911E DISTORTION MEASURING SET
DESCRIPTION AND OPERATION

1. GENERAL

1.01 The 911E Distortion Measuring Set is designed for use with the Electronic Switching System (ESS) No. 1, Arranged with Data Features (ADF), Automatic Data Channel Test (ADACT). The 911E is mounted in the ADACT frame (Fig. 1).

1.02 The 911E Distortion Measuring Set functions in a similar manner to the 911C Distortion Measuring Set, but additional circuitry has been added to the 911E to provide for automatic operation.

1.03 The 911E permits a look at incoming data signals as they are presented to the ESS equipment. Measurements made at this point assess the quality of operation of stations, station loops, and associated facilities.

1.04 The fully implemented ADACT serves a maximum of 3072 data channels. Four 911E Distortion Measuring Sets are installed in a fully implemented installation. The basic functions of the ADACT are as follows:

(a) To connect a selected data channel to an idle 911E Distortion Measuring Set

(b) To adjust the 911E to accept the speed and code of the data stream to be measured

(c) To sense the distortion measured by the 911E

(d) To report the approximate percentage value of the distortion measured, after a valid measurement indication (VMI) is indicated by the 911E (see 1.06).

1.05 In operation, it is probable that the 911E will not start in synchronization with the incoming data signals. The amount of time required to achieve synchronization is variable, because it is dependent on the code, speed, and the individual characters being measured. A VMI function is included in the 911E to insure a valid measurement before a report is made. In order to insure a valid measurement and obtain a VMI, either of three conditions must be met. The conditions are as follows:

(a) Receiving 15 consecutive characters that are synchronized with the 911E character counter

(b) Receiving a marking interval of approximately 500 msec followed by nine consecutive synchronized characters

(c) Receiving a marking interval (approximately 500 msec), a single character, and another marking interval.

1.06 The distortion measurements made by the 911E are accurate to ±1 percent for measurements from 0 to 49 percent. In order to conserve circuitry, the distortion reported to the user has been grouped into the following seven ranges:

(1) 0 to 4 percent

(2) 5 to 14 percent

(3) 15 to 24 percent

(4) 25 to 29 percent

(5) 30 to 34 percent

(6) 35 to 39 percent

(7) 40 to 49 percent.

