



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

May 15, 2015

LICENSEE: DTE Electric Company

FACILITY: Fermi 2

SUBJECT: SUMMARY OF TELEPHONE CONFERENCE CALL HELD ON NOVEMBER 17, 2014, BETWEEN THE U.S. NUCLEAR REGULATORY COMMISSION AND DTE ELECTRIC COMPANY, CONCERNING REQUESTS FOR ADDITIONAL INFORMATION 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 November 17, 2014, to discuss and clarify the staff's draft requests for additional information (DRAIs) B.1.42-2, B.1.42-4, B.1.2-3, and B.1.22-1 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  
NOVEMBER 17, 2014

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SUMMARY OF TELEPHONE CONFERENCE CALL  
FERMI 2  
LICENSE RENEWAL APPLICATION  
NOVEMBER 17, 2014

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 November 17, 2014, to discuss and clarify the following draft requests for additional information (DRAIs) concerning the Fermi 2 license renewal application (LRA).

**DRAI B.1.42-2**

Background:

Section 54.21(a)(3) of Title 10 of the *Code of Federal Regulations* (10 CFR) requires the applicant to demonstrate that the effects of aging for structures and components will be adequately managed so that the intended function will be maintained consistent with the current licensing basis (CLB) for the period of extended operation. As described in the Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants (SRP-LR), an applicant may demonstrate compliance with 10 CFR 54.21(a)(3) by referencing the Generic Aging Lessons Learned (GALL) Report and when evaluation of the matter in the GALL Report applies to the plant.

GALL Report Aging Management Program (AMP) XI.S6 addresses the detection of aging effects for inaccessible, below-grade concrete structural elements, which depends on the plant's specific ground water/soil condition. For plants with non-aggressive ground water/soil, the program recommends: (a) evaluating the acceptability of inaccessible areas when conditions exist in accessible areas that could indicate the presence of, or result in, degradation to such inaccessible areas and (b) examining representative samples of the exposed portions of the below grade concrete, when excavated for any reason. For plants with aggressive ground water/soil (pH less than 5.5, chlorides greater than 500 ppm, or sulfates greater than 1500 ppm) and/or where the concrete structural elements have experienced degradation, the GALL Report recommends a plant specific AMP to manage the concrete aging effects during the period of extended operation.

During the audit, the staff noted that the LRA AMP basis document indicates that the Fermi 2 concrete structures are subject to an aggressive ground water/soil environment. The staff also noted that in Updated Final Safety Analysis Report (UFSAR) Table 2.5-16, "Chemical Analysis of Ground Water," the ground water tested in Fermi 2 had sulfate content above the 1500 ppm limit stated in the GALL Report for aggressive groundwater. The LRA AMP provided an enhancement to the "detection of aging effects" program element to revise the plant procedure to include the performance of opportunistic inspections if normally inaccessible areas become accessible due to plant activities, and to provide additional inspections of inaccessible areas in environments "where observed conditions in accessible areas exposed to the same environment indicate significant degradation."

ENCLOSURE 2

Issue:

LRA Section B.1.42, "Structures Monitoring," states that the program is an existing program that, following enhancement, will be consistent with GALL Report AMP XI.S6. However, the proposed enhancement to the "Structures Monitoring" does not appear to be consistent with the GALL Report recommendations for either an aggressive or non-aggressive water/soil environment. Additionally, the enhancement for inspections of inaccessible areas based on observations of accessible areas *with the same environment* appears to limit the scope of inaccessible areas that will be inspected. This is due to the potential that certain environment conditions may not exist for both accessible and inaccessible areas (i.e. a soil type environment may exist for an inaccessible area and not for an accessible area). Additional information is requested to verify consistency with the GALL Report for the detection of aging effects in inaccessible, below-grade concrete structural elements exposed to an aggressive ground water/soil environment.

Request:

1. Clarify how the enhancement for the "detection of aging effects" program element is consistent with that described in the GALL Report AMP XI.S6 for inaccessible areas exposed to aggressive ground water/soil.
2. If criteria other than that described in the GALL Report are being used, provide the basis to justify the adequacy of the proposed exception to manage the aging effects in inaccessible areas.

Discussion:

The staff provided clarification related to draft RAI B.1.42-2 and stated it will revise the RAI as follows:

First sentence of the second paragraph in the "Background" section:

GALL Report AMPs XI.S6 and XI.S7 address the detection of aging effects for inaccessible, below-grade concrete structural elements, which depends on the plant's specific ground water/soil condition.

Third paragraph of the "Background" section:

During the audit, the staff noted that the LRA AMP basis document indicates that the Fermi 2 concrete structures are subjected to an aggressive ground water/soil environment. The staff also noted that in UFSAR Table 2.5-16, "Chemical Analysis of Ground Water", the ground water tested in Fermi 2 had sulfate content above the 1500 ppm limit stated in the GALL Report for aggressive groundwater.

