



Monticello Nuclear Generating Plant  
2807 W County Road 75  
Monticello, MN 55362

June 17, 2016

L-MT-16-034  
10 CFR 2.202  
EA-13-109

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

Monticello Nuclear Generating Plant  
Docket No. 50-263  
Renewed Facility Operating License No. DPR-22

Monticello Nuclear Generating Plant: Fourth Six-Month Status Report 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 EA-13-109), Phases 1 and 2

- References:
- 1) 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. (ADAMS Accession No. ML13143A334)
  - 2) NRC Interim Staff Guidance JLD-ISG-2013-02, "Compliance with Order EA-13-109, Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation under Severe Accident Conditions," Revision 0, dated November 14, 2013. (ADAMS Accession No. ML13304B836)
  - 3) Letter from D. Skeen (NRC) to J. Pollock (NEI), "Endorsement of Hardened Containment Venting System (HCVS) Phase 1 Overall Integrated Plan Template (EA-13-109) Rev 0," dated May 14, 2014. (ADAMS Accession No. ML14128A219)
  - 4) NEI 13-02, "Industry Guidance for Compliance with Order EA-13-109," Revision 0, dated November 2013. (ADAMS Accession No. ML13316A853)
  - 5) Letter from K. Fili (NSPM) to Document Control Desk (NRC), "MNGP's Phase 1 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)," L-MT-14-052, dated June 30, 2014. (ADAMS Accession No. ML14183A412)

- 6) Letter from K. Fili (NSPM) to Document Control Desk (NRC), "Monticello Nuclear Generating Plant: First Six-Month Status Report 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)," L-MT-14-092, dated December 16, 2014. (ADAMS Accession No. ML14353A215)
- 7) Letter from P. Gardner (NSPM) to Document Control Desk (NRC), "Monticello Nuclear Generating Plant: Second Six-Month Status Report 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), Phase 1," L-MT-15-031, dated June 22, 2015. (ADAMS Accession No. ML15173A176)
- 8) NEI 13-02, "Industry Guidance for Compliance with Order EA-13-109," Revision 1, dated April 2015. (ADAMS Accession No. ML15113B318)
- 9) NRC Interim Staff Guidance JLD-ISG-2015-01, "Compliance with Phase 2 of 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. (ADAMS Accession No. ML15104A118)
- 10) Letter from P. Gardner (NSPM) to Document Control Desk (NRC), "Monticello Nuclear Generating Plant's Phase 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) including Phase 1 Status Report," L-MT-15-090, dated December 17, 2015. (ADAMS Accession No. ML15356A120)

On June 6, 2013, the Nuclear Regulatory Commission (NRC) issued Order EA-13-109 (Reference 1) to Northern States Power Company, a Minnesota corporation (NSPM), doing business as Xcel Energy. Reference 1 was effective immediately and directs NSPM to install 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, for Monticello Nuclear Generating Plant (MNGP). Specific requirements are outlined in Attachment 2 of Reference 1.

Reference 1 required submission of a Phase 1 Overall Integrated Plan (OIP) pursuant to Section IV, Condition D. Reference 3 endorses industry guidance document, NEI 13-02, Revision 0 (Reference 4) with clarifications and exceptions identified in Reference 3. Reference 5 provided the MNGP Phase 1 OIP.

Reference 1 requires submission of a status report at six-month intervals following submittal of the Phase 1 OIP. References 2 and 4 provide direction regarding the

content of the status reports. References 6 and 7 provided the first and second six-month status reports for Phase 1 of the order.

In Reference 9, the NRC endorsed industry guidance document NEI 13-02, Revision 1 (Reference 8) with clarifications and exceptions identified in Reference 9. NEI 13-02, Revision 1 provides guidance for implementing Phase 2 of Order EA-13-109. Reference 10 provided a combined Phase 1 and 2 OIP and provided an updated status of Phase 1 of the order.

The purpose of this letter is to provide the fourth six-month status report pursuant to Section IV, Condition D, of Reference 1, that delineates progress made in implementing the requirements of Reference 1. The enclosed report provides an update of milestone accomplishments, including any changes to the compliance method, schedule, or need for relief and the basis, if any.

Please contact John Fields, Fukushima Response Licensing, at 763-271-6707, if additional information or clarification is required.

#### Summary of Commitments

This letter makes no new commitments and no revisions to existing commitments.

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

Executed on June 17, 2016.



