



10 CFR 2.202  
EA-12-049

August 28, 2014

Attention: Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

Serial No.: 14-393  
NL&OS/MAE: R1  
Docket No.: 50-336  
License No.: DPR-65

**DOMINION NUCLEAR CONNECTICUT, INC.**  
**MILLSTONE POWER STATION UNIT 2**  
**SIX-MONTH STATUS REPORT IN RESPONSE TO MARCH 12, 2012 COMMISSION**  
**ORDER MODIFYING LICENSES WITH REGARD TO REQUIREMENTS FOR**  
**MITIGATION STRATEGIES FOR BEYOND-DESIGN-BASIS EXTERNAL EVENTS**  
**(ORDER NUMBER EA-12-049)**

References:

1. NRC Order Number EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events, dated March 12, 2012
2. Dominion Nuclear Connecticut, Inc.'s Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049), dated February 28, 2013 (Serial No. 12-161B)
3. Dominion Nuclear Connecticut, Inc.'s Six Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049), dated February 28, 2014 (Serial No. 12-161E)

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued an order (Reference 1) to Dominion Nuclear Connecticut (DNC). Reference 1 was immediately effective and directed DNC to develop, implement, and maintain guidance and strategies to maintain core cooling, containment, and spent fuel pool cooling capabilities in the event of a beyond-design-basis external event.

Reference 1 required submission of an Overall Integrated Plan (OIP) (Reference 2) pursuant to Section IV, Condition C. Reference 1 also required submission of a status report at six-month intervals following submittal of the OIP.

Attachment 1 to this letter provides the third six-month status report and an update of milestone accomplishments since the submittal of the previous six-month status report

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(Reference 3), including any changes to the compliance method, schedule, or need for relief and the basis.

Attachment 2 provides the ventilation strategy, identified as Open Item 19 for the OIP. This information is provided in the template format used for the originally submitted OIP. The pages provided in Attachment 2 for Section F5, "Safety Function Support (Ventilation)," supersede Section F5 in the originally submitted OIP.

If you have any questions, please contact Ms. Margaret Earle at (804) 273-2768.

Sincerely,



Mark D. Sartain  
Vice President - Nuclear Engineering

Attachments (2)

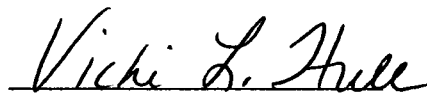
Commitments made by this letter: No new Regulatory Commitments

COMMONWEALTH OF VIRGINIA )  
 )  
COUNTY OF HENRICO )

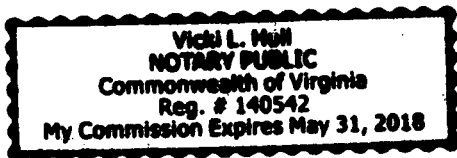
The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by Mark D. Sartain who is Vice President Nuclear Engineering of Dominion Nuclear Connecticut, Inc. He has affirmed before me that he is duly authorized to execute and file the foregoing document in behalf of the Company, and that the statements in the document are true to the best of his knowledge and belief.

Acknowledged before me this 28<sup>TH</sup> day of August, 2014.

My Commission Expires: 5-31-18.

  
Notary Public

(SEAL)



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**Attachment 1**

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

**August 2014**

**Millstone Power Station Unit 2**

**Dominion Nuclear Connecticut, Inc. (DNC)**

## **Six-Month Status Report for the Implementation of Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events**

### **1 Introduction**

Dominion Nuclear Connecticut, Inc. (DNC) developed an Overall Integrated Plan (OIP) (Reference 1), documenting the diverse and flexible strategies (FLEX) for Millstone Power Station Unit 2 (MPS2) in response to NRC Order Number EA-12-049 (Reference 2). This attachment provides an update of milestone accomplishments and open items since the last status report (Reference 16), including any changes to the compliance method, schedule, or need for relief/relaxation and the basis, if any.

### **2 Milestone Accomplishments**

The following milestones have been completed since the development of the OIP, and are current as of July 31, 2014.

- Submit Integrated Plan
- Develop Strategies
- Develop Training Plan
- Purchase Equipment
- Create Maintenance Procedures

### **3 Milestone Schedule Status**

The following table provides an update to Attachment 2A of the OIP. It provides the activity status of each item as of July 31, 2014, and whether the expected completion date has changed. The dates are planning dates subject to change as design and implementation details are developed.

The revised milestone target completion dates for 'Develop Modifications,' 'Implement Modifications,' 'Implement Training,' 'Issue FSGs and Associated Procedure Revisions,' 'Receive Equipment,' and 'Create Maintenance Procedures' do not impact the Order implementation date.

<b>Milestone</b>	<b>Target Completion Date</b>	<b>Activity Status</b>	<b>Revised Target Completion Date</b>
Submit Integrated Plan	February 2013	Complete	
Develop Strategies	April 2014	Complete	
Develop Modifications	July 2014	Started	December 2014*
Implement Modifications	August 2014	Started	October 2015*
Develop Training Plan	April 2014	Complete	

<b>Milestone</b>	<b>Target Completion Date</b>	<b>Activity Status</b>	<b>Revised Target Completion Date</b>
Implement Training	August 2014	Started	April 2015*
Issue FLEX Support Guidelines and Associated Procedure Revisions	September 2014	Started	July 2015*
Develop Strategies/Contract with National SAFER Response Center (NSRC)	August 2014	Started	
Purchase Equipment	February 2014	Complete	
Receive Equipment	August 2014	Started	September 2014*
Validation Walk-throughs or Demonstrations of FLEX Strategies and Procedures	December 2014	Not Started	
Create Maintenance Procedures*	August 2014	Complete	
Outage Implementation	October 2015	Not Started	

\* Refer to Section 8, Supplemental Information, for an explanation of the change to this Milestone.

#### **4 Changes to Compliance Method**

By letter dated February 28, 2013, (Reference 1), DNC provided an OIP to address Beyond-Design-Basis (BDB) events at MPS2 and Millstone Power Station Unit 3 (MPS3) as required by Order Number EA-12-049, dated March 12, 2012. The first Six-Month Status Update of the OIP for MPS2 and MPS3 was provided by letter dated August 23, 2013 (Reference 14). The second Six-Month Status Update for MPS2 was provided by letter dated February 28, 2014 (Reference 16). The following are changes to the compliance method information provided in the MPS2 OIP and subsequent updates, which continues to meet Nuclear Energy Institute (NEI) 12-06 (Reference 3):

- a) Regarding the previously reported strategy for Modes 5 & 6, credit was taken for the Refueling Water Storage Tanks (RWSTs) to provide a borated water source for injection into the Reactor Coolant System (RCS). Although the RWSTs are not missile protected, credit as a borated water source was based on the assumption that it was improbable that both tanks would be destroyed by a single tornado. Subsequently, the strategy has been enhanced to address the scenario that both RWSTs are unavailable. The revised strategy includes the provision to utilize other water sources onsite (which are protected from a tornado) if both RWSTs are unavailable. If a clean water source is used, flow must be controlled in order to match the rate of water loss (due to boiling) so that dilution of the boron concentration in the RCS does not occur.

