



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

February 28, 2014

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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's Second Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049) (TAC No. MF0923)

References:

1. NRC Order EA-12-049, "Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," dated March 12, 2012 (ADAMS Accession No. ML12054A735).
2. NRC Interim Staff Guidance JLD-ISG-2012-01, "Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," Revision 0, dated August 29, 2012 (ADAMS Accession No. ML12229A174).
3. NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," Revision 0, dated August 2012 (ADAMS Accession No. ML12242A378).
4. NSPM Letter to NRC, "Initial Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)," dated October 29, 2012 (ADAMS Accession No. ML12305A420).

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5. NSPM Letter to NRC, "Monticello Nuclear Generating Plant's Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)," dated February 28, 2013 (ADAMS Accession No. ML13066A066).
6. NSPM Letter to NRC, "Monticello's First Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)," dated August 28, 2013 (ADAMS Accession No. ML13241A200).

On March 12, 2012, the Nuclear Regulatory Commission (NRC) staff issued Order EA-12-049, "Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," (Reference 1), to all NRC power reactor licensees and holders of construction permits in active or deferred status. Reference 1 was effective immediately and directed Northern States Power Company, a Minnesota corporation (NSPM), doing business as Xcel Energy, to develop, implement and maintain guidance and strategies to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities following a beyond-design-basis external event for the Monticello Nuclear Generating Plant (MNGP). Specific requirements are outlined in Attachment 2 of Reference 1.

Pursuant to Condition C of Section IV, Reference 1 required submission of an initial status report 60 days following issuance of the final interim staff guidance (ISG), an overall integrated plan, and status reports at six-month intervals following the submittal of the overall integrated plan. The ISG (Reference 2) endorses, with clarifications, an industry guidance document from the Nuclear Energy Institute (NEI), NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," Revision 0 (Reference 3). Reference 4 provided the MNGP initial 60-day status report regarding mitigation strategies. Reference 5 provided the overall integrated plan for MNGP. The first six-month status report was provided in Reference 6.

The purpose of this letter is to provide the second six-month status report pursuant to Section IV, Condition C.2 of Reference 1, which delineates the progress made in implementing the requirements of the Reference 1 Order. The enclosed report provides an update of milestone accomplishments since the Reference 6 status report was submitted, including changes to the compliance method, schedule, or the need and basis for relief, if any.

Please contact Jennie Wike, Licensing Engineer, at 612-330-5788, 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 February 28, 2014.



Peter A. Gardner
Director of Site Operations, Monticello Nuclear Generating Plant
Northern States Power Company - Minnesota

Enclosure

cc: Administrator, Region III, USNRC
Director of Nuclear Reactor Regulation (NRR), USNRC
Project Manager, Monticello Nuclear Generating Plant, USNRC
Resident Inspector, Monticello Nuclear Generating Plant, USNRC

**Monticello Nuclear Generating Plant
Second Six-Month Status Report for Implementation of Order EA-12-049,
Order Modifying Licenses with Regard to Requirements for
Mitigation Strategies for Beyond-Design-Basis External Events**

1.0 Introduction

The Nuclear Regulatory Commission (NRC) issued Order EA-12-049, "Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," on March 12, 2012 (Reference 1). The Order required licensees to develop, implement and maintain guidance and strategies to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities following a beyond-design-basis external event. The Order required licensees to submit an overall integrated plan, including a description of how the requirements in Attachment 2 of the Order would be achieved. Northern States Power Company, a Minnesota corporation (NSPM), doing business as Xcel Energy, submitted the overall integrated plan (Reference 2) for the Monticello Nuclear Generating Plant (MNGP) on February 28, 2013. In accordance with Section IV, Condition C.2 of Reference 1, NSPM submitted the first six-month status report on August 28, 2013 (Reference 3).

On November 25, 2013, the NRC issued an Interim Staff Evaluation (ISE) for MNGP's Mitigating Strategies overall integrated plan (Reference 6). The ISE documents the NRC's conclusion that NSPM has provided sufficient information to determine that there is reasonable assurance that the overall integrated plan, when properly implemented, will meet the requirements of Order EA-12-049 at MNGP. The ISE also documents the confirmatory and open items identified by the NRC as a result of their review and audit of MNGP's overall integrated plan.

This Enclosure provides the second six-month status report. This status report includes an update of milestone accomplishments since submittal of the first six-month status report, including changes to the compliance method, schedule, or the need and basis for relief, if any. This status report also provides an update on NSPM's closure of the open and confirmatory items identified in the NRC's ISE.

