



**SECURITY-RELATED INFORMATION  
WITHHOLD UNDER 10 CFR 2.390**

10 CFR 52.79  
10 CFR 2.390

February 16, 2010  
NRC3-10-0010

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555-0001

- References:
- 1) Fermi 3  
Docket No. 52-033
  - 2) Letter from Jerry Hale (USNRC) to Peter W. Smith (Detroit Edison),  
"Request for Additional Information Letter No.4 Related to the SRP Sections  
11.02, 11.04, 11.05 and 12.02 for the Fermi 3 Combined License  
Application," dated March 9, 2009
  - 3) Letter from Bruce Olson (USNRC) to Peter W. Smith (Detroit Edison),  
"Requests for Additional Information Letter No. 2 Related to the  
Environmental Review for the Combined License Application for Fermi  
Nuclear Power Plant, Unit 3," dated November 6, 2009
  - 4) Letter from Jerry Hale (USNRC) to Jack M. Davis (Detroit Edison), "Request  
for Additional Information Letter No. 18 Related to the SRP Sections 8.2,  
9.2.1, 10.4.5, 11.4, 12.2, 12.3-12.4, and 14.2 for the Fermi 3 Combined  
License Application," dated December 1, 2009
  - 5) Letter from Jack M. Davis (DTE Energy) to USNRC, "Detroit Edison  
Company Response to NRC Request for Additional Information Letter No.4",  
NRC3-09-0007, dated April 8, 2009
  - 6) Letter from Peter W. Smith (DTE Energy) to USNRC, "Detroit Edison  
Company Response to NRC Request for Additional Information Letters No.  
18 and Supplemental Response to Letter No. 15", NRC3-10-0001, dated  
January 29, 2010

Subject: Detroit Edison Company Response to NRC FSAR Request for Additional  
Information Letter No. 4 and ER Request for Additional Information  
Letter No. 2

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In References 2 and 3, the NRC requested additional information to support the review of certain portions of the Fermi 3 Combined License Application (COLA). Responses to Requests for Additional Information (RAIs) 11.04-2 in Reference 2, and HH3.5-1, HH4.5-5, HH5.4.3-4, and HH5.4.3-5 in Reference 3 are provided as Attachments 1 through 4 of this letter. A preliminary response to RAI No. 11.04-2 was provided by Detroit Edison Company in Reference 5. RAI 11.04-2 Supplement 1 was requested in Reference 4 and a response was provided by Detroit Edison Company in Reference 6. Information contained in these responses will be incorporated into a future COLA submission as described in the RAI response.

Detroit Edison requests that Enclosure 1, which contains Security-Related Information, be withheld from public disclosure in accordance 10 CFR 2.390.

If you have any questions, or need additional information, please contact me at (313) 235-3341.

I state under penalty of perjury that the foregoing is true and correct. Executed on the 16<sup>th</sup> day of February 2010.

Sincerely,



Peter W. Smith, Director  
Nuclear Development – Licensing & Engineering  
Detroit Edison Company

- Attachments: 1) Response to FSAR RAI Letter No. 4 (Question No. 11.04-2)  
Response to ER RAI Letter No. 2 (Question No. HH3.5-1)  
Enclosure 1, General Arrangement Drawings, Security Related  
2) Response to ER RAI Letter No. 2 (Question No. HH4.5-5)  
3) Response to ER RAI Letter No. 2 (Question No. HH5.4.3-4)  
4) Response to ER RAI Letter No. 2 (Question No. HH5.4.3-5)

cc: Chandu Patel, NRC Fermi 3 Project Manager  
Jerry Hale, NRC Fermi 3 Project Manager  
Ilka Berrois, NRC Fermi 3 Project Manager  
Bruce Olson, NRC Fermi 3 Environmental Project Manager  
Fermi 2 Resident Inspector (w/o attachments)  
NRC Region III Regional Administrator (w/o attachments)  
NRC Region II Regional Administrator (w/o attachments)  
Supervisor, Electric Operators, Michigan Public Service Commission (w/o attachments)  
Michigan Department of Environmental Quality, Radiological Protection and Medical  
Waste Section (w/o attachments)

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**Attachment 1  
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**Response to FSAR RAI Letter No. 4 and ER RAI Letter No. 2**

**RAI Question No. 11.04-2  
RAI Question No. HH3.5-1**

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**NRC RAIs**

The following RAIs involve Class B and Class C low level radioactive waste (LLRW). Accordingly, Detroit Edison has elected to address these RAIs with a single response.

***FSAR RAI 11.04-2***

*FSAR Section 11.4.1, STD COL 11.4-4-A states that the proposed plant will not utilize temporary low-level radioactive waste storage facilities to support plant operation. The ESBWR DCD, however, provides the capacity to store the amount of low-level radioactive waste that could be generated in 6 months of operation. Accordingly, the staff requests the applicant to describe the facilities plan for long-term storage of low-level radioactive wastes projected to be generated during operation of Fermi Unit 3, and the operational program addressing the long-term management and storage of such wastes using the guidance of Regulatory Guide 1.206 and Section 11.4 of the Standard Review Plan (NUREG-0800, Rev. 3).*

***ER RAI HH3.5-1***

*Provide information on how the Class B and Class C low level radioactive waste (LLRW) generated during Fermi 3 operations would be managed.*

**Supporting Information**

*ER Section 3.5.2.3 mentions that "The SWMS [Solid Waste Management System] controls, collects, handles, processes, packages, and temporarily stores solid waste generated by the plant prior to shipping the waste offsite." Also, ESBWR DCD Revision 5 Section 11.4.1 states that "on-site storage space for a six-month volume of packaged waste is provided in the radwaste building."*

*In light of the current lack of a licensed offsite disposal facility and the uncertainty regarding the availability of a new disposal facility during the license term, Detroit Edison should describe the plan for storing Class B and C LLRW onsite during the license term and the environmental consequences of such extended onsite storage. Alternatively, if Detroit Edison has a plan for managing the wastes that does not require an offsite disposal facility or extended onsite storage, it should provide details for that plan.*

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**Response**

To accommodate additional Class B and C waste, the Fermi 3 Radwaste Building has been reconfigured. The Radwaste Building provides storage space sized to hold the total combined minimum volume of 3 months of packaged Class A and 10 years of packaged Class B/C low-level radioactive waste estimated to be generated during plant operations. Such waste is normally promptly disposed of at licensed offsite processing and disposal facilities. The only operating disposal sites that presently accept Class B and C waste are in Richland, Washington, and Barnwell, South Carolina. However, neither of these facilities currently accepts Class B and C waste from outside the Northwest, Rocky Mountain and Atlantic LLRW compacts. A recently-licensed site in Andrews County, Texas, if opened, will, at least initially, only accept waste from Texas and Vermont, which are members of a prearranged compact. Michigan is not currently affiliated with any compact.

In the event that no offsite disposal facility is available to accept Class B and C waste from Fermi 3 when it commences operation, additional waste minimization measures could be implemented to reduce or eliminate the generation of Class B and C waste, with the potential to greatly extend the planned 10 year storage capacity. These measures could include reducing the service run length for resin beds, short loading media volumes in ion exchange vessels, and other techniques discussed in the EPRI Class B/C Waste Reduction Guide (Nov. 2007) and EPRI Operational Strategies to Reduce Class B/C Wastes (April 2007). As noted above, without crediting these waste minimization measures, the Radwaste Building provides at least 10 years capacity for storing Class B and C waste. This provides time for offsite disposal capability to be developed or additional onsite capacity to be added. Continued storage of Class B and C waste in the SWMS would be in accordance with procedures that will maintain occupational exposures within permissible limits and result in no additional environmental impacts.

Class B and C wastes are stored in HICs, within the Fermi 3 Radwaste Building, that meet transportation and disposal requirements in effect at the time the container is placed in storage. In the event that repackaging is required at the time of disposal due to requirements in effect at that time, the HIC can be relocated to a dewatering station for processing. The Class B and C HICs are remotely placed in the storage area utilizing the Radwaste Building crane. Accurate placement and retrieval of the HIC is accomplished using indexing or locating features of the crane. The crane is equipped with a grapple mechanism and load cell for handling the HIC or shield bell. To maintain container integrity for the storage period, and to allow handling during eventual transportation and disposal, the HICs are constructed of corrosion resistant materials that are compatible with the stored waste and the indoor environment of the Radwaste Building. The design life for the HIC is 300 years. HICs are vented to prevent internal pressurization due to generation of gases during storage. The vented gases are removed from the storage space by the Radwaste Building heating, ventilating, and air-conditioning system, which is filtered and

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monitored prior to discharge to atmosphere. Visual inspection of the HICs is periodically performed using remote monitoring techniques to ensure container integrity in storage.

If additional storage capacity for Class B and C LLRW beyond 10 years is desired, Fermi 3 could elect to construct a new temporary storage facility. Any facility would meet applicable NRC guidance, including Appendix 11.4-A of the Standard Review Plan, "Design Guidance for Temporary Storage of Low-Level Waste." Such a facility would be located in a previously disturbed area in the vicinity of the power block, and in a location that would not affect wetlands. The environmental impacts of constructing such a facility would be minimal. The operation of a storage facility meeting the standards in Appendix 11.4-A would provide appropriate protection against releases, maintain exposures to workers and the public below applicable limits, and result in no significant environmental impact.

In lieu of onsite storage, Fermi 3 could enter into a commercial agreement with a third-party contractor that would process, store, own, and ultimately dispose of low-level waste generated as a result of Fermi 3 operations. Activities associated with the transportation, processing, and ultimate disposal of low level waste by the third-party contractor would necessarily comply with all applicable laws and regulations in order to assure public health and safety and protection of the environment. In particular, the third-party contractor would conduct its operations consistent with applicable Agreement State or NRC regulations (*e.g.*, 10 CFR Part 20), which will assure that the radiological impacts from these activities would be small. Environmental impacts resulting from management of low-level wastes are expected to be bounded by the NRC's findings in 10 CFR 51.51(b) (Table S-3). Table S-3 assumes that solid, low-level waste from reactors will be disposed of through shallow land burial, and concludes that this kind of disposal will not result in the release of any significant effluent to the environment.

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**Proposed COLA Revision**

Proposed changes to the Fermi 3 COLA, Part 2, Part 3, Part 7, and Part 10 are attached. Markups illustrate changes to relevant portions of the COLA to implement the storage plan identified above, including additional design progression details. Fermi 3 COLA markups which include security related general arrangement drawings are provided in Enclosure 1. Proposed changes to the following COLA sections are attached:

- Part 2, FSAR Section 1.2
- Part 2, FSAR Section 1.8
- Part 2, FSAR Table 1.9-201
- Part 2, FSAR Table 1C-201
- Part 2, FSAR Section 9.4
- Part 2, FSAR Section 9A
- Part 2, FSAR Section 11.4
- Part 2, FSAR Section 12.3
- Part 3, ER Section 3.5.2.3
- Part 3, ER Section 3.8.3
- Part 7, Departures Report
- Part 10, ITAAC

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**Markup of Detroit Edison COLA**  
(following 81 pages)

The following markup represents how Detroit Edison intends to reflect this RAI response in the next submittal of the Fermi 3 COLA Revision 2. However, the same COLA content may be impacted by revisions to the ESBWR DCD, responses to other COLA RAIs, other COLA changes, plant design changes, editorial or typographical corrections, etc. As a result, the final COLA content that appears in a future submittal may be different than presented here.

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## 1.2 General Plant Description

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

Add Insert "1" here



---

### 1.2.2.11.4 Main Turbine

---

Delete the second sentence of the first paragraph and replace the first sentence of the first paragraph with the following.

---

**STD CDI**

The main turbine has one high-pressure (HP) turbine and three low-pressure (LP) turbines.

---

---

### 1.2.2.11.7 Main Condenser

---

Delete the second sentence of the third paragraph and replace the first sentence of the third paragraph with the following.

---

**STD CDI**

The main condenser is a multi-pressure, triple-shell unit.

---

---

### 1.2.2.12.13 Hydrogen Water Chemistry System

---

Replace this section with the following.

---

**STD CDI**

The Hydrogen Water Chemistry System (HWCS) consists of hydrogen and oxygen supply systems to inject hydrogen in the feedwater and oxygen in the offgas, plus monitoring systems to track the effectiveness of the system.

---

---

### 1.2.2.12.15 Zinc Injection System

---

Replace this section with the following.

---

**STD CDI**

The Zinc Injection System is not utilized.

---

---

### 1.2.2.12.16 Freeze Protection

---

Replace this section with the following.

---

Insert "1"

<b>1.2.2.10.2 Solid Waste Management System</b>	
	Delete the first sentence of the seventh paragraph and replace the first sentence of the seventh paragraph with the following.
EF3 DEP 11.4-1	The Radwaste Building is configured to accommodate at least 10 years of packaged Class B and C waste and approximately three months of packaged Class A waste considering routine operations and anticipated operational occurrences.

---

**STD CDI** Freeze protection is incorporated at the individual system level using insulation and heat tracing for all external tanks and piping that may freeze during winter weather.

---

1.2.2.16.10 **Other Building Structures**

---

Replace the fifth paragraph with the following.

---

**EF3 CDI** Other facilities include the Service Building, Water Treatment Building, Administration Building, Training Center, Sewage Discharge System, warehouse, and hot and cold machine shop. These are all of conventional size and design, and in some cases may be shared with other units at the same site.

---

**STD SUP 1.2-1** 1.2.2.19 **Modular Construction Techniques and Plans**  
[START COM 1.2-001] To the extent practical, modular construction techniques that have been applied during ABWR construction projects will be adapted and/or modified for use during ESBWR construction. Modularization reviews will be performed to develop a plan for bringing the ABWR experience into the ESBWR. Once completed, the results of the modularization reviews will be used as guidance to develop the detailed design of the areas affected by modularization. [END COM 1.2-001]

---

Add Insert "2" here →

**1.3 Comparison Tables**

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

---

Add the following at the end of this section.

---

**EF3 COL 1.3-1-A** There are no updates to DCD Table 1.3-1 based on unit specific information.

---

1.3.1 **COL Information**

1.3-1-A **Update Table 1.3-1**

This COL item is addressed in Section 1.3.