- b) Based on a study that included a chemical analysis of the various water sources onsite, the preferred order of clean water sources for use in both the primary and secondary sides of the Nuclear Steam Supply System (NSSS) was revised. Additionally, use of water from Long Island Sound or the onsite pond following a flooding event have been excluded as water sources for either the primary or secondary sides of the NSSS since they contain high concentrations of salt. As a last resort, however, they are not excluded as a water source for the Spent Fuel Pool.
- c) DNC is pursuing an alternate means of compliance to NEI 12-06, Section 3.2.2, regarding additional "spare" cables and hoses. Typically, the hoses utilized to implement a FLEX strategy are not a single continuous hose, but are composed of individual sections of a smaller length joined together to form a sufficient length. In the case of cables, multiple individual lengths of cable are used to construct a circuit.

Hoses and cables are passive devices, that are unlikely to fail provided they are appropriately inspected and maintained. The most likely cause of failure is mechanical damage during handling provided that the hoses and cables are stored in areas with suitable environmental conditions. The hoses and cables for the FLEX strategies will be stored and maintained in accordance with manufacturers' recommendations including any shelf life requirements. Initial inspections and periodic inspections or testing/replacement will be incorporated into the site's maintenance and testing program and implemented in accordance with Section 11.5 of NEI 12-06.

The industry has proposed for NRC Staff consideration alternate methods of compliance to the N+1 requirement applicable to hoses and cables, as stated in Section 3.2.2 of NEI 12-06. DNC supports this industry proposal and has adopted the agreed upon method for hoses in that 10% of the total length and at least one of the longest single lengths for each hose size has been purchased. With regard to cables, the 120/240VAC generators and the 480VAC generators are backups to each other; therefore, only N sets of cables are required. Consequently, once NRC endorsement of this alternate approach is complete, DNC will have achieved alternate compliance with the NEI 12-06 N+1 requirement for hoses.

- d) The structural integrity of the reactor Containment building will not be challenged due to increasing Containment pressure during a BDB Extended Loss of AC Power (ELAP) event. Additionally, analysis has shown that any increase in temperature following an ELAP event does not challenge the key parameter instrumentation in the Containment for at least seven (7) days.

Multiple Containment cooling methods described in previous submittals are available as options for heat removal to maintain Containment temperature for equipment design limits. However, they are not required to be specifically designated as primary and alternate strategies. Adequate time is available utilizing equipment from the NSRC to deploy the cooling methods described.

- e) The BDB and NSRC equipment details in OIP Table 1, PWR Portable Equipment Phase 2, and OIP Table 2, PWR Portable Equipment Phase 3, respectively, have changed. Updates to the 'List Portable Equipment,' are included as well as associated changes/deletions in footnotes. Minor changes to the number of components have been included for some of the support equipment categories, but no changes have been made to the quantities of any of the major FLEX components. Revised OIP Tables 1 and 2 are attached.

## 5 Need for Relief/Relaxation and Basis for the Relief/Relaxation

DNC expects to comply with the order implementation date and no relief/relaxation is required at this time.

## 6 Open Items

The NRC has established an audit process to allow the exchange of information between the licensees and the NRC Staff (Reference 19). Between July 21, 2014 and July 25, 2014, MPS2 and MPS3 were the subject of an NRC onsite audit where the site specific aspects of DNC's proposed FLEX Mitigating Strategies were reviewed. During this NRC onsite audit, the staff reviewed site specific documentation and, upon completion of the audit, indicated that further review of several items was not anticipated as DNC proceeds towards compliance for Orders EA-12-049 and EA-12-051. These items are identified in the following tables in Section 6. Note that the tables provided in Sections 6.4 and 6.5 are new and are the result of the ongoing NRC audit process.

### 6.1. Open Items from Overall Integrated Plan

The following table provides a summary of the status of Open Items (OI) identified by DNC and documented in Attachment 2B of the MPS2 Overall Integrated Plan submitted on February 28, 2013 and the status of each item.

Overall Integrated Plan Open Items		
OI #	Description	Status
1	Verify response times listed in timeline and perform staffing assessment.	Started  Scheduled completion date: December 2014
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). Final durations will be provided when the analyses are completed.	Complete.  (Reference 4)  <b>During the July 2014 NRC Onsite Audit, the NRC Staff indicated that further review of this item was not anticipated as DNC proceeds towards compliance for Orders EA-12-049 and EA-12-051.</b>



Overall Integrated Plan Open Items		
OI #	Description	Status
3	Analyses will be performed to develop fluid components performance requirements and confirm fluid hydraulic-related strategy objectives can be met.	<p>Complete.</p> <p>The hydraulic calculation for the FLEX pumps deployed using their associated hose networks have confirmed that the primary and the alternate connections for core cooling/decay heat removal, RCS Inventory, and reactivity control (RCS Injection), and Spent Fuel Pool (SFP) make-up strategies can be satisfactorily accomplished in response to an ELAP/Loss of Ultimate Heat Sink (LUHS) event. (Reference 8)</p> <p>Hydraulic calculations have confirmed that the SW flows for the Containment cooling options are adequate. (Reference 8)</p> <p><b>During the July 2014 NRC Onsite Audit, the NRC Staff indicated that further review of this item was not anticipated as DNC proceeds towards compliance for Orders EA-12-049 and EA-12-051.</b></p>
4	A study is in progress to determine the design features, site location(s), and number of equipment storage facilities. The final design for BDB equipment storage will be based on the guidance contained in NEI 12-06, Section 11.3, Equipment Storage. A supplement to this submittal will be provided with the results of the equipment storage study.	<p>Complete.</p> <p>A single 10,000 sq. ft. Type 1 building is being constructed at MPS for storage of BDB equipment. The building is designed to meet the plant's design basis for the Safe Shutdown Earthquake, high wind hazards, snow, ice and cold conditions, and is located above the flood elevation from the most recent site flood analysis.</p> <p>The BDB Storage Building is sited south of the railroad bridge, on the west side of the MPS access road, adjacent to the existing northeast contractor parking lot. (References 13 and 17)</p>
5	FLEX Support Guidelines (FSGs) will be developed in accordance with PWROG guidance. Existing procedures will be revised as necessary to implement FSGs.	<p>Started.</p> <p>Scheduled completion date: July 2015*</p>

Overall Integrated Plan Open Items		
OI #	Description	Status
6	Electric Power Research Institute (EPRI) guidance documents will be used to develop periodic testing and preventative maintenance procedures for BDB equipment. Procedures will be developed to manage unavailability of equipment such that risk to mitigating strategy capability is minimized.	<p>Complete.</p> <p>EPRI guidance documents have been used, where available, to develop the testing and preventative maintenance strategies for all sites. Fleet-wide templates have been developed and input into the individual site maintenance strategies. Specific Periodic Maintenance (PM) procedures based on these strategies will be implemented prior to the required MPS2 compliance date for Order EA-12-049.</p> <p>A fleet-wide FLEX Strategy Program Document has been developed (Refer to Open Item 7). The program includes the requirement to manage unavailability of equipment such that risk to mitigating strategy capability is minimized. A fleet-wide procedure has been developed to specifically address equipment unavailability. (Reference 20)</p>
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.	<p>Complete.</p> <p><b>During the July 2014 NRC Onsite Audit, the NRC Staff indicated that further review of this item was not anticipated as DNC proceeds towards compliance for Orders EA-12-049 and EA-12-051.</b>  (Reference 21)</p>
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).	<p>Complete.</p> <p><b>During the July 2014 NRC Onsite Audit, the NRC Staff indicated that further review of this item was not anticipated as DNC proceeds towards compliance for Orders EA-12-049 and EA-12-051.</b>  (Reference 19)</p>
9	Confirm consistency of the FLEX strategies with the PWROG evaluation of post-loss of all AC power plant response for Combustion Engineering plants.	<p>Complete.</p> <p>The Combustion Engineering (CE) Owners Group has issued generic guidelines to address plant response for post-loss of all AC power for Combustion Engineering plants. Based on these guidelines, DNC has developed plant specific FSGs for MPS2 to address plant response for post-loss of all AC power. Specifically, depressurization of SGs</p>

