

INSPECTION OF FSV FUEL STORAGE CONTAINERS AND SUPPORT STOOLS		Identifier: TPR-7812
		Revision*: 3
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INTEC	Technical Procedure	For Additional Info: http://EDMS
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Manual: INTEC FSV3

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*The current revision can be verified on EDMS.

1. INTRODUCTION

1.1 Purpose

Inspect Fuel Storage Containers (FSC), Support Stools (SS), Charge Face Structure (CFS) underside (vault ceiling), and vault wall and floor surfaces for signs of degradation in support of the Aging Management Program (AMP).

1.2 Scope and Applicability

This procedure provides instructions that allow for relocating a shield plug from a Standby Storage Well (SSW) to selected empty vault locations. (SSW shield plugs contain leak test and purge ports. These ports are used to insert viewing equipment into the vault module at an empty vault location.)

This procedure also applies to the application development of remote visual inspection technology for inspection of SSCs Important to Safety within the vaults. Possible vault access points include the cooling air temperature surveillance probe ports on the Charge Face above the inlet and outlet collimator walls, a leak test plug, the emergency release tool access and/or HEPA filter port of a Charge Face Isolation Valve, and through the valve itself. The Precautions and Limitations, Prerequisites, and Instructions sections of this procedure apply where applicable, and will be revised as technology application is proven or disproven for the respective vault access points.

2. PRECAUTIONS AND LIMITATIONS

- 2.1 Personnel must follow the applicable hazard mitigations detailed in Appendix C, "Procedure Hazard Analysis."
- 2.2 A Radiation Work Permit (RWP) is not required for this job. If general area radiation levels exceed 2 mrem/hr or removable contamination levels (beta-gamma) exceed 1,000 dpm/100 cm² (by smear), work must be stopped IMMEDIATELY, the situation investigated, and an RWP issued before proceeding.
- 2.3 If the need arises to suspend operation (such as, for lunch, breaks, end of day, correct deficiency) before completion of the procedure, the following must be done:
 - 2.3.1 Steps necessary to secure handling equipment and/or the crane must be performed and annotated in the margin with signature and date.

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- 2.3.2 When resuming work, the steps necessary to return the handling equipment and/or the crane to operation (including pre-operational crane checks, if required) must be performed and annotated in the margin with signature and date.
- 2.4 Any potential deficiencies, hazard, or abnormal condition noted during the performance of this procedure must be entered in Appendix A, Procedure Discrepancies, and reported verbally to the FSV ISFSI Manager.
- 2.5 The Fuel Storage Containers (FSC), Support Stools (SS), Charge Face Structure (CFS) underside (vault ceiling), and vault wall and floor surfaces must be inspected for signs of degradation in support of the Aging Management Program (AMP). (Technical Specification (TS) 5.5.5 a.)
- 2.5.1 This inspection must be completed every 10 (ten) years (Safety Evaluation Report (SER) 3.2.2).
- 2.6 The Everest XLG3™ Video® Probe System must be connected to a low-impedance earth ground to prevent stray voltage or static electrical charge.
- 2.7 Unnecessary steps may be marked “Not Applicable (N/A),” and minimum personnel requirements and required materials and equipment may be adjusted as appropriate for the evolution.
- 2.8 The crane must NOT be moved when personnel are attached to the fall arrest device on the crane hook.

3. PREREQUISITES

3.1 Planning and Coordination

Initial

- _____ 3.1.1 FSV ISFSI Manager: Ensure, as a minimum, the following personnel are available:
- A. Certified Fuel Handlers (CFH) (3)
 - B. Radiological Control Technicians (RCT)/Radiation Control Monitors (RCM) (2)
 - C. Remote Systems Operator (1)
 - D. Facility Safety Officer (FSO)
 - E. FSV ISFSI Manager.
- _____ 3.1.2 CFH: Ensure this procedure is the most current revision.

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3.2 Performance Documents

- 3.2.1 Ensure the following forms are available for use in this procedure:
- A. Form 434.14, “Pre-Job Briefing Checklist”
 - B. Form 434.15, “Pre-Job Briefing Attendance Record” (if used)
 - C. Form 433.24, “Task Evolution Feedback Form”
 - D. Form 441.49, “ICP Radiation Work Permit” (if used)
 - E. The signed off FHPA FSV#1.
 - F. Form FRM-835, MVDS Crane Inspection Checklist

3.3 Special Tools, Equipment, Parts, and Supplies

- _____ 3.3.1 CFH: Ensure these actions have been performed for the following table:
- A. The identification number and calibration due date for calibrated tools or test equipment have been recorded
 - B. The material or equipment listed is available as needed.

Material and Equipment List		
Item Description	Remarks	Quantity
Torque wrench capable of torquing to 200 ft lbs Upper range of torque wrench _____	S/N _____ Calibration Due Date _____	1
2-3/8-in. socket		
2-3/8-in. open-end wrench		
Breaker bar		
5/8-in socket and ratchet	Used to remove shield plug port plugs	
Leather gloves		
Neoprene, nitrile, or natural rubber gloves	Only required when handling Moly-Kote (or equivalent)	
Safety glasses with side shields	Only required when handling Moly-Kote (or equivalent)	
Moly-Kote lubricant or equivalent		

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Material and Equipment List		
Item Description	Remarks	Quantity
1/2-inch. Allen head socket		
Bucket/tray for bolts		
Ratchet and extension		
Flat blade screwdriver		
RO-20, Micro-rem meter, or equivalent radiation instrument		
177L count rate meter or equivalent		
Substantial footwear		
MVDS Crane	Inspection Due Date _____	
Sling No. 2 (SLG-FSV-2)	Inspection Due Date _____	
Sling No. 3 (SLG-FSV-3)	Inspection Due Date _____	
Sling No. 4 (SLG-FSV-4)	Inspection Due Date _____	
Fall protection harnesses	Inspection Due Date _____	A/R
Fall protection lanyards	Inspection Due Date _____	A/R
Fall protection fall arrest device	Inspection Due Date _____	A/R
Fall protection connector straps	Inspection Due Date _____	A/R
Video inspection equipment	Specified by engineering	
Everest XLG3™ Video® Probe System		
Probe delivery system(s)		
Optical camera tips		
Calibrated measurement verification block	Serial No. 6D46, Calibration Due Date 2/28/18	
Extension cord		

3.4 Training

3.4.1 Ensure the training requirements of Appendix C are met.

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4. INSTRUCTIONS

NOTE 1: *Unless designated in front of the step, a Certified Fuel Handler (CFH) is the person performing the steps.*

NOTE 2: *Steps 4.1.1 through 4.1.8 may be performed in any order as directed by the job supervisor.*

4.1 Perform preoperational steps.

_____ 4.1.1 FSV ISFSI Manager: Conduct a prejob briefing (use Form 434.14, “Pre-Job Briefing Checklist,” and Form 434.15, “Pre-Job Briefing Attendance Record,” if needed) with the operations personnel and complete the following items:

- A. A discussion of safety precautions and emergency actions
- B. A review of Section 4 of this procedure
- C. Assurance that training and qualification of personnel are current
- D. RCT/RCM coverage has been assigned to provide radiological control surveillance when needed during the performance of this procedure.

_____ 4.1.2 FSO: Check the FSV Fuel Inventory Operator Aid to identify an SSW and a vault location not loaded with an FSC.

| _____ 4.1.3 FSV ISFSI Manager: Designate the SSW and/or vault location to be used.

SSW: _____ Vault: _____

_____ 4.1.4 FSO: Inspect the work area and ensure that it is free of any hazards that would make completion of this procedure unsafe.

_____ 4.1.5 FSO: Ensure TPR-5612, “Annual Inspection of the MVDS Crane and CHM Dead Stop Device,” has been completed (required every 12 months) (SR 3.2.2.1).

Date performed: _____ Date due: _____

_____ 4.1.6 FSO: Ensure TPR-5606, “Inspection of FSV ISFSI Isolation Valves and Shield Plug Handling Devices,” has been completed at intervals not to exceed every 12 months during use.

Date performed: _____ Date due: _____

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_____ 4.1.7 FSV ISFSI Manager: Verify that the prerequisites and preoperational Steps 4.1.1 through 4.1.6 have been satisfied.