---

INSERT "2" (Page 1 of 5)

FIGURE 1.2-21R. RADWASTE BUILDING PLAN AT ELEVATION -9350  
{{{Security-Related Information – Withheld Under 10 CFR 2.390}}}

See Enclosure 1 of this letter

INSERT "2" (Page 2 of 5)

FIGURE 1.2-22R. RADWASTE BUILDING PLAN AT ELEVATION -2350  
{{{Security-Related Information – Withheld Under 10 CFR 2.390}}}

See Enclosure 1 of this letter

INSERT "2" (Page 3 of 5)

FIGURE 1.2-23R. RADWASTE BUILDING PLAN AT ELEVATION 4650  
{{{Security-Related Information – Withheld Under 10 CFR 2.390}}}

See Enclosure 1 of this letter

INSERT "2" (Page 4 of 5)

FIGURE 1.2-24R. RADWASTE BUILDING PLAN AT ELEVATION 10650  
{{{Security-Related Information – Withheld Under 10 CFR 2.390}}}

See Enclosure 1 of this letter

INSERT "2" (Page 5 of 5)

FIGURE 1.2-25R. RADWASTE BUILDING ELEVATION SECTION A-A AND  
SECTION B-B

{{{Security-Related Information – Withheld Under 10 CFR 2.390}}}

See Enclosure 1 of this letter



---

## 1.8 Interfaces with Standard Design

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

### 1.8.2 Identification of Balance of Plant Interfaces

---

Add the following paragraph after the first paragraph of this section.

**STD CDI**

---

The significant interface requirements for those systems that are beyond the scope of the DCD are identified in DCD Tier 1.

---

Delete the second sentence of the second paragraph of this section.

---

**EF3 SUP 1.8-1**

### 1.8.3 Verification of Site Parameters

Chapter 2.0 provides information demonstrating that the site characteristics fall within the ESBWR site parameters specified in the referenced certified design.

---

**EF3 SUP 1.8-2**

### 1.8.4 COL Information Items and Permit Conditions

Section 1.10 identifies specific FSAR sections that address the COL Information items from the referenced certified design, and COL Action Items.

One site-specific departure has been identified from the referenced certified design, which is described in COLA Part 7. (Reference Table 1.8-201)

**EF3 SUP 1.8-3**

### 1.8.5 Generic Changes and Departures from the Referenced Certified Design

~~There are no generic changes or departures from the referenced certified design. (Reference Table 1.8-201).~~

---

**EF3 SUP 1.8-4**

### 1.8.6 Variances from the ESP and ESPA SSAR

This supplement is not applicable to Fermi 3.

---

**EF3 SUP 1.8-5**

### 1.8.7 Conceptual Design Information

The referenced DCD includes conceptual design information (CDI) for certain systems, or portions of systems, that are outside the scope of the standard plant design. Table 1.8-202 identifies systems for which either

the CDI in the DCD is adopted as the actual system design information, or the CDI in the DCD is replaced with site-specific design information, along with cross references to FSAR sections where the CDI is treated. Where there are differences between the conceptual design and the actual design, these differences have been evaluated. The evaluations have concluded that there are no impacts on the safety evaluations provided in the referenced certified design.

---

**EF3 SUP 1.8-6**

**1.8.8 Probabilistic Risk Assessment**

Site- and plant-specific information, including site meteorological data and site-specific population distribution, plant-specific design information that replaced conceptual design information described in the DCD, and the departures listed in Subsection 1.8.5, were reviewed with respect to the design certification PRA. The conclusion, which is documented in Section 19.5, is that there is no significant change from the certified design PRA.

---

**Table 1.8-201 Departures from the Referenced Certified Design [EF3 SUP 1.8-3]**

Number	Subject	FSAR Section
<del>None</del>	Long-Term, Temporary Storage of Class B and C Low-Level Radioactive Waste	1.2.2.10.2, 9.4.3.1, 11.4, 11.4.1, 11.4.2.2.1, 11.4.2.2.2, 11.4.2.2.4, and 11.4.2.3.1

EF3 DEP 11.4-1

Table 1.9-201 Conformance with Standard Review Plan (Sheet 29 of 47)

[EF3 COL 1.9-3-A]

SRP Section	Title	Rev	Date	Specific Acceptance Criteria	Evaluation
11.4	Solid Waste Management System	Rev. 3	Mar-07	II.1, II.2, II.5, II.7, II.8, II.9, II.14 II.3, II.4, II.6, II.11, II.12, II.13	Conforms.  Conforms (addressed in DCD Section 11.4 and in Section 11.4; for Acceptance Criterion II.13, this is also addressed in Section 11.5) with the following exception: RG 1.206, Section 13.4 includes the PCP as an operational program, and only requires a program description in the COLA and a milestone for full program implementation. The FSAR provides a description of the PCP, along with the implementation milestone. Procedures for handling waste will be developed once the PCP is implemented.
				<del>II.10</del>	<del>Not applicable. There is no temporary on-site storage facility.</del>
11.5	Process and Effluent Radiological Monitoring Instrumentation and Sampling Systems	Rev. 4	Mar-07	II.1, II.2	Conforms (addressed in DCD Section 11.5.2) with the following exception: Procedural controls are based on NQA-1, rather than RG 1.33, as described in Section 13.5. Quality Assurance Program requirements are addressed in Section 17.5.

II.10,

**Table 1C-201 Operating Experience Review Results Summary—Generic Letters**

STD COL 1C.1-1-A

~~[STD COL 1C.1-1-A]~~

No.	Issue Date	Title	Evaluation Result or Location(s) Where Discussed
82-39	12/22/82	Problems with the Submittals of 10 CFR 73.21 Safeguards Information Licensing Review	Not Applicable. Is an administrative communication. The site has an approved procedure for handling Safeguards Information including how to mail such information to authorized recipients.

Add Insert "3" here

**Table 1C-202 Operating Experience Review Results Summary—IE Bulletins**

[STD COL 1C.1-2-A]

No.	Issue Date	Title	Evaluation Result or Location(s) Where Discussed
2005-02	07/18/05	Emergency Preparedness and Response Actions for Security-Based Events	COLA Part 5, Emergency Plan

Insert "3"

	No.	Issue Date	Title	Evaluation Result or Location(s) Where Discussed
EF3 DEP 11.4-1	81-38	11/10/81	Storage of Low-Level Radioactive Wastes at Power Reactor Sites	The Radwaste Building includes space for processing and storage of low level waste. Storage space is provided for at least 10 years of packaged Class B and C waste and approximately 3 months worth of packaged Class A waste. Section 11.4

9.3.11 **Zinc Injection System**

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

9.3.11.2 **System Description**

---

Replace the second paragraph with the following.

---

**STD COL 9.3.11-1-A** A Zinc Injection System is not utilized.

---

9.3.11.4 **Test and Inspections**

---

Replace the second paragraph with the following.

---

**STD COL 9.3.11-2-A** A Zinc Injection System is not utilized.

---

9.3.11.6 **COL Information**

**STD COL 9.3.11-1-A** 9.3.11-1-A **Determine Need for Zinc Injection System**  
This COL item is addressed in Subsection 9.3.11.2.

**STD COL 9.3.11-2-A** 9.3.11-2-A **Provide System Description for Zinc Injection System**  
This COL item is addressed in Subsection 9.3.11.4.

---

9.3.12 **Auxiliary Boiler System**

This section of the referenced DCD is incorporated by reference with no departures or supplements.

---

**9.4 Heating, Ventilation, and Air Conditioning**

Add Insert "4" here

~~This section of the referenced DCD is incorporated by reference with no departures or supplements.~~

---

**9.5 Other Auxiliary Systems**

9.5.1 **Fire Protection System**

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

---

Insert "4"

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

**9.4.3.1 Design Basis**

**RWGAVS**

Add the following new bullet at the end of the first paragraph.

EF3 DEP 11.4-1

- The RWGAVS provides the capability to exhaust air from the Class A, B and C storage areas. This includes the ventilation of the area to prevent the buildup of hydrogen or biogas that may be generated in and vented from the stored Class B and C high integrity containers. This area will be equipped with hydrogen/explosive gas detectors.



---

## Appendix 9A Fire Hazards Analysis

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

---

### 9A.2.1 Codes and Standards

---

Add the following second paragraph.

---

#### EF3 SUP 9A-01

The codes and standards that are applicable to the design of the site-specific portions of the yard are listed in Table 9.5-201. Table 1.9-204 identifies the relevant editions for each applicable code and standard. These codes and standards also apply to the operational aspects of the fire detection and suppression systems.

---

### 9A.4.7 Yard

---

Replace the first paragraph with the following.

---

#### EF3 COL 9A.7-1-A

The Yard includes all portions of the plant site external to the Reactor Building, Fuel Building, Control Building, Turbine Building, Radwaste Building, and Electrical Building. The fire zone drawings for the site-specific portions of the yard are provided in Figure 9A.2-33R and Figure 9A.2-201.

---

Replace the second paragraph with the following.

---

#### EF3 COL 9A.7-2-A

**[START COM 9A-001]** A detailed fire hazards analysis of the yard area that is outside the scope of the certified design can not be completed until cable routing is performed during final design. This information will be provided six months prior to fuel load. **[END COM 9A-001]**

The FSAR will be revised to include this information, as appropriate, as part of a subsequent FSAR update.

Add Insert "5" here →

### 9A.5.7 Yard

---

Replace the last two sentences with the following.

---

Insert "5"

**9A.5.5 Radwaste Building**

Replace the section with the following.

EF3 DEP 11.4-1

See Table 9A.5-5R for detailed fire hazards analysis of each fire area within the Radwaste Building.

See Figures 9A.2-20R through 9A.2-24R for Radwaste Building fire drawings.

**EF3 COL 9A.7-2-A** This COL item is addressed in Subsection 9A.4.7, Subsection 9A.5.7, Subsection 9A.5.8, and Subsection 9A.5.9.

---

**Table 9A.5-7 Revisions**

**EF3 COL 9A.7-2-A** Delete Fire Area F4202.  
Add Fire Areas F8100 and F8101.

Add Insert "6" before Table 9A.5-7R



**Table 9A.5-5R**  
**Radwaste Building**

Fire Area: <b>F6101</b>		Description: <b>Radwaste Handling Equipment</b>				
Building: <b>Radwaste</b>		Applicable codes: <b>IBC; Reg Guide 1.189; NFPA 10, 13, 14, 72, 90A, 101, 804</b>				
Fire Zone Dwg:		Building code occupancy classification: <b>F-1</b>				
<b>9A.2-20R</b> <b>9A.2-21R</b> <b>9A.2-22R</b> <b>9A.2-23R</b> <b>9A.2-24R</b>		Electrical classification: <b>none</b>				
		Safety-related divisional equipment or cables: <b>none</b>				
		Nonsafety-related redundant trains or equipment or cables: <b>none</b>				
		Surrounded by fire barriers rated at: <b>3 hours</b>				
		Except: <b>basemat (non-rated); exterior underground walls (non-rated);</b>				
Consisting of the following Rooms:						
EL	Room #	Potential Combustibles	Fire Detection Primary Backup	Fire Suppression Primary Backup		
-9350	6100, 6102, 6103, 6104, 6105, 6106, 6107, 6108, 6109, 6150, 6160, 6161, 6171, 6172, 6173, 6174, 6175, 6176, 6177, 6180, 6182, 6183, 6185, 6186, 6187, 6188, 6189	Class IIIB lubricants Cable insulation Transient combustibles Class A combustibles	Suppression flowswitch	Manual pulls (outside stairwell at each landing)	Wet-pipe sprinkler 8.1 L/min per m2 over 140 m2	Hose racks (in nearby stairwells) ABC fire extinguishers
-2350	6103, 6104, 6105, 6106, 6107, 6108, 6109, 6150, 6160, 6161, 6171, 6200, 6201, 6202, 6251, 6271, 6272, 6273, 6274, 6275, 6276, 6277, 6278, 6281, 6282, 6283, 6284					
4650	6381, 6382, 6383, 6390, 6391, 6392, 6393, 6394, 6395, 6396					
		> 700	Anticipated combustible load, MJ/m2			
		700	Unsprinklered combustible load limit, MJ/m2			
Assuming operation of installed fire extinguishing equipment, impact of fire upon:				Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:		
Plant operation: <b>None; restoration required before handling radwaste</b>				<b>Complete burnout of all equipment and cables within this Fire Area affects no safety-related or safe shutdown divisional equipment; all safety divisions and both redundant trains A and B are operable.</b>		
Radiological release: <b>Contained within building</b>						
Life safety: <b>Travel distance limits to EXITs meet NFPA 101</b>						
Manual firefighting: <b>Access via stairwells and exterior doors</b>						
Property loss: <b>Moderate</b>						

**Table 9A.5-5R  
Radwaste Building (cont.)**

Fire Area: <b>F6170</b> Building: <b>Radwaste</b> Fire Zone Dwg: <b>9A.2-20R</b>	Description: <b>Electrical Equipment</b> Applicable codes: <b>IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804</b> Building code occupancy classification: <b>F-1</b> Electrical classification: <b>none</b> Safety-related divisional equipment or cables: <b>none</b> Nonsafety-related redundant trains or equipment or cables: <b>none</b> Surrounded by fire barriers rated at: <b>3 hours</b> Except: <b>basemat (non-rated); elevator doors (1.5 hr rated); exterior underground walls (non-rated)</b>					
Consisting of the following Rooms:						
EL	Room #	Potential Combustibles	Fire Detection		Fire Suppression	
			Primary	Backup	Primary	Backup
-9350	6170	Electrical equipment Cable insulation	Area-wide ionization	Manual pulls (outside stairwells at each landing)	CO2 fire extinguishers	Hose racks (in nearby stairwells)
		< 1400	Anticipated combustible load, MJ/m2		Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown: <b>Complete burnout of all equipment and cables within this Fire Area affects no safety-related or safe shutdown divisional equipment; all safety divisions and both redundant trains A and B are operable.</b>	
		1400	Unsprinklered combustible load limit, MJ/m2			
Assuming operation of installed fire extinguishing equipment, impact of fire upon:						
Plant operation:		<b>None; restoration required before handling radwaste</b>				
Radiological release:		<b>None, no radiological materials present</b>				
Life safety:		<b>Travel distance limits to EXITs meet NFPA 101</b>				
Manual firefighting:		<b>Access via stairwells</b>				
Property loss:		<b>Moderate</b>				

