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December 9, 2016
NRC-16-0069

10 CFR 50.54(f)

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

- References:
- 1) Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43
 - 2) NRC Order EA-13-109, "Issuance of Order to Modify Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions," dated June 6, 2013 (Accession No. ML13130A067)
 - 3) NRC Interim Staff Guidance JLD-ISG-2015-01, "Compliance with Phase 2 Order EA-13-109, Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation under Severe Accident Conditions," Revision 0, dated April 2015 (Accession No. ML15104A118)
 - 4) NEI 13-02, "Industry Guidance for Compliance with Order EA-13-109, BWR Mark I & II Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions," Revision 1, dated April 2015 (Accession No. ML15113B318)
 - 5) DTE Electric Company Letter, NRC-14-0043, "DTE Electric Company's Phase 1 Integrated Plan in Response to June 6, 2013 Commission Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation under Severe Accident Conditions (Order Number EA-13-109)," dated June 30, 2014 (Accession No. ML14182A203)
 - 6) DTE Electric Company Letter, NRC-15-0105, "DTE Electric Company's Phase 1 and Phase 2 Overall Integrated Plan for Implementation of Order EA-13-109, Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions," dated December 23, 2015 (Accession No. ML15357A289)

- 7) NRC Letter to DTE Electric Company, "Fermi Unit 2 – Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Phase 1 of Order EA-13-109 (Severe Accident Capable Hardened Vents)," dated April 1, 2015 (Accession No. ML15077A574)
- 8) NRC Letter to DTE Electric Company, "Fermi Unit 2 – Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Phase 2 of Order EA-13-109 (Severe Accident Capable Hardened Vents)," dated August 30, 2016 (ML16231A443)
- 9) DTE Electric Company Letter, NRC-16-0039, "DTE Electric Company's Fourth Six-Month Status Report for Implementation of Order EA-13-109, Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions," dated June 20, 2016 (Accession No. ML16172A209)

Subject: DTE Electric Company's Fifth Six-Month Status Report for Implementation of Order EA-13-109, Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions

On June 6, 2013, the U.S. Nuclear Regulatory Commission (NRC) issued an order (Reference 2) to DTE Electric Company (DTE). Reference 2 was immediately effective and directed DTE to take certain actions to ensure that Fermi 2 Nuclear Power Plant has a hardened containment vent system (HCVS) to remove decay heat from the containment, and maintain control of containment pressure within acceptable limits following events that result in loss of active containment heat removal capability while maintaining the capability to operate under severe accident (SA) conditions resulting from an Extended Loss of AC Power (ELAP). Specific requirements were outlined in Attachment 2 of Reference 2.

Reference 2 required submission of an Overall Integrated Plan (OIP) by June 30, 2014 for Phase 1 of the Order, and an OIP by December 31, 2015 for Phase 2 of the Order. The interim staff guidance (Reference 3) provided direction regarding the content of the OIP for Phase 1 and Phase 2. Reference 3 endorsed industry guidance document NEI 13-02, Revision 1 (Reference 4), with certain clarifications and exceptions. References 5 and 6 provided the Phase 1 and Phase 2 OIPs. In References 7 and 8, NRC provided the Phase 1 and Phase 2 Interim Staff Evaluations for Fermi 2. Reference 9 provided the most recent six-month update.

The Enclosure to this letter provides the fifth six-month update for Phase 1 and Phase 2 of the Order.

This letter contains no new regulatory commitments.

Should you have any questions or require additional information, please contact Mr. Scott A. Maglio, Manager – Nuclear Licensing, at (734) 586-5076.

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

Executed on December 9, 2016



Keith J. Polson
Site Vice President

Enclosure: DTE Electric Company's Fifth Six-Month Status Report

cc: Director, Office of Nuclear Reactor Regulation
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 to
NRC-16-0069**

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

DTE Electric Company's Fifth Six-Month Status Report

DTE Electric Company's Fifth Six-Month Status Report for the Implementation of Order EA-13-109, "Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions"

1 Introduction

DTE Electric Company (DTE) developed an Overall Integrated Plan (OIP) (Reference 8.1), documenting the installation of a Hardened Containment Vent System (HCVS) that provides a reliable hardened venting capability for pre-core damage and under severe accident conditions, including those involving a breach of the reactor vessel by molten core debris, in response to Reference 8.2. Updates of milestone accomplishments will be based on the combined Phase 1 and 2 OIP, dated December 23, 2015 (Reference 8.3).

This Enclosure provides an update of milestone accomplishments since submittal of the combined Phase 1 and 2 OIP, including any changes to the compliance method, schedule, or need for relief/relaxation and the basis, if any, in accordance with Nuclear Energy institute (NEI) 13-02, Revision 1, "Industry Guidance for Compliance with Order EA-13-109, BWR Mark I & II Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions" (Reference 8.4).

2 Milestone Accomplishments [required by NEI 13-02 Section 7.3.1.2]

The following milestone(s) have been completed since the development of the combined Phase 1 and 2 OIP (Reference 8.3), and are current as of November 8, 2016, for this status report.

