

APPENDIX C
COMMUNICATIONS EQUIPMENT
PERFORMANCE TESTS

Part 1: Radio Equipment C-1
Part 2: Duress Alarms C-5

Part 1
Radio Equipment

Objective	C-1
System Tested	C-1
Scenario	C-1
Evaluation	C-2
Special Considerations	C-2
Responsibilities	C-2
Internal Coordination	C-2
Security Considerations	C-3
Personnel Assignments	C-3
Logistical Requirements	C-3
Data Collection SheetRadio Equipment	C-4

Part 1

Radio Equipment

Objective

The objective is to test the operation of radio equipment. The applicable DOE references are:

Applicability

Class A Facilities and Class B Facilities

Facilities with Category I or II
SNM or Vital Equipment

Order Reference

DOE Manual 5632.1C-1,
Chapter X

DOE Manual 5632.1C-1,
Chapter X

System Tested

System - Communications equipment

Functional Element - Radio communication capability

Component(s) - Base, mobile, and handheld protective force radios

Scenario

Radio equipment is tested by listening to radio transmissions. The purpose of these tests is to verify equipment operability and transmission quality.

One method of testing radio equipment is to station an inspector at the CAS or the SAS. The inspector then directs the CAS operator (after first obtaining approval from an appropriate security manager) to contact each security post (including fixed posts, mobile posts, vehicle patrols, or foot patrols) and local law-enforcement agencies (if applicable). These tests do not normally take much time and are generally conducted while the inspectors are in the CAS for other reasons, such as alarm system testing.

A second method of testing radio equipment is to conduct testing from the SPO posts or other locations where SPOs are stationed or on patrol. With this method, the inspector instructs the SPO (after first obtaining approval from an appropriate security manager) to contact the CAS, SAS, or another post. The inspector then moves on to the next post or to a different location and repeats the procedure. Testing of radio equipment takes very little time and is normally performed during tours or testing of other equipment.

The inspectors may choose to use a combination of the two testing methods to provide a more comprehensive assessment of the reliability of radio equipment.

The inspectors may also elect to test the range and reliability of the radio equipment. Such tests may involve having SPOs on patrol routes attempt to contact the CAS, SAS, or other posts while at extreme ranges from those locations. Testing can also be conducted from areas where the SPOs would normally patrol, but where the transmission is shielded, such as inside or behind buildings (in particular, buildings with metal or reinforced concrete walls). If feasible, testing should be conducted during a range of weather conditions.

Evaluation

The primary objective in the evaluation is to determine whether the radio transmissions are clear and the radios are operable. Other points that should be considered in the evaluation are:

- Are there alternative means of contacting the CAS or SAS in a timely manner if the radios are inoperable or jammed (telephone, intercom, beeper)? What are those procedures? Can officers determine and detect jamming?
- Does the SAS have all the radio communications capabilities of the CAS?

Special Considerations

Radio equipment tests are straightforward and usually require very little time or effort. They are normally conducted in conjunction with tours or other tests in order to maximize the efficiency of data gathering. Also, testing of radio equipment is usually conducted concurrently to further increase efficiency.

SRT radios should be tested in both clear and voice privacy/encrypted modes.

Although protective forces have taken action in recent years to provide encrypted radios to their SRTs, several problems have been observed. Some protective forces have been slow to develop procedures to install the encryption codes. Others have not established clear procedures for switching to the secure mode when necessary, or procedures for communicating between the SRT in the secure mode and the rest of the protective force in the clear mode. Also, when radios are used in the encrypted mode, range is sometimes decreased.

Responsibilities

Inspectors: Select the posts and radios that will be tested, the test methods, and the time(s) of testing. Select the equipment to be tested and provide instructions to the SPOs and CAS/SAS operators after obtaining permission from appropriate managers.

Facility: Address safety concerns and ensure that protective force protective force supervision is available to control any response.

Internal Coordination

Any indicators that the radios are not a reliable means of communication may be of interest to the protective force topic team (as it relates to equipment and duties). Testing should be scheduled to avoid interference with other tests involving the protective force.

Security Considerations

Follow all normal security procedures.

Personnel Assignments

Test Director:

Facility Protective Force Representative:

Safety Coordinator:

Facility Safety Coordinator:

Logistical Requirements

A protective force supervisor should be available to control activities at the CAS/SAS or at each portal test location.

Safety: Follow normal operating procedures.

**Data Collection Sheet
Radio Equipment**

Test Method

	Zone Tested	Zone Number	Equipment Type	System Test (CAS-POST)	System Test (POST-POST)	Quality of Transmission
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
Comments:						

Part 2

Duress Alarms

Objective	C-5
System Tested	C-5
Scenario	C-5
Evaluation	C-6
Special Considerations	C-6
Responsibilities	C-7
Internal Coordination	C-7
Security Considerations	C-7
Personnel Assignments	C-7
Logistical Requirements	C-7
Data Collection Sheet Duress Alarms	C-8

Part 2

Duress Alarms

Objective

The objective is to test the operation of duress alarms. The applicable DOE references are:

Applicability

Class A Facilities and Class B Facilities
Containing Category II Quantities of SNM

