Vito A. Kaminskas
Site Vice President

DTE Energy Company
6400 N. Dixie Highway, Newport, MI 48166
Tel: 734.586.6515 Fax: 734.586.4172
Email: kaminskasv@dteenergy.com

10 CFR 54

April 17, 2015
NRC-15-0032

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington D C 20555-0001

References: 1) Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43

2) DTE Electric Company Letter to NRC, "Fermi 2 License Renewal Application," NRC-14-0028, dated April 24, 2014 (ML14121A554)

3) NRC Letter, "Requests for Additional Information for the Review of the Fermi 2 License Renewal Application – Set 25 (TAC No. MF4222)," dated March 20, 2015 (ML15072A081)

4) DTE Electric Company Letter to NRC, "Response to NRC Request for Additional Information for the Review of the Fermi 2 License Renewal Application – Set 11 Question B.1.22-1," NRC-15-0029, dated February 19, 2015 (ML15050A602)

Subject: Response to NRC Request for Additional Information
for the Review of the Fermi 2 License Renewal Application – Set 25

In Reference 2, DTE Electric Company (DTE) submitted the License Renewal Application (LRA) for Fermi 2. In Reference 3, NRC staff requested additional information regarding the Fermi 2 LRA. Enclosure 1 to this letter provides the DTE response to the request for additional information (RAI). Enclosure 2 to this letter provides a revised response to Set 11 RAI B.1.22-1 as discussed with the NRC during clarification calls on March 24 and 25, 2015.

One new commitment is being made in this submittal. The new commitment is in LRA Table A.4 Item 16, Inservice Inspection – IWF Program, as indicated in the response to RAI B.1.22-1 in Enclosure 2. In addition, revisions have been made to commitments previously identified in the LRA. The revised commitments are in

LRA Table A.4 Item 11, External Surfaces Monitoring, as indicated in the response to RAI B.1.16-2a in Enclosure 1.

Should you have any questions or require additional information, please contact Lynne Goodman at 734-586-1205.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on April 17, 2015

Vito A. Kaminskas
Site Vice President
Nuclear Generation

Enclosures:
1) DTE Response to NRC Request for Additional Information for the Review of the Fermi 2 License Renewal Application – Set 25
2) DTE Revised Response to NRC Request for Additional Information for the Review of the Fermi 2 License Renewal Application – Set 11 Question B.1.22-1

cc: NRC Project Manager
NRC License Renewal Project Manager
NRC Resident Office
Reactor Projects Chief, Branch 5, Region III
Regional Administrator, Region III
Michigan Public Service Commission,
Regulated Energy Division (kindschl@michigan.gov)

**Enclosure 1 to**
**NRC-15-0032**

**Fermi 2 NRC Docket No. 50-341**
**Operating License No. NPF-43**

# DTE Response to NRC Request for Additional Information for the Review of the Fermi 2 License Renewal Application – Set 25

***Set 25 RAI B.1.16-2a***

*Background*

*The response to request for additional information (RAI) B.1.16-2, dated January 28, 2015, states that the External Surfaces Monitoring Program will be revised to inspect insulated components to ensure that moisture intrusion has not degraded the insulation when the insulation is required to reduce heat transfer. Commitment No. 11h and Enhancement No. 8 were added to revise the program procedures to include instructions for the inspection of both jacketed and non-jacketed insulation for insulation degradation due to moisture intrusion.*

*Generic Aging Lessons Learned (GALL) Report Aging Management Program (AMP) XI.M36, as revised by License Renewal Interim Staff Guidance (LR-ISG)-2012-02, "Aging Management of Internal Surfaces, Fire Water Systems, Atmospheric Storage Tanks, and Corrosion Under Insulation," provides guidance on the inspection of jacketed insulation to manage reduced heat transfer. The "detection of aging effects" program element states that if configuration features, such as minimum overlap and seam locations, associated with jacketed insulation are not applicable that an alternative inspection methodology should be proposed to address reduced thermal insulation resistance.*

