

July 3, 2012

Mr. Jack M. Davis  
Senior Vice President  
and Chief Nuclear Officer  
Detroit Edison Company  
Fermi 2 – 210 NOC  
6400 North Dixie Highway  
Newport, MI 48166

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION LETTER NO. 78 RELATED TO  
CHAPTER 1.05 FOR THE FERMI 3 COMBINED LICENSE APPLICATION

Dear Mr. Davis:

By letter dated September 18, 2008, Detroit Edison Company (Detroit Edison) submitted for approval a combined license application pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 52. The U.S. Nuclear Regulatory Commission (NRC) staff is performing a detailed review of this application to enable the staff to reach a conclusion on the safety of the proposed application.

The NRC staff has identified that additional information is needed to continue portions of the review. The staff's request for additional information (RAI) is contained in the enclosure to this letter. In order to minimize delays to the current licensing schedule, we request that you respond within 60-days of receipt of this RAI or provide a schedule for your response within 30-days.

If changes are needed to the safety analysis report, the staff requests that the RAI response include the proposed wording changes. If you have any questions or comments concerning this matter, I can be reached at 301-415-8148 or by e-mail at [jerry.hale@nrc.gov](mailto:jerry.hale@nrc.gov).

Sincerely,

/RA/

Jerry Hale, Project Manager  
Licensing Branch 3  
Division of New Reactor Licensing  
Office of New Reactors

Docket No.: 052-033

eRAI Tracking No. 6574

Enclosure:  
Request for Additional Information

Mr. Jack M. Davis  
Senior Vice President  
and Chief Nuclear Officer  
Detroit Edison Company  
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Enclosure:  
Request for Additional Information

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ADAMS Accession No.: ML121850099

NRO-002

OFFICE	PM: DNRL/LB3	LA: DNRL/LB3	OGC	PM: DNRL/LB3	PM DNRL/LB3
NAME	JHale	SGreen	MCarpentier	AMuniz	JHale
DATE	6/25/12	07/03/2012	6/25/12	6/25/12	7/3/12

\*Approval captured electronically in the electronic RAI system.

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## **Request for Additional Information No. 6574**

Fermi Unit 3  
Detroit Edison  
Docket No. 52-033  
SRP Section: 01.05 - Other Regulatory Considerations

Question: 01.05-3

The NRC staff has been directed by the Commission to implement the Fukushima Near-Term Task Force recommendations contained in SECY-12-0025, "Proposed Orders and Requests for Information in Response to Lessons Learned from Japan's March 11, 2011, Great Tohoku Earthquake and Tsunami" dated February 17, 2012. Attachment 2 to order EA-12-049 (ADAMS Accession No. ML12054A735) for all power reactor licensees and holders of construction permits in active or deferred status requires a phased approach for mitigating beyond-design-basis external events. The initial phase requires the use of installed equipment and resources to maintain or restore core cooling, containment, and spent fuel pool (SFP) cooling capabilities. The transition phase requires providing sufficient, portable, onsite equipment and consumables to maintain or restore these functions until they can be accomplished with resources brought from off site. The final phase requires obtaining sufficient offsite resources to sustain those functions indefinitely.

The design described in the Fermi 3 final safety analysis report (FSAR), Rev. 4 references the Economic Simplified Boiling-Water Reactor (ESBWR) design control document (DCD), Rev. 9 which includes passive design features that provide core, containment, and SFP cooling capability for 72 hours, without reliance on alternating current (ac) power. These features do not rely on access to any external water sources. The NRC staff reviewed these design features prior to issuance of the final safety evaluation report (ADAMS Accession No. ML110050215). The ESBWR design also includes equipment to maintain required safety functions in the long term (beyond 72 hours to 7 days) including capability to replenish water supplies. Connections are provided for pumping equipment that can be brought to the site to back up the installed equipment. The staff concluded in its FSER that the ESBWR design is capable of supporting extended operation of the passive safety systems to maintain required safety functions in the long term (i.e 72 hours to 7 days period) without reliance on offsite support. As such, this RAI requests Detroit Edison (Fermi 3 COL applicant) to address the following items relative to the final phase.

1. Develop, implement, and maintain guidance and strategies to maintain or restore core cooling, containment and SFP cooling capabilities following a beyond-design-basis external event.
2. These strategies must be capable of mitigating a simultaneous loss of all ac power and loss of normal access to the normal heat sink and have adequate capacity to address challenges to core cooling, containment, and SFP cooling capabilities.
3. Provide reasonable protection for the associated equipment from external events. Such protection must demonstrate that there is adequate capacity to address challenges to core cooling, containment, and SFP cooling capabilities.

Enclosure

4. Describe capability of implementing the strategies in all modes.
5. Full compliance shall include procedures, guidance, training and acquisition, staging, or installing of equipment needed for the strategies.

Question: 01.05-4

The NRC staff has been directed by the Commission to implement the Fukushima Near-Term Task Force recommendations contained in SECY-12-0025, "Proposed Orders and Requests for Information in Response to Lessons Learned from Japan's March 11, 2011, Great Tohoku Earthquake and Tsunami" dated February 17, 2012. Attachment 2 to Order EA-12-051 (ADAMS Accession No. ML12054A679) for all power reactor licensees and holders of construction permits in active or deferred status requires reliable indication of the water level in associated spent fuel storage pools capable of supporting identification of the following pool water level conditions by trained personnel: (1) level that is adequate to support operation of the normal fuel pool cooling system, (2) level that is adequate to provide substantial radiation shielding for a person standing on the spent fuel pool operating deck, and (3) level where fuel remains covered and actions to implement make-up water addition should no longer be deferred.

The design described in the ESBWR DCD, Rev. 9 as referenced in the Fermi 3 FSAR, Revision 4 addresses many of these attributes of spent fuel pool level instrumentation. The NRC staff reviewed these design features prior to issuance of the final safety evaluation report (ADAMS Accession No. ML110050215). The ESBWR design largely addresses the requirements in Attachment 2 by providing two safety-related pool level instrument channels for both the spent fuel and buffer pools. The instruments measure level from the top of the spent fuel pool to the top of the fuel racks to address the range requirements listed above. The safety-related classification provides for the following additional design features:

- Instruments
- Arrangement
- Mounting
- Qualification
- Independence
- Electrical isolation and physical separation between instrument channels
- Testing
- Display

As such, this RAI requests Fermi 3 to address the following items that were not specified in ESBWR DCD, Rev. 9:

1. The spent fuel pool/buffer pool level instrumentation shall include the following design features:
  - 1.1 Power supplies: Instrumentation channels shall provide for power connections from sources independent of the plant alternating current (ac) and direct current (dc) power distribution systems, such as portable generators or replaceable batteries. Power supply designs should provide for quick and accessible

connection of sources independent of the plant ac and dc power distribution systems. Onsite generators used as an alternate power source and replaceable batteries used for instrument channel power shall have sufficient capacity to maintain the level indication function until offsite resource availability is reasonably assured.

- 1.2 Accuracy: The instrument shall maintain its designed accuracy following a power interruption or change in power source without recalibration.
2. The spent fuel pool/buffer pool instrumentation shall be maintained available and reliable through appropriate development and implementation of a training program. Personnel shall be trained in the use and the provision of alternate power to the safety-related level instrument channels.