Replace ENRAF Series 854 Wire Drums and/or Displacers

Tank Farm Maintenance Procedure

USQ #TF-17-0987-S, Rev 2

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Change History (≤ Last 5 Rev-Mods)

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<td>E-3</td>
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<td>Changed Step 5.1.22.4 and 5.1.22.5, Changed Step 5.1.39, Change to Figure 5, and added Figure 6</td>
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<td>E-1</td>
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<td>Removed Note before Step 3.4.4 and Step 3.4.4. Added “First and Last to Print Name. Record Section Update.”</td>
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<td>E-0</td>
<td>4/20/2015</td>
<td>Periodic Review comments</td>
<td>Modified 4.3.5 to add: 4.3.5.1 PLACE equipment in a safe condition 4.3.5.2 NOTIFY FWS. 4.3.5.3 PROCEED as directed by FWS AND RECORD directions on comments sheet. Capitalized and bolded action verbs throughout. Reworked step 5.1.23 Remove IF needed from step 5.2.25.2 Step 3.4.3 language was replaced with the following. “Immediately report any spills or releases to the appropriate shift office in order to implement the actions described in procedure TF-REC-001, &quot;Response to Environmental Condition”. This includes any water discharge to surface contamination areas or resulting from operational error. Step 3.4.4 changed to reflect the content found in procedure TFC-ESHQ-ENV_FSC-01 Deleted the Warning statement in 3.1.1 and added Caution statement.</td>
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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for replacement of ENRAF Series 854 wire drums and/or displacers.

1.2 Scope

This procedure may be used on any ENRAF Series 854 gauge installed in tank farm facilities.

2.0 INFORMATION

2.1 Terms and Definitions

- PTFE - Polytetrafluoroethylene
3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

3.1.1 Industrial Hygiene sampling and/or monitoring requirements will be specified in the appropriate Industrial Hygiene Sampling Plan (IHSP).

3.2 Equipment Safety

CAUTION - Over torquing may cause valve damage.

CAUTION - Closing the isolation valve without raising the displacer into the sight glass will "cut" the drum wire causing the displacer to drop into the tank and the tension release to "rat's nest" the wire on the drum.

CAUTION - Closing the isolation valve without raising the displacer will "cut" the drum wire causing the displacer to drop into the tank and, the tension release to "rat's nest" the wire on the drum.

CAUTION - Greasing the carbon PTFE bearings may cause failure. The drum bearings do not require any lubricant at all.

3.2.1 A kink could cause the wire to break; slight bends in the wire are acceptable.

3.2.2 If during installation of the drum or displacer the wire becomes kinked, cut off the kinked section from the drum and re-install the loop and clip.

3.2.3 Never tighten the compartment cover before the threads are properly engaged. Keep threads free from dirt and, although the threads have been greased, it will never harm to grease them lightly with an acid free grease after the gauge has been opened.

3.2.4 When closing, the covers should be turned counterclockwise until the threads click into place.

3.2.5 The wire drum is delicate equipment and must be handled with extreme care when outside of the drum housing. The drum should be over-packed to prevent damage in the event it is dropped or struck by other equipment. Since both the displacer and drum are specific to the gauge, they should not be stored separate from the gauge.
3.3 **Radiation and Contamination Control**

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

3.4 **Environmental Compliance**

3.4.1 Waste disposal will be in accordance with Waste Planning Checklist and TO-100-052.

3.4.2 The following requirements from TFC-ESHQ-ENV-STD-06 must be met:

1. If sustained wind speeds are >25 mph, then do not open risers. .
   - A local wind speed measurement device may be utilized in lieu of Hanford Meteorological Station readings, if local wind speed readings are taken in unobstructed location representative of the work area.
   - If a local wind speed device is used to measure wind speeds, then the use of the local wind speed device and measured wind speed readings must be documented in the Work Record.

2. Open riser time will be minimized. .

3. HPT coverage will be performed as specified in the Radiological Work Permit.

4. Equipment is decontaminated or contained when removed from tanks.
   - Equipment is decontaminated or contained when removed from tanks when >50,000 dpm/100 cm² beta/gamma and/or >70 dpm/100 cm² alpha.
   - Swipes will be taken to determine that the surface of the item or the outermost surface of the container are maintained <50,000 dpm/100 cm² beta/gamma and/or <70 dpm/100 cm² alpha.
   - Containments used during the work must be in accordance with TFC ESHQ RP_RWP-C-02 latest revision, Attachment A, Containment Selection Guide.