2.0 Milestone Accomplishments

The original milestone schedule with target dates was provided in Attachment 2 of the Reference 2 Enclosure. The following milestone has been completed since the Reference 3 status report was submitted and is current as of January 31, 2014.

- Commence Engineering Modification Design – Phase 2 & 3 (design process has started)

3.0 Milestone Schedule Status

The following Table 1 provides an update of the milestone schedule for the overall integrated plan. This table includes a brief milestone status and a revised target date if the target date has changed. The target dates are planning dates subject to change as design and implementation details are developed.

- Regional Response Center Operational:

The target completion date for the Regional Response Center for MNGP has been determined.

- Procure Equipment:

The target completion date for procuring equipment was changed from June 2014 to December 2014.

- Implementation Outage:

The target completion date for the implementation outage was moved from April 2015 to May 2015, due to changes in the refueling outage schedule.

Table 1 – Overall Integrated Plan Milestone Schedule			
Milestone	Target Completion Date	Activity Status	Revised Target Completion Date
Submit 60 Day Status Report	October 2012	Complete	
Submit Overall Integrated Plan	February 2013	Complete	
Submit First Six-Month Status Report	August 2013	Complete	
Commence Engineering Modification Design – Phase 2 & 3	January 2014	Complete	

Table 1 – Overall Integrated Plan Milestone Schedule			
Milestone	Target Completion Date	Activity Status	Revised Target Completion Date
Submit Second Six-Month Status Report	February 2014	Complete with this submittal	
Regional Response Center Operational (MNGP)	TBD	Started	November 2014
Procure Equipment	June 2014	Started	December 2014
Submit Third Six-Month Status Report	August 2014	Not Started	
Commence Installation for Online Modifications – Phase 2 and 3	August 2014	Not Started	
Implement Storage	December 2014	Not Started	
Issue Maintenance Procedures	December 2014	Started	
Implement Training	February 2015	Not Started	
Submit Fourth Six-Month Status Report	February 2015	Not Started	
Submit Staffing Assessment	Four months prior to R27	Not Started	
Complete Communication Recommendations	Four months prior to R27	Not Started	
Issue Procedures updated for FLEX strategies	April 2015	Started	
Implementation Outage	April 2015 (End of R27)	Not Started	May 2015 (End of R27)
Validation Walk-throughs	April 2015	Not Started	
Submit Completion Report	August 2015	Not Started	

4.0 Proposed Changes to Compliance Method

There are two changes to the compliance method documented in the overall integrated plan, and one update to information provided in the overall integrated plan regarding the hardened containment vent. The updated information on the hardened containment vent and the changes to the overall integrated plan are provided below.

Hardened Containment Vent

NRC Order EA-12-049 (Reference 1) requires implementation of Mitigation Strategies to address an extended loss of alternating current (AC) power (ELAP) and loss of normal

access to ultimate heat sink (LUHS). The endorsed Interim Staff Guidance (ISG) for compliance with NRC Order EA-12-049, ISG-JLD-2012-01 (Reference 5), used the containment vent required by NRC Order EA-12-050 (Reference 7) for the heat removal function for boiling water reactors (BWRs). Reference 2 provided the NSPM response to the NRC Order EA-12-049 using the endorsed guidance from Reference 5. On June 6, 2013, the NRC rescinded NRC Order EA-12-050 with the issuance of NRC Order EA-13-109 (Reference 4). Thus, NSPM will not be installing an NRC Order EA-12-050 containment vent for MNGP as stated in Reference 2. As of January 31, 2014, NSPM is not planning to request relief from Order EA-12-049 for its hardened containment vent strategies.

Alternate Nitrogen Supply

The overall integrated plan submitted for MNGP included the following regarding the nitrogen gas requirements:

Nitrogen gas requirements for the first 24 hours are expected to be supplied by the installed capacity of the Alternate Nitrogen Supply System, and will be confirmed by analysis, so no change out of bottles is required during Phase 1. If the completed analysis results in a change in strategy, this will be provided in a six-month status report. (Reference 2)

NSPM completed the analysis of the nitrogen gas requirements for Train B of the Alternate Nitrogen Supply system. The analysis concluded that the existing nitrogen bottles will supply gas for 20 hours. Therefore, supplemental alternate nitrogen may need to be provided after 20 hours. The ELAP procedures will require that the pressure for the alternate nitrogen supply be checked periodically. See Confirmatory Item 3.2.1.6.A in Table 2 for additional details on the nitrogen analysis results.

