

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO EMERGENCY PLAN CHANGES FOR

FERMI 2

DOCKET NO. 50-341

1.0 INTRODUCTION

By application dated May 14, 2007, supplemented by letters dated February 5, 2008, February 7, 2008, August 22, 2008, and December 30, 2008 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML071430159, ML080440121, ML080450337, ML082390034, and ML090070340 respectively), Detroit Edison (the licensee) submitted proposed changes to the Fermi 2 Radiological Emergency Response Preparedness (RERP) Plan in accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.54(q) for U.S. Nuclear Regulatory Commission (NRC) review and approval.

The proposed changes would eliminate certain 30-minute and 60-minute augmented positions from the emergency response organization, specifically, the Station Nuclear Engineer (SNE), and the second Chemistry Technician. The licensee also requested approval to eliminate two additional Emergency Response Organization (ERO) positions: the Emergency Operations Facility (EOF) Coordinator and the Quality Assurance (QA) Advisor. In the letters dated February 5, 2008 and February 7, 2008, Detroit Edison subsequently withdrew the proposed change involving the EOF Coordinator after determining that the elimination of this position did not require prior NRC approval. In its letter dated December 30, 2008, the licensee withdrew the following two proposals: 1) Proposal 3 - Removal of One Support Engineer from the 60-Minute Response Requirement, and 2) Proposal 5 – Deletion of the QA Advisor ERO Position.

2.0 REGULATORY EVALUATION

The regulatory requirements and guidance on which the NRC staff based its acceptance are as follows:

2.1 Regulations

In 10 CFR 50.47(b) (1) it states, in part, that: "...each principal response organization has staff to respond and to augment its initial response on a continuous basis."

In 10 CFR 50.47(b)(2) it states, in part, that: "...adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available..."

In 10 CFR Part 50, Appendix E, Section IV, Part A, "Organization," it states, in part, that: "The organization for coping with radiological emergencies shall be described, including definition of authorities, responsibilities, and duties of individuals assigned to the licensee's emergency organization..."

Enclosure

2.2 Guidance

Revision 1 to NUREG-0654/FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Section II.B.5, states, in part, that:

Each licensee shall specify the positions or title and major tasks to be performed by the persons to be assigned to the functional areas of emergency activity. For emergency situations, specific assignments shall be made for all shifts and for plant staff members, both onsite and away from the site. These assignments shall cover the emergency functions in Table B-1 entitled, "Minimum Staffing Requirements for Nuclear Power Plant Emergencies." The minimum on-shift staffing levels shall be as indicated in Table B-1. The licensee must be able to augment on-shift capabilities within a short period after declaration of an emergency. This capability shall be as indicated in Table B-1.

Regulatory Issue Summary (RIS) 2005-02, "Clarifying the Process for Making Emergency Plan Changes," was issued by the NRC to clarify the meaning of "decrease in effectiveness," to clarify the process for making changes to the emergency plans, and to provide some examples of changes that are considered to be a decrease in effectiveness.

3.0 TECHNICAL EVALUATION

The NRC staff has reviewed the licensee's regulatory and technical analyses in support of its proposed RERP Plan changes, as described in their application dated May 14, 2007, as supplemented by letters dated February 5, 2008, February 7, 2008, and August 22, 2008.

3.1 Removal of the SNE Position from the 30-Minute Response Requirement

The proposed change would delete the requirement for the SNE from reporting to the site within 30 minutes. This position addresses the core/thermal hydraulics portion of the technical support task in the 30-minute response column of NUREG-0654/FEMA-REP-1, Table B-1. This task would now reside with the on-shift Shift Technical Advisor (STA) until relieved by Engineering Staff who reports to the Technical Support Center (TSC) within 60 minutes following an Alert or higher emergency declaration.

The tasks performed by the SNE do not represent additional duties for the STA. The functional responsibilities of the STA and SNE are currently shown in the Fermi 2 RERP Plan, Table B-2, "Emergency Response Organization Functional Responsibilities," Page B-5. For the STA, the responsibilities include the following: "Advise the Emergency Director on plant technical matters, including Thermal/Hydraulic issues, Reactor Engineering, analysis related to safe operation of the plant." The SNE responsibilities read as follows: "Analyze conditions affecting core safety" and "Advise the Emergency Director/Shift Manager on all matters relating to reactor core safety." The licensee noted that the task of dose assessment was transferred from the STA to the on-shift Chemistry Technician in Revision 32 of the Fermi 2 RERP Plan. The licensee also noted that multiple drills have been performed without response from the SNE and there have been no performance issues related to the analysis of core safety or the task of technical support.

The STA is trained and qualified to perform SNE tasks. The licensee stated that the STA is adequately trained to assess core/thermal hydraulic issues and to advise the Emergency Director on matters involving core safety. Training is provided following the guidance of the Institute of Nuclear Power Operations 90-003, "Guidelines for the Training and Qualification of Shift Technical Advisors." Training for mitigating core damage allows the STA to evaluate plant conditions to determine the scope of the accident and describes methods to control reactivity, analyze plant data to determine the status of core cooling, and ways to ensure core cooling. The licensee concluded that the site training and qualification program ensures that the STA is qualified to perform the SNE duties required by the Fermi 2 RERP Plan, Table B-2.

