

NRR-PMDAPEm Resource

From: Rankin, Jennivine
Sent: Wednesday, May 06, 2015 3:34 PM
To: Alan I Hassoun (hassouna@dteenergy.com)
Subject: Fermi 2 - Request for Additional Information regarding the license amendment request to adopt NEI 99-01, Revision 6 (MF5048)
Attachments: EAL RAIs.docx

Mr. Hassoun,

By letter dated October 21, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14295A078), DTE Electric Company (DTE) submitted a license amendment request to the Fermi 2 Facility Operating License (NPF-43). The proposed amendment revises the current emergency action level (EAL) scheme from one based upon NUMARC/NESP-007, Revision 2, "Methodology for Development of Emergency Action Levels," to one based upon the Nuclear Energy Institute (NEI) document NEI 99-01, Revision 6, "Development of Emergency Action Levels for Non-Passive Reactors" (ADAMS Accession No. ML13091A209).

The NRC staff has reviewed the information provided in the license amendment request and determined that additional information is required in order to complete its review.

A draft request for additional (RAI) was transmitted on April 23, 2015, and a clarification call was held on May 6, 2015. As agreed upon subsequent to the clarification call, please submit your response to the RAIs by June 19, 2015. If you wish to alter the date of your response, please contact me at (301) 415-1530.

Please treat this e-mail as formal transmittal of the RAIs.

Thanks,
Jennie

Jennie Rankin, Project Manager
Plant Licensing Branch III-1
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REQUEST FOR ADDITIONAL INFORMATION

DTE ELECTRIC COMPANY

FERMI 2

LICENSE AMENDMENT REQUEST TO REVISE

THE EMERGENCY ACTION LEVEL SCHEME

DOCKET NO. 50-341

By letter dated October 21, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14295A078), DTE Electric Company (DTE) submitted a license amendment request to the Fermi 2 Facility Operating License (NPF-43). The proposed amendment revises the current emergency action level (EAL) scheme from one based upon NUMARC/NESP-007, Revision 2, "Methodology for Development of Emergency Action Levels," to one based upon the Nuclear Energy Institute (NEI) document NEI 99-01, Revision 6, "Development of Emergency Action Levels for Non-Passive Reactors" (ADAMS Accession No. ML13091A209).

The NRC staff has reviewed the information provided in the license amendment request and determined that additional information is required in order to complete its review.

General comment:

For all the EALs, a "plant-specific" basis section was added in addition to the NEI 99-01, Revision 6 basis information, called "generic" in the package. While the staff does not object to information being added to the EAL basis to ensure understanding of the particular EAL, it must be noted that when there is a potential conflict between the "plant-specific" and "generic" basis sections, that the information in the "generic" basis in NEI 99-01, Revision 6 will be given precedence by the staff as it is an NRC-endorsed methodology for the development of EALs. To avoid any potential misunderstandings, please review all the EALs to ensure that information developed for the "plant-specific" sections are not in conflict with the "generic" sections, and revise accordingly, if necessary.

RAI Fermi-01:

In Section 1.0, "Purpose" of the Fermi 2 EAL Technical Bases please incorporate the relevant language from NEI 99-01, Revision 6, Section 4.6, related to the applicability of 10 CFR 50.54(q) to this document, or provide justification for not incorporating.

RAI Fermi-02:

The endorsed version of NEI 99-01, Revision 6 can be found at ADAMS Accession No. ML13091A209. For clarity, please reference the correct ADAMS accession number of the endorsed version of NEI 99-01, Revision 6, on Pages 4 and 17.

RAI Fermi-03:

Section 3.1.2, "Valid Indications," (1st paragraph) of the Fermi 2 EAL Technical Bases is derived from NEI 99-01, Revision 6, Section 5.1(3rd paragraph). The last sentence from NEI 99-01, Revision 6, which states, "The validation of indications should be completed in a manner that supports timely emergency declaration," was not included. While other areas of the Fermi 2 EAL Technical Bases document imply this, to ensure a consistent understanding, please add

the quoted sentence from NEI 99-01, Revision 6, or provide further justification for not incorporating.

RAI Fermi-04:

NEI 99-01, Revision 6, Section 4.3, "Instrumentation Used for EALs," states "...scheme developers should ensure that specific values used as EAL setpoints are within the calibrated range of the referenced instrumentation...EAL setpoint values should not use terms such as 'off-scale low' or 'off-scale high' since that type of reading may not be readily differentiated from an instrument failure."

