10 ASCII TERMINAL



OPTIONS

- o 711-100 expand memory
- o 711-102 Data Control Feature
- o 711-120 non-impact printer
  or
- o 711-121 impact printer

A. GENERAL CONFIGURATION NOTES
1. Printers supported in monitor mode only.
2. 711-102 data control feature, required for INTERCOM Support.
3. 711-101 Protect Feature not supported by standard Software.

B. NOS/BE CONFIGURATION NOTES
1. Intercom 5/CCI 3
-Dial-up or dedicated; 2 wire or 4 wire; half duplex.
-Multidrop with 714 controllers (see 714-10, -20).
-2000/2400/4800 BPS dial-up.
-2400/4800 BPS dedicated.
-711-120, 711-121 Printers are not addressable (slaved only).
-200UT or Mode 4C protocol.
2. Intercom 4/CCP 1
-Same as B.1..
3. Intercom 4-6671/7077/791
-Same as B.1. except dial-up only at 2000 BPS.

C. NOS CONFIGURATION NOTES
1. Network Products/CCP 3 (NOS R4).
-Same as B.1.
2. Network Products/CCP 3 (NOS R3).
-Supported only by Transaction Facility 1.
-2000/2400 BPS Dial-up; 2400/4800 dedicated.
3. Timeshare 2 (Telex), E/I 200
-Not supported.

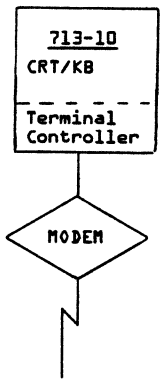
D. PUBLICATIONS

NUMBER	SOURCE	TITLE
62034100	RVLOPS	711-10 Display Terminal Operator's Guide
62022700	RVLOPS	711-10 Display Terminal Reference Manual
82181800	RVLOPS	Non-Impact Printer Station Operator's Guide
82181900	RVLOPS	Non-Impact Printer Station Reference Manual
62129700	RVLOPS	Impact Printer Station Operator's Guide
62129800	RVLOPS	Impact Printer Station Reference Manual

E. CABLES
1. Data set cable (10) type "A" furnished with each 711-10.
2. Printer station I/O cable (10 ft.) type "C" furnished with each 711-120 or 711-121. Other standard lengths available (max. of 1000 ft.) via CSE.

Terminal Configurations

713-10 CONVERSATIONAL DISPLAY
{TTY 33, 35, 37, 38 Compatible}



OPTIONS

- o 713-120 non-impact printer
- o 711-100 16 line X 80 character expanded memory

A. GENERAL CONFIGURATION NOTES
1. Operates in TTY {Model 33/35/37/38} compatible asynchronous mode at 110, 150, or 300 BPS.
2. 2-wire, dial-up or dedicated lines.
3. Operates at 110 BPS on 6671 or 6671-2.
4. Operates at 110 or 300 BPS on 6671 or 6671-2 with option 10295-1.
5. Operates at 110 BPS on 6676.
6. Operates at 110 or 300 BPS on 6676 with option 10294-1.
7. Operates at 110/300 BPS on 6671-3.
8. Communication in half duplex mode {2 way alternate}.
9. Uses mode 3 {TTY} protocol.
10. Non-impact printer operates in monitor mode.

B. NOS/BE CONFIGURATION NOTES
1. Intercom 5/CCI 3
   -See Asynchronous Terminal Support Matrix {Page 2}.
2. Intercom 4/CCP 1
   -See Asynchronous Terminal Support Matrix {Page 2}.
3. Intercom 4-6671/6676/7077/791
   -See Asynchronous Terminal Support Matrix {Page 2}.

C. NOS CONFIGURATION NOTES
1. Network Products/CCP 3 {NOS R4}.
   -See Asynchronous Terminal Support Matrix {Page 2}.
2. Network Products/CCP 3 {NOS R3}.
   -See Asynchronous Terminal Support Matrix {Page 2}.
3. Timeshare 2 {Telex}, E/I 200
   -See Asynchronous Terminal Support Matrix.

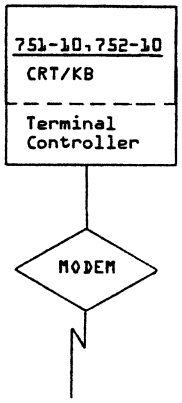
D. PUBLICATIONS

NUMBER	SOURCE	TITLE
62037900	RVLOPS	713-10 Display Terminal Operator's Guide
62033400	RVLOPS	713-10 Display Terminal Reference Manual
62149600	RVLOPS	713-120 Non-Impact Printer Operator's Guide
62149700	RVLOPS	713-120 Non-Impact Printer Reference Manual

E. CABLES

1. Data Set Cable {10 ft.} furnished with each 713-120.
2. One printer may service up to eight display terminals. Total "Daisy Chain" cable length limit is 1500 feet. Printer may be located any place within chain.

751-10, 752-10 DISPLAY TERMINAL



SUPPORTED OPTIONS	751-10	752-10	752-20
751-104 Ans. Bk.	X	-	-
753-10 NIP	X	-	-
753-11 NIP	-	X	X
754-10/20 Cassette	X	-	-
755-10/20	X	-	-
755-11/21	-	X	X
Current Loop	751-103 (Opt)	752-11 (Term)	752-21 (Term)

A. GENERAL CONFIGURATION NOTES
1. Operates in TTY (Model 33/35/37/38) compatible asynchronous mode at speeds up to 9600 BPS.
2. 2-wire, dial-up or dedicated lines.
3. Operates at 110 BPS on 6671 or 6671-2.
4. Operates at 110 or 300 BPS on 6671 or 6671-2 with option 10295-1.
5. Operates at 110 BPS on 6676.
6. Operates at 110 or 300 BPS on 6676 with option 10294-1.
7. Operates at 110/300 BPS on 6671-3.
8. Operates up to 1200 BPS on 2550 (CCP1.0); up to 9600 BPS on 2550 (CCP3.1/CCI 3)
9. Communication in half duplex mode (2 way alternate).
10. Uses mode 3 (TTY) protocol.
11. Non-impact and impact printer operates in monitor mode.
12. 150 BPS supported with INTERCOM 4.2 and above.

B. NOS/BE CONFIGURATION NOTES
1. Intercom 5/CCI 3
-See Asynchronous Terminal Support Matrix (Page 2).
2. Intercom 4/CCP 1
-See Asynchronous Terminal Support Matrix (Page 2).
3. Intercom 4-6671/6676/7077/791
-See Asynchronous Terminal Support Matrix (Page 2).

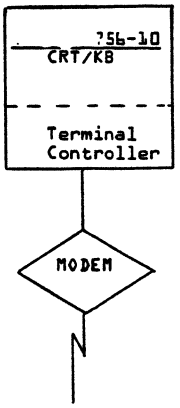
C. NOS CONFIGURATION NOTES
1. Network Products/CCP 3 (NOS R4).
-See Asynchronous Terminal Support Matrix (Page 2).
2. Network Products/CCP 3 (NOS R3).
-See Asynchronous Terminal Support Matrix (Page 2).
3. Timeshare 2 (Telex), E/I 200
-See Asynchronous Terminal Support Matrix.

D. PUBLICATIONS

NUMBER	SOURCE		TITLE
62962800	RVLOPS	750 Terminal Subsystem	Reference Manual
62951400	RVLOPS	750 Terminal Subsystem	Operators Guide
62957200	RVLOPS	750 Installation Instructions	
62957300	RVLOPS	752 Operators Guide/Reference Manual	
62941000	RVLOPS	752 Installation Instructions	

E. CABLES
1. Data Set Cable 10.5 feet furnished with each 751-10, 752-10.
2. Data Set Cable as above furnished with each I/O peripheral.
3. See Page 7 for adapter cables for unique communication interface situations.

756-10 Display Term



Supported Option	756-10
60HZ	
o 753-11	X
o 755-11/21	X
o Current Loop	756-11
o Keyboard Layout	
- Typewriter	756-201
- ISO	756-202
	756-20
50HZ	
o 753-11	X
o 755-11/21	X
o Current Loop	756-21
o Keyboard Layout	
- Typewriter	756-203
- ISO	756-204

A. GENERAL CONFIGURATION NOTES
1. Operates in TTY (Model 33/35/37/38) compatible asynchronous mode at speeds up to 9600 BPS.
2. 2-wire, dial-up or dedicated lines.
3. Operates at 110 BPS on 6671 or 6671-2
4. Operates at 110 or 300 BPS on 6671 with 6671-2 with option 10295-1.
5. Operates at 110 BPS on 6676.
6. Operates at 110 or 300 BPS on 6676 with option 10294-1.
7. Operates at 110/300 BPS on 6671-3.
8. Operates up to 1200 BPS on 2550 (CCP1.0) up to 9600 BPS on 2550 (CCP3.1/CCI 3)
9. Communication in half duplex mode (2 way alternate).
10. Uses mode 3 (TTY) protocol.
11. Non-impact and impact printer operates in monitor mode.
12. 150 BPS supported with INTERCOM 4.2 and above.

B. NOS/BE CONFIGURATION NOTES
1. Intercom 5/CCI 3
-See Asynchronous Terminal Support Matrix (Page 2).
2. Intercom 4/CCP 1
-See Asynchronous Terminal Support Matrix (Page 2).
3. Intercom 4-6671/6676/7077/791
-See Asynchronous Terminal Support Matrix (Page 2).

C. NOS CONFIGURATION NOTES
1. Network Products/CCP 3 (NOS R4).
-See Asynchronous Terminal Support Matrix (Page 2).
2. Network Products/CCP 3 (NOS R3).
-See Asychronous Terminal Support Matrix (Page 2).
3. Timeshare 2 (Telex), E/I 200
-See Asynchronous Terminal Support Matrix.

D. PUBLICATIONS

NUMBER	SOURCE	TITLE
62957300	RVLOPS	752 Operators Guide/ Reference Manual
62941000	RVLOPS	752 Installation Instructions
62941600	RVLOPS	756 Installation Instructions
62941700	RVLOPS	756 Operators Guide/ Reference Manual

E. CABLES

1. Data Set Cable (10.5 feet) furnished with each 752, 756.
2. Data Set Cable as above furnished with each I/O Peripheral.
3. See Page 7 for adapter cables for unique communication interface situations.

ADAPTER CABLES FOR UNIQUE COMMUNICATION INTERFACE SITUATION

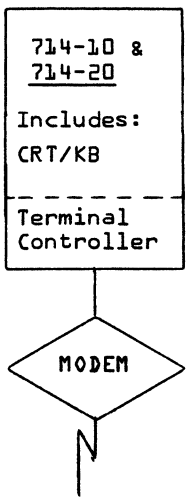
SITUATION	ADAPTER P/N FOR DEVICE SHOWN		
	751	752	756
o BELL MODEM			
- 113A	61407806		
- 202C	61407807		
o ANDERSON JACOBSON ACCOUSTIC COUPLER			
- ADAC 242		61407808	61407808
- ADAC 1200	61407807		
o DIRECT CONNECTION WITHOUT MODEM			
- SWITCHED CARRIER	61407809	61407809	61407809
- CONSTANT CARRIER	61407810	61407810	61407810

COMMENTS

The adapters are short cables which are connected in series with the data set cable between the device and communications interface. They serve to make the necessary interconnecting wiring changes peculiar to that connection. The adapters may be purchased as the P/N shown for $20.00.

714-10 & 714-20 (ASCII) Multi-Station Display Controller

OPTIONS/PERIPHERALS



- o 714-20 (replacement) multi-buffer, multi-station controller. Identical to 714-10, except that it includes (7) printer buffers.
- o 714-123, 16 line x 80 character CRT with data protect and control options.
- o 711-120 non-impact printer & 711-121 impact printer.
- o 714-122 8 line x 80 character.

A. GENERAL CONFIGURATION NOTES

1. AT&T 201,203, or equivalent data set required except for 255x local.

B. NOS/BE CONFIGURATION NOTES

1. Intercom 5/ CCI 3
   - -Dial-up or dedicated; 2 wire or 4 wire, half duplex.
   - -2000/2400/4800 BPS dial-up.
   - -2400/4800 BPS dedicated.
   - -Can control up to 12 CRT displays or 9 displays and 3 printers which can be 714-122, 714-123, 711-120, or 711-121, in any combination except that printer is addressed as logical unit 4, 8, or 12.
   - -Data Protect/Control option not supported.
2. Intercom 4/CCP 1
   - -Same as B.1, except data Control is required.
3. Intercom 4 - 6671-7077/791
   - -Same as B.1. except dial-up only at 2000 BPS.

