

## 13.3 Emergency Planning

### 13.3.1 Introduction

This FSAR section addresses the plans, design features, facilities, functions, and equipment necessary for radiological emergency planning (EP) that must be considered in a COL application. This includes both the applicant's onsite emergency plan and State and local offsite emergency plans, which the NRC and the Federal Emergency Management Agency (FEMA) evaluated for adequacy and a reasonable assurance that they can be implemented. The plans shall be an expression of the overall concept of operations, describe the essential elements of advanced planning that have been considered, and the provisions that have been made to cope with radiological emergency situations.

### 13.3.2 Summary of Application

Section 13.3 of the Fermi 3 COL FSAR, Revision 5, incorporates by reference Section 13.3 of the certified ESBWR DCD, Revision 9. In addition, in FSAR Section 13.3, the applicant provides the following:

#### COL Items

- STD COL 13.3-1-A Identification of OSC and Communication Interfaces with Control Room and TSC.

The applicant provided additional information in FSAR Section 13.3 to address COL Item 13.3-1-A of the ESBWR DCD, which states:

The COL applicant is responsible for identifying the [operational support center] OSC and the communication interfaces or inclusion in the detailed design of the control room and [technical support center] TSC (Section 13.3).

- STD COL 13.3-2-A Identification of EOF and Communication Interfaces with Control Room and TSC.

The applicant provided additional information in FSAR Section 13.3.2 to address COL Item 13.3-2-A of the ESBWR DCD, which states:

The COL applicant is responsible for the design of the communication system located in the EOF in accordance with NUREG-0696 (Reference 13.3-2) (Section 13.3).

- STD COL 13.3-3-A Decontamination Facilities.

The applicant provided additional information in Section 13.3.2 to address COL Item 13.3-3-A of the ESBWR DCD, which states:

The COL applicant will provide supplies at the site for decontamination of onsite individuals in the service building adjacent to the main change rooms (Section 13.3).

### Supplemental Information

Part 5, Revision 4, "Emergency Plan," of the Fermi 3 COL application, includes the following:

#### Onsite Emergency Plans

Part 5, "Emergency Planning," of the Fermi 3 COL application includes the Emergency Plan (the Fermi 3 Emergency Plan). The Fermi 3 Emergency Plan consists of a basic plan and seven appendices. The seven appendices provide additional detailed information regarding various aspects of the Fermi 3 Emergency Plan.

#### Offsite Emergency Plans

Part 5, "Emergency Planning," of the Fermi 3 COL application includes current State and local emergency plans. In addition, Part 5 includes the detailed evacuation time estimate (ETE) report.

### ITAAC

Part 10, Revision 4, "ITAAC," inspections, tests, analyses, and acceptance criteria (ITAAC) of the Fermi 3 COL application, provides information regarding EP – inspections, tests, analyses and acceptance criteria (EP-ITAAC). The ITAAC are evaluated in Section 13.3C.19 of this SER. The applicant provided the following standard supplement in Chapter 14:

#### STD SUP 14.3-1-A

The COL applicant shall provide EP inspections, tests, analyses, and acceptance criteria (ITAAC), based on industry guidance.

### License Conditions

- Part 2, License Condition

The applicant proposed a license condition [COM 13.4-031] to submit a fully developed set of site-specific Emergency Action Levels (EALs) to the NRC in accordance with the NRC-endorsed version of NEI 07-01, Revision 0, "Methodology for Development of Emergency Action Levels Advanced Passive Light Water Reactors," with no deviations. The fully developed site-specific EAL scheme shall be submitted to the NRC for confirmation at least 180 days prior to initial fuel load.

- Part 10, License Condition

In Part 10, Revision 4, of the Fermi 3 COL application, the applicant proposes a license condition to execute formal Letters of Agreement with State and local agencies with responsibilities prior to fuel load.

In Part 10, Revision 4, of the Fermi 3 COL application the applicant proposed a license condition to submit a detailed analysis of on-shift staffing, in accordance with NEI 10-05, "Assessment of On-Shift Emergency Response Organization Staffing and Capabilities," Revision 0, and the licensee shall incorporate any changes to the EP needed to bring staff to

the required levels, prior to or concurrent with completion of EP ITAAC 2.0 of EP ITAAC Table 2.3.1, and no less than 180 days prior to initial fuel load.

### **13.3.3 Regulatory Basis**

The regulatory basis of the information incorporated by reference is in NUREG-1966. In addition, the relevant requirements of the Commission regulations for EP, and the associated acceptance criteria, are in Section 13.3 of NUREG-0800.

The applicable regulatory requirements and guidance for EP are as follows:

- 10 CFR 52.79(a)(21) and 10 CFR 52.79(a)(22)(i) require the FSAR to include emergency plans that comply with the requirements of 10 CFR 50.47 and Appendix E to 10 CFR Part 50, in addition to certifications from State and local governmental agencies with EP responsibilities. Under 10 CFR 50.47(a)(1)(ii), no initial COL under 10 CFR Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants," will be issued unless a finding is made by the NRC that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. In addition, under 10 CFR 50.47(a)(2), the NRC will base its finding on a review of the FEMA findings and determinations as to whether State and local emergency plans are adequate and demonstrate reasonable assurance that they can be implemented and on the NRC assessment as to whether the applicant's onsite emergency plans are adequate and demonstrate reasonable assurance that they can be implemented.
- 10 CFR 52.77, "Contents of applications; general information," 10 CFR 52.80, 10 CFR 50.33(g), and 10 CFR 100.21, "Non-seismic Siting Criteria."
- NUREG-0800 identifies NUREG-0654/FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," and other related guidance. The related acceptance criteria are identified in NUREG-0800 Section 13.3.II, "Acceptance Criteria." The applicable regulatory guidance for reviewing emergency preparedness as an operational program is established in NUREG-0800, Section 13.4.
- In addition, Appendix A to 44 CFR 353, "Memorandum of Understanding (MOU) Between Federal Emergency Management Agency and Nuclear Regulatory Commission Relating to Radiological Emergency Planning and Preparedness," September 14, 1993, states that FEMA is responsible for findings and determinations as to whether offsite emergency plans are adequate and can be implemented. FEMA radiological emergency preparedness (REP) guidance documents provide guidance on various topics for use by State and local organizations responsible for REP and response. NUREG-0654/FEMA-REP-1, Revision 1, includes guidance that provides a basis for State and local governments to develop REP.

### **13.3.4 Technical Evaluation**

As documented in NUREG-1966, NRC staff reviewed and approved Section 13.3 of the certified ESBWR DCD. The staff reviewed Section 13.3 of the Fermi 3 COL FSAR, Revision 5, and

checked the referenced ESBWR DCD to ensure that the combination of the information in the COL FSAR and the information in the ESBWR DCD appropriately represents the complete scope of information relating to this review topic.<sup>1</sup> The staff's review confirms that the information contained in the application and the information incorporated by reference address the relevant information related to this section.

The staff reviewed the information in the Fermi 3 COL FSAR:

COL Items

- STD COL 13.3-1-A Identification of OSC and Communication Interfaces with Control Room and TSC
- STD COL 13.3-2-A Identification of EOF and Communication Interfaces with Control Room and TSC
- STD COL 13.3-3-A Decontamination Facilities

The staff's review of STD COL 13.3-1-A, 13.3-2-A, and 13.3-3-A are in Attachment 13.3A of this SER. Additional detailed evaluations of STD COL 13.3-1-A and 13.3-2-A can be found in Attachment 13.3C, "Onsite Emergency Plan," Section 13.3C.8, and the evaluations of STD COL 13.3-3-A are in Section 13.3C.11 of this SER.

Supplemental Information

The staff's review of the information provided in the application that is not part of the Fermi 3 EP is in Attachment 13.3B, "Emergency Planning Information in the Application," of the SER.

Onsite Emergency Plan

The staff's evaluation of the applicant's EP is in Attachment 13.3C of this SER. The staff finds that the applicant's onsite emergency plan is acceptable because it meets the standards in 10 CFR 50.47(b) and the requirements in Appendix E to 10 CFR Part 50. Verification that the proposed revisions to the Onsite Emergency Plan are incorporated into the next FSAR revision is being tracked as confirmatory items.

Offsite Emergency Plans

FEMA reviewed the offsite emergency plans for the State of Michigan Emergency Management Plan (December 2005), State of Michigan Department of Environmental Quality Nuclear Facilities Emergency Management Plan (February 2008), Monroe County Emergency Management Plan (March 2006), and the Wayne County Emergency Operations Plan (June 2007). FEMA's Interim Findings Report (IFR) dated May 6, 2009 (see ADAMS Accession No. ML092360251), concluded that offsite emergency plans are adequate and there is reasonable assurance that they can be implemented. The staff has reviewed the FEMA report and concurs with FEMA's findings and determination regarding offsite EP.

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<sup>1</sup> See "Finality of Referenced NRC Approvals" in SER Section 1.2.2, for a discussion on the staff's review related to verification of the scope of information to be included in a COL application that references a design certification.

## ITAAC

### STD SUP 14.3-1-A

The COL applicant shall provide EP-ITAAC based on industry guidance.

The staff's evaluation of the proposed site-specific EP-ITAAC against the generic EP-ITAAC in NUREG-0800 Section 14.3.10, Table 14.3.10-1, "Emergency Planning Generic Inspections, Tests, Analyses, and Acceptance Criteria (EP-ITAAC)," and 10 CFR 52.80(a), located in Section 13.3C.19 of this SER, finds that the applicant has adequately addressed the applicable EP-ITAAC needed to provide reasonable assurance that, upon successful completion, the facility will be constructed and operated in conformity with the COL, the provisions of the Atomic Energy Act, and the Commission's rules and regulations. Verification that proposed revisions to the EP-ITAAC are incorporated into the next FSAR revision was being tracked as confirmatory items. The staff verified that Fermi 3 COL Part 10, Revision 4 included the proposed site-specific EP-ITAAC. Therefore, this confirmatory item is resolved.

### License Conditions

- Part 2, License Condition [COM 13.4-031]

The applicant proposed a license condition related to the plant-specific EALs. Specifically, the applicant proposed the following:

The applicant proposed a license condition [COM 13.4-031] to submit a fully developed set of site-specific Emergency Action Levels (EALs) to the NRC in accordance with the NRC-endorsed version of NEI 07-01, Revision 0, with no deviations. The fully developed site-specific EAL scheme shall be submitted to the NRC for confirmation at least 180 days prior to initial fuel load.

The staff revised the proposed license condition as follows:

The applicant shall submit a fully developed set of site-specific Emergency Action Levels (EALs) to the NRC in accordance with the NRC-endorsed version of NEI 07-01, Revision 0, with no deviations. The EALs shall have been discussed and agreed upon with State and local officials. These fully developed site-specific EAL schemes shall be submitted to the NRC for confirmation at least 180 days prior to initial fuel load.

With this modification, the staff finds this license condition acceptable. The staff's evaluation of the EALs is documented in Section 13.3C.4 of the SER.

- Part 10, License Condition

The applicant provided a license condition in Section 2.3 of Part 10, "Emergency Planning ITAAC," Table 2.3-1, "ITAAC For Emergency Planning," of the Fermi 3 COL application. This table adequately addresses requirements of 10 CFR 52.80(a) for site-specific EP-ITAAC in a COL application and is therefore acceptable. The staff's detailed evaluation of the EP-ITAAC identified in Table 2.3-1 of Part 10 of the Fermi 3 COL application is documented in Attachment 13.3C Section 13.3C.19 of this SER.

- Part 10, License Condition

The applicant has proposed a license condition to execute formal Letters of Agreement with State and local agencies with EP responsibilities prior to fuel load. Specifically, the applicant proposed the following:

Prior to loading fuel, Detroit Edison shall execute formal Letters of Agreement with the following entities:

1. Michigan State Police
2. Monroe County Emergency Management Division
3. Wayne County Department of Homeland Security & Emergency Management
4. Frenchtown Charter Township Fire Department
5. Mercy Memorial Hospital Corporation
6. Monroe Community Ambulance
7. Oakwood Southshore Medical Center
8. Ohio Emergency Management Agency
9. Monroe County Community College

These Letters of Agreement will identify the specific nature of arrangements in support of emergency preparedness for operation of the proposed new nuclear unit. The Emergency Plan shall be revised to include these Letters of Agreement after they have been executed.

The staff's evaluation of the Letters of Agreement is documented in Attachment 13.3C, Section 13.3C.1.7, "Written Agreements," of this SER.

- Part 10, License Condition

The applicant proposed a license condition to submit a detailed analysis of on-shift staffing, in accordance with NEI 10-05, "Assessment of On-Shift Emergency Response Organization Staffing and Capabilities," Revision 0, and the licensee shall incorporate any changes to the EP needed to bring staff to the required levels, prior to or concurrent with completion of EP ITAAC 2.0 of EP ITAAC Table 2.3.1, and no less than 180 days prior to initial fuel load.

The staff finds that the proposed DTE license condition adequately addresses the required detailed analysis of on-shift staffing. This is acceptable because it conforms to the guidance in NSIR/DPR-ISG-01 Interim Staff Guidance, Emergency Planning for Nuclear Power Plants. Verification that a future revision of the COL application incorporates this license condition is being tracked as a **Confirmatory Item 13.03-77**.

### 13.3.5 Post-Combined License Activities

For the reasons discussed in the technical evaluation section above, the staff finds the following ITAAC and license conditions acceptable:

- The licensee shall perform and satisfy the ITAAC defined in Table 2.3-1 of COL application Part 10.

- The applicant shall submit a fully developed set of site-specific Emergency Action Levels (EALs) to the NRC in accordance with the NRC-endorsed version of NEI 07-01, Revision 0, with no deviations. The EALs shall have been discussed and agreed upon with State and local officials. These fully developed site-specific EAL schemes shall be submitted to the NRC for confirmation at least 180 days prior to initial fuel load.
- License Condition COL application Part 10 – The applicant shall execute formal Letters of Agreement with State and local agencies with EP responsibilities prior to fuel load. These Letters of Agreement will identify the specific nature of arrangements in support of emergency preparedness for operation of the proposed new nuclear unit. The Emergency Plan shall be revised to include these Letters of Agreement after they have been executed.
- The applicant proposed a license condition to provide a schedule to support the NRC’s inspection of operational programs, including the EP. Specifically, the applicant proposed the following:
  - Prior to initial fuel load, the licensee shall submit a schedule, no later than 12 months after issuance of the COL, and updated every 6 months until 12 months before scheduled fuel loading, and every month thereafter until either the operational program for the ITP in FSAR Table 13.4-201, Item 19, has been fully implemented or the plant has been placed in commercial service, whichever comes first. This schedule shall support implementation details of the ITP and planning for the conduct of NRC inspections of operational programs listed in FSAR Table 13.4-201, Item 19.
- The staff reviewed the above proposed license condition in Section 13.4.4, “Technical Evaluation,” of this SER.

### **13.3.6 Conclusion**

The NRC staff reviewed the application and checked the referenced DCD. The staff’s review confirmed that the applicant has addressed the required information, and no outstanding information is expected to be addressed in the COL FSAR related to this chapter. The results of the NRC staff’s technical evaluation of the information incorporated by reference in the Fermi 3 COL application are documented in NUREG-1966, “Final Safety Evaluation Report Related to the Certification of the Economic Simplified Boiling Water Reactor.”

In addition, the staff compared the additional COL supplemental information in the application to the relevant NRC regulations, the guidance in Section 13.3 of NUREG-0800, and other NRC regulatory guides. The staff concludes that the Fermi 3 EP provides an adequate expression of the overall concept of the operation and describes the essential elements of advanced planning and the provisions adopted to cope with emergency situations. The staff’s detailed evaluations of the Fermi 3 Emergency Response Plan are located in Attachments 13.3A, 13.3B, and 13.3C of this SER. Verification that proposed revisions to the emergency plan are incorporated into the next FSAR revision is being tracked as confirmatory items and their completion is discussed in the attachments below.

Based on FEMA’s IFR and its evaluation of the Fermi 3 Emergency Response Plan, the staff concludes there is reasonable assurance that adequate protective measures can and will be

taken in the event of a radiological emergency. Therefore, the staff concludes that the Fermi 3 Emergency Response Plan meets the requirements of 10 CFR 50.33(g), 10 CFR 50.34(b)(6)(v), 10 CFR 50.34(f)(2), 10 CFR 50.47, Appendix E to 10 CFR Part 50, 10 CFR 52.77, 10 CFR 52.79(a)(21), 10 CFR 52.79(a)(22)(i), 10 CFR 52.80, 10 CFR 52.81, and 10 CFR 52.83.

Pursuant to 10 CFR 50.47(a) and subject to the license conditions noted above and the satisfactory completion of the EP-ITAAC, the staff concludes there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency at the Fermi 3 site. The staff also finds that emergency preparedness for Fermi 3 is adequate to support full-power operations.

The staff's final conclusion for the EP is subject to verification that the confirmatory items identified in the following attachments to this section of this SER are incorporated into the applicant's next revision of the Fermi 3 FSAR.

### **Attachment 13.3A COL Information Items, Supplemental Information Items and Departures**

This attachment addresses the COL information items and the supplemental information items and departures associated with EP.

#### **13.3A.1 Regulatory Basis**

The regulatory basis for accepting the resolution of COL Item STD COL 13.3-1-A requiring the identification of OSC and communication interfaces with the control room (CR) and TSC is established in 10 CFR 50.47(b), 10 CFR 50.34(f)(2)(xxv), and the guidance in NUREG-0654/FEMA-REP-1, Revision 1, (including the March 2002 addenda) and NUREG-0696, "Functional Criteria for Emergency Response Facilities."

The regulatory basis for accepting the resolution of the COL Item STD COL 13.3-2-A requiring the identification of EOF and communication interfaces with the CR and TSC is established in 10 CFR 50.47(b), 10 CFR Part 52, Appendix E to 10 CFR Part 50, 10 CFR 50.33(g), 10 CFR 52.79(a)(17), and 10 CFR 50.34(f)(2)(xxv); and the guidance in NUREG-0654/FEMA-REP-1, Revision 1 (including the March 2002 addenda), and NUREG-0696.

The regulatory basis for accepting the resolution of COL Item STD COL 13.3-3-A, "Decontamination Facilities," requiring supplies to be provided for the decontamination of onsite individuals is established in 10 CFR 50.47(b), 10 CFR Part 52 and Appendix E to 10 CFR Part 50.

The regulatory basis for accepting the resolution of COL Item STD COL 14.3-1-A, "EP-ITAAC," is based on industry guidance and is in 10 CFR 52.80(a). This item requires a COL application to include the proposed ITAAC that the licensee shall perform—including those applicable to EP—and the acceptance criteria that are necessary and sufficient to provide reasonable assurance that if the ITAAC are successfully completed, the facility will be constructed and operated to conform with the COL, the provisions of the Atomic Energy Act, the Commission's rules and regulations, and the guidance in Section 14.3.10 of NUREG-0800.

#### **13.3A.2 COL Information Items**

### Technical Information in the Application:

- STD COL 13.3-1-A Identification of OSC and Communication Interfaces with Control Room and TSC

Section 13.3 of the Fermi 3 COL FSAR replaces the fifth through the ninth paragraphs of the ESBWR DCD Tier 2 information with the following:

As addressed in the emergency plan, the TSC is provided with reliable voice and data communication with the MCR and Emergency Operations Facility (EOF) and reliable voice communications with the Operational Support Center (OSC), NRC, and state and local operations centers.

The OSC communications system has at least one dedicated telephone extension to the control room, and one dedicated telephone extension to the TSC, and one telephone capable of reaching on-site and off-site locations, as a minimum.”

- STD COL 13.3-2-A Identification of EOF and Communication Interfaces with Control Room and TSC

Section 13.3 of the Fermi 3 COL FSAR replaces the fifth through the ninth paragraphs of the ESBWR DCD Tier 2 with the same information described for COL Item STD COL 13.3-1-A listed above.

- STD COL 13.3-3-A Decontamination Facilities

Section 13.3 of the Fermi 3 COL FSAR replaces the second sentence in the tenth paragraph of the ESBWR DCD Tier 2 with the following:

Supplies are provided in the service building adjacent to the main change rooms for decontamination of on-site individuals.

### Technical Evaluation:

- STD COL 13.3-1-A Identification of OSC and Communication Interfaces with Control Room and TSC

The staff’s review of the information in the applicant that addresses COL Item STD COL 13.3-1-A concludes that it meets the requirements in 10 CFR 50.47(b) and 10 CFR 50.34(f)(2)(xxv) and the guidance in Revision 1 to NUREG-0654/FEMA-REP-1 (including the March 2002 addenda) and NUREG-0696. The details of this review are in Section 13.3C.8 of this SER.

- STD COL 13.3-2-A Identification of EOF and Communication Interfaces with Control Room and TSC

The staff’s review of the applicant’s information that addresses COL Item STD COL 13.3-2-A concludes that it meets the requirements in 10 CFR 50.47(b), 10 CFR Part 52, Appendix E to 10 CFR Part 50, 10 CFR 50.33(g), 10 CFR 52.79(a)(17), and 10 CFR 50.34(f)(2)(xxv) and the guidance in Revision 1 to NUREG-0654/FEMA-REP-1 (including the March 2002 addenda) and NUREG-0696. The details of this review are in Section 13.3C.8 of this SER.

- STD COL 13.3-3-A Decontamination Facilities

The staff's review of the applicant's information that addresses COL Item STD COL 13.3-3-A concludes that it meets the requirements in 10 CFR 50.47(b), 10 CFR Part 52, and Appendix E to 10 CFR Part 50. The details of this review are in Section 13.3C.11 of this SER.

### **13.3A.3 Supplemental Information Items**

- STD COL 14.3-1-A Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)

Section 14.3 "Inspections, Tests, Analysis, and Acceptance Criteria" describes replacing the last paragraph of this section in the ESBWR DCD Tier 2 with the following:

The requirements for inclusion of Emergency Planning ITAAC (EP-ITAAC) in a COLA are provided in 10 CFR 52.80(a). In SRM-SECY-05-0197, the NRC approved generic EP-ITAAC for use in COL and ESP applications. This set of EP-ITAAC was considered in the development of the plant-specific EP-ITAAC, which are tailored to the ESBWR design. The plant-specific EP-ITAAC are included in a separate part of the COLA.

#### **Technical Evaluation:**

- STD COL 14.3-1-A Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)

The COL applicant states that the NRC-approved generic EP-ITAAC for use in COL applications was considered in the development of the Fermi 3 plant-specific EP-ITAAC. The plant-specific EP-ITAAC are included in the Fermi 3 COL application Part 10. The resolution of this COL item is addressed in Section 13.3C.19 of this SER.

### **13.3A.4 Departures**

There are no departures that affect emergency preparedness.

### **13.3A.5 Conclusion**

The NRC staff reviewed the application and checked the referenced DCD. The staff's review confirmed that the applicant has addressed the required information, and no outstanding information is expected to be addressed in the COL FSAR related to this chapter. The results of the NRC staff's technical evaluation of the information incorporated by reference in the Fermi COL application are documented in NUREG-1966, "Final Safety Evaluation Report Related to the Certification of the Economic Simplified Boiling Water Reactor."

In addition, NRC staff compared the COL items and the supplemental information item in the Fermi 3 COL application to the applicable NRC regulations and other NRC regulatory guides. Therefore the staff concludes that the applicant has provided sufficient information to comply with the applicable regulatory requirements in 10 CFR 50.33(g), 10 CFR 52.79(a)(17), 10 CFR 52.79(a)(21), 10 CFR 50.34(f)(2)(xxv), 10 CFR 50.47(b)(2) and (6); and the applicable guidance in NUREG-0654/FEMA-REP-1, NUREG-0696, and NUREG-0800.

## **Attachment 13.3B Emergency Planning Information in the Application**

This attachment of the SER includes the NRC staff's evaluation of EP information that the applicant is required to provide in the COL application. However, the attachment does not address the applicant's plans for responding to a radiological emergency, which are evaluated in Attachment 13.3C of this SER.

### **13.3B.1 Regulatory Basis<sup>2</sup>**

The applicable regulatory requirements for EP information are as follows:

- Appendix E to 10 CFR Part 50 Section I, "Introduction," describes the emergency planning zone (EPZ.)
- Appendix E to 10 CFR Part 50 Section E.III, "The Final Safety Analysis Report," requires the FSAR to include plans for coping with emergencies.
- 10 CFR 52.79(a)(21) and 10 CFR 50.34(b)(6)(v), "Contents of applications; technical information," also require the FSAR to include an onsite emergency plan that meets the requirements in 10 CFR 50.47 and Appendix E to 10 CFR Part 50.
- 10 CFR 50.33, "Content of the application; general information," and 10 CFR 52.77, "Contents of applications; general information," require in part, the submittal of State and local emergency plans.
- 10 CFR 50.33(g) requires in part, a description of the plume exposure pathway and the ingestion pathway EPZs. In addition, 10 CFR 50.47(c)(2), "Emergency plans," states generally that the plume exposure pathway EPZ for nuclear power plants shall consist of an area about 16 kilometers [km] (10 miles [mi]) in radius and the ingestion pathway EPZ shall consist of an area about 80 km (50 mi) in radius. The exact size and configuration of the EPZs surrounding a particular nuclear power reactor shall be determined in relation to local emergency response needs and capabilities as they are affected by conditions such as demography, topography, land characteristics, access routes, and jurisdictional boundaries. The plans for the ingestion pathway shall focus on actions that are appropriate to protect the food ingestion pathway.
- 10 CFR 50.34(b)(6)(v) requires plans for coping with emergencies that shall include the items specified in Appendix E. 10 CFR 50.34(h)(1)(i) and 10 CFR 52.79(a)(41) require the COL application to include an evaluation of the facility against NUREG-0800. Section 13.3 of NUREG-0800 provides guidance for reviewing onsite emergency plans for nuclear power plants. 10 CFR 50.34(h)(2) and (3) require the evaluation to identify and describe all differences from the NUREG-0800 acceptance criteria in Section 13.3 and to evaluate how the proposed alternatives to the NUREG-0800 criteria provide an acceptable method for complying with the Commission regulations. Where differences

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<sup>2</sup> The bracketed [ ] alphanumeric designations used throughout this SER section identify the corresponding NUREG-0654/FEMA-REP-1 evaluation criteria used by the staff to determine compliance with 10 CFR 50.47(b).  
Braces { } identify requirements in Appendix E to 10 CFR Part 50.  
Parentheses ( ) identify other applicable regulatory requirements.

exist, the evaluation should discuss how the proposed alternative provides an acceptable method for complying with the Commission regulations or portions thereof that underlie the corresponding NUREG-0800 acceptance criteria.

- 10 CFR 52.73, "Relationship to other subparts," states that the application for a COL may reference a standard design.
- 10 CFR 52.79(a)(22)(i) requires certifications from State and local governmental agencies with EP responsibilities stating that (1) the proposed emergency plans are practicable; (2) these agencies are committed to participating in any further development of the plans, including any required field demonstrations; and (3) these agencies are committed to executing their responsibilities under the plans in the event of an emergency.
- 10 CFR 52.81, "Standards for review of applications," states that COL applications will be reviewed according to the standards in 10 CFR Part 50 and Part 100, "Reactor Site Criteria." Therefore, the requirements of 10 CFR Part 100 Subpart B, "Evaluation Factors for Stationary Power Reactor Site Applications on or After January 10, 1997," are applicable. 10 CFR 100.1(c), "Reactor Site Criteria, Purpose," requires the identification of physical characteristics unique to the proposed site that could pose a significant impediment to the development of emergency plans. In addition, 10 CFR 100.21(g) also requires applications for site approval to identify physical characteristics unique to the proposed site.
- 10 CFR 100.1(c) states that siting factors and criteria are important in assuring that radiological doses from normal operation and postulated accidents will be acceptably low, that natural phenomena and potential man-made hazards will be appropriately accounted for in the design of the plant, that site characteristics are such that adequate security measures to protect the plant can be developed, and that physical characteristics unique to the proposed site that could pose a significant impediment to the development of emergency plans are identified.
- 10 CFR 100.21(g) states that physical characteristics unique to the proposed site that could pose a significant impediment to the development of emergency plans must be identified.
- 10 CFR 30.32(i)(1) states that the licensee is required to possess radioactive materials in an unsealed form on foils or plated sources or sealed in glass in excess of the quantities in 10 CFR 30.72, "Schedule C--Quantities of radioactive materials requiring consideration of the need for an emergency plan for responding to a release."
- 10 CFR 40.31 (j)(1), states that the licensee is required to possess uranium hexafluoride in excess of 50 kilograms in a single container or 1,000 kilograms total.
- 10 CFR 70.22 (i)(1) states that a license is required to possess enriched uranium or plutonium, which in turn requires a criticality accident alarm system for uranium hexafluoride in excess of 50 kilograms in a single container or 1,000 kilograms total; or in excess of 2 curies of plutonium in an unsealed form or on foils or plated sources.

### **13.3B.2 FSAR and Onsite Emergency Plan**

**Technical Information in the Application: {Appendix E, Section III} (10 CFR 52.79(a)(21)) (10 CFR 50.34(b)(6)(v))** Section 13.3 of the COL FSAR states that the emergency plan should be prepared in accordance with 10 CFR 52.79(d) and maintained as a separate document. The document is Part 5, "Emergency Plan," (Fermi 3 Emergency Plan) of the COL application. In Part 5, Section I.B, "Scope," states that the plan should describe actions to be taken in the event of a radiological emergency at Fermi 3 that may impact the health and safety of the general public or plant employees. In Section I.C, "Planning Basis," the Fermi Emergency Plan states that it meets the planning standards set forth in 10 CFR 50.47(b) and the requirements of 10 CFR Part 50, Appendix E. The Plan was developed to address the applicable provisions of RG 1.101, "Emergency Planning and Preparedness for Nuclear Power Reactors," and is also based on the guidance in Revision 1 to NUREG-0654/FEMA-REP-1. The Fermi Emergency Plan also includes seven appendices that provide additional detailed information on various aspects of the onsite emergency plan.

**Technical Evaluation: {Appendix E, Section III} (10 CFR 52.79(a)(21)) (10 CFR 50.34(b)(6)(v))** The staff's review finds that the Fermi 3 COL FSAR includes an emergency plan for coping with emergencies at the Fermi 3 site that meets the applicable requirements in Section III of Appendix E to 10 CFR Part 50, 10 CFR 52.79(a)(21), and 10 CFR 50.34(b)(6)(v).

### **13.3B.3 Submittal of State and Local Emergency Plans**

**Technical Information in the Application: (10 CFR 50.33)** The "Explanatory Notes Regarding the Emergency Plan and Supplemental Information" of the Fermi 3 EP states that current State and local EP documents are included as Supplemental Information. The list of State and local EP documents includes:

- Michigan Emergency Management Plan
- Monroe County Management Plan
- Wayne County Operations Plan
- Michigan Department of Environmental Quality Nuclear Facilities Emergency Management Plan (NFEMP)
- The Ohio Plan for Response to Radiation Emergencies at Commercial Nuclear Power Plants

The applicant has submitted all required offsite Emergency Plans for State and local governmental entities that are wholly or partially within the plume exposure pathway EPZ. These State and local governmental entities include the Michigan Counties of Monroe and Wayne. The offsite Emergency Plans for Michigan and Ohio, which are wholly or partially within the ingestion pathway EPZ, were required to be submitted. However, the State of Ohio plan was not included in the application. In RAI 13.03-35, the staff requested the applicant to provide the Ohio State REP and letter of certification consistent with 10 CFR 50.33(g). In the response to this RAI dated December 7, 2009 (ML093440828), the applicant provided the ingestion pathway portion of the State of Ohio Emergency Operations Plan and the certification letter from

the State of Ohio. The applicant's response also included a proposed revision of Appendix 2 to the Fermi 3 Emergency Plan that includes the State of Ohio Certification Letter in the list of certification letters.

**Technical Evaluation: (10 CFR 50.33)** The staff finds the applicant's response to RAI 13.03-35 acceptable because it included both the Ohio State Emergency Response Plan and the requested letter of certification. The applicant submitted all required offsite emergency plans for State and local governmental entities that are wholly or partially within the plume exposure pathway EPZ. These submittals are acceptable because they meet the requirements in 10 CFR 50.33(g).

#### **13.3B.4 Description of the Emergency Planning Zones**

**Technical Information in the Application: {Appendix E, Section I} (10 CFR 50.33(g)) (10 CFR 50.47(c)(2))** Section I.D, "Emergency Planning Zones," of the Emergency Plan describes both the plume and ingestion exposure pathway EPZs. The plume exposure pathway EPZ is described as an area approximately 16 km (10 mi) in radius around the site. Figure I-1, "Fermi 3 Plume Exposure Pathway EPZ," of the Emergency Plan illustrates the EPZ.

The ingestion pathway EPZ is described as an area approximately 80 km (50 mi) in radius around the site. Figure I-2, "Fermi 3 Ingestion Exposure Pathway EPZ," of the EP illustrates the EPZ.

**Technical Evaluation:** FEMA and the staff reviewed the applicant's description of the EPZ and finds the size acceptable because it meets the requirements of 10 CFR 50.33(g), 10 CFR 50.47(c)(2), and Section 1 of Appendix E to 10 CFR Part 50.

#### **13.3B.5 Certifications from State and Local Governments**

**Technical Information in the Application: (10 CFR 52.79(a)(22)(i))** Appendix 2, "Certification Letters," to the Fermi Emergency Plan includes a list of certification letters from the Michigan State Police, the Monroe County Emergency Management Division, the Wayne County Department of Homeland Security & Emergency Management, and the Frenchtown Charter Township Fire Department. In RAI 13.03-35, the staff requested the applicant to provide Certification Letters for the Appendix 2 list of organizations that may be required to provide support to Fermi 3 in the event of an emergency. The applicant's response to this RAI dated December 7, 2009 (ML093440828), proposed a license condition to execute formal Letters of Agreement (LOAs) with each agency listed in Appendix 2 of the Fermi 3 Emergency Plan, prior to loading fuel. The LOAs will identify the specific nature of the arrangements supporting the Fermi 3 Emergency Plan.

**Technical Evaluation:** The staff finds the applicant's response to RAI 13.03-35 acceptable because it meets the requirements of 10 CFR 52.79(a)(22)(i). The staff confirmed that Revision 4 to Part 10 "ITAAC" of the Fermi 3 COL application incorporates the information and textual changes in the response to RAI 13.03-35. The staff finds that the revision to Section 3.1 ("Emergency Planning Actions") of Part 10 to the Fermi 3 COL application provides an adequate license condition to ensure that the requirements of 10 CFR 52.79(a)(22)(i) will be met prior to fuel load.

#### **13.3B.6 Evaluation Against the Standard Review Plan**

**Technical Information in the Application: (10 CFR 52.79(a)(41)) (10 CFR 50.34(h)(1)(i)) (10 CFR 50.34(h)(2 and 3))** In Section 1.9 “Conformance with Standard Review Plan and Applicability of Codes and Standards,” of Part 2 in the Fermi 3 COL application, the applicant provided Table 1.9-201, “Conformance with Standard Review Plan,” to document that the application conforms to the SRP acceptance criteria. Table 1.9-201 indicates that Section 13.3, “Emergency Planning,” conforms to the SRP acceptance criteria and is therefore acceptable.

The applicant uses the term “conforms” in Table 1.9-201 to mean that no exception is taken to the SRP acceptance criteria as they apply to site-specific design information, operational aspects of the facility, or siting information in the FSAR. Also, the term “Not applicable” means that the SRP acceptance criteria do not apply to the ESBWR or to Fermi 3. Any differences with the SRP acceptance criteria are identified and justified, with references to the applicable FSAR sections that address the difference.

**Technical Evaluation:** The staff reviewed the applicant’s evaluation of the Fermi Emergency Plan against the applicable portions of SRP Section 13.3, “Emergency Planning,” dated March 2007 and identified the differences between the SRP acceptance criteria in Section 13.3 and application Table 1.9-201 to be adequately described. Therefore, the staff’s review finds that the information is acceptable and meets the requirements of 10 CFR 52.79(a)(41), 10 CFR 50.34(h)(1)(i), and 10 CFR 50.34(h)(2 and 3).

#### **13.3B.7 Reference to a Standard Design**

**Technical Information in the Application:** Section 13.3, of the COL FSAR states that Section 13.3 of the ESBWR DCD is incorporated by reference with departures and/or supplements as noted.

**Technical Evaluation:** The staff’s review finds that the ESBWR DCD is incorporated by reference into the Fermi 3 COL FSAR and the evaluation of the departures and supplements is in Attachment 13.3A of this SER. This information is acceptable because it meets the requirements of 10 CFR 52.73.

#### **13.3B.8 Impediments to the Development of Emergency Plans**

**Technical Information in the Application: (10 CFR 52.81) (10 CFR 100.1(c)) (10 CFR 100.21(g))** Appendix 5 to the Emergency Plan, “Evacuation Time Estimate Summary,” states that the ETE report, “Fermi Nuclear Plant Development of Evacuation Time Estimates,” dated August 2010 describes the analyses undertaken and the results obtained by the study. On the basis of the information in the ETE Report, Appendix 5 of the Fermi 3 Emergency Plan, the staff concludes that there are no unique physical characteristics on the Fermi nuclear power plant site that pose a significant impediment to the development of emergency plans.

**Technical Evaluation: (10 CFR 52.81) (10 CFR 100.1(c)) (10 CFR 100.21(g))** The applicant has demonstrated through the ETE Report that no physical characteristics unique to the proposed site would pose a significant impediment to the development of emergency plans. Therefore, the staff finds that the information is acceptable because it meets the requirements of 10 CFR 100.1(c), 10 CFR 100.21(g), and 10 CFR 52.81. The staff’s review of the ETE Report is in Section 13.3C.18, “Evacuation Time Estimates Analysis,” of this SER.

### **13.3B.9 Emergency Planning for Byproduct, Source, and Special Nuclear Material Licenses**

**Technical Information in the Application: (10 CFR 30.32(i), 10 CFR 40.31(j), and 10 CFR 70.22(i)(1))** In Table 13.4-201, "Operational Programs Required by NRC Regulations," of Section 13.4, "Operational Program Implementation," of the Fermi 3 FSAR, the applicant requests applicable licenses under 10 CFR Part 30, "Rules of General Applicability to Domestic Licensing of Byproduct Material"; Part 40, "Domestic Licensing of Source Material"; and Part 70, "Domestic Licensing of Special Nuclear Material," prior to the initial receipt of by-product sources or special nuclear materials (excluding Exempt Quantities as described in 10 CFR 30.18). In RAI 13.03-88 the staff requested additional information regarding the requirements of 10 CFR 30.32(i)(1). Specifically, the staff asked whether the request for a Part 30 license involves authorization to receive or possess by-product material(s) "in unsealed form, on foils, plated sources, or sealed in glass," in excess of the quantities in 10 CFR 30.72 Schedule C. The applicant's response to RAI 13.03-88 dated December 6, 2013 (ML13344B028), states that no by-product material in an unsealed form, on foils or plated sources, or sealed in glass in excess of the quantities in Schedule C of 10 CFR 30.72 would be received, possessed, or used at the Fermi 3 site. Because the quantities do not exceed Schedule C, an EP that meets the requirements of 10 CFR 30.32(i)(3) is not required. As such, the implementation of the Emergency Plan prior to the receipt of by-product material will be removed from FSAR Table 13.4-201, "Operational Programs Required by NRC Regulations." In RAI 13.03-89, the staff requested additional information regarding the requirements of 10 CFR 40.31(j)(1). Specifically, whether the request for a Part 40 license involves authorization to receive, possess, or use uranium hexafluoride in excess of 50 kilograms (kg) (110 pounds [lb]) in a single container or 1,000 kg (about 2,200 lb.) total. The applicant's response to RAI 13.03-89 dated December 6, 2013 (ML13344B028), states that the Part 40 license would not involve authorization to receive, possess, or use uranium hexafluoride in excess of 50 kg (110 lb) in a single container or 1,000 kg (2,200 lb) total. Because the quantities would not exceed the values listed above, an EP for responding to the radiological hazards of an accidental release of source material and to any associated chemical hazards related to the material is not required. As such, the implementation of the EP prior to the receipt of source material will be removed from FSAR Table 13.4-201, "Operational Programs Required by NRC Regulations." And Chapter 12 of the FSAR will be revised to include a requirement addressing these limitations during the period before the implementation of the EP (before the initial fuel loading and following the finding that the acceptance criteria in the COL has been met as stated in 10 CFR 52.103(g)). In RAI 13.03-90, the staff requested additional information regarding the requirements of 10 CFR 70.22(i)(1) and whether the request for a Part 70 license involves authorization to possess enriched uranium for which a criticality accident alarm system is required. The applicant's response to RAI 13.03-90 dated December 6, 2013 (ML13344B028), states that the request for a Part 70 license does not involve authorization to possess enriched uranium for which a criticality accident alarm system is required, uranium hexafluoride in excess of 50 kg (110 lb) in a single container or 1,000 kg (2,200 lb) total, or in excess of 2 curies of plutonium in an unsealed form or on foils or plated sources. Hence, an emergency plan that meets 10 CFR 70.22(i)(3) is not required. Therefore, the implementation of the Emergency Plan before the receipt of special nuclear materials will be removed from FSAR Table 13.4-201, "Operational Programs Required by NRC Regulations." Also, Chapter 12 of the FSAR will be revised to include a requirement addressing these limitations during the period prior to the implementation of the Emergency Plan (prior to the initial fuel loading and following the finding that the acceptance criteria in the COL has been met as required in 10 CFR 52.103(g)).

**Technical Evaluation: (10 CFR 30.32(i), 10 CFR 40.31(j), and 10 CFR 70.22(i)(1))** The staff finds that the additional information and textual revisions to the Fermi 3 FSAR that the applicant submitted in response to RAIs 13.03-88, 13.03-89, and 13.03-90 acceptable because they meet the requirements of 10 CFR 30.32(i), 10 CFR 40.31(j), and 10 CFR 70.22(i)(1). The staff confirmed that Revision 5 of the Fermi 3 FSAR incorporated the proposed revisions to (1) remove a reference to implement the Emergency Plan prior to initial receipt of by-product sources or special nuclear materials from FSAR Table 13.4-201; and (2) include information to address the requirements of 10 CFR 30.32(i), 10 CFR 40.31(j), and 10 CFR 70.22(i)(1) during the period prior to implementing the Emergency Plan to Subsection 12.2.1.5 of Chapter 12 of the Fermi 3 FSAR as described in the responses to RAIs 13.03-88, 13.03-89, and 13.03-90.

The staff created Confirmatory Items 13.03-73 through 13.03-75 to track the proposed revisions to (1) remove a reference to implement the Emergency Plan prior to initial receipt of by-product sources or special nuclear materials from FSAR Table 13.4-201; and (2) include information to address the requirements of 10 CFR 30.32(i), 10 CFR 40.31(j), and 10 CFR 70.22(i)(1) during the period prior to implementing the Emergency Plan to Subsection 12.2.1.5 of Chapter 12 of the Fermi 3 FSAR. The staff finds that with the exception of the confirmatory actions, the information provided is acceptable and meets the requirements of 10 CFR 30.32(i), 10 CFR 40.31(j), and 10 CFR 70.22(i)(1).

The staff created Confirmatory Item 13.03-73 to track the revision to remove the reference to 10 CFR 30.32(i)(3) in FSAR Table 13.4-201. This item also tracks a revision to Chapter 12 of the FSAR to include a requirement for addressing the limitations of 10 CFR 30.32(i)(3) during the period prior to the implementation of the Emergency Plan, prior to the initial fuel loading, following the finding that the acceptance criteria in the COL has been met as required in 10 CFR 52.103(g). The staff verified that FSAR Revision 5 includes the references in FSAR Table 13.4-201. Therefore, Confirmatory Item 13.03-73 is resolved.

The staff created Confirmatory Item 13.03-74 to track the revision to remove the reference to 10 CFR 40.31(j)(1) in FSAR Table 13.4-201 and a revision to Chapter 12 of the FSAR to include a requirement for addressing the limitations of 10 CFR 40.31(j)(1) during the period prior to the implementation of the Emergency Plan, (prior to the initial fuel loading, following the finding that the acceptance criteria in the COL has been met as required in 10 CFR 52.103(g)). The staff verified that FSAR Revision 5 includes the references in FSAR Table 13.4-201. Therefore, Confirmatory Item 13.03-74 is resolved.

The staff created Confirmatory Item 13.03-75 to track the revision to remove the reference to 10 CFR 70.22(i)(1) in FSAR Table 13.4-201 and a revision to Chapter 12 of the FSAR to include a requirement for addressing the limitations of 10 CFR 70.22(i)(1) during the period prior to the implementation of the Emergency Plan, (prior to the initial fuel loading and following the finding that the acceptance criteria in the combined license has been met as required in 10 CFR 52.103(g)). The staff verified that FSAR Revision 5 includes the references in FSAR Table 13.4-201. Therefore, Confirmatory Item 13.03-75 is resolved.

### **13.3B.10 Post Combined License Activities**

The following License Condition is proposed by the applicant:

Prior to loading fuel, Detroit Edison shall execute formal LOAs with the following entities:

1. Michigan State Police
2. Monroe County Emergency Management Division
3. Wayne County Department of Homeland Security & Emergency Management
4. Frenchtown Charter Township Fire Department
5. Mercy Memorial Hospital Corporation
6. Monroe Community Ambulance
7. Oakwood Southshore Medical Center
8. Ohio Emergency Management Agency
9. Monroe County Community College

These LOAs will identify the specific nature of arrangements in support of emergency preparedness for operating the proposed new nuclear unit. The Emergency Plan shall be revised to include these LOAs after they have been executed.

