Prepare and Load Hedgehog II Waste Sample Containers & Steel PIGs

Tank Farm Plant Operating Procedure

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>
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<tbody>
<tr>
<td>C-5</td>
<td>06/04/2018</td>
<td>Request from Sampling group to revise data sheets.</td>
<td>Added a row on data sheet 2, removed column on data sheet 3, and added comment and signature section to data sheet 3.</td>
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<tr>
<td>C-4</td>
<td>10/02/2017</td>
<td>Operations and Engineering request</td>
<td>Deleted 4.2.4 and modified 5.8.2 to correct the wording, changed portrait to landscape and added different signature blocks for more room and compliance regarding data sheets.</td>
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<tr>
<td>C-3</td>
<td>08/24/2017</td>
<td>Periodic Review</td>
<td>RadCon suggested comments incorporated</td>
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<td>C-2</td>
<td>06/30/2016</td>
<td>Inconsequential change</td>
<td>Updated Records section.</td>
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<td>C-1</td>
<td>02/09/2016</td>
<td>Request from Sampling group to clarify meaning of step.</td>
<td>P.21. Modified Step 5.6.1 to make applicable to CMVs only.</td>
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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for preparation and loading of the Hedgehog II/Steel PIG Packaging System for supporting shipment of Tank Farm Samples to the 222-S laboratories. This procedure implements Defense in Depth controls as described in RPP-13303, *Tank Farms Documented Safety Analysis*, 3.3.2.3.2-2, *Other Defense-in Depth Features*.

1.2 Scope

1.2.1 This procedure involves:
- Preparing containers for loading and shipping
- Loading sample material into containers per applicable sections of this procedure after the containers have been prepared for shipping.

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 General Information

2.1.1 The 250 ml stainless-steel containers (PIGs) may be stored with their cap screws installed, but not torqued. Otherwise, the hedgehog assembly components may be stored fully assembled.

2.1.2 Ensure O-rings on 250 ml stainless-steel containers (PIGs) are lubricated when assembled with silicone grease (e.g. Dow Corning 111)

2.1.3 O-rings used with stainless-steel containers (250-ml PIGs) must be replaced annually (plus a 60 day grace period), in accordance with HNF-11651, Section 9.3.1 as managed by the Computerized History and Maintenance Software program

2.1.4 Bottom O-ring and bottom screw(s) inspection(s) required only if bottom cap is removed.

2.2 Terms and Definitions

- NFT Nuclear Filter Technology
- N/M Narrow Mouth
- ORRSR Onsite Routine Radioactive Shipment Record
- W/M Wide Mouth
3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

**WARNING** - To ensure flammable gas or pressure limits are not exceeded, the shipping window for the Hedgehog II is 35 hours upon closure of the 250 ml PIG container with 250 ml or smaller sample bottle inside. Failure to vent shipping container prior to exceeding 35-hour shipping window may result in personnel injury.

**WARNING** - Failure to don appropriate PPE before working with Slip Plate may result in personnel injury

3.1.1 When there is a potential to contact Tank Waste, appropriate PPE and portable eyewash with drench hose are required. Contact Industrial Safety/Hygiene for direction.

3.1.2 Steel PIG weight is approximately 85 pounds.

3.1.3 Protective footwear with ankle support is required.

3.1.4 Leather gloves are required when using sharp blades to remove box labels.

3.2 Radiation and Contamination Control

3.2.1 When this procedure is worked in radiological areas, an approved radiological work permit (RWP) is required. If radiological conditions or work performed falls outside the scope of the RWP, all work activities must be discontinued until a new or revised RWP has been issued in accordance with TFC-ESHQ-RP_RWP-C-03.

3.2.2 When work is performed in or when work will result in an area requiring radiological controls [Contamination Area (CA), High contamination Area (HCA), Radiation area (RA), High Radiation Area (HRA), or an Airborne Radioactivity Area (ARA)], an approved work package screened by RadCon per TFC-ESHQ-RP_RWP-C-01 must be developed. The work package shall be reviewed and approved by Radiological Control per ALARA work planning procedure TFC ESHQ RP_RWP C 03 and RWP procedure TFC-ESHQ-RP_RWP-C-04.

3.2.3 Radiological information is to be documented on Radiological Survey Report(s).
3.3 Limits

HNF-SD-TP-SARP-001, Safety Analysis Report for Packaging (Onsite) Sample PIG Transport System

Section 4.0 Transport System

Seal times for the PIG Shipping Container are as follows:
- 89 h for the 0.5 L (Steel PIG) payload.

The PIG shipping container is to be vented prior to exceeding shipping window/seal time.

If seal time/shipping window has been exceeded do not vent container and contact FWS to have the PIG shipping container vented per an approved work package or procedure.
3.3 Limits (Cont.)

3.3.1 The contents of the Hedgehog II are limited to Type A radioactive materials normal form per HNF-11651, Operation and Maintenance Manual for Hedgehog II Packaging System.