C. NOS CONFIGURATION NOTES

1. Network Products/CCP 3 (NOS R4).
   - -Same as B.1. except up to 15 addressable peripherals and printers supported in local mode only.
2. Network Products/CCP 3 (NOS R3).
   - -Supported only by Transaction Facility 1.
   - -2000/2400 BPS dial-up, 2400/4800 dedicated.
3. Timeshare 2 (Telex), E/I 200
   - -Not supported.

D. PUBLICATIONS

NUMBER	SOURCE	TITLE
82184500	RVLOPS	714 Terminal Operator's Guide
82184600	RVLOPS	714 Terminal Reference Manual
82175900	RVLOPS	Display/Keyboard Station Operator's Guide
82176000	RVLOPS	Display/Keyboard Station Reference Manual
82181800	RVLOPS	Non-Impact Printer Station Operator's Guide
82181900	RVLOPS	Non-Impact Printer Station Reference Manual
62129700	RVLOPS	Impact Printer Station Operator's Guide
62129800	RVLOPS	Impact Printer Station Reference Manual

E. CABLES

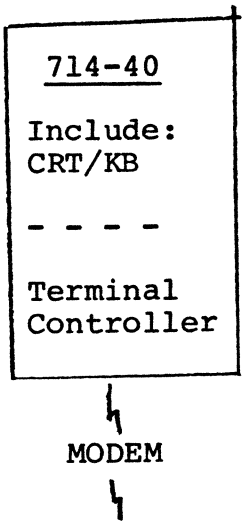
1. Data Set Cable (10 ft.) furnished with each 714-10 or 714-20.
2. Maximum "Daisy Chain" cable length from controller to last device is 1000 feet.
3. Display Station I/O Cable (50 Ft.) furnished with Display Station. Other standard lengths available via CSE.
4. Printer Station I/O Cable (10 Ft.) furnished with Printer Station. Other standard lengths available via CSE.

EXHIBIT J
SYSTEM CONFITURATION DETAIL

714-40 Single Station

OPTIONS

- o 714-200 Conversion Option
- o 753-11 non-impact printer
  or
- o 755-11/21 impact printer



A. TERMINAL CONFIGURATION NOTES

1. ATT 201, 203 or equivalent data set required except for 255X local.

B. NOS/BE CONFIGURATION NOTES

1. Intercom 5/:CCI 3

   - Dial-up or dedicated; 2 wire or 4 wire; half duplex.
   - 2000/2400/4800 BPS dial-up.
   - 2400/4800 9600 BPS dedicated.

2. Intercom 4/CCP 3

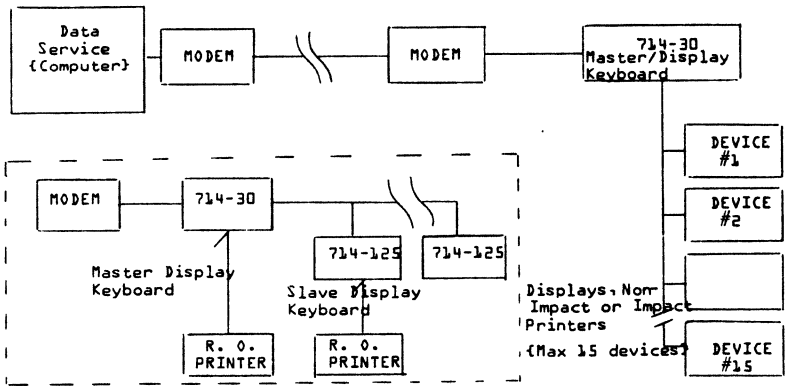
   - Same as B.1..

3. Intercom 4-6671/7077/791

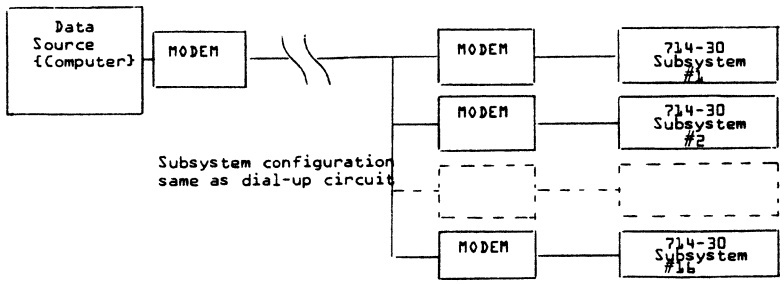
   - Same as B.1. except dial-up only at 2000 BPS.

714-30 (ASCII) Multi-Station Display Controller

DIAL-UP CIRCUIT



DEDICATED CIRCUIT (MULTI-DROP)



OPTIONS/PERIPHERALS

- o 714-30 (replacement) multi-buffer, multi-controller. Consists of controller and CRT/keyboard.
- o 714-125, 16/24 line x 80 character CRT with data protect and control.
- o 753-11 non-impact printer & 755-11/21 impact printer.
- o See Note A.1.

A. GENERAL CONFIGURATION NOTES

1. Cannot be configured with any 71X products not listed on this page.
2. AT&T 201, 203, or equivalent data set required except for 255X local.
3. Successor to 714-10/20 and supported under Standard software with known differences. (See Reference Manual.)

B. NOS/BE CONFIGURATION NOTES

1. Intercom 5/CCI 3
   - Dial-up or dedicated; 2 wire or 4 wire, half duplex.
   - 2000/2400/4800 BPS dial-up.
   - 2400/4800/9600 BPS dedicated.
   - Can control up to 12 CRT displays or 9 displays and 3 printers which can be 714-125, 753-11, 755-11, or 755-21, in any combination except that printer is addressed as logical unit 4, 8, or 12.
   - Printers are physically connected to the 714-125 slave display. Therefore, the number of printers cannot exceed the number of 714-125's.
2. Intercom 4/CCP 3
   - Same as B.1, except data control is required.
3. Intercom 4 6671-7077/791
   - Same as B.1 except dial-up only at 2000 BPS.

C. NOS CONFIGURATION NOTES

1. Network Products/CCP 3 (NOS R4).
   - Same as B.1 except up to 15 addressable peripherals and printers supported in local mode only.
2. Network Products/CCP 3 (NOS R3).
   - Supported only by Transaction Facility 1.
   - 2000/2400 BPS dial-up, 2400/4800 dedicated.
3. Timeshare 2 (Telex), E/I 2000
   - Not supported.

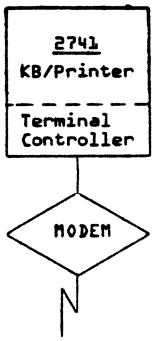
D. PUBLICATIONS

NUMBER	SOURCE	TITLE
62947400	RVLOPS	Operator's Guide
62947500	RVLOPS	On-site Product/Maintenance Manual

E. CABLES

1. Data Set Cable (10 ft.) furnished with each 714-30.
2. Maximum cumulative I/O cable length is 1000 feet.
3. Display Station I/O Cable (50 ft.) furnished with Display Station.
4. Other cable lengths available via QSE.

2741 IBM TELETYPE - CLASS TERMINAL



A. GENERAL CONFIGURATION NOTES
1. Uses 2741 Protocol and Correspondence Code.

B. NOS/BE CONFIGURATION NOTES
1. Intercom 5/ CCI 3
-Not Supported.
2. Intercom 4/CCP 1
-Not Supported.
3. Intercom 4 - 6671 - 7077/791
-Not Supported.

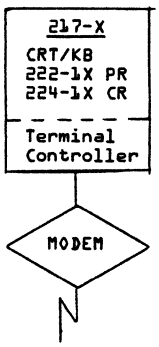
C. NOS CONFIGURATION NOTES
1. Network Products / CCP 3 (NOS R4).
-Operates on dial-up 134.5 BPS Asynchronous line, 2 wire, half duplex.
2. Network Products/CCP 3 (NOS R3).
-Same as C.1.
3. Time Share 2 (Telex)
-Operates at 134.5 BPS on 6671-3, 6671, or 6671-2 with option 10295-1, 6676 with option 10294-1.

D. PUBLICATIONS
(not applicable)

E. CABLES
(not applicable)

BATCH

200 USER TERMINAL (217-X)



OPTIONS

- o 217-11 Controller with 50x20 CRT, BCD code
- o 217-12 Controller with 80x13 CRT, BCD code
- o 222-11 Printer (300 LPM), BCD
- o 222-12 Printer (300 LPM), BCD
- o 224-11 Reader (300 CPM), BCD
- o 224-12 Reader (300 CPM), BCD
- o 217-13 Controller with 50x20 CRT, ASCII code
- o 217-14 Controller with 80x13 CRT, ASCII code
- o 222-13 Printer (300 LPM), ASCII
- o 222-14 Printer (300 LPM), ASCII
- o 224-13 Reader (300 CPM), ASCII
- o 224-14 Reader (300 CPM), ASCII

A. GENERAL CONFIGURATION NOTES
1. Dial-up or dedicated line.
2. 2-wire or 4-wire.
3. Operates at 2000/2400 BPS.
4. Half duplex mode (2 way alternate), ASCII or BCD.
5. Effective speeds of peripherals depend upon length of records, protocol and line speed and may be less than rated speeds.
6. 4800 BPS available as option.

B. NOS/BE CONFIGURATION NOTES
1. Intercom 5/CCI 3
   -Support as in A. plus multidrop with up to 12 controllers.
2. Intercom 4/CCP 1
   -Same as B.1.
3. Intercom 4 - 6671-7077/791
   -Same as B.1.

C. NOS CONFIGURATION NOTE
1. Network Products/CCP 3 (NOS R4).
   -Same as B.1.
2. Network Products/CCP 3 (NOS R3).
   -Same as B.1.
3. E/I 200
   -Same as B.1 except only BCD support.

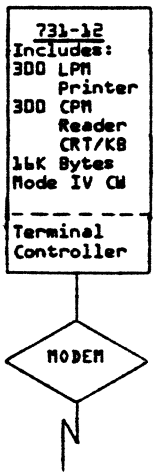
D. PUBLICATIONS

NUMBER	SOURCE	TITLE
(217-11 & 217-12)		
82128000	RVLOPS	200 UT Hardware Reference Manual
(217-13 & 217-14)		
82136000	RVLOPS	200 UT Op. & Prog.

E. CABLES
1. The following cables are provided with each 217-X

Card Reader	15 ft.	p/n	61094400
Line Printer	15 ft.	p/n	61068400
Modem	30 ft.	p/n	61023102

731-12 LOW SPEED BATCH TERMINAL



OPTIONS

- o 731-106 IBM 2780 Emulation CW
- o 731-107 Mode II CW

A. GENERAL CONFIGURATION NOTES
1. Dial-up or dedicated line.
2. 2-wire or 4-wire.
3. Operates at 2000/2400/4800 BPS
4. Half duplex mode (2 way alternate)
5. Effective speeds of peripherals depend upon length of records, protocol and line speed and may be less than rated.

B. NOS/BE CONFIGURATION NOTES
1. Intercom 5/CCI 3
   -Supported as in A.
2. Intercom 4/CCP 1
   -Supported as in A.
3. Intercom 4-6671/7077/791
   -Supported as in A.

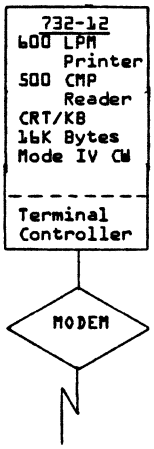
C. NOS CONFIGURATION NOTES
1. Network Products/CCP 3 (NOS R4).
   -Supported as in A.
2. Network Products/CCP 3 (NOS R3).
   -Supported as in A.
3. E/I 200
   -Supported as in A except only BCD Support.

D. PUBLICATIONS

NUMBER	SOURCE	TITLE
82187000	RVLOPS	(731-106) IBM 2780 Emulation CW
82163500	RVLOPS	(731-107) Mode II CW
82163400	RVLOPS	(731/732-12) Op. and Prog.
82163800	RVLOPS	Display Station Hdw. Ref./CE

E. CABLES
1. The following cables are provided with each 731-12.
   - o Data Set 10 ft. P/N 61023101
   - o Printer 30 ft. P/N 10357902
   - o Card Reader - Built In

732-12 MEDIUM SPEED BATCH TERMINAL



OPTIONS

- o 732-106 IBM 2780 Emulation CW
- o 732-107 Mode II Controlware

A. GENERAL CONFIGURATION NOTES
1. Dial-up or dedicated line.
2. 2-wire or 4-wire.
3. Operates at 2000/2400/4800 BPS on 6671, 6671-2, or 6671-3, 255X, 7077/791.
4. Operates at 9600 BPS on 6671-3, 255X, 7077/791.
5. Effective speeds of peripherals depend upon length of records, protocol, line speed, and may be less than rated speeds.
6. Half duplex mode (2 way alternate).
7. Uses 200 UT protocol.

