

Digital Computer Laboratory
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

SUBJECT: BIWEEKLY REPORT, MARCH 7, 1955

to: Jay W. Forrester

From: Scientific and Engineering Computation Group

1. MATHEMATICS, CODING AND APPLICATIONS

1.1 Introduction

During the past two weeks 452 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 46 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>WWI Time</u>
100	Comprehensive System of Service Routines	169.5 minutes
120 D.	The Aerothermopressor	92.6 minutes
122 B.	Coulomb Wave Functions	28.9 minutes
123 C.	Earth Resistivity Interpretation	105.2 minutes
126 C.	Data Reduction	145.6 minutes
131	Special Problems (Staff Training, etc.)	42.9 minutes
132 C.	N. C. Milling Machine	3.9 minutes
141	S and EC Subroutine Study	38.9 minutes
144 C.	Self-consistent Molecular Orbital	48.3 minutes
155 D.	Synoptic Climatology	452.1 minutes
167 D.	Batch Distillations with Holdup	5.9 minutes
172 B.	Overlap Integrals	145.0 minutes
180 B.	Crosscorrelation of Blast Furnace Data	28.4 minutes

194 B.	Augmented Plane Wave Method (Sodium)	101.3 minutes
195 C.	Intestinal Motility	57.0 minutes
199 C.	Compressible Flow in a Tube	117.4 minutes
203 C.	Response of a Building Under Dynamic Loading	11.2 minutes
204 C.	Exchange Integrals Between Real Slater Orbitals	39.4 minutes
212 C.	Dispersion Curves for Seismic Waves	57.3 minutes
217 A.	Atomic Wave Function and Energies	26.5 minutes
223 C.	Investigation of Turbulent Flow	21.8 minutes
224 C.	Vertical Velocity Fields	300.7 minutes
225 B.	Neutron-Deuteron Scattering	43.6 minutes
228 A.	Evaluation of Difference Diffusion Equation	21.2 minutes
230 C.	Bridge Response to Blast Loads	71.9 minutes
231 C.	Reactor Runaway Prevention	60.2 minutes
233 C.	Utility Stock Prices	6.2 minutes
234 A.	Atomic Integrals	12.8 minutes
235 B.	Eigenvalues for a Spheroidal Square Well	106.5 minutes
236 C.	Transient Response of Aircraft to Heating	19.8 minutes
238 B.	Self-consistent Calculation of Nuclear Density	322.7 minutes
239 C.	Guidance and Control	6.3 minutes
241 B.	Transients in Distillation Columns	139.8 minutes
242 A.	Counting Structures of Relations	6.4 minutes
244 C.	Data Reduction for X-1 Fire Control	17.0 minutes
245 C.	Theory of Neutron Reactions	4.5 minutes
247 C.	Surface Pressure Prediction	7.4 minutes
248 B.	Propane Vibrations	18.2 minutes
251 B.	Packed Column Dynamics	19.7 minutes
252 C.	Analysis of Two Story Steel Frame Building	21.3 minutes

255 C.	Energy Transfer in Biological Substances	5.0 minutes
257 C.	Horizontal Stabilizer Analysis	16.8 minutes
261 C.	Fourier Synthesis for Crystal Structures	9.9 minutes
262 C.	Evaluation of Two-center Molecular Integrals	10.1 minutes
263 C.	Aircraft Pullup Flight Path	13.3 minutes
285 C.	Application of APW Method to Chromium Crystal	23.3 minutes

1.3 Computer Time Statistics

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

Programs	49 hours, 40.8 minutes
Magnetic Drum Test	16.4 minutes
Magnetic Tape Test	56.1 minutes
Scope Calibration	13.9 minutes
PETR Test	8.9 minutes
Demonstrations (No. 131)	42.9 minutes
Total Time Used	<u>51 hours, 59.0 minutes</u>
Total Time Assigned	53 hours, 27.0 minutes
Usable Time, Percentage	97.28
Number of Programs	452