**Table 9A.5-5R  
Radwaste Building (cont.)**

Fire Area: <b>F6190</b>		Description: <b>Elevator</b>		Building code occupancy classification: <b>F-1</b>		
Building: <b>Radwaste</b>		Applicable codes: <b>IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804; ASME A17.1</b>		Electrical classification: <b>none</b>		
Fire Zone Dwg: <b>9A.2-20R 9A.2-21R 9A.2-22R 9A.2-23R</b>		Safety-related divisional equipment or cables: <b>none</b>		Nonsafety-related redundant trains or equipment or cables: <b>none</b>		
		Surrounded by fire barriers rated at: <b>3 hours</b>		Except: <b>basemat (non-rated); elevator doors (1.5 hr rated)</b>		
Consisting of the following Rooms:			Fire Detection		Fire Suppression	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
-9350	6190	Class IIIB lubricants Cable insulation	Area-wide ionization	Manual pulls (outside Elev at each landing)	ABC fire extinguishers (outside Elev at each landing)	Hose racks (in nearby stairwell)
-2350						
4650						
10650						
13650	6580	Class IIIB lubricants Cable insulation Electrical equipment			CO2 fire extinguisher (outside room)	
		<b>&lt; 700</b>	Anticipated combustible load, MJ/m2		Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown: <b>Complete burnout of all equipment and cables within this Fire Area affects no safety-related or safe shutdown divisional equipment; all safety divisions and both redundant trains A and B are operable.</b>	
		<b>700</b>	Unsprinklered combustible load limit, MJ/m2			
Assuming operation of installed fire extinguishing equipment, impact of fire upon:						
Plant operation:		<b>None</b>				
Radiological release:		<b>None, no radiological materials present</b>				
Life safety:		<b>Travel distance limits to EXITs meet NFPA 101</b>				
Manual firefighting:		<b>Access via stairwells and hoistway doors</b>				
Property loss:		<b>Negligible</b>				

**Table 9A.5-5R  
Radwaste Building (cont.)**

Fire Area: <b>F6191</b>		Description: <b>Stairwell A</b>				
Building: <b>Radwaste</b>		Applicable codes: <b>IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804</b>				
Fire Zone Dwg: <b>9A.2-20R 9A.2-21R 9A.2-22R 9A.2-23R</b>		Building code occupancy classification: <b>F-1</b>				
		Electrical classification: <b>none</b>				
		Safety-related divisional equipment or cables: <b>none</b>				
		Nonsafety-related redundant trains or equipment or cables: <b>none</b>				
		Surrounded by fire barriers rated at: <b>3 hours</b>				
		Except: <b>basemat (non-rated)</b>				
Consisting of the following Rooms:						
EL	Room #	Potential Combustibles	Fire Detection Primary      Backup			
			Fire Suppression Primary      Backup			
<b>-9350</b>	<b>6191</b>	<b>None</b>	<b>Area-wide ionization</b>	<b>Manual pulls (outside stairwell at each landing)</b>	<b>Hose racks</b>	<b>ABC fire extinguishers</b>
<b>-2350</b>						
<b>4650</b>						
<b>10650</b>						
<b>13650</b>						
		<b>negligible</b>	Anticipated combustible load, MJ/m <sup>2</sup>	Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:		
		<b>700</b>	Unsprinklered combustible load limit, MJ/m <sup>2</sup>			
Assuming operation of installed fire extinguishing equipment, impact of fire upon:				<b>Complete burnout of all equipment and cables within this Fire Area affects no safety-related or safe shutdown divisional equipment; all safety divisions and both redundant trains A and B are operable.</b>		
Plant operation:		<b>None</b>				
Radiological release:		<b>None, no radiological materials present</b>				
Life safety:		<b>Travel distance limits to EXITs meet NFPA 101</b>				
Manual firefighting:		<b>Access via exterior and interior doors</b>				
Property loss:		<b>Negligible</b>				

**Table 9A.5-5R  
Radwaste Building (cont.)**

Fire Area: <b>F6192</b>	Description: <b>Stairwell B</b>					
Building: <b>Radwaste</b>	Applicable codes: <b>IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804</b>					
Fire Zone Dwg: <b>9A.2-20R 9A.2-21R 9A.2-22R 9A.2-23R</b>	Building code occupancy classification: <b>F-1</b>	Electrical classification: <b>none</b>				
	Safety-related divisional equipment or cables: <b>none</b>	Nonsafety-related redundant trains or equipment or cables: <b>none</b>				
	Surrounded by fire barriers rated at: <b>3 hours</b>					
	Except: <b>basemat (non-rated)</b>					
<b>Consisting of the following Rooms:</b>						
EL	Room #	Potential Combustibles	Fire Detection	Fire Suppression		
			Primary	Backup	Primary	Backup
<b>-9350</b>	<b>6192</b>	<b>None</b>	<b>Area-wide ionization</b>	<b>Manual pulls (outside stairwell at each landing)</b>	<b>Hose racks</b>	<b>ABC fire extinguishers</b>
<b>-2350</b>						
<b>4650</b>						
<b>10650</b>						
		<b>negligible</b>	Anticipated combustible load, MJ/m2	Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:		
		<b>700</b>	Unsprinklered combustible load limit, MJ/m2	<b>Complete burnout of all equipment and cables within this Fire Area affects no safety-related or safe shutdown divisional equipment; all safety divisions and both redundant trains A and B are operable.</b>		
Assuming operation of installed fire extinguishing equipment, impact of fire upon:						
Plant operation:	<b>None</b>					
Radiological release:	<b>None, no radiological materials present</b>					
Life safety:	<b>Travel distance limits to EXITs meet NFPA 101</b>					
Manual firefighting:	<b>Access via exterior and interior doors</b>					
Property loss:	<b>Negligible</b>					



**Table 9A.5-5R  
Radwaste Building (cont.)**

Fire Area: <b>F6193</b> Building: <b>Radwaste</b> Fire Zone Dwg: <b>9A.2-20R</b> <b>9A.2-21R</b> <b>9A.2-22R</b> <b>9A.2-23R</b>	Description: <b>Stairwell C</b> Applicable codes: <b>IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804</b> Building code occupancy classification: <b>F-1</b> Electrical classification: <b>none</b> Safety-related divisional equipment or cables: <b>none</b> Nonsafety-related redundant trains or equipment or cables: <b>none</b> Surrounded by fire barriers rated at: <b>3 hours</b> Except: <b>basemat (non-rated)</b>																																																		
Consisting of the following Rooms:																																																			
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:10%;">EL</th> <th style="width:10%;">Room #</th> <th style="width:20%;">Potential Combustibles</th> <th style="width:15%;">Fire Detection Primary</th> <th style="width:15%;">Backup</th> <th style="width:15%;">Fire Suppression Primary</th> <th style="width:15%;">Backup</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">-9350</td> <td style="text-align: center;">6193</td> <td style="text-align: center;">None</td> <td style="text-align: center;">Area-wide ionization</td> <td style="text-align: center;">Manual pulls (outside stairwell at each landing)</td> <td style="text-align: center;">Hose racks</td> <td style="text-align: center;">ABC fire extinguishers</td> </tr> <tr> <td style="text-align: center;">-2350</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">4650</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">10650</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	EL	Room #	Potential Combustibles	Fire Detection Primary	Backup	Fire Suppression Primary	Backup	-9350	6193	None	Area-wide ionization	Manual pulls (outside stairwell at each landing)	Hose racks	ABC fire extinguishers	-2350							4650							10650							<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:20%; text-align: center;"><b>negligible</b></td> <td>Anticipated combustible load, MJ/m2</td> <td rowspan="2" style="vertical-align: top;">                     Assuming automatic &amp; manual FP equipment does not function, impact of design basis fire on safe shutdown:  <b>Complete burnout of all equipment and cables within this Fire Area affects no safety-related or safe shutdown divisional equipment; all safety divisions and both redundant trains A and B are operable.</b> </td> </tr> <tr> <td style="text-align: center;"><b>700</b></td> <td>Unsprinklered combustible load limit, MJ/m2</td> </tr> </table> <p>Assuming operation of installed fire extinguishing equipment, impact of fire upon:</p> <table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:30%;">Plant operation:</td> <td><b>None</b></td> </tr> <tr> <td>Radiological release:</td> <td><b>None, no radiological materials present</b></td> </tr> <tr> <td>Life safety:</td> <td><b>Travel distance limits to EXITs meet NFPA 101</b></td> </tr> <tr> <td>Manual firefighting:</td> <td><b>Access via exterior and interior doors</b></td> </tr> <tr> <td>Property loss:</td> <td><b>Negligible</b></td> </tr> </table>	<b>negligible</b>	Anticipated combustible load, MJ/m2	Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown: <b>Complete burnout of all equipment and cables within this Fire Area affects no safety-related or safe shutdown divisional equipment; all safety divisions and both redundant trains A and B are operable.</b>	<b>700</b>	Unsprinklered combustible load limit, MJ/m2	Plant operation:	<b>None</b>	Radiological release:	<b>None, no radiological materials present</b>	Life safety:	<b>Travel distance limits to EXITs meet NFPA 101</b>	Manual firefighting:	<b>Access via exterior and interior doors</b>	Property loss:	<b>Negligible</b>
EL	Room #	Potential Combustibles	Fire Detection Primary	Backup	Fire Suppression Primary	Backup																																													
-9350	6193	None	Area-wide ionization	Manual pulls (outside stairwell at each landing)	Hose racks	ABC fire extinguishers																																													
-2350																																																			
4650																																																			
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<b>negligible</b>	Anticipated combustible load, MJ/m2	Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown: <b>Complete burnout of all equipment and cables within this Fire Area affects no safety-related or safe shutdown divisional equipment; all safety divisions and both redundant trains A and B are operable.</b>																																																	
<b>700</b>	Unsprinklered combustible load limit, MJ/m2																																																		
Plant operation:	<b>None</b>																																																		
Radiological release:	<b>None, no radiological materials present</b>																																																		
Life safety:	<b>Travel distance limits to EXITs meet NFPA 101</b>																																																		
Manual firefighting:	<b>Access via exterior and interior doors</b>																																																		
Property loss:	<b>Negligible</b>																																																		

**Table 9A.5-5R  
Radwaste Building (cont.)**

Fire Area: <b>F6194</b>		Description: <b>Stairwell D</b>				
Building: <b>Radwaste</b>		Applicable codes: <b>IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804</b>				
Fire Zone Dwg:		Building code occupancy classification: <b>F-1</b>				
<b>9A.2-20R</b>		Electrical classification: <b>none</b>				
<b>9A.2-21R</b>		Safety-related divisional equipment or cables: <b>none</b>				
<b>9A.2-22R</b>		Nonsafety-related redundant trains or equipment or cables: <b>none</b>				
<b>9A.2-23R</b>		Surrounded by fire barriers rated at: <b>3 hours</b>				
		Except: <b>basemat (non-rated)</b>				
Consisting of the following Rooms:			Fire Detection		Fire Suppression	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
<b>-9350</b>	<b>- 6194</b>	<b>None</b>	<b>Area-wide ionization</b>	<b>Manual pulls (outside stairwell at each landing)</b>	<b>Hose racks</b>	<b>ABC fire extinguishers</b>
<b>-2350</b>						
<b>4650</b>						
<b>10650</b>						
		<b>negligible</b>	Anticipated combustible load, MJ/m2		Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown: <b>Complete burnout of all equipment and cables within this Fire Area affects no safety-related or safe shutdown divisional equipment; all safety divisions and both redundant trains A and B are operable.</b>	
		<b>700</b>	Unsprinklered combustible load limit, MJ/m2			
Assuming operation of installed fire extinguishing equipment, impact of fire upon:						
Plant operation:		<b>None</b>				
Radiological release:		<b>None, no radiological materials present</b>				
Life safety:		<b>Travel distance limits to EXITS meet NFPA 101</b>				
Manual firefighting:		<b>Access via exterior and interior doors</b>				
Property loss:		<b>Negligible</b>				

**Table 9A.5-5  
Radwaste Building (cont.)**

Fire Area: <b>F6270</b> Building: <b>Radwaste</b> Fire Zone Dwg: <b>9A.2-21R</b> <b>9A.2-22R</b>	Description: <b>Radwaste Control Room Complex</b> Applicable codes: <b>IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804</b>	Building code occupancy classification: <b>B</b> Electrical classification: <b>none</b> Safety-related divisional equipment or cables: <b>none</b> Nonsafety-related redundant trains or equipment or cables: <b>none</b> Surrounded by fire barriers rated at: <b>3 hours</b> Except: <b>elevator doors (1.5 hr rated); basemat for 6287 (non-rated)</b> interior fire barriers rated at: <b>1 hours</b> between: <b>rooms 6270 and 6287</b>				
Consisting of the following Rooms:						
EL	Room #	Potential Combustibles	Fire Detection Primary	Backup	Fire Suppression Primary	Backup
-2350	6270	Electrical equipment Cable insulation Class A combustibles	Area-wide ionization	Manual pulls (outside stairwells at each landing)	CO2 fire extinguishers	Hose racks (in nearby stairwells)
	6270 below floor	Cable insulation			Hose racks (in nearby stairwells)	ABC fire extinguishers
	6287, 6288, 6289	Electrical equipment Cable insulation Class A combustibles				
		<b>&lt; 1400</b>	Anticipated combustible load, MJ/m <sup>2</sup>		Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown: <b>Complete burnout of all equipment and cables within this Fire Area affects no safety-related or safe shutdown divisional equipment; all safety divisions and both redundant trains A and B are operable.</b>	
		<b>1400</b>	Unsprinklered combustible load limit, MJ/m <sup>2</sup>			
Assuming operation of installed fire extinguishing equipment, impact of fire upon:						
Plant operation:		<b>None; restoration required before handling radwaste</b>				
Radiological release:		<b>None, no radiological materials present</b>				
Life safety:		<b>Travel distance limits to EXITs meet NFPA 101</b>				
Manual firefighting:		<b>Access via stairwells</b>				
Property loss:		<b>Moderate</b>				

