UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

October 22, 2014

Mrs. Karen D. Fili
Site Vice-President
Northern States Power Company – Minnesota
Monticello Nuclear Generating Plant
2807 West County Road 75
Monticello, MN 55362-9637

SUBJECT: MONTICELLO NUCLEAR GENERATING PLANT - PLAN FOR THE ONSITE AUDIT REGARDING IMPLEMENTATION OF MITIGATING STRATEGIES AND RELIABLE SPENT FUEL POOL INSTRUMENTATION RELATED TO ORDERS EA-12-049 AND EA-12-051 (TAC NOS. MF0923 AND MF0924)

Dear Mrs. Fili:

On March 12, 2012, the U.S. Nuclear Regulatory Commission (NRC) issued Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond Design-Basis External Events" and Order EA-12-051, "Order to Modify Licenses With Regard To Reliable Spent Fuel Pool Instrumentation," (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML12054A736 and ML12054A679, respectively). The orders require holders of operating reactor licenses and construction permits issued under Title 10 of the *Code of Federal Regulations* Part 50 to submit for review, Overall Integrated Plans (OIPs) including descriptions of how compliance with the requirements of Attachment 2 of each order will be achieved.

By letter dated February 28, 2013 (ADAMS Accession No. ML13066A066), Northern States Power Company, a Minnesota corporation (NSPM, the licensee), doing business as Xcel Energy, submitted its OIP for Monticello Nuclear Generating Plant (Monticello) in response to Order EA-12-049. By letters dated August 28, 2013, February 28, 2014 and August 28, 2014 (ADAMS Accession Nos. ML13241A200, ML14065A037, and ML14241A260, respectively), the licensee submitted its first three six-month updates to the OIP. By letter dated August 28, 2013 (ADAMS Accession No. ML13234A503), the NRC notified all licensees and construction permit holders that the staff is conducting audits of their responses to Order EA-12-049 in accordance with NRC Office of Nuclear Reactor Regulation (NRR) Office Instruction LIC-111, "Regulatory Audits" (ADAMS Accession No. ML082900195). This audit process led to the issuance of the Monticello interim staff evaluation (ISE) and audit report (ADAMS Accession No. ML13220A139) and continues with in-office and onsite portions of this audit.

By letter dated February 28, 2013 (ADAMS Accession No. ML13060A447), the licensee submitted its OIP for Monticello in response to Order EA-12-051. By electronic transmission dated June 7, 2013 (ADAMS Accession No. ML13176A331), the NRC staff sent a request for additional information (RAI) to the licensee. By letters dated July 12, 2013, August 28, 2013, February 28, 2014, and August 28, 2014 (ADAMS Accession Nos. ML13193A324, ML13241A197, ML14069A463, and ML14241A262, respectively), the licensee submitted its RAI responses and first three six-month updates to the OIP.

The NRC staff's review to date led to the issuance of the Monticello ISE and RAI dated October 28, 2013 (ADAMS Accession No. ML13275A187). By letter dated March 26, 2014 (ADAMS Accession No. ML14083A620), the NRC notified all licensees and construction permit holders that the staff is conducting in-office and onsite audits of their responses to Order EA-12-051 in accordance with NRC NRR Office Instruction LIC-111, as discussed above.

The ongoing audit process, to include the in-office and onsite portions, allows the staff to assess whether it has enough information to make a safety evaluation of the Integrated Plans. The audit allows the staff to review open and confirmatory items from the mitigation strategies ISE, RAI responses from the spent fuel pool instrumentation ISE, the licensee's integrated plans, and other audit questions. Additionally, the staff gains a better understanding of submitted information, identifies additional information necessary for the licensee to supplement its plan, and identifies any staff potential concerns. The audit's onsite portion will occur prior to declarations of compliance for the first unit at each site.

This document outlines the on-site audit process that occurs after ISE issuance as licensees provide new or updated information via periodic updates, update audit information on e-portals, provide preliminary Overall Program Documents/Final Integrated Plans, and continue in-office audit communications with staff while proceeding towards compliance with the orders.

The staff plans to conduct an onsite audit at Monticello in accordance with the enclosed audit plan from November 17 – 21, 2014.

If you have any questions, please contact me at 301-415-2833 or by e-mail at Peter.Bamford@nrc.gov.

