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April 25, 2019

L-MT-19-020
10 CFR 2.202
EA-13-109

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

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

Monticello Nuclear Generating Plant: Report of Full Compliance with Phase 1 and Phase 2 of 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), Phases 1 and 2 (CAC No. MF4376)

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)

11) Letter from P. Gardner (NSPM) to Document Control Desk (NRC), "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 Number EA-13-109), Phases 1 and 2," L-MT-16-034, dated June 17, 2016. (ADAMS Accession No. ML16169A309)

12) Letter from M. Halter (NRC) to P. Gardner (NSPM), "Subject: 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)

13) Letter from J. Quichocho (NRC) to P. Gardner (NSPM), "Subject: Monticello Nuclear Generating Plant – Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Phase 2 of Order EA-13-109 (Severe Accident Capable Hardened Vents) (CAC No. MF4376),"dated September 6, 2016. (ADAMS Accession No. ML16244A120)

14) Letter from P. Gardner (NSPM) to Document Control Desk (NRC), "Monticello Nuclear Generating Plant: Fifth 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), Phases 1 and 2," L-MT-16-072, dated December 19, 2016. (ADAMS Accession No. ML16354A666)

15) Letter from P. Gardner (NSPM) to Document Control Desk (NRC), "Monticello Nuclear Generating Plant: Sixth 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), Phases 1 and 2," L-MT-17-042, dated June 14, 2017. (ADAMS Accession No. ML17166A051)

16) Letter from C. Church (NSPM) to Document Control Desk (NRC), "Monticello Nuclear Generating Plant: Seventh 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), Phases 1 and 2," L-MT-17-081, dated December 21, 2017. (ADAMS Accession No. ML17355A508)

17) Letter from R. Auluck (NRC) to C. Church (NSPM), "Subject: Monticello Nuclear Generating Plant – Report for the Audit of Licensee Responses to Interim Staff Evaluations Open Items Related to NRC Order EA-13-109 to Modify Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe

Accident Conditions (CAC NO. MF3476; EPID L-2014-JLD-0052)," dated April 10, 2018. (ADAMS Accession No. ML18094A804)

18) Letter from R. Auluck (NRC) to C. Church (NSPM), "Subject: Monticello Nuclear Generating Plant – Correction to the Audit Report for the Audit of Licensee Responses to Interim Staff Evaluations Open Items Related to NRC Order EA-13-109 to Modify Licenses with Regard to Reliable Hardened Containment Vents Capable of Operation Under Severe Accident Conditions (CAC NO. MF3476; EPID L-2014-JLD-0052)," dated May 14, 2018. (ADAMS Accession No. ML18130A921)
19) Letter from C. Church (NSPM) to Document Control Desk (NRC), "Monticello Nuclear Generating Plant: Eighth 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), Phases 1 and 2," L-MT-18-035, dated June 26, 2018. (ADAMS Accession No. ML18177A422)
20) Letter from C. Church (NSPM) to Document Control Desk (NRC), "Monticello Nuclear Generating Plant: Ninth 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), Phases 1 and 2," L-MT-18-079, dated December 17, 2018. (ADAMS Accession No. ML18352A254)

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. References 2 and 3 endorse industry guidance document, NEI 13-02, Revision 0 (Reference 4) with clarifications and exceptions. 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. Reference 11 provided the fourth status report which included both Phase 1 and Phase 2 status updates. In References 12 and 13, the NRC provided interim staff evaluations (ISEs) for HCVS Order Phase 1 and 2 OIPs, respectively. In References 14, 15, 16, 19, and 20 NSPM provided the fifth, sixth, seventh, eighth, and ninth HCVS Order status reports.

The purpose of this letter is to provide the report of full compliance with Phase 1 and Phase 2 of the 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) (Reference 1) pursuant to Section IV, Condition D.4 of the Order for Monticello Nuclear Generating Plant (MNGP).

MNGP has designed and installed a venting system that provides venting capability from the wetwell during severe accident conditions in response to Phase 1 of NRC Order EA-13-109. MNGP has implemented a reliable containment venting strategy that makes it unlikely that the plant would need to vent from the containment drywell before alternative reliable containment heat removal and pressure control is reestablished in response to Phase 2 of NRC Order EA-13-109. The information provided herein documents full compliance for MNGP with NRC Order EA-13-109.

MNGP Phases 1 and 2 OIP Open Items and ISE Open Items have been addressed and reviewed by the NRC as documented in Reference 18 and as provided below, and are considered complete.

