Digital Computer Laboratory
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

SUBJECT: BIWEEKLY REPORT, AUGUST 22, 1955

To: Jay W. Forrester

From: Scientific and Engineering Computation Group

1. MATHEMATICS, CODING AND APPLICATIONS

1.1 Introduction

During the past two weeks 547 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 56 of the problems that have been accepted by the S&EC Group.

1.2 Programs and Computer Operation

Problem No.	Title	Minutes
100	Comprehensive System of Service Routines	340.7
106 C.	MIT Seismic Project	7.6
122 N.	Coulomb Wave Functions	11.5
126 D.	Data Reduction	16.0
131	Special Problems (Staff Training, etc.)	11.2
132 D.	Numerically Controlled Milling Machine	5.7
141	S&EC Subroutine Study	123.9
144 N.	Self-consistent Molecular Orbital	2.8
155 N.	Synoptic Climatology	20.8
162 N.	Nuclear Scattering Phase-Shifts	7.3
193 L.	E.V. Problem for Propagation of E.M.Waves	3.4
194 B,N.	Augmented Plane Wave Method (Sodium)	24.1
216 C.	Ultrasonic Delay Lines	20.0
217 N.	Atomic Wave Function and Energies	6.9
218 N.	Stage B for Diatomic Molecules	6.6
219	Linear Programming	58.1
225 B,N.	Neutron-Deuteron Scattering	118.5
226 D.	Circulation of the Atmosphere	48.1

231	B,N.	Reactor Runaway Prevention 10.9
235	B,N.	Eigenvalues for a Spheroidal Square Well 535.6
236	C.	Transient Response of Aircraft to Heating 68.5
241	B,N.	Transients in Distillation Columns 16.3
245	N.	Theory of Neutron Reactions 140.7
246	B,N.	Scattering From Oxygen 45.6
253	N.	APW as Applied to Face- and Body-Centered Iron 14.8
256	C.	WWI-1103 Translation Program 58.6
259	L.	Ionosphere Computation 1207.5
260	N.	Energy Levels of Diatomic Hydrides 20.3
261	C.	Fourier Synthesis for Crystal Structures 44.8
262	N.	Evaluation of Two-center Molecular Integrals 145.7
264	C.	Optimization of Alternator Control System 8.5
266	A.	Calculations for the MIT Reactor 257.3
267	B.	Numerically Controlled Milling Machine Turbine Blade 21.5
269	C.	Analysis of Shear Wall Testing Machine 46.1
270	B.	Critical Mass Calculations 117.5
271	B.	Beam Splitting Technique 3.6
272	L.	General Raydist Solution 87.7
273	N.	Cosmic Ray Air Shower 20.9
274	N.	Multiple Scattering 8.5
278	N.	Energy Levels of Diatomic Hydrides LiH 69.8
279	D.	Queuing 68.5
280	B.	Correlation Function 25.3
288	N.	Atomic Wave Functions 16.4
297	B.	Diffusion Boundary Layer 66.7
298	C.	Dipole Moments 56.6
299	C.	Heat Transfer in Turbulent Flow 6.3
300	L.	Tropospheric Propagation 31.1
303	B.	Prediction of Chromatographic Separations 128.0
304	A.	Relativisitc Atomic Wave Functions 237.7
307	C.	Supersonic Nozzle Design 3.3
308	C.	Frequency Analysis of Aperiodic Functions 25.9
310	C.	Rocket Trajectory Calculations 12.8
311	N.	Solitary Wave Generating Cam 15.7
312	L.	Error Analysis 18.3

313 D.	Routines for Course 6.601	10.6
314 C.	Factoring High Order Polynomials	8.2

1.3 Computer Time Statistics

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

Programs	75 hours,	4.1 minutes
Magnetic Drum Test		31.8 minutes
Magnetic Tape Test		63.3 minutes
Scope Calibration		15.9 minutes
PETR Test		30.4 minutes
Test Storage Check		7.4 minutes
Demonstrations (No. 131)		11.2 minutes
Total Time Logged	77 hours,	44.1 minutes
Div. 6 Conversions, Inter-run Operations, etc.	33 hours,	14.8 minutes
Total Time Assigned	112 hours,	27.9 minutes
Usable Time, Percentage	98.6%	
Number of Programs	547	

2. LIBRARY ACCESSIONS LIST

DCL-90	Whirlwind Display Program: Vibrations in a Length of String	Arden and Patterson
DCL-91	Modification of the Numerically Controlled Milling Machine Translation Routine for Use with the G&L Machine	Siegel
DCL-92	Proposed Additional Function for the Read-In Button	Helwig
DCL-94-1	Polynomial Factorization (Revised August 17, 1955)	Jacobs
DCL-97	Whirlwind I Processing Routine for Course 6.601	Siegel

Copies of the above are available from M. Marean in the S&EC Group Library, Barta Building 111.