

Digital Computer Laboratory
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

SUBJECT: BIWEEKLY REPORT, SEPTEMBER 16, 1956

To: Frank M. Verzuh

From: Scientific and Engineering Computation Group

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 39 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	103.3
120 B,N.	The Aerothermopressor	35.6
126 D.	Data Reduction	34.1
131	Special Problems (Staff Training, etc.)	6.7
141	S and EC Subroutine Study	15.1
162 N.	Nuclear Scattering Phase-Shifts	9.5
193 L.	E.V. Problem for Propagation of E.M. Waves	413.5
194 B,N.	Augmented Plane Wave Method (Sodium)	34.2
204 N.	Exchange Integrals Between Real Slater Orbitals	31.9
219	Linear Programming	6.9
225 B,N.	Neutron-Deuteron Scattering	18.4
226 D.	Circulation of the Atmosphere	34.6
236 C.	Transient Response of Aircraft to Heating	10.9
253 N.	APW as Applied to Face- and Body-Centered Iron	9.6
257 C.	Horizontal Stabilizer Analysis	125.2
260 N.	Energy Levels of Diatomic Hydrides	17.1
261 C.	Fourier Synthesis for Crystal Structures	38.7
274 N.	Multiple Scattering	19.5
278 N.	Energy Levels of Diatomic Hydrides LiH	599.1
285 N.	APW as Applied to Chromium Crystal	10.2
288 N.	Atomic Wave Functions	747.8
300 L.	Tropospheric Propagation	325.5
310 C.	Rocket Trajectory Calculations	463.0
312 L.	Error Analysis	40.7

317 C.	Stability Derivatives from Flight Test Data	141.7
326 C.	Production for Transportation Study	162.1
327 L.	Prediction Analysis	79.4
336 C.	Pattern Identification	40.6
341 C.	Statistical and Dynamic Methods in Forecasting	240.0
346 B.	Complex Spectrum Analysis	42.7
361 B,N.	Growth of Fatigue Cracks	1.7
362 B.	Fourier Synthesis for Crystal Structure	2.7
364 C.	Blast Response of Rotor Blades	37.3
371 L.	Atmospheric Propagation of Radio Waves	3.9
376 N.	Flight Simulation	17.6
377 L.	Coverage Analysis	25.9
380 B.	Switching Circuits	4.1
382 B.	Calculation of Prime Numbers	1.6
384 B.	Prompt Neutron Emission Probability	66.2

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.	3.0 min.
Lincoln Programs	14 hrs.	48.9 min.
Magnetic Tape Test		53.1 min.
Scope Calibration		14.3 min.
PETR Test		18.9 min.
Test Storage Check		8.8 min.
Demonstrations (No. 131)f		6.7 min.
Total Time Logged	68 hrs.	33.7 min.
Div. 6 Conversions, Inter-run Operations, etc.	5 hrs.	58.1 min.
Total Time Assigned	75 hrs.	47.8 min.
Usable Time, Percentage	98.33%	
Number of Programs	447	