1.07 The following serial data speeds and codes may be measured by the 911E Distortion Measuring Set:

(1) 45.5 bauds, Baudot code

(2) 50.0 bauds, Baudot code

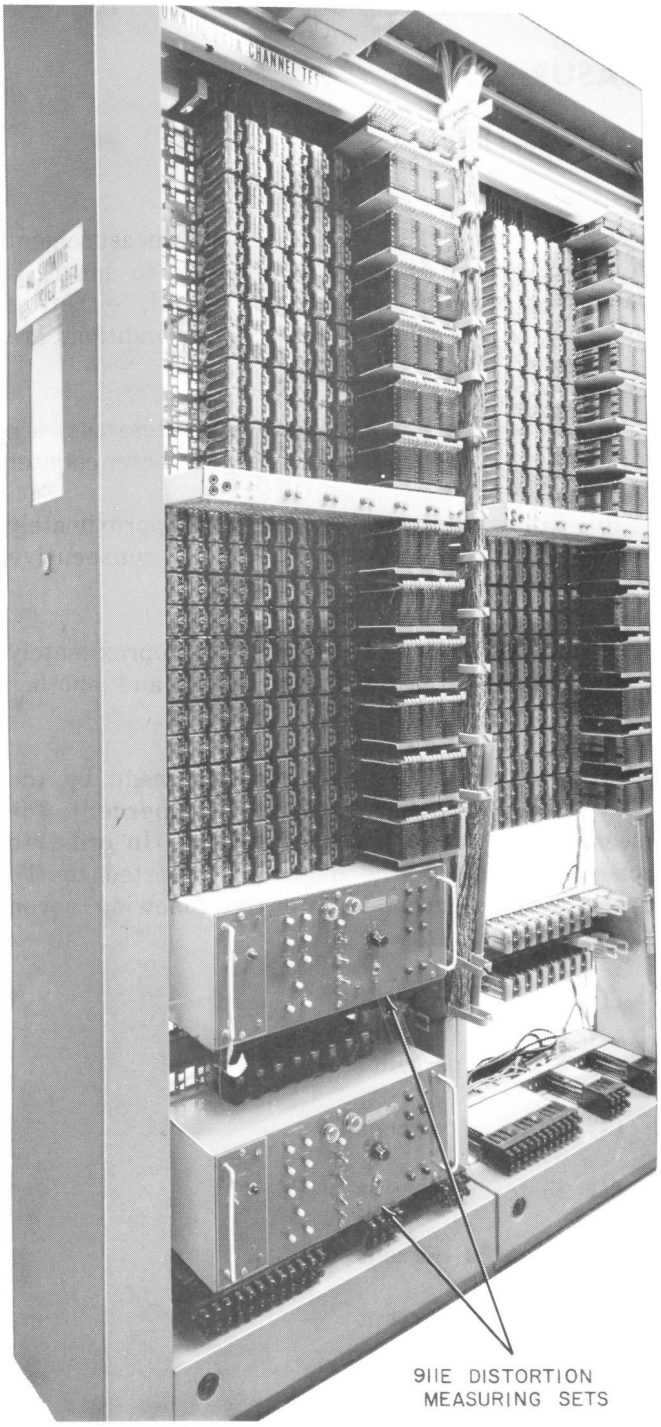

Fig. 1—911E Distortion Measuring Sets in Adact Frame

(3) 56.9 bauds, Baudot code

(4) 74.2 bauds, Baudot code

(5) 110 bauds, USA Standard Code for Information Interchange (USAS X 3.4 1967)

(6) 150 bauds, USA Standard Code for Information Interchange (USAS X 3.4 1967).

1.08 All functions pertaining to the use of the 911E are controlled by the ESS central processor. The time required for a valid measurement will vary, but, under normal conditions, should be only a few seconds. For all tests, the central processor will allow a full 2-minute test interval before making a "no valid measurement" report.

2. IDENTIFICATION

2.01 The 911E Distortion Measuring Set is self-contained in a metal cabinet which is 8 inches high by 12 inches deep and is arranged to mount on the 26-inch ADACT frame.

2.02 Operating voltages (+155, +26, +12, -12) required for functioning of the 911E circuitry are provided from a 115-volt rectifier power supply mounted within the 911E cabinet. Voltages (-48, +24) required for operation of magnetic latching relays that control code and speed functions are supplied from the No. 1 ESS ADF.

2.03 The 911E can be tested independently of the ESS equipment.

3. OPERATION

3.01 The 911E Distortion Measuring Set is designed for complete automatic operation under the control of the No. 1 ESS central processor. Conventionally, while searching for trouble on a particular data channel, personnel at the control serving test center (CSTC) will send a message via a teletypewriter link to the central processor requesting a distortion measurement on the data channel in question.

3.02 The message must identify the originating station, state that action is requested, state the action requested, and identify the channel to be tested. The following is a representative message requesting a distortion measurement:

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SOO2R 03/01 1115 0
ACT-REQ
/DIST/ 1568
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3.03 When distortion measurements have been completed, the central processor returns a message reporting the results. A sample reply to the above action request is shown below:

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     V R0021 03/01 1115
S002R 03/01 1115

DIST 1568 01JK-41568-FM2 5-14
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3.04 Complete information pertaining to the origination and definition of action requests may be found in the section entitled Common Control Switching Arrangements With Added Data Features (CCSA-DF) Description of Access Equipment Features and Operation (660-209-500).

3.05 The manual switches located on the front of the 911E are provided for test purposes. Test procedures are discussed in Section 103-813-502.

3.06 Additional information pertaining to the 911E Distortion Measuring Set may be found in the Circuit Descriptions (CDs) entitled Data Systems Central Office Distortion Measuring Set No. 911E for Use With No. 1 ESS ADF Automatic Data Channel Test Circuit (CD-70950-01) and Electronic Switching Systems No. 1 Arranged With Data Features Automatic Data Channel Test Circuit (CD-3A012-01).