

DSC PURGING AND HEPA FILTER CHANGEOUT	Identifier: TPR-7069 Revision*: 10 Page: 1 of 22
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INTEC	Technical Procedure	For Additional Info: http://EDMS	Effective Date: 09/19/13
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Manual: 1774

USE TYPE 1Change Number: 340064

*The current revision can be verified on EDMS.

HSM No. _____

Date: _____

NOTE: *Any changes to this procedure must undergo a 10 CFR Part 72 screen.***1. INTRODUCTION****1.1 Purpose**

To lower the hydrogen concentration and ensure a clear diffusion path by performing a DSC purge and DSC HEPA filter changeout.

1.2 Scope and Applicability

This procedure defines the systematic actions required for DSC purging and DSC HEPA filter changeout (which is required if hydrogen sampling indicates hydrogen concentrations greater than 0.5%) during storage activities of the TMI-2 Independent Spent Fuel Storage Installation (ISFSI) after storing a Dry Shielded Canister(s) (DSCs) in a Horizontal Storage Module(s) (HSMs).

2. PRECAUTIONS AND LIMITATIONS

- 2.1 Personnel must follow the applicable hazard mitigations detailed in Appendix D, "Procedure Hazard Analysis."
- 2.2 Disposal of waste must be performed per MCP-1390 "Waste Generator Services Waste Management."
- 2.3 Step completion verifications must be performed as follows:
 - 2.3.1 Steps that have an initial block in the column must be initialed by supervision or procedure reader, as the step and associated sub-steps are completed.
 - 2.3.2 Steps that are not applicable must be marked "N/A" and initialed by supervision prior to conducting the next step of the procedure.
 - 2.3.3 All verifications must be documented at the time they are performed.

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- 2.4 If any TS limit is exceeded, the HSM must be placed in a safe configuration and the TMI-2 ISFSI Manager/alternate or TMI-2 FSO/alternate notified and direction received before proceeding.
- 2.5 If operations are halted, the HSM must be placed back into a safe configuration per Technical Lead's direction.
- 2.6 When purging is complete the DSC must be re-sampled per TPR-7066, "Periodic HSM Monitoring, DSC Sampling, and Filter Housing Leak Tests," to verify the hydrogen concentration is equal to or less than 0.5%. Upon a successful sample, the Vent port and Purge port filters must be changed out within 24 hours. The lower explosive limit (LEL) for hydrogen is 5.0% by volume (50,000 ppm).
- 2.7 A radiological containment must be installed if required by RWP prior to replacing purge and vent port HEPA filters.
- 2.8 An ALARA review and RWP must be completed prior to performance of this procedure.
- 2.9 If, during hydrogen sampling, the hydrogen concentration within a DSC exceeds the LCO, purge the DSC within 7 days until the hydrogen concentration is within limits, AND replace the HEPA filters for the DSC within 24 hours after the DSC purge operation is complete. (TMI-2 TS 3.2.3)
- 2.10 The surface dose rate of each HSM rear access door must not exceed 100 mrem/h (gamma and neutron); and the surface dose rate of each HEPA filter housing must not exceed 1,200 mrem/h (gamma and neutron). If these rates are exceeded, the cause of the dose rates must be evaluated within 7 days AND corrective action must be taken to restore the dose rates within limits within 30 days. (TMI-2 TS 3.2.2)

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3. PREREQUISITES

NOTE: *Steps 3.1.1 through 3.1.5 may be performed out of sequence to improve operational efficiency at the discretion of the Technical Lead.*

3.1 Planning and Coordination

Initial

- | | | |
|-------|-------|--|
| _____ | 3.1.1 | <p><u>Supervision:</u> As a minimum, ensure the following personnel are available:</p> <ul style="list-style-type: none"> A. TMI-2 ISFSI Tech Lead (1) B. Fuel Handling Operator (Minimum—1 for radiological surveys and leak testing, 2 for hydrogen sampling) C. QA Representative (Minimum—1 for hydrogen sampling and leak testing. Not required for radiological surveys) D. RCT (1). |
| _____ | 3.1.2 | <p><u>Supervision:</u> Conduct a prejob briefing in accordance with MCP-3003, “Performing Pre-Job Briefings and Documenting Feedback.”</p> |
| _____ | 3.1.3 | <p><u>Supervision:</u> Verify qualifications of all personnel that will operate or supervise the operation of equipment identified as important to safety during this procedure. (TMI-2 TS 5.3.2)</p> |
| | | Supervision Signature |
| | | Date |
| _____ | 3.1.4 | <p><u>Supervision:</u> Notify security of pending entrance into CPP-1774.</p> |
| _____ | 3.1.5 | <p><u>Supervision:</u> Ensure a ICP Radiological Work Permit is in place.</p> |

