

Digital Computer Laboratory
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

SUBJECT: BIWEEKLY REPORT, SEPTEMBER 2, 1956

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From: Scientific and Engineering Computation Group

1. MATHEMATICS, CODING AND APPLICATIONS

1.1 Introduction

During the past two weeks 519 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 40 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	104.6
120 B,N.	The Aerothermopressor	22.7
126 D.	Data Reduction	73.9
131	Special Problems (Staff Training, etc.)	35.7
162 N.	Nuclear Scattering Phase-Shifts	14.3
193 L.	E.V. Problem for Propagation of E.M. Waves	260.3
194 B,N.	Augmented Plane Wave Method (Sodium)	118.2
203 D,N.	Response of a Building Under Dynamic Loading	88.9
204 N.	Exchange Integrals Between Real Slater Orbitals	30.0
226 D.	Circulation of the Atmosphere	18.9
244 C.	Data Reduction for X-1 Fire Control	23.2
253 N.	APW as Applied to Face- and Body-Centered Iron	10.5
257 C.	Horizontal Stabilizer Analysis	356.3
260 N.	Energy Levels of Diatomic Hydrides	80.2
261 C.	Fourier Synthesis for Crystal Structures	13.9
262 N.	Evaluation of Two-center Molecular Integrals	7.4
274 N.	Multiple Scattering	173.1
278 N.	Energy Levels of Diatomic Hydrides LiH	292.8
285 N.	APW as Applied to Chromium Crystal	33.0
288 N.	Atomic Wave Functions	1190.2
290 N.	Polarizability Effects in Atoms and Molecules	43.2
300 L.	Tropospheric Propagation	86.7
310 C.	Rocket Trajectory Calculations	169.1
312 L.	Error Analysis	51.7
317 C.	Stability Derivatives from Flight Test Data	136.3
326 C.	Production for Transportation Study	32.3
327 L.	Prediction Analysis	130.2
334 C.	Parametric Study of Coupling and Damping	74.4

336 C.	Pattern Identification	58.0
341.C.	Statistical and Dynamic Methods in Forecasting	92.8
346 B.	Complex Spectrum Analysis	26.7
360 (B)	Dynamic Response of Shear Walls	32.6
362 B.	Fourier Synthesis for Crystal Structure	12.9
363 A.	Asymptotic Integration of Equations	80.2
364 C.	Blast Response of Rotor Blades	14.1
371 L.	Atmospheric Propagation of Radio Waves	7.6
377 L.	Coverage Analysis	61.6
380 B.	Switching Circuits	6.3
382 B.	Calculation of Prime Numbers	18.1
384 B.	Prompt Neutron Emission Probability	16.9

1.3 Computer Time Statistics

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

S&EC Programs	57 hours, 46.0 minutes
Lincoln Programs	9 hours, 58.1 minutes
Magnetic Tape Test	56.5 minutes
Scope Calibration	19.1 minutes
PETR Test	25.4 minutes
Test Storage Check	9.6 minutes
Demonstrations (No. 131)	35.7 minutes
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Total Time Logged	70 hours, 10.4 minutes
Division 6 Conversions, Inter-run Operations, etc.	6 hours, 20.7 minutes
Total Time Assigned	79 hours, 0.1 minutes
Usable Time, Percentage	96.85%
Number of Programs	519