### **13.3B.11 Conclusion**

NRC staff reviewed the EP information required by regulations to be included in the application but not required to be part of the Fermi 3 Emergency Plan. The staff concludes that the information is acceptable and meets the requirements and guidance in 10 CFR 50.33, 10 CFR 50.34(b)(6)(v), 10 CFR 50.47(c)(2), 10 CFR 52.73, 10 CFR 52.77, 10 CFR 52.79, 10 CFR 52.81, 10 CFR 100.1(c), 10 CFR 100.21(g), and the applicable portions of Appendix E to 10 CFR Part 50 as discussed above.

### **Attachment 13.3C Onsite Emergency Plan**

The NRC evaluates emergency plans for nuclear power reactors to determine that the plans are adequate and there is reasonable assurance that the plan can be implemented. This attachment to the SER provides the results of the onsite emergency plan review for the proposed new Fermi 3 Nuclear Power Plant site.

The Fermi 3 FSAR Section 13.3 states that the Fermi 3 Emergency Plan is included in Part 5 of the COL application. Also included as part of the onsite emergency plan are seven appendices, which provide additional detailed information on various aspects of the Fermi 3 Emergency Plan. In addition, Part 10 of the COL application includes a set of ITAAC related to the Fermi 3 Emergency Plan.

The following section describes the NRC staff's evaluation of the onsite Emergency Plan for the Fermi 3 site and parallels the planning standards in NUREG-0654/FEMA-REP-1, Revision 1. Compliance with the guidance in NUREG-0654/FEMA-REP-1, Revision 1, for each planning standard meets the requirements of 10 CFR 50.47(b).

By letter dated December 18, 2012, "Detroit Edison Company Incorporation of the Emergency Preparedness Rule Changes into the Fermi 3 COLA," the applicant provide additional information concerning the incorporation of the Enhancements to Emergency Preparedness Regulations (76FR72560) 10 CFR 50.47, 50.54(q), Part 50, Appendix E, and 52.79. The staff's evaluation of the additional information provided in the letter above is below.

#### **13.3C.1 Assignment of Responsibility (Organizational Control)**

### **13.3C.1.1 Regulatory Basis**

In determining whether the proposed Fermi 3 Emergency Plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(1), the staff evaluated the plan against the detailed evaluation criteria<sup>3</sup> in NUREG-0654/FEMA-REP-1, Revision 1. The staff also evaluated the proposed Emergency Plan against applicable regulatory requirements related to the area of "Assignment of Responsibility (Organization Control)," in Appendix E to 10 CFR Part 50.<sup>4</sup>

### **13.3C.1.2 Overall Response Organization**

**Technical Information in the Emergency Plan: [A.1.a]** Section II.A, "Assignment of Responsibility," describes the emergency response participating organizations and includes the concept of operations. Participating organizations and their descriptions include State agencies, county governments, local governments, and Federal emergency response agencies. State organizations identified in Section II.A.1.a.1, "State, Local and Provincial Governmental Agencies," include the Department of State Police and Department of Environmental Quality. Federal agencies identified in Section II.A.1.a.2, "Federal Agencies," include the NRC, the United States Department of Energy (DOE), FEMA, United States Coast Guard (USCG), and the United States Environmental Protection Agency (EPA).

In Section II.A.1.b, "Concept of Operations," the Michigan Department of Community Health (MDCH) is identified as a participating government agency with the overall responsibility to protect the health and safety of the general public from radiation. In RAI 13.03-01-02, the staff requested additional information regarding whether to include the MDCH in the listing of participating agencies in Section II.A.1.a.1. The applicant's response to RAI 13.03-01-02 dated December 7, 2009 (ML093440828), describes the responsibilities of the MDCH and described that the MDCH Bureau of Health Systems (Radiation Safety Section) is responsible for assisting the Michigan Department of Environmental Quality (MDEQ) staff in responding to nuclear accidents and emergency drills and exercises. The applicant states that the MDCH can provide health physics staff and expertise for radiological monitoring teams, worker decontamination centers, and the Joint Information Center (JIC). The applicant will revise Section II.A.1.b of the Fermi 3 Emergency Plan to explain that the MDCH shares the responsibility with MDEQ for coordinating medical support for a nuclear accident.

**{Appendix E, Section IV.A.8}** Section II.A.1.b identifies the State government agencies with emergency responsibilities and the Governor of the State of Michigan as having complete authority over offsite emergency operations and decision making. The Emergency Management Division, of the Michigan State Police is responsible for general planning, command and control, and overall direction and coordination. This responsibility includes coordinating the implementation of protective actions to evacuate and/or shelter the public. The MDEQ is responsible for advising State and local officials on the implementation of protective actions. Section II.A.1.b identifies the Chairperson of the Monroe County Board of Commissioners and the Wayne County Executive as the local government officials responsible for protective actions.

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<sup>3</sup> The bracketed [.] alphanumeric designations used throughout this FSER section identify the corresponding NUREG-0654/FEMA-REP-1 evaluation criteria used by the staff to determine compliance with 10 CFR 50.47(b).

<sup>4</sup> Braces {.} identify requirements in Appendix E to 10 CFR Part 50.

**Technical Evaluation: [A.1.a]** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-01-02 to be acceptable, because they conform to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan incorporated the information and textual changes in the response to RAI 13.03-01-02. The staff finds that the Fermi 3 Emergency Plan provides an adequate general discussion of the assignment of responsibilities and addresses protective actions. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

**{Appendix E, Section IV.A.8}** The staff finds that the Fermi 3 Emergency Plan adequately identifies State and/or local officials responsible for planning, ordering, and controlling appropriate protective actions including evacuations when necessary. This information is acceptable because it meets the requirements in Appendix E to 10 CFR Part 50.

### **13.3C.1.3      *Concept of the Operations***

**Technical Information in the Emergency Plan: [A.1.b]** Section II.A.1, “Emergency Organization,” discusses the need to coordinate emergency response actions with Fermi 2 for events affecting both units and explains that a single Emergency Director is designated from the onsite shift management to carry out the Emergency Plan. Section II.A.1.b describes the applicant’s responsibilities beginning with an assessment of plant conditions, the classification of emergencies, notifications, protective action recommendations (PAR), communications, and ending with a termination of emergency conditions. Section II.A.1.b identifies the Shift Manager as the responsible official for directing the activities of the plant staff in the initial assessment and in corrective and protective functions. The CR is the initial center for the coordination of emergency response actions. Once activated, the TSC provides supportive command and control functions of the CR. Following the activation of the emergency response facilities, a qualified senior manager assumes the Emergency Director position.

**{Appendix E, Section III}** FSAR Section 13.3.2, “Emergency Plan,” states that the Emergency Plan is in Part 5 of the COL application. Section II.A of the Fermi 3 Emergency Plan describes the participating emergency response organizations and provides an overall concept of the operations. These include actions beginning with an assessment of plant conditions and ending with a termination of emergency conditions. The Plan describes the emergency response roles of supporting organizations and offsite agencies for State, local, and Federal agencies.

**Technical Evaluation: [A.1.b] {Appendix E, Section III}** The staff finds that the Fermi 3 Emergency Plan adequately describes the applicant’s operational role, its concept of operations, and its relationship to the total effort. This information is acceptable because it conforms to the guidance in Revision 1 to NUREG-0654/FEMA-REP-1 and the requirements in Appendix E to 10 CFR Part 50.

### **13.3C.1.4      *Organizational Interrelationships***

**Technical Information in the Emergency Plan: [A.1.c.]** Figure II.A-1, “Emergency Operations Center Interrelationships,” provides a block diagram of organizational interrelationships for the emergency operations center (EOC). Section II.A.1.b identifies the Monroe County EOC in Monroe, Michigan, and the Wayne County EOC in Romulus, Michigan. In RAI 13.03-01-04, the staff requested additional information on county EOCs. The applicant’s response to this RAI dated December 7, 2009 (ML093440828), provided a revised Figure II.A-1 of the Fermi 3

Emergency Plan showing multiple county EOCs. Section II.A.1.a.1 identifies the Province of Ontario, Canada, as a participating organization, and the Ontario EOC is included in Figure II.A-1. Roles of the State Police; MDEQ, and MDCH are described in Section II.A.1.b.

**Technical Evaluation: [A.1.c.]** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-01-04 to be acceptable, because they conform to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan incorporated the information and textual changes in the response to RAI 13.03-01-04. The staff finds that the Fermi 3 Emergency Plan adequately illustrates the interrelationships among the participating organizations in an emergency response in a block diagram and in the text. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.1.5      *Individual in Charge of Emergency Response***

**Technical Information in the Emergency Plan: [A.1.d]** Section II.A.1.d, “Individual in Charge of Emergency Response,” explains that the Shift Manager determines whether an emergency exists and the appropriate and applicable emergency classification. Upon the declaration of an emergency, the Shift Manager assumes the role of Emergency Director and is in charge of the emergency response.

**Technical Evaluation: [A.1.d]** The staff finds that the Fermi 3 Emergency Plan adequately identifies a specific individual by title who shall be in charge of the emergency response. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.1.6      *24-Hour Response Capability***

**Technical Information in the Emergency Plan: [A.1.e.]** Section II.A.1.e, “24 Hour Emergency Response Capability,” explains that the applicant maintains the capability for a 24-hour response, which includes the manning of communications links. This capability is maintained through the training of multiple responders for key emergency response positions, the assignment of emergency response personnel to extended shifts when needed to support emergency response operations, the procurement of external resources to supplement the assigned staff, and the availability of basic necessities such as food and sleeping facilities to accommodate emergency response personnel.

**Technical Evaluation: [A.1.e.]** The staff finds that the Fermi 3 Emergency Plan adequately describes provisions for a 24-hour per day emergency response, including around-the-clock staffing of communication links. These provisions are acceptable because they conform to the guidance in NUREG-0654/FEMA-REP 1, Revision 1.

#### **13.3C.1.7      *Written Agreements***

**Technical Information in the Emergency Plan: [A.3]** Section II.A.2, “Written Agreements,” references Appendix 2 “Certification Letters,” which documents a list of certification letters between the applicant and the State of Michigan, Monroe and Wayne County agencies, and private sector organizations. Appendix 2 states that agreements are also on file for the Michigan State Police, Monroe County Emergency Management Division, Wayne County Department of Homeland Security & Emergency Management, Frenchtown Charter Township

Fire Department, Mercy Memorial Hospital Corporation, Monroe County Ambulance, and the Oakwood Southshore Medical Center. In RAI 13.03-01-05, the staff requested the applicant to revise the Emergency Plan to include copies of existing agreements with the organizations identified in Appendix 2. The applicant's response to RAI 13.03-01-05 dated December 7, 2009 (ML093440828), states that LOAs supporting the proposed Fermi 3 Emergency Plan have not yet been specifically executed. The applicant stated that these letters will be individually executed before operation as verified by the ITAAC for Emergency Planning in Table 2.3-1, Item 1.0, and the letters will be similar to those executed for the existing Fermi 2. The applicant includes copies of the existing agreements for Fermi 2 in the response. In Supplemental RAI 13.03-07, the staff requested the applicant to provide in the copies of the Emergency Plan LOAs for Fermi 3. The applicant's response to Supplemental RAI 13.03-07 dated June 25, 2010 (ML101790463), further clarified that there are certification letters from the support agencies, and the LOAs will be executed prior to loading fuel at Fermi 3.

**Technical Evaluation: [A.3]** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan that the applicant submitted in response to RAI 13.03-01-05 and Supplemental RAI 13.03-07 acceptable, because they conform to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 5 of the Fermi 3 FSAR contains a license condition stating that LOAs for Fermi 3 will be executed prior to operation. This response is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.1.8      *Operations for a Protracted Period***

**Technical Information in the Emergency Plan: [A.4]** Section II.A.3, "Continuous Operations," identifies either the Emergency Officer or the Emergency Director as the individual responsible for (1) ensuring a continuity of technical, administrative, and material resources during emergency operations; (2) procuring external resources as needed; and (3) establishing arrangements for basic necessities.

**Technical Evaluation: [A.4]** The staff finds that the Fermi 3 Emergency Plan adequately identifies the specific title of the individual responsible for the continuity of resources during a protracted period. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.1.9      *Conclusion***

The staff reviewed the onsite emergency plan as described above for the assignment of responsibility. The staff concludes that the information provided in the Fermi 3 Emergency Plan is acceptable and meets the requirements of 10 CFR 50.47(b)(1), because it complies with the guidance in Planning Standard A of NUREG-0654/FEMA-REP-1 Revision 1, and the applicable portions of Appendix E to 10 CFR Part 50 as described above.

#### **13.3C.2      *Onsite Emergency Organization***

##### **13.3C.2.1      *Regulatory Basis***

In order to determine whether the proposed emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(2), the staff evaluated the plan against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1, Revision 1. The staff also evaluated the proposed

emergency plan against applicable regulatory requirements related to the "Onsite Emergency Organization" in Appendix E to 10 CFR Part 50.

### **13.3C.2.2      *Normal Plant Operations Organization***

**Technical Information in the Emergency Plan: {Appendix E, Section IV.A.1}** Section II.B.1, "Onsite Emergency Organization," explains that the minimum staffing needed to conduct routine and emergency operations will be maintained under guidelines that are consistent with 10 CFR 50.54(m). This section also details the responsibilities of on-shift personnel. In addition, Table II.B-1 describes the minimum on-shift staffing requirements and augmented staffing according to functional areas, Emergency Response Facility (ERF), and emergency classification. Details of the normal plant organization are in plant administrative procedures. In RAI 13.03-02-01, the staff requested the title and description of the plant administrative procedures. The applicant's response to this RAI dated December 7, 2009 (ML093440828), states that details of the normal plant organization are in Section 13.1 of the Fermi 3 FSAR. The response also includes text for Section II.B.1 of the Fermi 3 Emergency Plan that references Section 13.1 of the FSAR. Plant administrative procedures describe the normal plant organization, including the reporting relationships. On-shift personnel are considered immediately available to respond to an emergency. In RAI 13.03-02-06, the staff requested the title of the Emergency Response Organization (ERO) Staffing Emergency Plan Implementing Procedure (EPIP) and a description of the controls required to allow lower level documents to contain the information in the emergency response plan (i.e., 10 CFR 50.54(q) commitment for the changes). The applicant's response to this RAI dated December 7, 2009 (ML093440828), includes a revision to Section II.B that details the ERO position, responsibilities, major tasks regarding ERO staffing required for initial emergency response actions, and provisions for the timely augmentation of on-shift personnel. The revision describes the following EIPs:

- 1) Notifications/ Communications
- 2) Technical Support Center Activation and Operation
- 3) Operational Support Center Activation and Operation
- 4) Emergency Operations Center Activation and Operation
- 5) Joint Information Center Activation and Operation

The applicant also provided a revision to Section II.P.6 stated that the changes to the EIPs are in accordance with the requirements of 10 CFR 50.54(q).

**Technical Evaluation: {Appendix E, Section IV.A.1}** The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan incorporated the information and textual changes in the responses to RAIs 13.03-02-01 and 13.03-06. The staff finds the additional information and revisions to the Fermi 3 Emergency Plan submitted in response to RAIs 13.03-02-01 and 13.03-06 acceptable, because they conform to the regulatory requirements of Appendix E to 10 CFR Part 50 Section IV.A.1 and the guidance in Revision1 to NUREG-0654/FEMA-REP-1. The staff finds that the Fermi 3 Emergency Plan adequately describes the normal plant organization and appropriately describes changes to the EIPs in accordance with the requirements of 10 CFR 50.54(q).

### **13.3C.2.3      *Onsite Emergency Organization***

**Technical Information in the Emergency Plan: [B.1] {Appendix E, Section IV.A.2.b}** Section II.B.1 explains that the Shift Manager assumes responsibility as the Emergency Director

upon declaration of an emergency and describes the assignment of plant staff for the emergency response. The full ERO is activated at the declaration of an Alert, Site Area Emergency, or General Emergency and includes the CR, OSC, TSC, and the EOF. Figure II.B-1, "Control Room"; Figure II.B-2, "Operational Support Center"; Figure II.B-3, "Technical Support Center"; and Figure II.B-4, "Emergency Operations Facility," illustrate the ERO and functional responsibilities for various positions performing the functions detailed in Table II.B.2, "Emergency Response Organization Functional Responsibilities."

Section II.B.4, "Fermi 3 Emergency Response Organization Staff," describes the positions, titles, and major tasks to be performed by persons assigned to functional areas of an emergency, which are all identified in the EIPs. These assignments cover the functions listed in Table II.B-1, "Minimum Staffing Requirements for Emergencies," which describes minimum on-shift staffing by functional areas and augmented staffing during an Alert or higher. Table II.B-2 describes key positions and functional responsibilities for the overall ERO.

Table II.B-2 includes the responsibilities of the Radiation Protection Advisor in the TSC, who provides direction for radiation protection; Dose Assessors in the TSC, who perform onsite and offsite dose assessment and projections; Chemistry Technicians in the CR and TSC who perform dose assessments for potential and actual releases; Radiation Protection Coordinator in the EOF, who directs the Radiological Emergency Team Coordinator and Dose Assessors; and the Dose Assessor/Meteorological Assessor in the EOF, who performs dose assessments and projections.

**Technical Evaluation: [B.1] {Appendix E, Section IV.A.2.b}** The staff finds that the Fermi 3 EP adequately describes the onsite ERO with a detailed discussion of the plant staff emergency assignments. This information is acceptable because it conforms to the requirements of Appendix E, Section IV.A.2.b of 10 CFR Part 50 and the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.2.4      *Designation of an Emergency Coordinator***

**Technical Information in the Emergency Plan: [B.2]** Section II.B.1 states that the Shift Manager assumes responsibility as the Emergency Director upon a declaration of an emergency. This position has the responsibility and authority to initiate any required emergency response actions, including emergency classification changes; notification of Federal, State, local, and provincial authorities; and PARs to offsite authorities. The Emergency Director is responsible for coordinating the onsite emergency response under the direction and control of the Emergency Officer, when the EOF is declared operational.

**Technical Evaluation: [B.2]** The staff finds that the Fermi 3 Emergency Plan adequately identifies a designated individual as the Emergency Coordinator who shall be on shift at all times. This person shall have the authority and responsibility to immediately and unilaterally initiate any emergency action, including providing PARs to authorities responsible for implementing offsite emergency measures. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.2.5      *Line of Succession for the Emergency Coordinator***

**Technical Information in the Emergency Plan: [B.3]** Section II.B.2, "Emergency Director Line of Succession," states that if the Shift Manager is rendered unable to fulfill the duties and

responsibilities of the Emergency Director (e.g., due to personal illness or injury); the on-shift Unit Supervisor (a position that is also staffed at all times) assumes the Emergency Director position until relieved by the Plant Manager or a designated alternate. The normal line of succession would be from the Shift Manager to the Plant Manager or an alternate, after becoming fully familiar with the pertinent plant and radiological conditions and status of emergency response/accident mitigation efforts.

**Technical Evaluation: [B.3]** The staff finds that the Fermi 3 Emergency Plan adequately identifies a line of succession for the emergency coordinator position and the specific conditions for higher level utility officials to assume this function. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.2.6      *Responsibilities of the Emergency Coordinator***

**Technical Information in the Emergency Plan: [B.4] {Appendix E, Section IV.A.2.c}** Section II.B.3, “Emergency Director Responsibilities,” lists these responsibilities that include implementing immediate onsite corrective and protective actions and initiating offsite notifications and PARs. Some Emergency Director responsibilities cannot be delegated, such as directly notifying and making protective action recommendations to governmental authorities; implementing offsite emergency response actions; authorizing plant and emergency workers to receive radiation doses in excess of the 10 CFR Part 20 “Standards for Protection Against Radiation”; and limiting and authorizing the distribution and use of potassium iodide (KI). Section II.B.1 states that when the EOF is activated, the Emergency Officer is responsible for the overall direction and control of the entire activated ERO and for coordinating with offsite agencies. The position of Emergency Officer is to be filled by a qualified senior manager who will have the non-delegable responsibility to directly notify and make PARs to governmental authorities responsible for implementing offsite emergency response actions.

**{Appendix E, Section IV.A.2.a}** Section II.B.1 states that the Shift Manager will assume responsibility for and the position as Emergency Director upon the declaration of an emergency. This position has the responsibility and authority to initiate any required emergency response actions and is responsible for coordinating the onsite emergency response. Table II.B-2 summarizes these responsibilities.

**Technical Evaluation: [B.4]** The staff finds that the Fermi 3 Emergency Plan adequately establishes the functional responsibilities assigned to the Emergency Coordinator, and clearly specifies which responsibilities may not be delegated. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

**{Appendix E, Section IV.A.2.a}** The staff finds that the Fermi 3 Emergency Plan adequately describes the onsite ERO with a detailed discussion of the authority, responsibilities, and duties of the individual(s) who will take charge during an emergency. This information is acceptable because it conforms to the requirements in Appendix E, Section IV.A.2.c to 10 CFR Part 50.

### **13.3C.2.7      *On-shift and Augmentation Emergency Response Staff***

**Technical Information in the Emergency Plan: [B.5.] {Appendix E, Section IV.A.9}** Section II.B, “Emergency Response Organization,” describes the Fermi 3 ERO positions and associated responsibilities. It outlines the staffing responsible for providing initial emergency response actions and the timely augmentation of on-shift personnel. EIPs provide the details of (1) ERO

position descriptions, responsibilities, and major tasks to support initial emergency response actions; (2) the timely augmentation of notifications and communications; and (3) the activation and operation of the TSC, OSC, EOC, and JIC. In RAI 13.03-02-12, the staff requested the applicant to revise the Emergency Plan to include a description of the staffing for maintenance personnel that reflects Figure II.B-1. The applicant's response dated December 7, 2009 (ML093440828), explains that on-shift maintenance personnel are assigned to the Damage Control and Rescue Team. In Supplemental RAI 13.03-11, the staff requested the applicant to describe the staffing of on-shift maintenance personnel to match the Figure II.B-1 position block diagram. The applicant's response to this RAI dated June 25, 2010 (ML101790463), states that Footnote 3 of Table II.B-1 will be revised to clarify that one individual qualified to provide mechanical maintenance support and one individual qualified to provide electrical maintenance support are on-shift; one individual qualified to provide electrical maintenance support and one individual qualified to provide instrumentation and control (I&C) maintenance support will respond within 30 minutes to an Alert or higher; and one individual qualified to provide mechanical maintenance support, one qualified Radwaste Operator, and one individual qualified to provide electrical maintenance support will respond within 60 minutes to an Alert or higher. The response further explains that Figure II.B-1 will be revised to indicate that the on-shift maintenance personnel are assigned to the Damage Control and Rescue Teams identified in Table II.B-1. In RAI 13.03-02-13, the staff requested the applicant to include in the Emergency Plan a description of the CR Communicator shown in Figure II.B-1. The applicant's response to these RAIs dated December 7, 2009 (ML093440828), states that Table II.B-1 of the Fermi 3 Emergency Plan describes the major tasks and organizational title associated with the CR Communicator position. The applicant also states in the response that the CR Communicator, at the direction of the CR Emergency Director, completes initial notification of and communications with Detroit Edison and State, local, and NRC EROs. In RAI 13.03-02-20 and RAI 13.03-02-21, the staff requested additional information regarding the Emergency Director and Emergency Officer, respectively. The applicant's responses to these RAIs dated December 7, 2009 (ML093440828), included a revised Table II.B-2 with the Emergency Officer's responsibility to direct the notification of governmental authorities and make PARs to these authorities.

Section II.B.1 states that the designated minimum staffing required to conduct routine and immediate emergency operations is maintained in accordance with 10 CFR 50.54(m) and the Fermi 3 technical specifications. Section 13.1 of the FSAR provides further details of the normal plant organization and reporting relationships.

Table II.B-1 describes Detroit Edison's intent to achieve the 30- and 60-minute augmentation times indicated in Table B-1 of NUREG-0654/FEMA-REP-1, Revision 1, and in Supplement 1 to NUREG-0737, "Clarification of TMI Action Plan Requirements." On-shift personnel are considered to be immediately available to respond to the emergency situation and to initiate emergency response actions. The normal complement of on-shift personnel is augmented according to the emergency classification.

Section II.C.2, "Offsite Organization Representation in the EOF," describes the Detroit Edison personnel assignment as liaisons to the State, Monroe County, and Wayne County EOCs, upon their activation. These representatives act as technical liaisons providing plant status and emergency activity information updates to the offsite agencies. In RAI 13.03-02-17, the staff requested the applicant to revise Table II.B-2 of the Emergency Plan to include the Emergency Director's responsibilities described in Section II.A.1.b, such as the activation of the ERO and the direction of initial notifications of PARs. In the response to RAI 13.03-02-17 dated

December 7, 2009 (ML093440828), the applicant revised Table II.B-2 to show the responsibilities of the Shift Manager/Emergency Director to direct initial notifications of PARs and to activate the ERO. In RAI 13.03-02-19, the staff requested an explanation as to how a position in the augmenting ERO will perform the call-in of the team. In the response to RAI 13.03-02-19 dated December 7, 2009 (ML093440828), the applicant revised Table II.B-2 of the Fermi 3 Emergency Plan to show how the responsibilities of the CR Emergency Director will ensure that Detroit Edison personnel are called out as conditions warrant.

Section II.B.4, "Fermi 3 Emergency Response Organization Staff," states that Detroit Edison will provide for minimum staffing of the Fermi 3 ERO that is consistent with Table II.B-1 of this EP (based on Table B-1 of NUREG-0654). Table II.B-2 describes the key Fermi 3 ERO positions and their functional responsibilities. In RAI 13.03-02-07, the staff requested the applicant to revise the notification/communication functions in Table II.B.1 to be consistent with Table B-1 of NUREG-0654. In the response to RAI 13.03-02-07 dated December 7, 2009 (ML093440828), the applicant explained that Non-Licensed Operators are assigned the notification/communication functions and as Non-Licensed Operators, these individuals are also assigned other functions. In Supplemental RAI 13.03-08, the staff requested the applicant to revise Table II.B.1 of the Fermi 3 EP to designate one of the excess Non-Licensed Operators as dedicated to the notification/communication functions, with no additional assigned functions. The applicant's response to RAI 13.03-08 dated June 25, 2010 (ML101790463), states that Table II.B-1 and Figure II.B-1 will be revised to indicate that one on-shift, Non-Licensed Operator will be designated to perform only the notification/communication functions.

In RAI 13.03-02-09, the staff requested the applicant to revise the areas of expertise list in the Table II.B.1 "Plant System Engineering, Repair, and Corrective Actions" section to be consistent with the NUREG-0654 Table B-1 listing. The applicant's response to this RAI dated December 7, 2009 (ML093440828), states that Non-Licensed Operators are qualified to perform radwaste operations during emergencies, which is reflected in a revision to Table II.B-1 that identifies core/thermal hydraulics and electrical and mechanical engineering analyses as technical support. These technical support and maintenance personnel will be assigned to the Damage Control and Rescue Team, and a footnote to Table II.B-1 will be added to clarify that one Non-Licensed Operator may be assigned the Radwaste Operator duties to support emergency response or recovery activities, as needed.

In RAI 13.03-02-10, the staff requested that Table II.B-1 be revised to include "firefighting communications." In the response to this RAI dated December 7, 2009 (ML093440828), the applicant revised Table II.B-1 of the Emergency Plan to include "firefighting communications." In RAI 13.03-02-11, the staff requested the applicant to describe who the shift personnel are and their qualifications that allow them to fill the designated position in Table II.B-1. The applicant's response dated December 7, 2009 (ML093440828), explains that the Table II.B-1 footnote indicates that the corresponding staff numbers are not included in the stated total number in the table, and the individuals filling the asterisked emergency response positions in the table may be assigned multiple tasks. The applicant also notes that on-shift Operations and Maintenance personnel fulfill the primary functions assigned to the Damage Control and Rescue Teams, with support from Radiation Protection Technicians. In addition, on-shift Maintenance personnel are also assigned to complete the "Repair and Corrective Actions" tasks. In Supplemental RAI 13.03-10.b, the staff requested the applicant to clarify the inconsistency between Table II.B-1 data and Footnote 3. In the response to this RAI dated June 25, 2010 (ML101790463), the applicant states that Footnote 3 of Table II.B-1 will be revised to clarify that one individual qualified to provide mechanical maintenance support and one individual qualified

to provide electrical maintenance support are on-shift; one individual qualified to provide electrical maintenance support and one individual qualified to provide I&C maintenance support will respond within 30 minutes of an Alert or higher; and one individual qualified to provide mechanical maintenance support, one qualified Radwaste Operator, and one individual qualified to provide electrical maintenance support will respond within 60 minutes to an Alert or higher.

Section II.B describes the key Fermi 3 ERO positions and associated responsibilities. This section outlines the staffing needed to provide initial emergency response actions and the timely augmentation of on-shift personnel, when required. The EPIPs provide ERO position descriptions, responsibilities, and major tasks of the ERO staffing required for initial emergency response actions, in addition to provisions for the timely augmentation of notifications/communications and ERF activation and operation

**{Appendix E, Section IV.A.9}** DTE proposed a license condition to be incorporated into the Fermi 3 COLA, Part 10, stating "The licensee shall submit a detailed analysis of on-shift staffing, in accordance with NEI 10-05, "Assessment of On-Shift Emergency Response Organization Staffing and Capabilities" Revision 0, and the licensee shall incorporate any changes to the EP needed to bring staff to the required levels, prior to or concurrent with completion of EP ITAAC 2.0 of EP ITAAC Table 2.3. 1, and no less than 180 days prior to initial fuel load."

**Technical Evaluation: [B.5]** The staff finds the additional information and textual revisions to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-02-07, RAIs 13.03-02-09 through 13.03-02-13, RAI 13.03-02-17, RAIs 13.03-02-19 through 13.03-02-21, Supplemental RAI 13.03-08, RAI 13.03-10.b, and RAI 13.03-11 acceptable because they conform to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 the Fermi 3 Emergency Plan incorporated the information and textual changes in the responses to the RAIs listed above. The staff finds that the revisions to Table II.B-1, Table II.B-2, and Figure II.B-1 in the Fermi 3 Emergency Plan adequately describe the ERO positions and associated responsibilities. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

**Technical Evaluation: {Appendix E, Section IV.A.9}** The staff finds that the proposed DTE license condition adequately addresses the required detailed analysis of on-shift staffing. This is acceptable because it conforms to the guidance in NSIR/DPR-ISG-01 Interim Staff Guidance, Emergency Planning for Nuclear Power Plants. Verification that a future revision of the COL application incorporates the license condition is being tracked as a **Confirmatory Item 13.03-77**.

### **13.3C.2.8      *Interfaces Between Functional Areas***

**Technical Information in the Emergency Plan: [B.6]** Figure II.A-1, "Emergency Operation Center Interrelationships," shows the interfaces between and among the site functional areas of emergency response activities, Corporate Headquarters, State of Michigan, Monroe and Wayne Counties, Province of Ontario (Canada), and Federal agencies. In RAI 13.03-01-01, the staff requested a description of the interactions with the Province of Ontario. In the response to this RAI dated December 7, 2009 (ML093440828), the applicant described the interactions with the Province of Ontario that include (1) notifications; (2) interactions at the EOF; and (3) interactions at the JIC. The applicant stated that interactions with the EOF and JIC are discussed in Sections II.C.2 and II.G.3, respectively, of the Fermi 3 Emergency Plan. The applicant provided a revised Figure II.B-4 identifying a liaison to the Province of Ontario. Additionally, the

applicant's revised text to Section II.E.1.b.3 of the Emergency Plan specifies an initial notification to the Province of Ontario. In RAI 13.03-02-05 the staff requested the applicant to include in the block diagram interfaces between and among the onsite functional areas of emergency activities; licensee headquarters support; local services support; and State and local government response organization, including the TSC, OSC, and EOF. In the response to this RAI dated December 7, 2009 (ML093440828), the applicant stated that Figure II.A-1 will be revised to show interfaces with the TSC and OSC in a revision to the Emergency Plan.

Roles of the State Police, MDEQ, and MDCH are described in Section II.A.1.b, "Concept of Operations." In RAI 13.03-01-03, the staff requested the applicant to include the roles of the State Police, MDEQ, MDCH, DOE, EPA, and USCG in Figure II.A-1. The applicant's response dated December 7, 2009 (ML093440828), stated that the Michigan State Police, MDEQ, and MDCH are included in Figure II.A-1 under the listing for "Emergency Support Functions," as shown in the "State Emergency Operations Center" box of Figure II.A-1. The applicant stated that because the DOE manages the Federal Radiological Monitoring and Assessment Center (FRMAC), DOE is included in the "Federal Radiological Monitoring and Assessment Center (FRMAC)" box in Figure II.A-1. The applicant also notes that because the activities of the EPA and Coast Guard do not occur in one of the EOCs, these organizations are not included in Figure II.A-1.

Section II.A.1.a.1 identifies the Province of Ontario as a participating organization, and the Ontario EOC is included in Figure II.A-1 under "Adjacent States."

**Technical Evaluation: [B.6]** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-01-01, RAI 13.03-01-03, and RAI 13.03-02-05 acceptable because they conform to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan incorporated the information and textual changes in the responses to the RAIs listed above. The staff also finds that the Fermi 3 Emergency Plan adequately specifies the interfaces between and among the onsite functional areas of emergency activities, licensee headquarters support, local services support, and State and local government response organization; in addition to illustrating them in a block diagram that includes the onsite TSC, OSC, and EOF. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.2.9      *Corporate Support***

**Technical Information in the Emergency Plan: [B.7] {Appendix E, Section IV.A.3}** Section II.B.6, "Detroit Edison Headquarters Support for the Fermi 3 Emergency Response Organization," explains that corporate support functions include notifications and communications to other organizations not directly involved in the emergency response and keeping upper management and other company locations informed of emergency activities. Figure II.A-1 illustrates the interfaces of site functional areas of emergency response activities and the Corporate Headquarters. In RAI 13.03-02-02, the staff requested additional information regarding the applicant's Corporate Headquarters personnel interface with other functional areas. In the response to this RAI dated December 7, 2009 (ML093440828), the applicant revises Figure II.A-1 of the Fermi 3 Emergency Plan to include the interface with Detroit Edison Corporate Headquarters.

**Technical Evaluation: [B.7] {Appendix E, Section IV.A.3}** The staff finds the additional information submitted in response to RAI 13.03-02-02 acceptable, because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan incorporated the information and textual changes provided in the response to RAI 13.03-02-02. The staff finds that the Fermi 3 Emergency Plan adequately describes who among the corporate management, administrative, and technical support personnel will augment plant staffing during emergency events. This information is acceptable because it conforms to the requirements in Appendix E, Section IV.A.3 to 10 CFR Part 50 and the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.2.10 Contractor and Private Organizations Support**

**Technical Information in the Emergency Plan: [B.8] {Appendix E, Section IV.A.5}** Section II.B.7, "Support from Contractor and Private Organizations," identifies and describes assistance from the following supporting contractors and private organizations: Institute of Nuclear Power Operations (INPO), General Electric-Hitachi (GEH), the DOE Radiation Emergency Assistance Training Center/Training Site, and other private sector medical service agencies including Mercy Memorial Hospital; Oakwood Southshore Medical Center; a local ambulance services; Entergy Nuclear Palisades LLC; Indiana Michigan Power; and American Nuclear Insurers (ANI).

In RAI 13.03-02-04, the staff requested the identification of employees and non-employees by position and title who have special qualifications for coping with emergency situations. In the response to this RAI dated December 7, 2009 (ML093440828), the applicant stated that the scope of responsibilities of external organizations that may be called upon to assist in emergency response activities will be identified in properly executed LOAs or other legal instruments consistent with the requirements of 10 CFR 50.33(g). The applicant states that the list of public and private sector organizations in Section II.A of the Emergency Plan encompasses the full range of emergency response expertise that may be called upon for assistance in emergencies. The applicant further states that no other persons with special qualifications outside of those described in Sections II.A and II.B have been identified.

**Technical Evaluation: [B.8] {Appendix E, Section IV.A.5}** The staff finds the additional information submitted in response to RAI 13.03-02-04 acceptable because it conforms to the requirements in Appendix E to 10 CFR Part 50, Section IV.A.5 and the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff finds that the Fermi 3 Emergency Plan adequately specifies contractors and private organizations that may be requested to provide technical assistance to and augmentation of the ERO. This information is acceptable because it conforms to the requirements in Appendix E to 10 CFR Part 50, Section IV.A.5 and the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.2.11 Local Emergency Response Support**

**Technical Information in the Emergency Plan: [B.9] {Appendix E, Section IV.A.6}** Section II.B.8, "Local Emergency Response Support," describes the agreements established and maintained with outside support agencies that include law enforcement, fire protection, and ambulance and hospital support. Section II.L, "Medical and Public Health Support," describes hospital and medical support, onsite first aid capabilities, and medical transportation.

Appendix 2 includes certification letters from the Michigan State Police, Monroe County Emergency Management Division, Wayne County Department of Homeland Security & Emergency Management, Frenchtown Charter Township Fire Department, Mercy Memorial Hospital Corporation, Monroe County Ambulance, and Oakwood Southshore Medical Center. These letters indicate that the specific nature of emergency response arrangements will be established in agreements, and existing agreements will be revised if and when the applicant proceeds with construction and operation of the new plant. In RAI 13.03-01-05, the staff requested copies of existing agreements with signature pages from organizations identified in Appendix 2 to show that these agreements delineate authorities, responsibilities, and action limits. In the response to this RAI dated December 7, 2009 (ML093440828), the applicant states that Letters of Agreement (LOAs) supporting the proposed Fermi 3 COLA Emergency Plan have not yet been executed. In Supplemental RAI 13.03-07, the staff requested the applicant to include in the Emergency Plan copies of the LOAs. In the response to Supplemental RAI 13.03-07 dated June 25, 2010 (ML101790463), the applicant stated that certification letters have been obtained from the support agencies, and formal LOAs will be executed prior to loading fuel at Fermi 3. The response also proposed a license condition to address the inclusion of LOAs in the Emergency Plan prior to loading the initial fuel load.

**Technical Evaluation: [B.9] {Appendix E, Section IV.A.6}** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-01-05 and Supplemental RAI 13.03-07 acceptable, because the information conforms to the requirements of Appendix E, Section IV.A.6 and the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 5 of the Fermi 3 FSAR and Part 10 of the COL application incorporate the information and textual changes in the responses to the RAIs listed above. The staff finds that the Fermi 3 Emergency Plan and the EP-ITAAC in the COL application, Part 10, adequately identify the services that may be needed during an emergency and commit to establishing LOAs with agencies that will provide those services. This information is acceptable because it conforms to the requirements of Appendix E, Section IV.A.6 and the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.2.12 Conclusion**

NRC staff reviewed the onsite emergency plan, as described above, for the onsite emergency organization. NRC staff conclude that the information in the Fermi 3 Emergency Plan and the FSAR is acceptable, because it meets the requirements of 10 CFR 50.47(b)(2) and conforms to the guidance in Planning Standard B of NUREG-0654/FEMA-REP-1, Revision 1 and the applicable portions and requirements of Appendix E to 10 CFR Part 50, as described above.

### **13.3C.3 Emergency Response Support and Resources**

#### **13.3C.3.1 Regulatory Basis**

The determination whether the proposed emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(3), the staff evaluated the plan against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1, Revision 1. The staff also evaluated the proposed emergency plan against applicable regulatory requirements related to the area of "Emergency Response Support and Resources" in Appendix E to 10 CFR Part 50.

### **13.3C.3.2      *Person Authorized to Request Federal Support***

**Technical Information in the Emergency Plan: [C.1.a]** Section II.C.1, “Federal Response Capability,” explains that the Emergency Director or the Emergency Officer (when the EOF is activated) is responsible for requesting Federal assistance as needed. Section II.B states that the Emergency Director is authorized to obtain assistance from offsite support organizations.

**Technical Evaluation: [C.1.a]** The staff finds that the Fermi 3 Emergency Plan adequately addresses the person authorized to request Federal support. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.3.3      *Expected Assistance from State, Local, and Federal Agencies***

**Technical Information in the Emergency Plan: [C.1.b] {Appendix E, Section IV.A.7}** Section II.B.8 the Fermi 3 Emergency Plan states the Fermi 3 Emergency Plan implementing procedures or letters of agreement (LOAs) with ORO organizations identify ORO resource availability and their applicable integration into site activities during an emergency event, including HAB events, at the Fermi site. The procedures or LOAs identify ORO resources and coordination, for potential simultaneous on-site and off-site ORO support, including coordination between security and EP resources, which may be called upon during a radiological emergency scenario involving hostile action based events at the Fermi site. In RAI 13.03-95 the staff asked for the title of the EPIP to contain the described information and what actions would be taken if shortfalls in ORO resources were found. In response to this RAI dated December 6, 2013 (ML13344B028), the applicant stated EPIP entitled "Maintaining Emergency Preparedness," identifies and describes the requirements for the annual review of LOAs as well as actions to be taken if shortfalls are noted and that Section II.P.3 of the Fermi 3 Emergency Plan will also be revised to capture this information.

Section II.C, “Emergency Response Support and Resources,” describes that the FRMAC Advance Party could be expected in the site vicinity within 12 hours following the order to deploy, and assistance from the NRC offices in Chicago (Illinois) will arrive in the site vicinity within 5 hours following notification. Support is available from the Oak Ridge DOE under the DOE Radiological Assistance Program; Oak Ridge includes medical support from the Radiation Emergency Assistance Center/Training Site. Section C.1.e identifies the State EOC in Lansing, Michigan, or an alternate State EOC in Northville, Michigan, and the Wayne County EOC in Romulus, Michigan, as available sites that will support the Federal response. The Emergency Operations Plan for Wayne County and the Emergency Management Plan for Monroe County each describe their respective EOCs. Section C.2, “Offsite Organization Representation in the EOF,” explains that the State of Michigan team will interface with plant personnel to (1) perform radiological dose calculations; (2) determine offsite PARs; and (3) coordinate field monitoring team activities.

**Technical Evaluation: [C.1.b] {Appendix E, Section IV.A.7}** The staff finds the additional information and textual revision to the Fermi 3 emergency plan submitted in response RAI 13.03-95 to be acceptable. The applicant described the requirements for the annual review of LOAs as well as actions to be taken if shortfalls are noted which is acceptable because it conforms to the guidance in NSIR/DPR-ISG-01 Interim Staff Guidance, Emergency Planning for Nuclear Power Plants Section IV.D. The staff finds that the Fermi 3 Emergency Plan adequately identifies the assistance expected from appropriate State, local, and Federal agencies with responsibilities for coping with emergencies. This information is acceptable

because it conforms to the requirements in Appendix E to 10 CFR Part 50, Section IV.A.7 and the guidance in NUREG-0654/FEMA-REP-1, Revision 1 and NSIR/DPR-ISG-01 Interim Staff Guidance. Verification that a future revision of the COL application incorporates the acceptable changes found in RAI 13.03-69 is being tracked as a **Confirmatory Item 13.03-78**.

#### **13.3C.3.4      *Resources to Support the Federal Response***

**Technical Information in the Emergency Plan: [C.1.c]** Section II.C, “Emergency Response Support and Resources,” lists airfields in the vicinity of the plant that may be used by emergency support groups, including two helicopter pads on the site. Additional provisions for incorporating the Federal response capability include the need for the applicant to provide facilities and resources to support the Federal response through the EOF. Office space and communications equipment are available for NRC personnel in the TSC, EOF, and JIC. State and local command centers that may be available to support the Federal response include the State EOC, the Monroe County EOC, and the Wayne County EOC. Section II.B states that the EOF administrator coordinates logistical support for onsite emergency personnel. In RAI 13.03-03-01, the staff requested a description of on-site provisions such as available office space for Federal, State, and local emergency personnel. In the response, to this RAI dated December 7, 2009 (ML093440828), the applicant stated that Section II.C.1.d of the Emergency Plan indicates the facilities and resources that are available at the EOF to support the Federal response, in addition to office space and communications equipment for NRC personnel in the TSC, EOF, and JIC, as described in Section II.H.1. The applicant also stated that Section II.H.1.c of the Emergency Plan specifies that the TSC provides work space for five NRC representatives, and Section II.H.1.d indicates that the EOF provides workspace for State and local representatives.

**Technical Evaluation: [C.1.c]** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-03-01 acceptable, because they conform to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan incorporated the information and textual changes in the response to RAI 13.03-03-01. The staff finds that the Fermi 3 Emergency Plan adequately describes provisions for incorporating the Federal response capability into its operation plan including specific licensee, State and local resources available to support the Federal response. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.3.5      *Representatives to Offsite Governments***

**Technical Information in the Emergency Plan: [C.2.b]** Section II.C states that personnel are assigned as liaisons to the State, Monroe County, Wayne County, and Province of Ontario EOCs when they are activated.

**Technical Evaluation: [C.2.b]** The staff finds that the Fermi 3 Emergency Plan adequately addresses the dispatch of a representatives to principal offsite governmental EOCs. This provision is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.3.6      *Radiological Laboratory Support***

**Technical Information in the Emergency Plan: [C.3]** Section II.C identifies fixed and mobile radiological laboratories, their radiation monitoring and analytical capabilities, and the advance time needed to respond following notification. This section also explains that these laboratories are available to support emergency response activities on a 24-hour per day basis.

