

Digital Computer Laboratory
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

SUBJECT: BIWEEKLY REPORT, JULY 25, 1955

To: Jay W. Forrester

From: Scientific and Engineering Computation Group

1. MATHEMATICS, CODING AND APPLICATIONS

1.1 Introduction

During the past two weeks 587 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 57 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	578.6
106 C.	MIT Seismic Project	27.0
120 B,N.	The Aerothermopressor	218.8
126 D.	Data Reduction	68.4
131	Special Problems (Staff Training, etc.)	9.1
132 D.	N. C. Milling Machine	15.7
141	S and EC Subroutine Study	261.2
144 N.	Self-consistent Molecular Orbital	11.1
162 N.	Nuclear Scattering Phase-Shifts	19.1
172 B,N.	Overlap Integrals	15.5
193 L.	E. V. Problem for Propagation of E. M. Waves	28.3
194 B,N.	Augmented Plane Wave Method (Sodium)	47.2
195 C.	Intestinal Motility	17.5

DCL-93		2
199 N.	Compressible Flow in a Tube	48.5
204 N.	Exchange Integrals Between Real Slater Orbitals	4.5
216 C.	Ultrasonic Delay Lines	6.8
217 N.	Atomic Wave Function and Energies	20.0
218 N.	Stage B for Diatomic Molecules	6.9
224 N.	Vertical Velocity Fields	55.6
225 B,N.	Neutron-Deuteron Scattering	11.3
226 D.	Circulation of the Atmosphere	42.8
234 N.	Atomic Integrals	3.6
235 B,N.	Eigenvalues for a Spheroidal Square Well	271.3
236 C.	Transient Response of Aircraft to Heating	28.2
239 C.	Guidance and Control	91.0
241 B,N.	Transients in Distillation Columns	92.5
244 C.	Data Reduction for X-1 Fire Control	7.4
245 N.	Theory of Neutron Reactions	32.0
246 B,N.	Scattering from Oxygen	22.8
253 N.	APW as Applied to Face- and Body-Centered Iron	11.9
256 C.	WWI-1103 Translation Program	4.5
258 C.	Dynamic Analysis of an Aircraft Interceptor	22.2
259 L.	Ionosphere Computation	85.5
261 C.	Fourier Synthesis for Crystal Structures	42.6
262 N.	Evaluation of Two-center Molecular Integrals	47.8
264 C.	Optimization of Alternator Control System	19.1
266 A.	Calculations for the MIT Reactor	336.4
267 B.	NCMM Turbine Blade	18.6
270 B.	Critical Mass Calculations	69.7
271 B.	Beam Splitting Technique	54.5

272 L.	General Raydist Solution	31.6
273 N.	Cosmic Ray Air Shower	18.6
277 C.	Horizontal Stabilizer Study	3.1
278 N.	Energy Levels of Diatomic Hydrides LiH	68.9
279 D.	Queuing	28.1
285 N.	APW as Applied to Chromium Crystal	22.5
288 N.	Atomic Wave Functions	18.5
291 B.	Dynamic Buckling	15.0
297 B.	Diffusion Boundary Layer	65.0
298 C.	Dipole Moments	60.7
299 C.	Heat Transfer in Turbulent Flow	25.5
300 L.	Tropospheric Propagation	9.8
302 B.	Partially Continuous Wooden Beams	5.3
303 B.	Prediction of Chromatographic Separations	121.6
304 A.	Relativistic Atomic Wave Functions	79.1
305 B.	Course 6.25, Summer 1955	54.9
308	Frequency Analysis of Aperiodic Functions	14.5

1.3 Computer Time Statistics

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

Programs	56 hrs.	49.1 min.
Magnetic Drum Test		51.1 min.
Magnetic Tape Test		58.7 min.
Scope Calibration		22.6 min.
PETR Test		31.8 min.
Test Storage Check		10.9 min.
Demonstrations (No. 131)		9.1 min.
Total Time Logged	59 hrs.	53.3 min.
Division 6 Conversions, Inter-run Operations, etc.	19 hrs.	51.0 min.
Total Time Assigned	82 hrs.	36.3 min.
Usable Time, Percentage	96.53%	
Number of Programs	587	