Radial HEPA Filter Installation, Removal, and Replacement

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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for removal, installation, and disposal of Radial breather filters on Breather Filter assembly/riser.

1.2 Scope

1.2.1 This procedure involves filters installed on Breather Filter assemblies/risers, and may be used for new, first-time installation or replacement of Radial filter(s). (Reference drawing H-14-021360, Sht. 3, latest revision [Tank Filter Identification List for SSTs, DCRTs, Catch Tanks, and other SSC] 2nd H-14-110157 for the AP-Farm primary inlet air stations.)

1.2.2 This procedure can be performed in multiple locations. A work area and/or location specific hazard analysis must be performed prior to starting the activity per TFC-ESHQ-S_SAF-C-02.

2.0 INFORMATION

2.1 Terms and Definitions

- CA – Contamination Area
- DAC - Derived Air Concentration
- PER – Problem Evaluation Request
- QC – Quality Control
- RBA – Radiological Buffer Area
- RIDS – Records Inventory and Disposition Schedule
- TOC – Tank Operations Contractor.
3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

3.1.1 Industrial hygiene sampling and/or monitoring requirements will be specified in applicable Industrial Hygiene Sampling Plan, latest revision.

3.1.2 Some bird screens have sharp, exposed, expanded metal edges. This type of screen should be handled carefully.

3.1.3 If removing a radiological filter from a tank that is not listed on Table A-1 of TFC-ESHQ-S_IS-C-02 silver shield gloves are required.

3.2 Equipment Safety

CAUTION - Too much twisting torque on the filter mesh material could cause it to crinkle and possibly puncture the filter material.

CAUTION - Cross-threading of filter threads may result in equipment failure.

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.
3.4 Environmental Compliance

3.4.1 All materials are to be managed in accordance with Waste Planning Checklist and TO-100-052.

3.4.2 Ensure Waste Planning Checklist is included in work package.

3.4.3 Pre-job and post-job surveys (smears) shall be taken.

3.4.4 Decontamination and surveys taken on filter housing during filter installation are necessary to ensure compliance with Environmental regulatory requirements.

3.4.5 Report any spills or releases immediately to the appropriate WRPS Shift Office. This includes any water discharge to surface contamination areas.

3.4.6 Report work space air samples to WRPS Environmental Protection and appropriate WRPS Shift Office for grab air samples equal to or greater than 10 DAC within the work space AND/OR contamination found during post job radiological surveillance of the posted and controlled radiological boundary area boundary that exceeds the Radiological Work Plan (RWP).

3.5 Limits

HNF-SD-WM-TSR-006, Tank Farms Technical Safety Requirements

RPP-11413, Ventilation System In-Service Requirements
- Ventilation System Operation and Filtration.
4.0 PREREQUISITES

4.1 Special Tools, Equipment, and Supplies

The following equipment and materials may be needed to perform this procedure:

- Portable eye wash with drench hose station(s)
- Radial HEPA Filters
- Teflon tape for stainless steel (gray)
- Waste container
- Spare wing nut
- Spare bird screen
- Other tools, equipment and supplies as identified by Shift Manager/OE/FLM/User.

4.2 Performance Documents

The following documents will be needed to complete this procedure:

- Additional copies of Data Sheet 1 for each new filter to be installed
- Additional copies of Data Sheet 3 for each new filter to be installed

The following documents may be needed during performance this procedure:

- TFC-ESHQ-S_IS-C-02, Personal Protective Equipment
- TO-100-052, Perform Waste Generation, Segregation, Accumulation, and Clean-up
4.3 Field Preparation

4.3.1 ENSURE pre-job safety briefing, including all involved personnel, has been completed.

Quality Control Inspection of HEPA Filter

4.3.2 ENSURE QC approval of Bill of Materials has been completed for replacement filter.

4.3.3 COMPLETE inspection per Data Sheet 1.

4.3.4 IF filter does not pass visual inspection, REQUEST System Engineer to identify corrective action(s).

4.3.5 IF filter passes visual inspection, INITIAL AND DATE Data Sheet 1.

4.3.6 ENSURE a work area and/or a location specific hazards analysis has been performed per TFC-ESHQ-S-SAF-C-02.
5.0 PROCEDURE

Special Instructions

If performance of any Section(s) in this procedure is not required for procedure completion, steps within Section(s) not performed are to be marked, "N/A" in appropriate Data Sheet signoff space, and explained in comments/remarks section of Data Sheet or Comments Page.