5. Verify passive or active HEPA filtration on tanks.

6. Pre- and post-job surveys (smears) shall be taken.
3.4 Environmental Compliance (Cont.)

3.4.3 Immediately report any spills or releases to the appropriate shift office in order to implement the actions described in procedure TF-REC-001, "Response to Environmental Condition". This includes any water discharge to surface contamination areas or resulting from operational error.

3.4.4 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).
4.0 PREREQUISITES

4.1 Special Tools, Equipment, and Supplies

The following supplies may be needed to perform this procedure:

- Portable ENRAF Terminal (PET) Model No. 847
- Replacement gaskets for sight glass window assembly (if required)
- 5/16” Allen wrench
- 3mm Allen tee handle wrench
- Breaker bar
- Small screwdriver
- Tape
- Glove bag(s) per RPP-7933
- Rubber matting (for shielding removed displacer)
- Rubber band for (securing removed wire drum)
- Storage box (for removed wire drum)
- Acid free grease
- Torque wrench.

4.2 Performance Documents

The following documents may be needed to perform this procedure:

- TO-100-052, Perform Waste Generation, Segregation, Accumulation and Clean-up
- TO-040-180, Operate Tank Surface Level Monitoring Devices
- Site Form # A-6003-272, WRPS Glove Bag Certification Checklist
- TO-020-420, Clean, Level Indicating Transmitter Tapes, Plummets, and Displacers.
4.3 Field Preparation

NOTE - Steps 4.3.1 through 4.3.6 may be worked concurrently, out of order, and/or repeated.

4.3.1 IF the RL value (required for calibration of ENRAF) is not on the Data Sheet, OBTAIN the RL from Engineering AND RECORD below, otherwise N/A.

Asset or Instrument I.D. ____________________________

RL = _________ Provided by ____________________________

_________________ / ____________________________

Craft Signature Print (First and Last) Date

4.3.2 IF a flushing activity is desired at any time, prior to commencement of this work activity, flush per TO-020-420.

4.3.3 IF the gauge is connected to TMACS, NOTIFY TMACS operator by phone at (373-2618) of intent to perform this procedure.

4.3.4 OBTAIN release from Operations management prior to beginning performance of this procedure.

4.3.5 IF during performance of this procedure, any of the following conditions are found, IMMEDIATELY STOP WORK:

• Any equipment malfunction which could prevent fulfillment of its functional requirements
• Personnel error or procedural inadequacy which could prevent fulfillment of procedural requirements.

4.3.5.1 PLACE equipment in a safe condition.

4.3.5.2 NOTIFY FWS.

4.3.5.3 PROCEED as directed by FWS.

4.3.5.4 RECORD directions on comments sheet.

General Recovery Action

4.3.6 IF any Specification Limit in this procedure is violated, IMMEDIATELY NOTIFY Tank Farm Operations Shift Manager of the condition, unless a specific Recovery Action is stated with the limit.
5.0 PROCEDURE

NOTE - If performance of any steps in this procedure are not required for procedure completion, (e.g. varying requirements for different Farms and/or Tanks) steps not performed are to be marked “N/A” with initial and date in the left-hand margin next to applicable step.

5.1 Replace Old Wire Drum and Displacer

NOTE - This procedure is intended to be performed on existing gauges that may be contaminated.

5.1.1 **HPT** PERFORM pre-job contamination and radiation survey of the work area.

5.1.2 **RECORD** RSR number(s) on the RSR Working Record prior to end of shift.

5.1.3 **IF** replacing displacer, **RECORD** the new displacer's weight shown/tagged on the displacer, otherwise N/A.

```
Displacer Weight
____________________ / ____________________________ / _______________________
Craft Signature          Print (First and Last)            Date
```

5.1.4 **IF** working with a densitometer, **RECORD** new displacer's volume shown/tagged on the displacer on the work package work record.

5.1.5 **IF** replacing wire drum, **RECORD** engraved drum circumference, **OTHERWISE** N/A.

```
Drum Circumference
____________________ / ____________________________ / _______________________
Craft Signature          Print (First and Last)            Date
```

5.1.6 **CONNECT** portable ENRAF terminal to gauge if not already connected.
5.1 Replace Old Wire Drum and Displacer (Cont.)