“Issue” section:

LRA Section B.1.42, "Structures Monitoring", states that the program is an existing program that, following enhancement, will be consistent with GALL Report AMPs XI.S6 and XI.S7. However, the proposed enhancement to the “Structures Monitoring” does not appear to be consistent with the GALL Report recommendations for an aggressive water/soil environment. Additional information is requested to verify consistency with the GALL Report for the detection of aging effects in inaccessible, below-grade concrete structural elements exposed to an aggressive ground water/soil environment.

Request 1:

Clarify how the enhancement for the “detection of aging effects” program element is consistent with that described in the GALL Report AMPs XI.S6 and XI.S7 for inaccessible areas exposed to aggressive ground water/soil.

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

The RAI will be issued as revised.

#### **DRAI B.1.42-4**

##### Background:

Section 54.21(a)(3) of 10 CFR requires the applicant to demonstrate that the effects of aging for structures and components will be adequately managed so that the intended function(s) will be maintained consistent with the CLB for the period of extended operation. As described in SRP-LR, an applicant may demonstrate compliance with 10 CFR 54.21(a)(3) by referencing the GALL Report and when evaluation of the matter in the GALL Report applies to the plant.

LRA Section B.1.39, “RG 1.127, Inspection of Water-Control Structures Associated with Nuclear Power Plants,” which is implemented by the applicant as part of LRA Section B.1.42, “Structures Monitoring,” states that the programs are existing programs that, following enhancement, will be consistent with GALL Report AMPs XI.S6 and XI.S7. The “parameters monitored or inspected,” “detection of aging effects,” and “acceptance criteria” program elements of GALL Report AMPs XI.S6 and XI.S7, explicitly address the aging management of high-strength (measured yield strength greater than or equal to 150 kilo-pounds per square inch (ksi)) structural bolts greater than 1 inch in diameter. The GALL Report recommends that visual inspections of high-strength structural bolts be supplemented with volumetric or surface examinations to detect cracking.

Based on a review of information in the LRA and provided during the AMP audit, the staff noted that sufficient information was not provided to determine whether high-strength structural bolts (other than ASTM A325, F1852, and A490 used in civil structures) are used in the structures and how stress corrosion cracking (SCC) will be managed by the AMP(s). The staff also noted that the LRA AMP basis document for the Structures Monitoring Program states that plant

procedures prevent the use of molybdenum disulfide as a lubricant for bolting, and uses this explanation as the basis for justifying that [high-strength] structural bolting is not susceptible to SCC. However, the staff notes that the use of molybdenum disulfide is not the only contributor to SCC of high-strength bolts.

Issue:

It is not clear if there are high-strength structural bolts used in Fermi 2 structures (other than ASTM A325, F1852, and A490 used in civil structures) and, if used, whether the “preventive actions,” “parameters monitored or inspected,” and “detection of aging effects,” program elements of LRA Sections B.1.42 and B.1.39, are consistent with the recommendations in GALL Report AMPs XI.S6 and XI.S7 regarding the provision to monitor for SCC in high-strength structural bolts greater than 1 inch in diameter through supplemental volumetric or surface examinations to detect cracking. The staff notes that the use of molybdenum disulfide is not the only contributor to SCC of high-strength bolts and preventing its use does not assure that high-strength structural bolts will not be susceptible to SCC.

Request:

1. State whether high-strength (measured yield strength greater than or equal to 150 ksi) structural bolts greater than 1 inch in diameter are used in Fermi 2 structures (including those within the scope of the Structures Monitoring Program and RG 1.127, Inspection of Water-Control Structures Associated with Nuclear Power Plants Program).
2. If high-strength structural bolts greater than 1 inch in diameter are used (other than ASTM A325, F1852, and A490 used in civil structures), state how the “preventive actions,” “parameters monitored or inspected,” and “detection of aging effects” program elements are consistent with the GALL Report recommendations to monitor for SCC through supplemental volumetric or surface examinations.
3. Clarify whether molybdenum disulfide was used as a lubricant for high-strength structural bolts greater than 1 inch in diameter prior to prohibiting its use, and if so, state what actions will be taken to ensure that these high-strength structural bolts will be adequately managed during the period of extended operation.

Discussion:

The staff provided clarification related to draft RAI B.1.42-4 and stated it will revise the RAI to remove the discussion on the use of molybdenum disulfide and incorporate this discussion in draft RAI B.1.2-3.

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

The RAI will be issued as revised.