Overall Integrated Plan Open Items		
OI #	Description	Status
		to a plant specific value of a target SG pressure to prevent Safety Injection Tank (SIT) nitrogen injection. (Reference 7)
10	Develop strategy for use of the BDB AFW Pump to provide SG injection in the unlikely event of loss of TDAFW pump due to hurricane related storm surge flooding of the Turbine Building.	Complete.  In accordance with storm preparation procedures, one BDB AFW pump will be deployed early in the MPS2 Turbine Building Truck Bay. (Reference 17)
11	Plant modifications will be completed for permanent plant changes required for implementation of FLEX strategies.	Started.  Scheduled completion date: See Milestone Schedule above.
12	Complete the engineering evaluation of the main steam atmospheric dump valve (MS ADV) outlet lines.	Complete.  The evaluation identified the need for a plant modification to the ADV outlet lines. The identified modification is included in Open Item 11. (Reference 22)
13	Complete the evaluation of TDAFW pump long term operation with $\leq 120$ psig inlet steam pressure.	Complete.  TDAFW pump operation and adequate AFW flow to the SGs at SG pressures $< 120$ psig has been confirmed. (References 5 and 6)
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.	Complete.  <b>During the July 2014 NRC Onsite Audit, the NRC Staff indicated that further review of this item was not anticipated as DNC proceeds towards compliance for Orders EA-12-049 and EA-12-051.</b> (References 16 and 17)

Overall Integrated Plan Open Items		
OI #	Description	Status
15	Analyses will be performed to develop electrical components performance requirements and confirm electrical loading-related strategy objectives can be met.	<p>Complete.</p> <p>Calculations have been completed for the sizing and loading analysis of the 120VAC, 480VAC, and 4160 VAC generators and confirm the electrical loading-related strategy objectives can be met (Reference 11).</p> <p><b>During the July 2014 NRC Onsite Audit, the NRC Staff indicated that further review of this item was not anticipated as DNC proceeds towards compliance for Orders EA-12-049 and EA-12-051.</b></p>
16	An evaluation of all BDB equipment fuel consumption and required re-fill strategies will be developed.	<p>Complete.</p> <p>An evaluation of all BDB equipment fuel consumption and required refill strategies has been completed and provided as part of the ongoing NRC audit process. (Reference 17)</p>
17	A lighting study will be performed to validate the adequacy of supplemental lighting and the adequacy and practicality of using portable lighting to perform FLEX strategy actions.	<p>Complete.</p> <p>A lighting study has been completed validating the adequacy of supplemental lighting and the adequacy and practicality of using portable lighting to perform FLEX Strategy actions. This was provided as part of the ongoing NRC audit process. (Reference 17)</p>
18	A comprehensive study of communication capabilities is being performed in accordance with the commitments made in DNC letter S/N 12-205F dated October 29, 2012 in response to Recommendation 9.3 of the 10 CFR 50.54(f) letter dated March 12, 2012. The results of this study will identify the communication means available or needed to implement command and control of the FLEX strategies at Millstone. Validation of communications required to implement FLEX strategies will be performed as part of Open Item No. 1.	<p>Complete.</p> <p>A study documenting the communications strategy has been completed. The study concludes that effective implementation of the FLEX strategies will include the use of satellite phones and hand-held radios. The study acknowledges that MPS2 does not have a sound-powered phone system or equivalent and that radio usage is limited (Reference 9). Accordingly, the tabletop assessment of the FLEX strategies performed as part of the Phase 2 Staffing study has identified that the coordination of command and control of the FLEX strategies will require the use of dispatched personnel.</p>

<b>Overall Integrated Plan Open Items</b>		
<b>OI #</b>	<b>Description</b>	<b>Status</b>
19	Details of the ventilation strategy are under development and will conform to the guidance given in NEI 12-06. The details of this strategy will be provided at a later date.	Complete.  See Attachment 2, OIP Section F5 – Safety Functions Support (Ventilation).
20	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.	Complete.  The soil liquefaction study has been completed (Reference 12), which supports the location of the storage building and the haul routes. The results will be included with the final design package for the storage building (Reference 13).
21	The equipment listed in Table 1 will be received on site.	Started.  Scheduled completion date: September 2014*

\* Refer to Section 8, Supplemental Information, for an explanation of the change to this Open Item.

## 6.2. Open Items from Interim Staff Evaluation (ISE)

The following table provides a summary of the Open Items (OI) from the MPS2 Interim Staff Evaluation (Reference 15) and the status of each item.

Interim Staff Evaluation Open Items		
OI #	Description	Status
3.2.1.8.A	<p>Core Subcriticality and Boron Mixing: 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.</p> <p>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.</p>	<p>Complete.</p> <p><b>During the July 2014 NRC Onsite Audit, the NRC Staff indicated that further review of this item was not anticipated as DNC proceeds towards compliance for Orders EA-12-049 and EA-12-051.</b>  (References 17 and 19)</p>
3.2.4.1.A	<p>The licensee did not provide sufficient information regarding cooling functions provided by such systems as auxiliary building cooling water, service water, or component cooling water cooling when ac power is lost during the ELAP for Phase 1 and 2. For example, the potential need for cooling water for the TDAFW pump bearings was not discussed. Additional analysis by the licensee is required to determine the acceptability of the licensee's plans to provide supplemental cooling to the subject components when normal cooling will not be available during the ELAP.</p>	<p>This ISE OI has been addressed as follows:</p> <p>Permanently installed plant equipment used to support FLEX strategies do not require cooling support systems, such as component cooling water and service water, to perform their required functions. Therefore, no additional analysis is required to confirm the acceptability of supplemental cooling to plant equipment supporting Phase 1 or 2 strategies.  (Reference 17)</p>

### 6.3. Confirmatory Items from Interim Staff Evaluation

The following table provides a summary of the Confirmatory Items (CI) from the MPS2 Interim Staff Evaluation (ISE) and the status of each item.

Interim Staff Evaluation Confirmatory Items		
CI #	Description	Status
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.	This ISE CI is being addressed through the ongoing NRC audit process. (References 17 and 19)
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 ac power.	<b>During the July 2014 NRC Onsite Audit, the NRC Staff indicated that further review of this item was not anticipated as DNC proceeds towards compliance for Orders EA-12-049 and EA-12-051.</b> (References 17 and 19)
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.	This ISE CI is being addressed through the ongoing NRC audit process. (References 17 and 19)
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 BDB equipment fuel consumption and required re-fill strategies, and to determine preferred travel pathways using the guidance contained in NEI 12-06. The pathways will attempt to avoid areas with trees, power lines, and other potential obstructions.	<b>During the July 2014 NRC Onsite Audit, the NRC Staff indicated that further review of this item was not anticipated as DNC proceeds towards compliance for Orders EA-12-049 and EA-12-051.</b> (References 17 and 19)
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.	<b>During the July 2014 NRC Onsite Audit, the NRC Staff indicated that further review of this item was not anticipated as DNC proceeds towards compliance for Orders EA-12-049 and EA-12-051.</b> (References 19 and 22)

