## Portable Exhauster Fan Inspection and Bearing Lubrication

**Tank Farm Maintenance Procedure**  
200E/200W

**USQ # Routine Maintenance**

<table>
<thead>
<tr>
<th>Rev-Mod</th>
<th>Release Date</th>
<th>Justification</th>
<th>Summary of Changes</th>
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<tr>
<td>D-4</td>
<td>10/24/2018</td>
<td>Periodic Review</td>
<td>Added &quot;(First &amp; Last)” to print signature lines. Delete Section 4.0, reference to OSD-T-151-00013 in Section 3.5. Add new steps to Section 5.1.</td>
</tr>
<tr>
<td>D-3</td>
<td>09/17/2018</td>
<td>Inconsequential change</td>
<td>Removal of references to TO-060-108 and POR107.</td>
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<tr>
<td>D-2</td>
<td>02/21/2017</td>
<td>Inconsequential change</td>
<td>Reference removal of TO-060-006. Update Records statement, 20% shading where required.</td>
</tr>
<tr>
<td>D-1</td>
<td>04/05/2016</td>
<td>Per Engineering WRPS does not have the equipment/software and training to perform Shock Pulse Monitoring (SPM).</td>
<td>Deleted all references, steps, data sheet that pertained to SPM. Updated supplies list. Added &quot;fan shaft to step 5.1.4 and data sheet 1. Corrected the spelling of zerk.</td>
</tr>
<tr>
<td>D-0</td>
<td>05/13/2015</td>
<td>Periodic Review</td>
<td>Added OSD-T-151-00013 to Scope. Add 12\textsuperscript{th} &amp; 13\textsuperscript{th} bullets at Section 4.2. Added Step 5.1.1. Struck Warning from Step 3.1.1, Struck 3\textsuperscript{rd} &amp; 9\textsuperscript{th} bullets at Section 4.2. Struck Warning prior to Step 5.1.1. Reworded Step 5.1.6.1 and Records Section 5.5.</td>
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5.2 Restoration

5.3 Acceptance Criteria

5.4 Review

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Data Sheet 1 – Portable Exhauster Fan Inspection

Figure 1 – Typical Portable Exhauster Bearing Locations for Lubrication

Comments Page
1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for inspection of fans and bearing lubrication on portable exhausters.

1.2 Scope

This procedure pertains to the inspection of fans and bearing lubrication on portable exhausters.

This Procedure also meets the Operating Specifications for Single-Shell Waste Storage Tanks per OSD-T-151-00013.

2.0 INFORMATION

None

3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

3.1.1 Care should be taken when working around moving parts. Reaching inside of equipment guards and shrouds could cause personal injury.

3.1.2 If a lock and tag is required during the performance of this procedure, comply with DOE-0336, Hanford Site Lockout/Tagout Procedure.

3.1.3 Compliance with DOE–0359, Hanford Site Electrical Safety Program is required when working with this procedure.

3.2 Equipment Safety

CAUTION - Over greasing/pressurizing bearings may cause bearing damage and shorten bearing life.
3.3 Radiation and Contamination Control

3.3.1 Work in radiological areas will be performed using a radiological work permit following review by Radiological Control per ALARA Work Planning procedure TFC-ESHQ-RP_RWP-C-03.

3.3.2 The opening of any system or component within a Radiological Area requires the presence of a Health Physics Technician to verify radiological conditions are within RWP limits.

3.3.3 All removed materials, liquids, spent cleaning materials and used filter(s) should be treated as contaminated until proven non-contaminated by radiological survey.

3.4 Environmental Compliance

3.4.1 If hazardous waste is generated during performance of this procedure, consult Hazardous Waste Coordinator for specific instructions to ensure compliance with all environmental standards, as applicable, for disposal.

