

Forrester

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Division 6 - Lincoln Laboratory
 Massachusetts Institute of Technology
 Cambridge 39, Massachusetts

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Auth:	DDJ
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Date:	3-15-60

SUBJECT: GROUP LEADERS' MEETING, November 9, 1953

To: Group Leaders

From: David R. Brown

Date: November 10, 1953

Present: Jay W. Forrester, D. R. Brown, S. H. Dodd, R. R. Iverett,
J. C. Proctor, N. H. Taylor, C. R. Wieser, and P. Youtz

- Agenda:
1. IBM Time Schedules
 2. Power Supplies for AN/FSQ-7
 3. Organization for Installation of AN/FSQ-7 (XD-1) in Lexington
 4. Use of Classified Document Log
 5. Personnel
 6. Size of Display Tube
 7. Visit to Jacobs Instrument
 8. ADC Visit on November 13
 9. Ferrite Synthesis
 10. Visit to ERA
 11. Test Equipment Committee
 12. Speed and Logical Organization of AN/FSQ-7
 13. Telephone Service to Poughkeepsie
 14. Drum and Display System
 15. Morale at High Street
 16. Lincoln Seminars

1. IBM Time Schedules

Dodd and P. Gray reviewed the summary schedules in E-562 at High Street on November 4 and 5. The backup time schedules were not sufficiently detailed to lend certainty to the summary schedules but no further delay can be allowed in issuing the summaries. Dodd talked to R. Crago on how to handle the production schedule to make up for the delays now accumulating in engineering development. Crago believes that additional manpower and a second shift can be obtained to shorten the production period if necessary. For the immediate future, emphasis will be placed on good detailed backup schedules. A meeting will be held on November 12 at Poughkeepsie to discuss these new schedules.

Taylor expressed concern that the design for arithmetic element and arithmetic-element control must be frozen very soon to permit production to go ahead. December 1 has been set as the date for freezing the central machine. Forrester and Everett will make a schedule for reviewing the basic circuits and logical design.

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Group 61-Group 62 meetings on the specifications for the FSQ-7 system should be resumed with IBM participation.

2. Power Supplies for AN/FSQ-7

A brief review of the power supplies has indicated that the proposed system is not entirely satisfactory. A contract for power-supply development has been let to General Electric and the control has already been ordered from Westinghouse. The specifications for the power supply were set during the Project Grind meetings and the power-supply group, notably J. Gano and P. Beeby, have arrived at the present design as the result of those specifications. The present primary voltage of 120:208 volts may lead to unnecessary bulk and cost. A 277:480-volt system should be considered. Dodd will consider the proposed system in greater detail on November 12, and together with Everett and Taylor will see that the situation is corrected.

Dodd will see that other proposals for parts of the FSQ-7 design will receive proper review. The punched-card input equipment should be reviewed by someone outside the IBM organization.

3. Organization for Installation of AN/FSQ-7 (XD-1) in Lexington

The Lincoln Laboratory has the responsibility for equipment outside the XD-1 building, such as the telephone lines. We should not hesitate to call on ADA for assistance, however. The Lincoln Laboratory experience with phone lines should be reviewed so that the lines for XD-1 can be ordered as soon as possible. G. Valley should be consulted.

Now is the time to begin negotiations with a contractor for installation of XD-1 in Lexington. We should ask ADA whom they would recommend as the contractor. Jackson and Moreland appear to be the best qualified local organization. Taylor will call R. Crago to suggest that we make preliminary inquiry to determine Jackson and Moreland's interest. After this has been done, Professor Gordon Brown can call Ralph Booth at Jackson and Moreland to see if they are interested. If they are, Forrester will see Booth and arrange for IBM and Jackson and Moreland to get together.

The relationship of Jackson and Moreland to IBM, Hugh Wainwright, and Francis Associates should be defined. It is important that IBM place a competent production man on the job very soon.

4. Use of Classified Document Log

Proctor is preparing a memorandum to secretaries to describe the use of the classified document log. The log replaces receipts for internal handling of classified documents. When a document is received at the secretary's office, this will be noted in the log. When the

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document is turned over to a person outside that office, he will initial the log when he receives the document and when he returns it. In general, this procedure will be used within the group and receipt forms will be required when documents are mailed from one area to another.

5. Personnel

No fixed hours of work are set for staff members. Emphasis is placed on accomplishment rather than hours of work. To permit necessary group activities, such as joint experimental work, discussions, meetings, etc., and to provide adequate utilization of non-staff services, the preferred hours for staff members are from 8:00 to 5:00. In some cases, the nature of the work will require other hours. Some staff members are required to work during the night, away from the laboratory, or over the weekend. In general, staff members tend to appear for work after 8:00 and leave work after 5:00. It is important, however, that staff members responsible for non-staff, starting work at 8:00, should themselves arrive here at 8:00. This subject might be discussed at the next Friday tea.