<b>Interim Staff Evaluation Confirmatory Items</b>		
<b>CI #</b>	<b>Description</b>	<b>Status</b>
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 ELAP analysis for Combustion Engineering (CE) plants is limited to analyzing the flow conditions before reflux boiling initiates. This review should confirm an acceptable definition for the initiation of reflux boiling.	<b>During the July 2014 NRC Onsite Audit, the NRC Staff indicated that further review of this item was not anticipated as DNC proceeds towards compliance for Orders EA-12-049 and EA-12-051.</b>  (Generic) (Reference 19)
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)) or justification should be provided for use of a lower value.	This ISE CI is being addressed through the ongoing NRC audit process.  (Generic) (References 19 and 23)
3.2.1.6.A	Sequence of Event (SOE) action Item 5 indicates that the ELAP is declared at 45 minutes, and Action Item 6 indicates that at 50 minutes (5 minutes after the declaration of the ELAP), the operator controls SG atmospheric dump valves (ADVs) and AFW flow locally as an on-going action for cooldown and decay heat removal. On page 105 of the integrated plan in Attachment 1B NSSS Significant Reference Analysis Deviation Table, the licensee notes in item 6 that cooldown starts at 2 hours at 75 degrees F/hr. to a SG pressure of 135 psia. Clarification is needed to correct this apparent inconsistency.	This ISE CI is being addressed through the ongoing NRC audit process. (References 4, 17, and 19)
3.2.1.6.B	The licensee did not provide a discussion regarding the operator actions required to control SG ADVs and 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.	This ISE CI is being addressed through the ongoing NRC audit process. (References 4, 17, and 19)



<b>Interim Staff Evaluation Confirmatory Items</b>		
<b>CI #</b>	<b>Description</b>	<b>Status</b>
3.2.1.6.C	Confirm that response times listed in the SOE timeline are verified and that staffing assessment has been performed.	<b>During the July 2014 NRC Onsite Audit, the NRC Staff indicated that further review of this item was not anticipated as DNC proceeds towards compliance for Orders EA-12-049 and EA-12-051.</b> (Reference 24)
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. It is not clear from the discussion provided how this will enable a flow path to vent the steam and condensate from the Fuel Building.	<b>During the July 2014 NRC Onsite Audit, the NRC Staff indicated that further review of this item was not anticipated as DNC proceeds towards compliance for Orders EA-12-049 and EA-12-051.</b> (References 17 and 19)
3.2.3.A	During the audit process the licensee stated that the details of the long term Containment cooldown and depressurization strategies for MPS2 are still under development. Upon selection of the preferred strategy, detailed GOTHIC analysis will be performed to document and validate the strategy and also to provide operators with timelines and guidelines for actions to ensure the long term integrity of the Containment throughout the Phase 3 of the postulated ELAP/LUHS scenario. Confirm that the revised analyses and the selected strategy are acceptable.	This ISE CI is being addressed through the ongoing NRC audit process.  (See Section 4d and Reference 19)
3.2.4.2.A	The ventilation evaluation will be completed later this year and the results will be provided in the February 2014 6-Month update. Confirm that the evaluation and results are acceptable.	<b>During the July 2014 NRC Onsite Audit, the NRC Staff indicated that further review of this item was not anticipated as DNC proceeds towards compliance for Orders EA-12-049 and EA-12-051.</b> (See Attachment 2)

<b>Interim Staff Evaluation Confirmatory Items</b>		
<b>CI #</b>	<b>Description</b>	<b>Status</b>
3.2.4.4.A	Confirm the adequacy of existing lighting and the adequacy of portable lighting to perform FLEX strategy actions.	<b>During the July 2014 NRC Onsite Audit, the NRC Staff indicated that further review of this item was not anticipated as DNC proceeds towards compliance for Orders EA-12-049 and EA-12-051.</b> (References 17 and 19)
3.2.4.4.B	Confirm that upgrades to the site's communications systems have been completed.	This ISE CI is being addressed through the ongoing NRC audit process. (Reference 9)
3.2.4.6.A	Additional information is needed to confirm habitability of the Main Control Room during the ELAP.	This ISE CI is being addressed through the ongoing NRC audit process. (References 17 and 19)
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 NSRC 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.	<b>During the July 2014 NRC Onsite Audit, the NRC Staff indicated that further review of this item was not anticipated as DNC proceeds towards compliance for Orders EA-12-049 and EA-12-051.</b> (See Section 4b and Reference 17)
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.	<b>During the July 2014 NRC Onsite Audit, the NRC Staff indicated that further review of this item was not anticipated as DNC proceeds towards compliance for Orders EA-12-049 and EA-12-051.</b> (References 17 and 19)
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.	<b>During the July 2014 NRC Onsite Audit, the NRC Staff indicated that further review of this item was not anticipated as DNC proceeds towards compliance for Orders EA-12-049 and EA-12-051.</b> (Reference 11)

<b>Interim Staff Evaluation Confirmatory Items</b>		
<b>CI #</b>	<b>Description</b>	<b>Status</b>
3.4.A	The licensee's plans for the use of off-site resources conform to the minimum capabilities specified in NEI12-06 Section 12.2, with regard to the capability to obtain equipment and commodities to sustain and backup the site's coping strategies (item 1). Confirm the licensee addresses the remaining items (2 through 10), or provides an appropriate alternative.	This ISE CI is being addressed through the ongoing NRC audit process. (Reference 19)

#### **6.4. Audit Questions Reviewed During the MPS2 NRC Onsite Audit**

Various MPS2 Audit Questions (AQs) were evaluated during the MPS Unit 2 NRC Onsite Audit. The following AQs were evaluated and remain "Open".

Audit Question #1	<p>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.</p> <p>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 MPS2. (Reference Item 3.1.1.2.A)</p>	<p>This AQ is being addressed through the ongoing NRC audit process. (References 17 and 19)</p>
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<p>Audit Question #2</p>	<p>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.</p> <p>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)</p>	<p>This AQ is being addressed through the ongoing NRC audit process.  (References 19 and 25)</p>
<p>Audit Question #9</p>	<p>NEI 12-06, Section 9.3.3 requires providing procedural enhancements that involve addressing the effects of high temperatures on the portable equipment. Dominion did not provide any information regarding operation of portable equipment at the high temperatures that may be experienced due to the ELAP, i.e., would the equipment have to operate in any high temperature areas of the plant when deployed. A review of the diagrams provided in Figures 1-8 of the integrated plan appear to show that all portable FLEX equipment, (BDB pumps and ac generators) will be set up in areas outside of the buildings where the connections will be made. This would allow operation only in the high ambient temperatures external to plant buildings.</p> <p>Dominion plans on storing BDB equipment so that it will be protected from high temperature events while stored in the BDB Storage Building(s) or in protected areas of the plant. However, as noted on page 27 of the integrated plan, 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)</p>	<p>This AQ is being addressed through the ongoing NRC audit process.  (See Attachment 2)</p>

<p>Audit Question #10</p>	<p>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 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 the timing of switchover from CST to the 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)</p>	<p>This AQ is being addressed through the ongoing NRC audit process. (References 17 and 19)</p>
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<p>Audit Question #36</p>	<p>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. 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)</p>	<p>This AQ is being addressed through the ongoing NRC audit process.  (See Section 4b and References 17 and 19)</p>
<p>Audit Question #44</p>	<p>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) adequate shutdown margin; (3) time 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 the applicability, address how the applicable recommendations are considered in the ELAP analysis, and discuss the plan to implement the recommendations. Also, provide rationale for each of the recommendations that are determined to be not applicable to the plant.</p>	<p>This AQ is being addressed through the ongoing NRC audit process.  (References 17 and 19)</p>

<p>Audit Question #58</p>	<p>Reference Item 3.2.1.8.C. Section C.2 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.</p>	<p>This AQ is being addressed through the ongoing NRC audit process.  (References 17 and 19)</p>
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### 6.5. Additional Items Reviewed During the MPS2 NRC Onsite Audit

The following table provides a list of the additional Safety Evaluation (SE) Review items identified and evaluated during the MPS2 NRC Onsite Audit and the status of each item.

