

Digital Computer Laboratory
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

SUBJECT: BIWEEKLY REPORT, OCTOBER 14, 1956

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From: Scientific and Engineering Computation Group

1. MATHEMATICS, CODING AND APPLICATIONS

1.1 Introduction

During the past two weeks 387 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 41 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	99.4
106 C.	MIT Seismic Project	16.6
126 D.	Data Reduction	213.9
131	Special Problems (Staff Training, etc.)	8.8
141	S and EC Subroutine Study	7.6
162 N.	Nuclear Scattering Phase-Shifts	24.2
193 L.	E.V. Problem for Propagation of E.M. Waves	84.5
204 N.	Exchange Integrals Between Real Slater Orbitals	41.7
219	Linear Programming	16.1
225B,N.	Neutron-Deuteron Scattering	5.2
226 D.	Circulation of the Atmosphere	35.3
253 N.	APW as Applied to Face-and Body-Centered Iron	2.4

DCL-147		2
256 C.	WWI -1103 Translation Program	41.2
257 C.	Horizontal Stabilizer Analysis	145.5
261 C.	Fourier Synthesis for Crystal Structures	45.2
264 C.	Optimization of Alternator Control System	3.5
273 N.	Cosmic Ray Air Shower	729.2
274 N.	Multiple Scattering	24.7
278 N.	Energy Levels of Diatomic Hydrides LiH	425.2
300 L.	Tropospheric Propagation	429.5
306 D.	Spectral Analysis of Atmospheric Data	17.3
310 C.	Rocket Trajectory Calculations	418.8
312 L.	Error Analysis	48.0
317 C.	Stability Derivatives from Flight Test Data	33.6
327 L.	Prediction Analysis	54.6
336 C.	Pattern Identification	78.9
337 N.	Nonlinear 2nd Order Diff. Eqs.	24.4
341 C.	Statistical and Dynamic Methods in Forecasting	189.3
343 C.	Weather Prediction	18.4
346 B.	Complex Spectrum Analysis	74.2
350 D.	Computation of Variances and Covariances	55.2
361 B,N.	Growth of Fatigue Cracks	11.9
364 C.	Blast Response of Rotor Blades	28.2
369	Temperature Distribution in a Beam	29.8
372 B.	Design of Spherical Shell Segments	7.0
377 L.	Coverage Analysis	22.2
382 B.	Calculation of Prime Numbers	14.0

DCL-147		3
383 C.	Stokes Particle Velocities	4.2
385 B.	Feed Plate Location	11.1
387 C.	Determination of Velocity Potential	3.5
388 D.	Temperature Distribution in Aircraft Generators	30.2

1.3 Computer Time Statistics

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

S and EC Programs	48 hrs.	46.9 min.
Lincoln Programs	10 hrs.	38.8 min.
Magnetic Tape Test		47.7 min.
Scope Calibration		9.9 min.
PETR Test		21.1 min.
Test Storage Check		9.0 min.
Demonstrations (No. 131)		8.8 min.
Total Time Logged	61 hrs.	2.2 min.
Div. 6 Conversions, Inter-run Operations, etc.	14 hrs.	39.8 min.
Total Time Assigned	77 hrs.	43.0 min.
Usable Time, Percentage	97.41%	
Number of Programs	387	