5.1.7 RECORD the As-Found tank liquid level reading (or last known reading).

________________________________________

Liquid Level

________________________________________

Craft Signature Print (First and Last) Date

NOTE - Displacer movement is shown by an arrow character (↑ or ↓) and a changing level reading on the gauge display.

5.1.8 ENTER Command = [CA]. (This command raises the displacer).

5.1.9 IF directed by FWS to flush ENRAF as displacer rises, FLUSH per TO-020-420.

5.1.10 WHEN displacer rises to within approximately 50 to 75 inches of expected reference elevation, REQUEST HPT to monitor exposure at riser.

5.1.11 IF radiation levels exceed the job-specific Radiological Work Permit (RWP), or Specific work instructions, on contact with the base of the riser, LOWER the displacer (by typing [UN] then <ENTER> on the portable ENRAF Terminal) AND NOTIFY Operations Shift Manager (the wire and displacer will need to be flushed per TO-020-420 before continuing) otherwise CONTINUE.

5.1.12 VISUALLY INSPECT displacer in sight glass.

5.1.13 ENTER Command = [FR]. (This command freezes the motion of the displacer).

5.1.14 PRIOR to positioning valve, VISUALLY INSPECT valve for damage (i.e. stem twists, bends, or ball valve breaks).

Visual Inspection revealed damage? YES [ ] NO [ ].

________________________________________

Craft Signature Print (First and Last) Date

5.1.15 IF valve cannot be positioned due to damage, CONTACT FWS or Engineering for direction.
5.1 Replace Old Wire Drum and Displacer (Cont.)

CAUTION
Over torquing may cause valve damage.

CAUTION
Closing the isolation valve without raising the displacer into the sight glass will "cut" the drum wire causing the displacer to drop into the tank and the tension release to "rat's nest" the wire on the drum.

5.1.16 IF working with a Flow-Tek ball valve (see Table 1: Gauges with Flow-Tek Ball Valves), PERFORM the following; OTHERWISE, GO TO Step 5.1.17.

5.1.16.1 TO close the valve, APPLY up to but not exceeding 180 ft-lbs of torque.

5.1.16.2 IF the valve does not close at 180 ft-lbs or less, CONTACT Engineering AND

OBTAIN approval to increase torque values in 10 ft-lbs increments until valve closes.

5.1.16.3 IF the valve takes over 180 ft-lbs to close, RECORD approximate torque value (above 180 ft-lbs), OTHERWISE N/A.

\[
\begin{array}{ccc}
\text{Torque Value} & / & /
\end{array}
\]

Craft Signature / Print (First and Last) / Date

5.1.16.4 AFTER valve is closed, CYCLE the valve 3 to 4 times.

5.1.16.5 IF stem twists, bends, or ball valve breaks in any way during closing, STOP WORK AND

NOTIFY Shift Manager.
5.1 Replace Old Wire Drum and Displacer (Cont.)

**CAUTION**
Closing the isolation valve without raising the displacer will "cut" the drum wire causing the displacer to drop into the tank and, the tension release to "rat's nest" the wire on the drum.

5.1.17 **CLOSE AND SECURE** the isolation valve (ball valve between riser and gauge) AND

IF valve cannot be closed without excessive force, **CONTACT** Engineering.

5.1.18 **ENSURE** power switch is in the "OFF" position, or receptacle plug is "disconnected".

5.1.19 **REMOVE** electronic compartment cover.

5.1.20 **LOCK** "motor lock" located at the bottom left corner of the electronic compartment (see Figure 2: Motor Lock).

**NOTE** - RADCON concurrence the type of glove bag to be used is required and that those listed in the approved listing are adequate, provided they are equivalent in nature.

- Two glove bags may be needed: one around the drum compartment, the other around the sight glass.

5.1.21 **INSTALL** ground cover around work area.

5.1.22 **PREPARE AND PLACE** needed equipment into glove bag(s).

5.1.22.1 **ENSURE** ground cover is installed around riser.

5.1.22.2 **ENSURE** a "clip" is attached at end of the wire on the new drum.

5.1.22.3 **PLACE** tape on the outside of the sight glass cover.