3.3.2 To ensure flammable gas or pressure limits are not exceeded the shipping window for the Hedgehog II is 35 hours upon either of the following conditions:

- Closure of the 1 liter bottle with a 250 ml or smaller sample bottle inside
- Closure of the 250 ml PIG with 250 ml or smaller sample bottle inside.

3.3.3 The 1 liter or 250 ml PIG are to be vented prior to exceeding shipping window or seal time. If seal time/shipping window has been exceeded do not vent container and contact FWS to have the container vented per an approved work package or procedure.

3.3.4 The following will ensure the Maximum Gross Weights for Hedgehog-II Configurations (Nominal) from HNF-11651 Table 2 are not exceeded.

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Bottle and contents* kg (lb)</th>
<th>Max. S.G.(g/ml) of waste sample to meet Bottle and Content Limits Full Container</th>
<th>Max. S.G. (g/ml) of waste sample to meet Bottle and Content Limits Partially Full Container</th>
</tr>
</thead>
<tbody>
<tr>
<td>250 ml shielded With 240 ml PFA sample bottle</td>
<td>0.562 (1.24)</td>
<td>1.57@100% Full</td>
<td>1.96@80%Full</td>
</tr>
<tr>
<td>250 ml shielded With 250 ml N/M glass sample bottle</td>
<td>0.562 (1.24)</td>
<td>1.58@100% Full</td>
<td>1.97@80%Full</td>
</tr>
<tr>
<td>250 ml shielded With 250 ml W/M glass sample bottle (or smaller)</td>
<td>0.562 (1.24)</td>
<td>1.38@100% Full</td>
<td>1.81@76%Full</td>
</tr>
<tr>
<td>1 L glass With 250 ml or smaller Glass W/M or N/M or PFA</td>
<td>1.72 (3.8)</td>
<td>4.19@100% Full</td>
<td>N/A</td>
</tr>
</tbody>
</table>

*If the sample density is not known, the bottle and contents must be weighed to ensure the nominal payload limits are not exceeded.
4.0 PREREQUISITES

4.1 Special Tools, Equipment and Supplies

4.1.1 The following supplies may be needed to perform this procedure:

- Allen/Torx wrench for 250 ml stainless steel container (PIG) cap screws
- Anti-seize lubricant
- Components for hedgehog assembly for 250-ml or 1-Liter I-Chem wide-mouth glass bottle with a Q or K 5082 black phenolic lid with polyethylene disk
- Labels, various shipping
- Lead gloves/aprons
- Leather gloves
- Chemical goggles
- Chemical gloves
- Nuclear Filter Technology (NFT) handling tools
- Polyethylene bags (various sizes)
- Protective footwear
- Slip Plate (MSDS 014484E)
- Silicone grease (e.g. DOW Corning 111)
- Spatulas, scraper blades, and heat gun, as necessary
- Strap wrench
- Tamper-indicating device
- Tape
- Temporary shielding
- Torque wrench and extension (in/lbs)
- Other tools, equipment and supplies as identified by Shift Manager/OE/FWS.
4.1 Special Tools, Equipment and Supplies (Cont.)

4.1.2 The following supplies may be needed to perform this procedure for steel PIGs:

- Calibrated Torque Wrench (Ft/lbs)
- Socket, \( \frac{1}{8} \) in.
- Socket, \( \frac{1}{4} \) in. Allen wrench
- Lint-Free Cloths
- TERI Reinforced Towels (Engineer should be contacted for equivalent material if TERI reinforced towels are not available.)
- APIEZON Type N lubricant
- Lead blankets.

4.2 Field Preparation

4.2.1 **INSPECT** all tools and equipment to be used, for defects and current calibration.

**NOTE** - An authorized shipper will be responsible for ensuring compliance with appropriate regulations.

4.2.2 **ENSURE** an authorized shipper is present to ship samples.

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

NOTE - Steps not directly involved with load-in/load-out of sample (i.e., Hardigg case labeling or removal of labeling) may be worked in any logical order as directed by Authorized Shipper/FWS.

- Radioactive contamination is allowed. The shipper will provide guidance or ORRSR/RSR.

- Container assembly operation and maintenance are described in supporting document HNF-11651.

- It is not necessary to remove the cover or base of the stainless steel hedgehog inserts (PIG) solely for the purpose of an inspection. However, every time a cover or base is removed, the O-ring and sealing surfaces shall be inspected.

- Inspection of bottom screws is only required if base is removed.

- Sections 5.1 through 5.5 can be used for packaging as determined by FLM.

5.1 Prepare Hedgehog II Assembly for Shipping 250 ml PIG

5.1.1 HPT PERFORM contamination survey when exposing previously inaccessible surfaces.

5.1.2 INSPECT hedgehog assembly components according to criteria listed in Attachment 2.

5.1.3 USE Hedgehog Assembly Inspection Checklist (Attachment 1) to list the following to indicate component has met criteria listed in Attachment 2:

- Components
- Inspection information
- Initials and date of person doing inspection for each component.

