Central Office Alarms Functional Testing Requirements

Contents

1. General

1.1 Purpose

This practice provides the minimum requirements for testing major equipment alarms and building alarms in:

- Central Offices (COs).
- Remote switching sites.

1 . General, continued

1.2 Filing Instructions and Supersedures

Discard all previous issues and associated addenda of this practice and file this issue numerically in your GTE Telephone Operations practices set.

This practice supersedes and cancels:

- All policies, procedures, general instructions, letters, and memoranda which address this subject.
- Any document which provides information contrary to the information contained in this practice.

1.3 Reason for Reissuing

This practice has been reissued to to update titles and align the testing requirements.

1.4 Responsibility

This practice was published by the GTE Telephone Operations Enterprise Services Department. For more information about this practice, contact the GTE Telephone Operations Headquarters Network Reliability Support Department.

1.5 Disclaimer

This practice was prepared solely for the use of GTE Telephone Operations. It must be used only by its employees, customers, and end users when installing, operating, maintaining, and repairing GTE Telephone Operations' equipment, facilities, and services. Any other use of this practice is forbidden. The information contained in this practice may not be applicable in all circumstances and is subject to change without notice. By using this practice the user agrees that GTE Telephone Operations will have no liability (to the extent permitted by applicable law) for any consequential, incidental, special, or punitive damages that may result.

2. Overview

2.1 Responsibilities

The following chart details the areas of responsibility in the CO alarm testing process.

The Following Personnel/Entity...	Is Responsible for...
Region/Area Customer Operations Organization	Ensuring that: • All requirements in this practice are satisfactorily met for his or her jurisdiction. • Records are available for the retention period specified in this practice (see Section 3.10).

(continued)

2.1 Responsibilities, continued

The Following Personnel/Entity...	Is Responsible for...
Central Office Equipment (COE) Installation	Ensuring that: • Alarms are built into all new equipment. • New equipment is tested for the proper operation of all alarms, before equipment is placed into service.
Area Local Manager	• Scheduling the alarm testing for each of his or her offices to include Direct Current (DC) power. • Communicating the schedule of testing (both date and time) to the NOC - Monitor & Control (M&C) for its concurrence. • Completing and submitting the High - Risk Activity notice before performing the tests. • Ensuring that: - Testing is completed according to the schedule. - Test results are compared to the Telephone Operating Network Integration Control System (TONICS) printout and analyzed for any discrepancies.
NOC - M&C	• Communicating to the Area Customer Operations contact any known activity that might interfere with the alarm testing process. • Monitoring the CO being tested. • Creating a NOCTrack Ticket before the beginning of the test. • Calling the CO if: - An unexpected alarm is received. OR - A service degradation condition occurs during the testing process. NOTE: If **such a condition occurs, the testing should be terminated.** • Capturing the switch output messages from TONICS at the end of the testing. • Forwarding a copy of the switch messages to the site for later comparison.

(continued)

2.1 Responsibilities, continued

The Following Personnel/Entity...	Is Responsible for...
Support Assets – Building Services	• Testing the following: – Commercial power alarms – Annual Testing. – Building system alarms – Annual Testing. – Fire system alarm – Semi-annual basis. • Coordinating the test with NOC M&C. • Completing and submitting the High – Risk activity notice.

2.2 Definitions

The following chart defines the acronyms used in this practice.

Acronym	Definition
CLLI	Common Language Location Identifier
CO	Central Off ice
COE	Central Office Equipment
CZT	Customer Zone Technician
DCS	Digital Cross-Connect System
DLC	Digital Loop Carrier
INAS	Integrated Network Alarm System
MDF	Main Distribution Frame
NOC	Network Operations Center
NOC – M&C	Network Operations Center – Monitor and Control
TONICS	Telephone Operating Network Integration Control System

2.3 References

The following chart provides sources of supplementary information relating to this practice. The documents could be required for performing certain tasks.

See . . .	For Information About...
205-000-000	Equipment Alarms Overview
205-000-001	Alarms for Electromechanical Switching Equipment
205-000-002	Alarms for Electronic Switching Equipment
205-000-003	Alarms for Toll Switching Equipment
205-000-004	Alarms for Carrier and Radio Facilities
205-000-005	Alarms for Switching Equipment Support Systems
205400406	Alarms for Peripheral Equipment
205-605-501	Alarms, Audible and Visual (Excluding SATT Alarms) Testing Procedures
205-605-502	Audible and Visual Power Equipment — Alarms Test Procedures
740-200-070	Building Alarms- Engineering Applications
740-500-070	Remote Equipment Buildings (REBs) -Engineering Guidelines
741-200-500	Building Alarms Functional Tests
742-l 00-l 06	Fenwal Low Voltage Fife and Smoke Detection and Halon 1301 Fire Suppression Systems — Operation and Maintenance
742-101-500	Sprinkler System Automatic — Maintenance

3. Alarm Testing

3.1 Equipment That Must Be Tested

GTE Telephone Operations requires that all CO equipment designed to be capable of generating a major alarm must be tested. This includes (but is not limited to) the equipment shown in the following chart.