5.1.22.4 **IF** sight glass cover must be loosened, **SLIGHTLY LOOSEN** the sight glass cover.

5.1.22.5 **IF** sight Drum Compartment must be loosened, **SLIGHTLY LOOSEN** the Drum Compartment.

5.1.22.6 **CHECK** by visual inspection that the wire on the drum to be installed is free of excessive kinks.
5.1 Replace Old Wire Drum and Displacer (Cont.)

NOTE - Only one glove bag may be signed off as accepted for each hold point.
- Inspection of glove bag is performed prior to use and checks for damage such as rips, tears, or other defects (i.e. welded seams, specifically where dissimilar materials are used) to ensure that the glove bag will provide the necessary protections for personnel.

5.1.23 CHOOSE one of the following Glove Bag methods AND PROCEED as directed:

5.1.23.1 IF using “One Glove Bag Method”, GO TO Step 5.1.24.

5.1.23.2 IF using “Two Glove bag Method”,

a. LINE-OUT AND N/A Step 5.1.26 Hold Point

b. GO TO “Two Glove Bag Method” on Step 5.1.28.

One Glove Bag Method

5.1.24 INSPECT glovebag.

5.1.25 INSTALL glove bag.

(HP) HOLD POINT

5.1.26 HPT PERFORM (initial) certification of containment in accordance with glove bag certification checklist (A-6003-272).

_________________________ ____________________
Printed (First and Last) Name \ HP Signature\HP Date

5.1.27 LINE-OUT AND N/A hold point boxes in, “Two Glove bag Method”,
Steps 5.1.30 and 5.1.33 AND
PROCEED to Step 5.1.34.
5.1 Replace Old Wire Drum and Displacer (Cont.)

Two Glove bag Method

5.1.28 INSPECT glovebag.

5.1.29 INSTALL glove bag over sight glass.

(HP) HOLD POINT

5.1.30 HPT PERFORM (initial) certification of containment in accordance with glove bag certification checklist (A-6003-272).

Printed (First and Last) Name \ HP Signature\HP Date

5.1.31 INSPECT glove bag prior to use for damage such as rips, tears, or other defects (i.e. welded seams, specifically where dissimilar materials are used) to ensure that the glove bag will provide the necessary protections for personnel.

5.1.32 INSTALL glove bag over drum compartment.

(HP) HOLD POINT

5.1.33 HPT PERFORM (initial) certification of containment in accordance with glove bag certification checklist (A-6003-272).

Printed (First and Last) Name \ HP Signature\HP Date
5.1 Replace Old Wire Drum and Displacer (Cont.)

NOTE - Contamination Area (CA) may be posted/ downposted multiple times as survey results allow.

5.1.34 IF performing work in RBA. POST work area as CA.

5.1.35 REMOVE sight glass cover.

5.1.36 OBTAIN dose rate of displacer AND PERFORM one of the following:

5.1.36.1 IF displacer dose rate exceeds RWP, STOP WORK AND CONTACT Shift Manager.

5.1.36.2 IF displacer dose rate does not exceed RWP, CONTINUE with procedure.

5.1.37 PERFORM applicable Steps 5.1.37.1 thru 5.1.37.5 concurrently, (i.e. one continuous motion).

5.1.37.1 PULL mounting clip and displacer through the sight glass window opening.

5.1.37.2 WHILE keeping tension on the gauge wire, DISCONNECT old displacer from the clip AND PLACE in bag for disposal.

5.1.37.3 IF the wire drum is not being replaced, GO TO Step 5.1.42.3, OTHERWISE CONTINUE.

5.1.37.4 REMOVE drum compartment cover.

5.1.37.5 REMOVE old wire drum AND PLACE in bag for disposal.

CAUTION
Greasing the carbon PTFE bearings may cause failure. The drum bearings do not require any lubricant at all.

5.1.38 TAKE-OUT the drum shaft bushing.

5.1.39 REPLACE the bearings using Option 1 (Figure 5) or Option 2 (Figure 6).
5.1 Replace Old Wire Drum and Displacer (Cont.)

