

Digital Computer Laboratory
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

SUBJECT: BIWEEKLY REPORT, July 11, 1955

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From: Scientific and Engineering Computation Group

1. MATHEMATICS, CODING AND APPLICATIONS

1.1 Introduction

During the past two weeks 415 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 49 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	233.9
120 B,N.	The Aerothermopressor	237.2
122 N.	Coulomb Wave Functions	6.9
126 D.	Data Reduction	352.5
131	Special Problems (Staff Training, etc.)	46.8
132 D.	N. C. Milling Machine	22.4
141	S and EC Subroutine Study	240.4
144 N.	Self-consistent Molecular Orbital	31.6
155 N.	Synoptic Climatology	49.0
172 B,N.	Overlap Integrals	2.5
193 L.	E.V. Problem for Propagation of E.M. Waves	32.5
195 C.	Intestinal Motility	7.6
199 N.	Compressible Flow in a Tube	12.1

203 D,N.	Response of a Building Under Dynamic Loading	5.9
204 N.	Exchange Integrals Between Real Slater Orbitals	1.1
212 B,N.	Dispersion Curves for Seismic Waves	35.1
218 N.	Stage B for Diatomic Molecules	19.7
224 N.	Vertical Velocity Fields	70.3
225 B,N.	Neutron-Deuteron Scattering	4.0
226 D.	Circulation of the Atmosphere	35.0
235 B,N.	Eigenvalues for a Spheroidal Square Well	307.4
236 C.	Transient Response of Aircraft to Heating	29.2
238 B,N.	Self-consistent Calculation of Nuclear Density	28.5
239 C.	Guidance and Control	21.1
241 B,N.	Transients in Distillation Columns	22.2
245 N.	Theory of Neutron Reactions	16.8
246 B,N.	Scattering From Oxygen	15.7
248 B.	Propane Vibrations	6.8
253 N.	APW as Applied to Face- and Body-Centered Iron	5.7
256 C.	WWI -1103 Translation Program	33.6
258 C.	Dynamic Analysis of an Aircraft Interceptor	43.7
259 L.	Ionosphere Computation	25.9
260 N.	Energy Levels of Diatomic Hydrides	16.8
261 C.	Fourier Synthesis for Crystal Structures	71.2
262 N.	Evaluation of Two-center Molecular Integrals	9.8
266 A.	Calculations for the MIT Reactor	277.7
270 B.	Critical Mass Calculations	20.5
271 B.	Beam Splitting Technique	27.1
272 L.	General Raydist Solution	28.7
274 N.	Multiple Scattering	3.3

278 N.	Energy Levels of Diatomic Hydrides LiH	23.9
291 B.	Dynamic Buckling	1.6
295 C.	Electron Collision Frequency	12.4
297 B.	Diffusion Boundary Layer	36.9
298 C.	Dipole Moments	5.4
299 C.	Heat Transfer in Turbulent Flow	9.4
300 L.	Tropospheric Propagation	2.2
301 C.	Fourier Synthesis	11.7
302	Partially Continuous Wooden Beams	6.5

1.3 Computer Time Statistics

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

Programs	42 hrs.	1.4 min.
Magnetic Drum Test		25.8 min.
Magnetic Tape Test		43.5 min.
Scope Calibration		12.2 min.
PETR Test		12.4 min.
Test Storage Check		3.1 min.
Demonstrations (No.131)		46.8 min.
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Total Time Logged	44 hrs.	25.2 min.
Div. 6 Conversions, Inter-run Operations, etc.	10 hrs.	54.0 min.
Total Time Assigned	56 hrs.	38.2 min.
Usable Time, Percentage		97.9 o/o
Number of Programs	415	