*Issue*

*The staff lacks the information necessary to evaluate the aging management of reduced thermal insulation resistance of non-jacketed insulation. The External Surfaces Monitoring Program does not include an inspection methodology or frequency to detect reduced thermal insulation resistance due to moisture intrusion for non-jacketed insulation.*

*Request*

*Provide the inspection methodology and frequency used to manage reduced thermal insulation resistance for non-jacketed insulation. State the basis for the inspection methodology and frequency.*

**Response:**

Visual inspection of jacketed and non-jacketed insulation will be conducted in accordance with the External Surfaces Monitoring Program. 100 percent visual inspection will occur of accessible insulation at least once per refueling cycle except for insulation located in high radiation areas. Insulation in high radiation areas will be inspected on an opportunistic basis. Potential water intrusion will be considered. Signs of water intrusion would include discoloration, staining, or surface irregularities. It is expected that insulation that shows no sign of discoloration, stains, or surface irregularities would perform its intended insulation function. Enhancements in the External Surfaces Monitoring Program (LRA Sections A.1.16 and B.1.16) will be revised to include a description of these activities.

In addition, non-jacketed thermal insulation with the intended function "insulation" will be monitored through the Periodic Surveillance and Preventive Maintenance (PSPM) Program. In each five-year period beginning five years prior to the period of extended operation (PEO) where plant conditions permit (i.e., the insulated pipe is carrying a heat load and is not located in a high radiation area), thermography of at least 20 percent of the available population will be performed to assess its insulating ability. A revision to the PSPM Program (LRA Sections A.1.35 and B.1.35) will be made to include a description of these activities.

**LRA Revisions:**

LRA Table 3.5.2-4 and LRA Sections A.1.16, A.1.35, A.4, B.1.16, and B.1.35 are revised as shown on the following pages. Additions are shown in underline and deletions are shown in strike-through. Note that previous changes to these same LRA sections made in the July 30, 2014 letter (NRC-14-0051), January 15, 2015 letter (NRC-15-0002), and January 28, 2015 letter (NRC-15-0007) are not shown in underline or strike-through such that only the new changes due to RAI B.1.16-2a are shown as revisions.

**Table 3.5.2-4**
**Bulk Commodities**
**Summary of Aging Management Evaluation**

| Table 3.5.2-4: Bulk Commodities | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Structure and/or Component or Commodity** | **Intended Function** | **Material** | **Environment** | **Aging Effect Requiring Management** | **Aging Management Programs** | **NUREG-1801 Item** | **Table 1 Item** | **Notes** |
| Insulation (includes jacketing, wire mesh, tie wires, straps, clips) | IN, SNS | Fiberglass, calcium silicate, Fiberfrax, fiberfrax ceramic fiber durablanket, Insulfrax | Air – indoor uncontrolled | Loss of material, Change in material properties, Degradation due to moisture intrusion | External Surfaces Monitoring<br>Periodic Surveillance and Preventive Maintenance | | | J |

### A.1.16 External Surfaces Monitoring Program

Acceptance criteria are defined to ensure that the need for corrective action is identified before a loss of intended function. For stainless steel, a clean shiny surface is expected. For flexible polymers, a uniform surface texture (no cracks) and no change in material properties (e.g., hardness, flexibility, physical dimensions, color unchanged from when the material was new) are expected. For rigid polymers, no surface changes affecting performance, such as erosion, cracking, crazing, checking, and chalking, are acceptable. For insulation, no discoloration, staining, or surface irregularities from moisture intrusion is expected.

The External Surfaces Monitoring Program will be enhanced as follows.