B. NOS/BE CONFIGURATION NOTES
1. Intercom 5/CCI 3
   -Supported as in A.
2. Intercom 4/CCP 1
   -Supported as in A.
3. Intercom 4-6671/7077/791
   -Supported as in A.

C. NOS CONFIGURATION NOTES
1. Network Products/CCP 3 (NOS R4).
   -Supported as in A.
2. Network Products/CCP 3 (NOS R3).
   -Supported as in A.
3. E/I 200
   -Supported as in A except only BCD Support.

D. PUBLICATIONS

NUMBER	SOURCE	TITLE
82163500	RVLOPS	731/732-10 Mode II Op. & Prog.
82163800	RVLOPS	Display Station Hdw./CE
82187000	RVLOPS	2780 Op. & Prog.
82163400	RVLOPS	731/732-12 Op. & Prog. (Mode IV)

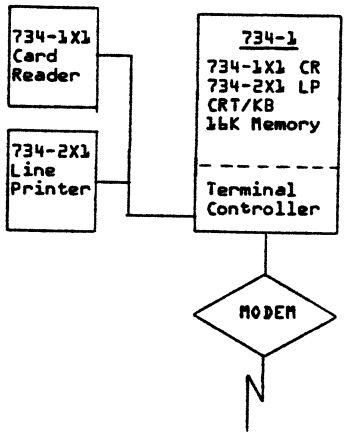
E. CABLES

1. The following cables are provided with each 732-12.

o Data Set	10 ft.	61023101
o Printer	30 ft.	10353902
o Card Reader	30 ft.	10353902

* Reference 7077/791 and 255x/HCP configuration rules in communications section.

734 BATCH TERMINAL



PERIPHERALS & OPTIONS

- o 734-101 300 CPM Card Reader
- o 734-151 600 CPM Card Reader
- o 734-201 300 LPM Line Printer
- o 734-251 600 LPM Line Printer
- o 734-11 IBM 2780 Emulation
- o 734-12 IBM 3780 Emulation

A. GENERAL CONFIGURATION NOTES
1. Dial-up or dedicated line.
2. 2-wire or 4-wire.
3. Operates at 2000/2400 BPS on 6671.
4. Operates at 2000/2400/4800 BPS on 6671 with option 10258-1.
5. Operates at 2000/2400/4800 BPS on 6671-2 or 6671-3.
6. Operates at 9600 BPS on 6671-3, 255x,7077/791.

B. NOS/BE CONFIGURATION NOTES
1. Intercom 5/ CCI 3
   -Supported as in A.
2. Intercom 4/CCP 1
   -Supported as in A.
3. Intercom 4 - 6671/7077/791
   -Supported as in A.

C. NOS CONFIGURATION NOTES
1. Network Products/CCP 3 (NOS R4).
   -Supported as in A.
2. Network Products/CCP 3 (NOS R3).
   -Supported as in A.
3. E/I 200
   -Supported as in A except only BCD Support.

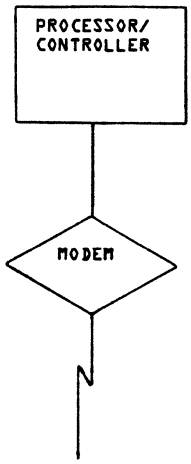
D. PUBLICATIONS

NUMBER	SOURCE	TITLE
62971300	RVLOPS	Batch Terminal Reference Manual (734-1)
62971500	RVLOPS	Batch Terminal Operators Guide (734-1)
82176000	RVLOPS	Keyboard Display Reference Manual
82175900	RVLOPS	Keyboard Display Operator's Guide
62971400	RVLOPS	Batch Terminal Reference Manual (Option 734-11)
62971600	RVLOPS	Batch Terminal Operator's Guide (Option 734-11)
59709100	RVLOPS	Line Printer Reference Manual
82179000	RVLOPS	TFC Hdw. Diag. Sys. Instant Reference Manual

E. CABLES
1. The following cables furnished with each 734-1:
   - o Data Set Cable (30 ft.)
   - o Reader Cable (10 ft.) and Printer Cable (20 ft.)
   - o Controller to Keyboard/Display Cable (5 ft.)

CYBER 18-XX (200UT CONTROLWARE)

CY18- 5, - 10M, - 20, - 30 WITH 1890-1 OPTION



- o 300 CPM Card Reader, 1829-30
- o 600 CPM Card Reader, 1829-60
- o 300 LPM Printer, 1827-30
- o 600 LPM Printer, 1827-60
- o 200UT Controlware Option, 1890-1

NOTE: See CY18 Section for Configuration details

A. General Configuration Notes

1. Supported under NOS, NOS-BE only in 200UT emulating mode.

B. NOS/BE Configuration Notes
Support is the same as 734 Batch Terminal

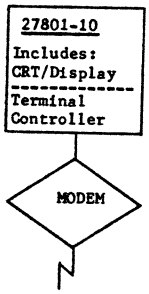
C. NOS Configuration Notes
Support is the same as 734 Batch Terminal

D. Publications

96768910	LDS	Batch Controlware Reference Manual
96768900	LDS	Batch Controlware Installation Handbook

E. Cables
(See CY18 Configurator)

27801-10 Batch (IBM) Terminal



OPTIONS

- o 300 CPM Card Reader, 27801-11
- o 600 CPM Card Reader, 27801-12
- o 300 LPM Printer, 27801-21 (80COL)
- o 300 LPM Printer, 27801-22 (136COL)
- o 600 LPM Printer, 27801-25 (136COL)
- o 200 U.T. Option, 27801-91

A. GENERAL CONFIGURATION NOTES

1. Supported under NOS, NOS-BE, only in 200 U.T. emulating mode.

B. NOS/BE CONFIGURATION NOTES

-Support is the same as 734 Batch Terminal.

C. NOS CONFIGURATION NOTES

-Support is the same as 734 Batch Terminal.

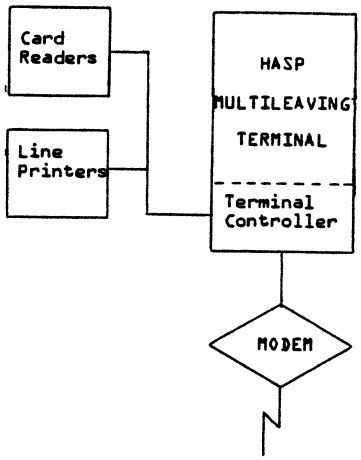
D. PUBLICATIONS

NUMBER	SOURCE	TITLE
62971400	RVLOPS	Batch Terminal Reference Manual (27801-10)
62971600	RVLOPS	Batch Terminal Operators Guide (27801-10)
82176000	RVLOPS	Keyboard Display Reference Manual
82175900	RVLOPS	Keyboard Display Operators Guide
62971300	RVLOPS	Batch Terminal Reference Manual (27801-91)
62971500	RVLOPS	Batch Terminal Operators Guide (27801-91)
59709100	RVLOPS	Line Printer Reference Manual
82179000	RVLOPS	TPC Hdw. Diag. Sys. Instant Reference Manual

E. CABLES

Data Set Cable (30') furnished type A.
Reader cable (10') and Printer cable (20') furnished with Controller.
Controller to Keyboard/Display Cable (5') furnished.

HASP MULTILEAVING TERMINALS



OPTIONS

Consoles

Card Punch

Plotter

{These terminals are produced by many vendors such as Data-100, HARRIS-COPE, etc.}

A. GENERAL CONFIGURATION NOTES
-Dependent on vendor.

B. NOS/BE CONFIGURATION NOTES
1. INTERCOM 5/CCI 3
-Speeds up to 19,200 bits per second.
-The maximum configuration supported is 7 card readers, 7 printers, and a combination of card punches and plotters totaling not more than 7.
2. INTERCOM 4/CCP 1
-Not supported.
3. INTERCOM 4 - 667 1
-Not supported.

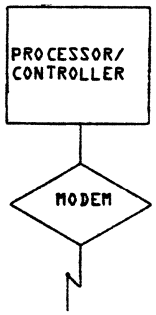
C. NOS CONFIGURATION NOTES
1. Network Products/CCP 3 {NOS R4}
-Speeds up to 19,200 bits per second.
-The maximum configuration supported is 7 card readers, 7 printers, and a combination of card punches and plotters totaling not more than 7.
2. Network Products/CCP 3 {NOS R3}
-Not supported.
3. E/I 200
-Not supported.

D. PUBLICATIONS
-Dependent on vendor.

E. CABLES
-Dependent on vendor

2780/3780 TERMINALS

{The CYBER 18-XX with 1890-2, 1890-3 controlware options is described. In addition other vendors offer 2780/3780 compatible terminals}



CY18-05, -10, -10M, -20, -30

- o 300 CPM Card Reader, 1829-30
- o 600 CPM Card Reader, 1829-60
- o 300 LPM Printer, 1827-30
- o 600 LPM Printer, 1827-60
- o 2780 Controlware, 1890-2
- o 3780 Controlware, 1890-3

NOTE: See CY18 section for configuration details.

A. GENERAL CONFIGURATION NOTES
-See CY 18 Section or vendor specifications

B. NOS/BE CONFIGURATION NOTES
1. Intercom 5/ CCI 3
-Supported using Bisync protocol at synchronous speeds of 2000/2400/4800/9600 BPS.
2. Intercom 4/CCP 3
-Not Supported
3. Intercom 4 - 6671/7077/791
-Not Supported

C. NOS CONFIGURATION NOTES
-Not Supported

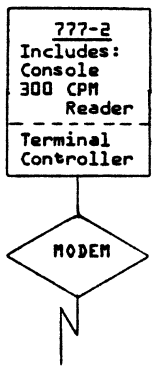
D. PUBLICATIONS
-See CY18-XX or vendor

E. CABLES
-See CY18 Configurator or Vendor Specifications.

III

GRAPHICS

777-2 HIGH SPEED CYBER GRAPHICS TERMINAL



OPTIONS

- o 774-1, console work station.
- o 1726-405, card reader or 1728-430.
- o 1742-30 line printer or 1742-120 line printer.
- o memory expansion
- o 1711, TTY, 1713, or 713 TTY compatible.

A. GENERAL CONFIGURATION NOTES
1. Up to (2) 774-1 consoles on a controller.

B. NOS/BE CONFIGURATION NOTES
1. Intercom 5/ CCI 3
-Not Supported.
2. Intercom 4/CCP 1
-Not Supported.
3. Intercom 4 - 6673/4
-Operates on 40,800 or 50,000 BPS wide band line, with 6673, 6674.
-Uses 4-wire full duplex (two way alternate).
-Uses Wide Band Protocol (EXPORT/IMPORT HS).
-If additional 774-1 consoles or remote job entry peripherals are added, 4K memory increments should be added to reduce degradation of performance.
-Operation with SCOPE/INTERCOM requires 777/IGS software package; in addition 3D/IGS software gives added feature performance.
-Requires a 415 card punch on the Host for Controlware Deck maintenance.

C. NOS CONFIGURATION NOTES
(not supported)

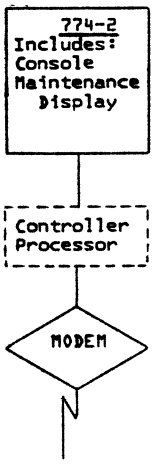
D. PUBLICATIONS

NUMBER	SOURCE	TITLE
82165700	RVLOPS	Console Reference Manual

E. CABLES
1. The following cables are provided with each 777-2.

	P/N	QTY
o Terminator Power Cable	61258700	1
o Register Signal Cable	61258600	1
o Shielded I/F cable (30 ft.)	10353902	4
o Interrupt Cable (30 ft.)	18201904	2

774-2 CYBER GRAPHICS TERMINAL



OPTIONS

- o 1742-120 or 1742-30 Line Printer
- o 1711, 1713 or 713 TTY Compatible Device
- o 1729, 430/1728 or 405/1726 Card Reader
- o 774-1

A. GENERAL CONFIGURATION NOTES
1. Adapts to 1704, or 1774 or 1784-2 Processor, requires card reader (same configuration notes apply as on 777-2).

B. NOS/BE CONFIGURATION NOTES
1. INTERCOM 5/CCI 3
   - Not Supported
2. INTERCOM 4/CCP 1
   - Not Supported
3. INTERCOM 4 - 6673/4
   - Operates on 40,800 BPS or 50,000 BPS wideband line with 6673, 6674.
   - Use 4-wire full duplex (two way alternate)
   - Uses wideband Protocol (Export/Import HS)
   - If additional 774-1 consoles or remote job entry peripherals are added, 4K memory increments should be added to reduce degradation of performance.
   - Operation with SCOPE/INTERCOM requires 777/IGS software package; 3D/IGS software provides additional features.
   - Requires a 415/415-30 card punch on the Host for controlware deck maintenance.