_____ FSV ISFSI Manager _____ Date

4.1.7.1 Log the procedure in the FSV Daily Operations Log and release it to commence work.

_____ 4.1.8 FSO: Ensure the Charge Face is posted as a “Control Area.”

4.2 Perform daily crane checks (if not already performed).

NOTE: *Section 4.2 may be performed concurrently with positioning the crane and attaching rigging and must be completed prior to lifting a load.*

_____ 4.2.1 Insert Key No. 1 into lock on crane control pendant and turn clockwise.

_____ 4.2.2 Press the POWER ON button on the crane control pendant.

4.2.2.1 Visually ensure that the tornado clamps have released by observing the lamps on the crane pendant are extinguished.

_____ 4.2.3 Ensure the crane hook is at the upper datum.

_____ 4.2.4 Perform daily check of the crane. (SAR 9.2.4, Table 9.2-1)

4.2.4.1 Traverse the crane bridge north and south to ensure the bridge limits function.

4.2.4.2 Traverse the crane trolley west and east to ensure the trolley limits function.

4.2.4.3 Lower the crane hoist to the change of speed then raise the hook to ensure the motion limit and the upper datum (MVDS Crane hoist upper limit switch) function properly.

4.2.4.4 Lower the crane hoist to eye level and inspect the hook and wire rope for obvious deficiencies.

4.3 IF the SSW lid needs to be removed, THEN remove SSW lid.

_____ 4.3.1 Attach Sling No. 4 to the crane hook.

_____ 4.3.2 Traverse crane and Sling No. 4 and then align over SSW.

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- _____ 4.3.3 Install the lifting eyebolts with links into the SSW lid and attach a tagline.
- _____ 4.3.4 Remove the SSW 1/2-in. Allen head lid bolts.
- _____ 4.3.5 Lower the crane hook with Sling No. 4 and attach the sling hooks (with hooks facing out) to the eyebolts on the lid.

NOTE: *Step 4.3.6 is performed concurrently with Step 4.3.7 or 4.3.8.*

- 4.3.6 RCT/RCM: Perform radiation and contamination surveys of the storage well area as the SSW lid is raised.

_____ Signature _____ Date

- _____ 4.3.7 IF SSW lid O-rings are to be installed, THEN position the SSW lid per the applicable steps of TPR-5659.
- _____ 4.3.8 IF SSW lid O-rings are NOT to be installed, THEN traverse the crane and SSW lid to a position as designated by the Job Supervisor.
- _____ 4.3.9 Lower the SSW lid to seat at the designated position.
- _____ 4.3.10 IF leaving the sling attached to the SSW lid, GO TO Step 4.3.14, and continue with procedure, WITHOUT RETURNING TO this step.
- _____ 4.3.11 Remove Sling No. 4 from the SSW lid.

NOTE: *Steps 4.3.13 through 4.3.14 may be worked concurrently with Step 4.3.12.*

- _____ 4.3.12 IF directed by Job Supervisor, THEN remove the lifting eyebolts from the designated SSW lid.
- _____ 4.3.13 Traverse the crane with Sling No. 4 attached to the sling laydown area.
- 4.3.14 Remove Sling No. 4 from the crane hook.

4.4 Install IV at the vault location.

- _____ 4.4.1 IF an IV is already located (not bolted) at the designated vault location, GO TO Step 4.4.12 WITHOUT RETURNING TO this step.

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NOTE: *Steps 4.4.2 through 4.4.8 may be worked in any sequence as directed by the job supervisor.*

_____ 4.4.2 Attach Sling No. 3 to crane hook.

WARNING

The weight and configuration of the IVs make them difficult to control during tagging. Due to the combination of the potential tripping hazard of the charge face and the difficulty of IV tagging, IF EXTREME CAUTION IS NOT EXERCISED WHEN TRAVERSING AN IV, INJURY TO PERSONNEL COULD RESULT.

_____ 4.4.3 Traverse the crane to align Sling No. 3 with the IV.

4.4.3.1 USE EXTREME CAUTION when traversing an IV.

_____ 4.4.4 Install the lifting eyebolts with links to the IV.

4.4.4.1 Attach two tags lines to the IV.

4.4.4.2 Assign two riggers to the tag lines.

_____ 4.4.5 Remove the dust covers from the bolt holes and from the shield plug-lifting hole at the vault location.

_____ 4.4.6 Install the two IV location pegs at the vault location in accordance with Appendix B, IV Positioning and Bolting Pattern.

_____ 4.4.7 Connect Sling No. 3 to the eyebolts with hooks facing out.

4.4.8 If needed, remove the IV bolts.

4.4.8.1 First CFH (Performer): Remove all IV bolts.

Signature Date

4.4.8.2 Second CFH: Verify (independent) all IV bolts have been removed.

Signature Date

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_____ 4.4.9 Traverse and align the IV at the vault location.

4.4.9.1 Place valve mechanism of the IV ONLY in a southwest direction.

_____ 4.4.10 Lower the IV to the vault location ensuring correct alignment on the location pegs.

NOTE: *Steps 4.4.11 through 4.4.15 may be worked in conjunction with Steps 4.5.1 through 4.5.10.*

_____ 4.4.11 Disconnect Sling No. 3 from the eyebolts.

NOTE: *Steps 4.4.12 and 4.4.15 may be worked in any sequence as directed by the job supervisor.*

_____ 4.4.12 Remove eyebolts from the IV (if installed).

_____ 4.4.13 Bolt the IV at the vault location.

4.4.14 Two CFH: Torque the IV bolts.

4.4.14.1 First CFH (Performer): Torque the IV bolts to 200 ft·lbs with the exception of the short bolt located under the IV plunger, per the IV positioning and bolting pattern in Appendix B.

Signature Date

4.4.14.2 Second CFH: Verify (witness) the specified IV bolts have been torqued to 200 ft·lbs per the IV positioning and bolting pattern in Appendix B.

Signature Date

_____ 4.4.15 Hand tighten the short bolt using a 2-3/8 in. open-end wrench as applicable.

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4.5 Install IV at the SSW.

NOTE: *If an IV is already installed at the designated SSW, all of section 4.5 may NOT have to be performed.*

WARNING

The weight and configuration of the IVs make them difficult to control during tagging. Due to the combination of the potential tripping hazard of the charge face and the difficulty of IV tagging, IF EXTREME CAUTION IS NOT EXERCISED WHEN TRAVERSING AN ISOLATION VALVE, INJURY TO PERSONNEL COULD RESULT.

NOTE: *Steps 4.5.1 through 4.5.8 may be worked out of sequence.*

- 4.5.1 USE EXTREME CAUTION when traversing an IV.
- _____ 4.5.2 Install the lifting eyebolts with links to the IV.
 - 4.5.2.1 Attach two tag lines to the IV.
 - 4.5.2.2 Assign two riggers to the tag lines.
- _____ 4.5.3 Remove the dust covers from the bolts holes and the shield plug-lifting hole.
- _____ 4.5.4 Install the two IV location pegs at the SSW in accordance with Appendix B.
- _____ 4.5.5 If needed, remove the IV bolts.
 - 4.5.5.1 First CFH (Performer): Remove all IV bolts.

_____	_____
Signature	Date
 - 4.5.5.2 Second CFH: Verify (independent) all IV bolts have been removed.

_____	_____
Signature	Date
- _____ 4.5.6 Attach Sling No. 3 to the lifting eyebolts.

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NOTE: *Step 4.5.7 and associated surveys may be performed concurrently with Step 4.5.8.*

4.5.7 RCT/RCM: Perform radiation and contamination surveys while lifting and initially traversing the IV.

_____ Signature _____ Date

_____ 4.5.8 Traverse and align the IV at the SSW.
 4.5.8.1 Place the valve mechanism of the IV ONLY in a southwest direction.

