Replace Personnel Decon Trailer 5 Micron Filter Element

Tank Farm Maintenance Procedure

MAINTENANCE

USQ # GCX-2

<table>
<thead>
<tr>
<th>Rev-Mod</th>
<th>Release Date</th>
<th>Justification</th>
<th>Summary of Changes</th>
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<td>B-3</td>
<td>12/03/2018</td>
<td>Comply with the new DOE-0359 updates.</td>
<td>Replaced old steps 3.1.1 and 3.1.2 with new steps 3.1.1 and 3.1.2 and DOE-0359 verbage.</td>
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<td>B-2</td>
<td>06/12/2017</td>
<td>Periodic Review</td>
<td>Inconsequential Change. Record Section Update.</td>
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<td>09/26/2016</td>
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<td>Periodic Review</td>
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1.0 PURPOSE

1.1 Purpose

The purpose of this Procedure is to provide instructions for replacement of the Mobile Radioactive Personnel Decontamination Unit 5 micron filter element.

1.2 Scope

This procedure is for use on the Personnel Decontamination Unit(s) (PDU) Five (5) Micron Filter replacement.

2.0 INFORMATION

2.1 Terms and Definitions

- PDU - Personnel Decontamination Unit

2.2 General Information

2.2.1 Components are identified using “X” as a substitute for Unit/Trailer identification numbers. For example, POR29X = POR291 or POR292 or POR293. MOXXXX = MO2244 or MO2171 as applicable.
3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

3.1.1 Operation of electrical equipment and overcurrent protective devices shall be performed by a qualified person.

3.1.2 Component operation requires an Electrical Risk Assessment (ERA).
(Exemption: an ERA is not required for DC circuits, single-phase circuits, or three phase circuits rated less than 240 volts and supplied by transformers (or equivalent), or generator, rated at less than 125 kVA.)

3.1.3 If a lock and tag is required during the performance of this procedure, comply with the DOE-0336, Hanford Site Lockout/Tagout Procedure.
3.2 **Radiation and Contamination Control**

Work in radiological Areas will be performed using a Radiological Work Permit following review by Radiological Control per the ALARA Work Planning Procedure TFC-ESHQ-RP_RWP-C-03.

3.3 **Environmental Compliance**

3.3.1 All non-emergency use, testing, and discharges of the eyewash assembly must be done in accordance with State Waste Water Discharge Permit ST 4511. Environmental approval for non-emergency discharge to the environment is required.

3.3.2 Immediately report all leaks or discharges to Environmental using the Environmental On-Call list in accordance with TFC-ESHQ-ENV_FS-C-01.

3.3.3 In the event of emergency use of the eyewash assembly, Environmental must be notified within one hour.

3.3.4 In accordance with TFC-ESHQ-ENV_RM-C-04, *Water Discharge at Tank Farms*, routine maintenance and operation activities may result in small incidental discharge of raw water as long as the limits and conditions listed below are met.

- No discharge from a single activity may exceed 60 gallons released to the soil.
- Appropriate best management practices (BMPs) shall be implemented to prevent unnecessary discharges.
- No ponding of liquid.
- During pre-job planning, measures to limit soil erosion will be in the work plan.
- During performance of the work, all measures to limit ponding and/or erosion will be implemented.
4.0 PREREQUISITES

4.1 Special Tools, Equipment, and Supplies

The following supplies may be needed to perform this procedure:

- Safety glasses
- Goggles
- Tape
- Wrench(es)
- Clean cotton or rubber gloves for reinstalling filter element
- One (1) container (to catch clean drain water)
- Catch Tank or Water Buffalo
- Temporary lighting
- Medium size Screwdrivers, flat tip and Philips
- O-rings - Part # 002045
- Filter housing gasket – Part # 20041-B
- Filter housing cap nut gasket – Part # 2072-B
- 5 Micron Filter, Part # 4411K922 (or MS20PP5)
- Spanner Wrench
- Other tools, equipment, and supplies as identified by Shift Manager/OE/FWS/User.

4.2 Performance Documents

The following documents may be needed to perform this procedure:

- DOE-0336 Hanford Site Lockout/Tagout Procedure.
5.0 PROCEDURE

5.1 Replace 5 Micron Filter Element

NOTE - Procedure affects clean water system and does not require Radcon presence.