Sincerely,

For PBamford

Peter Bamford, Senior Project Manager
Orders Management Branch
Japan Lessons-Learned Division
Office of Nuclear Reactor Regulation

Docket No.: 50-263

Enclosure:
Audit plan

cc w/encl: Distribution via Listserv

Audit Plan
Monticello Nuclear Generating Plant

BACKGROUND AND AUDIT BASIS

On March 12, 2012, the U.S. Nuclear Regulatory Commission (NRC) issued Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond Design-Basis External Events" and Order EA-12-051, "Order to Modify Licenses With Regard To Reliable Spent Fuel Pool Instrumentation," (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML12054A736 and ML12054A679, respectively). Order EA-12-049 directs licensees to develop, implement, and maintain guidance and strategies to maintain or restore core cooling, containment, and spent fuel pool (SFP) cooling capabilities in the event of a beyond-design-basis external event (BDBEE). Order EA-12-051 requires, in part, that all operating reactor sites have a reliable means of remotely monitoring wide-range SFP levels to support effective prioritization of event mitigation and recovery actions in the event of a BDBEE. The orders require holders of operating reactor licenses and construction permits issued under Title 10 of the *Code of Federal Regulations* Part 50 to submit for review, Overall Integrated Plans (OIPs) including descriptions of how compliance with the requirements of Attachment 2 of each order will be achieved.

By letter dated February 28, 2013 (ADAMS Accession No. ML13066A066), Northern States Power Company, a Minnesota corporation (NSPM, the licensee), doing business as Xcel Energy, submitted its OIP for Monticello Nuclear Generating Plant (Monticello, MNGP) in response to Order EA-12-049. By letters dated August 28, 2013, February 28, 2014 and August 28, 2014 (ADAMS Accession Nos. ML13241A200, ML14065A037, and ML14241A260, respectively), the licensee submitted its first three six-month updates to the OIP. By letter dated August 28, 2013 (ADAMS Accession No. ML13234A503), the NRC notified all licensees and construction permit holders that the staff is conducting audits of their responses to Order EA-12-049 in accordance with NRC Office of Nuclear Reactor Regulation (NRR) Office Instruction LIC-111, "Regulatory Audits" (ADAMS Accession No. ML082900195). The purpose of the staff's audit is to determine the extent to which the licensees are proceeding on a path towards successful implementation of the actions needed to achieve full compliance with the order. This audit process led to the issuance of the Monticello interim staff evaluation (ISE) and audit report (ADAMS Accession No. ML13220A139).

By letter dated February 28, 2013 (ADAMS Accession No. ML13060A447), the licensee submitted its OIP for Monticello in response to Order EA-12-051. By electronic transmission dated June 7, 2013 (ADAMS Accession No. ML13176A331), the NRC staff sent a request for additional information (RAI) to the licensee. By letters dated July 12, 2013, August 28, 2013, February 28, 2014, and August 28, 2014 (ADAMS Accession Nos. ML13193A324, ML13241A197, ML14069A463, and ML14241A262, respectively), the licensee submitted its RAI responses and first three six-month updates to the OIP. The NRC staff's review to date led to the issuance of the Monticello ISE and RAI dated October 28, 2013 (ADAMS Accession No. ML13275A187). By letter dated March 26, 2014 (ADAMS Accession No. ML14083A620), the NRC notified all licensees and construction permit holders that the staff is conducting in-office and onsite audits of their responses to Order EA-12-051 in accordance with NRC NRR Office Instruction LIC-111, as discussed above.

The ongoing audit process, to include the in-office and onsite portions, allows the staff to assess whether it has enough information to make a safety evaluation of the Integrated Plans. The audit allows the staff to review open and confirmatory items from the mitigation strategies ISE, RAI responses from the spent fuel pool instrumentation (SFPI) ISE, the licensee's integrated plans, and other audit questions. Additionally, the staff gains a better understanding of submitted information, identifies additional information necessary for the licensee to supplement its plan, and identifies any staff potential concerns. The audit's onsite portion will occur prior to declarations of compliance for the first unit at each site.

This document outlines the onsite audit process that occurs after ISE issuance as licensees provide new or updated information via periodic updates, update audit information on e-portals, provide preliminary Overall Program Documents (OPDs)/Final Integrated Plans (FIPs), and continue in-office audit communications with staff while proceeding towards compliance with the orders.

Following the licensee's declarations of order compliance, the NRC staff will evaluate the OIPs as supplemented, the resulting site-specific OPDs/FIPs, and, as appropriate, other licensee submittals based on the requirements in the orders. For Order EA-12-049, the staff will make a safety determination regarding order compliance using the Nuclear Energy Institute (NEI) guidance document NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide" issued in August, 2012 (ADAMS Accession No. ML12242A378), as endorsed by NRC Japan Lessons-Learned Directorate (JLD) interim staff guidance (ISG) 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'" (ADAMS Accession No. ML12229A174) as providing one acceptable means of meeting the order requirements. For Order EA-12-051, the staff will make a safety determination regarding order compliance using the NEI guidance document NEI 12-02, "Industry Guidance for Compliance with NRC Order EA-12-051, 'To Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation'" (ADAMS Accession No. ML12240A307), as endorsed, with exceptions and clarifications, by NRC ISG JLD-ISG-2012-03 "Compliance with Order EA-12-051, 'Reliable Spent Fuel Pool Instrumentation'" (ADAMS Accession No. ML12221A339) as providing one acceptable means of meeting the order requirements. Should the licensee propose an alternative strategy or other method deviating from the guidance, additional staff review will be required to evaluate if the alternative strategy complies with the applicable order.