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3.2 Special Tools, Equipment, Parts, and Supplies

NOTE: *The following list of tools specifies the minimum quantities and capacities required.*

_____ 3.2.1 Supervision: Ensure the following equipment and tools are available, are positioned, and are in current calibration as required:

DSC Purging/HEPA Filter Changeout Tools		
✓	Item	Comments
	Calibrated Torque Wrench (Inch Pounds) for Sample Cover Installation 30—250 in. · lb (Selected torque wrench must have a range such that desired torque of 160 inch pounds falls somewhere in the middle third of the torque wrench range.)	<hr/> Equipment ID No. Calibration Due Date
	Calibrated Torque Wrench (Foot Pounds) for HEPA Filter Installation (Selected torque wrench must have a range such that desired torque of 55 foot pounds falls somewhere in the middle third of the torque wrench range.)	<hr/> Equipment ID No. Calibration Due Date
	Wrenches—32 mm socket and ratchet or adjustable wrench	Used for the HSM rear access door and transportation cover bolts.
	Anti-Seize lubricant	For application to bolts prior to installation.
	Rolling ladder with side rails	For access to the DSC purge and vent ports while installed in the HSM.
	Purge filter housing sample cover and associated seals	
	DSC Test Tool	
	Appropriate PPE	As required by ES&H.
	Regulated Compressed Air Cylinders (minimum of 2 full cylinders approximately 1,700 psig)	
	HEPA Filter Socket	TMI-902-X
	Replacement HEPA filters (five)	Must have evidence of QA acceptance.
	Purge Gas Regulator	
	Property ID #715969	_____ Calibration Due Date

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_____ 3.2.2 QA: Verify that the equipment and tools listed in Step 3.2.1 are in current calibration, that calibration information has been recorded correctly, and that torque wrenches are of the correct range.

_____ QA Signature _____ Date _____

3.3 Training

3.3.1 Ensure the training requirements in Appendix D are met.

3.4 Approvals and Notifications

_____ 3.4.1 Supervision: Verify all prerequisites have been satisfied, and approval is given for work to commence.

_____ Supervision Signature _____ Date _____

4. INSTRUCTIONS

NOTE: Sections NOT having a designated performer before them will be performed by operations personnel.

4.1 IF the need exists to perform any task in the following routing table GO TO and complete the appropriate section for that task; THEN RETURN TO this section to select another task.

Task	Procedure Section
Perform preoperational checks	Perform Section 4.2.
Open the HSM rear access door	Perform Section 4.3.
Purge the DSC with compressed air	Perform Section 4.4.
Replace the Vent Port HEPA filters	Perform Section 4.5.
Replace the Purge Port HEPA filter	Perform Section 4.6.
Close and lock HSM rear access door	Perform Section 4.7.
Perform procedure closeout	Perform Section 4.8.

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4.2 Performing Preoperational ChecksInitial

- _____ 4.2.1 OP/RCT: IF required by RWP,
THEN set up radiological containment at the back of the HSM
containing the DSC in which the filters are to be changed.
- 4.2.2 RCT: Perform gamma and neutron radiation survey at the surface of the
rear access door. (TMI-2 TS 3.2.2)
- 4.2.2.1 Supervision: Verify combined radiation levels (gamma plus
neutron) are less than 100 mrem/h at the surface of the HSM
rear access door.

Supervision Signature_____
Date

- _____ 4.2.2.2 RCT: Establish control boundaries as necessary.

4.3 Opening HSM Rear Access Door

- 4.3.1 RCT: Monitor for increase in radiation fields while rear access door is
opened.
- 4.3.2 Open HSM rear access door.
- 4.3.3 Supervision: Inspect rear door to ensure it remains operational and the
vent holes in rear door are free of blockage.
- 4.3.4 Supervision: IF the rear door needs maintenance attention,
THEN record problem in Facility Log and initiate work request.
- _____ 4.3.5 OP/RCT: Remove the vent and purge filter housing dust covers.
- 4.3.6 RCT: Perform gamma and neutron radiation surveys at contact near the
center of the purge and vent filter housings. (TMI-2 TS 3.2.2)
- 4.3.6.1 Supervision: Verify (single sign-off) combined radiation
levels (gamma plus neutron) are less than 1,200 mrem/h at
the vent and purge filter housing.

