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

July 2, 2014

Mr. David A. Heacock
President and Chief Nuclear Officer
Dominion Nuclear Connecticut, Inc.
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060-6711

SUBJECT: MILLSTONE POWER STATION, UNITS 2 AND 3 - 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. MF0858, MF0859, MF0838, AND MF0839)

Dear Mr. Heacock:

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. ML13064A265), supplemented by letter dated April 30, 2013 (ADAMS Accession No. ML13126A206), Dominion Nuclear Connecticut, Inc. (the licensee) submitted its OIP for Millstone Power Station, Units 2 and 3 (MPS) in response to Order EA-12-049. By letters dated August 23, 2013, and February 28, 2014 (ADAMS Accession Nos. ML13242A011, ML14069A013, and ML14069A014, respectively), the licensee submitted its first two 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) Instruction LIC-111, "Regulatory Audits" (ADAMS Accession No. ML082900195). This audit process led to the issuance of the MPS interim staff evaluation (ISE) and audit report (ADAMS Accession No. ML13338A433) and continues with in-office and onsite portions of this audit.

By letter dated February 28, 2013 (ADAMS Accession No. ML13063A012), the licensee submitted its OIP for MPS in response to Order EA-12-051. By letter dated June 26, 2013 (ADAMS Accession No. ML13175A242), the NRC staff sent a request for additional information (RAI) to the licensee. By letters dated July 26, 2013, August 23, 2013, and February 28, 2014 (ADAMS Accession Nos. ML13213A015, ML13242A014, ML14069A011, respectively), the licensee submitted its RAI responses and first two six-month updates to the OIP.

The NRC staff's review to date led to the issuance of the MPS ISE and RAI dated October 29, 2013 (ADAMS Accession No. ML13291A115). 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 Millstone in accordance with the enclosed audit plan from July 21st through July 25th, 2014.

If you have any questions, please contact me at 301-415-5430 or by e-mail at james.policikoski@nrc.gov.

Sincerely,

for

James Policikoski, Project Manager
Orders Management Branch
Japan Lessons-Learned Division
Office of Nuclear Reactor Regulation

Docket Nos.: 50-336 and 50-423

Enclosure:
Audit plan

cc w/encl: Distribution via Listserv

Audit Plan
Millstone Power Station, Units 2 and 3

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. ML13064A265), supplemented by letter dated April 30, 2013 (ADAMS Accession No. ML13126A206), Dominion Nuclear Connecticut, Inc. (Dominion, the licensee) submitted its OIP for Millstone Power Station, Units 2 and 3 (Millstone, MPS) in response to Order EA-12-049. By letters dated August 23, 2013, and February 28, 2014 (ADAMS Accession Nos. ML13242A011, ML14069A013, and ML14069A014, respectively), the licensee submitted its first two 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) 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 MPS interim staff evaluation (ISE) and audit report (ADAMS Accession No. ML13338A433) and continues with in-office and onsite portions of this audit.

By letter dated February 28, 2013 (ADAMS Accession No. ML13063A012), the licensee submitted its OIP for MPS in response to Order EA-12-051. By letter dated June 26, 2013 (ADAMS Accession No. ML13175A242), the NRC staff sent a request for additional information (RAI) to the licensee. By letters dated July 26, 2013, August 23, 2013, and February 28, 2014 (ADAMS Accession Nos. ML13213A015, ML13242A014, ML14069A011, respectively), the licensee submitted its RAI responses and first two six-month updates to the OIP. The NRC staff's review to date led to the issuance of the MPS ISE and RAI dated October 29, 2013 (ADAMS Accession No. ML13291A115). 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.

Enclosure

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 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 (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) developed 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 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). For Order EA-12-051, the staff will make a safety determination regarding order compliance using the NEI developed 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, as endorsed, for compliance, additional staff review will be required to evaluate the alternative strategy in reference to 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." On-site 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 Millstone 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 SFPI 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	James A. Isom
Project Manager	James Polickoski
Technical Support	Brian Lee
Technical Support	Garry Armstrong
Technical Support	Matthew McConnell
Technical Support	Duc Nguyen
Technical Support	Josh Miller

NRC AUDIT TEAM – SUPPLEMENTAL MEMBERS

Title	Team Member
Branch Chief	Stewart Bailey
Senior Resident Inspector	Josephine Ambrosini
Project Manager	Jason Paige
R-I Senior Reactor Analyst	Wayne Schmidt

LOGISTICS

The audit will be conducted onsite at Millstone from July 21st through July 25, 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 45 days from the end of the audit.

INFORMATION NEEDS

- Materials/documentation provided in responses to open or confirmatory items and RAIs in the Millstone ISEs;
- OPD/FIP (current version), operator procedures, operator training plans, RRC (SAFER) playbook; and
- Materials/documentation for staff audit questions and/or licensee OIP identified open items 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, staff audit questions, and licensee open items; 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. Operations Department level walk-through of portable (FLEX) diesel generator (DG) procedures and battery management/load shedding 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, and related equipment mounting areas. Assess the potential of EMI.

Part 2 – Specific Technical Review Items:

During the visit, the following audit items will be addressed from the Millstone ISEs open items (OIs), confirmatory items (CIs), and SFPI RAIs; Millstone audit question list (AQ); licensee OIP, as supplemented, open items; and draft safety evaluation (SE) additional questions. Please provide documents or demonstrations as needed to respond to each item below:

Millstone Power Station, Unit 2; Onsite Audit #1 (21-25 Jul 2014)

Audit item reference	Item
ISE OI 3.2.1.8.A	Core Subcriticality and Boron Mixing: The [Pressurized-Water Reactor Owners Group] (PWROG) submitted to NRC a position paper, dated August 15, 2013, which provides test data regarding boric acid mixing under single-phase natural circulation conditions and outlined applicability conditions intended to ensure that boric acid addition and mixing would occur under conditions similar to those for which boric acid mixing data is available. During the audit process, the licensee informed the NRC staff of its intent to abide by the generic approach discussed above. The licensee should address the clarifications in the NRC endorsement letter dated January 8, 2014 (ADAMS Accession No. ML13276A183).
ISE CI 3.1.1.2.A	Confirm that the preferred travel pathways are determined using the guidance contained in NEI 12-06. The pathways will attempt to avoid areas with trees, power lines, and other potential obstructions and will consider the potential for soil liquefaction. This is scheduled to be completed in June 2014.
ISE CI 3.1.1.3.A	Confirm that a review is completed to determine impacts from large internal flooding sources that are not seismically robust and do not require [alternating current] (ac) power.
ISE CI 3.1.1.4.A	The licensee's plan for implementing the use of off-site resources is not complete. The local assembly areas have not been identified. The licensee is also evaluating the possibility of boat transport for personnel. Confirm identification of offsite staging areas, access routes and methods of delivery of equipment to the site.
ISE CI 3.1.2.2.A	The licensee has identified open items related to deployment of equipment during flooding conditions resulting from a hurricane; to verify response times listed in the timeline and perform staffing assessment, and to perform an evaluation of all [Beyond-Design Basis] (BDB) equipment fuel consumption and required re-fill strategies, and to determine preferred travel pathways using the guidance contained in NEI 12-06. Confirm deployment pathways.
ISE CI 3.2.1.A	Confirm that Combustion Engineering Case 21 in WCAP-17601-P, as evaluated in MPS2 document ETE-NAF-2012-0150, Section 6.1, is representative for MPS2 and appropriate for simulating the ELAP transient.