AUDIT SCOPE

As discussed, onsite audits will be performed per NRR Office Instruction LIC-111, "Regulatory Audits," to support the development of safety evaluations. Site-specific OIPs and OPDs/FIPs rely on equipment and procedures that apply to all units at a site, therefore, audits will be planned to support the "first unit at each site." Onsite audits for subsequent units at a site will be on an as-needed basis.

The purpose of the audits is to obtain and review information responsive to the Monticello OIPs, as supplemented, open and confirmatory items from the mitigation strategies ISE, RAI responses from the SFPI ISE, and to observe and gain a better understanding of the basis for the site's overall programs to ensure the licensee is on the correct path for compliance with the

Mitigation Strategies and Spent Fuel Pool Instrumentation orders. These may include, but are not limited to:

- Onsite review and discussion for the basis and approach for detailed analysis and calculations (Orders EA-12-049, EA-12-051);
- Walk-throughs of strategies and laydown of equipment to assess feasibility, timing, and effectiveness of a given mitigating strategy or integration of several strategies (Order EA-12-049);
- Storage, protection, access, and deployment feasibility and practicality for onsite portable equipment (Order EA-12-049);
- Evaluation of staging, access, and deployment of offsite resources to include Regional Response Center (RRC) provided equipment (Order EA-12-049); and
- Review dimensions and sizing of the SFP area, placement of the SFP level instrumentation, and applicable mounting methods and design criteria (Order EA-12-051).

NRC AUDIT TEAM

Title	Team Member
Team Lead and Project Manager	Peter Bamford
Technical Support	Bruce Heida
Technical Support	Joshua Miller
Technical Support	Khoi Nguyen
Technical Support	Kevin Roche
Technical Support	Kerby Scales

LOGISTICS

The audit will be conducted onsite at Monticello on November 17 - 21, 2014. Entrance and exit briefings will be held with the licensee at the beginning and end of the audit, respectively, as well as daily briefings of team activities. Additional details will be addressed over the phone. A more detailed schedule is provided below.

A private conference room is requested for NRC audit team use with access to audit documentation upon arrival and as needed.

DELIVERABLES

An audit report/summary will be issued to the licensee within 90 days from the end of the audit.

INFORMATION NEEDS

- Materials/documentation provided in responses to open or confirmatory items and RAIs in the ISEs;
- OPD/FIP (current version), operator procedures, FLEX Support Guidelines (FSGs), operator training plans, NSAR (SAFER) Monticello Response Plan; and
- Materials/documentation for staff audit questions as listed in the Part 2 table below

To provide supplemental input to the ongoing audit of documents submitted to the NRC and made available via e-portal, the onsite audit will have three components: 1) a review of the overall mitigating strategies for the site, including, if needed, walk-throughs of strategies and equipment laydown of select portions; 2) a review of material relating to open or confirmatory items and RAIs from the ISEs, and staff audit questions; and 3) additional specific issues requested by NRC technical reviewers related to preparation of a safety evaluation. Each part is described in more detail below:

Part 1 - Overall Mitigating Strategies and Program Review:

During the onsite audit, please be prepared to conduct a tabletop discussion of the site's integrated mitigating strategies and SFP instrumentation compliance program. This discussion should address the individual components of the plans, as well as the integrated implementation of the strategies including a timeline. The licensee team presenting this should include necessary representatives from site management, engineering, training, and operations that were responsible for program development, and will be responsible for training and execution.

Following the tabletop discussion, please be prepared to conduct walk-throughs of procedures and demonstrations of equipment as deemed necessary by NRC audit team members. Include representatives from engineering and operations that will be responsible for training and execution. At this time we expect, at a minimum, to walk-through the items below. Based on the tabletop presentations and audit activities, this list may change.

WALK-THROUGH LIST:

1. Walk-through a sample of strategies that will be delineated by specific NRC technical staff audit team members.

2. Walk-through of portable (FLEX) diesel generator (DG) procedures, to include power supply pathways, areas where manual actions are required, and electrical isolation.

3. Walk-through of building access procedures, to include any unique access control devices.

4. Strategy walk-through of transfer routes from staging and storage areas to deployment locations for both onsite and offsite equipment.

5. Strategy walk-through for core cooling and reactor coolant system (RCS) inventory, to include portable pumping equipment, flow paths, and water storage locations and the related reactor systems analysis and calculations.

6. Walk-through of communications enhancements.

7. Walk-through of SFP area, SFP instrumentation locations, main control room, and related equipment mounting areas.

Part 2 – Specific Technical Review Items:

During the visit, the following audit items will be addressed from the licensee's ISEs open items (OI), confirmatory items (CI), and SFPI RAIs; audit question list (AQ); and draft safety evaluation (SE) additional questions. Please provide documents or demonstrations as needed to respond to each item.

