

Digital Computer Laboratory
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

SUBJECT: BIWEEKLY REPORT, AUGUST 19, 1956

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From: Scientific and Engineering Computation Group

1. MATHEMATICS, CODING AND APPLICATIONS

1.1 Introduction

During the past two weeks 537 coded programs were run on the time allocated to the Scientific and Engineering (S&EC) Group. These programs represent part of the work that has been done on 47 of the problems that have been accepted by the S&EC Group.

1.2 Programs and Computer Operation

<u>Problem No.</u>	<u>Title</u>	<u>Minutes</u>
100	Comprehensive System of Service Routines	86.6
106 C.	MIT Seismic Project	6.1
126 D.	Data Reduction	171.8
131	Special Problems (Staff Training, etc.)	62.5
141	S&EC Subroutine Study	3.4
162 N.	Nuclear Scattering Phase-Shifts	15.9
193 L.	E.V. Problem for Propagation of E.M. Waves	180.6
194 B,N.	Augmented Plane Wave Method (Sodium)	300.3
226 D.	Circulation of the Atmosphere	10.2
236 C.	Transient Response of Aircraft to Heating	2.2
240 A.	Electrons and Photons in Cascade	1.5
245 N.	Theory of Neutron Reactions	230.2
253 N.	APW as Applied to Face- and Body-Centered Iron	21.6
257 C.	Horizontal Stabilizer Analysis	81.5
261 C.	Fourier Synthesis for Crystal Structures	75.4
262 N.	Evaluation of Two-center Molecular Integrals	56.3
270 B.	Critical Mass Calculations	75.9
273 N.	Cosmic Ray Air Shower	399.1
274 N.	Multiple Scattering	41.4
278 N.	Energy Levels of Diatomic Hydrides LiH	444.6

285 N.	APW as Applied to Chromium Crystal	32.4
288 N.	Atomic Wave Functions	918.9
290 N.	Polarizability Effects in Atoms and Molecules	30.2
293 C.	Rolling Bearings	34.5
300 L.	Tropospheric Propagation	15.5
310 C.	Rocket Trajectory Calculations	204.9
312 L.	Error Analysis	33.5
317 C.	Stability Derivatives from Flight Test Data	152.2
327 L.	Prediction Analysis	198.1
334 C.	Parametric Study of Coupling and Damping	21.6
336 C.	Pattern Identification	20.7
341 C.	Statistical and Dynamic Methods in Forecasting	88.0
343 C.	Weather Prediction	33.9
346 B.	Complex Spectrum Analysis	56.9
351 B.	Non-Uniform Fuel Distribution	46.6
360 C.	Dynamic Response of Shear Walls	47.9
362 B.	Fourier Synthesis for Crystal Structure	21.2
363 A.	Asymptotic Integration of Equations	70.8
364 C.	Blast Response of Rotor Blades	21.8
367 B.	Determination of Critical Mass	18.1
372 B.	Design of Spherical Shell Segments	27.0
376 N.	Flight Simulation	117.9
377 L.	Coverage Analysis	13.8
380 B.	Switching Circuits	8.9
382 B.	Calculation of Prime Numbers	5.7
383 C.	Stokes Particle Velocities	6.8
384 B.	Prompt Neutron Emission Probability	4.3

1.3 Computer Time Statistics

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

S&EC Programs	66 hours, 55.2 minutes
Lincoln Programs	7 hours, 21.6 minutes
Magnetic Tape Test	1 hour, 1.2 minutes
Scope Calibration	10.9 minutes
PETR Test	23.4 minutes
Test Storage Check	12.9 minutes
Demonstrations (#131)	<u>1 hour, 2.5 minutes</u>
Total Time Logged	77 hours, 7.6 minutes
Div. 6 Conversions, Inter-run Operations, etc.	8 hours, 7.8 minutes
Total Time Assigned	88 hours, 1.4 minutes
Usable Time, Percentage	96.86%
Number of Programs	537