Emergency Heat Load Spent Fuel Pool (SFP) Makeup

The overall integrated plan submitted for MNGP included the following regarding the time constraint for providing SFP makeup in an emergency heat load condition:

For the SFP emergency heat load, provide makeup to the SFP [within 12 hours] using portable FLEX pump to at least meet the boil off rate (53 gpm for emergency heat load). (Reference 2)

Instead of 12 hours, NSPM will provide SFP makeup in an emergency heat load condition within eight hours. This change in timing will ensure makeup water can be delivered to the SFP prior to the SFP boiling. The earliest SFP boiling prediction time assuming emergency heat load is 8.3 hours.

5.0 Need and Basis for Relief from the Requirements of the Order

NSPM expects to comply with the Order implementation date and requirements. No relief from the requirements of the Order is required at this time.

6.0 Open Items from Overall Integrated Plan and Interim Staff Evaluation

NSPM did not identify any open items in the MNGP mitigating strategies overall integrated plan. The overall integrated plan did contain future actions to ensure compliance with the Order. The future actions were identified internally and are being tracked through NSPM's corrective action program (CAP).

On November 25, 2013, the NRC issued the ISE for MNGP's Mitigating Strategies overall integrated plan (Reference 6). As a result of the review and audit of MNGP's overall integrated plan, the NRC identified a list of confirmatory and open items that required additional follow-up or resolution. Confirmatory items are items that the NRC considered conceptually acceptable, but for which resolution might be incomplete. These items require some minimal follow up review or audit prior to NSPM's compliance with Order EA-12-049. Open items are items for which NSPM did not present a sufficient basis for NRC to determine that the issue is on a path to resolution. The NRC's intention for designating an issue as an open item was to document significant items that needed resolution during the review process, rather than being verified after the compliance date through the inspection process.

A list of the ISE open and confirmatory items is provided in Table 2. The table provides an update on NSPM's closure of the open and confirmatory items identified in the NRC's ISE. These items will be tracked to closure in future six-month status reports.

Table 2 – Open Items and Confirmatory Items	
Item No.	Description
Open Item 3.1.1.3.A	The licensee's integrated plan did not address the potential impacts from large internal flooding sources that are not seismically robust and do not require ac power, the potential loss of ac power to mitigate ground water in critical locations, or the impact of potential failure of non-seismically robust downstream dams.
The requested information will be provided in a future six-month status report.	

Table 2 – Open Items and Confirmatory Items	
Item No.	Description
Open Item 3.1.2.2.A	The licensee's integrated plan did not address flooding deployment issues for restocking supplies during flooding conditions, protection for fuel supplies assuring connection points are protected, the need to provide water extraction pumps, and the need for temporary flood barriers.
The requested information will be provided in a future six-month status report.	
Open Item 3.1.2.3.A	The licensee did not discuss the need for temporary flood barriers and dewatering pumps during flooding events.
The requested information will be provided in a future six-month status report.	
Open Item 3.2.1.2.A	The licensee did not identify or provide justification for the assumptions made regarding primary system leakage from the recirculation pump seals and other sources.
<p>NSPM completed the Modular Accident Analysis Program (MAAP) analysis for MNGP. The primary system leakage used in the MAAP analysis ranged from 30 gpm to 165 gpm, assuming an initial Reactor Pressure Vessel (RPV) pressure of 1000 psig (nominal operating pressure). The primary system leakage was assumed to occur at the transient initiation. As the RPV was depressurized, leakage decreased. The maximum leakage from the failure of both seals for each reactor recirculation pump is 70 gpm. The maximum leakage for both reactor recirculation pumps plus the Technical Specification primary system boundary leakage of 25 gpm, equals a total primary system leakage of up to 165 gpm.</p>	

Table 2 – Open Items and Confirmatory Items

Item No.	Description
Open Item 3.2.3.A	Additional plant-specific Extended Loss of AC Power (ELAP) analysis information commensurate with the level of detail contained in NEDC-33771P, including analysis assumptions and results in their tabulated and plotted formats is needed to conclude that containment functions will be maintained.

NSPM completed a plant-specific ELAP analysis, called a MAAP analysis. The reference case analysis assumptions used in the MAAP analysis are the following:

1. 90°F per hour cool down was initiated at 30 minutes, after which pressure was maintained between 200 and 400 psig.
2. Leakage from the RPV was assumed to be 165 gpm.
3. Reactor water level was maintained between -47" and +48" by Reactor Core Isolation Cooling (RCIC).
4. RCIC was assumed to be available until the suppression pool temperature reaches 240°F. Above 240°F, it was assumed the level was maintained by a portable pump.
5. The hardened containment vent was opened when the containment pressure reaches 10 psig.