<p>Safety Evaluation Review Item #1</p>	<p>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.</p>	<p><b>During the July 2014 NRC Onsite Audit, the NRC Staff indicated that further review of this item was not anticipated as DNC proceeds towards compliance for Orders EA-12-049 and EA-12-051.</b>  (References 17 and 19)</p>
<p>Safety Evaluation Review Item #3</p>	<p>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.</p>	<p><b>During the July 2014 NRC Onsite Audit, the NRC Staff indicated that further review of this item was not anticipated as DNC proceeds towards compliance for Orders EA-12-049 and EA-12-051.</b>  (References 19 and 23)</p>

Safety Evaluation Review Item #4	Human factors questions addressed during walkdowns of plant equipment as well as in discussion with personnel.	This SE Review Item is being addressed through the ongoing NRC audit process. (Reference 19)
Safety Evaluation Review Item #5	Please provide adequate basis that, when considering mixing time, there is sufficient flow capacity to support borated makeup to both units from a single RCS makeup pump taking suction from a portable batching tank.	<b>During the July 2014 NRC Onsite Audit, the NRC Staff indicated that further review of this item was not anticipated as DNC proceeds towards compliance for Orders EA-12-049 and EA-12-051.</b> (Reference 19)
Safety Evaluation Review Item #6	EMC Compliance	<b>During the July 2014 NRC Onsite Audit, the NRC Staff indicated that further review of this item was not anticipated as DNC proceeds towards compliance for Orders EA-12-049 and EA-12-051.</b> (Reference 19)
Safety Evaluation Review Item #7	Provide evaluation for the cross-tie of the Unit 2 batteries 201A and 201B.	<b>During the July 2014 NRC Onsite Audit, the NRC Staff indicated that further review of this item was not anticipated as DNC proceeds towards compliance for Orders EA-12-049 and EA-12-051.</b> (Reference 19)
Safety Evaluation Review Item #8	Evaluate vendor information for the C&D batteries (Unit 2) for operation beyond an 8 hour duty cycle.	This SE Review Item is being addressed through the ongoing NRC audit process. (Reference 19)
Safety Evaluation Review Item #9	Security Related Issues.	This SE Review Item is being addressed through the ongoing NRC audit process. (Reference 19)

## 7 Potential Safety Evaluation Impacts

Section 6.5 provides a list of the additional Safety Evaluation (SE) Review items identified and evaluated during the MPS NRC Onsite Audit and the status of each item.



Additionally, DNC is participating in the ongoing industry effort to develop guidance for the Final Integrated Plan that will support NRC preparation of the Safety Evaluation documenting MPS2 compliance with Order EA-12-049. The format of the Final Integrated Plan is consistent with the Safety Evaluation Template provided with the July 1, 2014 Jack Davis memorandum (ML14161A643)(Reference 18).

## 8 Supplemental Information

This supplemental information provides details of the changes identified in the status updates above and addresses the following topics: a) a revision to Milestone Task 'Develop Modifications,' b) a revision to Milestone Task 'Implement Modifications,' c) a revision to Milestone Task 'Implement Training,' d) a revision to Milestone Task 'Issue FSGs and Associated Procedure Revisions,' e) a revision to Milestone Task 'Receive Equipment,' f) a revision to Milestone Task 'Create Maintenance Procedures,' g) a revision to Open Item No. 5, and, h) a revision to Open Item No.21.

- a) **MPS2, Milestone Task 'Develop Modifications'**: The revision to the scheduled target completion date is needed to obtain final design change approval of the MPS2 modifications to the Atmospheric Dump Valve (ADV) outlet piping supports.
- b) **MPS2, Milestone Task 'Implement Modifications'**: The revision to the scheduled milestone target completion date is required since the ADV modification requires a unit outage. This revised date is consistent with the date for full implementation of the FLEX Mitigating Strategies for MPS2.
- c) **MPS2, Milestone Task 'Implement Training'**: The revision to the scheduled milestone target completion date corresponds to the training completion date set for MPS3, since MPS2 and MPS3 BDB training is performed jointly. The MPS3 date is the result of a relaxation of Condition A.2 of the Order requested by DNC and accepted by the NRC. The revised target completion date meets the schedule for full implementation of the FLEX Mitigating Strategies for MPS2.
- d) **MPS2, Milestone Task 'Issue FSGs and Associated Procedure Revisions'**: The revision to the scheduled milestone target completion date allows for completion of the MPS2 FSGs in line with the schedule for validation and training on the FSGs.
- e) **MPS2, Milestone Task 'Receive Equipment'**: The majority of the purchased major equipment has been received onsite. However, delivery of the final items has been delayed and is not expected until September 2014.
- f) **MPS2, Milestone Task 'Create Maintenance Procedures'**: The Milestone is to be restated as 'Develop Maintenance Strategies.' This change is to revise the current milestone to reflect the intended activity which was to develop the maintenance strategies based on industry and vendor supplied information. As per the response provided above for Open Item 6, the restated task has been completed. The design change implementing the FLEX Mitigating Strategies Program identifies the

maintenance strategies required for the FLEX implementation and requires that Periodic Maintenance (PM) procedures be developed. Submittal of requests for creation of these PMs is in accordance with the Design Control Program and will be tracked. The PMs will be prioritized such that the near-term requirements, (e.g., 30 day walkdown inspections) are in-place prior to FLEX Mitigating Strategy implementation date. The PMs for the longer term requirements will be implemented prior to their first performance interval.

- g) **MPS2, Open Item 5**: The Open Item completion date is revised to July 2015. The revision to the scheduled Milestone target completion date allows for completion of the MPS2 FSGs in line with the schedule for validation and training on the FSGs.
- h) **MPS2, Open Item 21**: The majority of the purchased major equipment has been received onsite. However, delivery of the final items has been delayed and is not expected until September 2014.

## 9 References

The following references support the updates to the Overall Integrated Plan described in this attachment and are available in ADAMS or have been provided to the staff for their review.

1. DNC's Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049), dated February 28, 2013 (Serial No. 12-161B).
2. NRC Order Number EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," dated March 12, 2012.
3. NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," Revision 0, dated August 2012.
4. DNC's Supplement to Overall Integrated Plan in Response to March 21, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis Events (Order Number EA-12-049), dated April 30, 2013 (Serial No. 12-161C).
5. Calculation 13-024, "Turbine Driven Auxiliary Feedwater (TDAFW) Pump Delivered Flow at Reduced Steam Generator Pressure," April 22, 2013.
6. Engineering Technical Evaluation ETE-MP-2013-1034, "MP2 Turbine Driven Aux Feedwater Pump Minimum Continuous Operating Speed," dated March 12, 2013.
7. PWROG letter, OG-13-197, Transmittal of PA-PSC-0965 Final CE-NSSS Specific ELAP Response (FLEX) Guidelines, May 17, 2013.
8. Calculation 13-015, "MP2 & MP3 FLEX Strategy Hydraulic Calculations," Rev. 0.
9. ETE-CPR-2013-0003, "Beyond Design Basis Communications Strategy/Plan," Rev. 1.
10. Calculation 13-015, "MP2 & MP3 FLEX Strategy Hydraulic Calculations," Rev. 2.