5.1.40 INSTALL the bushing.

5.1.41 REMOVE holding device from new drum.

5.1.42 PERFORM Steps 5.1.42.1 thru 5.1.42.6 concurrently, (i.e. one continuous motion).

5.1.42.1 VISUALLY INSPECT the drum shaft is properly positioned in the drum.

5.1.42.2 WHILE Holding Drum, FEED new wire through neck.

5.1.42.3 CONNECT new displacer to the clip.

5.1.42.4 PLACE the displacer through the sight glass.

5.1.42.5 CONTINUE LOWERING the displacer into sight glass until it is suspended from the gauge.

5.1.42.6 ENSURE the drum is inserted into its bearings.

5.1.43 CHECK the axial free-play by PERFORMING the following:

5.1.43.1 PUSH the drum towards the magnet cap in such a way that the drum shaft meets the magnet cap.

5.1.43.2 SLIGHTLY TWISTING the drum bringing it in a slow vibration.

5.1.43.3 ENSURE the drum and drum shaft is free to move toward you.

5.1.44 VISUALLY CHECK displacer connection, displacer thread tightness AND VERIFY no kinks in wire and around displacer clip.

Craft Signature / Print (First and Last) / Date

5.1.45 REPLACE/RE-INSTALL sight glass cover and gaskets.

NOTE - The drum may require a slight push to ensure the drum meets the magnetic cap.

5.1.46 IF removed in Step 5.1.37.4, CLOSE drum compartment cover.

5.1.47 UNLOCK "motor lock" located at the bottom left corner of the electronic compartment (Figure 3: Motor Unlock).
5.1 Replace Old Wire Drum and Displacer (Cont.)

5.1.48 REPLACE the electronic compartment cover.

5.1.49 IF working with a densitometer, PERFORM the following sub-steps; OTHERWISE, GO TO Section 5.2.

5.1.49.1 WHEN facing the display, CONNECT portable ENRAF terminal to gauge by plugging the terminal’s optical coupler into the socket located on the left side of the gauge.

5.1.49.2 PRESS the ON/RESET button.

5.1.49.3 SWITCH power ON to gauge.

5.1.49.4 ENTER command [DV] (this displays the displacer volume currently entered in the gauge. The units are in scientific notation for cubic centimeters, e.g. .11000000E+03 = 110.00 grams).

5.1.49.5 IF Displacer Volume (DV) does not match exactly the New Displacer Volume recorded on the Calibration Data Sheet, PERFORM steps 5.1.49.6 through 5.1.49.9; OTHERWISE, GO TO Section 5.2.

5.1.49.6 ENTER command [W2=ENRAF2].

5.1.49.7 ENTER command [DV=+.xxxxxxxxE+03], where .xxxxxxxxE+03 is the New Displacer Volume from the Calibration Data Sheet in scientific notation.

5.1.49.8 ENTER command [EX].

5.1.49.9 ENTER Command = [FR]. (This command freezes the motion of the displacer).

5.1.49.10 WAIT for gauge to reinitialize.
5.2 Drum Circumference Check

5.2.1 IF not already done PERFORM the following:

5.2.1.1 WHEN facing the display, CONNECT portable ENRAF terminal to gauge to be tested, by plugging the terminal's optical coupler into the socket located on the left side of the gauge.

5.2.1.2 PRESS ON/RESET button.

5.2.2 IF power is OFF, SWITCH power ON to gauge.

5.2.3 ENTER Command [DC]. (This command displays the programmed drum circumference).

5.2.4 RECORD [DC] as the programmed drum circumference.

Programmed Value: ______________________

Craft Signature / Print (First and Last) / ______ Date

NOTE - The portable ENRAF terminal displays the drum circumference in scientific notation, which is different from the format engraved on the drum. The value displayed by the portable ENRAF terminal will look like: "DC=+.33000000E+00". The units here are meters, whereas the drum value is given in millimeters. The same value on the drum would look like: "330.0000".

5.2.5 CONFIRM drum circumference value in portable ENRAF terminal displays the value found engraved on the wire drum as recorded in Step 5.1.21. YES [ ] NO [ ]

5.2.5.1 IF no was checked, PERFORM steps 5.2.5.2 through 5.2.5.5; OTHERWISE

GO TO step 5.2.6.

5.2.5.2 ENTER Command [W2=ENRAF2]. (This command enters protection level 2).

5.2.5.3 ENTER Command [DC=+.xxxxxxxxE+00], where xxxxxxxxx is the value engraved on the wire drum. (i.e., DC=+.32703900E+00).
5.2 Drum Circumference Check (Cont.)

