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Memorandum M-2478

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Page 1 of 3

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Date: 2/1/66

Division 6 - Lincoln Laboratory  
Massachusetts Institute of Technology  
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SUBJECT: BIWEEKLY PROGRESS REPORT FOR AN/TSC-7 October 23, 1953

To: J. W. Forrester, R. R. Everett, Division 6 Group Leaders

From: A. P. Kromer, P. J. Gray

Building A Preparation

Current plans for providing space in Building A for XD-1 call for the construction of a building having approximately 17,000 sq. feet of floor area at the west end of Building A which would be used for the operational areas. The computer, drums, power equipment, etc. will be located in the basement of Building A.

Power Equipment

IBM has subcontracted the design and construction of the d-c power supplies to the General Electric Company in Lynn. Two G.E. engineers were to report this week at High Street to begin design work on the bread-board control panel.

Motor-generator sets and associated switchgear for alternate and parallel operation are to be procured from Westinghouse.

Arithmetic Element & Control

Pluggable unit breakdowns have been completed for the normal bits of all registers of the Arithmetic Element. The 432 pluggable units required are of ten types. The types of pluggable units to be used in the end digits, i.e., S (sign) and 15 of the arithmetic registers remain to be determined.

The instruction list has been frozen temporarily at 45 instructions. These include the 42 instructions contained in IBM Report H-42 plus 3 additional orders, bz (Branch on Zero), ps (Program Stop) and ab (Add B Registers to Accumulators).

Due to the current emphasis on tube count reduction, the question of cathode followers has been reopened. It is felt that considerable savings can be effected by the use of the 7AK7 and the 5998 tubes as medium and high power cathode followers respectively, in place of paralleling 5965 tubes in multiple.

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Memorandum M-2478

Page 2 of 3

Internal Memory

Most of the design of the selection plane system has been frozen. The pluggable selection plane panel will contain the crystal matrix, the crystal matrix output amplifier, the 5998 driving tubes and transformer. Both the crystal matrix and the circuits for the matrix output amplifier will make use of etched wiring techniques.

Memory Cores

A program for testing the 150,000 cores required for the first AN/FSQ-7 memory has been agreed upon with IBM. Delays in development and provision of planned core testing equipment at IBM has made it necessary for MIT and IBM to share the testing load until approximately the middle of November, at which time IBM expects to have sufficient core test set-ups to assume the entire testing burden. Cores for the first memory are scheduled to be completely tested by January 1, 1954.

Maintenance Console

Several additional decisions have been made concerning the maintenance console. It was decided that only one light per flip-flop will be included on the console, and that no display scope will be included. Some audible signal will probably be provided as an aid in testing and maintenance. It has been suggested that the extra light for each flip-flop be placed in a box for ease in photographing.

Drums

The tube count survey in the XD-1 machine indicates that magnetic drums are calling for a large percentage of the tubes in the system. A review of the logic of this portion of the machine has been initiated, and a serious effort to reduce the tube count will be made. Several proposals are now under intensive study. These include improved read and write switching, the use of larger diameter drums, and the use of non-return-to-zero techniques. The possible tube savings appear to be considerable.

Inputs

Magnetic core shifting registers are about ready for subcontracting, and at present it appears that Raytheon will be chosen to do the final engineering and packaging of this item.

A radar mapper test has been presented to IBM engineers who will design the mapper to work with the test. A test for the SDV demodulators is also being prepared.

Bendix collaboration on mapper design and construction is continuing. Two Bendix engineers are in residence at High Street accumulating necessary data.

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Memorandum M-2478

Page 3 of 3

Display

Study and testing of the Charactron tube is continuing at a rapid rate. Two additional 19" Charactron tubes have been received at MIT with an 8 x 8 array of characters. This array is the type currently receiving consideration. In general the results are quite encouraging, and things look very hopeful for the use of the Charactron tube.

A summary of the recent visit to Convair and Hughes Aircraft Co. is available in M-2446, "Summary of West Coast Visit."


Discussions with IBM have led to a number of decisions with regard to display. They are as follows:

1. A block of track numbers can be preassigned to interceptors.
2. There will be a category of proposed interceptors.
3. Flight plans will have identity F and status P.
4. Raid number will be displayed at intercept points.
5. Forced displays are always bright.
6. Requested displays may be bright or dim.
7. Categories may be bright or dim.
8. There will be 4 sets of feature switches per console.
9. A square will be used to encircle attention points or forced displays.

Signed:

  
A. P. Kramer

Signed:

  
B. J. Gray

Approved:

  
N. H. Taylor

APK:PJG/mmt

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