NO. 3 ESS
OPERATIONAL TESTING
GENERAL INFORMATION
LOAD APPLICATION AND VOLUME

CONTENTS

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1. GENERAL INFORMATION

1.1 Description

1.11 This section presents general information on No. 3 ESS volume testing.

1.12 These tests are conducted to detect hardware and translation faults which are sensitive to a large volume of requests for service. The requests for service are originated by a volume test set which simulates telephone traffic.

1.13 The series of volume tests designed for No. 3 ESS are as follows:

NOTE: These handbook sections are listed in the order of sequence in which they should be conducted.

A. HB 269, Section 660.31; Operational Testing, Volume, Maintenance - the procedures called for in this section, while using designated test equipment to originate and terminate intraoffice and interoffice calls, tests the office ability to maintain service in a fault environment. The office is subjected to voltage stress within design limits.

B. HB 269, Section 660.35; Operational Test, High Temperature Stress - the procedures called for in this section provide a method to verify that the system will function properly at its high temperature design limit.

C. HB 269, Section 660.41; Operational Testing, Volume, Integrated - the procedures called for in this section, using designated test equipment, originate and terminate calls on lines to test the office capability to sustain this load over a 24-hour interval with minimum error requirements. A combination of intraoffice and interoffice loads are applied during this test.

1.2 Sequence of Operation

1.21 The No. 3 ESS load application and volume tests should be conducted in the overall office testing sequence designated in Handbook 269, Section 1.

1.3 Test of Associated Equipment

1.31 The requirements for test of associated equipment should have already been satisfied when the designated sequence of testing indicated in HB 269, Section 1 is followed.

1.4 Cross-Connections

1.41 All cross-connects between the CDF and the network and between the CDF and trunks and service circuits must be in place.

1.5 Cabling Not To Be Connected Until After Test

1.51 No connections should be made to outside plant until sometime after all volume tests have been completed. Cabling may be installed if it can be deactivated by some convenient method such as removing protector units.

1.6 References

1.61 In addition, the following documents may be helpful:

Code	Title
HB 269, Sec. 660.01	Volume Testing With ITE 5956 (SCOATS)
TMO-5649	Computerized Volume Test Set
TMO-5956	SCOATS Test Set
PK-3H301	Network Troubleshooting Manual

2. RECORDS AND REQUIREMENTS

2.1 Records: The results of the volume test sections shall be recorded on Forms SD-97-1313 and SD-97-1315. Refer to Handbook 3, Section 6B for detailed information on filling out these test records.

2.2 Requirements: Load application and volume tests shall meet associated requirements specified in BSP 820-650-180; Performance Requirements, No. 3 ESS, General Equipment Requirements, Electronic Switching Systems.

3. TEST EQUIPMENT

3.1 Required Equipment:

Amt.	ITE Code	Title	Part of
1	5649	Computerized Volume Test Set	
1	5390-CC6	Control Board	ITE-5649
8	5390-CC7	Line Circuit	ITE-5649
Set	5664	Computerized Volume Test Set Program Tapes	ITE-5649
1	5489 or	33 ASR TTY	ITE-5649
*	ITE-5956	SCOATS	

* 1 for each 4 networks

1	5942	Low Voltage Switch Assy.	

3.2 Possible Troubleshooting Test Equipment

ITE Code	Title
4511	Whistler Test Set
4525B	Tone Buzzer Test Set
4631	Test Receiver Set
4659	Volt-Ohm-Milliammeter

ITE Code	Title
4669	Tektronix 134 amplifier and P6020 Current Probe
4732	Clip-on DC Milliammeter
5237B	Oscilloscope Tektronix #465

4. TEST PREPARATION

4.1 General

4.11 The following preparations must be made prior to starting associated load or volume testing:

a. Test equipment verification

b. Test line selection

c. Test trunk selection

d. Worksheet preparation for lines and trunks

4.12 The test equipment should be set up and tested for proper operation in advance of initial volume testing.

4.13 Test lines are provided in translation to be used for originating and terminating calls. The generic program will not permit normal "in-service" (nontest) lines to originate or terminate calls while in the precut mode.

NOTE: If SCOATS is used originating test lines must be set up for 1-digit speed calling to originate calls.