- a. Please confirm that all setpoints and indications used in the EAL scheme are within the calibrated range(s) of the stated instrumentation and that the resolution is appropriate for the setpoint/indication.
- b. Where the term "Max Safe" is used, the plant-specific information states that there is only one available instrument and that all other "Max Safe" values must be derived from surveys. This is not the staff's expectation as surveys do not provide for timely EAL declaration, and are only acceptable based on the NRC-endorsed methodology when determining radiation levels for the Central Alarm Station used in EAL RA3.1. For all instances where the terms "Max Safe" or "Max Normal" are used to quantify a set of instrumentation, please confirm the suitability of this instrumentation as a threshold for timely EAL declaration for the specific EAL or Fission Barrier Threshold, and if necessary, develop EALs using specific instrumentation and values rather than this established set of "Max Safe" instruments/values.

RAI-Fermi-05:

In Section 5.0, "Definitions," for consistency with the approved guidance, please include the following definitions from NEI 99-01, Revision 6, or provide justification for not incorporating:

- Independent Spent Fuel Storage Installation (ISFSI),
- (Notification of) Unusual Event,
- Alert,
- Site Area Emergency,
- General Emergency,
- Initiating Condition,
- Emergency Action Level;
- Fission Product Barrier Threshold, and
- Emergency Classification Level.

In addition, for emergency planning purposes, please confirm that the site-specific definitions of Owner Controlled Area (OCA) and Site Boundary are correctly applied throughout the document, as typically the OCA is the area beyond which the licensee does not own, lease, or otherwise control, and the Site Boundary is a sub-area of the OCA. Please revise, or elaborate in the document, as appropriate to ensure understanding on intended application.

RAI-Fermi-06:

For EALs RG1.1, RS1.1 and RU1.1, please provide justification for the difference in radiation monitor threshold values from the values currently provided in EP-101, dated May 7, 2013 (ADAMS Accession No. ML13212A154), or revise accordingly.

Fermi-RAI-07:

For EAL RA1.1, the Plant-Specific Basis information describes the Unusual Event basis, when this EAL is for the Alert. Please provide justification for this apparent misalignment, or revise accordingly.

RAI-Fermi-08:

NRC regulations in Appendix E, Section IV.C.2, to 10 CFR Part 50 require the licensee to establish and maintain the capability to assess, classify, and declare an emergency condition within 15 minutes after the availability of indications to plant operators that an EAL has been exceeded and to promptly declare the emergency condition as soon as possible following identification of the appropriate emergency classification level.

For EALs RU2.1 and RA2.2, please confirm that all the stated instrumentation is available within the Control Room, and if not, identify and justify the impact on timely declaration of this EAL.

RAI-Fermi-09:

Category AA2 (2nd paragraph) from NEI 99-01, Revision 6 states, "This IC applies to irradiated fuel that is licensed for dry storage up to the point that the loaded storage cask is sealed."

For EAL RA2.1, please explain why discussion of the applicability of this EAL until spent fuel is sealed in a licensed dry cask, was not incorporated, or revise accordingly.

RAI-Fermi-10:

Category CU3 from NEI 99-01, Revision 6, states that this EAL "reflects a condition where there has been a significant loss of instrumentation capability necessary to monitor RCS conditions and operators would be unable to monitor key parameters necessary to assure core decay heat removal."

For EAL CU3.2, the bulleted list of available instruments for monitoring reactor pressure vessel (RPV) level includes "visual observation of reactor cavity level from the refueling floor." The intent of this EAL is to declare an event upon a loss of instrumentation; therefore the inclusion of this bullet would be inconsistent with EAL intent. Please revise accordingly, or provide further justification for this criterion.

RAI-Fermi-11:

For EALs CU5.1 and SU7.1, the use of the Michigan (MI) State Radios (800 MHz) is listed as a communication method; however, they are not discussed in the Plant-Specific description. Please explain how the MI State Radios (800MHz) work for in-the-plant communications, or remove it from consideration as an onsite communication method.

RAI-Fermi-12:

For EAL HU2.1, the staff expects licensees to use the EAL method described in Category HU2 of NEI 99-01, Revision 6 when instrumentation is not available in the Control Room to directly support the EAL. Please explain in greater detail: (1) how these specific seismic values are determined; and (2) the timing of this determination after the receipt of the "Seismic System Event/Trouble" annunciator.

RAI-Fermi-13:

For EALs HU4.1 and HU4.2, there is a potential for misunderstanding between the information contained in the "plant-specific" section and the "generic" section as to when the declaration

clock starts. To ensure consistent understanding, please use the NEI 99-01, Revision 6 endorsed wording, or provide further justification to support staff evaluation of an alternative.

RAI-Fermi-14:

Category HU4 in NEI 99-01, Revision 6 includes the ISFSI for plants with the ISFSI outside of the Protected Area. However, the staff could not decipher from the referenced UFSAR Figure 1.2-5 if the ISFSI is located within the Protected Area.