_____ 4.5.9 Lower the IV to the SSW ensuring correct alignment on the location pegs.

NOTE: *Steps 4.5.10 through 4.5.14 may be worked out of sequence as directed by the job supervisor.*

_____ 4.5.10 Disconnect Sling No. 3 from the eyebolts.

_____ 4.5.11 Traverse the crane to the sling laydown area.

_____ 4.5.12 Disconnect Sling No. 3 from the crane hook.

_____ 4.5.13 Remove eyebolts from the IV.

_____ 4.5.14 Bolt the IV at the SSW.

_____ 4.5.15 Hand tighten the short bolt using a 2-3/8 in. open-end wrench as applicable.

4.5.16 Two CFH: Torque the IV bolts.

4.5.16.1 First CFH (Performer): Torque the IV bolts to 200 ft·lbs with the exception of the short bolt located at the IV plunger, per the IV positioning and bolting pattern in Appendix B.

_____ Signature _____ Date

4.5.16.2 Second CFH: Verify (witness) the specified IV bolts have been torqued to 200 ft·lbs per the IV positioning and bolting pattern in Appendix B.

_____ Signature _____ Date

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4.6 Install Shield Plug Handling Device (SPHD) 1 to IV at vault location.

- _____ 4.6.1 Connect Sling No. 2 to crane hook.
- _____ 4.6.2 Connect fall arrest device to crane hook using connector strap as needed.
- _____ 4.6.3 Traverse Sling No. 2 and fall arrest device to align with SPHD 1 located at its parked position.
- _____ 4.6.4 Don fall protection equipment.

WARNING

Moving the crane when personnel are attached to the fall arrest device on the crane hook could result in personnel injury.

- _____ 4.6.5 Do NOT move the crane when personnel are attached to the fall arrest device on the crane hook.
 - _____ 4.6.6 Connect fall arrest device to fall protection equipment.
 - _____ 4.6.7 Connect Sling No. 2 to SPHD 1.
 - _____ 4.6.8 Disconnect fall arrest device from fall protection equipment.
 - _____ 4.6.9 Doff fall protection equipment.
 - _____ 4.6.10 Traverse and align SPHD 1 at the IV positioned at the vault location ensuring a tag line is used.
 - _____ 4.6.11 Lower SPHD 1 to seat on the IV, ensuring correct alignment has been achieved using the locating pins.
 - _____ 4.6.12 Rotate SPHD 1 clockwise by hand to engage the valve interlock, allowing the IV to be opened.
- 4.7 Open the IV and remove the shield plug at the vault location.
- _____ 4.7.1 Fully open the IV by the hand drive.
 - _____ 4.7.2 Remove the lifting pin from SPHD 1.
 - _____ 4.7.3 Lower the rod to engage on the shield plug.
 - _____ 4.7.4 Disconnect Sling No. 2 from SPHD 1.

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NOTE: *Indication of proper lifting rod thread engagement is by the lifting rod traveling approximately the length of the wide red band.*

_____ 4.7.5 Screw the lifting rod into the shield plug.

_____ 4.7.6 Connect Sling No. 2 to SPHD 1.

NOTE: *Indications are given on the lifting rod to assist the operator to line up the lifting pin and avoid attempting to lift the complete SPHD off the IV prior to disconnecting the interlock.*

First a green band appears on the lifting rod indicating a further 6 in. of lift is required to align the lifting pin, second an orange band appears on the lifting rod indicating a further 3 in. of lift is required to align the lifting pin. The pin is aligned when the 1-in. plain band is exposed below the orange band. The appearance of a red band indicates that the lifting rod is being raised too high for location of the lifting pin.

_____ 4.7.7 Raise the lifting rod and shield plug into SPHD 1 to the 1-in. plain band.

_____ 4.7.8 Align the lifting pin holes and insert the lifting pin.

_____ 4.7.9 Fully close the IV by the hand drive.

_____ 4.7.10 Rotate SPHD 1 counter-clockwise to disengage the valve interlock.

_____ 4.7.11 Raise SPHD 1 to the crane upper datum.

NOTE: *Step 4.7.12 may be performed concurrently with Steps 4.7.13 through 4.7.15.*

4.7.12 RCT/RCM: Perform radiation and contamination surveys of the top of the IV gate.

Signature

Date

| _____ 4.7.13 Ensure all personnel in the truck bay are clear of suspended loads.

NOTE 1: *The normal shield plug laydown position for this evolution is the receptacle at the CLUP.*

NOTE 2: *Steps 4.7.14 and 4.7.15 may be worked concurrently.*

_____ 4.7.14 Ensure the cover has been removed from the shield plug laydown position.

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_____ 4.7.15 Traverse SPHD 1 to the shield plug laydown position using a tag line.

_____ 4.7.16 Lower SPHD 1 to seat.

4.8 Remove the shield plug from SPHD 1 and position SPHD 1 at the SSW.

_____ 4.8.1 Remove the lifting pin from SPHD 1.

_____ 4.8.2 Lower the shield plug to rest in its laydown position.

_____ 4.8.3 Disconnect Sling No. 2 from SPHD 1.

_____ 4.8.4 Fully unscrew the lifting rod from the shield plug.

_____ 4.8.5 Connect Sling No. 2 to SPHD 1.

NOTE: *Indications are given on the lifting rod to assist the operator to line up the lifting pin.*

First a green band appears on the lifting rod indicating a further 6 in. of lift is required to align the lifting pin, second an orange band appears on the lifting rod indicating a further 3 in. of lift is required to align the lifting pin. The pin is aligned when the 1-in. plain band is exposed below the orange band. The appearance of a red band indicates that the lifting rod is being raised too high for location of the lifting pin.

_____ 4.8.6 Raise the lifting rod into SPHD 1.

_____ 4.8.7 Align the lifting pin holes and insert the lifting pin.

_____ 4.8.8 Traverse SPHD 1 to the IV at the SSW ensuring a tag line is used.

_____ 4.8.9 Lower SPHD 1 to seat on the IV ensuring correct alignment has been achieved using the locating pins.

_____ 4.8.10 Rotate SPHD 1 clockwise by hand to engage the valve interlock allowing the IV to be opened.

4.9 Open the IV at the SSW and remove the shield plug.

_____ 4.9.1 Fully open the IV by the hand drive.

_____ 4.9.2 Remove the lifting pin from SPHD 1.

_____ 4.9.3 Lower rod to engage on the shield plug.

_____ 4.9.4 Disconnect Sling No. 2 from SPHD 1.

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NOTE: *Indication of proper lifting rod thread engagement is by the lifting rod traveling approximately the length of the wide red band.*

_____ 4.9.5 Screw the lifting rod into the shield plug.

_____ 4.9.6 Connect Sling No. 2 to SPHD 1.

NOTE: *Indications are given on the lifting rod to assist the operator to line up the lifting pin and avoid attempting to lift the complete SPHD off the IV prior to disconnecting the interlock.*

First a green band appears on the lifting rod indicating a further 6 in. of lift is required to align the lifting pin. Second an orange band appears on the lifting rod indicating a further 3 in. of lift is required to align the lifting pin. The pin is aligned when the 1-in. plain band is exposed below the orange band. The appearance of a red band indicates that the lifting rod is being raised too high for location of the lifting pin.

_____ 4.9.7 Raise the lifting rod and shield plug into SPHD 1 to the 1-in. plain band.

_____ 4.9.8 Align the lifting pin holes and insert the lifting pin.

_____ 4.9.9 Fully close the IV by the hand drive.

_____ 4.9.10 Rotate SPHD 1 counter-clockwise to disengage the valve interlock.

_____ 4.9.11 Raise SPHD 1 to the crane upper datum.

NOTE: *Step 4.9.12 may be performed concurrently with Step 4.9.13.*

4.9.12 RCT/RCM: Perform radiation and contamination surveys of the top of the IV gate.

_____ Signature _____ Date

_____ 4.9.13 Traverse SPHD 1 to the IV at the vault location ensuring a tag line is used.

4.10 Install SPHD 1 to IV at the vault location.

_____ 4.10.1 Lower SPHD 1 to seat on the IV ensuring correct alignment has been achieved using the locating pins.

_____ 4.10.2 Rotate SPHD 1 clockwise by hand to engage the valve interlock allowing the IV to be opened.

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- 4.11 Open the IV and install the shield plug at the vault location.
- _____ 4.11.1 Fully open the IV by the hand drive.
- _____ 4.11.2 Remove the lifting pin from SPHD 1.
- _____ 4.11.3 Lower the shield plug to seat in the vault.
- _____ 4.11.4 Disconnect Sling No. 2 from SPHD 1.
- _____ 4.11.5 Unscrew the lifting rod from the shield plug.
- _____ 4.11.6 Connect Sling No. 2 to SPHD 1.

