

Digital Computer Laboratory
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

SUBJECT: BIWEEKLY REPORT, JANUARY 20, 1957
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From: Scientific and Engineering Computation Group

1. MATHEMATICS, CODING AND APPLICATIONS

1.1 Introduction

During the past two weeks 361 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 45 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	67.1
106 C.	MIT Seismic Project	3.6
126 D.	Data Reduction	75.3
131	Special Problems (Staff Training, etc.)	49.0
141	S and EC Subroutine Study	11.9
193 L	E.V. Problem for Propagation of E.M. Waves	135.5
194 B,N.	Augmented Plane Wave Method (Sodium)	129.1
199 N.	Compressible Flow in a Tube	18.9
203 D,N.	Response of a Building Under Dynamic Loading	33.1
219	Linear Programming	34.1
231 B,N.	Reactor Runaway Prevention	56.8
245 N.	Theory of Neutron Reactions	156.2
253 N.	APW as Applied to Face- and Body-Centered Iron	21.1
257 C.	Horizontal Stabilizer Analysis	40.9
260 N.	Energy Levels of Diatomic Hydrides	22.5
261 C.	Fourier Synthesis for Crystal Structures	22.8
262 N.	Evaluation of Two-center Molecular Integrals	26.3
273 N.	Cosmic Ray Air Shower	160.6

274 N.	Multiple Scattering	38.5
278 N.	Energy Levels of Diatomic Hydrides LiH	55.0
288 N.	Atomic Wave Functions	24.1
300 L.	Tropospheric Propagation	233.6
312 L.	Error Analysis	3.7
317 C.	Stability Derivatives from Flight Test Data	70.2
326 C.	Production for Transportation Study	219.2
327 L.	Prediction Analysis	135.5
335 A.	Course 6.25	3.4
337 N.	Nonlinear 2nd Order Diff. Eqs.	1.6
341 C.	Statistical and Dynamic Methods in Forecasting	84.9
361 B,N.	Growth of Fatigue Cracks	5.7
364 C.	Blast Response of Rotor Blades	15.0
377 L.	Coverage Analysis	32.7
380 B.	Switching Circuits	7.9
382 B.	Calculation of Prime Numbers	12.9
384 B.	Prompt Neutron Emission Probability	35.2
386 C.	Free Convection	22.6
388 D.	Temperature Distribution Aircraft Generators	20.7
390 B.	Hitchell's Wave Making Integral	17.7
391 L.	Magnetic Relaxation in Thin Films	14.1
394 C.	Automatic Programming for Machine Tools	25.0
396	Subroutine Study	51.3
398 A.	Diagonalization of Matrices	67.7
399 L.	Domain Wall Motion	126.5
400 C.	Temperature and Stress Response	32.6
401 N.	Non-Stationary Queueing Problems	9.9

1.3 Computer Time Statistics

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

S and EC Programs	28 hrs.	21.4 min.
Lincoln Programs	11 hrs.	21.6 min.
Magnetic Tape Test		50.2 min.

Scope Calibration	10.7 min.
PETR Test	19.6 min.
Test Storage Check	12.5 min.
Demonstrations (No. 131)	49.0 min.
Total Time Logged	42 hrs. 5.0 min.
Div. 6 Conversions, Inter-run Operations, etc.	6 hrs. 21.0 min.
Total Time Assigned	49 hrs. 10.0 min.
Usable Time, Percentage	98.51%
Number of Programs	361