Peter A. Gardner  
Site Vice President, Monticello Nuclear Generating Plant  
Northern States Power Company - Minnesota

Enclosure

cc: Administrator, Region III, USNRC  
Project Manager, Monticello Nuclear Generating Plant, USNRC  
Resident Inspector, Monticello Nuclear Generating Plant, USNRC

## ENCLOSURE

### MONTICELLO NUCLEAR GENERATING PLANT

#### FOURTH SIX-MONTH STATUS REPORT FOR THE IMPLEMENTATION OF NRC ORDER EA-13-109, “ORDER MODIFYING LICENSES WITH REGARD TO RELIABLE HARDENED CONTAINMENT VENTS CAPABLE OF OPERATION UNDER SEVERE ACCIDENT CONDITIONS, PHASES 1 AND 2”

### 1.0 Introduction

Northern States Power Company, a Minnesota corporation (NSPM), doing business as Xcel Energy, developed a Phase 1 Overall Integrated Plan (OIP) (Reference 1), documenting the installation of a Hardened Containment Vent System (HCVS) that provides a reliable wetwell 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 for the Monticello Nuclear Generating Plant (MNGP), in response to Reference 2. Starting with this six month status report, updates of milestone accomplishments will be based on the combined Phase 1 and 2 OIP dated December 17, 2015 (Reference 9). Previous status reports for Phase 1 only were provided to the NRC in References 6 and 8.

NSPM developed an updated and combined Phase 1 and 2 OIP (Reference 9), documenting:

1. The installation of a 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 2.
2. An alternative venting strategy that makes it unlikely that a drywell vent is needed to protect the containment from overpressure related failure under severe accident conditions, including those that involve a breach of the reactor vessel by molten core debris, in response to Reference 2.

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.

### 2.0 Milestone Accomplishments

None.

### 3.0 Milestone Schedule Status

The following provides an update to Part 5 of the combined Phase 1 and 2 OIP (Reference 9). It provides the activity status of each item, and whether the expected completion date has changed. The dates are planning dates subject to change as design and implementation details are developed (i.e., not considered formal regulatory commitments). This schedule is current as of May 31, 2016.

One Milestone activity is being revised in this report. The Phase 1 Design Engineering On-site/Complete milestone target completion date is being revised from June 2016 to July 2016. A potential change to the scope of the design modifications was recently proposed that may impact the revised milestone date. If the additional scope impacts the milestone date, then additional information will be provided to the NRC in a future 6-month update.

The revised milestone target completion date does not impact the order implementation date.

Milestone	Target Completion Date	Activity Status	Comments
<b>Phase 1 and 2 HCVS Milestone Table</b>			
Submit Phase 1 OIP	June 2014	Complete	
<b>Submit 6 Month Updates:</b>			
Update 1	December 2014	Complete	
Update 2	June 2015	Complete	
Update 3 (with Phase 2 OIP)	December 2015	Complete	
Update 4	June 2016	Complete with this submittal	
Update 5	December 2016	Not Started	
Update 6	June 2017	Not Started	
Update 7	December 2017	Not Started	
Update 8	June 2018	Not Started	
Update 9	December 2018	Not Started	

Milestone	Target Completion Date	Activity Status	Comments
<b>Phase 1 and 2 HCVS Milestone Table</b>			
<b>Phase 1 Specific Milestones</b>			
<b>Phase 1 Modifications:</b>			
Hold preliminary/conceptual design meeting	June 2014	Complete	
Design Engineering On-site/Complete	June 2016	Started	Revised Target Completion Date is July 2016
Implementation Outage	May 2017	Not Started	
Walk Through Demonstration/Functional Test	May 2017	Not Started	
<b>Phase 1 Procedure Changes Active:</b>			
Operations Procedure Changes Developed	December 2016	Started	
Site Specific Maintenance Procedure Developed	December 2016	Not Started	
Procedure Changes Active	May 2017	Not Started	
<b>Phase 1 Training:</b>			
Training Complete	May 2017	Not Started	
<b>Phase 1 Completion:</b>			
HCVS Implementation	May 2017	Not Started	
Submit Completion Report	July 2017	Not Started	
<b>Phase 2 Specific Milestones</b>			
<b>Phase 2 Modifications:</b>			

Milestone	Target Completion Date	Activity Status	Comments
<b>Phase 1 and 2 HCVS Milestone Table</b>			
Hold preliminary/conceptual design meeting	October 2015	Complete	
Design Engineering On-site/Complete	June 2018	Not Started	
Implementation Outage	May 2019	Not Started	
Walk Through Demonstration/Functional Test	May 2019	Not Started	
<b>Phase 2 Procedure Changes Active:</b>			
Operations Procedure Changes Developed	December 2018	Not Started	
Site Specific Maintenance Procedure Developed	December 2018	Not Started	
Procedure Changes Active	May 2019	Not Started	
<b>Phase 2 Training:</b>			
Training Complete	May 2019	Not Started	
<b>Phase 2 Completion:</b>			
HCVS Implementation	May 2019	Not Started	
Submit Completion Report	July 2019	Not Started	

#### 4.0 Proposed Changes to Compliance Method

There are no changes to the compliance methods as documented in the combined Phase 1 and 2 OIP (Reference 9).