NOTE: *Indications are given on the lifting rod to assist the operator to line up the lifting pin and avoid attempting to lift the complete SPHD off the IV prior to disconnecting the interlock.*

First a green band appears on the lifting rod indicating a further 6-in. of lift is required to align the lifting pin, second an orange band appears on the lifting rod indicating a further 3-in. of lift is required to align the lifting pin. The pin is aligned when the 1-in. plain band is exposed below the orange band. The appearance of a red band indicates that the lifting rod is being raised too high for location of the lifting pin.

- _____ 4.11.7 Raise the lifting rod into SPHD 1 to the 1-in. plain band.
- 4.11.7.1 Align the lifting pin holes and insert the lifting pin.
- _____ 4.11.8 Fully close the IV valve by the hand drive.
- _____ 4.11.9 Rotate SPHD 1 counter-clockwise to disengage the valve interlock.

NOTE: *Step 4.11.10 may be performed concurrently with Step 4.11.11.*

- 4.11.10 RCT/RCM: Perform general area radiation and contamination surveys while lifting and initially traversing SPHD 1.

Signature

Date

- _____ 4.11.11 Traverse SPHD 1 to the laydown area ensuring a tag line is used.
- _____ 4.11.12 Don fall protection equipment.

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WARNING

Moving the crane when personnel are attached to the fall arrest device on the crane hook could result in personnel injury.

- _____ 4.11.13 Do NOT move the crane when personnel are attached to the fall arrest device on the crane hook.
- _____ 4.11.14 Connect fall arrest device to fall protection equipment.
- _____ 4.11.15 Disconnect Sling No. 2 from SPHD 1.
- _____ 4.11.16 Disconnect fall arrest device from fall protection equipment.
- _____ 4.11.17 Doff fall protection equipment.
- _____ 4.11.18 Traverse the crane to the sling laydown area.
- _____ 4.11.19 Disconnect Sling No. 2 and fall arrest device from the crane hook.
- _____ 4.11.20 Connect Sling No. 3 to the crane hook.
- 4.12 Remove the IV from the vault location.

NOTE: *Steps 4.12.1 through 4.12.5 may be worked out-of-sequence as directed by the job supervisor.*

- _____ 4.12.1 Align Sling No. 3 to the IV located at the vault.
- 4.12.2 CFH: Unbolt the IV from the vault.
 - 4.12.2.1 First CFH (Performer): Remove the IV bolts.

Signature	Date
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- 4.12.2.2 Second CFH: Verify (independent) IV bolts have been removed.

Signature	Date
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**INSPECTION OF FSV FUEL STORAGE CONTAINERS
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- _____ 4.12.3 Install the IV eyebolts with links to the IV.
- 4.12.3.1 Attach two tag lines to the IV.
- 4.12.3.2 Assign two riggers to the tag lines.
- _____ 4.12.4 Lower Sling No. 3 and connect to eyebolt links and attach two tag lines.

NOTE: *Step 4.12.5 and associated surveys may be performed concurrently with Step 4.12.6.*

- 4.12.5 RCT/RCM: Perform radiation and contamination surveys while lifting and initially traversing the IV.

Signature

Date

WARNING

The weight and configuration of the IVs make them difficult to control during tagging. Due to the combination of the potential tripping hazard of the charge face and the difficulty of IV tagging, IF EXTREME CAUTION IS NOT EXERCISED WHEN TRAVERSING AN ISOLATION VALVE INJURY TO PERSONNEL COULD RESULT.

- _____ 4.12.6 Traverse the IV to IV laydown area.
- 4.12.6.1 USE EXTREME CAUTION when traversing an IV.
- _____ 4.13 IF other means of access are to be used (for example, HEPA port, emergency release tool port, or directly through the IV), THEN configure the area as needed and attach documentation of the configuration.

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4.14 Perform video inspection of vault area.

NOTE: *Step 4.14.1 may be performed concurrently with Step 4.14.2.*

4.14.1 RCT/RCM: Perform a contamination survey of the plugs as they are removed from the shield plug ports (if removed), or other equipment if used, and a radiation survey of the open ports or access areas.

_____ Signature _____ Date

_____ 4.14.2 Remove the plugs from the shield plug ports.

CAUTION:
Inserting the video inspection equipment too far could result in contamination of the equipment.

_____ 4.14.3 Insert the video inspection equipment through the shield plug ports or access areas, but NOT too far.

_____ 4.14.4 Perform the video inspection as directed by Engineering, to include the FSC, SS, CFS underside (vault ceiling), and vault wall and floor surfaces, for signs of degradation. (TS 5.5.5 a.)

NOTE: *Step 4.14.5 may be worked in conjunction with Step 4.14.6.*

4.14.5 RCT/RCM: Perform radiological surveys as the video inspection equipment is removed and port plugs or other equipment items are re-installed.

_____ Signature _____ Date

_____ 4.14.6 Remove the video inspection equipment from the shield plug ports or access areas.

NOTE: *Steps 4.14.7 and 4.14.8 may be performed concurrently.*

_____ 4.14.7 Store the video inspection equipment as directed by supervision.

_____ 4.14.8 Reinstall the plugs in the shield plug ports.

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4.15 Reinstall the IV at the vault location.

WARNING

The weight and configuration of the IVs make them difficult to control during tagging. Due to the combination of the potential tripping hazard of the charge face and the difficulty of IV tagging, IF EXTREME CAUTION IS NOT EXERCISED WHEN TRAVERSING AN ISOLATION VALVE INJURY TO PERSONNEL COULD RESULT.

- _____ 4.15.1 Traverse and align the IV at the vault location.
- 4.15.1.1 USE EXTREME CAUTION when traversing an IV.
- 4.15.1.2 Place valve mechanism of the IV ONLY in a southwest direction.
- _____ 4.15.2 Lower the IV to the vault location ensuring correct alignment on the location pegs.
- _____ 4.15.3 Disconnect Sling No. 3 from the IV.
- | **NOTE:** *Steps 4.15.4 through 4.15.9 may be worked in any sequence as directed by the job supervisor.*
- _____ 4.15.4 Remove eyebolts from the IV.
- _____ 4.15.5 Bolt the IV at the vault location.
- 4.15.6 Two CFH: Torque the IV bolts.
- 4.15.6.1 First CFH (Performer): Torque the IV bolts to 200 ft·lbs with the exception of the short bolt located under the IV plunger, per the IV positioning and bolting pattern in Appendix B.

Signature

Date

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4.15.6.2 Second CFH: Verify (witness) the specified IV bolts have been torqued to 200 ft·lbs per the IV positioning and bolting pattern in Appendix B.

Signature

Date

- _____ 4.15.7 Hand tighten the short bolt using a 2-3/8 in. open-end wrench as applicable.
- _____ 4.15.8 Traverse the crane to the sling laydown area.
- _____ 4.15.9 Disconnect Sling No. 3 from the hook.
- 4.16 Install Shield Plug Handling Device (SPHD) 1 to IV at vault location.
- _____ 4.16.1 Connect Sling No. 2 to crane hook.
- _____ 4.16.2 Connect fall arrest device to crane hook using connector strap as needed.
- _____ 4.16.3 Traverse Sling No. 2 and fall arrest device to align with SPHD 1 located at its parked position.
- _____ 4.16.4 Don fall protection equipment.

WARNING

Moving the crane when personnel are attached to the fall arrest device on the crane hook could result in personnel injury.

- _____ 4.16.5 Do NOT move the crane when personnel are attached to the fall arrest device on the crane hook.
- _____ 4.16.6 Connect fall arrest device to fall protection equipment.
- _____ 4.16.7 Connect Sling No. 2 to SPHD 1.
- _____ 4.16.8 Disconnect fall arrest device from fall protection equipment.
- _____ 4.16.9 Doff fall protection equipment.
- _____ 4.16.10 Traverse and align SPHD 1 at the IV positioned at the vault location ensuring a tag line is used.

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_____ 4.16.11 Lower SPHD 1 to seat on the IV, ensuring correct alignment has been achieved using the locating pins.