Supervision Signature_____
Date

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4.3.7 Supervision: IF combined radiation levels (gamma plus neutron) are greater than 1,200 mrem/h at the vent and purge filter housing, THEN do the following:

4.3.7.1 Return the HSM to a safe configuration.

4.3.7.2 Notify ISFSI Management.

4.4 Purging the DSC with Compressed Air (TMI-2 TS 3.2.3)

_____ 4.4.1 Install purge port filter housing sample cover as follows:

4.4.1.1 Ensure the rubber O-rings are installed into the sample cover seal grooves.

4.4.1.2 If necessary, remove the purge and vent port filter housing dust covers.

_____ 4.4.1.3 Supervision: Ensure personnel handling sample cover attachment bolts are wearing protective eyeglasses with side shields and rubber or leather gloves.

4.4.1.4 Ensure the four attachment bolts for the purge port sample cover are coated with Anti-seize.

4.4.1.5 Install the sample cover with the four attachment bolts torquing to 160 in. · lb in three increments (snug, 85 in. · lb, 160 in. · lb), using the 30 to 250 in. · lb torque wrench.

_____ 4.4.1.6 QA: Verify purge port filter housing sample cover attachment bolts are torqued to 160 in. · lb.

_____ QA Signature

_____ Date

_____ 4.4.2 RCT: Monitor removal of outer purge port plug.

_____ 4.4.3 Remove the outer purge port plug from the purge port filter housing.

_____ 4.4.4 Install the DSC test tool into the purge port on the purge port filter housing.

_____ 4.4.5 Install regulator on compressed air bottle, then connect to the DSC test tool using tygon tubing (or similar tubing) per Appendix C.

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_____ 4.4.6 Open a path to the interior of the DSC by using the DSC test tool to remove the inner purge port plug.

NOTE 1: *Purging will require 2 full bottles of compressed air.*

NOTE 2: *140 cubic ft/hr of Helium is equivalent to 58.6 cubic ft/hr compressed air.*

_____ 4.4.7 Open the compressed air bottle valve and adjust regulator on the Helium scale to supply 140 cubic ft/hr.

_____ 4.4.8 RCT: Monitor for changing radiological conditions during purging by taking periodic radiation surveys around HEPA filters and continuous air sampling at the vent port.

_____ 4.4.9 Purge the DSC until regulator will NO longer regulate at 140 cubic ft/hr and pressure drops to less than 100 psig indicating bottle is empty.

NOTE: *Purging will require 2 full bottles of compressed air.*

_____ 4.4.10 Change out compressed air bottle per the following:

_____ 4.4.10.1 Close the valve on the empty compressed air bottle.

_____ 4.4.10.2 Close path to the DSC using the DSC test tool to install the inner purge port plug.

_____ 4.4.10.3 Change compressed air bottle.

_____ 4.4.10.4 Open path to interior of the DSC by using the DSC test tool to remove the inner purge port plug.

_____ 4.4.10.5 Open the compressed air bottle valve and adjust regulator to supply 140 cubic ft/hr.

_____ 4.4.11 WHEN purge is complete
AND regulator will NO longer regulate at 140 cubic ft/hr
AND pressure drops to less than 100 psig indicating the bottle is empty,
THEN close valve on air supply.

_____ 4.4.12 Close the path to the interior of the DSC by using the DSC test tool to install the inner purge port plug.

_____ 4.4.13 Disconnect the regulated compressed air supply from the DSC test tool.

_____ 4.4.14 Remove DSC test tool from purge port.

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_____ 4.4.15 Install the outer purge port plug into the purge port filter housing.

_____ 4.4.16 Supervision: Ensure personnel handling sample cover attachment bolts are wearing protective eyeglasses with side shields and rubber or leather gloves.

NOTE: *Purge port filter housing sample cover may be left installed, if hydrogen sampling is to be performed on the same day as purging.*

_____ 4.4.17 IF necessary, THEN remove the purge port filter housing sample cover and store as directed by Technical Lead.

_____ 4.4.18 RCT: Perform contamination and radiation survey of work area.

_____ 4.4.19 Supervision: Perform hydrogen sampling per TPR-7066 to verify hydrogen concentration is below 0.5%.

4.5 Replacing Vent Port HEPA Filters (TMI-2 TS 3.2.3)

NOTE: *Hydrogen concentration needs to be verified less than or equal to 0.5% prior to HEPA filter changeout. Change out needs to occur within 24 hours after verification.*

_____ 4.5.1 Supervision: Record date and time hydrogen concentration is verified less than or equal to 0.5% in TPR-7066.

_____ Date _____ Time _____

_____ 4.5.2 QA: Record the filter ID number and verify filters have been accepted by QA.

Filter No. 1 ID Number _____

Filter No. 2 ID Number _____

Filter No. 3 ID Number _____

Filter No. 4 ID Number _____

_____ QA Signature _____ Date _____

_____ 4.5.3 OP/RCT: Remove the vent port filter housing dust cover if currently installed.

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- _____ 4.5.4 RCT: Perform radiation survey near the vent port filter housing.
- _____ 4.5.5 Tape blotter paper or other appropriate material around rear opening and vent port housing to control contamination.
- _____ 4.5.6 RCT: Perform contamination survey at the vent port filter housing.
- _____ 4.5.7 Loosen HEPA filters with wrench, but do NOT remove.
- _____ 4.5.8 OP/RCT: Install radiological containment if required.
- _____ 4.5.9 Remove the vent port HEPA filters under RCT observation.
- _____ 4.5.10 Install the new HEPA filters into the vent port housing.