Audit Item Reference	Item Description
OI 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 [alternating current] 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.
OI 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.
OI 3.1.2.3.A	The licensee did not discuss the need for temporary flood barriers and dewatering pumps during flooding events.
OI 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.
OI 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.
OI 3.2.4.3.A	The licensee needs to provide a discussion of the effects of loss of power to heat tracing.
OI 3.2.4.5.A	The licensee needs to provide information regarding local access to the protected areas under ELAP.

Audit Item Reference	Item Description
OI 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.
CI 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.
CI 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.
CI 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.
CI 3.2.1.1.A	From the June position paper, identify and discuss the benchmarks which are relied upon to demonstrate that [Modular Accident Analysis Program] MAAP4 is an appropriate code for simulation the of ELAP event.
CI 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.
CI 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.
CI 3.2.1.1.D	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. 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.)
CI 3.2.1.1.E	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.
CI 3.2.1.3.D	The licensee did not provide the basis for [Sequence of Events] 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.
CI 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.
CI 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.
CI 3.2.1.6.A	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.

Audit Item Reference	Item Description
CI 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.
CI 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 [reactor core isolation cooling] RCIC injection to [reactor pressure vessel] RPV will commence without delay and remain uninterrupted. Additional information to be provided in a six-month update.
CI 3.2.2.A	The licensee will provide additional information regarding providing alternate makeup via [residual heat removal] 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.
CI 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.
CI 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.
CI 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.
CI 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%.
CI 3.2.4.4.A	The licensee needs to provide a discussion that includes a rationale for eliminating power to 125 volt [direct current] dc emergency lighting. This action is inconsistent with other sections of the licensee's response regarding emergency lighting.
CI 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.
CI 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.
CI 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.
CI 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.

Audit Item Reference	Item Description
AQ.2	NEI 12-06, Section 5.3.3, "Procedural Interfaces," Consideration 1 specifies criteria for compiling a reference source for plant operators for obtaining necessary instrument readings to support the implementation of the coping strategies in the event a beyond-design-basis seismic event affects seismically qualified electrical equipment. In its OIP, NSPM identified that it is possible to determine local readings for containment temperature using a portable handheld device. The OIP did not provide the detail needed to determine whether a reference source currently exists for obtaining containment temperatures or other key reactor parameter local instrument readings (e.g., at control room panels or containment penetrations) in this same manner (handheld device) or some other method to be developed. Provide a discussion regarding the ability to read key instrumentation locally in the event Main Control Room and non-Main Control Room instrumentation is not available.
AQ.5	NEI 12-06, Section 6.2.3.1, "Protection of FLEX Equipment," Option 1.c. permits storage of FLEX equipment below flood level if time is available and plant procedures/guidance address the needed actions to relocate the equipment. Section 3.2.1.7, "Event Response Actions," Principle 6 discusses that strategies that have a time constraint should be identified with a basis the time can reasonably be met. NSPM is proposing to store the FLEX equipment at a location in buildings that are not designed to withstand an external flood because the flood hazard has ample warning time to allow deployment of FLEX equipment. NSPM noted that the planned new storage building will be located at an elevation that prevents a flood from impacting access to FLEX equipment during the early stages of the flood. NSPM did not provide the actual elevations for the new storage location relative to the maximum flood level, nor discussion regarding the time needed to move the equipment before either of the two storage buildings were flooded (except to say in the early stages of the flood). Provide a discussion of the timing required for relocation of the FLEX equipment in order to provide a basis to show that time constraints can reasonably be met.
AQ.9	NEI 12-06, Section 8.3.2, "Deployment of FLEX Equipment," Consideration 2 discusses that provisions should be made for snow/ice removal to obtain and transport FLEX equipment from storage to its deployment location. In its OIP, NSPM identified that the administrative program for deployment of the strategies will include elements to ensure pathways are clear or require actions to clear pathways, but did not provide the detail needed regarding the program and capabilities. Provide a discussion regarding the snow/ice removal program and related capabilities.

