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Memorandum 6L-175

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Division 6 - Lincoln Laboratory
 Massachusetts Institute of Technology
 Lexington 73, Massachusetts

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SUBJECT: GROUP LEADERS' MEETING, December 6, 1954

To: Group Leaders

From: David R. Brown

Date: December 8, 1954

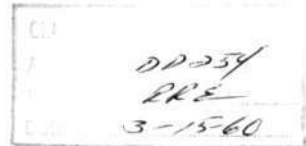
Present: J. W. Forrester, D. R. Brown, S. H. Dodd, R. R. Everett,
 A. P. Kromer, J. C. Proctor, N. H. Taylor, C. R. Wieser,
 P. Youts, and J. B. Goodenough and F. E. Vinal for Items
 5 and 6

- Agenda:
1. Meetings
 2. Maintenance Contract for FSQ-7
 3. Division 6 Space
 4. Research Assistants
 5. Magnetic-Materials Research
 6. Release of Memory-Core Process
 7. Time Schedules
 8. Hughes' Visit
 9. Digital Data Receivers and Transmitters
 10. ADES Assistance
 11. Christmas Holiday
 12. Status of Building Design
 13. Acceptance Tests for AN/FSQ-7(XD-1)
 14. Projection System

1. Meetings

A meeting on data links was held on November 30 at the Joint Project Office. The GE data link will be used for the interim, even though it has some difficulties. Development of the BTL link will be accelerated.

A meeting was held on December 1 in Admiral E. L. Cochrane's office to discuss the management of Project High with the following representatives of IBM: J. Zollinger, C. F. McElwain, J. M. Coombs, and M. M. Astrahan. J. Zollinger has been appointed Director of Defense Contracts and C. F. McElwain Director of Defense Engineering and Manufacturing. C. F. McElwain is now in a position to correct weaknesses in the management of Project High. A joint IBM-MIT guidance committee was set up to hold its first meeting on December 9. Membership of the guidance committee is as follows: C. F. McElwain (Chairman), J. Zollinger, G. R. Solomon, R. C. Sampson, G. A. Cullen, J. M. Coombs, and T. A. Burke (Secretary) from IBM; and J. W. Forrester, R. R. Everett, N. H. Taylor, and S. H. Dodd from Lincoln Laboratory. The primary function of the guidance committee is to discuss and solve problems, rather than exchange information. IBM's scheduling will be strengthened.

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A meeting was held in Poughkeepsie on December 3 with Air Force, IBM, and Lincoln Laboratory participation to discuss IBM's proposal for development work. A more clear and specific proposal is requested from IBM. Lincoln Laboratory and IBM will collaborate on a proposal to be sent to the Air Force, this proposal being due December 15. It is to cover the fiscal years 1956 and 1957.

At another meeting in Poughkeepsie on December 3 the Air Force was informed of the status of IBM's negotiations to obtain additional engineering for the FSQ-7 program by subcontract. Air Force survey teams will investigate three companies of IBM's choice, probably Hazeltine, Federal, and Bendix.

Air Force exhibit No. 17 for production FSQ-7's is not yet complete. An unresolved question is whether or not items which will not be a part of the first few systems should be part of the exhibit. Examples are the projection system and the mapper supervisor. This question may be discussed by the joint IBM-MIT guidance committee. S. H. Dodd should accumulate pertinent information.

2. Maintenance Contract for FSQ-7

Air Force representatives from Rome plan to write a description of the maintenance job for FSQ-7 to serve as a basis for a maintenance contract. Two Air Force representatives will spend some time here discussing WMI maintenance. Their description is to be completed by January 1, 1955.

3. Division 6 Space

At the request of H. D. Ross, the conference room next to H. D. Ross's office in the Group 62-6h headquarters area has been proposed as an office for W. L. Jackman and R. W. Bottomley. The Group 62 conference room would then be in the old travel office on the first floor of Building b. W. H. Taylor will discuss this proposal with H. D. Ross, suggesting that W. L. Jackman and R. W. Bottomley might better be located in Building F. However, if H. D. Ross wants W. L. Jackman and R. W. Bottomley in the in the Group 62-6h headquarters area, this will be arranged.

The contract engineers now working with R. S. Fellows will probably stay until June, moving into Building F about January 15.

J. C. Proctor should keep an eye on basement space, especially the basement of Building A.

4. Research Assistants

The electrical engineering junior staff rating forms should be returned complete to J. C. Proctor by December 15.