11. Calculation 2013-ENG-04383E2, "Millstone Power Station Unit 2 Beyond Design Basis – FLEX Electrical 4160V, 4840V and 120VAC System Loading Analysis," Rev. 0.
12. URS Geotechnical Investigation and Engineering Report, FLEX Storage Building Project, Millstone Power Station, Waterford, Connecticut, dated January 27, 2014.
13. Design Change MPG-13-00010, "BDB Storage Building/Millstone Power Station/Units 2&3."
14. DNC's Six Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049), dated August 23, 2013 (Serial No. 12-161D).
15. Millstone Power Station, Units 2 and 3 - Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Order EA-12-049 (Mitigating Strategies), dated January 31, 2014.
16. DNC's Six Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049), dated February 28, 2014 (Serial No. 12-161E).
17. ETE-CPR-12-0008, Rev. 3 "Beyond Design Basis – FLEX Strategy Overall Integrated Plan Basis Document."
18. Memorandum from Jack R. Davis, JLD, Office of NRR, to Stewart N. Bailey, Sheena A, Whaley, and Jeremy S. Bowen, "Supplemental Staff Guidance for the Safety Evaluations for Order EA-12-049 on Mitigation Strategies for Beyond-Design-Basis External Events and Order EA-12-051 on Spent Fuel Pool Instrumentation," dated July 1, 2014 (ML14161A643).
19. NRC letter from Jack R. Davis, Director Mitigating Strategies Directorate to All Operating Reactor Licensees and Holders of Construction Permits, "Nuclear Regulatory Commission Audits of Licensee Responses to Mitigating Strategies Order EA-12-049," dated August 28, 2013 (ML13234A503)
20. Procedure CM-AA-BDB-102, "Beyond Design Basis FLEX Equipment Unavailability Tracking."
21. Procedure CM-AA-BDB-10, "Beyond Design Basis FLEX Program."
22. Zachary Engineering Evaluation EE 13-E02, Evaluation of Atmospheric Dump Valve (ADV) Pipe for Tornado Generated Missile – Millstone Unit 2, Rev. 0
23. ETE-CPR-2012-0150, Rev. 1, Add. 0, "Core Cooling Evaluation for Dominion Fleet and Prepared Input for Response to Order EA-12-049."
24. DNC's March 12, 2012 Information Request, Phase 2 Staffing Assessment Report, dated June 12, 2014 (Serial No. 14-198).
25. FSG-7, "Loss of Vital Instrumentation or Control Power."

**Table 1 – PWR Portable Equipment Phase 2<sup>1</sup>**

Use and (Potential / Flexibility) Diverse Uses						Performance Criteria	Maintenance
<i>List Portable Equipment</i>	<i>Core</i>	<i>Containment</i>	<i>SFP</i>	<i>Instrumentation</i>	<i>Accessibility</i>		<i>Maintenance / Preventive Maintenance Requirements</i>
BDB High Capacity diesel-driven pump (2) and assoc. hoses and fittings	X	X	X			1200 gpm @ 150 psid	Will follow EPRI template requirements
BDB AFW pump (3) and assoc. hoses and fittings	X					300 gpm @ 500 psid	Will follow EPRI template requirements
BDB RCS Injection pump (2) and assoc. hoses and fittings	X					45 gpm @ 3000 psid	Will follow EPRI template requirements
120/240VAC generators (3) and associated cables, connectors and switchgear				X		23.3 kW	Will follow EPRI template requirements

**Table 1 – PWR Portable Equipment Phase 2<sup>1</sup>**

Use and (Potential / Flexibility) Diverse Uses						Performance Criteria	Maintenance
<i>List Portable Equipment</i>	<i>Core</i>	<i>Containment</i>	<i>SFP</i>	<i>Instrumentation</i>	<i>Accessibility</i>		<i>Maintenance / Preventive Maintenance Requirements</i>
120/240VAC generators (8) <sup>2</sup> and associated cables, connectors and switchgear (to power support equipment)					X	5-6.5 kW	Will follow EPRI template requirements
480VAC generators (3) and associated cables, connectors and switchgear (to re-power battery chargers, inverters, and Vital Buses)	X	X		X		500 kW	Will follow EPRI template requirements
Portable boric acid batching tank (2)	X					1000 gal	Will follow EPRI template requirements
Light plants (2)					X		Will follow EPRI template requirements

**Table 1 – PWR Portable Equipment Phase 2<sup>1</sup>**

Use and (Potential / Flexibility) Diverse Uses						Performance Criteria	Maintenance
<i>List Portable Equipment</i>	<i>Core</i>	<i>Containment</i>	<i>SFP</i>	<i>Instrumentation</i>	<i>Accessibility</i>		<i>Maintenance / Preventive Maintenance Requirements</i>
Front end loader (1) <sup>2</sup>					X		Will follow EPRI template requirements
Tow vehicles (2) <sup>2</sup>	X	X	X		X		Will follow EPRI template requirements
Hose trailer (2) and Utility vehicle (1) <sup>2</sup>	X	X	X		X		Will follow EPRI template requirements
Fans / blowers (10) <sup>2</sup>					X		Will follow EPRI template requirements
Air compressors (6) <sup>2</sup>	X				X		Will follow EPRI template requirements
Fuel truck (1) with 1,100 gal. tank and pumps	X	X	X	X	X		Will follow EPRI template requirements
Fuel carts with transfer pumps (2) <sup>2</sup>	X	X	X	X	X		Will follow EPRI template requirements
Communications equipment <sup>3</sup>	X	X	X	X	X		Will follow EPRI template requirements

**Table 1 – PWR Portable Equipment Phase 2<sup>1</sup>**

Use and (Potential / Flexibility) Diverse Uses						Performance Criteria	Maintenance
<i>List Portable Equipment</i>	<i>Core</i>	<i>Containment</i>	<i>SFP</i>	<i>Instrumentation</i>	<i>Accessibility</i>		<i>Maintenance / Preventive Maintenance Requirements</i>
Misc. debris removal equipment <sup>2</sup>					X		Will follow EPRI template requirements
Misc. Support Equipment <sup>2</sup>					X		Will follow EPRI template requirements

**NOTES:**

1. This table is based on one BDB Storage Building containing equipment for both MPS2 and MPS3.
2. Support equipment. Not required to meet N+1.
3. Quantities are identified in ETE-CPR-2013-0003 that was developed in response to the results of the communications study performed for Recommendation 9.3 of the 10 CFR 50.54(f) letter dated March 12, 2012.

