
PPS Preventive Maintenance Procedure: Sector 19

This document has been approved by:

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Date

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Date

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Date

1: Introduction

1.1 Purpose

The purpose of this preventative maintenance procedure is to verify that Personnel Protection Systems (PPS) safety devices for Sector 19 are adequately maintained to ensure continued safe and satisfactory operation.

1.2 Scope

This document certifies that the status and control devices for Sector 19 have been inspected and maintained.

2: Applicability

2.0.1 The preventive maintenance procedure should be completed during major downtimes.

2.0.2 The Controls Department, PPS Group, is responsible for completing the preventive maintenance procedure.

3: Prerequisite Actions

**Maintenance
Complete**

3.0.1 Verify in the PPS Bypass Logbook, located in Hal Smith's office (Controls Department, Room 134), that all bypasses for Sector 19 have been removed. (If not, proceed to the next step.)

3.0.2 If all bypasses have NOT been removed, an authorized person should verify that they do not invalidate the outcome of the test and note them here:

3.0.3 The maintenance person will need the following tools:

- Flashlight
- Screw Drivers (Philips and standard)
- Voltmeter
- Door Knobset Tool
- Lubricants
- Cleaning Fluid
- Paint Brush
- Kim Wipes

4: Manway Check

4.1 Keybank

**Maintenance
Complete**

- 4.1.1 Inspect the lockout cam pin hub for alignment and tightness. _____
- 4.1.2 Inspect the keysense pin hub for alignment and tightness. _____
- 4.1.3 Clean, adjust, and lubricate the keybank. _____
- 4.1.4 Check the wiring termination points for possible shorts and loose connections. _____
- 4.1.5 Inspect all keys for possible cracks and/or bends. _____
- 4.1.6 Inspect the door and “keybank incomplete” status bar micro-switches for correct adjustment. _____
- 4.1.7 Verify that the Emergency Entry/Exit break-away glass and hammer are in place. _____

4.2 Manway Door

**Maintenance
Complete**

- 4.2.1 Clean, inspect, and lubricate the knobset. _____
- 4.2.2 Lubricate the door hinges. _____
- 4.2.3 Inspect the door to ensure correct alignment and closure. _____

4.3 Door Limit Switches

**Maintenance
Complete**

- 4.3.1 Inspect and adjust (if necessary) the door limit switches. _____

4.3.2 Inspect the lever arms (possibly bent or loose).

4.3.3 Check for loose wiring (termination points and strain relief).

4.4 Hatch

**Maintenance
Complete**

4.4.1 Inspect the hatch lift cable for possible kinks and missing hardware (such as nuts, bolts, or clamps).

4.4.2 Operate the hatch locally (push button for pneumatic control) and verify that it opens and closes correctly.

4.4.3 Inspect the pneumatic system for possible kinked airlines.

4.4.4 Verify that the pneumatic ram functions properly.

4.5 Hatch Limit Switches

**Maintenance
Complete**

4.5.1 Inspect and adjust (if necessary) the hatch limit switches.

4.5.2 Inspect the lever arms (possibly bent or loose).

4.5.3 Check for possible loose wiring (termination points and strain relief).

4.5.4 Inspect the limit switch activator arm for possible damage, missing hardware, or misalignment.

4.6 Housing Emergency Beam Shutoff Buttons

Note: The shutoff buttons are inside the accelerator housing.

4.6.1 Complete the following table:

Action	E/O #1	E/O #2	E/O #3	E/O #4
1. Verify that the pilot lights on the Emergency Off box are lit.	_____	_____	_____	_____
2. Verify that the Emergency Beam Shutoff sign is in place.	_____	_____	_____	_____
3. Verify that the button action is smooth.	_____	_____	_____	_____
4. Open the button box cover, place a voltmeter across the contact blocks, operate the switch and verify that it is operating correctly.	_____	_____	_____	_____
5. Check the wiring termination points for shorts, loose connections and proper strain relief.	_____	_____	_____	_____
6. Inspect contact block for radiation damage, loose connections or corrosion.	_____	_____	_____	_____

4.7 Panic Circuit Reset Buttons

**Maintenance
Complete**

Note: *The downstream button is located at the bottom of the manway; the upstream button is located at the beginning of the next sector.*