NOTE - Component numbers are prefixed by various combinations of letters and numbers to designate the facility where the filter is installed (e.g., "B201-WST-").

5.1 Field Work for Radial Filter Installation

5.1.1 DELIVER filter(s) in its carton and bags to work area.

5.1.2 IF a new filter is to be installed at a new location, ENSURE a new weather cover is available.

5.1.3 PERFORM pre-job contamination and radiation surveys of the work area AND

RECORD on Data Sheet 2 by end of shift.
5.1 Field Work for Radial Filter Installation (Cont.)

NOTE - In accordance with HNF-SD-WM-TSR-006 ACs 5.8.2 and 5.9.2, as documented on the applicable Ignition Source Control Requirements Screening of Work Activities and Equipment Used in Performing Work Activities, closing the filter isolation is a required ignition control.

5.1.4 ENSURE filter isolation valve is CLOSED. (Valve handle is normally positioned 90 degrees from inlet pipe when closed.) (AC 5.8.2)

5.1.5 DURING the entire performance of this procedure, INSPECT filter assembly per Data Sheet 3 for discrepancies (e.g., bent/rusted, deformation of the weather cover, fasteners, and labels).

5.1.5.1 IF discrepancies are found, RECORD discrepancies in Comment section on Data Sheet 3 by end of shift.

5.1.6 INSTALL ground cover.

5.1.7 IF working in an RBA, CONTROL as a localized CA.

5.1.8 DURING performance of this procedure, SURVEY all tools, equipment, and fittings inserted into and/or removed from the filter(s) housing for radiological contamination.

5.1.9 IF existing filter is being replaced, GO TO Section 5.2 to remove existing filter.

5.1.10 IF no filter is currently installed, GO TO Section 5.3 to install new filter.
5.2 Remove Old Filter(s)

5.2.1 IF handling bird screens with sharp, exposed, expanded metal edges, **DON** canvas or leather gloves.

5.2.2 IF removing a Radial Filter, **PERFORM** the following:

5.2.2.1 **UNSCREW** wing-nut **AND** **REMOVE** weather cover and bird screen (keep for later use).

**CAUTION**

Too much twisting torque on the filter mesh material could cause it to crinkle and possibly puncture the filter material.

5.2.3 **LOOSEN** Radial breather filter.

5.2.4 **ENSURE** both the following conditions exist for the equipment being removed:

- The equipment is decontaminated or contained.
- The equipment meets the following criteria at the outer-most surface of item or container:
  - < 50,000 dpm/100 cm² beta-gamma
  - < 70 dpm/100 cm² alpha.

5.2.5 **CAREFULLY UNSCREW** Radial breather filter.

5.2.6 **HPT PERFORM** contamination survey of filter connection area **AND** **CONFIRM** levels are within RWP limits.
5.2 Remove Old Filter(s) (Cont.)

5.2.7 IF it will require more than one minute to start installation of new filter CONTROL breached opening with a temporary cover.

5.2.8 DELIVER old filter to Operations personnel AND

GO TO Section 5.3.

Disposal of Old Filter

NOTE - Steps 5.2.9 through 5.2.13 may be worked in parallel with the remainder of this procedure.