_____ 4.16.12 Rotate SPHD 1 clockwise by hand to engage the valve interlock, allowing the IV to be opened.

4.17 Open the IV and remove the shield plug at the vault location.

_____ 4.17.1 Fully open the IV by the hand drive.

_____ 4.17.2 Remove the lifting pin from SPHD 1.

_____ 4.17.3 Lower the rod to engage on the shield plug.

_____ 4.17.4 Disconnect Sling No. 2 from SPHD 1.

NOTE: *Indication of proper lifting rod thread engagement is by the lifting rod traveling approximately the length of the wide red band.*

_____ 4.17.5 Screw the lifting rod into the shield plug.

_____ 4.17.6 Connect Sling No. 2 to SPHD 1.

NOTE: *Indications are given on the lifting rod to assist the operator to line up the lifting pin and avoid attempting to lift the complete SPHD off the IV prior to disconnecting the interlock.*

First a green band appears on the lifting rod indicating a further 6 in. of lift is required to align the lifting pin, second an orange band appears on the lifting rod indicating a further 3 in. of lift is required to align the lifting pin. The pin is aligned when the 1-in. plain band is exposed below the orange band. The appearance of a red band indicates that the lifting rod is being raised too high for location of the lifting pin.

_____ 4.17.7 Raise the lifting rod and shield plug into SPHD 1 to the 1-in. plain band.

_____ 4.17.8 Align the lifting pin holes and insert the lifting pin.

_____ 4.17.9 Fully close the IV by the hand drive.

_____ 4.17.10 Rotate SPHD 1 counter-clockwise to disengage the valve interlock.

_____ 4.17.11 Raise SPHD 1 to the crane upper datum.

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NOTE: *Indications are given on the lifting rod to assist the operator to line up the lifting pin and avoid attempting to lift the complete SPHD off the IV prior to disconnecting the interlock.*

First a green band appears on the lifting rod indicating a further 6-in. of lift is required to align the lifting pin, second an orange band appears on the lifting rod indicating a further 3-in. of lift is required to align the lifting pin. The pin is aligned when the 1-in. plain band is exposed below the orange band. The appearance of a red band indicates that the lifting rod is being raised too high for location of the lifting pin.

- _____ 4.19.7 Raise the lifting rod into SPHD 1 to the 1-in. plain band.
 - 4.19.7.1 Align the lifting pin holes and insert the lifting pin.
- _____ 4.19.8 Fully close the IV valve by the hand drive.
- _____ 4.19.9 Rotate SPHD 1 counter-clockwise to disengage the valve interlock.
- 4.20 Install Shield Plug into SPHD 1 and install to IV at the vault location.

NOTE: *Step 4.20.1 may be performed concurrently with Step 4.20.2.*

4.20.1 RCT/RCM: Perform radiation and contamination surveys while lifting and initially traversing SPHD 1.

_____ Signature _____ Date

- _____ 4.20.2 Traverse SPHD 1 to the shield plug laydown area ensuring a tag line is used.
- _____ 4.20.3 Lower the SPHD 1 and align with the shield plug.
- _____ 4.20.4 Remove the lifting pin from SPHD 1.
- _____ 4.20.5 Lower the lifting rod to engage the shield plug.
- _____ 4.20.6 Disconnect Sling No. 2 from SPHD 1.
- _____ 4.20.7 Fully screw the lifting rod into the shield plug.
- _____ 4.20.8 Connect Sling No. 2 to SPHD 1.

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NOTE: *Indications are given on the lifting rod to assist the operator to line up the lifting pin. First a green band appears on the lifting rod indicating a further 6 in. of lift is required to align the lifting pin. Second, an orange band appears on the lifting rod indicating a further 3 in. of lift is required to align the lifting pin. The pin is aligned when the 1-in. plain band is exposed below the orange band. The appearance of a red band indicates that the lifting rod is being raised too high for location of the lifting pin.*

_____ 4.20.9 Raise the lifting rod and shield plug into SPHD 1 to the 1-in. plain band.

4.20.9.1 Align the lifting pin holes and insert the lifting pin.

NOTE: *Step 4.20.10 may be performed concurrently with Step 4.20.11.*

4.20.10 RCT/RCM: Perform radiation and contamination surveys while lifting and initially traversing SPHD 1.

_____ Signature _____ Date

_____ 4.20.11 Traverse SPHD 1 to the vault location ensuring a tag line is used.

_____ 4.20.12 Lower SPHD 1 to seat on the IV, ensuring correct alignment has been achieved using the locating pins.

_____ 4.20.13 Rotate SPHD 1 clockwise by hand to engage the valve interlock, allowing the IV to be opened.

4.21 Open the IV and install the shield plug at the vault location.

_____ 4.21.1 Fully open the IV.

_____ 4.21.2 Remove the lifting pin from SPHD 1.

_____ 4.21.3 Lower the shield plug to seat into the vault location.

_____ 4.21.4 Disconnect Sling No. 2 from SPHD 1.

_____ 4.21.5 Fully unscrew the lifting rod from the shield plug.

_____ 4.21.6 Connect Sling No. 2 to SPHD 1.

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NOTE: *Indications are given on the lifting rod to assist the operator to line up the lifting pin and avoid attempting to lift the complete SPHD off the IV prior to disconnecting the interlock.*

First a green band appears on the lifting rod indicating a further 6 in. of lift is required to align the lifting pin, second an orange band appears on the lifting rod indicating a further 3 in. of lift is required to align the lifting pin. The pin is aligned when the 1-in. plain band is exposed below the orange band. The appearance of a red band indicates that the lifting rod is being raised too high for location of the lifting pin.

_____ 4.21.7 Raise the lifting rod to the 1-in. plain band.

4.21.7.1 Align the lifting pin holes and insert the lifting pin.

_____ 4.21.8 Fully close the IV.

_____ 4.21.9 Rotate SPHD 1 counter-clockwise to disengage the valve interlock.

NOTE: *Step 4.21.10 may be performed concurrently with Step 4.21.11.*

4.21.10 RCT/RCM: Perform general area radiation and contamination surveys while lifting and initially traversing SPHD 1.

Signature

Date

NOTE: *The normal SPHD 1 laydown position is the storage stand located on the charge face.*

_____ 4.21.11 Traverse SPHD 1 to the laydown position ensuring a tag line is used.

_____ 4.21.12 Lower SPHD 1 to the laydown position.

_____ 4.21.13 Don fall protection equipment.

WARNING

Moving the crane when personnel are attached to the fall arrest device on the crane hook could result in personnel injury.

_____ 4.21.14 Do NOT move the crane when personnel are attached to the fall arrest device on the crane hook.

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- _____ 4.21.15 Connect fall arrest device to fall protection equipment.
- _____ 4.21.16 Disconnect Sling No. 2 from SPHD 1.
- _____ 4.21.17 Disconnect fall arrest device from fall protection equipment.
- _____ 4.21.18 Doff fall protection equipment.
- _____ 4.21.19 Traverse the crane to the sling laydown area.
- _____ 4.21.20 Disconnect Sling No. 2 and fall arrest device from the crane hook.
- 4.22 Remove the IV from the vault location.

NOTE: *Steps 4.22.1 through 4.22.5 may be worked out of sequence.*

- _____ 4.22.1 Attach Sling No. 3 to the crane hook.
- _____ 4.22.2 Traverse Sling No. 3 and align to the IV located at the vault location.
- _____ 4.22.3 Unbolt the IV from the vault location and store the bolts.
 - 4.22.3.1 First CFH (Performer): Remove the IV bolts.

Signature _____
Date

- 4.22.3.2 Second CFH: Verify (independent) IV bolts have been removed.

Signature _____
Date

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WARNING

The weight and configuration of the IVs make them difficult to control during tagging. Due to the combination of the potential tripping hazard of the charge face and the difficulty of IV tagging, IF EXTREME CAUTION IS NOT EXERCISED WHEN TRAVERSING AN ISOLATION VALVE, INJURY TO PERSONNEL COULD RESULT.

