

FSV ISFSI RADIATION SURVEY AND VAULT DRAIN SYSTEM SAMPLE COLLECTION AND ANALYSIS			Identifier: TPR-5613
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INTEC	Technical Procedure	For Additional Info: http://EDMS	Effective Date: 09/13/12

Manual: INTEC FSV3

USE TYPE 2

Change Number: 337248

*The current revision can be verified on EDMS.

1. INTRODUCTION

1.1 Purpose

The Fort St. Vrain (FSV) Independent Spent Fuel Storage Installation (ISFSI) Vault Drain System shall be sampled and analyzed once per calendar quarter. Periodic radiation surveys of the FSV ISFSI will be performed to satisfy the requirements of 10 CFR 20. See Section 6, References, for background information concerning this procedure.

1.2 Scope and Applicability

This procedure specifies the actions necessary to perform a vault drain sample analysis, and radiation/contamination surveys at various locations inside and outside the FSV ISFSI.

2. PRECAUTIONS AND LIMITATIONS

- 2.1 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.
- 2.2 Personnel must follow the applicable hazard mitigations detailed in Appendix B, "Procedure Hazard Analysis."
- 2.3 The FSV ISFSI Manager must be notified as soon as possible if survey results indicate the presence of loose surface contamination in excess of 100 counts per minute corrected above background using appropriate instruments.
- 2.4 The FSV ISFSI Manager must be notified as soon as possible if survey results indicate the presence of any areas, accessible to personnel, in which there exists radiation at such levels that an individual could receive in any 1 hour a dose equivalent in excess of 2 millirem.
- 2.5 Instrumentation used for these surveys must be calibrated and maintained under a formal program.
- 2.6 Instrumentation used for these surveys must be used in accordance with the appropriate procedures and/or vendor technical manuals.

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3. PREREQUISITES**3.1 Planning and Coordination**

3.1.1 FSV ISFSI Manager: As a minimum, ensure the following personnel are available:

Radiological Control Technician (RCT)

3.1.2 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 associated with the conduct of this procedure.
- B. A review of Section 4 of this procedure
- C. Assure training and qualification of personnel are current
- D. RCT coverage has been assigned to provide radiological control surveillance when required during the performance of this procedure.

3.1.3 RCT: Verify current revision number of this procedure to ensure it is the current issue.

3.1.4 RCT: Process a radiation work permit (RWP), if necessary.

3.2 Special Tools, Equipment, Parts, and Supplies

3.2.1 RCT: Record identification number and calibration date per PRD-317 requirements.

3.2.2 RCT: Ensure the following are available:

- A. Sample container (540 mL squat jar or equivalent)
- B. Waste liquid container
- C. Pipe wrench
- D. Thread sealant
- E. Leather gloves.

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3.3 Field Preparations

3.3.1 RCT: Ensure instrumentation has been source checked before use.

3.3.2 RCT: Ensure instrumentation calibration is current.

3.4 Training

3.4.1 FSO: Ensure the training requirements in Appendix B are met.

3.5 Approvals and Notifications

3.5.1 FSV ISFSI Manager: Ensure prerequisites have been completed.

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

4. INSTRUCTIONS

NOTE: *Steps that require a signature or initial for completion and that are not performed or that are not applicable may be marked as N/A, initialed and dated, and written explanation provided.*

4.1 Perform a contamination survey.

WARNING

Survey results indicating removable contaminations in excess of 100 corrected counts per minute corrected above background (using appropriate instruments indicate a contamination hazard to personnel may be present.

4.1.1 IF survey results indicate removable contamination in excess of 100 corrected counts per minute corrected above background using appropriate instruments,
THEN **immediately notify** the FSV ISFSI Manager.

NOTE: *The acceptance criterion is less than 1,000 dpm/100 cm² (equivalent to 100 corrected counts per minute) above background using appropriate instruments. A large area survey (such as a masslinn mop) may be used to establish that contamination levels are less than acceptance criteria.*

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4.1.2 Ensure the source storage locker area is included in the survey.

Init/Date

4.1.3 RCT: Obtain contamination surveys (smears) of approximately 100 cm² at various locations inside and outside the FSV ISFSI.

4.1.3.1 Record all survey locations per PRD-317.

4.1.4 RCT: Count all smears and record all survey results per PRD-317.

4.2 Perform a radiation survey.

WARNING

Radiation surveys of greater than 2.0 millirem per hour, may indicate a radiation hazard to personnel.

4.2.1 RCT: IF radiation surveys indicate the presence of greater than 2.0 millirem per hour, THEN notify the FSV ISFSI Manager or designee.

4.2.2 Ensure any posted areas such as the source storage locker and depleted uranium plug storage area are included in the survey.

