



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

May 26, 2015

LICENSEE: DTE Electric Company

FACILITY: Fermi 2

SUBJECT: SUMMARY OF TELEPHONE CONFERENCE CALL HELD ON MARCH 4, 2015, BETWEEN THE U.S. NUCLEAR REGULATORY COMMISSION AND DTE ELECTRIC COMPANY, CONCERNING REQUESTS FOR ADDITIONAL INFORMATION, SET 28 PERTAINING TO THE FERMI 2 LICENSE RENEWAL APPLICATION (TAC NO. MF4222)

The U.S. Nuclear Regulatory Commission (NRC or the staff) and representatives of DTE Electric Company (DTE or the applicant) held a telephone conference call on March 4, 2015, to discuss and clarify the staff's draft requests for additional information (DRAIs) 4.1-1a, B.1.10-2, B.1.10-3, and 4.2.7-1 concerning the Fermi 2 license renewal application. The telephone conference call was useful in clarifying the intent of the staff's DRAIs.

Enclosure 1 provides a listing of the participants and Enclosure 2 contains a listing of the DRAIs discussed with the applicant, including a brief description on the status of the items.

The applicant had an opportunity to comment on this summary.

*/RA/*

Daneira Meléndez-Colón, Project Manager  
Projects Branch 1  
Division of License Renewal  
Office of Nuclear Reactor Regulation

Docket No. 50-341

Enclosures:

1. List of Participants
2. Summary of Telephone Conference Call

cc w/encls: Listserv

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TELEPHONE CONFERENCE CALL  
FERMI 2  
LICENSE RENEWAL APPLICATION

LIST OF PARTICIPANTS  
MARCH 4, 2015

PARTICIPANTS

AFFILIATIONS

Daneira Meléndez-Colón	U. S. Nuclear Regulatory Commission (NRC)
James Medoff	NRC
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SUMMARY OF TELEPHONE CONFERENCE CALL  
FERMI 2  
LICENSE RENEWAL APPLICATION  
MARCH 4, 2015

The U.S. Nuclear Regulatory Commission (NRC or the staff) and representatives of DTE Electric Company (DTE or the applicant) held a telephone conference call on March 4, 2015, to discuss and clarify the following draft requests for additional information (DRAIs) concerning the Fermi 2 license renewal application (LRA).

**DRAI 4.1-1a**

Background:

By letter dated December 23, 2014, the staff issued request for additional information (RAI) 4.1-1, in which the staff asked the applicant to clarify whether the methodology in General Electric (GE) Technical Report (TR) No. NEDO-24057-P (as included in the current licensing basis (CLB)) includes a time-dependent analysis and whether the analysis is relied upon to qualify the structural integrity of the reactor vessel internal (RVI) components against the consequences of flow-induced vibrations. If the analysis is time-dependent, the staff asked the applicant to provide justification as to why the analysis would not need to be identified as a time-limited aging analysis (TLAA) for the LRA.

In the applicant's response to RAI 4.1-1, by letter dated February 5, 2015, the applicant stated that the methodology in TR No. NEDO-24057-P does not include a time-dependent analysis as long as the flow-induced vibration stress is less than 10,000 psi, 0-p. The applicant stated that, based on startup vibration measurements at the prototype plant, the maximum peak stress amplitude due to flow induced vibrations is less than 10,000 psi, 0-p, and that this stress amplitude value implies that no fatigue usage is accumulated by the component due to flow-induced vibration (American Society of Mechanical Engineers (ASME) Code Section III, Division 1, Appendix I, Figure I-9.2.2, "Design Fatigue Curve for Austenitic Steels"). The applicant used this basis to conclude that the operating time will have no effect on the RVI component evaluation.

Issue:

The staff can only disposition RAI 4.1-1 based on comparison with the current licensing or design basis for assessing flow induced vibrations in RVI components at the facility. The actual stress range amplitudes cannot be used as a basis for implying that the loads are less than the fatigue endurance limit for these components because the applicant has not: (a) established what that fatigue endurance limit is, in terms of a fatigue endurance limit stress threshold value, and (b) demonstrated that vibrational loading stress amplitudes of 10,000 psi or less will be lower than the stress value associated with the known fatigue endurance limit established for the RVI components.

Request:

Clarify how TR No. NEDO-24057-P assessed the time-dependency of flow-induced vibrations against definite stress-related limits or thresholds for fatigue-induced effects in the plant's RVI

ENCLOSURE 2

components. Include sufficient information (including identification of applicable equations threshold or acceptance criteria values, data results, and evaluation assumptions and conclusions) used in the assessment of flow-induced vibrations for these components. Clarify and justify why the analysis of flow induced vibrations in this report would not need to be identified as a TLAA, when compared to the six criteria for defining TLAA's in 10 CFR 54.3(a).