**Table 2 – PWR Portable Equipment Phase 3**

Use and (Potential / Flexibility) Diverse Uses									Performance Criteria		Maintenance	Notes
List Portable Equipment	Quantity Req'd /Unit	Quantity Provided / Unit	Power	Core Cooling	Cont. Cooling/ Integrity	Access	Instrumentation	RCS Inventory			<i>Preventative Maintenance Required</i>	
Medium Voltage Generators	2	2	Jet Turb.	X	X		X		4.16 KV	1 MW	Performed by NSRC	(1)
Low Voltage Generators	0	1	Jet Turb.		X		X	X	480VAC	1100 KW	Performed by NSRC	(2)
High Pressure Injection Pump	0	1	Diesel					X	3000#	60 GPM	Performed by NSRC	(2)
S/G RPV Makeup Pump	0	1	Diesel	X				X	500#	500 GPM	Performed by NSRC	(2)
Low Pressure / Medium Flow Pump	0	1	Diesel			X			300#	2500 GPM	Performed by NSRC	(2)
Low Pressure / High Flow Pump	1	1	Diesel	X	X				150#	5000 GPM	Performed by NSRC	(3)
Lighting Towers	0	1	Diesel			X				40,000 Lu	Performed by NSRC	(4)



**Table 2 – PWR Portable Equipment Phase 3**

Use and (Potential / Flexibility) Diverse Uses									Performance Criteria	Maintenance	Notes
List Portable Equipment	Quantity Req'd /Unit	Quantity Provided / Unit	Power	Core Cooling	Cont. Cooling/ Integrity	Access	Instrumentation	RCS Inventory		<i>Preventative Maintenance Required</i>	
Diesel Fuel Transfer	0	AR	N/A	X	X	X	X	X	500 Gal	Performed by NSRC	(2)
Mobile Water Treatment	0	2	Diesel	X				X	150 GPM	Performed by NSRC	(2) (5)
Mobile Boration Skid	0	1	N/A					X	1000 Gal	Performed by NSRC	(2)

Note 1 - NSRC 4KV generator supplied in support of Phase 3 for Core Cooling, Containment Cooling, and Instrumentation FLEX Strategies. (Includes a distribution panel and sufficient cables for connection to site 4kV buses.)  
Note 2 - NSRC Generic Equipment – Not required for FLEX Strategy – Provided as Defense-in-Depth.  
Note 3 - NSRC Low Pressure / High Flow pump supplied in support of Phase 3 for Core Cooling and Containment Cooling FLEX Strategies.  
Note 4 - NSRC components provided for low light response plans.  
Note 5 - Usage dependent on Westinghouse Water Quality Study results.

**Attachment 2**

**Overall Integrated Plan Section F5  
Safety Function Support (Ventilation)**

**Millstone Power Station Unit 2  
Dominion Nuclear Connecticut, Inc. (DNC)**

**F5 - Safety Functions Support (Ventilation)**

**Determine Baseline coping capability with installed coping<sup>1</sup> modifications not including FLEX modifications.**

**F5.1 - PWR Installed Equipment Phase 1**

*Provide a general description of the coping strategies using installed equipment including station modifications that are proposed to maintain and/or support safety functions. Identify methods and strategy(ies) utilized to achieve coping times.*

The FLEX strategies for maintenance and/or support of safety functions involve several elements. One element is to ensure that ventilation, heating, and cooling are adequate to maintain acceptable environmental conditions for equipment operation and personnel habitability. Per the guidance given in NEI 12-06, FLEX strategies must be capable of execution under the adverse conditions (unavailability of installed plant lighting, ventilation, etc.) expected following a BDB External Event (BDBEE) resulting in an Extended Loss of AC Power/Loss of Ultimate Heat Sink (ELAP/LUHS). The primary concern with regard to ventilation is the heat buildup which occurs with the loss of forced ventilation in areas that continue to have heat loads.

The key areas identified for all phases of implementation of the FLEX Mitigating Strategy activities are the Main Control Room (MCR), East & West DC Switchgear (SWGR) Rooms, Enclosure Building - East & West Penetration Rooms (location of the Atmospheric Dump Valves, ADVs), East 480V Load Center, TDAFW Pump Room, Upper 4kV SWGR Room, MCC B61 Enclosure, Charging Pump Cubicles, the Control Room A/C (CRAC)/Mechanical Equipment Room (MER), and the Track Bay area of the Turbine Building. These areas have been evaluated to determine the temperature profiles following an ELAP/LUHS event. With the exception of the TDAFW Pump Room, the Upper 4kV SWGR Room and the Charging Pump Cubicle, results of the evaluations have concluded that for all other identified areas, some actions are needed (either short term or long term actions) in order for temperatures to remain within acceptable limits following a BDBEE. The evaluations are based on conservative input heat load assumptions for all areas and with preemptive actions being taken, only when necessary, to reduce heat load or to establish either active or passive ventilation (e.g., portable fans, open doors, etc.)

The Phase 1 actions for ventilation are actions involving existing plant structures, primarily doors, and constitute the short term actions required. The Phase 1/short term

<sup>1</sup> Coping modifications consist of modifications installed to increase initial coping time, i.e., generators to preserve vital instruments or increase operating time on battery powered equipment.

actions for the MCR are those required by existing procedures for Station Blackout (SBO) and require certain instrument cabinets to be opened within 30 minutes. The Phase 1 actions for the DC SWGR Rooms (which include the station battery rooms), East 480V Load Center, and MCC 61 Enclosure are to open various designated doors within 30 minutes, 2 hours, and 4 hours, respectively. No Phase 1 actions are required for the CRAC/MER or areas inside the Turbine Building.

The Enclosure Building East and West Penetration Rooms do not require supplemental ventilation, either passive or active. However, since an operator must pass through the Spent Fuel Pool (SFP) area to get to the east penetration room to operate the ADVs, the actions to open up the several designated doors in the SFP area is considered a Phase 1 action.

**Details:**

<p><b>F5.1.1 - Provide a brief description of Procedures / Strategies / Guidelines</b></p>	<p><i>Confirm that procedure/guidance exists or will be developed to support implementation.</i></p> <p>The Unit 2 Station Blackout Procedure (AOP 2530) directs the actions to be taken within the MCR.</p> <p>The FLEX Strategy Guideline FSG-5 will include the actions to open the various designated doors to allow for natural circulation of air where necessary. This action alone will ensure that the temperatures in the affected rooms remain acceptable.</p> <p>No other actions are required to maintain equipment operation or personnel habitability following an ELAP/LUHS event in Phase 1.</p>
<p><b>F5.1.2 - Identify modifications</b></p>	<p><i>List modifications and describe how they support coping time.</i></p> <p>No ventilation related modifications are required for any phase of the ELAP/LUHS response.</p>
<p><b>F5.1.3 - Key Parameters</b></p>	<p><i>List instrumentation credited for this coping evaluation phase.</i></p> <p>No key ventilation parameters have been identified as required to maintain acceptable equipment and personnel environments for any phase of the ELAP/LUHS response.</p>

**Notes:**  
The information provided in this section is based on the following reference(s):

- Beyond Design Basis – FLEX Strategy Overall Integrated Plan Basis Document, ETE-CPR-

2012-0009, Rev. 3.

**F5 - Safety Functions Support (Ventilation)**

**F5.2 - PWR Portable Equipment Phase 2**

*Provide a general description of the coping strategies using on-site portable equipment including station modifications that are proposed to maintain and/or support safety functions. Identify methods and strategy(ies) utilized to achieve coping times.*

Per the guidance given in NEI 12-06, FLEX strategies must be capable of execution under the adverse conditions (unavailability of installed plant lighting, ventilation, etc.) expected following a BDBEE resulting in an ELAP/LUHS. The ventilation related actions that are taken in Phase 1 are expected to dissipate the minimal heat loads from the DC battery sources and residual heat loads in the de-energized equipment. However, Phase 2 introduces additional loads when the BDB 480 VAC diesel generator is placed into service. The Phase 2 actions are adequate for the longer term ventilation needs. Primarily these actions involve the restoration of existing ventilation equipment using power supplied by the BDB 480 VAC generators. This includes the MCR HVAC system and the supply and exhaust fans in DC SWGR Rooms and 480V Load Center. Additionally, since the MCR HVAC is energized, the heat load in the CRAC/MER Room increases and supplemental cooling (by means of a fan in the open doorway to the 480V Load Center) is required to maintain acceptable temperatures.

