

2807 West County Road 75
Monticello, MN 55362

800.895.4999
xcelenergy.com



June 26, 2018

L-MT-18-035
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: 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 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. MF4376; 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. MF4376; EPID L-2014-JLD-0052),” dated May 14, 2018. (ADAMS Accession No. ML18130A921)

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, and 16 NSPM provided the fifth, sixth, and seventh HCVS Order status reports.

The purpose of this letter is to provide the eighth six-month status report pursuant to Section IV, Condition D.3, of Reference 1, that delineates progress made in implementing the requirements of Reference 1. Enclosure 1 provides the status report, which includes an update of Phase 1 and 2 milestone accomplishments, including any changes to the compliance method, schedule, or need for relief and the basis, if any.

Enclosure 2 provides additional information regarding Phase 1 Open ISE Item #5 that was closed in the Sixth Six-Month status report (Reference 15) and NRC Audit Report (Reference 18).

Please contact Andrew Kouba, Regulatory Affairs Engineer, at 612-342-8971, 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 26, 2018.



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

Enclosures (2)

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

ENCLOSURE 1

MONTICELLO NUCLEAR GENERATING PLANT

EIGHTH 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) for the Monticello Nuclear Generating Plant (MNGP), in response to Reference 2. The Phase 1 OIP documents 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. Starting with the fourth six-month status report (Reference 12), updates of milestone accomplishments were based on the combined Phase 1 and 2 OIP, (Reference 9). The fifth, sixth and seventh six-month status reports were provided in References 14, 15 and 16. 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

The original milestone schedule with target dates was provided in Part 5 of the combined Phase 1 and Phase 2 OIP (Reference 9). The milestone dates are updated, if necessary, in the six-month status reports. Two milestones were completed since the

last six-month status report and prior to May 31, 2018. The two milestones are related to Phase 2 of the HCVS Order. The milestones completed were:

- Phase 2 Operations Procedure Changes Developed, and
- Phase 2 Training

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, 2018.

Milestone	Target Completion Date	Activity Status	Revised Target Completion Date
Phase 1 and 2 HCVS Milestone Table			
Submit Phase 1 OIP	June 2014	Complete	
Submit 6 Month Updates:			
Update 1	December 2014	Complete	
Update 2	June 2015	Complete	
Update 3 (with Phase 2 OIP)	December 2015	Complete	
Update 4	June 2016	Complete	
Update 5	December 2016	Complete	
Update 6	June 2017	Complete	
Update 7	December 2017	Complete	
Update 8	June 2018	Complete with this Submittal	

Milestone	Target Completion Date	Activity Status	Revised Target Completion Date
Update 9	December 2018	Not Started	
Phase 1 Specific Milestones			
Phase 1 Modifications:			
Hold preliminary/conceptual design meeting	June 2014	Complete	
Design Engineering On-site/Complete	November 2016	Complete	
Implementation Outage	May 2017	Complete	
Walk Through Demonstration/Functional Test	May 2017	Complete	
Phase 1 Procedure Changes Active:			
Operations Procedure Changes Developed	May 2017	Complete	
Site Specific Maintenance Procedure Developed	May 2017	Complete	
Procedure Changes Active	May 2017	Complete	
Phase 1 Training:			
Training Complete	May 2017	Complete	
Phase 1 Completion:			
HCVS Implementation	May 2017	Complete	
Submit Completion Report	July 2017	Not Required	Milestone is not required per NRC direction.
Phase 2 Specific Milestones			

Milestone	Target Completion Date	Activity Status	Revised Target Completion Date
Phase 2 Modifications:			
Hold preliminary/conceptual design meeting	October 2015	Complete	
Design Engineering On-site/Complete	June 2018	Complete	
Implementation Outage	May 2019	Not Started	
Walk Through Demonstration/Functional Test	May 2019	Not Started	
Phase 2 Procedure Changes Active:			
Operations Procedure Changes Developed	December 2018	Complete	
Site Specific Maintenance Procedure Developed	December 2018	Not Started	
Procedure Changes Active	May 2019	Started	
Phase 2 Training:			
Training Complete	May 2019	Complete	
Phase 2 Completion:			
HCVS Implementation	May 2019	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). Updates to information in the OIP are discussed below.

OIP Update – Electrical Component Qualification

In Reference 9, Part 2, NSPM stated that any HCVS order electrical components that interface with Class 1E power sources would be considered safety related and that the remaining components would be considered augmented quality components.

As described in the response to ISE Open Item 10 in Reference 15, not all electrical components installed for the HCVS Order Phase 1 compliance are safety related or augmented quality. However, all components are qualified for the expected conditions that may occur should an ELAP with core damage occur.

OIP Update – Electrical Conduit Seismic Classification

In Reference 9, Part 2, NSPM stated that conduit designs will be installed to Seismic Class 1 Criteria.

The conduit work in support of the HCVS modifications to complete Phase 1 of the order were considered non-safety related installations. The conduit that was installed was required to be Underwriters Laboratory (UL) listed. The conduit was installed to Seismic II/I criteria, which ensures the conduit will not collapse in a design basis seismic event.

OIP Update – Backup Operating Station Valve Controls

In Reference 9, Part 2, NSPM stated that controls required to open the HCVS at the backup operating station (Remote Operating Station (ROS)) will be secured.

A key-lock switch is provided for the HCVS Primary Containment Isolation Valve controls at the Alternate Shutdown System Panel where the Primary Operating Station is provided. However, at the nitrogen bottles, manual isolation valves were installed, and these valves are normally closed but are not secured. Multiple actions (i.e. at the nitrogen bottles and at the ROS) are required to open an HCVS containment isolation valve or to rupture the rupture disk, therefore, inadvertent operation is not credible.