5.1.4 IF deficiencies are discovered in a component of the hedgehog assembly, CORRECT deficiencies

OR

REPLACE components.
5.2 Load and Ship Hedgehog II Assembly with 250 ml PIG

5.2.1 IDENTIFY sample(s) to be loaded.

5.2.2 INSERT sample bottle into stainless steel 250ml PIG container.

5.2.3 INSTALL lid onto 250ml PIG container.

5.2.4 INSTALL lid screws AND DO NOT TIGHTEN.

NOTE - This is a contact measurement with window closed and no geometry correction factor applied.

5.2.5 CONFIRM contact dose rate is < 1.5 R/hr.

OR

IF contact dose rate is > 1.5 R/hr, PERFORM the following:

5.2.5.1 STOP work

5.2.5.2 NOTIFY Authorized Shipper/FWS

5.2.5.3 GO TO Section 5.3 to load sample using steel PIGs into shipping container.

NOTE - 5.2.6 may be repeated if the pig needs to be vented per step 5.2.9.

5.2.6 PERFORM removable contamination survey of 250ml PIG containers AND CONFIRM contamination levels are <1,000 DPM/100 CM² Beta Gamma and <20 DPM/100 CM² Alpha.

5.2.6.1 IF contamination levels are greater than allowable limits, DECONTAMINATE 250ml PIG container AND REPEAT Step 5.2.6.

5.2.6.2 IF repeated decontamination efforts show no improvement, TERMINATE decontamination efforts AND PERFORM the following:

a. STOP work

b. NOTIFY Authorized Shipper/FWS.
5.2 Load and Ship Hedgehog II Assembly with 250 ml (Cont.)

5.2.7 **TORQUE** lid screws to 17 – 18 inch-lb **AND**

**RECORD** seal time on Attachment 1.

5.2.8 **IF** the 250ml Pig containers are being loaded during the sampling evolution, **REPEAT** Steps 5.2.1 through 5.2.7 for each sample.

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**WARNING**

To ensure flammable gas or pressure limits are not exceeded, the shipping window for the Hedgehog II is 35 hours upon closure of the 250 ml PIG container with 250 ml or smaller sample bottle inside.

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**WARNING**

Failure to vent shipping container prior to exceeding 35-hour shipping window may result in personnel injury.

---

5.2.9 **IF** there is a possibility of exceeding the 35 hour shipping window, **PERFORM** the following: (HNF SD TP SARP 001)

5.2.9.1 **VENT** 250ml PIG container.

5.2.9.2 **PERFORM** contamination survey, **ENSURE** that the levels specified in 5.2.6 are not exceeded.

5.2.9.3 **TORQUE** lid screws to 17-18 in/lbs.

5.2.9.4 **RECORD** new seal time on Attachment 1.
5.2 Load and Ship Hedgehog II Assembly with 250 ml (Cont.)

5.2.10 **ENSURE** Chain of Custody matches the following on seal **AND**

**COMPLETE** Data Sheet 3:
- Supervisor
- Date of Sampling
- Sample Number
- Time of Sampling
- Seal Number.

5.2.11 **PLACE** 250ml PIG container assembly into an NFT can with bottom shock protector installed.

5.2.12 **IF** not already installed in NFT can, **PLACE** foam side shock protectors around 250ml PIG container assembly.

5.2.13 **PLACE** foam insert, load spreader, and Bellville washer over 250ml PIG hedgehog assembly.

**WARNING**

Failure to don appropriate PPE before working with Slip Plate may result in personnel injury.

NOTE - No lubricant is required on NFT can’s Acme thread. However, a light film of silicone-based lubricant or anti-seize lubricant may be used to ease assembly.

5.2.14 **IF** working with Slip Plate, **DON** appropriate PPE.

5.2.15 **INSTALL** lid.

NOTE - A strap wrench or other handling tool may be needed to hold NFT can while last quarter turn of lid is made to line up ring plunger.

5.2.16 **PLACE** NFT can into cut-out of hedgehog foam in Hardigg case.

NOTE- Ring plunger facing up will ensure container handle axis is in vertical orientation and will allow installation of nylon spacers.

5.2.17 **CONFIRM** pull ring plunger assembly is facing up and out.
5.2 Load and Ship Hedgehog II Assembly with 250 ml (Cont.)

5.2.18 PLACE two hard nylon spacers on top of NFT can lid, one on each side of container’s handle.

5.2.19 ENSURE foam spacer is installed on top of NFT can.

5.2.20 SECURE Hardigg case by hooking butterfly latches up and over lip of catch mechanism and rotating latches clockwise their full travel.