C. NOS CONFIGURATION NOTES
(not supported)

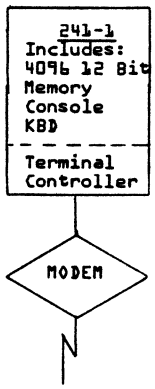
D. PUBLICATIONS

NUMBER	SOURCE	TITLE
82165700	RVLOPS	Console Reference Manual

E. CABLES
1. The following cables are provided with each 774-2:

	P/N	QTY
o Terminator Power Cable	61258700	1
o Register Signal Cable	61258600	1
o Shielded I/F cable (30 ft.)	10353902	4
o Interrupt Cable (30 ft.)	18201904	2

241 GRID TERMINAL OR LCGT, GRAPHICS SUBSYSTEM



OPTIONS

- o 248-2 expanded memory, 8192 12 bit
- o 10182 expanded symbol set

A. GENERAL CONFIGURATION NOTES
1. Dial-up or dedicated line.
2. 2-wire or 4-wire, up to 12 drops.
*3. Operates at 2000 BPS, dial-up with 6671, 6671-2, and 6671-3.
4. Operates at 2000/2400 BPS on 6671 with option 10258-1.
*5. Operates at 2400 BPS dedicated line with 6671, 6671-2, and 6671-3.
*6. Operates at 4800/9600 BPS dedicated line with 6671-2, 6671-3, and 255x/HCP.
7. Operation with SCOPE/INTERCOM requires 241/IGS software package.
*8. 255x/HCP support local terminal configuration without modems up to 50 ft.
9. Maximum (12) ports, if any, are 4800 BPS with 6671-X.
10. Maximum (4) ports, if any, are 9600 BPS with 6671-X.
11. Half duplex mode (2 way alternate).
12. Uses 200 UT protocol.
13. Operates at 4800 BPS dial-up with 255x.

* Reference 255X/HCP configuration rules in communications section.

B. NOS/BE CONFIGURATION NOTES
1. Intercom 5/CCI 3
-Support as indicated in A for 255x.
2. Intercom 4/CCP 1
-Support as indicated in A for 255x.
3. Intercom 4 - 6671
-Support as indicated in A for 6671.

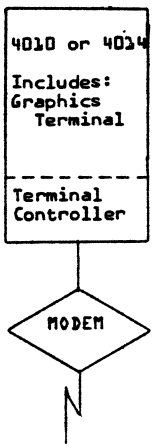
C. NOS CONFIGURATION NOTES
1. Network Products/CCP 3 (NOS R4).
-Supported as indicated in A for 255x.
2. Network Products/CCP 3 (NOS R3).
-Not Supported.
3. E/I 200
-Not Supported.

D. PUBLICATIONS

NUMBER	SOURCE	TITLE
82144300	RVLOPS	241-1 Op. & Prog.
82144400	RVLOPS	241-1 Hdw. Ref/CE Manual
82134600	RVLOPS	Grid Term. Controller Book 1
82134700	RVLOPS	Grid Term. Controller Book 2
82134800	RVLOPS	Grid Term. Controller Book 3
82134900	RVLOPS	Grid Term. Console Hdw. Ref. ICE

E. CABLES
1. Data set 25 feet #6102310X provided with each 241.

4010 & 4014 TEKTRONIX GRAPHICS TERMINAL



OPTIONS

- o Asynchronous operation standard
- o Synchronous operation requires TEKTRONIX option, 20 synchronous interfaces.
- o 4631 hard copy recorder

A. GENERAL CONFIGURATION NOTES
1. Synchronous Operation -
   a) Operates at 2000 dial-up on 2400 or 4800 BPS dedicated synchronous line (2 wire or 4 wire) with 6671.
   b) Operates at up to 4800 BPS dial-up with 255X.
2. Asynchronous Operation -
   a) Operates at 110 to 300 BPS dial-up or dedicated line with 6671 or 6676.
   b) Operates at 110, 300, 1200 BPS dial-up or up to 4800 BPS dedicated with 255X/CCP3.1.

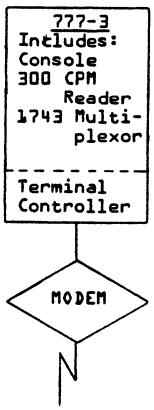
B. NOS/BE CONFIGURATION NOTES
1. INTERCOM 5/ CCI 3
   -Support as indicated in A for 255X.
2. INTERCOM 4/CCP 1
   -Support as indicated in A for 255X.
3. INTERCOM 4 - 6671
   -Support as indicated in A for 6671.

C. NOS CONFIGURATION NOTES
1. Network Products/CCP 3 (NOS R4).
   - Support as indicated in A for 255X.
2. Network Products/CCP 3 (NOS R3).
   -Supported only in asynchronous operation as indicated in A for 6671.
3. Timeshare 2 (Telex)
   -Supported only in asynchronous operation as indicated in A for 6671.

D. PUBLICATIONS
Contact vendor

E. CABLES
Contact vendor

777-3 VOICE GRADE CYBER GRAPHICS TERMINAL



OPTIONS

- o 774-1, additional console work stations.
- o 1726-405, card reader or 1728-430.
- o 1742-30 line printer or 1742-120 line printer.
- o memory expansion
- o 1711, TTY, 1713 or 713 TTY compatible

A. GENERAL CONFIGURATION NOTES

1. Up to (2) 774-1 consoles on a controller.
2. Operates on switched lines to 4800 BPS, dedicated to 9600 BPS, with 6671 and 255X.
3. Uses half duplex (two way alternate) 2 or 4 wire.
4. Uses 200 UT (MODE 4) Protocol.
5. If additional 774-1 consoles or remote job entry peripherals are added, 4K memory increments should be added to avoid degradation of performance.
6. Operation with INTERCOM requires 777/IGS software package: 3D/IGS software provides additional features.
7. Requires a 415 card punch on the Host for controlware Deck.

B. NOS/BE CONFIGURATION NOTES

1. INTERCOM 5/ CCI 3
   -Supported as indicated in A for 255X.
2. INTERCOM 4/CCP 1
   -Supported as indicated in A for 255X.
3. INTERCOM 4 - 6671 - 7077/791
   -Supported as indicated in A.

C. NOS CONFIGURATION NOTES

(Not Supported)

D. PUBLICATIONS

NUMBER	SOURCE	TITLE
82165700	RVLOPS	Console Reference Manual

E. CABLES

1. The following cables are provided with each 777-3.

	P/N	QTY
o Terminator Power Cable	61258700	1
o Register Signal Cable	61258600	1
o Shielded I/F cable (30 ft.)	10353902	4
o Interrupt Cable (30 ft.)	18201904	2

Communications Subsystem Configurations

COMPANY PRIVATE

TABLE 1

CCP1.0 AND INTERCOM 4.5

SUPPORTED TERMINALS ②	CCP1.0/INTERCOM 4.5 NOS/BE 1.1 ①	CCP1.0/INTERCOM 4.5 NOS/BE RELEASE (5/77) ①	COMMENTS
CDC 200 U.T. (217)	20,24,48	20,24,48	
CDC 731-12	20,24,48	20,24,48	
CDC 732-12	20,24,48,96	20,24,48,96	
CDC 734-1	20,24,48,96	20,24,48,96	
CDC 711-10	20,24,48	20,24,48	
CDC 714	20,24,48	20,24,48	
CDC 214	20,24,48	20,24,48	
CDC 241-1 ③	20,24	20,24	
CDC 777-3	20,24,48,96	20,24,48,96	777/IGS V2.1 sftw only
TTY M33, M35, M37 & M38	110,150,300	110,150,300,600,1200	
TEKTRONIX 4010/4014	110,150,300,20	110,150,300,600,1200,20	
CDC 713-10	110,150,300	110,150,300,600,1200	
CDC 751-10 ③	110,150,300	110,150,300,600,1200	
CDC CY18-XX(term. opt.) ③	20,24,48,96	20,24,48,96	

① Indicates speeds in bits per second. 20=2,000 BPS, 24=2,400 BPS, 48=4,800 BPS, 96=9,600 BPS

② All features or functions of all terminals may not be supported

③ Not yet tested, but expected to be compatible

TABLE 2

COMPANY PRIVATE

NOS RELEASE 12/76 with NOS1.1, NAM1, RBF1, TAF1, CCP3

SUPPORTED TERMINAL ②	NOS1.1, NAM1, RBF1, CCP3 ①	NOS1.1, NAM1, TAF1, CCP3 ①	NOS1.1, TRANEX T-2 MOD. 1 ①	COMMENTS
CDC 200 U.T. {217}	20,24,48	20,24,48*		*When operating
CDC 731-12	20,24,48	20,24,48*		Terminal in
CDC 732-12	20,24,48,96	20,24,48,96*		Interactive Mode
CDC 734-1	20,24,48,96	20,24,48,96*		
CDC 711-10		20,24,48		
CDC 714		20,24,48		
CDC 214		20,24,48		
TTY M33, M35, M37, M38			110,150,300,600	
CDC 713-10			110,150,300	
CDC 751-10 ③			110,150,300,600	
IBM 2741			134.5	
TEKTRONIX 4010/4014			110,150,300,600	
MEMOREX 1240			110,150,300,600	
CYBER 18-XX {term. opt.} ③	20,24,48,96	20,24,48,96*		
HAZELTINE 2000 ③			110,150,300,600	

① Indicates speeds in bits per second. 20=2,000 BPS, 24=2,400 BPS, 48=4,800 BPS, 96=9,600 BPS

② All features or functions of all terminals may not be supported

③ Not yet tested, but expected to be compatible

TABLE 3

2550-100 EMULATION CONTROLWARE

Supported terminals list for this product has not changed but is provided herein for information purposes

TERMINALS (or total equivalents)	2550-100 W/TELEX/KRONOS or NOS	2550-100 W/TRANEX/KRONOS or NOS	2550-100 W/E-I KRONOS or NOS
CDC 200 U.T. (217)			20,24,48
CDC 731-12			20,24,48
CDC 732-12			20,24,48
CDC 734-1			20,24,48
TTY M33, M35, M37 & M38	110,150,300,600	110,150,300,600	
IBM 2741	134.5M		
TEKTRONIX 4010/4014	110,150,300,600	110,150,300,600	
CDC 713-10	110,150,300,600	110,150,300,600	
TTY M40	110,150,300,600	110,150,300,600	
MEMOREX 1240	110,150,300,600	110,150,300,600	
HAZELTINE 2000	110,150,300,600	110,150,300,600	

LEGEND AND NOTES:

20=2,000 BPS, 24=2,400 BPS, 48=4,800 BPS

M Only PTTC/BCD Character Set Supported

TABLE 4

NOS RELEASE 12/76 NETWORK PRODUCTS

I. Central Memory Requirements (values in decimal)

MODULE	MIN	TARGET	MAX	FREQUENCY
NIP	9,000	12,000	20,000	1.00
RBF	7,000	7,500	13,000	1.00
CS	16,400	16,400	18,200	.10
NS	12,300	12,300	12,300	.07
OPF	5,400	5,400	5,400	.15
NVF	2,050	2,150	2,150	.10

II. CPU Utilization

For operation in the target configuration estimated CPU utilization is 20%.

III. Performance

Based on the target configuration perofrmance is estimated at 6,000 characters per second throughput. The performance goal is 10,000 characters/second.