The enclosure for MCC B61 has a dedicated HVAC unit. If a jumper cannot be used to repower the cooling unit, it is sufficient to open the enclosure door and blow air into the enclosure using one of the fans available in the miscellaneous BDB equipment.

An additional Phase 2 action may be required in the unlikely scenario that the diesel powered BDB AFW pump is required to operate while it is pre-staged inside the Turbine Building Track Bay. If this were to occur, the BDB procedure to operate the pump inside the Track Bay would require that the nearby rollup door (behind the closed flood gate) and a door on the 70' elevation be opened to allow air exchange in the area of the operating pump. This would be required coincident with the starting of the pump but would no longer be necessary after the flood gates are opened and the BDB AFW pump is re-located to its normally deployed location just outside of the Track Bay.

**Details:**

**F5.2.1 - Provide a brief description of Procedures / Strategies / Guidelines**

*Confirm that procedure/guidance exists or will be developed to support implementation with a description of the procedure / strategy / guideline.*

	<p>The FLEX Strategy Guideline, FSG-5, will include the actions to open the various designated doors to allow for natural circulation of air where necessary.</p> <p>FSG-3 will open the necessary doors if the BDB AFW pump is operated inside the Turbine Building.</p> <p>FSG-4 directs the restoration of installed ventilation and cooling systems when power is available.</p>
<p><b>F5.2.2 - Identify modifications</b></p>	<p><i>List modifications necessary for phase 2</i></p> <p>No ventilation related modifications are required for any phase of the ELAP/LUHS response.</p>
<p><b>F5.2.3 - Key Parameters</b></p>	<p><i>List instrumentation credited or recovered for this coping evaluation.</i></p> <p>No key ventilation parameters have been identified as required to maintain acceptable equipment and personnel environments for any phase of the ELAP/LUHS response.</p>
<p><b>F5.2.4 - Storage / Protection of Equipment :</b>  <b>Describe storage / protection plan or schedule to determine storage requirements</b></p>	
<p><b>Seismic</b></p>	<p><i>List how equipment is protected or schedule to protect</i></p> <p>All equipment necessary to implement the Unit 2 ventilation strategy is stored in areas that are protected against seismic hazards.</p>
<p><b>Flooding</b></p>	<p><i>List how equipment is protected or schedule to protect</i></p> <p>All equipment necessary to implement the Unit 2 ventilation strategy is stored in areas that are above the maximum flood levels for the Millstone site.</p>
<p><b>Severe Storms with High Winds</b></p>	<p><i>List how equipment is protected or schedule to protect</i></p> <p>All equipment necessary to implement the Unit 2 ventilation strategy is stored in areas that are protected from hurricanes, tornados, and strong winds.</p>

<b>Snow, Ice, and Extreme Cold</b>	<i>List how equipment is protected or schedule to protect</i>  All equipment necessary to implement the Unit 2 ventilation strategy is stored in areas that are protected from extreme weather conditions.
<b>High Temperatures</b>	<i>List how equipment is protected or schedule to protect</i>  All equipment necessary to implement the Unit 2 ventilation strategy is stored in areas that are protected from extreme weather conditions.

**F5.2.5 - Deployment Conceptual Design**

<b>Strategy</b>	<b>Modifications</b>	<b>Protection of connections</b>
<p><i>a. Identify Strategy including how the equipment will be deployed to the point of use.</i></p> <p>There is a minimal deployment of supplemental ventilation equipment in the ELAP/LUHS coping strategies. Most of the ventilation provided by the strategy is existing plant equipment that is repowered by the 480 VAC diesel generator.</p> <p>In addition to opening doors, the strategy only identifies two areas where supplemental cooling, using portable fans, is required. These areas are: 1) the area between the CRAC/MER Room and the 480V Load Center and 2) the MCC B61 Enclosure.</p>	<p><i>Identify modifications</i></p> <p>No ventilation related modifications are needed to support the implementation of the ELAP/LUHS coping strategies.</p>	<p><i>Identify how the connection is protected</i></p> <p>No ventilation related connections are needed to support the implementation of the ELAP/LUHS coping strategies.</p>

<p>Although no additional cooling measures, other than those identified above, are necessary, the operating staff will periodically monitor area temperatures to insure habitability and equipment survivability conditions are acceptable. Additional natural convection flow paths or portable ventilation fans and/or stand alone AC units may be utilized if the area temperature measurements indicate unacceptable increasing trends.</p>		
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**Notes:**

The information provided in this section is based on the following reference(s):

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**F5 - Safety Functions Support (Ventilation)**

**F5.3 - PWR Portable Equipment Phase 3**

*Provide a general description of the coping strategies using phase 3 equipment including modifications that are proposed to maintain and/or support safety functions. Identify methods and strategy(ies) utilized to achieve coping times.*

Per the guidance given in NEI 12-06, FLEX strategies must be capable of execution under the adverse conditions (unavailability of installed plant lighting, ventilation, etc.) expected following a BDBEE resulting in an ELAP/LUHS. Any additional heat loads added as a result of Phase 3 repowering efforts utilizing the 4kV generator from the National SAFER Response Center (NSRC) are addressed by the existing ventilation systems repowered by either the BDB 480VAC diesel generator or the 4kV generator received from the NSRC. Therefore, no Phase 3 actions are required to maintain equipment operation or personnel habitability.

**Details:**

**F5.3.1 - Provide a brief description of Procedures / Strategies / Guidelines**

*Confirm that procedure/guidance exists or will be developed to support implementation with a description of the procedure / strategy / guideline.*

No procedures/strategies are required to maintain any Phase 3 equipment operation or personnel habitability following an ELAP/LUHS event.

**F5.3.2 - Identify modifications**

*List modifications necessary for phase 3*

No ventilation related modifications are required for any phase of the ELAP/LUHS response.

**F5.3.3 - Key Parameters**

*List instrumentation credited or recovered for this coping evaluation.*

No key ventilation parameters have been identified as required to maintain acceptable equipment and personnel environments for any phase of the ELAP/LUHS response.

**F5 - Safety Functions Support (Ventilation)**

**F5.3 - PWR Portable Equipment Phase 3**

**F5.3.4 - Deployment Conceptual Design**

<b>Strategy</b>	<b>Modifications</b>	<b>Protection of connections</b>
<p><i>a. Identify Strategy including how the equipment will be deployed to the point of use.</i></p> <p>There is no required deployment of supplemental ventilation equipment in the ELAP/LUHS coping strategies for Phase 3.</p> <p>Although no additional compensatory cooling measures are expected to be necessary, for defense in depth, the operating staff will periodically monitor area temperatures to insure habitability and equipment survivability conditions are acceptable. Additional natural convection flow paths or portable ventilation fans and/or stand alone AC units may be utilized if the area temperature measurements indicate unacceptable increasing trends.</p>	<p><i>Identify modifications</i></p> <p>No ventilation related modifications are needed to support the implementation of the ELAP/LUHS coping strategies.</p>	<p><i>Identify how the connection is protected</i></p> <p>No ventilation related connections are needed to support the implementation of the ELAP/LUHS coping strategies.</p>

**Notes:**

The information provided in this section is based on the following reference(s):

- Beyond Design Basis – FLEX Strategy Overall Integrated Plan Basis Document, ETE-CPR-2012-0009, Rev. 3.