NO. 3 ESS
TEST METHODS FOR
A FULLY UNITIZED NO. 3 ESS SYSTEM

CONTENTS

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1. GENERAL INFORMATION

1.1 Description

1.11 This section provides the method of verifying the integrity of a fully unitized No. 3 ESS system.

1.12 The system will be tested from its initial power-up through the 24-hour Integrated Volume tests.

1.13 At the conclusion of this section, the No. 3 ESS will have been tested fully and will be able to be turned over to the Telephone Company for their acceptance tests.

1.2 Overview

1.21 The system will be tested in a building block sequence: small sections will be verified, then all equipment will be used together for a final verification with volume testing.

1.22 Since the system is fully tested at the factory, it is expected that most (or all) testing can be performed with a minimum of defects and troubleshooting.

1.23 All of the terminology used herein should be familiar to the installer, assuming there has been exposure to No. 3 ESS through training or previous experience.

1.3 Sequence

This will be the base handbook section that will be run for all testing. Other sections will be referenced as necessary for troubleshooting information, document and test equipment information, or merely a clarification of the instructions contained here. Six other sections will be branched to for actual testing: Handbook 269, Sections 551, 660, 660.01, 660.31, 660.35, 660.41 and Section 545 if the office is equipped with the AMARC feature, and 613.01 and 613.02 if the office is equipped with ROTL.

2. RECORDS AND REQUIREMENTS

2.1 The results of the tests in this section shall be recorded on forms SD-97-1313 and SD-97-1315. For detailed information on filling out these forms, refer to Handbook 3, Section 6B.

2.2 These records and all associated TTY printouts will be saved as part of the office records.

2.3 The procedures of this section are based on the performance requirements of BSP 820-650-180.

3. TEST EQUIPMENT

Qty	ITE	Description
1	4715	Capacitor Forming Tool
4		TEXWIPES

Other test equipment will/may be required. See paragraph 1.3 of this handbook section.

4. TEST PREPARATION

4.1 The installer should read fully and have a good understanding of this handbook section before starting any of the testing required. Especially important is Section 7: "Off-Hours and Concurrent Testing."

5. REQUIREMENTS

5.1 Complete, up-to-date copies of this handbook, all Office Drawings and Records (Output Forms), Program Listings (PRs), Schematic and Tabular Drawings (SDs and Ts), Trouble Locating Manuals (TLMs), and current Input/Output Message Manuals (IM/OMs) should be on-site, filed, and available for reference.

5.2 All AC wiring is completed and operational. (The -48V rectifiers in the 151A power plant are wired for single-phase 208V at the factory; modify as necessary.)

5.3 Batteries are in place, wired, and being charged using the 151A plant. (All distribution fuses must have been removed before the -48V rectifiers were turned on.)

5.4 The office TTY is in place, wired, and using AC from the Idle-Line Motor Control (ILMC).

5.5 CDF jumpers for the office alarms (including toll alarms) are wired.

5.6 Equipment needed for Integrated Volume test (Sect. 660.41) should be on-site the day testing starts.

5.7 Equipment needed for Low Voltage (Sect. 660.31) and High Temperature Stress (Section 660.35) tests should be on-site within 2 days after testing starts.

6. GENERAL NOTES

6.1 The numbers contained in "( )" at the end of a line indicate the handbook section number to consult if difficulties are encountered. The handbook is 269 unless otherwise noted.

6.2 The phrases "Daisy Chain" and "Nightly Routine" are used interchangeably in this section. Either phrase indicates the nightly maintenance exercise that is triggered by the "D" traffic schedule.

6.3 Check any TTY message that needs clarification with the IM/OM.

6.4 If a +24V fuse on MPO operates (opens) it should be replaced by shutting off the two parallel 188A converters on the same +24V bus, clearing the fault, replacing the fuse, then turning back on the converters. These fuse positions cannot be charged up using the alarm fuse (LED) slots; they can only be replaced by powering off.

6.5 The AUTOCONNECT features will not be tested in this section since they were verified in the factory. The "Return Telephone Numbers" are in the translations as local numbers. Please inform the TelCo that these numbers will have to be changed once outside lines and trunks are operational.

6.6 If the office is equipped with Generic 3E3, issue 2 or later, the Off-line Bootstrap task will be performed on the nightly routines. If 3E3, issue 1A or 1B and the pathces are not up to Gen-No. 90 or higher, then this task will not be performed.