TABLE 5

COMPANY PRIVATE

NOS RELEASE 12/77 WITH NAM, RBF, IAF, CCP, TAF

SUPPORTED TERMINALS ②	NOS, NAM, RBF, CCP ①	NOS, NAM, IAF, CCP ①	NOS, NAM, TAF, CCP ①	COMMENTS
CDC 200 U.T. {217}	20,24,48	20,24,48*	20,24,48*	*When operating
CDC 731-12	20,24,48	20,24,48*	20,24,48*	terminal in Interactive
CDC 732-12	20,24,48,96	20,24,48,96*	20,24,48,96*	Mode
CDC 734-1	20,24,48,96	20,24,48,96*	20,24,48,96*	
CDC 711-10		20,24,48	20,24,48	
CDC 714		20,24,48	20,24,48	
CDC 241-1				Support not specified
CDC 777-3				Support not specified
TTY M33, M35, M37 & M38		110,150,300,600,1200	110,150,300,600,1200	
IBM 2741		134.5		
TEKTRONIX 4010		110,150,300,600,1200	110,150,300,600	
and 4014		20,24,48,96	20,24,48,96	
CDC 713-10		110,150,300	110,150,300	
CDC 751-10 ③		110,150,300,600,1200	110,150,300,600,1200	
		24,48,96	24,48,96	
TTY MOD 40		110,150,300,600,1200	110,150,300,600,1200	
MEMOREX 1240		110,150,300,600,1200	110,150,300,600,1200	
HAZELTINE 2000 ③		110,150,300,600,1200	110,150,300,600,1200	
HASP/MULTILEAVING	20,24,48,96	20,24,48,96*		
CYBER 18-XX {term. opt.} ③	20,24,48,96	20,24,48,96*	20,24,48,96*	

① Indicates speeds in bits per second. 20=2,000BPS, 24=2,400BPS, 48=4,800BPS, 96=9,600BPS

② All features or functions of all terminals may not be supported

③ Not yet tested, but expected to be compatible

TABLE 6

NOS/BE RELEASE 3Q/78 NAM, RBF, IAF, CCP

SUPPORTED TERMINALS ②	NOS/BE, RAM RBF, CCP ①	NOS/BE, NAM, IAF, CCP ①	COMMENTS
CDC 200 U.T. {217}	20,24,48	20,24,48*	*When operating terminal
CDC 731-12	20,24,48	20,24,48*	in Interactive Mode
CDC 732-12	20,24,48,96	20,24,48,96*	
CDC 734-1	20,24,48,96	20,24,48,96*	
CDC 711-10		20,24,48	
CDC 714		20,24,48	
CDC 214		20,24,48	
CDC 241-1			Support not specified
CDC 777-3			Support not specified
TTY M33, M35, M37 & M38		110,150,300,600,1200	
IBM 2741		134.5	
TEKTRONIX 4010/4014		110,150,300,600,1200, 20,24,48,96	
CDC 713-10		110,150,300,	
CDC 751-10 ③		110,150,300,600,1200, 24,48,96	
TTY MOD. 40		110,150,300,600,1200	
MEMOREX 1240		110,150,300,600,1200	
HAZELTINE 2000 ③		110,150,300,600,1200	
HASP/MULTILEAVING	20,24,48,96	20,24,48,96*	
CYBER 18-XX{term. opt.} ③	20,24,48,96	20,24,48,96*	

① Indicates speeds in bits per second. 20=2,000BPS, 24=2,400BPS, 48=4,800BPS, 96=9,600BPS

② All features or functions of all terminals may not be supported

③ Not yet tested, but expected to be compatible

1.0 COMMUNICATIONS SUBSYSTEMS SELECTION

Table 1 below defines the communications subsystems that are supported as a function of Operating System release level and Application/Protocol Support. To use the table: 1) Look across the top of the table for the appropriate Operating System and version (release level) of system Software. 2) Use the upper half of the table to determine what communication Subsystems are supported by that version of the desired operating system. 3) Use the lower half of the table to determine if the required applications, protocols and line speeds are supported. For detailed Terminal support information, see the appropriate area in the Terminal Configurator Section (Timesharing, Remote Batch or Graphics). 4) The system configuration section defines the specific configuration limitations.

NOTE: NOS R4 with Network Products and NOS/BE with INTERCOM 5 support only a 2551 with CCP or CCI respectively.

TABLE I
COMMUNICATIONS SUBSYSTEMS SUPPORT

	NOS/BE				NOS					
	INTERCOM 5		INTERCOM 4.7		NETWORK PRODUCTS			NOS TELEX		
	INTER-ACTIVE	REMOTE BATCH	INTER-ACTIVE	REMOTE BATCH	IAF	RBF	TAF	TELEX	EI200	TAF MUX
Active Subsystems										
255X/CCP	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
255X Emulation	No	No	Yes	Yes	No	No	No	Yes	Yes(1)	Yes
Mature Subsystems										
6671	No	No	Yes	Yes	No	No	No	Yes	Yes(2)	Yes
6676	No	No	Yes	No	No	No	No	Yes	No	Yes
6673/6674	No	No	Yes	Yes	No	No	No	No	No	No
APPLICATIONS										
Time Sharing/Transaction			300/							
TTY (BPS)	9,600	No	1,200(3)	No	9,600	No	9,600	600	No	600
M4 (BPS)	19,200	No	9,600	No	19,200	No	19,200	No	No	No
HASP (BPS)	19,200	No	No	No	19,200	No	19,200	No	No	No
Remote Batch										
M4 (BPS)	No	19,200	No	9,600	No	19,200	No	No	4,800	No
HASP (BPS)	No	19,200	No	No	No	19,200	No	No	No	No
2780/3780 (BPS)	No	9,600	No	No	No	No	No	No	No	No
HS Export	No	No	No	50,000 (4)	No	No	No	No	No	No
Graphics										
777-2 (BPS)	No	No	40,800(4)	No	No	No	No	No	No	No
777-3 (BPS)	9,600	No	9,600	No	No	No	No	No	No	No
774-2 (BPS)	No	No	40,800(4)	No	No	No	No	No	No	No
241-1 (BPS)	9,600	No	9,600	No	No	No	No	No	No	No
Tektronix			300/							
4010/4014 (BPS)	9,600	No	1,200(3)	No	9,600	No	No	600	No	No

NOTES:

(1) A second Emulation coupler is required to support both Export/Import amd TELEX functions simultaneously.
(2) A second Data Set Controller is required to support both Export/Import and TELEX functions simultaneously.
(3) Supports 1200 BPS on 255X/CCP only.
(4) Supported only on 6673/6674.

1.1 Configurator USE

This configurator provides a method for analyzing and determining the 2551 configuration necessary to support a network requirement. This configurator is a generalized configurator based on normal terminal loads and activities as stated in the assumptions. If the requirements of the target network differ greatly from this generalized environment contact your Regional 2550 configuration specialist for guidance. Keep in mind also that this configurator determines only the 2551 requirements for the computer system and does not take into consideration CYBER 170 host requirements and/or limitations. See the CYBER 170 Configurator section for host product considerations.

To use this configurator analyze the network according to traffic types as outlined in Section 2.0. Then use Section 3.0 to evaluate each network node based on the desired system software. Next use Section 4.0 to configure the required 2551 hardware.

2.0 NETWORK ANALYSIS

The purpose of this Section is to analyze the configuration requirements of the desired network.

This configurator addresses the network on a node by node basis and therefore the first thing to do is to analyze the network requirements to determine if more than one 2551 node is desired or required and define the lines that will be connected to each 2551 node.

Say for example that two 2551's are required for backup as part of the requirements or if a remote node is required or desirable for line economy reasons then split the network accordingly and define the lines, protocols, speeds, tracks, etc. that will be connected to each 2551 node.

2.1 General Network Considerations

The major network consideration is to determine the level of network activity that is to be assumed for configuration purposes. This configurator assumes representative levels of terminal activity for given types of active lines and active devices but the user must determine how many of the configured lines and configured devices are to be considered active for configuration purposes.

The underlined terms above need further definition. A configured line is a communication line (255X port) that is known to the system while a configured device is a terminal device that is known to the system such as a line printer, card reader, console, TTY CRT display with keyboard, etc. The key words here are "known to the system" but not necessarily active. On the other hand active lines and active devices pertains to the configured lines and terminals that are to be considered active for configuration purposes. A worst case consideration assumes that all configured lines and devices are active. This results in a configuration that could handle all lines and devices being active at the same time. Depending on customer usage and requirements a more normal situation might be to assume that only a certain percentage of the configured lines would be active at any given time. This would usually lead to a smaller 255X configuration that would still satisfy the communication requirements. A rule-of-thumb percentage for configured versus active lines and devices is 70%. In any case the configuration assumptions should be included in the proposal so that the operational considerations of the proposed configuration are documented.

2,2 Traffic Types

This section defines and describes a set of data traffic types that are used later to estimate 255X memory, trunk and processor utilizations.

2.2.1 Mode 4 Batch Traffic

Definition

1. Remote batch traffic to and from a CDC mode 4 terminal protocol card reader and line printer. This terminal type includes 200 UT's, 734-12's, CYBER 18-05M's and a multitude of batch terminals and mini-processors simulating the Mode 4 protocol.

Charactertistics

1. A Mode 4 terminal is configured with three devices per terminal a console, card reader and line printer. In the remote batch environment the potential active devices are the output device (line printer) and the input device (card reader).

2. For a dial-up or point-to-point connection this implies 1 or 2 active devices per active line (output only, input only or both input and output).

3. For a multidrop terminal connection the number of active devices per active line would depend on the total number of input and output devices expected to be active on that line at any given time. This could range from one active device on the low end up to two times the number of terminal drops on the high end.

Assumptions

1. Mode 4 batch traffic has a block size of 1000 characters.

2. Line utilization is assumed to be 70%.

2.2.2 IBM HASP Multileaving Batch Traffic

Definition

1. Remote batch traffic to and from HASP M/L terminal protocol card readers, line printers and card punches. This traffic type includes a multitude of batch terminals and miniprocessors utilizing the HASP M/L protocol. These include the IBM 360/25, DATA 100/78, HARRIS 1600, CDC CYBER 18 with COM18.

Characteristics

1. A HASP M/L terminal can be configured with up to 15 devices; a console; up to 7 card readers and up to 7 printers and punches. For the remote batch environment the potential active devices are up to 7 output devices (line printers and punches) and up to 7 input devices (card readers).

2. Multidrop is not supported by HASP.

3. The number of active input and output devices per line will depend on the terminal hardware configuration and usage. A normal hardware configuration would contain one each card reader and line printer.

Assumptions

1. HASP M/L batch traffic has a block size of 400 bytes for line speeds of 9600 BPS or less and a block size of 800 bytes for line speeds of 19,200 BPS.

2. Line utilization is assumed to be 70%.

2.2.3 IBM 2780/3780 Batch Traffic

Definition

1. Remote batch traffic to and from an IBM 2780/3780 terminal card reader, line printer and/or punch.

Characteristics

1. A 2780/3780 terminal may be configured with up to 3 devices per terminal a card reader, line printer and punch. Up to 1 input device and 1 output device may be active for a 3780 terminal while the 2780 supports only 1 active device at a time.

2. Multidrop terminals are not supported.

3. The number of active devices per active line of this traffic type will be one or two depending on the hardware type and usage.

Assumptions

1. 2780/3780 batch traffic has a block size of 400 bytes.

2. Line utilization is assumed to be 70%.

2.2.4 High Volume Interactive Traffic

Definition

1. High volume Data streaming to/from interactive terminal devices. These terminals could be asynchronous interactive devices such as CDC 75X displays, printers and/or cassettes or synchronous (Mode 4) interactive devices such as CDC 714 displays, printers etc.

Characteristics

1. This traffic type is characterized by the continuous streaming of data to or from a terminal without any user intervention. Examples of this traffic type include data transfers to and from a mini-computer, reading and dumping data from and to a tape cassette, output to a character printer or plotter. This traffic type should be used only if the traffic is sustained for extended periods of the day, such that the interactive terminal is used in a fashion similar to a batch terminal. Keep in mind that in a multidrop or cluster terminal environment the level of total traffic activity on the line is an accumulation of the individual device activities. However, high volume traffic would not normally be multidropped since the assumed line utilization would not leave adequate line capacity to handle additional terminals without appreciable degradation.

2. For Asynchronous interactive terminals there is one device (keyboard/display/hardcopy combination) per terminal. Therefore, since multidrop is not supported there is one active device possible per active line.

3. For synchronous interactive terminals (CDC 714) multidrop and clustering is supported. Therefore, the number of configured devices would be equal to the total number of keyboard/display combinations and printers on the line. The number of active devices per active line will be determined by the terminal hardware configuration on the line and the usage.

Assumptions

1. For NOS, high volume interactive traffic has a block size of approximately 200, 400 or 800 characters for asynchronous lines of 1200, 2400, 4800 BPS respectively, and approximately 1000 characters for Mode 4 lines.

2. For NOS/BE, high volume interactive traffic has a block size of approximately 100 characters.

3. Line utilization is assumed to be 80%.

2.2.5 Medium Volume Interactive Traffic

Definition

1. Medium volume data streaming to/from interactive terminal devices. As with high volume traffic these terminals can be asynchronous or synchronous interactive terminals.

Characteristics

1. This traffic type should be used for all interactive terminal usage where some minimum user action generates a large amount of input or output. Unlike high volume interactive traffic, however, the input or output is assumed to be sustained for only a few seconds, and then some other user action is necessary to generate the next input or output. This might include normal graphics user activities, file scanning or formatted screen activities where little user think time or input time is required. Two or more terminals of this traffic type multi-dropped on a line should be considered as a high volume traffic type for configuration purposes.

2. The same rules apply for determining active devices as for high volume traffic.

Assumptions

1. Medium volume interactive traffic has the same block size characteristics as high volume interactive traffic.

2. Line utilization is assumed to be 40%.

2.2.6 Low Volume Interactive Traffic

Definition

1. Low volume data to/from interactive terminal devices. As with the other interactive traffic types the terminals may be synchronous or asynchronous.

