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Memorandum M-2875

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

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SUBJECT: SECTION LEADERS MEETING GROUP 62, JUNE 14, 1954  
To: All Division 6 Group Leaders, All Group 62 Staff  
From: A. P. Kromer  
Date: June 17, 1954

Abstract: Plans to establish engineering control of inspection and test of the prototype system have been initiated. MRI design by IBM is delayed pending a Lincoln decision regarding method of re-laying information from P site to Direction Center. Initial hardware for the central display system is being constructed at Division 7, Lexington. Modification to the logic for the radar drum field is to be made to convert the parity bit to an information bit. Provisions to cool XD-1 by use of outside air in emergency are to be incorporated in the system.

I. Quality Control AN/FSQ-7 (XD-1)

A meeting with the Air Force inspector at IBM plant (Mr. George Moross), AFCRC representatives, and Norm Taylor of Lincoln was held last week to discuss control of quality and performance of equipment of the prototype system. The Air Force contracting officer has indicated to the inspector that control of the XD-1 systems from a quality standpoint rests with AFCRC. This agency delegated engineering control to Lincoln, and Ken Olsen, Lincoln resident representative at Poughkeepsie, has in turn been designated as the contact man with the Air Force inspection group at IBM.

While it was generally agreed that quality control procedures for XD-1 would emphasize equipment performance and minimize appearance and physical characteristics, it is planned to review the military specification MIL-Q-5923B and to document the applicable paragraphs or sections by having them included in the IBM contract. This review will be a joint MIT-IBM undertaking.

II. MRI Inputs

The start of the engineering design work for the MRI inputs of XD-1 has indicated that the question of the number of telephone lines on which this information will be transmitted from a P site to a Direction

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Center must be resolved. Initial thinking called for use of three lines for the prototype XD-1 system and subsequently reducing this to two or one lines for production. It is now evident that this approach would require a complete new engineering design for each of these conditions. To relieve the engineering burden of doing a double design job it has been agreed that the same system would be used for both XD-1 and subsequent production. However, the exact manner of relaying this data from a P site to a Direction Center for both programs is not yet resolved. Prompt attention must be given to this matter to secure an early decision on which IBM can proceed with their engineering work.

### III. XD-1 Testing at Poughkeepsie

The instruction control frame is currently under test at Plant 2. This work is being done on a two-shift basis. However, O'Brien stated that in his opinion the space available around the frame for the necessary test equipment, scopes, reference drawings, etc., is somewhat limited.

The program frame is nearing completion of assembly and wiring and is expected to be ready for test in about two weeks. At this time the instruction control frame will be coupled to the program frame and they will be operated together.

### IV. Duplex Central Building Layout

Study of the suggested layout for the duplex central building by the architectural firm engaged by ADES has raised a question regarding the possibility of interchanging the second and third floor; that is, placing the operations rooms on the second floor of the building and the office and miscellaneous related elements on the top or third floor of the building. One problem that this might bring up is the location of the d-c power supplies further away from the computer and associated equipment which is on the first floor of the building. The estimated saving in building costs of approximately \$200,000.00 per building, however, seems to justify further exploration of this possibility and more detailed consideration of the problem regarding d-c supply lines. One obvious advantage, which seems to offset problems associated with the d-c supplies, is a reduction in the length of signal lines for the display system if the scopes are on the second instead of the third floor. This will be investigated further and all of the pertinent facts determined before any change in present thinking is agreed upon.

### V. Display Systems

The central display system design is proceeding with layout of etched cards and pluggable units. Design information for assembly of the initial group of pluggable units to be used for bench measurements and type testing has been completed and material and parts furnished to the

Division 7 shops for preparation of etched cards and assembly of components to them.

#### VI. Radar Drum Field

The requests from the programming group to change the available word length on the radar drum field from 24 to 26 bits has been investigated. This change was requested to allow more categories of information to be designated while stored on this drum. In view of the significant amount of additional engineering work involved to make this change at this time, it has been suggested and generally agreed upon that the parity bit will be used as an information bit and no parity check would be made on this particular drum in the XD-1 and XD-2 systems. This seems entirely satisfactory to all groups concerned except that in the test loop for the radar drum the parity bit is presently required and some change in logic to overcome this situation will be necessary. This change is felt to be of minor nature, however.

The parity bit as well as additional information bits may be desired in the duplex centrals.

#### VII. Equipment Cooling - Emergency Outside Air

Since the XD-1 system will operate from the chill water supply which is located in the central power house at the Lexington Laboratory building, it is felt to be advisable to incorporate into the system a feature which would permit outside air to be used for equipment cooling under emergency conditions. This can be engineered into the system without affecting the schedule significantly. Therefore, it is planned to recommend that this be added to the equipment-cooling system. Lincoln will advise the Air Force (AFCRC and AMC Rome) of our desires in this matter so that suitable contractual negotiations can be undertaken to authorize the additional cost of the engineering and provision of equipment as a supplement to the IBM contract.

#### VIII. Meetings This Week

On Tuesday, June 15, a meeting at the Whittemore Building, Cambridge, to discuss the duplex central proposals, particularly sections three through five of IM-91. Also on Tuesday, June 15, a meeting at Lexington (Enticknap) concerning telephone system within the central.

On Wednesday, June 16, meetings at Cambridge for concurrence on the display systems. At Poughkeepsie, meeting regarding the number of crosstell inputs to determine MIT-IBM concurrence.

On Thursday, June 17, at Poughkeepsie, a meeting regarding the general testing plans for the XD-1 equipment and at Cambridge a meeting


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regarding the addition of facility to receive ground-to-air link signals at the XD-1 building location for monitoring purposes.

SIGNED   
R. P. Kromer

APPROVED   
N. H. Taylor

APK/cp  
cc: R. P. Crago, IBM  
C. F. Lynch

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