ISE CI 3.2.1.1.A	Confirm that Westinghouse letter LTR-TDA-13-31, Rev. 0-B, Attachment 1, shows that the CENTS code used in the [Extended loss of ac power] ELAP analysis for Combustion Engineering (CE) plants is limited to analyzing the flow conditions before reflux boiling initiates. The information to be provided should specify an acceptable definition for the initiation of reflux boiling, as discussed in the NRC endorsement letter for the use of CENTS (ADAMS Accession No. ML13276A555).
ISE CI 3.2.1.2.A	The RCP seal initial maximum leakage rate should be greater than or equal to the upper bound expectation for the seal leakage rate for the ELAP event discussed in the PWROG position paper addressing the RCP seal leakage for CE plants (ADAMS Accession No. ML13235A151 (Non-Publicly Available – Proprietary)). Verify the RCP seal initial maximum leakage rate is greater than or equal to the upper bound expectation for the seal leakage rate for the ELAP event or provide justification for using a lower value.
ISE CI 3.2.1.6.B	Provide a discussion regarding the operator actions required to control [steam generator] SG [atmospheric dump valves] ADVs and [auxiliary feedwater] AFW flow and justification is needed to determine that all the required operator actions are reasonably achievable within the required time constraint of 50 minutes during the ELAP conditions, or a discussion regarding the required cooldown completion time that is supportable by analysis.
ISE CI 3.2.1.6.C	Confirm that response times listed in the [Sequence of Events] SOE timeline are verified and that staffing assessment has been performed.
ISE CI 3.2.2.A	Following a BDB event, a vent pathway would be required in the event of SFP bulk boiling and can be established by opening the Fuel Building roll-up doors for inlet and outlet air flow. However the licensee's strategy for providing air flow to remove steam generated from pool boiling is not clear. The path for inlet and exhaust air is apparently the same i.e., the fuel building rollup doors. Discuss how the fuel building rollup doors will enable a flow path to vent the steam and condensate from the Fuel Building.
ISE CI 3.2.4.2.A	Analyses to evaluate the effects of loss of ventilation in various areas are currently underway. Upon completion of these analyses, detailed strategies and operator action timelines will be developed for the implementation of compensatory measures to maintain the area temperatures below the applicable design limits, if necessary. The results will be provided in the February 2014 6-month update. Confirm that the analyses and the compensatory measures show that room temperatures are acceptable to maintain functionality of the equipment needed to carry out the mitigation strategies.
ISE CI 3.2.4.4.A	Confirm the adequacy of existing lighting and the adequacy of portable lighting to perform FLEX strategy actions.
ISE CI 3.2.4.4.B	Confirm that upgrades to the site's communications systems have been completed.

ISE CI 3.2.4.7.A	Westinghouse is currently performing an analysis to determine the consequences of usage of impure water sources in the steam generators. The results of the analysis are expected to provide the allowed time limits on usage of these sources. The RRC will provide equipment to initiate residual heat removal and water treatment equipment such that heat removal can be ensured for extended durations. Confirm that the analysis results and resultant strategies are acceptable.
ISE CI 3.2.4.9.A	A secondary source for fuel oil will be the MPS3 Diesel Fuel Oil Storage Tanks. These underground tanks contain a minimum of 32,670 gallons of fuel oil. They are seismic and missile protected. Confirm the ability to transfer this fuel, and complete an evaluation of all BDB equipment fuel consumption and required re-fill strategies, including any gasoline required for small miscellaneous equipment.
ISE CI 3.2.4.10.A	The licensee has completed an analysis of the battery capability regarding expected time available with ac power. Site specific procedural guidance governing load stripping will be developed. Confirm electrical components performance requirements and electrical loading-related strategy objectives can be met.
AQ 1	NEI 12-06 Section 5.3.2 Consideration 1 specifies that equipment deployment routes to be traveled should be reviewed for potential soil liquefaction that could impede equipment movement following a severe seismic event. Dominion did not provide a definite conclusion regarding the potential for liquefaction along deployment routes or if liquefaction was an issue at MPS2. Dominion identified that liquefaction may be a problem but no analysis was provided to evaluate this potential deployment issue. Provide a discussion regarding the potential for seismic event liquefaction that clearly defines this deployment hazard for MSP2. (Reference Item 3.1.1.2.A)
AQ 2	NEI 12-06 Section 5.3.3 Consideration 1 specifies that seismically qualified electrical equipment can be affected by beyond-design-basis seismic events; therefore, guidance should be available for determining instrument reading for both main control room (MCR) and non-control room readouts regarding how and where to measure key instrument readings at containment penetrations for example, where applicable, using a portable instrument. Dominion's integrated plan did not include providing guidance for this situation. Provide a discussion of how plant staff will determine required key instrument readings if MCR instrumentation is not functioning following a seismic event. (Reference Item 3.1.1.3.A)

AQ 6	NEI 12-06, Section 6.2.3.2 requires addressing nine considerations regarding deployment of FLEX equipment during flooding conditions. Although Dominion's integrated plan addresses several of these considerations, Dominion did not specifically address Consideration 5 regarding the potential for a flooding limiting access to portable equipment connection points, Consideration 7 regarding the need for dewatering or extraction pumps, and Consideration 8 regarding the need for temporary flood barriers. Provide a complete discussion that addresses all deployment considerations and concerns during flooding including the two noted above. (Reference Item 3.1.2.2.A)
AQ 7	NEI 12-06, Section 6.2.3.3 requires addressing three considerations regarding flood deployment procedures, alternate connection points, and guidance for temporary flood barriers. Dominion did not discuss the need for guidance for the potential deployment of temporary flood barriers and use of extraction pumps, per Consideration 3 above. Provide a discussion regarding the potential need for temporary flood barriers and extraction pumps if needed. (Reference Item 3.1.2.3.A)
AQ 8	NEI 12-06, Section 8.3.3 requires addressing procedural interfaces associated with a snow, ice and extreme cold hazard. Dominion did not specifically address the amount, location and storage of snow removal equipment and procedures required for snow and ice conditions at the plant, although Dominion plans to revise several extreme event procedures, it is not clear that this will include snow removal actions or the ability to transport equipment under these conditions. Provide a discussion regarding the location and type of snow removal equipment and procedures required for snow and ice conditions at the plant. (Reference Item 3.1.4.3.A)
AQ 9	Dominion plans on locating the BDB AFW pump inside the Turbine Building for the specific case of imminent flooding for the installed TDAFW pump. In this situation, the portable pump would be operating inside a confined space, subject to high temperatures due to lack of ventilation. Provide a discussion regarding the ability of FLEX equipment to operate at potentially high ambient temperatures for placement of portable FLEX equipment in the situation where the portable BDB AFW pump is operated inside the Turbine Building. (Reference Item 3.1.5.3.A)

