INTRODUCTION

The Arizona Department of Transportation’s (ADOT) Transportation Technologies Group (TTG) plans, manages, and implements all of ADOT’s Intelligent Transportation Systems (ITS) projects. As part of a statewide effort to manage traffic, the Traffic Operations Center (TOC) controls the Freeway Management System (FMS), monitors incidents and dispatches statewide forces. There are several goals for this investment as listed below:

1. Reduce recurring congestion.
2. Provide statewide incident management.
3. Provide quality and timely information to the travelling public.
4. Design and construct quality ITS projects in a timely manner.
5. Enhance mobility of the citizens of Arizona.
6. Continue to be an international leader in ITS implementation.
7. Support and maintain ITS infrastructure.
8. Improve commercial vehicles operations.

It is critical that all systems are available and fully functional 24 hours a day, seven days a week. Contact with DPS, local Police Departments and Fire Departments, Paramedics and Phoenix Maintenance must be provided at all times.

PURPOSE OF DOCUMENT

The purpose of this document is to allow operators to regularly perform systematic tests on all systems and subsystems located in the ADOT Traffic Operations Center Operations Room. This operator acceptance test will be performed on a monthly basis or when changes are made to the system. The acceptance forms will be signed by both the operator and Operations Room Supervisor, and kept on file.

SUBSYSTEMS

The Traffic Operations Center has a number of systems and subsystems. The following Systems are included in the Traffic Operations Center:

- UNIX System
- AZTech
- PC System
- Voice Remote Access System (VRAS)
- Closed Circuit Television (CCTV)
- Tunnel Management System (TMS)
- Phone / Radio / Television System
- Stand Alone Variable Message Signs (SYLVIA)
- Facilities Control
- Backup Power
PROCEDURE FOR PERFORMANCE TEST

UNIX System

- Power up O/W and log onto system.

ArcView Window

Turn on and off the following themes:

- VMS Status
- Ramp Meters
- Speed
- City Streets
- Incidents
- Phoenix Speed
- Scottsdale Speed
- Tempe Speed
- Super Speed
- PV Speed
- Mesa Speed
- Glendale Speed
- ADOT Speed
- Cameras
- Detectors
- Nodes
- Routes
- Cities
- Arizona

Test the following:

- Zoom in Map.
- Pan Map.
- Zoom to Active Themes.

Incident Management

- From the ArcView screen, access the IM Selection Screen.
- Select an incident and check that each field on the IM Log Screen can be modified.
- From the IM Selection Screen, click on Initiate New Incident to create a new incident and check each field.
- From the IM Selection Screen, click on Search and test that function by entering an existing DR number.

Loop Detectors

The operator shall check the status on the Loop Detectors along the following corridors and note which Loop Detectors are not working:

- I-10 West.
- I-10 East.
- I-17.
- SR 51.
- SR 143.
Variable Message Signs

- Post a test message - “Trailmaster System Test” - on each of the VMS listed below.
- Click on Show/CANCEL Commands and verify that message was executed successfully.
- Verify with camera if possible.
- Blank message.
- Click on Show/CANCEL Commands and verify that test message was deleted successfully.
- Verify with camera if possible.
- Click on lightning bolt and read Active Messages.

