Digital Computer Laboratory
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

SUBJECT: BIWEEKLY REPORT, JANUARY 24, 1955

To: Jay W. Forrester

From: Scientific and Engineering Computation Group

1. MATHEMATICS, CODING AND APPLICATIONS

1.1 Introduction

During the past two weeks 448 coded programs were run on the time allocated to the Scientific and Engineering (S&EC) Group. These problems represent part of the work that has been done on 43 of the problems that have been accepted by the S&EC Group.

1.2 Programs and Computer Operation

Problem No.	Title	WWI Time
100	Comprehensive System of Service Routines	312.0 minutes
106 C.	MIT Seismic Project	131.9 minutes
108 C.	An Interpretive Program	299.4 minutes
120 D.	The Aerothermopressor	57.0 minutes
122 B.	Coulomb Wave Functions	197.1 minutes
123 C.	Earth Resistivity Interpretation	40.2 minutes
126 C.	Data Reduction	77.5 minutes
130 C.	Six-component Distillation	28.3 minutes
131	Special Problems (Staff Training, etc.)	19.3 minutes
141	S&EC Subroutine Study	15.5 minutes

144 C.	Self-consistent Molecular Orbital	37.7 minutes
155 D.	Synoptic Climatology	194.9 minutes
156 A.	Reflection in a Semi-Infinite Rect. W.G.	9.3 minutes
167 D.	Batch Distillations with Holdup	14.4 minutes
172 B.	Overlap Integrals	170.0 minutes
183 D.	Scattering of Electrons from Hydrogen	128.1 minutes
194 B.	Augmented Plane Wave Method (Sodium)	87.7 minutes
195 C.	Intestinal Motility	12.7 minutes
199 C.	Compressible Flow in a Tube	88.1 minutes
203 C.	Response of a Building Under Dynamic Loading	4.5 minutes
204 C.	Exchange Integrals Between Real Slater Orbitals	96.9 minutes
212 C.	Dispersion Curves for Seismic Waves	27.4 minutes
216 C.	Ultrasonic Delay Lines	28.4 minutes
217 A.	Atomic Wave Function and Energies	22.9 minutes
218 C.	Stage B for Diatomic Molecules	3.8 minutes
219	Linear Programming	36.1 minutes
221	Course 6.25, 1954	7.0 minutes
222 B.	Helicopter Rotor Stability	19.4 minutes
223 C.	Investigation of Turbulent Flow	10.9 minutes
224 C.	Vertical Velocity Fields	351.8 minutes
225 B.	Neutron-Deuteron Scattering	111.6 minutes
228 A.	Evaluation of Difference Diffusion Equation	47.6 minutes
230 C.	Bridge Analysis	89.4 minutes
232 B.	Energy Levels in a Spheroidal Potential	3.9 minutes
233 C.	Utility Stock Prices	6.7 minutes
235 B.	Eigenvalues for a Spheroidal Square Well	40.2 minutes
236 C.	Transient Response of Aircraft to Heating	42.3 minutes

237 C.   Autocorrelation Function of Submitted Data   3.4 minutes

239 C.   Guidance and Control   71.1 minutes

241 B.   Transients in Distillation Columns   24.3 minutes

242 A.   No. of Structures of Relations on Finite Set   8.2 minutes

243 D.   Crystal Filters   8.3 minutes

244 C.   Data Reduction for X-1 Fire Control   7.1 minutes

1.3 Computer Time Statistics

The following indicates the distribution of WWI time allocated to the S&EC Group.

Programs	49 hours, 35.0 minutes
Magnetic Drum Test	29.1 minutes
Magnetic Tape Test	28.8 minutes
Scope Calibration	15.9 minutes
Demonstrations (#131)	19.3 minutes
Total Time Used	51 hours, 8.1 minutes
Total Time Assigned	52 hours, 50.1 minutes
Usable Time, Percentage	96.79%
Number of Programs	448

2. LIBRARY ADDITIONS

The following is an addition to the list of S&EC internal publications.

No.	Title	Author
DCL-28	Electronic Computers for Business (First Draft of Table of Contents)	Adams and Gill.
DCL-29	S&EC Biweekly November 15, 1954	
DCL-30	S&EC Biweekly November 29, 1954	
DCL-31	List of Short Titles of Problems	
DCL-32	Laboratory Personnel List, December 1, 1954	G. Nagle
DCL-33	Library Accessions List December 1, 1954	M. Marean
DCL-34	Credit Allowance List	

DCL-35 Purchase Order List

DCL-36 Biweekly Report, 13 December 1954

DCL-37 WWI Computer Schedule for Group 6345   J. Porter

DCL-38 Laboratory Personnel List, 1 January 1955

DCL-39 Biweekly Report, 27 December 1954

DCL-40 Memo to All Red Temporary Badge Holders   M. Marean

DCL-41 An ERA 1103 Translation Program   J. Frankovich

DCL-42 Visitors Report (form)

DCL-43 Memo on Visitors   C. Nagle

DCL-44 Biweekly Report, 10 January 1955

DCL-45 Number Systems (for Training Course)   D. Arden

DCL-46 Letter about Expended Time   J. Porter

DCL-47 Payroll Demonstration Routine   B. Riskin

DCL-48 Automatic Scope Output Requests   A. Siegel and
                                                      S. Best

DCL-49 A Proposed Translation Program for the
        Numerically Controlled Milling Machine   A. Siegel

DCL-50 Biweekly Report, 24 January 1955