Equipment Category	Examples of Equipment
Telecommunications	• Switching. • Carrier. • Radio. • Fiber. • Transmission. . DCS. • Broadband. . DLC.
Power	• Emergency AC generators. • Battery plant. • Rectifiers. • Power distribution boards. • Converters. • Inverters. • Ringing plant.
Building Systems	• Air conditioning. • Temperature control equipment. • Sump pumps. • Door alarms.
Fire Detection and Suppression	• Fire detection systems. • Sprinkler systems. • Halon systems.

Each equipment item might fail in a variety of ways (including exceeding specified thresholds or losing power from a blown fuse or bad power supply), resulting in an alarm condition. Whenever possible, GTE Telephone Operations personnel must:

- Simulate the various situations that cause alarms.
- Verify that the alarms are functioning properly.

3.1 Equipment That Must Be Tested, continued

NOTE: This practice provides information for testing alarm circuitry as completely and practically as possible; however, not all alarms are easily simulated. The intent of this practice is not to require that ail alarm conditions be simulated (carrier slippage, for example).

Testing alarms:

- **Does not require using sophisticated equipment.**
- **Should not disrupt or interrupt service.**
- **Should not cause equipment damage because of accidental short circuiting of backplane points during the testing process.**

GTE Telephone Operations Practice 740-200-070 stipulates the building alarms that must be monitored.

3.2 Risks of Degrading Service

The procedures for testing alarms can cause situations that might degrade service. The following issues must be considered before testing alarms:

- Schedule the procedures during periods of low customer traffic. Schedule high-risk maintenance activity between 11:00 p.m. (2306) and 6:00 a.m. (0600).

  NOTES: The actual maintenance time is subject to local standards. The hours might vary between 11:00 p.m. and 6:00 a.m., depending on the local circumstances.

  Submit a High-Risk Activity notice before testing.

- Toggling a power supply on and off is inherently risky to both the power supply and the electronic components it serves. Spare materials must be on hand in case a malfunction occurs during testing procedures.
- Repetitive and rapid initialization of alarm leads might cause electromagnetic inductance (spikes) or place unusual demands on processor time. Either circumstance might be detrimental to service. Be careful to simulate alarms in a slow and deliberate manner to effectively reduce this risk.

3.3 Frequency of Testing

Testing must be conducted as shown in the following chart.

Time Frame	Explanation of Test
Annual l y Support Assets	The functionality of all major equipment alarms must be tested at least annually. This applies to Building System alarms. **NOTE: Building Services personnel are responsible for testing these alarms and coordinating with the** NOC.
Annually Area Customer Operations	Telecommunications equipment, including all alarms associated with a switching site, must be tested at least once a year. **NOTE: Area Customer Operations personnel are responsible for testing alarms and coordinating with the NOC.**

(continued)

3.3 Frequency of Testing, continued

Time Frame	Explanation of Test
Semi-Annually Support Assets	me functionality *of* all major fire systems alarms must be tested at least semi-annually. **NOTE: Building Services personnel are responsible for testing alarms and coordinating with the NOC.**

3.4 Preparation

Technicians must receive approval from the Area Local Manager before performing any testing. The Local Manager must notify the NOC M&C Flight Controller:

- That testing is scheduled.
- When testing is about to begin.

Before beginning tests, ensure that the most current issue of all related documentation is available on-site. This includes:

- Manufacturer's documentation.
- Alarm sense-point assignment.
- Current status of sense points. All sense points capable of being put in or out of service should be in service.
- Office drawings.
- Any other information pertinent to the equipment being tested.
- INAS Alarm Assignment.
- Current status of INAS alarm points.

3.5 Methods for Activating Alarms

If procedures for generating alarms are available from the vendor, generate all alarms according to the manufacturer's instructions.

The following chart describes the various methods for activating alarms. These are listed in order of preferred activation method.

Method	Explanation
Equipment Failure	Equipment Failure is the most complete and thorough method for verifying proper functionality of the alarms. This method should be used whenever possible. NOTE: Use **this method only when:** • **The equipment being tested Is fully redundant.** • **Service interruption is highly unlikely.** Area Customer Operation Managers must agree with this approach for any individual piece of equipment. The Equipment Failure method does not test alarms only. It also tests the: • Transfer to "hot standby" protection equipment. • Operation of the redundant equipment.
Equipment Alarm Test Switch	Some equipment might have a mounted switch available for activating the alarm circuitry. Use this switch to initiate the alarm if the Equipment Failure method is not used.
Sense Point or INAS Alarm Point	If alarm sense-point activation is used instead of Equipment Failure testing and the equipment being tested does not have an alarm test switch, activate the contacts at: • The equipment. OR • A point as close to the equipment as possible. Try to avoid activating the test contacts at the frame.

(continued)

3.5 Methods for Activating Alarms, continued

Method	Explanation
Sense Point or INAS Alarm Point (cont.)	GTE Telephone Operations Practice 205-605-502 describes a locally fabricated resistance cord that might be used for shorting alarm-generating contact points. install the cord from the toad side of an alarm fuse to each telltale strip or terminal. Use GTE Telephone Operations Practice 205-605-502 to check the: • Power distribution boards. • Chargers. • DC-DC converters. • Ringing generators.