5.1.1 ENSURE personnel trained in the operation of breakers and disconnects dons PPE (refer to Section 3.1).


5.1.3 IF not already off TURN-OFF POR29X-EMER-MS-103, PRIMING PUMP (P-2) START/STOP (located on the West Wall of the Equipment Room) by placing the toggle switch in the DOWN/OFF position, Figure 2.

NOTE - The following valves are located above the East and West hot water heaters and are being closed to help prevent drain back.

5.1.4 PERFORM the following to prevent siphoning from the hot water heaters:

5.1.4.1 CLOSE the following East Water Heater valves:
• Cold water inlet, POR29X-EMER-V-109
• Hot water outlet, POR29X-EMER-V-110.

5.1.4.2 CLOSE the following West Water Heater valves:
• Cold water inlet, POR29X-EMER-V-106
• Hot water outlet, POR29X-EMER-V-107.

5.1.5 STAGE a container of sufficient volume to hold drain water from filter housing drain valve, POR29X-EMER-V-118. (refer to Figure 3)

5.1.5.1 SLOWLY OPEN filter housing drain valve, POR29X-EMER-V-118. (see Figure 3)
5.1 Replace 5 Micron Filter Element (Cont.)

Remove 5 Micron Filter

5.1.6 LOOSEN AND REMOVE cap nut from the filter cap on POR292-EMER-FLT-101 water supply filter.

5.1.7 GRASP the filter body with one hand AND RELEASE the restraining strap from the filter housing.

5.1.8 REMOVE the used filter AND PLACE in a container for rubbish.

5.1.9 CLOSE the housing drain shutoff valve, POR29X-EMER-V-118.

5.1.10 REPLACE Filter Housing gasket.
5.1 Replace 5 Micron Filter Element (Cont.)

**Install New 5 Micron Filter**

5.1.11 **DON** clean Cotton or Rubber gloves.

5.1.12 **STAGE AND INSTALL** new 5 micron filter, PN 4411K922 or MS20PP5 for ease of installation during filter replacement.

**NOTE** - Care should be taken to prevent debris from entering filter housing during filter installation.

5.1.13 **SLIP** filter housing Center Rod up through the filter cap **AND**

**INSTALL AND TIGHTEN** Cap Nut leak tight.

5.1.14 **CONNECT** the restraining strap around the filter housing.

5.1.15 **CLOSE** filter housing valve POR29X-EMER-V-118.

5.1.16 **RECORD** replacement of 5 micron filter cartridge on Data Sheet.

5.1.17 **TURN-ON** POR29X-EMER-MS-103 PRIMING PUMP (P-2), START/STOP (located on the West Wall of the Equipment Room), by placing the toggle switch in the UP/ON position.

5.1.18 **ENSURE** personnel trained in the operation of breakers and disconnects dons PPE (refer to Section 3.1).

5.1.19 **AT** Distribution Panel MOXXXX-EDS-DP-101, **TURN ON** POR29X-EMER-P-101, Water Supply Pump by CLOSING (ON) breaker 6B on the West Wall of the Equipment Room.

5.1.19.1 **IF** Water Supply Pump does not start, **PRESS** On/Off button on P-1, Potable Water Pump control panel, Figure 5.
Replace Personnel Decon Trailer 5 Micron Filter Element

5.1 Replace 5 Micron Filter Element (Cont.)

5.1.20 PERFORM the following on the hot water heaters:

5.1.20.1 OPEN the following East Water Heater valves:
- Cold water inlet, POR29X-EMER-V-109
- Hot water outlet, POR29X-EMER-V-110.

5.1.20.2 OPEN the following West Water Heater valves:
- Cold water inlet, POR29X-EMER-V-106

5.1.21 AT POR29X-EMER-EMO-101, PULL (Red) “SYSTEM START AND EMERGENCY STOP” knob (Figure 4).

5.1.22 RECORD the completion of maintenance on Data Sheet.
5.2 Restoration

5.2.1 **CHECK** equipment restoration by observing indications are consistent with expected conditions.

5.2.2 **PLACE** the Decon Trailer in Standby Mode per TO-020-029.

5.2.3 **NOTIFY** Operations maintenance is complete and system may be returned to normal operation.

5.3 Acceptance Criteria

Acceptance Criteria has been met when Steps in this procedure have been satisfactorily performed and As-Left values meet the specifications and tolerance(s) per the Data Sheet.