AQ 10	NEI 12-06, Section 3.2.2, Paragraph (5) provides that: plant procedures/guidance should ensure that a flow path is promptly established for makeup flow to the steam generator/nuclear boiler and identify backup water sources in order of intended use. Additionally, plant procedures/guidance should specify clear criteria for transferring to the next preferred source of water. Dominion did provide supporting information regarding the analyses used to determine: (1) the required time of 1.8 hours to control the AFW flow for SG overfill prevention, and (2) the required condensate storage tank (CST) - Long Island Sound switchover time of no greater than 8.4 hours, and did not address the adequacy of the analyses including the computer codes/methods and assumptions used. For example, it was not clear if the decay heat model was based on ANS 5.1-1979 + 2 sigma model. Discuss the analysis that was used to determine regarding the timing of switchover from CST to the ultimate heat sink (UHS) water supplies for SG makeup, and address the adequacy of the analysis, computer codes/methods, and assumptions used in the analysis. Also, discuss and justify the decay heat model used in this analysis. (Reference Item 3.2.1.A)
AQ 26	Not all of the RRC pumps required by the Phase 3 strategies are included in Table 2 which lists the portable pumps required during the Phase 3 of ELAP. Only the BDB portable RCS injection pump is listed. Provide an updated list of equipment that is presently known to be needed to support the ELAP Phase 3 strategies that must be obtained from the RRC. In addition, describe the power requirements, if any, for these pumps. (Reference Item 3.2.1.9.A)
AQ 32	NEI 12-06, Section 3.2.2, Paragraph (3) provides that plant procedures/guidance should specify actions necessary to assure that equipment functionality can be maintained (including support systems or alternate method) in an ELAP/ [LNUHS] or can perform without ac power or normal access to the UHS. Dominion's plans and strategies to provide cooling and ventilation to areas of the plant affected by loss of ac power during the ELAP are not finished. Dominion will provide strategies for ventilation of areas of the plant affected by ELAP at a later date and noted an open item regarding this issue. The areas of the plant that would most likely be affected by loss of ventilation and cooling systems are the ones that will be necessary to be occupied (e.g., MCR, TDAFW pump room) during the ELAP or will require ventilation for situations like hydrogen generation in the battery rooms. When developing strategies for cooling and ventilation for areas of the plant affected by ELAP, ensure that strategies include the above areas as a minimum. Provide a discussion of these issues in the appropriate update to the integrated plan. In addition, this strategy should provide information on the adequacy of the ventilation provided in the battery room to protect the batteries from the effects of elevated or lowered temperatures, especially if the ELAP is due to high or low temperature hazard. (Reference Item 3.2.4.2.A)

AQ 36	NEI 12-06, Section 3.2.2, Paragraph (5) provides that: plant procedures/guidance should ensure that a flow path is promptly established for makeup flow to the steam generator/nuclear boiler and identify backup water sources in order of intended use. This section also specifies that when all other preferred water sources have been depleted, lower water quality sources may be pumped as makeup flow using available equipment and that procedures/guidance should clearly specify the conditions when the operator is expected to resort to increasingly impure water sources. a) Provide the conditions when an operator is expected to resort to increasingly impure water sources. b) Dominion noted for the alternate strategy for RCS makeup, that water would be added to a batching tank and that "Bags of powdered boric acid are easy to deploy to any area of the plant where the batching tanks are required. Water for mixing would be supplied by the BDB High Capacity pump." The water supplies in this instance would be water from either a 3 million gallon site pond or the UHS. Both of these makeup water supplies could potentially contain debris or foreign material. Provide a discussion and analysis of the possible consequences of injecting potentially impure or contaminated water from the UHS or the site 3 million gallon pond into the RCS or the SG's. (Reference Item 3.2.4.5.B)
AQ 37	The licensee's plan for electrical isolation and interactions did not provide reasonable assurance that the plan conforms to the guidance in NEI 12-06, Section 3.2.2, Paragraph (13) because there is insufficient information on electrical isolations and interactions to determine how the portable FLEX generator and the Safeguards Buses are isolated to prevent simultaneously supplying power to the same bus from different sources. Please provide information on how Dominion addresses electrical isolation to prevent simultaneously supplying power to the same bus from different sources.
AQ 44	Section 3.2 of WCAP-17601-P discusses the PWROG's recommendations that cover the following subjects for consideration in developing FLEX mitigation strategies: (1) minimizing RCP seal leakage rates; (2) maintaining adequate shutdown margin; (3) initiating cooldown and depressurization; (4) prevention of the RCS overfill; (5) blind feeding an SG with a portable pump; (6) nitrogen injection from SITs, and (7) asymmetric natural circulation cooldown (NCC). Discuss Dominion's position on each of the recommendations discussed above for developing the FLEX mitigation strategies. List the recommendations that are applicable to the plant, provide rationale for any that are not aplicable, address how the applicable recommendations are considered in the ELAP analysis, and discuss the plan to implement the recommendations.
AQ 50	Reference Item 3.2.4.8.D: Provide a summary of the sizing calculation for the FLEX generators to show that they can supply the loads assumed in phases 2 and 3.