NOTE: *If radiological containment provides access to both the vent and purge housings, the containment may be left in place to change the purge housing filters.*

- _____ 4.5.11 IF necessary,
THEN remove radiological containment per RCT.

NOTE: *Selected torque wrench must have a range such that desired torque of 55 foot pounds falls somewhere in the middle third of the torque wrench range.*

- _____ 4.5.12 Using torque wrench, torque HEPA filters to 55 ft · lb.
- _____ 4.5.13 QA: Verify HEPA filters are torqued to 55 ft · lb.

Filter No. 1	QA Signature	Date
Filter No. 2	QA Signature	Date
Filter No. 3	QA Signature	Date
Filter No. 4	QA Signature	Date

- _____ 4.5.14 RCT: Perform radiation and contamination survey of work area.
- _____ 4.5.15 RCT/OP: IF contamination level exceeds 1,000 dpm/100 cm² beta-gamma and/or 20 dpm/100 cm² alpha, THEN decon as necessary.

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_____ 4.5.16 RCT/OP: Install the vent port filter housing dust cover.

4.6 Replacing the Purge Port HEPA Filter (TMI-2 TS 3.2.3)

_____ 4.6.1 QA: Record the HEPA filter (to be installed in the purge port) ID number and verify filter has been accepted by QA.

Filter ID No. _____

QA Signature

Date

_____ 4.6.2 RCT/OP: Remove the purge filter housing dust cover if currently installed.

_____ 4.6.3 RCT: Perform radiation survey near the purge port filter housing.

_____ 4.6.4 RCT: Perform contamination survey at the purge port filter housing.

_____ 4.6.5 Loosen HEPA filter with wrench, but do NOT remove.

_____ 4.6.6 OP/RCT: IF necessary, THEN install radiological containment to purge port.

_____ 4.6.7 Remove the purge port HEPA filter per RCT direction.

_____ 4.6.8 Install the new HEPA filter into the purge port filter housing.

_____ 4.6.9 Remove radiological containment per RCT direction.

NOTE: *Selected torque wrench must have a range such that desired torque of 55 foot pounds falls somewhere in the middle third of the torque wrench range.*

_____ 4.6.10 Using torque wrench, torque HEPA filters to 55 ft · lb.

_____ 4.6.11 QA: Verify HEPA filter is torqued to 55 ft lb.

QA Signature

Date

_____ 4.6.12 RCT: Perform radiation and contamination survey of work area.

_____ 4.6.13 RCT/OP: IF contamination level exceeds 1,000 dpm/100 cm² beta-gamma and/or 20 dpm/100 cm² alpha, THEN decon as necessary.

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- _____ 4.6.14 RCT/OP: Install the purge port filter housing dust cover.
- _____ 4.6.15 Supervision: Record date and time indicating completion of vent and purge port HEPA filter change out.

Date Time

4.7 Closing and Locking the HSM Rear Access Door

NOTE 1: *Anti-seize lubricant may be applied to the rear access bolts as needed.*

NOTE 2: *Protective eyeglasses with side shields and leather gloves must be worn when handling anti-seize lubricant.*

- _____ 4.7.1 Supervision: Ensure that the HSM drain is free of visible obstructions.
- _____ 4.7.2 Supervision: Ensure HSM rear access door is locked

4.8 Performing Procedure Closeout

- _____ 4.8.1 Supervision: 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

- _____ 4.8.2 Supervision: Perform a postjob review as directed by MCP-3003.

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- 4.8.3 Supervision: Ensure that all procedure steps have been completed, initialed or initialed and signed as appropriate.