**Technical Evaluation: [C.3]** The staff finds that the Fermi 3 Emergency Plan adequately identifies radiological laboratories and their general capabilities and expected availability to provide radiological monitoring and analytical services that can be used in an emergency. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.3.7      *Other Sources of Assistance***

**Technical Information in the Emergency Plan: [C.4]** Section II.C states that the applicant has made arrangements to obtain additional emergency response support from the INPO Fixed Nuclear Facility Voluntary Assistance Agreement signatories. This section also states that GEH has an emergency support program in place to provide design engineering expertise, specialized equipment, and other services. Appendix 2 of the Fermi 3 Emergency Plan provides a list of the certification letters established between the applicant, the State of Michigan, Monroe and Wayne County agencies, and private sector organizations committed to supporting the implementation of the Emergency Plan. The original agreements are kept on file by Fermi 3 Emergency Preparedness or the applicant's Contract Services. The certifications letters are from the Michigan State Police; Monroe County Emergency Management Division; Wayne County Department of Homeland Security & Emergency Management; Frenchtown Charter Township Fire Department; Mercy Memorial Hospital Corporation; Monroe Community Ambulance; and Oakwood Southshore Medical Center. In RAI 13.03-01-05 and Supplemental RAI 13.03-07 (described in Section 13.3C.1.7 "Written Agreements"), the staff requested the applicant to include copies of the LOAs in the Emergency Plan, copies of the letters of agreement. In the response to Supplemental RAI 13.03-07 dated June 25, 2010 (ML101790463), the applicant proposed a license condition to obtain Letters of Agreement prior to loading fuel at Fermi 3.

**{Appendix E, Section III}** Section II.C.2, "Offsite Organization Representation in the EOF," of the Fermi 3 Emergency Plan identifies the role of the State of Michigan to perform radiological dose calculations and generate PARs. Section II.C.4, "Other Supporting Organizations," identifies the roles of the INPO Fixed Nuclear Facility Voluntary Assistance Agreement signatories and GEH, which has an emergency support program in place to provide design engineering expertise, specialized equipment, and other services. In addition, a mutual assistance agreement exists with other utilities for offsite environmental monitoring.

**Technical Evaluation: [C.4]** The staff finds that the proposed DTE license condition adequately addresses the required detailed analysis of on-shift staffing submitted in response to RAI 13.03-01-05 and Supplemental RAI 13.03-07 acceptable. This is acceptable because it conforms to the guidance in NSIR/DPR-ISG-01 Interim Staff Guidance, Emergency Planning for Nuclear Power Plants. The staff confirmed that the Fermi 3 COL application, Part 10 Revision 4 incorporates the license condition described above.

**{Appendix E, Section III}** The staff finds that the Fermi 3 Emergency Plan adequately describes the applicant's operational role, concept of operations, and relationship to the total effort. This information is acceptable because it conforms to the requirements in Appendix E to 10 CFR Part 50, Section III.

### **13.3C.3.8 Conclusion**

NRC staff reviewed the onsite emergency plan as described above, for the emergency response support and resources. NRC staff concludes that the information in the Fermi 3 Emergency Plan is acceptable because it meets the requirements of 10 CFR 50.47(b)(3); complies with the guidance in Planning Standard C of NUREG-0654/FEMA-REP-1, Revision 1; and complies with the applicable portions of Appendix E to 10 CFR Part 50, as described above.

### **13.3C.4 Emergency Classification System**

#### **13.3C.4.1 Regulatory Basis**

In order to determine whether the proposed emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(4), the staff evaluated the plan against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1, Revision 1. The staff also evaluated the proposed plan against applicable regulatory requirements related to the "Emergency Classification System" in Appendix E to 10 CFR Part 50.

#### **13.3C.4.2 Emergency Classification System**

**Technical Information in the Emergency Plan: [D.1 and D.2] {Appendix E, Section IV.B and C}** Section II.D, "Emergency Classification System," of the Fermi 3 Emergency Plan describes the standard emergency classification and action level schemes based on system and effluent parameters that affected State and local response organizations may rely on for determining initial offsite response measures. The Fermi 3 EPIP for emergency classifications will provide the parameter values and equipment status that are indicative of each emergency class. Changes to this EPIP will be in accordance with the requirements of 10 CFR 50.54(q) and the guidance in Regulatory Issue Summary (RIS) 2005-02, "Clarifying the Process for Making Emergency Plan Changes." Section II.I, "Accident Assessment," further describes the availability and location of initial and continuing information for an accident assessment throughout the course of an event. This information includes plant parameter display systems, a liquid and gaseous sampling system, area and process radiation monitoring systems, and accident radiation monitoring systems including high-range containment radiation monitors.

Section II.D.1, "Classification System," describes the emergency classification system in use, including the four emergency classes described in Appendix E to 10 CFR 50: Notification of Unusual Event, Alert, Site Area Emergency, and General Emergency. Each classification in the system is characterized by Emergency Action Levels (EALs) or initiating conditions that address emergencies of increasing severity. In RAI 13.03-17, the staff requested the applicant to address plans to finalize the Fermi 3 Emergency Classification and Action Level Scheme and provided them with two options. In the response to this RAI dated September 24, 2009 (ML092720656), the applicant selects Option 2 for the Fermi 3 Emergency Plan. Option 2 requires the applicant to submit an emergency plan section that describes the emergency classification system and addresses four critical elements required for an EAL scheme.

Section II.D.2, “Emergency Action Levels (EALs),” states that emergency classifications are characterized by EALs that are consistent with the general class descriptions in accordance with RG 1.101. The EALs, where possible, are related to plant instrumentation readings and are classified by determining which EAL-initiating conditions have been met.

**Technical Evaluation: [D.1 and D.2] {Appendix E, Section IV.B and IV.C}** The staff reviewed the proposed license condition (COM 13.4-031) to be added to the Fermi 3 FSAR, Chapter 13, Table 13.4-201, which states that “The licensee shall submit a fully developed set of site-specific Emergency Action Levels (EALs) to the NRC in accordance with the NRC-endorsed version of NEI 07-01, Rev. 0, with no deviations. The fully developed site-specific EAL scheme shall be submitted to the NRC for confirmation at least 180 days prior to initial fuel load.”

The staff finds the additional information and textual revisions to the Fermi 3 Emergency Plan in the response to RAI 13.03-17 acceptable, because they conform to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan the information and textual changes provided in the response to RAI 13.03-17. The staff finds that the Fermi 3 Emergency Plan provides an adequate overview of its EAL scheme, its general list of licensee actions at each emergency classification level and its commitment to control the EALs in accordance with 10 CFR 50.54(q).

The staff finds the proposed EAL scheme license condition and response to RAI 13.03-17 acceptable because they conform to the requirements of Appendix E to 10 CFR Part 50, Sections IV.B and IV.C, and the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.4.3      *Emergency Action Levels Review by State and Local Authorities***

**Technical Information in the Emergency Plan: {Appendix E, Section IV.B}** Section II.D.3, “State/Local Emergency Action Level Scheme,” states that Detroit Edison is coordinating with the State of Michigan and Monroe and Wayne Counties to ensure consistency between the classification schemes. State, county, and provincial authorities review the content of the EALs on an annual basis. Detroit Edison informs the offsite governmental agencies of any EAL changes that significantly impact the initial conditions or technical basis.

**Technical Evaluation: {Appendix E, Section IV.B}** The staff finds that the Fermi 3 Emergency Plan and license condition COM 13.4-031—discussed in Section 13.3.4 of this SER—adequately describe how the initial EAL schemes will be discussed with and agreed to by the State, county, and provincial authorities, who will hold an annual EAL review meeting to discuss any changes in the scheme. This information is acceptable because it conforms to the requirements of 10 CFR Part 50, Appendix E, Section IV.B, for licensees to annually review their EAL schemes with offsite stakeholders.

#### **13.3C.4.4 Conclusion**

NRC staff reviewed the Fermi 3 Emergency Plan as described above for the emergency classification system. NRC staff concludes that the information provided to describe the EAL scheme is acceptable because it conforms to the requirements of 10 CFR 50.47(b)(4), Appendix E to 10 CFR Part 50, Sections IV.B and IV.C, and the guidance in Planning Standard D of NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.5 Notification Methods and Procedures**

##### **13.3C.5.1 Regulatory Basis**

In order to determine whether the proposed emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(5), the staff evaluated the plan against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1, Revision 1. The staff also evaluated the proposed plan against applicable regulatory requirements related to “Notification Methods and Procedures” in Appendix E to 10 CFR Part 50 and 10 CFR 50.72.

##### **13.3C.5.2 Notification Procedures, Capabilities, and Agreements**

**Technical Information in the Emergency Plan: [E.1] {Appendix E, Section IV.D.1 and D.3}** Section II.E, “Notification Methods and Procedures,” of the Fermi 3 Emergency Plan states that the Emergency Director in the CR or TSC—or the Emergency Officer in the EOF—is responsible for notifying State, county, and Federal agencies in accordance with the EIPs. Section II.E also explains that specific requirements for notifications to the NRC about classified emergency events are detailed in 10 CFR 50.72, and guidance can be found in the Emergency Plan implementing procedures. Appendix 6, “Emergency Plan Implementing and Supporting Procedures (Typical List) and Procedure Cross-Reference to Plan,” identifies a procedure for notifications/communications.

Section II.E states that the Province of Ontario is notified immediately after the NRC and only once at each initial emergency classification of an Unusual Event, Alert, Site Area Emergency, or General Emergency. Section II.E also states that an event will be reported to the NRC Operations Center immediately after notifying the appropriate State and county agencies, but no later than one hour after the time of initial classification, escalation, termination, or entry into the recovery phase. In RAI 13.03-05-01, the staff requested the applicant to explain how notifying the Province of Ontario an hour or more after an initial emergency declaration is considered early notification to the populace. In the response to this RAI dated December 7, 2009 (ML093440828), the applicant describes interactions with the Province of Ontario, including an initial notification within one hour of the specified initiating conditions. The applicant states that for the existing Fermi 2 facility, requirements for notifying Federal, State, and local officials—including the Province of Ontario—are established in the EPIP, “Emergency Notifications.” Appendix 6 of the Fermi 3 Emergency Plan lists an EPIP entitled, “Notifications/Communications.”

Section II.E states that the applicant will notify the State of Michigan and Monroe and Wayne Counties within 15 minutes of a declared emergency at Fermi 3. This section also outlines the content of initial and follow-up messages to response organizations within the 16-km (10-mi) Plume Exposure Pathway EPZ. Section II.E also states that the State and county emergency response plans describe procedures for State and county officials to make a public notification

decision promptly after notification from Fermi 3 of an emergency. The system for disseminating information to the public includes releasing prescribed messages through appropriate broadcast media, such as the emergency alert system (EAS). In addition, the counties will activate the alert and notification system (ANS) upon direction from State or local authorities. The ANS can be activated within 15 minutes of a determination to notify the public.

**Technical Evaluation: [E.1] {Appendix E, Section IV.D.1 and D.3}** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-05-01 acceptable because they conform to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 EP incorporated the information and textual changes in the response to RAI 13.03-05-01. The staff finds that the Fermi 3 Emergency Plan adequately describes the procedures used to address a mutually agreeable basis for notification and means of verification. This information is acceptable because it conforms to the emergency classification guidance in NUREG-0654/FEMA-REP-1, Appendix 1, "US Nuclear Regulatory Commission Emergency Action Level Guidelines for Nuclear Power Plants," and the requirements in 10 CFR Part 50, Appendix E, Sections IV.D.1 and D.3.

### **13.3C.5.3      *Notification and Activation of the Emergency Response Organization***

**Technical Information in the Emergency Plan: [E.2] {Appendix E, Section IV.C}** Section II.A.1.b states the Emergency Director directs the activation of the Fermi 3 ERO for emergencies classified as Alert, Site Area Emergency and General Emergency. The Emergency Director may direct the activation of all or part of the Fermi 3 ERO for a Notification of Unusual Event, based on an assessment of plant conditions and support needs.

Section II.E describes the Plant Announcement (Page)/Party Line (PA/PL) System as the primary means for notifying onsite personnel. The CR will make an announcement that an emergency has been declared and what actions should be taken. ERO members will be instructed to respond to their designated ERF. The CR will also notify onsite and offsite personnel assigned to the ERO using an automatic callout system or a commercial telephone as a backup. Appendix 6, "Emergency Plan Implementing and Supporting Procedures (Typical List) and Procedure Cross-Reference to Plan," identifies a notification/communication procedure.

**Technical Evaluation: [E.2] {Appendix E, Section IV.C}** The staff finds that the Fermi 3 Emergency Plan adequately addresses procedures for alerting, notifying, and mobilizing emergency response personnel. This information is acceptable because it conforms to the requirements in 10 CFR Part 50, Appendix E, Section IV.C, and the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.5.4      *Initial Message Content to Offsite Response Organizations***

**Technical Information in the Emergency Plan: [E.3] {Appendix E, Section IV.A.4 and IV.C}** Section II.E of the Fermi 3 Emergency Plan lists the content of initial notification messages established between the applicant and the State and county agencies for a classified emergency. The initial notification message will contain plant contact information (location, date, and time); current classification of emergency and circumstances; whether a release is taking place; basic meteorological data; any recommended PARs; and potentially affected populations or areas. In RAI 13.03-05-01, the staff requested the applicant to provide additional

information and revise the plan's described timing for the notification of the Province of Ontario, or provide a justification for why and how this meets the intent for early notification of the public.

**Technical Evaluation: [E.3] {Appendix E, Section IV.A.4 and IV.C}** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-05-01, dated December 7, 2009 (ML093440828) acceptable because they conform to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan incorporated the information and textual changes in the response to RAI 13.03-05-01. The staff finds that the Fermi 3 Emergency Plan adequately describes the message authentication scheme. This information is acceptable because it conforms to the requirements in 10 CFR Part 50, Appendix E, Sections IV.A.4 and IV.C, and the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.5.5      *Follow-up Messages to Offsite Response Organizations***

**Technical Information in the Emergency Plan: [E.4]** Section II.E states that for all emergency classifications, follow-up messages will be issued from the plant to affected State and local authorities to provide further details about the emergency. Available and appropriate information will be supplied including plant contact information (location, date, time); meteorological data (wind speed and direction, stability class, and precipitation); reactor information; plant status and updates; offsite release dose data; calculated and projected dose rates; and measured offsite radiation levels.

**Technical Evaluation: [E.4]** The staff finds that the Fermi 3 Emergency Plan adequately provides for follow-up messages from the facility to offsite authorities. The staff verified that the nature of the information provided is consistent with the requirements of the State and local emergency plans. This is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.5.6      *Notification of the Public***

**Technical Information in the Emergency Plan: [E.6] {Appendix E, Section IV.D.3}** Section II.E states that the siren system is designed to be operationally segregated by the county boundary within the 10-mile radius. The ANS signal will be a three (3) minute steady signal. Upon determination of the need for public notification, the ANS can be activated within 15 minutes.

The "Cross-Reference of Fermi 3 Emergency Plan to Other Regulations and Regulatory Documents In Accordance with RG 1.206, Section C.I.13.3.1" provided as "Supplemental Information" to the Fermi 3 Emergency Plan identifies the sections within the State of Michigan Emergency Management Plan and the Monroe and Wayne County emergency plans where information is provided on an administrative means for notification.

Section II.E.5, "Instructions to the Public in the Plume Exposure EPZ," states that the capability exists for the prompt notification of the general public within the 10-mile Plume Exposure EPZ around the Fermi 3 site. This notification capability consists of two (2) principal elements: 1) the Alert and Notification System (ANS) and 2) the EAS radio and television stations. The locations of the sirens were determined by a comprehensive engineering study that addressed population density, geographical features, siren output, and the mounting heights of sirens to ensure coverage of the EPZ. The siren system is designed to be operationally segregated by the

county boundary within the 16-km (10-mi) radius. In RAI 13.03-99 the NRC staff requested a description of DTE's backup ANS capability as required by 10 CFR Part 50, Appendix E, Section IV.D.3. In a letter dated December 6, 2013 (ML13344B028) the applicant provided a description of an intranet-based mass notification service that can send emergency messages to geo-coded (by address) telephones throughout the Michigan portion of the Fermi 10-mile Emergency Planning Zone (EPZ). The system design was provided to FEMA by the State of Michigan for review and received FEMA's approval contingent on the completion of an initial testing program.

Section II.E.5 also describes that the operational state of readiness for the ANS is maintained under an agreement with the local agencies to test the system by sounding the sirens on a periodic basis that meets or exceeds FEMA guidance. Reports of inoperable equipment are provided to maintenance personnel designated by the Fermi 3 Emergency Preparedness Department. The testing and maintenance program identifies inoperable equipment in a timely manner and restores the equipment to a functional status commensurate with FEMA operability requirements and in accordance with FEMA-REP-10, "Guide for the Evaluation of Alert and Notification Systems for Nuclear Power Plants." In addition to the routine test and repair program, preventive maintenance of the ANS will be performed on an annual basis, as described in the plant procedures.

**Technical Evaluation: [E.6]** The staff finds that the Fermi 3 Emergency Plan adequately establishes the administrative and physical means, in addition to the time required, for notifying and providing prompt instructions to the public in the plume exposure pathway EPZ. This information is acceptable because it conforms to the guidance of NUREG-0654/FEMA-REP-1, Revision 1.

**Technical Evaluation: {Appendix E, Section IV.D.3}** The staff finds the additional information submitted in response to RAI 13.03-99 to be acceptable because it conforms to the guidance in NSIR/DPR-ISG-01 Interim Staff Guidance, Emergency Planning for Nuclear Power Plants Section IV.J. The staff finds that the Fermi 3 Emergency Plan adequately describes the backup means of public alert and notification capability for use in the event the primary method of alert and notification were unavailable. This is acceptable because it meets the requirements in 10 CFR Part 50, Appendix E, Section IV.D.3 and conforms to the guidance in NSIR/DPR-ISG-01 Interim Staff Guidance. Verification that a future revision of the COL application incorporates the acceptable changes found in RAI 13.03-73 is being tracked as a **Confirmatory Item 13.03-79**.

#### **13.3C.5.7      *Written Messages to the Public***

**Technical Information in the Emergency Plan: [E.7]** Section II.E of the Fermi 3 Emergency Plan states that the State of Michigan has developed EAS messages for the public that are consistent with the emergency classification scheme. These draft messages are included as part of the State of Michigan EAS Plan and contain instructions with regard to specific protective actions to be taken by occupants and visitors of the affected areas. Detroit Edison will provide offsite authorities with supporting information for messages to the public. Messages may include instructions such as to take shelter and go indoors; close windows and doors; turn off ventilation systems; directions for evacuation; directions to stay tuned to specific stations for further information; ad hoc respiratory protection (for example, handkerchief over mouth or thyroid blocking).

**Technical Evaluation: [E.7]** The staff finds that the Fermi 3 Emergency Plan adequately discusses written messages intended for the public developed by the State of Michigan. In particular, draft messages were prepared giving instructions to the public with regard to specific protective actions to be taken by occupants of the affected areas. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.5.8      *Notification of the NRC***

**Technical Information in the Emergency Plan: {Appendix E, Section IV.A.4} (10 CFR 50.72(a)(3)) and (10 CFR 50.72(c)(3))** Section II.E.1.b.2, "Nuclear Regulatory Commission," explains that an event will be reported to the NRC Operations Center immediately after notification of the appropriate State and county agencies, but no later than one (1) hour after the initial classification, escalation, termination, or entry into the recovery phase. Section II.F.1.5, "NRC Telephones," describes separate telephone lines dedicated for communications with the NRC, which include the Emergency Notification System (ENS). The ENS provides initial notifications and ongoing information about plant systems, status, and parameters to the NRC. The Emergency Response Data System (ERDS) will be initiated within one (1) hour of the declaration of an Alert classification or higher. In RAI 13.03-34, the staff requested the applicant to add a description to the Fermi 3 Emergency Response Plan of an accelerated notification to the NRC of a security-related attack within approximately 15 minutes of its discovery, as described in RIS 2006-12, "Endorsement of Nuclear Energy Institute Guidance 'Enhancements to Emergency Preparedness Programs For Hostile Action.'" The applicant's response dated December 7, 2009 (ML093440828), provided a revision to Section II.EI.b.2 of the Fermi 3 Emergency Plan that describes an accelerated notification process within 15 minutes of a security-related attack at the site. Specific requirements for notifications to the NRC for classified emergency events are detailed in 10 CFR 50.72, and guidance is provided in the EIPs.

**Technical Evaluation: {Appendix E, Section IV.A.4} (10 CFR 50.72(a)(3))** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-34 acceptable because they conform to the guidance in NUREG-0800. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan incorporated the information and textual changes in the response to RAI 13.03-34. The staff finds that the Fermi 3 Emergency Plan provides adequate details for notifying the NRC immediately after notifying the appropriate State or local agencies and no later than one hour after the time the licensee declares one of the Emergency Classes, in addition to an abbreviated notification within 15 minutes of a security-related event. This information is acceptable because it conforms to the requirements in 10 CFR Part 50, Appendix E, Section IV.A.4, and 10 CFR 50.72(a)(3).

**(10 CFR 50.72(c)(3))** The staff finds that the Fermi 3 Emergency Plan adequately describes the telephone notifications under 10 CFR 50.73(a) and (b), in addition to the required initial notification. There are adequate provisions that upon the request of the NRC, an open and continuous communication channel with the NRC will be maintained. This information is acceptable because it conforms to the requirements in 10 CFR 50.72(c)(3).

### **13.3C.5.9      *Conclusion***

The staff concludes that the information in the Fermi 3 Emergency Plan regarding notification methods and procedures are acceptable, because they conform to and meet the requirements of 10 CFR 50.47(b)(5), 10 CFR 50.72(a)(3), 10 CFR 50.72(c)(3), and Appendix E to 10 CFR

Part 50, Sections IV.A.4, IV.C, IV.D.1, and D.3 and the guidance in Planning Standard E of NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.6 Emergency Communications**

#### **13.3C.6.1 Regulatory Basis**

In order to determine whether the proposed emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(6), the staff evaluated the plan against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1, Revision 1. The staff also evaluated the plan against applicable regulatory requirements related to “Emergency Communications” in Appendix E to 10 CFR Part 50 and Generic Letter (GL) 91-14, “Emergency Telecommunications.”

#### **13.3C.6.2 Content of the Emergency Communications Plan**

**Technical Information in the Emergency Plan: [F.1.a]** Section II.F.1, “Description of Communications Links,” states that Fermi 3 maintains the capability to make initial notifications to the designated offsite agencies on a 24-hour per day basis. The offsite notification ring-down phone system provides communications to State and county warning points and to EOCs from the CR, TSC, and EOF. Backup methods include commercial telephone lines, radios, and facsimiles. State and county warning points are continuously staffed. Figure II.F-1 depicts the emergency communications telephone network; and Figure II.F-2 depicts the communications links between the Fermi 3 site, Monroe County, Wayne County, and the State of Michigan.

Figure F-2, “Personnel in Charge of Communications Links at Fermi 3, Monroe County, Wayne County, and the State of Michigan,” provides the titles and alternates for those in charge of the communications links. Section II.F.1 states that Fermi 3 maintains the capability of making initial notifications to the designated offsite agencies on a 24-hour per day basis. State and county warning points are continuously staffed and available to receive notification of an event at Fermi 3.

Additional technical details describing the intra- and offsite plant communications are in Section 9.5.2, “Communications Systems,” of this SER.

**Technical Evaluation: [F.1.a]** The staff finds that the Fermi 3 Emergency Plan adequately addresses communication plans for emergencies provide for 24-hour per day notifications to and activation of the State/local emergency response network. At a minimum, this network provides a telephone link and an alternate that include around-the-clock staffing at communication links that initiate emergency response actions. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

Additional technical staff reviews of information regarding emergency communications are in Section 9.5.2 of this SER.

**Technical Information in the Emergency Plan: [F.1.b.]** Section II.F.1 describes communications systems used between the applicant and State and local governments in the plume exposure pathway EPZ. The communication systems described include telephone communications through: private automatic branch exchange lines, automatic ring-down phones, NRC telephones, a microwave system, JIC phones, and radio communications systems as backup communication options.

**Technical Evaluation: [F.1.b]** The staff finds that the Fermi 3 Emergency Plan adequately addresses provisions for communications with State and local governments within the EPZs. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

**Technical Information in the Emergency Plan: [F.1.c.]** Section II.F.1 describes communications systems used between the applicant and Federal emergency response organizations. These systems include the PABX lines, the ENS, the Health Physics Network (HPN), the Reactor Safety Counterpart Link (RSCL), the Protective Measures Counterpart Link (PMCL), the ERDS Channel, and the Management Counterpart Link (MCL).

**Technical Evaluation: [F.1.c]** The staff finds that the Fermi 3 Emergency Plan adequately addresses provisions for communications as needed with Federal EROs. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

**Technical Information in the Emergency Plan: [F.1.d.]** Section II.F.1 describes communications systems used between the CR, TSC, EOF, the nuclear facility, the principal State and local EOCs, and the field assessment teams. These communication systems include PABX lines, a sound-powered telephone system, a ring-down phone system, an automatic callout system, a microwave system, telephones in the JIC, radio communications, facsimile transmissions, the PA/PL system, and the owner-controlled area notification system (OCANS).

**Technical Evaluation: [F.1.d]** The staff finds that the Fermi 3 Emergency Plan adequately describes the communication plans that include provisions for emergency communications between the nuclear facility and the EOF, State and local EOCs, and radiological monitoring teams. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

**Technical Information in the Emergency Plan: [F.1.e.]** Section II.F.1.a.4, "Automatic Callout System," describes that notification of onsite personnel will be completed through a combination of public address announcements, alarms, and proceduralized phone calls. Fermi 3 utilizes an automatic callout system that employs pagers as the primary notification method and an automatic telephone system as a backup to rapidly notify members of the ERO. The system consists of a computer with modem equipment capable of initiating and receiving telephone calls. When contact is made, the system automatically requests security identification and then responds. The pager vendor's system accepts group and individual numbers from the callout system that activate several radio transmitters that, in turn, activate personal pagers assigned to ERO members. The system is designed with redundant power, phone, and computer components with geographic separation.

**Technical Evaluation: [F.1.e]** The staff finds that the Fermi 3 Emergency Plan adequately describes the emergency communication plans that include provision for alerting or activating emergency personnel in each response organization. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

**Technical Information in the Emergency Plan: [F.1.f.]** Section II.F.1 describes communications systems used between the applicant and NRC Headquarters, the NRC Regional Office Operations Center, the EOF, and the radiological monitoring team assembly areas. These systems include the ENS, HPN, RSCL, PMCL, the ERDS Channel, MCL, local area network (LAN), and the nuclear security system. Offsite Radiological Emergency Team

(RET) vehicles are equipped with a radio to provide mobile communications that are carried over Detroit Edison ultra-high frequency (UHF) service frequencies assigned to Western Wayne County. The radio control console for directing actions of the offsite RET is located in the EOF/RET Dispatch Room.

**Technical Evaluation: [F.1.f]** The staff finds that the Fermi 3 Emergency Plan adequately describes the communication plans for emergencies and addresses provisions for communication by the licensee with NRC headquarters, NRC Regional Office Emergency Operations Centers, and the EOF and radiological monitoring team assembly area. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

**Technical Information in the Emergency Plan: {Appendix E, Section IV.E.9}** Section II.F.1 describes multiple onsite and offsite communications systems. Communication systems include telephone systems, radio systems, facsimiles, PA/PL, OCANS. Backup power sources exist including, batteries, and standby generators.

**Technical Information in the Emergency Plan: {Appendix E, Section IV.E.9(a)}** Section II.F.3, "Communication System Tests," of the Fermi 3 Emergency Plan explains that communications between the Fermi 3 ERFs and the State/county warning points are tested monthly.

**Technical Information in the Emergency Plan: {Appendix E, Section IV.E.9(b)}** Section II.N.2.a, "Communication Drills," states that communication systems between the CR, TSC, and EOF to the NRC Headquarters Operations Center shall be tested monthly.

**Technical Information in the Emergency Plan: {Appendix E, Section IV.E.9(c)}** Section II.N.2.a states that communications between the plant, State, and local EOCs and offsite radiological emergency teams are tested annually.

**Technical Information in the Emergency Plan: {Appendix E, Section IV.E.9(d)}** Section II.N.2.a states that communication systems between the CR, TSC, EOF, to NRC Headquarters and Regional Operations Center shall be tested monthly.

**Technical Evaluation: {Appendix E, Section IV.E.9, (a), (b), (c), and (d)}** The staff finds that the Fermi 3 Emergency Plan adequately describes at least one onsite and one offsite communications system and a backup power source for each system. This information is acceptable because it conforms to the requirements described in Appendix E to 10 CFR Part 50.

In addition, the applicant's communication plans have arrangements for emergencies that include titles and alternates for those in charge at both ends of the communication links and primary and backup means of communication. Consistent with the function of the governmental agency, these arrangements include:

- a. Provisions for communications with contiguous State/local governments within the plume exposure pathway EPZ. Such communications shall be tested monthly.
- b. Provisions for communications with Federal emergency response organizations. Such communications shall be tested annually.

- c. Provisions for communications among the nuclear power reactor CR, onsite TSC, and EOF; and among the nuclear facility, the principal State and local emergency operations centers, and the field assessment teams. Such communications shall be tested annually.
- d. Provisions for communications between the licensee and NRC Headquarters and the appropriate NRC Regional Office Operations Center from the nuclear power reactor CR, onsite TSC, and EOF. Such communications shall be tested monthly.

These provisions for onsite and offsite communications are acceptable because they meet the requirements in Appendix E to 10 CFR Part 50.

**Technical Information in the Emergency Plan: (GL 91-14)** Section II.F.1.a.5 of the Fermi 3 Emergency Plan describes that the ENS, HPN, RSCL, PMCL, ERDS, MCL, and the LAN are separate dedicated telephone lines for communications with the NRC. In RAI 13.03-06-01, the staff requested additional information regarding guaranteed power provided to the emergency communications equipment. In the response dated December 7, 2009 (ML093440828), the applicant described the emergency telecommunications system (ETS) and refers to ESBWR DCD Section 9.5.2, and FSAR Subsection 9.5.2.2 regarding the guaranteed power to the communications equipment. The applicant states that ESBWR DCD Subsection 9.5.2.1 provides the following power generation design bases for the plant communications systems:

- Communication subsystems are independent of one another, so a failure in one subsystem does not degrade the performance of the other subsystems.
- The communication system is in accordance with applicable codes and standards, and the equipment is shielded as necessary from the adverse effects of electromagnetic interference (EMI) and radio frequency interference (RFI).
- The communication subsystems are functional during a loss of offsite power.

The applicant stated that FSAR Subsection 9.5.2.2 provides additional details regarding power supplies to the ENS:

Electrical power for this phone system is provided by two redundant AC power sources, and batteries, with an 8 hour capacity rating, would automatically supply power to these phones if a complete loss of AC power to the phones occurred. This design ensures that the ENS located at the site is fully operable from the site in the event of a loss of offsite power at the site and is in compliance with the requirements of NRC Bulletin 80-15 for the ENS.

In Supplemental RAI 13.03-12, the staff requested the applicant to revise Section II.F.1.a.5 of the Emergency Plan to include a reference to the sections of the ESBWR DCD and the FSAR that describe guaranteed power to the communication systems. In the response to Supplemental RAI 13.03-12 dated June 25, 2010 (ML101790463), the applicant provided revisions to be included in Section F.1 that state, "Subsection 9.5.2.2 of the Fermi 3 FSAR and Subsection 9.5.2 of the ESWBR DCD provide a description of the plant communications systems."

**Technical Evaluation: (GL 91-14)** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to Supplemental RAI 13.03-12 acceptable, because they conform to the guidance in GL 91-14. The staff confirmed that Revision 5 of Fermi 3 FSAR Subsection 9.5.2.2 incorporate the additional information and textual revisions in the response to Supplemental RAI 13.03-12. Therefore, the staff finds that the Fermi 3 Emergency Plan adequately includes provisions for communications with the NRC. This information is acceptable because it meets the guidance in GL 91-14.

### **13.3C.6.3      *Communications with Medical Facilities***

**Technical Information in the Emergency Plan: [F.2]** Section II.F.2, “Communication with Fixed and Mobile Medical Support Facilities,” of the Fermi 3 Emergency Plan states that commercial telephones are the primary communications method to both primary and backup medical hospitals. Backup communications systems include radio or other mobile services. Communication between ambulances and hospitals is the responsibility of the ambulance and hospital services.

**Technical Evaluation: [F.2]** The staff finds that the Fermi 3 Emergency Plan adequately describes a coordinated communication link for fixed medical support facilities and ambulance services. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.6.4      *Periodic Testing of the Emergency Communications System***

**Technical Information in the Emergency Plan: [F.3]** Section II.F.3, “Communication System Tests,” of the Fermi 3 Emergency Plan states that communications between the Fermi 3 ERFs and the State/county warning points are tested monthly. Section II.N.2.a, “Communication Drills,” provides the following additional communication testing schedules:

- Communications between the CR, TSC, EOF, Michigan State Police, Monroe County Central Dispatch, and Wayne County Central Communications are tested monthly.
- Communications between Fermi 3 ERFs and the offsite response organizations are tested during annual drills.
- Communications between plant, State, and local EOCs and offsite RETs are tested annually.
- Communications between the CR, TSC, OSC, EOF, and Joint Public Information Center (JPIC) are tested annually.

**Technical Evaluation: [F.3]** The staff finds that the Fermi 3 Emergency Plan adequately describes the periodic testing of the entire emergency communications system. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.6.5      *Conclusion***

NRC staff concludes that the information in the Fermi 3 Emergency Plan regarding emergency communications is acceptable and conforms to the requirements of 10 CFR 50.47(b)(6); Appendix E to 10 CFR Part 50; Sections IV.E.9(a), (b), (c), and (d); the guidance in Planning

Standard F of NUREG-0654/FEMA-REP-1, Revision 1; and the guidance in GL 91-14 as described above.

### **13.3C.7 Public Education and Information**

#### **13.3C.7.1 Regulatory Basis**

In order to determine whether the proposed emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(7), the staff evaluated the plan against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1, Revision 1. The staff also evaluated the plan against applicable regulatory requirements related to "Public Education and Information" in Appendix E to 10 CFR Part 50.

#### **13.3C.7.2 Content of Public Information**

**Technical Information in the Emergency Plan: [G.1]** Section II.G, "Public Education and Information," describes Detroit Edison's public education and information program and outlines the process for keeping the public within the 16-km (10-mi) EPZ informed in the event of an emergency. Details regarding types of information provided to the public and coordination with the news media are specifically described in the EPIPs. Section II.G.1, "Public Information Program," states that the public education and information program for the Fermi 3 Plant is updated annually by Detroit Edison—in coordination with State and county agencies—to address how the general public is notified and what the actions affected individuals should take in an emergency. This information includes but is not limited to educational information on radiation; who to contact for additional information; protective measures (shelters, evacuation route maps, reception/congregate care center locations, and respiratory protection information); and special instructions for the handicapped.

Section II.G.2, "Distribution and Maintenance of Public Information," states that Detroit Edison distributes a safety information publication on an annual basis to residents and transients in the 16-km (10-mi) EPZ. The information is distributed by mail to each residence and to appropriate locations where transient populations may obtain a copy including hotels, highway rest areas, and State recreation areas; and activities such as school program presentations' speeches at meetings of community groups; booth displays at the Monroe County Fair; and tours of the Fermi 3 plant. These tours include exhibits, lectures, and the opportunity to ask questions about all aspects of plant operations. The public information program provides permanent as well as transient populations with an adequate opportunity to become aware of the information that is available. Public information materials instruct affected individuals to go indoors and turn on their radios or televisions when they hear the ANS sirens operating. The publications identify which local radio and television stations provide information related to a plant emergency.

**Technical Evaluation: [G.1]** The staff finds that the Fermi 3 Emergency Plan adequately describes both the periodic (at least annually) dissemination of information to the public regarding how affected areas and populations will be notified and what actions they should take in an emergency and the means for accomplishing the dissemination of the information. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.7.3      *Distribution and Maintenance of Public Information***

**Technical Information in the Emergency Plan: [G.2] {Appendix E, Section IV.D.2}** Section II.G.2 states that the applicant will update and mail safety information publications annually to residents and to locations where transients may be located including hotels, highway rest areas, and State recreation areas. These materials instruct affected individuals to go indoors and turn on their radios and televisions at the sound of the sirens. Educational information on radiation and which radio and television stations provide information relevant to the event are included in these public education materials.

**Technical Evaluation: [G.2] {Appendix E, Section IV.D.2}** The staff finds that the Fermi 3 Emergency Plan adequately describes a public information program that annually provides permanent and transient populations within the plume exposure EPZ an adequate opportunity to become aware of the information. The program includes provisions for written materials that are available in a residence during an emergency. This information is acceptable because it conforms to the requirements in 10 CFR Part 50, Appendix E, Section IV.D.2 and the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.7.4      *Points of Contact for the News Media***

**Technical Information in the Emergency Plan: [G.3.a]** Section II.G.3, “News Media Coordination,” identifies the location of the JIC at the Monroe County Community College, 19.2 km (12 mi) west-southwest of Fermi 3, with an Onsite News Center briefing area for the media when appropriate. The Onsite News Center is located in the Nuclear Operations Center (NOC) Auditorium, approximately one mile southwest of the plant. Section II.G.4, “Information Exchange,” identifies a Company officer as the designated Corporate Utility Spokesperson for the applicant in the event of an accident at Fermi 3. This Utility Spokesperson will brief the news media in the Onsite News Center during non-radiological releases. If the JIC is activated, the Utility Spokesperson and JIC staff will coordinate with the EOF; Corporate Communication personnel; and Federal, State, county, and Canadian spokespersons in the JIC. According to Section II.G.3, the JIC is located 19.2 km (12 mi) west-southwest of Fermi 3 at the Monroe County Community College and can accommodate approximately 500 members of the news media. In RAI 13.03-07.01, the staff requested the applicant to provide the news media contacts. In the response to this RAI dated December 7, 2009 (ML093440828), the applicant stated that Section II.G of the Emergency Plan describes multiple activities that address interactions with the news media, including the publication and distribution of public educational information that discusses public information sources and an annual News Media Acquaintance Program. The applicant further stated that carrying out these activities requires the identification of and coordination with the news media consistent with the controlling regulatory requirements and guidance. The applicant provided a copy of the current public emergency information publication that includes a listing of EAS radio and television stations and stated that Fermi 2 and 3 will use a common public emergency information publication similar to the one currently used by Fermi 2. Section II.G states that details regarding the types of information provided to the public and coordination with the news media are in the EPIPs.

**Technical Evaluation: [G.3.a]** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-07.01 acceptable, because they conform to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan incorporated the additional information and textual revisions in the response to RAI 13.03-07.01. The staff finds that the Fermi 3

Emergency Plan adequately designates the points of contact and physical locations for use by the news media during an emergency. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.7.5      *Space for News Media***

**Technical Information in the Emergency Plan: [G.3.b]** Section II.G.3 identifies the location of the JIC at the Monroe County Community College. The JIC can accommodate approximately 500 members of the news media, and an Onsite News Center that serves as a briefing area for the media (when appropriate) can accommodate 20 to 50 news media personnel.

**Technical Evaluation: [G.3.b]** The staff finds that the Fermi 3 Emergency Plan adequately describes the physical location of the space designated for use by a limited number of news media at the EOF during a declared emergency at the Fermi 3 site. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.7.6      *Designated Spokesperson***

**Technical Information in the Emergency Plan: [G.4.a]** Section II.G.4 of the Fermi 3 Emergency Plan states that a Company officer will be designated Corporate Utility spokesperson for an event at Fermi 3. In RAI 13.03-07.03, the staff requested additional information regarding designated spokespersons. In the response to this RAI dated December 7, 2009 (ML093440828), the applicant explains that the designated Federal, State, local, and Canadian spokespersons are specified in their respective plans and Section II.G.4 describes the process for the Corporate Utility Spokesperson and other designated spokespersons to obtain access to and execute a timely exchange of all necessary information.

**Technical Evaluation: [G.4.a]** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-07.03 acceptable, because they conform to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan the additional information and textual revisions provided in the response to RAI 13.03-07.03. The staff finds that the Fermi 3 Emergency Plan adequately identifies a spokesperson who has access to all necessary information. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.7.7      *Timely Exchange of Information***

**Technical Information in the Emergency Plan: [G.4.b]** Section II.G.4 states that there will be a timely exchange of information between spokespersons. In RAI 13.03-07.04, the staff requested additional information regarding descriptions by title/position of the plant's points of contacts for releasing public information. In the response to this RAI dated December 7, 2009 (ML093440828), the applicant identified news media training to include information regarding points of contact for releasing public information during an emergency.

**Technical Evaluation: [G.4.b]** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-07.04 acceptable, because they conform to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan the additional information and textual revisions provided in the response to RAI 13.03-07.04. The staff finds that the Fermi 3 Emergency Plan

adequately describes the established arrangements for a timely exchange of information among designated spokespersons. This information is acceptable because it meets the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.7.8     *Rumor Control***

**Technical Information in the Emergency Plan: [G.4.c]** Section II.G.4 addresses rumors. If members of the public need to obtain information, they can request a clarification of any questions they may have by calling a publicized number for the Monroe County Emergency Management Division (EMD). Telephones at the Monroe County EMD will be staffed by local government representatives. Utility personnel at the JIC will coordinate rumor control with personnel at the Monroe County EMD before media briefings, so that rumors can be refuted or confirmed. This communication with the public will aid in dispelling rumors. Annex D to Appendix I, “Nuclear Accident Procedures Public Information,” of the Monroe County Emergency Management Plan states that Public Inquiry Personnel will staff phones, but an automatic answering service may be utilized. Section II.G.4 states that State and local plans and procedures have been established and provide further details concerning the control of rumors.

**Technical Evaluation: [G.4.c]** The staff finds that the Fermi 3 Emergency Plan adequately describes the coordinated arrangements for dealing with rumors. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.7.9     *Annual Media Orientation***

**Technical Information in the Emergency Plan: [G.5]** Section II.G.5, “News Media Training,” states that the applicant, with the assistance of State and local authorities, will conduct programs annually to acquaint the news media with EP and procedures. These programs cover radiation and radiological effects of nuclear power plants and provide information regarding points of contact for releasing information under emergency conditions. These programs also offer information to enhance the media's ability to communicate radiological events to the public.

**Technical Evaluation: [G.5]** The staff finds that the Fermi 3 Emergency Plan adequately describes a coordinated program that is conducted at least annually to acquaint the news media with the emergency plans, information concerning radiation, and points of contact for releasing public information in an emergency. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.7.10    *Conclusion***

NRC staff concludes that the information in the Fermi 3 Emergency Plan regarding public education and information is acceptable because it meets the requirements of 10 CFR 50.47(b)(7), Appendix E to 10 CFR Part 50, and Section IV.D.2 and conforms to the guidance in Planning Standard G of NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.8     *Emergency Facilities and Equipment***

### **13.3C.8.1      *Regulatory Basis***

In order to determine whether the proposed emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(8), the staff evaluated the plan against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1, Revision 1. The staff also evaluated the plan against applicable regulatory requirements related to "Emergency Facilities and Equipment," in Appendix E to 10 CFR Part 50, 10 CFR 50.34, and 10 CFR 50.72. In addition, the staff evaluated the proposed emergency plan against the guidance in Supplement 1 to NUREG-0737.

#### *Technical Support Center*

### **13.3C.8.2      *Technical Support Center Functions***

**Technical Information in the Emergency Plan: [H.1] {Appendix E, Section IV.E.8} (8.2.1.a of NUREG-0737, Supplement 1)** Section II.H.1.b, "Technical Support Center," states that the TSC is activated for Alert and higher emergencies and provides support to the CR for plant status assessments, potential offsite impacts, and emergency action implementation. The TSC is able to accommodate 26 people, including 21 Detroit Edison personnel and workspace for five NRC representatives. The TSC provides plant management and technical support to the CR staff, relieves reactor operators of peripheral duties not directly related to reactor system manipulations, provides continuing event classification evaluation, emergency response coordination within the Protected Area, and may be used for technical support during recovery operations. The TSC staff provides protective actions onsite and offsite and communication with government agencies until the EOF is operational. Section II.B of the Fermi 3 Emergency Plan provides a description of the TSC technical, engineering, senior management and other position staffing.

**Technical Evaluation: [H.1] {Appendix E, Section IV.E.8} (8.2.1.a)** The staff finds that the Fermi 3 Emergency Plan adequately describes the TSC staffing and ability to effectively direct and control necessary emergency actions during an event. This information is acceptable because it conforms to the requirements of Appendix E to 10 CFR Part 50, Section IV.E, the guidance in NUREG-0654/FEMA-REP-1 Revision 1, and Supplement 1 to NUREG-0737.

### **13.3C.8.3      *TSC Location***

**Technical Information in the Emergency Plan: (8.2.1.b of NUREG-0737, Supplement 1) (50.34(f)(2)(xxv))** Section H.1.b identifies the location of the TSCs in the electrical building within the Protected Area; they meet all of the ESBWR Standard Plant TSC design requirements.

**Technical Evaluation: (8.2.1.b of NUREG-0737, Supplement 1) (50.34(f)(2)(xxv))** The staff finds that the Fermi 3 Emergency Plan adequately describes the TSC location. This information is acceptable because it meets the requirements in 10 CFR 50.34(f)(2)(xxv) and the guidance in Supplement 1 to NUREG-0737, Section 8.2.1.b.