4.2.3 RCT: Perform direct, (contact and 30 cm) and general area radiation surveys at various locations inside and outside the FSV ISFSI using the RO-2 and/or microR-meter, or equivalent.

4.2.3.1 Record all survey locations per PRD-317.

4.2.4 RCT: IF radiation is detected THEN post area with necessary posting.

4.2.4.1 IF this step is NOT required, THEN skip this step.

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4.3 Perform vault drain sample and analysis.

WARNING

The drain hatch covers are heavy and bulky and can cause back or shoulder strain when removing.

4.3.1 Perform the drain hatch cover removal per MCP-2692.

4.3.2 RCT: Wearing leather gloves, remove hatch covers for the FSV ISFSI drain pipe.

NOTE: *A direct radiation level of greater than, or equal to, 2 mrem/hr is indication of gross activity in the vault drain line requiring additional radiological controls.*

4.3.3 RCT: Perform a direct radiation survey of the vault drain pipe.

NOTE: *Step 4.3.3.1 may be marked N/A if appropriate.*

4.3.3.1 IF the contact radiation level (dose rate) is greater than or equal to 2 mrem/hr,
THEN RCT: Process an RWP prior to proceeding with the procedure.

RWP number _____

4.3.4 RCT: Perform a contamination survey of the vault drain sample pit.

NOTE: *Step 4.3.4.1 may be marked N/A if appropriate.*

4.3.4.1 IF the contamination level on any smear exceeds 1,000 dpm/100 cm²,
THEN process an RWP prior to proceeding with the procedure.

RWP number _____

4.3.5 RCT (performer): Ensure the FSV ISFSI vault drain isolation valve is shut.

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- 4.3.6 RCT: Obtain sample container and mark it with the following:
- A. Sample location Date
 - B. Time Sample ID number
- 4.3.7 RCT: Place a sample container under the drain pipe to collect any liquid trapped behind the pipe cap.
- 4.3.8 RCT: Remove the drain cap.
- NOTE:** *If no liquid is present in Step 4.3.10, Steps 4.3.10.1, 4.3.15, and 4.3.16.1 through 4.3.25 may be skipped.*
- 4.3.9 Handle the waste liquid collection container and sample bottle as potentially contaminated until survey is performed.
- 4.3.10 RCT: Crack open the FSV ISFSI vault drain isolation valve and indicate if liquid is present.
- Yes _____ No _____ (check one)
- 4.3.10.1 Fill sample bottle to the extent possible.
- 4.3.11 RCT (performer): Shut the FSV ISFSI vault drain isolation valve.
- 4.3.12 RCT: Replace the drain pipe cap.

WARNING

The drain hatch covers are heavy and bulky and can cause back or shoulder strain when replacing.

- 4.3.13 Perform the drain hatch cover replacement per MCP-2692.
- 4.3.14 RCT: Wearing leather gloves, install hatch covers for the FSV ISFSI drain pipe.
- 4.3.15 RCT: Survey the exterior of the sample bottle for direct radiation and surface contamination.

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NOTE: *Step 4.3.16.1 may be skipped if appropriate.*

4.3.16 IF direct radiation exceeds 100 cpm on contact with RM-14, or equivalent, or free external contamination levels exceed 100 cpm 14, or equivalent,
THEN mark the sample and handle the bottle as radioactive material.

4.3.16.1 RCT: Deliver the sample to the Radiation Measurements Laboratory (RML) or other approved laboratory.

4.3.17 RCT: Have laboratory analyze for gross α , gross β , gamma, and tritium as permitted by available sample volume per the appropriate procedures.

4.3.17.1 Attach copy of analysis results to this surveillance procedure.

4.3.18 RCT: IF any activity was detected in the sample,
THEN notify the FSV ISFSI Manager, or designee.

4.3.18.1 Process an RWP for radioactive liquid waste disposal.

4.3.18.2 IF no activity was detected in the sample,
THEN skip Step 4.3.18.

WARNING

The drain hatch covers are heavy and bulky and can cause back or shoulder strain when removing.

4.3.19 Perform the drain hatch cover removal per MCP-2692.

4.3.20 RCT: IF any liquid is remaining in the FSV drain pipe,
THEN wearing leather gloves, remove hatch covers for the FSV ISFSI drain pipe.

4.3.20.1 IF no liquid remains in the FSV drain pipe,
THEN N/A Step 4.3.20.

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NOTE: *Either Step 4.3.21 or 4.3.22 may be skipped as appropriate.*

4.3.21 RCT: IF any activity was detected in the sample, THEN ensure an RWP has been issued prior to proceeding to Step 4.3.21.1.

