

Digital Computer Laboratory
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

SUBJECT: BIWEEKLY REPORT, March 21, 1955

To: Jay W. Forrester

From: Scientific and Engineering Computation Group

1. MATHEMATICS, CODING AND APPLICATIONS

1.1 Introduction

During the past two weeks 495 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 51 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	257.6
106 C.	MIT Seismic Project	2.4
120 D.	The Aerothermopressor	76.1
123 C.	Earth Resistivity Interpretation	57.8
126 C.	Data Reduction	88.1
131	Special Problems (Staff Training, etc.)	34.6
132 C.	N. C. Milling Machine	6.0
141	S and EC Subroutine Study	58.4
144 C.	Self-consistent Molecular Orbital	30.6
155 D.	Synoptic Climatology	511.5
172 B.	Overlap Integrals	100.3
193 C.	E.V. Problem for Propagation of E.M. Waves	52.7
194 B.	Augmented Plane Wave Method (Sodium)	88.6

195 C.	Intestinal Motility	25.3
196	Single Address Computer	12.8
198	Student Problems for SAC and TAC	60.1
203 C.	Response of a Building Under Dynamic Loading	21.3
204 C.	Exchange Integrals Between Real Slater Orbitals	4.4
212 C.	Dispersion Curves for Seismic Waves	63.4
217 A.	Atomic Wave Function and Energies	13.4
218 C.	Stage B for Diatomic Molecules	23.1
219	Linear Programming	10.6
224 C.	Vertical Velocity Fields	133.5
225 B.	Neutron-Deuteron Scattering	24.4
228 A.	Evaluation of Difference Diffusion Equation	12.4
230 C.	Bridge Response to Blast Loads	38.3
231 C.	Reactor Runaway Prevention	88.4
234 A.	Atomic Integrals	4.1
235 B.	Eigenvalues for a Spheroidal Square Well	107.0
236 C.	Transient Response of Aircraft to Heating	49.9
238 B.	Self-consistent Calculation of Nuclear Density	102.4
239 C.	Guidance and Control	109.2
241 B.	Transients in Distillation Columns	66.6
242 A.	Counting Structures of Relations	15.8
244 C.	Data Reduction for X-1 Fire Control	38.2
245 C.	Theory of Neutron Reactions	1.5
247 C.	Surface Pressure Prediction	39.1
248 B.	Propane Vibrations	19.8
250.	Translation Program for the NCMM	11.9
252 C.	Analysis of Two Story Steel Frame Building	13.2

256.	WWI -1103 Translation Program	153.6
257 C.	Horizontal Stabilizer Analysis	9.4
258 C.	Dynamic Analysis of a Typical Aircraft Interceptor	21.9
260 C.	Energy Levels of Diatomic Hydrides	35.8
261 C.	Fourier Synthesis for Crystal Structures	31.0
262 C.	Evaluation of Two-center Molecular Integrals	19.6
263 C.	Aircraft Pullup Flight Path	17.7
265 L.	Electron Diffusion in an Electromagnetic Field	29.7
266 A.	Calculations for the MIT Reactor	30.8
267 B.	NCMM Turbine Blade	5.3
285 C.	APW as Applied to Chromium Crystal	9.8

1.3 Computer Time Statistics

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

Programs	46 hours, 43.8 minutes
Magnetic Drum Test	49.5 minutes
Magnetic Tape Test	48.7 minutes
Scope Calibration	17.1 minutes
PETR Test	8.3 minutes
Demonstrations (No. 131)	34.6 minutes
Total Time Used	49 hours, 22.0 minutes
Total Time Assigned	52 hours, 15.0 minutes
Usable Time, Percentage	94.05
Number of Programs	495