**5.0 Need and Basis for Relief/Relaxation from the Requirements of the Order**

NSPM expects to comply with the order implementation date and no relief/relaxation is required at this time.

**6.0 Open Items from Combined Overall Integrated Plan and Interim Staff Evaluation**

The following tables provide a summary of the open items documented in the combined Phase 1 and 2 OIP (Reference 9) and the Interim Staff Evaluation (ISE) (Reference 7) and the status of each item.

Combined Phase 1 and 2 OIP Open Items	Status
<b>Phase 1 Open Items</b>	
1. Follow industry guidance on missile protection for HCVS.	Open
2. Identify the 24 hour power supply for the HCVS.	Open
3. Determine radiological conditions for the FLEX portable equipment staging areas.	Open
4. Evaluate the Alternate Shutdown System Panel and Backup HCVS Operation Station locations for accessibility, habitability, staffing sufficiency, associated pathways from the control room and communication capability with vent-use decision makers.	Open
5. Determine approach or combination of approaches to control hydrogen.	Open
6. Determine the Qualification Method for HCVS instrumentation.	Open
7. Evaluate the effects of radiological and temperature constraints on the deployment of nitrogen bottles after 24 hours.	Open
8. Evaluate HCVS battery charger location for accessibility, habitability, staffing sufficiency, associated pathways from control room and communication capability with vent-use decision makers.	Open
<b>Phase 2 Open Items</b>	
1. Determine approach to repower Low Pressure Coolant Injection (LPCI) swing bus from FLEX PDG.	Open



Combined Phase 1 and 2 ISE Open Items	Status
<b>Phase 1 ISE Open Items</b>	
1. Make available for NRC staff audit the final sizing evaluation for HCVS batteries/battery charger including incorporation into FLEX Diesel Generator (DG) loading calculation.	Open
2. Make available for NRC staff audit documentation of the HCVS nitrogen pneumatic system design including sizing and location.	Open
3. Make available for NRC staff audit an evaluation of temperature and radiological conditions to ensure that operating personnel can safely access and operate controls and support equipment.	Open
4. 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.	Open
5. Make available for NRC staff audit the seismic and tornado missile final design criteria for the HCVS stack.	Open
6. Make available for NRC staff audit the descriptions of local conditions (temperature, radiation and humidity) anticipated during Extended Loss of 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.	Open
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.	Open
8. Provide a description of the final design of the HCVS to address hydrogen detonation and deflagration.	Open

Combined Phase 1 and 2 ISE Open Items	Status
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.	Open
10. Make available for NRC staff audit descriptions of all instrumentation and controls (existing and planned) necessary to implement this order including qualification methods.	Open
11. 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 Event (BDBEE) and severe accident wetwell venting.	Open
Phase 2 ISE Open Items	Status
None	

**7.0 Interim Staff Evaluation Impacts**

There are no potential impacts to the Phase 1 ISE identified at this time. A Phase 2 ISE has not been provided to NSPM at this time.

**8.0 References**

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

1. Letter from K. Fili (NSPM) to Document Control Desk (NRC), "MNGP's Phase 1 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)," L-MT-14-052, dated June 30, 2014. (ADAMS Accession No. ML14183A412)
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. (ADAMS Accession No. ML13143A334)
3. NEI 13-02, "Industry Guidance for Compliance with Order EA-13-109," Revision 0, dated November 2013. (ADAMS Accession No. ML13316A853)

4. NRC Interim Staff Guidance JLD-ISG-2013-02, "Compliance with Order EA-13-109, Order Modifying Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions," Revision 0, dated November 14, 2013. (ADAMS Accession No. ML13304B836)
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7. Letter from M. Halter (NRC) to P. Gardner (NSPM). "Monticello Nuclear Generating Plant - Interim Staff Evaluation Relating To Overall Integrated Plan In Response To Phase One Of Order EA-13-109 (Severe Accident Capable Hardened Vents) (TAC No. MF4376)," dated April 2, 2015. (ADAMS Accession No. ML15082A167)
8. Letter from P. Gardner (NSPM) to Document Control Desk (NRC), "Monticello Nuclear Generating Plant: Second Six-Month Status Report 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), Phase 1," L-MT-15-031, dated June 22, 2015. (ADAMS Accession No. ML15173A176)
9. Letter from P. Gardner (NSPM) to Document Control Desk (NRC), "Monticello Nuclear Generating Plant's Phase 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) including Phase 1 Status Report," L-MT-15-090, dated December 17, 2015. (ADAMS Accession No. ML15356A120)
10. NRC Interim Staff Guidance JLD-ISG-2015-01, "Compliance with Phase 2 of 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)
11. NEI 13-02, "Industry Guidance for Compliance with Order EA-13-109," Revision 1, dated April 2015. (ADAMS Accession No. ML15113B318)