AQ 53	Section F1.2 of the licensee's OIP states that the BDB electrical receptacles 53 will be connected to a new breaker on the 120 VAC vital bus panels. However, this new breaker is not identified in Section A.4, Action item 12 (page 11), nor in F1.2.2. Please clarify if this is a breaker that will be installed as part of the FLEX and if it is part of the modifications necessary for Phase 2
AQ 58	Section C.2 of the licensee's OIP describes that if venting of the RCS is necessary, the operators will use the remotely-operated reactor head vents. This information does not provide reasonable assurance that the plan conforms to the guidance of NEI 12-06, Section 3.2.2, Paragraph (3), since this section does not describe how these head vents are going to be operated (i.e., will portable battery packs be used to open and/or close the head vents?). Please provide information about operation of the head vents and if power will be necessary for their operation.
AQ 59	a) The licensee has many open items to complete a hydraulic analysis to confirm the flow rates from the BDB suction/fill connection to AFW system is adequate. Provide the hydraulic analysis to confirm the flow rates. b) The licensee states that the MS ADVs are not qualified for a seismic or tornado event, but is in the process of evaluating the equipment to withstand these events. Provide an evaluation to show that the MS ADVs can withstand a seismic or tornado event.
AQ 61	The licensee states that the alternate strategy for connecting the diesel driven BDB AFW pump is to remove the bonnet off of the feedwater regulating bypass valve. This strategy is more complex than just connecting the hose to a stub connection. It involves removing hydraulic actuators. The staff requests that the licensee provide more discussion on how operators will accomplish this task, to include tools, chain falls, staging of necessary equipment, complexity of task, and time.
AQ 62	The licensee states that the TDAFW pump is not fully protected for high flood levels and tornado missiles. Their strategy is to use a portable diesel driven AFW pump capable of 300gpm. Since, the TDAFW pump can be lost, provide details on the strategy for deploying the portable pump to include time requirements for installation in regards to RCS heat up and SG dryout (50 minutes), and consider missile protected equipment (e.g., alternate FW injection point is not missile protected, unknown if CST is missile protected) (OIP Open Item 10).
AQ 80	Provide details of the MPS program for maintenance and testing of FLEX electrical equipment such as batteries, cables, and diesel generators.

Licensee Identified OI 2	Preliminary analyses have been performed to determine the time to steam generator (SG) overfill without operator action to reduce Auxiliary Feedwater (AFW) flow, time to SG dryout without AFW flow, and time to depletion of the Condensate Storage Tank (CST). Provide the final durations when the analyses are completed.
Licensee Identified OI 3	Analyses will be performed to develop fluid components performance requirements and confirm fluid hydraulic-related strategy objectives can be met. Verify the fluid components performance requirements.
Licensee Identified OI 5	FLEX Support Guidelines (FSGs) will be developed in accordance with PWROG guidance. Existing procedures will be revised as necessary to implement FSGs. Verify that the existing procedures are updated to implement FSGs.
Licensee Identified OI 7	An overall program document will be developed to maintain the FLEX strategies and their bases, and provide configuration control and change management for the FLEX Program. Provide status of the development of the overall program document.
Licensee Identified OI 8	The DNC Nuclear Training Program will be revised to assure personnel proficiency in the mitigation of BDB events is developed and maintained. These programs and controls will be developed and implemented in accordance with the Systematic Approach to Training (SAT). Verify the revision of the DNC Nuclear Training program to account for personnel training in the mitigation of BDB events.
Licensee Identified OI 14	The Phase 3 coping strategy to maintain Containment integrity is under development. Methods to monitor and evaluate Containment conditions and depressurize/cool Containment, if necessary, will be provided in a future update. Provide status of the Phase 3 coping strategy.
Licensee Identified OI 15	Analyses will be performed to develop electrical components performance requirements and confirm electrical loading-related strategy objectives can be met. Provide final analysis supporting the electrical components performance requirements.
SFPI RAI 1	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.
SFPI RAI 12	Please provide the NRC staff with the final configuration of the power supply source for each channel so that the staff may conclude that the two channels are independent from a power supply assignment perspective.

SE review item 1	WCAP-17792-P - Provide a detailed discussion on the applicability to MPS2 of the recommendations in WCAP-17792 to vent the RCS while makeup is being provided for the mitigating strategies involving RCS makeup and boration. This discussion should include if the MPS2 strategy includes venting the RCS, methods of venting, vent operations criteria, related fluid dynamic analysis, involving instrumentation, and related parameter thresholds.
SE review item 3	Time to reflux cooling - Please clarify whether the intended timeline for aligning the FLEX RCS makeup pump may be delayed based on procedural guidance that derives from the analysis in WCAP-17792-P, pages 3-10 through 3-16. Although the staff recognizes that plant operators require leeway to control pumps and equipment in response to plant indications and other symptoms, the staff considers it prudent that equipment alignments proceed as outlined in the integrated plan to the extent possible. Therefore, provide justification if the operators would delay the alignment of the FLEX RCS makeup pump(s) beyond the time specified in the integrated plan based on initial indications that the reactor coolant pump seal leakage is lower than the value assumed in the ELAP analysis.
SE review item 4	Discuss human factors questions related to mitigating strategies implementation during walkdowns of plant equipment as well as in discussions with personnel.
SE review item 5	Please provide adequate basis that, when considering mixing time, there is sufficient flow capacity to support borated makeup from a single RCS makeup pump taking suction from a portable batching tank.

Millstone Power Station, Unit 3; Onsite Audit #1 (21-25 Jul 2014)

Audit item reference	Item
ISE OI 3.2.1.8.A	Core Sub-Criticality - The PWROG submitted to NRC a position paper, dated August 15, 2013, which provides test data regarding boric acid mixing under single-phase natural circulation conditions and outlined applicability conditions intended to ensure that boric acid addition and mixing would occur under conditions similar to those for which boric acid mixing data is available. During the audit process, the licensee informed the NRC staff of its intent to abide by the generic approach discussed above. The licensee should address the clarifications in the NRC endorsement letter dated January 8, 2014.

ISE CI 3.1.1.2.A	The licensee stated that the haul path from the BDB Storage Building to the MPS3 equipment deployment locations and the building foundation design evaluations are proceeding for Millstone. Confirm that soil liquefaction is not a concern.
ISE CI 3.1.1.3.A	The licensee stated that the review for internal flooding sources that could result from seismic induced failures and engine-driven or gravity-drain water sources has not been completed. Also, MPS3 does not have a permanent safety-related groundwater removal system installed. However, the Engineered Safety Features building does have a sump to control groundwater in-leakage. In ETE-CPR-2012-0008, Section 11.1.3.3, the licensee stated that they also have several small pumps and hoses on site for this purpose. Confirm that the impact of this in-leakage is limited, or can be addressed.
ISE CI 3.1.1.4.A	The licensee's plan for implementing the use of off-site resources is not complete. The local assembly areas have not been identified. The licensee is also evaluating the possibility of boat transport for personnel. Confirm identification of offsite staging areas, access routes and methods of delivery of equipment to the site.
ISE CI 3.2.1.A	Confirm that the NOTRUMP analysis provided in Section 5.2.1 of WCAP-17601-P, Revision 1 is applicable to MPS3 and supports the licensee's sequence of events.
ISE CI 3.2.1.1.A	Confirm that the use of the NOTRUMP code for the ELAP analysis is limited to the flow conditions prior to reflux condensation initiation. This includes specifying an acceptable definition for reflux condensation cooling.
ISE CI 3.2.1.2.A	The RCP seal initial maximum leakage rate should be greater than or equal to the upper bound expectation for the seal leakage rate for the ELAP event discussed in the PWROG position paper addressing the RCP seal leakage for CE plants (ADAMS Accession No. ML13235A151 (Non-Publicly Available – Proprietary)). Verify the RCP seal initial maximum leakage rate is greater than or equal to the upper bound expectation for the seal leakage rate for the ELAP event or provide justification for using a lower value.
ISE CI 3.2.1.2.B	For Westinghouse Reactor Coolant Pump (RCP) seals, provide justification (including the applicable analysis and relevant seal leakage testing data) that (1) the integrity of the associated O-rings will be maintained at the temperature conditions experienced during the ELAP event, and (2) the seal leakage rate of 21 gpm/seal used in the ELAP is acceptable.