5.2.9 PLACE used filter in bag.

5.2.10 SEAL bag with Radial breather filter inside in accordance with Waste Planning Checklist and TO-100-052.

5.2.11 CONFIRM exterior contamination levels of bag are within RWP limits.

5.2.12 IF requested by Engineering, DELIVER filter to a designated filter test location for testing/inspection.

5.2.13 IF testing is not requested, DISPOSE of filter(s) in accordance with Waste Planning Checklist and TO-100-052.
5.3 Install New Filter(s)

5.3.1 **ENSURE** anti-galling material is applied to filter threads (i.e., Teflon tape for stainless steel [gray]). (See Figure 1 for Radial filter replacement sketch.)

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-threading of filter threads may result in equipment failure.</td>
</tr>
</tbody>
</table>

5.3.2 **USE** caution to ensure filter threads do not become cross-threaded AND **CAREFULLY INSTALL** new Radial breather filter.

**NOTE:** AP Tank Farm Primary Inlet stations have their birdscreens welded to their top hat. Replacement of these screens is not possible. If damage is noted to the screens, or they are failing to properly keep out birds, make note on the comments page and contact HVAC engineering.

5.3.3 **IF** the 4-sided inside mount bird screen is being used, **REPLACE** it with the newer style 2-sided exterior fit bird screen.

5.3.4 **ENSURE** screen has no gaps around screen to top hat after assembly.

5.3.4.1 **FWS VERIFY** wing nut is secure and tight once assembled.

<table>
<thead>
<tr>
<th>Signature</th>
<th>Print (First and Last)</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>FWS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5.3.5 **IF** screen gaps are present, manipulate screen “mask” accordingly to seal to the top hat cover.

5.3.6 **INSTALL** bird screen, weather cover, and wing nut.

5.3.7 **FULLY OPEN** filter isolation valve AND

**IF** valve is fitted with latching device, **ENSURE** mechanical latch is used. (Valve handle normally aligns with inlet pipe when open.)

5.3.8 **SIGN AND DATE** Data Sheet 3 to indicate new filter(s) is successfully installed by end of shift.
5.4 Restoration

5.4.1 PACKAGE all waste in accordance with TO-100-052.

5.4.2 PERFORM post-job contamination and radiation surveys of the work area.

5.4.3 DOWN-POST as survey results allow AND RECORD on Data Sheet 2 by end of shift.

5.5 Acceptance Criteria

5.5.1 PERFORM this section only if this procedure was used for a new filter installation OTHERWISE GO TO Section 5.6.

5.5.2 FWS/Lead CONFIRM Data Sheet 1, Data Sheet 2, and Data Sheet 3 entries are complete.

5.5.3 IF this filter was a first-time installation, FWS/Lead NOTIFY Environmental Compliance that Radial filter has been installed and valve is open AND DOCUMENT on Comments Page the name of the Environmental representative contacted, and the date of contact.

5.6 Review

5.6.1 IF discrepancies were noted during performance of this procedure, FWS NOTIFY System Engineer AND OBTAIN concurrence to initiate a work package.

5.6.2 FWS/Lead RECORD on Data Sheet 4 any work request numbers generated during the performance of this procedure AND NOTIFY System Engineer of any deficiencies.

5.6.3 FWS/Lead SIGN AND DATE Data Sheet 4.
5.7 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.
# Data Sheet 1 - QC Inspection Data

<table>
<thead>
<tr>
<th>HEPA Filter Change out QC Data Sheet*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work Package Number</td>
</tr>
<tr>
<td>Date of Inspection</td>
</tr>
<tr>
<td>Filter equipment number where HEPA Filter will be installed (example: B201-WST-FLT-101).</td>
</tr>
</tbody>
</table>