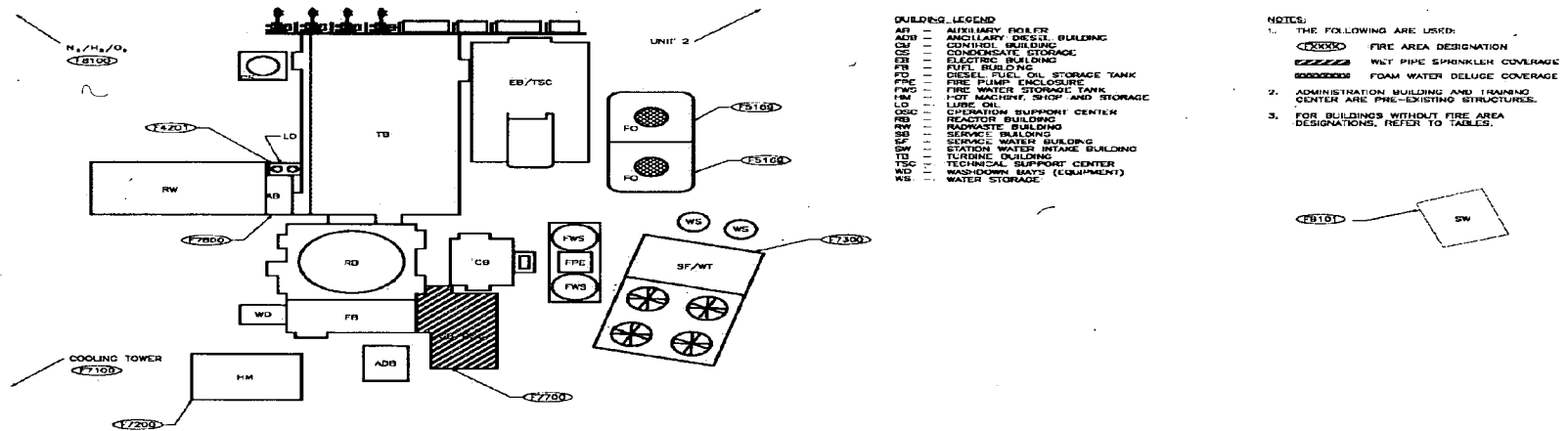
**Table 9A.5-5  
Radwaste Building (cont.)**

Fire Area: <b>F6301</b> Building: <b>Radwaste</b> Fire Zone Dwg: <b>9A.2-22R</b> <b>9A.2-23R</b>	Description: <b>HVAC Equipment</b> Applicable codes: <b>IBC; Reg Guide 1.189; NFPA 10, 14, 72, 90A, 101, 804</b> Building code occupancy classification: <b>F-1</b> Electrical classification: <b>none</b> Safety-related divisional equipment or cables: <b>none</b> Nonsafety-related redundant trains or equipment or cables: <b>none</b> Surrounded by fire barriers rated at: <b>3 hours</b> Except: <b>elevator doors (1.5 hr rated)</b>					
Consisting of the following Rooms:						
EL	Room #	Potential Combustibles	Fire Detection		Fire Suppression	
			Primary	Backup	Primary	Backup
4650	6380	Class IIIB lubricants Cable insulation	Area-wide ionization	Manual pulls (outside stairwells at each landing)	Hose racks	ABC fire extinguishers
10650	6480	Filter media				
		< 700	Anticipated combustible load, MJ/m <sup>2</sup>		Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown: <b>Complete burnout of all equipment and cables within this Fire Area affects no safety-related or safe shutdown divisional equipment; all safety divisions and both redundant trains A and B are operable.</b>	
		700	Unsprinklered combustible load limit, MJ/m <sup>2</sup>			
Assuming operation of installed fire extinguishing equipment, impact of fire upon:						
Plant operation:		<b>None; restoration required before handling radwaste</b>				
Radiological release:		<b>None, no radiological materials present</b>				
Life safety:		<b>Travel distance limits to EXITS meet NFPA 101</b>				
Manual firefighting:		<b>Access via stairwells</b>				
Property loss:		<b>Minor</b>				

Add Insert "7" before Figure 9A.2-33R (Page 1 of 6)

Figure 9A.2-33R Site Fire Protection Zone ESBWR Plot Plan

[EF3 COL 9A.7-1-A]



Insert "7" (Page 2 of 6)

FIGURE 9A.2-20R. RADWASTE BUILDING FIRE PROTECTION ZONES EL -9350  
{{{Security-Related Information – Withheld Under 10 CFR 2.390}}}

See Enclosure 1 of this letter

Insert "7" (Page 3 of 6)

FIGURE 9A.2-21R. RADWASTE BUILDING FIRE PROTECTION ZONES EL -2350  
{{{Security-Related Information – Withheld Under 10 CFR 2.390}}}

See Enclosure 1 of this letter

Insert "7" (Page 4 of 6)

FIGURE 9A.2-22R. RADWASTE BUILDING FIRE PROTECTION ZONES EL 4650  
{{{Security-Related Information – Withheld Under 10 CFR 2.390}}}

See Enclosure 1 of this letter



Insert "7" (Page 5 of 6)

FIGURE 9A.2-23R. RADWASTE BUILDING FIRE PROTECTION ZONES EL 10650  
{{{Security-Related Information – Withheld Under 10 CFR 2.390}}}

See Enclosure 1 of this letter

Insert "7" (Page 6 of 6)

FIGURE 9A.2-24R. RADWASTE BUILDING FIRE PROTECTION ZONES  
SECTION A-A AND SECTION B-B

{{{Security-Related Information – Withheld Under 10 CFR 2.390}}}

See Enclosure 1 of this letter

## 11.4 Solid Waste Management System

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

Add Insert "8" here

### 11.4.1 SWMS Design Bases

Add the following after the second paragraph.

Add Insert "9" here

#### STD SUP 11.4-1

The LWMS offsite dose calculations, which are described in Subsection 12.2.2.4, include the offsite doses from the SWMS liquid effluents, as they are processed by the LWMS. Similarly, the GWMS offsite dose calculations, which are described in Subsection 12.2.2.2 include the offsite doses from the SWMS gaseous effluents, as they are inputs processed by the GWMS. The cost-benefit analyses in Section 11.2.1 for the LWMS and in Section 11.3.1 for the GWMS address the liquid and gaseous effluents that are generated from solid waste processing by the SWMS. Because these two cost-benefit analyses include the liquid and gaseous effluents from the SWMS, the augments considered for the LWMS and GWMS apply to the SWMS, which provides inputs to those systems. As described in Sections 11.2.1 and 11.3.1, no augments are needed for the LWMS and GWMS to comply with 10 CFR 50, Appendix I, Section II.D. Therefore, no augments are needed for the SWMS to comply with 10 CFR 50, Appendix I, Section II.D.

~~Add the following to the seventh bullet.~~

#### ~~STD COL 11.4-4-A~~

~~The site does not utilize any temporary storage facilities to support plant operation.~~

fourth

12.3.1.5

Replace the fourth sentence of the ~~fourth~~ paragraph with the following:

#### STD COL 11.4-5-A

Section 12.6 discusses how the ESBWR design features and procedures for operation will minimize contamination of the facility and environment, facilitate decommissioning, and minimize the generation of radioactive wastes, in compliance with 10 CFR 20.1406. Section 4 describes the requirement for procedures for operation of the radioactive waste processing system. Operating procedures for mobile/portable SWMS

13.5

Insert "8"

Replace the third and fourth sentences of the third paragraph with the following.

EF3 DEP 11.4-1

The SWMS component capacities are provided in Table 11.4-1R. The estimated annual waste generated from the SWMS Subsystem is provided in Table 11.4-2R. Table 11.4-2R also identifies Class A, B, and C waste in accordance with 10 CFR 61.55 (Reference 11.4-16) and the quantities of waste that would be shipped or stored in the long-term storage area of the Radwaste Building if a licensed disposal facility is not available.

Insert "9"

Replace the seventh bullet of the first paragraph with the following.

EF3 DEP 11.4-1  
STD COL 11.4-4-A

- The Radwaste Building has been configured to accommodate at least 10 years of packaged Class B and C waste and approximately three months of packaged Class A waste, considering routine operations and anticipated operational occurrences. This Class B and C waste storage capacity is based on a conservative estimate of the annual generation of low-level waste, without credit for potential waste minimization techniques and methods other than dewatering. In order to further minimize B/C waste volume a more restrictive waste minimization plan could be implemented. This plan would consider strategies to reduce generation of Class B and C waste, including reducing the in-service run length of resin beds, as well as resin selection, short-loading, and point of generation segregation techniques. Implementation of these techniques could substantially extend the 10 year capacity of the Class B and C storage area in the Radwaste Building.

required by ~~Section 12.5, Section 12.6, and Section~~ address requirements of 10 CFR 20.1406.

Add Insert "10" here

Sections 12.4, 12.5, and 13.5

### 11.4.2.3 Detailed System Component Description

#### 11.4.2.3.5 SWMS Processing Subsystem

Replace the last three sentences of the second paragraph with the following.

#### STD COL 11.4-1-A

Testing of the SWMS includes testing specified in Table 1 of RG 1.143. Implementation of the programs described in Section 12.1, for maintaining occupational dose ALARA, and Section 12.5, Radiation Protection Program, ensure that operation, maintenance, and testing of the SWMS satisfy the guidance in RG 8.8.

#### STD COL 11.4-2-A

Specific equipment connection configuration and plant sampling procedures are used to implement the guidance in Inspection and Enforcement (IE) Bulletin 80-10 (DCD Reference 11.4-19). The permanent and mobile/portable non-radioactive systems, which are connected to radioactive or potentially radioactive portions of SWMS, are protected from contamination with an arrangement of double check valves in each line. The configuration of each line is also equipped with a tell-tale connection, which permits periodic checks to confirm the integrity of the line and its check valve arrangement. Plant procedures describe sampling of non-radioactive systems that could potentially become contaminated by cross-connection with systems that contain radioactive material. In accordance with the guidance in RG 1.109, exposure pathways that may arise due to unique conditions are considered for incorporation into the plant-specific ODCM if they are likely to contribute significantly to the total dose.

#### STD COL 11.4-3-A

Waste classification and process controls are described in the PCP. NEI 07-10, "Generic FSAR Template Guidance for Process Control Program (PCP)," which is under review by the NRC, is incorporated by reference. (Reference 11.4-201). The milestone for development and implementation of the PCP is addressed in Section 13.4.

---

**11.4.2.2 System Operation**

**11.4.2.2.1 SWMS Collection Subsystem**

---

Replace the fourth paragraph with the following,

---

EF3 DEP 11.4-1

When sufficient bead resins have been collected in the high or low activity resin holdup tanks, they are mixed via the high or low activity circulation pump and sent to the SWMS Processing Subsystem via the high or low activity transfer pump. When sufficient bead resins have been collected in the condensate resin holdup tank, they are mixed via the low activity circulation pump and sent to the LWMS pre-treatment ion-exchanger for reuse or the SWMS Processing Subsystem via the low activity transfer pump.

---

Replace the last two sentences of the fifth paragraph with the following.

---

EF3 DEP 11.4-1

The suspended solids are allowed to settle and the residual water is transferred by the respective decant pump to the equipment drain collector tanks or the floor drain collector tanks for further processing. When sufficient sludges have been collected in the tank, the sludges are normally mixed by the low activity circulation pump and sent to the SWMS Processing Subsystem by the low activity transfer pump.

---

**11.4.2.2.2 SWMS Processing**

---

Replace the last paragraph with the following.

---

EF3 DEP 11.4-1

The estimated annual waste generated from the SWMS Subsystems is provided in Table 11.4-2R. Table 11.4-2R also identifies Class A, B, and C waste in accordance with 10 CFR 61.55 (Reference 11.4-16) and the quantities of waste that would be shipped or stored.

Typically, HICs of approximately 120 cubic feet each will be used for packaging Class B and C spent resins and sludge and HICs of approximately 215 cubic feet each will be used for packaging Class A spent resins and sludge. The larger containers can be used for Class A waste because radionuclide concentrations are lower so more waste can be placed in one container without exceeding radiation levels for transportations or disposal.

---

**11.4.2.2.4 Container Storage Subsystem**

---

Replace the first paragraph with the following.

---

EF3 DEP 11.4-1

The Radwaste Building is configured to accommodate at least 10 years of packaged Class B and C waste and approximately three months of packaged Class A waste, considering routine operations and anticipated operational occurrences.

Containers used for packaged waste include the following:

- HICs (approximately 215 cubic feet each for Class A and approximately 120 cubic feet each for Class B/C) used for spent resins and sludge
- 55-gallon drums (approximately 7.65 cubic feet each) used for DAW
- B-25 Boxes (metal boxes approximately 96 cubic feet each) used for DAW and miscellaneous parts
- Other shipping containers as necessary

See Figure 1.2-23R and Figure 11.4-1R for container storage schemes and sequencing.

Hydrogen and biogas can be generated in packaged and stored waste. The hydrogen is a result of the radiolytic decomposition of the resin beads (i.e. styrene). The biogas is a result of microorganisms and other materials necessary to support growth and metabolism of the microorganisms (i.e. nutrients) introduced into the waste stream from the environment.

HICs are provided with a passive vent equipped with a high efficiency particulate air (HEPA) filter. The HICs will vent to the general area in which they are being stored. The HICs will be provided with shield "bells". A shield bell is a steel, vertical right circular cylinder with an open bottom. It is also capable of venting to the general area. Shield bells are placed over HICs to provide radiation shielding. The Radwaste Building HVAC System is sized and designed to prevent hydrogen or biogas from accumulating in the general storage area. Furthermore, the general storage area will be monitored with hydrogen/explosive gas detectors that will alarm in the Radwaste Control Room.

The filters on the containers' vents will prevent migration of radioactive particulate. Should a filter break-through, the Radwaste Building's HVAC will control any contamination and direct it through the system's filters and exhaust the air through the Radwaste Building Ventilation Stack which is a radiologically monitored release point.

HICs will be equipped with a dewatering stone (i.e. filter) to permit verification/final dewatering after removal from storage and prior to shipment for disposal. The verification/final dewatering will be accomplished in a Dewatering Station on Elevation 4650 of the Radwaste Building or at an approved alternate facility (e.g. off-site vendor). Reprocessing/repackaging of stored wastes prior to shipment for final disposal will be performed as needed.



---

11.4.2.3.1 Pumps

---

Replace section 11.4.2.3.1 with the following

---

EF3 DEP 11.4-1

Typically three types of pumps are utilized in the SWMS. The decant and concentrated waste pumps are centrifugal pumps. Air operated diaphragm type pumps are utilized in dewatering stations and for circulation pumps; and the transfer pumps are progressing cavity type pumps. All pumps are constructed of materials suitable for the intended service. Pump codes are per the noted requirements of DCD Table 3.2-1 for K20 Solid Waste Management Systems and DCD Table 11.2-1.