Discussion:

Draft RAI 4.1-1a is a followup to the applicant's response to RAI 4.1-1, dated February 5, 2015.

The staff provided clarification related to its request in draft RAI 4.1-1a.

The applicant understands the staff's concerns and stated that it will revise the response to RAI 4.1-1 and re-submit for the staff's review.

Draft RAI 4.1-1a will not be issued.

**DRAI B.1.10-2**

Background:

LRA Commitment No. 7, Part c, in LRA Table A.4 provides activities that the applicant will need to complete in order to manage loss of preload due to stress relaxation in the plant's core plate rim hold-down bolts. By letter dated December 23, 2014, the staff issued RAI 4.1-2, which related to identification of the future aging analysis that will be performed in evaluation of the plant's core plate rim hold-down bolts and why that analysis would not need to be submitted to the staff for approval prior to the period of extended operation. By letter dated February 5, 2015, the applicant responded to RAI 4.1-2, which amended LRA Commitment No. 7, Part c, Option (b). Under this part of Commitment No. 7, the applicant will only be submitting an inspection plan for staff approval if the future Electric Power Research Institute (EPRI) Boiling Water Reactor Vessel and Internals Project (BWRVIP) inspection and evaluation (I&E) guideline bases for boiling water reactor core plate rim hold-down bolts will continue to call for inspections of these components.

Issue:

LRA Commitment No. 7, Part c, Option (b), as amended by letter dated February 5, 2015, does not constitute an adequate basis for managing loss of preload/stress relaxation in the core plate rim hold-down bolts because: (a) the proposed action in the option is based on the applicant's speculation that the BWRVIP will be updating its inspection guidance for core plate rim hold-down bolts, which has yet to be done (including proper regulatory review by the staff), and (b) the proposed action in the option does not indicate that the inspection plan for the core plate rim hold-down bolts, along with the supporting loss of preload/stress relaxation analysis and justification, will be submitted to the staff for approval at least two years prior to entering the period of extended operation, regardless of whether inspections of the bolts will be implemented or eliminated in the updated I&E guidelines for the components.

Request:

Justify why amended versions of LRA Commitment No. 7, Part c, Option (b), in LRA Table A.4 and LRA Section A.1.10 do not commit to submittal of an inspection plan for the core plate rim hold-down bolts, along with a supporting loss of preload/stress relaxation analysis and justification, for staff approval at least two years prior to entering the period of extended operation, regardless of whether the submitted basis proposes inspections or justifies elimination of inspections for the core plate rim hold-down bolts.

Discussion:

The staff provided clarification related to its request in draft RAI B.1.10-2.

The applicant understands the staff's concerns and will provide a response to the RAI.

This request will be sent as a formal RAI.

**DRAI B.1.10-3**

Background:

By letter dated January 20, 2015, the applicant provided its response to RAI B.1.10-1. In its response, the applicant provided the list of BWRVIP reports that Fermi 2 implements that contain "mandatory" or "needed" guidance.

By letter dated February 5, 2015, the applicant provided its response to RAI 4.1-3. In this letter, the applicant stated that the sample flaw evaluation in TR No. BWRVIP-26-A is not being adopted as part of the CLB for Fermi 2, and therefore does not constitute a TLAA for the LRA. In its response, the applicant stated that it will be implementing the I&E guidelines in TR No. BWRVIP-183 as the basis for inspecting the top guide and its components during the period of extended operation.

Issue:

In its response, the applicant stated that BWRVIP-183 will be used for the inspection of the top guide components. Generic Aging Lessons Learned (GALL) Report Aging Management Program (AMP) XI.M9 recommends that BWRVIP-26-A be used for the inspection of these components. The applicant did not provide an exception or an enhancement to its BWR Vessel Internals Program to reflect the use of BWRVIP-183.

Also, by letter dated December 13, 2011, the staff issued a draft of the final safety evaluation report (FSER) for BWRVIP-183, which includes three (3) applicant conditions. However, the EPRI BWRVIP has yet to accept the staff's draft of the FSER on BWRVIP-183. Therefore, as of February 18, 2015, BWRVIP-183 has not been endorsed by the NRC, and the staff needs further justification why the applicant's BWR Vessel Internals Program references this unendorsed BWRVIP report for the inspection of the top guides and their components.

Finally, the staff is unclear which other BWRVIP reports that are unendorsed by the NRC will be relied upon for the BWR Vessel Internals Program.