Supervision Signature

Date

5. RECORDS

This procedure TPR-7069

Form 434.14, “Pre-job Briefing Checklist” (If used)

Form 441.49, “ICP Radiological Work Permit” (RWP)

Radiological Survey

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

MCP-1390, “Waste Generator Services Waste Management”

MCP-3003, “Performing Pre-Job Briefings and Documenting Feedback”

MCP-3562, “Hazard Identification, Analysis, and Control of Operational Activities”

PRD-5040, “Handling and Use of Compressed Gases”

SAR-II-8.4, “TMI-2 Safety Analysis Report”

TPR-7066, “Periodic HSM Monitoring, DSC Sampling, and Filter Housing Leak Tests”

TSR-8.4, “Technical Specifications for Three Mile Island–Unit 2 Independent Spent Fuel Storage Installation”

7. APPENDIXES

Appendix A, Vent and Purge Port Information

Appendix B, DSC Test Tool

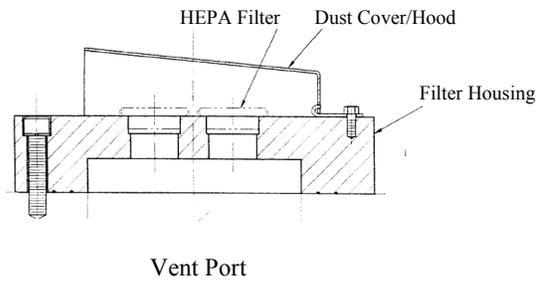
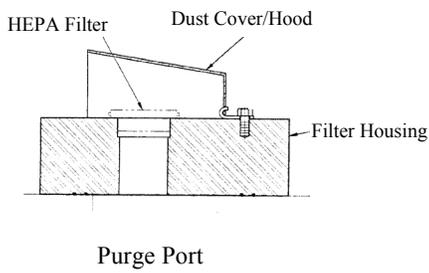
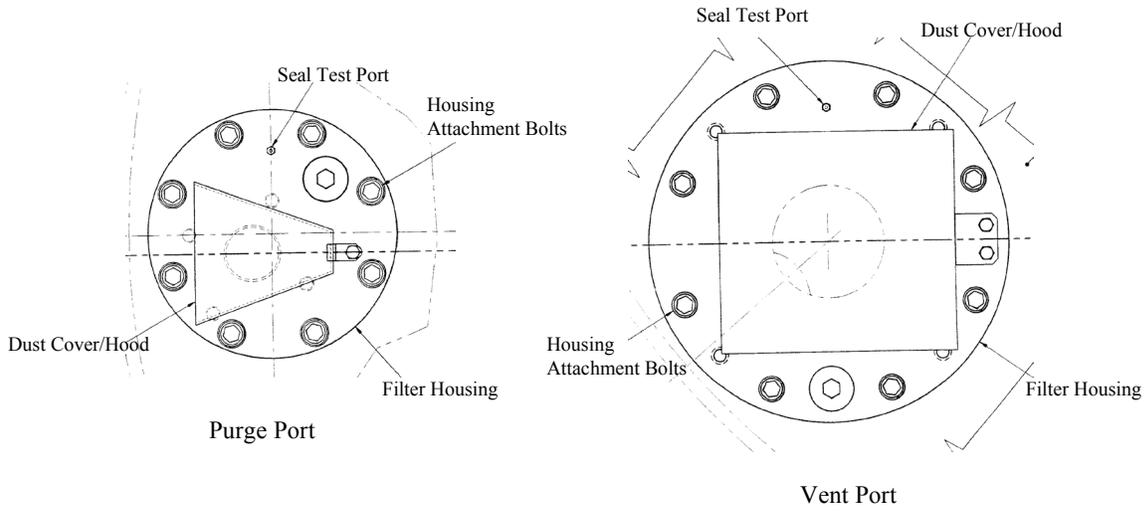
Appendix C, Port Purge Equipment Setup

Appendix D, Procedure Hazard Analysis

Appendix E, Procedure Basis

Appendix A

Vent and Purge Port Information



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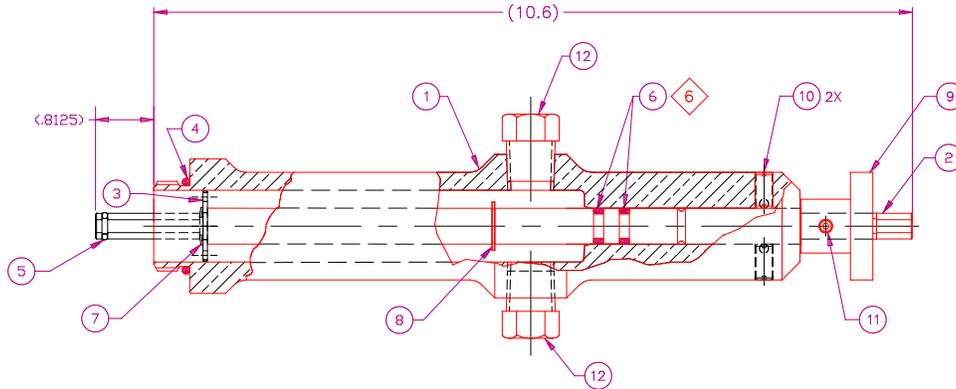
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Appendix B