---

11.4.6 **COL Information**

- 11.4-1-A **SWMS Processing Subsystem Regulatory Guide Compliance**
- STD COL 11.4-1-A** This COL item is addressed in Subsection 11.4.2.3.5.
- 11.4-2-A **Compliance with IE Bulletin 80-10**
- STD COL 11.4-2-A** This COL item is addressed in Subsection 11.4.2.3.5.
- 11.4-3-A **Process Control Program**
- STD COL 11.4-3-A** This COL item is addressed in Subsection 11.4.2.3.5.
- 11.4-4-A **Temporary Storage Facility**
- STD COL 11.4-4-A** This COL item is addressed in Subsection 11.4.1.
- 11.4-5-A **Compliance with Part 20.1406**
- STD COL 11.4-5-A** This COL item is addressed in Subsection 11.4.1.
- 

Add Insert "11" here



11.4.7 **References**

- 11.4-201 NEI 07-10, Generic FSAR Template Guidance for Process Control Program (PCP).
- 

**11.5 Process Radiation Monitoring System**

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

---

Add the following paragraph at the end of this section.

---

- STD COL 11.5-3-A** Replace text references to DCD Table 11.5-5 with Table 11.5-201.
- 

11.5.4.4 **Setpoints**

---

Replace the first sentence in this section with the following.

---

- STD COL 11.5-2-A** The derivation of setpoints used for offsite dose monitors described in the ODCM. Refer to Subsection 11.5.4.5 for a discussion regarding ODCM development and implementation.
-

Insert "11"

**Table 11.4-1R**  
**SWMS Component Capacities**

<b>Equipment Description</b>	<b>Type</b>	<b>Quantity</b>	<b>Nominal Capacity* Liter (Gal)</b>
<b>Tanks</b>			
High Activity Resin Holdup Tank	Vertical, Cylindrical	1	70,000 (18,494)
Low Activity Resin Holdup Tank	Vertical, Cylindrical	1	70,000 (18,494)
Condensate Resin Holdup Tank	Vertical, Cylindrical	1	70,000 (18,494)
Low Activity Phase Separator	Vertical, Cylindrical	1	55,000 (14,531)
High Activity Phase Separator	Vertical, Cylindrical	1	12,000 (3,170)
Concentrated Waste Tank	Vertical, Cylindrical	1	60,000 (15,852)
<b>Pumps</b>			
High Activity Decant Pump	Horizontal, Centrifugal	2	333L/min (88gpm)
Low Activity Decant Pump	Horizontal, Centrifugal	2	333L/min (88gpm)
High Activity Transfer Pump	Horizontal, Progressing Cavity	2	379L/min (100gpm)
Low Activity Transfer Pump	Horizontal, Progressing Cavity	2	379L/min (100gpm)
High Activity Circulation Pump	Diaphragm	2	833 L/min (220gpm)
Low Activity Circulation Pump	Diaphragm	2	833 L/min (220gpm)
Concentrated Waste Pump	Horizontal, Centrifugal	2	1,333L/min (352gpm)
<b>Process Equipment</b>			
Dewatering Equipment Fill Head	N/A	2	-
Dewatering Pump	Diaphragm	2	75L/min (20gpm)

\*For tanks, nominal capacity refers to the operating tank capacity. Nominal capacity for pumps is in liters/min (gallons/min).

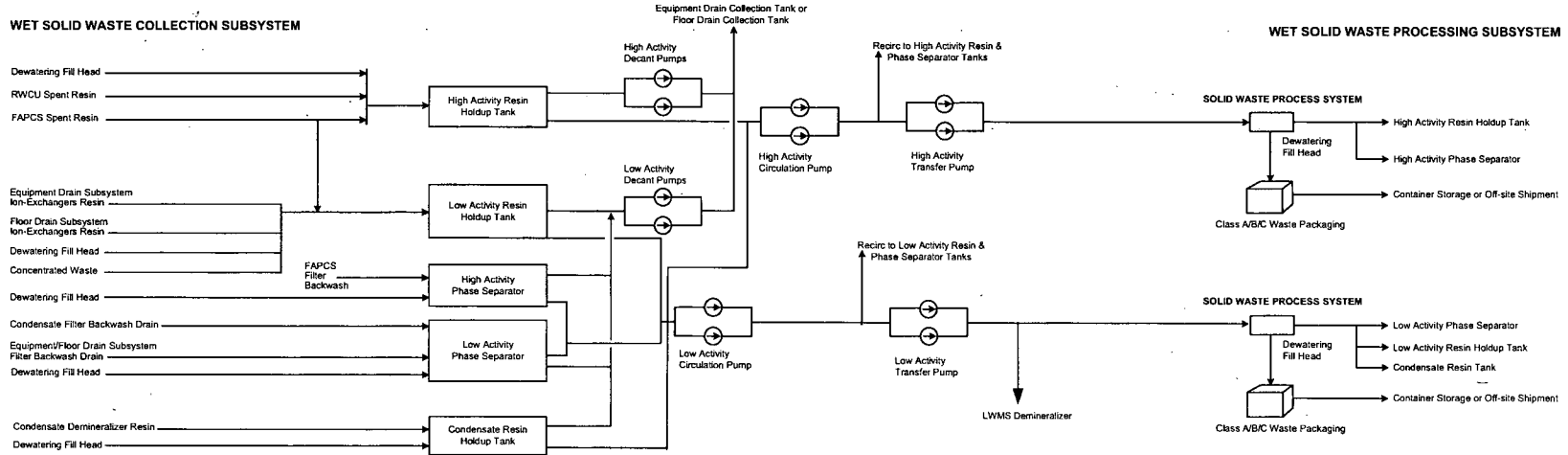
**Table 11.4-2R**  
**Annual Waste Volumes<sup>1&5</sup>**

Waste Type	Waste Class Per 10 CFR 61.55	Estimated Annual Waste Generation m <sup>3</sup> /yr (ft <sup>3</sup> /yr)	Estimated Annual Shipped Volume <sup>2</sup> m <sup>3</sup> /yr (ft <sup>3</sup> /yr)	Estimated Annual Volume Subject to Long-Term Storage m <sup>3</sup> /yr (ft <sup>3</sup> /yr)
<b>Dry Active Wastes (DAW)</b>				
Combustible waste:	A	225 (7,951)	225 (7,951)	-
Compactable waste:	A	38 (1,343)	38 (1,343)	-
Other waste:	A	100 (3,534)	100 (3,534)	-
<b>DAW Total</b>	<b>A</b>	<b>363 (12,827)</b>	<b>363 (12,827)</b>	<b>-</b>
<b>Wet Solid Wastes</b>				
RWCU Spent Bead Resin:	B/C	7.6 (269)	-	7.6 (269)
FAPCS Spent Bead Resin <sup>4</sup>	B/C	8.0 (283)	-	8.0 (283)
Condensate Purification System Spent Bead Resin:	A	33.8 (1,194)	33.8 (1,194)	-
LWMS Spent Bead Resin:	A	5.4 (191)	5.4 (191)	-
Condensate Purification System Filter Sludge:	A	5.2 (184)	5.2 (184)	-
LWMS Filter Sludge:	A	0.8 (28.3)	0.8 (28.3)	-
LWMS Concentrated Waste <sup>3</sup> :	A	50 (1,766)	25 (883)	-
<b>Wet Solid Waste Total</b>	<b>A</b>	<b>110.8 (3,915)</b>	<b>70.2 (2,480)</b>	<b>15.6 (552)</b>
<b>Mixed Waste:</b>	<b>-</b>	<b>0.416 (14.71)</b>	<b>0.416 (14.71)</b>	<b>-</b>

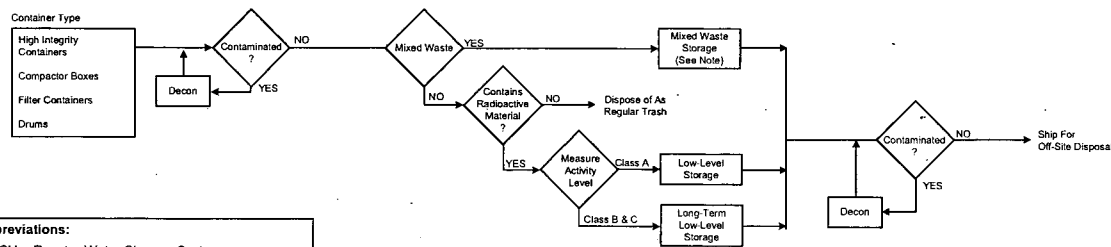
- 1 If waste is compacted using a third party service, the estimated annual shipped waste volume provided in Table 11.4-2R may be reduced depending on the type and level of waste and the waste compacting equipment and resulting compaction performance.
- 2 Value is a long-term average of resins and sludges in the dewatered condition and all other wastes packaged for shipment. The values for resins and sludges in the above table are volumes packaged for shipment.

Insert "11" (Page 3 of 5)

- 3 The volume reduction is based on LWMS Concentrated Waste moisture removal. An estimate of 50% volume reduction is thought to be conservative based on current moisture removal technologies, such as drying and membrane-based operations.
- 4 The exact type of filters in the fuel pool system has not been established. There will be a small amount of filter sludge generated. This amount will be minimal and can be accommodated in the long-term storage plan.
- 5 Irradiated hardware is not addressed here. It will be addressed by the applicant on a case-by-case basis.



**CONTAINER STORAGE SUBSYSTEM**



**Abbreviations:**  
 RWCU - Reactor Water Cleanup System  
 FAPCS - Fuel and Auxiliary Pools Cooling System  
 RO - Reverse Osmosis System  
 HCW - High Conductivity Waste

**Note:** EPA Requirements set forth in 40 CFR may also apply to this particular waste.

**DRY ACTIVE WASTE PROCESSING**

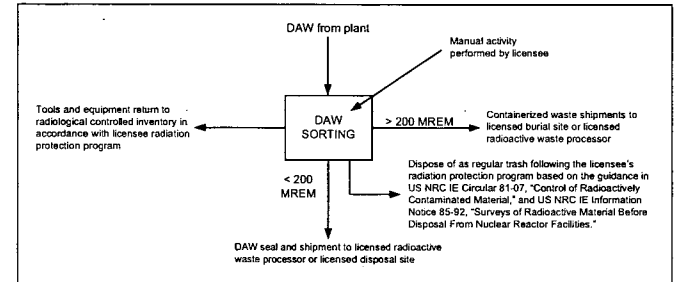
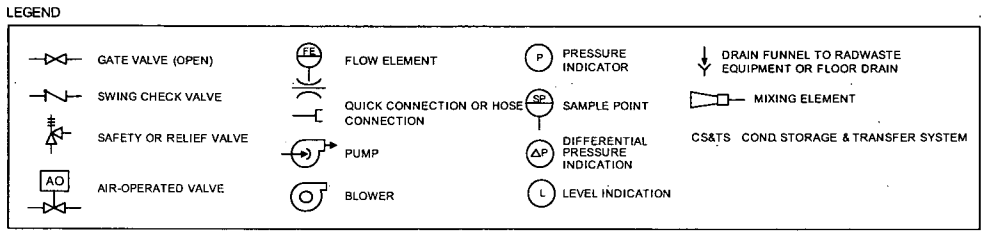
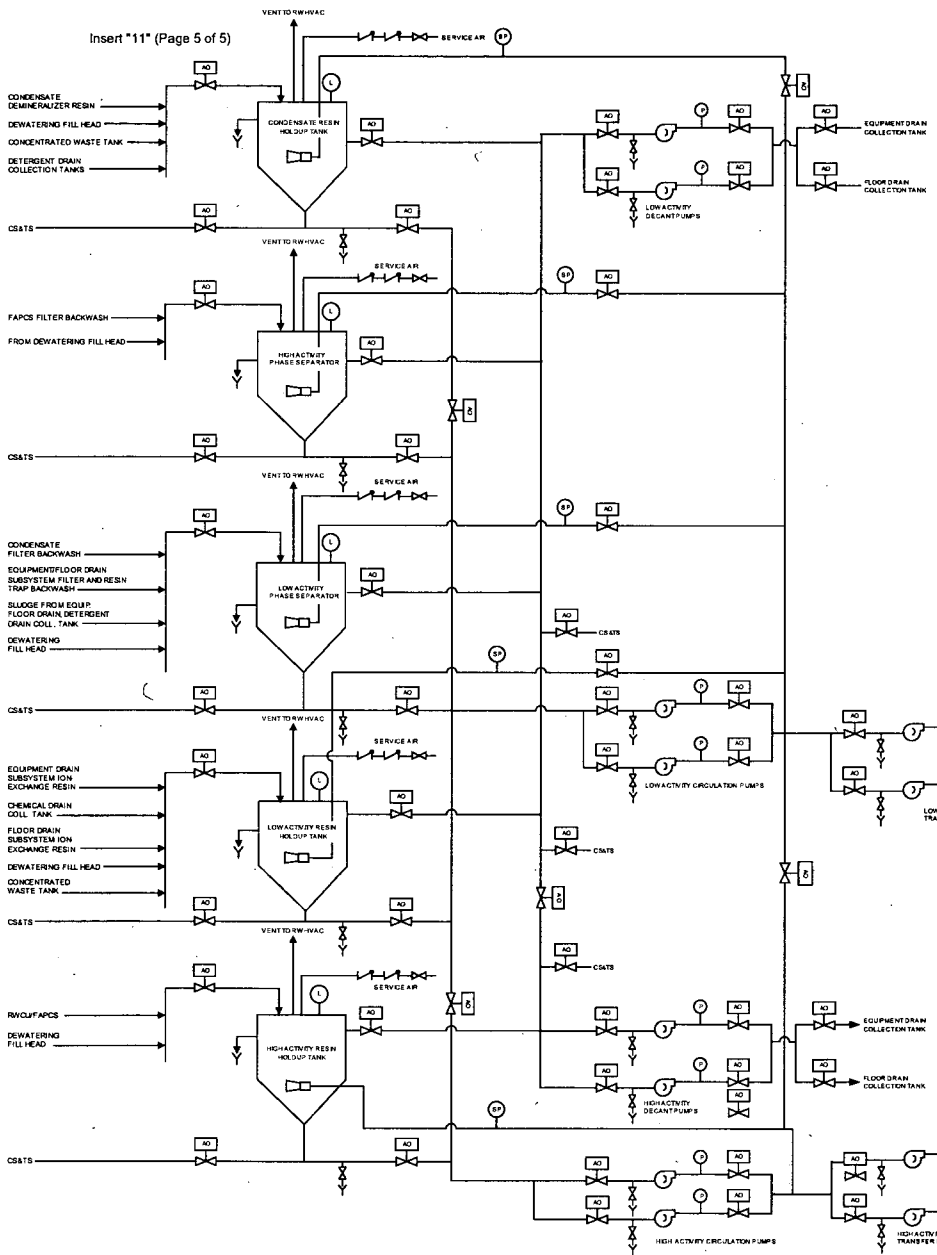