- Revise External Surfaces Monitoring Program procedures to include acceptance criteria for the parameters observed.
  - Metals should not have any indications of relevant degradation.
  - Flexible polymers should have a uniform surface texture and color with no cracks and no dimension change, no abnormal surface conditions with respect to hardness, flexibility, physical dimensions, and color.
  - Rigid polymers should have no erosion, cracking, crazing, or chalking.
  - For insulation, no discoloration, staining, or surface irregularities from moisture intrusion.
- Revise External Surfaces Monitoring Program procedures to stipulate that administrative controls are in accordance with the Fermi 2 10 CFR 50 Appendix B Quality Assurance Program.
- Revise External Surfaces Monitoring Program procedures to include instructions for detection of cracking of gas-filled stainless steel and aluminum components exposed to outdoor air.
- ~~Revise External Surfaces Monitoring Program procedures to include instructions for monitoring of insulation required to reduce heat transfer to ensure insulation degradation due to moisture intrusion has not occurred. These instructions will include inspection guidance for both jacketed and non-jacketed insulation.~~
  Revise External Surfaces Monitoring Program procedures to: a) Visually inspect 100 percent of accessible jacketed and non-jacketed insulation required to reduce heat transfer that is not in a high radiation area at least once per refueling cycle to ensure insulation degradation due to moisture intrusion has not occurred. Visual inspection of insulation in high radiation areas will be performed on an opportunistic basis. b) Ensure procedures include instructions to inspect for signs of water intrusion. Inspect accessible surfaces for the following signs of water intrusion: discoloration, staining, or surface irregularities.

Enhancements will be implemented prior to the period of extended operation.

### A.1.35 Periodic Surveillance and Preventive Maintenance Program

The Fermi 2 aging management review credits the following inspection activities.

- Visually inspect and manually flex the rubber gasket/seal for reactor building spent fuel storage pool gates to verify no loss of sealing.
- Determine wall thickness of selected service water system piping components to manage loss of material due to recurring internal corrosion by multiple corrosion mechanisms.
- Visually inspect a representative sample of EDG system air coolant, lube oil, and jacket water heat exchanger tubes to manage loss of material due to wear.
- Determine wall thickness of selected EDG system piping components to manage loss of material due to recurring internal corrosion by multiple corrosion mechanisms.
- Use visual or other NDE techniques to inspect internal surfaces to manage fouling of the fire water system heat exchanger tubes exposed to raw water.
- Visually inspect a representative sample of the dry piping downstream of the manual isolation valve for the cable spreading room wet pipe system for flow blockage. The first inspection will be within five years of the period of extended operation.
- Visually inspect a representative sample of CTG system lube oil heat exchanger tubes to manage loss of material due to wear.
- Visually inspect a representative sample of CTG system atomizing air precooler heat exchanger tubes to manage fouling and loss of material due to wear.
- Visually inspect and clean CTG system atomizing air booster compressor suction filter to manage fouling.
- Visually inspect and clean CTG system compressor extraction air filter to manage fouling.
- Use visual or other NDE techniques to inspect containment atmospheric control system recombiner components' internal surfaces to manage loss of material.
- Perform thermography on a sample of non-jacketed insulation having an intended function of "insulation" to assess its insulating ability. A sample will consist of at least 20 percent of the available population of non-jacketed insulation where the insulated piping has a heat load and is not located in a high radiation area. The first thermography will be during the five years prior to the period of extended operation.

## A.4 LICENSE RENEWAL COMMITMENT LIST

| No. | Program or Activity | Commitment | Implementation Schedule | Source |
|---|---|---|---|---|
| 11 | External Surfaces Monitoring | Enhance External Surfaces Monitoring Program as follows:<br><br>e. Revise External Surfaces Monitoring Program procedures to include acceptance criteria for the parameters observed.<br>• Metals should not have any indications of relevant degradation.<br>• Flexible polymers should have a uniform surface texture and color with no cracks and no dimension change, no abnormal surface conditions with respect to hardness, flexibility, physical dimensions, and color.<br>• Rigid polymers should have no erosion, cracking, crazing, or chalking.<br>• <u>For insulation, no discoloration, staining, or surface irregularities from moisture intrusion.</u> | Prior to September 20, 2024. | A.1.16 |

| No. | Program or Activity | Commitment | Implementation Schedule | Source |
|---|---|---|---|---|
| | | h. ~~Revise External Surfaces Monitoring Program procedures to include instructions for monitoring of insulation required to reduce heat transfer to ensure insulation degradation due to moisture intrusion has not occurred. These instructions will include inspection guidance for both jacketed and non-jacketed insulation.~~ Revise External Surfaces Monitoring Program procedures to: a) Visually inspect 100 percent of accessible jacketed and non-jacketed insulation required to reduce heat transfer that is not in a high radiation area at least once per refueling cycle to ensure insulation degradation due to moisture intrusion has not occurred. Visual inspection of insulation in high radiation areas will be performed on an opportunistic basis. b) Ensure procedures include instructions to inspect for signs of water intrusion. Inspect accessible surfaces for the following signs of water intrusion: discoloration, staining, or surface irregularities. | | |

