Digital Computer Laboratory
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

To: Jay W. Forrester

From: Scientific and Engineering Computations Group

SUBJECT: BIWEEKLY REPORT, APRIL 1, 1956

1. MATHEMATICS, CODING AND APPLICATIONS

1.1 Introduction

During the past two weeks 447 coded programs were run on the time allocated to the Scientific and Engineering (S and EC) Group. These programs represent part of the work that has been done on 55 of the problems that have been accepted by the S&EC Group.

1.2 Programs and Computer Operation

Problem No.	Title	Minutes
100	Comprehensive System of Service Routines	83.0
106 C.	MIT Seismic Project	29.6
122 N.	Coulomb Wave Functions	20.0
126 D.	Data Reduction	83.6
131	Special Problems (Staff Training, etc.)	24.5
141	S and EC Subroutine Study	7.7
162 N.	Nuclear Scattering Phase-Shifts	38.4
172 B,N.	Energy Bands in Graphite	152.5
193 L.	E. V. Problem for Propagation of E. M. Waves	44.1
194 B,N.	Augmented Plane Wave Method (Sodium)	100.8
203 D,N.	Response of a Building Under Dynamic Loading	6.1
204 N.	Exchange Integrals Between Real Slater Orbitals	9.7
216 C.	Ultrasonic Delay Lines	203.0
219	Linear Programming	32.7
226 D.	Circulation of the Atmosphere	16.5
231 B,N.	Reactor Runaway Prevention	12.2
234 N.	Atomic Integrals	2.5
240 A.	Electrons and Photons in Cascade	1.8

241 B,N.	Transients in Distillation Columns	40.6
245 N.	Theory of Neutron Reactions	84.4
246 B,N.	Scattering From Oxygen	90.9
253 N.	APW as Applied to Face-and Body-Centered Iron	52.0
256 C.	WWI-1103 Translation Program	68.0
257 C.	Horizontal Stabilizer Analysis	104.1
260 N.	Energy Levels of Diatomic Hydrides	171.1
261 C.	Fourier Synthesis for Crystal Structures	11.5
262 N.	Evaluation of Two-Center Molecular Integrals	73.3
266 A.	Calculations for the MIT Reactor	11.2
270 B.	Critical Mass Calculations	34.7
273 N.	Cosmic Ray Air Shower	92.8
275 B.	Buckling of Shallow Elastic Shells	49.1
278 N.	Energy Levels of Diatomic Hydrides LiH	55.2
285 N.	APW as Applied to Chromium Crystal	15.3
288 N.	Atomic Wave Functions	100.2
290 N.	Polarizability Effects in Atoms and Molecules	97.6
297 B.	Diffusion Boundary Layer	35.2
306 D.	Spectral Analysis of Atmospheric Data	7.3
309 B,N.	Pure and Impure Potassium Chloride Crystal	119.4
312 L.	Error Analysis	36.7
314 C.	Factoring High Order Polynomials	9.7
317 C.	Stability Derivatives from Flight Test Data	30.1
319 B,N.	Scattering from a Spheroidal Potential	219.3
327 L.	Prediction Analysis	210.9
333 A.	Combustion Problem	74.4
334 C.	Parametric Study of Coupling and Damping	5.2
337 N.	Nonlinear 2nd Order Differential Equations	66.7
338 C.	Optimization of Ram-Air Cooling Systems	73.8
341 C.	Statistical and Dynamic Methods in Forecasting	113.4
343 C.	Weather Prediction	15.6
345 B.	Matrix Multiplication	24.2
348 A.	Wave Propagation	5.8
351 B.	Non-Uniform Fuel Distribution	12.8
352 B.	Propeller Shafting Lateral Vibrations	11.9

353 A.	Waiting Line---Constant Holding Time	10.6
354 D.	Response of a Single Story Concrete Building	4.0

1.3 Computer Time Statistics

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

Programs	51 Hrs.	23.2 min.
Magnetic Drum Test	--	--
Magnetic Tape Test		53.6 min.
Scope Calibration		7.0 min.
PETR Test		20.4 min.
Test Storage Check		9.6 min.
Demonstrations (No. 131)		24.5 min.
Total Time Logged	53 hrs.	18.3 min.
Division 6 Conversions, Inter-run Operations, etc.	14 hrs.	41.3 min.
Total Time Assigned	68 hrs.	49.6 min.
Usable Time, Percentage	98.78%	
Number of Programs	447	