DSC Test Tools



VENT/TEST TOOL ASSEMBLY

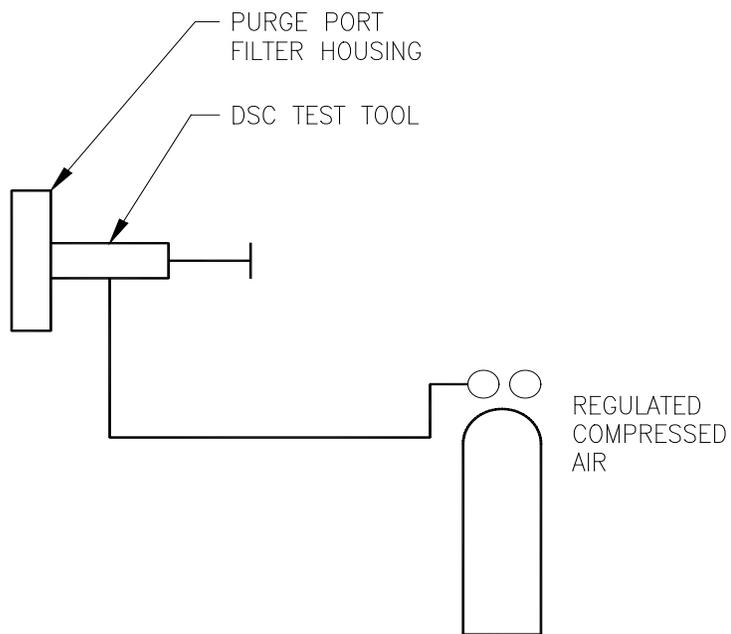
12	2		HEX HD PLUG, 3/8 NPT	SST
11	1		FLAT POINT SET SCREW, #10-24UNC X 1/4	SST
10	2	REID W-16N	BALL PLUNGER, 1/4-20UNC	
9	1	REID SKKR-3B	KNURLED KNOB, 3/8-16UNC, SST	
8	1	WALDES TRUARC 5108-50-H	RETAINING RING, INVERTED EXT SERIES	
7	1	WALDES TRUARC 5131-37-H	RETAINING RING, BOWED E-RING, EXT SERIES	
6	2	PARKER #2-109, CLASS AN	O-RING, .299 I.D. X ϕ .103 COMPOUND C557-70	
5	1	PARKER #2-010, CLASS AN	O-RING, .239 I.D. X ϕ .070 COMPOUND C557-70	
4	1	PARKER #2-216, CLASS AN	O-RING, 1.109 I.D. X ϕ .139, COMPOUND C557-70	
3	1		SHT, .06 THK X 1.0 DIA	ASTM B21, 464 OR 482 ALLOY BRASS 1/2 HARD TEMPER
2	1		RD BAR, ϕ .50 X 10.4	ASTM A193, GRADE B7
1	1		RD BAR, 2.0 X 9.1	ASTM B21, 464 OR 482 ALLOY BRASS 1/2 HARD TEMPER
ITEM NO.	QTY	PART OR IDENTIFYING NO.	NOMENCLATURE OR DESCRIPTION	MATERIAL SPECIFICATION

NOTE: *The vent and purge port test tools are identical.*

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Appendix C

Port Purge Equipment Setup



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Appendix D

Procedure Hazard Analysis

Highly Hazardous Activity? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			HPSC No.: TPR-7069		
Disciplines (SMEs) involved in hazard analysis: (Checking the box indicates discipline is/was involved in the hazard analysis for this procedure.)					
	Discipline		Discipline		Discipline
<input checked="" type="checkbox"/>	Industrial Safety	<input checked="" type="checkbox"/>	RCT/RAD Eng.	<input checked="" type="checkbox"/>	Engineering
<input checked="" type="checkbox"/>	Industrial Hygiene	<input type="checkbox"/>	Env. Protection	<input checked="" type="checkbox"/>	Operations
<input type="checkbox"/>	Fire Protection	<input checked="" type="checkbox"/>	Quality Assurance	<input type="checkbox"/>	Other:
Required Job Training/Required Personal Protective Equipment					
Training			PPE		
RadWorker II			Anti-c clothing as required per RWP		
TMI General Employee Training			Leather or rubber gloves		
TMI-2 ISFSI Storage Operations Lead			Protective eyeglasses with side shield		
Heat Stress			Substantial footwear (when working under this TPR)		
Portable Ladders			Safety shoes (for work in areas where heavy dropped, falling, or rolling object hazards exist)		
Hantavirus					
INL Compressed Gas Safety Training					