Audit Item Reference	Item Description
AQ.23	The integrated plan on pages 33 and 34 notes that the battery loadshed analysis is preliminary and provides a high level summary of potential loads that can be shed and loads that will remain for the 125V and 250V DC batteries. It also notes that additional analysis will be accomplished and if the analysis results require a change in strategy this will be communicated in a six-month status update. Identify the six-month status report in which this information is to be provided. When accomplishing this further analysis, include a discussion of the following issues in the appropriate six month status update: With regard to the load shedding of the dc bus in order to conserve battery capacity: a. Provide the dc load profile for the mitigation strategies to maintain core cooling, containment, and spent fuel pool cooling during all modes of operation. In your response, describe any load shedding that is assumed to occur and the actions necessary to complete each load shed. Also provide a detailed discussion on the loads that will be shed from the dc bus, the equipment location (or location where the required action needs to be taken), and the required operator actions necessary and the time to complete each action. In your response, explain which functions are lost as a result of shedding each load and discuss any impact on defense-in-depth strategies and redundancy. b. Identify any plant components that will change state if vital ac or dc power is lost or de-energized during the load shed. The NRC is particularly interested in whether a safety hazard is introduced, such as de-energizing the dc-powered seal oil pump for the main generator and allowing hydrogen to escape, which could contribute to risk of fire or explosion in the vicinity from the uncooled main turbine bearings. c. Identify dc breakers that must be opened as a part of the load shed evolution. d. Identify whether the dc breakers that must be opened will be physically identified by special markings to assist operators in manipulating the correct breakers.
AQ.24	NEI 12-06, Section 3.2.1, "General Criteria and Baseline Assumptions" discusses the criteria and assumptions to be used in establishing the baseline coping capability. On pages 33-34 of the OIP, NSPM states that "with this deep load shedding strategy, it is expected that the station batteries can be extended through Phase 1 and do not require portable supplemental charging before eight hours for the most limiting battery. Additional formal analysis will be performed to support this. If analysis results require a change in strategy, that change will be communicated in a six-month status report. This approach will reduce critical instrument diversity as only Division II of essential instrumentation will remain powered after load shedding." Identify the six-month OIP update for NSPM set to provide the formal loadshed and battery life extension analysis mentioned above and any resulting changes in strategy.
AQ.27	NEI 12-06 Section 3.2.1.7, principle 6, specifies that strategies that have a time constraint to be successful should be identified and a basis provided that the time can reasonably be met. No technical basis or supporting analysis is provided for (1) why Action Item 5 (depressurization of the RCS to 100 psig) has no time constraint, (2) why depressurization is required prior to venting the Torus, (3) the rate of depressurization that would be implemented, or (4) that the resulting pressure or temperature conditions in the containment have been determined to be acceptable, e.g., for RCIC net positive suction head (NPSH). Provide additional information and analysis to address the gaps (1) through (4) identified above.
AQ.38	Battery Room Ventilation. With regard to ventilation, the licensee stated that "there are two strategies for venting the battery rooms. The primary strategy will be to repower the existing exhaust fan which is connected to the emergency power bus. The alternate strategy is to prop open doors and set up portable fans. Provide a discussion of the hydrogen gas exhaust path for each strategy.

Audit Item Reference	Item Description
AQ.40	Electrical Isolations and Interactions. NEI 12-06, Section 3.2.2, guideline (13) specifies that appropriate electrical isolation and interactions for portable equipment diesel generator should be addressed in procedures/guidance. In its integrated plan, NSPM provides no information on the electrical isolations of the portable diesel generators. Describe how the portable/FLEX diesel generators and installed generators and switchgear are isolated to prevent simultaneously supplying power in order to conform to NEI 12-06, Section 3.2.2, guideline (13). Provide a discussion or analysis regarding electrical isolations when complete. The following generic item questions represent information the NRC staff will need in order to assess the adequacy of the response to Order EA-12-049. The NRC staff is pursuing resolution of these issues under a separate effort; however, the questions listed below represent how these generic issues relate to the individual licensee Order EA-12-049 responses. Licensees are asked to review the generic items and consider how they will provide the information requested to the NRC staff in the future in coordination with the separate effort.
AQ.41	The response discusses use of the hardened containment vent system (HCVS) line from the torus that will be opened to remove heat from the torus to reduce containment temperature for both Phase 1 and 2 strategies. On page 34, the discussion regarding nitrogen supplies, notes that, "HCVS usage includes breaking the rupture disc and operation of air operated valves." Provide a discussion of valve operations and actions required to break the rupture disc to allow flow from the torus to the vent piping, number of operators required to accomplish this activity, and any special equipment or tools required to access and break the rupture disc. Discuss any access limitations that may result from any adverse environmental effects and how this will be mitigated.
AQ.49	The MNGP integrated plan for Phase 2 SFP makeup for the normal and emergency heat load case contains insufficient information to determine the adequacy of SFP cooling strategies and did not provide any details regarding providing makeup via the RHR spent fuel cooling piping to include the routing of hoses from the FLEX portable pump, location where the portable pump is connected to the system, and FLEX pump flow and pressure requirements and capabilities using this flow path. Provide a discussion and analysis regarding how this strategy will be implemented considering the above factors and an analysis to show that the required flow can be delivered to the SFP with the planned deployment strategy.
AQ.51	The source of the information (reference) for the determination of emergency core off load heat load discussed above was not provided. The source of information for the normal heat load was the Updated Safety Analysis Report. Provide the appropriate reference.
AQ.53	In its integrated plan, NSPM relies on diesel fuel reserves from the diesel generator day tanks, and installed fuel transfer pumps. Additional information is required to determine if the areas of the plant containing fuel tanks and pumps are fully protected for probable maximum flood (PMF) events. This information is required in order to form the basis for conclusions with respect to conformance to the guidance of NEI 12-06, Section 3.2.1.3, initial condition (5). Provide a discussion regarding protection of fuel supplies and pumping systems during PMF conditions.