Characteristics

1. This traffic type is characterized by a low volume, short message interaction between the terminal user and his/her application program. This traffic type includes normal timesharing usage and other usage where appreciable user intervention and delays due to think time, data editing or data preparation are involved. Since line utilization is minimal for this traffic type, the multidropping of terminals should not affect the traffic type classification for the line but will affect the number of active devices on the line.

Assumptions

1. Low volume interactive traffic has a block size equivalent to one line of input or output of maximum size 100 characters or so.

2. Line utilization is assumed to be minimal. Each line is assumed to generate a maximum of 10 characters/second or so, independent of line speed.

2.2.7 Remote Node Trunk Traffic

Definition

1. Remote Node Trunk Line traffic between a 2551 remote node and a 2551 front-end node. A full duplex bit-oriented communications protocol (HDLC) is utilized on the trunk.

Characteristics

1. This traffic type is characterized by a frame size of 256 bytes.

2. The effect of the trunk traffic must be considered when configurating both the remote 2551 node and the front-end 2551 node.

Assumptions

1. Trunk line utilization is assumed to be 80%.

3.0 SYSTEMS CONFIGURATION

This section will allow the user to evaluate 2551 requirements for the desired network based on the Host Operating System environment.

Select the desired Operating System Environment section and proceed.

3.1 NOS 1.3/CCP 3.1/Network Products

3.1.1 General Configuration Notes

1. A 2551 can physically have two 2558-3 channel couplers. Standard software supports the use of only one coupler at a time.

2. A maximum of 8-2551 frontends can be connected to one CYBER 170 host computer. A maximum of 2-2551 frontends per CYBER channel.

3. Second level 2551 remote nodes are supported via communications trunk line interconnect to 2551 frontend nodes. The interconnect requires 2563-1 CLA hardware and Link Interface Program software (N221-02) at each end. Only one trunk line connection is allowed between a given frontend and remote node pair.

4. A maximum of 8-2551 remote nodes can be connected to a 2551 frontend node.

5. A 2551 remote node can connect to to a maximum of 4-2551 frontend nodes.

6. CCP3.1 supports the following protocols at the stated speeds:

   - Asynchronous (2561-1) - 110; 134; 150; 300; 600; 1200; 2400; 4800; 9600 BPS
   - CDC Mode 4 (2560-1) - 2000; 2400; 4800; 9600; 19,200 BPS
   - IBM HASP M/L (2560-1) - 2000; 2400; 4800; 9600; 19,200 BPS
   - HDLC Remote Link Trunk (2563-1) - 2400; 4800; 9600; 19,200 BPS.

7. Async auto speed recognition is provided at speeds of 110, 134, 150, 300, 600 and 1200 BPS.

8. Two versions of the Async TIP exist, the Async TIP and the Async TIP Extended. A single 2550 may be configured with either the Async TIP or the Async TIP Extended, but both simultaneously. The Async TIP Extended supports the following terminals/features which are not supported by the Async TIP:

   IBM 2741 terminals
   Bit-paired APL terminals (e.g. CDI Miniterm 1203)
   Typewriter-paired APL terminals (e.g. AJ 832)
   APL character set on switchable ASCII terminals (e.g. DECwriter II)

9. A single communications line may support only one protocol - Async, CDC Mode 4, IBM HASP M/L or HDLC Remote Node Trunk. However, a single communications line may be used to support different variants of the CDC Mode 4 protocol multi-dropped on the line - Mode 4A BCD, Mode 4A ASCII or Mode 4C.

3.1.2 Remote Node Analysis

If a remote node is not required or desired in the network configuration, go on to Section 3.1.3.

If a remote node is to be configured, use this section to determine the Remote Link trunk utilization requirement for this remote node. Carry this requirement as input to Section 3.1.3 to fully configure this 2551 remote node.

3.1.2.1 Remote Link Trunk Utilization

The table below provides for determining the remote node trunk requirements based on the traffic types supported by the remote node.

The values in the table represent the required trunk throughput in characters per second for each active line of the stated traffic type and speed. For this remote node, multiply the number of active lines of each traffic type and speed by the corresponding table entry. The sum of each of these individual throughputs provides the total character trunk throughput required for this remote node.

The calculated total trunk throughput defines the requires trunk line bandwidth as follows:

1. A total throughput of up to 240 characters/second requires a 2400 BPS trunk line.

2. A total throughput of up to 480 characters/second requires a 4800 BPS trunk line.

3. A total throughput of up to 960 characters/second requires a 9600 BPS trunk line.

4. A total throughput of up to 1920 characters/second requires a 19,200 BPS trunk line.

4. A total trunk throughput of greater than 1920 characters per second either multiple trunks be used or that the desired terminal load requires that they be configured on multiple 2551 remote nodes. Remember, however, that multiple trunks from a given 2551 remote node must be connected to different 2551 frontend nodes. If multiple trunks are used, the system will automatically balance the number of connections to be equal over each trunk.

Remote Line Trunk Utilization (Characters/Second) Per Active Line as Described.						
	Line Speed (BPS)					
Traffic Type	300	1200	2400	4800	9600	19200
Mode 4 Batch per active line	N/A	N/A	210	420	840	1680
HASP M/L Batch per active line	N/A	N/A	210	420	840	1680
High Volume Interactive per active line	20	100	190	380	770	N/A
Medium Volume Interactive per active line	10	50	100	190	380	N/A
Low Volume Interactive per active line	10	10	10	10	10	N/A

3.1.3 2551 Processor Utilization

The following table allows the 2551 processor utilization to be calculated. The values in the table represent the percentages of the usable 2551 processor utilized by each active line of the stated traffic type and speed.

Percent 2551 Processor Utilized per Active Line as Described.						
	Line Speeds (BPS)					
Traffic Type	300	1200	2400	4800	9600	19200
Mode 4 Batch per active line	N/A	N/A	2	4	7	14
HASP M/L per active line	N/A	N/A	2	4	7	14
High Volume Interactive per active line	1/4	1	2	3	6	N/A
Medium Volume Interactive per active line	1/4	1/2	1	2	3	N/A
Low Volume Interactive per active line	1/4	1/4	1/4	1/4	1/4	N/A
Remote Node Trunk per active trunk	N/A	N/A	1	3	5	10

To calculate the total processor utilization, multiply the number of active lines of each traffic type and speed by the percentage value in the table. Then sum these percentages to arrive at the total processor utilization for this 2551.

A processor utilization of 100% indicates a fully loaded configuration, therefore, if the total processor utilization exceeds 100%, the described network cannot be supported on a single 2551. At this point the alternative is to split the described network and configure multiple 2551's.

3.1.4 2551 Memory Utilization

This section computes the requirements for 2551 memory and allows the user to establish the system memory configurations needed to support these requirements. Total 2551 memory requirements are determined by adding the Table Space and the Buffer Space requirements and using the Available Buffer/Table Space Table to determine the configuration necessary to support these requirements.

3.1.4.1 Table Space Memory Computation

The total words required for table space is computed by the following:

Table Space = 50 x total number of configured lines
+ 32 x total number of configured devices
+ 114 x number of configured Remote Link trunks.

3.1.4.2 Buffer Space Memory Computations

For each 2551 in the configuration, use the following table to calculate the number of 2551 memory words required for data buffers. Multiply the number of active devices for each traffic type and speed as described by the buffer words required for that entry. The sum of these provides the total buffer space requirements for this 2551.

Words of Buffer Space Required Per Active Device as Described.						
	Line Speed (BPS)					
Traffic Type	300	1200	2400	4800	9600	19200
Mode 4 Batch						
per active output device	--	--	1152	1152	1152	1152
per active input device	--	--	576	576	576	576
HASP M/L						
per active output device	--	--	512	512	768	1344
per active input dfevice	--	--	256	256	256	448
High Volume Interactive per active input/output device	256	256	512	1024	1024	--
Medium Volume Interactive per active input/output device	176	176	304	560	560	--
Low Volume Interactive per active input/output device	96	96	96	96	96	--
Remote Link Trunk per active trunk	--	--	--	--	1344	1344

3.1.4.3 2551 Memory Configuration

Total the previously computed Table Space and Buffer Space requirements to determine the total Buffer/Table Space needed. The table below defines the Buffer/Table Space available for the various 2551 hardware and terminal/trunk software configurations. Select the terminal/trunk configurations combination required to support the described network and follow the table across to determine the memory configurations necessary to provide the required Buffer/Table Space. If required space exceeds the limits of available space, the network must be configured on multiple 2551s. However, if required memory space exceeds available space by only one or two thousand words, the configuration may be acceptable since CCP regulation mechanisms will accommodate momentary peak buffer requirements.

2551 Available Buffer/Table Space

TIP Configuration					2551 Memory Size		
Async	Async Ext.	Mode 4	HASP	Trunk	65K	81K	96K
--	X	--	--	--	17	33	35
X	--	--	--	--	18	34	36
--	--	X	--	--	20	35	36
--	X	X	--	--	10	26	34
X	--	X	--	--	11	26	35
--	--	--	X	--	21	35	36
--	X	--	X	--	11	27	33
X	--	--	X	--	12	28	34
--	--	X	X	--	13	29	36
--	X	X	X	--	--	19	34
X	--	X	X	--	--	20	35
--	--	--	--	X	22	37	37
--	X	--	--	X	12	28	35
X	--	--	--	X	14	29	36
--	--	X	--	X	15	31	36
--	X	X	--	X	--	21	34
X	--	X	--	X	--	22	35
--	--	--	X	X	16	32	37
--	X	--	X	X	--	23	35
X	--	--	X	X	--	24	36
--	--	X	X	X	--	24	36
--	X	X	X	X	--	14	30
X	--	X	X	X	--	15	31

3.2 NOS 1.3/TELEX-EI200

This system configuration supports the 2551 using the 2550-101 controlware or the 6671/6676 Data Set Controllers. Go to Section 5.0, Section 6.0 and/or Section 7.0 for configuration details.

3.3 NOS/BE 1.3/INTERCOM 5

3.3.1 General Configuration Notes

1. A 2551 can physically have two 2558-3 channel couplers. Standard software supports the use of only one coupler at a time.
2. A maximum of 12-2551 frontends can be connected to one CYBER 170 host computer. A maximum of 2-2551 frontends per CYBER channel.
3. Remote 2551 nodes are not supported.
4. CCI 3.0 supports the following protocols at the stated speeds.
   - Asynchronous (2561-1) - 110; 150; 300; 600; 1200; 2400; 4800; 9600 BPS
   - CDC Mode 4 (2560-1) - 2000; 2400; 4800; 9600; 19,200 BPS
   - HASP M/L (2560-1) - 2000; 2400; 4800; 9600; 19,200 BPS
   - IBM 2780/3780 (2560-1) - 2000; 2400; 4800; 9600 BPS
5. Asynchronous auto speed recognition is provided at speeds of 110, 150, 300 and 1200 BPS.
6. Auto terminal recognition is provided for 2780/3780 and HASP M/L terminals.

3.3.2 2551 Processor Utilization

The following table allows the 2551 processor utilization to be calculated. The values in the table represent the percentage of the 2551 processor utilized by each active line of the stated traffic type and speed.

Percent 2551 Processor Utilized per Active Line as Described.

Traffic Type	Line Speed (BPS) 300	1200	2400	4800	9600	19200
Mode 4 Batch per active line	N/A	N/A	2	4	7	14
HASP M/L Batch per active line	N/A	N/A	2	4	7	14
2780/3780 Batch per active line	N/A	N/A	2	4	7	N/A
High Volume Interactive per active line	1/2	2	3	6	13	N/A
Medium Volume Interactive per active line	1/4	1	2	3	6	N/A
Low Volume Interactive per active line	1/4	1/4	1/4	1/4	1/4	N/A

To calculate the total processor utilization, multiply the number of active lines of each traffic type and speed by the percent value in the table. Then sum these percentages to determine the total processor utilization for this 2551.

If the total processor utilization exceeds 100%, the described network cannot be supported on a single 2551. At this point the alternative is to split the network and configure multiple 2551s.

3.3.3 2551 Memory Utilization

This section computes the requirements for 2551 memory and allows the user to establish the system memory configuration needed to support these requirements. The total 2551 memory requirements are determined by adding the Table Space and the Buffer Space requirements and by using the available Buffer/Table Space Table to determine the configuration necessary to support these requirements.

3.3.3.1 Table Space Memory Computation

The total words required for table space is computed by the following:

For 2551 Configurations:

Table Space = 49 x total number of configured lines
+ 32 x total number of configured devices

3.3.3.2 Buffer Space Memory Computation

For each 2551 in the configuration, use the following table to calculate the number of 2551 memory words required for data buffers. Multiply the number of active devices for each traffic type as described by the buffer words required for that entry. The sum of these provides the total buffer space requirements for this 2551. Note that the buffer space is independent of line speed.