A summary of the results of the reference case analysis is provided as follows:

- Reactor depressurization started at 30 minutes
- Hard pipe vent was opened at 1.7 hours.
- The suppression pool reached 240°F at 11.5 hours.
- Successful adequate core cooling was achieved for Phases 1 and 2 using RCIC for 11.5 hours and then a portable pump.
- Drywell temperature did not exceed 300°F.
- Suppression pool temperature stabilized at approximately 250°F.
- Less than 75 Safety Relief Valve (SRV) openings.

The MNGP overall integrated plan stated that the Hardened Containment Vent System would be initiated at six hours following the start of the ELAP. The time constraint on opening the hard pipe vent is still being evaluated based on the results of the MAAP analysis. The hardened containment vent will be operated in accordance with plant Emergency Operating Procedures (EOP) that are being revised in accordance with the Boiling Water Reactor Owners Group (BWROG) guidance provided in Revision 3 of the Emergency Planning Guidelines/Severe Accident Guidelines (EPG/SAG).

Table 2 – Open Items and Confirmatory Items

Item No.	Description
Open Item 3.2.3.B	The licensee needs to resolve the issue of the potential for the BWROG revised venting strategy to increase (relative to currently accepted venting strategies) the likelihood of detrimental effects on containment response for events in which the venting strategy is invoked. In particular it has not been shown that the potential for negative pressure transients, hydrogen combustion, or loss of containment overpressure (as needed for pump net positive suction head) is not significantly different when implementing Revision 3 of the Emergency Planning Guidelines/Severe Accident Guidelines (EPG/SAG) vs. Revision 2 of the EPG/SAG.

On January 9, 2014, the NRC endorsed the NEI/BWROG paper titled “BWR Containment Venting” that addresses the NRC staff’s concerns with the revised venting strategy in Revision 3 of the EPG/SAG (ADAMS Accession No. ML13358A206). The NRC’s endorsement letter noted that plant-specific implementation of the EPG/SAG relied on such items as the capabilities of the installed vent path, the Net Positive Suction Head (NPSH) for RCIC, and guidance to prevent negative containment pressures. NSPM addresses each of these plant-specific implementation items in the paragraphs below.

Installed Vent Path

The Monticello hardened containment vent consists of an 8-inch diameter line starting at a dedicated penetration at the top of the torus, connected to two containment isolation valves. The 8-inch line expands to a 10-inch diameter pipe to a rupture disc and exits to a release point above the Reactor Building roof near the Reactor Building exhaust on the north side of the Reactor Building. The hardened containment vent piping travels up the north side of the reactor building. The vent was designed to a temperature of 309°F and a pressure of 62 psig. The completed MAAP analysis verified that venting with the hardened containment vent will prevent the containment pressure from exceeding its design pressure.

NPSH for RCIC

The discussion of the NPSH for RCIC operation is provided in response to Confirmatory Item 3.2.1.8.A.

Guidance to Prevent Negative Pressure In Containment

Guidance will be added to the containment venting procedure to ensure that the hardened containment vent is closed before a negative pressure is created in the containment.

Table 2 – Open Items and Confirmatory Items	
Item No.	Description
Open Item 3.2.4.3.A	The licensee needs to provide a discussion of the effects of loss of power to heat tracing.
<p>Heat tracing will be lost due to the loss of power. Heat traced components that could be used in an ELAP, but are not credited in the overall integrated plan, are sections of piping in the condensate storage system, diesel fuel oil system, and the fire protection system.</p> <p>Piping associated with the condensate storage tanks (CST) contains heat tracing to protect the pipes from freezing. The CSTs are insulated and heated with a typical temperature of 100°F. The CSTs and associated piping are insulated, which will slow cooling and delay freezing of the piping. The normal suction supply for both RCIC and High Pressure Coolant Injection (HPCI) are the non-seismically qualified CSTs and are the preferred source of makeup water, if available. Since the CSTs could be available in an ELAP scenario, the final ELAP procedure will contain a discussion about the effects of loss of heat tracing in cold weather.</p> <p>Heat tracing is also provided to a diesel fuel oil line and two fire hose stations in the Turbine Building Addition. These components are not credited in MNGP's ELAP strategies.</p>	
Open Item 3.2.4.5.A	The licensee needs to provide information regarding local access to the protected areas under ELAP.
<p>Keys are available to Operations personnel and allow Operators local access to internal locked areas in the plant (protected areas) during an ELAP.</p>	

