

Digital Computer Laboratory
 Massachusetts Institute of Technology
 Cambridge 39, Massachusetts

SUBJECT: BIWEEKLY REPORT, JUNE 10, 1956

To: Jay W. Forrester

From: Scientific and Engineering Computation Group

1. MATHEMATICS, CODING AND APPLICATIONS

1.1 Introduction

During the past two weeks 560 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 56 of the problems that have been accepted by the S and EC Group.

1.2 Programs and Computer Operation

<u>Problem No.</u>	<u>Title</u>	<u>Minutes</u>
100	Comprehensive System of Service Routines	248.1
106 C.	MIT Seismic Project	41.0
122 N.	Coulomb Wave Functions	53.8
126 D.	Data Reduction	130.2
131	Special Problems (Staff Training, etc.)	36.1
141	S and EC Subroutine Study	7.1
172 B,N.	Energy Bands in Graphite	9.9
193 L.	E.V. Problem for Propagation of E.M. Waves	136.5
194 B,N.	Augmented Plane Wave Method (Sodium)	288.0
199 N.	Compressible Flow in a Tube	28.0
203 D,N.	Response of a Building Under Dynamic Loading	74.2
217 N.	Atomic Wave Function and Energies	2.3
219	Linear Programming	13.9

DCL-131		2
231 B,N.	Reactor Runaway Prevention	13.2
240 A.	Electrons and Photons in Cascade	10.0
241 B,N.	Transients in Distillation Columns	49.9
245 N.	Theory of Neutron Reactions	614.2
253 N.	APW as Applied to Face- and Body-Centered Iron	8.9
256 C.	WWI-1103 Translation Program	10.8
257 C.	Horizontal Stabilizer Analysis	215.1
261 C.	Fourier Synthesis for Crystal Structures	75.6
262 N.	Evaluation of Two-center Molecular Integrals	87.0
264 C.	Optimization of Alternator Control System	33.1
266 A.	Calculations for the MIT Reactor	9.5
273 N.	Cosmic Ray Air Shower	14.7
278 N.	Energy Levels of Diatomic Hydrides LiH	260.1
285 N.	APW as Applied to Chromium Crystal	19.8
288 N.	Atomic Wave Functions	199.7
290 N.	Polarizability Effects in Atoms and Molecules	45.5
300 L.	Tropospheric Propagation	23.9
306 D.	Spectral Analysis of Atmospheric Data	33.6
312 L.	Error Analysis	12.0
315 C.	Torpedo Hit Distribution	284.6
317 C.	Stability Derivatives from Flight Test Data	22.6
319 B,N.	Scattering from a Spheroidal Potential	15.7
326 C.	Production for Transportation Study	21.1
327 L.	Prediction Analysis	8.1
334 C.	Parametric Study of Coupling and Damping	23.2
336 C.	Pattern Identification	10.2

DCL-131		3
337 N.	Nonlinear 2nd Order Differential Equations	14.2
341 C.	Statistical and Dynamic Methods in Forecasting	345.1
342 B.	Transient Heat Flow in Solids	100.1
343 C.	Weather Prediction	22.2
350 D.	Computation of Variances and Covariances	121.1
354 D.	Response of a Single Story Concrete Building	36.1
360 B.	Dynamic Response of Shear Walls	126.6
361 B,N.	Growth of Fatigue Cracks	3.9
363 A.	Asymptotic Integration of Equations Concerning Torroidal Shell	8.6
364 C.	Blast Response of Rotor Blades	15.0
365	Finding Eigenvalues of an Asymmetric Matrix	109.7
367 B.	Determination of Critical Mass.	32.8
369	Temperature Distribution in a Beam	213.7
371 L.	Atmospheric Propagation of Radio Waves	61.9
372 B.	Design of Spherical Shell Segments	3.0
373 B.	Flux Leveling in Homogeneous Reactor - Part I.	.5
377 L.	Coverage Analysis	24.7

1.3 Computer Time Statistics

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

S&EC Programs	68 hrs.	47.2 min.
Lincoln Programs	4 hrs.	27.1 min.
Magnetic Drum Test		0.0 min.
Magnetic Tape Test	1 hr.	14.8 min.
Scope Calibration		11.8 min.
PETR Test		31.1 min.
Test Storage Check		12.6 min.
Demonstrations (no. 131)		36.1 min.
Total Time Logged	76 hrs.	0.7 min.
Div. 6 Conversions, Inter-run Operations, etc.	12 hrs.	54.8 min.
Total Time Assigned	95 hrs.	9.5 min.
Usable Time, Percentage	93.45%	
Number of Programs	560	