Request:

1. Justify the use of BWRVIP-183, as implemented for the BWR Vessel Internals Program, when the report has not been endorsed by the NRC.
2. Justify why the BWR Vessel Internals Program has not been enhanced or has not included an exception to account for the implementation of BWRVIP-183.
3. Based on BWRVIP reports relied upon for the BWR Vessel Internals Program, including the list of BWRVIP reports provided in the response to RAI B.1.10-1, by letter dated January 20, 2015, identify those reports that are not endorsed by the NRC, as of February 18, 2015. For these reports: (a) justify its implementation when it is not NRC-endorsed and (b) provide an exception or enhancement to the BWR Vessel Internals Program to reference the BWRVIP report.

Discussion:

The staff provided clarification related to its request in draft RAI B.1.10-3.

The staff stated that it will reach out to EPRI BWRVIP and seek resolution on the status of the draft FSER for BWRVIP-183, "BWR Vessel and Internals Project, Top Guide Grid beam Inspection and Flaw Evaluation Guidelines."

The applicant noted that GALL Report (Revision 2) AMP XI.M9 recommends the use of BWRVIP-183.

This request will not be sent as a formal RAI at this time pending resolution of the status of the draft FSER for BWRVIP-183. At that point the staff will determine if the request needs to be revised.

**DRAI 4.2.7-1**

Background:

LRA Section 4.2.7 describes the applicant's TLAA evaluation for the reactor pressure vessel (RPV) core reflood thermal shock analysis. The LRA states that the analysis currently in effect is documented in GE TR No. NEDO-10029, "An Analytical Study on Brittle Fracture of GE-BWR Vessels Subject to the Design Basis Accident," dated June 1969. The LRA also states that a later thermal shock analysis, "Fracture Mechanics Evaluation of a Boiling Water Reactor Vessel Following a Postulated Loss of Coolant Accident," was developed by S. Ranganath in August 1979. The LRA explains that the Ranganath analysis bounds the Fermi 2 RPV considering the maximum adjusted reference temperature for the Fermi 2 RPV beltline materials at the end of the period of extended operation. Therefore, the LRA concludes that the RPV core reflood thermal shock analysis has been projected to the end of the period of extended operation.



Issue:

The analysis in TR No. NEDO-10029 represents the RPV core reflood thermal shock analysis that is currently in effect for the CLB, not the 1979 Ranganath analysis. In addition, the 1979 Ranganath analysis was performed in analysis of a GE BWR-6 reactor design; however, the reactor at Fermi 2 is a GE BWR-4 reactor. Therefore, the applicant has yet to demonstrate that the TLAA in the TR No. NEDO-10029 is acceptable in accordance with 10 CFR 54.21(c)(1)(ii) because: (a) the applicant has not adequately demonstrated how the analysis in TR No. NEDO-10029 has been projected to the end of the period of extended operation, and (b) the applicant has not provided adequate demonstration that the 1979 Ranganath analysis represents the updated RPV core flood analysis of record for Fermi 2 and is applicable and bounding for the GE BWR-4 design of the Fermi 2 reactor.

Request:

Provide the following information to demonstrate that the analysis in TR No. NEDO-10029 has been adequately projected to the end of the period of extended operation in accordance with 10 CFR 54.21(c)(1)(ii):

1. The specific aging effect that was evaluated in the analysis,
2. The parameter that was mathematically evaluated in the analysis as being representative of the aging effect and the acceptance criterion that was established in the analysis for that aging effect parameter,
3. The initial aging effect parameter size, level, or amount that was detected or assumed in the analysis,
4. The time-dependent parameter in the analysis that has been projected to the end of the period of extended operation (i.e., the parameter that is based on time-dependent assumptions defined by the current operating term) and the 60-year projected value for this parameter,
5. Change in the aging effect parameter as calculated using the applicable time-dependent parameter,
6. Final aging effect parameter size, level, or amount, as grown or increased by the applicable time-dependent parameter, and
7. The applicable equations and safety coefficient assumptions used in the analysis, including any changes to those equations or safety coefficient assumptions from those initially assumed in the original analysis of record.

Otherwise, provide adequate demonstration that the TLAA in TR No. NEDO-10029 is acceptable in accordance with the requirement in 10 CFR 54.21(c)(1)(i) or (iii). As appropriate, revise the updated final safety analysis report (UFSAR) supplement summary description for this TLAA, (i.e., LRA Section A.2.1.7) based on your response to this request.

Discussion:

The staff provided clarification related to its request in draft RAI 4.2.7-1. The staff stated that it will revise the request and provide additional clarification on the information needed to complete its review.

The applicant understands the staff's concerns and will provide a response to the revised RAI.

This request will be sent as a formal RAI pending its revision by the staff.