

Memorandum 6M-3291, Supplement 3

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Division 6 - Lincoln Laboratory
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SUBJECT: SPECIFICATIONS FOR THE CENTRAL COMPUTER FOR THE AN/FSQ-7,
SUPPLEMENT 3.

To: S. H. Dodd

From: R. R. Shorey

Date: 24 August 1955

Approved: 
H. E. Anderson

Abstract: The AN/FSQ-7 specifications for the Central Computer System as recommended by Lincoln Laboratory were listed in 6M-3291 (released by TIR 1-57), 6M-3291, Supplement 1 (released by TIR 1-66), and 6M-3291, Supplement 2 (released by TIR 1-78). This supplement (supplement 3) lists status changes and modifications in the following areas:

- a. Detailed specification of the Test Memory
- b. Specification of an amendment to the Selection and Input-Output Control
- c. Specification of amendments to the Card Machines
- d. Specification of an amendment to the Perseblsn codes

1.0 Introduction

The specifications for the Central Computer System of the AN/FSQ-7 are defined by Lincoln Laboratory Memorandum 6M-3291, Specifications for the Central Computer System of AN/FSQ-7 (released by TIR 1-57), 6M-3291, Supplement 1 (released by TIR 1-66), and Supplement 2 (released by TIR 1-78). Modifications to and changes in the status of specifications since the release of 6M-3291; 6M-3291, Supplement 1; and 6M-3291, Supplement 2 are listed but not described in detail in this supplement. In addition, Lincoln Laboratory recommendations on the importance of certain modifications are included. "Concurrence" as used below means that Lincoln and IBM have agreed on the adequacy of the technical design specified in a particular document.

2.0 Specifications

2.1 Test Memory

IBM document D-87, Test Memory for the Production System, dated 31 May 1955, received concurrence with modifications in a letter dated 23 June 1955. This document specifies the circuitry of the test memory described previously in IBM document D-6, Specifications

of the Arithmetic Element for the AN/FSQ-7 Production System, dated 29 June 1954; in IBM document D-32, Specifications for the Duplex Maintenance Console of a AN/FSQ-7 Production System, dated 29 September 1954; and in IBM document IM-79, Proposal for Test Memory, dated 17 March 1954 which did not receive concurrence. The Test Memory Plug Board is now described as being located on the Duplex Maintenance Console instead of at the arithmetic frames as previously specified. As stated in section 6.4 of 6M-3291, Lincoln Laboratory recommends that this change be incorporated as soon as possible without delaying production schedules and need not be retrofitted.

2.2 Selection and In and Out Control Element

IBM document D-19-4, Changes in the Selection and In and Out Control Element, dated 13 July 1955, received concurrence in a letter dated 13 July 1955. This specification is an amendment to the Selection and In Out Control Specifications to permit the Central Computer to sense the phase of the display cycle. Lincoln Laboratory recommends that this feature be incorporated in the initial machine since extensive use of this is planned in the operational programs. (Ref.: section 5.1 of 6M-3291).

2.3 Card Machines

a. An inter-office Lincoln Laboratory letter (IBM no. D-12-1) from R. W. Bettenley and S. L. Thompson dated 5 April 1955 enumerates four features of card machine operation which should be improved. In a letter, Concurrence on P-81, D-12-1, Proposed Changes in the Card Machines, dated 19 May 1955, Lincoln and IBM concurred that these items should be corrected but that the methods proposed for the correction are not necessarily the ones that should be used. Lincoln recommends that these changes should be made as soon as possible without effecting production schedules and should be retrofitted to all machines. (Ref.: section 9.1 of 6M-3291).

b. IBM document D-12-2, Supplement 2 to the Card Reader, Printer and Punch Specifications for AN/FSQ-7, dated 23 June 1955, is a modification to the card machines specifications to include a 72 volt d-c Power Supply at the Card Machines. Concurrence on this amendment is indicated in the document itself. This change was proposed by IBM because of difficulties encountered when using the 72 volt d-c power from the Central Computer MCD frame. This specification is adequate for the initial machines, but Lincoln Laboratory recommends that an investigation be made to determine if some method may be found to utilize the MCD frame power in order to be consistent with the philosophy of centralized power supplies for maximum operational effectiveness and reliability. (Ref.: section 9.1 of 6M-3291).

c. IBM document D-92, .009 Card Stock for Binary Punching and Reading Equipment (P-193), dated 20 June 1955 received concurrence in a letter dated 23 June 1955. This document specifies that the card stock will be increased in thickness from .0065 inches to .009 inches. All IBM card machines must necessarily be adjusted to use the .009 card. This increase in card thickness was made in order that high percentage hole punching can be carried out with no decrease in the reliability of card operations. (Ref.: section 9.1 of 6M-3291). Lincoln recommends that this change be incorporated in the initial machines.

