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Memorandum 6M-3857

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

SUBJECT: LINCOLN-IBM MEETING ON XD-1 EQUIPMENT NEEDS

From: S. H. Dodd and R. R. Everett

Date: 30 August 1955

Approved: SAD
S. H. Dodd

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A meeting was held at Lincoln Laboratory on 26 August 1955 to discuss the XD-1 schedule of equipment as it affects the Experimental Subsector and the McGuire Direction Center. The following were present:

MIT

IBM

S. H. Dodd
R. R. Everett
J. W. Forrester
M. G. Holloway
B. E. Morriss
J. A. O'Brien
C. F. J. Overhage

T. A. Burke
R. P. Crago
J. F. Mills
H. D. Ross
G. R. Solomon
R. N. Sweetland
J. E. Zollinger

CLASSIFICATION CHANGED TO:
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By: LEE
Date: 4-4-60

Memorandum 6M-3852, "Equipment Needs in XD-1," was used as a basis for discussion.

H. D. Ross stated that he did not feel it was a difficult problem to meet the reliability requirements stated in 6M-3852 and fully agreed that this reliability was necessary and would be met for all required items on their operating dates.

R. P. Crago emphasized the following difference between IBM's scheduled dates and their contractual dates. A completely operating piece of equipment, at high reliability, in a state completely ready for Lincoln programming use is promised on the scheduled date. A completed unit with all nonfunctional details such as paint color and covers, ready for Air Force acceptance, is promised on the contractual date.

1. (Each numbered item refers to the numbered items in Memorandum 6M-3852). Item 1 of 6M-3852 states as follows:

"All equipment for XD-1 should be operating in accordance with the published IBM schedules except as noted below. These schedules

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are given in IBM CD #6-408-174."

H. D. Ross stated that IBM expects to meet the scheduled dates as indicated in IBM CD #6-408-174 for all XD-1 equipment except for the display equipment discussed later in the meeting. IBM thus expects to meet the 15 October 1955 date for all major pieces of equipment with the exception of the display system, command post, and additional auxiliary memory in operating condition, and further it was stated that IBM could perhaps finish earlier (possibly as soon as 1 October).

2. "Two additional index registers as described in IBM P-170 should be operating on 1 October 1955."

H. D. Ross stated that the 1 October requirement for these index registers can be met.

3. "The 38 consoles needed for initial program operation and described in 6M-3850 should be operating by 21 November 1955. These consoles are required with design characteristics as specified in Lincoln design requirements as released under TIR #1-85, #1-91, #1-92, and #1-95."

4. "A completed display system with all situation display and auxiliary consoles with the exception of the command post must be operating 1 January 1956 and be kept in calibration after that date. This system must agree with the Lincoln design requirements released in TIR #1-85, #1-91, #1-92, and #1-95.

MIT stated that a total of 44 consoles are required by 21 November 1955. The 38 noted are on the operations floor. In addition 3 are needed on the computer floor for display maintenance, and 3 are needed near the maintenance console for program checkout. The 3 display maintenance consoles are not listed in 6M-3850.

R. P. Crago divided the display problem into two areas:

- a. Delays in the delivery of display equipment as originally described.
- b. Delays due to modifications and additions as required by Lincoln to match operational specifications.

Delays in the delivery of original equipment were ascribed to production troubles at Crosley including the strike at the Richmond plant and to mechanical and electrical troubles in equipment partially as a result of IBM pressure on Crosley to meet the original schedules. R. P. Crago stated that MIT schedule dates for the original equipment could be met only by an extraordinary effort by IBM including establishment of a modification center at Lexington. Such a center would

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require about 100 people, mostly technicians. IBM would prefer to stop Crosley production, correct drawing and design errors, establish better inspection procedures, and restart production after a delay of some months.

R. P. Crago estimated the cost of MIT required changes as an additional 20% beyond that required to complete the equipment as originally described. IBM agreed that the display system must be supplied according to the new specifications and that they will work to this end.

IBM then questioned the firmness of the 21 November 1955 date vs. the 1 January 1956 date. MIT stated its position as follows:

- a. The November date is a firm requirement for program checkout.
- b. The 1 January 1956 date was established only partially because of the programming needs. A major reason was the necessity for completely installing and debugging the display system before extensive operational use begins. If display system installation is allowed to extend beyond 1 January, there will be conflicts in computer time allocation and confusion and lost reliability in those parts of the display system presumably already operational.

