

Digital Computer Laboratory  
Massachusetts Institute of Technology  
Cambridge, Massachusetts

**SUBJECT:** BIWEEKLY REPORT, SEPTEMBER 6, 1955

**To:** Jay W. Forrester

**From:** Scientific and Engineering Computation Group

**1. MATHEMATICS, CODING AND APPLICATIONS**

**1.1 Introduction**

During the past two weeks 534 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 46 of the problems that have been accepted by the S&EC Group.

**1.2 Programs and Computer Operation**

<u>Problem No.</u>	<u>Title</u>	<u>Minutes</u>
100	Comprehensive System of Service Routines	188.9
106 C.	MIT Seismic Project	175.9
122 N.	Coulomb Wave Functions	23.5
126 D.	Data Reduction	12.8
131	Special Problems (Staff Training, etc.)	56.2
141	S&EC Subroutine Study	26.6
155 N.	Synoptic Climatology	11.4
193 L.	E.V. Problem for Propagation of E.M.Waves	60.8
194 B,N.	Augmented Plane Wave Method (Sodium)	24.1
217 N.	Atomic Wave Function and Energies	28.1
218 N.	Stage B for Diatomic Molecules	10.8
219	Linear Programming	117.7
226 D.	Circulation of the Atmosphere	58.0
231 B,N.	Reactor Runaway Prevention	23.7
235 B,N.	Eigenvalues for a Spheroidal Square Well	405.8
236 C.	Transient Response of Aircraft to Heating	80.5

245 N.	Theory of Neutron Reactions	89.9
246 B,N.	Scattering From Oxygen	59.8
253 N.	AFW as Applied to Face- and Body-Centered Iron	19.1
256 C.	WWI-1103 Translation Program	129.7
261 C.	Fourier Synthesis for Crystal Structures	11.2
266 A.	Calculations for the MIT Reactor	63.2
267 B.	Numerically Controlled Milling Machine Turbine Blade	106.4
272 L.	General Raydist Solution	129.5
273 N.	Cosmic Ray Air Shower	70.7
274 N.	Multiple Scattering	29.1
277 C.	Horizontal Stabilizer Study	8.6
278 N.	Energy Levels of Diatomic Hydrides LiH	82.4
279 D.	Queuing	20.4
280 B.	Correlation Function	30.5
288 N.	Atomic Wave Functions	419.7
297 B.	Diffusion Boundary Layer	40.7
298 C.	Dipole Moments	92.2
299 C.	Heat Transfer in Turbulent Flow	61.1
300 L.	Tropospheric Propagation	154.5
304 A.	Relativistic Atomic Wave Functions	136.4
306 D.	Spectral Analysis of Atmospheric Data	20.5
307 C.	Supersonic Nozzle Design	15.2
308 C.	Frequency Analysis of Aperiodic Functions	3.0
309 B,N.	Pure and Impure Potassium Chloride Crystal	7.7
310 C.	Rocket Trajectory Calculations	2.9
311 N.	Solitary Wave Generating Cam	54.1
312 L.	Error Analysis	71.4
313 D.	Routines for Course 6.601	22.0
314 C.	Factoring High Order Polynomials	3.6
316 L.	Radar Conversion and Correlation	10.6

### 1.3 Computer Time Statistics

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

Programs	53 hours, 34.7 minutes
Magnetic Drum Test	28.4 minutes
Magnetic Tape Test	55.4 minutes
Scope Calibration	20.9 minutes
PETR Test	21.4 minutes
Test Storage Check	6.0 minutes
Demonstrations (#131)	56.2 minutes
Total Time Logged	<u>56 hours, 43.0 minutes</u>
Div. 6 Conversions, Inter-run Operations, etc.	15 hours, 24.1 minutes
Total Time Assigned	75 hours, 14.1 minutes
Usable Time, Percentage	95.86%
Number of Programs	534