The functional responsibilities of the STA and SNE are currently shown in Fermi Unit 2 RERP Plan, Table B-2, "Emergency Response Organization Functional Responsibilities," Page B-5. For the STA, the responsibilities include the following: "Advise the Emergency Director on plant technical matters, including Thermal/Hydraulic issues, Reactor Engineering, analysis related to safe operation of the plant." The SNE responsibilities read as follows: "Analyze conditions affecting core safety" and "Advise the Emergency Director/Shift Manager on all matters relating to reactor core safety." The licensee noted that the task of dose assessment was transferred from the STA to the on-shift Chemistry Technician in Revision 32 of the Fermi Unit 2 RERP Plan (also reference Detroit Edison submittal of Revision 32 of the RERP Plan dated March 16, 2007.)

Several technological advancements have been implemented to increase the capabilities and support provided to personnel assessing core conditions, and estimating core damage. These include upgrades to the plant computer system, and the program for calculating power distribution within the core, which provides more efficient and accurate assessment of accident conditions. Based on the capabilities of various on-shift personnel to recognize core damage indications, and technological advances since the implementation of NUREG-0654/FEMA-REP-1, Revision 1 (i.e., SAMGs, core damage assessment methodology, etc.) such as the use of flowcharted, symptom based emergency operating procedure, severe accident procedures, and computerized/automated core management and calculation routine (3-D Monicore), provides for the adequate functional oversight to ensure that core thermal hydraulic limits are not exceeded and that core coolable geometry is maintained.

In a previous submittal dated September 6, 2005 (ADAMS Accession No. ML052560292), Detroit Edison had proposed several changes to the Fermi 2 RERP Plan, including a clarification that the STA would only be required on-shift during operating modes 1 through 3 and would not be required on-shift during operating modes 4 and 5 or during refueling, in accordance with Fermi 2 Technical Specifications (TS). A note would have been added to Table B-1, "Staffing for Fermi 2 Emergency Response Organization," of the Fermi 2 RERP Plan indicating the STA was available to provided technical support only in modes 1 through 3. By letter dated July 21, 2006 (ADAMS Accession No. ML062090105), Detroit Edison subsequently withdrew this submittal. By letter dated August 31, 2006 (ADAMS Accession No. ML062120047), the NRC staff indicated that the STA position is required to be staffed in all modes for emergency response purposes as stated in NUREG-0654/FEMA-REP-1, Table B-1, and this proposed change to the Fermi 2 RERP Plan would have been denied. In the markup of the Fermi 2 RERP Plan, Table B-1, Page B-3, provided in the current submittal dated May 14, 2007, one STA is shown as being available on-shift. There is no note indicating that the STA would be available only during certain operating modes. In a teleconference with the licensee on August 6, 2008, and subsequently

documented by a letter dated August 22, 2008, the licensee confirmed that the STA would be available on-shift during all operating modes.

Based on the preceding analysis, the NRC staff finds that the proposed change to delete the SNE as a 30-minute responder and assign this duty to the STA would maintain the capability to perform these functions in a timely manner and continue to meet the standards in 10 CFR 50.47(b) and the requirements in Appendix E of 10 CFR Part 50, and would provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.

3.2 Removal of the Second Chemistry Technician from the 60-Minute Response Requirement

The proposed change would delete the requirement for the second Chemistry Technician from reporting to the site within 60 minutes. This position supports the on-shift Chemistry Technician in the area of radiochemistry. The licensee stated that originally this requirement existed to ensure the capability to promptly obtain reactor coolant and containment atmosphere samples was maintained. The requirement for having a post-accident sample and analysis within three hours was eliminated for Fermi 2 in 2002 with approval of License Amendment No. 150. This amendment deleted TS 5.5.3, "Post Accident Sampling System (PASS)," thereby eliminating the requirement for the PASS at Fermi 2.

Capabilities still exist for sampling reactor coolant during an emergency to validate core damage estimates. The licensee stated that the sample used for this analysis is dose equivalent iodine-131 (DEI-131). Sampling for DEI-131 cannot occur for a minimum of two hours after a potential core damage event and can be delayed for up to six hours. For an Alert or higher event, the RadChem Advisor (staffed by chemistry management personnel) responds to the TSC. The RadChem Advisor evaluates the event with respect to chemistry needs and requests additional chemistry support as needed. The licensee stated that additional chemistry support would arrive within the time allotted for DEI-131 sampling.

The licensee evaluated the impact of the deletion of the second Chemistry Technician to determine if this change would create an undue burden on the on-shift Chemistry Technician. The licensee did not note any adverse impacts on the capability of the on-shift Chemistry Technician to perform assigned emergency response tasks. Other methods now exist to determine core damage using containment radiation levels and the dose assessment program or procedural calculations. As noted above, additional chemistry support may be requested as needed.