5.2.21 APPLY one tamper-indicating device across opening of Hardigg case.

5.2.22 OBTAIN dose rates from Hardigg Case at the following distances:
- Contact
- 30 cm
- 1 M.

5.2.23 IF dose rate readings from Hardigg Case exceed 200 mrem/hr on contact and/or 10 mrem/hr at 1 meter, STOP work AND NOTIFY Authorized Shipper/FWS.

5.2.24 PERFORM contamination survey on Hardigg Case AND CONFIRM contamination levels are within limits of ORRSR/RSR.

5.2.25 PREPARE AND INSTALL Radioactive Material Tag on Hardigg Case to be sent with shipment.

5.2.26 REPEAT Steps 5.2.9 through 5.2.25 for any remaining samples.

5.2.27 GO TO Section 5.7.
5.3 Inspect Steel Pig

NOTE - Steps in this section can be performed in any logical order.

_____ 5.3.1 CONDUCT radiological survey of steel PIGs.

_____ 5.3.2 PERFORM contamination survey of steel PIGs when previously inaccessible surfaces are exposed.

_____ 5.3.3 IF transporting Steel PIG, ENSURE swivel hoist ring is torqued to 7 (7 to 8) ft-lbs.

_____ 5.3.4 PERFORM inspection of steel PIGs AND RECORD on Data Sheet 1.
5.4 Prepare and Load Steel PIG into PIG Shipping Container

NOTE - Steps in this section may be performed in any logical order.
- Designating/providing an Authorized Shipper is the responsibility of the sample generator.

_____ 5.4.1 ENSURE Waste Tank Sample Seal is affixed to the Steel PIG.

_____ 5.4.2 ENSURE Chain of Custody matches the following on seal AND COMPLETE Data Sheet 3:
  • Supervisor
  • Date of Sampling
  • Sample Number
  • Time of Sampling
  • Seal Number.

_____ 5.4.3 COMPLETE radiological survey of Steel PIG AND ENSURE Radioactive Material Tag is complete and attached.

_____ 5.4.4 INSPECT shipping container AND COMPLETE Pre-load portion of Data Sheet 2.

_____ 5.4.5 IF transporting a steel PIG, PLACE insert absorbent material (TERI reinforced towels/equivalent at FWS discretion) capable of absorbing twice the amount of material being shipped around the Sample PIG.
5.4 Prepare and Load Steel PIG into PIG Shipping Container (Cont.)

____  5.4.6 IF the following components require cleaning, ENSURE they are wiped with a lint free cloth: (HNF-SD-TP-SARP-001)

____  
• O-rings - on PIG shipping container
____  
• Grooves - on PIG shipping container
____  
• Mating surfaces of PIG shipping container.

____  5.4.7 IF the O-rings appear dry on PIG shipping container, ENSURE APIEZON Type N lubricant is applied sparingly to O-rings. (HNF-SD-TP-SARP-001)

____  5.4.8 CAREFULLY LOWER Steel PIG into PIG shipping container.

____  5.4.9 BE CAREFUL not to scratch mating surfaces or nick O-rings AND PLACE lid of PIG shipping container on to flange. (HNF-SD-TP-SARP-001)

____  5.4.10 SEAL shipping container as follows:

5.4.10.1 PLACE hex head nuts in position on PIG shipping container.

____  5.4.10.2 TORQUE nuts to 20 (15-25) ft-lb. (HNF-SD-TP-SARP-001)

____  5.4.10.3 RECORD seal time on Data Sheet 2.

____  5.4.11 COMPLETE PRE-SHIP INSPECTION on Data Sheet 2.
5.5 Load and Ship Hedgehog II Assembly with 1-Liter Bottle

5.5.1 INSPECT hedgehog assembly components according to criteria listed in Attachment 2.

5.5.2 PERFORM contamination survey of steel PIGs when previously inaccessible surfaces are exposed.

5.5.3 USE Hedgehog Assembly Inspection Checklist (Attachment 1) to list the following to indicate component has met criteria listed in Attachment 2:
- Components
- Inspection information
- Initials and date of person doing inspection for each component.

5.5.4 IF deficiencies are discovered in a component of the hedgehog assembly, CORRECT deficiencies OR REPLACE components, as allowable.

5.5.5 CONFIRM bottom shock protector and four side shock protectors are installed in NFT can.

5.5.6 PLACE sample bottle in 1 liter bottle.

5.5.7 RECORD 1 liter bottle seal time on Attachment 1.

5.5.8 PLACE 1 liter bottle into plastic bag AND PERFORM dose rate and contamination survey.

5.5.9 TAPE plastic bag closed as follows:
- TWIST OPEN end of bag and tape closed
- RE-TAPE to side of 1 liter bottle.

5.5.10 PLACE bagged bottle assembly into NFT can in upright position.

5.5.11 INSTALL the following in the order listed:
- Top foam insert (it fits inside uppermost shock protector and is placed on top of bottle assembly)
- Stainless-steel disc
- Top shock protector.
5.5 Load and Ship Hedgehog II Assembly with 1-Liter Bottle (Cont.)