<table>
<thead>
<tr>
<th>ADOT ID</th>
<th>Location</th>
<th>ADOT ID</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>62</td>
<td>I-10 WB, at 80th Ave</td>
<td>32</td>
<td>I-17 SB, at Central</td>
</tr>
<tr>
<td>61</td>
<td>I-10 WB, at 59th Ave</td>
<td>31</td>
<td>I-17 SB, at Van Buren</td>
</tr>
<tr>
<td>60</td>
<td>I-10 WB, at 35th Ave</td>
<td>30</td>
<td>I-17 SB, at Grand Ave</td>
</tr>
<tr>
<td>13</td>
<td>I-10 WB, at 7th Ave</td>
<td>17</td>
<td>I-17 NB, at 4th Ave</td>
</tr>
<tr>
<td>37</td>
<td>I-10 WB, at 13th St</td>
<td>18</td>
<td>I-17 NB, at Grant</td>
</tr>
<tr>
<td>33</td>
<td>I-10 WB, at 16th St</td>
<td>53</td>
<td>SR 143 SB, at Sky Harbor</td>
</tr>
<tr>
<td>12</td>
<td>I-10 WB, at Jefferson</td>
<td>54</td>
<td>SR 143 NB, at University</td>
</tr>
<tr>
<td>11</td>
<td>I-10 WB, at 32nd St</td>
<td>59</td>
<td>SR 51 SB, at Osborn</td>
</tr>
<tr>
<td>10</td>
<td>I-10 WB, at 48th St</td>
<td>58</td>
<td>SR 51 SB, at Northern</td>
</tr>
<tr>
<td>1</td>
<td>I-10 EB, at 67th Ave</td>
<td>55</td>
<td>SR 51 NB, at Osborn</td>
</tr>
<tr>
<td>2</td>
<td>I-10 EB, at 35th Ave</td>
<td>56</td>
<td>SR 51 NB, at Bethany Home</td>
</tr>
<tr>
<td>35</td>
<td>I-10 EB, at 19th Ave</td>
<td>49</td>
<td>L 202 WB, at 32nd St</td>
</tr>
<tr>
<td>4</td>
<td>I-10 EB, at 10th St</td>
<td>50</td>
<td>L 202 EB, at 24th St</td>
</tr>
<tr>
<td>34</td>
<td>I-10 EB, at 20th St</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>I-10 EB, at Jefferson</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>I-10 EB, at 40th St</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>I-10 EB, at 48th St</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Ramp Meters

- Open the RMS Status Screen.
- Check that all the ramp meters are working and verify visually with camera when possible.
- Check that the Time of Day and Min and Max Metering Levels can be adjusted.

Traffic Signals

- Enable the Traffic Signal Icons and click on an icon to open the TI Status Screen.
- Check that all the signals at the Traffic Interchanges are working.
- Check that the timing plans can be modified via the Manual Override command.
Wall Projector

- Make sure that the Wall Projector is on and working properly.
- Check that the display on the wall projector is focused and clear.
- Check that the real time display changes every 20 seconds.
- Make sure freeway speeds match the O/W speeds.
- Make sure VMS Locations are projected.
- Make sure HCRS Icons are projected.
- Make sure IMS data is projected.
- Check that the Date and Time is displayed.

AzTech

Send Test Message through Electronic Messaging to:

- Tempe
- Mesa
- Phoenix
- Scottsdale
- Chandler
- Peoria
- Gilbert
- McDOT
- Paradise Valley
- Phoenix Fire
- ADOT
- Phoenix Transit

Check that AzTech is able to receive the following data from the following Cities:

Speed, Volume and Occupancy

- Tempe
- Mesa
- Phoenix
- Scottsdale
- Chandler
- Maricopa County

RCRS Data

- Tempe
- Mesa
- Phoenix
- Scottsdale
- Chandler
- Peoria
- MCDOT
- Gilbert
- Phoenix Fire
- Maricopa County
Bus Schedule

- Phoenix Transit Schedule Adherence

Camera Control

Pan, Tilt and Zoom the following cameras:

- Cam7131 Glendale Cam 1 Glendale @ 59th Ave
- Cam7172 Mesa Cam 2 NE Alma School @ Southern
- Cam7171 Mesa Cam 1 SW Alma School @ Southern
- Cam7234 Phoenix Cam 4 Jefferson @ 7th St
- Cam7233 Phoenix Cam 3 Washington St @ Central Ave
- Cam7232 Phoenix Cam 2 Jefferson St @ 1st St
- Cam7231 Phoenix Cam 1 Jefferson St @ 3rd St
- Cam7252 Scottsdale Cam 2 Scottsdale Rd @ Shea Blvd
- Cam7251 Scottsdale Cam 1 F L Wright Rd @ Hayden Rd
- Cam7292 Tempe Cam 2 I-10 @ Bell Butte
- Cam7291 Tempe Cam 1 Rio Salado Pkwy @ Bell Butte

VMS

Send Test Message for:

- Dobson Rd SB
- Dobson Rd NB
- Southern Ave WB
- Baseline Rd WB

PC System

- Power-on PC, start Windows NT, log onto systems

Alfie Jr.