Table 2 – Open Items and Confirmatory Items	
Item No.	Description
Open Item 3.2.4.8.A	The licensee did not provide any information regarding loading/sizing calculations of portable diesel generator(s) and strategy for electrical isolation for FLEX electrical generators from installed plant equipment.
<p>A portable 480V generator will supply six battery chargers. These six battery chargers will support the following loads:</p> <ul style="list-style-type: none"> • Division I 125V battery • Division I 250V batteries • Division II 125V battery • Division II 250V batteries <p>Each division of the 125V batteries is charged by a 125V battery charger with a rated output of 100 amps.</p> <p>Each division of the 250V batteries is charged by two 125V battery chargers. The battery chargers for the 250V batteries each have a rated output of 150 amps.</p> <p>The battery chargers will be isolated from the installed equipment by local disconnect switches.</p> <p>The portable 480V generators have not been purchased. Additional information for this open item will be provided in a future six-month status report once the design for the portable 480V diesel generators are finalized and the equipment purchased.</p>	
Open Item 3.2.4.8.B	The licensee needs to provide a description of the instrumentation that will be used to monitor portable/FLEX electrical power equipment including their associated measurement tolerances/accuracy to ensure that the electrical equipment remains protected and that operators are provided with accurate information
<p>Additional information for this open item will be provided in a future six-month status report once the design for the portable 480V diesel generators and associated strategies are finalized.</p>	
Confirmatory Item 3.1.1.2.A	The licensee is still developing storage locations and associated deployment pathways for Phase 2 equipment. The availability of the potential need for ac power to deploy equipment could not be evaluated.
<p>The requested information will be provided in a future six-month status report.</p>	

Table 2 – Open Items and Confirmatory Items	
Item No.	Description
Confirmatory Item 3.1.1.4.A	The licensee's integrated plan did not identify Regional Response Center resources, the off-site staging areas, and delivery methods sufficiently in order to evaluate the means to obtain the resources from off site.
The requested information will be provided in a future six-month status report.	
Confirmatory Item 3.1.5.3.A	The licensee did not provide measures for operating FLEX equipment at possible excessively high temperatures that may exist inside plant structures and buildings.
The requested information will be provided in a future six-month status report.	
Confirmatory Item 3.2.1.1.A	From the June position paper, identify and discuss the benchmarks which are relied upon to demonstrate that MAAP4 is an appropriate code for simulation the of ELAP event.
The requested information will be provided in a future six-month status report.	
Confirmatory Item 3.2.1.1.B	Confirm that the collapsed level remains above Top of Active Fuel (TAF) and that the cool down rate was within the technical specification limits.
NSPM completed the MAAP analysis for MNGP. The MAAP analysis confirmed that the collapsed level remains above the TAF. The MAAP analysis assumed a 90°F per hour cool down rate, which is within the Technical Specification limit.	
Confirmatory Item 3.2.1.1.C	Confirm that MAAP was used in accordance with Sections 4.1, 4.2, 4.3, 4.4, and 4.5 of the June position paper.
The MAAP analysis performed for MNGP was carried out in accordance with Sections 4.1, 4.2, 4.3, 4.4, and 4.5 of the June 2013 position paper, EPRI Technical Report 3002001785, "Use of Modular Accident Analysis Program (MAAP) in Support of Post-Fukushima Applications."	

Table 2 – Open Items and Confirmatory Items	
Item No.	Description
Confirmatory Item 3.2.1.1.D	<p>Identify and justify the subset of key modeling parameters taken from Tables 4-1 through 4-6 of the MAAP4 Applications Guidance (EPRI 1020236). This should include response at a plant-specific level regarding specific modeling options and parameter choices for key models that would be expected to substantially affect the ELAP analysis performed for that licensee's plant. Although some suggested key phenomena are identified below, other parameters considered important in the simulation of the ELAP event by the vendor/ licensee should also be included.</p> <ul style="list-style-type: none"> a. Nodalization b. General two-phase flow modeling c. Modeling of heat transfer and losses d. Choked flow e. Vent line pressure losses f. Decay heat (fission products/actinides/ etc.)
<p>The MAAP analysis has been completed and is available for NRC review.</p>	
Confirmatory Item 3.2.1.1.E	<p>Identify the specific MAAP analysis case that was used to validate the timing of mitigating strategies in the integrated plan and state that it is available on a web portal for NRC staff to view. Alternately, a comparable level of information may be included in the response to the question. In either case, the analysis should include a plot of the collapsed vessel level to confirm that TAF is not reached (the elevation of the TAF should be provided) and a plot of the temperature cool down to confirm that the cool down is within tech spec limits.</p>
<p>The MAAP analysis completed for MNGP modeled several scenarios representative of the overall integrated plan. This MAAP analysis is available for NRC review. The MAAP analysis will be used to refine and enhance the mitigating strategies. Any changes to the strategy will be provided in future six-month status reports.</p>	
Confirmatory Item 3.2.1.3.C	<p>The licensee did not provide a completed analysis for repowering batteries using the portable FLEX 480 volt ac diesel generator and the associated time constraint for battery life. Additional analysis is required to confirm timing.</p>
<p>The requested information will be provided in a future six-month status report.</p>	