3.4.2 Pre-job and post-job surveys are required and must be documented on a Radiological Survey Report (RSR).
4.0 **PREREQUISITES**

4.1 **Special Tools Equipment and Supplies**

The following supplies may be needed to perform this procedure:

- Shell Gadus S2 V100 2, Shell Gadus S2 V220 2, Shell Gadus S3 V220C 2, Shell Gadus S5 V100 2, Mobilith SHC 100
- Hand Grease Gun
- Clean wiping towels - wet and dry
- Non-regulated penetrating solvent/degreaser
- Flashlight, plastic bags/sleeves and tape for waste disposal
- ¾ inch wrench
- ¾ inch wrench
- Other tools, equipment and supplies as identified by Shift Manager/OE/FWS/User.
4.2 Performance Documents

The following documents may be needed during performance this procedure:
- DOE-0336, Hanford Site Lockout/Tagout Procedure
- H-14-105672, Ventilation Port Exhauster POR-008 P&ID
- H-14-020113, POR126 and POR127 Piping and Instrument Diagram
- H-14-108928. POR107 Piping and Instrument Diagram
- H-14-107014, POR06 Assembly and Piping Diagram
- TO-060-045, Operate POR06 Exhauster
- TO-060-126, Operate POR126 Exhauster Ventilation System
- TO-060-127, Operate POR127 Exhauster Ventilation System
- TO-100-052, Perform Waste Generation, Segregation, Accumulation and Clean-up.

4.3 Field Preparation

4.3.1 FWS/Lead CONDUCT pre-job safety briefing, including all involved personnel, per TFC-OPS-MAINT-C-02, Pre-Job Briefing.

4.3.2 ENSURE Tank Farms Operations personnel, under the direction of the FWS, have configured the ventilation system to allow performance of this procedure.
5.0 PROCEDURE

5.1 Inspection of Fans

5.1.1 **DURING** fan inspections, **USE** care not to reach inside, or around equipment guards and shrouds if equipment is running.

5.1.2 **IF** the fan is initially off, **PERFORM** the following Steps out of sequence:

5.1.2.1 N/A Step 5.1.7.

5.1.2.2 **PERFORM** Step(s) 5.1.8 through 5.2.5.

5.1.2.3 **PROCEED** with Step(s) 5.1.3 through 5.1.6.

5.1.3 **ENSURE** fan is operating per applicable operating procedure.

5.1.4 **INSPECT** fans, motors, and drive system for the following:

- Proper operation
- Unusual noise.
5.1 Inspection of Fans (Cont.)

5.1.5 GREASE fan shaft bearings, as follows:

**CAUTION**
Over greasing/pressurizing bearings may cause bearing damage and shorten bearing life.

5.1.5.1 CLEAN grease zerk fitting.

5.1.5.2 APPLY one or two shots of grease from hand-grease gun into each bearing grease-fitting (see Figure 1).

5.1.5.3 CHECK Step #1 on Data Sheet 1 AND RECORD any discrepancies on Comments Page.

5.1.5.4 CHECK Step #2 on Data Sheet 1 AND RECORD any discrepancies on Comments Page.

5.1.6 INSPECT fan blower housing and associated connections for the following:
- Loose fasteners
- Poor integrity.

5.1.6.1 CHECK Step #3 on Data Sheet 1 AND RECORD any discrepancies on Comments Page.

5.1.7 REQUEST operations shut down fan per applicable operating procedure.

5.1.8 PERFORM Lock and Tag or Authorized worker in accordance with DOE-0336, Hanford Site Lockout/Tagout Procedure.

5.1.9 ENSURE fan is de-energized AND REMOVE guards and/or shrouds.

5.1.10 HPT PERFORM survey of any previously inaccessible areas.
5.1 Inspection of Fans (Cont.)

5.1.11 **INPECT** fan and motor drive shaft and coupling for wear or damage as follows:

5.1.11.1 **REMOVE** shaft guard.

5.1.11.2 **CHECK** for coupling wear by manually twisting each side of coupling to check for rotational slack.

5.1.11.3 **WIPE** excess grease from fan bearings.

5.1.12 **CHECK** Step #4 on Data Sheet 1 AND **RECORD** any discrepancies on Comments Page.