- Send a multiple Test Message to Operations supervisor and confirm receipt via telephone.

Highway Closure and Restriction System (HCRS)

Test Steps:

- Activate HCRS software
- Connect to the HCRS Server.
- Select the Arizona map for viewing.
- Click on each closure / incident icon to display events details and verify information.
Select the Phoenix map.
Click on each closure / incident icon on Phoenix map to display events details and verify information.
Select the Flagstaff map.
Click on each closure / incident icon on Flagstaff map to display events details and verify information.
Select the Arizona map for viewing.
Create a Test Icon in Phoenix with a 30-minute duration.
Select the Phoenix map for viewing on one HCRS client and the Arizona map on the other.
After verifying test message on Internet, VRAS and Kiosk then terminate the test message.
Observe the removal of the terminated closure / incident from both the Phoenix map and the Arizona map.
Activate the Help / About menu item.
Contact Database Administrator to query the Sybase database to view active closure / incident events.

Date: _____________
Contact: ______________

Verify the list of active events.
Check that the pan function is working.
Check that the zoom function is working.
From the menu bar, Add an event
From the menu bar, Filter an event.
From the menu bar, Print an event.
From the menu bar, List all events.
Click on the incident icons and check that each of the fields can be edited.
Disconnect from the session, and verify that software closed properly.

E-mail
Send Test Message to Operations Supervisor or another operator, and confirm receipt with reply.

Internet
Connect to http://www.azfms.com
Pull up Cameras and check that streaming video is working.
Pull up Real Time Map and check that it updates information every 20 seconds.
Pull up HCRS and check pan and zoom functions.
Check that the Incident Icons in HCRS display the relevant information
Make sure RealPlayer is working properly.
Verify the test message was displayed.
Check that the links on the http://www.azfms.com homepage are working.
Check Connection to World Wide Web by connecting to http://itsa.org/

Icons for Work Orders

- Click on shortcut to PC Job Request and check that the correct form is pulled up.
- Click on shortcut to Sun Equipment Job Request and check that the correct form is pulled up.
- Click on shortcut to Field Devices Request and check that the correct form is pulled up.
- Pull up the Schedule for the large Conference Room.
- Click on the Tours Icon to view the tour schedule for the TOC.

Printers at Workstations

- Print a test page to check that printer is working properly.

Voice Remote Access System

Voice Remote Access System (VRAS)

- Call 1-888-411-7623 and check that Beginning Script “Welcome to ADOT…” runs properly.
- Check that the time and date stamp is current.
- Check that the system has been updated within the last 5 minutes.
- Select SR 143.
- Listen for the confirmation that 143 was the selected roadway. Then listen to the VRAS prompt requesting the user to select incidents, closures or weather conditions.
- Listen for incidents active on 143.
- Listen for closures active on 143.
- Listen for weather information pertaining to 143.
- Repeat the request for incidents as above for I-40
- Request for closures as above for I-40
- Request for weather conditions as above for I-40.
- Exit VRAS and listen for the Goodbye message.

Kiosk

- 5 minutes after a test incident is entered in HCRS, check that the event is updated in the Kiosk.
- Click on the incident icon and verify that information is correct.
- Verify that each of the 8 screens in the kiosk can be accessed and are operational.
- Verify that Kiosk connects to Internet properly.
**Closed Circuit Television (CCTV)**

**Video Display Wall**

The operator shall verify that all monitors on the video wall are working and that the bottom row of monitors is scrolling all cameras within a corridor.