ISE CI 3.2.1.2.C	If the seals are changed to the newly designed Generation 3 SHIELD seals, or non-Westinghouse seals, justify the acceptability of the use of the newly designed Generation 3 SHIELD seals or non-Westinghouse seals and the RCP seal leakages rates for use in the ELAP analysis. Address the compliance of the conditions and limitations specified in the NRC endorsement letter dated May 28, 2014 for the SHIELD seals (ADAMS Accession No. ML14132A128), if the SHIELD seals are credited in the ELAP analysis.
ISE CI 3.2.1.3.A	Confirm that the licensee has addressed the applicability of Assumption 4 on page 4-13 of WCAP-17601-P, and confirm that the values used for the requested parameters in the Westinghouse calculations that were performed using the ANS 5.1 1979 +2 sigma decay heat model bound initial condition 3.2.1.2(1) of NEI 12-06, Section 3.2.1.2.
ISE CI 3.2.1.6.A	The licensee stated that for Action Item 11 the portable boric acid batching tank will be deployed at 12 - 18 hours, if the RWST tank is not available. Confirm that the deployment time of 12 - 18 hours is acceptable.
ISE CI 3.2.4.2.A	Analyses to evaluate the effects of loss of ventilation in various areas are currently underway. Upon completion of these analyses, detailed strategies and operator action timelines will be developed for the implementation of compensatory measures to maintain the area temperatures below the applicable design limits, if necessary. The results will be provided in the February 2014 6-month update. Confirm that the analyses and the compensatory measures show that room temperatures are acceptable to maintain functionality of the equipment needed to carry out the mitigation strategies.
ISE CI 3.2.4.4.A	Confirm the adequacy of existing lighting and the adequacy of portable lighting to perform FLEX strategy actions.
ISE CI 3.2.4.4.B	Confirm that upgrades to the site's communications systems have been completed.
ISE CI 3.2.4.7.A	Westinghouse is currently performing an analysis to determine the consequences of usage of impure water sources in the steam generators. The results of the analysis are expected to provide the allowed time limits on usage of these sources. The RRC will provide equipment to initiate residual heat removal and water treatment equipment such that heat removal can be ensured for extended durations. Confirm that the analysis results and resultant strategies are acceptable.

AQ 1	NEI 12-06 Section 5.3.2 Consideration 1 requires that equipment deployment routes to be traveled should be reviewed for potential soil liquefaction that could impede equipment movement following a severe seismic event. Dominion did not provide a definite conclusion regarding the potential for liquefaction along deployment routes or if liquefaction was an issue at MPS3. Dominion identified that liquefaction may be a problem, but no analysis was provided to evaluate this potential deployment issue. Provide a discussion regarding the potential for seismic event liquefaction that clearly defines this deployment hazard for MSP3. (Reference Item 3.1.1.2.A)
AQ 2	NEI 12-06 Section 5.3.3 Consideration 1 requires that seismically qualified electrical equipment can be affected by beyond-design-basis seismic events; therefore, guidance should be available for determining instrument reading for both main control room (MCR) and non-control room readouts regarding how and where to measure key instrument readings (e.g. at containment penetrations for in-containment sensors, using a portable instruments). Dominion's integrated plan did not include providing guidance for this situation. Provide a discussion of how plant staff will determine required key instrument readings if MCR instrumentation is not functioning following a seismic event. (Reference Item 3.1.1.3.A)
AQ 6	NEI 12-06, Section 6.2.3.2 requires addressing nine considerations regarding deployment of FLEX equipment during flooding conditions. Although Dominion's integrated plan addresses several of these considerations, Dominion did not specifically address Consideration 5 regarding the potential for a flooding limiting access to portable equipment connection points, Consideration 7 regarding the need for dewatering or extraction pumps, and Consideration 8 regarding the need for temporary flood barriers. Provide a complete discussion that addresses all deployment considerations and concerns during flooding including the two noted above. (Reference Item 3.1.2.2.A)
AQ 7	NEI 12-06, Section 6.2.3.3 requires addressing three considerations regarding flood deployment procedures, alternate connection points, and guidance for temporary flood barriers. Dominion did not discuss the need for guidance for the potential deployment of temporary flood barriers and use of extraction pumps, per Consideration 3 above. Provide a discussion regarding the potential need for temporary flood barriers and extraction pumps if needed. (Reference Item 3.1.2.3.A)
AQ 9	NEI 12-06 Section 8.3.2 requires addressing deployment of snow removal equipment. A review was conducted of licensee's integrated plan related to deployment of flex equipment for the snow, ice and extreme cold hazard. Dominion did not identify any specific equipment that could be deployed for ice or snow removal. Table 2, Phase 2 equipment did not specifically identify that adequate snow removal equipment was available although debris removal equipment was noted. Provide a discussion of snow removal equipment and how it will be protected from external events. (Reference Item 3.1.4.2.A)