## B.1.16 EXTERNAL SURFACES MONITORING

### Program Description

For polymeric materials, the visual inspection will include 100 percent of the accessible components. The sample size of polymeric components that receive physical manipulation is at least ten percent of the available surface area.

Examples of inspection parameters for (jacketed and non-jacketed) insulation include the following:

- Discoloration
- Staining
- Surface irregularities

Acceptance criteria are defined to ensure that the need for corrective action is identified before a loss of intended function. For stainless steel, a clean shiny surface is expected. For flexible polymers, a uniform surface texture (no cracks) and no change in material properties (e.g., hardness, flexibility, physical dimensions, color changed from when the material was new) are expected. For rigid polymers, no surface changes affecting performance such as erosion, cracking, crazing, checking, and chalking, are acceptable. For insulation, no discoloration, staining, or surface irregularities from moisture intrusion is expected.

### Enhancements

| Element Affected | Enhancement |
|---|---|
| 3. Parameters Monitored or Inspected<br>4. Detection of Aging Effects | ~~Revise External Surfaces Monitoring Program procedures to include instructions for monitoring of insulation required to reduce heat transfer to ensure insulation degradation due to moisture intrusion has not occurred. These instructions will include inspection guidance for both jacketed and non-jacketed insulation.~~<br>Revise External Surfaces Monitoring Program procedures to: a) Visually inspect 100 percent of accessible jacketed and non-jacketed insulation required to reduce heat transfer that is not in a high radiation area at least once per refueling cycle to ensure insulation degradation due to moisture intrusion has not occurred. Visual inspection of insulation in high radiation areas will be performed on an opportunistic basis. b) Ensure procedures include instructions to inspect for signs of water intrusion. Inspect accessible surfaces for the following signs of water intrusion: discoloration, staining, or surface irregularities. |

| Element Affected | Enhancement |
|---|---|
| 6. Acceptance Criteria | Revise External Surfaces Monitoring Program procedures to include acceptance criteria for the parameters observed.<br>• Metals should not have any indications of relevant degradation.<br>• Flexible polymers should have a uniform surface texture and color with no cracks and no dimension change, no abnormal surface conditions with respect to hardness, flexibility, physical dimensions, and color.<br>• Rigid polymers should have no erosion, cracking, crazing, or chalking.<br>• For insulation, no discoloration, staining, or surface irregularities from moisture intrusion. |

### B.1.35 PERIODIC SURVEILLANCE AND PREVENTIVE MAINTENANCE

The Fermi 2 aging management review credits the following inspection activities.

| | |
|---|---|
| Reactor building | Visually inspect and manually flex the rubber gasket/seal for spent fuel storage pool gates to verify no loss of sealing. |
| Service water system | Determine wall thickness of selected service water system piping components to manage loss of material due to recurring internal corrosion by multiple corrosion mechanisms. |
| Emergency diesel generator system | Visually inspect a representative sample of EDG system air coolant, lube oil, and jacket water heat exchanger tubes to manage loss of material due to wear.<br>Determine wall thickness of selected EDG system piping components to manage loss of material due to recurring internal corrosion by multiple corrosion mechanisms. |
| Fire water system | Use visual or other NDE techniques to inspect internal surfaces to manage fouling of the fire water system heat exchanger tubes exposed to raw water.<br>Visually inspect a representative sample of the dry piping downstream of the manual isolation valve for the cable spreading room wet pipe system for flow blockage. The first inspection will be within five years of the period of extended operation. |
| Combustion turbine generator system | Visually inspect a representative sample of CTG system lube oil heat exchanger tubes to manage loss of material due to wear.<br>Visually inspect a representative sample of CTG system atomizing air precooler heat exchanger tubes to manage fouling and loss of material due to wear.<br>Visually inspect and clean CTG system atomizing air booster compressor suction filter to manage fouling.<br>Visually inspect and clean CTG system compressor extraction air filter to manage fouling. |
| Containment atmospheric control system | Use visual or other NDE techniques to inspect containment atmospheric control system recombiner components' internal surfaces to manage loss of material. |
| Non-jacketed insulation | Perform thermography on a sample of non-jacketed insulation having an intended function of "insulation" to assess its insulating ability. A sample will consist of at least 20 percent of the available population of non-jacketed insulation where the insulated piping has a heat load and is not located in a high radiation area. The first thermography will be during the five years prior to the period of extended operation. |

