Digital Computer Laboratory
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

SUBJECT: BIWEEKLY REPORT, JANUARY 23, 1956

To: Jay W. Forrester

From: Scientific and Engineering Computation Group

1. MATHEMATICS, CODING AND APPLICATIONS

1.1 Introduction

During the past two weeks 627 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 64 of the problems that have been accepted by the S and EC Group.

1.2 Programs and Computer Operation

Problem No.	Title	Minutes
100	Comprehensive System of Service Routines	204.6
106 C.	MIT Seismic Project	87.1
120 B,N.	The Aerothermopressor	24.1
122 N.	Coulomb Wave Functions	5.8
126 D.	Data Reduction	174.3
131	Special Problems (Staff Training,etc.)	83.6
141	S and EC Subroutine Study	11.3
155 N.	Synoptic Climatology	19.4
172 B,N.	Overlap Integrals	147.5
179 C.	Transient Temperature of a Box-Type Beam	18.2
193 L.	E.V. Problem for Propagation of E.M. Waves	34.1
194 B,N.	Augumented Plane Wave Method (Sodium)	63.0
203 D,N.	Response of a Building Under Dynamic Loading	3.6
219	Linear Programming	45.4
225 B,N.	Neutron-Deutron Scattering	65.5
226 D.	Circulation of the Atmosphere	47.2

231	B,N.	Reactor Runaway Prevention	61.5
236	C.	Transient Response of Aircraft to Heating	8.8
241	B,N.	Transients in Distillation Columns	4.2
245	N.	Theory of Neutron Reactions	8.5
246	B,N.	Scattering From Oxygen	69.5
253	N.	APW as Applied to Face- and Body-Centered Iron	159.9
256	C.	WWI -1103 Translation Program	22.1
257	C.	Horizontal Stabilizer Analysis	59.1
260	N.	Energy Levels of Diatomic Hydrides	111.1
261	C.	Fourier Synthesis for Crystal Structures	162.8
262	N.	Evaluation of Two-center Molecular Integrals	63.7
264	C.	Optimization of Alternator Control System	30.6
266	A.	Calculations for the MIT Reactor	166.8
270	B.	Critical Mass Calculations	148.6
272	L.	General Raydist Solution	7.1
273	N.	Cosmic Ray Air Shower	49.9
274	N.	Multiple Scattering	19.5
275	B.	Buckling of Shallow Elastic Shells	108.4
277	C.	Horizontal Stabilizer Study	3.9
278	N.	Energy Levels of Diatomic Hydrides LiH	23.2
285	N.	APW as Applied to Chromium Chrystal	18.7
288	N.	Atomic Wave Functions	56.9
290	N.	Polarizability Effects in Atoms and Molecules	200.9
293	C.	Rolling Bearings	16.5
300	L.	Tropospheric Propagation	33.6
306	D.	Spectral Analysis of Atmospheric Data	8.3
309	B,N.	Pure and Impure Potassium Chloride Chrystal	43.5
312	L.	Error Analysis	132.8
315	C.	Torpedo Hit Distribution	94.7
317		Stability Derivatives from Flight Test Data	15.9
318	C.	3D Aero-dynamic-Lead-Pursuit Study	35.4
320	B,N.	Moment of Inertia of a Spheroidal Nucleus	16.8
322		The Maximum Bubble Size	93.2
323	N.	Analysis of Cloud Chamber Photographs	5.4
325	B.	Diffusion Equation	36.2

327 L.	Prediction Analysis	133.1
330 C.	Postfailure Response of Aircraft Structures Subjected to Blast Loading	5.3
332 C.	Game Theory Optimization	69.5
333 A.	Combustion Problem	69.6
334 C.	Parametric Study of Coupling and Damping	44.7
335 D.	Course 6.25 Fall 1955	9.2
336 C.	Pattern Identification	20.2
338 C.	Optimization of Ram-Air Cooling Systems	23.9
339 A	Numerical Treatment of a Fourth Order Parabolic Partial Differential Equation	2.4
340 B,N.	Self Energy and Mass of the Polaron, Feynman Theory	23.1
343	Weather Prediction	13.6
344 B.	Dynamic Programming	32.9
347 B.	Solving Simultaneous Equations	7.6

1.3 Computer Time Statistics

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

Programs	58 hours, 24.2 minutes
Magnetic Drum Test	0.0 minutes
Magnetic Tape Test	1 hour , 17.0 minutes
Scope Calibration	21.5 minutes
PETR Test	29.6 minutes
Test Storage Check	13.6 minutes
Demonstrations (No.131)	1 hour, 23.6 minutes
Total Time Logged	62 hours, 9.5 minutes
Inter-run Operations, etc.	20 hours, 52.4 minutes
Total Time Assigned	83 hours, 5.9 minutes
Usuable Time, Percentage	99.92%
Number of Programs	627