Digital Computer Laboratory
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

SUBJECT: BIWEEKLY REPORT, March 17, 1957

To: Frank M. Verzuh

From: Scientific and Engineering Computation Group

1. MATHEMATICS, CODING AND APPLICATIONS

1.1 Introduction

During the past two weeks 488 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 46 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	59.7
106 C.	MIT Seismic Project	53.4
126 D.	Data Reduction	104.4
131	Special Problems (Staff Training, etc.)	56.8
141	S and EC Subroutine Study	1.3
193 L.	E.V. Problem for Propagation of E.M. Waves	191.0
194 B,N.	Augmented Plane Wave Method (Sodium)	322.2
203 D,N.	Response of a Building Under Dynamic Loading	250.5
204 N.	Exchange Integrals Between Real Slater Orbitals	71.3
219	Linear Programming	13.3
236 C.	Transient Response of Aircraft Structures to Aerodynamic Heating	3.3
245 N.	Theory of Neutron Reactions	78.4
253 N.	APW as Applied to Face- and Body-Centered Iron	50.5
256 C.	WWI-1103 Translation Program	12.9
257 C.	Horizontal Stabilizer Analysis	51.0
260 N.	Energy Levels of Diatomic Hydrides	52.2
261 C.	Fourier Synthesis for Crystal Structures	16.0
262 N.	Evaluation of Two-center Molecular Integrals	147.3
273 N.	Cosmic Ray Air Shower	361.8
278 N.	Energy Levels of Diatomic Hydrides LiH	260.5
285 N.	APW as Applied to Chromium Crystal	35.3
290 N.	Polarizability Effects in Atoms and Molecules	28.1
310 C.	Rocket Trajectory Calculations	113.1
312 L.	Error Analysis	89.3

317 C.	Stability Derivatives from Flight Test Data	160.4
327 L.	Prediction Analysis	349.9
328 B.	Buried Elastic Wave Source	16.1
334 C.	Parametric Study of Coupling and Damping	5.1
336 C.	Pattern Identification	112.9
341 C.	Statistical and Dynamic Methods in Forecasting	163.0
350 D.	Computation of Variances and Covariances	44.7
361 B,N.	Growth of Fatigue Cracks	8.6
364 C.	Blast Response of Rotor Blades	44.1
368 B,N.	Condensation in a Vertical Tube	57.6
377 L.	Coverage Analysis	82.4
380 B.	Switching Circuits	30.1
384 B.	Prompt Neutron Emission Probability	152.5
386 C.	Free Convection	48.0
387 C.	Determination of Velocity Potential	12.9
388 D.	Temperature Distribution Aircraft Generators	64.5
389 D.	Supersonic Flow of Air in a Tube	34.8
390 B.	Mitchell's Wave-Making Integral	91.0
394 C.	Automatic Programming for Machine Tools	13.0
395 L.	Phase Error Calculation	2.5
404 B.	Core Optimization	15.2

1.3 Computer Time Statistics

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

S and EC Programs	52 hrs.	41.0 min.
Lincoln Programs	11 hrs.	55.1 min.
Magnetic Tape Test		40.8 min.
Scope Calibration		10.2 min.
PETR Test		21.4 min.
Test Storage Check		4.4 min.
Demonstrations (No. 131)		56.8 min.
Total Time Logged	66 hrs.	59.5 min.
Div. 6 Conversions, Inter-run Operations, etc.	6 hrs.	59.5 min.
Total Time Assigned	77 hrs.	23.2 min.
Usable Time, Percentage	95.39 %	
Number of Programs	488	

N.B. Quarterly Progress Report forms are due April 5, 1957.