Table 2 – Open Items and Confirmatory Items	
Item No.	Description
Confirmatory Item 3.2.1.3.D	The licensee did not provide the basis for SOE Action Item 9 regarding the 8-hour time the portable diesel driven FLEX pumps will be staged. Additional analysis is required to confirm timing.
<p>NSPM has completed the MAAP analysis for MNGP. The MAAP analysis shows that the suppression pool temperature will remain less than 240°F for at least 11 hours in the reference case scenario. Therefore, RCIC will be available for at least 11 hours, and adequate time will be available to stage the portable diesel driven FLEX pumps. Staging the portable diesel driven FLEX pumps will be accomplished in eight hours, as identified in the OIP. NSPM selected eight hours for deployment of the portable diesel driven FLEX pumps, because deployment resources are assumed to arrive after 6 hours and the portable diesel driven FLEX pump can be set up in less than 2 hours.</p>	
Confirmatory Item 3.2.1.3.E	The licensee provided preliminary times for SOE Action Items 10, 11, and 12 regarding ventilation needs for various areas of the plant. Additional analysis is required to confirm timing.
<p>The requested information will be provided in a future six-month status report.</p>	

Table 2 – Open Items and Confirmatory Items	
Item No.	Description
Confirmatory Item 3.2.1.4.A	The licensee did not provide complete updated information regarding FLEX portable pump flow analyses. This will be provided in the licensee's February 2014 status update report.
<p>NSPM completed a flow analysis for the Godwin Model HL5MS FLEX portable pumps to confirm that the FLEX portable pump can supply adequate flow. A summary of the results of this flow analysis is provided below.</p> <p><u>Delivery of Water to the RPV</u></p> <p>Delivery of water to the RPV with pressure of 100 psig was analyzed for the following paths:</p> <ul style="list-style-type: none"> • Primary path: Discharge Canal to Residual Heat Removal Service Water (RHRSW) cross tie to RHR (5" hoses) to the reactor is greater than 500 gpm. • Alternate Path: Discharge Canal to Residual Heat Removal (RHR) pump discharge area, to the reactor is greater than 300 gpm. <p><u>Delivery of Water to the Spent Fuel Pool (SFP)</u></p> <p>Delivery of water to the SFP was analyzed for the following paths:</p> <ul style="list-style-type: none"> • Primary Path: Discharge Canal to RHRSW crosstie to RHR to SFP is greater than 700 gpm. • Alternate Path: Discharge Canal to the reactor building (5" hoses), up stairs to the Spent fuel Pool (two 2 ½" hoses) is greater than 600 gpm. <p>Procedures will allow flow to be delivered to both the spent fuel pool and the reactor. Flow rates will be controlled by valves in the fire hose connections. Flow rates will be measured by gauges on the fire hoses and water levels will be monitored by control room instruments.</p>	
Confirmatory Item 3.2.1.4.B	The licensee needs to provide further technical basis or a supporting analysis for the portable/FLEX diesel generator capabilities considering the capacity of the equipment. A summary of the sizing calculation for the FLEX 480V diesel generators to show that they can supply the loads assumed in Phases 2 is also needed.
<p>See response to Open Item 3.2.4.8.A above for a description of the loads for the portable FLEX diesel generator. Additional information for this confirmatory item will be provided in a future six-month status report once the design for the portable 480V diesel generators and associated strategies are finalized.</p>	

