

Digital Computer Laboratory
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

SUBJECT: BIWEEKLY REPORT, SEPTEMBER 30, 1956

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From: Scientific and Engineering Computations Group

1. MATHEMATICS, CODING AND APPLICATIONS

1.1 Introduction

During the past two weeks 479 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	103.4
120 B,N.	The Aerothermopressor	80.6
126 D.	Data Reduction	263.9
162 N.	Nuclear Scattering Phase-Shifts	26.4
193 L.	E.V. Problem for Propagation of E.M. Waves	188.5
194 B,N.	Augmented Plane Wave Method (Sodium)	25.7
204 N.	Exchange Integrals Between Real Slater Orbitals	3.5
219	Linear Programming	17.9
225 B,N.	Neutron-Deuteron Scattering	21.5
226 D.	Circulation of the Atmosphere	52.5
245 N.	Theory of Neutron Reactions	23.9
253 N.	APW as Applied to Face- and Body-Centered Iron	5.7
257 C.	Horizontal Stabilizer Analysis	342.4

261 C.	Fourier Synthesis for Crystal Structures	47.0
264 C.	Optimization of Alternator Control System	17.2
273 N.	Cosmic Ray Air Shower	6.6
274 N.	Multiple Scattering	24.9
278 N.	Energy Levels of Diatomic Hydrides LiH	730.5
288 N.	Atomic Wave Functions	169.8
290 N.	Polarizability Effects in Atoms and Molecules	86.5
300 L.	Tropospheric Propagation	74.3
306 D.	Spectral Analysis of Atmospheric Data	22.9
310 C.	Rocket Trajectory Calculations	1081.0
312 L.	Error Analysis	51.5
317 C.	Stability Derivatives from Flight Test Data	109.2
327 L.	Prediction Analysis	83.4
336 C.	Pattern Identification	26.7
337 N.	Nonlinear 2nd Order Differential Equations	5.8
341 C.	Statistical and Dynamic Methods in Forecasting	29.6
343 C.	Weather Prediction	5.8
346 B.	Complex Spectrum Analysis	69.2
354 D.	Response of a Single Story Concrete Building	6.5
361 B,N.	Growth of Fatigue Cracks	6.7
364 C.	Blast Response of Rotor Blades	69.7
369	Temperature Distribution in a Beam	38.7
377 L.	Coverage Analysis	17.1
380 B.	Switching Circuits	28.3
382 B.	Calculation of Prime Numbers	16.7
385 B.	Feed Plate Location	1.8

1.3 Computer Time Statistics

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

S and EC Programs	59 hrs.	28.5 min.
Lincoln Programs	6 hrs.	54.8 min.
Magnetic Tape Test	1 hr.	7.1 min.
Scope Calibration		9.8 min.
PETR Test		26.2 min.
Test Storage Check		11.0 min.
Total Time Logged	68 hrs.	17.4 min.
Div. 6 Conversions, Inter-run Operations, etc.	5 hrs.	57.8 min.
Total Time Assigned	75 hrs.	8.2 min.
Usable Time, Percentage	98.82%	
Number of Programs	479	