Digital Computer Laboratory
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

SUBJECT: BIWEEKLY REPORT, OCTOBER 28, 1956

To: Frank M. Verzuh

From: Scientific and Engineering Computation Group

1.   MATHEMATICS, CODING AND APPLICATIONS

    1.1   Introduction

            During the past two weeks 455 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 48 of the problems that have been accepted by the S and EC Group.

    1.2   Programs and Computer Operation

Problem No.	Title	Minutes
100	Comprehensive System of Service Routines	150.7
126 D.	Data Reduction	190.3
131	Special Problems (Staff Training, etc.)	393.5
141	S and EC Subroutine Study	25.3
162 N.	Nuclear Scattering Phase-Shifts	12.1
193 L.	E. V. Problem for Propagation of E. M. Waves	178.8
199 N.	Compressible Flow in a Tube	72.8
203 D,N.	Response of a Building Under Dynamic Loading	29.1
204 N.	Exchange Integrals Between Real Slater Orbitals	296.3
219	Linear Programming	49.6
225 B,N.	Neutron-Deuteron Scattering	47.2
226 D.	Circulation of the Atmosphere	45.9
231 B,N.	Reactor Runaway Prevention	11.2
253 N.	APW as Applied to Face- and Body-Centered Iron	20.9
257 C.	Horizontal Stabilizer Analysis	177.9
260 N.	Energy Levels of Diatomic Hydrides	13.5
261 C.	Fourier Synthesis for Crystal Structures	27.6
262 N.	Evaluation of Two-center Molecular Integrals	47.1
264 C.	Optimization of Alternator Control System	4.2
273 N.	Cosmic Ray Air Shower	363.6
274 N.	Multiple Scattering	30.8
278 N.	Energy Levels of Diatomic Hydrides LiH	159.6
306 D.	Spectral Analysis of Atmospheric Data	11.2
309 B,N.	Pure and Impure Potassium Chloride Crystal	14.8
310 C.	Rocket Trajectory Calculations	35.3

312 L.	Error Analysis	21.2
317 C.	Stability Derivatives from Flight Test Data	93.7
327 L.	Prediction Analysis	175.9
336 C.	Pattern Identification	40.7
337 N.	Nonlinear 2nd Order Diff. Eqs.	10.5
341 C.	Statistical and Dynamic Methods in Forecasting	264.7
343 C.	Weather Prediction	3.8
354 D.	Response of a Single Story Concrete Building	8.7
361 B,N.	Growth of Fatigue Cracks	19.9
364 C.	Blast Response of Rotor Blades	42.1
368 B,N.	Condensation in a Vertical Tube	4.1
369	Temperature Distribution in a Beam	308.7
372 B.	Design of Spherical Shell Segments	23.9
377 L.	Coverage Analysis	54.0
382 B.	Calculation of Prime Numbers	32.7
383 C.	Stokes Particle Velocities	22.3
385 B.	Feed Plate Location	22.1
386 C.	Free Convection	2.3
387 C.	Determination of Velocity Potential	1.7
388 D.	Temperature Distribution in Aircraft Generators	37.7
391 L.	Magnetic Relaxation in Thin Films	23.9
393 N.	The Inverse Bremsstrahlung Spectrum	2.7
394 C.	Automatic Programming for Numerically Controlled Machine Tools	8.7

1.3 Computer Time Statistics

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

S and EC Programs	46 Hrs.	51.9 min.
Lincoln Programs	7 Hrs.	9.9 min.
Magnetic Tape Test		54.1 min.
Scope Calibration		12.2 min.
PETR Test		27.7 min.
Test Storage Check		7.2 min.
Demonstrations (No. 131)	6 Hrs.	33.5 min.
Total Time Logged	62 Hrs.	16.5 min.
Division 6 Conversions, Inter-run Operations, etc.	5 Hrs.	13.8 min.
Total Time Assigned	69 Hrs.	58.3 min.
Usable Time, Percentage	96.47%	
Number of Programs	455	