Figure 11.4-1R. Solid Waste Management System Process Diagram



SYSTEM DESIGN PER REQUIREMENTS OF REG GUIDE 1.143

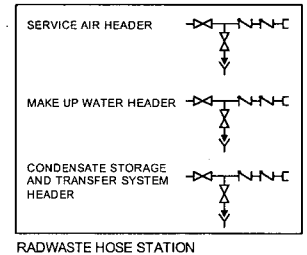
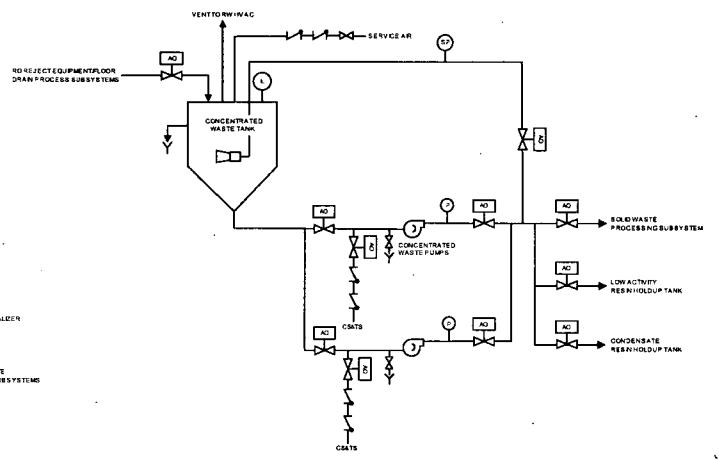


Figure 11.4-2R SWMS Collection Subsystem

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### 12.3 Radiation Protection

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

#### 12.3.1.3 Radiation Zoning

---

Replace the last sentence with the following.

---

**STD COL 12.3-3-H** Access to "Very High Radiation Areas" is discussed in Section 12.5.

---

#### 12.3.4 Area Radiation and Airborne Radioactivity Monitoring Instrumentation

---

Replace the last bullet with the following.

---

**STD COL 12.3-2-A** The radiation instrumentation that monitors airborne radioactivity is classified as nonsafety-related. Airborne radiation monitoring operational considerations, such as the procedures for operation and calibration of the monitors, as well as the placement of the portable monitors, are discussed in Section 12.5.

---

#### 12.3.7 COL Information

##### 12.3-2-A Operational Considerations

**STD COL 12.3-2-A** This COL item is addressed in Subsection 12.3.4.

##### 12.3-3-H Controlled Access

**STD COL 12.3-3-H** This COL item is addressed in Subsection 12.3.1.3.

Add Insert "12" here

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### 12.4 Dose Assessment

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

---

#### 12.4.7.1 Annual Doses to Construction Workers

**EF3 SUP 12.4-1** Doses to construction workers are addressed in Section 4.5 of the Environmental Report contained in COLA Part 3.



Table 12.3-4R

## Area Radiation Monitors for Radwaste Building

ARM No.	Description & Location	Figure No.	Monitoring Range <sup>1</sup>
1	RW Electrical Equipment Room (6170), EL -9350	12.3-39R	H
2	RW Control Room (6270), EL -2350	12.3-40R	H
3	RW High Activity Decant Pump Room (6188), EL -9350	12.3-39R	H
4	RW High Activity Transfer Pump Room (6283), EL-2350	12.3-40R	H
5	RW Trailer Access Area (6383), EL 4650	12.3-41R	H
6 <sup>2</sup>	RW Liquid Radioactive Waste Treatment Processing Systems Area (6381), EL 4650	12.3-41R	H
7 <sup>2</sup>	RW Wet Solid Radioactive Waste Treatment Processing Area (6394/6395), EL 4650	12.3-41R	H
8 <sup>2</sup>	RW Dry Solid Waste Treatment Area (Sorting Room 6393), EL 4650	12.3-41R	H
9 <sup>2</sup>	RW Packaged Waste Storage Area (6390/6391/6392), EL 4650	12.3-41R	H

<sup>1</sup> The monitoring ranges corresponding to these alphabetical designations are provided in DCD Table 12.3-7.

<sup>2</sup> ARMs located in accessible areas where abnormal plant evolutions or anticipated operational occurrences can potentially result in dose rate increases of 1mSv/hr (100 mrem/hr) or more.

**Table 12.3-8R**  
**Shielding Geometry (Nominal)**

Elev.	Room	Room Name	North	East	South	West	Floor	Ceiling
<b>Nuclear Island</b>			<b>cm (in)</b>					
-11500	1151	RWCU/SDC Heat Exchanger Room A	75 (30)	110 (43)	100 (39)	100/75 (39/30)	Ground	70 (28)
-11500	1152	RWCU/SDC Pump Room A	60 (24)	55 (22)	55 (22)	60/40 (24/16)	Ground	90 (35)
-11500	1161	RWCU/SDC Heat Exchanger Room B	75 (30)	100 (39)	100/75 (39/30)	110 (43)	Ground	70 (28)
-11500	1162	RWCU/SDC Pump Room B	60 (24)	60 (24)	70 (28)	35 (14)	Ground	70 (28)
-11500	2102	FAPC Backwash Tank Room	70 (28)	80 (31)	90 (35)	110 (43)	Ground	90 (35)
-11500	2150	FAPC Pump/Heat Exchanger Room A	35 (14)	70 (28)	60 (24)	30 (12)	Ground	70 (28)
-11500	2151	Backwash Transfer Pump Room A	90 (35)	105 (41)	70 (28)	95 (37)	Ground	70 (28)
-11500	2160	FAPC Pump/Heat Exchanger Room B	35 (14)	30 (12)	60 (24)	35 (14)	Ground	70 (28)
-11500	2161	Backwash Transfer Pump Room B	70 (28)	105 (41)	70 (28)	95 (37)	Ground	70 (28)
-6400	1250	RWCU/SDC Heat Exchanger Room A	110(43)	110 (43)	100 (39)	100 (39)	70 (28)	70 (28)
-6400	1251	RWCU/SDC Filter/Demineralizer Vault A1	135 (53)	150 (59)	40 (16)	135 (53)	110 (43)	90 (35)
-6400	1252	RWCU/SDC Filter/Demineralizer Vault A2	40 (16)	150 (59)	40 (16)	135 (53)	110 (43)	90 (35)
-6400	1260	RWCU/SDC Heat Exchanger Room B	110(43)	100 (39)	100 (39)	100 (39)	70 (28)	70 (28)
-6400	1261	RWCU/SDC Filter/Demineralizer Vault B1	135(53)	40 (16)	150 (59)	40 (16)	110 (43)	90 (35)
-6400	1262	RWCU/SDC Filter/Demineralizer Vault B2	135(53)	40 (16)	150 (59)	70 (28)	110 (43)	90 (35)
-6400	2251	FAPC Filter/Demineralizer Vault 1	90 (35)	70 (28)	30 (12)	90 (35)	70 (28)	70 (28)
-6400	2261	FAPC Filter/Demineralizer Vault 2	30 (12)	70 (28)	115 (45)	90 (35)	70 (28)	70 (28)

**Table 12.3-8R**

**Shielding Geometry (Nominal)**

Elev.	Room	Room Name	North	East	South	West	Floor	Ceiling
<b>Radwaste Building</b>			<b>cm (in)</b>					
-9350	6103	Equipment Drain Collection Tank Room A	120 (47)	90 (35)	80 (31)	60 (24)	Ground	91 (36)
-9350	6104	Equipment Drain Collection Tank Room B	120 (47)	60 (24)	80 (31)	60 (24)	Ground	91 (36)
-9350	6105	Equipment Drain Collection Tank Room C	120 (47)	60 (24)	80 (31)	60 (24)	Ground	91 (36)
-9350	6106	Low Activity Resin Holdup Tank Room	60 (24)	60 (24)	130 (51)	60 (24)	Ground	91 (36)
-9350	6107	Condensate Resin Holdup Tank Room	60 (24)	90 (35)	130 (51)	60 (34)	Ground	91 (36)
-9350	6108	High Activity Resin Holdup Tank Room	110 (43)	100 (39)	130 (51)	100 (39) 110 (43)	Ground	91 (36)
-9350	6109	Concentrated Waste Tank Room	60 (24)	60 (24)	130 (51)	90 (35)	Ground	91 (36)
-9350	6150	Floor Drain Collection Tank Room A	120 (47)	60 (24)	80 (31)	60 (24)	Ground	91 (36)
-9350	6160	Floor Drain Collection Tank Room B	120 (47)	60 (24)	80 (31)	60 (24)	Ground	91 (36)
-9350	6161	Low Activity Phase Separator Room	60 (24)	70 (28)	130 (51)	60 (24)	Ground	91 (36)
-9350	6171	Floor & Equipment Drain Sample Tank Room	120 (47)	60 (24)	60 (24)	120 (47)	Ground	91 (36)
-2350	6103	Equipment Drain Collection Tank Room A	120 (47)	90 (35)	80 (31)	60 (24)	N/A	91 (36)
-2350	6104	Equipment Drain Collection Tank Room B	120 (47)	60 (24)	80 (31)	80 (31) 60 (24)	N/A	91 (36)
-2350	6105	Equipment Drain Collection Tank Room C	120 (47)	60 (24)	80 (31)	60 (24)	N/A	91 (36)
-2350	6106	Low Activity Resin Holdup Tank Room	60 (24)	60 (24)	130 (51)	60 (24)	N/A	91 (36)
-2350	6107	Condensate Resin Holdup Tank Room	60 (24)	90 (35)	130 (51)	60 (24)	N/A	91 (36)
-2350	6108	High Activity Resin Holdup Tank Room	110 (43)	100 (39)	130 (51)	110 (43)	N/A	91 (36)
-2350	6109	Concentrated Waste Tank Room	60 (24)	60 (24)	130 (51)	90 (35)	N/A	91 (36)
-2350	6150	Floor Drain Collection Tank Room A	120 (47)	60 (24)	80 (31)	60 (24)	N/A	91 (36)
-2350	6251	High Activity Phase Separator Room	90 (35)	90 (35)	90 (35)	90 (35)	50 (20)	91 (36)
-2350	6160	Floor Drain Collection Tank Room B	120 (47)	60 (24)	80 (31)	60 (24)	N/A	91 (36)





Insert "12" (Page 6 of 17)

FIGURE 12.3-19R. RADWASTE BUILDING RADIATION ZONES EL -9350  
{{{Security-Related Information – Withheld Under 10 CFR 2.390}}}

See Enclosure 1 of this letter

Insert "12" (Page 7 of 17)

FIGURE 12.3-20R. RADWASTE BUILDING RADIATION ZONES EL -2350  
{{{Security-Related Information – Withheld Under 10 CFR 2.390}}}

See Enclosure 1 of this letter

Insert "12" (Page 8 of 17)

FIGURE 12.3-21R. RADWASTE BUILDING RADIATION ZONES EL 4650  
{{{Security-Related Information – Withheld Under 10 CFR 2.390}}}

See Enclosure 1 of this letter



Insert "12" (Page 9 of 17)

FIGURE 12.3-22R. RADWASTE BUILDING RADIATION ZONES EL 10650  
{{{Security-Related Information – Withheld Under 10 CFR 2.390}}}

See Enclosure 1 of this letter

Insert "12" (Page 10 of 17)

FIGURE 12.3-39R. RADWASTE BUILDING AREA RADIATION MONITORS  
EL -9350

{{{Security-Related Information – Withheld Under 10 CFR 2.390}}}

See Enclosure 1 of this letter

Insert "12" (Page 11 of 17)

FIGURE 12.3-40R. RADWASTE BUILDING AREA RADIATION MONITORS  
EL -2350

{{{Security-Related Information – Withheld Under 10 CFR 2.390}}}

See Enclosure 1 of this letter

Insert "12" (Page 12 of 17)

FIGURE 12.3-41R. RADWASTE BUILDING AREA RADIATION MONITORS  
EL 4650

{{{Security-Related Information – Withheld Under 10 CFR 2.390}}}

See Enclosure 1 of this letter

Insert "12" (Page 13 of 17)

FIGURE 12.3-42R. RADWASTE BUILDING AREA RADIATION MONITORS  
EL 10650

{{{Security-Related Information – Withheld Under 10 CFR 2.390}}}

See Enclosure 1 of this letter

Insert "12" (Page 14 of 17)

FIGURE 12.3-61R. RADWASTE BUILDING ACCESS AND EGRESS ROUTES  
EL -9350

{{{Security-Related Information – Withheld Under 10 CFR 2.390}}}

See Enclosure 1 of this letter

Insert "12" (Page 15 of 17)

FIGURE 12.3-62R. RADWASTE BUILDING ACCESS AND EGRESS ROUTES  
EL -2350

{{{Security-Related Information – Withheld Under 10 CFR 2.390}}}

See Enclosure 1 of this letter

Insert "12" (Page 16 of 17)

FIGURE 12.3-63R. RADWASTE BUILDING ACCESS AND EGRESS ROUTES  
EL 4650

{{{Security-Related Information – Withheld Under 10 CFR 2.390}}}

See Enclosure 1 of this letter



Insert "12" (Page 17 of 17)

FIGURE 12.3-64R. RADWASTE BUILDING ACCESS AND EGRESS ROUTES  
EL 10650

{{{Security-Related Information – Withheld Under 10 CFR 2.390}}}

See Enclosure 1 of this letter

DCD Section 9.4 describes the building HVAC systems servicing the Fuel Building, Turbine Building, Radwaste Building, and Reactor Building, and includes process diagrams for each system. Detailed discussion of the potential sources of airborne activity to each of these systems is provided in DCD Section 12.2.3. This includes information on airborne sources from the fuel pool resulting from refueling activities.