3.6 Scheduling and Coordination

In scheduling and coordinating alarm testing, adhere to the following conditions:

- Because alarm testing must be accomplished during the maintenance window period, schedule testing activity between 11:00 p.m. (2300) and 6:00 a.m. (0609).
- The site and the NOC – M&C must agree on the date and time of the scheduled alarm testing before it is performed.
- Submission of a High-Risk Activity notice before testing.
- Site personnel must call the NOC – M&C when testing is:
  - About to begin.
  - Completed or has otherwise stopped.

3.7 Functional Requirements

Equipment must be tested for:

- Sensory alarms.
- Message alarms.

3.7.1 Sensory Alarms

Equipment must be tested to ensure that both audible and visual alarms are functional.

3.7.2 Message Alarm

Many alarms generate a message related to an alarm condition. Check the output device to ensure that these messages are:

- Correctly transmitted.
- Consistent with the equipment being tested.
- As descriptive and specific as possible (for the equipment being tested) in the space allocated by the system.
- Uniform with messages for the same type of alarm sense point from all other COs associated with one support/monitoring center.

NOTE: **Some areas forward switch messages through support systems. Changes to messages must be coordinated with both the support system and the support/monitoring center so that all sites forward identical messages for any one alarm.**

3.8 Discrepancies and Corrective Action

Any problems or inconsistencies found during the testing process should be:

- Corrected immediately (if possible).
- Documented before any further testing is done.

When discrepancies cannot be corrected immediately, the local Manager must:

1. Identify the discrepancy.
2. Document the discrepancy.
3. Assign corrective action.
4. Establish follow-up dates.

If equipment is multipled into a common, singular alarm lead, test each piece of equipment individually to generate an alarm.

NOTE: Should alarm conditions fail to be detected at the NOC – M&C, CZT personnel must trace the problem and connect the proper alarm points to ensure monltoring.

3.9 Testing

On the scheduled date and time, the following testing activities are performed.

Stage	Who Does It	What Is Done
1	**CZT**	A. Informs the NOC – M&C that the testing is about to begin. B. Tests each alarm in accordance with the instructions in Section 3.5. C. Verifies each alarm for both sensory and message functions. **NOTE: When testlng redundant equipment wlth the Equipment Failure method, check for proper:** • **Transfer to standby protection equlpment.** • **Operation of the redundant equlpment.** D. When problems or inconsistencies are encountered, follows the instructions in Section 3.8. E. Informs the NOC – M&C when the testing is completed.

(continued)

3.9 Testing, continued

Stage	Who Does It	What Is Done
2	NOC-M&C Technician	A. Verifies with the CZT that the address shown in the Site Profile is: • Correct. • The address to which the switch printout should be sent. B. Determines from the CZT the type of medium (paper or soft copy) on which the switch printout should be generated. NOTE: Soft **copies sent via electronic mail are recommended, rather than paper copies sent through company or** U.S. **Mail.** C. Creates a printout from TONICS of the switch message output during the alarm testing. D. Forwards the TONICS printout to the site.
3	CZT	After the testing is completed: A. Retains a copy of the testing process for later comparison/analysis with the TONICS data. NOTE: This **copy may be:** • **The local printout from the office printer, if available.** OR • **If no local printout is available, a list of the equipment/sense points in the exact order in which they were tested/activated.** B. Verifies that all alarms are noted on the TONICS printout after receiving it from the NOC. C. Verifies that all alarms created the appropriate switch output message. D. Verifies CLLI code designations for all tested locations. E. Retains the site printout (or testing sequence if no site printout is available) for the period specified in Section 3.10.

3.10
Records

Record the results of all testing and other pertinent data, including the:

- Date.
- Equipment tested.
- Name of the person who performed the test.
- Problems or discrepancies found.
- Corrective actions taken.

The Central Office Alarm Functional Test Log (see Exhibits 1 and 2) must be filed with the site's daily journal (maintenance or site log) if a paper log is used. A copy of the testing results should be filed at the associated support/monitoring center (to be retained for two years).

NOTE: **Electronically logging alarm testing is acceptable if all of the stipulated items are entered. This information must be accessible by the NOC.**

Exhibits

CENTRAL OFFICE ALARM FUNCTIONAL TEST LOG

Central Office ________________________________

Equipment/ Sense Point	Location	Date	Comments	Inspected By

Exhibit 1 – Central Office Alarm Functional Test Log

CENTRAL OFFICE ALARM FUNCTIONAL TEST LOG

Central Office Keller Tandem Main

Equipment Sense Point	Location	Date	Comments	Inspected By
9004ACXR	RR212	1/5/94	All channel bank in bay TOK	Joe Teck
		5/8/94	Loose multiple corrected in system 20	Joe Teck
		7/7/94	All channel banks in bay TOK	Joe Teck
9004A CXR	RR213	1/5/94	Cross connect missing on MDF	Joe Teck
		5/8/94	All channel banks in bay TOK	Joe Teck
		7/7/94	All channel banks in bay TOK	Joe Teck

Exhibit 2 – Example of a Completed Central Office Alarm Functional Test Log