### **13.3C.8.4      *TSC Staffing Requirements***

**Technical Information in the Emergency Plan: (8.2.1.c and j of NUREG--0737, Supplement 1)** Table II.B-1, "Minimum Staffing Requirements for Emergencies," lists the TSC staffing within 30 minutes of a declared emergency. The list includes the Emergency Director,

Communicator, and the Radiation Protection Advisor. Within 60 minutes, the list also includes the Technical Engineer or Nuclear Safety Advisor and the Support Engineer. In RAI 13.03-08.02, the staff requested additional information regarding how the TSC staffing meets the requirements in NUREG-0737, Supplement 1. The RAI is particularly concerned about core/thermal hydraulics and electrical and mechanical technical support. In the response to this RAI dated December 7, 2009 (ML093440828), the applicant includes a revised Table II.B-1, which identified core/thermal hydraulics and electrical and mechanical engineering analyses as the technical support provided by on-shift personnel. In RAI 13.03-02-09, the staff requested additional information on why Table II.B-1 does not describe core/thermal hydraulics, maintenance expertise for electrical, I&C, and Mechanical and Radwaste Operator expertise, or individuals to fill these functions. The applicant's response dated December 7, 2009 (ML093440828) stated that the staffing identified in Table II.B-1 is based on enhancements gained after years of experience from operating the existing Fermi 2, and the effectiveness of the proposed emergency response organizational staffing has been tested and proven through the organization's response to multiple drills, exercises, and emergency events. In addition, the requested reduction evaluations show that a reduction in staffing does not reduce the effectiveness of the emergency response plan. The staff requested additional information in Supplemental RAI 13.03-09 regarding the enhancements resulting from experience that demonstrates the proposed reduced staffing represents sufficient staffing and expertise. In the response to Supplemental RAI 13.03-09 dated June 25, 2010 (ML101790463), the applicant referred the staff to the Table II.B-1 revision included in the response to RAI 13.03-02-12 dated December 7, 2009 (ML093440828), which shows that Detroit Edison Maintenance personnel are assigned to the Damage Control and Rescue Team. The staff found that a revision to Table II.B-1 was included in the response to RAI 13.03-02-09 and not in the response to RAI 13.03-02-12. The applicant further stated that as indicated in FSAR Table 13.1-202, the Radwaste Operator is not a member of the minimum shift organization for the ESBWR. The applicant stated that Non-Licensed Operators are qualified to perform radwaste operations during emergencies. The applicant also states that a footnote to Table II.B-1 will be added to clarify that one Non-Licensed Operator may be assigned Radwaste Operator duties to support the emergency response or recovery activities, as needed. The applicant provided a revised Table II.B-1 with a footnote explaining that one Non-Licensed Operator may be assigned Radwaste Operator duties.

In RAI 13.03-08.03, the staff requested additional information regarding how TSC staffing meets the NUREG-0696 requirement of full and functional operation within 30 minutes. The applicant's response dated December 7, 2009 (ML093440828), states that the staffing identified in Table II.B-1 is based on NUREG-0654/FEMA-REP-1, Revision 1 and Revisions 2 and 3 of RG 1.101. The applicant added that similar staffing designations used for the existing Fermi 2 have successfully responded to drills, exercises, and emergency events.

**Technical Evaluation: (8.2.1.c and j of NUREG-0737, Supplement 1)** The staff finds the additional information and textual revisions to the Fermi 3 Emergency Plan submitted in responses to RAIs 13.03-08.03, 13.03-02-09, and Supplemental RAI 13.03-09 acceptable because they conform to the guidance in Supplement 1 to NUREG-0737, Sections 8.2.1.c and j. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan the additional information and textual revisions provided in the response to RAI 13.03-08.03, 13.03-02-09 and Supplemental RAI 13.03-09. The staff finds that the Fermi 3 Emergency Plan adequately describes the TSC staffing, size, and equipment.

### **13.3C.8.5 TSC Structure**

#### **Technical Information in the Emergency Plan: (8.2.1.d of NUREG–0737, Supplement 1)**

Section II.H.1.b states that the TSC design is in accordance with the ESBWR Standard Plant that complies with all TSC requirements. The applicant has incorporated the TSC structure described in the ESBWR DCD with no departures or deviations and states that the ESBWR DCD provides relevant information regarding the design and location of the TSC. Table 3.2-1, “Classification Summary,” of the ESBWR DCD Tier 2, states that the electrical building structure is Seismic Category NS. Section 3.2.1, “Seismic Classification,” of the ESBWR DCD Tier 2 states that the Seismic Category NS structures and equipment are designed for seismic requirements that are in accordance with the 2003 revision of the International Building Code (IBC).

**Technical Evaluation: (8.2.1.d of NUREG–0737, Supplement 1)** The staff finds that the Fermi 3 Emergency Plan adequately describes the TSC structure. This information is acceptable because it meets the guidance in Supplement 1 to NUREG–0737, Section 8.2.1.d.

### **13.3C.8.6 TSC Environmental Controls**

#### **Technical Information in the Emergency Plan: (8.2.1.e of NUREG–0737, Supplement 1)**

Section II.H.1.b states that the TSC has environmental controls for providing room temperature, air, humidity, and cleanliness appropriate for personnel and equipment. Section 9.4.7, “Electrical Building HVAC System,” of the ESBWR DCD Tier 2 states that the electrical building heating, ventilation, and air conditioning (HVAC) has a subsystem for the TSC, the TSC HVAC subsystem (TSCVS), and while the TSC ventilation system is not specified in SRP Section 9.4.1, the ESBWR design is committed to providing a TSC that has environmental conditions in the TSC compatible with the design limits of its equipment. The TSCVS provides filtered conditioned air to the TSC using two redundant air filtration units (AFUs) with fans, high efficiency particulate air (HEPA) filters, charcoal filters for radioactive material removal when needed. The TSCVS maintains the TSC at a slight, positive pressure. Redundant air handling units with filters, heating and cooling coils, and a humidifier provide conditioned air to the TSC.

**Technical Evaluation: (8.2.1.e of NUREG–0737, Supplement 1)** The staff finds that the Fermi 3 Emergency Plan adequately describes the TSC environmental controls. This information is acceptable because it meets the guidance in Supplement 1 to NUREG–0737, Section 8.2.1.e.

### **13.3C.8.7 TSC Radiological Protection**

#### **Technical Information in the Emergency Plan: (8.2.1.f of NUREG–0737, Supplement 1)**

Section II.H.1.b states that the TSC room is equipped with radiological protection and monitoring for personnel radiation exposure to maintain doses of less than 0.05 Sieverts (Sv) (5 roentgen equivalent man [rem]) total effective dose equivalent (TEDE) as defined in 10 CFR 50.2 for the duration of the accident, and the level of protection is similar to that of the CR. Subsection 11.5.1.1.2, “Radiation Monitors Required for Plant Operation,” of the ESBWR DCD Tier 2 states that the Process Radiation Monitoring system includes monitoring of the gaseous intake stream for the TSCVS air intake. Subsection 11.5.3.2.12, “Technical Support Center HVAC Air Intake,” of the ESBWR DCD Tier 2 states that this system continuously monitors the intake air duct with a single gamma radiation monitor.

Subsection 7.5.2.2, "Containment Monitoring System," of DCD Tier 2, describes the containment monitoring system for gaseous sampling and effluent radiation monitoring and the parameters that are monitored during normal and accident conditions.

**{Appendix E, Section IV.E.1}** Section II.H.1.b states that the TSC room is equipped with radiological protection and monitoring for personnel radiation exposure to maintain doses of less than 0.05 Sv (5 rem) TEDE for the duration of the accident, and the level of protection is similar to that of the CR.

**Technical Evaluation: (8.2.1.f of NUREG-0737, Supplement 1) {Appendix E, Section IV.E.1}** The staff finds that the Fermi 3 Emergency Plan adequately describes the TSC radiological protection. This information is acceptable because it meets the requirements of 10 CFR Part 50, Appendix E, Section IV.E.1 and the guidance in Supplement 1 to NUREG-0737, Section 8.2.1.f.

Subsection 15.4.5.3.2.5, "Technical Support Center Radiological Consequence Analysis," of the NUREG-1966 (ESBWR DCD FSER) contains additional evaluation details concerning the habitability of the TSC and concludes that the analysis of the TSC radiological consequence in the ESBWR DCD, which is incorporated by reference into the Fermi 3 COL FSAR, is acceptable.

#### **13.3C.8.8      *TSC Communications***

**Technical Information in the Emergency Plan: (8.2.1.g of NUREG-0737, Supplement 1)** Section II.H.1.b states that the TSC has reliable voice and data communications to the CR, OSC, EOF, NRC Operations Center, and other offsite agencies. Section II.F.1 describes the communications available in the TSC. The PABX system connects the CR, TSC, OSC, and EOF. A microwave system provides primary functions for emergency telephones and backup emergency telephone communications using administrative lines that can access offsite locations. A ring-down phone system that is programmed for automatic dialing provides communications to state and county warning points and EOCs from the CR, TSC, and EOF. In addition, facsimile machines are available in the CR, TSC, EOF and JIC. A PA/PL system with handsets and speakers is also available in the TSC.

**Technical Evaluation: (8.2.1.g of NUREG-0737, Supplement 1)** The staff finds that the Fermi 3 Emergency Plan adequately describes the TSC communications. This information is acceptable because it meets the guidance in Supplement 1 to NUREG-0737, Section 8.2.1.g.

#### **13.3C.8.9      *TSC Data Collection, Storage, and Analysis***

**Technical Information in the Emergency Plan: (8.2.1.h of NUREG-0737, Supplement 1)** Section II.H.1.b states that the TSC has the capability to record and display vital plant data in real time, and the display capability includes a workstation capable of displaying the parameters required for a safety parameter display system (SPDS). Section 7.1.5 of the ESBWR DCD Tier 2 describes the SPDS. Subsection 7.1.5.1.2, "N-DCIS [Nonsafety-related distributed control and information system] Non safety-Related Design Bases," of the ESBWR DCD Tier 2 states N-DCIS collects and archives data for display on the SPDS. Section II.H.4, "Onsite Monitoring Systems," also states that key radiological monitoring system (RMS) data are linked to the plant computer that is available in the TSC and EOF. The RMS provides the needed radiation and activity levels to determine source terms for dose projection procedures.

Chapter 7, "Instrumentation and Control Systems," of the ESBWR DCD describes additional technical details relating to the TSC data collection, storage, and analytical capabilities.

**Technical Evaluation: (8.2.1.h of NUREG-0737, Supplement 1)** The staff finds that the Fermi 3 Emergency Plan adequately describes the TSC data collection, storage, and analytical capabilities. This information is acceptable because it meets the guidance in Supplement 1 to NUREG-0737, Section 8.2.1.h.

#### **13.3C.8.10 TSC Human Factors Engineering**

**Technical Information in the Emergency Plan: (8.2.1.h and k of NUREG-0737, Supplement 1)** Section 18.1, "Human Factors Engineering, Overview," of the ESBWR DCD Tier 2 states that the human factors engineering (HFE) program addresses the main CR, remote shutdown system, TSC, EOF displays, and local control stations that have safety-related functions or are defined by a task analysis. Section 18.2.1, "HFE Program and MMIS [man-machine interface system] and HFE Implementation Plan," states that the HFE design team will establish the HFE Program and the MMIS and HFE Implementation Plan, which provides the direction and integration of HFE-related design implementation and evaluation activities. Additional details about the HFE Plan and its implementation are described in detail in Chapter 18 of the ESBWR DCD Tier 2.

#### **13.3C.8.11 TSC Plant Records**

**Technical Information in the Emergency Plan: (8.2.1.i of NUREG-0737, Supplement 1)** Section II.H.1.b states that TSC personnel have access to up-to-date as-built drawings, schematics, and diagrams of structures and systems to the component level, technical specifications, plant and emergency operating procedures, onsite and offsite emergency plans, offsite population data, evacuation plans, EIPs, and the FSAR. In RAI 13.03-08.04, the staff requested additional information clarifying whether plant operating records are included in the records available to TSC personnel. In the response dated December 7, 2009 (ML093440828), the applicant states that the TSC staff has access to plant operating records.

**Technical Evaluation: (8.2.1.i of NUREG-0737, Supplement 1)** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-08.04 acceptable because they conform to the guidance in Supplement 1 to NUREG-0737, Section 8.2.1.i. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan incorporated the additional information and textual revision in the response to RAI 13.03-0804. The staff finds that the Fermi 3 Emergency Plan adequately describes the availability of the TSC plant records. This information is acceptable because it meets the guidance in Supplement 1 to NUREG-0737, Section 8.2.1.i.

#### **13.3C.8.12 TSC Activation**

**Technical Information in the Emergency Plan: [H.4]** Section II.H.3, "Activation and Staffing of Emergency Response Facilities (ERFs)," states that the TSC is staffed and activated for Alert and higher declarations. The TSC is staffed and activated using the EIPs and Table II.B-1 position staffing and times.

**Technical Evaluation: [H.4]** The staff finds that the Fermi 3 Emergency Plan adequately provides for the activation and staffing of the TSC. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### Operations Support Center

##### **13.3C.8.13 Operations Support Center Functions**

**Technical Information in the Emergency Plan: [H.1] (8.3.1.a of NUREG-0737, Supplement 1)** Section II.H.1.c, "Operational Support Center (OSC)," states that the OSC provides an area for the coordination of shift personnel supporting emergency response operations without causing congestion in the CR. The OSC is not designed to be habitable under all emergency conditions, and the EIPs have provisions for relocating the OSC as needed and as directed by the Emergency Director. The survey, repair, and operations teams are sent from the OSC into the plant areas; the OSC is the staging area for personnel who may be assigned to first aid, search and rescue, damage control, and emergency repair activities.

**Technical Evaluation: [H.1] (8.3.1.a of NUREG-0737, Supplement 1)** The staff finds that the Fermi 3 Emergency Plan adequately describes the OSC functions. This information is acceptable because it meets the guidance in Supplement 1 to NUREG-0737, Section 8.3.1.a and NUREG-0654/FEMA-REP-1, Revision 1.

##### **13.3C.8.14 OSC Location**

**Technical Information in the Emergency Plan: (8.3.1.b of NUREG-0737, Supplement 1) (50.34(f)(2)(xxv))** Section II.H.1.c describes the location of the OSC in the service building within the Protected Area, which is separate from the CR and provides an area for coordinating shift personnel to support emergency response operations without causing congestion in the CR.

**Technical Evaluation: (8.3.1.b of NUREG-0737, Supplement 1) (50.34(f)(2)(xxv))** The staff finds that the Fermi 3 Emergency Plan adequately describes the location of the OSC. This information is acceptable because it conforms to the requirements of 10 CFR 50.34(f)(2)(xxv) and the guidance in Supplement 1 to NUREG-0737, Section 8.3.1.b.

##### **13.3C.8.15 OSC Coordination Activities**

**Technical Information in the Emergency Plan: (8.3.1.a of NUREG-0737, Supplement 1)** Section II.H.1.c describes the OSC as an area for coordinating shift personnel supporting emergency response operations without causing congestion in the CR. The OSC is the staging area for personnel who may be assigned to first aid, search and rescue, damage control, and emergency repair activities. Survey, repair, and operation teams are sent from the OSC into the plant areas. The OSC Coordinator manages OSC activities and dispatches emergency personnel to assignments as directed by the Emergency Director. Operating personnel (not assigned to the CR); Radiation Protection personnel; Chemistry personnel; and Maintenance personnel including mechanical, electrical, and I&C are some of the disciplines that report to the OSC. Responsibilities of the OSC Coordinator also include accountability for anyone dispatched to the OSC and the control of radiological exposure to personnel in the OSC and TSC.

**Technical Evaluation: (8.3.1.a of NUREG–0737, Supplement 1)** The staff finds that the Fermi 3 Emergency Plan adequately describes the functions of the OSC Coordination Activities. This information is acceptable because it conforms to the guidance in Supplement 1 to NUREG–0737, Section 8.3.1.a.

#### **13.3C.8.16    *OSC Communications***

**Technical Information in the Emergency Plan: (8.3.1.c of NUREG–0737, Supplement 1)** Section II.H.1.c explains that the OSC communications system shall have at least one dedicated telephone line to the CR, one dedicated telephone line to the TSC, and a telephone line that can reach onsite and offsite, as a minimum requirement. Section II.F.1 states that the OSC communications system shall have at least one dedicated telephone extension to the CR, one dedicated telephone extension to the TSC, and one telephone capable of reaching onsite and offsite locations, as a minimum requirement. Section II.F of this plan provides additional information about the onsite communications systems.

**Technical Evaluation: (8.3.1.c of NUREG–0737, Supplement 1)** The staff finds that the Fermi 3 Emergency Plan adequately describes the OSC communications. This information is acceptable because it meets the guidance in Supplement 1 to NUREG–0737, Section 8.3.1.c.

#### **13.3C.8.17    *OSC Activation and Staffing***

**Technical Information in the Emergency Plan: [H.4]** Section II.H.3 states the OSC is staffed and activated for Alert and higher declarations. The OSC is staffed and activated using emergency plan implementing procedures and Table II.B-1 position staffing and times.

**Technical Evaluation: [H.4]** The staff finds that the Fermi 3 Emergency Plan adequately provides for the activation and staffing of the OSC. This information is acceptable because it conforms to the guidance in NUREG–0654/FEMA-REP-1, Revision 1.

#### **13.3C.8.18    *OSC Capacity and Supplies***

**Technical Information in the Emergency Plan: [H.9]** Section II.H.1.c states that the OSC provides an area for coordinating shift personnel supporting emergency response operations, without causing congestion in the CR. OSC equipment and supplies include protective clothing, dosimetry, and sampling and survey equipment that the OSC teams use.

**Technical Evaluation: [H.9]** The staff finds that the Fermi 3 Emergency Plan adequately describes the OSC capacity and supplies. This information is acceptable because it conforms to the guidance in NUREG–0654/FEMA-REP-1, Revision 1.

#### ***Emergency Operations Facility***

#### **13.3C.8.19    *Emergency Operations Facility Functions***

**Technical Information in the Emergency Plan: [H.2] {Appendix E, Section IV.E.8} (8.4.1.a of NUREG–0737, Supplement 1)** Section II.H.1.d, “Emergency Operations Facility (EOF),” states that Fermi 2 and 3 share the EOF, which is the location where the Emergency Officer will direct staff in overall company activities involved with an emergency. The EOF is activated upon declarations of the Alert level and higher and provides for overall management of the

emergency response; the performance of non-delegable functions when in command and control; offsite protective actions and radiological monitoring; environmental sampling analyses; public information; communications to State and county officials; the determination of recommended public protective actions; and the coordination of Federal, State, and county agencies. The EOF has the capability to display technical data via a workstation that, at a minimum, is capable of displaying the parameters that are required of a SPDS. The SPDS function is described in Section 7.1.5 of the ESBWR DCD Tier 2. The EOF technical data system receives, stores, processes, and displays information sufficient to perform assessments of the actual and potential onsite and offsite environmental consequences of an emergency condition. In RAI 13.03-101, the staff requested additional information as to whether the space available in the EOF has been evaluated for an event that would activate both the Fermi 2 and 3 EROs, such as a security event, to ensure there is sufficient space to accommodate the additional personnel required by both EROs. The staff requested the applicant provide documentation of the EOF's available space evaluation and revised emergency plan EOF description to include the capability to support both Fermi 2 and 3 ERO teams in the event of a site event activating both units EROs. In the applicant's response to a letter dated December 6, 2013 (ML13344B028), the applicant provided an adequate description of the evaluation performed to demonstrate the EOF would have adequate space to support activation and staffing of both the Fermi 2 and 3's EROs.

**Technical Evaluation: [H.2] {Appendix E, Section IV.E.8} (8.4.1.a)** The staff finds the additional information submitted in response RAI 13.03-101 to be acceptable because it conforms to the guidance in NSIR/DPR-ISG-01 Interim Staff Guidance, Emergency Planning for Nuclear Power Plants Section IV.D. The staff finds the Fermi 3 Emergency Plan adequately describes the EOF functions. This information is acceptable because it conforms to the requirements of 10 CFR Part 50, Appendix E, Section IV.E.8 and the guidance in NUREG-0654/FEMA-REP-1, Revision 1, NSIR/DPR-ISG-01 Interim Staff Guidance and Supplement 1 to NUREG-0737, Section 8.4.1.a. Verification that a future revision for the COL application incorporates the acceptable changes found in RAI 13.03-101 is being tracked as a **Confirmatory Item 13.03-80**.

### **13.3C.8.20 EOF Location**

**Technical Information in the Emergency Plan: (8.4.1.b of NUREG-0737, Supplement 1) (50.34(f)(2)(xxv))** Section II.H.1.d describes the EOF as about 1,524 meters (m) (5,000 feet [ft]) from Fermi 3 on owner-controlled property. The EOF is designed for habitability in the event of a postulated accidental radioactive release from Fermi 3. The design includes shielding (with a protection factor of 20), an HVAC system with HEPA filters, and portable airborne radioactivity and area radiation monitors that alarm locally to assure that personnel exposures to radiological hazards do not exceed 10 CFR Part 20 limits. The staff requested additional information in RAI 13.03-08.08 regarding the location of the EOF in Figure I-3. In the response to this RAI dated December 7, 2009 (ML093440828), the applicant states that the EOF is located approximately 1,829 m (6,000 ft) southwest of Fermi 2 and approximately 1,524 m (5,000 ft) southwest of the Fermi 3 reactor building. In RAI 13.03-08.07, the staff requested additional information regarding whether the EOF should be included within the owner-controlled area in Figures I-3 and II.J-1. The applicant's response dated December 7, 2009 (ML093440828), states that the EOF is located in the NOC, which is located on "owner-controlled property" but is not within the owner-controlled area.

**Technical Evaluation: (8.4.1 of NUREG–0737, Supplement 1b) (50.34(f)(2)(xxv))** The staff finds the additional information and textual revisions to the Fermi 3 Emergency Plan submitted in responses to RAIs 13.03-08.07 and 13.03-08.08 acceptable, because they conform to the guidance in Supplement 1 to NUREG–0737, Section 8.4.1.b. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan incorporated the additional information and textual revisions in the responses to RAIs 13.03-08.07 and 13.03-08.08. The staff finds that the Fermi 3 Emergency Plan adequately describes the EOF location. This information is acceptable because it conforms to the requirements in 10 CFR 50.34(f)(2)(xxv) and the guidance in Supplement 1 to NUREG–0737, Section 8.4.1.b.

#### **13.3C.8.21 EOF Size**

**Technical Information in the Emergency Plan: (8.4.1.c of NUREG–0737, Supplement 1)** Section II.H.1.d states that the size of the EOF is intended to serve as a workspace that accommodates about 40 people, including 25 Detroit Edison personnel and nine NRC representatives. The EOF also has available workspace for representatives from offsite government agencies including the State of Michigan, Monroe and Wayne Counties, and the Province of Ontario, who may send representatives if they deem it necessary. In RAI 13.03-08.06, the staff requested additional information regarding how the minimum size of 244 square meters ( $m^2$ ) (2,625 square feet [ $ft^2$ ]) for the EOF meets NUREG-0696 parameters for 40 persons. In the response to this RAI dated December 7, 2009 (ML093440828), the applicant stated that the description of the EOF floor area in Section II.H.1.d, is inaccurate; the floor area exceeds  $279 m^2$  (3,000  $ft^2$ ) and thus meets the NUREG–0696 criterion.

**Technical Evaluation: (8.4.1.c of NUREG–0737, Supplement 1)** The staff finds the additional information and textual revisions to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-08.06 acceptable, because they conform to the guidance in Supplement 1 to NUREG-0737, Section 8.2.1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan the additional information and textual revisions provided in the response to RAI 13.03-08.06. The staff finds that the Fermi 3 Emergency Plan adequately describes the size of the EOF. This information is acceptable because it conforms to the guidance in Supplement 1 to NUREG-0737, Section 8.2.1.

#### **13.3C.8.22 EOF Structural Capabilities**

**Technical Information in the Emergency Plan: (8.4.1.d of NUREG–0737, Supplement 1)** In SRP Section 13.3.III, “Review Procedure,” Item 9 states that if an application is for an additional reactor at an operating reactor site, and the application proposes to incorporate and extend elements of the existing emergency planning program to the new reactor, those existing elements should be considered acceptable and adequate. Therefore, the building code of the EOF is acceptable because it incorporates elements of the existing emergency plan for Fermi 2.

**Technical Evaluation: (8.4.1.d of NUREG–0737, Supplement 1)** The staff finds the Fermi 3 Emergency Plan adequately describes the EOF structural capabilities. This information is acceptable because it conforms to the guidance in Supplement 1 to NUREG-0737, Section 8.4.1.d.

### **13.3C.8.23**    *EOF Environmental Requirements*

#### **Technical Information in the Emergency Plan: (8.4.1.e of NUREG–0737, Supplement 1)**

Section II.H.1.d states that the EOF design is intended to accommodate habitability in the event of a postulated radioactive release from an accident. The design includes shielding with a protection factor of 20, an HVAC with HEPA filters, and portable airborne radioactivity and area radiation monitors that alarm locally to ensure that personnel exposures do not exceed the 10 CFR Part 20 radiation limits.

**Technical Evaluation: (8.4.1.e of NUREG–0737, Supplement 1)** The staff finds that the Fermi 3 Emergency Plan adequately describes the environmental habitability of the EOF. This information is acceptable because it conforms to the guidance in Supplement 1 to NUREG-0737, Section 8.4.1.e.

### **13.3C.8.24**    *EOF Voice and Data Communications and Information Collection*

#### **Technical Information in the Emergency Plan: (8.4.1.f of NUREG–0737, Supplement 1)**

Section II.H.1.d states that the EOF has extensive communications extending to the TSC, offsite Radiological Teams, the NRC, offsite EOCs, and intra-facilities. Section II.F.1 describes these communications systems that also include facsimiles, computer transmissions, and electronic transfer capabilities, in addition to several radio networks that support communications with radiological monitoring teams, maintenance teams, Nuclear Security personnel, and others and provide backup to offsite government and support agencies. Each offsite RET vehicle has a radio with the radio control console for directing their actions; the radio is located in the EOF/RET Dispatch Room. If telephones are not operative, the EOF Security Advisor has direct radio contact with the Michigan State Police or the Monroe County Sheriff, in addition to the telephone-to-radio capability of the Nuclear Security System.

Section II.H.1.d states that the EOF has backup power capabilities to normal commercial power, so a loss of commercial power is not expected to impact the communications equipment. The backup power sources include an electrical generator, uninterruptible power supply (UPS) systems, and a direct current (dc) battery.

**Technical Evaluation: (8.4.1.f of NUREG–0737, Supplement 1)** The staff finds the Fermi 3 Emergency Plan adequately describes the EOF voice and data communications and information collection capabilities. This information is acceptable because it conforms to the guidance in Supplement 1 to NUREG-0737, Section 8.4.1.f.

### **13.3C.8.25**    *EOF Information Storage and Analysis*

#### **Technical Information in the Emergency Plan: (8.4.1.g of NUREG–0737, Supplement 1)**

Section II.H.1.d states that the display capability in the EOF includes a workstation that is capable of displaying the parameters required for an SPDS. Section II.H.1.d also states that the EOF technical data system receives, stores, processes, and displays information that is sufficient for assessing actual and potential onsite and offsite environmental consequences of an emergency. Section II.H.4, "Onsite Monitoring Systems," states that the SPDS provides a display of plant parameters that may be used to assess the operation status in the CR, TSC, and EOF; to promote the exchange of information between these facilities; and to assist in the decision making process. Subsection 7.1.5.1.2 of the ESBWR DCD Tier 2 states that this system collects and archives data to display the SPDS in the main CR.

**Technical Evaluation: (8.4.1.g of NUREG–0737, Supplement 1)** The staff finds the Fermi 3 Emergency Plan adequately describes the EOF information storage and analytical capabilities. This information is acceptable because it conforms to the guidance in Supplement 1 to NUREG-0737, Section 8.4.1.g.

#### **13.3C.8.26    *EOF Plant Records***

**Technical Information in the Emergency Plan: (8.4.1.h of NUREG–0737, Supplement 1)** Section II.H.1.d states that EOF personnel have access to up-to-date as-built drawings, schematics, and diagrams of structures and systems to the component level; technical specifications; plant and emergency operating procedures, FSAR, state and local emergency management plan, offsite population data, evacuation plans, and EIPs either as hard copies or electronically.

**Technical Evaluation: (8.4.1.h of NUREG–0737, Supplement 1)** The staff finds that the Fermi 3 Emergency Plan adequately describes the availability of plant records in the EOF. This information is acceptable because it conforms to the guidance in Supplement 1 to NUREG-0737, Section 8.4.1.h.

#### **13.3C.8.27    *EOF Industrial Security***

**Technical Information in the Emergency Plan: (8.4.1.j of NUREG–0737, Supplement 1)** In SRP Section 13.3.III, “Review Procedure,” Item 9 states that if an application is for an additional reactor at an operating reactor site, and the application proposes to incorporate and extend elements of the existing emergency planning program to the new reactor, those existing elements should be considered acceptable and adequate. Therefore, the industrial security provided for the EOF is acceptable because it incorporates elements of the existing emergency plan for Fermi 2.

**Technical Evaluation: (8.4.1.j of NUREG–0737, Supplement 1)** The staff finds the Fermi 3 Emergency Plan adequately describes the industrial security provided for the EOF. This information is acceptable because it conforms to the guidance in Supplement 1 to NUREG-0737, Section 8.4.1.j.

#### **13.3C.8.28    *EOF Human Factors***

**Technical Information in the Emergency Plan: (8.4.1.k of NUREG–0737, Supplement 1)** Section 18.1 of the ESBWR DCD Tier 2 states that the HFE programs address the main control room, remote shutdown system, TSC, EOF displays, and Local Control Stations that have safety-related functions or are defined by task analyses. Section 18.2.1 states that the HFE design team will establish the HFE Program and the MMIS and HFE Implementation Plan, which provide the direction and integration of HFE-related design implementation and evaluation activities. Additional details of the HFE Plan and its implementation are described in detail in Chapter 18 of the ESBWR DCD Tier 2.

**Technical Evaluation: (8.4.1.k of NUREG–0737, Supplement 1)** The staff finds that the Fermi 3 Emergency Plan and Chapter 18 of the ESBWR DCD Tier 2 EOF HFE, to adequately describe the EOF HFE functions. This information is acceptable because it meets the guidance in Supplement 1 to NUREG-0737, Sections 8.4.1.k.

### **13.3C.8.29**    *EOF Activation and Staffing*

**Technical Information in the Emergency Plan: [H.4] (8.4.1.i of NUREG–0737, Supplement 1)** Section II.H.3 states that the EOF is staffed and activated for Alert and higher declarations using EIPs and Table II.B-1 position staffing and times. Table II.B-1 lists the EOF staffing that includes the Communicator, Emergency Officer, Radiation Protection Coordinator, and RET Sampler or Radiation Protection Technician, all with 60-minute augmentation times. Section II.H.1.d states that the EOF is where the Emergency Officer directs a staff in overall company emergency activities. Section II.B.1, “Onsite Emergency Organization,” states that the Emergency Officer is a qualified senior manager. The augmentation time is 60 minutes for EOF personnel; Table 2 in Supplement 1 to NUREG–0737 lists 30- and 60-minute augmentation times. In RAI 13.03-08.05, the staff requested additional information regarding how the 60-minute augmentation time for the EOF staffing meets the goal of 30 and 60 minutes in Table 2 of Supplement 1 to NUREG–0737. The applicant’s response dated December 7, 2009 (ML093440828), states that Table II.B-1 is based on NRC guidance in NUREG–0654/FEMA-REP-1, Revision 1 (Table 2 in NUREG–0737, Supplement 1) and Revisions 2 and 3 of RG1.101. The applicant stated that Table II.B-1 includes enhancements resulting from multiple years of experience gained through operating the existing Fermi 2. In addition, the proposed ERO staffing requirements can look to the proven effectiveness of the existing Fermi 2 ERO’s response to multiple drills, exercises, and emergency events.

**Technical Evaluation: [H.4] (8.4.1.i of NUREG–0737, Supplement 1)** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-08.05 acceptable because they conform to the guidance in Supplement 1 to NUREG-0737, Section 8.4.1.i. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan included the additional information and textual revision provided in the response to RAI 13.03-08.05. The staff finds that the Fermi 3 Emergency Plan adequately addresses the EOF activation and staffing. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1 and Supplement 1 to NUREG-0737, Section 8.4.1.i.

### *Other Emergency Facilities and Equipment*

### **13.3C.8.30**    *Onsite Monitoring System*

**Technical Information in the Emergency Plan: [H.5]** Section II.H.4, “Onsite Monitoring Systems,” states that Detroit Edison maintains and operates onsite monitoring systems needed to provide data that are essential for initiating emergency measures and performing accident assessments. The systems are monitored for geophysical phenomena, radiological conditions, plant processes, and fire hazards. The seismic monitoring system measures and records the acceleration of the structure and remains in a standby mode until an earthquake causes the system to activate the recording capabilities. Offsite seismic data can also be obtained from the United States Geological Survey’s National Earthquake Information Center or the University of Michigan at Ann Arbor. Section 3.7.4, “Seismic Instrumentation,” of the ESBWR DCD Tier 2 provides details of the system. The RMS data are linked to the plant computer, which allows the data to be passed to the TSC and EOF and provides the needed radiation levels and activity to determine source terms for dose projection procedures. The RMS includes area radiation monitors that directly measure in-plant exposure rates and also include portable continuous air monitors that measure airborne particulates and iodine at various locations. Process monitors are used to measure radioactive noble gas, iodine, and particulates in effluent, gaseous, and liquid streams. High-range accident RMS measure radiation levels at selected locations,

including the containment. The process monitoring system provides real-time meteorological data for calculating offsite radiological dose assessments. The emergency response portion of the system interfaces with the meteorological data acquisition system to provide and store data used to project offsite doses. There is a system terminal access in the CR, OSC, TSC, and EOF. The fire detection system is designed to detect visible and invisible smoke and combustion products and/or heat in designated plant areas. Section 9.5.1, "Fire Protection System," of the ESBWR DCD Tier 2 describes the fire protection system in detail. Section 12.3.4, "Area Radiation and Airborne Radioactivity Monitoring Instrumentation," of the ESBWR DCD Tier 2 provides details of the radiological monitoring instrumentation. In addition to permanent monitors, portable radiation monitoring and sampling equipment is maintained with other items dedicated for emergency response, which is described in emergency plan administrative procedures and radiation protection procedures. Section II.H.5, "Access to Data from Monitoring Systems," states that a system of continuous air samplers and environmental monitoring dosimeters surrounding the site monitors offsite environmental radiation, and the Fermi 3 offsite dose calculation manual (ODCM) includes a description of the system.

**Technical Evaluation: [H.5]** The staff finds that the Fermi 3 Emergency Plan adequately describes the onsite monitoring systems. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.8.31 Provisions to Acquire Data from Offsite Sources**

**Technical Information in the Emergency Plan: [H.6]** Section II.H.5 states that Detroit Edison acquires meteorological data from the National Weather Service (NWS) during periods when the primary system is unavailable. Back-up seismic data is available from the U.S. Geological Survey. Other data sources, such as commercial media outlets, may also be used. Offsite environmental radiological monitoring equipment includes a series of continuous air samplers and environmental monitoring dosimeters that surround the facility. The Fermi 3 ODCM describes these monitoring systems. The EOF laboratory is the designated facility for receiving and analyzing environmental samples during emergencies, as are the in-plant Chemistry and Radiation Protection Laboratories. The calibration and operational readiness of all laboratory equipment is assured in accordance with plant procedures. In addition to the monitoring systems, equipment, and radiological laboratory facilities provided at the plant, Detroit Edison maintains arrangements for back-up radiological monitoring and analytical support from offsite organizations. Section II.A of the Emergency Plan describes these arrangements and the capabilities of the facilities. Appendix 2 of this Plan includes pertinent agreements from these support organizations. Section II.C.3 of this Plan also provides information concerning available laboratory facilities.

**Technical Evaluation: [H.6]** The staff finds that the Fermi 3 Emergency Plan adequately describes data acquisition from or emergency access to offsite monitoring and analytical equipment. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.8.32 Offsite Radiological Monitoring Equipment**

**Technical Information in the Emergency Plan: [H.7]** Section II.H.6, "Offsite Radiological Monitoring Equipment," states that offsite radiological monitoring equipment is available for the RETs to assess offsite radiological consequences. Section II.H.6 states that the types of

radiological monitoring equipment are described in the EIPs and the radiation protection procedures.

**Technical Evaluation: [H.7]** The staff finds that the Fermi 3 Emergency Plan adequately describes the offsite radiological monitoring equipment in the vicinity of the nuclear facility. This information is acceptable because it conforms to the guidance in NUREG–0654/FEMA-REP-1, Revision 1.

#### **13.3C.8.33    *Meteorological Instrumentation***

**Technical Information in the Emergency Plan: [H.8]** Section II.H.7, “Meteorological Instrumentation and Procedures,” states that Fermi 3 shares its meteorological monitoring system with Fermi 2 and thus meets the requirements of RG 1.23, “Meteorological Monitoring Programs for Nuclear Power Plants.” Both primary and secondary sensors are located on an onsite, 60-meter tower at elevations of 10 and 60 meters, respectively. These sensors monitor wind speed and direction, temperature, delta temperature, Pasquill stability class, and sigma theta. Only the primary system also monitors the dew point and precipitation. Instantaneous and various averaged data are available from dial-up terminals in the CR, TSC, and EOF. If any parameter is unavailable, supplementary data are available from the corporate computer system. In addition, there is a contract with a vendor to provide weather and forecast data; and NWS data are also available by contacting the nearest NWS office.

In addition, Fermi 3 uses the National Oceanic and Atmospheric Administration (NOAA) gauging station at the Fermi 2 intake canal for hydrological monitoring, which records Lake Erie levels. Additional NOAA data are available from gauging stations at Gibraltar, Michigan, about 16 km (10 mi) north-northeast of the plant on the Detroit River; and at Toledo, Ohio, about 35 km (22 mi) south-southwest of the plant on Lake Erie. These data can be obtained by contacting the Toledo Coast Guard.

Additional detailed information describing the Fermi 3 meteorological systems and equipment is in Section 2.3.3 of this SER.

**Technical Evaluation: [H.8]** The staff finds that the Fermi 3 Emergency Plan adequately describes the meteorological instrumentation and procedures and provisions for obtaining representative current meteorological data from other sources. This information is acceptable because it conforms to the guidance in NUREG–0654/FEMA-REP-1, Revision 1. Additional details on the staff’s review of the Fermi 3 meteorological systems and equipment are in Section 2.3.3 of this SER.

#### **13.3C.8.34    *Inspection/Inventory of Emergency Equipment***

**Technical Information in the Emergency Plan: [H.10]** Section II.H.9, “Emergency Equipment and Supplies / Emergency Kits,” states that emergency response facilities and equipment are inspected and inventoried according to emergency plan administrative procedures and other plant procedures. There are quarterly inventories of all emergency equipment and supplies as well as after each use in an exercise, drill, or emergency. During the inventory, radiological monitoring equipment is checked to verify that the required calibration period and location are in accordance with the inventory lists. Surveillances also include an operational check of instruments and equipment, which have a shelf life that is identified, checked, and replaced as

necessary. Detroit Edison maintains sufficient reserves of instruments and equipment to replace any items that are removed from emergency kits for calibration or repair.

**Technical Evaluation: [H.10]** The staff finds that the Fermi 3 Emergency Plan adequately describes provisions for inspecting inventory and operationally checking emergency equipment and instruments at least once each calendar quarter and after each use. The staff also finds that sufficient reserves of instruments and equipment to replace any that are removed from the inventory for calibration or repair. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.8.35    *Emergency Kits***

**Technical Information in the Emergency Plan: [H.11]** Section II.H.9 provides a list of general categories of emergency equipment including communications equipment, protective clothing, respiratory protection equipment, environmental monitoring equipment, decontamination supplies, and miscellaneous tools. The specific equipment and supplies are described in emergency plan administrative procedures and radiation protection procedures.

**Technical Evaluation: [H.11]** The staff finds that the Fermi 3 Emergency Plan adequately describes the general categories of emergency kits including protective equipment, communications equipment, radiological monitoring equipment and emergency supplies. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.8.36    *Location to Coordinate Field Monitoring Data***

**Technical Information in the Emergency Plan: [H.12]** Section II.H.10, "Receipt of Field Monitoring Data," states that radiological assessment personnel in the EOF, when the EOF is operational, are designated as the central point for the receipt and analysis of offsite radiological field monitoring data results and sample media analysis results that are collected by the RET personnel. Sampling and analysis equipment is available to determine the activity of samples.

**Technical Evaluation: [H.12]** The staff finds that the Fermi 3 Emergency Plan adequately describes the establishment of a central point for the receipt and analysis of all field monitoring data and coordination of sample media at the EOF Environmental Lab. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.8.37    *Facilities and Supplies for Emergency Medical Treatment***

**Technical Information in the Emergency Plan: {Appendix E, Section IV.E.4}** Section II.L.2, "Onsite First Aid Capability," describes that at least two first aid qualified personnel are onsite on a 24-hour basis. The onsite nurse is responsible for first aid treatment and the decision for offsite medical assistance during normal hours of operation. The Plant First Responder will perform these duties during off hours. Additional first aid support is available from operations personnel, personnel in the CR or OSC, and Radiation Protection Personnel if necessary. The Onsite medical facility at Fermi 3 is designed to provide basic first responder aid to injured or ill personnel prior to arrival of offsite medical support. Supplies and equipment maintained at the onsite medical facility are described in emergency plan administrative procedures. Section 13.3, "Emergency Planning," of the ESBWR DCD Tier 2 and Section 13.3 of the Fermi 3 FSAR state that decontamination facilities and supplies for use by on-site personnel are

provided in the service building adjacent to the main change rooms. Section II.K.6, “Contamination Control Measures,” states that personnel that are contaminated are directed to the appropriate onsite or offsite decontamination facilities. Section II.J.3, “Personnel Monitoring and Decontamination,” states that personnel monitoring and decontamination is performed in accordance with radiation protection procedures.

**Technical Evaluation: {Appendix E, Section IV.E.4}** The staff finds the Fermi 3 Emergency Plan adequately describes the sites facilities and medical supplies available for emergency first aid treatment. This information is acceptable because it meets the requirements in 10 CFR Part 50, Appendix E, Section IV.E.4.

### **13.3C.8.38     *Maintenance of Emergency Equipment and Supplies***

**Technical Information in the Emergency Plan: {Appendix E, Section IV.G}** As stated in Subsection 13.3C.8.34 of this attachment, Section II.H.9 of the Fermi 3 Emergency Plan describes and evaluates the emergency response facilities, equipment inspections, and inventory programs and administrative procedures. Section II.P.3, “Plan Reviews and Updates,” states that the Supervisor of Emergency Planning is responsible for an annual review of the Emergency Plan to ensure that the plan and its supporting agreements are current. The Supervisor of Emergency Planning also identifies topics for consideration and possible changes to the plan. Section II.P.4, “Distribution of Revised Plans,” states that the Supervisor of Emergency Preparedness determines which recommended changes are incorporated into the Emergency Plan, including changes to implementation or administrative procedures. Any revisions should be in accordance with the plant review and approval processes. The EPIPs are distributed on a controlled basis to the ERFs and other agencies in accordance with the plant’s document control distribution process.

**Technical Evaluation: {Appendix E, Section IV.G}** The staff finds that the Fermi 3 Emergency Plan adequately describes the provisions for ensuring that the plan remains current—such as maintaining up-to-date implementation procedures and emergency equipment and supplies. The staff finds the plan acceptable because it meets the requirements in 10 CFR Part 50, Appendix E, Section IV.G.

### **13.3C.8.39     *ERDS Description, Testing, and Activation***

**Technical Information in the Emergency Plan: {Appendix E, Section VI}** Section II.E.1.b, “Offsite Emergency Response Organizations,” states that ERDS will be initialized within 1 hour of the declaration of an Alert or higher. Section II.H.1.b, “Technical Support Center,” states that CR communications with the NRC include the transmission of information using the ERDS.

Subsection 9.5.2.5-4-A, “Offsite Interfaces (2),” of the ESBWR DCD Tier 2 states that the applicant will describe the methods of communications from the CR, TSC, and EOF to the NRC, including the establishment of the ERDS in accordance with NUREG–0696. Subsection 7.1.4.2, “N-DCIS Nonsafety-Related Design Bases Summary,” of the ESBWR DCD Tier 2 states that the design bases for the N-DCIS includes providing secure data communications to authorized external systems including the TSC, EOF, and ERDS. Subsection 7.1.4.8.4, “Plant Computer Functions (PCF) Description Summary,” of the ESBWR DCD Tier 2 states that the PCF provides support functions for secure communications to the TSC, EOF and ERDS. Subsection 7.5.1.2, “System Description,” of the ESBWR DCD Tier 2 states that the non-safety part of post-accident monitoring (PAM) includes the SPDS, the emergency response facilities

information systems, and the ERDS. Subsection 2.3.3.1.5, "Data Reduction and Transmission," of the Fermi 3 FSAR states that the NRC can receive selected meteorological data through the ERDS. Section II.F.1.a.5 describes the ERDS as a communication system from the utility to the NRC. Section II.N.2, "Drills," states that communications between the CR, TSC, and EOF to NRC Headquarters and Regional Operations Centers shall be tested monthly.

**(10 CFR 50.72(a)(4))** Section II.E.1.b states that the ERDS will be initialized within 1 hour of the declaration of an Alert or higher.