4.22.4 USE EXTREME CAUTION when traversing an IV.

_____ 4.22.5 Install the lifting eyebolts with links.

4.22.5.1 Attach two tag lines to the IV.

4.22.5.2 Assign two riggers to the tag lines.

_____ 4.22.6 Lower Sling No. 3 and connect to eyebolt links.

_____ 4.22.7 IF performing additional inspection(s)
THEN position the IV at the next location per Steps 4.22.9 and 4.22.11.

_____ 4.22.8 IF NOT performing additional inspection(s)
THEN move isolation IV to a laydown area per Steps 4.22.9, 4.22.10 and 4.22.12 through 4.22.15.

NOTE: *Step 4.22.9 may be performed concurrently with Step 4.22.10 or 4.22.11.3 (as applicable) as directed by the job supervisor.*

4.22.9 RCT/RCM: Perform general area radiation and contamination surveys while lifting and initially traversing the IV.

_____ Signature

_____ Date

_____ 4.22.10 Traverse the IV to IV laydown area ensuring two tag lines and riggers are used.

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4.22.11 Position the IV for the next inspection.

NOTE: *Steps 4.22.11.1 and 4.22.11.2 may be performed concurrently with Step 4.22.11.3.*

4.22.11.1 Remove the dust caps from bolt holes and from the shield plug-lifting hole at the vault location.

Vault: _____

4.22.11.2 Install the two IV location pegs at the vault location in accordance with Appendix B.

WARNING

The weight and configuration of the IVs make them difficult to control during tagging. Due to the combination of the potential tripping hazard of the charge face and the difficulty of IV tagging, IF EXTREME CAUTION IS NOT EXERCISED WHEN TRAVERSING AN ISOLATION VALVE INJURY TO PERSONNEL COULD RESULT.

4.22.11.3 Traverse the IV to the next vault location to be inspected ensuring two tag lines and riggers are used.

4.22.11.3.1 USE EXTREME CAUTION when traversing an IV.

4.22.11.4 Place valve mechanism of the IV ONLY in a southwest direction.

4.22.11.5 Lower the IV to the vault location ensuring correct alignment on the location pegs.

4.22.11.6 Traverse Sling No. 3 to the sling laydown area.

4.22.11.7 Disconnect Sling No. 3 from the crane hook.

4.22.11.8 Install the dust covers for the bolt holes and shield plug lifting hole at the previous vault location.

4.22.11.9 Mark Steps 4.22.12 through 4.22.15 and Sections 4.23 through 4.24 as “N/A”.

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- _____ 4.22.12 Lower the IV to the laydown area.
- _____ 4.22.13 Disconnect Sling No. 3 from the lifting eyebolts.
- _____ 4.22.14 Remove the eyebolts from the IV.
- _____ 4.22.15 Install the dust covers for the bolt holes and shield plug lifting hole located at the vault location.
- 4.23 Remove the IV from the SSW.

NOTE 2: *Steps 4.23.1 through 4.23.5 may be worked out of sequence.*

- _____ 4.23.1 Traverse Sling No. 3 and align to the IV located at the SSW.
- _____ 4.23.2 Install the lifting eyebolts with links.
 - 4.23.2.1 Attach two tag lines to the IV.
 - 4.23.2.2 Assign two riggers to the tag lines.
- _____ 4.23.3 Unbolt the IV from the SSW and store the bolts.
 - 4.23.3.1 First CFH (Performer): Remove the IV bolts.

_____	_____
Signature	Date
 - 4.23.3.2 Second CFH: Verify (independent) IV bolts have been removed.

_____	_____
Signature	Date
- _____ 4.23.4 Lower Sling No. 3 and connect to eyebolt links with hooks facing out.

NOTE: *Step 4.23.5 may be performed concurrently with Step 4.23.6.*

- 4.23.5 RCT/RCM: Perform general area radiation and contamination surveys while lifting and initially traversing the IV.

_____	_____
Signature	Date

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WARNING

The weight and configuration of the IVs make them difficult to control during tagging. Due to the combination of the potential tripping hazard of the charge face and the difficulty of IV tagging, IF EXTREME CAUTION IS NOT EXERCISED WHEN TRAVERSING AN ISOLATION VALVE, INJURY TO PERSONNEL COULD RESULT.

_____ 4.23.6 Traverse the IV to IV laydown area ensuring two tag lines and riggers are used.

4.23.6.1 USE EXTREME CAUTION when traversing an IV.

_____ 4.23.7 Lower the IV.

_____ 4.23.8 Disconnect Sling No. 3 from the IV.

_____ 4.23.9 Remove the lifting eyebolts.

NOTE: *Step 4.23.12 may be worked concurrently with Steps 4.23.10 and 4.23.11.*

_____ 4.23.10 Traverse Sling No. 3 to the sling laydown area.

_____ 4.23.11 Disconnect Sling No. 3 from the crane hook.

_____ 4.23.12 Install the dust covers for the bolt holes and shield plug lifting hole located at the SSW.

4.24 IF the SSW lid needs to be installed,
THEN do the following:

_____ 4.24.1 IF Sling No. 4 is attached to the SSW lid,
THEN perform the following:

4.24.1.1 Connect it to the crane hook.

4.24.1.2 GO TO Step 4.24.3, to traverse the crane,
WITHOUT RETURNING TO this step.

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- _____ 4.24.2 IF Sling No. 4 is NOT attached to the SSW lid,
THEN perform the following:
- 4.24.2.1 Connect Sling No. 4 to the crane hook.
 - 4.24.2.2 Verify the lifting eyebolts are installed into the SSW lid.
 - 4.24.2.3 Attach the sling hooks to the eyebolts on the lid.
- _____ 4.24.3 Traverse the crane and lid to the SSW.
- NOTE 1:** *To facilitate proper alignment of the lid bolt holes, the 1/2-in. Allen head bolts may be started prior to seating the SSW lid.*
- NOTE 2:** *The correct direction for alignment of the storage well lid leak check points are for the storage well leak check point – EAST and the seal interspace leak check point – SOUTH.*
- _____ 4.24.4 Lower the SSW lid to seat on the SSW.
- _____ 4.24.5 Remove Sling No. 4 from the SSW lid.
- _____ 4.24.6 Raise Sling No. 4 to the crane upper datum.
- | **NOTE:** *Steps 4.24.7 through 4.24.10 may be worked in any order as directed by the Job Supervisor.*
- _____ 4.24.7 Remove the lifting eyebolts from the SSW lid.
- _____ 4.24.8 IF lid O-rings are NOT installed,
THEN hand-tighten lid bolts.
- _____ 4.24.9 IF lid O-rings are installed,
GO TO TPR-5659 and install lid bolts per the applicable steps,
THEN RETURN TO Step 4.24.10.
- _____ 4.24.10 Remove Sling No. 4 from the crane hook at the sling laydown area.
- 4.25 Secure the crane.
- _____ 4.25.1 Position the crane as directed by the Job Supervisor.
- _____ 4.25.2 Secure power at the crane pendant.
- 4.25.2.1 Ensure the tornado clamps have engaged by observing that the lamps on the crane pendant illuminate.

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_____ 4.25.3 Remove Key No. 1 from crane pendant control.

4.26 Perform post-performance activities.

4.26.1 FSO: Perform the following:

4.26.1.1 Review this technical procedure.

4.26.1.2 Verify that the necessary deficiency recording documents and work performance documents to track and correct any deficiencies have been generated.

4.26.1.3 Request all personnel signing or initialing steps in this procedure to complete the information in the table below:

Printed Name	S Number	Job Function	Initials	Signature

_____ FSO Signature _____ Date

4.26.2 FSV ISFSI Manager: Perform the following:

4.26.2.1 Verify this procedure has been completed.

4.26.2.2 Document completion of procedure on FSV Operations Log.

_____ FSV ISFSI Manager Signature _____ Date

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5. RECORDS

Records package with completed copy of this procedure and all supporting documentation, including documentation associate with Section 4.13.

