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April 12, 2016
NRC-16-0027

10 CFR 54

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) License Renewal Interim Staff Guidance, LR-ISG-2015-01, "Changes to Buried and Underground Piping and Tank Recommendations," dated January 28, 2016 (ML15308A021)

Subject: Fermi 2 License Renewal Application Response to LR-ISG-2015-01

In Reference 2, DTE Electric Company (DTE) submitted an application for a renewed operating license for Fermi 2 pursuant to 10 CFR 51 and 10 CFR 54. In Reference 3, the NRC staff issued LR-ISG-2015-01 regarding buried and underground piping and tanks. Enclosure 1 to this letter provides a summary review of LR-ISG-2015-01. Enclosure 2 to this letter provides the License Renewal Application (LRA) revisions developed to address LR-ISG-2015-01. The revised sections of the LRA include Section 2.1.3, Appendix A, Appendix B, and associated tables.

No new commitments are being made in this submittal. However, a revision is being made to a commitment previously identified in the LRA. The revised commitment is to change a table number (based on the corresponding change in LR-ISG-2015-01) for the Buried and Underground Piping Program as indicated in LRA Table A.4 Item 4 in Enclosure 2.

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 12, 2016



Keith J. Polson
Site Vice President
Nuclear Generation

Enclosures: 1. Fermi 2 LRA Supplement for LR-ISG-2015-01 – General Description
2. Fermi 2 LRA Supplement for LR-ISG-2015-01 – LRA Revisions

cc: NRC 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-16-0027**

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

Fermi 2 LRA Supplement for LR-ISG-2015-01 – General Description

Background

On January 28, 2016, the NRC issued License Renewal Interim Staff Guidance (LR-ISG) 2015-01 "Changes to Buried Piping and Underground Tank Recommendations." The aging management program XI.M41, "Buried and Underground Piping and Tanks" in LR-ISG-2015-01 supersedes the version in LR-ISG-2011-03, which had been addressed in the Fermi 2 License Renewal Application (LRA).

A review has been completed, and revised LRA sections have been developed to reflect the guidance of LR-ISG-2015-01. The LRA revisions are provided in Enclosure 2.

The Fermi 2 Buried and Underground Piping Program will be consistent with LR-ISG-2015-01 with one exception. DTE identified two stainless steel pipes between the Condensate Storage Tank vault and the Turbine Building that may not have been coated. Per Table XI.M41-1 in LR-ISG-2015-01, footnote a, applicants are to provide justification when buried stainless steel pipe is not coated. Since documentation does not specifically identify these buried pipes are coated, DTE will assume they are not coated unless or until they are demonstrated to be coated.

Program Exception

NUREG-1801, Table XI.M41-1, as provided by LR-ISG-2015-01, includes the preventive action of coating buried stainless steel pipes. There are two stainless steel pipes buried between the Condensate Storage Tank vault and the Turbine Building, which may not be coated.

NUREG-1801, Table XI.M41-2, as provided by LR-ISG-2015-01, recommends periodic inspections of buried piping and underground tanks. Fermi 2 Buried and Underground Piping Program will manage the effects of aging on the external surfaces of buried and underground piping within the scope of license renewal. To justify the exception of the stainless steel pipe possibly not being coated, an inspection will be performed of both of these buried stainless steel pipes that are routed between the CST and the Turbine Building every 10 years, commencing in the 10 years prior to the period of extended operation, rather than performing one inspection of stainless steel buried piping every 10 years per NUREG-1801, Table XI.M41-2. Justification for the exception is provided in LRA Section B.1.4 markup contained in Enclosure 2.

LRA Revisions

LRA Sections 2.3.1, Appendix A, Appendix B, and associated tables are revised as shown in Enclosure 2. Additions are shown in underline and deletions are shown in strike-through. Note that previous changes made to these same LRA sections made in previous letters are not shown in underline or strike-through such that only the new changes due to this letter are shown as revisions.