5.2.5.4 ENTER Command [EX]. (This command exits protection level 2).

5.2.5.5 ENTER Command = [FR]. (This command freezes the motion of the displacer).

NOTE - Only one glove bag may be signed off as accepted for each hold point.

5.2.6 IF performing work using EITHER of the following glove bag methods in a Radiological Buffer Area (RBA), ESTABLISH a temporary contamination area.

5.2.7 IF “One Glove Bag Method” is applicable, GO TO Step 5.2.8 and proceed as directed,

OR

IF “Two Glove bag Method” is applicable, LINE-OUT AND N/A Step 5.2.10 Hold Point "BEFORE CONTINUING" THEN

GO TO Step 5.2.14 and proceed as directed.

One Glove Bag Method

5.2.8 REMOVE glove bag.

5.2.9 HPT PERFORM contamination surveys on exposed surfaces in glove bag.

5.2.9.1 IF levels are < 50,000 dpm/100 cm² beta-gamma and < 70 dpm/100 cm² alpha, HPT SIGN HOLD POINT (5.2.10) AND PROCEED to step 5.2.11.

5.2.9.2 IF levels are ≥ 50,000 dpm/100 cm² beta-gamma or ≥ 70 dpm/100 cm² alpha, DECONTAMINATE glove bag interior to below these levels or apply fixative.
5.2 Drum Circumference Check (Cont.)

(HP) HOLD POINT

5.2.10 HPT VERIFY removable contamination levels on all exposed surfaces within the containment are < 50,000 dpm/100 cm² beta-gamma and <70 dpm/100 cm² alpha prior to removal.

Printed (First and Last) Name \ HP Signature\HP \ Date

5.2.11 REMOVE Glove bag AND
DISPOSE per Waste Planning Checklist.

5.2.12 SURVEY and DECONTAMINATE area covered by glovebag as necessary to reduce contamination levels to <1000 dpm/100 cm² beta-gamma and <20 dpm/100 cm² alpha.

5.2.13 LINE-OUT AND N/A in, “Two Glove bag Method”, Steps 5.2.16 and 5.2.21 hold point boxes BEFORE CONTINUING, to Step 5.2.22.

Two Glove bag Method

5.2.14 REMOVE glove bag.

5.2.15 HPT PERFORM contamination surveys on exposed surfaces in glove bag.

5.2.15.1 IF levels are < 50,000 dpm/100 cm² beta-gamma and <70 dpm/100 cm² alpha, HPT SIGN HOLD POINT (5.2.16) AND PROCEED to step 5.2.17.

5.2.15.2 IF levels are ≥ 50,000 dpm/100 cm² beta-gamma or ≥ 70 dpm/100 cm² alpha, DECONTAMINATE glove bag interior to below these levels or apply fixative.
5.2 Drum Circumference Check (Cont.)

**(HP) HOLD POINT**

5.2.16 **HPT VERIFY** removable contamination levels on all exposed surfaces within the containment are < 50,000 dpm/100 cm² beta-gamma and <70 dpm/100 cm² alpha prior to removal.

<table>
<thead>
<tr>
<th>Printed (First and Last) Name</th>
<th>HP</th>
<th>Signature</th>
<th>HP</th>
<th>Date</th>
</tr>
</thead>
</table>

5.2.17 **REMOVE** Glovebag **AND**

**DISPOSE** per Waste Planning Checklist.

5.2.18 **SURVEY AND DECONTAMINATE** area covered by glovebag as necessary to reduce contamination levels to <1000 dpm/100 cm² beta-gamma and <20 dpm/100 cm² alpha.

5.2.19 **REMOVE** glove bag.

5.2.20 **HPT PERFORM** contamination surveys on exposed surfaces in glove bag.

5.2.20.1 **IF** levels are < 50,000 dpm/100 cm² beta-gamma and < 70 dpm/100 cm² alpha, **HPT SIGN** HOLD POINT (5.2.21) **AND**

**PROCEED** to step 5.2.22.

5.2.20.2 **IF** levels are ≥ 50,000 dpm/100 cm² beta-gamma or ≥ 70 dpm/100 cm² alpha, **DECONTAMINATE** glove bag interior to below these levels or apply fixative
5.2 Drum Circumference Check (Cont.)