**WARNING**
Failure to don appropriate PPE before working with Slip Plate may result in personnel injury.

NOTE - No lubricant is required on NFT can’s Acme thread. However, a light film of silicone-based lubricant or anti-seize lubricant may be used to ease assembly.

5.5.12 IF working with Slip Plate, **DON** appropriate PPE.

5.5.13 **PLACE** lid on NFT can **AND**

ENSURE lid is square and level.

5.5.13.1 **SPIN** lid down threads until last quarter turn to ring plunger.

5.5.13.2 **IF** lid does not spin on easily, **REMOVE** lid **AND**

**START** over, spinning lid until last quarter turn to ring plunger.

NOTE - A strap wrench or other handling tool may be needed to hold NFT can while last quarter turn of lid is made to line up ring plunger.

5.5.14 **TWIST** NFT can lid on **AND**

**TIGHTEN** until pull ring plunger locks into plunger mount.

5.5.15 **PLACE** NFT can into Hardigg case.

NOTE - Foam piece 724-04FA (dwg. H-2-830875) has a notch cut out in foam for lid handle.

5.5.16 **INSTALL** foam piece 724-04FA.

5.5.17 **PLACE** base of NFT can against ABS load spreader **AND**

**LOWER** NFT can into Hardigg case.

5.5.18 **CONFIRM** pull ring plunger assembly is facing up.

5.5.19 **PLACE** handle through notch cut in foam piece.
5.5 Load and Ship Hedgehog II Assembly with 1-Liter Bottle (Cont.)

5.5.20 Close Hardigg case lid.

5.5.21 Secure lid by hooking butterfly latches up and over lip of catch mechanism, and rotating latches clockwise their full travel.

5.5.22 Apply one tamper-indicating device across opening of Hardigg case.

5.5.23 Obtain dose rates from Hardigg Case at the following distances:
- Contact
- 30 cm
- 1 M.

5.5.24 If dose rate readings from Hardigg Case exceed 200 mrem/hr on contact and/or 10 mrem/hr at 1 meter, STOP work AND NOTIFY Authorized Shipper/FWS.

5.5.25 Perform contamination survey on Hardigg Case AND CONFIRM contamination levels are within limits of ORRSR/RSR.

5.5.26 Prepare and Install Radioactive Material Tag on Hardigg Case to be sent with shipment.

5.5.27 Repeat Steps 5.5.1 through 5.5.26 for any remaining samples to be loaded.

5.5.28 Go To Section 5.7.
5.6 Inspect Sample Transfer Vehicle

5.6.1 IF shipment requires use of a Commercial Motor Vehicle (CMV), ENSURE transport vehicle has current DOT inspection per 49CFR 396.17 thru 396.23.

5.6.2 INSPECT transport vehicle AND DOCUMENT results on Checklist 1.

5.6.3 IF any deficiencies are noted, CONTACT FWS.

5.6.4 IF truck requires refueling, BEFORE refueling, CONFIRM there are no samples in Hardigg Cases.

5.7 Load and Transport Samples

5.7.1 ENSURE transfer vehicle inspection per Section 5.6 has been completed.

5.7.2 ENSURE the following:
- Container(s) is/are labeled properly
- Shipper has completed Shipping Documents
- Tamper indicating device is affixed to the Hardigg case.

5.7.3 ENSURE Chain of Custody matches the following on seal AND COMPLETE Data Sheet 3:
- Supervisor
- Date of Sampling
- Sample Number
- Time of Sampling
- Seal Number.

5.7.4 OBTAIN RSR or ORRSR from Authorized shipper.

5.7.5 IF dose rates of Hardigg Case(s) exceed limits identified on RSR or ORRSR, CONTACT Authorized shipper.

5.7.6 ENSURE load is secured. (e.g., Tie Downs, Netting, etc.)
5.8 Deliver Samples to Receiving Facility

5.8.1 NOTIFY Receiving Facility and Dispatcher or FWS upon leaving and arrival at labs.

5.8.2 ENSURE Dispatch communicates radiological condition of sample to receiving facility prior to shipment of sample.

5.8.3 IF external contamination limits are exceeded, NOTIFY Dispatcher or FWS.
5.9  Records

5.9.1  **PERFORM** the following for records identified within this procedure.

5.9.1.1  **RECORD** the number of times the record was generated in applicable column

**OR**

**PLACE** a check mark (✔) in the N/A column.

5.9.1.2  **SUBMIT** the package for verification of completed records.