5.1.13 **IF** fan access hatch is present, **PERFORM** the following:

5.1.13.1 **NOTIFY** RadCon to perform survey prior to opening fan access hatch.

5.1.13.2 **OPEN** fan access hatch.

5.1.13.3 **HPT** **PERFORM** survey of any previously inaccessible areas.

5.1.13.4 **INSPECT** fan blades for wear and/or damage.

5.1.13.5 **CHECK** Step #5 on Data Sheet 1 AND **RECORD** any discrepancies on Comments Page.

5.1.13.6 **CLOSE AND LATCH** fan access hatch AND **CHECK** Step #6 on Data Sheet 1.

5.1.14 **CLEAN** around fan and motor AND **CHECK** Step #7 on Data Sheet 1.

5.1.15 **RECORD** findings and corrective actions on Comments Page.
5.2 Restoration

5.2.1 INSPECT unit AND

REMOVE any excess grease.

5.2.2 RE-INSTALL shaft guard.

5.2.3 ENSURE all safety guards are in place and in good condition AND

CHECK Step #8 on Data Sheet 1.

5.2.4 REMOVE Lock and Tag or Authorized Lockout/Tagout in accordance with DOE-0336, Hanford Site Lockout/Tagout Procedure.

5.2.5 REQUEST operations return equipment to operable configuration per applicable operating procedure.

5.2.6 OBSERVE for squealing or other problems as fan comes up to speed AND

CHECK Step #9 on Data Sheet 1.

5.2.7 ENSURE fan is operating normally AND

CHECK Step #10 on Data Sheet 1.

5.2.8 IF corrective maintenance is required or discrepancies are found, RECORD on Comments Sheet AND

NOTIFY FWS.
5.3 Acceptance Criteria

Acceptance Criteria has been met when Steps in this procedure have been satisfactorily performed and equipment operates normally with no unusual noise or vibration.

5.4 Review

5.4.1 INFORM FWS test is complete.

5.4.2 FWS REVIEW AND ENSURE the following:
- Completed Data Sheet meets the acceptance criteria
- Comment Sections are filled out appropriately
- Work Requests and/or PERs needed as a result of this procedure are generated and identified on the data sheet
- Work request number(s) of any work documents generated as a result of this procedure are recorded on the Data Sheet.

5.4.3 Craftsman and FWS SIGN and date Data Sheet 1 when complete.

5.4.4 OBTAIN System Engineering review and signature on Data Sheet.

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.
## Portable Exhauster Fan Inspection Data Sheet

<table>
<thead>
<tr>
<th>STEP #</th>
<th>ACTION</th>
<th>SAT</th>
<th>UNSAT*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fan shaft bearings greased properly and appear to be undamaged and in good condition.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Fan, motor, and drive system operating properly with no unusual noise or vibration.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Fan blower housings and associated connections are in satisfactory condition with no damage, loose fasteners, or excessive vibration.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Fan drive shaft, motor drive shaft, and shaft coupling are in good condition with no visible wear or damage.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Fan blades are in good condition with no visible wear or damage. (Mark N/A if fan access hatch is not present)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Fan access hatch closed and latched properly. (Mark N/A if fan access hatch is not present)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Fan and motor areas cleaned and all rags and tools removed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>All safety guards and shields properly installed and in good condition.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Fan, motor, and drive system come up to speed properly with no squealing or other problems.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Fan and motor operating properly once up to speed.</td>
<td></td>
<td></td>
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</table>

* Explain any UNSAT conditions on comments page, and list any corrective actions taken.

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Signature / Print (First & Last) / Date
Craftsman

Signature / Print (First & Last) / Date
FWS

Signature / Print (First & Last) / Date
System Engineer
Figure 1 – Typical Portable Exhauster Bearing Locations for Lubrication
Record below any comments encountered during performance of the procedure, and a description of any degraded conditions found and resulting actions taken. Also explain any UNSAT conditions described in Data Sheet 1.

Date: _______________  

Signature  
Craftsman

Print (First & Last)  

Date