

Digital Computer Laboratory
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

SUBJECT: BIWEEKLY REPORT, OCTOBER 2, 1955

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From: Scientific and Engineering Computation Group

1. MATHEMATICS, CODING AND APPLICATIONS

1.1 Introduction

During the past two weeks 469 coded programs were run on the time allocated to the Scientific and Engineering (S&EC) Group. These programs represent part of the work that has been done on 48 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	167.9
120 B,N.	The Aerothermopressor	37.3
122 N.	Coulomb Wave Functions	29.8
126 D.	Data Reduction	36.7
131	Special Problems (Staff Training, etc.)	68.7
141	S and EC Subroutine Study	6.0
155 N.	Synoptic Climatology	14.6
177 C.	Low Aspect Ratio Flutter	40.5
179 C.	Transient Temperature of a Box-Type Beam	8.2
193 L.	E.V. Problem for Propagation of E. M. Waves	56.2
194 B,N.	Augmented Plane Wave Method (Sodium)	56.8
199 N.	Compressible Flow in a Tube	9.6
204 N.	Exchange Integrals Between Real Slater Orbitals	134.2
216 C.	Ultrasonic Delay Lines	49.2
219	Linear Programming	63.9
226 D.	Circulation of the Atmosphere	68.5
231 B,N.	Reactor Runaway Prevention	75.3
235 B,N.	Eigenvalues for a Spheroidal Square Well	199.2

241 B,N.	Transients in Distillation Columns	18.3
245 N.	Theory of Neutron Reactions	183.8
246 B,N.	Scattering From Oxygen	19.8
253 N.	APW as Applied to Face- and Body-Centered Iron	71.3
256 C.	WWI - 1103 Translation Program	102.3
257 C.	Horizontal Stabilizer Analysis	17.3
259 L.	Ionosphere Computation	196.2
260 N.	Energy Levels of Diatomic Hydrides	174.0
262 N.	Evaluation of Two-center Molecular Integrals	29.5
266 A.	Calculations for the MIT Reactor	46.6
270 B.	Critical Mass Calculations	147.1
272 L.	General Raydist Solution	45.2
274 N.	Multiple Scattering	18.5
278 N.	Energy Levels of Diatomic Hydrides LiH	150.4
279 D.	Queuing	2.4
284 C.	Gulf Stream Motion Forecasting	19.8
285 N.	APW as Applied to Chromium Crystal	14.2
288 N.	Atomic Wave Functions	705.5
291 B.	Dynamic Buckling	39.4
297 B.	Diffusion Boundary Layer	110.8
299 C.	Heat Transfer in Turbulent Flow	337.2
300 L.	Tropospheric Propagation	3.0
304 A.	Relativistic Atomic Wave Functions	122.1
306 D.	Spectral Analysis of Atmospheric Data	4.3
307 C.	Supersonic Nozzle Design	5.9
308 C.	Frequency Analysis of Aperiodic Functions	16.8
309 B,N.	Pure and Impure Potassium Chloride Crystal	28.3
310 C.	Rocket Trajectory Calculations	14.6
312 L.	Error Analysis	66.7
314 C.	Factoring High Order Polynomials	2.9

1.3 Computer Time Statistics

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

Programs	62 hrs. 48.1 min.
Magnetic Drum Test	27.9 min.
Magnetic Tape Test	59.9 min.
Scope Calibration	23.1 min.
PETR Test	25.5 min.
Test Storage Check	5.2 min.
Demonstrations (No.131)	<u>1 hr. 8.7 min.</u>
Total Time Logged	66 hrs. 18.4 min.
Div. 6 Conversions, Inter-run Operations, etc.	<u>15 hrs. 0.8 min.</u>
Total Time Assigned	82 hrs. 35.2 min.
Usable Time, Percentage	98.47%
Number of Programs	469