(HP) HOLD POINT

5.2.21 **HPT VERIFY** removable contamination levels on all exposed surfaces within the containment are < 50,000 dpm/100 cm² beta-gamma and <70 dpm/100 cm² alpha prior to removal.

---

5.2.22 **REMOVE** Glove bag **AND** **DISPOSE** per Waste Planning Checklist.

5.2.23 **SURVEY AND DECONTAMINATE** area covered by glove bag as necessary to reduce contamination levels to <1000 dpm/100 cm² beta-gamma and <20 dpm/100 cm² alpha.

5.2.24 **ENSURE** ball valve is open.

5.2.24.1 **SYNCHRONIZE** the ENCODER.

5.2.24.2 **ENTER** command “W2=ENRAF2”.

5.2.24.3 **ENTER** command “SM”.

5.2.24.4 **ENTER** command “FP” **AND** **WAIT** approx 30 seconds.

5.2.24.5 **ENTER** command “SO”.

5.2.24.6 **ENTER** command “EX”.

5.2.25 **HPT PERFORM** post-job radiation and contamination survey.

5.2.25.1 **DECONTAMINATE** to a minimum of Pre-Job survey contamination levels.

5.2.25.2 **DOWNPOST** as radiological conditions allow.

5.2.25.3 **RECORD** RSR# in the Work record prior to end of shift.
5.3 **Post Job Calibration**

Post-job calibration will be completed on a separate calibration package.

5.4 **Restoration**

5.4.1 **IF** any problems were encountered with calibration, **INFORM** FWS.

5.4.2 **ENSURE** Test Equipment has been disconnected and removed.

5.4.3 **ENSURE** equipment system restoration by observing indications are consistent with expected conditions.

5.5 **Acceptance Criteria**

5.5.1 Acceptance parameters are specified in the individual sections of this procedure.

- Craft sign offs
- Health Physics sign offs (Hold Points).

5.6 **Review**

5.6.1 **INFORM** FWS maintenance is complete.

5.6.2 **INFORM** Surveillance Office by phone at 373-1945 (DST) or 372-2698 (SST) maintenance has been performed.

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

- Completed Procedure meets the acceptance criteria
- Comments sections are filled out appropriately
- Any work requests needed as a result of this procedure are identified and generated.
Replace ENRAF Series 854 Wire Drums and/or Displacers

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.
Table 1: Gauges with Flow-Tek Ball Valves

| A-103  | T-101 |
| A-104  | T-104 |
| A-106  | T-105 |
| A-302-A| T-106 |
| AN-101 | T-108 |
| AW-102 | T-110 |
| AW-103 | T-111 |
| AW-104 | T-112 |
| AW-105 | TX-101 |
| AW-106 | TX-102 |
| AX-102 | TX-103 |
| AX-104 | TX-105 |
| AY-101 | TX-106 |
| AY-102 | TX-107 |
| BX-101 | TX-108 |
| BX-102 | TX-109 |
| BX-103 | TX-110 |
| BX-104 | TX-111 |
| BX-105 | TX-112 |
| BX-107 | TX-113 |
| BX-108 | TX-114 |
| BX-109 | TX-115 |
| BX-110 | TX-116 |
| BX-111 | TX-117 |
| BX-112 | TX-118 |
| C-105  | TX-302-C|
| C-106  | TY-101 |
| C-107  | TY-102 |
| C-204  | TY-103 |
| S-102  | TY-104 |
| S-105  | TY-105 |
| S-109  | TY-106 |
| S-110  | U-102  |
| S-112  | U-108  |
| S-302  | U-110  |
| SX-101 | U-111  |
| SX-102 | U-203  |
| SX-103 | UX-302-A|
| SY-101 R-1C | U-204 |
|        | U-301  |
Replace ENRAF Series 854 Wire Drums and/or Displacers

Figure 1: Front View of ENRAF 854 Level Gauge Setup

Figure 2: Motor Lock
Replace ENRAF Series 854 Wire Drums and/or Displacers

Figure 3: Motor Unlock

Figure 4: Side View of ENRAF 854 Level Gauge
The drum bearings do not require any lubricant.
The drum bearings do not require any lubricant.