Words of Buffer Space Required Per Active Device as Described	
Traffic Type	Buffer Words
CDC Mode 4 batch	
per active output device	1280
per active input device	640
HASP M/L Batch	
per active output device	1280
per active input device	640
IBM 2780/3780 Batch	
per active output device	1280
per active input device	640
High Volume Interactive	
per active input/output device	64
Medium Volume Interactive	
per active input/output device	64
Low Volume Interactive	
per active input/output device	64

3.3.3.3 255X Memory Configuration

Total the previously computed table space and buffer space requirements to determine the total Buffer/Table Space needed. The table below defines the available buffer/table space for the various hardware and terminal software configurations. Select the terminal configuration combination required to support the desired network on this 2551 and follow the table across to determine the memory configuration necessary to provide the required space.

If required space exceeds the limits of available space, the network on this 2551 must be configured on multiple 2551's. However, if required memory space exceeds available space by only one or two thousand words, the configuration may be acceptable since CCP regulation mechanisms will accommodate momentary peak buffer requirements.

2551 Available Buffer/Table Space						
TIP Configuration				2551 Memory Size		
Async	Mode 4	HASP	2780/3780	65K	81K	96K
X	--	--	--	30	33	34
--	X	--	--	25	31	32
X	X	--	--	23	30	32
--	--	X	--	25	31	32
X	--	X	--	24	31	32
--	X	X	--	19	29	30
X	X	X	--	17	28	30
--	--	--	X	26	31	33
X	--	--	X	25	31	32
--	X	--	X	20	29	30
X	X	--	X	18	29	30
--	--	X	X	20	29	31
X	--	X	X	19	29	30
	X	X	X	14	27	28
X	X	X	X	12	27	28

4.0 2551 HARDWARE CONFIGURATION

Use this section to configure the 2551 hardware products.

4.1 General Configuration Notes

1. A console is required, but may be customer provided. Select 752-10 or indicate use of customer provided equivalent device.

2. Select the CLA (Communication Line Adapter) cards according to communication line type to be terminated from 2560-X or 2561-1, two lines per CLA, or 2563-1 CLA, which supports one line per CLA.

3. Select CLA Cables. This is normally a two-step procedure. For any CLA there may be more than one Modem and Cable type. Frequently, the specifics of modem type and line connection are not known (even by the customer) when the system is ordered.

   Step 1. Cables may be ordered by product number without specifying a dash number (specific model) for the purpose of order pricing.

   Step 2. The detailed cable definition will be required 90 days prior to the ship date. The cable definition data specifying the cable by product number and dash number (model) and quantity of each must be in the order package to insure that CLA cables are shipped with the system.

4. A total of three memory expansion increments in any combination can be physically accommodated not to exceed the 128K total memory capacity. Example: three 2554-16's or one 2554-16 and two 2554-32's or three 2554-32's, etc. Check in the specific software support section to determine the maximum usable memory.

5. CLA expansion beyond the cabinet space provided in the base unit is obtained by selecting appropriate combinations of 2556-10 cabinets, each of which can house up to 2556-11 Loop multiplexers. Each Loop multiplexer can support 16 CLA's of any type.

4.2 CLA Cable Descriptions

4.2.1 10400-X CLA Cables

This class of CLA cables is used to connect a 2561-1 asynchronous RS232 CLA to its associated modem or directly to an RS232 compatible terminal. Standard cable length is 50 feet. The specific models are the:

1. 10400-1 CLA cable connects a 2561-1 to AT&T 103A, 103E, and 113B and 202 C/D (without reverse channel) data sets.

2. 10400-2 CLA cable connects a 2561-1 directly to a local terminal having an RS232 interface without use of a modem.

3. 10400-3 CLA cable connects a 2561-1 to AT&T 103F or 202R data sets.

4.2.2 10401-X CLA Cables

This class of CLA cables is used to connect a 2560-1 or 2563-1 synchronous RS232 CLA to its associated modem or directly to an RS232 compatible terminal. Standard cable length is 50 feet. The specific models are the:

1. 10401-1 CLA cable connects a 2560-1 or 2563-1 to AT&T 201A, 201B, 201C, 203A or 208B data sets.

2. 10401-2 CLA cable connects a 2560-1 or 2563-1 to AT&T 208A or 209 data sets.

3. 10401-4 CLA cable connects a 2560-1 or 2563-1 directly to an RS232 compatible terminal.

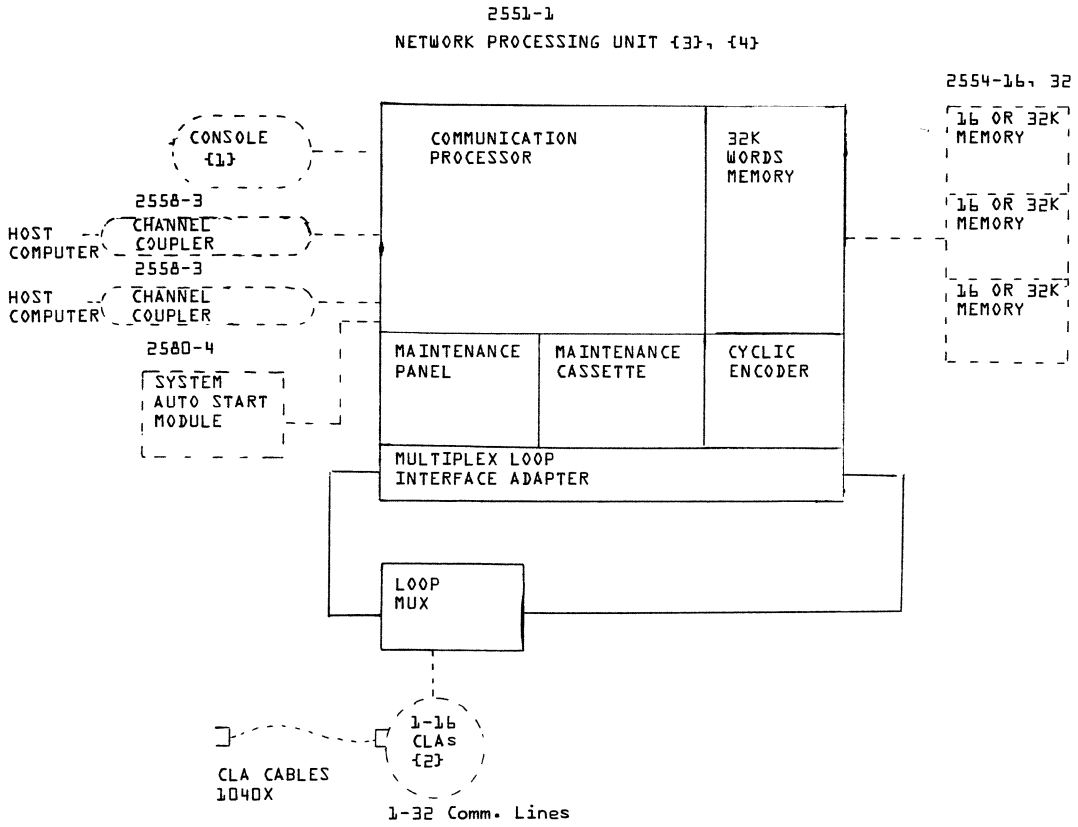
4.2.3 10402 CLA Cables

This class of CLA cables is used to connect a 2560-2 synchronous CLA to wide band AT&T 301 and 303 series modems. There is one model the 10402-1. The 2560-2 CLA is not currently supported by standard software.

4.2.4 10403 CLA Cables

This class of CLA cables is used to connect a 2560-3 CLA to communications lines meeting CCITT recommendation V.35. There is one model the 10403-1.

4.3 Hardware Configurations



LEGEND:

_____System elements included in basic 2551-1 product

------Required and/or optional units which must be separately specified by product number.

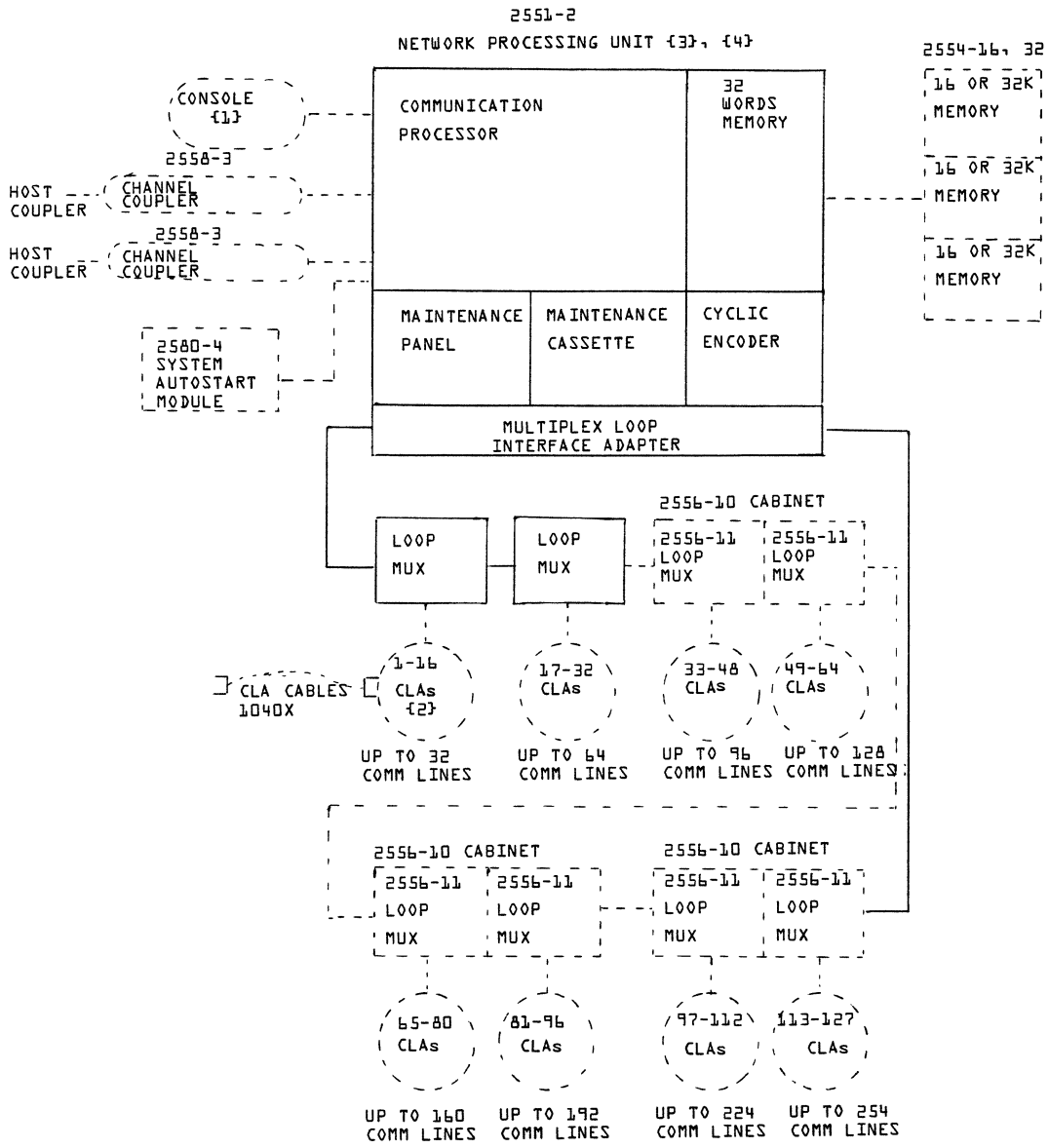
NOTES:

{1} Console required, but must be specified. Select 752-10, 756-10 {NIP printer is not supported with 752-10 or 756-10} or equivalent.

{2} Select 256X CLA's as required {one or two comm lines per CLA depending on type}.

{3} The 2551-1 NPU is field upgradeable to a 2551-2 NPU by installations of the 2580-3 upgrade kit.

{4} For Remote NPU operation, the 2580-4 System Autostart module is required on the remote NPU and a 2563-1 CLA is required on both the remote NPU and the front end NPU.