OIP Update – Drill/Exercise Performance

In Reference 9, Part 4, NSPM stated that the site will utilize the guidance provided in NEI 13-06 and 14-01 for guidance related to drills, tabletops, or exercises for HCVS operation. In addition, the site will integrate these requirements with compliance to any rulemaking resulting from the NTF Recommendations 8 and 9.

It is NSPM's intention to comply with drill/exercise performance requirements consistent with the final 10 CFR 50.155 language. NSPM will continue to utilize the guidance of NEI 13-06 and NEI 14-01 insofar as it is consistent with the regulatory requirements promulgated in the final rulemaking.

OIP Update – SAWA and SAWM Flowrates

In Reference 9, Part 3, NSPM stated that the Severe Accident Water Addition (SAWA) flowrate for MNGP is 305 gpm and the Severe Accident Water Management (SAWM) flowrate is 61 gpm.

A refined evaluation of the required SAWA and SAWM flowrates has been completed for MNGP. As a result, SAWA flow is now 285 gpm and SAWM flow is now 57 gpm.

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 Evaluations (ISE) (References 7 and 13) and the status of each item.

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
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

ISE Phase 1 Open Items	Status
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
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
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

ISE Phase 2 Open Items	Status
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

7.0 Interim Staff Evaluation Impacts

There are no potential impacts to the Phase 1 or 2 ISE identified 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)
 5. 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)
 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 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. (ADAMS 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)
12. 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)
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. MF4376; 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.

L-MT-18-035
Enclosure 1

MF4376; EPID L-2014-JLD-0052),” dated May 14, 2018. (ADAMS Accession No. ML18130A921)

ENCLOSURE 2

MONTICELLO NUCLEAR GENERATING PLANT

**ADDITIONAL RESPONSE TO ISE OPEN ITEM #5
ASSOCIATED WITH NRC ORDER EA-13-109, PHASE 1**

**ORDER MODIFYING LICENSES WITH REGARD TO RELIABLE
HARDENED CONTAINMENT VENTS CAPABLE OF OPERATION UNDER
SEVERE ACCIDENT CONDITIONS**

Introduction:

This enclosure provides additional information relating to the following Open Item from the NRC Hardened Containment Vent System (HCVS) Interim Staff Evaluation (Reference 1) for the Monticello Nuclear Generating Plant (MNGP):

<u>Open Item #</u>	<u>Description</u>
5	Seismic and tornado missile design criteria for the HCVS stack.

References:

1. 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)
2. Boiling Water Reactor Owners Group White Paper HCVS-WP-04, Revision 0, "Missile Evaluation for HCVS Components 30 Feet Above Grade", dated August 17, 2015 (ADAMS Accession No. ML15244A923)
3. NEI 12-06 Revision 2, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," dated December 2015 (ADAMS Accession No. ML16005A625).

Open Item Responses:

Open Item 5 - Seismic and Tornado Missile Design Criteria for the HCVS Stack:

NRC Request

Per the teleconference audit conducted on March 22, 2018 between the NRC and NSPM staff to confirm Monticello Nuclear Generating Plant Order EA-13-109 Phase 1 and Phase 2 Interim Staff Evaluation (ISE) open items, the NRC requested NSPM to provide the list of assumptions in the BWROG white paper, HCVS-WP-04, and explain how we meet each one in this six-month HCVS order status update.

NSPM Response

HCVS-WP-04 (Reference 2) lists four assumptions on pages 1-2.

- 1) Piping and components external to any missile-protected structure and less than 30 feet above grade are evaluated and, unless otherwise justified in plant-specific OIPs, protected from large and small missiles.

How MNGP Meets the Assumption: Both the reactor building (up to Operating Floor – 1027'8") and HPCI buildings are Class 1 structures designed to withstand tornado missiles and tornado wind loading. The portion of the Hardened Containment Vent System outside these buildings has been protected from tornado missiles to an elevation of 30 feet by the erection of a tornado missile barrier. The barrier is designed to withstand tornado loads including missile impact.

- 2) Piping and components external to any missile-protected structure and greater than 30 feet above grade conform to the following:
 - a) The target area of the HCVS components is less than 300 ft²,

How MNGP Meets the Assumption: The exposed target area of the HCVS piping above the top of the missile barrier is approximately 143 square feet.

- b) The size and robustness of the exposed HCVS are substantial (e.g., steel piping versus small tubing or plastic piping),

How MNGP Meets the Assumption: The exposed portion of the HCVS is welded steel piping, designed to ASME B31.1 "Power Piping."

- c) There is no source of obvious potential missiles in the proximity of the exposed HCVS components (such as an unrestrained material lay down area).

How MNGP Meets the Assumption: The potential for generation of missiles from nearby areas at higher ground surface elevations was assessed in Engineering Evaluation EE-

26081-01. It was determined that the areas of higher elevation were sufficiently distant to not pose a hazard to the HCVS. There are no extraordinary missile sources nearby.

- 3) Licensees consider guidance in FLEX, or other procedures, to restore venting capability in the event the HCVS is damaged. Restoration could include cutting pipe below damaged section. This location may have to be below the release height requirements otherwise imposed.

How MNGP Meets the Assumption: The Hardened Containment Vent System at Monticello is designed to withstand the external events applicable to the site. Therefore, there is no need to provide for repairing or bypassing a damaged section of the vent piping.

- 4) Licensees verify that if hurricanes are screened in for FLEX (see NEI-12-06), that the site procedures recommend a plant shut down prior to hurricane arrival on-site.

How MNGP Meets the Assumption: The Monticello Nuclear Generating Plant was screened out for hurricanes under NEI 12-06 (Reference 3) due to its location near the center of the North American continent.