Installation Engineering Handbook 269
Western Electric
Northern Illinois Works

Section
3-2-79
Replaces: Section 1B
dated 7-14-78

NO. 3 ESS
TEST PLANNING FOR INDIVIDUAL FRAME SHIPMENTS

CONTENTS

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1. INTRODUCTION

1.1 This section provides detailed test planning information for the installation of a No. 3 ESS machine packaged and shipped as individual frames. A typical test sequence chart is included to aid in the development of a detailed job test plan. The information in this section should be used in conjunction with the general information of Section 1.

1.2 Refer to Section 1A for detailed test planning information for unitized No. 3 ESS shipments.

2. DESCRIPTION OF LOOSE FRAME SHIPMENTS

2.1 Factory Assembly, Wire and Test

2.11 As indicated in Section 1, each No. 3 ESS machine is fully assembled and wired to permit operational testing at the factory. This factory test effort includes verifying the office generic program and translations through volume tests.

2.12 Handbook 269 sections are used as a basis for the factory test effort, Also, the factory is required to meet the same performance requirements as would be required in a field installation prior to turnover to the telephone company.

2.13 An individual frame shipment of a No. 3 ESS machine is typically ordered for those applications which are not conductive to receiving a unitized shipment.

2.2 Equipment Packaging

2.21 Upon completion of the factory test effort, the equipment must be disassembled to permit packaging and shipment as individual frames. The disassembly effort includes removing all interframe cabling. The factory will also mail CCJ3H100-30 and CCJ3H100-31 drawings to the job site.

2.22 Excess cable lengths will be provided to permit rewiring on site.

2.3 Shipment of Equipment

2.31 The equipment required for the factory assembly and test effort, although disassembled and packaged as individual frames, will be shipped together as a single truckload. The equipment will typically be delivered in less than one week.

2.32 The equipment may be specified for shipment to a warehouse or directly to the job site. If shipped to the job site, the equipment unloading must be closely coordinated to prevent excessive demurrage charges. The following organizations should be contacted for the shipping progress and expected delivery time:

Oklahoma City Works
Resident Transportation Supervisor-OC
Department 961
CORNET 359-3121
(405) 781-3121

3. INSTALLATION PROCEDURE

3.1 Installation Prestart

3.11 The reserve battery plant, is shipped and installed in advance of the No. 3 ESS equipment. This includes the battery stand, batteries and intercell connectors. The installer should also mark the floor and install the frame base anchors in advance of receiving the No. 3 ESS frames.

3.12 The reserve batteries may optionally be connected to a temporary power rectifier and precharged. This effort would eliminate a delay in the testing.

3.13 The distributing frame module(s), conduit and wiring from the house service panel to the system, and ladder racking from the distributing frame to the wall racking can also be installed in advance of receiving the No. 3 ESS frames.

3.2 Equipment Assembly

3.21 Each No. 3 ESS is assembled per the actual office configuration and floor plan for the factory test effort. At the office site, the equipment is reassembled on a frame by frame basis. Complete assembly and hardware details for the standard floor plan are included in ED-3H154-30. The job drawings should be referenced for any modifications of the standard floor layout.

3.22 Base covers, end guards and other miscellaneous hardware items are not essential to the testing effort. This equipment should be installed early in the interval to prevent interference with the testing effort and provide a safer working environment.

3.23 The distributing frame terminal blocks are stamped at the factory to facilitate the factory test effort. All blocks were removed from the frame for shipment to site. The installer should remount these blocks on the distributing frame per the engineered frame layout.

3.3 Equipment Wiring

3.31 All interframe cabling and wiring is shipped from the assembly factory. Cable tags will be left on all cables to facilitate routing and terminating.

3.32 A majority of the cable terminations are connectorized. Notable exceptions are some of the cables to the distributing frame and the frame power feeders.

3.33 In conjunction with the drawings noted in paragraph 2.21 the following drawings may be useful for connecting cables:

Document	Description
ED-3H101-10 J1C058B-1	No. 3 ESS Method of Cabling for Processor Frame
ED-3H102-10 J1C060A-1	No. 3 ESS Method of Cabling for Maintenance Frame
ED-3H103-10 J3H001D-1	No. 3 ESS Method of Cabling for Test Frame
ED-3H104-10 J3H001C-1	No. 3 ESS Method of Cabling for Control Frame
ED-3H105-10 J3H001B-1	No. 3 ESS Method of Cabling for Network Frame
ED-3H106-10 J87824A-1	No. 3 ESS Method of Cabling for Misc. Power Frame
ED-3H107-10 J86872A-1	No. 3 ESS Method of Cabling for Power and Supl. Power Frame
ED-3H107-10	No. 3 ESS Method of Cabling for CDF Frame
ED-3H100-30	No. 3 ESS System Interframe Connectorized Cabling Plan
ED-3H100-31	No. 3 ESS System Nonconnectorized Cabling Plan
ED-3H100-35 -36	No. 3 ESS Cable Forming