<table>
<thead>
<tr>
<th>Records Submittal Checklist</th>
<th>Number of times completed</th>
<th>N/A (✔)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Forms and Documents</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attachment 1 - Hedgehog Assembly Shipment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Checklist 1 - Truck Inspection Checklist</td>
<td></td>
<td></td>
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<tr>
<td>Data Sheet 1 - Steel PIG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data Sheet 2 – PIG Shipping Container Inspection</td>
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<td></td>
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<tr>
<td>Data Sheet 3 – Chain of Custody Checklist</td>
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<td></td>
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<tr>
<td>FWS/OE/Shift Manager SEND the completed records</td>
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<tr>
<td>work package to the Central Shift Office</td>
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</tr>
<tr>
<td>for records retention.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

______________/______________/______________

Signature  Print (First and Last)  Date

FWS/OE/Shift Manager

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.
Figure 1 - 250-ml Hedgehog II Assembly (no bags shown)
Prepare and Load Hedgehog II Waste Sample Containers & Steel PIGs

Figure 2 - 1-L Glass Bottle Hedgehog II Assembly (no bags shown)

- NFT Can Lid
- Top Shock Protector (Foam)
- Load Spreader
- Foam Insert (724-04FA) Has Notch For Handle In 1L Configuration (H-2-830875 Sh. 4)
- 1 Liter Glass Bottle
- Side Shock Protector (Foam)
- Bottom Shock Protector (Foam)
- O-Ring
- NFT Can
## HEDGEHOG II ASSEMBLY SHIPMENT CHECKLIST – SIGNOFF SHEET

<table>
<thead>
<tr>
<th>Date:</th>
<th>Sample #</th>
<th>Sample #</th>
<th>Sample #</th>
<th>Sample #</th>
<th>Sample #</th>
<th>Sample #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Torque Wrench #</td>
<td>SS Pig #</td>
<td>SS Pig #</td>
<td>SS Pig #</td>
<td>SS Pig #</td>
<td>SS Pig #</td>
<td>SS Pig #</td>
</tr>
<tr>
<td>Torque Wrench Calibration Date</td>
<td>NFT #</td>
<td>NFT #</td>
<td>NFT #</td>
<td>NFT #</td>
<td>NFT #</td>
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<tr>
<td>Hardigg Case #</td>
<td>Hardigg Case #</td>
<td>Hardigg Case #</td>
<td>Hardigg Case #</td>
<td>Hardigg Case #</td>
<td>Hardigg Case #</td>
<td>Hardigg Case #</td>
</tr>
</tbody>
</table>

### HARDIGG CASE

| Case exterior | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL |
| Case hardware | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL |
| Orientation markings | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL |
| Foam | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL |
| ABS Spreader | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL |
| Nylon inserts* | PASS/FAIL/NA | PASS/FAIL/NA | PASS/FAIL/NA | PASS/FAIL/NA | PASS/FAIL/NA | PASS/FAIL/NA |
| Foam and shock absorbers | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL |
| Gap in case gasket | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL |
| NFT CAN | CIRCLE ONE | CIRCLE ONE | CIRCLE ONE | CIRCLE ONE | CIRCLE ONE | CIRCLE ONE |
| ID numbers on lid and container match | YES/NO | YES/NO | YES/NO | YES/NO | YES/NO | YES/NO |
| Thread portions of body and lid | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL |
| Lid/body distortion, damage/excessive wear | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL |
| Welds | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL |
| Foam | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL |
| O-rings | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL |
| Load Spreader | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL |
| Bellville washer * | PASS/FAIL/NA | PASS/FAIL/NA | PASS/FAIL/NA | PASS/FAIL/NA | PASS/FAIL/NA | PASS/FAIL/NA |
| Locking mechanism | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL | PASS/FAIL |

* N/A on 1 liter glass bottle assembly.

Attachment 1 CONTINUED ON NEXT PAGE
## HEDGEHOG II ASSEMBLY SHIPMENT CHECKLIST – SIGNOFF SHEET (Cont.)

<table>
<thead>
<tr>
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<th>Sample #</th>
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</thead>
<tbody>
<tr>
<td>Inspect SS PIG</td>
<td>CIRCLE ONE</td>
<td>CIRCLE ONE</td>
<td>CIRCLE ONE</td>
<td>CIRCLE ONE</td>
<td>CIRCLE ONE</td>
<td>CIRCLE ONE</td>
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<tr>
<td>Serial numbers for the lid, base, and body match</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
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<tr>
<td>O-rings and sealing surfaces</td>
<td>PASS/FAIL</td>
<td>PASS/FAIL</td>
<td>PASS/FAIL</td>
<td>PASS/FAIL</td>
<td>PASS/FAIL</td>
<td>PASS/FAIL</td>
</tr>
<tr>
<td>Lube/change O-rings</td>
<td>PASS/FAIL</td>
<td>PASS/FAIL</td>
<td>PASS/FAIL</td>
<td>PASS/FAIL</td>
<td>PASS/FAIL</td>
<td>PASS/FAIL</td>
</tr>
<tr>
<td>Capscrews</td>
<td>PASS/FAIL</td>
<td>PASS/FAIL</td>
<td>PASS/FAIL</td>
<td>PASS/FAIL</td>
<td>PASS/FAIL</td>
<td>PASS/FAIL</td>
</tr>
<tr>
<td>Lifting cable</td>
<td>PASS/FAIL</td>
<td>PASS/FAIL</td>
<td>PASS/FAIL</td>
<td>PASS/FAIL</td>
<td>PASS/FAIL</td>
<td>PASS/FAIL</td>
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<tr>
<td>Glass Bottle</td>
<td>CIRCLE ONE</td>
<td>CIRCLE ONE</td>
<td>CIRCLE ONE</td>
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<td>CIRCLE ONE</td>
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<td>I-Chem black phenolic lid</td>
<td>PASS/FAIL/NA</td>
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<td>PASS/FAIL/NA</td>
<td>PASS/FAIL/NA</td>
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<tr>
<td>Cracks/deformations/flaws</td>
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<td>PASS/FAIL/NA</td>
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### 1 Liter Bottle/250 ml PIG Seal Time