## **DRAI B.1.22-1**

### Background:

The LRA states that the Inservice Inspection - IWF Program, with enhancements, is consistent with GALL Report AMP XI.S3, "ASME Section XI, Subsection IWF." The "detection of aging effects" program element in GALL Report AMP XI.S3 recommends that, for high-strength structural bolting (actual measured yield strength greater than or equal to 150 ksi) in sizes greater than 1 inch nominal diameter, volumetric examinations should be performed in addition to VT-3 to detect cracking. GALL Report AMP XI.S3 recommendations for aging management of high-strength structural bolting include the following:

- The "scope of program" program element states that the scope of the program includes high-strength structural bolting.
- The "preventive actions" program element recommends using bolting material that has an actual measured yield strength less than 150 ksi.
- The "preventive actions" program element states that molybdenum disulfide (MoS<sub>2</sub>) should not be used as a lubricant due to its potential contribution to SCC, especially for high-strength bolts.
- The "parameters monitored or inspected" program element recommends that high-strength structural bolting susceptible to SCC be monitored for cracking.
- The "detection of aging effects" program element states that the volumetric examination may be waived with adequate plant-specific justification.

### Issue:

License renewal application Section B.1.22, "Inservice Inspection-IWF," includes enhancements to revise plant procedures to emphasize "the use of lubricants and sealants for high-strength bolting," and to identify unacceptable conditions such as "cracked or sheared bolts, including high-strength bolts." However, it is not clear whether there are high-strength structural bolts (actual measured yield strength greater than or equal to 150 ksi) in sizes greater than 1 inch nominal diameter within the scope of the Inservice Inspection-IWF Program. In addition, it is not clear how the applicant plans to manage aging for these components consistent with GALL Report AMP XI.S3 recommendations in the "preventive actions," "parameters monitored or inspected," and "detection of aging effects" program elements described above.

The LRA also states that “[p]lant procedures prohibit the use of lubricants containing molybdenum disulfide. Since the use of this type of lubricant is prohibited in plant procedures and plant procedures provide the technical guidance for installation requirements [...], the potential for [SCC] for high-strength structural bolting material, i.e., ASTM A325 and A490, is not plausible.” Given that the use of molybdenum disulfide is not the only contributor to SCC of high strength bolts; the staff has not determined that there is sufficient basis to waive volumetric examination of high-strength structural bolting (actual measured yield strength of 150 ksi) in sizes greater than 1 inch diameter.

Request:

1. State whether or not there are high strength structural bolts (actual measured yield strength greater than or equal to 150 ksi) in sizes greater than 1 inch diameter within the scope of the Inservice Inspection-IWF Program.
2. If high-strength structural bolts (actual measured yield strength greater than or equal to 150 ksi) in sizes greater than 1 inch diameter are within the scope of the Inspection-IWF Program, state how the recommendations for managing degradation of high-strength bolts described in the “preventive actions,” “parameters monitored or inspected,” and “detection of aging effects” program elements will be implemented for the Inservice Inspection-IWF Program.
3. If the above recommendations will not be implemented (i.e., an exception is being taken to the GALL recommendations), provide the associated technical justification. If applicable, provide additional information regarding plant-specific justification to waive volumetric examinations to address the potential of SCC for high-strength structural bolts consistent with the GALL Report AMP.

Discussion:

The staff provided clarification related to draft RAI B.1.22-1 and stated it will revise the RAI to remove the discussion on the use of molybdenum disulfide and incorporate this discussion in draft RAI B.1.2-3.

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

The RAI will be issued as revised.

### **DRAI B.1.2-3**

#### Background:

GALL Report AMPs XI.M18 and XI.S3 state that molybdenum disulfide ( $\text{MoS}_2$ ) should not be used as a lubricant due to its potential contribution to SCC, especially for high-strength bolts. The GALL Report also states that the applicant is to evaluate applicable operating experience to support the conclusion that the effects of aging are adequately managed.

LRA Sections B.1.2 and B.1.22 state that the Bolting Integrity and Inservice Inspection-IWF programs are existing AMPs, with enhancements and an exception, that will be consistent with GALL Report AMPs XI.M18 and XI.S3.

#### Issue:

LRA Sections B.1.2 and B.1.22 state that “[p]lant procedures prohibit the use of lubricants containing molybdenum disulfide.” During its onsite audit, the staff confirmed that the bolting procedures had been revised to prohibit the use of  $\text{MoS}_2$ ; however, it is not clear whether  $\text{MoS}_2$  lubricants have been used at Fermi 2 before plant procedures were revised to prohibit their use.

#### Request:

State whether  $\text{MoS}_2$  lubricants have been used on high-strength bolts of any kind within the scope of the Bolting Integrity and Inservice Inspection-IWF programs. If these lubricants have been used, explain how the affected closure bolts will be managed for age-related degradation.

#### Discussion:

The staff provided clarification related to draft RAI B.1.2-3 and stated it will revise the RAI to include its concerns regarding the use of molybdenum disulfide as described in DRAIs B.1.42-4 and B.1.22-1.

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

The RAI will be issued as revised.