**Enclosure 2
to
NRC-16-0027**

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

Fermi 2 LRA Supplement for LR-ISG-2015-01 – LRA Revisions

2.1.3 Interim Staff Guidance Discussion

LR-ISG-2011-03 Generic Aging Lessons Learned (GALL) Report Revision 2 [Aging Management Program] AMP XI.M41, "Buried and Underground Piping and Tanks"

This ISG provides expanded guidance for managing the effects of aging of buried and underground piping and tanks within the scope of license renewal. This guidance is presented as revisions to NUREG-1800 (Ref 2.1-2) and NUREG-1801 (Ref. 2.1-3). The revised guidance has been considered in the integrated plant assessment and is reflected in the aging management results presented in Section 3. ~~and the~~ The aging management program description ~~presented in Appendix B (Section B.1.4)~~ guidance was superseded in LR-ISG-2015-01.

LR-ISG-2011-05 Ongoing Review of Operating Experience

LR-ISG-2012-01 Wall Thinning due to Erosion Mechanisms

LR-ISG-2012-02 Aging Management of Internal Surfaces, Fire Water Systems, Atmospheric Storage Tanks, and Corrosion under Insulation

LR-ISG-2013-01 Aging Management of Loss of Coating or Lining Integrity for Internal Coatings/Linings on In Scope Piping, Piping Components, Heat Exchangers, and Tanks

LR-ISG-2015-01 Changes to Buried and Underground Piping and Tank Recommendations

This ISG provides revised guidance to managing aging effects associated with the external surfaces of buried and underground components. This revised guidance is reflected in the aging management program presented in Appendix A and Appendix B (Section B.1.4).

A.1.4 Buried and Underground Piping Program

The Buried and Underground Piping Program is a new program that will manage the effects of aging on the external surfaces of buried and underground piping components within the scope of license renewal. The program will manage aging effects of loss of material and cracking for the external surfaces of buried and underground piping fabricated of aluminum, carbon steel, gray cast iron, and stainless steel through preventive and mitigative measures (e.g., coatings, backfill quality, and cathodic protection) and periodic inspection activities during opportunistic or directed excavations. There are no underground or buried tanks for which aging effects would be managed by the Buried and Underground Piping Program. Fermi 2 utilizes a cathodic protection system. Fermi 2 has performed preliminary laboratory soil composition analyses on samples removed from the site to evaluate the potential corrosivity of the soil for use in life cycle management.

Soil testing will be conducted once in each ten-year period starting ten years prior to the period of extended operation, if a reduction in the number of inspections recommended in Table ~~4a~~ [XI.M41-2](#) of NUREG-1801, ~~XI.M41~~, is taken based on a lack of soil corrosivity.

~~If the -100 mV criterion is applied for cathodic protection for specific piping~~ [When using the 100 mV, -750 mV or -650 mV polarization criteria as an alternative to the -850 mV criterion, for steel piping](#), electric resistance probes (ERPs) will be installed in select locations as determined by a Cathodic Protection Specialist. The ERPs will be made of the most anodic metal in the system to ensure adequate protection of the most anodic system metal. Concurrent with the ERPs, permanent reference cells and reference metal will be installed. Installation of the permanent reference cells at pipe depth and near the piping of interest will allow for an accurate measurement of pipe-to-soil potential, minimizing the influence of mixed metals. Where used, the electrical resistance probes will be uncoated and placed in the immediate vicinity of the buried piping it is representing. For each installation application, two probes will be installed; one connected to the cathodic protection system and one left unprotected. The test probe left unprotected (not connected to the pipe) will be free of the mixed metals influence.

This program will be implemented prior to the period of extended operation.

A.4 LICENSE RENEWAL COMMITMENT LIST

No.	Program or Activity	Commitment	Implementation Schedule	Source
6	Buried and Underground Piping	Implement new Buried and Underground Piping Program that will manage the effects of aging on the external surfaces of buried and underground piping within the scope of license renewal. Soil testing will be conducted once in each ten-year period starting ten years prior to the period of extended operation, if a reduction in the number of inspections recommended in Table 4A XI.M41-2 of NUREG 1801, XI.M41 , is taken based on a lack of soil corrosivity.	Prior to September 20, 2024, or the end of the last refueling outage prior to March 20, 2025, whichever is later. Initial directed inspections and soil testing (if the reduction in inspections based on soil testing is taken) will be performed within the ten years prior to March 20, 2025.	A.1.4