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<tr>
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<th>Time</th>
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</tbody>
</table>
Attachment 2 - Inspections

1.0 STAINLESS STEEL HEDGEHOGS (PIGs) INSPECTION

1.1 The stainless steel hedgehogs (PIGs) shall have all parts present to be shipped, and their serial numbers for the lid, base, and body of each PIG shall match.

1.2 The O-ring sealing surfaces on the container wall and cover of each PIG shall be free from foreign materials, scratches or other imperfections, if base is removed also perform the above inspections.

1.3 The O-ring must be free of twists, dirt residue, flattened areas, stretching, or other damage and sufficiently lubricated with silicone-based lubricant.

1.4 The capscrews shall be free of wear on the threading and hexagonal socket and not stripped. The proper length capscrews shall be installed correctly:
• 250-ml PIG: Top screws will be 1”; Bottom screws will be ¼”

1.5 Inspect the lifting cable to ensure there are no broken wires or damage that would present easy, safe, removal of the shielded cover.

2.0 BOTTLE INSPECTION (For 1-Liter Glass Bottle Shipment Only)

2.1 The 1-liter I-Chem wide mouth glass bottle will have a Qorpak 5082 black phenolic lid with polyethylene disk.

2.2 The glass bottle, lid, and its associated liner shall be free of any cracks, deformations, or flaws that would preclude an effective seal.
3.0 INTERMEDIATE CONTAINER (NFT CAN) INSPECTION

3.1 ID numbers on lid and container shall be verified as identical.

3.2 Inspect thread portions of body and lid to ensure they are free of dirt or foreign materials.

3.3 Inspect lid and body, including thread ring, for distortion, damage or excessive wear such as dents and bulging.

3.4 Inspect welds for cracks or separation.

3.5 Inspect foam for cuts gouges, compression, or moisture that would preclude continued use.

3.6 O-rings are free of cuts, tears, flat spots or brittleness.

3.7 Inspect load spreader is free of cracks and warping.

3.8 When shipping shielded containers, inspect Bellville washer for cracks, raised metal on any faces or edges, and surface free of burrs.

3.9 Locking mechanism shall function properly, allowing the latch to lock into place.
4.0 HARDIGG CASE INSPECTION

4.1 The case exterior shall be free of cracks and dents that degrade the integrity of the case.

4.2 The case hardware shall be inspected for serviceability, and all latches, handles, rivets, attachment rivets, and locking mechanisms must be present and working properly. Rivets shall not be loose enough to allow the latches to move away from the package surface.

4.3 The orientation markings on the case shall be marked accurately (with the internal black, ABS load spreader on the bottom of the packaging). The exterior top of the case shall be marked “This End Up,” with arrows on the two sides of the case accordingly.

4.4 The foam shall be in place, allowing the NFT can assembly to fit snugly, with no significant gouges that would prevent the case from limiting impact (especially on the top orientation of the Hardigg case).

4.5 The ABS spreader shall be in place and not cracked, warped, or distorted.

4.6 If transporting shielded containers, inspect the two nylon inserts for cracking, warping, distortion, or other damage.

4.7 Inspect foam and shock absorbers for damage that would prevent impact-limiting function (i.e., severe gouges, compression).

4.8 Ensure gap in case gasket is oriented at the bottom of the case. Inspect gasket for damage that would preclude future use.
### Checklist 1 - Truck Inspection Checklist

**TRUCK INSPECTION CHECKLIST**

<table>
<thead>
<tr>
<th>Component</th>
<th>Sat</th>
<th>Unsat</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tires and Rims</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coolant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Running Lights</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steering Mechanism</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Horn</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Windshield Wipers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rear/Side Vision Mirrors</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radio (2 way) (or cell phone)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Free of Oil, Grease and Fuel Leaks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brakes</td>
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<tr>
<td>Parking Brake</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Reflector Triangle</td>
<td></td>
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<tr>
<td>Emergency Flashing Lights</td>
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<tr>
<td>Placard</td>
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<tr>
<td>Fire Extinguisher</td>
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</table>

