

Digital Computer Laboratory
Massachusetts Institute of Technology
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SUBJECT: BIWEEKLY REPORT, SEPTEMBER 20, 1954
 To: Jay W. Forrester
 From: Scientific and Engineering Computation Group

1. MATHEMATICS, CODING AND APPLICATIONS

1.1 Introduction

During the past two weeks 251 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 28 of the problems that have been accepted by the S&EC Group.

Five new problems (208, 209, 210, 211, and 212) were initiated during this period. Descriptions for each of these will be provided in the progress report that covers the period September 6 through October 3.

Since July 19, 1954, reports issued by the Scientific and Engineering Computation Group have been designated by the three-letter combination DCL. Previously such reports appeared in the R-, E-, and M- series or as bulletin board memoranda. A list of the new DCL- series to date will appear in the next S&EC Progress Report.

1.2 Programs and Computer Operation

<u>Problem No.</u>	<u>Title</u>	<u>WMI Time</u>
100	Comprehensive System of Service Routines	546 minutes
106 C.	MIT Seismic Project	61 minutes
120 D.	The Aerothermopressor	151 minutes
123 C.	Earth Resistivity Interpretation	108 minutes
126 C.	Data Reduction	169 minutes
132 C.	Subroutines for the Numerically Controlled Milling Machine	15 minutes

141	S&EC Subroutine, Study	7 minutes
143 D.	Vibrational Frequency Spectrum of a Copper Crystal	87 minutes
155 D.	Synoptic Climatology	141 minutes
159 D.	Water Use in a Hydroelectric System	715 minutes
166 C.	Construction and Testing of a Delta-Wing Flutter Model	94 minutes
167 D.	Products of Batch Distillations with Holdup	97 minutes
173	Course 6.537 Digital Computer Application Practice	38 minutes
183 D.	Blast Response of Aircraft	103 minutes
184 D.	Scattering of Electrons from Hydrogen	336 minutes
190 D.	Zeeman and Stark Effect in Positronium	22 minutes
193 C.	Eigenvalue Problem for Propagation of E.M. Waves	19 minutes
195 C.	Intestinal Motility	26 minutes
199 C.	Laminar Boundary Layer of a Steady, Compressible Flow in the Entrance Region of a Tube	27 minutes
200 C.	A Study of Recurrent Events	76 minutes
201 C.	Study of the Ammonia Molecule	4 minutes
202 C.	Calculation of Vertical Antenna Coverage Skeleton	17 minutes
204 C.	Exchange Integrals between Real Slater Orbitals	11 minutes
207 C.	Check for REAC	44 minutes
208 C.	Interceptor Flight Control Problem	21 minutes
209 A.	Numerical Solution of Homogeneous Linear Differential Equations with Quadratic Polynomial Coefficients	47 minutes
210 A.	Residue-Indices and Primitive Roots	6 minutes
211 C.	Servo Response to a Cosine Pulse	3 minutes

1.3 Computer Time Statistics

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

Programs	49 hours, 51 minutes
Conversions	02 minutes
Magnetic Drum Test	44 minutes
Magnetic Tape Test	35 minutes
Scope Calibration	30 minutes
Total Time Used	51 hours, 42 minutes
Total Time Assigned	52 hours, 13 minutes
Usable Time, Percentage	99%
Number of Programs Run	251

2. COMPUTER ENGINEERING

2.1 WMI System Operation

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

Computer reliability was excellent during this period. The majority of the down time was caused by the undersized fusing of the new power wiring for the output coder and a faulty head for magnetic-tape unit 3B.

The magnetic-tape-printout control equipment will be moved to E row on Saturday, 18 September.

A new test-storage input program will be set up in toggle-switch storage on Monday, 27 September. Flip-Flop Registers 4,5 and 6 will be moved to new test-storage addresses. Any programs using these flip-flops should be corrected prior to this date.

2.2 Terminal Equipment

Magnetic Drums

(H.L.Ziegler)

The drum-monitoring-system writeup has been completed and is to be included in the Technician's Manual for the drums. A similar writeup of erasing methods is being prepared for this same manual.

Wiring of the new test rack is nearly complete, and most of it has been checked out. This rack should be ready for use early in the coming week.