NO. 3 ESS
OPERATIONAL TEST
HIGH TEMPERATURE STRESS

CONTENTS

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1. GENERAL INFORMATION

   1.1 Description

      1.11 This section provides a method
           to verify that the No. 3 ESS
will function properly at its high temperature design limit.

      1.12 Attaining the high temperature
           limit requires advance planning
and preparation by both TELCo and Western
Electric.

      1.13 CAUTION: The safety and health
                    procedures required
for heat stress testing of ESS offices can
be found in Handbook 0. These procedures
must be observed.

      1.14 The cool area required in
           Handbook 0 must be provided
in the building as near as possible to the
equipment under test. Remote testing
equipment such as a maintenance TTY must
be provided in this area such that remote
testing can be performed from there.

   1.2 Overview

      1.21 With a load on the system, the
           temperature is raised at a
maximum rate of 15°F/hour until it reaches
116°F to 120°F. During this time, the
equipment is tested and problems cleared as
they occur.

      1.22 The system is periodically
           diagnosed while maintaining
the high temperature design limit (116°F -
120°F) with each SYC active for half of a
4-hour test interval with the load box
continuously running. Any major alarm or
exceeding 1 lost call in 10,000 aborts the
test and must be resolved.

      1.23 After 4 consecutive hours with
           no major alarms and the call
completion rate within limits, each CU is
forced to reload from tape.

      1.24 With the requirements success-
           fully met, the temperature is
lowered at a maximum rate of 15°F/hour until
the normal operating temperature is
attained.

   1.3 Sequence

      1.31 This section should follow
           the successful completion of
the Maintenance Volume Test (Handbook 269,
Section 660.31) and prior to the Integrated
Volume Test (Handbook 269, Section 660.41).

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 de-
tailed information on filling out these
forms, refer to Handbook 3, Section 6B.

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

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

3. TEST PREPARATION

3.1 Load Application

3.11 The load to be applied during the test of this section is identical to that required during the Maintenance Volume Test (i.e., both intra-office and interoffice calls at a rate of 500 calls per hour per network frame).

3.2 Heat Application

3.21 Procedures for setting up enclosures and heaters for reaching the 116 F to 120 F range are provided in Handbook 261, Section 940.

3.3 Temperature Measurement

3.31 A thermometer or thermocouple placed in front of the processor frame 5 feet above the floor shall be used as the reference for the office temperature.

3.32 In addition, a thermometer shall be placed in the center of each aisle along the centerline 5 feet above the floor. These thermometers shall be used to verify a uniform temperature throughout the office.

3.4 Traffic Schedules

3.41 Using the RC:REPT input message, request busy hour schedules to be printed every hour.

3.42 Initialize the tapes (INIT:TAPE!) 3 times to retension the tapes and reduce the possibility of read or write errors.

3.43 Back up the current translations, including the busy hour schedule, on tape using OP:DATA;CURR!

3.5 Tape Verification

3.51 Audit the tapes

ALW:TAPEUTIL!

AUDIT:TAPE(0,1)!

Successful completion will reduce the possibility of a tape malfunction aborting the test.

4. HEAT APPLICATION

4.1 Preparation

4.11 Place both CUs in TEST MODE and MANUAL.

4.12 Power both CUs down and then back up.

4.13 At the SSP operate SELECT CU 0, FORCE, ENABLE, STABLE, MEM RELOAD, and INIT EXECUTE. (It may be necessary to operate the ENABLE and INIT EXECUTE keys three times.) Verify that CU 0 successfully boots and runs.

4.14 Repeat steps 4.11 thru 4.13 selecting CU 1 instead of CU 0.

4.15 Release all keys and restore any out of service equipment.

4.16 Set the time to 7:55.

SET:CLK:TIME (7,55,00), day (mo,dd,yy)!

(This is to bypass the Daisy Chain.)

4.17 Verify that at 8:00, a busy hour schedule is printed. (This will clear the traffic counters.)

4.18 Start the volume test sets.

NOTE: The test set counters and traffic schedules should be monitored while the temperature is being raised in 4.2 for any indication of calls being lost.

4.2 Raising Temperature

4.21 Start raising the temperature at a maximum rate of 15°F per hour until it reaches a range of 116°F to 120°F.

4.22 The temperature should be checked at no more than 60 minute intervals to maintain the 5°F rate.

4.23 After each hourly printout, compare the test set counters against the busy hour schedules, looking for any indications of calls being lost.