_____________/_____________/_____________
Signature
Print (First & Last)  Date
Driver
# STEEL PIG VISUAL INSPECTION

<table>
<thead>
<tr>
<th>Steel PIG ID No./Sample No.</th>
<th>YES/NO</th>
<th>YES/NO</th>
<th>YES/NO</th>
<th>YES/NO</th>
<th>YES/NO</th>
<th>YES/NO</th>
<th>YES/NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stud and Nuts Are Not Stripped</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
</tr>
<tr>
<td>Nuts and Lock Washers Present</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
</tr>
<tr>
<td>Steel PIG Lid Easy to Remove</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
</tr>
<tr>
<td>Steel PIG Free of Visual Damage</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
</tr>
<tr>
<td>Internal Cavity Free of Foreign Material</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
</tr>
<tr>
<td>PVC (or lead) Insert in Place as directed by FWS</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
</tr>
<tr>
<td>Steel PIG swivel hoist ring torqued to 7 to 8 ft/lbs.</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
</tr>
<tr>
<td>Shock absorbent media in place (e.g., sponge)</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
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Signature / Print (First & Last) / Date

Operations
# Steel PIG Visual Inspection

<table>
<thead>
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<th>Steel PIG ID No./Sample No.</th>
<th>Studs and Nuts Are Not Stripped</th>
<th>Nuts and Lock Washers Present</th>
<th>Steel PIG Lid Easy to Remove</th>
<th>Steel PIG Free of Visual Damage</th>
<th>Internal Cavity Free of Foreign Material</th>
<th>PVC (or lead) Insert in Place as directed by FWS</th>
<th>Steel PIG swivel hoist ring torqued to 7 to 8 ft/lbs.</th>
<th>Shock absorbent media in place (e.g., sponge)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>YES/NO</td>
<td>YES/NO</td>
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</tbody>
</table>

**Signature** / **Print (First & Last)** / **Date**

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**Prepare and Load Hedgehog II Waste Sample Containers & Steel PIGs**

**Data Sheet 1 - Steel PIG (Cont.)**
## Data Sheet 2 – PIG Shipping Container Inspection

### PRE-LOAD INSPECTION

<table>
<thead>
<tr>
<th>Sample number (sample going into shipping container)</th>
<th>PIG Shipping Container Serial Number</th>
<th>Verify bolts are not damaged, galled or corroded and will not affect structural integrity of Shipping Container. Replace, if applicable.</th>
<th>Verify no broken welds are found on Shipping Container.</th>
<th>Verify no dents (&gt; 1/2&quot; in depth) are found on Shipping Container.</th>
<th>Verify no lid distortions on Shipping Container.</th>
<th>O-rings are free of cracking, hardening or stretching.</th>
<th>Shipping Container is free of damage.</th>
<th>Shipping Container seal surfaces are free of visible scratches.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6003_</td>
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<td>Y / N</td>
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## PRE-SHIP INSPECTION

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<th>Y / N</th>
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</thead>
<tbody>
<tr>
<td>Torque wrench is within calibration date.</td>
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<tr>
<td>Nuts on PIG Shipping Container Torqued</td>
<td>Y / N</td>
<td>Y / N</td>
<td>Y / N</td>
<td>Y / N</td>
<td>Y / N</td>
<td>Y / N</td>
</tr>
<tr>
<td>Date PIG Shipping Container Sealed</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Time PIG Shipping Container Sealed</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>External contamination survey is ≤ 22 dpm/cm² beta-gamma</td>
<td>Y / N</td>
<td>Y / N</td>
<td>Y / N</td>
<td>Y / N</td>
<td>Y / N</td>
<td>Y / N</td>
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<tr>
<td>External contamination survey is ≤ 2.2 dpm/cm² alpha</td>
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**Signature** / **Print (First & Last)** / **Date**

**Operations**

**Comments:**
## Data Sheet 3 – Chain of Custody Checklist

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<thead>
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<th></th>
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<th>Sample Number</th>
<th>Sample Number</th>
<th>Sample Number</th>
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<tr>
<td><strong>Supervisor</strong></td>
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<tr>
<td><strong>Date of Sampling</strong></td>
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<td>YES/NO</td>
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<tr>
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<td>YES/NO</td>
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<tr>
<td><strong>Time of Sampling</strong></td>
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<td>YES/NO</td>
<td>YES/NO</td>
<td>YES/NO</td>
</tr>
<tr>
<td><strong>Seal Number</strong></td>
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</tbody>
</table>

**COMMENTS:**

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________


____________________ / __________________________ / __________
Signature                  Print (First & Last)            Date

Operations
### Data Sheet 3 – Chain of Custody Checklist (Cont.)

<table>
<thead>
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**COMMENTS:**

________________________________________  /  ________________________________________________  /  ____________________________
Signature                  Print (First & Last)                  Date

Operations