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## PPS Preventive Maintenance Procedure: Sector 05

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This document has been approved by:

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**J. W. Humphrey, Controls Dept. Head**

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**Date**

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**W. B. Pierce, Controls Section Leader**

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**Date**

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**H. E. Smith, PPS Group Leader**

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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 05 are adequately maintained to ensure continued safe and satisfactory operation.

## **1.2 Scope**

This document certifies that the status and control devices for Sector 5 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 5 have been removed. (If not, proceed to the next step.)

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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:

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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

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## 4: Manway Check

### 4.1 Manway Door

**Maintenance  
Complete**

4.1.1 Clean, inspect, and lubricate the knobset.

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4.1.2 Lubricate the door hinges.

\_\_\_\_\_

4.1.3 Inspect the door to ensure correct alignment and closure.

\_\_\_\_\_

### 4.2 Door Limit Switches

**Maintenance  
Complete**

4.2.1 Inspect and adjust (if necessary) the door limit switches.

\_\_\_\_\_

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

\_\_\_\_\_

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

\_\_\_\_\_

### 4.3 Hatch

**Maintenance  
Complete**

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

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

\_\_\_\_\_

4.3.3 Inspect the pneumatic system for possible kinked airlines.

\_\_\_\_\_

4.3.4 Verify that the pneumatic ram functions properly.

\_\_\_\_\_

#### 4.4 Hatch Limit Switches

**Maintenance  
Complete**

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

\_\_\_\_\_

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

\_\_\_\_\_

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

\_\_\_\_\_

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

\_\_\_\_\_

#### 4.5 Housing Emergency Beam Shutoff Buttons

**Note:** The shutoff buttons are inside the accelerator housing.

4.5.1 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.                                                           | _____  | _____  | _____  | _____  |

## 4.6 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.*

4.6.1 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 possible 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 FULL OPEN** LED on the status panel (123-136) in Rack 06, Level 33, and **HATCH NOT FULL CLOSED** LED on the linac PPS Status & Control Panel (125-386) in Rack 05, Level 29, react to the relay operation. \_\_\_\_\_
- 6.2.5 Manually toggle Relay 0505-K3; verify that **HATCH FULL OPEN** LED on the status panel reacts to the relay operation. \_\_\_\_\_

## 6.2 Relays and Status LEDs (continued)

Maintenance  
Complete

- 6.2.6 Manually toggle Relay 0505-K4; verify that **DOOR NOT FULL CLOSED** LED on the status panel and **HOUSING DOOR CLOSED** LED on the PPS Status & Control Panel react to the relay operation. \_\_\_\_\_
- 6.2.7 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. \_\_\_\_\_
- 6.2.8 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. \_\_\_\_\_
- 6.2.9 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. \_\_\_\_\_
- 6.2.10 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. \_\_\_\_\_
- 6.2.11 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

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#### 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 05 is complete.

## 7.2 Controls Department Approval

**Signature**

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**Name and title (print)**

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**Date**

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## 7.3 PPS Follow-up

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