During periods of high radioactivity, the Reactor Building and Fuel Building HVAC systems may direct exhaust to the Reactor Building HVAC purge exhaust filter unit. The Reactor Building purge exhaust filter units are equipped with prefilters, high efficiency particulate air (HEPA) filters and carbon filters for mitigating and controlling gaseous effluents from the Reactor Building or Fuel Building. DCD Table 9.4-11 provides design information for the Reactor Building purge exhaust filter units. The exhaust air is monitored for radiation prior to discharge to atmosphere through the plant vent stack.

The Radwaste Building HVAC system directs exhaust air to exhaust filtration units. The system uses HEPA filtration of the exhaust air from the building prior to discharge to the atmosphere. The exhaust air is monitored for radiation prior to discharge to atmosphere through the plant vent stack. DCD Table 9.4-7 provides design information for the Radwaste Building HVAC system.

The Turbine Building HVAC system directs building exhaust air to filtration units. Exhaust air from low potential contamination areas is exhausted to the plant vent stack, where it is monitored for radioactive contamination. Exhaust air from high potential contamination areas is filtered using HEPA filters before being exhausted to the plant vent stack. Areas with high potential contamination have exhaust subsystems equipped with HEPA filtration units for localized air cleanup prior to mixing with the main ventilation exhaust. The Turbine Building combined ventilation exhaust is monitored for halogens, particulates and noble gas releases. Turbine Building exhaust air is directed to the plant vent stack where it is monitored for radiation prior to being discharged to the atmosphere.

Process radiation monitoring is provided for the systems described above. FSAR Section 11.5 describes the PRMS in further detail.

The bounding annualized airborne radioactivity source terms for Fermi 3 are shown in DCD Table 12.2-16. The parameters used for determining the release characteristics are shown in DCD Table 12.2-15. The resulting bounding annualized release was used in determining the radiological impacts of operation. This analysis, resulting impact determinations, and evaluation showing conformance with 10 CFR 50, Appendix I design objectives are described in more detail in Section 5.4.

#### **3.5.2.3 Solid Waste Management System**

Certain amounts of radioactive materials are generated in solid form. The Solid Waste Management System (SWMS) collects, processes, packages, and temporarily stores these solid radioactive wastes for offsite shipment and permanent disposal.

The SWMS controls, collects, handles, processes, packages, and temporarily stores solid waste generated by the plant prior to shipping the waste offsite. These wastes include filter backwash sludge, reverse-osmosis concentrates, and bead resins generated by the LWMS, reactor water cleanup/shutdown cooling system, fuel and auxiliary pools cooling system and the condensate purification system. Contaminated solids such as HEPA and cartridge filters, rags, plastic, paper, clothing, tools, and equipment are also disposed of in the SWMS. Liquids generated by the SWMS are processed through the LWMS described in Subsection 3.5.2.1.

FSAR Table 11.4-2R

FSAR

FSAR Table 11.4-1R

The SWMS processes and components are described in ~~DCD~~ Section 11.4. ~~DCD Table 11.4-1~~ provides SWMS component capacities. ~~DCD Table 11.4-2~~ provides estimates of annual waste generation and shipped volumes of dry active, wet solid and mixed wastes. ~~DCD Figure 11.4-1 through Figure 11.4-3~~ provide process and instrumentation diagrams for the SWMS.

### 3.5.2.4 Population Doses

Add Insert "13" here

FSAR Figures 11.4-1R and 11.4-2R and DCD

Population doses offsite were determined for airborne and liquid release pathways. A detailed discussion of the calculation methods and inputs is provided in Section 5.4.

Results of the analysis and conformance with 10 CFR 20 and 10 CFR 50, including the design objectives of 10 CFR 50, Appendix I are provided in Section 5.4.

### 3.5.3 References

- 3.5-1 GE-Hitachi Nuclear Energy, "ESBWR Design Control Document – Tier 2," Revision 4, September 2007.
- 3.5-2 ANSI/ANS 18.1, "Source Term Specification," 1976.

- 3.5-3 EPRI Class B/C Waste Reduction Guide (November 2007).
- 3.5-4 EPRI Operational Strategies to Reduce Class B/C Wastes (April 2007).

The SWMS provides storage space sized to hold the total combined volume of 3 months of packaged Class A and 10 years of packaged Class B/C low-level radioactive waste estimated to be generated during plant operations. Such waste is normally promptly disposed of at licensed offsite processing and disposal facilities. The only operating disposal sites that presently accept Class B and C waste are in Richland, Washington, and Barnwell, South Carolina. However, neither of these facilities currently accepts Class B and C waste from outside the Northwest, Rocky Mountain and Atlantic LLRW compacts. A recently-licensed site in Andrews County, Texas, if opened, will, at least initially, only accept waste from Texas and Vermont, which are members of a prearranged compact. Michigan is not currently affiliated with any compact.

Additional waste minimization measures could be implemented to reduce or eliminate the generation of Class B and C waste, with the potential to greatly extend the planned 10 year storage capacity to the entire volume of Class B/C low-level radioactive waste. These measures could include reducing the service run length for resin beds, short loading media volumes in ion exchange vessels, and other techniques discussed in the EPRI Class B/C Waste Reduction Guide (Nov. 2007) and EPRI Operational Strategies to Reduce Class B/C Wastes (April 2007). As noted above, without crediting these waste minimization measures, the Radwaste Building provides 10 years capacity for storing Class B and C waste. This provides time for offsite disposal capability to be developed or additional onsite capacity to be added. Continued storage of Class B and C waste in the SWMS would be in accordance with procedures that will maintain occupational exposures within permissible limits and result in no additional environmental impacts.

If additional storage capacity for Class B and C LLRW is required, Fermi 3 could elect to construct a new temporary storage facility. The facility would meet applicable NRC guidance, including Appendix 11.4-A of the Standard Review Plan, "Design Guidance for Temporary Storage of Low-Level Waste." Such a facility would be located in a previously disturbed area in the vicinity of the power block, and in a location that would not affect wetlands. The environmental impacts of constructing such a facility would be minimal. The operation of a storage facility meeting the standards in Appendix 11.4-A would provide appropriate protection against releases, maintain exposures to workers and the public below applicable limits, and result in no significant environmental impact.

In lieu of onsite storage, Fermi 3 could enter into a commercial agreement with a third-party contractor that will process, store, own, and ultimately dispose of low-level waste generated as a result of Fermi 3 operations. Activities associated with the transportation, processing, and ultimate disposal of low level waste by the third-party contractor would necessarily comply with all applicable laws and regulations in order to assure public health and safety and protection of the environment. In particular, the third-party

Insert "13" (Page 2 of 2)

contractor would conduct its operations consistent with applicable Agreement State or NRC regulations (e.g., 10 CFR Part 20), which will assure that the radiological impacts from these activities would be small. Environmental impacts resulting from management of low-level wastes are expected to be bounded by the NRC's findings in 10 CFR 51.51(b) (Table S-3). Table S-3 assumes that solid, low-level waste from reactors will be disposed of through shallow land burial, and concludes that this kind of disposal will not result in the release of any significant effluent to the environment.

exceeding this requirement. The radionuclide inventories used in the NUREG-1817 analysis (Table H-11) are based on an average burnup of 46,000 MWd/MTU. Furthermore, in NUREG-1555, the NRC subsequently concluded that average burnup up to 62,000 MWd/MTU for the peak rod is also bounded by the environmental impacts considered in Table S-4. The ESBWR technology meets this subsequent evaluation condition.

#### 3.8.2.6 Time after Discharge of Irradiated Fuel before Shipment

Paragraph 10 CFR 51.52(a)(3) requires that no irradiated fuel assembly be shipped until at least 90 days after it is discharged from the reactor. Table S-4 assumes 150 days of decay time prior to shipment of any irradiated fuel assemblies. Five years is the minimum decay time expected before shipment of irradiated fuel assemblies, supported by two current practices. One is per contract with DOE, who has ultimate responsibility for the spent fuel. Five years is the minimum cooling time specified in 10 CFR 961, Appendix E. The other practice is that the NRC specifies five years as the minimum cooling period when they issue certificates of compliance for casks used for shipment of power reactor fuel (NUREG-1437, Addendum 1, pp 26). The ESBWR Fuel Building spent fuel storage pool is designed for a maximum storage capacity to accommodate the total number of irradiated fuel assemblies resulting from 10 calendar years of plant operation plus one full core offload of fuel assemblies (Reference 3.8-3).

#### 3.8.2.7 Shipment of Irradiated Fuel

Paragraph 10 CFR 51.52(a)(5) allows for truck, rail, or barge transport of irradiated fuel. The ESBWR vendor states either rail or truck shipment will be used. Detroit Edison plans to ship irradiated fuel by either rail or truck. Packaging of the fuel for offsite shipment would comply with applicable DOT (49 CFR 173 and 178) and NRC (10 CFR 71) regulations for transportation of radioactive material. The analysis in NUREG-1817 assumed 41 shipments, but noted that "newer shipping cask designs are based on longer-cooled spent fuel (5 years out of reactor) and have larger capacities than those used in this assessment." The newer spent fuel shipping cask capacities are up to 1.8 MTU/shipment (Reference 3.8-2). Using the 68.20 MTU per reload based on a 24-month cycle, this would result in approximately 38 total shipments, or 19 shipments per year.

#### 3.8.3 Transportation of Radioactive Waste

As described in Subsection 3.5.2.3, low-level radioactive waste will be packaged using the SWMS to meet transportation and disposal site acceptance requirements. Radwaste processing systems operation procedures, which includes packaging of solid radwaste, are developed as discussed in FSAR Subsection 13.5.2.2.5. Packaging of waste for offsite shipment will comply with applicable DOT (49 CFR 173 and 178) and NRC (10 CFR 71) regulations for transportation of radioactive material. ~~The~~ packaged waste will be stored onsite on an interim basis before being shipped offsite to a licensed volume reduction facility or disposal site. As stated in 10 CFR 51.52(a)(4), "with the exception of irradiated fuel, all radioactive waste shipped from the reactor is packaged and in a solid form."

As described in Subsection 3.5.2.3 and FSAR Section 11.4, the

Paragraph 10 CFR 51.52(a)(5) requires that the mode of transport of low-level radioactive waste is either truck or rail. Detroit Edison plans to ship low-level radioactive waste by rail or truck.

#### 3.8.4 Conclusion

The NRC evaluated the environmental impact and risk effects of transportation of fuel and waste for LWRs in WASH-1238, and in Supplement 1 of NUREG-75/038, Environmental Survey of Transportation of Radioactive Materials to and from Nuclear Power Plants; and found the impacts to be small. These NRC analyses provided the basis for Table S-4 in 10 CFR 51.52.

In NUREG-1817, an analysis was performed to investigate the doses to crew, onlookers, and persons along the route for 11 representative reactor sites, including the Grand Gulf site. For the purposes of this ER, it has been assumed that the Grand Gulf results bound those for the Fermi 3 site.

The bounding cumulative doses to the exposed population, as given in Table S-4 of 10 CFR 51.52(c), are 0.04 person-Sv per reference-reactor year to transport workers, and 0.03 person-Sv per reference-reactor year to the general public (i.e., onlookers and persons along the route). The NUREG-1817 analysis for Grand Gulf resulted in the population doses that are tabulated in Table 3.8-5.

Population doses to the onlookers for the ESBWR reactor type exceeded the Table S-4 value. Per NUREG-1817, there are several reasons for this exceedance, including the assumed number of spent fuel shipments, as well as conservative shipping distances, dose rates from casks, and average truck stop times. The analysis in Appendix H.2 of NUREG-1817 normalized the number of spent fuel shipments for the reference reactor, which assumed that 60 shipments per year would be made, each shipment carrying 0.5 MTU of spent fuel. The normalized value of 41 shipments was utilized for the ESBWR reactor design, as well as a shipping distance of 2310 mi and five years of cooling time for the spent fuel, resulting in a dose rate of 0.1 mSv/hr at two meters from the vehicle, and 30 minutes per truck stop.

As discussed in Subsection 3.8.2.7, using the newer spent fuel shipping casks, the expected number of annual shipments from Fermi 3 to Yucca Mountain could be as low as 19, which is well under the 41 shipments used in the analysis presented in NUREG-1817. Newer spent fuel shipping cask designs are based on longer-cooled spent fuel and have larger capacities than shorter-cooled casks, which results in fewer shipments per year. Furthermore, the assumed five-year cooling time is conservative in comparison with the expected ten-year cooling time at Fermi 3. This longer cooling time will result in lower dose rates during transport, as substantiated by NUREG/CR-6672, which is cited in NUREG-1817.

WASH-1238 used a typical shipping distance of 1000 mi, whereas the shipping distance used for the Grand Gulf site was 2310 mi. This discrepancy resulted in an apparently higher cumulative dose to the public in the NUREG-1817 analysis, but if the shipping distances were normalized, this discrepancy would not be nearly as significant.

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*Detroit Edison*

**Fermi 3  
Combined  
License  
Application**

**Part 7:  
Departures  
Report**

(Includes Information on Departures,  
Exemptions and Supplemental  
Information)

**Revision 1  
March 2009**



~~No Departures Taken~~

Insert "14"

**Introduction:**

A departure is a plant-specific deviation from design information in a standard design certification rule. Departures from the reference ESBWR Design Control Document (DCD) are identified and evaluated consistent with regulatory requirements and guidance. Each departure is examined in accordance with 10 CFR 52 requirements. Although the ESBWR Design Certification Application is currently under review with the NRC, departures are evaluated utilizing the guidance provided in Regulatory Guide 1.206, Section C.IV.3.3.

The following departure is evaluated in this report:

EF3 DEP 11.4-1: Long-term, Temporary Storage of Class B and C Low-Level Radioactive Waste

**Departure: EF3 DEP 11.4-1 - Long-Term, Temporary Storage of Class B and C Low-Level Radioactive Waste**

**Summary of Departure:**

The ESBWR DCD identifies that on-site storage space for a six-month volume of packaged waste is provided in the Radwaste Building. The Fermi Unit 3 Radwaste Building is configured to accommodate a minimum of ten years volume of packaged Class B and C waste, while maintaining space for at least three months of packaged Class A waste. This departure is effected by reconfiguring the arrangement of systems and components within the ESBWR RWB volume. The systems structures and components requiring re-arrangement are associated with the Liquid Waste Management System (LWMS) and Solid Waste Management System (SWMS). The existing Radwaste Building Fire Protection and HVAC Systems have sufficient capacity to accommodate the extra volume of Class B and C wastes, and require no modification.