**Enclosure 2 to**
**NRC-15-0032**

**Fermi 2 NRC Docket No. 50-341**
**Operating License No. NPF-43**

# DTE Revised Response to NRC Request for Additional Information for the Review of the Fermi 2 License Renewal Application – Set 11 Question B.1.22-1

***Set 11 RAI 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. The GALL Report AMP XI.S3 has the following recommendations for aging management of high-strength structural bolting:*

- *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 that is less than 150 ksi.*
- *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*

*LRA Section B.1.22, "Inservice Inspection - IWF," includes enhancements to revise plant procedures 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" and "parameters monitored or inspected" 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 conclude that SCC is not a credible aging effect for high-strength structural bolting (actual measured yield strength greater than or equal to 150 ksi) in sizes greater than 1 inch diameter. If 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 license renewal, the staff needs additional information regarding the environments to which these bolts are exposed to evaluate the applicant's claim that there is no potential for SCC.*

*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 Inservice Inspection - IWF Program, state how the recommendations will be implemented for the Inservice Inspection - IWF Program:*

*(a) Provide additional information regarding the environments to which bolts are exposed.*

*(b) State whether the recommendations for managing degradation of high-strength bolts described in the "preventive actions" and "parameters monitored or inspected" of the GALL Report AMP XI.S3 will be implemented for the Inservice Inspection – IWF Program.*

**Response:**

DTE previously responded to RAI B.1.22-1 by letter dated February 19, 2015 (NRC-15-0029). The response to RAI B.1.22-1 is revised to include additional information requested by the NRC on clarification calls held on March 24 and 25, 2015. The revised response below supersedes the response previously provided on February 19, 2015.

(1) DTE has identified one instance of high-strength structural bolting with 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: the RPV skirt to ring girder bolted joint, which contains sixty 2-1/2" x 9-7/8" ASTM A490 bolts. These bolts are covered in the Inservice Inspection – IWF Program for visual inspection.

There are no other high-strength structural bolts with 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. This conclusion is based on the following:

1. The Fermi 2 pipe erection specification does not specify use of high-strength material.
2. The Fermi 2 concrete anchor specification and drawing do not specify the use of high-strength bolts.
3. A 100% review of all hanger sketch bill of materials for the representative sample of ASME Section XI Class 1, 2, and 3 component supports inspected each Inservice Inspection 10-year interval did not find any high-strength bolts greater than 1 inch diameter identified.

(2) (a) These bolts are installed in the lower area of the bioshield annulus which is a dry and relatively cool area of the drywell. During operation, the drywell is inerted with nitrogen. The thread lubricant used is Never-Seez #NS-160 which is a copper, aluminum, graphite based thread lubricant not containing molybdenum disulfide. Because this is a non-corrosive and low temperature environment, stress corrosion initiation in these bolts is not credible. In addition, NUREG-1801 indicates (for item TP-300) that ASTM A490 bolts used in structural applications have not been shown to be prone to stress corrosion cracking and that stress corrosion cracking potential need not be evaluated for these bolts.