Facilities with Category I or II SNM
or Vital Equipment

Order Reference

DOE Manual 5632.1C-1,
Chapter X, Paragraph 2

DOE Manual 5632.1C-1,
Chapter X, Paragraph 2

System Tested

System - Communications equipment

Functional Element - Communication capability in duress situations

Component(s) - Duress switches, transmitters, annunciators

Scenario

Duress alarm operation is tested by activating a duress switch (typically either a pushbutton for hardwired systems or a knob on a security radio) and verifying that an alarm condition annunciates in the appropriate locations. The purpose of these tests is to verify equipment operability. Other tests may be conducted that are designed to allow the inspectors to observe a protective force response to a duress condition; however, such testing requires detailed planning to ensure safety, and is not discussed in this section of the inspectors guide. Measures must be taken to ensure that all appropriate personnel are aware that the duress alarm condition is occurring as part of an equipment test and that no response action should be initiated.

One method of testing duress alarms is to station an inspector at a location where most or all duress alarms annunciate, such as the CAS or the SAS. The inspectors then direct the CAS operator (after first obtaining approval from an appropriate security manager) to contact each security post that is equipped with a duress alarm or a duress feature on the security radio (including fixed posts, mobile posts, vehicle patrols, or foot patrols). The CAS operator instructs the SPO at each post (one post at a time) to activate his duress alarm and the inspector then verifies the alarm conditions. These tests do not normally take much time and are generally conducted while the inspectors are in the CAS for other reasons, such as alarm system testing.

A second method of testing duress alarms is to conduct tests from SPO posts or other duress switch locations. With this method, the inspector instructs the SPO (after first obtaining approval from an appropriate security manager) to activate the duress switch and verify the alarm condition at the receiving location (for example, the CAS) by telephone or radio. The inspector can test some or all of the duress

alarms at that post (once at a given post, however, he should test all duress alarms there). The inspector then moves on to the next post and repeats the procedure. The advantage to this testing method is that the inspectors have an opportunity to observe the location of the duress switch (that is, whether it is in a concealed location) and the SPO's familiarity with the duress alarm operation. Tests of duress alarms conducted at SPO posts take very little time and are normally performed during tours or tests of portal access control and search equipment. Normally, radios and other communications equipment are tested simultaneously with duress alarms.

The inspectors may choose to use a combination of the two testing methods to provide a more comprehensive assessment of the reliability of duress alarms.

Duress alarms that rely on radio frequency (RF) transmissions tend to be less reliable than hardwired systems. Tests of RF duress alarms should be emphasized, particularly in those cases where an RF duress switch is located in a post situated within a building that shields RF transmissions (for example, a building with metal or reinforced concrete walls). At facilities having vehicle-based or handheld radios with duress features, inspectors may elect to test the range and reliability of the duress capability. Such testing may involve having SPOs on patrol routes a duress switch while at extreme ranges from the receivers. Testing can also be conducted at areas where the SPOs would normally patrol but where RF transmissions are shielded, such as inside or behind buildings.

Evaluation

The primary objective in the evaluation is to determine whether the duress alarms function as designed. Other points to consider in the evaluation are:

- Was the SPO familiar with the location and operation of the duress switch?
- Are the duress switches located in an unobtrusive location (that is, reducing the likelihood that an adversary would notice that a duress alarm was activated)?
- Are there alternative means of alerting the CAS to a duress condition if the primary duress switch at a post cannot be activated (for example, through a duress feature on radio, or by code words)?
- Can duress be activated in a timely fashion either in or out of the carrying case (many SPOs must remove radio from belt holder or unbuckle strap, then search for button)?
- Does the primary duress annunciation station (usually the CAS) have a backup for receiving a duress condition if the primary annunciation station is compromised?
- Does the primary duress annunciation station have a duress capability that annunciates in a second location, but does not alert an adversary in the primary location?

Special Considerations

Duress alarm tests are straightforward and usually require very little time or effort. They are normally conducted in conjunction with tours or other tests to maximize the efficiency of data gathering. Also, testing of radio equipment is usually conducted concurrently to further increase efficiency.

Responsibilities

- Inspectors: Select the duress alarm and posts to be tested, the test methods, and the time(s) of testing. Select and provide instructions to the SPOs and CAS/SAS operators after obtaining permission from appropriate managers.
- Facility: Address safety concerns and ensure that protective force supervision is available to control any response.

Internal Coordination

Any indications that SPOs are not familiar with duress alarm operation or locations of duress switches may be of interest to the protective force topic team, as it relates to training and duties.

Tests should be scheduled so as not to interfere with other tests involving the protective force.

Security Considerations

Follow all normal security procedures.

Personnel Assignments

Test Director:

Facility Trusted Agent:

Facility Protective Force Representative:

Safety Coordinator:

Facility Safety Coordinator:

Logistical Requirements

A protective force supervisor should be available to control activities at the CAS/SAS or at each portal where a test is conducted.

Safety:

- Follow normal operating procedures
- Notify all locations of alarm annunciation that a test is being conducted and no response is to be initiated
- Any SPO responses must be controlled by protective force supervision
- Complete a safety plan

**Data Collection Sheet
Duress Alarms**

Test Method

	Zone Tested	Zone Number	Alarm Type	(CAS-POST)	(POST-POST)	Alternate Means	Special Features
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
Comments:							