**Scope/Extent of Departure:**

This departure affects Tier 1 information in the ESBWR DCD. This departure is identified in Part 10: ITAAC Section 1.

This departure affects Tier 2 information in the ESBWR DCD. This departure is identified in FSAR Sections 1.2.2.10.2, 9.4.3.1, 11.4, 11.4.1, 11.4.2.2.1, 11.4.2.2.2, 11.4.2.2.4, and 11.4.2.3.1; FSAR Tables 9A.5-5R, 11.4-1R, 11.4-2R, 12.3-4R, and 12.3-8R; and FSAR Figures 1.2-21R, 1.2-22R, 1.2-23R, 1.2-24R, 1.2-25R, 9A.2-20R, 9A.2-21R, 9A.2-22R, 9A.2-23R, 9A.2-24R, 11.4-1R, 11.4-2R, 12.3-19R, 12.3-20R, 12.3-21R, 12.3-22R, 12.3-39R, 12.3-40R, 12.3-41R, 12.3-42R, 12.3-61R, 12.3-62R, 12.3-63R, and 12.3-64R.

**Departure Justification:**

DCD Sections 11.4.1, SWMS Design Basis, and 11.4.2.2.4, Container Storage Subsystem, discuss on-site storage space for low-level radioactive waste. The design accommodates a six-month volume of packaged waste storage in the Radwaste Building.

Class A, B, and C low-level radioactive waste is normally promptly disposed of at licensed offsite processing and disposal facilities. In the event that an offsite facility is not available to accept Class B and C waste shipments, the Fermi Unit 3 Radwaste Building waste storage space has been configured to accommodate at least ten years of Class B and C waste generated during

plant operation. Shielding analysis results show that the dose rates in surrounding areas, both within the building and externally, are maintained below the allowable limits in accordance with the radiological area classification in FSAR Section 12.3.1.3. Long-term, temporary storage of Class B and C waste HICs, with design lifetimes of 300 years, will not have an adverse effect on the integrity of the waste containers. Periodic inspections will be performed to confirm container integrity during storage.

The increased Class B and C waste storage space is consistent with the regulatory guidance of NUREG-0800, Section 11.4, Appendix 11.4-A. The storage space reserved for Class A waste exceeds that recommended by NUREG-0800, Standard Review Plan, Branch Technical Position 11-3.

**Departure Evaluation:**

This departure affects Tier 1 and Tier 2 information.

Tier 1. The Descriptions of the locations of Area Radiation Monitors (ARMs) in the Radwaste Building (RWB) have been modified to logically reflect the RWB layout. The number of ARMs in the RWB remains unchanged, only the room descriptions have been changed. Accordingly it does not:

1. Result in a decrease in the level of safety.
2. Present a risk to the public health and safety, or present inconsistencies with the common defense and security.

Tier 2. This Tier 2 departure does not affect off-site dose rates or the integrity of waste containers in storage. As such, the potential for increased radiation exposure to members of the public is not created. Accordingly, it does not:

1. Result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the plant-specific DCD;
2. Result in more than a minimal increase in the likelihood of occurrence of a malfunction of a structure, system, or component (SSC) important to safety previously evaluated in the plant-specific DCD;
3. Result in more than a minimal increase in the consequences of an accident previously evaluated in the plant-specific DCD;
4. Result in more than a minimal increase in the consequences of a malfunction of a SSC important to safety previously evaluated in the plant-specific DCD;
5. Create a possibility for an accident of a different type than any evaluated previously in the plant-specific DCD;
6. Create a possibility for a malfunction of an SSC important to safety with a different result than any evaluated previously in the plant-specific DCD;
7. Result in a design basis limit for a fission product barrier as described in the plant specific DCD being exceeded or altered; or
8. Result in a departure from a method of evaluation described in the plant-specific DCD use.

Therefore, this departure has no safety significance.

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*Detroit Edison*

Fermi 3  
Combined  
License  
Application

Part 10:  
ITAAC

Revision 0  
September 2008

**TIER 1 INFORMATION  
AND  
INSPECTIONS, TESTS, ANALYSES, AND ACCEPTANCE**

- CRITERIA**
- 1. TIER 1 INFORMATION**  
DCD Tier 1 is incorporated by reference.
- 2. COLA ITAAC**  
The Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) for the COLA are provided in tabular form, consistent with the format shown in RG 1.206 Table C.II.1-1.
- 
- with the following exception
- Replace Section 2.3.2, Design Description with the following - (Add Insert "15" Here)

The COLA-ITAAC consist of the following four parts:

1. Design Certification ITAAC
2. Emergency Planning ITAAC
3. Physical Security ITAAC
4. Site-Specific ITAAC

This set of COLA-ITAAC is included herein. Completion of the ITAAC is a proposed condition of the combined license to be satisfied prior to fuel load.

The Area Radiation Monitoring System (ARMS) continuously monitors the gamma radiation levels within the various areas of the plant and provides an early warning to operating personnel when high radiation levels are detected so the appropriate action can be taken to minimize occupational exposure.

- (1) The functional arrangement (location) of the ARMS equipment is as listed on Table 2.3.2-1R.
- (2) Each ARM channel listed in Table 2.3.2-1R initiates a MCR alarm and a local audible alarm (if provided) when the radiation level exceeds a preset limit.
- (3) Each ARM channel listed in Table 2.3.2-1R is provided with indication of radiation level.

**Table 2.3.2-1R**  
**ARM Locations**

Area	Description & Locations
Reactor Building	RB Refueling Floor Area #1
Reactor Building	RB Refueling Floor Area #2
Reactor Building	RB New Fuel Buffer Pool
Reactor Building	RB New Fuel Buffer Pool
Reactor Building	RB RWCU/SDC Pump
Reactor Building	RB Sump Pumps
Reactor Building*	RB RWCU/SDC Train A Heat Exchanger
Reactor Building*	RB RWCU/SDC Train B Heat Exchanger
Reactor Building	RB Lower Equipment Hatch
Reactor Building	RB Lower Personnel Hatch
Reactor Building	FMCRD HCU Room B
Reactor Building	FMCRD HCU Room D
Reactor Building	RB RWCU/SDC Filter Demineralizer Area
Reactor Building	RB Radiological Control Area Entrance
Reactor Building	RB H2/O2 Monitoring (CMS) Skid
Reactor Building	RB H2/O2 Monitoring (CMS) Skid Panel
Reactor Building	Instrument Rack Area #1
Reactor Building	Instrument Rack Area #2
Reactor Building	Instrument Rack Area #3
Reactor Building	Instrument Rack Area #4
Reactor Building	Instrument Rack Area #5
Reactor Building	Instrument Rack Area #6
Reactor Building	Instrument Rack Area #7
Reactor Building	Instrument Rack Area #8
Reactor Building	RB IFTS Maintenance Room (Multiple)
Reactor Building	Fuel Handling Machine
Reactor Building	RB Remote Shutdown Panel A Area
Reactor Building	RB Remote Shutdown Panel B Area
Fuel Building	FB Spent Fuel Floor
Fuel Building	Fuel Handling Machine

**Table 2.3.2-1R**  
**ARM Locations**

Area	Description & Location
Fuel Building	FB Fuel Transfer Cask Area
Fuel Building	FB FAPCS Heat Exchangers
Fuel Building	FB FAPCS Heat Exchangers
Fuel Building*	FB FAPCS Backwash Transfer Pumps
Fuel Building	FB Sump Pumps
Fuel Building	RB Ground Grade Access Pathway
Fuel Building	FB Wash Down Bay Entry Door
Fuel Building	FB IFTS Fuel Bldg Isolation Valve Room (Inside)
Fuel Building	Fuel Prep Machine
Radwaste Building	RW Electrical Equipment Room
Radwaste Building	RW Control Room
Radwaste Building	RW High Activity
Radwaste Building	RW High Activity Transfer Pump Room
Radwaste Building	RW Trailer Access Area
Radwaste Building*	RW Liquid Radioactive Waste Treatment Processing Systems Area
Radwaste Building*	RW Wet Solid Radioactive Waste Treatment Processing Area
Radwaste Building*	RW Dry Solid Waste Treatment Sorting Room Area
Radwaste Building*	RW Packaged Waste Storage Area
Turbine Building*	Main Condenser Vault Area
Turbine Building*	Feedwater Heater Drain Cooler 1 A/B/C Room
Turbine Building	H2 and O2 Analyzer Room B
Turbine Building	Condensate Pumps Room
Turbine Building*	Low Pressure Heater Area
Turbine Building*	Feedwater Heater 4 and Feedwater Storage Tank Room
Turbine Building*	Turbine Bldg Steam Tunnel
Turbine Building*	Condensate Drain Tank and Steam Jet Air Ejector/H2 Recombiner and Cooler Room B
Turbine Building*	Steam Jet Air Ejector/H2 Recombiner and Cooler Room A
Turbine Building*	Feedwater Heater 5B and 6B Room
Turbine Building	Condensate Filter Access Hatch Room
Turbine Building	Corridor/Turbine Building Operating Floor



**Table 2.3.2-1R  
ARM Locations**

Area	Description & Location
Turbine Building	Corridor/Turbine Operating Floor
Turbine Building	Crane Travel Area
Turbine Building	Equipment Main Access Area
Turbine Building	RCCWS Pump/Exchanger Room A
Turbine Building*	Offgas Charcoal Adsorber Vessel Vault
Turbine Building	Condensate Pleated Filter Valve/Condensate Filter Transfer Pumps/condensate Flow Control Valve Station Room
Turbine Building	Condensate Pleated Filter Valve/Condensate Filter Transfer Pumps/Condensate Flow Control Valve Station Room
Turbine Building	Condenser Sampling Pump Room A
Turbine building	Condenser Sampling Pump Room B
Turbine Building	Condensate Deep Bed Demineralizer Valve Room
Turbine Building	H2 and O2 Analyzer Room A
Turbine Building*	Feedwater Heater 5A and 6A Room
Turbine Building*	Feedwater heater 7B Room
Turbine Building*	Feedwater Heater 7A Room
Turbine Building	Turbine Bldg Sampling/Drain Sump C Room
Turbine Building	Corridor/Exhaust Duct Area
Turbine Building	RCCWS Pump/Exchanger Room B
Turbine Building*	Main Condenser Vault Area
Control Building	Main Control Room

\* ARMs located in accessible areas where abnormal plant evolutions or anticipated operational occurrences can potentially result in dose rate increases of 1mSv/hr (100mRem/hr) or more.

**Attachment 2**  
**NRC3-10-0010**

**Response to ER RAI Letter No. 2**

**RAI Question No. HH4.5-5**

**NRC ER RAI HH4.5-5**

*Provide construction worker doses for constructing an LLRW storage facility on-site.*

**Supporting Information**

*Provide an estimate of the annual dose contribution to a LLRW storage facility construction worker (it is assumed that such a facility would be constructed sometime in the future when Fermi 3 is operating) from operations of Fermi 3 and other existing sources. According to ESRP 4.5 Section I, data are needed for the number and principal locations of construction workers who will be exposed to the radiation sources and the total amount of time per year that they will spend at those locations.*

**Response**

Environmental Report (ER) Section 4.5 describes the estimates of doses to construction workers during the construction of Fermi 3. These activities include construction of the Radwaste Building. As the LLW would be stored in the Radwaste Building and an additional LLW storage location is not planned, there is no additional impact to the construction worker dose. The construction worker dose estimates previously presented remain valid.

**Proposed COLA Revision**

None.

**Attachment 3  
NRC3-10-0010**

**Response to ER RAI Letter No. 2**

**RAI Question No. HH5.4.3-4**

**NRC ER RAI HH5.4.3-4**

*Provide radiation dose estimates for the maximally exposed individual from the onsite out-of-plant storage of solid waste.*

**Supporting Information**

*According to ESRP Section 5.4.2, data are needed for the exposure rates associated with the proposed plant and onsite out-of-plant storage of solid LLRW to meet the acceptance criterion of 40 CFR 190 and 10 CFR 20.1301(e).*

**Response**

As discussed above, the proposed location for the storage of LLW is within the Radwaste Building. Thus, an additional out of plant storage is not planned. Therefore, there is no impact to the dose estimates to the maximum exposed individual (MEI) currently presented in ER Section 5.4.

**Proposed COLA Revision**

None.

**Attachment 4  
NRC3-10-0010**

**Response to ER RAI Letter No. 2**

**RAI Question No. HH5.4.3-5**

**NRC ER RAI HH5.4.3-5**

*Provide occupational dose calculations from onsite storage of Class B and Class C LLRW from Fermi 3.*

**Supporting Information**

*Provide a revised estimate of total dose to a Fermi 3 occupational worker that includes contributions from an LLRW storage facility. Also, state what effect the onsite storage of LLRW will have on the overall estimated Fermi 3 occupational worker dose estimates. ESRP Sections 4.5 and 5.4.3.III(3) recommend inclusion of an estimate of the collective occupational dose.*

**Response**

ESBWR DCD Section 12.4, Revision 6, provides the occupational dose estimates for the ESBWR. ESBWR DCD Section 12.3.1.4.5. The stored Class B and C HICs are shielded by shield bells surrounding each container and shield wall enclosing the storage area. HICs are provided with a passive vent equipped with a high efficiency particulate air (HEPA) filter to prevent migration of radioactive particulate. Shielding analyses, assuming filled HICs and crediting shielding and radioactive decay of the HIC contents over time, have shown that the dose rates in surrounding areas, both within the building and externally, are maintained below the allowable limits in accordance with the radiological zone designation as defined in ESBWR DCD Section 12.3.1.3, Revision 6. Total radioactive material inventory limits are established to ensure shielding analysis assumptions for HIC dose rates are maintained. Inventory records are maintained for waste types, waste contents, radionuclides and radioactive material, dates of storage, shipments, and other relevant data related to storage of Class B and C wastes.

The fourth paragraph of ESBWR DCD Section 12.4.3, Revision 6, describes how the occupational dose estimates in ESBWR DCD Table 12.4-4, Revision 6, were developed. As stated above, the radiological zone designations in the Radwaste Building are unchanged by the additional storage of Class B and C wastes. Therefore, the occupational dose estimates in ESBWR DCD Table 12.4-4 are valid for Fermi 3.

**Proposed COLA Revision**

None.