7. OFF-HOURS AND CONCURRENT TESTING

7.1 Off-Hours Testing

7.11 On a one-shift installation, the time (approx. 15 hours) between the end of the work shift on one day and the start of the shift on the next day is idle time where the No. 3 ESS should be utilized to run tests such as network fabric or the daisy chain. It is strongly suggested that, if the system is sane enough on the first day of testing and then on each subsequent day, these tests be left in the machine overnight. Network fabric can be put in in the UCL mode and will run either until it finishes or until the errors exceed 50. You must allow 35 minutes per network frame equipped. The system clock should be set to allow for linking up the daisy chain after fabric finishes. We urge this any night when there is no other testing going on and providing the system is stable enough to handle it. For example: the shift ends at 4:30 p.m., the daisy chain is scheduled to begin at 11:00 p.m., and the office is equipped with 12 network frames. Then set the system clock to 3:00 p.m. at the end of the shift and put in EX:NW;UCL! Network fabric will finish up at around 10:00 p.m. (system time) and the daisy chain will start one hour later. Both should finish well before the start of the work shift on the next day.

7.12 The only requirement is that one even and one odd daisy chain run before volume testing starts. The daisy chain is programmed to run the even or odd circuits according to the date (day of the month) set in the system clock when the D-sched. starts (see step 8.309). Do not run any load on the office during the nightly periods until fabric and the daisy chain have been run at least once from each SYC.

7.13 If parts of the Daisy Chain fail, it is set up to abort the remaining parts so as not to exceed the maintenance limit of a particular SVC, TRK, or JCTR group. If this does happen, the process can be started again from where it left off with one of the messages:

DGN:SVC ggg mmm;ALL!
DGN:TRK ggg mmm;ALL!
DGN:JC nn jj;ALL!

(The "ALL" options are not defined in the IM.)

For example: If JC 1 8 fails DGN, the rest of the even junctors on network frame one will not be diagnosed. To continue where the daisy chain left off, remove the JC you wish to start on (JC 1 10) then restart with DGN:JC 1 10;ALL! When the junctors in Network 1 finish and Network 2 start, stop the test with ABT:DGN! In the morning, the failures from network fabric along with the failures from the daisy chain (i.e., CU DGN, PCF DGN, Tape DGN, R+T DGN, ALIT, SVC DGN, TRK DGN, and Junctor DGN) can be investigated and cleared (521, 525, 533, 534, 535, and 544) Trunks that are not terminated will fail diagnostics. Incoming and two-way trunks will not be diagnosed unless the office is in the precut mode.

7.2 Concurrent Testing

7.21 Whenever there is a long test running in the machine, the time spent waiting for a result should be used to wire the lines on the Main Frame that will be used to support volume testing. This includes loop-around trunks also. The wiring the factory provided for test lines should be sufficient for field volume tests. See Sections 660 and 660.01 for further information concerning the starting of volume tests.

7.22 During the ALIT test Recent Change is allowed. Service orders necessary to equip the test lines with the one-digit speed call feature (SC8) required by the SCOATs boxes should be put in at this time. See input message RC:LINE/ ESL YES/.

7.23 If there is an insufficient number of SC8 lists available, follow the REALLOCATION procedure in BSP 233-154-130 to add more lists. (This reallocation, if necessary, should not be done during ALIT.)

7.24 If the lines used to run traffic from the SCOATs boxes have not had their speed-calling assignments made, it is recommended they be made now. Keep in mind these assignments are customer-dialed recent changes, and, like any recent change, will not be allowed if the offline CU is out of service.

7.25 Traffic may be started any time the load boxes are ready. Verify the call completion rate is less than or equal to 1 loss in 10,000 attempts. If it is not, the reason must be identified and corrected since every volume test requires this performance.

8. TEST PROCEDURES

8.1 Power-Up

8.11 Verify all power switches on all equipment are "OFF" (excepting the 151A plant).

8.12 Check that the (4) 316W mercury relays are plugged in the MPO frame.

8.13 Unseat the FB425 circuit pack at CONT-0, 144-44.

8.14 *****If inserted, remove the tapes from the TDCs.***** Clean the head in each TDC with TEXWIPES.

8.15 At the 151A plant, using an ITE-4715 capacitor forming tool, charge up each load fuse position and insert the proper size of distribution fuse. (Be careful with the fuses assigned in the pulsers; they require 15 amp ABS fuses.)

8.16 Turn on:

All converters on MPO (HB 21, Section 299).

All battery boost converters on the network frames by releasing buttons A and B (161).

Control frame(s) (160).

SSP, TDCs, TTYCs, Processors (150).

Circuits on the Misc. frames, 13A annc. machine (162).