NOTE: A sufficient number of test lines should have been assigned in translations by the Telephone Company to do volume testing. (Refer to paragraph 5 of this section.) If the required lines are not available, nontest lines may be used with the system in the cut mode or adequate test line requirements may be defined via Recent Change TTY input messages.

4.14 Test trunk circuits (TCs) are those trunk circuits selected for testing in Section 660.21. Some of these trunk circuits are required in Sections 660.31 and 660.41 to suport additional testing requirements.

4.15 Worksheets should be prepared in advance of testing. This should expedite the verification of proper cross-connections plus (the application of) those 'test-connections' required.

4.2 Test Equipment Setup

The test equipment setup may be required for a substantial portion of the installation/test interval and should be established with this condition in mind. Consideration should be given to the personnel congestion, adequate lighting and available aisle space. It is also desirable to locate the test equipment in a position near the control complex for ease of voice communication and reading the registers while also making cabling to the CDF as convenient as possible.

5. TRANSLATION TEST LINE ASSIGNMENTS

5.1 General

5.11 No. 3 ESS testing procedures require that translation load test line assignments be made. These assignments, plus full trunk, test and service circuit information must be contained within the initial office translations. Test line assignments contained within the translations should reflect features and options which the office will have at cutover.

5.12 The load test line assignments may be left in the office translations through cutover.

5.2 Test Line Requirements

5.21 Test lines are designated as DP or TT properly reflecting the actual office ratio.

5.22 All test lines used for volume testing should be designated as test and not have been assigned any special features or equipment options which could impede load application tests, except 1-digit speed calling if the SCOATS is used.

5.23 The test line assignments in the office translations should be reviewed to verify that they will properly support volume test requirements.

6. COMPUTING TEST LOAD APPLICATION

6.1 General

It is the intention of the No. 3 ESS load and volume tests to approach the office engineered BHC in intraoffice (IAO) and interoffice calls. These loads, (intra + inter), when combined, provide the load for the integrated volume test. An attempt should be made to achieve 95 percent of the engineered intraoffice load and 95 percent of the interoffice loa. If, for some reason, this load cannot be achieved (due to volume test set, test lines, trunks and service circuits imbalance or other limitations) then the interoffice load should be given precedence.

6.2 Integrated Volume and Maintenance

6.21 The Maintenance, High Temperature Stress, and Integrated Volume tests combine the test setups of intraoffice and interoffice load to present the office with a call load which should be representative of the real load.

6.22 Combining the intraoffice and interoffice loads should not be done without evaluating the impact to total service circuits used. Specifically, the CDPRs and regular ringing circuits are required by both the intraoffice and interoffice calls.

6.23 The following rules may be applied when computing the maximum "number of calls which may be in progress at any one time" (a volume test set parameter) during integrated and maintenance volume testing:

a. The maximum number of calls (total of DP and TT) which may be dialing at one time is equal to the number of in-service and available CDPRs.

b. The maximum number of calls, which require MFTs and which may be outpulsing at any one time, is equal to the number of in-service and available MFTs.

c. The maximum number of calls, which require MFRs and which may be outpulsing at any one time, is equal to the number of in-service and available MFRs.

d. The maximum number of calls, which require regular ringing circuits and which may be ringing at any one time, is equal to the number of in-service and available regular ringing circuits.

7. TEST REQUIREMENTS

7.1 General

7.11 These load and volume tests verify the capability of the system to function as an active telephone central office. They should be run within two weeks of turnover using the generic program issue with which the office will be cut into service. all hardware change notices (CNs) required for the program issue being used must be installed prior to these tests. The telephone company must be notified at least 12 hours prior to the start of these tests.

NOTE: Point issue CNs may be installed after completion of volume testing. There is no requirement to retest after a point issue change.

7.12 All volume tests must meet the following requirements:

a. No major alarms are allowed.

b. All error detection shall be enabled during test.

c. All maintenance printouts that occur must be investigated and accounted for.

d. All detected troubles must be cleared.

7.13 At the conclusion of testing, the results shall be recorded, and it shall be determined that the performance requirements have been met. The telephone company shall be notified at least four (4) hours prior to a restart.

7.14 The operating company shall receive a copy of these test results and notified to preserve the copy for a minimum of 30 days after the office is placed (cutover) into service.

7.2 Additional - Additional test requirements may be found with associated test sections.

No arrows shown due to extensive changes.

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