

MLDS Verification Test Plan

Unit Testing:

Test Set 1:

Ranger newRanger(): Ranger
ComputerInterface newComputer(): ComputerInterface

Ranger randy
ComputerInterface computer

randy.RangerID = 1234
computer.password = Password1234
If (computer.passwordCorrect() == true)
 randy.logIn()
 Return PASS
Else
 Return FAIL

Test Set 2:

Ranger newRanger(): Ranger
ComputerInterface newComputer(): ComputerInterface

Ranger admin
ComputerInterface computer

admin.RangerID = 0987
admin.isAdmin = true
computer.password = Password0987
If (admin.login() && computer.userIsAdmin == true)
 admin.changeSettings()
 Return PASS
Else
 Return FAIL

Integration Testing:

Test Set 1: Sensor and Gateway Connection

- When an acoustic sensor detects an animal sound, the data should be transmitted to the Sensor Network Gateway\
 - Sensor detects mountain lion sound, data sent to gateway
 - Sensor loses connection, gateway does not receive data
 - Gateway confirms receipt of valid detection data
- Expected Result: Sensor data successfully reaches the gateway, and missing or failed connections are logged

Test Set 2: Alert and Alarm Activation

- When a new detection is received, the system should trigger an alarm at the ranger station
 - Interface receives mountain lion alert, physical alarm is triggered
 - Ranger manually silences alarm, alarm stops
 - Alarm system disconnected, interface shows alarm system offline warning
- Expected result: Alarm activates only for valid detections and can be manually silenced. If the alarm service fails, the system shows an error

System Testing:

Test Set 1: Full Alert Workflow

- Purpose: Verify the complete process from sensor detection to ranger classification and report generation
- Test Steps:
 - A field sensor detects a mountain lion noise and sends an alert to the ranger station.
 - The system sounds the alarm.
 - A ranger turns off the alarm and classifies the alert as “Definite.”
 - The System saves the classification and alert details in the database.
 - The ranger generates a report for the day's detections.
- Expected Results: The alert triggers the alarm, the classification is stored correctly and the daily report includes the alert data.
- This test ensures that the entire detection, response, and reporting workflow functions correctly from start to finish.

Test Set 2: Alarm and Re-Trigger Behavior

- Purpose: Confirm that the alarm behaves correctly based on detection rules.
- Test Steps:
 - A sensor detects a mount lion noise, and the system sounds the alarm.
 - The ranger acknowledges and turns off the alarm.

- Another detection is reported from the same location- the alarm should not sound again.
 - A separate detection occurs at a different location- the alarm should sound.
- Expected Results: The alarm reactivates only for detections at a new location after the previous alert has been acknowledged.
- This verifies the alarm logic to prevent repeated alerts for the same event but still responds correctly to new threats.