

Digital Computer Laboratory
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

SUBJECT: BIWEEKLY REPORT, JANUARY 10, 1955

To: Jay W. Forrester

From: Scientific and Engineering Computation Group

1. MATHEMATICS, CODING AND APPLICATIONS

1.1 Introduction

During the past two weeks 377 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 40 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>WWI Time</u>
100	Comprehensive System of Service Routines	538.0 minutes
106 C.	MIT Seismic Project	75.9 minutes
107 C.	Autocorrelation and Fourier Transform	8.7 minutes
108 C.	An Interpretive Program	28.9 minutes
120 D.	The Aerothermopressor	11.4 minutes
122 B.	Coulomb Wave Functions	207.2 minutes
123 D.	Earth Resistivity Interpretation	34.8 minutes
126 C.	Data Reduction	12.1 minutes
130 C.	Six-component Distillation	18.0 minutes

131	Special Problems (Staff Training, etc.)	56.2 minutes
141	S&EC Subroutine Study	3.3 minutes
144 C.	Self-consistent Molecular Orbital	23.0 minutes
155 D.	Synoptic Climatology	478.3 minutes
162 C.	Nuclear Scattering Phase-Shifts	7.1 minutes
172 B.	Overlap Integrals	24.2 minutes
177 D.	Low Aspect Ratio Flutter	4.2 minutes
183 D.	Blast Response of Aircraft	828.4 minutes
189 C.	Gustiness in the Free Atmosphere	12.7 minutes
194 B.	Augmented Plane Wave Method(Sodium)	20.2 minutes
195 C.	Intestinal Motility	13.7 minutes
201 C.	Study of the Ammonia Molecule	37.9 minutes
203 C.	Response of a Building Under Dynamic Loading	4.5 minutes
204 C.	Exchange Integrals Between Real Slater Orbitals	123.3 minutes
212 C.	Dispersion Curves for Seismic Waves	16.4 minutes
213 D.	Industrial Process Control Studies	20.4 minutes
216 C.	Ultrasonic Delay Lines	7.1 minutes
218 C.	Stage B for Diatomic Molecules	3.6 minutes
219.	Linear Programming	31.1 minutes
222 B.	Helicopter Rotor Stability	87.4 minutes
224 C.	Vertical Velocity Fields	104.4 minutes
225 B.	Neutron-Deuteron Scattering	11.8 minutes
228 A.	Evaluation of Difference Diffusion Equation	15.3 minutes
230 C.	Bridge Response to Blast Loads	12.6 minutes
231 C.	Reactor Runaway Prevention	40.5 minutes
232 B.	Energy Levels in a Spheroidal Potential	4.8 minutes
233 C.	Utility Stock Prices	15.9 minutes

235 B.	Eigenvalues for a Spheroidal Square Well	8.5 minutes
236 C.	Transient Response of Aircraft Structures to Aerodynamic Heating	34.5 minutes
237 C.	Autocorrelation Function of Submitted Data	11.4 minutes
239 C.	Guidance and Control	3.8 minutes

1.3 Computer Time Statistics

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

Programs	49 hours, 05.3 minutes
Magnetic Drum Test	25.1 minutes
Magnetic Tape Test	21.6 minutes
Scope Calibration	14.0 minutes
Demonstrations(#131)	<u>56.2 minutes</u>
Total Time Used	51 hours, 02.2 minutes
Total Time Assigned	52 hours, 14.2 minutes
Usable Time, Percentage	97.5%
Number of Programs	377