3.34 In general, all wiring should be completed before power is applied to any equipment frame. Testing of the control complex could optionally be started in advance of completion of the wiring effort under the following conditions:

- Control Complex Interframe Cabling Complete
- Power Distribution Feeders to Miscellaneous Power and Control Complex Frames Installed
- Power Distribution Feeders from Miscellaneous Power Frame (+24 volt converters) to Control Complex Installed

- 151A Power Plant Tested, Operational and Batteries on Float

- Miscellaneous Power Frame +24 Converters Tested and Operational

With this equipment installed and operational, the installer can power verify the control complex and begin test verification of the processor.

3.35 Temporary power alarms must be made operational to provide 24 hour coverage as specified in HB 18, Sec. 18F before any load is placed on the battery plant in an unattended office. Specific wiring information is included in HB 21, Sec. 211.

3.36 The ac power wiring for the aisle lights, appliance outlets and the switching system is shown in ED-3H151-30. Early completion of the aisle lights will greatly aid the installation effort as building lights are typically minimal.

3.4 Equipment Testing

3.41 The initial installation tests are associated with verification of the installer run wiring (continuity tests) and applying power to the equipment (power verification tests). All subsequent installation tests and the sequence of tests are developed around a building block principle. As each circuit is verified for correct operation, it is used in the testing of additional equipment. This building block procedure, although essential, results in a serial testing effort thus eliminating parallel operation.

3.42 Paragraph 4 and Chart A provide detailed test planning and sequencing information. This information should be reviewed in conjunction with the applicable test sections for the preparation of a job plan. Specific attention should be given to the complexity of each test to aid in the development of manpower assignments and test equipment requirements.

4. TEST PLANNING AND SEQUENCING

4.1 An Installation Interval Planning Network for installation of a No. 3 ESS as individual frames is shown in Chart A. This planning chart reflects only a suggested sequence of events and does not reflect either interval or manloading.

4.2 The sequencing of a majority of the tests is fixed since operationally tested equipment is used in the testing specified in subsequent handbook sections. The sequencing of the following Handbook sections in general is not critical provided Section 535 (System Verification of Trunks) and earlier sequenced sections have been completed.

SECTION	EQUIPMENT
544	Automatic Line Insulation Test
551	Alarm Generation Test
610.XX	Service Circuits - Operational Test
612.XX	Trunk Circuits - Operational Test
614.XX	Line Circuits - Operational Test
634.XX	Custom Calling Features
642	Cutover Program features
680	Half Office Test

4.3 The examples on page 4 show how to read Chart A. In general, the events forming the straight line of bubbles at the top will have a direct effect upon the completion date of the job. This sequence of events is known as the critical path and the job should be planned so that there are no gaps or slack time between these events. Events not in the critical path should be assigned in such a manner as to avoid slack time in the critical path awaiting their completion. Advantage should be taken of this flexibility to start volume testing early giving additional time for resolving system problems.

4.4 Periodic review of the job progress is also essential to insure meeting the scheduled completion date. Chart A provides a convenient means of following the job progress by checking off completed sections.

ATTACHMENTS
Figure 1 on Page 4, Chart A on Page 5

No arrows shown due to extensive changes.

Manager, ESS Installation & Field Engineering
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Reason for Reissue:
To delete references to separate factory and site orders.
To add mailing of CCJ3H100-30 and CCJ3H100-31 drawings to job site.
To add a new paragraph 3.33 to delete reference to NIW.