As noted in Section 3.1 of this evaluation, the responsibility for on-shift dose assessment had been reassigned from the STA to the on-shift Chemistry Technician in a previous revision to the Fermi 2 RERP Plan. Fermi currently uses Raddose-V interfaces with the Integrated Plant Computer System (IPCS) which can be operated in automatic or a manual mode. In automatic mode, once the user selects an accident type and source type, current meteorological and radiation monitoring data is automatically obtained from the IPCS. If data is not available from IPCS, the user can enter data manually. Further, Raddose-V has the capability to calculate dose and dose rates based on the following data options:

Back Calculation Using Field Dose Rates
Isotopic Sample Analyses
Direct Entry (of release rates)
Monitor Override (worse case Design Base Analyses)

The licensee provides that this program is a user-friendly, automated program that reflects a significant time savings and minimizes the potential for errors in the results. The back-up mode of dose assessment is no longer calculations, but is a computer-based program and is quick and easy to use. Fermi 2 RERP Plan, Table B-1, indicates that the Radiation Protection Advisor in the TSC would report and has responsibility for dose assessment within 30 minutes of an Alert or higher emergency declaration, and is further augmented in this area by the Radiation Protection Coordinator in the EOF within 60 minutes. The licensee noted that the current dose assessment program requires less time to set up and initiate compared to the previous version, saving time and minimizing the potential for errors. The backup mode of dose assessment is no longer a manual process, but is a computer-based program. However, the initial protective action recommendation (PAR) is normally based on plant status. Dose assessment results allow for verification of the emergency declaration and PARs. As dose assessment results become available, the existing PAR can be modified as needed.

Based on the preceding analysis, the NRC staff finds that the proposed change to delete the second Chemistry Technician as a 60-minute responder continues to meet the standards in 10 CFR 50.47(b) and the requirements in Appendix E of 10 CFR Part 50, and would provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. Adequate on-shift sampling and dose assessment capabilities are in place to support the chemistry/radiochemistry function shown in NUREG-0654/FEMA-REP-1, Table B-1.

4.0 CONCLUSION

The NRC staff concludes that incorporation of the proposed change would not decrease the effectiveness of the FERMI 2 Radiological Emergency Response Preparedness Plan and the plan, as changed, continues to meet the standards in 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR Part 50. The licensee has maintained its capability to perform the duties and functions of each position that has been proposed to be eliminated. The licensee has instituted measures to ensure the capability exists to perform the expected functions for the extended time period. In light of the above, no NRC approval is necessary.

5.0 REFERENCES

1. Detroit Edison Letter, "Submittal of Proposed Revision to the Fermi 2 Radiological Emergency Response Preparedness Plan (RERP Plan)," dated May 14, 2007. [ADAMS Accession No. ML071430159]
2. Detroit Edison Letter, "Response to NRC Request for Additional Information Regarding the Proposed Revision to the Fermi 2 Radiological Emergency Response Preparedness Plan (RERP Plan)," dated February 5, 2008. [ADAMS Accession No. ML080440121]
3. Detroit Edison Letter, "Correction to Administrative Error in the Cover Letter for the Response to NRC Request for Additional Information Regarding the Proposed Revision to the Fermi 2 Radiological Emergency Response Preparedness Plan (RERP Plan)," dated February 7, 2008. [ADAMS Accession No. ML080450337]
4. Detroit Edison Letter, "Shift Technical Advisor Staffing Requirement Clarification in the Fermi 2 Radiological Emergency Response Preparedness Plan," dated August 22, 2008. [ADAMS Accession No. ML082390034].
5. Detroit Edison Letter, "Withdrawal of Two Proposals from the Proposed Revision to the Fermi 2 Radiological Emergency Response Preparedness Plan," dated December 30, 2008. [ADAMS Accession No. ML090070340]
6. Detroit Edison Letter, "Submittal of Revision 32 to the Fermi 2 Radiological Emergency Response Preparedness Plan (RERP Plan)," dated March 16, 2007. [ADAMS Accession No. ML070820248]
7. 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," dated November 1980. [ADAMS Accession No. ML040420012]
8. NRC Regulatory Issue Summary 2005-02, "Clarifying the Process for Making Emergency Plan Changes," dated February 14, 2005. [ADAMS Accession No. ML042580404]
9. Detroit Edison Letter, "Submittal of Proposed Revision to the Fermi 2 Radiological Emergency Response Preparedness Plan (RERP Plan)," dated September 6, 2005. [ADAMS Accession No. ML052560292]
10. Detroit Edison Letter, "Withdrawal of Submittal of Proposed Revision to the Fermi 2 Radiological Emergency Response Preparedness Plan (RERP Plan)," dated July 21, 2006. [ADAMS Accession No. ML062090105]
11. NRC Letter, "Fermi 2 – Withdrawal of Proposed Changes to the Radiological Emergency Response Plan," dated August 31, 2006. [ADAMS Accession No. ML062120047]

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