AQ 10	NEI 12-06, Section 9.3.2 states that the FLEX equipment should be transported to different locations, even during the extreme conditions applicable to the site. The potential impact of high or low temperatures on the storage of equipment should also be considered, e.g., expansion of sheet metal, swollen door seals, etc. Although Dominion addressed accessibility issues regarding loss of power to normal access points, no information was provided regarding any plans for managing access through doors/gates under extreme high temperature conditions. Provide a discussion regarding deployment of FLEX equipment considering the potential effects of extreme high temperatures on accessibility noted above. (Reference Item 3.1.5.2.A)
AQ 11	As described in NEI 12-06, Section 3.2.1.7 and JLD-ISG-2012-01, Section 2.1, strategies that have a time constraint to be successful should be identified and a basis provided that the time can be reasonably met. Action Item 8 in the SOE on page 104 of 111, indicates that throttling AFW flow to SGs is required at 2.0 hours following the initiation of ELAP to prevent the SG overfill. Action Item 12 indicates that before the demineralized water storage tank (DWST) depletes the beyond-design-basis (BDB) high capacity pumps are required to deploy to barge slip and initiate flow from Long Island Sound within 20.9 hours. Subsequently, Dominion provided a supplement to the integrated plan which changes, 2.0 hours and 20.9 hours to 1.3 hours and 22.7 hours, respectively. Discuss the analyses used to determine: (1) the required time of 1.3 hours to control the AFW flow for SG overfill prevention, and (2) the required DWST- Long Island Sound switchover time of no greater than 22.7 hours, and address the adequacy of the analyses including the computer codes/methods and assumptions used. If the decay heat model used is not the ANS 5.1-1979 + 2 sigma model, discuss the model and address its adequacy for the use. (Reference Item 3.2.1.A)
AQ 14	Dominion has provided an RCS injection pump capable of providing a flow rate of 40 gpm with high pressure (greater than nominal operating pressure) discharge capability. The potential exists for total RCP seal leakage to be greater than the 40 gpm makeup capability of the FLEX RCS makeup pump. Provide an analysis to support that the 40 gpm RCS injection pump will be adequate to make up for maximum RCP seal leakage. (Reference Item 3.2.1.2.B)

AQ 16	Section 4.4.1 of WCAP-17601-P states, in part, that, "the NRC Information Notice (IN) 2005-14 has accepted the use of a 21 gpm assumption in deterministic analyses to develop coping analyses to show compliance with Appendix R. Given that the 50.63 station blackout (SBO) transient is similar with regard to seal performance, the 21 gpm should also be acceptable for developing ELAP strategies; this has not been called into question by the NRC in inspections (e.g., Component Design Basis Inspections)." It is stated in IN 2005-14 that, "for the Westinghouse RCP seals, as discussed in a recently submitted document on RCP seal performance, a leakage rate of 21 gpm per RCP may be assumed in the licensee's safe shutdown assessment following the loss of all RCP seal cooling. Assumed leakage rates greater than 21 gpm are only warranted if the increase seal leakage is postulated as a result of deviations from seal vendor recommendations." It is also stated in IN 2005-14 that, "even if seal cooling is not reestablished, degradation of the seals for leakage rate to significantly increase is not expected for an indefinite period of time if the RCPs are secured before the seal temperature exceeds 235 degrees F. Restoration of seal cooling may result in cold thermal shock of the seal and possibly cause increased seal leakage." Address the applicability of the above statements from IN 2005-14 to the ELAP analysis. (Reference Item 3.2.1.2.D)
AQ 20	On page 104 of 111 Attachment 1A of the licensee's OIP, SOE timeline, Dominion indicates for Action Item 1 that, "at the elapsed time of 15 seconds, the TDAFW pump starts and AFW flow is verified." Dominion noted that "this is the original design basis for an SBO event – 50 minutes to SG dryout a." It was also noted (footnote 'a') that this was "previously evaluated in response to 10 CFR50.63 and is in accordance with existing procedures." Clarify whether the TDAFW pump is automatically or manually actuated, and if automatically actuated, the actuation signal used. Address the adequacy of the actuation time of 15 seconds. Also, confirm whether the above information regarding TDAFW pump starting time is consistent with that listed in Table 5.2.2-1 of WCAP-17601, "Sequence of Events" for the reference case applicable to MPS-3. Table 5.2.2-1 indicates that at 60 seconds, the AFW flow begins to all SGs. If the times are consistent, provide the basis to support that the TDAFW pump can start at 15 seconds and that the AFW flow can be supplied to all SGs in 60 seconds. If the WCAP and Dominion noted action times are not consistent, clarify any inconsistencies. (Reference Item 3.2.1.6.A)

AQ 23	In the licensee's OIP, SOE Action Item 5 indicates that the ELAP/LUHS is declared at 45 minutes, and SOE Action Item 6 indicates that at 50 minutes (5 minutes after the declaration of the ELAP), the operator controls SG atmospheric relief bypass valves and AFW flow locally as an on-going action for cooldown and decay heat removal. The above early initiation of cooldown (5 minutes following ELAP) at 50 minutes appears inconsistent with the information in Item 6 of Attachment 1B (page 106 of the integrated plan) that indicates that based on the analysis of the plant reference case in Section 5.2.1 of the WCAP-17601, plant cooldown begins 2 hours following declaration of the ELAP with cooldown rate of <100F/hr until the SG pressure reaches 290 psig. Clarify this apparent inconsistency for cooldown initiation time. Discuss the operator actions required to control SG atmospheric relief bypass valves and AFW flow and justify that all the required operator actions are reasonably achievable within the required time constraint of 50 minutes during the ELAP conditions. Also, provide an analysis to support the required cooldown completion time, and discuss the required action to complete the cooldown and justify that all of the required actions can be accomplished within the completion time. (Reference Item 3.2.1.6.D)
AQ 25	Specify the required cooldown completion time that is supportable by adequate analysis. Discuss the required action to complete the cooldown and justify that the all the required actions can be accomplished within the completion time. (Reference Item 3.2.1.6.F)
AQ 27	On page 106 of Attachment 1B to Reference 1 of the licensee's OIP it indicates that the minimum SG pressure of 290 psig is consistent with the existing EOP setpoint to prevent safety injection accumulator nitrogen gas from entering the RCS. Discuss the analysis used to support the SG pressure of 290 psig in preventing the nitrogen into the core. (Reference Item 3.2.1.6.H)
AQ 33	Not all of the RRC pumps required by the Phase 3 strategies are included in Table 2 which lists the portable pumps required during the Phase 3 of ELAP. Only the BDB portable RCS injection pump is listed. Provide an updated list of equipment that is presently known to be needed to support the ELAP Phase 3 strategies that must be obtained from the RRC. In addition, describe the power requirements, if any, for these pumps. (Reference Item 3.2.1.9.A)
AQ 36	NEI 12-06, Table 3-2 and Appendix D summarize one acceptable approach for the SFP cooling strategies. This approach uses a portable injection source to provide cooling to the SFP. This approach will also provide a vent pathway for steam and condensate from the SFP. Dominion's strategy for providing air flow to remove steam generated from pool boiling is not clear. The path for inlet and exhaust air is apparently the same i.e., the Fuel Building rollup doors. Provide a discussion or analysis regarding how this strategy will enable a flow path to vent the steam and condensate from the Fuel Building to maintain habitability. (Reference Item 3.2.2.B)