**Technical Evaluation: {Appendix E, Section VI} (10 CFR 50.72(a)(4))** The staff finds that the Fermi 3 Emergency Plan adequately describes the ERDS as a direct near real-time electronic data link between the licensee's onsite computer system and the NRC Operations Center that provides automated transmission of a limited data set of selected parameters and an established testing frequency. This information is acceptable because it meets the requirements in 10 CFR Part 50, Appendix E, Section VI. The staff also finds that the Fermi 3 Emergency Plan adequately describes the activation of the ERDS and the regulatory requirements in 10 CFR 50.72(a)(4).

#### **13.3C.8.40 ERO Augmentation at Alternative Facility**

**Technical Information in the Emergency Plan: {Appendix E, Section VI.E.8.b, c & d}** The Fermi 3 Emergency Plan, Section II.H.I.d describes an Alternate EOF (AEOF) located at the Western Wayne Center, approximately 22 miles northwest of Fermi 3. The facility has adequate communications equipment and sufficient space to accommodate the additional personnel required for continuity of dose projection and decision making capability, including coordination of the offsite teams. Portable equipment is provided for personnel to perform their assigned functions. Activation and support functions of the AEOF are described in emergency plan implementing procedures. The Fermi 2 Emergency Response Plan, (Revision 40 page H-4) identifies the same AEOF located at the Western Wayne Center. In RAI 13.03-94 the staff requested additional information as to whether the space available in the Western Wayne Center has been evaluated for an event that would activate both the Fermi 2 and 3 EROs, such as a security event, to ensure there is sufficient space to accommodate the additional personnel required by both EROs. The staff requested the applicant provide documentation of the Alternate EOF available space evaluation and revise emergency plan Alternate EOF description to include the capability to support both Fermi 2 and 3 ERO teams in the event of a site event activating both units EROs. In the applicant's response dated December 6, 2013 (ML13344B028) the applicant provided an adequate description of the evaluation performed to demonstrate the AEOF would have adequate space to support activation and staffing of both the Fermi 2 and 3's EROs.

**Technical Evaluation: {Appendix E, Section VI.E.8.b, c & d }** The staff finds the additional information submitted in response RAI 13.03-94 to be acceptable because it conforms to the guidance in NSIR/DPR-ISG-01 Interim Staff Guidance, Emergency Planning for Nuclear Power Plants Section IV.D. The staff finds that the Fermi 3 Emergency Plan adequately describes the AEOF activation, support functions, location, communications equipment, space to accommodate the additional personnel required for continuity of dose projection, decision making capability, coordination of the offsite teams and portable equipment. This information is acceptable because it meets the requirements in 10 CFR Part 50, Appendix E, Section IV.E.8 (c) & (d) and conforms to the guidance in NSIR/DPR-ISG-01 Interim Staff Guidance.

Verification that a future revision of the COL application incorporates the acceptable changes found in RAI 13.03-68 is being tracked as **Confirmatory Item 13.03-81**.

#### **13.3C.8.41 Conclusion**

The staff reviewed the Fermi 3 Emergency Plan and its provisions for emergency facilities and equipment. The staff finds that the plan is acceptable and meets the requirements of 10 CFR 50.34; 10 CFR 50.47(b)(8); 10 CFR 5072(a)(4); 10 CFR Part 50, Appendix E, Sections IV.E, G, and VI; and the guidance in NUREG-0654/FEMA-REP-1, Planning Standard H; and NUREG-0737, Supplement 1.

#### **13.3C.9 Accident Assessment**

##### **13.3C.9.1 Regulatory Basis**

In order to determine whether the proposed emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(9), the staff evaluated the plan against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1, Revision 1. The staff also evaluated the proposed emergency plan against applicable regulatory requirements related to the area of "Accident Assessment" in Appendix E to 10 CFR Part 50 and 10 CFR 50.34.

##### **13.3C.9.2 Initiating Conditions for Emergency Classes**

**Technical Information in the Emergency Plan:** [I.1] Section II.I.1, "Parameters Indicative of Emergency Conditions," states that plant system and effluent parameter values are utilized to determine accident severity and subsequent emergency classification, as described in Section II.D of this Emergency Plan. Environmental and meteorological events are also determining factors in emergency classifications. EPIP "Emergency Classification" identifies plant systems and effluent parameters that are indicative of off-normal or accident conditions and includes the various indications that correspond to the emergency initiating conditions. Section II.H describes the instrumentation and equipment capabilities available for each emergency response facility.

Evaluation of plant conditions is accomplished through the monitoring of plant parameters from indications both in the CR and within the plant. Some of the more important plant parameters to be monitored in the CR are assembled into a single display location (i.e., the SPDS). As indicated earlier, the SPDS monitors parameters relative to the plant design such as the reactor coolant system pressure, containment pressure, reactor power, safety system status, containment radiation level, and effluent monitor readings.

**Technical Evaluation:** [I.1] The staff finds that the Fermi Emergency Plan adequately identifies plant system and effluent parameter values characteristic of a spectrum of off-normal conditions and accidents, and identifies the plant parameter values or other information which correspond to the emergency action level initiating conditions. The staff's technical evaluation of parameter values and the corresponding emergency classification level is discussed in Subsection 13.3C.4.2 of this SER. Therefore, the staff finds this information acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### 13.3C.9.3 *Capability to Continuously Assess an Accident*

**Technical Information in the Emergency Plan: [I.2] (10 CFR 50.34(f)(2)(xvii))** Section II.I.1 states that the resources available to provide initial and continuing information for an accident assessment throughout the course of an event include plant parameter display systems, a liquid and gaseous sampling system, area and process radiation monitoring systems, and the accident radiation monitoring system (which includes the high-range containment radiation monitors). Section II.I.2, "Plant Monitoring Systems," states that the initial values and continuing assessments of plant conditions through the course of an emergency may rely on reactor coolant sample results, radiation and effluent monitors, in-plant iodine instrumentation, and containment radiation monitoring. Section II.I.8, "Measuring Radioiodine Concentrations," states that Detroit Edison equips RETs with portable air samplers, appropriate sample media, and analytical equipment capable of detecting radioiodine concentrations at or below 1E-7 microcuries per cubic centimeter ( $\mu\text{Ci/cc}$ ) under field conditions. Appendix 4, "Radiological Monitoring and Assessment," of the Emergency Plan provides additional information regarding plant monitoring systems that are significant to ongoing and continuous radiological assessments.

In RAI 13.03-09-02, the staff requested information regarding post-accident sampling capabilities. The applicant's response dated December 7, 2009 (ML093440828), states that post-accident sampling capabilities are addressed in FSAR Section 9.3. In addition, the applicant provided a revised Section II.I.1 that includes a reference to Section 9.3 of the FSAR.

Subsection 9.3.2.2, "System Description," of the Fermi 3 FSAR states that the post-accident sampling program meets the requirements of NUREG-0800 Section 9.3.2 for actions that are required in lieu of a post-accident sampling system. The Post-Accident Sampling Program relies on installed post-accident monitoring instrumentation described in Section 7.5 of the DCD Tier 2 and does not require the capability to obtain and analyze highly radioactive coolant samples, although such samples may be used for emergency classification as well. Plant procedures address obtaining reactor coolant samples from the reactor water cleanup/shutdown cooling (RWCU/SDC) sample line and suppression pool samples from the fuel and auxiliary pools cooling system (FAPCS) sample line, both using the reactor building sample station; and containment atmosphere samples in accordance with the DCD Tier, 2 Section 11.5, "Process Radiation Monitoring System," which states that the process radiation monitoring system (PRMS) allows for the determination of gaseous and liquid process and effluent streams radioactive material content during normal and accident conditions. Subsection 7.5.2.2, "Containment Monitoring System," of the DCD Tier 2 describes the containment monitoring system for gaseous sampling and effluent radiation monitoring and the parameters that are monitored during normal and accident conditions.

**Technical Evaluation: [I.2] (10 CFR 50.34(f)(2)(xvii))** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-09-02 to be acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that the Revision 2 of the Fermi 3 Emergency Plan incorporated the information and textual changes provided in the response to RAI 13.03-09-02. The staff finds that the Fermi 3 Emergency Plan adequately describes the methods of making initial and continuing assessment of plant conditions through the course of an accident. This is acceptable because it meets the requirements in 10 CFR 50.34(f)(2)(xvii) and conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

Additional technical details on the staff's review of the Post-Accident Sampling Program is in Section 9.3.2 of this SER, which concludes that the Program meets the guidance in SRP Subsection 9.3.2.I.6 for actions required in lieu of a post-accident sampling system.

#### **13.3C.9.4      *Capability to Determine Source Term***

##### **Technical Information in the Emergency Plan: [I.3a] {Appendix E, Section IV.E.2}**

Section II.I.3, "Determination of Source Term and Radiological Conditions," describes the use of source term estimations. Core damage estimations provide a means of realistically differentiating between the four (4) damage states (i.e., no damage, clad failure, fuel melt, and vessel melt-through) to: 1) evaluate the status of the fission product barriers and how their status relates to the risks and possible consequences of the accident; 2) provide input on core configuration (i.e., coolable or uncoolable) for prioritization of mitigating activities; 3) determine the potential quality (type) and/or quantity (percent) of source terms available for release in support of projected offsite doses and PARs; 4) provide information that quantifies the severity of an accident in terms that can be readily understood and visualized; and 5) support the determination of radiological protective actions that could be considered for long term recovery activities. The offsite does assessment software, Raddose-V, relates various measured parameters, including containment radiation monitor readings, to the source term available for release within plant systems; and effluent monitor readings, to the magnitude of the radioactive materials available for release.

Appendix 4, Section 2.1 "Source Term Data Input" of the Emergency Plan states that the typically available monitors used to aid in determining an event's potential source term includes containment high range radiation monitors, containment bypass monitors, plant vent monitors and steam line monitors.

**Technical Evaluation: [I.3.a] {Appendix E, Section IV.E.2}** The staff finds that the Fermi 3 Emergency Plan adequately establishes methods, techniques and equipment to be used for determining the source terms (i.e., releases of radioactive materials) within plant systems based on plant system parameters and effluent monitors and its magnitude. This is acceptable because it meets the requirements of Appendix E, Section IV.E.2 and conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1,

#### **13.3C.9.5      *Capability to Determine the Magnitude of a Radiological Release***

##### **Technical Information in the Emergency Plan: [I.3b] {Appendix E, Section IV.B}**

Section II.I.3 describes Raddose-V, the offsite does assessment software, as the method/technique used to determine the magnitude of a radiological release. The software relates various measured parameters, including containment radiation monitor readings, to the source term available for release within plant systems; and effluent monitor readings, to the magnitude of the radioactive materials available for release.

Appendix 4, "Radiological Monitoring and Assessment," describes the means for relating various measured parameters, including containment radiation monitor readings, to the source term available for release within plant systems; and also describes the means for relating various measured parameters, including effluent monitor readings, to the magnitude of the release of radioactive materials.

**Technical Evaluation: [I.3.b] {Appendix E, Section IV.B}** The staff finds that the Fermi 3 Emergency Plan adequately establishes methods and techniques to be used for determining the magnitude of releases of radioactive material within plant systems based on plant system parameters and effluent monitors. This is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1, and meets the requirements of Appendix E, Section IV.B to 10 CFR Part 50.

### **13.3C.9.6      *Relationship Between Effluent Monitors and Exposure***

**Technical Information in the Emergency Plan: [I.4] {Appendix E, Section IV.A.4} {Appendix E, Section IV.B}** Section II.I.4, "Relationship Between Effluent Monitor Reading and Exposure and Contamination Levels," states that the EIPs include the relationship between effluent monitor readings and onsite and offsite exposures and contamination for various meteorological conditions. Appendix 4 provides a description of how the offsite dose assessment program uses dose and dose rate determinations based on plant effluent monitors, and contamination estimates based on deposition assumptions and meteorological conditions in making dose projections using effluent monitors and exposure data.

**Technical Evaluation: [I.4] {Appendix E, Section IV.A.4} {Appendix E, Section IV.B}** The staff finds that the Fermi 3 Emergency Plan adequately establishes the relationship between effluent monitor readings and onsite and offsite exposures and contamination for various meteorological conditions and how the data is used to make dose projections. This is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1, and the applicable requirements in Appendix E to 10 CFR Part 50.

### **13.3C.9.7      *Meteorological Information***

**Technical Information in the Emergency Plan: [I.5]** Section II.H.7 states the meteorological monitoring system at Fermi 3 is shared with Fermi 2. The meteorological monitoring system meets the requirements of RG 1.23 and provides the capability for predicting atmospheric effluent transport and diffusion. The meteorological system has the capability of being remotely interrogated by multiple users, onsite or offsite. Meteorological data is available in the CR, TSC, and EOF from the plant computer network system and dial-up terminals.

Additional detailed information describing the Fermi 3 meteorological systems and equipment is in Section 2.3.3 of this SER.

**Technical Evaluation: [I.5]** The staff finds that the Fermi 3 Emergency Plan adequately describes the capability of acquiring and evaluating meteorological information from both onsite and offsite locations. This is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.9.8      *Projecting Dose When Instrumentation is Inoperable***

**Technical Information in the Emergency Plan: [I.6]** Section II.I.6, "Determination of Release Rates and Projected Doses When Installed Instruments are Inoperable or Off-Scale," states that EIPs establish processes for estimating release rates and projected doses if the associated instrumentation is inoperable or off-scale. The capability for projecting offsite dose and dose rates due to actual or potential airborne releases is via the Raddose-V computer program interfaced with the plant process computer. Raddose-V is available in the CR, TSC, and EOF.

The manual version of Raddose-V can be available in other onsite/offsite facilities and locations. The basic methodology used to calculate the offsite radiological dose and dose rates was developed by and agreed upon by the applicant, Entergy Nuclear (Palisades), and American Electric Power (D.C. Cook) and accepted by the State of Michigan Department of Environmental Quality for use in emergency planning.

**Technical Evaluation: [I.6]** The staff finds that the Fermi 3 Emergency Plan adequately establishes the methodology for determining the release rate/projected doses if the instrumentation used for assessment is off-scale or inoperable. This is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.9.9      *Field Monitoring Capability***

**Technical Information in the Emergency Plan: [I.7]** Section II.I.7, “Field Monitoring Capability,” states that the RETs perform field monitoring within the plume exposure pathway. These teams are trained to conduct field surveys, obtain air samples, and collect environmental samples, and are qualified in accordance with RG 1.8, Revision 3, “Qualification and Training of Personnel for Nuclear Power Plants,” and the emergency preparedness training requirements described in Section II.O of this Plan. Emergency plan implementing procedures provide guidance for performance of field monitoring team activities. RETs are equipped with air sampling equipment, personnel dosimetry, radiological survey instruments, procedures, communications equipment, and supplies to facilitate performance of radiation, surface contamination, and airborne radioactivity monitoring.

**Technical Evaluation: [I.7]** The staff finds that the Fermi 3 Emergency Plan adequately describes the capability and resources for field monitoring within the plume exposure emergency planning zone. This is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.9.10      *Capability to Rapidly Assess Radiological Hazards***

**Technical Information in the Emergency Plan: [I.8]** Section II.I.7 states that the RETs perform field monitoring within the plume exposure pathway. These teams are trained to conduct field surveys, obtain air samples, and collect environmental samples. Two to four teams are available and can be dispatched within 30 to 60 minutes of an emergency declaration. RET vehicles are equipped with a radio to provide mobile communications carried over Detroit Edison UHF service frequencies assigned to Western Wayne County. The radio-control-console for directing actions of the offsite RETs is located in the EOF/RET Dispatch Room. The information collected is forwarded to the TSC or EOF when activated. The EOF laboratory may be used for the receipt and qualitative analysis of all environmental sample media.

If necessary, supplemental teams trained in field survey and monitoring techniques can be called out or may be requested through mutual assistance agreements established with Entergy Nuclear Palisades, L.L.C. and Indiana Michigan Power to provide support during an emergency. A description of the agreement is in Section II.C of this Plan. The teams are also equipped with appropriate monitoring and sampling equipment. Data from the supplemental field monitoring team(s) is also reported to the EOF.

**Technical Evaluation: [I.8]** The staff finds that the Fermi 3 Emergency Plan adequately describes methods, equipment, deployment times and expertise to rapidly conduct offsite assessment of radiological hazards. This is acceptable because they conform to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.9.11     *Capability to Measure Radioiodine Concentrations in Air***

**Technical Information in the Emergency Plan: [I.9]** Section II.1.8, “Measuring Radioiodine Concentrations,” states that RETs are equipped with portable air samplers, appropriate sample media, and analysis equipment capable of detecting radioiodine concentrations at or below  $1E-7$   $\mu\text{Ci/cc}$  under field conditions, taking into consideration potential interference from noble gas activity and background radiation. The collected air sample is measured by hand held survey meter as an initial check of the projection derived from plant data to determine if significant quantities of elemental iodine have actually been released.

**Technical Evaluation: [I.9]** The staff finds that the Fermi 3 Emergency Plan adequately describes a capability to detect and measure radioiodine concentrations in air in the plume exposure EPZ as low as  $10^{-7}$   $\mu\text{Ci/cc}$  under field conditions. This is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.9.12     *Means to Relate Various Parameters to Dose Rates***

**Technical Information in the Emergency Plan: [I.10]** Section II.1.7 describes the EAL-based PARs that Detroit Edison provides, based on offsite dose projections. The radiation protection staff is responsible for conducting offsite dose projections periodically throughout any emergency during which there is an actual or potential release of an amount of radioactive material that is likely to result in offsite consequences.

Section II.1.9, “Relating Measured Parameters to Dose Rates,” states Appendix 4 of this Plan describes the means for relating measured parameters to dose rates for those key isotopes listed in Table 3 of NUREG-0654/FEMA-REP-1. Appendix 4 describes the provisions for estimating the projected dose based on projected and actual dose rates using the Raddose-V software designed to estimate dose rates from inhalation and ground deposition, and calculate deposition rates at 15-minute intervals. The user is able to estimate release rates from plant specific radiation monitor readings and flow rates by direct input, by back calculating from field data, or by grab sample analysis. From these estimates, integrated doses and total deposition are calculated for the length of time covering the release of radioisotopes. Doses and deposition are determined at radial grid and special receptor locations surrounding the facility, based on radiological and meteorological data collected at the plant.

**Technical Evaluation: [I.10]** The staff finds that the Fermi 3 Emergency Plan adequately establishes a means for relating the various measured parameters (e.g., contamination levels, water and air activity levels) to dose rates for key isotopes and gross radioactivity measurements. The Fermi 3 Emergency Plan also adequately describes provisions for estimating integrated dose from the projected and actual dose rates and for comparing these estimates with the protective action guides. This is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.9.13 Conclusion**

The staff reviewed the Fermi 3 Emergency Plan in regards to Planning Standard I, "Accident Assessment" of NUREG-654/FEMA-REP-1 Revision 1 and applicable regulation and concluded that the information provided in the Fermi 3 Emergency Plan regarding accident assessment is acceptable and meets the requirements of 10 CFR 50.34(f)(2)(xvii), 10 CFR 50.47(b)(9), 10 CFR Part 50, Appendix E, and complies with the guidance in NUREG-0654/FEMA-REP-1 Planning Standard I.

### **13.3C.10 Protective Response**

#### **13.3C.10.1 Regulatory Basis**

In order to determine whether the proposed emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(10), the staff evaluated it against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.10.2 Warning Onsite Personnel**

**Technical Information in the Emergency Plan: [J.1.a-d]** Section II.J.1, "Onsite Notification," states in the event of an emergency, methods are established for notifying personnel within the Protected Area, including employees, visitors, and contractor personnel. The primary means of notification within the Protected Area is the evacuation alarm and remote warning system. The system provides an audible signal that alerts personnel of an emergency event via siren and public address announcement which includes the emergency classification and response actions to be taken. The In-Plant PA/PL system may also be used for notification inside the Protected Area. In high noise areas where these systems may not be audible, other measures such as visible warning signals or personal notifications may be used.

Individuals located outside of the Protected Area but inside the owner-controlled area are informed via audible warnings provided by warning systems and the security force. If needed, local law enforcement personnel warn individuals located outside of the Protected Area but inside the owner-controlled area. In RAI 13.03-10.01, the staff requested a discussion on why the audible warnings from the warning systems and from the activities of the security force may not successfully notify individuals outside of the Protected Area but inside the owner-controlled area. The applicant's response dated December 7, 2009 (ML093440828), states that the individuals located within the owner-controlled area but outside of the Protected Area are notified of emergency conditions through audible warnings from the warning systems and from the activities of the security force.

Information regarding the meaning of the various warning systems and the appropriate response actions is provided through plant training programs, visitor orientation, escort instructions, posted instructions, or in the content of audible messages. Escorts provide response instructions to visitors. All individuals in the Protected Area are notified within about 15 minutes of the declaration of any emergency requiring individual response actions, such as accountability or evacuation. In RAI 13.03-10.02, the staff requested additional information regarding the time needed to notify persons outside of the Protected Area but within owner-controlled areas. The applicant's response dated December 7, 2009 (ML093440828), describes the ability to notify all individuals in the owner-controlled area within about 15 minutes of an incident requiring protective actions.

**Technical Evaluation: [J.1.a-d]** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAIs 13.03-10.01 and RAI 13.03-10.02 acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan incorporated the information and textual changes in the response to RAIs 13.03-10.01 and RAI 13.03-10.02. The staff finds that the Fermi 3 Emergency Plan adequately establishes the means and the amount of time required to warn or advise onsite individuals and those who may be in areas controlled by the operator, including employees who do not have emergency assignments; visitors; contractor and construction personnel; and other persons who may be in or passing through the onsite public access areas; or persons who are within the owner-controlled area. This clarification is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.10.3    *Evacuation Routes for Onsite Personnel***

**Technical Information in the Emergency Plan: [J.2]** Section II.J.2, “Evacuation Routes and Transportation,” states that Nuclear Security is responsible for directing traffic and controlling personnel as they leave Fermi 3 in an emergency, including special provisions for a coordinated evacuation under severe conditions such as inclement weather; large groups of personnel who need to be evacuated; or a high-level radioactive release. If an onsite evacuation is inadvisable due to adverse conditions such as weather-related, radiological, or traffic density conditions, affected individuals will be directed to a safe onsite area determined by the Emergency Director for accountability. If necessary, there will be contamination monitoring and decontamination. Individuals will be informed of the evacuation routes with appropriate instructions via plant training programs, visitor orientation, escort instructions, posted instructions, or in the content of audible messages.

Figure II.J-2, “Evacuation Routes and Assembly Areas,” identifies the evacuation routes and relocation and monitoring centers for persons leaving Fermi 3. Evacuated personnel will be directed to assemble at the Newport Service Center, Dixie Warehouse, and Trenton Channel Power Plant; or they will be sent home. In RAI 13.03-10.03, the staff requested the applicant to provide a letter of commitment from the Newport Service Center, Dixie Warehouse, and Trenton Channel Power Plant. The applicant’s response dated December 7, 2009 (ML093440828), stated that the Newport Service Center, Dixie Warehouse, and Trenton Channel Power Plant are owned and operated by Detroit Edison. Therefore, no LOAs are necessary for the use of these facilities. Pre-planned evacuation routes are established and maintained to be consistent with the EPIPs. There is a secondary route for site evacuation in the event that the primary route is rendered impassable because of radiological or meteorological conditions or other impediments to evacuation. The Emergency Director determines the travel directions and offsite assembly area(s) based on current meteorological and emergency conditions. Affected individuals will evacuate the site via their personal vehicles. If any individual onsite does not have access to a personal vehicle, arrangements will be made for transportation with another evacuating individual. In RAI 13.03-10.04, the staff requested additional information regarding the process for arranging transportation for individuals without vehicles. The applicant’s response dated December 7, 2009 (ML093440828), provided a revised Section II.J.2 of the Emergency Plan that directs the security force to arrange for transportation from the site for any individual who is unable to arrange for transportation.

**Technical Evaluation: [J.2]** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAIs 13.03-10.03 and 13.03-10.04 acceptable, because they conform to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

The staff confirmed that Revision 4 of the Fermi Emergency Plan incorporated the information and textual changes in the response to RAIs 13.03-10.03 and RAI 13.03-10.04. The staff finds that the Fermi 3 Emergency Plan adequately describes provisions for evacuation routes and for transporting onsite individuals to a suitable offsite location, including alternatives for inclement weather; high traffic density; and specific radiological conditions. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.10.4    *Radiological Monitoring of Onsite Personnel***

**Technical Information in the Emergency Plan: [J.3]** Section II.J.3, “Personnel Monitoring and Decontamination,” states that the Emergency Director is responsible for monitoring the contamination of personnel, vehicles, and personal property when there is a likelihood that individuals and their property may have become contaminated before or during the site evacuation. Personnel evacuating the site will be monitored for contamination as they exit the Protected Area by the portal monitors or will be sent to offsite assembly areas and monitored by portable friskers. Based on the status of the release of radioactive materials from the plant, monitoring may be limited to speed up the evacuation process.

**Technical Evaluation: [J.3]** The staff finds that the Fermi 3 Emergency Plan adequately provides for radiological monitoring of people evacuated from the site. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.10.5    *Evacuation of Non-Essential Onsite Personnel***

**Technical Information in the Emergency Plan: [J.4]** Section II.J.4, “Non-essential Personnel Evacuation and Decontamination,” states that in the event of a site area or a general emergency, nonessential personnel will be evacuated. The facility will have the appropriate equipment and supplies to facilitate contamination monitoring and decontamination at the relocation and monitoring centers, as needed.

**Technical Evaluation: [J.4]** The staff finds that the Fermi 3 Emergency Plan adequately provides for the evacuation of onsite nonessential personnel in the event of a “site area emergency” or “general emergency” and provides a decontamination capability. These provisions are acceptable because they conform to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.10.6    *Onsite Personnel Accountability***

**Technical Information in the Emergency Plan: [J.5]** Section II.J.5, “Personnel Accountability,” states that a capability is in place to account for all individuals in the Protected Area and to determine the identities of any missing individuals within 30 minutes following the declaration of a site area emergency or a general emergency. As individuals exit the Protected Area, they leave their identification badges with Nuclear Security personnel. Security will begin the accountability process using either the security computer system or by visual inspection using the badge exchange system and will report the results of the accountability process to the Emergency Director. Once established, accountability within the Protected Area is maintained throughout the course of the event, unless specifically terminated by the Emergency Director. Emergency plan implementing procedures describe the accountability process, which is consistent with the requirements of the Fermi 3 Security Plan.

**Technical Evaluation: [J.5]** The staff finds that the Fermi 3 Emergency Plan adequately provides for a capability to account for all individuals onsite at the time of the emergency, to ascertain the names of missing individuals within 30 minutes of the start of an emergency, and to account for all onsite individuals continuously thereafter. This plan is therefore acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.10.7    *Protection for Personnel Remaining or Arriving Onsite***

**Technical Information in the Emergency Plan: [J.6.a-c]** Section II.J.6, “Protective Measures,” states that adequate supplies of radiation protection equipment are maintained for personnel remaining in or entering the Protected Area or ERFs, including respiratory protection equipment; protective clothing; and radioactive protective drugs (i.e., potassium iodide [KI]). This emergency equipment is listed, maintained, and inspected in accordance with radiation protection procedures. The onsite medical facility maintains adequate amounts of KI to support the onsite ERO for emergency situations, as determined and authorized by the Emergency Director. Onsite supplies of protective clothing and respiratory protection equipment may be augmented by supplies provided by offsite responders, such as firefighters responding to the site.

**Technical Evaluation: [J.6.a-c]** The staff finds that the Fermi 3 Emergency Plan adequately provides for individual respiratory protection, the use of protective clothing, and radioactive protective drugs (i.e., KI). These provisions are therefore acceptable because they conform to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.10.8    *Recommending of Protective Actions***

**Technical Information in the Emergency Plan: [J.7] {Appendix E, Section IV.3}** Section II.J.6 states the Emergency Director makes decisions regarding appropriate protective measures based on an evaluation of conditions on the site, including input from the Nuclear Security. If the Emergency Director determined that personnel assembly, accountability, and evacuation could result in undue hazards to site personnel, the Emergency Director may issue other protective measures.

In Section II.J.7, “Protective Action Recommendations and Bases,” descriptions of public PARs show that they are based on plant conditions, estimated offsite doses, or some combination of both. Government officials in affected states and counties promptly receive PARs; offsite agencies receive PARs within 15 minutes of a general emergency declaration and within 15 minutes of a change in status of a PAR. In RAI 13.03-02-03, the staff requested a description of the process for making offsite dose projections and how they are transmitted to State and local authorities, to the NRC, and to other appropriate governmental entities. The applicant’s response dated December 7, 2009 (ML093440828), states that the Emergency Director or Emergency Officer is responsible for communicating offsite dose projections to Federal, State, and local authorities. The response also includes revisions to Table II.B-2 identifying that the Emergency Director has these responsibilities and added text to Section II.J.7 of the Emergency Plan that specifically discusses these responsibilities.

There are PARs based on offsite dose projections, in addition to the EAL-based PARs. The Radiation Protection staff is responsible for measuring offsite dose projections periodically during any emergency, when there is an actual or potential release of an amount of radioactive material that is likely to result in offsite consequences. Emergency plan implementation

procedures establish the requirements for performing required dose calculations and projections. The projected doses are compared to the Protective Action Guides (PAGs) in Table II.J-1, "Protective Action Guides," which are derived from EPA 400-R-92-001, "The Manual of Protective Action Guides and Protective Actions for Nuclear Incidents," and Supplement 3 to NUREG-0654/FEMA REP-1, Revision 1. Table II.J-1 identifies specified dose limits governing evacuation (or shelter). In RAI 13.03-10.05, the staff requested information regarding the use of shelters for the public as a potential protective action recommendation. In the response dated December 7, 2009 (ML093440828), the applicant stated that Section II.J.7 of the Emergency Plan refers to Table II.J-1, which provides for both evacuation and sheltering. The applicant provided new tables including Table II.J-2, "Exposure Pathways, Incident Phases, and Protective Actions"; and Table II.J-3, "Representative Shielding Factors from Gamma Cloud Source," which describe potential PAR actions. In Supplemental RAI 13.03-14, the staff requested the applicant to revise the Plan's description of the Emergency Directors expected PAR actions to be taken for a general emergency declaration to be consistent with 10 CFR 50.47 (b)(10) RIS 2004-13, "Consideration of Sheltering in Licensee's Range of Protective Action Recommendations," and NUREG-0654, Supplement 3. The applicant's response to Supplemental RAI 13.03-14 dated June 25, 2010 (ML101790463), stated that, Section II.J.7 will be revised to clarify that an evacuation will not be recommended if conditions make evacuation dangerous. Furthermore, to aid in determining appropriate protective actions, the applicant will add Table II.J-3, which contains representative shielding factors provided by typical structures against direct exposure from the plume. In RAI 13.03-87, the staff asked the applicant to revise the Fermi 3 ERP description of the Emergency Directors expected PAR actions to be taken for a general emergency declaration. The revision should consider the use of KI to be consistent with 10 CFR 50.47 (b)(10). The applicant's response to RAI 13.03-87 dated December 6, 2013 (ML13344B028), the applicant stated that the Fermi 3 ERP discussion of the Emergency Director's process for developing PARs will be revised to consider administering stable iodine after a general emergency declaration. In RAI 13.03-103 the staff requested the applicant revise the emergency response plan to include the use of NRC approved evacuation time estimates (ETEs) and updates to the ETEs in the formulation of protective action recommendations. In the applicant's response dated December 6, 2013 (ML13344B028) the applicant provided a revision to the Fermi 3 emergency response plan that included the use of the ETEs in development of PARs.

**Technical Evaluation: [J.7]** The staff finds that the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAIs 13.03-02-03, 13.03-10.05, 13.03-87 and Supplemental RAI 13.03-14 are acceptable because they conform to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan incorporated the information and textual changes in the response to RAIs 13.03-02-03, 13.03-10.05, 13.03-87, and Supplemental RAIs 13.03-14. The staff finds that the Fermi 3 Emergency Plan adequately establishes a mechanism for recommending protective actions to the appropriate State and local authorities. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

The staff created Confirmatory Item 13.03-72 to track the revision in the Emergency Plan regarding the Emergency Director's process for developing PARs and for administering stable iodine (i.e., potassium iodide) as a consideration. The staff verified that the Emergency Plan, Revision 4 includes the PARS and proper administration of iodine. Therefore, Confirmatory Item 13.03-72 is resolved.

**Technical Evaluation: {Appendix E, Section IV.3}** The staff finds the additional information submitted in response to RAI 13.03-103 to be acceptable because it meets the requirements in 10 CFR 50.47(b)(10) and Appendix E, Section IV.1. The staff finds that the Fermi 3 Emergency Plan adequately establishes a mechanism for recommending protective actions to the appropriate State and local authorities. Verification that a future revision of the COL application incorporates the acceptable changes found in RAI 13.03-103 is being tracked as a **Confirmatory Item 13.03-82.**

#### **13.3C.10.9 Evacuation Time Estimates**

**Technical Information in the Emergency Plan: [J.8]** Section II.J.8, "Evacuation Time Estimates," states that the ETE is summarized in Appendix 5, "Evacuation Time Estimate Summary," of the Fermi 3 Emergency Plan, and that the ETE is consistent with the guidance in Appendix 4 of NUREG-0654/FEMA-REP-1, Revision 1.

**Technical Evaluation: [J.8]** The staff finds that the Fermi 3 Emergency Plan adequately provides time estimates for the evacuation of the general public within the plume exposure EPZ. Section 13.3C.18 of this SER includes details of the staff's review of the Fermi 3 ETE, which the staff finds acceptable because it meets the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.10.10 Plans to Implement Protective Measures**

**Technical Information in the Emergency Plan: [J.10.a]** Section II.J.10, "Protective Measures Implementation," of the Fermi 3 Emergency Plan refers to Appendix 5, "Evacuation Time Estimate Summary," which provides a map of the plume exposure pathway EPZ illustrating evacuation routes; protective action areas (PAAs); pre-selected radiological sampling and monitoring points; and locations of shelter areas and relocation centers. In RAI 13.03-10-06(.1), (.2), (.3), the staff requested a map that identifies evacuation routes; pre-selected radiological sampling and monitoring points; and relocation centers in host areas. In the response to RAI 13.03-10.06.1 dated December 7, 2009 (ML093440828), the applicant provides Figure 10-2, "Evacuation Routes for PAA 1, 3 and 5"; and Figure 10-3, "Evacuation Routes for PAA 2 and 4." These figures show the evacuation routes from the EPZ. In the response to RAI 13.03-10-06.2 dated December 7, 2009 (ML093440828), the applicant stated that the protocol for the offsite dose assessment does not include pre-selected radiological sampling and monitoring points. In lieu of those points, the protocol relies on atmospheric transport and diffusion plume projections using the Raddose V software. Sections II.B and II.I of the Emergency Plan describe the activities of the Radiation Protection Advisor, Radiation Protection Coordinator, Dose Assessor, and RET Coordinator. As indicated in Table II.B-2, the Radiation Protection Coordinator determines survey areas for offsite RETs, and the RET Coordinator coordinates the efforts of the offsite RETs. Section II.I.7 of the plan provides additional information regarding RET activities. RETs are equipped with maps and global positioning system (GPS) devices to assure that there will be proper sampling locations consistent with the stated directions. According to the applicant's description, these activities are conducted in accordance with the requirements of the EIPs "Dose Assessment Methodology" and "Onsite/Offsite Radiological Monitoring," which are listed in Appendix 6 of the Fermi 3 Emergency Plan. The applicant stated that following this protocol eliminates the need for a map that identifies pre-selected radiological sampling and monitoring points. In Supplemental RAI 13.03-15, the staff requested the applicant to revise the plan to include a description of how radiological offsite survey data are communicated in a uniform, understandable, and useable

manner to offsite stakeholders in accordance with the NUREG-0654 evaluation Criterion II.J.10.a. In the response to Supplemental RAI 13.03-15 dated June 25, 2010 (ML101790463), the applicant stated that the Emergency Plan incorrectly states that a map illustrating pre-selected radiological sampling points is included in Appendix 5, and the Emergency Plan will also be corrected to indicate that the RETs rely on GPS devices to determine the location of their survey. The applicant described the process that field teams follow to communicate to users of this information in the EOF. The applicant stated how field information is communicated to the ERO and to the State representatives in the EOF.

In the response to RAI 13.03-10-06.3 dated December 7, 2009 (ML093440828), the applicant provided Figure 10-1, "Fermi Nuclear Power Plant Reception Centers and Host Schools," which shows the relocation centers in the host areas.

**Technical Evaluation: [J.10.a]** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAIs 13.03-10.06.1, 13.03-10-06.2, RAI 13.03-10.06.3, and Supplemental RAI 13.03-15 acceptable because they conform to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan incorporated the information and textual changes in the response to RAIs 13.03-10.06.1, 13.03-10-06.2, RAI 13.03-10-06.3, and Supplemental RAI 13.03-15. The staff finds that the Fermi 3 Emergency Plan adequately addresses evacuation routes, evacuation areas, preselected radiological sampling and monitoring points, relocation centers in host areas, and shelter areas. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

**Technical Information in the Emergency Plan: [J.10.b.]** Appendix 5 of the Fermi 3 Emergency Plan includes Figure A5-1, "Fermi Nuclear Power Plant Permanent Resident Population by PAA," which identifies the population distribution around the facility according to evacuation area. Appendix 5 of the Emergency Plan summarizes population distributions and contains population by PAA. In RAI 13.03-10-07, the staff requested the applicant to revise the plan to include population information in a sector format consistent with NUREG-0654, Criterion J.10.b. In the response to RAI 13.03-10-07 dated December 7, 2009 (ML093440828), the applicant provided Figure A5-2, "Permanent Residents by Sector," which indicates the population information in a sector format.

**Technical Evaluation: [J.10.b]** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-10-07 acceptable because they conform to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan provided the information and textual changes provided in the response to RAI 13.03-10-07. The staff finds that the Fermi 3 Emergency Plan includes adequate maps showing population distribution around the nuclear facility by protective action areas as well as by sector. This is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

**Technical Information in the Emergency Plan: [J.10.c]** Section II.J.1 states that individuals located outside of the Protected Area but inside the owner-controlled area are informed through audible warnings emanating from warning systems; the security force; and if needed, from local law enforcement personnel. In RAI 13.03-10.01, the staff requested the applicant to discuss why the audible warnings emitted from warning systems and the activities of the security force may not successfully notify individuals outside of the Protected Area but within the owner-controlled area. The applicant's response to this RAI dated December 7, 2009 (ML093440828)

recognizes that Section II.J.1 of the plan does not accurately describe local law enforcement responsibilities under emergency conditions. The applicant provided includes a revised Section II.J.1 to clarify that individuals located in the owner-controlled area but outside of the Protected Area are informed of emergency conditions through audible warnings emanating from warning systems and from the activities of the security force.

Section II.J.10.c states that the Fermi 3 ANS sirens are the primary method of warning the public. The Directors of Monroe and Wayne County Emergency Management are responsible for activating the portion of the system in their respective jurisdictions. Other warning methods may include communications via the telephone; television and radio EAS stations; public address systems; bull horns from patrol cars; and personal contacts. In RAI 13.03-10-08, the staff asked why the description of implementation of PARs did not include the Province of Ontario. The applicant's response to RAI 13.03-10-08 dated December 7, 2009 (ML093440828), provided a revision to Section II.J.10 that includes the Province of Ontario in the implementation of Fermi 3 PARs.

**Technical Evaluation: [J.10.c]** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan in the response to RAIs 13.03-10.01 and 13.03-10-08 acceptable, because they conform to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan incorporated the information and textual changes in the response to RAIs 13.03-10.01 and 13.03-10-08. The staff finds that the Fermi 3 Emergency Plan adequately describes the means for notifying all segments of the transient and resident population. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

**Technical Information in the Emergency Plan: [J.10.m]** Section II.J.7 discusses PARs and bases. In addition to the EAL-based PAR, Detroit Edison has PARs based on offsite dose projections. Table II.J-1 compares the projected doses to the PAGs, which are derived from the *Manual of Protective Action Guides and Protective Actions for Nuclear Incidents* (EPA 400-R-92-001) and Supplement 3 to NUREG-0654/FEMA REP-1. PARs are then developed based on the results of these comparisons. Table II.J-2 summarizes possible protective actions that will be implemented by State and local agencies during an emergency. As a further aid in determining appropriate protective actions, Table II.J-3 contains representative shielding factors provided by typical structures against direct exposure from the plume. The EPIP "Protective Action Recommendations" is listed in Appendix 6 and provides details regarding the development of PARs.

**Technical Evaluation: [J.10.m]** The staff finds that the Fermi 3 Emergency Plan adequately describes a basis for the choice of plume exposure pathway PARs during emergency conditions. This basis includes expected protective factors against direct and inhalation exposures afforded by various shelter structures. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.10.11 Conclusion**

The staff conclude that the information in the Fermi 3 Emergency Plan regarding the protective response is acceptable because it meets the requirements of 10 CFR 50.47(b)(10) and conforms to the guidance in NUREG-0654/FEMA-REP-1, Planning Standard J.

### **13.3C.11 Radiological Exposure Control**

### **13.3C.11.1 Regulatory Basis**

In order to determine whether the proposed emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(11), the staff evaluated the plan against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.11.2 Onsite Exposure Guidelines**

**Technical Information in the Emergency Plan: [K.1.a-g]** Section II.K.1, “Onsite Exposure Guidelines and Authorizations,” states that all reasonable measures will be taken to keep exposures to emergency personnel for rescue, first aid, decontamination, ambulance, medical treatment, and corrective or assessment actions within 10 CFR Part 20 limits. Table II.K-1 provides dose limits for activities and conditions in accordance with the emergency exposure criteria and guidance in EPA-400-R-92-001.

**Technical Evaluation: [K.1.a-g]** The staff finds that the Fermi 3 Emergency Plan adequately describes onsite exposure guidelines that are consistent with the guidance in EPA-400-R-92-001 for removing injured persons, undertaking corrective actions, performing assessment actions, providing first aid, performing personnel decontamination, providing ambulance services, and providing medical treatment. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.11.3 Onsite Radiation Protection Program**

**Technical Information in the Emergency Plan: [K.2]** Section II.K.1 states that the Emergency Director has the nondelegable responsibility for authorizing personnel exposure levels that exceed 10 CFR Part 20 limits during an emergency. Section II.K.2, “Radiation Protection Program,” states that Chapter 12 of the Fermi 3 FSAR provides details regarding the Radiation Protection Program and states that the Radiation Protection Advisor is responsible for implementing radiation protective actions in an emergency. Chapter 12 of the FSAR incorporates by reference NEI 07-03A, “Generic FSAR Template Guidance for Radiation Protection Program Description.”

Section II.K.2 provides exposure guidelines for volunteers if exposures are greater than the normal limits. This section states that the Radiation Protection Program and the emergency plan implementing procedures contain provisions to implement emergency exposure guidelines.

**Technical Evaluation: [K.2]** The staff finds that the Fermi 3 Emergency Plan adequately provides an onsite Radiation Protection Program to be implemented during emergencies, including methods to implement emergency exposure guidelines and plans that identify by position the individual who can authorize exposures in excess of 10 CFR Part 20 limits. This information is acceptable because it conforms to the guidance of NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.11.4 Capability to Determine The Dose Received by Emergency Personnel**

**Technical Information in the Emergency Plan: [K.3.a]** Section II.K.3, “Dosimetry and Dose Assessment,” states that permanent-record and self-reading dosimeters are provided to emergency responders, including those from offsite locations. The dosimeter ranges are sufficient to measure both routine and accident doses, and these dose assessment capabilities

are available on a 24-hour basis. Emergency plan implementing procedures establish the requirements for dosimeter distribution.

**Technical Evaluation: [K.3.a] {Appendix E, Section IV.E.1}** The staff finds that the Fermi 3 Emergency Plan adequately describes provisions for a 24-hour-per-day capability to determine the doses to emergency personnel involved in any nuclear accident and the distribution of dosimeters, both self-reading and permanent record devices. This information is acceptable because it meets the requirements in Appendix E, Section IV.E and conforms to the guidance of NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.11.5    *Dose Records for Emergency Personnel***

**Technical Information in the Emergency Plan: [K.3.b]** Section II.K.3 states that the external dosimetry program has provisions and requirements for using the permanent record and self-reading dosimeters. The EIPs establish requirements for distributing dosimeters to emergency responders, including those individuals responding to the site from offsite locations. Table II.B-2 states that the Radiation Protection Advisor ensures that personnel exposure records will be maintained.

**Technical Evaluation: [K.3.b]** The staff finds that the Fermi 3 Emergency Plan adequately describes the use and distribution of dosimeters and the provisions for maintaining dose records for emergency workers involved in a nuclear accident. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.11.6    *Decontamination Action Levels***

**Technical Information in the Emergency Plan: [K.5.a]** Section II.K.5, “Decontamination Action Levels,” of the Fermi 3 Emergency Plan states that decontamination requirements for personnel and areas, including action levels and criteria, are implemented in accordance with radiation protection procedures.

**Technical Evaluation: [K.5.a]** The staff finds that the Fermi 3 Emergency Plan adequately specifies action levels for determining the need for decontamination. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.11.7    *Decontamination Facilities and Supplies***

**Technical Information in the Emergency Plan: [K.5.b] {Appendix E, Section IV.E.3}** Section II.K.5 of the Fermi 3 Emergency Plan states that emergency equipment and supplies are maintained at Fermi 3 and include decontamination supplies identified in Section II.H.9. This section states that the emergency plan administrative procedures and radiation protection procedures describe the equipment, supplies, and locations. Section II.K.6, “Contamination Control Measures,” states that personnel will be decontaminated in accordance with established procedures and may be referred to the onsite medical representative, if normal procedures do not reduce contamination to acceptable levels. This section also states that supplies, instruments, equipment, and vehicles will be monitored before being removed from contaminated areas and will be decontaminated in accordance with radiation protection procedures. Ambulances transporting contaminated personnel will be monitored and decontaminated by plant personnel before leaving the medical facility.

