

DTE Energy
One Energy Plaza, Detroit, MI 48226-1279



10 CFR 52.79

January 25, 2013
NRC3-13-0002

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

- References:
- 1) Fermi 3
Docket No. 52-033
 - 2) Letter from Jerry Hale (USNRC) to Jack M. Davis (Detroit Edison), "Request for Additional Information Letter No. 78 Related to Chapter 1.05 for the Fermi 3 Combined License Application," dated July 3, 2012
 - 3) 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
 - 4) Letter from Peter W. Smith (Detroit Edison) to USNRC, "Detroit Edison Company Response to NRC Request for Additional Information Letter No. 78," NRC3-12-0024, dated August 24, 2012

Subject: DTE Electric Company Supplemental Response to NRC Request for Additional Information Letter No. 78

In Reference 2, the NRC requested additional information to support the review of certain portions of the Fermi 3 Combined License Application (COLA). The Requests for Additional Information (RAIs) in Reference 2 address the Fukushima Near-Term Task Force recommendations contained in Reference 3.

Responses to the RAIs in Reference 2 were provided in Reference 4. Attachments 1 and 2 of this letter provide supplemental responses to the RAIs in Reference 2, as requested by the staff.

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

DOGS
NRO

I state under penalty of perjury that the foregoing is true and correct. Executed on the 25th day of January 2013.

Sincerely,



Peter W. Smith, Director
Nuclear Development – Licensing and Engineering
DTE Electric Company

Attachments: 1) Supplemental Response to RAI Letter No. 78 (Question No. 01.05-3)
 2) Supplemental Response to RAI Letter No. 78 (Question No. 01.05-4)

cc: Adrian Muniz, NRC Fermi 3 Project Manager
 Tekia Govan, NRC Fermi 3 Project Manager
 Michael Eudy, NRC Fermi 3 Project Manager
 Bruce Olson, NRC Fermi 3 Environmental Project Manager (w/o attachments)
 Fermi 2 Resident Inspector (w/o attachments)
 NRC Region III Regional Administrator (w/o attachments)
 NRC Region II Regional Administrator (w/o attachments)
 Supervisor, Electric Operators, Michigan Public Service Commission (w/o attachments)
 Michigan Department of Natural Resources and Environment
 Radiological Protection Section (w/o attachments)

Attachment 1 to
NRC3-13-0002
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Attachment 1
NRC3-13-0002
(8 pages)

Supplemental Response to RAI Letter No. 78
(eRAI Tracking No. 6574)

RAI Question No. 01.05-3

NRC RAI 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.*
- 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.*

Supplemental Response

DTE Electric Company initially provided a response to NRC RAI 01.05-3 in letter NRC3-12-0024, dated August 24, 2012 (ML12240A184). The following response replaces the response provided in letter NRC3-11-0024. Material changes from the initial response are indicated by revision bars.

The response to this RAI is based on SECY-12-0025, Enclosure 4, Attachment 3, "Requirements for Mitigation Strategies for Beyond-Design-Basis External Events at COL Holder Reactor Sites (Vogtle Units 3 and 4)." SECY-12-0025, Enclosure 4, Attachment 3 contains different requirements for Vogtle Units 3 and 4 than those described in SECY-12-0025, Enclosure 4, Attachment 2, because of the AP1000's passive design. As described in the RAI, the staff has found the ESBWR design to utilize similar passive design features. As such, a license condition is proposed in response to this RAI, with similar content as was required for Vogtle Units 3 and 4.

The proposed license condition reads as follows:

Mitigation Strategies for Beyond-Design-Basis External Events

Prior to initial fuel load, DTE Electric Company shall address the following requirements using the guidance contained in JLD-ISG-2012-01, "Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," Revision 0:

- A. Develop, implement, and maintain guidance and strategies to maintain or restore core, containment, and spent fuel pool cooling capabilities following a beyond-design-basis external event. 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 for core, containment, and spent fuel pool cooling capabilities at all units on the Fermi 3 site, and
 - Have the capability to be implemented in all modes.
- B. Provide reasonable protection for the associated equipment from external events. Such protection must demonstrate that there is adequate capacity to address challenges to core, containment, and spent fuel pool cooling capabilities at all units on the Fermi site.

Within one (1) year after issuance of the Fermi 3 COL, an overall integrated plan shall be submitted to the NRC for review, including a description of how compliance with the requirements described in this license condition will be achieved.