AQ 44	NEI 12-06, Section 3.2.2, Paragraph (5) provides that: plant procedures/guidance should ensure that a flow path is promptly established for makeup flow to the steam generator/nuclear boiler and identify backup water sources in order of intended use. This section also specifies that when all other preferred water sources have been depleted, lower water quality sources may be pumped as makeup flow using available equipment and that procedures/guidance should clearly specify the conditions when the operator is expected to resort to increasingly impure water sources. a) Provide the conditions when an operator is expected to resort to increasingly impure water sources. b) Dominion noted for the alternate strategy for RCS makeup, that water would be added to a batching tank and that "Bags of powdered boric acid are easy to deploy to any area of the plant where the batching tanks are required. Water for mixing would be supplied by the BDB High Capacity pump." The water supplies in this instance would be water from either a 3 million gallon site pond or the UHS. Both of these makeup water supplies could potentially contain debris or foreign material. Provide a discussion and analysis of the possible consequences of injecting potentially impure or contaminated water from the UHS or the site 3 million gallon pond into the RCS or the SG's. (Reference Item 3.2.4.5.B)
AQ 45	NEI 12-06, Section 3.2.2, Paragraph (13) provides that the use of portable equipment to charge batteries or locally energize equipment may be needed under ELAP/[LNUHS] conditions. Appropriate electrical isolations and interactions should be addressed in procedures/guidance. Dominion did not discuss this situation in the integrated plan. Provide a discussion regarding plans and procedure/guidance to isolate portable electrical generators from plant electrical generation systems. (Reference Item 3.2.4.6.A)

AQ 46	NEI 12-06, Section 3.2.2, guideline (6) provides that plant procedures/guidance should identify loads that need to be stripped from the plant direct current (dc) buses (both Class 1E and non-Class 1E) for the purpose of conserving dc power. Dominion has completed an analysis of the battery capability regarding expected time available with ac power. (See Reference "ETE-CEE-2012-1001"). Results show that with completion of load stripping in 75 minutes, the Class 1E battery life was initially calculated to be 5 hours, but this would require a modification to cross connect batteries. Dominion noted the following on page 61 of the integrated plan "...Procedures currently direct the operators to strip all nonessential dc loads after the unit is stabilized. However, to achieve the extended battery time, additional load stripping may be necessary. Site specific procedural guidance governing load stripping will be developed. (Reference Item 7)" Dominion also noted Open Item 13 to perform an analysis to develop electrical components performance requirements and confirm electrical loading-related strategy objectives can be met. It is not clear from the discussion provided that Dominion has clearly established the 5 hour estimate of battery life. Provide the following specific information for review: a) A discussion and supporting details and analysis completed to show that station batteries can last 5 hours with the appropriate load shedding in the appropriate integrated plan update. (Reference Item 3.2.4.8.A)
AQ 46, continued	b) A detailed list and 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 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 and redundancy. i. Discuss which components change state when loads are shed and actions needed to mitigate resultant hazards (for example, allowing hydrogen release from the main generator, disabling credited equipment via interlocks, etc.). ii. Which breakers will operators open as part of the load shed evolutions? iii. Will the dc breakers to be opened be physically identified by special markings to assist operators manipulating the correct breakers? c) Provide the minimum dc voltage that must be maintained, and the basis for the minimum voltage on the dc bus, to ensure proper operation of all required electrical equipment. d) Describe what modification is required if batteries 301A-1 and 301B-1 and 301A-2 and 301B-2 are cross connected. Reference Item 3.2.4.8.A.
AQ 48	Current regulatory guidance on battery duty cycles for safety-related batteries limits qualification to 8 hours. In the plan, Dominion established battery duty cycles to be a 5 hour battery life. Please clarify if enough margin is provided considering that support staff will not be available until 6 hours after the ELAP. (Reference Item 3.2.4.8.C)

AQ 58	Describe the fuel oil supply to all FLEX equipment and flow paths for the fuel oil associated with the diesel driven pump (i.e., fuel oil storage tank volume, supply pathway, etc.). Also, ensure how fuel quality will be ensured if stored for extended periods of time.
AQ 60	Electrical Isolation. Provide information on how Dominion addresses electrical isolation to prevent simultaneously supplying power to the same bus from different sources.
AQ 61	Provide a summary of the sizing calculation for the FLEX generators to show that they can supply the loads assumed in phases 2 and 3.
AQ 62	Section F1.2 of the licensee's OIP states that the BDB electrical receptacles will be connected to a transfer switch in the supply cable to the 120 VAC vital bus panels. However, a new 1600A breaker is identified in Figure 8. Please clarify if this new breaker is the transfer switch mentioned in Section F1.2.
AQ 63	Section F1.3 of the licensee's OIP states the 4160 VAC DG will power the non-vital bus, which can then power the vital 4160 bus. It is not clear what evaluations were made to assume that the non-vital bus will be available after ELAP. Please explain what assumptions are made to consider the non-vital bus robust to be available for Phase 3.
AQ 68	The licensee has many open items to complete a hydraulic analysis to confirm the flow rates from the BDB suction/fill connection to AFW system is adequate. Provide the hydraulic analysis to confirm the flow rates.
AQ 70	The licensee states that the alternate strategy for connecting the diesel driven BDB AFW pump is to remove the bonnet off of the SGBD valve. The staff requests that the licensee provide more discussion on how operators will accomplish this task, to include tools, chain falls, staging of necessary equipment, complexity of task, and time.
AQ 72	An MPS3 integrated plan contained insufficient information related to RCP seal leakage rates expected in all phases, to conclude that MPS3 integrated plan conforms to the guidance regarding RCP seal leakage in NEI 12-06. Provide information to the following items: (a) The manufacturer's name and model number for the reactor coolant pumps and the reactor coolant pump seals, and discuss whether or not the reactor coolant pump and seal combination complies with a seal leakage model described in WCAP-17601, (b) Confirm that load shed activities will not interfere with required valve positioning or operator action capability that may be credited in establishing ELAP response strategies, including those actions related to isolating RCS leakage paths and seal leakoff.