Audit Item Reference	Item Description
AQ.62	Page 14 states that when RCIC operation is no longer possible, the reactor will be fully depressurized using the [safety-relief valves] SRVs. Clarify the criteria that are used to determine whether RCIC operation is possible (e.g., fluid temperature, NPSH) and justify their adequacy. Include clarification as to whether the assessment of RCIC pump NPSH margin considers the potential for transient conditions associated with cyclical safety/relief valve discharge (potentially in the vicinity of the RCIC suction line) and containment venting while the suppression pool is saturated or nearly saturated. Provide a discussion of 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.
AQ.63	The information provided in the submittal suggests that a single FLEX pump may be used to provide cooling flow to multiple destinations (e.g., the reactor core, the suppression pool, and the spent fuel pool). Confirm that the FLEX pump can supply adequate flow and clarify whether the pumped flow will be split and simultaneously supplied to all destinations or whether the flow will be alternated between them. If simultaneous flow will be used, then clarify how the flow splits will be measured and controlled (i.e., whether control exists for the total flow on a common line or on lines to individual destinations) to ensure that adequate flow (i.e., sufficient but not excessive) reaches each destination.
AQ.65	Provide a discussion on the effects of heightened temperatures (i.e., temperatures above those assumed in the sizing calculation for each battery) on each battery's capability to perform its function for the duration of the ELAP event.
SFP.1	Given the potential for varied dose rates from hardware stored in the SFP, please provide a description of how the elevation identified as Level 2 might be affected.
SFP.2	Please provide a clearly labeled sketch or marked-up plant drawing of the plan view of the SFP area, depicting the SFP inside dimensions, the planned locations/placement of the primary and back-up SFP level sensor, and the proposed routing of the cables that will extend from these sensors toward the location of the read-out/display device.
SFP.3	Please provide the following: a) The design criteria that will be used to estimate the total loading on the mounting device(s), including static weight loads and dynamic loads. Describe the methodology that will be used to estimate the total loading, inclusive of design-basis maximum seismic loads and the hydrodynamic loads that could result from pool sloshing or other effects that could accompany such seismic forces. b) A description of the manner in which the level sensor (and stilling well, if appropriate) will be attached to the refueling floor and/or other support structures for each planned point of attachment of the probe assembly. Indicate in a schematic the portions of the level sensor that will serve as points of attachment for mechanical/mounting or electrical connections. c) A description of the manner by which the mechanical connections will attach the level instrument to permanent SFP structures so as to support the level sensor assembly. d) Address how other hardware stored in the SFP will not create adverse interaction with the fixed instrument location(s).
SFP.4	For RAI 3(a) above, please provide the analyses used to verify the design criteria and methodology for seismic testing of the SFP instrumentation and the electronics units, including, design basis maximum seismic loads and the hydrodynamic loads that could result from pool sloshing or other effects that could accompany such seismic forces.
SFP.5	For each of the mounting attachments required to attach SFP level equipment to plant structures, please describe the design inputs, and the methodology that was used to qualify the structural integrity of the affected structures/equipment.

Audit Item Reference	Item Description
SFP.6	Please provide the following: a) A description of the specific method or combination of methods you intend to apply to demonstrate the reliability of the permanently installed equipment under beyond-design- basis ambient temperature, humidity, shock, vibration, and radiation conditions. b) A description of the testing and/or analyses that will be conducted to provide assurance that the equipment will perform reliably under the worst-case credible design-basis loading at the location where the equipment will be mounted. Include a discussion of this seismic reliability demonstration as it applies to a) the level sensor mounted in the SFP area, and b) any control boxes, electronics, or read-out and re-transmitting devices that will be employed to convey the level information from the level sensor to the plant operators or emergency responders. c) A description of the specific method or combination of methods that will be used to confirm the reliability of the permanently installed equipment such that following a seismic event the instrument will maintain its required accuracy.
SFP.7	For RAI 6 above, please provide the results for the selected methods, tests and analyses used to demonstrate the qualification and reliability of the installed equipment in accordance with the order requirements.
SFP.8	Please provide the following: a) A description of how the two channels of the proposed level measurement system meet this requirement so that the potential for a common cause event to adversely affect both channels is minimized to the extent practicable. b) Further information on how each level measurement system, consisting of level sensor electronics, cabling, and readout devices will be designed and installed to address independence through the application and selection of independent power sources, the use of physical and spatial separation, independence of signals sent to the location(s) of the readout devices, and the independence of the displays.
SFP.9	Please provide the following: a) A description of the electrical ac power sources and capabilities for the primary and backup channels. b) Please provide the results of the calculation depicting the battery backup duty cycle requirements demonstrating that its capacity is sufficient to maintain the level indication function until offsite resource availability is reasonably assured.
SFP.10	Please provide the following: a) An estimate of the expected instrument channel accuracy performance under both (a) normal SFP level conditions (approximately Level1 or higher) and (b) at the beyond design-basis conditions (i.e., radiation, temperature, humidity, post-seismic and post- shock conditions) that would be present if the SFP level were at the Level2 and Level3 datum points. b) A description of the methodology that will be used for determining the maximum allowed deviation from the instrument channel design accuracy that will be employed under normal operating conditions as an acceptance criterion for a calibration procedure to flag to operators and to technicians that the channel requires adjustment to within the normal condition design accuracy.