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5. Magnetic Materials Research

The initial objective of the Magnetic Materials Group to provide magnetic cores for the development of the FSQ-7 memory has been fulfilled so that the FSQ-7 memory program now requires very little attention from this group. If back-up for the FSQ-7 program were all that were required, it would only be necessary to keep about two staff members active on memory-core synthesis and another two staff members active on magnetic-core testing, so that these staff members would be able to serve as consultants should any emergency arise.

Fifteen staff members of Group 63 are now engaged in magnetic-materials research. Their work, except for the slight demands of the FSQ-7 program, is directed toward the goals set for advance development of digital computers of the FSQ-7 type. This advance development was described in the minutes of the Group Leaders' Meeting, October 25, 1954, Memorandum 6L-170. The objective of the two-to-four-year program is an experimental model of a system to do an FSQ-7-type job, but using new components and techniques such as the transistor, to achieve better reliability, maintainability, transportability, and capability. The solution of the memory problem for this system will require the development of improved magnetic materials and possibly some new types of magnetic materials. A basic investigation of the chemistry and physics of ferrites is necessary to provide a foundation for the creation of these materials. The magnetic-materials staff has decreased from twenty to fifteen during the last year.

6. Release of Memory-Core Process

The pilot plant for ferrite memory cores in Group 63 has been able to make cores superior to those available from other sources. These cores have larger output voltages (about 50 percent), better signal ratios, and wider current margins. MIT is anxious to publish information on the process for making these superior memory cores that ferrite manufacturers can supply better cores. Since the process used at MIT includes several techniques borrowed from General Ceramics and from RCA, permission from these companies is desirable before these techniques are published. This permission has been requested, and tentatively granted by RCA, subject to their review of the paper before publication. General Ceramics, however, is unwilling to have information on any part of their process published. Negotiations with General Ceramics are continuing with the hope of at least getting information on MIT's process back to General Ceramics and several other companies participating in the development of ferrite memory cores.

7. Time Schedules

S. H. Dodd, N. H. Taylor, A. P. Kromer, and several others are doing SAGE system planning. A time schedule for the SAGE system is being prepared as a basis for the planning. This time schedule will include FSQ-7 schedules, but more detailed schedules are required for the

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period after delivery. The manpower available from IBM, ADES, Lincoln Laboratory, etc., for the different aspects of the program will be considered. Lincoln Laboratory's part in the program must be defined to make most effective use of its manpower. Detailed schedules for Lincoln Laboratory's part in the program will be prepared.

Plans for the period after FSQ-7 delivery will be discussed at the joint IBM-MIT guidance committee meeting. Programming for XD-1 will be discussed at the December 13 Group Leaders' Meeting.

8. Hughes' Visit

On November 30, representatives of Hughes, Convair, WADC, CRC, and Lincoln Laboratory discussed proposed tests of Hughes MX-1179 using a modified Convair airliner to be carried out in mid 1956. Lincoln Laboratory is not yet committed to carrying out any tests and will visit Hughes this month to discuss the system in greater detail, discuss criteria for tests, etc. J. A. Arnow is handling liaison with Hughes.

9. Digital Data Receivers and Transmitters

CRC has not yet sent any information on DDR's and DDT's to ADC.

10. ADES Assistance

A joint ADEX-Lincoln Laboratory meeting on December 3 discussed areas where ADES might assist the SAGE-system program. The following areas were discussed:

1. manual input and output for the direction center
2. monitoring system for teletype outputs
3. telephone problems in general
4. ADES participation in installation
5. Radar orientation
6. possible reduction in the cost of telephone circuits
7. telephone lines and data circuits
8. programming
9. added equipment and interconnections at P sites

11. Christmas Holiday

An unofficial report of MIT's holiday schedule calls for a full day of work on December 23 and a holiday on December 24.

12. Status of Building Design

Western Electric has sent out drawings for bids on the first two direction centers. A meeting will be held on December 10 to discuss revisions of these drawings to be sent to the bidders.

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A meeting in New York on the combined direction and combat center, held during the week of November 29, ruled out ADC's request for additional space for administrative officers.

13. Acceptance Tests for AN/FSQ-7(XD-1)

No definite plans for acceptance tests for XD-1 should be made until further consideration is given the possibility of a realistic test to check system reliability. Such a test might require that XD-1 operate for 22 hours per day for 15 consecutive days. The effect of such a ~~stringent~~ test on IBM's contract fee should be determined.

14. Projection System

R. R. Everett will see that F. Rodgers, P. Youtz, or C. Corderman take responsibility for planning the projection system.

Signed David R. Brown
David R. Brown
Secretary

DRB/jg

cc: A. P. Kromer
W. K. Idnwill

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