Initial status reports shall be provided to the NRC sixty (60) days following issuance of the Fermi 3 COL and at six (6) month intervals following submittal of the overall integrated plan described above which delineate progress made in implementing the requirements of this license condition.

Proposed COLA Revision

Part 10, Section 3, "Fermi 3 Proposed License Conditions," is revised as shown on the attached markup.

Markup of Detroit Edison COLA
(following 3 pages)

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

3.7 Emergency Planning Actions

Because various equipment set points and other information cannot be determined until as-built information is available, the COLA does not fully address certain aspects of the Emergency Action Level (EAL) scheme. Thus, COL applicants using EAL schemes in accordance with NEI 07-01 are proposed the following license condition:

The licensee shall submit a fully developed set of site-specific 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.

 Insert 1 on the following page

Insert 1 – Previously submitted in the response to RAI 01.05-2

3.8 Fukushima Actions

3.8.1 Emergency Planning Actions

The applicant is proposing the following license condition related to communications:

At least two (2) years prior to scheduled initial fuel load, the licensee shall have performed an assessment of on-site and offsite communications systems and equipment required during an emergency event to ensure communications capabilities can be maintained during prolonged station blackout conditions. The communications capability assessment will be performed in accordance with NEI 12-01, "Guidance for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities," Revision 0, or other NRC approved guidance in effect six months prior to completion of the assessment.

At least one hundred eighty (180) days prior to scheduled initial fuel load, the licensee shall complete implementation of corrective actions identified in the communications capability assessment described above, including any related emergency plan and implementing procedure changes and associated training.



Insert 2 on the
following page

3.8.2 Mitigation Strategies for Beyond-Design-Basis External Events

Prior to initial fuel load, DTE Electric Company shall address the following requirements using the guidance contained in JLD-ISG-2012-01, "Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," Revision 0:

- A. Develop, implement, and maintain guidance and strategies to maintain or restore core, containment, and spent fuel pool cooling capabilities following a beyond-design-basis external event. 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 for core, containment, and spent fuel pool cooling capabilities at all units on the Fermi 3 site, and
 - Have the capability to be implemented in all modes.
- B. Provide reasonable protection for the associated equipment from external events. Such protection must demonstrate that there is adequate capacity to address challenges to core, containment, and spent fuel pool cooling capabilities at all units on the Fermi site.

Within one (1) year after issuance of the Fermi 3 COL, an overall integrated plan shall be submitted to the NRC for review, including a description of how compliance with the requirements described in this license condition will be achieved.

Initial status reports shall be provided to the NRC sixty (60) days following issuance of the Fermi 3 COL and at six (6) month intervals following submittal of the overall integrated plan described above which delineate progress made in implementing the requirements of this license condition.

Attachment 2 to
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Page 1

Attachment 2
NRC3-13-0002
(9 pages)

Supplemental Response to RAI Letter No. 78
(eRAI Tracking No. 6574)

RAI Question No. 01.05-4

NRC RAI 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.*

Supplemental Response

DTE Electric Company initially provided a response to NRC RAI 01.05-4 in letter NRC3-12-0024, dated August 24, 2012 (ML12240A184). The following response replaces the response provided in letter NRC3-11-0024. Material changes from the initial response are indicated by revision bars.

The response to this RAI is based on SECY-12-0025, Enclosure 6, Attachment 3, "Requirements for Reliable Spent Fuel Pool Level Instrumentation at COL Holder Reactor Sites." SECY-12-0025, Enclosure 6, Attachment 3 contains different requirements for Vogtle Units 3 and 4 than those described in SECY-12-0025, Enclosure 6, Attachment 2, because of the AP1000's passive design. As described in the RAI, the staff has found the ESBWR design to utilize similar passive design features. Additionally, as described in the RAI, the staff has found the ESBWR design to adequately address spent fuel pool level instrumentation arrangement, qualification, and display. As such, a license condition is proposed in response to this RAI with similar content as was required for Vogtle Units 3 and 4, except that the proposed license condition does not address spent fuel pool level instrumentation arrangement, qualification, or display, as provisions for those design features are included in the ESBWR design.

The proposed license condition reads as follows:

Reliable Spent Fuel Pool/Buffer Pool Level Instrumentation

Prior to initial fuel load, DTE Electric Company shall address the following requirements using the guidance contained in JLD-ISG-2012-03, "Compliance with Order EA-2012-051, Reliable Spent Fuel Pool Instrumentation," Revision 0:

- A. The spent fuel pool/buffer pool level instrumentation shall include the following design features:
 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 shall 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.