<table>
<thead>
<tr>
<th>Column</th>
<th>Description</th>
<th>Cameras Numbers Scrolling on Bottom</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>I-10 West</td>
<td>1,2,3,4,5,6,7,8,58,59,62</td>
</tr>
<tr>
<td>B</td>
<td>I-10 Interloop</td>
<td>7,8,12,13,14,15,16,18</td>
</tr>
<tr>
<td>C</td>
<td>I-10 East</td>
<td>16,17,18,19,20</td>
</tr>
<tr>
<td>D</td>
<td>I-17</td>
<td>30,31,32,33,34,35,36,37</td>
</tr>
<tr>
<td>E</td>
<td>SR-51</td>
<td>13,78,79,80,81,82,83,84</td>
</tr>
<tr>
<td>F</td>
<td>Loop 202</td>
<td>13,66,69,70,71,75,76</td>
</tr>
<tr>
<td>G</td>
<td>SR-143</td>
<td>66,75,76,77</td>
</tr>
<tr>
<td>H</td>
<td>Security Cam/Tunnel Cam</td>
<td>0,90,91,303</td>
</tr>
</tbody>
</table>

**CCTV Monitor (Javelin)**

- Check that the sign-in function works.
- Check that video switching between cameras works properly.

Check that Pan/Tilt/Lens Control works properly on all the following cameras:

<table>
<thead>
<tr>
<th>Column</th>
<th>Description</th>
<th>Cameras Numbers Scrolling on Bottom</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>I-10 West</td>
<td>1,2,3,4,5,6,7,8,58,59,62</td>
</tr>
<tr>
<td>B</td>
<td>I-10 Interloop</td>
<td>7,8,12,13,14,15,16,18</td>
</tr>
<tr>
<td>C</td>
<td>I-10 East</td>
<td>16,17,18,19,20</td>
</tr>
<tr>
<td>D</td>
<td>I-17</td>
<td>30,31,32,33,34,35,36,37</td>
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<td>E</td>
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<td>F</td>
<td>Loop 202</td>
<td>13,66,69,70,71,75,76</td>
</tr>
<tr>
<td>G</td>
<td>SR-143</td>
<td>66,75,76,77</td>
</tr>
<tr>
<td>H</td>
<td>Security Cam/Tunnel Cam</td>
<td>0,90,91,303</td>
</tr>
<tr>
<td></td>
<td>Cam/Equipment Services</td>
<td>390</td>
</tr>
</tbody>
</table>

Note which cameras, if any, are out of order.
AZTech Cameras

Check that the TOC is receiving video feed from the following AZTech Cameras:

- 122
- 123
- 124
- 125
- 126
- 127
- 128
- 129
- 130
- 131
- 132
- 133
- 134
- 135
- 136
- 137

Note which cameras are not transmitting the video feed.

VCR

- Select a camera and record 5 minutes of sample video.
- Replay sample video to ensure the tape recorded properly.

Tunnel Management System (TMS)

Tunnel Monitor

- Check that the tunnel monitor is able to access the appropriate screens and controls. This is an indication of the FD&LS Computer’s connection to the TMS host computer.
- Cycle through the following screen and reset any malfunctions and alarms.
- Note which devices are not on-line as indicated by Programmable Logic Controller (PLC):

  - Screen A
  - Screen B
  - Screen C
  - Screen D
  - Screen E
  - Screen F
  - Screen G
  - Screen H
  - Screen I
  - Screen J
  - Screen K
  - Screen L
  - Screen M
  - Screen N
  - Screen O
  - Screen P
  - Screen Q
  - Screen R
  - Screen S
  - Screen T
  - Screen U

Fire Detection and Life Safety System

- Ask a technician to go onsite to test the 18 Fire Detection Zones and 18 Fire Telephone Cabinets in each direction.
- Also have technician check the Fire Alarm Control Panel (FACP).

Date: __________________
Technician: _______________________

Air Quality

☐ Study CO Concentration Trending File to check that Carbon Monoxide Sensors are working.

Emergency Roadway Telephone Assistance Lines

Ask a technician to go onsite to test the following Emergency Roadway Telephone Assistance Lines:

<table>
<thead>
<tr>
<th>WB</th>
<th>EB</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
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<td>2</td>
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<td>3</td>
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<td>6</td>
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<td>7</td>
<td>7</td>
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<tr>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>9</td>
</tr>
</tbody>
</table>

Video Monitor

☐ Check that the video monitor is clear and operating with the proper settings.