2.4 PERSELBSN Codes

IBM document D-16-7, PERSELBSN Codes, dated 19 July 1955 received verbal concurrence on 20 July 1955. This document is an amendment to the PERSELBSN code specifications. Lincoln recommends that the instructions specified in this document be incorporated in the initial machines. IBM documents D-16-5 (Lincoln Laboratory 6DR-251) and D-16-6 (Lincoln Laboratory 6DR-250) did not receive concurrence and are superseded. (Ref.: section 8.1 of 6M-3291).

2.5 Magnetic Tape Element

IBM document D-76, Magnetic Tape and Reels for AN/FSQ-7 and AN/FSQ-8, dated 9 March 1955 received concurrence with modifications in a letter dated 30 March 1955. This document specifies the initial quantities of magnetic tape and reels for each AN/FSQ-7 and AN/FSQ-8. (Ref.: section 7.1 of 6M-3291).

3.0 Summary Reference List

The specification documents listed below are all described elsewhere in this memorandum and should be added to the list of detailed specifications for the central computer for the AN/FSQ-7 of the production AN/FSQ-7. In the comments column are listed Lincoln Laboratory change recommendations for the inclusion of a specification in the AN/FSQ-7 and other pertinent remarks concerning its status. The Lincoln Laboratory change recommendations are classified into four categories which have the following connotation:

"Class A" Change is defined as one which must be made before the equipment will be suitable for its air defense function.

"Class BR" Change is considered ultimately necessary in all machines. The AN/FSQ-7 can be used for air defense work without them, but they should be introduced as soon as possible without adversely affecting delivery schedules.

"Class B" Change is desirable change to facilitate the air defense function of the AN/FSQ-7. They should be incorporated in the production program as soon as possible without adversely affecting delivery schedules, but Lincoln currently feels that they need not be retrofitted into all previous machines.

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"Class C" - a change which should be incorporated at the manufacturer's convenience without adversely affecting production schedules.

SIGNED:

RR Shorey
R. R. Shorey

Production Coordination Office

RRS:mmc

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page 5 REFERENCE LIST, SPECIFICATIONS FOR THE CENTRAL COMPUTER FOR THE AN/FSQ-7, SUPPLEMENT 3

| <u>Document No.</u> | <u>Title</u> | <u>L.L.Doc.Rm.No.</u> | <u>Comments</u> |
|---|---|-----------------------|--|
| <u>TEST MEMORY</u> | | | |
| D-87 | Test Memory for the Production System, dated 31 May 1955 | 6DR-269 | Initial Specification |
| D-87 | Concurrence letter, dated 23 June 1955 | 6DR-288 | |
| <u>SELECTION AND IN AND OUT CONTROL</u> | | | |
| D-19-4 | Changes in the Selection and In and Out Control Element, dated 13 July 1955 | 6DR-292 | Class A Change |
| D-19-4 | Concurrence letter, dated 13 July 1955 | 6DR-293 | |
| <u>CARD MACHINES</u> | | | |
| D-12-1 | Interoffice Lincoln Laboratory Letter, Proposed Changes in the Card Machines, dated 5 April 1955 | 6DR-321 | Class BR Change |
| D-12-1 | Concurrence letter, dated 19 May 1955 | 6DR-322 | |
| D-12-2 | Supplement 2 to the Card Reader, Printer, and Punch Specifications for AN/FSQ-7, dated 23 June 1955 | 6DR-286 | Modification requested by IBM and agreed to as expedient by Lincoln. Concurrence contained in document |
| D-92 | .009 Card Stock for Binary Punching and Reading Equipment (P-193), dated 20 June 1955 | 6DR-303 | Class A Change |
| D-92 | Concurrence letter, dated 23 June 1955 | 6DR-284 | |

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REFERENCE LIST, SPECIFICATIONS FOR THE CENTRAL COMPUTER FOR THE AN/FSQ-7, SUPPLEMENT 3 (cont.)

| <u>Document No.</u> | <u>Title</u> | <u>L.I. Doc. Rm. No.</u> | <u>Comments</u> |
|------------------------------|---|--------------------------|--|
| <u>MAGNETIC TAPE ELEMENT</u> | | | |
| D-76 | Magnetic Tape and Reels for AN/FSQ-7 and AN/FSQ-8, dated 9 March 1955 | 6DR-174 | Initial Specification |
| D-76 | Concurrence letter, dated 30 March 1955 | 6DR-323 | |
| <u>PERSELBSN CODES</u> | | | |
| D-16-7 | PERSELBSN Codes, dated 19 July 1955 | 6DR-324 | Class A Change Verbal concurrence at meeting on 20 July 1955 |

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