

# Performance/Acceptance Testing of Access Control Systems<sup>1</sup>

These tests and procedures will check and provide assurance that the access control system components are functioning at a known performance level for authorizing the proper badges within the access controlled doors. It will validate that alarms from those sub-components give assurance that those components are protected with alarms or tampers, and that the components operate within the requirements of the statement of work. Three levels of testing can be performed on the access control and alarm system depending on operational constraints imposed by the site, or contractor.

1. Level 1 procedure will assure that electronic access control locks and readers are in place at the doors. This level of testing will verify compliance with the Select Agent Codes of Federal Regulation (CFRs)<sup>2</sup>, ensuring that limited access controls are in place.
2. Level 2 procedures will provide assurance that electronic access controls are in place at doors and that the capability to report an alarm if the door is forced open is in place. This will provide basic assurance of proper alarm reporting. It will not check full performance testing that would indicate that all hardware is functional nor that the conceptual design has been properly implemented.
3. Level 3 procedures will provide assurance that all hardware and critical software has been tested and meets the intent of the conceptual design. Checks are made on the documentation and training supplied by the installer.

Procedures are described for two door categories. The Category 1 Door is controlled by a proximity card reader or similar electronic credential reader and a magnetic lock. The doors are also equipped with a balanced magnetic switch sensor and pneumatic door closer. The Category 2 Door is controlled by a proximity card reader or similar credential, personal identification number (PIN), or biometric device, and magnetic lock. The doors are also equipped with a balanced magnetic switch sensor and pneumatic door closer.

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<sup>2</sup> 42 CFR 73, 9 CFR 121, and 7 CFR 331

## Level 1 Procedures

Note: Items in { } refer to the data sheet line (row) number

### **Equipment:**

- ballpoint pen or #2 pencil
- badge and pin number that will allow access to all doors
- badge and pin number that will not allow access to any doors (i.e. visitor)
- data sheets for marking doorway hardware configurations.

### **Field Test Procedure**

1. Testers must have experience in identifying the hardware mounted on each of the doors will form multiple teams. Tester will mark the data form with the location {2} and identification of the door and circle all visible hardware {5-19} on the outside door
2. Tester optionally can check for the hardware {5-19} mounted on the inside of the doorway.
3. When the door is locked, the tester will pull and push (in an up/down and in/out motion) on door to ensure that the door does not open. Mark on {25} any movement that is noticed.
4. Category 1 door test
  - Tester will present a valid credential and verify {52} that door opens. Tester does not need to go through door.
  - Tester will present a non-valid credential and verify {56} that door does not open.
5. Category 2 door test
  - Tester will present a valid credential, enter an invalid PIN {53}, and verify that door does not open.
  - Tester will present a invalid credential, enter a valid PIN {56}, and verify that door does not open.
  - Tester will present a valid credential, enter a valid PIN {52}, and verify that door opens. Tester does not need to go through door.
6. Tester will verify all information on the test data sheet is correct and continue to the next door.

This level of testing will only validate compliance with the CFRs using electronic access controls. It does not serve to provide any validation to proper installation of all hardware or programming. This level of testing is not recommended for validation and acceptance testing other than to verify the most basic operation of the access control system.

## Level 2 Procedures

Note: Items in { } refer to the data sheet line (row) number

### Equipment:

- ballpoint pen or #2 pencil
- badge and pin number that will allow access to all doors
- badge and pin number that will not allow access to any doors (i.e. visitor)
- badge that is not enrolled in the system
- standard metal ruler at least 6 inches in length with markings to resolve measurements to 1/16<sup>th</sup> of an inch
- data sheets for marking doorway hardware configurations
- Multiple 2-way radios on the same frequency; one for the alarm/access control monitor and one for each field test team
- Strong large magnet to overcome the balanced magnetic switch (BMS) magnetic field

## Scripts for Level 2 Testing

All reference numbers in [ ] refer to the steps set forward in the level 2 testing procedures. Italic words are actions the field tester and CAS monitor will be doing to enter information on the data sheets.

**CAS:** is defined as the person who is monitoring the alarm/access control monitoring station, if there are multiple stations there should be one person at each station.

**FT1:** is defined as the field tester, if there are multiple groups the numbers will be different. Only one set of scripts are indicated, the script for the field tester will be the same for each test group, but the CAS monitor ***must*** identify which field test group they are acknowledging, i.e. “FT1, I received your alarm. FT2 your door is reset.”

### Level 2 Script

**FT1:** CAS, I’m at Door ### ready to test locked door.

**CAS:** FT1, start locked door test.

**FT1:** (after push/pull [3] test), CAS, this is FT1 did you receive any alarms?

**CAS:** FT1, no alarms received. *Mark line ? on data sheet no alarm, if an alarm occurred mark line ? that alarm received, if known, mark reason door alarmed.*

1. Testers must have experience in identifying the hardware mounted on each of the doors will form multiple teams.
2. Tester will mark the data form with the location {2} and identification of the door and circle all visible hardware {5-19} on the outside door
3. From the outside of the door, when the door is locked, the tester will pull and push (in an up/down and in/out motion) on door to ensure that the door does not open or provide for a visible gap between the door and the door jam anywhere from the top to the bottom of the doorway. A visible gap is defined as large enough opening that a small object, such as a #2 pencil or standard ballpoint pen, could fit through without

applying undo force on the object. Mark on {25} any movement that is noticed. Mark after verifying with the central alarm station (CAS) the alarm/no alarm {25} status during test.

