Digital Computer Laboratory
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

SUBJECT: BIWEEKLY REPORT, AUGUST 23, 1954

To: Jay W. Forrester

From: Scientific and Engineering Computation Group

1. MATHEMATICS, CODING AND APPLICATIONS

1.1 Introduction

During the past two weeks 376 coded programs were run on the time allocated to the Scientific and Engineering Computation (S&EC) Group. These programs represent part of the work that has been carried on in 36 of the problems that have been accepted by the S&EC Group.

1.2 Programs and Computer Operation

Problem No.	Title	WWI Time
100	Comprehensive System of Service Routines	238 minutes
106 C.	MIT Seismic Project	329 minutes
108 C.	An Interpretive Program	15 minutes
126 C.	Data Reduction	55 minutes
132 C.	Subroutines for the Numerically Controlled Milling Machine	28 minutes
141	S&EC Subroutine Study	31 minutes
143 D.	Vibrational Frequency Spectrum of a Copper Crystal	77 minutes
144 C.	Self-Consistent Molecular Orbital	31 minutes
155 D.	Synoptic Climatology	277 minutes
156 A.	Evaluation of the Reflection Coefficient in a Semi-Infinite Rectangular Wave Guide	8 minutes
159 D.	Water Use in a Hydroelectric System	337 minutes
161 C.	Response of Mass-Plastic Spring System to Transient Loading	8 minutes

Problem No.	Title	WWI Time
166 C.	Construction and Testing of a Delta-Wing Flutter Model	20 minutes
167 D.	Products of Batch Distillations With Holdup	636 minutes
169 B.	Utilizing a General Purpose Digital Computer in Switching-Circuit Design	10 minutes
172 B.	Overlap Integrals of Molecular and Crystal Physics	6 minutes
173	Course 6.537 Digital Computer Application Practice	56 minutes
174 C.	Tight Binding Calculations in Crystals	3 minutes
177 D.	Low Aspect Ratio Flutter	5 minutes
180 B.	Crosscorrelation of Blast Furnace Input-Output Data	10 minutes
183 D.	Blast Response of Aircraft	2 minutes
184 D.	Scattering of Electrons from Hydrogen	82 minutes
186 C.	Tracking Response Characteristics of the Human Operator	31 minutes
188 C.	Effect of Gravity on Relative Water Production In Oil Reservoirs	10 minutes
190 D.	Zeeman and Stark Effect in Positronium	131 minutes
193 C.	Eigenvalue Problem for Propagation of E. M. Waves	16 minutes
194 B.	An Augmented Plane Wave Method as Applied to Sodium	91 minutes
195 C.	Intestinal Motility	19 minutes
196	Single Address Computer	1136 minutes
197	Three Address Computer	1421 minutes
198	Student Problems Coded for SAC and TAC	367 minutes
199 C.	Laminar Boundary Layer of a Steady, Compressible Flow in the Entrance Region of a Tube	46 minutes
201 C.	Study of the Ammonia Molecule	71 minutes
202	Calculation of Vertical Antenna Coverage Skeleton	4 minutes

Problem No.	Title	WWI Time
205	Electron Lattice Interaction in Solids	47 minutes
206	Electronic Energies of the Molecule H_2^-	69 minutes

1.3 Computer Time Statistics

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

Programs	95 hours, 23 minutes
Conversions	30 minutes
Magnetic Drum Test	54 minutes
Magnetic Tape Test	40 minutes
Scope Calibration	32 minutes
Demonstrations (#131)	0 minutes
Total Time Used	97 hours, 59 minutes
Total Time Assigned	101 hours, 53 minutes
Usable Time, Percentage	96.2%
Number of Programs Run	376

2. COMPUTER ENGINEERING

2.1 WWI System Operation

(A. J. Roberts, L. L. Holmes)

A wiring error caused intermittent operation of the address-selection circuits for core memory for two or three days. Two sets of tubes, one with cathodes normally at -300 volts and one with cathodes normally at ground, had their heaters accidentally tied together. The resulting heater-cathode potentials caused several tubes to break down and destroyed several crystals in the selection matrices. All tubes and components which might have been damaged were replaced, and no further trouble was experienced.

Computer operation has been satisfactory, with most troubles appearing at the end of installation periods. The incidence of buffer-drum parity alarms has decreased sharply with the discovery and temporary suppression of crosstalk from the buffer to the auxiliary section of the buffer drum.

2.2 Terminal Equipment

2.21 Magnetic Drums (H. L. Ziegler)

A writeup of the drum monitoring system is nearly complete, and prints to be used with it are being brought up-to-date. This writeup is to become part of a description of the entire drum system.

3. ADMINISTRATION AND PERSONNEL

New Staff

Elliot Raiffa is a new DIC Staff Member in C. W. Adams' group. He was a Mathematical Statistician for the Chemical Corporation, Dugway Proving Grounds, Utah.

Staff Termination (J. C. Proctor)

John Bassett

Donn Combelic

New Non-Staff Personnel (R. A. Osborne)

Armand Bedard is a technician who has joined the Construction Shop.

Dorothy Troskey has joined the Production Control Office as a secretary.

Terminated Non-Staff (R. A. Osborne)

Robert Flack