- Fifth Six-Month Status Report (this submittal)
- Hold preliminary/conceptual design meeting for Phase 2
- Modifications Evaluation for Phase 2

3 Milestone Schedule Status [required by NEI 13-02 Section 7.3.1.1]

The following provides an update to Part 5 of the combined Phase 1 and 2 OIP (Reference 8.3). It provides the activity status of each item. No expected completion dates have changed in this report.

Milestone	Target Completion Date	Activity Status	Comments {Include date changes in this column}
Phase 1 and 2 HCVS Milestone Table			
Submit Overall Integrated Plan	Jun 2014	Complete	
Submit 6 Month Updates			
Update 1	Dec 2014	Complete	
Update 2	Jun 2015	Complete	
Update 3 [with Phase 2 OIP]	Dec 2015	Complete	
Update 4	Jun 2016	Complete	
Update 5	Dec 2016	This submittal	
Update 6	Jun 2017	Not Started	
Update 7	Dec 2017	Not Started	
Update 8	Jun 2018	Not Started	
Update 9	Dec 2018	Not Started	
Phase 1 Specific Milestones			
Phase 1 Modifications			
Hold preliminary/conceptual design meeting	Jun 2014	Complete	
Modifications Evaluation	Jul 2014	Complete	
Design Engineering On-site/Complete	Apr 2017	Started	
Implementation Outage	Apr 2017	Not Started	
Walk Through Demonstration/Functional Test	Apr 2017	Not Started	
Phase 1 Procedure Changes Active			
Operations Procedure Changes Developed	Apr 2017	Started	
Site Specific Maintenance Procedure Developed	Apr 2017	Started	
Procedure Changes Active	Apr 2017	Not Started	
Phase 1 Training			
Training Complete	Apr 2017	Started	
Phase 1 Completion			
Submit Completion Report [60 days after full site compliance]	Jun 2017	Not Started	
Phase 2 Specific Milestones			
Phase 2 Modifications			
Hold preliminary/conceptual design meeting	Sept 2016	Complete	
Modifications Evaluation	Sept 2016	Complete	
Design Engineering On-site/Complete	Sept 2017	Started	
Implementation Outage	Oct 2018	Not Started	

Milestone	Target Completion Date	Activity Status	Comments {Include date changes in this column}
Phase 1 and 2 HCVS Milestone Table			
Phase 2 Specific Milestones (cont.)			
Walk Through Demonstration/Functional Test	Oct 2018	Not Started	
Phase 2 Procedure Changes Active			
Operations Procedure Changes Developed	Oct 2018	Started	
Site Specific Maintenance Procedure Developed	Oct 2018	Not Started	
Procedure Changes Active	Oct 2018	Not Started	
Phase 2 Training			
Training Complete	Oct 2018	Not Started	
Phase 2 Completion			
Submit Completion Report [60 days after full site compliance]	Dec 2018	Not Started	

4 Changes to Compliance Method [required by NEI 13-02 Section 7.3.1.3]

There are no changes to the compliance method as documented in the combined Phase 1 and 2 OIP (Reference 8.3).

5 Need and Basis for Relief/Relaxation [required by NEI 13-02 Section 7.3.1.4]

DTE expects to comply with the order implementation date.

6 Open Items from Combined Phase 1 and 2 Overall Integrated Plan and Interim Staff Evaluations [required by NEI 13-02 Section 7.3.1.5]

The following tables provide a summary of the open items documented in the combined Phase 1 and 2 OIP or the Interim Staff Evaluations (ISEs) (References 8.5 and 8.6) and the status of each item.

Combined Phase 1 and 2 OIP Open Items		Status
Phase 1 OIP Open Items		
OIP Open Item	Action	Comment
1	Confirm thermal environment for actions using GOTHIC.	See Phase 1 ISE Open Item 2.
2	Confirm radiological environment.	See Phase 1 ISE Open Item 2.
3	Confirm suppression pool heat capacity.	See Phase 1 ISE Open Item 3.
4	Define tornado missile protection for RB 5 th floor components.	Missile protection for HCVS components on the RB 5 th floor will be provided by following the guidance of NRC endorsed white paper, <i>HCVS-WP-04 Missile Evaluation for HCVS Components 30 Feet Above Grade.</i>
Phase 2 OIP Open Items		
OIP Open Item	Action	Comment
1	Confirm that the thermal environment supports feasibility of staff actions.	Added for Phase 2 per Table 3.1 and 3.1.b of Reference 8.3
2	Confirm that the radiological environment supports feasibility of staff actions.	Added for Phase 2 per Table 3.1 and 3.1.b of Reference 8.3

Combined Phase 1 and 2 ISE Open Items		Status
Phase 1 ISE Open Items		
1	Make available for NRC staff audit documentation confirming that all load stripping will be accomplished within one hour and fifteen minutes of event initiation and will occur at locations not impacted by a radiological event.	Response to be documented in a future update
2	Make available for NRC staff audit an evaluation of Section 3.2.1 temperature and radiological conditions to ensure that operating personnel can safely access and operate controls and support equipment.	Response to be documented in a future update