NOTE: *MCP-557, “Records Management,” the INL Records Schedule Matrix, and associated record types list(s) provide current information on the storage, turnover, and retention requirements for these records.*

6. REFERENCES

GEC Technical Specification, 362F0154, “Operating Sequence”

GEC Technical Specification, 362F0387, “Positioning and Securing of CFS Isolation Valve at the CFS CLUP, SSW and NSW”

General Electric Company (GEC) DWG. No. 362 A 0060 Standby Storage Well

Safety Analysis Report for the Fort St. Vrain Independent Spent Fuel Storage Installation, Section 5.1, “Storage System Operations”

FSV ISFSI Technical Specifications

TPR-5659, “Replacement of FSV Fuel Storage Container Lid Seals”

Everest XLG3™ Video® Probe System Operating Manual

7. APPENDIXES

Appendix A, Procedure Discrepancies

Appendix B, IV Positioning and Bolting Pattern

Appendix C, Procedure Hazard Analysis

Appendix D, Procedure Basis

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Appendix B

IV Positioning and Bolting Pattern

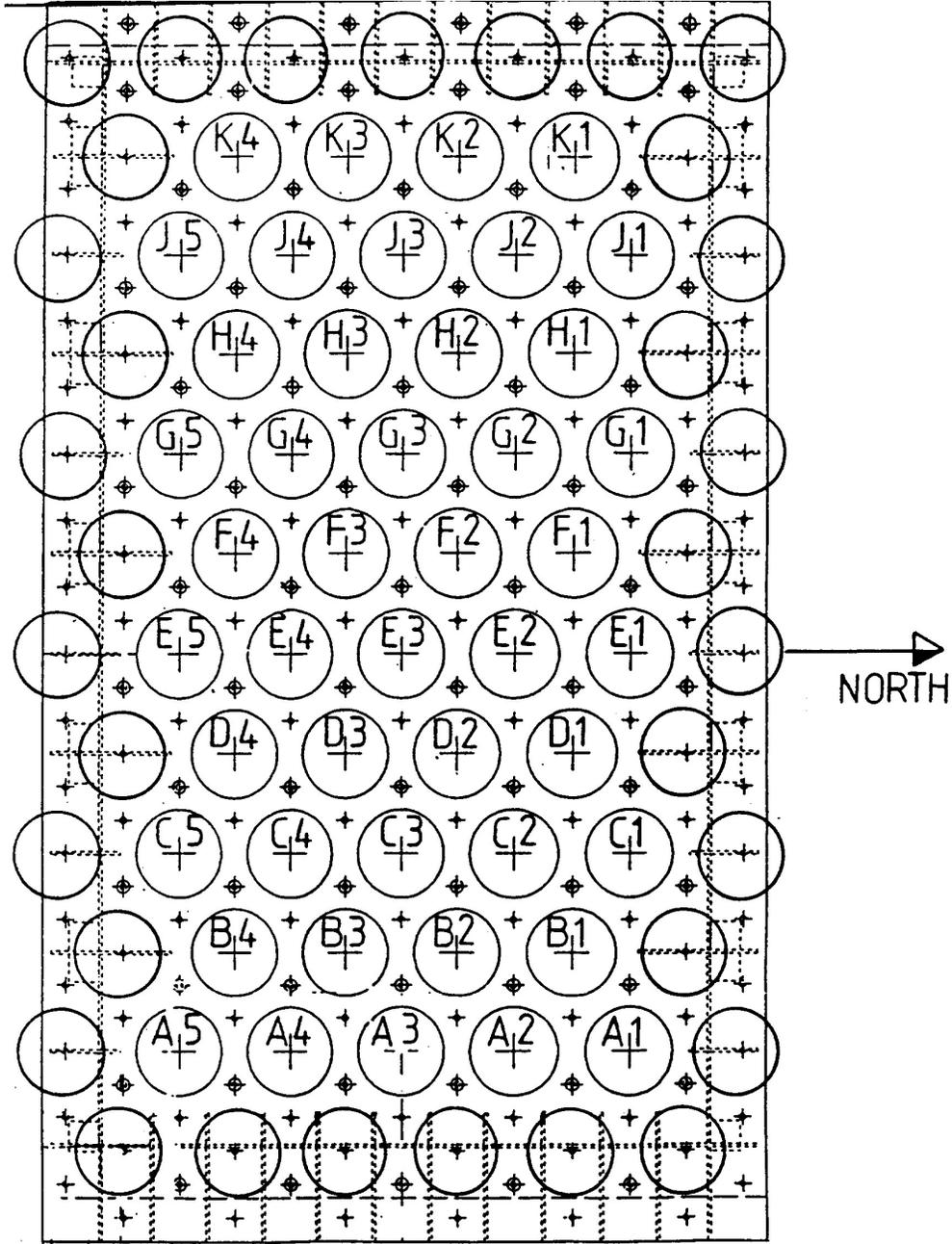


FIG 1 VM STORAGE LOCATIONS

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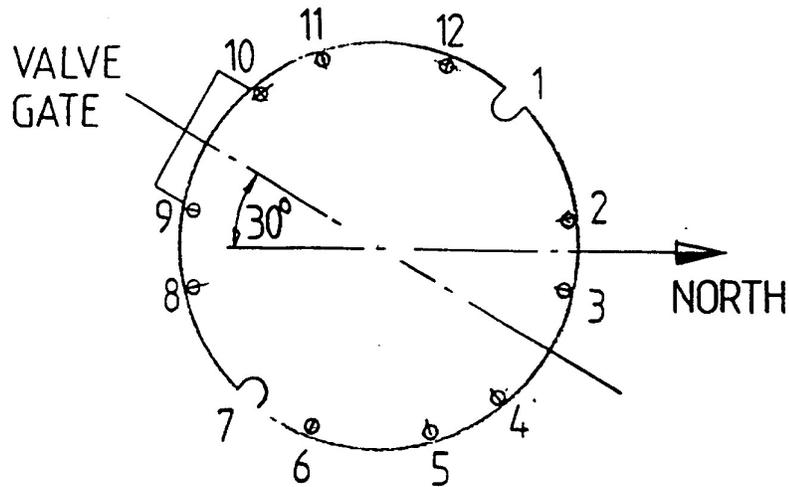


FIG2 VALVE -CFS BOLT LOCATION

VM STORAGE LOCATION	LOCATION AND BOLT	BOLT
A5.C5.E5.G5.J5.	1 AND 7	2,3,4,5,6,10,11,12.
K1,K2,K3,K4.	1 AND 7	2,3,4,5,6,8, 9,10.
ALL OTHER POSITIONS	1 AND 7	4,5,6,8,9,10,11,12.

TABLE 1 BOLTING PATTERN -CFS

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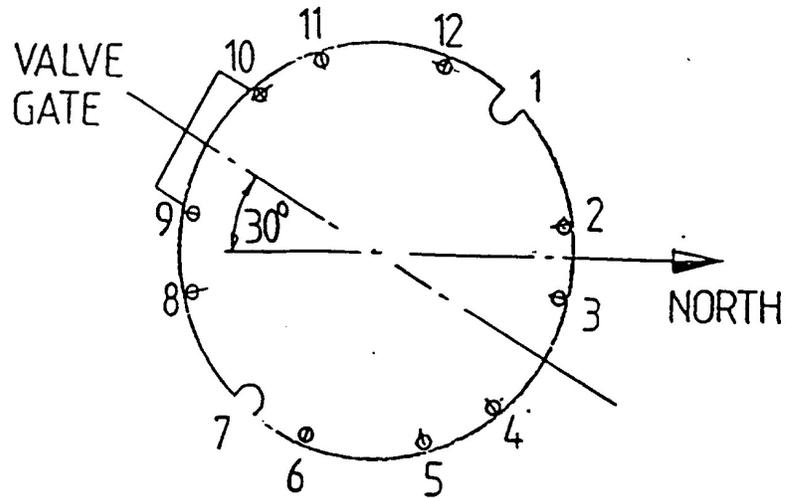