2. Accuracy: The instrument shall maintain its designed accuracy following a power interruption or change in power source without recalibration. ESBWR DCD, Tier 1, Revision 9, Table 2.6.2-2 specifies a minimum instrument accuracy of ± 300 mm (1 ft), which meets the guidance set forth in JLD-ISG-2012-03, Revision 0.

- B. 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.

Within one (1) year after issuance of the Fermi 3 COL, an overall integrated plan shall be submitted to the NRC for review, including a description of how compliance with the requirements described in this license condition will be achieved.

Initial status reports shall be provided to the NRC sixty (60) days following issuance of the Fermi 3 COL and at six (6) month intervals following submittal of the overall integrated plan described above which delineates progress made in implementing the requirements of this license condition.

Proposed COLA Revision

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3.7 Emergency Planning Actions

Because various equipment set points and other information cannot be determined until as-built information is available, the COLA does not fully address certain aspects of the Emergency Action Level (EAL) scheme. Thus, COL applicants using EAL schemes in accordance with NEI 07-01 are proposed the following license condition:

The licensee shall submit a fully developed set of site-specific 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.

 Insert 1 on the following page

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3.8 Fukushima Actions

3.8.1 Emergency Planning Actions

The applicant is proposing the following license condition related to communications:

At least two (2) years prior to scheduled initial fuel load, the licensee shall have performed an assessment of on-site and offsite communications systems and equipment required during an emergency event to ensure communications capabilities can be maintained during prolonged station blackout conditions. The communications capability assessment will be performed in accordance with NEI 12-01, "Guidance for Assessing Beyond Design Basis Accident Response Staffing and Communications Capabilities," Revision 0, or other NRC approved guidance in effect six months prior to completion of the assessment.

At least one hundred eighty (180) days prior to scheduled initial fuel load, the licensee shall complete implementation of corrective actions identified in the communications capability assessment described above, including any related emergency plan and implementing procedure changes and associated training.



Insert 2 on the
following page

Insert 2 – Submitted in the response to RAI 01.05-3 (Attachment 1)

3.8.2 Mitigation Strategies for Beyond-Design-Basis External Events

Prior to initial fuel load, DTE Electric Company shall address the following requirements using the guidance contained in JLD-ISG-2012-01, "Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," Revision 0:

- A. Develop, implement, and maintain guidance and strategies to maintain or restore core, containment, and spent fuel pool cooling capabilities following a beyond-design-basis external event. 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 for core, containment, and spent fuel pool cooling capabilities at all units on the Fermi 3 site, and
 - Have the capability to be implemented in all modes.
- B. Provide reasonable protection for the associated equipment from external events. Such protection must demonstrate that there is adequate capacity to address challenges to core, containment, and spent fuel pool cooling capabilities at all units on the Fermi site.

Within one (1) year after issuance of the Fermi 3 COL, an overall integrated plan shall be submitted to the NRC for review, including a description of how compliance with the requirements described in this license condition will be achieved.

Initial status reports shall be provided to the NRC sixty (60) days following issuance of the Fermi 3 COL and at six (6) month intervals following submittal of the overall integrated plan described above which delineate progress made in implementing the requirements of this license condition.

Insert 3 on the following page



3.8.3 Reliable Spent Fuel Pool/Buffer Pool Level Instrumentation

Prior to initial fuel load, DTE Electric Company shall address the following requirements using the guidance contained in JLD-ISG-2012-03, "Compliance with Order EA-2012-051, Reliable Spent Fuel Pool Instrumentation," Revision 0:

- A. The spent fuel pool/buffer pool level instrumentation shall include the following design features:
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 shall 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.
 2. Accuracy: The instrument shall maintain its designed accuracy following a power interruption or change in power source without recalibration. ESBWR DCD, Tier 1, Revision 9, Table 2.6.2-2 specifies a minimum instrument accuracy of ± 300 mm (1 ft), which meets the guidance set forth in JLD-ISG-2012-03, Revision 0.
- B. 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.

Within one (1) year after issuance of the Fermi 3 COL, an overall integrated plan shall be submitted to the NRC for review, including a description of how compliance with the requirements described in this license condition will be achieved.

Initial status reports shall be provided to the NRC sixty (60) days following issuance of the Fermi 3 COL and at six (6) month intervals following submittal of the overall integrated plan described above which delineates progress made in implementing the requirements of this license condition.