Sequence Of Basic Job Steps	Potential Hazards	Hazard Control/PPE
1. General work on the TMI-2 ISFSI pad	1a. Slipping or tripping	1a. Remove ice and sand icy spots as appropriate or maintain awareness of surroundings, and wear safety shoes.
	1b. Extreme temperature environment	1b. Establish work stay times per MCP-2704, "Heat and Cold Stress." Wear cold weather clothing and gloves or ice vests as appropriate.
	1c. Contamination and radiation	1c.1 Complete Radiation Work Permit. Put in RadCon hold points at procedure steps where RCT surveys radiation or contamination levels are identified.
1c.2 Wear Anti-c clothing per RWP.		
2. Gather equipment and supplies	2a. Work may disturb areas with rodent feces or urine	2a. Do <u>NOT</u> disturb area and contact appropriate personnel for cleanup.
	2b. Back strain	2b. Use proper lifting techniques when moving or removing equipment/supplies, and discuss techniques during pre-job briefing.
	2c. Pinch points	2c. Maintain awareness of surroundings, maintain safe body positioning, and wear leather gloves.
3. Enter INTEC-1774	3a. Back strain	3a. Use proper lifting techniques when manually removing snow or ice and discuss techniques during pre-job briefing.

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Sequence Of Basic Job Steps	Potential Hazards	Hazard Control/PPE
4. RCT survey radiation and contamination levels at various points at the rear of the HSM and establish appropriate controls	4a. Contamination and radiation	4a. See general hazards.
5. Open HSM rear access door	5a. Eye or skin irritant from Anti Seize	5a. Wear protective eyeglasses with side shields and rubber or leather gloves when handling Anti Seize.
	5b. Pinch points	5b. Maintain awareness of surroundings, maintain safe body positioning, and wear leather gloves.
	5c. Removal of shielding	5c.1 Work per Radiation Work Permit. 5c.2 RadCon survey prior to and during opening rear access door.
6. Remove purge and vent filter housing dust covers	6a. Ladder use	6a. Personnel must have had Portable Ladder training. Use rolling ladder with side rails.
	6b. Pressurized gas	6b. Personnel must have INL Compressed Gas Safety Training.
7. RCT surveys radiation and contamination levels at the purge and vent filter housings	7a. Contamination and radiation	7a. See general hazards.
8. Replace Vent Port HEPA filters	8a. Eye or skin irritant from Anti Seize	8a. Wear protective eyeglasses with side shields, rubber or leather gloves when handling Anti Seize
	8b. Pinch points	8b. Maintain awareness of surroundings, maintain safe body positioning, wear leather gloves.
	8c. Manual lifting of covers	8c. Use proper lifting techniques, wear safety shoes.
	8d. Ergonomic hazards	8d. Use ladder or platform to properly position body.
	8e. Lead coated material (only when using purge filter cover containing lead seal)	8e. Lead Awareness training and wear leather gloves.
9. Replace the Purge Port HEPA filter	9a. Contamination and radiation	9a. See general hazards.
10. Install the vent filter housing dust cover	10a. Using a ladder	10a. Personnel must have had Portable Ladder training. Use rolling ladder with side rails.
11. Close and lock HSM rear access door	11a. Eye or skin irritant from Anti Seize	11a. Wear protective eyeglasses with side shields, rubber or leather gloves when handling Anti Seize.
	11b. Pinch points	11b. Maintain awareness of surroundings, maintain safe body positioning, and wear leather gloves.

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Appendix E

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
OSB Chairperson	X ^a	X	X	Industrial Safety			
Qualified Operator	X	X	X	Engineering			
Radiological Engineering				Industrial Hygiene			
Environmental				Facility Safety Officer	X	X	X
Quality	X	X	X	Safety Analysis	X	X	X
NFM/Doc Owner	X	X	X	Compliance Lead	X	X	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
General	Detailed written procedures will be developed and maintained for the ISFSI operations, maintenance, surveillance, and testing described in Steps 5.1.1 and 5.1.2. Procedure changes in Step 5.1.1 are subject to DOE Unreviewed Safety Question analysis as they are conducted under the parameters and cognizance of the TAN SAR under DOE regulation.	TMI-2 SAR	9.4.1

