

Digital Computer Laboratory  
Massachusetts Institute of Technology  
Cambridge 39, Massachusetts

SUBJECT BIWEEKLY REPORT, May 2, 1955

To: Jay W. Forrester

From: Scientific and Engineering Computation Group

1. MATHEMATICS, CODING AND APPLICATIONS

1.1 Introduction

During the past two weeks 554 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 62 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	338.4
106 C.	MIT Seismic Project	14.5
120 D.	The Aerothermopressor	124.9
122 B.	Coulomb Wave Functions	45.5
123 C.	Earth Resistivity Interpretation	67.8
126 C.	Data Reduction	29.1
131	Special Problems (Staff Training, etc.)	19.3
132 C.	N. C. Milling Machine	11.0
141	S and EC Subroutine Study	17.8
155 D.	Synoptic Climatology	57.3
156 A.	Reflection in a Semi-Infinite Rect. W.G.	7.6
179 C.	Transient Temperature of a Box-Type Beam	14.1

180 B.	Crosscorrelation of Blast Furnace Data	35.4
193 C.	E.V. Problem for Propagation of E.M. Waves	26.2
194 B.	Augmented Plane Wave Method (Sodium)	76.1
196	Single Address Computer	22.2
203 C.	Response of a Building Under Dynamic Loading	7.8
204 C.	Exchange Integrals Between Real Slater Orbitals	9.7
213 D.	Industrial Process Control Studies	52.9
217 A.	Atomic Wave Function and Energies	65.5
218 C.	Stage B for Diatomic Molecules	1.8
224 C.	Vertical Velocity Fields	149.7
225 B.	Neutron-Deuteron Scattering	8.6
226 D.	Circulation of the Atmosphere	29.3
230 C.	Dynamic Analysis of Bridges	114.8
235 B.	Eigenvalues for a Spheroidal Square Well	83.7
236 C.	Transient Response of Aircraft to Heating	31.2
238 B.	Self-consistent Calculation of Nuclear Density	251.2
239 C.	Guidance and Control	58.9
241 B.	Transients in Distillation Columns	77.9
242 A.	Counting Structures of Relations	24.5
244 C.	Data Reduction for X-1 Fire Control	27.3
250.	Translation Program for the NCMM	35.5
252 C.	Analysis of Two Story Steel Frame Building	6.9
256.	WWI -1103 Translation Program	38.5
258 C.	Dynamic Analysis of an Aircraft Interceptor	22.6
259 C.	Ionosphere Computation	19.6
260 C.	Energy Levels of Diatomic Hydrides	21.8

261 C.	Fourier Synthesis for Crystal Structures	44.6
263 C.	Aircraft Pullup Flight Path	58.1
264 C.	Optimization of Alternator Control System	10.0
266 A.	Calculations for the MIT Reactor	11.3
267 B.	NCMM Turbine Blade	4.9
268 B.	Extrapolation Techniques	19.8
269 C.	Analysis of Shear Wall Testing Machine	9.3
270 B.	Critical Mass Calculations	49.6
271 B.	Beam Splitting Technique	24.2
272 L.	General Raydist Solution	17.2
273 N.	Cosmic Ray Air Shower	7.3
274 N.	Multiple Scattering	23.5
275 B.	Buckling of Shallow Elastic Shells	68.0
276 B,N	Martensitic Transformation in Stainless Steel	11.3
277 C.	Horizontal Stabilizer Study	20.7
278 N.	Energy Levels of Diatomic Hydrides LiH	5.2
279 N.	Queuing	15.7
280 B.	Correlation Function	168.2
281 C.	Correlations and Transforms	45.5
284 C.	Gulf Stream Motion Forecasting	5.4
285 C.	APW as Applied to Chromium Crystal	76.8
286	Responses of the Human Pilot	10.6
287 D.	Probability Pattern	7.1

### 1.3 Computer Time Statistics

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

Programs	45 hours, 45.3 minutes
Magnetic Drum Test	57.7 minutes
Magnetic Tape Test	70.9 minutes
Scope Calibration	10.5 minutes
PETR Test	13.0 minutes
Test Storage Check	3.7 minutes
Demonstrations (No.131)	19.3 minutes
Total Time Logged	<u>48 hours, 40.4 minutes</u>
Div. 6 Conversions, Inter-run Operations, etc.	16 hours, 46.0 minutes
Total Time Assigned	70 hours, 36.4 minutes
Usable Time, Percentage	92.7 percent
Number of Programs	554