Table 2 – Open Items and Confirmatory Items	
Item No.	Description
Confirmatory Item 3.2.1.6.A	<p>The licensee specified that the 24-hour time constraint for supplying alternate nitrogen is preliminary but provided no technical basis or analysis to support the 24-hour requirement to supply alternate nitrogen. The licensee will provide updated information in a six-month status report in February 2014.</p>
<p>NSPM completed an analysis of the required alternate nitrogen supply. The completed analyses assumed that the Alternate Nitrogen System supplied nitrogen to the SRVs, Main Steam Isolation Valves (MSIV), T-ring seals, the hardened containment vent rupture disc and the hardened containment vent valves. There are two trains of Alternate Nitrogen Supply, and Train B supplies the hardened containment vent. A gas usage evaluation was conducted for the Train B nitrogen supply. The evaluation concluded that sufficient gas pressure would be available for 20 hours following the ELAP assuming that the following occurs:</p> <ul style="list-style-type: none"> • 100 SRV actuations supplied by Train B • Rupturing the hardened containment vent rupture disc • Opening two hardened containment vent isolation valves and opening one of the valves nine additional times. <p>Due to the uncertainty of leakage assumptions used in the analysis, the ELAP procedures will require that the pressure for the alternate nitrogen supply be checked periodically.</p>	

Table 2 – Open Items and Confirmatory Items	
Item No.	Description
Confirmatory Item 3.2.1.8.A	The licensee did not provide a discussion regarding the methodology used to assure adequate NPSH for the RCIC pump and justify that it is adequate in light of the potential for limited margins and potentially significant transient phenomena. Additional information will be provided in a six-month update.
<p>NPSH has been evaluated for the RCIC pump. The evaluation did not assume any nitrogen gas was present in the Suppression Chamber atmosphere. The evaluation assumed saturated conditions in the Suppression Pool. With a Suppression Pool level greater than 11 feet and RCIC flow less than 300 gpm, the evaluation concluded that there is NPSH margin. The evaluation assumed that the Suppression Pool liquid was a uniform temperature. This assumption is conservative because of water stagnation. With water stagnation, hotter water is on the surface; and therefore, cooler water at the Suppression Pool ring header would be drawn into the RCIC pump suction.</p>	
Confirmatory Item 3.2.1.8.B	The integrated plan provides no details regarding: actual connection points, (e.g., system valve numbers and actual location in plant piping) the length of hose runs and associated connecting fittings required to connect the portable pump at the primary and alternate locations, and no details regarding portable pump capabilities to correlate with actual flow and pressure requirements. It is not possible to determine based on the limited information that the strategies for phase 2 core cooling are viable.
<p>The requested information will be provided in a future six-month status report.</p>	
Confirmatory Item 3.2.1.8.C	The licensee will provide additional information regarding final design and implementation plans for use of impure water for core makeup.
<p>As stated in the MNGP overall integrated plan, the normal suction supply for RCIC and HPCI are the two CSTs (non-seismic tanks) and the Suppression Pool. Because the CST may not be available for all scenarios, the credited makeup water source for the FLEX portable pumps is drawn from the Discharge Canal, where river water is processed through the traveling screens prior to the loss of power. Additionally, the hoses taking suction from the Discharge Canal will have strainers with 3/8" holes to prevent large debris from entering the pump. The Mississippi River serves as a backup source of water to the Discharge Canal.</p> <p>When using raw water from the Mississippi River, reactor level will be maintained above the separator spill over level to ensure water can enter the core from the separators (downflow) should water upflow be blocked by debris.</p>	

Table 2 – Open Items and Confirmatory Items	
Item No.	Description
Confirmatory Item 3.2.1.8.D	The licensee provided insufficient information to support a conclusion that the switchover from CST to the torus function will be accomplished in a timely manner so that RCIC injection to RPV will commence without delay and remain uninterrupted. Additional information to be provided in a six-month update.
The requested information will be provided in a future six-month status report.	
Confirmatory Item 3.2.2.A	The licensee will provide additional information regarding providing alternate makeup via RHR spent fuel cooling piping, e.g., the routing of hoses from the FLEX portable pump, location where the portable pump is connected to the RHR system, FLEX pump flow and pressure requirements using this flow path in a six-month update.
See response to Confirmatory Item 3.2.1.4.A for information regarding the flow rates required for the SFP makeup. The requested information on the routing of hoses for this SFP strategy will be provided in a future six-month status report.	
Confirmatory Item 3.2.2.B	The licensee did not provide complete information regarding the FLEX portable pump for the strategy for maintaining SFP level including routing of hoses, available flow rates and flow rates required to the SFP.
See response to Confirmatory Item 3.2.1.4.A for information regarding the flow rates required for the SFP makeup. The requested information on the routing of hoses for this SFP strategy will be provided in a future six-month status report.	
Confirmatory Item 3.2.4.1.A	The licensee did not provide additional formal analysis to determine the timing and scope of the supplemental cooling water, or systems and components need to support ELAP strategies. The results of this analysis will be provided in a six-month status report.
The requested information will be provided in a future six-month status report.	