The group agreed to proceed as follows:

- a. Lincoln will establish a Priorities Committee composed of representatives of ADC, Division II, and Group 61 to consider the detailed operational scheduling requirements for the consoles in the XD-1 display system requested for 1 January 1956 in 6M-3582.
- b. Lincoln and IBM will establish a Ways and Means Committee to work out acceptable equipment compromises for all display equipment. Using facilities and delivery information from IBM and, where needed, Lincoln, this committee will establish the exact equipment description including a specific installation plan with associated dates for all consoles. This will result in a detailed statement of how the Lincoln schedule requirements will be met and will indicate any additional facilities needed to meet the schedule. Substitution of nonstandard equipment, temporary outriggers for equipment mounting, and cannibalizing lower priority consoles are permissible.

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Committee membership was established as follows:

For IBM	W. B. Mercaldi	(empowered to commit IBM on equipment compromises)
	F. Burud	
For Lincoln	R. D. Buzzard	(empowered to commit MIT on equipment compromises)
	H. K. Rising	

J. A. O'Brien for Lincoln and J. F. Mills for IBM were given responsibility for the rapid functioning of this committee. The committee was directed to reach decisions rapidly by whatever means is necessary. The committee will continue in being throughout the life of the display installation.

The committee will concentrate first on the 44 consoles required by 21 November and the command post and will report on these by 2 September. On the basis of the equipment compromises reached, the committee will determine the manpower and facilities that must be made available in order to meet the scheduled dates.

S. H. Dodd was given responsibility for over-all coordination of Lincoln display planning.

R. P. Crago agreed that IBM would establish a modification center for the first 44 consoles. A decision as to action on subsequent consoles will await IBM discussions with Crosley and Hazeltine and the results of the Lincoln Priorities Committee.

Progress on the display problem will be reported at the Project High Coordination Committee meeting of 7 September 1955. IBM will report on their ability to supply the manpower and facilities determined by the Ways and Means Committee.

Unresolved problems will be discussed at the ADES meeting of 15 September 1955.

5. "The additional auxiliary drum memory should be operating 1 February 1956."

H. D. Ross said that the 1 February 1956 schedule requirement can be met if 4 hours per day of computer time beyond that presently allocated during January, 1956, in Chart 1 of 6M-3852 can be made available to IBM. He further stated that IBM is presently behind schedule on this equipment, and it will require substantial IBM effort.

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6. "The command post equipment including consoles and the special command post desk should be operating 1 February 1956."

Hazeltine Electronic Corporation has stated to IBM that HEC is not interested in a contract for the command post desk for XD-1 unless it can have an operating date of 1 June 1956 or later. It was agreed that this is unsatisfactory. R. P. Crago agreed that IBM would build the desk themselves out of wood so that the required date can be met. T. A. Burke stated that IBM now has contractual coverage for this work. M. G. Holloway agreed that the command post desk electronic equipment should be considered by the Ways and Means Committee as part of the display system problem but stated that 1 February 1956 was a firm ADC requirement for this desk. M. G. Holloway further requested that the deviations in electronics or desk shape and appearance should be brought to Col. J. D. Lee's attention.

7. "A draft list of XD-1 specifications with required operating dates has been issued as 6M-3851. This memorandum is scheduled for release by TIR in final form 13 September 1955. IBM comments on completeness of this memorandum should be received by 7 September 1955."

R. P. Crago said R. C. Marden of IBM would work on a review of 6M-3851. B. E. Morriss agreed to be Lincoln's representative on settling any problems that result. IBM will report on this review at the 7 September Project High Coordination Meeting in Lexington.

8. "Equipment changes required by revision of Air Force operational specifications and computer programs which result from experience in the Experimental Subsector should be planned for at a manpower level which we presently estimate as approximately 10 engineers and 5 technicians. A corresponding level of support facilities at Poughkeepsie or elsewhere should supplement this group. This personnel is in addition to those implementing presently agreed changes."

IBM concurred in the necessity for these engineers and technicians and expects to include this in the maintenance contract covering the time period after 1 October 1955. The number of people to be supplied requires further study. T. A. Burke does not feel that IBM now has adequate contractual coverage for these engineers and technicians but agreed that he would investigate the possibilities and report his progress at the 7 September Project High Coordination Committee meeting. If this is not satisfactory, it will be brought up at the 15 September ADES monthly meeting.

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