4.7.1 Complete the following table:

Action	Down-stream Button	Up-stream Button
1. Verify that the button action is smooth.	_____	_____
2. Open the button box cover, place a voltmeter across the contact blocks, operate the switch and verify that it is operating correctly.	_____	_____
3. Check the wiring termination points for shorts, loose connections and proper strain relief.	_____	_____
4. Inspect contact block for radiation damage, loose connections or corrosion.	_____	_____

5: Housing Gate

5.1 Limit Switches

**Maintenance
Complete**

5.1.1 Inspect and adjust (if necessary) the housing gate limit switches (located on the gate frame).

5.1.2 Inspect the lever arms (possibly bent or loose).

5.1.3 Check for loose wiring (termination points and strain relief).

5.2 Knobset or Thumb Knob

**Maintenance
Complete**

5.2.1 Clean and lubricate the knobset or thumb knob.

5.2.2 Lubricate the gate hinges.

5.2.3 Check the gate for proper alignment and closure.

6: Alcove

6.1 Racks

**Maintenance
Complete**

- 6.1.1 Clean Racks 05 and 06. _____
- 6.1.2 Inspect the cable connections for possible loose connections and strain relief. _____
- 6.1.3 Verify that rack doors have hasps and locks. _____
- 6.1.4 Clean and lubricate the locks. _____
- 6.1.5 Verify that linac PPS Status and Control Panel (125-386) in Rack 05, Level 29, has not been damaged. _____
- 6.1.6 Verify that PPS Sector Hazard Control Panel Chassis (125-056) in Rack 06, Level 34, has not been damaged. _____

6.2 Relays and Status LEDs

**Maintenance
Complete**

WARNING!! Relays in Racks 05 and 06 have 115 V AC present.

- 6.2.1 Turn off contact breakers CB 1 and CB 2 in Rack 05, Level 46, and lock and tag them before cleaning the relays. _____
- 6.2.2 Remove the front panel covers from Rack 05, Levels 01 and 06, and Rack 06, Level 11, and clean the relays with contact cleaner. _____
- 6.2.3 Remove the locks and tags and restore the AC power. _____
- 6.2.4 Manually toggle Relay 0505-K2. Verify that **HATCH NOT CLOSED CH A** LED on the status panel (123-136) in Rack 06, Level 33 reacts to the relay operation. _____
- 6.2.5 Manually toggle Relay 0505-K3. Verify that **HATCH NOT CLOSED CH B** LED on the status panel (123-136) in Rack 06, Level 33 reacts to the relay operation. _____

6.2 Relays and Status LEDs (continued)

Maintenance
Complete

6.2.6 Manually toggle Relay 0505-K2 and Relay 0505-K3 simultaneously. Verify that **HATCH CLOSED** LED on the PPS Status & Control Panel (125-386) in Rack 05, Level 29, reacts to the relay operation.

6.2.7 Manually toggle Relay 0505-K4; verify that **DOOR NOT CLOSED** LED on the status panel and **HOUSING DOOR CLOSED** LED on the PPS Status & Control Panel react to the relay operation.

6.2.8 Manually toggle Relay 0505-K5; verify that **KEYBANK NOT COMPLETE** LED on the status panel and **KEYBANK COMPLETE** LED on the PPS Status & Control Panel react to the relay operation.

6.2.9 Manually toggle Relay 0505-K6; verify that **PANIC CIRCUIT NOT RESET** LED on the status panel and **PANIC CIRCUIT RESET** LED on the PPS Status & Control Panel react to the relay operation.

6.2.10 Manually toggle Relays 0505-K7 and K8; verify that **SECTOR SECURE** LED on the status panel and **SECTOR SECURE** LED on the PPS Status & Control Panel react to the relay operation.

6.2.11 Manually toggle Relay 0505-K9; verify that **HOUSING LIGHTS NOT OUT** LED on the status panel and **HOUSING LIGHTS OUT** LED on the PPS Status & Control Panel react to the relay operation.

6.2.12 Manually toggle Relay 0505-K10; verify that **VVS INHIBIT** LED on the status panel and **VVS PERMISSIVE** LED on the PPS Status & Control Panel react to the relay operation.

7: Records and Reports

7.1 Maintenance Person

7.1.1 Comments

7.1.2 Completed by:

Signature of Maintenance Person _____

Name and title (print) _____

Date _____

- 7.1.3 The maintenance person verbally notifies the PPS Group Leader that the PPS preventative maintenance for Sector 19 is complete.

7.2 Controls Department Approval

Signature

Name and title (print)

Date

7.3 PPS Follow-up

The PPS Group Leader files the approved preventative maintenance procedure in the designated PPS file area.