Closed Circuit Television (CCTV) Controller

For the following cameras,
Check that the following movable cameras are able to pan, tilt, zoom and focus and check that the control is able to switch between the following cameras:

| 1  | 6  | 11 | 16 |
| 2  | 7  | 12 | 17 |
| 3  | 8  | 13 | 18 |
| 4  | 9  | 14 | 19 |
| 5  | 10 | 15 | 20 |
| 10 | 24 |

Lighting Control

☐ Step up the Lighting Intensity in the tunnel by one level.
☐ Verify changes in lighting with tunnel camera.
☐ Return Lightning to previous intensity.
ADOT TOC Acceptance Test

Roadway Loop Detectors

Check that Loops are functional and that the following information is being displayed and updated:
- Vehicles/Hour, This Hour and Last Hour.
- Test the Lane Use Signals by posting “open” and “closed” in each lane and verify with Eastbound camera.

Non-interruptible Power Supplies

- Check with tunnel maintenance that tunnel UPS is operational and that it has been cycled on and off weekly.
  Date of last test: ______________
  Contact for last test: ______________

Phone / Radio/Television System

Phone Lines

- Test Phone Lines by calling the different extensions in the TOC operations room.

Cell Phones

- Test Cell Phones by calling operations supervisor or another operator.

Radio System

Test the following channels and ensure reception on both ends is clear:

1A – CNST
1B – CNST 1
1C – CNST 2
1D – CHST 3
2A – LNDSC
2B – MAINT
2C – TOC
2D – SGNLS
2E – PAINT
3A – INCDT
3B – ADMIN
B-01 PHX (White Tanks)
B-02 PHX (Mt. Ord)
A-03 FLAG (Mt. Eldon)
B-11 YUMA (Telegraph)

- Test Hand Held Radios.
- Test caller check console.

DPS Scanner

Test the following DPS channels:

Ch#  Bank: A - DPS Bank Number: A
- 460.47500 FMN Police DPS District 1 Kingman
- 460.02500 FMN Police DPS District 2 Flagstaff
- 460.30000 FMN Police DPS District 3 Holbrook
- 460.40000 FMN Police DPS District 4 Yuma
- 460.32500 FMN Police DPS District 5 Metro Phoenix
- 460.25000 FMN Police DPS District 6 Florence
- 460.42500 FMN Police DPS District 8 Tucson
- 460.32500 FMN Police DPS District 9 Wilcox
- 460.47500 FMN Police DPS District 11 Globe-Payson
- 460.42500 FMN Police DPS District 12 Camp-Verde
- 460.40000 FMN Police DPS District 13 Phoenix East
- 460.30000 FMN Police DPS District 14 Wickenburg
- 460.27500 FMN Police CI-1
- 460.50000 FMN Police CI-2
- 460.50000 FMN Police CI-3
- 460.50000 FMN Police CI-4
- 460.22500 FMN Police State
- 460.22500 FMN Police State Tactical

**Ch# Bank: B - Phoenix Fire Bank Number: B**
- 154.19000 FMN Fire Main Dispatch
- 154.25000 FMN Fire Violent Incident Tactical
- 154.07000 FMN Fire Air Operations
- 154.28000 FMN Fire Statewide Fire Mutual Aid
- 153.83000 FMN Fire North/Central Tactical
- 154.31000 FMN Fire Glendale/Peoria/Sun City Tac
- 154.14500 FMN Fire Tempe Tactical
- 153.77000 FMN Fire South Tactical
- 155.67000 FMN Fire West Tactical
- 151.37000 FMN Fire Far North Tactical
- 154.02500 FMN Fire Misc Use (low Power)
- 155.77500 FMN Fire Technical Rescue (haz mat)

**Ch# Bank: C - Phoenix Police Bank Number: C**
- 453.10000 FMN Police Ch-1 Chase North
- 453.30000 FMN Police Ch-2 Information
- 453.45000 FMN Police Ch-3 Chase South
- 155.36500 FMN Police Ch-4 South
- 155.07000 FMN Police Ch-5 Central
- 155.64000 FMN Police Ch-6 North East
- 155.52000 FMN Police Ch-7 North Central
- 155.43000 FMN Police Ch-8 West
- 155.70000 FMN Police Ch-9 North-Northwest
- 155.76000 FMN Police Ch-10
- 155.07000 FMN Police Ch-11
- 155.61000 FMN Police Ch-12
Television

Check to make sure the television in the operations room is able to receive the following channels:

- Weather Channel
- CNN
- MSNBC
- Other news channels.