For EALs HU4.3 and HU4.4, please clarify whether the ISFSI is located within the protected area. If the ISFSI is not considered to be part of the Protected Area, add the ISFSI to the EALs, or provide justification for not incorporating.

RAI-Fermi-15:

Category HU4 in NEI 99-01, Revision 6 specifies basis related requirements from 10 CFR 50, Appendix R.

For EALs HU4.1, HU4.2, HU4.3 and HU4.4, there does not appear to be any Appendix R discussion. Please include the information from the NEI 99-01, Revision 6 guidance related to Appendix R and the timing, or provide justification for not incorporating.

RAI-Fermi-16:

For EAL HA5.1, the "plant-specific" basis states that the Control Room is not included as it is addressed in RA3.1; yet, EAL RA3.1 does not bound atmospheric gasses. Typically a well-designed Control Room has a ventilation system capable of protecting the operations staff from the consequences of an external gaseous release and, therefore, need not be included in EAL HA5.1. Please provide further justification on why the Control Room is excluded from the applicability of this EAL, or revise accordingly.

RAI-Fermi-17:

The plant-specific basis in EALs HA6.1 and HS6.1 contain a bullet stating, "RPV level and pressure are being controlled from the Dedicated or Remote Shutdown Panels." This implies that the licensee will wait until this bullet is met to declare the EAL when, in fact, the staff expects the declaration start clock for this EAL to be when the last licensed operator leaves the Control Room (as reflected in first sentence of the HS6.1 plant-specific basis). Please explain in more detail why the staff should consider the addition of the above statement, or revise accordingly.

RAI-Fermi-18:

For EAL HS6.1, please explain why operating mode specificity to the key safety functions list was not addressed, as the shutdown operating modes may not need control of these safety functions as quickly as the hot operating modes.

RAI-Fermi-19:

Note 10 in EALs SA1.1 and SS1.1 state, "Credit may be taken for one of the four CTGs as an onsite AC power source only if the CTG is already aligned and capable of powering an essential bus within 15 minutes." However, Note 10 was not included in EALs SU1.1 and SG1.1. Please explain why Note 10 was not added to EALs SU1.1 and SG1.1 to reflect the restrictions when considering the combustion turbine generators (CTGs), or revise accordingly.

RAI-Fermi-20:

For EALs SU4.1 and SU4.2, a comment was added to the “plant-specific” basis section to limit the consideration of this EAL when in Operating Mode 3 (Hot Shutdown). While the staff has no technical issue with this restriction, this should be incorporated as a note to the EAL and included on the EAL Wallboard, as it changes the applicability of the EAL. Please revise accordingly, or remove the restriction, as applicable.

RAI-Fermi-21:

For EALs SU6.1, SU6.2, SA6.1 and SS6.1, please note that it is not the staff's expectation that licensees include a specific power level to denote shutdown, as licensed operators are trained to determine if the plant is shutdown, or not, using power as well as other plant parameters. Please explain the basis for including a specific power level.

In addition, the staff notes that the Startup Operating Mode is not included in Category SU5 in NEI 99-01, Revision 6. Please explain in further detail the basis for the addition of the Startup operating mode to EALs SU6.1, SU6.2, SA6.1 and SS6.1, or revise accordingly.

RAI-Fermi-22:

The basis section of Category SS5 in NEI 99-01 is intended to reflect that this EAL addresses a condition when all means of achieving shutdown are unsuccessful, and continued power generation is challenging the capability to remove heat from the core and/or RCS.

The plant-specific section of EAL SS6.1 states, “*For this Site Area Emergency EAL, reactor shutdown achieved by injection of boron or use of the alternate control rod insertion methods of 29.ESP.03 is also credited provided [emphasis added] reactor power can be reduced below the APRM downscale trip set point before indications of an extreme challenge to either core cooling or heat removal exists.*” Please explain the addition of the above sentence as it appears to be misaligned with the initiating conditions described in NEI 99-01, Revision 6.

RAI-Fermi-23:

For EAL SA8.1, please explain the information added to the “plant-specific” basis section (1st paragraph) that potentially conflicts with the 3rd paragraph of the “generic” basis section with respect to the operating mode. In addition, please explain the value-added to the EAL with the inclusion of this “plant-specific” information, particularly when it is different than the “generic” (NEI99-01, Revision 6 information), or revise accordingly.

RAI-Fermi-24:

Category E-HU1 in NEI 99-01, Revision 6 provides an example EAL which states, “Damage to a loaded cask CONFINEMENT BOUNDARY as indicated by an on-contact radiation reading greater than (2 times the site-specific cask specific technical specification allowable radiation level) on the surface of the spent fuel cask.”