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Step	Basis	Source	Citation
General (continued)	However, any procedure changes that could have an impact or bearing on the design basis or safety basis of TMI ISFSI components, performance specifications or requirements in the TMI SAR or Tech Specs must also be subject to 10 CFR 72.48. Such applicable activities will be clearly denoted in Step 5.1.1 procedures. All TMI ISFSI procedures will be developed, reviewed, revised, approved, and controlled by the contractor in accordance with approved administrative procedures.		
2.1	Personnel must follow the applicable hazard mitigations detailed in Appendix D, "Procedure Hazard Analysis."	Procedure hazard appendix	
2.2	All waste produced by the TMI-2 ISFSI is handled and disposed of in accordance with the existing procedures for handling waste. INL has existing facilities to treat and dispose both liquid and solid waste.	TMI-2 SAR	6.0, 6.4, 6.5
2.3	Step completion verifications must be performed as follows: <ol style="list-style-type: none"> 1. Steps that have an initial block in the column must be initialed by supervision or procedure reader, as the step and associated sub-steps are completed. 2. Steps that are not applicable must be marked "N/A" and initialed by supervision prior to conducting the next step of the procedure. 3. All verifications must be documented at the time they are performed. 	Best management practice	
2.4	If any TS limit is exceeded, the HSM must be placed in a safe configuration and the TMI-2 ISFSI Manager/alternate or TMI-2 FSO/alternate notified and direction received before proceeding.	Best management practice	

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Step	Basis	Source	Citation
2.5	When purging is complete the DSC must be re-sampled per TPR-7066, “Periodic HSM Monitoring, DSC Sampling, and Filter Housing Leak Tests,” to verify the hydrogen concentration is equal to or less than 0.5%. Upon a successful sample, the Vent port and Purge port filters must be changed out within 24 hours. The lower explosive limit (LEL) for hydrogen is 5.0% by volume (50,000 ppm).	Best management practice	
2.6	A radiological containment must be installed if required by RWP prior to replacing purge and vent port HEPA filters.	ALARA requirement	
2.7	VDS exhaust and general cask decontamination wastes are generated during Dry Shielded Canister (DSC) evacuation and sealing operations as well as during the normal storage mode where periodic purging of the DSC may be required. Both waste streams will be managed in accordance with established waste processing practices. A radiological containment tent or glovebox must be set up and used when replacing HEPA filters to control radiological and contamination hazards.	TMI-2 SAR Procedure hazard analysis	1.3.3
2.8, 3.1.5	Form 441.49, “ICP Radiation Work Permit,” must be completed and on hand or readily available and must designate the appropriate anti-c clothing that must be worn during the operation.	Procedure hazard analysis	
2.9	If, during hydrogen sampling, the hydrogen concentration within a DSC exceeds the LCO, purge the DSC within 7 days until the hydrogen concentration is within limits AND, replace the HEPA filters for the DSC within 24 hours after the DSC purge operation is complete.	TMI-2 TS	3.2.3

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Step	Basis	Source	Citation
2.9, 4.4, 4.5, 4.6	The hydrogen gas concentration inside each DSC must not exceed 0.5% by volume. If these levels are exceeded, the DSC must be purged until the hydrogen concentration is within limits within 7 days and the HEPA filters must be replaced with 24 hours after completion of the DSC purging operation. Hydrogen concentration must be sampled monthly during the first year, and annually thereafter.	TMI-2 ISFSI	Spec 3.2.3 Action 3.2.3.a1 Action 3.2.3.a2
2.10, 4.2.2.1, 4.3.6.1, 4.3.7	The surface dose rate of each HSM rear access door must not exceed 100 mrem/h (gamma and neutron); and the surface dose rate of each HEPA filter housing must not exceed 1,200 mrem/h (gamma and neutron). If these rates are exceeded, the cause of the dose rates must be evaluated within 7 days AND corrective action must be taken to restore the dose rates within limits within 30 days. (TMI-2 TS 3.2.2)	TMI-2 ISFSI TS Procedure hazard analysis	LCO 3.2.2 Action 3.2.2.a
4.3, 4.4.1.3, 4.4.16, 4.7	Whenever Anti-Seize lubricant is used, the user must wear protective eyeglasses with side shields and leather or rubber gloves.	Exposure Assessment No. 1278.00 Procedure hazard analysis	
3.1.2	During the pre-job briefing, the hazards of the job and the work area and control of those hazards are discussed.	Procedure hazard analysis	
3.1.3	Personnel who operate or supervise the operation of equipment identified as important to safety must be trained and certified under the NRC approved training program.	TMI-2 ISFSI Administrative Control	5.3.2
3.1.4	Security must be notified of pending entrance into CPP-1774, which is a secured facility.	Security requirement	
3.2.2, 4.4.1.6, 4.5.2, 4.5.13, 4.6.1, 4.6.11	QA must verify proper specifications and inspections of all quality related equipment.	QA requirement	