Audit Item Reference	Item Description
SFP.11	Please provide the following: a) A description of the capability and provisions the proposed level sensing equipment will have to enable periodic testing and calibration, including how this capability enables the equipment to be tested in-situ. b) A description of how such testing and calibration will enable the conduct of regular channel checks of each independent channel against the other, and against any other permanently-installed SFP level instrumentation. c) A description of how functional checks will be performed, and the frequency at which they will be conducted. Describe how calibration tests will be performed, and the frequency at which they will be conducted. Provide a discussion as to how these surveillances will be incorporated into the plant surveillance program. d) A description of what preventive maintenance tasks are required to be performed during normal operation, and the planned maximum surveillance interval that is necessary to ensure that the channels are fully conditioned to accurately and reliably perform their functions when needed.
SFP.12	Please provide the following: a) The specific location for the backup instrument channel display. b) Please describe the evaluation used to validate that the display location can be accessed without unreasonable delay following a [beyond design-basis] BDB event. Include the time available for personnel to access the display as credited in the evaluation, as well as the actual time (e.g., based on walk-throughs) that it will take for personnel to access the display. Additionally, please include a description of the radiological and environmental conditions on the paths personnel might take. Describe whether the display location remains habitable for radiological, heat and humidity, and other environmental conditions following a BDB event. Describe whether personnel are continuously stationed at the display or monitor the display periodically.
SFP.13	Please provide a list of the procedures addressing operation (both normal and abnormal response), calibration, test, maintenance, and inspection procedures that will be developed for use of the spent SFP instrumentation. Please provide a brief description of the specific technical objectives to be achieved within each procedure.
SFP.14	Please provide the following: a) Further information describing the maintenance and testing program the licensee will establish and implement to ensure that regular testing and calibration is performed and verified by inspection and audit to demonstrate conformance with design and system readiness requirements. Please include a description of your plans for ensuring that necessary channel checks, functional tests, periodic calibration, and maintenance will be conducted for the level measurement system and its supporting equipment. b) A description of how the guidance in NEI 12 02 section 4.3 regarding compensatory actions for one or both non-functioning channels will be addressed. c) A description of what compensatory actions are planned in the event that one of the instrument channels cannot be restored to functional status within 90 days.
SE.1	Please provide information describing how the final arrangement of the SFP instrumentation and routing of the cabling between the level instruments, the electronics and the displays, meets the order requirement to arrange the SFP level instrument channels in a manner that provides reasonable protection of the level indication function against missiles that may result from damage to the structure over the SFP.

Audit Item Reference	Item Description
SE.2	Please provide an assessment of potential susceptibilities of EMI/RFI in the areas where the SFP instrument located and how to mitigate those susceptibilities.
SE.3	Please provide the following: a) A description of the plans for ensuring that necessary channel checks, functional tests, periodic calibration, and maintenance will be conducted for the level measurement system and its supporting equipment. b) Information describing compensatory actions when both channels are out-of-order, and the implementation procedures. c) Additional information describing expedited and compensatory actions in the maintenance procedure to address when one of the instrument channels cannot be restored to functional status within 90 days
SE.4	Please address the following items regarding the use of raw water sources for mitigating an ELAP event: a. Please discuss the quality of the water (e.g., suspended solids, dissolved salts) that will be used for primary makeup during ELAP events, accounting for the potential for increased suspended or dissolved material in some raw water sources during events such as flooding or severe storms. b. Please discuss whether instrumentation available during the ELAP event is capable of providing indication that inadequate core cooling exists for one or more fuel assemblies due to blockage at fuel assembly inlets or bypass leakage flowpaths. c. As applicable, please provide justification that the use of the intended raw water sources will not result in blockage of coolant flow across fuel assembly inlets and applicable bypass leakage flowpaths to an extent that would inhibit adequate core cooling. Or, if deleterious blockage at the core inlet cannot be precluded under ELAP conditions, then please discuss alternate means for assuring the adequacy of adequate core cooling in light of available indications. For example, will ELAP mitigation procedures be capable of ensuring top-down cooling of the reactor core?
SE.5	Verify that appropriate human factors are applied for the implementation of the FLEX strategies.
SE.6	Provide the basis for the minimum dc bus voltage that is required to ensure proper operation of all required electrical equipment.
SE.7	Provide electrical Single Line Diagrams showing the proposed connections of Phase 2 and 3 electrical equipment to permanent plant equipment. Show protection information (breaker, relay etc.) and rating of the equipment on the Single Line Diagrams.
SE.8	In the August 2014 update, the licensee discussed changing the portable FLEX pump connections to RHRSW from the Reactor Building to the Turbine Building. Confirm this change provides reasonable assurance that accessibility to at least one connection point of FLEX equipment is limited to seismically robust structures. This access includes both the connection point and any areas that plant operators will have to access to deploy or control the capability as required by NEI-12-06, Section 5.3.2. Consideration 2. Provide additional information to demonstrate conformance to NEI 12-06, Section 5.3.2, Consideration 2.