5.4 Review

5.4.1 **INFORM** FWS test is complete.

5.4.2 FWS **REVIEW AND ENSURE** the following:

- Completed Data Sheets meet the acceptance criteria.
- Comments sections are filled out appropriately.
- Work requests needed as a result of this procedure are identified and generated.
- Work request number(s) of any work documents generated as a result of this procedure, are recorded in the Comments/Remarks section of the Data Sheet, as applicable.

5.5 Records

This procedure is performed within a work package, as such, the procedure in its entirety will be maintained as a record per the Work Control process.

The record custodian identified in the Company Level Records Inventory and Disposition Schedule (RIDS) is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.
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**Figure 1 – Panel Board Schedule**

<table>
<thead>
<tr>
<th>CKT</th>
<th>Panel Board Schedule</th>
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<tbody>
<tr>
<td>1</td>
<td>Exterior Receptacles</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Ultra Violet Sanitizer (UVS-101)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Interior Receptacles</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>Grey Water Pump</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Interior Lighting</td>
<td>6A</td>
</tr>
<tr>
<td>6A</td>
<td>12V Converters RCPT-9</td>
<td>6B</td>
</tr>
<tr>
<td>6B</td>
<td>Water Supply Pump (P-101)</td>
<td></td>
</tr>
<tr>
<td>7A</td>
<td>Spare</td>
<td>8A</td>
</tr>
<tr>
<td>7B</td>
<td>Spare</td>
<td>8B</td>
</tr>
<tr>
<td>8B</td>
<td>East Water Heater (Htr-102)</td>
<td>10A</td>
</tr>
<tr>
<td>9A</td>
<td>West Water Heater (Htr-101)</td>
<td>10B</td>
</tr>
<tr>
<td>10A</td>
<td>Heat Trace – Grey Water</td>
<td>12B</td>
</tr>
<tr>
<td>9B</td>
<td>Space Heater (Equipment Room)</td>
<td>12A</td>
</tr>
<tr>
<td>11A</td>
<td>Heat Trace – Supply Water</td>
<td></td>
</tr>
<tr>
<td>11B</td>
<td>Space Heater (Dirty Room)</td>
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</tr>
<tr>
<td>13A</td>
<td>Space Heater (Clean Room)</td>
<td></td>
</tr>
<tr>
<td>13B</td>
<td>Space Heater (Htr-104)</td>
<td>14A</td>
</tr>
<tr>
<td>15A</td>
<td>Air Conditioning Unit (AC-101)</td>
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<tr>
<td>15B</td>
<td>Air Conditioning Unit (AC-102)</td>
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<tr>
<td>16A</td>
<td>Neg. Air Fan (F-1)</td>
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<tr>
<td>17A</td>
<td>Primary Room Heater (Roof Mounted)</td>
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</tr>
<tr>
<td>17B</td>
<td>South Pole Lights</td>
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Figure 2 – Priming Pump (P-2) START/STOP Switch
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Figure 3 – Ultra Violet Sanitizer System Layout with Primer Pump
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Figure 4 – Alarm Panel/Level Indication & Mixing valves CP-101/102 for Sink 1 & 2

**POR29X-EMER-CP-101**
MIXING VALVE 112 CONTROL PANEL
SUPPLIES SHOWERS 1 & 2 / SINK 1

**POR29X-EMER-PNL-101**
LEVEL INDICATION AND ALARM PANEL
SUPPLY AND GREY WATER TANKS

**POR29X-EMER-EMO-101**
SYSTEM START AND EMERGENCY STOP
(Pulled Out – System Running
Pushed In – System Standby)

Note - FOR29X = FOR291 or
POR 292 or POR293 as applicable

**POR29X-EMER-CP-102**
MIXING VALVE 113 CONTROL PANEL
SUPPLIES SHOWERS 3 & 4 / SINK 2
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Figure 5 – P-1 Potable Water Pump Control Panel
Replace Personnel Decon Trailer 5 Micron Filter Element

Figure 6 – PDU System Layout

General Notes:
1. Design Spec – WRES-1000008
2. CVT: 81-1379
3. Contract No: 4148
4. One water supply tank and two greywater tanks are mounted below the floor
5. Precise all equipment designations with the following unless otherwise noted:
   East PDU PC/22-EMER
   West PDU PC/22-EMER
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Figure 7 – PDU Supply Water Flow Diagram