**Table B-3
 Fermi 2 Program Consistency with NUREG-1801**

Program Name	NUREG-1801 Comparison			Plant-Specific
	Consistent with NUREG-1801	Programs with Enhancement	Programs with Exception to NUREG-1801	
Buried and Underground Piping	✘		✘	

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B.1.4 BURIED AND UNDERGROUND PIPING

Program Description

The Buried and Underground Piping Program is a new program that will manage the effects of aging on the external surfaces of buried and underground piping within the scope of license renewal. The program will manage aging effects of loss of material and cracking for the external surfaces of buried and underground piping fabricated of aluminum, carbon steel, gray cast iron, and stainless steel through preventive and mitigative measures (e.g., coatings, backfill quality, and cathodic protection) and periodic inspection activities during opportunistic or directed excavations. There are no underground or buried tanks for which aging effects would be managed by the Buried and Underground Piping Program. Fermi 2 utilizes a cathodic protection system. Fermi 2 has performed preliminary laboratory soil composition analyses on samples removed from the site to evaluate the potential corrosivity of the soil for use in life cycle management.

Soil testing will be conducted once in each ten-year period starting ten years prior to the period of extended operation, if a reduction in the number of inspections recommended in Table ~~4a~~ [XI.M41-2](#) of NUREG-1801, ~~Section XI.M41~~ is taken based on a lack of soil corrosivity.

~~If the -100 mV criterion is applied for cathodic protection for specific piping~~ [When using the 100 mV, -750 mV or -650 mV polarization criteria as an alternative to the -850 mV criterion, for steel piping](#), electric resistance probes (ERPs) will be installed in select locations as determined by a Cathodic Protection Specialist. The ERPs will be made of the most anodic metal in the system to ensure adequate protection of the most anodic system metal. Concurrent with the ERPs, permanent reference cells and reference metal will be installed. Installation of the permanent reference cells at pipe depth and near the piping of interest will allow for an accurate measurement of pipe-to-soil potential, minimizing the influence of mixed metals. Where used, the electrical resistance probes will be uncoated and placed in the immediate vicinity of the buried piping it is representing. For each installation application, two probes will be installed; one connected to the cathodic protection system and one left unprotected. The test probe left unprotected (not connected to the pipe) will be free of the mixed metals influence.

This program will be implemented prior to the period of extended operation.

NUREG-1801 Consistency

The Buried and Underground Piping Program will be consistent with the program described in NUREG-1801, Section XI.M41, Buried and Underground Piping and Tanks, as modified by LR-ISG-2011-03, *Changes to the Generic Aging Lessons Learned (GALL) Report Revision 2 Aging Management Program XI.M41, "Buried and Underground Piping and Tanks-,"* [and as subsequently modified by LR-ISG-2015-01, "Changes to Buried and Underground Piping and Tank Recommendations," with one exception.](#)

Exceptions to NUREG-1801

~~None~~ The Buried and Underground Piping program has the following exception.

<u>Element Affected</u>	<u>Exception</u>
<u>2. Preventive Actions</u>	<u>NUREG-1801, Table XI.M41-1 recommends that coatings be provided for buried stainless steel piping based on the environmental conditions (e.g. stainless steel in chloride containing environments) and that justification be provided when coatings are not provided. There are two stainless steel pipes between the Condensate Storage Tank vault and the Turbine Building that may not have been coated.¹</u>

Exception Note

1. The two stainless steel pipes are not coated in the Condensate Storage Tank (CST) underground vault. Though the general specification requires coating, specific documentation on these pipes does not identify that they are coated, including whether the buried portions (i.e. outside the vault) are coated. To justify the exception of the stainless steel pipe possibly not being coated, an inspection will be performed of both of these stainless steel pipes that are routed between the CST and the Turbine Building every 10 years, commencing in the 10 years prior to the period of extended operation. This will result in two inspections being performed every 10 years rather than performing only one inspection of stainless steel buried piping every 10 years per NUREG-1801, Table XI.M41-2. If during the first inspection, the stainless steel piping is determined to be coated, then future inspection will be at a rate of one inspection per 10 year interval, consistent with Table XI.M41-2 and therefore this exception would no longer be required. Fermi 2's groundwater monitoring program provides additional means of monitoring for degradation of piping in this area.

Enhancements

None