Part 3 – Specific Topics for Discussion:

1. Draft of Monticello OPD/FIP
2. Training
3. Portable (FLEX) equipment maintenance and testing
4. RRC (SAFER) Response Plan for Monticello

Proposed Schedule

Onsite Day 1, Monday, November 17, 2014

0800 Check in at site:
Badging
Dosimetry and whole body count for RCA entrance

1000 Entrance meeting

1015 NRC audit team meet with SRI/RI (time may change based on availability)

1200 Lunch

1300 Licensee presentation of strategies

1645 NRC Audit Team meeting

1700 Team lead daily debrief/next day planning with licensee

Onsite Day 2, Tuesday, November 18, 2014

0800 NRC Audit Team Activities:

- Technical area break-out discussions between NRC and licensee staff in the areas of reactor systems, electrical, balance-of-plant/structures, SFPI, and others
- Review documents relating to open or confirmatory items, RAIs, codes, analyses, etc.

1200 Lunch

1300 Continue NRC Audit Team Activities

1600 NRC Audit Team meeting

1700 Team lead daily debrief/next day planning with licensee

Onsite Day 3, Wednesday, November 19, 2014

0800 Continue NRC Audit Team Activities - Mitigating Strategies/SFPI walk-throughs with licensee

1200 Lunch

1300 Continue NRC Audit Team Activities

1600 NRC Audit Team meeting

1700 Team lead daily debrief/next day planning with licensee

Onsite Day 4, Thursday, November 20, 2014

0800 Continue NRC Audit Team Activities

1200 Lunch

1300 Continue NRC Audit Team Activities

1600 NRC Audit Team meeting

1700 Team lead daily debrief/pre-exit meeting

Onsite Day 5, Friday, November 21, 2014

1000 NRC/Licensee exit meeting

1100 Audit closeout/departure

The NRC staff's review to date led to the issuance of the Monticello ISE and RAI dated October 28, 2013 (ADAMS Accession No. ML13275A187). By letter dated March 26, 2014 (ADAMS Accession No. ML14083A620), the NRC notified all licensees and construction permit holders that the staff is conducting in-office and onsite audits of their responses to Order EA-12-051 in accordance with NRC NRR Office Instruction LIC-111, as discussed above.

The ongoing audit process, to include the in-office and onsite portions, allows the staff to assess whether it has enough information to make a safety evaluation of the Integrated Plans. The audit allows the staff to review open and confirmatory items from the mitigation strategies ISE, RAI responses from the spent fuel pool instrumentation ISE, the licensee's integrated plans, and other audit questions. Additionally, the staff gains a better understanding of submitted information, identifies additional information necessary for the licensee to supplement its plan, and identifies any staff potential concerns. The audit's onsite portion will occur prior to declarations of compliance for the first unit at each site.

This document outlines the on-site audit process that occurs after ISE issuance as licensees provide new or updated information via periodic updates, update audit information on e-portals, provide preliminary Overall Program Documents/Final Integrated Plans, and continue in-office audit communications with staff while proceeding towards compliance with the orders.

The staff plans to conduct an onsite audit at Monticello in accordance with the enclosed audit plan from November 17 – 21, 2014.

If you have any questions, please contact me at 301-415-2833 or by e-mail at Peter.Bamford@nrc.gov.

Sincerely,

/RA by Carla Roque-Cruz for/

Peter Bamford, Senior Project Manager
Orders Management Branch
Japan Lessons-Learned Division
Office of Nuclear Reactor Regulation

Docket No.: 50-263
Enclosure: Audit plan
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OFFICE	NRR/JLD/JOMB/PM	NRR/JLD/LA	NRR/DORL/LPL3-1/PM	NRR/JLD/JCBB/BC
NAME	PBamford	SLent	TBeltz	SBailey
DATE	10/17/14	10/17/14	10/20/14	10/21/14
OFFICE	NRR/JLD/JERB/BC	NRR/JLD/JOMB/BC(A)	NRR/JLD/JOMB/PM	
NAME	BPham	CRoque-Cruz	PBamford (CRoque-Cruz for)	
DATE	10/21/14	10/22/14	10/22/14	

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