FIG 4 VALVE -SSW/NSW BOLT LOCATION

POSITION	LOCATION	BOLT
SSW/NSW	1 AND 7	2,3,4,5,6,8,9,10,11,12

TABLE 3 BOLTING PATTERN - SSW/NSW

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Appendix C

Procedure Hazard Analysis

Highly Hazardous Activity? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		HPSC No.: TPR-7812	
Disciplines (SMEs) involved in hazard analysis: (Checking the box indicates discipline is/was involved in the hazard analysis for the procedure.)			
	Discipline		Discipline
<input checked="" type="checkbox"/>	Industrial Safety	<input type="checkbox"/>	RCT/RAD Eng.
<input type="checkbox"/>	Industrial Hygiene	<input type="checkbox"/>	Env. Protection
<input type="checkbox"/>	Fire Protection	<input checked="" type="checkbox"/>	Quality Assurance
<input type="checkbox"/>		<input type="checkbox"/>	Engineering
<input type="checkbox"/>		<input checked="" type="checkbox"/>	Operations
<input type="checkbox"/>		<input type="checkbox"/>	Other:
Required Job Training/Required Personal Protective Equipment			
Training		PPE	
Certified Fuel Handler		Substantial footwear	
Heat/cold stress		Appropriate gloves for operation with pinch points/chemicals	
Fall protection		Fall protection harness, fall arrest device, and connector strap	
RCT/RCM		Eye protection	

Sequence Of Basic Job Steps	Potential Hazards	Hazard Control/PPE	
1. General to all procedure	1a. Unqualified operator, unsafe condition of crane	1a. Verify crane operator qualification and familiarity with operation of the crane.	
	1b. Crane failure	1b. Verify that testing and inspection of the crane has been performed per the requirements of PRD-650.	
	1c. Rigging failure	1c.1	Verify that testing and inspection of rigging has been performed per the requirements of PRD-650.
		1c.2	Maintain personnel clear of suspended loads.
		1c.3	Use tag lines and long handled tools as appropriate for positioning loads.
		1c.4	Ensure eyebolts are fully seated.
	1d. Exceeding rated capacity of crane	1d.1	Verify load is within the capacity of the crane.
		1d.2	Perform lifts in accordance with procedure requirements.
	1e. Radiation/contamination	1e.1	Verify radiological conditions with RCT/RCM prior to beginning work.
		1e.2	Follow requirements of RWP if applicable.
		1e.3	The HEPA must have a current DOP test date.
	1f. Pinch points	1f. Wear leather gloves for pinch points associated with rigging.	
	1g. Uneven walking/working surface	1g.1	Personnel to be aware of tripping hazards that occur through design.
1g.2		Operator to be aware of proper body position while working on the Charge Face.	

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Sequence Of Basic Job Steps	Potential Hazards	Hazard Control/PPE
(1 continued)		1g.3 Wear substantial footwear.
	1h. Fall from a ladder	1h.1 Maintain three points of contact while ascending or descending the ladder, raise or lower tools via a bucket or rope.
		1h.2 Visually inspect ladder prior to use.
		1h.3 Follow the requirements of FHPA FSV#1.
	1i. Heat Stress	1i. Monitor heat stress in accordance with MCP-2704.
	1j. Ergonomics	1j.1 Ensure proper body position, use proper lifting techniques while attaching/detaching rigging.
1j.2 Applicable steps of MCP-2692 should be followed.		
1k. Electrical shock	1k. The Everest XLG3™ Video® Probe System must be connected to a low-impedance earth ground to prevent stray voltage or static electrical charge.	
2. Removing or installing the SSW lid	See general hazards	See general hazards
3. Installing or removing IV at designated location	3a. Chemical exposure	3a.1 Wear powder less latex or nitrile gloves when lubricating components.
	3b. Low level waste	3b.1 Dispose of low-level waste per MCP-62, “Waste Generator Services-Low-Level Waste Management.”
4. Installing or removing SPHD 1 to IV	4a. Fall hazard	4a.1 Ensure inspection tags for fall protection harness, fall arrest device, and connector strap are current.
		4a.2 The crane must <u>NOT</u> be moved when personnel are attached to the fall arrest device on the crane hook.
5. Opening the IV and removing the shield plug or installing the shield plug	5a. Fall hazard	5a.1 Ensure inspection tags for fall protection harness, fall arrest device, and connector strap are current.
		5a.2 The crane must <u>NOT</u> be moved when personnel are attached to the fall arrest device on the crane hook.
6. Positioning the CHM	6a. Fall hazard	6a.1 Ensure inspection tags for fall protection harness, fall arrest device, and lanyard are current.
	6b. Personnel injury	6b.1 Maintain constant visual and verbal contact with person on the CHM or working platform.
		6b.2 Personnel must only operate the crane as directed by the person on the CHM or working platform.
7. Opening and closing the CHM and IV	See general hazards	See general hazards
8. Loading and unloading the FSC into and out of the CHM	See general hazards	See general hazards
9. Aligning the shield plug	See general hazards	See general hazards

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Appendix D

Procedure Basis

Procedure Review Table							
Review Discipline	Rev.	DFC Intent ^b Change	DFC Nonintent ^c Change	Review Discipline	Rev.	DFC Intent ^b Change	DFC Nonintent ^c Change
Operations Management	X ^a	X	X	Industrial Safety	X	X	X
Qualified Operator	X	X	X	Engineering			
Radiological Engineering				Industrial Hygiene			
Environmental				Other:			
Quality	X ^a	X	*				

a. X = review required.
 b. Reviews for intent DFCs require the same discipline reviews required for a revision.
 c. Reviews for nonintent DFCs can be performed with only Operations management and a qualified operator’s review and then implemented for immediate use. However, the remaining discipline reviews, as indicated by an asterisk (*), must be obtained within two (2) weeks. See MCP-2985, “Chapter XVI – Operations Procedures,” for definitions of intent and nonintent changes.

Step	Basis	Source	Citation
Entire procedure	Documents will be established and implemented to describe the planning and execution of inspections.	SAR, Section IX, Conduct of Operations	
2.1	Personnel must follow the applicable hazard mitigations detailed in Appendix C.	Procedure hazard analysis	
2.2	A Radiation Work Permit (RWP) is not required for this job. If general area radiation levels exceed 2 mrem/hr or removable contamination levels (beta-gamma) exceed 1,000 dpm/100 cm ² (by smear), work must be stopped IMMEDIATELY, the incident investigated, and an RWP processed before proceeding.	PRD-317	

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Step	Basis	Source	Citation
2.3	<p>If the need arises to suspend operation (such as, for lunch, breaks, end of day, correct deficiency) before completion of the procedure, the following must be done:</p> <ol style="list-style-type: none"> 1. Steps necessary to secure handling equipment and/or the crane must be performed and annotated in the margin with signature and date. 2. When resuming work, the steps necessary to return the handling equipment and/or the crane to operation (including pre-operational crane checks, if required) must be performed and annotated in the margin with signature and date. 	Best management practice	
2.4	Any potential deficiencies, hazard, or abnormal condition noted during the performance of this procedure must be entered in Appendix A, Procedure Discrepancies, and reported verbally to the FSV ISFSI Manager.	Best management practice	
2.5, 4.14.4	Satisfy NRC commitment to remotely visually inspect the FSC, SS, CFS underside (vault ceiling), and vault wall and floor surfaces for signs of degradation.	Technical Specifications	5.5.5.a.
2.5.1	Satisfy NRC commitment to inspect components every 10 years.	Safety Evaluation Report	3.2.2
2.6	The Everest XLG3™ Video® Probe System must be connected to a low-impedance earth ground to prevent stray voltage or static electrical charge.	Procedure hazard analysis	
2.7	Unnecessary steps may be marked “Not Applicable (N/A),” and minimum personnel requirements and required materials and equipment may be adjusted as appropriate for the evolution.	Best management practice	
2.8	The crane must <u>NOT</u> be moved when personnel are attached to the fall arrest device on the crane hook.	Procedure hazard analysis	

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Step	Basis	Source	Citation
3.4.1	Ensure training requirements of Appendix C have been met.	Procedure hazard analysis	
4.1.5	Ensure the following Technical Specification surveillance procedure has been completed as required: TPR-5612, “Annual Inspection of the MVDS Crane and CHM Dead Stop Device,” required every 12 months.	SR 3.2.2.1	
4.1.6	Ensure the following procedure has been completed as required: TPR-5606, “Inspection of FSV ISFSI Isolation Valves and Shield Plug Handling Devices,” required at intervals not to exceed every 12 months during use.	GEC Technical Specification 362F0152	6.1.5, 6.1.6
4.1.8	This step implements – FSV conduct of operations Chapter 3, Control Area Activities	MCP-2975	