

Digital Computer Laboratory
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

SUBJECT: BIWEEKLY REPORT, APRIL 18, 1955

To: Jay W. Forrester

From: Scientific and Engineering Computation Group

1. MATHEMATICS, CODING AND APPLICATIONS

1.1 Introduction

During the past two weeks 575 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 57 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	401.4
120 D.	The Aerothermopressor	62.8
122 B.	Coulomb Wave Functions	76.2
123 C.	Earth Resistivity Interpretation	63.0
126 C.	Data Reduction	5.7
131	Special Problems (Staff Training, etc.)	19.2
132 C.	Numerically Controlled Milling Machine	19.4
141	S&EC Subroutine Study	6.7
155 D.	Synoptic Climatology	309.0
172 B.	Overlap Integrals	123.2

179 C.	Transient Temperature of a Box-Type Beam	37.0
193 C.	Eigenvalue Problem for Propagation of E.M.Waves	36.3
194 B.	Augmented Plane Wave Method (Sodium)	515.9
195 C.	Intestinal Motility	31.7
196	Single Address Computer	18.6
203 C.	Response of a Building Under Dynamic Loading	6.0
204 C.	Exchange Integrals Between Real Slater Orbitals	14.8
212 C.	Dispersion Curves for Seismic Waves	44.6
213 D.	Industrial Process Control Studies	9.2
217 A.	Atomic Wave Function and Energies	37.0
218 C.	Stage B for Diatomic Molecules	17.6
224 C.	Vertical Velocity Fields	183.3
226 D.	Circulation of the Atmosphere	4.8
230 C.	Dynamic Analysis of Bridges	144.2
231 C.	Reactor Runaway Prevention	3.5
235 B.	Eigenvalues for a Spheroidal Square Well	92.9
236 C.	Transient Response of Aircraft to Heating	33.3
238 B.	Self-consistent Calculation of Nuclear Density	106.1
239 C.	Guidance and Control	216.4
241 B.	Transients in Distillation Columns	36.2
242 A.	Counting Structures of Relations	27.4
244 C.	Data Reduction for X-1 Fire Control	17.9
245 C.	Theory of Neutron Reactions	12.6
247 C.	Surface Pressure Prediction	248.4
248 B.	Propane Vibrations	2.1
250 C.	Translation Program for the NCMM	29.4
252 C.	Analysis of Two Story Steel Frame Building	20.6

256 C.	WWI-1103 Translation Program	92.3
257 C.	Horizontal Stabilizer Analysis	59.0
258 C.	Dynamic Analysis of an Aircraft Interceptor	132.9
259 C.	Ionosphere Computation	21.6
260 C.	Energy Levels of Diatomic Hydrides	25.3
261 C.	Fourier Synthesis for Crystal Structures	11.4
263 C.	Aircraft Pullup Flight Path	35.2
265 L.	Electron Diffusion in an Electromagnetic Field	28.8
266 A.	Calculations for the MIT Reactor	59.2
267 B.	NCMM Turbine Blade	18.8
268 B.	Extrapolation Techniques	9.2
269 C.	Analysis of Shear Wall Testing Machine	7.1
270 B.	Critical Mass Calculations for Cylindrical Geometry	27.0
272 L.	General Raydist Solution	8.1
273 N.	Cosmic Ray Air Shower	6.6
274 N.	Multiple Scattering	23.0
275 B.	Buckling of Shallow Elastic Shells	23.9
276 B.	Martensitic Transformation in Stainless Steel	7.3
277 C.	Horizontal Stabilizer Study	1.7
285 B.	Application of APW Method to Chromium Crystal	46.0

1.3 Computer Time Statistics

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

Programs	60 hours, 59.6 minutes
Magnetic Drum Test	43.5 minutes
Magnetic Tape Test	31.7 minutes
Scope Calibration	24.9 minutes
PETR Test	12.7 minutes
Test Storage Check	3.7 minutes
Demonstrations (#131)	19.2 minutes
Total Time Logged	<u>63 hours, 15.3 minutes</u>

continued

Div. 6 Conversions, Inter-run Operations, etc.	22 hours, 23.6 minutes
Total Time Assigned	86 hours, 56.9 minutes
Usable Time, Percentage	98.5%
Number of Programs	575