Table 2 – Open Items and Confirmatory Items	
Item No.	Description
Confirmatory Item 3.2.4.2.A	The licensee did not perform calculations or supporting analysis regarding the effects of loss of ventilation in the RCIC room (that NEI 12-06 states may be addressed by plant-specific thermal hydraulic calculations) nor other areas of the plant (main control room (MCR) and battery room) when normal ventilation will not be available during the ELAP. This should include formal analysis for supplemental cooling of the RCIC room and battery room using portable fans, opening doors, and the timing and scope of such actions.
The requested information will be provided in a future six-month status report.	
Confirmatory Item 3.2.4.2.B	The licensee needs to provide information to confirm that the habitability limits of the MCR will be maintained in all Phases of an ELAP considering MIL-STD-1472C, which is incorporated by reference in NEI 12-06 via NUMARC 87-00 and specifies that 110°F is tolerable for light work for a 4-hour period while dressed in conventional clothing with a relative humidity of ~30%.
The requested information will be provided in a future six-month status report.	
Confirmatory Item 3.2.4.4.A	The licensee needs to provide a discussion that includes a rationale for eliminating power to 125 volt dc emergency lighting. This action is inconsistent with other sections of the licensee's response regarding emergency lighting.
<p>To support extended operation of RCIC and other critical components, the emergency lighting powered by the Division I station batteries will be shed. However, emergency lighting will still be supplied by local wall-mounted battery-powered units in the control room and all areas required for operator access to perform Phase 2 equipment connections. As stated in the Overall Integrated Plan, these local battery-powered emergency lighting will be modified to use light emitting diode (LED) bulbs to extend the emergency lighting capability to beyond eight hours.</p> <p>Supplemental portable lighting can also be supplied as needed by the FLEX diesel generators.</p> <p>Once the FLEX diesel generator is operational and supplying the battery chargers, Control Room emergency lighting powered by the 125 VDC system will be available.</p>	

Table 2 – Open Items and Confirmatory Items	
Item No.	Description
Confirmatory Item 3.2.4.4.B	Review of the licensee communications enhancements for confirmation that upgrades to the site's communications systems have been completed if necessary.
The requested information will be provided in a future six-month status report.	
Confirmatory Item 3.2.4.9.A	The licensee did not address actions to maintain the quality of fuel stored in the tanks of the portable equipment for potentially long periods of time when the equipment (diesel driven pumps and generators) will not be operated.
The requested information will be provided in a future six-month status report.	
Confirmatory Item 3.2.4.10.A	The licensee provided various examples of loads to be shed, and loads to remain powered from both divisions of the 125V DC and 250V DC buses, and stated that the station batteries do not require portable supplemental charging before eight (8) hours. The licensee needs to provide a completed load shed analysis.
The requested information will be provided in a future six-month status report.	
Confirmatory Item 3.3.2.A	The licensee needs to provide a description of the configuration control program it will implement that includes a program document that will contain: a historical record of previous strategies and the basis for changes, and a change control process to allow changes to the strategies only if they continue to meet the guidelines of NEI 12-06.
The requested information will be provided in a future six-month status report.	
Confirmatory Item 3.4.A	The licensee needs to provide additional information regarding the minimum capabilities for offsite resources for which each licensee should establish availability as noted in considerations 2 through 10 of NEI 12-06, Section 12.2 lists the following minimum capabilities.
The requested information will be provided in a future six-month status report.	

7.0 Potential Interim Staff Evaluation Impacts

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

8.0 References

The following references support the updates to the overall integrated plan described in this enclosure.

1. NRC Order EA-12-049, "Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," dated March 12, 2012 (ADAMS Accession No. ML12054A735).
2. NSPM Letter to NRC, "Monticello Nuclear Generating Plant's Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)," dated February 28, 2013 (ADAMS Accession No. ML13066A066).
3. NSPM Letter to NRC, "Monticello's First Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)," dated August 28, 2013 (ADAMS Accession No. ML13241A200).
4. 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 (ADAMS Accession No. ML13130A067).
5. NRC Interim Staff Guidance JLD-ISG-2012-01, "Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," Revision 0, dated August 29, 2012 (ADAMS Accession No. ML12229A174).
6. NRC Interim Staff Evaluation, "Monticello Nuclear Generating Plant – Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Order EA-12-049 (Mitigation Strategies)(TAC No. MF0923)," dated November 25, 2013 (ADAMS Accession No. ML13220A139).

7. NRC Order EA-12-050, "Issuance of Order to Modify Licenses with Regard to Reliable Hardened Containment Vents," dated March 12, 2012 (ADAMS Accession No. ML12054A694).