**Technical Evaluation: [K.5.b] {Appendix E, Section IV.E.3}** The staff finds that the Fermi 3 Emergency Plan adequately addresses the decontamination of emergency personnel, wounds, supplies, instruments, and equipment as well as the location of the decontamination equipment. This information is acceptable because it conforms to the guidance in NUREG–0654/FEMA-REP-1, Revision 1 and the requirements of Appendix E to 10 CFR Part 50.

#### **13.3C.11.8    *Onsite Contamination Control***

**Technical Information in the Emergency Plan: [K.6.a]** Section II.K.6 states that contaminated areas will be designated and identified to minimize the contamination of personnel or the spread of contamination within the plant, and access to these areas will be controlled. Personnel will take required precautionary measures, use protective clothing and equipment and be monitored before leaving contaminated areas.

**[K.6.b]** Section II.K.6 states that if an uncontrolled release of activity occurs, then eating, drinking, and chewing would be prohibited in all emergency response facilities until surveys show that these activities are permissible.

**[K.6.c]** Section II.K.6 states that contaminated items and areas will be returned to normal use when contamination levels have returned to acceptable levels, on the basis of the criteria in plant procedures.

**Technical Evaluation: [K.6.a-c]** The staff finds that the Fermi 3 Emergency Plan adequately addresses the contamination control measures for area access, drinking water, food supplies, and the criteria for permitting the return of areas and items to normal use. These measures are acceptable because they conform to the guidance in NUREG–0654/FEMA-REP-1, Revision 1.

#### **13.3C.11.9    *Capability to Decontaminate Relocated Onsite Personnel***

**Technical Information in the Emergency Plan: [K.7]** Section II.K.7, “Decontamination of Relocated Site Personnel,” of the Fermi 3 Emergency Plan states that radiation protection personnel at the assembly areas monitor and determine the need for decontamination. There are provisions for extra clothing, and suitable decontaminants are available for the expected type of contaminations—particularly with regard to skin contaminations. If it is not possible to do so locally, personnel can be sent to designated locations for monitoring and decontamination. Sections II.J.3 and II.J.4 include additional details describing the facilities used for monitoring and decontamination, in accordance with radiation protection procedures and emergency plan implementation procedures.

**Technical Evaluation: [K.7]** The staff finds that the Fermi 3 Emergency Plan adequately describes the capability to decontaminate relocated onsite personnel, provisions for extra clothing, and decontaminants suitable for the type of contamination expected. This information is acceptable because it conforms to the guidance in NUREG–0654/FEMA-REP-1, Revision 1.

#### **13.3C.11.10    *Conclusion***

The staff concludes that the information in the Fermi 3 Emergency Plan regarding radiation exposure control is acceptable and meets the requirements of 10 CFR 50.47(b)(11) and 10 CFR Part 50, Appendix E, Sections IV.E.1 and 3, and complies with the guidance in NUREG-0654/FEMA-REP-1, Revision 1, Planning Standard K.

### **13.3C.12 Medical and Public Health Support**

#### **13.3C.12.1 Regulatory Basis**

In order to determine whether the proposed emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(12), the staff evaluated the plan against the detailed evaluation criteria in NUREG–0654/FEMA-REP-1, Revision 1. The staff also evaluated the proposed emergency plan against applicable regulatory requirements related to "Medical and Public Health Support" in Appendix E to 10 CFR Part 50.

#### **13.3C.12.2 Onsite Medical Services**

##### **Technical Information in the Emergency Plan: [L.2] {Appendix E, Section IV.E.5}**

Section II.L.2, "Onsite First Aid Capability," states that at least two qualified first aid personnel are onsite on a 24-hour basis. The onsite nurse is responsible for first aid treatment and the decision for offsite medical assistance during normal hours of operation. The plant's first responder will perform these duties during off hours. Additional first aid support is available from operations personnel, from personnel in the CR or OSC, and from Radiation Protection Personnel if necessary. The onsite medical facility at Fermi 3 is designed to provide basic first responder aid to injured or ill personnel before the arrival of offsite medical support. The emergency plan administrative procedures describe the supplies and equipment maintained at the onsite medical facility. Section II.L.1, "Hospital and Medical Support," states that written procedures regarding radiological medical emergencies detail the actions to be taken onsite. These actions include offsite transportation of injured, contaminated individuals and hospital notifications. Appendix 6, "Emergency Plan Implementing and Supporting Procedures (Typical List) and Procedure Cross-Reference to Plan," identifies "Medical Response" as the procedure for this part of the Emergency Plan.

**Technical Evaluation: [L.2] {Appendix E, Section IV.E.5}** The staff finds that the Fermi 3 Emergency Plan adequately describes the arrangements made for first aid and for the services of medical personnel qualified to handle onsite radiation emergencies. These arrangements are acceptable because they meet the requirements in 10 CFR Part 50, Appendix E, Section IV.E.5 and conform to the guidance in NUREG–0654/FEMA-REP-1, Revision 1.

#### **13.3C.12.3 Offsite Medical Services**

##### **Technical Information in the Emergency Plan: [L.1] {Appendix E, Section IV.E.7}**

Section II.L.1 of the Fermi 3 Emergency Plan states that written agreements are maintained with Mercy Memorial Hospital as a primary facility and Oakwood Southshore Medical Center as a backup facility for treating injured, contaminated, or overexposed Fermi 3 personnel. Both hospitals maintain emergency cabinets containing contamination control supplies and dosimeters and are adequately supplied and equipped to receive and treat contaminated patients. Activities are coordinated to ensure that these facilities maintain the support capabilities.

**Technical Evaluation: [L.1] {Appendix E, Section IV.E.7}** The staff finds that the Fermi 3 Emergency Plan adequately describes the arrangements for the services of physicians and other medical personnel qualified to handle onsite radiation emergencies. These arrangements are acceptable because they meet the requirements in 10 CFR Part 50, Appendix E, Section IV.E.7 and conform to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

**Technical Information in the Emergency Plan: [L.4] {Appendix E, Section IV.E.6}**

Section II.L.3, "Medical Transportation," states that a local ambulance service (i.e., Monroe Community Ambulance) has agreed to provide transportation for injured and/or contaminated individuals from Fermi 3 on a 24-hour basis to an offsite medical facility. This commitment to provide transportation services is supported by a Letter of Certification, as listed in Appendix 2, "Certification Letters."

**Technical Evaluation: [L.4] {Appendix E, Section IV.E.6}** The staff finds that the Fermi 3 Emergency Plan adequately describes the arrangements to transport injured and/or contaminated individuals from the Fermi 3 site to an offsite medical facility on a 24-hour basis is acceptable because the plan meets the requirements in 10 CFR Part 50, Appendix E, Section IV.E.6 and conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

**13.3C.12.4 Conclusion**

The staff concludes that the information in the Fermi 3 Emergency Plan regarding medical and public health support is acceptable and meets the requirements of 10 CFR 50.47(b)(12) and 10 CFR Part 50, Appendix E, Sections IV.E.5, 6, and 7 and complies with the guidance in NUREG-0654/FEMA-REP-1 Revision 1, Planning Standard L.

**13.3C.13 Recovery and Reentry Planning and Post-Accident Operations**

**13.3C.13.1 Regulatory Basis**

In order to determine whether the proposed emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(13), the staff evaluated the plan against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1, Revision 1. The staff also evaluated the proposed emergency plan against applicable regulatory requirements related to the area of "Recovery and Reentry Planning and Post-Accident Operations" in Appendix E to 10 CFR Part 50.

**13.3C.13.2 Plans and Procedures for Reentry and Recovery**

**Technical Information in the Emergency Plan: [M.1] {Appendix E, Section IV.H}**

Section II.M, "Reentry and Recovery Planning," states that the EIPs include detailed information describing the reentry and recovery activities. Section II.M.1.a, "Evaluating Reentry Conditions," states that reentry during the recovery phase of an accident will be performed using normal exposure limits. Either normal procedures or procedures that consider existing as well as potential conditions inside the affected areas will be developed specifically for each reentry. In RAI 13.03-13.01, the staff requested additional information regarding the procedures that have been developed. The applicant's response to RAI 13.03-13.01 dated December 7, 2009 (ML093440828), provides a revised Section II.M that states reentry and recovery activities are conducted in accordance with the EIP entitled, "Recovery and Reentry," which is identified in Appendix 6 of the Emergency Plan. Section II.M.1.b, "Evaluating Entry into Recovery," states that a plan will be developed and coordinated with Federal, State, county, and provincial government officials. The recovery plan will include provisions for protecting public health and safety. Public officials will be kept aware of any impact the recovery plan may have on the responsibilities to the offsite public. There will also be periodic press briefings to inform the public of the progress regarding an emergency and periodic status reports to Detroit Edison employees and government and industry representatives. As low as is reasonably achievable

(ALARA) principals will be used to manage radiation exposures to workers, and the size and make-up of the Recovery Organization will be adjusted as necessary. Section II.M.2, "Recovery Organization," states that before terminating an emergency and entering recovery, the following items at a minimum are to be considered:

- conditions that initiated the emergency classification are no longer applicable
- the potential for uncontrolled releases into the environment are under control or are no longer in excess of technical specification limits
- the radioactive plume has dissipated and plume tracking is no longer required
- environmental monitoring to assess the extent of the deposition only is required
- in-plant radiation levels are stable or are decreasing and are acceptable for existing plant conditions
- the reactor is shut down and stable
- long-term core cooling is available
- the containment pressure is within the technical specification limits
- the integrity of the primary containment was established
- all required offsite notifications were made
- discussions were held with Federal, State, county, and provincial government agencies
- an agreement was reached to terminate the emergency

Section II.M.1.a, "Evaluating Reentry Conditions," states that all reentry activities conducted during an emergency are authorized by the Emergency Coordinator and are coordinated with OSC personnel. In RAI 13.03-13.03, the staff requested the applicant to revise the Fermi 3 Emergency Plan to include a description of the Emergency Coordinator position and to revise Figure II.M-1, "Recovery Organization (Basic Frame Work)," to include the Emergency Coordinator position. The applicant's response to RAI 13.03-13.03 dated December 7, 2009 (ML093440828), the applicant provided a revised Section II.M.1 that correctly refers to the Emergency Officer position. The applicant stated that the Emergency Coordinator title is incorrect, and the title should refer to the Emergency Officer described in Section II.B of the Emergency Plan as the individual who authorizes reentry activities during the emergency phase of an accident.

Section II.M.2 states that decisions to relax protective actions for the public will be made in accordance with the State of Michigan Emergency Management Plan.

**Technical Evaluation: [M.1] {Appendix E, Section IV.H}** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-13.01 and RAI 13.03-13.03 acceptable because they conform to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan the information and textual changes provided in the response to RAI 13.03-13.01 and RAI 13.03-13.03. The staff finds that the Fermi 3 Emergency Plan adequately describes general plans and procedures for reentry and recovery. The plan also describes how decisions are reached to relax protective measures (e.g., allow reentry into an evacuated area). This information is acceptable because it meets the requirements in 10 CFR

Part 50, Appendix E, Section IV.H and conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.13.3    *Recovery Organization***

**Technical Information in the Emergency Plan: [M.2]** Section II.M.2 describes the recovery organization positions and responsibilities for the four key positions identified in Figure II.M-1. This section also briefly discusses additional support positions that may be needed, depending on the specific accident conditions. The Recovery Manager (Manager, Nuclear Outage Management) directs the development of the recovery plan and procedures. The Nuclear Production Coordinator (Director of Nuclear Protection or a designated Alternate) develops the implementation and operating procedures to support the recovery efforts and authorizes the start of plant reentry activities. The Offsite Activities Coordinator is the liaison with offsite agencies and coordinates assistance for offsite recovery activities. A Public Information Coordinator is responsible for disseminating information about the recovery to the media and for coordinating with all public information groups. In RAI 13.03-13.02, the staff requested the applicant to clarify whether the JIC is the Public Information Coordinator. The applicant's response to RAI 13.03-13.02 dated December 7, 2009 (ML093440828), provided a revised Figure II.M-1 of the Emergency Plan that includes the position of "Public Information Coordinator."

**Technical Evaluation: [M.2]** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-13.02 acceptable because they conform to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan incorporated the information and textual changes in the response to RAI 13.03-13.02. The staff finds that the Fermi 3 Emergency Plan contains an adequate description of the position title, authority, and responsibilities of individuals who will fill key positions in the facility recovery organization; and that the organization includes technical personnel with responsibilities to develop, evaluate, and direct recovery and reentry operations. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.13.4    *Recovery Operations Initiation***

**Technical Information in the Emergency Plan: [M.3]** Section II.M.1.b of the Fermi 3 Emergency Plan states that recovery plans will be developed by Detroit Edison and coordinated with Federal, State, county, and provincial government officials. The plans will include, among other topics, provisions for periodic status reports to be given to Detroit Edison employees and government and industry representatives; and provisions for necessary adjustments in the size and makeup of the Recovery Organization, as needed. Section II.M.2 describes the Recovery Manager as responsible for notifying offsite authorities in a timely manner that a recovery operation will be initiated. The Recovery Manager will also indicate any expected or potential offsite impact. The "Cross Reference of Fermi 3 Emergency Plan to Other Regulations and Regulatory Documents In Accordance with RG 1.206, Section C.I.13.3.1" identifies the corresponding State activities in the Michigan Emergency Management Plan (MEMP).

**Technical Evaluation: [M.3]** The staff finds that that the Fermi 3 Emergency Plan adequately addresses the means for informing members of the response organizations that a recovery operation is going to be initiated and of any changes in the organizational structure that may

occur. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.13.5    *Methods To Estimate Total Population Exposure***

**Technical Information in the Emergency Plan: [M.4]** Section II.M.3, “Updating Total Population Exposure During Recovery Operations,” of the Fermi 3 Emergency Plan describes a method that was developed to estimate the total population exposure due to an accident from data collected in cooperation with State and Federal agencies. Total population exposure is determined through a variety of procedures that include an examination of pre-positioned environmental monitoring thermo luminescent dosimeters (TLDs); a bioassay; estimates based on release rates and meteorology; and estimates based on the environmental monitoring of food, water, and ambient dose rates. The State is the lead agency in collecting and analyzing environmental samples, and Fermi 3 environmental sampling activities will be coordinated with those of the State. The Fermi 3 Emergency Response Plan Supplemental Information document (Part 5, Revision 4 of the Fermi 3 COL application) titled, “Cross Reference of Fermi 3 Emergency Plan to Other Regulations and Regulatory Documents In Accordance with RG 1.206, Section C.I.13.3.1” identifies the corresponding State activities in the Disaster Specific Procedures Nuclear Power Plant Accident.

**Technical Evaluation: [M.4]** The staff finds that the Fermi 3 Emergency Plan adequately establishes a method for periodically estimating the total population exposure. This information is acceptable because it conforms to the guidance in NUREG–0654/FEMA-REP-1, Revision 1.

### **13.3C.13.6    *Conclusion***

The staff concludes that the information in the Fermi 3 Emergency Plan regarding recovery and reentry planning and post-accident operations is acceptable and meets the requirements of 10 CFR 50.47(b)(13) and 10 CFR Part 50, Appendix E, Section IV.H and complies with the guidance in NUREG-0654/FEMA-REP-1, Revision 1, Planning Standard M.

### **13.3C.14    *Exercises and Drills***

#### **13.3C.14.1    *Regulatory Basis***

In order to determine whether the proposed emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(14), the staff evaluated the plan against the detailed evaluation criteria in NUREG–0654/FEMA-REP-1, Revision 1. The staff also evaluated the proposed emergency plan against applicable regulatory requirements related to the area of "Exercises and Drills" in Appendix E to 10 CFR Part 50.

#### **13.3C.14.2    *Emergency Preparedness Exercise Purpose and Content***

**Technical Information in the Emergency Plan: [N.1.a]** Section II.N.1, “Exercises,” of the Fermi 3 Emergency Plan describes an exercise as an event that tests the integrated capability of a major portion of the basic elements in emergency preparedness plans and organizations. This section states that exercises are conducted in accordance with the NRC and FEMA rules in 10 CFR 50.47(b)(14) and 44 CFR 350.9.

**Technical Evaluation: [N.1.a]** The staff finds that the Fermi 3 Emergency Plan appropriately describes an exercise as a test of the integrated capability and the major elements of emergency plans and the preparedness program. In addition, the exercises will be conducted in accordance with the NRC and FEMA rules. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

**Technical Information in the Emergency Plan: [N.1.b]** Section II.N.1.b, “Exercise Scenarios and Participation,” of the Fermi 3 Emergency Plan states that a full participation exercise will include appropriate State, county, and provincial authorities and Fermi 3 personnel actively taking part in testing the integrated capability to adequately assess and respond to a declared emergency at the plant. Section II.N.1.a, “Exercise Scope and Frequency,” states that the exercises vary so that all major elements of the plan and of the emergency organizations are tested within a 8-year period. One exercise shall start between 6:00 p.m. and 4:00 a.m. within a 8-year period. Exercises may be announced or unannounced and conducted under various weather conditions. Section II.N.4, “Exercise and Drill Evaluation,” states that official observers from Federal, State, or local governments will observe, evaluate, and critique the required biennial exercise.

**Technical Evaluation: [N.1.b]** The staff finds that the Fermi 3 Emergency Plan describes a full participation exercise that includes the appropriate State, county, and provincial authorities and Fermi 3 personnel to test the integrated capability to adequately assess and respond to a declared emergency; and to vary the scenarios to ensure that all major elements of the plans and emergency organizations are tested within a 8-year period. In addition, at least one exercise scenario for a full participation exercise during an exercise cycle will begin between 6:00 p.m. and 4:00 a.m. and will be unannounced and conducted under various weather conditions. In all required biennial exercise evaluations the officials from Federal, State, or local governments will be able to observe, evaluate, and critique the performance. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.14.3    *Emergency Preparedness Exercises***

**Technical Information in the Emergency Plan: {Appendix E, Section IV.F.2}** Section II.N, “Exercises and Drills,” of the Fermi 3 Emergency Plan states that exercises and drills are conducted to practice, test, and evaluate the adequacy of the Emergency Preparedness Program including facilities, equipment, procedures, communication links, actions of ERO personnel, and coordination between Fermi 3 and offsite emergency response organizations. Section II.E.5 states that the ANS is tested on a periodic basis that meets or exceeds FEMA guidance.

**Technical Evaluation: {Appendix E, Section IV.F.2}** The staff finds that the Fermi 3 Emergency Plan adequately describes emergency preparedness exercises that will test the adequacy of implementing procedures and methods of timing and content, emergency equipment and communications networks, and the public notification system and will ensure that emergency organization personnel are familiar with their duties. This description is acceptable because it meets the requirements in 10 CFR Part 50, Appendix E, Section IV.F.2.

#### **13.3C.14.4    *Full Participation Exercise Before Fuel Load***

**Technical Information in the Emergency Plan: {Appendix E, Section IV.F.2.a}** Section II.N of the Fermi 3 Emergency Plan states that exercises and drills are conducted to practice, test,

and evaluate the adequacy of the Emergency Preparedness Program including the facilities, equipment, procedures, communication links, actions of ERO personnel, and the coordination between Fermi 3 and offsite emergency response organizations. Section II.N.1.b states that full participation exercises will include the appropriate offsite State, county, and provincial authorities and Fermi 3 personnel to adequately assess and respond to an accident at the plant.

**Technical Evaluation: {Appendix E, Section IV.F.2.a}** The staff finds that the Fermi 3 Emergency Plan adequately describes the participation of exercises that will test as much of the licensee, State, and local emergency plans as is reasonably achievable, without mandatory public participation. This description is acceptable because it meets the requirements in 10 CFR Part 50, Appendix E, Section IV.F.2.a.

#### **13.3C.14.5    *Onsite Biennial Exercise***

##### **Technical Information in the Emergency Plan: {Appendix E, Section IV.F.2.b}**

Section II.N.1.a of the Fermi 3 Emergency Plan states that an emergency (biennial) exercise will be conducted at least every 2 years and will vary so that all major elements of the plan and the emergency organizations will be tested within a 8-year period. Section II.N.1.b states that full participation exercises will include appropriate offsite State, county, and provincial authorities and Fermi 3 personnel to adequately assess and respond to an accident at the plant.

Section II.N.2, "Drills," states that drills are intended to test, develop, and maintain skills in a particular operation. Drills are conducted to ensure that adequate emergency response capabilities are maintained during the interval between the evaluated exercises.

Section II.N.2.f.2, "Additional Drills," states that during the interval between biennial exercises, at least one (1) "off year" drill should be conducted at the plant involving the principal areas of onsite emergency response capabilities. These areas include the management and coordination of emergency response, accident assessment, protective action decision making, and the repair and corrective action of plant systems.

**Technical Evaluation: {Appendix E, Section IV.F.2.b}** The staff finds that the Fermi 3 Emergency Plan adequately describes a drill and exercise program conducted to perform a Federally evaluated exercise every 2 years with additional drills and exercises to practice, test, and evaluate the adequacy of the Emergency Preparedness Program. The Program includes facilities, equipment, procedures, communication links, actions of ERO personnel, and coordination between Fermi 3 and offsite emergency response organizations to evaluate and correct deficiencies in any identified drill or exercise. Drills are conducted to ensure that adequate emergency response capabilities are maintained during the interval between evaluated exercises involving principal areas of onsite emergency response capabilities. These areas include the management and coordination of emergency response, accident assessment, protective action decision making, and plant system repair and corrective action. This description is acceptable because it meets the requirements in 10 CFR Part 50, Appendix E, Section IV.F.2.b.

#### **13.3C.14.6    *Offsite Biennial Exercise***

##### **Technical Information in the Emergency Plan: {Appendix E, Section IV.F.2.c}**

Section II.N.1.b of the Fermi 3 Emergency Plan states that the MEMP delineates the frequency of State participation in an exercise with Detroit Edison. This participation may be either full or partial depending on the objectives of the exercise and the degree to which the state and local plans will be tested. Full participation exercises will include appropriate offsite State, county,

and provincial authorities and Fermi 3 personnel to adequately assess and respond to an accident at the plant.

**Technical Evaluation: {Appendix E, Section IV.F.2.c}** The staff finds that the Fermi 3 Emergency Plan adequately describes full participation exercise scenarios performed at least biennially. These exercise scenarios provide opportunities for offsite authorities to have a role under the Fermi 3 Emergency Plan to exercise their plans. This information is acceptable because it meets the requirements in 10 CFR Part 50, Appendix E, Section IV.F.2.c.

#### **13.3C.14.7    *Ingestion Pathway Exercise with the State***

**Technical Information in the Emergency Plan: {Appendix E, Section IV.F.2.d}**

Section II.N.1.b of the Fermi 3 Emergency Plan states that Ingestion Pathway Exercises are conducted on a 6-year cycle, and Fermi 3 participates on a rotating basis with other fixed nuclear facilities in the State of Michigan. Ingestion Pathway Exercises are usually conducted in conjunction with a full participation exercise as the State chooses.

**Technical Evaluation: {Appendix E, Section IV.F.2.d}** The staff finds that the Fermi 3 Emergency Plan adequately describes how the licensee will coordinate with the State of Michigan on Ingestion Pathway Exercises. This information is acceptable because it meets the requirements in 10 CFR Part 50, Appendix E, Section IV.F.2.d.

#### **13.3C.14.8    *Enabling Local and State Participation in Drills***

**Technical Information in the Emergency Plan: {Appendix E, Section IV.F.2.e}**

Section II.N.2 of the Fermi 3 Emergency Plan describes the types and frequencies of drills and when appropriate, participation by outside organizations. Section II.N.2.e.2, "Additional Drills," states that routine offers to participate are made to offsite agencies in off-year drills.

**Technical Evaluation: {Appendix E, Section IV.F.2.e}** The staff finds that the Fermi 3 Emergency Plan adequately describes how the licensee enables State and local governments located within the plume exposure pathway EPZ to participate in the licensee's off-year drills. This information is acceptable because it meets the requirements in 10 CFR Part 50, Appendix E, Section IV.F.2.e.

#### **13.3C.14.9    *Remedial Exercises***

**Technical Information in the Emergency Plan: {Appendix E, Section IV.F.2.f}**

Section II.N.5, "Drill and Exercise Critiques," of the Fermi 3 Emergency Plan describes a critique and evaluation process that follows the exercises and drills. The Supervisor of Emergency Preparedness is responsible for evaluating the recommendations and comments from the critique to ensure that corrective actions are implemented. In RAI 13.03-14.01, the staff requested the applicant to include details regarding remedial exercises in the Fermi 3 Emergency Plan. The applicant's response to RAI 13.03-14.01 dated December 7, 2009 (ML093440828), provided a revised Section II.N.5 of the Emergency Plan stating that a remedial exercise will be conducted in the event that implementation of the emergency plan is not satisfactorily demonstrated during a biennial exercise.

**Technical Evaluation: {Appendix E, Section IV.F.2.f}** The staff finds the additional information and a textual revision to the Fermi 3 Emergency Plan submitted in response to

RAI 13.03-14.01 acceptable because it meets the requirements in 10 CFR Part 50, Appendix E, Section IV.F.2.f. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan incorporated the information and textual changes in the response to RAI 13.03-14.01. The staff finds that the Fermi 3 Emergency Plan adequately describes how remedial exercises will be conducted if the emergency plan is not satisfactorily tested during the biennial exercise, so that the NRC and FEMA can find reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. This information is acceptable because it meets the requirements in 10 CFR Part 50, Appendix E, Section IV.F.2.f.

### **13.3C.14.10 Drills**

#### **Technical Information in the Emergency Plan: [N.2] {Appendix E, Section IV.E.8.c}**

Section II.N.2 of the Fermi 3 Emergency Plan states that drills are a supervised instruction period intended to test, develop, and maintain skills in a particular operation and are conducted to ensure that adequate emergency response capabilities are maintained during the interval between evaluated exercises. Section II.N.5 states that as soon as possible following the conclusion of each drill or exercise, a critique will be conducted to evaluate the ability of all participating organizations to respond. The Fermi 3 Emergency Preparedness Department will develop a formal written critique based on input from the drill participants, controllers/evaluators, and observers. The written critique will document the ability of the ERO to respond to the simulated emergency situation or sequence of events and may identify the need for changes to the Emergency Plan, procedures, equipment, facilities, or other components of the Emergency Preparedness Program. In RAI 13.03-98, the staff requested the applicant to revise the emergency response plan to perform consolidated EOF functions. In response to RAI 13.3-98 dated December 6, 2013 (ML13344B028), the applicant committed to revise the emergency plan to state prior to initial operation of the Fermi Emergency Operations Facility (EOF) and at least once each subsequent 8-year exercise cycle, a drill or exercise will be conducted that demonstrates the Fermi 2 and 3 Emergency Response Organizations (EROs) can perform the consolidated Fermi 2 and 3 EOF functions described in the emergency plans.

**Technical Evaluation: [N.2] {Appendix E, Section IV.E.8.c}** The staff finds the additional information submitted in response RAI 13.03-98 to be acceptable because it conforms to the guidance in NSIR/DPR-ISG-01 Interim Staff Guidance, Emergency Planning for Nuclear Power Plants Section IV.I. The staff finds the Fermi 3 Emergency Plan adequately describes that drills are a supervised instruction period aimed at testing, developing and maintaining skills in a particular operation and that each drill is evaluated. This is acceptable because it meets the requirements in 10 CFR Part 50, Appendix E, Section IV.E.8.c and conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1 and NSIR/DPR-ISG-01 Interim Staff Guidance. Verification that a future revision of the COL application incorporates the acceptable changes found in RAI 13.03-98 is being tracked as a **Confirmatory Item 13.03-83**.

### **13.3C.14.11 Communications Drills**

#### **Technical Information in the Emergency Plan: [N.2.a] {Appendix E, Section IV.E.9(b)}**

Section II.N.2.a, "Communication Drills," of the Fermi 3 Emergency Plan states that communications with the CR, TSC, EOF, Michigan State Police, Monroe County Central Dispatch, and Wayne County Central Communications—as well as communications between the CR, TSC, and EOF and the NRC Headquarters Operations Center—will be tested monthly. Communications with the plant, State, and local emergency operation centers and the offsite radiological emergency teams—as well as communication with the CR, TSC, OSC, EOF, and

JPIC—will be tested annually. Annual drills conducted between the ERFs and participating organizations will include a confirmation of understanding of the content in the message. In RAI 13.03-14.02, the staff requested the applicant to verify that communications with Federal EROs and States within the ingestion pathway will be tested quarterly. The applicant's response to RAI 13.03-14.02 dated December 7, 2009 (ML093440828), states that testing the communications from the CR, TSC, and EOF to NRC Headquarters and the NRC Region III Office Operations Center are conducted on a monthly basis. The applicant stated that because the NRC is the lead Federal agency for responding to emergencies at Fermi 3, NRC is therefore the only Federal agency with which communications are tested. The applicant also stated that under the conditions that require the implementation of the Fermi 3 Emergency Plan, communications are not established or maintained with the State of Ohio, which is the only State other than Michigan within the ingestion exposure pathway EPZ. Communications with the State of Ohio are established and tested in accordance with the plans of affected Federal and State authorities. In Supplemental RAI 13.03-16, the staff requested the applicant to describe the testing of communications with the State of Ohio, which is within the ingestion pathway and is consistent with NUREG-0654, Criterion N.2.a. The applicant's response to Supplemental RAI 13.03-16 dated June 25, 2010 (ML101790463) notes that the following will be added as item 6 to Section II.N.2.a:

Communications with the State of Ohio is tested quarterly by the State of Michigan in accordance with the Disaster Specification Procedures of the Michigan Emergency Management Plant (MEMP) for Nuclear Power Plant Accidents (13.03-16).

The applicant provided a reference to the ingestion pathway testing from the "Disaster Specification Procedures," which state that "communications with Federal response agencies and States within the ingestion pathway are continuous, thereby being tested at least quarterly."

**Technical Evaluation: [N.2.a] {Appendix E, Section IV.E.9(b)}** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAIs 13.03-14.02 and Supplemental RAI 13.03-16 acceptable because they conform to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan the information and textual changes provided in the response to RAIs 13.03-14.02 and Supplemental RAI 13.03-16. The staff finds that the Fermi 3 Emergency Plan adequately describes how communications with Federal, State, and local governments in the plume exposure pathway EPZ will be tested. This information is acceptable because it meets the requirements in 10 CFR Part 50, Appendix E, Section IV.E.9(b) and conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.14.12 Fire Drills**

**Technical Information in the Emergency Plan: [N.2.b]** Section II.N.2.b, "Fire Drills," states that fire drills shall be conducted in accordance with Section 13.1 of the Fermi 3 FSAR and plant procedures. ESBWR DCD Tier 2 Subsection 9.5.1.15.4.5, "Fire Brigade Retraining," states that drills are performed at least once each calendar quarter for each shift fire brigade. Each fire brigade participates in at least two drills per year. Critiques are conducted upon completion of each drill. Drills include reviews of the latest plant modifications and corresponding changes in firefighting plans. Section II.N.2.b of the Fermi 3 Emergency Plan states that a fire drill involving the Frenchtown Fire Department is conducted annually.

**Technical Evaluation: [N.2b]** The staff finds the Fermi 3 Emergency Plan adequately describes how fire drills will be conducted in accordance with the Fermi 3 COL FSAR. This information is acceptable because it conforms to the guidance in NUREG–0654/FEMA-REP-1, Revision 1.

#### **13.3C.14.13 Medical Emergency Drills**

**Technical Information in the Emergency Plan: [N.2.c]** Section II.N.2.c, “Medical Emergency Drills,” states that a medical emergency drill will be conducted annually involves a simulated contaminated individual and provisions for participation by the local support service agencies (i.e., ambulance and offsite medical treatment facility). In addition, the Emergency Plan describes that the offsite portions of the medical drill may be performed as part of the required biennial exercise.

**Technical Evaluation: [N.2.c]** The staff finds the Fermi 3 Emergency Plan adequately describes medical emergency drills involving a simulation of contaminated individuals and provisions for participation by local support organizations. This information is acceptable because it conforms to the guidance in NUREG–0654/FEMA-REP-1, Revision 1.

#### **13.3C.14.14 Radiological Monitoring Drills**

**Technical Information in the Emergency Plan: [N.2.d]** Section II.N.2.d, “Radiological Monitoring Drills,” states that radiation monitoring drills will be conducted annually. These drills include collecting and analyzing sample media such as water, vegetation, and soil from the owner-controlled area or nearby offsite areas and provisions for communications and record keeping. Local organizations are routinely offered the opportunity to participate in the drill.

**Technical Evaluation: [N.2.d]** The staff finds the Fermi 3 Emergency Plan adequately describes plant environs and radiological monitoring drills (onsite and offsite) conducted annually, and local organizations are routinely offered the opportunity to participate. This information is acceptable because it conforms to the guidance in NUREG–0654/FEMA-REP-1, Revision 1.

#### **13.3C.14.15 Health Physics Drills**

**Technical Information in the Emergency Plan: [N.2.e]** Section II.N.2.e, “Radiation Protection Drills,” states that drills involving the sampling and analysis of simulated elevated radioactive airborne and liquid samples, as well as direct radiation measurements in the plant environment, shall be conducted semi-annually.

Section II.N.2.e states that the simulated elevated radioactive liquid and airborne samples will be used in the drill. Information is needed regarding the analysis of in-plant liquid samples with actual elevated radiation levels in Health Physics drills, including the use of the post-accident sampling system. In RAI 13.03-14.03, the staff requested the applicant to provide details regarding the use of the post-accident sampling system. The applicant’s response to RAI 13.03-14.03 dated December 7, 2009 (ML093440828) stated that the ESBWR design does not require a dedicated post-accident sampling system and the provided reference to the Topical Report NEDO-32991, “Regulatory Relaxation for BWR Post Accident Sampling Stations (PASS),” dated October 2000. The applicant also stated that processes for classifying fuel damage events utilize installed post-accident radiation monitoring instrumentation described in

DCD Tier 2 Section 7.5, and the plant procedures contain instructions for obtaining grab samples using installed systems as addressed in FSAR Section 9.3. The applicant further stated that post-accident monitoring is adequate to implement the Emergency Plan without relying on the post-accident sampling capability. The applicant provides a revised Section II.N that omits Section II.N.2.e. The staff requested additional information in RAI 13.03-81 regarding the frequency and content of the Health Physics drills. In the response to RAI 13.03-81 December 6, 2013 (ML13344B028), the applicant provides a markup revision to the Fermi 3 Emergency Plan Section II.N to clarify radiation protection drills.

**Technical Evaluation: [N.2.e]** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan that were submitted in response to RAI 13.03-14.03 and RAI 13.03-81 acceptable because they conform to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan incorporates the information and textual changes in the response to RAI 13.03-14.03 and RAI 13.03-81. The staff finds that the Fermi 3 Emergency Plan adequately describes how the health physics drills will be conducted semi-annually and will involve a response to an analysis of simulated elevated airborne and liquid samples and direct radiation measurements in the environment.

#### **13.3C.14.16 Conduct of Drills and Exercises**

**Technical Information in the Emergency Plan: [N.3.a-f]** Section II.N.3, “Conduct of Drills and Exercises,” describes how drills and exercises will be carried out. Advance knowledge will be kept to a minimum to allow for “free play” decision making and to ensure realistic participation. Drill and exercise scenarios will include the basic objectives of each drill and exercise and appropriate evaluation criteria; date(s), time period, place(s), and participating organizations; the simulated events; and a time schedule of real and simulated initiating events. These scenarios also include a narrative summary describing the conduct of the exercises or drills to include elements such as simulated casualties, offsite fire department assistance, the rescue of personnel, the use of protective clothing, the deployment of emergency teams, public information activities; descriptions of assignments for qualified controllers/evaluators; and appropriate provisions for observers from Federal, State, and local organizations.

**Technical Evaluation: [N.3.a-f]** The staff finds that the Fermi 3 Emergency Plan adequately describes how exercises and drills will be carried out to allow free play for decision making and to meet the exercise objectives. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.14.17 Observing, Evaluating, and Critiquing Drills and Exercises**

**Technical Information in the Emergency Plan: [N.4] {Appendix E, Section IV.F.2(g)}** Section II.N.4, “Exercise and Drill Evaluation,” states that officials from Federal, State, or local governments will observe, evaluate, and critique the required biennial exercise in which the State and counties participate. Section II.N.5, “Drill and Exercise Critiques,” states that a critique will be conducted as soon as possible following the conclusion of each drill and exercise, and the Fermi 3 Emergency Preparedness Department will develop a formal written critique that documents the ability of the ERO to respond to the simulated emergency.

**Technical Evaluation: [N.4] {Appendix E, Section IV.F.2(g)}** The staff finds that the Fermi 3 Emergency Plan adequately describes provisions for officials from Federal, State, or local governments to observe, evaluate, and critique the required exercises. The licensee will also

critique the required drills or exercises as soon as possible following their completions. This information is acceptable because it conforms to the requirements in 10 CFR Part 50, Appendix E, Section IV.F.2(g) and the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.14.18 Means to Correct Areas Needing Improvement**

**Technical Information in the Emergency Plan: [N.5]** Section II.N.5 states that the critique and evaluation process following an exercise or drill will be used to identify areas of the Emergency Preparedness Program that require improvement such as changes to the Emergency Plan, procedures, or other elements of the Emergency Preparedness Program. The Supervisor of Emergency Preparedness is responsible for evaluating recommendations and comments to ensure that corrective actions are implemented and to determine which items will be scheduled and tracked; the resolution will then be evaluated.

**Technical Evaluation: [N.5]** The staff finds that the Fermi 3 Emergency Plan adequately describes a means for evaluating observer and participant comments on areas in need of improvement, emergency plan procedural changes, assigning responsibility, implementing corrective actions, and establishing management controls to ensure that corrective actions are implemented. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.14.19 Conclusion**

The staff concludes that the information in the Fermi 3 Emergency Plan regarding exercises and drills is acceptable and meets the requirements of 10 CFR 50.47(b)(14) and 10 CFR Part 50, Appendix E, Sections IV.E.9(b) and IV.F.2.(a) thru (g); and complies with the guidance in NUREG-0654/FEMA-REP-1 Revision 1, Planning Standard N.

## **13.3C.15 Radiological Emergency Training**

### **13.3C.15.1 Regulatory Basis**

In order to determine whether the proposed emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(15), the staff evaluated the plan against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1, Revision 1. The staff also evaluated the proposed emergency plan against applicable regulatory requirements related to the area of "Radiological Emergency Training" in Appendix E to 10 CFR Part 50.

### **13.3C.15.2 Training for Offsite Emergency Organizations**

**Technical Information in the Emergency Plan: [O.1.a]** Section II.O, "Radiological Emergency Response Training," of the Fermi 3 Emergency Plan states that a training program will be implemented that provides for initial training and retraining for individuals with emergency response duties, including offsite support agencies that may be called on to assist in an emergency. Section II.O.1, "Offsite Emergency Response Training," states that the applicant will conduct or support site-specific training for offsite personnel who provide assistance during an emergency including local fire departments, law enforcement, ambulance, and hospital personnel. Additional training for offsite personnel is described in their respective radiological emergency plans with support provided by Fermi 3, when requested. Training topics include Radiological Emergency Response Plan orientation, communications interfaces, transporting

and treating contaminated patients, basic health physics, and radiation protection. The applicant, the Michigan State Police, and the local counties will also develop a four-part training program to be presented annually to the local offsite ERO. This section also provides a list of participating organizations.

**Technical Evaluation: [O.1.a]** The staff finds that the Fermi 3 Emergency Plan adequately describes the site-specific emergency response training provided to offsite emergency organizations that may be called upon to provide assistance in the event of an emergency. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.15.3    *Onsite Emergency Response Organization Training***

**Technical Information in the Emergency Plan: [O.2]** Section II.O.2, "Onsite Emergency Response Training," of the Fermi 3 Emergency Plan states that all ERO personnel are initially trained and receive periodic retraining based on the requirements of 10 CFR Part 50, Appendix E and on position-specific responsibilities. The training program includes practical drills where individuals demonstrate the ability to perform their responsibilities and tasks. The instructor/evaluator immediately corrects any errors noted during the practical drills and demonstrates the correct practice. Section II.O.4, "Onsite Emergency Response Organization Training Program," states that knowledge-based training may be provided in a classroom or other setting described in the emergency plan administrative procedures. In addition, performance-based training and evaluations are conducted for most ERO members during drills, walk-throughs, or table-tops. The completion of training activities and evaluations is documented in the ERO qualification guides.

**Technical Evaluation: [O.2]** The staff finds that the Fermi 3 Emergency Plan adequately describes the training program for members of the onsite emergency organization that provides classroom training and practical drills that demonstrate the ability to perform assigned emergency functions. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.15.4    *First Aid and Rescue Team Training***

**Technical Information in the Emergency Plan: [O.3] [O.4.f] {Appendix E, Section IV.F.1(b)(vi)}** Section II.O.3, "First Aid Training," of the Fermi 3 Emergency Plan states that personnel responsible for providing first aid will complete a training course equivalent to the Red Cross "Multi-Media" course. In RAI 13.03-15.01, the staff requested additional information regarding the scope, nature, and frequency of specialized initial training and retraining. The applicant's response to RAI 13.03-15.01 dated December 7, 2009 (ML093440828), provides a revised Section II.O of the Fermi 3 Emergency Plan that describes the scope, nature, and frequency of specialized initial training and retraining provided to ERO personnel including first aid and rescue team personnel. This training is consistent with existing Nuclear Generation Selection, Training, and Qualification Program Description QP-ER-665, "Emergency Response Organization."

**Technical Evaluation: [O.3] [O.4.f] {Appendix E, Section IV.F.1(b)(vi)}** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-15.01 acceptable because the information conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3

Emergency Plan incorporated the information and textual changes in the response to RAI 13.03-15.01. The staff finds that the Fermi 3 Emergency Plan adequately describes specialized initial and periodic retraining for individuals who may be called upon to provide first aid. This information is acceptable because it conforms to the requirements in 10 CFR Part 50, Appendix E, Section IV.F.1(b)(vi), and the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.15.5 Training Program to Implement the Emergency Plan**

#### **Technical Information in the Emergency Plan: [O.4] {Appendix E, Section IV.F.1}**

Section II.O.2 states that all ERO personnel are initially trained and receive periodic retraining based on the requirements of 10 CFR Part 50, Appendix E and position-specific responsibilities. The training program establishes the scope, nature, and frequency of the required training and qualification measures for facility position-specific emergency response members of the ERO. The content of the training program addresses the duties and responsibilities of the assigned position. Training is provided in a classroom or other setting as described in the emergency plan administrative procedures. Performance-based training and evaluations are conducted for most ERO members through drills, walk-throughs, or table-tops. The completion of training activities and evaluations are documented in ERO qualification guides. The lesson plans, study guides, and written exams are in the ERO training program. The initial and requalification training requirements are described in the emergency plan administrative procedures. Appendix 6 identifies the procedure for Radiological Emergency Response Training. Knowledge-based training may also be provided in a classroom setting.

In RAI 13.03-15.01, the staff requested additional information regarding the scope, nature, and frequency of the training specific to each of the following categories: personnel responsible for accident assessment; radiological monitoring teams and radiological analytical personnel; police, security, and firefighting personnel; repair and damage control/corrective action teams (onsite); first aid and rescue personnel; local support services personnel including Civil Defense/Emergency Service personnel; medical support personnel; licensee's headquarters support personnel; and personnel responsible for the transmission of emergency information and instructions. The applicant's response dated December 7, 2009 (ML093440828) provided a revised Section II.O of the Fermi 3 Emergency Plan that describes the scope, nature, and frequency of specialized initial training and retraining for ERO personnel. The training is consistent with existing Nuclear Generation Selection, Training, and Qualification Program Description QP-ER-665, "Emergency Response Organization." The applicant also described the scope, nature, and frequency of specialized initial training and retraining for the specific categories of personnel including ERO directors and coordinators; accident assessment personnel; radiological monitoring and analytical personnel; security and firefighting personnel; repair and damage control/corrective action team personnel; first aid and rescue team personnel; medical support personnel; Detroit Edison Headquarters support personnel; and personnel responsible for the transmission of emergency information and instructions.

**Technical Evaluation: [O.4] {Appendix E, Section IV.F.1}** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-15.01 acceptable because the information conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan incorporated the information and textual changes in the response to RAI 13.03-15.01. The staff finds that the Fermi 3 Emergency Plan adequately describes the training program for instructing and qualifying personnel who will implement radiological emergency response plans. This information is acceptable because it conforms to the

requirements in 10 CFR Part 50, Appendix E, Section IV.F.1, and the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.15.6    *Training for Emergency Response Organization Directors***

#### **Technical Information in the Emergency Plan: [O.4.a] {Appendix E, Section IV.F.1(b)(i)}**

Section II.O.2 states that all ERO personnel are initially trained and receive periodic retraining based on the requirements of 10 CFR Part 50, Appendix E and position-specific responsibilities. ERO personnel are trained to the extent appropriate to their duties and responsibilities. A program will be implemented to provide facility position-specific emergency response training for designated members of the ERO. In RAI 13.03-15.01, the staff requested additional information on training specifically for ERO Directors. The applicant's response to RAI 13.03-15.01 dated December 7, 2009 (ML093440828), provides a revised Section II.O of the emergency plan that describes the scope, nature, and frequency of specialized initial training and retraining for ERO personnel. The training is consistent with existing Nuclear Generation Selection, Training, and Qualification Program Description QP-ER-665, "Emergency Response Organization."

