

Digital Computer Laboratory
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

SUBJECT: BIWEEKLY REPORT, MARCH 3, 1957

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From: Scientific and Engineering Computation Group

1. MATHEMATICS, CODING AND APPLICATIONS

1.1 Introduction

During the past two weeks 371 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 47 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	46.7
106 C.	MIT Seismic Project	29.0
126 D.	Data Reduction	184.2
131	Special Problems (Staff Training, etc.)	14.4
141	S and EC Subroutine Study	51.7
162 N.	Nuclear Scattering Phase-Shifts	13.1
193 L.	E.V. Problem for Propagation of E.M. Waves	199.6
194 B,N.	Augmented Plane Wave Method (Sodium)	98.9
199 N.	Compressible Flow in a Tube	61.7
203 D,N.	Response of a Building Under Dynamic Loading	297.7
236 C.	Transient Response of Aircraft Structures	5.4
245 N.	Theory of Neutron Reactions	34.5
253 N.	APW as Applied to Face- and Body-Centered Iron	76.0
257 C.	Horizontal Stabilizer Analysis	5.0
260 N.	Energy Levels of Diatomic Hydrides	3.9
261 C.	Fourier Synthesis for Crystal Structures	25.9
262 N.	Evaluation of Two-center Molecular Integrals	131.5
273 N.	Cosmic Ray Air Shower	331.1
278 N.	Energy Levels of Diatomic Hydrides LiH	394.9
285 N.	APW as Applied to Chromium Crystal	9.8
290 N.	Polarizability Effects in Atoms and Molecules	4.8
310 C.	Rocket Trajectory Calculations	75.6
312 L.	Error Analysis	33.3
317 C.	Stability Derivatives from Flight Test Data	62.6
326 C.	Production for Transportation Study	37.8
327 L.	Prediction Analysis	140.8

334 C.	Parametric Study of Coupling and Damping	11.4
336 C.	Pattern Identification	14.5
337 N.	Nonlinear 2nd Order Diff. Eqs.	5.4
341 C.	Statistical and Dynamic Methods in Forecasting	219.6
350 D.	Computation of Variances and Covariances	94.9
361 B,N.	Growth of Fatigue Cracks	3.4
364 C.	Blast Response of Rotor Blades	28.7
368 B,N.	Condensation in a Vertical Tube	43.3
377 L.	Coverage Analysis	23.3
380 B.	Switching Circuits	24.8
384 B.	Prompt Neutron Emission Probability	4.8
386 C.	Free Convection	25.4
387 C.	Determination of Velocity Potential	36.3
388 D.	Temperature Distribution Aircraft Generators	5.7
389 D.	Supersonic Flow of Air in a Tube	38.7
390 B.	Mitchell's Wave-Making Integral	35.7
394 C.	Automatic Programming for Machine Tools	9.9
396	Subroutine Study	7.9
397 N.	Response Function of Air Shower Detectors	26.9
401 N.	Non-Stationary Queuing Problems	12.9
402 N.	Monte Carlo Inventory Control Study	1.0

1.3 Computer Time Statistics

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

S and EC Programs	43 hrs.	26.1 min.
Lincoln Programs	7 hrs.	3.9 min.
Magnetic Tape Test		37.8 min.
Scope Calibration		8.1 min.
PETR Test		20.2 min.
Test Storage Check		4.0 min.
Demonstrations (No.131)		14.4 min.
Total Time Logged	51 hrs.	54.5 min.
Div. 6 Conversion, Inter-run Operations, etc.	5 hrs.	35.0 min.
Total Time Assigned	58 hrs.	34.5 min.
Usable Time, Percentage	98.15%	
Number of Programs	371	