

Digital Computer Laboratory
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

SUBJECT: BIWEEKLY REPORT, AUGUST 8, 1955

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From: Scientific and Engineering Computation Group

1. MATHEMATICS, CODING AND APPLICATIONS

1.1 Introduction

During the past two weeks 619 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 55 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	388.4
106 C.	MIT Seismic Project	25.4
120 B,N.	The Aerothermopressor	70.6
122 N.	Coulomb Wave Functions	2.5
126 D.	Data Reduction	17.7
131	Special Problems (Staff Training, etc.)	93.1
141	S and EC Subroutine Study	190.3
155 N.	Synoptic Climatology	15.8
162 N.	Nuclear Scattering Phase- Shifts	9.6
172 B,N.	Overlap Integrals	.5
179 C.	Transient Temperature of a Box-Type Beam	40.1
193 L.	E.V. Problem for Propagation of E.M. Waves	9.2
194 B,N.	Augmented Plane Wave Method (Sodium)	13.9

216 C.	Ultrasonic Delay Lines	18.4
217 N.	Atomic Wave Function and Energies	65.3
218 N.	Stage B for Diatomic Molecules	2.5
225 B,N.	Neutron-Deuteron Scattering	8.2
226 D.	Circulation of the Atmosphere	51.1
234 N.	Atomic Integrals	6.3
235 B,N.	Eigenvalues for a Spheroidal Square Well	317.2
236 C.	Transient Response of Aircraft to Heating	39.5
239 C.	Guidance and Control	96.3
241 B,N.	Transients in Distillation Columns	82.8
245 N.	Theory of Neutron Reactions	43.4
246 B,N.	Scattering From Oxygen	38.8
253 N.	APW as Applied to Face- and Body-Centered Iron	24.0
256 C.	WWI -1103 Translation Program	13.3
257 C.	Horizontal Stabilizer Analysis	9.3
259 L.	Ionosphere Computation	761.3
260 N.	Energy Levels of Diatomic Hydrides	10.5
261 C.	Fourier Synthesis for Crystal Structures	23.1
262 N.	Evaluation of Two-center Molecular Integrals	174.9
264 C.	Optimization of Alternator Control System	23.0
266 A.	Calculations for the MIT Reactor	154.0
267 B.	NCMM Turbine Blade	37.5
270 B.	Critical Mass Calculations	130.2
271 B.	Beam Splitting Technique	63.4
272 L.	General Raydist Solution	77.5
273 N.	Cosmic Ray Air Shower	61.7
274 N.	Multiple Scattering	3.7

276 B,N	Martensitic Transformation in Stainless Steel	2.9
277 C.	Horizontal Stabilizer Study	6.7
278 N.	Energy Levels of Diatomic Hydrides LiH	58.1
279 D.	Queuing	28.8
280 B.	Correlation Function	36.7
288 N	Atomic Wave Functions	50.6
291 B.	Dynamic Buckling	35.6
297 B.	Diffusion Boundary Layer	59.9
298 C.	Dipole Moments	29.0
300 L.	Tropospheric Propagation	25.6
301 C.	Fourier P Phase (etc.)	5.1
303 B.	Prediction of Chromatographic Separations	225.2
304 A.	Relativistic Atomic Wave Functions	121.8
308 C.	Frequency Analysis of Aperiodic Functions	44.5
310	Rocket Trajectory Calculations	21.8

1.3 Computer Time Statistics

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

Programs	64 hours, 33.5 minutes
Magnetic Drum Test	67.3 minutes
Magnetic Tape Test	86.6 minutes
Scope Calibration	44.2 minutes
PETR Test	25.8 minutes
Test Storage Check	7.2 minutes
Demonstrations (No.131)	1 hour, 33.1 minutes
Total Time Logged	69 hours, 57.7 minutes
Div. 6 Conversions, Inter-run Operations, etc.	19 hours, 23.0 minutes
Total Time Assigned	94 hours, 12.7 minutes
Usable Time, Percentage	94.83 per cent
Number of Programs	619