**Technical Evaluation: [O.4.a] {Appendix E, Section IV.F.1(b)(i)}** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-15.01 acceptable because the information conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan incorporated the information and textual changes in the response to RAI 13.03-15.01. The staff finds that the Fermi 3 Emergency Plan adequately describes the specialized initial and periodic retraining program for instructing and qualifying directors, managers, and coordinators who will implement radiological emergency response plans. This information is acceptable because it conforms to the requirements in 10 CFR Part 50, Appendix E, Section IV.F.1(b)(i) and the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.15.7    *Training for Accident Assessment Personnel***

#### **Technical Information in the Emergency Plan: [O.4.b] {Appendix E, Section IV.F.1(b)(ii)}**

Section II.O.2 states that all ERO personnel are initially trained and receive periodic retraining based on the requirements of 10 CFR Part 50, Appendix E and position-specific responsibilities. A program will be implemented to provide facility position-specific emergency response training for designated members of the ERO. The training program establishes the scope, nature, and frequency of the required training and qualification measures. In RAI 13.03-15.01 the staff requested additional information regarding the scope, nature, and frequency of the training specifically for accident assessment personnel. The applicant's response to this RAI dated December 7, 2009 (ML093440828) provided a revised Section II.O of the Emergency Plan that describes the scope, nature, and frequency of specialized initial training and retraining for ERO personnel. The training is consistent with existing Nuclear Generation Selection, Training, and Qualification Program Description QP-ER-665, "Emergency Response Organization."

**Technical Evaluation: [O.4.b] {Appendix E, Section IV.F.1(b)(ii)}** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-15.01 acceptable because the information conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan incorporated the information and textual changes in the response to RAI 13.03-15.01. The staff finds that the Fermi 3 Emergency Plan adequately specializes initial and periodic retraining for personnel responsible for accident assessment, including CR shift

personnel. This information is acceptable because it meets the requirements in 10 CFR Part 50, Appendix E, Section IV.F.1(b)(ii) and conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.15.8     *Training for Radiological Monitoring and Analysis Personnel***

**Technical Information in the Emergency Plan: [O.4.c] {Appendix E, Section IV.F.1(b)(iii)}** Section II.O.2 states that all ERO personnel are initially trained and receive periodic retraining based on the requirements of 10 CFR Part 50, Appendix E and position-specific responsibilities. A program will be implemented to provide facility position-specific emergency response training for designated members of the ERO that may include emergency exposure limits and exposure control techniques. In RAI 13.03-15.01, the staff requested additional information regarding the scope, nature, and frequency of the training specifically for radiological monitoring and analytical personnel. The applicant's response dated December 7, 2009 (ML093440828) provided a revised Section II.O of the Emergency Plan that describes the scope, nature, and frequency of specialized initial training and retraining for ERO personnel. The training is consistent with existing Nuclear Generation Selection, Training, and Qualification Program Description QP-ER-665, "Emergency Response Organization."

**Technical Evaluation: [O.4.c] {Appendix E, Section IV.F.1(b)(iii)}** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-15.01 acceptable because the information it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan incorporated the information and textual changes in the response to RAI 13.03-15.01. The staff finds that the Fermi 3 Emergency Plan adequately describes the specialized initial and periodic retraining for radiological monitoring and analytical personnel. This information is acceptable because it meets the requirements in 10 CFR Part 50, Appendix E, Section IV.F.1(b)(iii) and conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.15.9     *Training for Fire Fighting Teams***

**Technical Information in the Emergency Plan: [O.4.d] {Appendix E, Section IV.F.1(b)(iv)}** Section II.O.2 states that all ERO personnel are initially trained and receive periodic retraining based on the requirements of 10 CFR 50 Appendix E and position-specific responsibilities. A program will be implemented to provide facility position-specific emergency response training for designated members of the ERO that may include security access control and the site evacuation process. In RAI 13.03-15.01, the staff requested additional information regarding the scope, nature, and frequency of the training specifically for firefighting teams. The applicant's response dated December 7, 2009 (ML093440828) provided a revised Section II.O of the Emergency Plan that describes the scope, nature, and frequency of specialized initial training and retraining for ERO personnel. The training is consistent with existing Nuclear Generation Selection, Training, and Qualification Program Description QP-ER-665, "Emergency Response Organization."

**Technical Evaluation: [O.4.d] {Appendix E, Section IV.F.1(b)(iv)}** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-15.01 acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan incorporated the information and textual changes provided in the response to

RAI 13.03-15-01. The staff concludes that the Fermi 3 Emergency Plan adequately describes the specialized initial and periodic retraining for firefighting personnel. This information is acceptable because it meets the requirements in 10 CFR Part 50, Appendix E, Section IV.F.1(b)(iv) and conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.15.10 *Training for Repair and Damage Control Teams***

**Technical Information in the Emergency Plan: [O.4.e] {Appendix E, Section IV.F.1(b)(v)}** Section II.O.2 states that all ERO personnel are initially trained and receive periodic retraining based on the requirements of 10 CFR Part 50, Appendix E and position-specific responsibilities. A program will be implemented to provide facility position-specific emergency response training for designated members of the ERO that may include emergency response facilities. In RAI 13.03-15.01, the staff requested additional information regarding the scope, nature, and frequency of the training. The applicant's response dated December 7, 2009 (ML093440828) applicant provided a revised Section II.O.4, "Onsite Emergency Response Organization Training Program," that identifies training provided to repair and damage control/corrective action team personnel.

**Technical Evaluation: [O.4.e] {Appendix E, Section IV.F.1(b)(v)}** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-15.01 acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan incorporated the information and textual changes in the response to RAI 13.03-15.01. The staff finds that the Fermi 3 Emergency Plan adequately describes the specialized initial and periodic retraining for repair and damage control teams. This information is acceptable because it meets the requirements in 10 CFR Part 50, Appendix E, Section IV.F.1(b)(v) and conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.15.11 *Training for Local Emergency Management Personnel***

**Technical Information in the Emergency Plan: [O.4.g] {Appendix E, Section IV.F.1}** Section II.O.1 states that the applicant conducts or supports site-specific training for offsite personnel who provide assistance during an emergency. This section also states that the applicant conducts an annual seminar for offsite support personnel involved with the onsite/offsite emergency response facilities, EALs, emergency classification, meteorology, dose assessment, field surveys, and PARs. This section also provides a list of participating organizations.

**Technical Evaluation: [O.4.g] {Appendix E, Section IV.F.1}** The staff finds that the Fermi 3 Emergency Plan adequately describes the specialized training and periodic retraining for local support services/emergency service personnel. This information is acceptable because it meets the requirements in 10 CFR Part 50, Appendix E, Section IV.F.1 and conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.15.12 *Training for Medical Support Personnel***

**Technical Information in the Emergency Plan: [O.4.h] {Appendix E, Section IV.F.1(b)(vii)}** Section II.O.3 states that personnel assigned to emergency teams who provide first aid will complete a training course equivalent to the Red Cross Multi-Media Program on a schedule compatible with the Red Cross requirements. In RAI 13.03-15.01, the staff requested additional

information regarding the scope, nature, and frequency of the training specifically for medical support personnel. The applicant's response dated December 7, 2009 (ML093440828) the applicant provided a revised Section II.O of the Emergency Plan that describes the scope, nature, and frequency of specialized initial training and retraining for ERO personnel. The training is consistent with existing Nuclear Generation Selection, Training, and Qualification Program Description QP-ER-665, "Emergency Response Organization."

**Technical Evaluation: [O.4.h] {Appendix E, Section IV.F.1(b)(vii)}** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-15.01 acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan incorporated the information and textual changes in the response to RAI 13.03-15.01. The staff finds that the Fermi 3 Emergency Plan adequately describes the specialized initial and periodic retraining for medical support personnel. This information is acceptable because it meets the requirements in 10 CFR Part 50, Appendix E, Section IV.F.1(b)(vii) and conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.15.13 *Training for Headquarters Support Personnel***

**Technical Information in the Emergency Plan: [O.4.i] {Appendix E, Section IV.F.1(b)(viii)}** Section II.O.2 states that all ERO personnel are initially trained and receive periodic retraining based on the requirements of 10 CFR Part 50, Appendix E and position-specific responsibilities. In RAI 13.03-15.01, the staff requested additional information regarding training for headquarters support personnel. The applicant's response dated December 7, 2009 (ML093440828) provided Section II.O.4, "Onsite Emergency Response Organization Training Program," stating that training is provided to Detroit Edison Headquarters support personnel. The content of the training program is appropriate for the duties and responsibilities of the assigned positions.

**Technical Evaluation: [O.4.i] {Appendix E, Section IV.F.1(b)(viii)}** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-15.01 acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan incorporated the information and textual changes in the response to RAI 13.03-15.01. The staff finds that the Fermi 3 Emergency Plan adequately describes the specialized initial and periodic retraining for licensee's headquarters support personnel. This information is acceptable because it meets the requirements in 10 CFR Part 50, Appendix E, Section IV.F.1(b)(viii) and conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.15.14 Training Related to the Transmitting Emergency Information**

**Technical Information in the Emergency Plan: [O.4.j]** Section II.O.2 states that a program will be implemented to provide facility position-specific emergency response training for designated members of the ERO that may include emergency response facilities. In RAI 13.03-15.01, the staff requested additional information regarding the scope, nature, and frequency of the training. The applicant's response to this RAI dated December 7, 2009 (ML093440828) provided Section II.O.4 that identifies the training provided to personnel responsible for the transmission of emergency information and instructions.

**Technical Evaluation: [O.4.j]** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-15.01 acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan incorporated the information and textual changes in the response to RAI 13.03-15.01. The staff finds that the Fermi 3 Emergency Plan adequately describes the specialized initial and periodic retraining for personnel responsible for the transmission of emergency information and instructions. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.15.15 Training for Security Personnel**

**Technical Information in the Emergency Plan: {Appendix E, Section IV.F.1(b)(ix)}** Section II.O.2 states that all ERO personnel are initially trained and receive periodic retraining based on the requirements of 10 CFR Part 50, Appendix E and position-specific responsibilities. A program will be implemented to provide facility position-specific emergency response training for designated members of the ERO that may include emergency response facilities. In RAI 13.03-15.01, the staff requested additional information regarding the scope, nature, and frequency of the training. The applicant's response dated December 7, 2009 (ML093440828) provides a revised Section II.O.4, "Onsite Emergency Response Organization Training Program," that identifies training provided to security and firefighting personnel.

**Technical Evaluation: {Appendix E, Section IV.F.1(b)(ix)}** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-15.01 acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan incorporated the information and textual changes in the response to RAI 13.03-15.01. The staff finds that the Fermi 3 Emergency Plan adequately describes the specialized initial and periodic retraining for security personnel. This information is acceptable because it meets the requirements in 10 CFR Part 50, Appendix E, Section IV.F.1(b)(ix).

### **13.3C.15.16 Retraining of Emergency Response Personnel**

**Technical Information in the Emergency Plan: [O.5] {Appendix E, Section IV.F.1}** Section II.O.2 states that all ERO personnel are initially trained and receive periodic retraining based on the requirements of 10 CFR Part 50, Appendix E and position-specific responsibilities. A program will be implemented to provide facility position-specific emergency response training for designated members of the ERO that may include emergency response facilities.

**Technical Evaluation: [O.5] {Appendix E, Section IV.F.1}** The staff finds that the Fermi 3 Emergency Plan adequately describes the provisions for retraining personnel with emergency

response responsibilities. This information is acceptable because it meets the requirements of 10 CFR Part 50, Appendix E, Section IV.F.1 and conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

### **13.3C.15.17 Conclusion**

The staff concludes that the information in the Fermi 3 Emergency Plan regarding radiological emergency training is acceptable and meets the requirements of 10 CFR 50.47(b)(15); 10 CFR Part 50, Appendix E, Sections IV.F.1, IV.F.1.b(i) through IV.F.1.b(ix) and complies with the guidance in NUREG-0654/FEMA-REP-1 Revision 1, Planning Standard O.

### **13.3C.16 Responsibility for the Planning Effort**

#### **13.3C.16.1 Regulatory Basis**

In order to determine whether the proposed emergency plan meets the applicable regulatory requirements in 10 CFR 50.47(b)(16), the staff evaluated the plan against the detailed evaluation criteria in NUREG-0654/FEMA-REP-1, Revision 1. The staff also evaluated the proposed emergency plan against applicable regulatory requirements related to the area of "Responsibility for the Planning Effort" in Appendix E to 10 CFR Part 50.

#### **13.3C.16.2 Training for Personnel Responsible for Planning Effort**

**Technical Information in the Emergency Plan: [P.1]** Section II.P.1, "Training," of the Fermi 3 Emergency Plan states that Detroit Edison provides training for the Emergency Preparedness staff that is consistent with applicable regulatory requirements and guidance; license conditions; other commitments; and accepted good practices. Training includes formal education, professional seminars, plant-specific training, industry meetings, and other activities and forums that provide an exchange of pertinent information.

**Technical Evaluation: [P.1]** The staff finds that the Fermi 3 Emergency Plan adequately describes the training that will be provided for individuals responsible for the planning effort. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.16.3 Person Responsible for Emergency Planning**

**Technical Information in the Emergency Plan: [P.2]** Section II.P.2, "Responsibility for the Planning Effort," of the Fermi 3 Emergency Plan identifies the Licensing Manager as the individual with overall authority and responsibility for emergency preparedness for the applicant. The Licensing Manager is also responsible for issuing and controlling the Fermi 3 Emergency Plan and activities associated with emergency preparedness.

**Technical Evaluation: [P.2]** The staff finds that the Fermi 3 Emergency Plan adequately identifies the individual, by title, with the overall authority and responsibility for radiological emergency response planning. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.16.4    *Designation of an Emergency Response Coordinator***

**Technical Information in the Emergency Plan: [P.3]** Section II.P, “Responsibility for the Planning Effort,” states that the Supervisor reports to the Licensing Manager and is designated as the Emergency Planning Coordinator. Responsibilities include developing and updating the Emergency Plan and implementing and administering procedures that support the plan. The Emergency Preparedness Supervisor also coordinates the development and revision of the Emergency Plan and procedures with other response organizations. The Licensing Manager is responsible for issuing and controlling the Emergency Plan.

**Technical Evaluation: [P.3]** The staff finds that the Fermi 3 Emergency Plan adequately designates an Emergency Planning Coordinator with the responsibility for developing and updating emergency plans and for coordinating these plans with other response organizations. This information is acceptable because it conforms to the guidance in NUREG–0654/FEMA-REP-1, Revision 1.

#### **13.3C.16.5    *Update and Maintenance of the Emergency Plan***

**Technical Information in the Emergency Plan: [P.4] {Appendix E, Section IV.G}** Section II.P.3, “Responsibility for the Planning Effort,” states that an annual review of the Emergency Plan is performed to ensure that the plan and its supporting agreements are current. Changes to the emergency plan include issues identified during training, audits, assessments, drills, exercises, or actual emergency events.

**Technical Evaluation: [P.4] {Appendix E, Section IV.G}** The staff finds that the Fermi 3 Emergency Plan adequately describes provisions for updating the emergency plan and agreements and reviewing and certifying it to be current on an annual basis. In addition, the applicant described updating provisions take into account changes identified by drills and exercises. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1 and meets the applicable requirements in 10 CFR Part 50, Appendix E.

#### **13.3C.16.6    *Distribution of Emergency Plans***

**Technical Information in the Emergency Plan: [P.5]** Section II.P.4, “Distribution of Revised Plans,” states that revisions to the plan are completed in accordance with the plant’s review and approval processes. Revisions to the plan are reviewed by affected organizations and then routed to the onsite review organization for review and approval. The plan and its implementing procedures are distributed as necessary on a controlled basis to the Emergency Response Facilities and selected State, local, provincial, and Federal agencies, in accordance with the plant’s document control distribution process.

**Technical Evaluation: [P.5]** The staff finds that the Fermi 3 Emergency Plan adequately describes how the emergency response plans and approved changes will be forwarded to all organizations and appropriate individuals with responsibility for implementation of the plan. This information is acceptable because it conforms to the guidance in NUREG–0654/FEMA-REP-1, Revision 1.

### **13.3C.16.7**    *Supporting Plans*

**Technical Information in the Emergency Plan:** [P.6] Section II.P.5, “Supporting Plans,” of the Fermi 3 Emergency Plan identifies the supporting plans from the State, county, and Federal governments, as well as from the NRC and the applicant.

**Technical Evaluation:** [P.6] The staff finds that the Fermi 3 Emergency Plan contains an appropriate detailed listing of supporting plans and their source. This information is acceptable because it conforms to the guidance in NUREG–0654/FEMA-REP-1, Revision 1.

### **13.3C.16.8**    *Emergency Plan Implementing Procedures*

**Technical Information in the Emergency Plan:** [P.7] Section II.P.6, “Implementing and Supporting Procedures,” states that Appendix 6 of the Fermi 3 Emergency Plan contains a listing by title of those procedures that implement and maintain the plan. Appendix 6 also includes sections of the plan and the corresponding implementing procedures.

**Technical Evaluation:** [P.7] The staff finds that the Fermi 3 Emergency Plan contains an Appendix with an appropriate listing of the procedures—by title—that are required to implement the plan and their corresponding sections of the plan that they implement. This Appendix is acceptable because it conforms to the guidance in NUREG–0654/FEMA-REP-1, Revision 1.

### **13.3C.16.9**    *Table of Contents and Cross-Reference Table*

**Technical Information in the Emergency Plan:** [P.8] Section II.P.7, “Table of Contents and Cross-Reference,” states that the Fermi 3 Emergency Plan contains a specific table of contents and that the format of the Plan follows the format of NUREG–0654-FEMA-REP-1, Revision 1. Appendix 7, “NUREG–0654 Cross-Reference,” of the Fermi 3 Emergency Plan provides a cross-reference between the Emergency Plan, Appendix E to 10 CFR Part 50, the evaluation criteria of NUREG–0654/FEMA-REP-1, and the State and local emergency plans.

**Technical Evaluation:** [P.8] The staff finds that the Fermi 3 Emergency Plan contains an adequate specific table of contents that cross-references applicable regulations and guidance documents to the supporting sections of Fermi 3 Emergency Response Plan. This is acceptable because it conforms to the guidance in NUREG–0654/FEMA-REP-1, Revision 1.

### **13.3C.16.10**    *Annual Independent Review of the Emergency Plan*

**Technical Information in the Emergency Plan:** [P.9] Section II.P.8, “Emergency Plan Audits,” states that in order to meet the requirements of 10 CFR 50.54(t), periodic independent reviews of the Emergency Preparedness Program will be conducted to examine conformance with 10 CFR 50.47, 10 CFR 50.54, and 10 CFR Part 50, Appendix E. The Nuclear Quality Assurance organization will perform or oversee the independent audit and will coordinate with the Supervisor of Emergency Preparedness to ensure that audit findings and recommendations for improvement are subject to management controls that are consistent with the plant’s corrective action program. The frequency of periodic audits is established and maintained based on an assessment of performance compared to performance indicators. However, the frequency of an audit may not be less than once every 24 months. In addition, program audits are conducted as soon as it is reasonably practicable after a change occurs in personnel,

procedures, equipment, or facilities that has the potential to adversely affect emergency preparedness—but no longer than 12 months after the change.

In RAI 13.03-16-01, the staff requested the applicant to revise the emergency plan audit frequency description to be consistent with 10 CFR 50.54(t) (1) (ii) and not to exceed 24 months. The applicant's response to RAI 13.03-16-01 dated December 7, 2009 (ML093440828), provided a revised Section II.P.8 that clearly describes the intervals between audits and will include this revised information in a future revision to the emergency plan.

**Technical Evaluation: [P.9]** The staff finds the additional information and textual revision to the Fermi 3 Emergency Plan submitted in response to RAI 13.03-16-01 acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1. The staff confirmed that Revision 4 of the Fermi 3 Emergency Plan incorporated the information and textual changes in the response to RAI 13.03-15.01. The staff finds that the Fermi 3 Emergency Plan adequately describes arrangements for and the conduct of independent reviews of the Emergency Preparedness Program, at intervals not to exceed 12 months after a change that has the potential to adversely affect the site's emergency preparedness. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.16.11 *Quarterly Update of Emergency Telephone Numbers***

**Technical Information in the Emergency Plan: [P.10]** Section II.P.9, "Emergency Telephone Numbers," states that the Emergency Preparedness Supervisor or designee is responsible for performing a quarterly review of telephone numbers in emergency response procedures and for ensuring that required updates are completed.

**Technical Evaluation: [P.10]** The staff finds that the Fermi 3 Emergency Plan adequately provides for updating telephone numbers in emergency procedures at least quarterly. This information is acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1, Revision 1.

#### **13.3C.16.12 *Conclusion***

The staff concludes that the information in the Fermi 3 Emergency Plan regarding the responsibility for EP is acceptable and meets the requirements of 10 CFR 50.47(b)(16) and 10 CFR Part 50, Appendix E, Section E.IV.G and complies with the guidance in NUREG-0654/FEMA-REP-1 Revision 1, Planning Standard P.

#### **13.3C.17 *Security-Based Event Considerations***

##### **13.3C.17.1 *Regulatory Basis***

NUREG-0800, Section 13.3, "Emergency Planning," specifies that applicants for a COL address the Commission Orders issued on February 25, 2002, as well as any subsequent NRC guidance, to determine what security-related aspects of EP and preparedness are to be addressed in the emergency plan.

The Commission Orders issued February 25, 2002, and security-related enhancements identified in NRC Bulletin 2005-02, "Emergency Preparedness and Response Actions for

Security-Based Events,” identify the following areas to be addressed in the COL application, Emergency Plan, or EPIPs:

1. Security-based Emergency Classification Levels and EALs - The emergency plan includes EALs to ensure that a site specific, security event results in an emergency classification declaration of at least a notification of unusual event. The classification scheme should also reflect the strategy for escalation to a higher level event classification.
2. NRC Notifications - Notification procedures allow for NRC notification of safeguard events immediately after notification of local law enforcement agencies, or within about 15 minutes of the recognition of a security-based threat.
3. Onsite Protective Measures - Consideration has been given to a range of protective measures for site workers, as appropriate, during a security-based event (e.g., evacuation of personnel from target buildings, site evacuation by opening security gates, dispersal of licensed operators, sheltering of personnel in structures away from potential site targets, and arrangements for accounting for personnel after attack).
4. ERO Augmentation - ERFs and alternative facilities have been identified to support the rapid response from ERO members to mitigate site damage from a security-based event once the site is secured. The alternative facilities could likely be located outside of the PA and should include the following characteristics: accessible even if the site is under threat or actual attack; communication links with the EOF, control room and plant security; the capability to perform offsite notifications; and the capability for engineering assessment activities, including damage control team planning and preparation. The alternative facility should also be equipped with general plant drawings and procedures, telephones, and computer links to the site.
5. Potential Vulnerabilities from Nearby Hazardous Facilities, Dams, and other Sites - The potential effect has been determined on the plant, onsite staffing and augmentation, and onsite evacuation strategies from damage to nearby hazardous facilities, dams, and other nearby sites, in consideration of a security-based event.
6. Drills and Exercises - Emergency Preparedness drill and exercise programs maintain the key skills necessary for mitigating security-based events. The ERO demonstrates security-based emergency preparedness program activities under the schedule as committed to in its emergency plans.
7. Emergency Preparedness and Response to a Security-based Event - Onsite staffing, facilities, and procedures are adequate to accomplish actions necessary to respond to a security-based event, and the emergency plan and/or procedures reflect the site specific needs.

#### **13.3C.17.2 Security-Based Emergency Classification and Emergency Action Levels**

**Technical Information in the Emergency Plan: (NUREG-0800)** Emergency classifications for security or a hostile action based on event information are included in the EALs addressed in Section 13.3C.4 of this SER.

**Technical Evaluation: (NUREG-0800)** The staff's evaluation is also in Section 13.3C.4 of this SER.

#### **13.3C.17.3 NRC Notification**

**Technical Information in the Emergency Plan: (NUREG-0800)** NRC notification information is in Subsection 13.3C.5.8 of this SER.

**Technical Evaluation: (NUREG-0800)** The staff's evaluation is also in Subsection 13.3C.5.8 of this SER.

#### **13.3C.17.4 Onsite Protective Measures**

**Technical Information in the Emergency Plan: (NUREG-0800)** Section II.J.6 of the Fermi 3 Emergency Plan addresses security measures for a hostile action event at the site. This section describes conditions that initiate hostile action event protective actions for the site other than personnel assembly, accountability, and evacuation—the expected protective actions for a radiological event. Specifically during a security event, the Emergency Director coordinates with Nuclear Security to make decisions regarding the appropriate protective actions for site personnel. If, in the Emergency Director's judgment, personnel assembly, accountability, and evacuation would not be the safest protective actions for site personnel, he or she may direct protective measures such as:

- Evacuation of personnel from areas and buildings perceived as high-value targets
- Site evacuation by opening, while continuing to defend, security gates
- Dispersal of key personnel
- Onsite sheltering
- Staging of ERO personnel in alternate locations pending the restoration of safe conditions
- Implementation of accountability measures following the restoration of safe conditions

**Technical Evaluation: (NUREG-0800)** The staff finds the Fermi 3 Emergency Plan adequately describes onsite protective measures necessary to respond to a security event. This information is acceptable because it meets the guidance in NUREG-0800.

#### **13.3C.17.5 Emergency Response Organization Augmentation**

**Technical Information in the Emergency Plan: (NUREG-0800)** ERO augmentation is addressed in Section II.A.1 under "Coordination with Fermi 2." This section states that in the event that emergencies are declared simultaneously at Fermi 2 and 3, a single Emergency Director is designated from onsite shift management in accordance with the emergency plan implementing procedures. The Emergency Director performs those duties described in the Fermi 3 Emergency Plan, as well as those described in the Fermi 2 Emergency Plan, and

coordinates activities between the TSCs and OSCs. Section II.B.1, Tables II.B-1, II.B-2 and II.B-4 address ERO command and control, ERO minimum staffing, and position functions/tasks. Section II.E.1 describes the processes and procedures for ERO notification and mobilization. Section II.J.5 states that personnel accountability is performed in accordance with EIPs consistent with the requirements of the Fermi 3 Security Plan. Section II.J.6 states that during a security event, conditions may dictate the initiation of protective measures other than personnel evacuation, assembly, and accountability. The Emergency Director makes decisions regarding appropriate protective measures based on an evaluation of site conditions, including input from security. The Emergency Director may direct other protective measures if personnel evacuation, assembly, and accountability may result in undue hazards to site personnel.

**Technical Evaluation: (NUREG-0800)** The staff finds that the Fermi 3 Emergency Plan adequately describes the ERO augmentation necessary to respond to a security event. This information is acceptable because it meets the guidance in NUREG-0800.

#### **13.3C.17.6 *Potential Vulnerabilities from Nearby Hazardous Facilities, Dams, and Other Sites***

**Technical Information in the Emergency Plan: (NUREG-0800)** The assessment of potential vulnerabilities from nearby hazardous facilities, dams, and other sites that could potentially affect the safety of the Fermi 3 facility is addressed in COL FSAR Section 2.2, "Nearby Industrial, Transportation, and Military Facilities." FSAR Section 2.2.1, "Locations and Routes," states that there are no chemical plants, refineries, mining operations, drilling operations, active oil or gas wells, military bases, or missile sites within the vicinity of Fermi 3. Section 2.2.3, "Evaluation of Potential Accidents," states that the separation between the: interstates, main railway line, and waterway routes and the Fermi site are within the safe distance criteria of RG 1.91 Revision 1, "Evaluations of Explosions Postulated to Occur at Transportation Routes Near Nuclear Power Plants."

**Technical Evaluation: (NUREG-0800)** The staff finds the Fermi 3 Emergency Plan adequately describes the assessment of other nearby hazards that could potentially affect the safety of the Fermi 3 facility. This information is acceptable because it meets the guidance in NUREG-0800.

#### **13.3C.17.7 *Security-Based Drills and Exercises***

**Technical Information in the Emergency Plan: (NUREG-0800)** Section II.N.1.b of the Fermi 3 Emergency Plan addresses the performance of security-based drills and exercises. This section states that the applicant will demonstrate emergency response capability to a security-based threat at least once within a 8-year period.

**Technical Evaluation: (NUREG-0800)** The staff finds the Fermi 3 Emergency Plan adequately describes the security-based drill and exercise program. This information is acceptable because it meets the guidance in NUREG-0800.

#### **13.3C.17.8 *Emergency Preparedness and Response to a Security-Based Event***

Onsite staffing, facilities, and procedures are adequate to accomplish actions necessary to respond to a security-based event, and the emergency plan and/or procedures reflect the site-specific needs.

**Technical Information in the Emergency Plan: (NUREG-0800)** Emergency Preparedness and Response to a security-based event information is described in Sections 13.3C.2, 13.3C.8, and 13.3C.10 of this SER.

**Technical Evaluation: (NUREG-0800)** The staff's evaluation is also in Sections 13.3C.2, 13.3C.8, and 13.3C.10 of this SER. This information is acceptable because it meets the guidance in NUREG-0800.

### **13.3C.17.9 Conclusion**

The staff concludes that the Fermi 3 Emergency Plan adequately addresses the preparation for and response to a security-based events program. This information is acceptable because it meets the guidance in NUREG-0800.

### **13.3C.18 Evacuation Time Estimate (ETE) Analysis**

The Fermi 3 Emergency Plan includes an analysis of the time required to evacuate the plume exposure pathway EPZ. The report titled, "Fermi Nuclear Power Plant Development of Evacuation Time Estimates," Revision 2, dated April 2010 (ETE Report) was provided as a separate document in the COL application. The report includes analyses of and responses to RAIs dated October 14, 2009 (ML092931167), which provided the basis for the NRC staff's conclusions as to the adequacy of its content and conformity with Appendix 4, "Evacuation Time Estimates within the Plume Exposure Pathway Emergency Planning Zone," to NUREG-0654/FEMA REP-1, Revision 1.

#### **13.3C.18.1 Regulatory Basis for the ETE Analysis**

The staff considered the following regulatory requirements and guidance in the review of the evacuation time estimate analysis:

10 CFR 52.79(a)(21) refers to 10 CFR Part 50, Appendix E, Section IV, which requires, in part, that the nuclear power reactor operating license applicant provide an analysis of the time required to evacuate various sectors and the distances within the plume exposure pathway EPZ for transient and permanent populations.

The staff evaluated the ETE Report against Appendix 4 to NUREG-0654/FEMA-REP-1, Revision 1. Appendix 4 contains detailed guidance that the staff used to determine whether the ETE analysis meets the applicable regulatory requirements in Appendix E to 10 CFR Part 50.

#### **13.3C.18.2 Introductory Materials Related to the ETE Report**

**Technical Information in the ETE Report: [Section I of Appendix 4]** Section 1.2, "The Fermi Nuclear Power Plant Location," of the ETE Report describes the Fermi 3 site as located on the west bank of Lake Erie, approximately 38 km (24 mi) northeast of Toledo, Ohio, and 48 km (30 mi) southwest of Detroit, Michigan. The EPZ consists of parts of Monroe and Wayne Counties. A vicinity map is provided as Figure 1-1, "Fermi Nuclear Power Plant Location Site Location," which shows the plant location, EPZ boundary, and topographical features including Lake Erie to the east of the site, inland waterways, major interstate highways, state roadways, and railroad tracks within the EPZ. Appendix L, "Protective Action Area Boundaries," describes the boundaries of the five protective action areas, which are generally distinguished by

roadways. In RAI 13.03-1, the staff requested the applicant to provide a map of the EPZ that identifies political boundaries. In the response to RAI 13.03-1 dated October 14, 2009 (ML092931167), the applicant revised Figure 6-1, "Fermi Nuclear Power Plant Protective Action Areas," to include political boundaries and to reference the political boundaries in the text.

Section 1, "Introduction," describes the approach used to develop information and analyze the evacuation times. The applicant gathered demographic information, performed a field survey of the EPZ, estimated trip generation times, defined evacuation regions, applied the procedures specified in the Transportation Research Board 2000 Highway Capacity Manual (TRB 2000), modeled the evacuation, and calculated the ETE. Section 1.3, "Preliminary Activities," states that the IDYNEV system was used in the analysis and includes PC-DYNEV, which is a macroscopic traffic simulation model used to calculate the ETE. Section 1 identifies NUREG/CR-4873, "Benchmark Study of the IDYNEV Evacuation Time Estimate Computer Code," and NUREG/CR-4874, "The Sensitivity of Evacuation Time Estimates to Changes in Input Parameters for the IDYNEV Computer Code," as references for additional detail regarding the model. Appendix B, "Traffic Assignment Model," describes the trip assignment and distribution model and provides the algorithm used to compute the link travel time. The algorithm was based on the Bureau of Public Roads formula. Appendix C, "Traffic Simulation Model: PC-DYNEV," describes the method and computer model used to analyze the evacuation times. Appendix C includes a description of histograms developed and used in the analysis.

Section 2.1, "Data Estimates," describes how population estimates were developed and states that roadway capacities were based on field surveys and the application of the 2000 Highway Capacity Manual guidance (TRB, 2000).

Section 2.2, "Study Methodological Assumptions," describes assumptions for data estimates, methodology, the planning basis, school evacuations, mobilization of the general population, percentage of households with commuters, and staffing the traffic control. The ETE is assumed to be the time from the advisory to evacuate until the time that the Region is clear of the indicated percentile of people. Evacuation movements are assumed to be outbound with regard to the plant site. Assumptions regarding shadow evacuations are provided and are consistent with the guidance in NUREG/CR-6863.

Section 2.3, "Study Assumptions," provides assumptions for data estimates, methodology, planning basis, school evacuations, mobilization of the general population, percentage of households with commuters, and staffing the traffic control. Section 2.3 describes roadway capacity and speed reduction percentages that are consistent with the values in the Highway Capacity Manual (TRB, 2000) and in the weather-related technical publication "Impacts of Weather on Urban Freeway Traffic Flow Characteristics and Facility Capacity," (Agarwal et al., 2005), which is identified in the ETE Report. Section 2.3 describes a planning assumption that 64 percent of households with commuters will wait for the return of a commuter before beginning their evacuation trip. In RAI 13.03-2, the staff noted a discrepancy between the 64 percent of households awaiting the return of a commuter and the 55 percent waiting for a family member to return before evacuating. In the response to RAI 13.03-2 dated October 14, 2009 (ML092931167), the applicant stated that the text for Assumption 3b would be revised to show the correct value of 62 percent. The applicant revised text for Assumption 3b in Section 2.3. In RAI 13.03-36 the staff requested the applicant to revise all applicable sections of the ETE Report to reflect the revised assumption that all households with commuters will await the return of the commuter prior to evacuating. In the response to RAI 13.03-36 dated April 16, 2010

(ML101190369), the applicant revised Section 8.1 and Table 8-1 to reflect that all commuters will return home. The applicant's additional text in Appendix F, "Telephone Survey," states:

This data was not used in this study. The findings of NUREG/CR-6953, Volume 2 indicate that the family tends to evacuate together. Based on this information, it is assumed for this study that 100 percent of households with at least one commuter (62% of EPZ households according to Figure F-6) await the return of the commuter before beginning their evacuation trip.

In the response the applicant revised Table 6-4, "Vehicle Estimates by Scenario," to reflect the changes in the buses and total vehicles as a result of the change regarding commuters.

In RAI 13.03-52, the staff requested the applicant to explain why the distributions that include commuters in Section 5, "Estimation of Trip Generation Time," such as Figure 5-3, "Comparison of Trip Generation Distributions," and Table 5-1, "Trip Generation Histograms for the EPZ Population," remain unchanged, and if they require to be changed revise the distributions and text references regarding commuters, as appropriate. In the response to RAI 13.03-52 dated August 13, 2010 (ML102290043), the applicant stated that because households with and without commuters exist within the EPZ, separate distributions for "households with commuters" and "households without commuters" are appropriate. Additionally, the applicant will remove all references to "households not awaiting commuters" in the ETE report. The applicant will revise Table 1-1, "ETE Study Comparisons," Section 5 and Table 6-3, "Percent of Population Groups Evacuating for Various Scenarios."

**Technical Evaluation: [Section I of Appendix 4]** The ETE Report includes a map showing the proposed site and plume exposure pathway EPZ, as well as transportation networks, topographical features, and political boundaries. The boundaries of the EPZ, in addition to the evacuation subareas within the EPZ, are based on factors such as current and projected demography, topography, land characteristics, access routes, and jurisdictional boundaries.

The ETE Report describes the method used to analyze the evacuation times. A general description of the evacuation model was provided, including the assumptions used in the evacuation time estimate analysis.

In the response to RAI 13.03-1 dated October 14, 2009 (ML092931167), the applicant revised Figure 6-1, "Fermi Nuclear Power Plant Protective Action Areas," to show PAAs and national, county, and township boundaries. The staff finds the additional information and textual revisions submitted in response to RAI 13.03-1 that clarified the textual information concerning the plant location in relation to transportation networks, topographical features, and political boundaries acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1 Revision 1 Appendix 4, Section I.A. The staff confirmed that Revision 1 of the Fermi Nuclear Power Plant (NPP) ETE incorporated the information and textual changes provided in the response to RAI 13.03-01.

In the response to RAI 13.03-2 dated October 14, 2009 (ML092931167), the applicant revised Assumption 3b to state that all households in the EPZ with commuters will await the return of the commuter before beginning their evacuation. In the response to RAI 13.03-36 dated April 16, 2010 (ML101190369) the applicant revised the number of transit-dependent persons and the number of vehicles used in the evacuation. In the response to RAI 13.03-52 dated August 13, 2010 (ML102290043), the applicant removed references to "households not awaiting

commuters” and revised Table 1-1, Section 5, and Table 6-3. The staff finds the additional information and textual revisions submitted in response to RAI 13.03-2 and RAIs 13.03-36 and 13.03-52 clarifying the textual information concerning assumptions used for households in the EPZ with commuters acceptable because it conforms to the guidance in NUREG-0654/FEMA-REP-1 Revision 1 Appendix 4, Section I.B.

### **13.3C.18.3 Demand Estimation**

**Technical Information in the ETE Report: [Section II of Appendix 4]** Population estimates in the ETE were based on data from the 2000 U.S. Census and projected to the year 2008 using census growth rate projections. For the new plant construction scenario, the permanent resident and shadow populations were projected to the year 2018. In Table 3-2, “EPZ Permanent Resident Population,” the 2000 population is 92,699 from which the 2008 population is projected. Table 3-2 of the ETE includes a footnote explaining that the 16-km (10-mi) boundary, as opposed to the EPZ boundary, is used in other COL application locations that lead to deviations in population estimates. The year 2000 population in the Detroit Edison Energy Environmental Report (ER) Section 2.5.1, “Demography,” and FSAR Subsection 2.1.3.1.2.1, “Transient Population,” is 89,198 based on a 16-km (10-mi) boundary rather than the EPZ boundary.

Section 3, “Demand Estimation,” quantifies the permanent residents, transients, and employees within the EPZ and includes peak populations for the River Raisin Jazz Festival special event; peak construction workforce; and visitors to parks, golf courses, marinas, and major retail facilities. Table 3-3, “Permanent Resident Population and Vehicles by PAA,” identifies a population of 103,343 and 47,113 vehicles that corresponds to an automobile occupancy factor of 2.2 people per vehicle (103,343/47,113). Table 8-1, “Transit Dependent Population Estimates,” identifies 2,986 people as transit dependent. In RAI 13.03-4, the staff asked for the number of transit-dependent residents who may have special needs. In the response to 13.03-4 dated October 14, 2009 (ML092931167), the applicant describes the approach for estimating the number of transit-dependent residents and demonstrates that the evacuation of this population group may be conducted within the ETE for the general public. The applicant added Section 8.5, “Evacuation of Homebound Special Needs Population,” to the ETE Report. In RAI 13.03-37, the staff asked whether vans are used to evacuate special needs individuals who are also transit dependent and if so, to provide the number and capacity of buses and vans available for the evacuation. In the response to RAI 13.03-37 dated April 16, 2010 (ML101190369), the applicant stated that based on discussions with emergency management personnel from Monroe and Wayne Counties, regular buses and specially equipped buses will be used to service wheelchair-bound residents within the EPZ. The applicant also stated that the number of buses in Monroe and Wayne Counties as well as in Toledo, Ohio. The applicant assumed that 50 percent of wheelchairs are rigid and 50 percent of wheelchairs are folding. Those wheelchair-bound persons using folding wheelchairs can be evacuated in a standard bus and their wheelchairs can be folded and placed elsewhere in the bus. Wheelchair-bound persons using rigid wheelchairs will be evacuated in specially equipped buses. The response describes regular buses that have a capacity of 7 persons with folding wheelchairs and 7 caretakers; and specially equipped buses with a capacity of 4 persons in rigid wheelchairs and 4 caretakers.

Table 3-4, “Transient Population and Vehicles by PAA,” lists a total of 13,458 transients in the EPZ and 6,405 vehicles that corresponds to a vehicle occupancy factor of 2.1 persons per vehicle (13,458/6,405). Appendix E, “Special Facility Data,” includes a table entitled, “Fermi

EPZ: Major Employers,” that identifies a total of 13,952 maximum-shift employees within the EPZ; 5,047 are identified as commuting employees. In RAI 13.03-5 (A, B), the staff asked about the differences in transient population values in Appendix E and Table 2.1-213 of the Fermi 3 FSAR. In the response to RAI 13.03-5 (A, B) dated October 14, 2009 (ML092931167), the applicant provided an updated Table E-3, “Major Employers within the Fermi EPZ,” which correctly identifies the percentage and number of employees commuting into the EPZ, total employees, and the number of employees in the maximum shift. The applicant compared the updated totals with the FSAR values and stated that the employee numbers in the ETE and FSAR are in good agreement. The automobile occupancy factor for employees who commute into the EPZ is developed separately and is estimated at one person per vehicle.

Section 8, “Transit Dependent and Special Facility Evacuation Time Estimates,” describes the estimate of the special facility population that is provided on an institution-by-institution basis and the mobilization and manpower needed to support an evacuation of special facilities. Weather conditions and current facility populations are considered along with ambulatory and non-ambulatory needs. In RAI 13.03-6 (A), the staff asked for the number of transportation resources needed if peak populations at special facilities were used. In the response to RAI 13.03-6 (A) dated October 14, 2009 (ML092931167), the applicant stated that no additional vehicle resources will be needed to support the evacuation of special facilities at full capacity, because reserve capacity in the planned vehicles can cover the difference in the population.

A listing of the schools located within the EPZ, including the student population and the number of bus runs required to support an evacuation, is in Table 8-2 (A and B) for Monroe and Wayne County Schools. Section 8.2, “School Population – Transit Demand,” identifies the bus capacity for primary schools as 70 students. Section 8.4, “Evacuation time Estimates for Transit Dependent People,” states that available bus resources are sufficient in each county to service the school evacuation demand in a single wave assuming that drivers are available for all vehicles. Additional information was requested in RAI 13.03-6 (B and C) regarding the number of buses required to support an evacuation of schools and the availability of drivers. In the response to RAI 13.03-6 (B) dated October 14, 2009 (ML092931167), the applicant identified that 383 buses are needed to evacuate schools when considering a maximum of 70 students per bus. The applicant will revise Table 8-2A, “Monroe County Schools,” to show that 271 bus runs are needed; and Table 8-2B, “Wayne County Schools,” to show that 112 bus runs are needed for a total of 383 bus runs. In the response to RAI 13.03-6 (C) dated October 14, 2009 (ML092931167), the applicant stated that emergency plans were reviewed and county officials confirmed that 383 buses and drivers are available to support a single-wave evacuation of schools.

Figure 3-1, “FNPP Permanent Resident Population by PAA,” describes the PAAs that cover the EPZ. Table 7-2, “Description of Evacuation Regions,” identifies the PAAs that are included in each region for which an ETE is developed. Region R01 is the 3.2 kilometer (2 mile) ring, R02 is the 8 kilometer (5 mile) ring, and R03 is the full EPZ. Table 7-1D, “Time to Clear the Indicated Area of 100 Percent of the Evacuating Population,” provides ETEs for the 3.2 kilometer (2 mile) zone, 8 kilometer (5 mile) zone, the full EPZ, and for multiple wind directions around the plant.

**Technical Evaluation: [Section II of Appendix 4]** The ETE Report provides an estimate of the number of people who may need to evacuate. Three population segments are considered: permanent residents, transients, and persons in special facilities. The permanent population is adjusted for growth, and the population data are translated into two groups: those using

automobiles and those without automobiles. The number of vehicles used by permanent residents is estimated using an appropriate automobile occupancy factor. In addition, evacuation time estimates for the simultaneous evacuation of the entire plume exposure pathway EPZ were determined.

Estimates of transient populations are developed using local data, including peak tourist volumes and employment data. Estimates for special facility populations are also provided.

The subareas for which evacuation time estimates were determined, encompass the entire area within the plume exposure EPZ. The maps are adequate for that purpose, and the level of detail is approximately the same as the USGS quadrant maps contain.