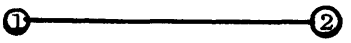
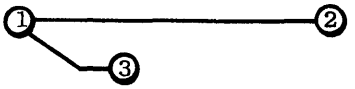
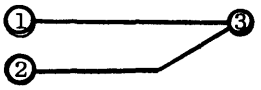
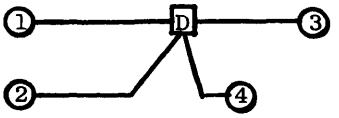
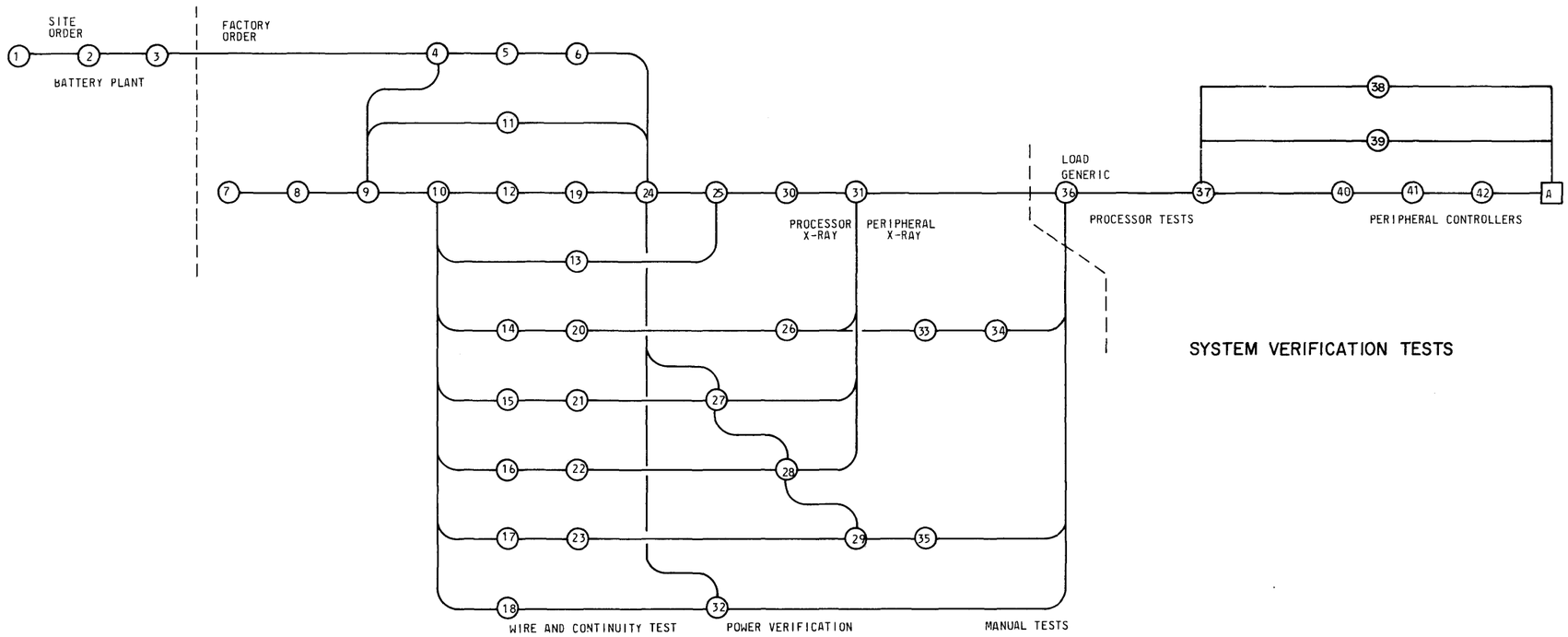
CONFIGURATION	LOGIC
	Activity 1 must be completed before Activity 2 can begin.
	Activity 1 must be completed before starting Activity 2 or 3. Activities 2 and 3 can be performed concurrently.
	Activities 1 and 2 can be performed concurrently but both must be completed before Activity 3 can begin.
	The D is a dummy and represents no productive work; it exists only to maintain logical relationships within the network. Neither Activity 3 nor 4 can begin until both 1 and 2 have been completed.

FIGURE 1

Explanation of Planning Network Chart A

CHART A

NO.3 ESS
INSTALLATION INTERVAL PLANNING NETWORK
(INDIVIDUAL FRAME SHIPMENTS)