AQ 84	Provide details of the MPS program for maintenance and testing of FLEX electrical equipment such as batteries, cables, and diesel generators.
Licensee Identified OI 1	Verify response times listed in timeline and perform staffing assessment.
Licensee Identified OI 3	Preliminary analyses have been performed to determine the time to steam generator (SG) overfill without operator action to reduce Auxiliary Feedwater (AFW) flow, time to SG dryout without AFW flow, and time to depletion of the Condensate Storage Tank (CST). Provide final durations when the analyses are completed.
Licensee Identified OI 5	Analyses will be performed to develop fluid components performance requirements and confirm fluid hydraulic-related strategy objectives can be met. Provide final analysis when completed.
Licensee Identified OI 7	FLEX Support Guidelines (FSGs) will be developed in accordance with PWROG guidance. Existing procedures will be revised as necessary to implement FSGs. Verify that the existing procedures are updated to implement FSGs.
Licensee Identified OI 9	An overall program document will be developed to maintain the FLEX strategies and their bases, and provide configuration control and change management for the FLEX Program. Provide status of the development of the overall program document.
Licensee Identified OI 10	The DNC Nuclear Training Program will be revised to assure personnel proficiency in the mitigation of BDB events is developed and maintained. These programs and controls will be developed and implemented in accordance with the Systematic Approach to Training (SAT). Verify the revision of the DNC Nuclear Training program to account for personnel training in the mitigation of BDB events.
Licensee Identified OI 18	Preferred travel pathways will be determined using the guidance contained in NEI 12-06. The pathways will attempt to avoid areas with trees, power lines, and other potential obstructions and will consider the potential for soil liquefaction. Confirm that the preferred travel pathways are determined using the guidance contained in NEI 12-06.
SFPI RAI 1	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.
SFPI RAI 12	Provide the NRC staff with the final configuration of the power supply source for each channel so that the staff may conclude that the two channels are independent from a power supply assignment perspective.

SE review item 1	WCAP-17792-P - Provide a detailed discussion on the applicability to MPS3 of the recommendations in WCAP-17792 to vent the RCS while makeup is being provided for the mitigating strategies involving RCS makeup and boration. This discussion should include if the MPS3 strategy includes venting the RCS, methods of venting, vent operations criteria, related fluid dynamic analysis, involving instrumentation, and related parameter thresholds.
SE review item 2	NSAL-14-1 - On February 10, 2014, Westinghouse issued Nuclear Safety Advisory Letter (NSAL)-14-1, informing licensees of plants with Standard Westinghouse RCP seals that 21 gpm may not be a conservative leakage rate for ELAP analysis. This value had been previously used in the ELAP analysis referenced for the use in many Westinghouse pressurized-water-reactors, including the generic reference analysis in WCAP-17601-P. Therefore, please clarify whether the assumption of 21 gpm of seal leakage per RCP (at 550 degrees F, 2,250 psia) remains valid in light of the issues identified in NSAL-14-1. In doing so, please identify the specifics of the seal leak off line design in NSAL and #1 seal faceplate material relative to the categories in NSAL-14-1 and identify the corresponding assumed leakage rate from NSAL-14-1 that is deemed applicable.
SE review item 3	Time to reflux cooling - Please clarify whether the intended timeline for aligning the FLEX RCS makeup pump may be delayed based on procedural guidance that derives from the analysis in WCAP-17792-P, pages 3-10 through 3-16. Although the staff recognizes that plant operators require leeway to control pumps and equipment in response to plant indications and other symptoms, the staff considers it prudent that equipment alignments proceed as outlined in the integrated plan to the extent possible. Therefore, provide justification if the operators would delay the alignment of the FLEX RCS makeup pump(s) beyond the time specified in the integrated plan based on initial indications that the reactor coolant pump seal leakage is lower than the value assumed in the ELAP analysis.
SE review item 4	Discuss human factors questions related to mitigating strategies implementation during walkdowns of plant equipment as well as in discussions with personnel.
SE review item 5	Please provide adequate basis that, when considering mixing time, there is sufficient flow capacity to support borated makeup from a single RCS makeup pump taking suction from a portable batching tank.

SE review item 6	Please provide adequate basis that calculations performed with the NOTRUMP code (e.g., those in WCAP-17601-P, WCAP-17792-P) are adequate to demonstrate that criteria associated with the analysis of an ELAP event (e.g., avoidance of reflux cooling, promotion of boric acid mixing) are satisfied. NRC staff confirmatory analysis suggests that the need for implementing certain mitigating strategies for providing core cooling and adequate shutdown margin may occur sooner than predicted in NOTRUMP simulations.

Part 3 – Specific Topics for Discussion:

1. Draft of Millstone OPD/FIP

2. Reactor systems analyses to include a discussion of applicability to WCAP-17601-P, boron mixing, WCAP-17792-P, and Nuclear Safety Advisory Letter (NSAL) 14-1

3. Training

4. Portable (FLEX) equipment maintenance and testing

5. RRC (SAFER) playbook

Proposed Schedule

Onsite Day 1, Monday, July 21, 2014

0730 Check in at site; badging

1000 Entrance meeting

1030 Dominion Presentation

1230 Lunch

1330 NRC Audit Team meeting

1400 NRC Audit Team activities

- Technical area break-out discussions between NRC and Dominion 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.

1530 Team lead daily debrief/next day planning with licensee

1630 Team lead debrief with licensee

Onsite Days 2 - 4, Tuesday, July 22nd through Thursday, July 26th, 2014

0730 NRC Audit Team Activities:

- Technical area break-out discussions between NRC and Dominion 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

1530 NRC Audit Team meeting

1630 Team lead daily debrief/next day planning with licensee

Onsite Day 5, Friday, July 25th, 2014

0730 NRC Audit Team Activities:

- Technical area break-out discussions between NRC and Dominion 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.

1000 Close-out of onsite NRC Audit Team Activities

1100 NRC Audit Team Meeting

1200 Lunch

1300 NRC Audit Exit

The NRC staff's review to date led to the issuance of the MPS ISE and RAI dated October 29, 2013 (ADAMS Accession No. ML13291A115). 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 Millstone in accordance with the enclosed audit plan from July 21st through July 25, 2014.

If you have any questions, please contact me at 301-415-5430 or by e-mail at james.polickoski@nrc.gov.

Sincerely,
/RA by Jason Paige for/
James Polickoski, Project Manager
Orders Management Branch
Japan Lessons-Learned Division
Office of Nuclear Reactor Regulation

Docket Nos.: 50-336 and 50-423
Enclosure:
Audit plan

DISTRIBUTION:
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JPolickoski, NRR/JLD
JBowen, NRR/JLD
SCampbell, NRR/DIRS

ADAMS Accession No. ML14176A952 * via email

OFFICE	NRR/DIRS/IPAB/AET*	NRR/JLD/LA	NRR/JLD/JCBB/BC*	NRR/JLD/JERB/BC*
NAME	JIsom	SLent	SBailey	SWhaley (MMcConnell for)
DATE	06/26/14	06/26/14	07/02/14	07/02/14

OFFICE	NRR/JLD/JOMB/BC	NRR/JLD/JOMB/PM
NAME	JBowen (JHughey for)	JPolickoski (JPaige for)
DATE	07/02/14	07/02/14

OFFICIAL AGENCY RECORD