In the response to RAI 13.03-6 (A) dated October 14, 2009 (ML092931167), the applicant stated that no additional vehicle resources will be needed to support an evacuation of special facilities at full capacity, because reserve capacity in the planned vehicles can cover the potential difference in population. The staff finds the applicant's response acceptable because it conforms to the guidance in Appendix 4 to NUREG-0654/FEMA-REP-1, Revision 1, Section II.C.

In the response to RAI 13.03-5 (A) dated October 14, 2009 (ML092931167), the applicant revised values entered for "Total Employees" and "Max Shift" in Table E-3 to correct the values. The staff finds the additional information and textual revisions submitted in response to RAI 13.03-5 (A) that corrected the textual information concerning estimates of transient populations in the EPZ acceptable, because they conform to the guidance in Appendix 4 to NUREG-0654/FEMA-REP-1 Revision 1, Section II.B. The staff confirmed that Revision 1 of the ETE Report incorporated the information and textual changes in the response to RAI 13.03-5(A).

In the response to RAI 13.03-5 (B) dated October 14, 2009 (ML092931167), the applicant revised Table E-3 to show 450 employees at the Meijer Distribution Center and 232 employees at TWB Company, LLC. The staff finds the additional information and textual revisions submitted in response to RAI 13.03-5 (B) that corrected the textual information concerning estimates of transient populations in the EPZ acceptable, because they conform to the guidance in Appendix 4 to NUREG-0654/FEMA-REP-1, Revision 1, Section II.B. The staff confirmed that Revision 1 of the ETE Report incorporated the information and textual changes in the response to RAI 13.03-5(B).

In the response to RAI 13.03-6 (B) dated October 14, 2009 (ML092931167), the applicant revised school bus totals for the evacuation of North Elementary School, Raisinville Elementary School, Chapman Elementary School, David Oren Hunter Elementary School, John M. Barnes Elementary School, and Cantrick Middle School in Table 8-2A, "Monroe County Schools," Table 8-2B, "Wayne County Schools," and in the supporting text. The staff finds the additional information and textual revisions submitted in response to RAI 13.03-6 (B) that corrected the textual information concerning school bus totals needed for the evacuation acceptable, because it conforms to the guidance in Appendix 4 to NUREG-0654, Section II.C. The staff confirmed that Revision 2 of the Fermi NPP ETE Report incorporated the information and textual changes in the response to RAI 13.03-6 (B).

In the response to RAI 13.03-6 (C) dated October 14, 2009 (ML092931167), the applicant added information stating that there are a sufficient number of school buses and drivers in

Monroe and Wayne Counties to evacuate schools in a single wave. The staff finds the additional information and textual revisions submitted in response to RAI 13.03-6 (C) that added information stating that the number of bus drivers is confirmed, and there are enough bus drivers to support a single-wave evacuation is acceptable because it conforms to the guidance in Appendix 4 to NUREG-0654/FEMA-REP-1, Revision 1, Section II.C. The staff confirmed that Revision 2 of the Fermi NPP ETE Report incorporated the information and textual changes in the response to RAI 13.03-6 (C).

In the response to RAI 13.03-4 dated October 14, 2009 (ML092931167), the applicant described the use of both bus and van service for wheelchair-bound residents. In RAI 13.03-37, the staff requested the applicant to clarify whether vans are used and if so, to identify the number and capacity of buses and vans for the evacuation of special needs individuals who are also transit dependent. In the response to RAI 13.03-37 dated April 16, 2010 (ML101190369) the applicant revised the ETE to describe the number of standard buses and specially equipped buses for evacuating special facilities as well as special needs persons who are also transit dependent. The staff finds the additional information and textual revisions submitted in response to RAI 13.03-4 and RAI 13.03-37 that clarified the textual information concerning the types of vehicles needed to evacuate special facility populations acceptable, because it conforms to the guidance in Appendix 4 to NUREG-0654/FEMA-REP-1, Revision 1, Section II.C. The staff confirmed that Revision 2 of the Fermi NPP ETE Report incorporates the information and textual changes in the response to RAI 13.03-6 (C).

#### **13.3C.18.4 Traffic Capacity**

**Technical Information in the ETE Report:** [Section III of Appendix 4] Figure 10-1, "Fermi Nuclear Power Plant Reception Centers and Host Schools," identifies the locations of host schools and reception centers. Figures 10-2, "Evacuation Routes for PAA 1, 3 and 5," and 10-3, "Evacuation Routes for PAA 2 and 4," identifies the roadway network and evacuation routes used in the analysis. The evacuation routes are outbound and are generally away from the plant.

Appendix C describes the method and computer model used to analyze the evacuation times. Appendix B provides a discussion on the trip assignment and distribution model and provides the algorithm used to compute the link travel time. Section 4, "Estimation of Highway Capacity," describes the method for estimating highway capacity and provides the algorithm and equation used for the lane capacity and for the approach to an intersection. Additional information was requested in RAI 13.03-3 (A) regarding how variables for the capacity of an approach to a signalized intersection were derived. In the response to RAI 13.03-3 (A) dated October 14, 2009 (ML092931167), the applicant clarified that the saturation flow rate estimates were based on observations made during the field survey and on principles in the 2000 Highway Capacity Manual. The applicant described that the mean queue discharge is specified by the analyst.

Section 1.4, "Comparison with Prior ETE Study," states that the highway free-flow speed was the variable used on all roadways rather than the maximum posted speed limit which was used in the previous analysis. Also, in Section 4, the capacity of highway sections is identified as a function of, among other things, the percentage of heavy trucks. Additional information was requested in RAI 13.03-9 (B, C) to describe the values of variables used in the equations. In the applicant's response dated October 14, 2009 (ML092931167), the applicant stated that posted speeds may influence free-flow speed (FFS) but posted speeds are not used in the Highway Capacity Manual (HCM) procedures. The HCM uses the free-flow speed. In the response to

RAI 13.03-9 (B, C) dated October 14, 2009 (ML092931167), the applicant stated that the ETE calculation did not utilize actual percentages for evaluating the effects of heavy trucks in the evacuation stream. The applicant also stated that heavy trucks traveling as “through” traffic would be diverted around the EPZ in the case of an evacuation. Section 4 references two technical publications that provide additional information on the development of the algorithms used in the modeling.

Section 4 states that at-grade intersections are apt to become the first bottleneck locations, and traffic control is often used to supersede traffic control devices at these intersections. Additional information was requested in RAI 13.03-3 (B) regarding how the use of traffic control is included in the equation in the intersection analysis. In the response to RAI 13.03-3 (B) dated October 14, 2009 (ML092931167), the applicant stated that the PC-DYNEV simulation model only represents actual traffic signals and provided a discussion regarding how intersections are modeled. Appendix D, “Detailed Description of Study Procedure,” identifies the steps to perform the evacuation time estimate calculations. Step 10 in Appendix D discusses how changing the control treatment at critical intersections can improve service and expedite the movement of traffic. Additional information was requested in RAI 13.03-3 (C) dated October 14, 2009 (ML092931167), regarding the identification of any model treatments that were used to expedite the flow of traffic. The applicant’s response the applicant clarified that the evacuation of the Fermi EPZ does not require any model treatments such as contra flow, and none were used in the analysis.

Appendix G, “Traffic Management,” is different from the Monroe and Wayne County traffic control plans, and the ETE Report states that the traffic management plan in the ETE does not supersede existing plans, but provides information that may be considered in updating the plan. Additional information was requested in RAI 13.03-3 (D) regarding the modeling of traffic control as a treatment to expedite the movement of traffic. In the response to RAI 13.03-3 (D) dated October 14, 2009 (ML092931167), the applicant stated that no allowance for reduction in the ETE due to traffic control was included in the analysis. The applicant also stated that if county traffic control points (TCPs) were manned in an evacuation, the ETE may be less than predicted in the study. In RAI 13.03-38, the staff requested that the applicant revise the text of the ETE report to clarify whether or not the current analysis approximates the use of traffic guides, based on the manner in which the analyst adjusts the green time at intersections to represent movement of traffic under evacuation conditions. In the response to RAI 13.03-38 dated April 16, 2010 (ML101190369), the applicant stated that the ETE does not approximate the use of traffic guides at TCPs based on the adjustment of green time at signalized intersections. The response further stated explains that the ETE modeling activity is intended to realistically represent the traffic environment during emergency evacuation conditions, and the signal splits input into the model are adjusted to represent realistic human behaviors during an emergency evacuation based on traffic conditions, but they are not treated optimally as though there are expert traffic control personnel controlling the signal at all times.

Figure 8-2, “Proposed Transit Dependent Bus Routes,” identifies the bus routes for individuals requiring public transit. Transit-dependent individuals are assumed to access these routes during the mobilization period. Access Control Point (ACP) #1 in Appendix G indicates that traffic barricades will be placed across Interstate 75 at S. Otter Creek Road, which would prevent the buses on Route 4 from traveling in the northbound direction as indicated on Figure 8-2. Additional information was requested in RAI 13.03-13 (D) to describe how buses will enter the EPZ at locations where traffic control barricades block the roadway. In the

response to RAI 13.03-13 (D) dated October 14, 2009 (ML092931167), the applicant stated that additional traffic controls will be recommended at ACP #1.

Figure E-1, "Overview of Schools within the Fermi EPZ," shows Jefferson Middle School, Sotd Elementary School, and North Elementary School located about 11 km (7 mi) or less from the EPZ boundary. Table 8-5A, "School Evacuation Time Estimates – Good Weather," indicates that the evacuation distances from these schools to the EPZ boundary are 14.7, 14.4, and 19.7 km (9.2, 9.0, and 12.3 mi), respectively. Additional information was requested in RAI 13.03-7 (A) regarding how distances are developed from the schools to the EPZ boundary. In the response to RAI 13.03-7 (A) dated October 14, 2009 (ML092931167), the applicant reduced the expected travel distances for Jefferson Middle School, Sotd Elementary School, and North Elementary School.

Appendix K, "Evacuation Roadway Network Characteristics," defines each roadway network segment with a numbered upstream and downstream node. Figure 1-2, "Fermi Nuclear Power Plant Link-Node Analysis Network," shows the node network used in the analysis. A legible map identifying nodes that correspond with the nodes described in Appendix K and a discussion on the narrowest roadway section was requested in RAI 13.03-8 (A) and RAI 13.03-9 (A). In the responses to these RAIs dated October 14, 2009 (ML092931167), the applicant provided Figures K-1 through K-21, "Fermi Link-Node Analysis Network," which contain legible nodes. The applicant also provided details regarding the survey of the roadway network and how this information is used in the analysis.

**Technical Evaluation: [Section III of Appendix 4]** The ETE Report provides a complete review of the evacuation road network. Analyses are made of travel times and potential locations for congestion. In addition, all evacuation route segments and their characteristics, including capacity, are described.

A traffic control and management strategy that is designed to expedite the movement of evacuating traffic is described. The traffic management strategy is based on a field survey of critical locations and consultations with emergency management and enforcement personnel. The applicant also analyzes travel times and potential locations for serious congestion along the evacuation routes.

The staff finds the applicant's responses to RAI 13.03-3 (A, C) acceptable.

In the response to RAI 13.03-9 (B) dated October 14, 2009 (ML092931167), the applicant revised the ETE report to explain the use of FFS in evacuation time calculations. The staff finds the additional information and textual revisions submitted in response to RAI 13.03-9(B) that clarified the textual information concerning the use of FFS in evacuation time calculations acceptable, because it conforms to the guidance in Appendix 4 to NUREG-0654/FEMA-REP-1, Revision 1, Section III.B. The staff confirmed that Revision 2 of the Fermi NPP ETE incorporated the information and textual changes in the response to RAI 13.03-9 (B).

In the response to RAI 13.03-9 (C) dated October 14, 2009 (ML092931167), the applicant revised the ETE report to explain that the presence of trucks in the traffic stream could be significant before the declaration of the advisory to evacuate. The staff finds the additional information and textual revisions submitted in response to RAI 13.03-9 (C) that clarified the textual information concerning the significance of trucks in the traffic stream before an evacuation advisory acceptable, because it conforms to the guidance in Appendix 4 to

NUREG-0654/FEMA-REP-1, Revision 1, Section III.B. The staff confirmed that Revision 2 of the Fermi NPP ETE incorporated the information and textual changes provided in the response to RAI 13.03-9 (C).

In the response to RAI 13.03-3 (B) dated October 14, 2009 (ML092931167), the applicant revised the ETE to clarify that the traffic simulation model represented actual traffic signals, and not the implementation of traffic control guides. The staff finds the additional information and textual revisions submitted in response to RAI 13.03-3(B) that clarified the textual information explaining the use of the TCPs not being specifically used in the traffic simulation model acceptable because it conforms to the guidance in Appendix 4 to NUREG-0654/FEMA-REP-1, Revision 1, Section III. The staff confirmed that Revision 1 of the Fermi ETE incorporated the information and textual changes in the response to RAI 13.03-3 (B).

In the response to RAI 13.03-13 (D) dated October 14, 2009 (ML092931167), the applicant revised the ETE to recommend a third traffic guide in order to facilitate the movement of inbound vehicles through ACP #1. The staff finds the additional information and textual revisions submitted in response to RAI 13.03-13(D) that adds the recommendation of third traffic guide acceptable, because it conforms to the guidance in Appendix 4 to NUREG-0654/FEMA-REP-1, Revision 1, Section III. The staff confirmed that Revision 2 to Fermi NPP ETE incorporated the information and textual changes in the response to RAI 13.03-13 (D).

In the response to RAI 13.03-7 (A) dated October 14, 2009 (ML092931167), the applicant revised distances in Tables 8-5A and 8-5B using the “calculate geometry” feature in geographic information system (GIS) and added a new table (Table 8-9) that gave the routes of buses to the EPZ boundary. The staff finds the additional information and textual revisions submitted in response to RAI 13.03-7 (A) that recalculates evacuation distances for EPZ risk schools acceptable, because it conforms to the guidance in Appendix 4 to NUREG-0654/FEMA-REP-1, Revision 1, Section III. The staff confirmed that Revision 2 of the Fermi NPP ETE the information and textual changes provided in the response to RAI 13.03-7 (A).

In the response to RAI 13.03-8 (A) dated October 14, 2009 (ML092931167), the applicant provided Figures K-1 through K-21 to illustrate the nodes given in Appendix K and supporting text to describe the figures. The staff finds the additional information and textual revisions submitted in response to RAI 13.03-8 (A) that provides EPZ evacuation roadway node figures acceptable, because it conforms to the guidance in Appendix 4 to NUREG-0654/FEMA-REP-1, Revision 1, Section III.B. The staff confirmed that Revision 2 of the Fermi NPP ETE incorporated the information and textual changes provided in the response to RAI 13.03-8 (A).

In the response to RAI 13.03-9 (A) dated October 14, 2009 (ML092931167), the applicant revised the ETE to include an explanation of how roadway characteristics are input into the traffic model. The staff finds the submitted additional information and textual revisions acceptable because it conforms to the guidance in Appendix 4 to NUREG-0654/FEMA-REP-1 Revision 1, Section III.B. The staff confirmed that Revision 2 of the Fermi NPP ETE incorporated the information and textual changes in the response to RAI 13.03-9 (A).

In the response to RAI 13.03-3 (D) dated October 14, 2009 (ML092931167), the applicant stated that no credit is taken for expected improvements that are caused by the implementation of traffic guides. However, the response to RAI 13.03-3(A) states where the specified control policy is not commensurate with attendant evacuation traffic volumes,” an adjustment [is] made

to the allocation of green time so that it represents the competing traffic volumes and the movement of traffic under evacuation conditions.” The response further states that no allowance is made for TCP operations. The applicant’s response to RAI 13.03-38 dated April 16, 2010 (ML101190369) provided a detailed description of the modeling approach to intersections. Therefore, the applicant’s response to RAI 13.03-38 is acceptable because it meets the guidance in Appendix 4 to NUREG-0654/FEMA-REP-1, Revision 1, Section III.B.

### **13.3C.18.5 Analysis of Evacuation Times**

**Technical Information in the ETE Report: [Section IV of Appendix 4]** Section 1.3, states that the IDYNEV system is used in the analysis and includes PC-DYNEV, which is a macroscopic traffic simulation model used to calculate the ETE. The assumptions on evacuation are based on simultaneous evacuation of inner and outer sectors. Table 7-1D, summarizes the model results and is displayed in a format consistent with Table 2 of Appendix 4 in NUREG-0654/FEMA-REP-1, Revision 1. The ETEs provided an aggregate time for the population of each of the evacuation regions to completely evacuate from that region under the conditions of the specific scenario. Figure 7-3, “Congestion Patterns at 1 hour after the Advisory to Evacuate,” identifies traffic congestion areas as well as congestion areas at subsequent times in additional figures.

Section 5 describes the process of combining distribution functions to establish the time-dependent traffic loading. The data to support the loading distributions were obtained from a telephone survey conducted during development of the ETE. Additional information was requested in RAI 13.03-10 (A, B) to explain the differences between the data obtained from the telephone survey and the data used in the analyses. In the response to RAI 13.03-10 (A, B) dated October 14, 2009 (ML092931167), the applicant described the method for truncating data and discussed the basis for not using outlier data points. Special facilities and schools are not included in the trip generation distributions and are quantified separately in Section 8. Figure 5-1, “Events and Activities Preceding the Evacuation Trip” shows the distribution functions. The trip generation activities, including the timeline for households with commuters, are described in Section 5. The timeline for households without commuters indicates that residents are at home at the time they become aware of the emergency. In addition, the timeline for transients indicates that transients do not return to their place of lodging prior to evacuating. Figure 5-3, “Comparison of Trip Generation Distributions,” shows each trip generation distribution curve comprised of individual mobilization activity times. Additional information was requested in RAI 13.03-11 (A, B) regarding the trip generation time elements for residents and transients. In the response dated October 14, 2009 (ML092931167), the applicant agreed that residents may not be at home when an evacuation is ordered and described why this would not affect the ETE. Furthermore, in the response to RAI 13.03-11 (A), dated October 14, 2009 (ML092931167), the applicant replaced Figure 5-1.

In the response to RAI 13.03-11 (B) dated October 14, 2009, the applicant stated that all lodging facilities in Figure E-6, “Lodging Facilities within the FERMI EPZ,” are within the 8- to 16-km (5- to 10- mi) area of the EPZ and states that the travel time from this area to the EPZ boundary would be less than the mobilization time. The applicant replaced Figure 5-1 in response to RAI 13.03-11 (B).

Section 7.4, “Guidance on Using ETE Tables,” identifies the contents of Table 7-1D as the elapsed time required for 100 percent of the population within a region to evacuate from that region and indicates the ETE for the R03 summer, midweek, midday, good weather is 4:05

(4 hours and 5 minutes). Figure 5-3 indicates that the trip generation distribution for residents with commuters may take up to 5 hours. Additional information was requested in RAI 13.03-10 (C) to clarify how the trip generation time may be longer than the total ETE. In the response to this RAI dated October 14, 2009 (ML092931167), the applicant stated that the trip generation time for residents with commuters is actually 4 hours, as indicated in Figure 5-3.

Section 8.4 describes a single-wave evacuation of Monroe and Wayne County Schools that would require 377 buses as identified in Table 8-2A and Table 8-2B. Additional information was requested in RAI 13.03-6 (C) to provide the source of information used to support availability of 377 buses and drivers. In the response to this RAI dated October 14, 2009 (ML092931167), the applicant confirmed that through the review of emergency plans and discussions with county officials, 383 buses are actually needed (271 buses in Table 8-2A and 112 buses Table 8-2B); and there are a sufficient number of buses and drivers to support a single-wave evacuation of schools. Table 8-5A indicates a 15-minute mobilization time for Airport Senior High School, Carleton Country Day, and Wager Junior High School and a 45-minute mobilization time for all other Monroe County schools and a 60-minute mobilization time for all Wayne County schools. Additional information was requested in RAI 13.03-14 (D) regarding the mobilization of resources for the evacuation of schools. In the response to RAI 13.03-14 (D) dated October 14, 2009 (ML092931167), the applicant stated that bus mobilization times for certain schools are shorter than others because school buses were kept on these campuses. All schools listed in Table 8-5A indicate a bus loading time of 5 minutes. The "Wayne County Emergency Operations Plan" identifies the process for loading students as being conducted one classroom at a time, with the teacher handing the student roster to the Principal when the bus is loaded. School enrollment is as high as 2,130 students. Additional information was requested in RAI 13.03-14 (E) to support the time needed to load each school bus. In the response dated October 14, 2009 (ML092931167), the applicant described how students at Monroe Senior High School could be boarded onto school buses within five minutes.

In Section 8.4 the average speed output by the model at 1 hour (51.3 kilometers per hour [kph] [31.9 mile per hour (mph)]) is used for ambulatory persons from special facilities and for emergency medical services vehicles. Similarly, Section 8.4 states that the average school bus speed at 50 minutes is 58.6 kph (36.4 mph) for Monroe County. Figure 7-4, "Congestion Patterns at 1 Hour After the Advisory to Evacuate," indicates congestion on the primary evacuation routes at this time. In RAI 13.03-12 (A) the staff requested how the vehicles would travel at the identified speeds along these congested roadways. In the response to RAI 13.03-12 (A) dated October 14, 2009 (ML092931167), the applicant stated that route-specific average speeds rather than network-wide average speeds would be used for special facility buses. The applicant stated that the average network-wide speeds are applicable for emergency medical service (EMS) vehicles since they have the right-of-way. The applicant assumed that EMS vehicles will be traveling at least the speed of general traffic. In RAI 13.03-39, the staff requested the applicant to use route-specific speeds when calculating the ETE for the EMS vehicles. In the response to RAI 13.03-39 dated April 16, 2010 (ML101190369), the applicant agreed that route specific-speeds should be used for ambulances rather than network-wide average speeds. In RAI 13.03-53, the staff requested the applicant to explain how average speeds in Table 8-13A, which range from 41.5 to 67.7 kph (25.8 to 42.1 mph) at 60 minutes, can be greater than the speeds for vehicles leaving both before and after 60 minutes, as identified in Tables 8-11.A and 8-13.A. In the response to RAI 13.03-53 dated August 13, 2010 (ML102290043), the applicant stated that the speeds are related to both the time of departure and the route of travel for the facilities. The applicant reviewed all of the

special facility routes and found the speeds to be accurate. The difference in speeds for the specific facilities identified is due to the time of departure and the route of travel. The applicant stated that Table 5-1 shows that only 10 percent of residents with commuters begin their evacuation trip within 60 minutes after the advisory to evacuate. Thus, the roadways are still relatively uncongested at this time in the evacuation. The applicant stated that the route speed, over time, mimics the pattern of the average network speed for the entire system and travel speeds for a single facility, such as Medilodge II, can vary significantly within a 15-minute timeframe. Additionally, the applicant stated that buses evacuating school children are routed in the direction of their respective relocation school; whereas, medical facilities are evacuated to host medical facilities. This results in the evacuating vehicles traveling along different routes. The applicant stated that the congestion diagrams in Section 7, "General Population Evacuation Time Estimates," indicate that the evacuation routes southbound out of Monroe are heavily congested, while those routes going to the west and northwest have less congestion. This results in higher average travel speeds for westbound routes and for medical facilities. The Monroe County Emergency Management Plan indicates that school buses will be used to support evacuation of transit dependent residents after schools have been evacuated, and the Monroe County Intermediate School District will coordinate this provision of public transportation. Section 8.4 states that it will take 90 minutes to mobilize drivers, and Section 8.1, "Transit Dependent People - Demand Estimate," identifies the need for 100 bus runs to support evacuation of the transit dependent population. To complete 100 bus runs, Table 8-7A, "Transit Dependent Evacuation Time Estimates – Good Weather," and Table 8-7B, "Transit Dependent Evacuation Time Estimates – Rain," identify seven bus routes for the evacuation of transit dependent residents with multiple buses serving each route. Additional information was requested in RAI 13.03-13 (A, B) regarding specialized transportation to support evacuation of the transit dependent population and the logistics and assumptions for deployment of buses. In the response to RAI 13.03-13 (A) dated October 14, 2009 (ML092931167), the applicant clarified that each "set" of 20 buses assigned to Routes 1 through 4 in the first wave, is spread out over a 60 minute window, separated by a 3-minute time interval between each bus. In RAI 13.03-40, the staff requested that the applicant add additional text for Tables 8-7A and 8-7B to better indicate the assumptions regarding single wave and second wave ETE values in the tables. In the response to RAI 13.03-40 dated April 16, 2010 (ML101190369), the applicant stated that the second wave ETE only applies when schools are in session and there are not sufficient bus resources to evacuate school children and the transit dependent general population simultaneously. Regarding RAI 13.03-13 (B), which requested information on the logistics and assumptions for deployment of buses, the applicant responded that the single wave evacuation identified in Tables 8-7A and 8-7B applies only when school is not in session or when school is in session and there are sufficient resources to evacuate schools and transit dependent residents at the same time. The ETE includes the time for transit dependent residents to get to bus routes and pick up points. The applicant described the logistics of buses used for the evacuation of the transit dependent population. Table 8-7A and Table 8-7B have been revised to include a headway column to show the elapsed time between the first and last bus on a route. Table 8-7A provides timing for the second wave that would begin at 106 minutes (75+5+10+16). Additional information was requested in RAI 13.03-13 (C) regarding the logistics of the second wave of buses. In the response to RAI 13.03-13 (C) dated October 14, 2009 (ML092931167), the applicant clarified that in the event of an overlap of buses, queuing would occur and explains why this would not affect the ETE.

Table 8-4, "Special Facility Transit Demand," provides facility capacities. Table 8-4 identifies each special facility by name and the specialized resources needed to support an evacuation,

including 21 ambulance runs to evacuate non-ambulatory residents. The time for the 21 ambulances to mobilize is identified as 30 minutes. Additional information was requested in RAI 13.03-14 (A, B) regarding facility peak population data, resources required to support the evacuation of the facility at peak population and the ambulance response time of 30 minutes. In the response to RAI 13.03-14 (A, B) dated October 14, 2009 (ML092931167), the applicant clarified that no additional vehicle or ambulance resources would be needed to support evacuation of special facilities at full capacity.

Appendix E identifies a total of 10 marinas within the EPZ having a total vehicle estimate of 912 and a total population of 1,784. Additional information was requested in RAI 13.03-11 (C) regarding the time necessary to evacuate boaters from the EPZ. In the response to this RAI dated October 14, 2009 (ML092931167), the applicant described the logistics and timing of boaters loading and evacuating from marinas. The response demonstrated that this time is within the total ETE for the evacuation of the public. Appendix E also identifies two jail facilities in Monroe County. Additional information was requested in RAI 13.03-14 (C) regarding the logistics and evacuation time for the jail facilities. In the response to this RAI dated October 14, 2009 (ML092931167), the applicant included a new Section 8.6, "Evacuation of Inmates from Correctional Facilities," which includes an ETE and describes the resources needed to evacuate correctional facilities.

**Technical Evaluation: [Section IV of Appendix 4]** A total of 98 ETE are computed for the evacuation of the general public. Each ETE quantifies the aggregate time (warning, mobilization, and travel) estimated for the population within one of the 7 Evacuation Regions to completely evacuate from that Region, under the circumstances defined for one of 14 evacuation scenarios ( $7 \times 14 = 98$ ). Separate evacuation time estimates are calculated for transit-dependent evacuees, including school children.

Distribution functions for notification of the three population segments of evacuees were developed. The distribution functions for the action stages after notification predict what fraction of the population will complete a particular action within a given span of time. There are distributions for auto-owning households, school population, and transit-dependent populations. These action stages for each population segment make up the trip generation distributions which are an input into the evacuation analysis. The on-road travel and delay times are then calculated inclusive of the trip generation distributions. A separate estimate of the time required to evacuate the non-auto-owning population dependent upon public transportation is developed.

The staff finds the clarifications and additional information submitted in response to RAIs 13.03-11 (C), 13.03-14 (A, B, D, E), 13.03-13 (C) acceptable because it conforms to the guidance in Appendix 4 of NUREG-0654/FEMA-REP-1, Revision 1, Section IV.

In the response to RAI 13.03-10 (A, B, and C) dated October 14, 2009 (ML092931167), the applicant revised Figure 5-3 of the ETE Report and included an explanation of the process and method used to account for outlier data points. The staff finds the additional information and textual revisions submitted for Figure 5-3 and process and method used to account for outlier data points acceptable because it conforms to the guidance in Appendix 4 to NUREG-0654/FEMA-REP-1, Revision 1, Section IV.B. The staff confirmed that Revision 2 of the Fermi NPP ETE incorporated the information and textual changes in the response to RAI 13.03-10 (A, B, and C).

In the response to RAI 13.03-11 (B) dated October 14, 2009 (ML092931167), the applicant provided a paragraph and revised Figure 5-1 that describes and illustrates that transients in hotels will either return to their place of lodging prior to evacuating or immediately evacuate from the EPZ. The staff finds the additional information and textual revisions submitted to clarify expected transient actions upon receiving an advisory to evacuate acceptable because it conforms to the guidance in Appendix 4 to NUREG-0654/FEMA-REP-1, Revision 1, Section IV.B. The staff confirmed that Revision 2 of the Fermi NPP ETE incorporated the information and textual changes in the response to RAI 13.03-11 (B).

In the response to RAI 13.03-6 (C) dated October 14, 2009 (ML092931167), the applicant revised the ETE to state that there are enough school buses and drivers within the Monroe and Wayne Counties available to evacuate schools in a single wave. The staff finds the additional information and textual revisions submitted that confirm there are sufficient bus and drives to support a single wave EPZ school evacuation acceptable because it conforms to the guidance in Appendix 4 to NUREG-0654/FEMA-REP-1 Revision 1, Section IV.B. The staff confirmed that Revision 2 of the Fermi NPP ETE incorporated the information and textual changes provided in the response to RAI 13.03-6 (C).

In the response to RAI 13.03-13 (B) dated October 14, 2009 (ML092931167), the applicant revised the text and tables within the ETE Report to reflect the staggering of transit buses. The staff finds the additional information and textual revisions submitted to explain and reflect the staggering of transit buses acceptable because it conforms to the guidance in Appendix 4 to NUREG-0654/FEMA-REP-1, Revision 1, Section IV.B. The staff confirmed that Revision 2 of the Fermi NPP ETE incorporated the information and textual changes provided in the response to RAI 13.03-13 (B).

In the response to RAI 13.03-14 (C) dated October 14, 2009 (ML092931167), the applicant added to the ETE Report a new Section 8.6, which includes an ETE and a description of the resources needed to evacuate correctional facilities. The staff finds the additional information and textual additions of the resources needed to evacuate correctional acceptable because conforms to the guidance in Appendix 4 to NUREG-0654/FEMA-REP-1, Revision 1, Section IV.B. The staff confirmed that Revision 2 of the Fermi NPP ETE incorporate the information and textual changes in the response to RAI 13.03-14 (C).

In the response to RAI 13.03-11 (A) dated October 14, 2009 (ML092931167), the applicant provided a revised Figure 5-1 and the text describing the sequences of each population group. The revision was not consistent with the revised Assumption 3b, which states that all households in the EPZ with at least one commuter will await the return of the commuter before beginning their evacuation. The applicant's response to RAI 13.03-36 dated April 16, 2010 (ML101190369), the change in the number of vehicles in the evacuation stream and the reduction in transit-dependent persons in Section 8. However, for consistency, changes in the text, tables, and figures in Section 5 regarding commuters who do not return home or households that do not await the return of a commuter were needed. In the response to RAI 13.03-52 dated August 13, 2010 (ML102290043) the applicant that all applicable sections of the ETE Report will be revised to reflect the revised assumption.

In the response to RAI 13.03-12 (A) dated October 14, 2009 (ML092931167), the applicant stated that route-specific average speeds rather than network-wide average speeds are used for special facility buses. Average network-wide speeds of 51.3 and 58.3 kph (31.9 mph and 36.4 mph) were retained for EMS vehicles because these vehicles have the right-of-way in an

emergency. The response did not address how EMS vehicles would traverse through congestion to achieve these speeds. In the response to RAI 13.03-39 dated April 16, 2010 (ML101190369), the applicant agreed that route-specific-speeds should be used for ambulances rather than network-wide average speeds. The staff finds the additional information and textual revisions submitted to endorse the use of route specific-speeds for EMS vehicles acceptable because it conforms to the guidance in Appendix 4 to NUREG-0654/FEMA-REP-1, Revision 1, Section IV.B. The staff confirmed that Revision 2 of the Fermi NPP ETE incorporated the information and textual changes in the response to RAI 13.03-39.

In the response to RAI 13.03-53 dated August 13, 2010 (ML102290043), the applicant reviewed all of the evacuation routes and confirmed the speeds used in the analysis were correct.

In the response to RAI 13.03-13 (A) dated October 14, 2009 (ML092931167), the applicant implied that the single-wave evacuation identified in Tables 8-7A and 8-7B would be applicable when school is not in session or when school is in session and there are sufficient resources to evacuate schools and transit-dependent residents at the same time. In the response to RAI 13.03-40 dated April 16, 2010 (ML101190369), the applicant added text to Tables 8-7A and 8-7B to indicate the assumptions made for single wave and second wave ETE values in the tables. The staff finds the additional information and textual revisions submitted to explain single wave and second wave evacuation assumptions for transit-dependent populations acceptable because it conforms to the guidance in Appendix 4 to NUREG-0654/FEMA-REP-1, Revision 1, Section IV.B. The staff confirmed that Revision 2 of the Fermi NPP ETE incorporated the information and textual changes in the response to RAI 13.03-40.

### **13.3C.18.6 Other Requirements**

**Technical Information in the ETE Report: [Section V of Appendix 4]** The process for confirming that an evacuation is complete is in Section 12, "Confirmation Time," which includes a time estimate for confirming the evacuation. Additional information was requested in RAI 13.03-15 (A, B) regarding the time required to confirm the evacuation. In the response to RAI 13.03-15 (A) dated October 14, 2009 (ML092931167), the applicant described the confirmation time with respect to guidance in NUREG-0654/FEMA-REP-1, Revision 1, and stated that the counties had not committed to implementing the recommended approach. In the response to RAI 13.03-15 (B) dated October 14, 2009 (ML092931167), the applicant also clarified that the time to obtain telephone numbers of residents living within the EPZ is not included in the confirmation time estimate. In RAI 13.03-41 requested the applicant to provide the amount of time the counties estimate it would take to confirm that the evacuation is complete. In the response to RAI 13.03-41 dated April 16, 2010 (ML101190369), the applicant described confirmation options that range from surveying a statistically random sample of the telephones in the area to a full door-to-door validation. The applicant stated that County plans indicate that a confirmation of the evacuation will be accomplished by monitoring traffic flow out of the EPZ, interviewing evacuees at reception centers, or by door-to-door confirmation. The applicant provided an estimate of 21.6 hours to complete a door-to-door confirmation.

Additional information was requested in RAI 13.03-16 (A, B, C) to clarify whether State and local law enforcement officials have reviewed the traffic control plan. In the response to this RAI dated October 14, 2009 (ML092931167), the applicant clarified that State and local law enforcement officials received presentations that included the traffic management plan. The ETE was revised to state that the ETE had been reviewed by local offsite officials. The

applicant clarified that the traffic management plan was developed to provide recommendations for measures to facilitate the evacuation of the EPZ. Furthermore, the applicant further stated that the counties have not implemented the recommendations in the ETE Report. The applicant also stated that no comments were provided by State and local organizations.

**Technical Evaluation: [Section V of Appendix 4]** The time required to confirm an evacuation was estimated. In addition, the development of the ETE Report was coordinated with emergency planners from the State of Michigan and Wayne and Monroe Counties who are involved in the emergency response for the site. This information is acceptable because it conforms to the guidance in Appendix 4 to NUREG-0654/FEMA-REP-1, Revision 1, Section V.

The staff finds the clarifications and additional information submitted in response to RAI 13.03-16 (C) acceptable, because it conforms to the guidance in Section V of Appendix 4 to NUREG-0654/FEMA-REP-1, Revision 1.

In the response to RAI 13.03-15 (B) dated October 14, 2009 (ML092931167), the applicant revise the ETE report to explain that telephone numbers can be compiled in the timeframe for families to mobilize and evacuate. The staff finds the additional information and textual revisions submitted to describe the time needed to compile telephone numbers acceptable because it conforms to the guidance in Appendix 4 to NUREG-0654/FEMA-REP-1, Revision 1, Section V. The staff confirmed that Revision 2 of the Fermi NPP ETE incorporated the information and textual changes in the response to RAI 13.03-15 (B).

In the response to RAI 13.03-16 (A, B) dated October 14, 2009 (ML092931167), the applicant revised Section 1.1 to state that local and State personnel have reviewed the ETE Report. The staff finds the additional information and textual revisions submitted describing the state and local reviews of the ETE Report to be acceptable, because it conforms to the guidance in Appendix 4 to NUREG-0654/FEMA-REP-1, Revision 1, Section V. The staff confirmed that Revision 2 of the Fermi NPP ETE incorporated the information and textual changes in the response to RAI 13.03-16 (A, B).

In the response to RAI 13.03-15 (A) dated October 14, 2009 (ML092931167), the applicant described the confirmation time with respect to guidance in NUREG-0654/FEMA-REP-1, Revision 1, and stated that the counties had not committed to implementing the recommended approach. In the response to RAI 13.03-41 dated April 16, 2010 (ML101190369), the applicant revised the ETE report to state the time to perform a door-to-door confirmation is the bounding confirmation time. The staff finds the additional information and textual revisions submitted describing the County plans to confirm EPZ evacuations acceptable because it conforms to the guidance in Appendix 4 to NUREG-0654/FEMA-REP-1, Revision 1, Section V. The staff confirmed that Revision 2 of the Fermi NPP ETE incorporated the information and textual changes in the response to RAI 13.03-41.

### **13.3C.18.7 Conclusion**

NRC staff reviewed the analysis of the ETE Report as described above and concludes that the information in the ETE Report is consistent with those portions of Section 13.3 of NUREG-0800 related to the evacuation time estimate analysis and is consistent with the guidance in Appendix 4 to NUREG-0654/FEMA-REP-1, Revision 1. Therefore, the ETE Report is acceptable and meets the applicable requirements of 10 CFR Part 50, Appendix E.IV.

### **13.3C.19 Emergency Planning - Inspections, Tests, Analyses, and Acceptance Criteria (EP-ITAAC)**

#### **13.3C.19.1 Regulatory Basis**

The staff considered the following regulatory requirement and guidance in the evaluation of the information in the COL application related to the EP-ITAAC:

10 CFR 52.80(a), requires that a COL application include the proposed inspections, tests, and analyses, including those applicable to EP, that the licensee shall perform, and the acceptance criteria that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, the facility has been constructed and will be operated in conformity with the COL, the provisions of the Atomic Energy Act, and the Commission's rules and regulations.

#### **13.3C.19.2 EP-ITAAC**

**Technical Information in the Application: (52.80(a)) (NUREG-0800)** The applicant addresses EP-ITAAC in Part 10, Section 2.3, "Emergency Planning ITAAC," of the Fermi 3 COL application. Table 2.3-1, "ITAAC For Emergency Planning," in Part 10 contains the proposed EP-ITAAC for those elements of the emergency plan that cannot be completed during the COL application review phase. NUREG-0800 contains a generic set of acceptable EP-ITAAC. The generic EP-ITAAC requires the COL applicant to provide acceptance criteria specific to the plant-specific design and site-specific emergency response plans and facilities.

The staff reviewed Table 2.3-1 against the generic set of EP-ITAAC in Table 14.3.10-1 of NUREG-0800. The staff's review noted inconsistencies between the Fermi 3 proposed EP-ITAAC in Table 2.3-1 and NUREG-0800, Table 14.3.10-1. The staff issued RAIs 13.03-017-01 through 13.03-017-12 and RAIs 13.03-55 through 13.03-80 requesting the applicant to address the inconsistencies in the applicant's documentation concerning staffing, EALs, and acceptance criteria associated with Emergency Planning. The staff reviewed the applicant's responses to RAIs 13.03-017-01 through 13.03-017-12 dated September 30, 2009 (ML092750405) and responses to RAIs 13.03-55 through 13.03-80 dated October 6, 2010 (ML102810222), along with proposed revisions to Table 2.3-1 and found them to be acceptable with the exception of RAI 13.03-72 and 13.03-79. The staff identified additional inconsistencies and issued RAIs 13.03-83 through 13.03-90 as described below.

In RAI 13.03-83, the staff asked the applicant to provide a basis for including ITAAC 5.3 that demonstrates the operability of the siren system. Given that the Fermi 3 site will use the existing Fermi 2 siren system that is currently inspected under the Reactor Oversight Program and may be presumed adequate for the purposes of this COL. In the response to this RAI dated December 6, 2013 (ML13344B028) the applicant stated that ITAAC 5.3 will be revised to state, "The capability of the Alert and Notification System (ANS) to operate properly is tested monthly by the Fermi 2 Reactor Oversight Program and may be presumed adequate for the purposes of the Fermi 3 EP as identified in NRC RAI Letter 52 dated March 29, 2011 (ML110590635), (RAI 13.03-83)."

In RAI 13.03-84, the staff asked the applicant to remove program Element 10.4 that states, "The means exists to register and monitor evacuees at relocation centers" in accordance with NUREG-0654 evaluation Criteria II.J.12. This Criterion II.J.12 is not applicable to licensees and

therefore is not needed in the COL application. In the response to this RAI December 6, 2013 (ML13344B028), the applicant stated that Detroit Edison agrees that Evaluation Criterion II.J.12 of NUREG-0654 is not applicable to licensees, and Table 2.3-1 will be revised to remove EP Program Element 10.4.

In RAI 13.03-85, the staff asked the applicant, to revise the acceptance criteria in ITAAC 14.1.1.A.1 for declaring an EAL to be from the time the information is available to the decision maker and not from when the information is noticed by the decision maker. In the response to this RAI dated December 6, 2013 (ML13344B028), the applicant stated that Acceptance Criterion 14.1.1.A.1.a will be revised to state, "Determine the correct highest emergency classification level based on events which were in progress, considering past events and their impact on the current conditions, within 15 minutes of indications for an emergency event."

In RAI 13.03-86, the staff asked the applicant to revise the acceptance criteria for ITAAC 10.1 to match the corresponding written change in response to RAI 13.03-72 dated October 6, 2010 (ML102810222). In the response to this RAI dated December 6, 2013 (ML13344B028) the applicant stated that the Acceptance Criterion 10.1 in Table 2.3-1 will be changed to address the specific capability to provide both warnings and instructions to individuals outside the protected area, but within the owner-controlled area in accordance with written change made in the response to RAI 13.03-72.

**Technical Evaluation: (52.80(a)) (NUREG-0800)** The staff finds the additional information and textual revisions to Part 10 of the Fermi 3 application submitted in response to RAIs 13.03-17-01 through 13.03-17-012, RAIs 13.03-55 through 13.03-71, RAIs 13.03-73 through 13.03-78, and RAI 13.03-80 acceptable because they conform to the guidance in NUREG-0800. The staff confirmed that Revision 5 of the Fermi 3 FSAR, Part 10 Table 2.3-1, incorporated the information and textual changes in the responses to the aforementioned RAIs and the proposed markup to Table 2.3-1.

The staff created Confirmatory Item 13.03-68 to track the revision of EP-ITAAC 5.3 (RAI 13.03-83). The staff verified that FSAR Revision 5 of the Fermi 3 COL includes the corrections to EP-ITAAC 5.2. Therefore, Confirmatory Item 13.03-68 is resolved.

The staff created Confirmatory Item 13.03-69 to track the Table 2.3-1 revision removing EP Program Element 10.4 (RAI 13.03-84). The staff verified that FSAR Revision 5 of the Fermi 3 COL includes the removal of EP program element 10.4 from Table 2.3-1. Therefore, Confirmatory Item 13.03-69 is resolved.

The staff created Confirmatory Item 13.03-70 to track the revision of Acceptance Criterion 14.1.1.A.1.a to state, "Determine the correct highest emergency classification level based on events which were in progress, considering past events and their impact on the current conditions, within 15 minutes of indications for an emergency event."-(RAI 13.03-85). The staff verified that FSAR Revision 5 of the Fermi 3 COL includes the revision of Acceptance Criterion 14.1.1.A.1.a. Therefore, Confirmatory Item 13.03-70 is resolved.

The staff created Confirmatory Item Action 13.03-71 to track the revision to Table 2.3-1 to specifically address the capability to provide both warnings and instructions to individuals outside the protected area, but within the owner-controlled area (RAI 13.03-86). The staff verified that FSAR Revision 5 of the Fermi 3 COL includes the revision to Table 2.3-1

to address warning and instruction capability outside the protected area. Therefore, Confirmatory Item 13.03-71 is resolved.

### **13.3C.19.3 Conclusion**

The NRC staff reviewed the application and checked the referenced DCD. The staff's review confirmed that the applicant has addressed the required information relating to the EP-ITAAC, the generic EP-ITAAC in Table 14.3.10-1 of NUREG-0800, 10 CFR 52.80(a), and Section 14.3.10 of NUREG-0800. The staff finds that the applicant has adequately addressed the applicable EP-ITAAC needed to provide reasonable assurance that upon the successful completion, the facility will be constructed and operated to conform with the COL, the provisions of the Atomic Energy Act, and the Commission rules and regulations. No outstanding information is expected to be addressed in the Fermi 3 COL application related to this section. The results of the NRC staff's technical evaluation of the information incorporated by reference into the Fermi 3 COL application are documented in NUREG-1966. Verification that the proposed revisions to the EP-ITAAC have been incorporated into the next FSAR revision was tracked via Confirmatory Items 13.03-68 through 13.03-71 which are closed, as stated above.