Stand Alone Variable Message Signs

Sylvia Software

For each of the following signs:
1) Send a test message to each sign to test for proper operation,
2) Check that the Connection to the sign is “on” from the Monitoring Status screen,
3) Blank test message from sign.

<table>
<thead>
<tr>
<th>Phoenix</th>
<th>Flagstaff</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-10 WB @ Ray Rd</td>
<td>I-17 NB @ MP 297.5</td>
</tr>
<tr>
<td>I-10 WB @ Guadalupe Rd</td>
<td>I-40 EB @ MP 144.0</td>
</tr>
<tr>
<td>US 60 WB @ McClintock Dr</td>
<td>I-40 WB @ MP 211.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wilcox</th>
<th>Elk Signs</th>
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<tbody>
<tr>
<td>I-10 EB @ Bowie</td>
<td>SR 260 WB @ Heber</td>
</tr>
<tr>
<td>I-10 WB @ San Simon</td>
<td>SR 260 EB @ Christopher Creek</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Kingman</th>
</tr>
</thead>
<tbody>
<tr>
<td>68 EB @ MP 26.2</td>
</tr>
<tr>
<td>93 SB @ MP 66.4</td>
</tr>
</tbody>
</table>

Facilities Control

Gate Control

- Check both South and East gates to ensure proper operation.
- Check that the remote speaker system is working.

Speaker System

- Test the Public Address system to ensure proper operation.
Door Bell

☐ Test the doorbell.

Parking Lot Camera

☐ Check the position of the camera and it’s pan, tilt, zoom and focus function.

Fire Alarm

☐ Verify that the Fire Department tested the fire alarm.
   Date of last test: ___________

Emergency Exit Lights

☐ Ensure that the Emergency Exit Lights in the control room are well lit and arrange for any blown bulbs to be replaced.

Hand Held Flashlights

☐ Ensure that Hand Held Flashlights can be found in a predetermined easily accessible place
☐ Ensure the Flashlights are working properly and have good batteries.

Operations Room Door

☐ Check that the Operations Room Door can be locked and that the Access Code to unlock the door works.

Lighting Controls

☐ Check the lighting controls within the Operations Room for proper dimming operation and on/off control.
☐ Arrange for any lights that are out of order to be fixed.

Cleanliness

☐ Ensure the workstations are neat and organized.
☐ Ensure the lunchroom and lunch table is clean and tidy.
Manuals

Verify that the following manuals are included in the cart and updated for On Call information:

- Flagstaff
- Globe
- Holbrook
- Kingman
- Operations Manual
- HCRS Training
- Manual
- Phoenix
- Prescott
- Safford
- Tucson
- VMS Request (By Date)
- Notebook
- Yuma
- Statewide
- Alfie Front Console
- Alfie Back Console
- AzTech Training

Backup Power

UPS is designed to provide continuous power for up to 20 minutes after loss of power. Ask one of the Technicians to check the UPS and note the status of its operation:

- Normal
- Test
- Bypass
- Off

Date Checked: __________
Technician: _____________________

The Generator is designed to kick on 90 seconds after main power is lost. Check with Pump House Maintenance to make sure the generators have been cycled on and off weekly and that they are operational.

- Operational
- Non-operational

Date of last test: __________
Name of Contact: _____________________
Sign Off Page

Acceptance Test completed during shift?
☐ Yes
☐ No

Date: __________________

Time: _________________

Operator Name: ______________________

Operator Signature: ______________________

Console Number: ______

Supervisor Signature: _____________________

Comments:
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