RWP number _____

4.3.21.1 Drain remaining contents of the vault into an appropriate waste liquid container in accordance with the RWP.

4.3.22 RCT: IF no activity was detected, THEN drain to yard.

4.3.23 RCT (performer): Shut the FSV ISFSI vault drain isolation valve.

4.3.24 RCT: Replace the drain pipe cap.

WARNING

The drain hatch covers are heavy and bulky and can cause back or shoulder strain when replacing.

4.3.25 Perform the drain hatch cover replacement per MCP-2692.

4.3.26 RCT: Wearing leather gloves, install hatch covers for the FSV ISFSI drain pipe.

4.4 Perform post-performance activities.

4.4.1 Facility Safety Officer: Review the results of the inspection maintenance. Generate necessary deficiency recording documents and work performance documents to track and correct any deficiencies.

4.4.1.1 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

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Printed Name	S Number	Job Function	Initials	Signature

Facility Safety Officer: _____
 Signature Date

4.4.2 FSV ISFSI Manager: Verify inspection procedure completed, deficiencies corrected, and system is operational.

FSV ISFSI Manager: _____
 Signature Date

4.4.2.1 Document completion of inspection procedure on FSV Daily Operations Log.

5. RECORDS

Records generated as a result of this procedure include the following:

Survey forms per PRD-317 and all data sheets and recorded information pertaining to this procedure.

NOTE: *The Records Schedule Matrix, located on the intranet at http://edms.inel.gov/docs/matrix/mtx_menu.html, and the applicable facility, organization, program, or project records management plan and records type list provide current information on uniform file codes, disposition authorities, and retention periods for these records.*

6. REFERENCES

10 CFR Part 20, Standards for Protection against Radiation.

Manual 15B, *Radiation Protection Procedures*

Safety Analysis Report for the Fort St. Vrain Independent Spent Fuel Storage Installation.

USNRC Environmental Assessment Related to the Construction and Operation of the Fort St. Vrain Independent Spent Fuel Storage Installation, Section 5.4: Radiation Monitoring Program.

PRD-317, “Radiation Protection, Safety And Health, And Environmental Protection Programs For NRC Regulated Facilities”

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7. APPENDIXES

- Appendix A, Procedure Discrepancies
- Appendix B, Procedure Hazard Analysis
- Appendix C, Procedure Basis

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Appendix B

Procedure Hazard Analysis

Highly Hazardous Activity? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		HPSC No.: TPR-5613	
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	
RCT/RCM		Safety glasses	
		Leather gloves	
		Substantial footwear	

Sequence Of Basic Job Steps	Potential Hazards	Hazard Control/PPE
1. Perform vault drain sample and analysis	1a. Ergonomics	1a.1 Personnel must maintain proper body position.
		1a.2 Personnel must utilize appropriate lifting techniques.
		1a.3 Personnel must not lift more than 50 pounds or 1/3 of their body weight, whichever is less.
	1b. Pinch points	1b.1 Personnel must wear gloves.
		1b.2 Personnel must maintain a proper body position.
	1c. Cuts/abrasions	1c. Personnel must wear gloves.
	1d. Foot hazards	1d. Personnel must wear substantial footwear.

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Appendix C
Procedure Basis

Step	Basis	Source	Citation
Entire procedure	Documents will be established and implemented to describe the planning and execution of inspections.	<i>Safety Analysis Report for the Fort St. Vrain Independent Spent Fuel Storage Installation, Section IX, Conduct of Operations, part 9.4.1</i>	
2.1	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	
2.2	Personnel must follow the applicable hazard mitigations detailed in Appendix B.	Procedure hazard analysis	
2.3	The FSV ISFSI Manager must be notified as soon as possible if survey results indicate the presence of loose surface contamination in excess of 100 counts per minute corrected above background using appropriate instruments.	Best management practice	
2.4	The FSV ISFSI Manager must be notified as soon as possible if survey results indicate the presence of any areas, accessible to personnel, in which there exists radiation at such levels that an individual could receive in any 1 hour a dose equivalent in excess of 2 millirem.	Best management practice	
2.5	Instrumentation used for these surveys must be calibrated and maintained under a formal program.	Company policy	
2.6	Instrumentation used for these surveys must be used in accordance with the appropriate procedures and/or vendor technical manuals.	Company policy	

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Step	Basis	Source	Citation
3.4.1	Ensure training requirements of Appendix B have been met.	Procedure hazard analysis	
4.3.2 4.3.14 4.3.20 4.3.26	Personnel must wear gloves.	Procedure hazard analysis	
Notes preceding Steps 4.1.3 and 4.2.3.	Ensure surveys are conducted to ensure radiation areas do not extend beyond posted boundaries Ensure surveys of radioactive source storage areas are conducted as required by MCP-137.	<i>Radiological Control Manual</i> article 552.1.e and MCP-137. “Radioactive Source Accountability and Control.”	