Preventive Maintenance and Inspection of VOG Blowers
45D-F-1A and 45D-F-1B

Tank Farm Maintenance Procedure
Effluent Treatment Facility

All Changes Require Review by the following Organizations:

USQ

CHANGE HISTORY (≤ LAST 5 REV-MODS)

<table>
<thead>
<tr>
<th>Rev-Mod</th>
<th>Release Date</th>
<th>Justification</th>
<th>Summary of Changes</th>
</tr>
</thead>
</table>

Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>1.1 Purpose</td>
<td>1.1</td>
</tr>
<tr>
<td>1.2 Scope</td>
<td>1.2</td>
</tr>
<tr>
<td>2.0 INFORMATION</td>
<td>2.0</td>
</tr>
<tr>
<td>3.0 PRECAUTIONS AND LIMITATIONS</td>
<td>3.0</td>
</tr>
<tr>
<td>3.1 Radiation and Contamination Control</td>
<td>3.1</td>
</tr>
<tr>
<td>3.2 Environmental Compliance</td>
<td>3.2</td>
</tr>
<tr>
<td>4.0 PREREQUISITES</td>
<td>4.0</td>
</tr>
<tr>
<td>4.1 Special Tools, Equipment, and Supplies</td>
<td>4.1</td>
</tr>
<tr>
<td>4.2 Performance Documents</td>
<td>4.2</td>
</tr>
<tr>
<td>4.3 Field Preparation</td>
<td>4.3</td>
</tr>
<tr>
<td>5.0 PROCEDURE</td>
<td>5.0</td>
</tr>
<tr>
<td>5.1 45D-F-1A – Motor Inspection</td>
<td>5.1</td>
</tr>
<tr>
<td>5.2 45D-F-1A – Mechanical Inspection</td>
<td>5.2</td>
</tr>
<tr>
<td>5.3 45D-F-1B – Motor Inspection</td>
<td>5.3</td>
</tr>
<tr>
<td>5.4 45D-F-1B – Mechanical Inspection</td>
<td>5.4</td>
</tr>
<tr>
<td>5.5 Acceptance Testing</td>
<td>5.5</td>
</tr>
<tr>
<td>5.6 Restoration</td>
<td>5.6</td>
</tr>
<tr>
<td>5.7 Acceptance Criteria</td>
<td>5.7</td>
</tr>
</tbody>
</table>
Preventive Maintenance and Inspection of VOG Blowers
45D-F-1A and 45D-F-1B

5.8 Review .................................................................................................................. 12
5.9 Records .................................................................................................................. 12
1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for maintenance on the Vessel Off Gas (VOG) Blowers. This work activity has been determined to fall under the General Hazards Analysis (GHA) category.

1.2 Scope

This procedure provides a safe, uniform method to perform maintenance on the 45D Vessel Off Gas (VOG) Blowers, American Blower Series BC (45D-F-1A and 45D-F-1B).

2.0 INFORMATION

NONE

3.0 PRECAUTIONS AND LIMITATIONS

3.1 Radiation and Contamination Control

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.

3.2 Environmental Compliance

In the event of a spill/leak/release, notify the SOM/FWS and respond per ETF-ERP-85B-003, Emergency Spill or Release at ETF.
4.0 PREREQUISITES

4.1 Special Tools, Equipment, and Supplies

The following supplies may be needed to perform this procedure:

- Chevron SRI NLGI2 grease (MSDS/SDS #010630).
- Belts, #4L420, two belts required in matched set (CID 665455)
- Clamp-on ammeter
- Gates “tension tester” or equivalent
- “Belt Hog” laser alignment tool, or equivalent
- 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
- DOE-0359, Hanford Site Electrical Safety Program
- ETF-45D-001, Vessel Off-Gas System Operation.

4.3 Field Preparation

4.3.1 IF compliance with DOE-0359 is required CONFIRM compliance is observed.
5.0 PROCEDURE

Special Instructions

Sections 5.1 through 5.4 may be performed out of sequence or concurrently in any logical order on one or both VOG Blowers if approved/as directed by the FWS and documented on the partial release sheet or during pre-job briefing.

5.1 45D-F-1A – Motor Inspection

5.1.1 IF blower 45D-F-1A is ON, REQUEST SOE to swap or stop blower 45D-F-1A per ETF-45D-001.

5.1.2 ENSURE lock and tag is applied per DOE-0336.

5.1.3 MEASURE insulation resistance to ground of motor leads (minimum resistance is 2.0 megohms) AND

RECORD on PM/S data sheet.

5.1.4 INSPECT blower motor for the following:
• Air vents are free of debris
• Cooling air flow is not restricted
• Motor mounting bolts are tight

5.1.5 RECORD inspection results on PM/S data sheet.
5.2 **45D-F-1A – Mechanical Inspection**

5.2.1 **IF** blower 45D-F-1A is ON, **REQUEST** SOE to swap or stop blower 45D-F-1A per ETF-45D-001.

5.2.2 **ENSURE** lock and tag is applied per DOE-0336.

**NOTE** - Steps 5.2.3 to 5.2.10 may be performed out of sequence, independently or concurrently in any logical order.

5.2.3 **INSPECT** bearings for the following:
- Blower shaft play
- Loose fasteners.

5.2.3.1 **IF** bearing(s) replacement is required, **NOTIFY** SOM/Engineering of required bearing(s) replacement.

5.2.3.2 **USE** Chevron SRI Grease NLGI 2 **AND**

**LUBRICATE** the bearings.

5.2.4 **RECORD** bearing inspection results on PM/S data sheet.