4. Category 1 door test (if category 2 door skip this step)
  - Tester will present a non-valid credential and verify {56} that door does not open.
  - Tester will present a valid credential and verify {52} that door opens.
5. Category 2 door test (if category 1 door skip this step)
  - Tester will present a valid credential, enter an invalid PIN {53}, and verify that door does not open.
  - Tester will present a invalid credential, enter a valid PIN {56}, and verify that door does not open
  - Tester will present a valid credential, enter a valid PIN {52}, and verify that door opens.
6. Tester uses valid credential and PIN {52} to check for the hardware mounted on the inside of the doorway {5-19}, but not on any containment lab inner airlock doors.
7. When the door is locked, the tester will pull and push (in an up/down and in/out motion) on door to ensure that the door does not open or provide for a visible gap between the door and the door jam anywhere from the top to the bottom of the doorway. Mark on {26} any movement that is noticed. Mark after verifying with the CAS the alarm/no alarm {26} status during test.
8. Category 1 door test (if category 2 door skip this step)
  - Tester will present a non-valid credential and verify {56} that door does not open.
  - Tester will present a valid credential and verify {52} that door opens.
9. Category 2 door test (if category 1 door skip this step)
  - Tester will present a valid credential, enter an invalid PIN {53}, and verify that door does not open.
  - Tester will present a invalid credential, enter a valid PIN {56}, and verify that door does not open
  - Tester will present a valid credential, enter a valid PIN {52}, and verify that door opens.
10. Tester will verify all information on the test data sheet is correct and continue to the next door.

## Level 3 Procedures

1. The door-monitoring sensor will detect movement of the door before that movement reaches 1 inch.
2. It will verify that movement of the door less than ½ inch will not cause a false alarm indication from the device.
3. The access controls for the door will be checked for operation
  - a. Authorized cards
  - b. Unauthorized cards
  - c. Wrong Pin
  - d. Door open to long
  - e. Door Forced
4. It will check all tampers associated with the door hardware and signal junction boxes.
  - a. Door Position monitoring device
  - b. Signal Junction boxes
  - c. Badge Readers
5. The alarm monitoring station will be checked for reporting of all alarms and tampers from the access controlled doors and signal junction boxes associated with protecting the site.
  - a. Are the proper procedures posted?
  - b. If graphical maps are used, are they accurate?
  - c. Approximate time for alarm generation to alarm reporting
  - d. Are the alarm text indications accurate?

Other information that will be requested concerns the operation and maintenance of the system. This information will focus on the documentation of the system and it's components:

1. How to operate and maintain the system
2. A schedule of training classes if any that were provided
3. Documentation of training of the operators and system administrators
4. Complete wiring and termination drawings of the system
5. Configuration information indicating all of the current setups (delays, door open times) and digital addresses associated with each access control components

These procedures do not attempt to check the every possible configuration of the system for all circumstances, but to check the hardware and its functions to an acceptance level at a known performance level.

The procedure for each set of door hardware may vary depending on the configuration of the door and will use the attached data collection performance sheets to drive each test. The basic flow for the hardware tests are outlined below:

### **Test Performance Measure for BMS Door**

1. Test door for movement while door is in closed state an alarm shall not be generated with door movement of up to ½ inch. This will involve pulling and pushing the door against the locking mechanism. Record any BMS alarms generated from movement of door. Test door for approximately 15 seconds using strong pull and push motion against the door. Repeat test 10 times. Door will pass test if no alarms are generated.
2. Unlock door locking mechanism and measure door movement. An alarm shall be generated by the time leading edge of the door has moved 1 inch from the closed position against the door jamb. The measurement is made beginning with the leading edge of the door against the door jamb in the closed position. From this position, open the door slowly until an alarm occurs. Measure the distance that the leading edge of the door has moved. The BMS passes if the movement distance is 1 inch or less. Repeat test 10 times. Any failure to detect within the 1 inch will result in a failure of the test.

### **Test Performance Measure for Access Control System**

1. Authorized badge and PIN should release the electronic lock and system should record a transaction (badge, date/time stamp).
2. Unauthorized badge and/or PIN should not release the electronic lock and system should record attempted entry (badge, date/time stamp).
3. Generate a door open alarm and time to see that the alarm is received by the alarm station within one second.
4. Door open time will be tested by using an authorized badge and PIN. The time from the entry of the last PIN number to the time that the door is unlocked will be timed. This should not exceed 3 seconds. This test should be repeated 10 times.