Combined Phase 1 and 2 ISE Open Items		Status
Phase 1 ISE Open Items (continued)		
3	Make available for NRC staff audit, analyses demonstrating that HCVS has the capacity to vent the steam/energy equivalent of one percent of licensed/rated thermal power (unless a lower value is justified), and that the suppression pool and the HCVS together are able to absorb and reject decay heat, such that following a reactor shutdown from full power containment pressure is restored and then maintained below the primary containment design pressure and the primary containment pressure limit.	Response to be documented in a future update
4	Make available for NRC staff audit the descriptions of local conditions (temperature, radiation and humidity) anticipated during extended loss of alternating current (AC) power (ELAP) and severe accident for the components (valves, instrumentation, sensors, transmitters, indicators, electronics, control devices, etc.) required for HCVS venting including confirmation that the components are capable of performing their functions during ELAP and severe accident conditions.	Response to be documented in a future update
5	Make available for NRC staff audit documentation of the HCVS nitrogen pneumatic system design including sizing and location.	Response to be documented in a future update
6	Make available for NRC staff audit the final sizing evaluation for HCVS batteries/battery charger including incorporation into FLEX diesel generator (DG) loading calculation.	Response to be documented in a future update

Combined Phase 1 and 2 ISE Open Items		Status
Phase 1 ISE Open Items (continued)		
7	Make available for NRC staff audit documentation that demonstrates adequate communication between the remote HCVS operation locations and HCVS decision makers during ELAP and severe accident conditions.	Response to be documented in a future update
8	Provide a description of the final design of HCVS to address hydrogen detonation and deflagration.	Response to be documented in a future update
9	Provide a description of the strategies for hydrogen control that minimizes the potential for hydrogen gas migration and ingress into the reactor building or other buildings.	Response to be documented in a future update
10	Make available for NRC staff review design details to ensure the potential for cross flow between HCVS and Standby Gas Treatment System (SGTS) is minimized.	Response to be documented in a future update
11	Provide a justification for deviating from the instrumentation seismic qualification guidance specified in Nuclear Energy Institute (NEI) 13-02, endorsed, in part, by JLD-ISG-2013-02 as an acceptable means for implementing applicable requirements of Order EA-13-109.	Response to be documented in a future update
12	Make available for NRC staff audit description of all instrumentation and controls (existing and planned) necessary to implement this order including qualification methods.	Response to be documented in a future update

Combined Phase 1 and 2 ISE Open Items		Status
Phase 1 ISE Open Items (continued)		
13	Make available for NRC staff audit documentation of an evaluation verifying the existing containment isolation valves, relied upon for the HCVS, will open under the maximum expected differential pressure during beyond design basis external events (BDBEE) and severe accident wetwell venting.	Response to be documented in a future update
Phase 2 ISE Open Items		
1	Licensee to demonstrate that containment failure as a result of overpressure can be prevented without a drywell vent during severe accident conditions.	Response to be documented in a future update
2	Licensee to provide the site-specific MAAP evaluation that demonstrates Severe Accident Water Addition (SAWA) / Severe Accident Water Management (SAWM) can be maintained for greater than 7 days.	Response to be documented in a future update
3	Licensee to demonstrate that there is adequate communication between Main Control Room and the SAWM control location during severe accident conditions.	Response to be documented in a future update
4	Licensee to demonstrate the SAWM flow instrumentation qualification for the expected environmental conditions.	Response to be documented in a future update

7 Interim Staff Evaluation Impacts

There are no potential impacts to the Interim Staff Evaluations identified at this time.

8 References

The following references support the updates to the combined Phase 1 and 2 OIP described in this Enclosure.

- 8.1 DTE Electric Company Letter, NRC-14-0043, "DTE Electric Company's Overall Integrated Plan in Response to June 6, 2013 Commission Order Modifying Licenses

- with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions (Order Number EA-13-109),” dated June 30, 2014 (ML14182A203)
- 8.2 NRC Order Number EA-13-109, “Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions” dated June 6, 2013 (ML13130A067)
 - 8.3 DTE Electric Company Letter, NRC-15-0105, “DTE Electric Company’s Combined Phase 1 and 2 Overall Integrated Plan in Response to June 6, 2013 Commission Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions (Order Number EA-13-109),” dated December 23, 2015 (ML15357A289)
 - 8.4 NEI 13-02, “Industry Guidance for Compliance with Order EA-13-109, BWR Mark I & II Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions,” Revision 1, dated April 2015 (ML15113B318)
 - 8.5 NRC Letter to DTE Electric Company, “Fermi Unit 2 - Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Phase 1 of Order EA-13-109 (Severe Accident Capable Hardened Vents),” dated April 1, 2015 (ML15077A574)
 - 8.6 NRC Letter to DTE Electric Company, “Fermi Unit 2 - Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Phase 2 of Order EA-13-109 (Severe Accident Capable Hardened Vents),” dated August 30, 2016 (ML16231A443)