NO.	ACTIVITY
1.	JOB START (POWER)
2.	ERECT BATTERY STAND (HB 18, SEC.17G)
3.	INSTALL BATTERIES (HB 18, SEC. 17H)
4.	INSTALL BATTERY CHARGE & DISCHARGE FEEDERS
5.	TEST 151A POWER PLANT (HB 21, SEC.211)
6.	CHARGE BATTERIES
7.	JOB START (ESS)
8.	ERECT & ALIGN FRAMES (HB 30, HB 39, HB 261)
9.	INSTALL CABLE RACK
10.	CABLE (BULK & CONNECTORIZED)
11.	RUN & CONNECT POWER DISTRIBUTION FEEDERS
12.	WIRE-MISCELLANEOUS POWER FRAME
13.	WIRE-CONTROL COMPLEX
14.	WIRE-TEST FRAME
15.	WIRE-NETWORK FRAME
16.	WIRE-CONTROL FRAME
17.	WIRE-MISCELLANEOUS FRAME
18.	WIRE-CDF CROSS CONNECTIONS
19.	CONTINUITY TEST-MISCELLANEOUS POWER FRAME (HB 269,SEC.104)
20.	CONTINUITY TEST-TEST FRAME (HB 269, SEC.101)
21.	CONTINUITY TEST-NETWORK FRAME (HB 269, SEC.103)
22.	CONTINUITY TEST-CONTROL FRAME (HB 269, SEC.102)
23.	CONTINUITY TEST-MISCELLANEOUS FRAME (HB 269,SEC.105)
24.	TEST-MISCELLANEOUS POWER FRAME (HB 21, SEC.399)
25.	POWER VERIFICATION-CONTROL COMPLEX (HB 269, SEC.150)
26.	POWER VERIFICATION-TEST FRAME (HB 269, SEC.151)
27.	POWER VERIFICATION-NETWORK FRAME (HB 269, SEC.161)
28.	POWER VERIFICATION-CONTROL FRAME (HB 269, SEC.160)
29.	POWER VERIFICATION-MISCELLANEOUS FRAME (HB 269 SEC.162)
30.	PROCESSOR TEST PROGRAMS (HB 269, SEC.300, PAR.4.11)
31.	PERIPHERAL TEST PROGRAMS (HB 269, SEC.300, PAR.4.12)
32.	RING & TONE DISTRIBUTION TESTS (HB 269, SEC.175)
33.	MILLIWATT DISTRIBUTION TESTS (HB 50, SEC.7.1)
34.	TRUNK & LINE TEST PANEL TESTS (HB 269, SEC.200)
35.	RECORDED ANNOUNCEMENT TEST (HB 59, SEC.410)
36.	SYSTEM INITIALIZATION (HB 269, SEC.508)
37.	SYSTEM VERIFICATION-CONTROL COMPLEX (HB 269, SEC.508.2)
38.	E2A TELEMENTRY & INTERFACE CKT. (HB 269, SEC. 622)
39.	SYSTEM VERIFICATION-AMARC FUNCTION (HB 269, SEC. 545)
40.	SYSTEM VERIFICATION-SCANNER CONTROLLER (HB 269, SEC.520.04)
41.	SYSTEM VERIFICATION-PERIPHERAL PULSE DISTRIBUTOR (HB 269, SEC.520.08)
42.	SYSTEM VERIFICATION-NETWORK CONTROLLER (HB 269, SEC.520.12)
43.	SYSTEM VERIFICATION-NETWORK FABRIC (HB 269, SEC.521)
44.	SYSTEM VERIFICATION-RING & TONE PLANT (HB 269, SEC.525)
45.	SYSTEM VERIFICATION-JUNCTORS (HB 269, SEC.533)
46.	SYSTEM VERIFICATION-TLTP-USING TRUNK CIRCUITS (HB 269,SEC.528.01)
47.	SYSTEM VERIFICATION-TLTP-USING LINE CIRCUITS (HB 269,SEC.528.02)
48.	SYSTEM VERIFICATION-SERVICE CIRCUITS (HB 269,SEC.534)
49.	SYSTEM VERIFICATION-TRUNK CIRCUITS (HB 269,SEC.535)
50.	AUTOMATIC LINE INSULATION TEST (HB 269,SEC.544)
51.	TTY OUTPUT OF ALARMS (HB 269, SEC.551)
52.	TTY &, AUTOCONNECT & TTYC OPERATION (HB269 SEC.601)
53.	OPERATIONAL TEST-SERVICE CIRCUITS (HB 269,SEC.610.XX)
54.	OPERATIONAL TEST-TRUNK CIRCUITS (HB 269,SEC.612.XX)
55.	OPERATIONAL TEST-CUSTOM CALLING FEATURES (HB 269, SEC.634.XX)
56.	VOLUME TEST-INTEROFFICE CALLING (HB 269, SEC.660.21)
57.	MAINTENANCE VOLUME TEST (HB 269, SEC.660.31)
58.	INTEGRATED VOLUME TEST (HB 269, SEC.660.41)
59.	CUTOVER PROGRAM FEATURES (HB 269, SEC.642)