## HEPA Filter (Record Information From Manufacturer’s Label)

<table>
<thead>
<tr>
<th>Filter Manufacturer</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Model Number</td>
<td>0-007-1-12-RF-NU-00-E3-Z04059***</td>
</tr>
<tr>
<td>Serial Number</td>
<td></td>
</tr>
<tr>
<td>HEPA Filter Flow Rating</td>
<td>(CFM)</td>
</tr>
<tr>
<td>HEPA Filter Resistance</td>
<td>(in. w.g.)</td>
</tr>
<tr>
<td>Manufacturer’s Penetration Test Date</td>
<td>(mm/dd/yyyy)</td>
</tr>
<tr>
<td>Verify Filter Aerosol Penetration Has Been Tested by the Manufacturer and is No Greater than 0.03% at 100% of Rated Flow</td>
<td>SAT</td>
</tr>
<tr>
<td>Seal (thread) Condition</td>
<td>SAT</td>
</tr>
</tbody>
</table>

(No significant damage or cross threading, etc.)

* Additional copies of this data sheet shall be made for each individual filter installed by this procedure.

** Any UNSAT conditions found should be described on Comments Page, and the System Engineer should be notified.

*** Letter variable

Signed________________________ /________________________ /________________________

Signature                  Print (First and Last)                     Date

QC Inspector
### Daily Survey Data Sheet

<table>
<thead>
<tr>
<th>Condition</th>
<th>Number</th>
<th>Date</th>
<th>Time</th>
<th>Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Job contamination and radiation survey number:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-Job contamination and radiation survey number:</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Comments:

* Additional copies of this data sheet shall be made as needed by this procedure.
## Radial HEPA Filter Installation, Removal, and Replacement

### Data Sheet 3 - Filter Installation Data

<table>
<thead>
<tr>
<th>HEPA Filter Change-out Data Sheet*</th>
<th>Work Package Number</th>
<th>Date of Installation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inspect for:</td>
<td>SAT</td>
<td>UNSAT**</td>
</tr>
<tr>
<td>No Damage to New HEPA Filter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Damage to Filter Weather Covers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Damage to Filter Threads</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Damage to Bird Screen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bird Screen properly Installed (including alignment with weather cover)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Missing Fasteners</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Missing Labels on Filter Assembly or Weather Covers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Filter Isolation valve operates properly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Visible Paint, Corrosion, or Other Foreign Objects In Filter Assembly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No visible sand or debris on, or in, filter media. ****</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Filter Installed Properly with No Discrepancies</td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>

*** Significant amount of Water found on Filter, (YES or NO). (Dripping from the filter)

Comment:

---

* Additional copies of this data sheet shall be made for each individual filter installed by this procedure.

** Any UNSAT conditions found should be described on Comments Page, a PER should be generated by the FWS for UNSAT conditions, potentially affecting the function and operation of the filter, a work request should be generated by the FWS for all UNSAT conditions to correct the problem, and the System Engineer should be notified.

*** Not considered a SAT or UNSAT condition.

**** Sand or debris found on the outside of AP primary ventilation HEPA radial filters is considered a common occurrence after being installed. It may be marked SAT if sand and debris are found on the outside of the radial HEPA filter. Neither a work request or PER are required when this condition exists for AP primary ventilation radial filters.

---

Signature: ___________________________  Print (First and Last): ___________________________  Date: __________/________/________

Craftsman
**PER Numbers Generated (if Applicable):**

<table>
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<tr>
<th>PER Numbers</th>
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**Work Request Numbers Generated (if Applicable):**

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<th>Work Request Numbers</th>
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**FWS:**

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Forward package to HVAC System Engineer for review and signature.

**System Engineer:**

<table>
<thead>
<tr>
<th>Signature</th>
<th>Print Name(First and Last)</th>
<th>Date</th>
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Forward package to Environmental for review and signature.

**Environmental:**

<table>
<thead>
<tr>
<th>Signature</th>
<th>Print Name(First and Last)</th>
<th>Date</th>
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</table>
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 or Data Sheet 3.

Date: __________________

<table>
<thead>
<tr>
<th>Signature</th>
<th>Print (First and Last)</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commenter</td>
<td></td>
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</tbody>
</table>
Figure 1 - Flanders Radial Filter Components