LEGEND:

_____ System elements in basic 2551-2 product

------- Required and/or optional units which must be separately specified by product number

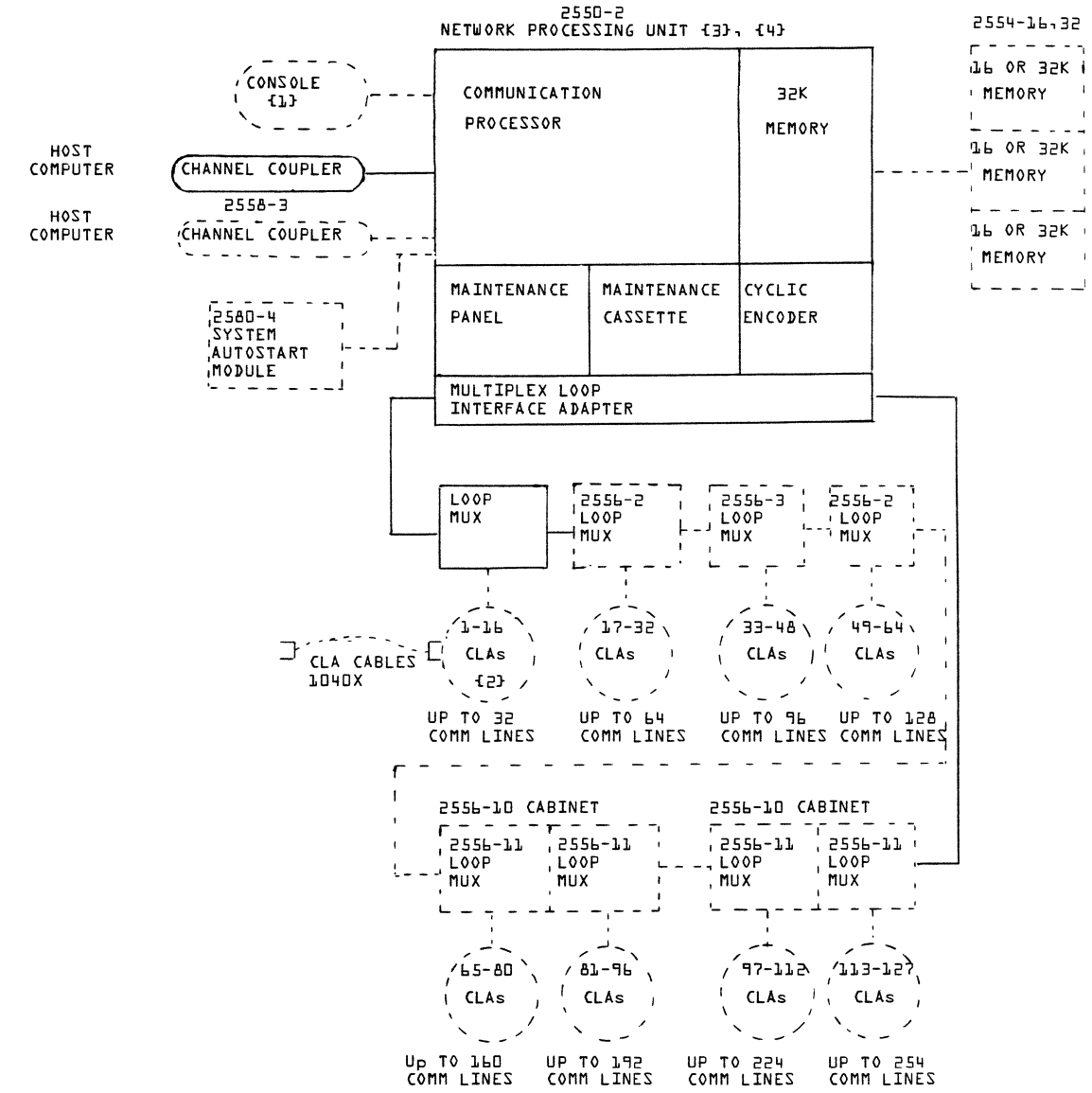
NOTES:

{1} Console required, but must be specified. Select 752-10, 756-10 {NIP printer is not supported with 752-10 or 756-10} or equivalent.

{2} Select 256X CLA's as required {one or two comm lines per CLA depending on type}.

{3} The 2551-2 NPU is field upgradeable to a 2552-2 NPU by installation of option 2580-1.

{4} For Remote NPU operation the 2580-4 System Autostart Module is required on the remote NPU and a 2563-1 CLA is required on both the remote NPU and the front end NPU.



LEGEND:

_____ System elements in basic 2550-2 product.

------- Required and/or optional units which must be separately specified by product number.

NOTES:

{1} Console required, but must be specified. Select 752-10, 756-10, {NIP printer is not supported with 752-10 or 756-10} or equivalent.

{2} Select 256X CLA's as required {one or two comm lines per CLA depending on type}.

{3} The 2550-2 NPU is field upgradeable to the functional equivalent 2552-2 NPU by the installation of option 2580-2.

{4} For Remote NPU operations, the 2580-4 system autostart module is required on the remote NPU and a 2563-1 CLA is required on both the remote NPU and the front end NPU.

5.0 2550-101 EMULATION CONTROLWARE

5.1 General Configuration Notes:

1. Requires 2550-2, 2551-1 or 2551-2 Network Processing Unit with basic 32K memory.

2. Console is required, but may be customer provided. Select 752-10 or indicate use of customer provided equivalent device.

3. Select the CLA (communication line adapter) cards according to communication line type to be terminated from 2560-1 synchronous CLA and/or 2561-1 asynchronous CLA.

4. 2550-101 will concurrently emulate up to four data set controllers in any configuration of 6671 and 6676 controllers allowed by the associated host computer operating system.

5. Interfaces with maximum of two peripheral processors (PPU) on single host or dual hosts, by adding 1 or 2 2558-4 Emulation Couplers.

6. Maximum of 128 circuit connections.

7. The 2550-101 has the capacity to accept and respond to a maximum of four equipment addresses.

5.2 NOS/BE Configuration Notes:

1. INTERCOM 4 support only; INTERCOM 5 does not support 667X Emulation.

2. Synchronous line speeds to 9600 BPS. (When terminating 9600 BPS circuits, no more than 4 circuits can be connected per logical 6671 MUX per PPU with 1M1 driver.

3. Dedicated or Dial-up lines.

4. Half-duplex support only.

5. Asynchronous line speeds of 110, 150, and 300 BPS.

6. For more than two logical 667X connections multiple copies of PPU driver (1M1) required.

7. Optional 2558-4 Emulation coupler required for dual PPU connection.

5.3 NOS Configuration Notes:

1. TELEX/EI200 support only; Network Products does not support 667X Emulation.

2. Maximum of one 6671 logical connection supported by E/I 200.

3. Maximum of eight logical connections (6671 and/or 6676) supported by Telex. (Multiple NPU's with 2550-101 controlware and/or 6676 DCS(s) and/or 6671 DCS(s)).

4. Dedicated or Dial-up lines.

5. Synchronous line speeds to 4800 BPS.

6. Asynchronous line speeds of 110, 134.5, 300 and 600 BPS are supported by standard software. Higher line sppeds can be supported by special software.

5.4 2550-101 Configuration Notes:

Hardware configuration rules when using the 2550-101 Emulation Option controlware are straightforward and are as follows:

1. Base Hardware Requirements

   - o One 2550-2, 2551-1, or 2551-2 Network Processing Unit
   - o One 2550-101 6671/6676 Emulation Controlware
   - o One or two 2558-4 Emulation Couplers
   - o One Communication Console. This requirement may be fulfilled by any of the following:
     - One 752-10 or 756-10 Interactive Display (NIP not supported).
     - Customer supplied equivalent product with RS232C interface connector.

2. Dual PPU Interface

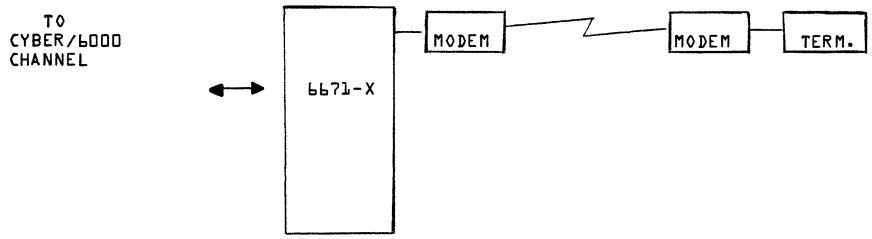
   If the NPU and 2550-101 are required to interface to a second PPU on the host computer, a second 2558-4 Emulation Coupler must be added to the configuration. As an example; two connections are required if both Telex and EI200 are to be supported.

3. Circuit Interfaces

   A. 2560-1 Synchronous Communications Line Adapter--Determine the total number of synchronous (voice grade 2000, 2400, 4800, and 9600 bps circuits, both local and remote) to be interfaced. Divide the total by two. The result will define the quantity of 2560-1 Synchronous Communication Line Adapters required.

   B. 2561-1 Asynchronous Communications Line Adapter--Determine the total number of asynchronous (110 to 600 bps circuits, local and remote) to be interfaced. Divide the total by two. The result will define the quantity of 2561-1 Asynchronous Communications Line Adapters required.

6.0 6671/6671-2/6671-3 DATA SET CONTROLLERS



6.1 GENERAL CONFIGURATION NOTES:

1. Handles Synchronous or Asynchronous circuits
2. 6671 operates at 2000 or 2400 BPS synchronous
3. 6671 operates at 4800 BPS (synchronous) with special option 10258-1
4. 6671-2 operates at 2000 to 4800 BPS synchronous
5. 6671-3 operates at 2000 to 9600 BPS synchronous
6. 6671 operates at 110 BPS asynchronous
7. 6671 or 6671-2 operates at 110 BPS (asynchronous). With special option 10295-1, 134.5 and 300 BPS are also provided.
8. 6671-3 operates at 110 to 1200 BPS asynchronous
9. 16 ports maximum connectability
10. Accommodates 2 wire or 4 wire, full or half duplex circuits
11. 6671-3 when terminating 9600 BPS circuits will only support up to 8 ports

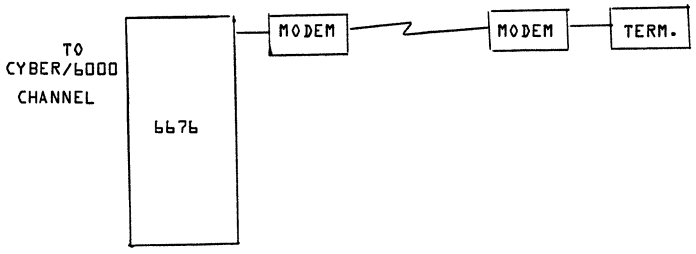
6.2 NOS/BE INTERCOM 4 Configuration Notes:

1. When terminating 9600 BPS circuits via a 6671-3, no more than four circuits can be connected if any are 9600 BPS.
2. When terminating 4800 BPS circuits, no more than 12 circuits can be connected if any are 4800 BPS.
3. Maximum supported asynchronous line speed is 300 BPS when using a 6671. 134.5 BPS is not supported.
4. Half-duplex support only.

6.3 NOS TIMESHARE/EI200 Configuration Notes:

1. Maximum supported synchronous line speed is 4800 BPS.
2. Maximum supported asynchronous line speed is 300 BPS with standard software; 1200 BPS can be supported with special software.
3. Half-duplex support only.

7.0 6676 DATA SET CONTROLLER



7.1 General Configuration Notes:

1. Handles asynchronous circuits only.
2. Terminates a maximum of 64 circuits.
3. Operates at 110 BPS.
4. Operates at 110, 134.5, 300 BPS with special option 10294-1.
5. Accommodates 2 wire or 4 wire, full or half duplex circuits.
6. Requires 65117-1 for 2XPPU operation on CYBER 170.

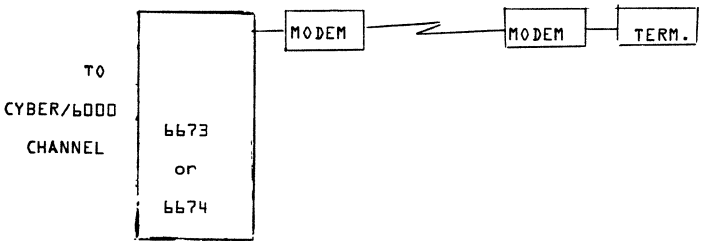
7.2 NOS/BE INTERCOM 4 Configuration Notes:

1. Half-duplex support only.
2. 134.5 BPS asynchronous is not supported.

7.3 NOS TIMESHARE/E1200 Configuration Notes:

1. Half-duplex support only.

8.0 6673/6674 DATA SET CONTROLLERS



8.1 General Configuration Notes:

1. Handles synchronous WIDEBAND circuits only.
2. Operates at 19.2 to 56K BPS.
3. Operates in half-duplex mode (two way alternate) on full-duplex circuit.
4. 12 bit byte only.
5. 6673 terminates two WIDEBAND circuits.
6. 6674 terminates four WIDEBAND circuits.
7. Supported only by NOS/BE INTERCOM 4.