8.2 Initialization

8.21 On two generic tapes, rotate the pointer away from the SAFE position. (There were at least 3 pairs of tapes [marked A0 and A1, B0 and B1, and C0 and C1] that were shipped from the factory. These six tapes are identical; use any pair.)

8.22 Insert these two tapes into the TDCs.

8.23 Operate (in the SSP "System Initialization" area) in sequence:

"Enable", "Stable", "Memory Reload", "Init Execute" buttons,

"Enable" and "Init Execute" again,

and "Enable" and "Init Execute" again.

Both (or at least one) CU should be trying to bootstrap (300). Upon coming up from the boot and Stable clear, the CUs should be in the Active-Not Active state as observed at the lights on the Power section of the CU control and display panel. The lamp(s) inside of the REQ-OOS key(s) on the offline Control Frame(s) should be lit. This is a result of the Stable clear.

NOTE: The system TTY should be typing at this point. If the system seems to have sanity (as observed by a dynamic pattern in the SSP) but is not typing, try the following:

Recheck the hook-up of the leads inside the TTY and at the ILMC.

Check that the local TTY connector is plugged onto port 0 of TTYC 0.

Swap AR17 packs between TTYCs 0 and 1.

Fail TTYC 0, move the local TTY connector to port 0 of TTYC 1, give system a "TTY INIT". (Fail TTYC 0 by turning power off from it.)

8.24 Set the system clock to 9:00 a.m. and the correct date.

8.25 Type INIT:TAPE!. When it finishes, type INIT:TAPE! again. This will retension the tapes.

8.3 Diagnostics

8.301 Take both processors out of manual and turn down the test mode key behind the CU panels.

8.302 Type RST:CU! This will run diagnostics and if ATP, restore the offline CU. The responses should be:

tt DGN CU x COMPL ATP ("x" is offline CU number: 0 or 1)
tt UPD OMAS COMP
tt RST CU COMPL.

8.303 Reinsert the FB425 pack at CONT-0 144-44.

8.304 Request a list of Hashsums by typing ALW:OW;UCL!, then: (for Generic program 3E3 use step 8.304a, for S02, Iss. 4A.3 use step 8.304b)

a) Type OP:HASH:GENERIC!
OP:HASHNR:SEG!

b) Type VFY:OW:ADR 077777!
VFY:OW:ADR 177777!
VFY:OW:ADR 257777!

Compare the responses from step 8.304a or 8.304b with the list of Hashsums included in the job condition report (item 2). If these values match: STOP:OW! If not, consult the Western Electric Regional RTAC for assistance.

8.305 Request DGN to be run on all offline PCF equipment by depressing and holding down the REQ-OOS button on the offline Control Frame(s) until the lamp in this button blinks off, then back on. If the DGN passes, the Scanner, Peripheral Pulse Distributor, and Network controllers will be restored to service (520.04, .08, .12).

8.306 Type SW:SYC!
Response: tt REPT SYC x ACT.

8.307 Type RST:CU!

8.308 Remove the offline PCF equipment from service by depressing and holding down the REQ-OOS button until the lamp within this button comes on. Request DGN with the method described in step 8.305.

8.309 Determine from either the office records (form ESS 3400-R) or the local TelCo representative the start time of the daisy chain (D-sched. traffic report). Insert this time into the machine with the RC:REPT input message.

8.310 Unseat any AR17 circuit pack in the Teletype Controllers (TTYC) that does not have a TTY terminating it and run DGN on all equipped TTYCs with DGN:TTYC c!

8.4 Functional Testing

8.41 Run the Line Circuits test (ALIT) with input message TST:LINE! (544). Be sure network fabric is not running at the same time as ALIT. These two tests will interfere with each other. Disregard any failure pointing to the FEMF test. Locate and clear any other troubles.

Once ALIT has passed, the circuit should be disabled by unseating the FB669 pack at 06-33 or the FB525 pack at 06-29 in the test frame. This is required since the ALIT test will interfere with call processing during subsequent volume testing.

8.42 If the office is equipped with AMARC, perform HB 269, Section 545.

8.43 Perform HB 269, Section 551, Generation of Alarms.

8.44 If the office is equipped with ROTL, perform HB 269, Sections 613.01 and 613.02.

8.5 Volume Testing

8.51 Run the Low Voltage Test: Section 660.31. If available, the ITE-5942 Low Voltage Switch Assembly should be utilized to speed up the low voltage tests.

8.52 Perform the High Temperature Stress Test: Section 660.35.

8.53 Perform the 24-hour Integrated Volume Test: Section 660.41.

Manager, Development Engineering and Installation - 2/2B, 3, 4 and 5 ESS

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