(b) The recommendations in the "preventive actions" program element of NUREG-1801 AMP XI.S3 will be implemented for the high-strength bolts in the Fermi 2 Inservice Inspection – IWF Program. LRA Section B.1.22 includes enhancements to the preventive actions program element in order to implement the Inservice Inspection – IWF Program consistent with NUREG-1801 AMP XI.S3. An additional enhancement will be added to the LRA Section B.1.22 preventive actions to use bolting material that has an actual measured yield strength less than 150 ksi. This enhancement will not affect the existing bolts described in the response to request (1) above, such that replacement of those existing bolts with like-for-like is considered acceptable. Instead, the purpose of the enhancement will be to prevent the use of high-strength bolts in other locations or applications.

NUREG-1801 AMP XI.S3 "detection of aging effects" program element states that volumetric examination may be waived with adequate plant-specific justification. Part 2 (a) of this response provides the plant-specific justification for waiving volumetric examination of Fermi 2 high-strength bolting identified in Part 1 of this response. Volumetric examination of high-strength bolts will not be implemented for the Inservice Inspection – IWF Program. The volumetric examination of high-strength bolting susceptible to stress corrosion cracking discussed in program elements 3 and 4 of NUREG-1801 AMP XI.S3 does not apply to Fermi 2 because there are no Fermi 2 high-strength bolts susceptible to stress corrosion cracking.

**LRA Revisions:**

LRA Sections A.1.22, A.4, and B.1.22 are revised as shown on the following pages. Additions are shown in underline and deletions are shown in strike-through.

### A.1.22 Inservice Inspection – IWF Program

The ISI-IWF Program will be enhanced as follows.

- Revise plant procedures to specify the preventive actions delineated in NUREG-1339 and EPRI NP-5769, NP-5067, and TR-104213 that emphasize proper selection of bolting material, installation torque or tension, and the use of lubricants and sealants for high-strength bolting.
- Revise plant procedures to require structural bolting replacement and maintenance activities to include appropriate preload and proper tightening (torque or tension) as recommended in EPRI documents, American Society for Testing of Materials (ASTM) standards, American Institute of Steel Construction (AISC) Specifications, as applicable.
- Revise plant procedures to include the preventive actions for storage of ASTM A325 and A490 bolting from Section 2 of Research Council for Structural Connections publication, "Specification for Structural Joints Using ASTM A325 or A490 Bolts."
- Revise plant procedures to include the preventive action of using bolting material that has an actual measured yield strength less than 150 ksi, except in the case of like-for-like replacement of existing bolting material in the reactor pressure vessel skirt to ring girder bolted joint.
- Revise plant procedures to specify that detection of aging effects will include monitoring anchor bolts for loss of material, loose or missing nuts or bolts, and cracking of concrete around the anchor bolts.

## A.4 LICENSE RENEWAL COMMITMENT LIST

| No. | Program or Activity | Commitment | Implementation Schedule | Source |
|---|---|---|---|---|
| 16 | Inservice Inspection (ISI) – IWF | Enhance ISI-IWF Program as follows:<br><br>f. Revise plant procedures to include the preventive action of using bolting material that has an actual measured yield strength less than 150 ksi, except in the case of like-for-like replacement of existing bolting material in the reactor pressure vessel skirt to ring girder bolted joint. | Prior to September 20, 2024. | A.1.22 |

### B.1.22 INSERVICE INSPECTION – IWF

**Enhancements**

| Element Affected | Enhancement |
|---|---|
| 2. Preventive Actions | Revise plant procedures to specify the preventive actions delineated in NUREG-1339 and in EPRI NP-5769, NP-5067, and TR-104213 that emphasize proper selection of bolting material, installation torque or tension, and the use of lubricants and sealants for high-strength bolting.<br><br>Revise plant procedures to require structural bolting replacement and maintenance activities to include appropriate preload and proper tightening (torque or tension) as recommended in EPRI documents, ASTM standards, and American Institute of Steel Construction (AISC) Specifications, as applicable.<br><br>Revise plant procedures to include the preventive actions for storage of ASTM A325 and A490 bolting from Section 2 of Research Council for Structural Connections publication, "Specification for Structural Joints Using ASTM A325 or A490 Bolts."<br><br>Revise plant procedures to include the preventive action of using bolting material that has an actual measured yield strength less than 150 ksi, except in the case of like-for-like replacement of existing bolting material in the reactor pressure vessel skirt to ring girder bolted joint. |