For EAL EU1.1, it is unclear that either of the two bullets listed will suffice for making this declaration. Please explain further, or clarify accordingly (e.g., including a logic 'or' statement).

Also note the misspelling of ‘multi-purpose canister’ (milti-purpose canister), when describing the confinement boundary in the “plant-specific” section.

RAI-Fermi-25:

For EAL EU1.1, the last sentence of the 1st paragraph developed for the Category E discussion states, *“Formal offsite planning is not required because the postulated worst-case accident involving an ISFSI has insignificant consequences to the public health and safety.”* This statement is not applicable for use in an EAL scheme for a licensed and operating reactor site. Please provide justification for including this statement, or revise accordingly.

RAI-Fermi-26:

Table 9-F-2, “BWR EAL Fission Product Barrier Table,” in NEI 99-01, Revision 6 provides logic for the thresholds with multiple considerations (e.g., “any”, “or”).

Table F-1, “Fission Product Barrier Threshold Matrix,” in the licensee’s submittal differs in logic with that in NEI 99-01, Revision 6. Please clarify the expected logic to be used and/or explain any deviations from the NEI 99-01, Revision 6.

RAI-Fermi-27:

Under the Fission Barrier Matrix for FC-Loss 1.A and PC-Potential Loss (PLOSS) 1.A, please provide additional justification as to why criterion “SAG entry is required” should be considered, in lieu of NEI 99-01, Revision 6 barrier threshold of “Primary containment flooding required,” or revise accordingly.

RAI-Fermi-28:

The NEI 99-01, Revision 6 basis (for RC-Loss 2.A), as shown in the “generic” basis section of RC-Loss 2.A) states, *“If it is determined that the ruptured line cannot be promptly isolated from the [emphasis added] **Control Room**, the RCS Barrier Loss threshold is met.”*

The basis for RC-Loss 2.A and RC-PLOSS 2.A define the term “Unisolable” as, *“An open or breached system line that cannot be isolated, [emphasis added] **remotely or locally.**”* Please provide further justification to support the ability to promptly isolate locally, or revise accordingly consistent with NEI 99-01, Revision 6.

RAI-Fermi-29:

For RC-PLOSS 2.A and PC-Loss 2.A, please address the following:

- a. Please verify that all of the “Max Normal” or “Max Safe” instruments are able to be used in the time requirements expected of an EAL, or revise to list specific instrumentation that would meet these requirements.
- b. The “plant-specific” basis information excludes all but one radiation monitor for use, and states that all other values will be determined by survey. This is not consistent with the guidance in NEI 99-01, Revision 6 as: (1) exclusionary information should be part of the threshold, not hidden within the basis information; and (2) only the Central Alarm Station is acceptable for surveys due to the timing associated with getting them done. Please provide further justification for staff evaluation, or revise accordingly.
- c. The guidance in NEI 99-01, Revision 6 is that the EAL declaration clock starts when the “Max Normal” or “Max Safe” alarm/indication occurs, and that determination of whether the leak is isolated to preclude EAL declaration must occur within 15-minutes. Please explain how proposed EALs will ensure that this is the understanding of the EAL decision-makers, or add guidance as applicable.

- d. Please explain why RC-PLoss 2.A describes “Max Safe” conditions in the “plant-specific” basis section, when this threshold is for “Max Normal”, or revise accordingly.

RAI-Fermi-30:

The threshold for RC-Loss 3.A states, “Drywell pressure > 1.68 psig due to RCS leakage.”

In the “plant-specific” basis section for RC-Loss 3.A, the sentence, “*Loss of drywell cooling that results in pressure greater than 1.68 psig should not be considered an RCS Barrier Loss,*” was added. Please explain why this sentence was added, or revise the “plant-specific” basis section accordingly.

RAI-Fermi-31:

Under the “plant-specific” basis for PC-PLoss 3.B, the last paragraph regarding if the hydrogen or oxygen monitor is unavailable requires significantly more justification to support staff’s evaluation. It is expected that the ability to monitor drywell and suppression pool hydrogen and oxygen concentrations is maintained during the operating modes applicable to the Fission Barrier Matrix. If this ability is compromised, then the licensee is required to compensate for this loss and timely restore functionality of the instrumentation. Please provide further justification, or revise accordingly.

RAI-Fermi-32:

Under the Fission Barrier Matrix for PC-PLoss 3.C, please explain why the “plant-specific” basis states, “*This threshold should be considered when EOP Primary Containment Control Step TWT-5 is reached and emergency RPV depressurization is required.*” This seems to imply that if the Heat Capacity Limit (HCL) is reached by any other emergency operating procedure, it would not result in classification. Please clarify if the statement above is the only instance where the threshold would be met, or revise accordingly.