5.2.5 **INSPECT** sheaves for the following:
- Wear
- Alignment
- Loose fasteners.

5.2.5.1 **IF** sheave(s) replacement is required, **NOTIFY** SOM/Engineering of required sheave(s) replacement.

5.2.6 **RECORD** sheave inspection results on PM/S data sheet.
5.2 45D-F-1A – Mechanical Inspection (Cont.)

5.2.7 INSPECT belts for wear or glazing.

NOTE - Proper belt tension is 19 to 21 pounds of force at 7/32 to 15/64 inches deflection (14.5 inches span).

- When using Belt Hog laser, alignment criteria are ± 2 ticks.

5.2.8 IF belt replacement is required, PERFORM the following:

5.2.8.1 REPLACE belt.

5.2.8.2 ALIGN sheaves.

5.2.8.3 ENSURE proper tension on belts.

5.2.9 IF belts do not require immediate replacement, ENSURE belts are adjusted for proper running tension and alignment.

5.2.10 RECORD belt inspection results on PM/S data sheet.
# Preventive Maintenance and Inspection of VOG Blowers
## 45D-F-1A and 45D-F-1B

## 5.3 45D-F-1B – Motor Inspection

5.3.1 IF blower 45D-F-1A is ON, **REQUEST** SOE to swap or stop blower 45D-F-1B per ETF-45D-001.

5.3.2 **ENSURE** lock and tag is applied per DOE-0336.

5.3.3 **MEASURE** insulation resistance to ground of motor leads (minimum resistance is 2.0 megohms) **AND**

**RECORD** on PM/S data sheet.

5.3.4 **INSPECT** blower motor for the following:
- Air vents are free of debris
- Cooling air flow is not restricted
- Motor mounting bolts are tight

5.3.5 **RECORD** inspection results on PM/S data sheet.
5.4 45D-F-1B – Mechanical Inspection

5.4.1 IF blower 45D-F-1A is ON, REQUEST SOE to swap or stop blower 45D-F-1B per ETF-45D-001.

5.4.2 ENSURE lock and tag is applied per DOE-0336.

NOTE - Steps 5.4.3 to 5.4.10 may be performed out of sequence, independently or concurrently in any logical order.

5.4.3 INSPECT bearings for the following:
• Blower shaft play
• Loose fasteners.

5.4.3.1 IF bearing(s) replacement is required, NOTIFY SOM/Engineering of required bearing(s) replacement.

5.4.3.2 USE Chevron SRI Grease NLGI 2 AND LUBRICATE the bearings.

5.4.4 RECORD bearing inspection results on PM/S data sheet.

5.4.5 INSPECT sheaves for the following:
• Wear
• Alignment
• Loose fasteners.

5.4.5.1 IF sheave(s) replacement is required, NOTIFY SOM/Engineering of required sheave(s) replacement.

5.4.6 RECORD sheave inspection results on PM/S data sheet.
5.4 45D-F-1B – Mechanical Inspection (Cont.)

5.4.7 INSPECT belts for wear or glazing.

NOTE - Proper belt tension is 19 to 21 pounds of force at 7/32 to 15/64 inches deflection (14.5 inches span).

- When using Belt Hog laser, alignment criteria are ± 2 ticks.

5.4.8 IF belt replacement is required, PERFORM the following:

5.4.8.1 REPLACE belt.

5.4.8.2 ALIGN sheaves.

5.4.8.3 ENSURE proper tension on belts.

5.4.9 IF belts do not require immediate replacement, ENSURE belts are adjusted for proper running tension and alignment.

5.4.10 RECORD belt inspection results on PM/S data sheet.
5.5 Acceptance Testing

5.5.1 ENSURE test equipment has been disconnected and removed.

5.5.2 REMOVE lock and tag per DOE-0336.

5.5.3 REQUEST SOE start a blower (45D-F-1A/45D-F-1B).

5.5.4 INSPECT blower for the following:
   • Excessive heat
   • Noise
   • Vibration.

5.5.5 IF the blower belt was replaced, PERFORM the following:

   5.5.5.1 REQUEST SOE run the associated blower to total at least two hours, but not more than seven days, THEN
   STOP blower.

   5.5.5.2 REQUEST SOE restart blower AND
   LISTEN to blower for unusual noise or belt squealing.

   NOTE - New belt tension is 9 to 21 pounds force at 7/32 to 15/64 inches deflection (14.5 inches span).
   - When using Belt Hog laser, alignment criteria is +/- 2 ticks.

   5.5.5.3 IF unusual noise or belt squealing is heard:
   a. STOP blower.
   b. APPLY lock and tag per DOE-0336.
   c. READJUST/REALIGN blower motor to achieve tension and alignment targets.
   d. REMOVE lock and tag per DOE-0336.

   5.5.5.4 REPEAT Steps 5.5.5.1 through 5.5.5.3 for the same blower until no unusual noise or belt squealing is heard.

5.5.6 IF belt was changed on the other blower, REPEAT Step 5.5.5 for the other blower.
5.6 Restoration

5.6.1 RESTORE to as-found conditions.

5.6.2 INFORM SOM test is complete and instrument/equipment/system may be returned to service.

5.6.3 IF lock and tag was installed, REQUEST its removal.

5.7 Acceptance Criteria

Acceptance criteria has been met when steps in this procedure have been satisfactorily performed and results are recorded on the data sheet(s).

5.8 Review

5.8.1 INFORM FWS test is complete.

5.8.2 (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.

5.9 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.