OIP Phase 1 Open Items	Status
1. Follow industry guidance on missile protection for HCVS.	Closed - see ISE Phase 1 Open Item 5
2. Identify the 24 hour power supply for the HCVS.	Closed – see ISE Phase 1 Open Item 1
3. Determine radiological conditions for the FLEX portable equipment staging areas.	Closed – see ISE Phase 1 Open Item 3

4. Evaluate the Alternate Shutdown System (ASDS) 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.	Closed – see ISE Phase 1 Open Items 3 and 7
5. Determine approach or combination of approaches to control hydrogen.	Closed – see ISE Phase 1 Open Items 8 and 9
6. Determine the Qualification Method for HCVS instrumentation.	Closed – see ISE Phase 1 Open Item 10
7. Evaluate the effects of radiological and temperature constraints on the deployment of nitrogen bottles after 24 hours.	Closed – see ISE Phase 1 Open Item 3
8. Evaluate HCVS battery charger location for accessibility, habitability, staffing sufficiency, associated pathways from control room and communication capability with vent-use decision makers.	Closed – see ISE Phase 1 Open Items 3 and 7
OIP Phase 2 Open Items	**Status**
1. Determine approach to repower Low Pressure Coolant Injection (LPCI) swing bus from FLEX PDG.	Complete See Reference 16

ISE Phase 1 Open Items	**Status**
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.	Closed See Reference 18
2. Make available for NRC staff audit documentation of the HCVS nitrogen pneumatic system design including sizing and location.	Closed See Reference 18
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.	Closed See Reference 18

ISE Phase 1 Open Items	Status
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.	Closed See Reference 18
5. Make available for NRC staff audit the seismic and tornado missile final design criteria for the HCVS stack.	Closed See Reference 18 and Additional Information in Enclosure 2 of Reference 20
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.	Closed See Reference 18
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.	Closed See Reference 18
8. Provide a description of the final design of the HCVS to address hydrogen detonation and deflagration.	Closed See Reference 18
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.	Closed See Reference 18
10. Make available for NRC staff audit descriptions of all instrumentation and controls (existing and planned) necessary to implement this order including qualification methods.	Closed See Reference 18

ISE Phase 1 Open Items	Status
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.	Closed See Reference 18

ISE Phase 2 Open Items	Status
1. Licensee to provide the plant specific justification for SAWA [Severe Accident Water Addition] flow capacity less than specified in the guidance in NEI 13-02, Section 4.1.1.2.	Closed See Reference 18
2. Licensee to evaluate the SAWA equipment and controls, as well as the ingress and egress paths for the expected severe accident conditions (temperature, humidity, radiation) for the sustained operating period.	Closed See Reference 18
3. Licensee to demonstrate how instrumentation and equipment being used for SAWA and supporting equipment is capable to perform for the sustained operating period under the expected temperature and radiological conditions.	Closed See Reference 18
4. Licensee to demonstrate that containment failure as a result of overpressure can be prevented without a drywell vent during severe accident conditions.	Closed See Reference 18
5. Licensee to demonstrate how the plant is bounded by the reference plant analysis that shows the SAWM [Severe Accident Water Management] strategy is successful in making it unlikely that a drywell vent is needed.	Closed See Reference 18
6. Licensee to demonstrate that there is adequate communication between the MCR [Main Control Room] and the Intake Structure operator at the FLEX manual valve during severe accident conditions.	Closed See Reference 18
7. Licensee to demonstrate the SAWM flow instrumentation qualification for the expected environmental conditions.	Closed See Reference 18

Milestone Schedule – Items Complete

Milestone	Completion Date
Phase 1 and 2 HCVS Milestone Table	
Submit Phase 1 OIP	June 2014
Submit 6 Month Updates:	
Update 1	December 2014
Update 2	June 2015
Update 3 (with Phase 2 OIP)	December 2015
Update 4	June 2016
Update 5	December 2016
Update 6	June 2017
Update 7	December 2017
Update 8	June 2018
Update 9	December 2018
Phase 1 Specific Milestones	
Phase 1 Modifications:	
Hold preliminary/conceptual design meeting	June 2014
Design Engineering On-site/Complete	November 2016
Implementation Outage	May 2017
Walk Through Demonstration/Functional Test	May 2017
Phase 1 Procedure Changes Active:	
Operations Procedure Changes Developed	May 2017
Site Specific Maintenance Procedure Developed	May 2017