4.24 After each hourly printout, perform each step in Table A.

4.25 If any troubles are indicated in 4.23 or 4.24, the temperature should be held constant until the trouble is cleared. (Faults encountered here do not affect the stress test requirements of paragraph 5.)

4.26 If the system time approaches the start of the daisy chain, change the time to 7:55.

5. STRESS TEST

5.1 Test Requirements

5.11 This test cannot be started until the office temperature has attained the 116°F to 120°F range. The temperature must never be allowed to exceed 120°F.

5.12 During the test, the temperature throughout the test area must be checked at least every 60 minutes and must remain within the 116°F to 120°F range. If the temperature should drop below 116°F, it must be raised and the test extended by the length of time the temperature was out of range.

5.13 The test must run for one consecutive 4-hour interval. (If the temperature drops out of range, the required interval increases accordingly.)

5.14 No major alarms are allowed. If any occur, the test is aborted. The cause must be determined and corrected and the stress test must be rerun starting at paragraph 5.2.

5.15 No more than 1 lost call in 10,000 is allowed. If this number is exceeded, the test is aborted. The cause must be determined and corrected and the stress test must be rerun starting at paragraph 5.2.

5.16 Approximately half of the test interval must be spent with each SYC active. If the system switches on its own, the reason should be determined and the original state restored to meet this requirement.

5.17 Each CU must successfully reload at the high temperature limit.

5.2 Preparation

5.21 Stop the volume test sets and reset the counters.

5.22 Set the system time to 7:55.

5.23 After the 8:00 busy hour schedule completes, start the procedure of 5.3.

5.3 Stress Test Procedure

5.31 Start the volume test sets.

5.32 Perform each step in Table A.

5.33 After each busy hour schedule completes, perform each step in Table A (i.e., perform Table A upon completion of each of the hourly reports at system time 9:00, 10:00, 11:00 and 12:00).

5.34 When the test interval has elapsed, stop the volume test sets and set the system clock to 5 minutes before the next hour. Allow the busy hour schedule to complete for that hour. (These schedules and the test set counters should be used to verify that the call completion requirement has been met.)

5.35 Place both CUs in TEST MODE and MANUAL. Power both CUs down and then back up again.

5.36 At the SSP, operate SELECT CU 0, FORCE, ENABLE, STABLE, MEM RELOAD and INIT EXECUTE keys. (It may be necessary to operate the ENABLE and INIT EXECUTE keys three times.) Verify that CU 0 successfully boots and runs.

5.37 Repeat steps 5.35 and 5.36, selecting CU 1 instead of CU 0.

5.38 Return all keys to normal and restore all out-of-service equipment to service.

6. REDUCE TEMPERATURE

6.1 Reduce the temperature at a maximum rate of 15°F per hour.

6.2 Every hour perform each step in Table A to keep the tapes tensioned and to locate any faults which may occur due to the temperature reduction. (Faults encountered here do not invalidate the results of the stress test of paragraph 5.)

HARDWARE VERIFICATION

TABLE A

STEP	INPUT	RESPONSE	NOTES
1.	INIT:TAPE! (Repeat 3 times)	INIT TAPE COMPL	Retension the tapes
2.	DGN:CU!	DGN CU n COMPLETE ATP UPD OMAS COMPL	
3.	DGN:TAPE n!	DGN TAPE n ATP	Repeat for each tape
4.	DGN:TTYC n!	DGN TTYC n ATP UPD OMAS COMPL	Repeat for each equipped TTYC
5.	RMV:SC fs! RMV:PPD fs! RMV:NWC fs!	RMV SC fs 000000 RMV PPD fs 000000 RMV NWC fs 000000	Remove the offline SC, PPD and NWC from service
6.	RST:PCF fs!	DGN FIOC fs ATP DGN SC fs ATP RST SC fs COMPL DGN FIOC fs ATP DGN NWC fs ATP RST NWC fs COMPL DGN FIOC fs ATP DGN PPD fs ATP RST PPD fs COMPL UPD OMAS COMPL	Diagnose and restore the offline Peripheral Control Frame
11.	Repeat steps 5 and 6 for each equipped PCF.		
12.	RMV:RT p!	RMV RT p 000000	Remove STBY RT plant
13.	RST:RT p!	DGN RT p ATP RST RT p COMPL UPD OMAS COMPL	Diagnose and restore the OOS RT plant
14.	SW:SYC!	REPT SYC a ACT	Switch system controls
15.	SW:RT!	REPT RT p ACT	Switch RT plants

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