Brown announced that L. Gold assigned to Group 35 but working part-time for Group 63 expects to leave the Lincoln Laboratory in March, 1954, primarily because the Lincoln Laboratory has been unable to obtain his clearance.

6. Size of Display Tube

Youtz plans to visit Corning this week to discuss display-tube envelopes. Aside from fabrication problems, a square tube would be most desirable. Youtz will determine what shapes are available and production problems associated with each type. The mock-ups of several systems being made in Endicott will be brought to MIT for examination.

7. Visit to Jacobs Instrument

Irving Reed and Brown visited Jacobs Instrument Company in Bethesda, Maryland, on November 3 and discussed the computer work there with Mr. Donald H. Jacobs. Two computers have been completed. The first, JAINCOMP-A, was a very small machine having three-binary-digit words to illustrate techniques for airborne digital computers. The second machine, JAINCOMP-B, later modified to JAINCOMP-B1, is a general-purpose electronic digital computer using the same techniques as those planned for future machines. It has a high-speed parallel arithmetic element, three registers of magnetic-core storage, and a punched card program. The third computer, JAINCOMP-C, is ready for assembly. This computer uses 800 6BF7's and dissipates a total of 2-1/2 kilowatts. The computer is a package approximately 3-feet square. It has 24 magnetic-core registers each storing 24 binary digits. Operational experience with these computers is lacking so that their reliability is unknown. Many of the construction techniques appear to be weak from a reliability point of view and would lead to serious production problems. The company appears to be out of touch with computer developments in other laboratories and has suffered some from this.

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The Jacobs' computers were developed to work in a bombing system but would be equally applicable to fire-control problems. Their possible use in some fire-control problems in Division 4 should be considered.

8. ADC Visit on November 13

Generals Chidlaw and Smith and others from the ADC will attend the Cape Cod demonstration on Friday, November 13. Some members of the party will stay over on Saturday to discuss the material in L-113. General Smith has expressed an interest in the Charactron. This will be available for inspection.

9. Ferrite Synthesis

The chemistry and ceramics section in Group 63 has succeeded in making small FSQ-7 type cores having characteristics better than the General Ceramics' cores. Pilot production, however, is lagging due to lack of personnel experienced with die problems.

10. Visit to ERA

W. O. Ogden, J. Mitchell, and W. C. Cauty visited ERA to discuss the magnetic-core memory during the week of November 2. ERA has an operating 32-by-32 plane using pulse transformer drive and a very simple sensing amplifier employing a pulse transformer input and low-level diode inversion. The ERA sense amplifier will be duplicated and studied here.

11. Test Equipment Committee

The Division 6 Test Equipment Committee has been discussing problems associated with the move to Lexington with Mr. G. O. Johnson in Division 7. Some consolidation of test equipment facilities may be desirable. Central facilities for repair of meters appear to be desirable. Maintenance facilities for scopes and Division 6 standard test equipment will probably continue to be maintained by Division 6.

12. Speed and Logical Organization of AN/FSQ-7

A possible modification of AN/FSQ-7 logical design to obtain increased speed by overlapping of memory access cycles is being studied. These studies indicate that the cost in additional control equipment might be excessive.

13. Telephone Service to Poughkeepsie

Proctor has discussed the problem of telephone service to Poughkeepsie with Professor Tucker. Professor Tucker plans to file a transmission complaint and believes that the difficulties can be corrected. No conference phones are available from the MIT switchboard.

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14. Drum and Display System

A review of the magnetic-drum situation has resulted in an improved design which decreases the number of tubes associated with that equipment. Four small drums, possibly with 66,000 registers, will be used in XD-1. The possibility of using larger drums in future systems will be maintained. IBM should proceed with the development of a double-diameter drum.

15. Morale at High Street

IBM management has expressed concern that personnel at High Street do not exhibit the enthusiasm and high morale which has been expected. In our dealings with IBM, we should give more attention to the objective of making IBM feel a part of the Air Defense Program. Some seminars will be arranged, similar to the Lincoln Laboratory evening seminars, to be presented at Poughkeepsie and discuss subjects of general interest. An ADC briefing will be arranged.

16. Lincoln Seminars

The Division 6 seminar series has been re-arranged. The first seminar will be held on November 17. The Cape Cod System will be discussed. The AN/FSQ-7 program will be discussed at a later date. Division 2 plans to present a seminar on L-113.

Signed

David R. Brown

David R. Brown
Secretary

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