Milestone	Completion Date
Procedure Changes Active	May 2017
Phase 1 Training:	
Training Complete	May 2017
Phase 1 Completion:	
HCVS Implementation	May 2017
Phase 2 Specific Milestones	
Phase 2 Modifications:	
Hold preliminary/conceptual design meeting	October 2015
Design Engineering On-site/Complete	June 2018
Implementation Outage	Not Needed
Walk Through Demonstration/Functional Test	December 2018
Phase 2 Procedure Changes Active:	
Operations Procedure Changes Developed	December 2018
Site Specific Maintenance Procedure Developed	March 2019
Procedure Changes Active	February 2019
Phase 2 Training:	
Training Complete	May 2018
Phase 2 Completion:	
HCVS Implementation	April 2019
Submit Completion Report	April 2019, completed with this submittal

Order EA-13-109 Compliance Elements Summary

The elements identified below for MNGP as well as the Phase 1 (Updated) and Phase 2 OIP response submittal (Reference 10), and the 6-Month Status Reports (References 6, 7, 11, 14, 15, 16, 19, and 20), demonstrate compliance with NRC Order EA-13-109. The MNGP Final Integrated Plan for reliable hardened containment vent Phase 1 and Phase 2 strategies is provided in the enclosure to this letter.

HCVS Phase 1 and Phase 2 Functional Requirements and Design Features – Complete

The MNGP Phase 1 HCVS provides a vent path from the wetwell to remove decay heat, vent the containment atmosphere, and control containment pressure within acceptable limits. The Phase 1 HCVS will function for those accident conditions for which containment venting is relied upon to reduce the probability of containment failure, including accident sequences that result in the loss of active containment heat removal capability during an extended loss of alternating current power.

The MNGP Phase 2 HCVS provides a reliable containment venting strategy that makes it unlikely that the plant would need to vent from the containment drywell before alternative reliable containment heat removal and pressure control is reestablished. The MNGP Phase 2 HCVS strategies implement Severe Accident Water Addition (SAWA) with Severe Accident Water Management (SAWM) as an alternative venting strategy. This strategy consists of the use of the Phase 1 wetwell vent and SAWA hardware to implement a water management strategy that will preserve the wetwell vent path until alternate reliable containment heat removal can be established.

The MNGP Phase 1 and Phase 2 HCVS strategies are in compliance with Order EA-13-109. The modifications required to support the HCVS strategies for MNGP have been fully implemented in accordance with the station processes.

HCVS Phase 1 and Phase 2 Quality Standards – Complete

The design and operational considerations of the Phase 1 and Phase 2 HCVS installed at MNGP comply with the requirements specified in the Order and described in NEI 13-02, Revision 1, "Industry Guidance for Compliance with Order EA-13-109". The Phase 1 and Phase 2 HCVS has been installed in accordance with the station design control process.

The Phase 1 and Phase 2 HCVS components including piping, piping supports, containment isolation valves, containment isolation valve actuators, and containment isolation valve position indication have been designed consistent with the design basis of the plant. All other Phase 1 and Phase 2 HCVS

components including electrical power supply, valve actuator pneumatic supply and instrumentation have been designed for reliable and rugged performance that is capable of ensuring Phase 1 and Phase 2 HCVS functionality following a seismic event.

HCVS Phase 1 and Phase 2 Programmatic Features – Complete

Storage of portable equipment for MNGP Phase 1 and Phase 2 HCVS use provides adequate protection from applicable site hazards, and identified paths and deployment areas will be accessible during all modes of operation and during severe accidents, as recommended in NEI 13-02, Revision 1, Section 6.1.2.

Training in the use of the Phase 1 and Phase 2 HCVS for MNGP has been completed in accordance with an accepted training process as recommended in NEI 13-02, Revision 1, Section 6.1.3.

Operating and maintenance procedures for MNGP have been developed and integrated with existing procedures to ensure safe operation of the Phase 1 and Phase 2 HCVS. Procedures have been verified and are available for use in accordance with the site procedure control program.

Site processes have been established to ensure the Phase 1 and Phase 2 HCVS is tested and maintained as recommended in NEI 13-02, Revision 1, Sections 5.4 and 6.2.

MNGP has completed validation in accordance with industry developed guidance to assure required tasks, manual actions, and decisions for HCVS strategies are feasible and may be executed within the constraints identified in the HCVS Phases 1 and 2 OIP for Order EA-13-109 (Reference 10).

MNGP has completed evaluations to confirm accessibility, habitability, staffing sufficiency, and communication capability in accordance with NEI 13-02, Revision 1, Sections 4.2.2 and 4.2.3.

Please contact Stephen Sollom, Senior Regulatory Affairs Engineer, at 612-342-8982, 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 April 25, 2019.

Christopher R. Church
Site Vice President, Monticello Nuclear Generating Plant
Northern States Power Company - Minnesota

Enclosure (1)

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