

VIRGINIA ELECTRIC AND POWER COMPANY
RICHMOND, VIRGINIA 23261

August 23, 2013

10 CFR 2.202
EA-12-049

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

Serial No.: 12-163D
NL&OS/MAE: R2
Docket Nos.: 50-280/281
License Nos.: DPR-32/37

VIRGINIA ELECTRIC AND POWER COMPANY
SURRY POWER STATION UNITS 1 AND 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. NRC Interim Staff Guidance JLD-ISG-2012-01, Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events, Revision 0, dated August 29, 2012
3. NEI 12-06, Diverse and Flexible Coping Strategies (FLEX) Implementation Guide, Revision 0, dated August 2012
4. Virginia Electric and Power Company's Initial Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049), dated October 25, 2012 (Serial No. 12-163A)
5. Virginia Electric and Power Company'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. 12-163B)
6. Virginia Electric and Power Company's Supplement to 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 April 30, 2013 (Serial No. 12-163C)

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued an order (Reference 1) to Virginia Electric and Power Company (Dominion). Reference 1 was immediately effective and directs Dominion to develop, implement, and maintain guidance and strategies to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities in the event of a beyond-design-basis external event. Specific requirements are outlined in Attachment 2 of Reference 1.

A151
MLR

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Attachment

**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**

**Surry Power Station Units 1 and 2
Virginia Electric and Power Company (Dominion)**

**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 developed an Overall Integrated Plan (OIP) (Reference 1) documenting the diverse and flexible strategies (FLEX) for Surry Power Station in response to NRC Order Number EA-12-049 (Reference 2). This attachment provides an update of milestone accomplishments and open items since submittal of the OIP including any changes to the compliance method, schedule, or need for relief/relaxation and the basis, if any.

2 Milestone Accomplishments

The following milestone has been completed since the development of the OIP and is current as of July 31, 2013.

- Submit OIP

3 Milestone Schedule Status

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

The revised milestone target completion dates for 'Develop Strategies', 'Implement Modifications', and 'Unit 1 Outage Implementation' do not impact the Order implementation date.

| Milestone | Target Completion Date | Activity Status | Revised Target Completion Date |
|-------------------------|-------------------------------|------------------------|---------------------------------------|
| Submit Integrated Plan | Feb 2013 | Complete | |
| Develop Strategies | July 2013 | Started | October 2013 |
| Develop Modifications | Apr 2014 | Started | |
| Implement Modifications | Sept 2014 | Started | May 2015 |
| Develop Training Plan | Apr 2014 | Started | |
| Implement Training | Aug 2014 | Not Started | |

| Milestone | Target Completion Date | Activity Status | Revised Target Completion Date |
|---|------------------------|-----------------|--------------------------------|
| Issue FSGs* | Sept 2014 | Not Started | |
| Develop Strategies/ Contract with Regional Response Center (RRC) | Apr 2014 | Started | |
| Purchase Equipment | Feb 2014 | Started | |
| Procure Equipment* | Aug 2014 | Not Started | |
| Validation Walk-throughs or Demonstrations of FLEX Strategies and Procedures* | Dec 2014 | Not Started | |
| Create Maintenance Procedures | Aug 2014 | Not Started | |
| Unit 1 Outage Implementation | Apr 2015 | Not Started | May 2015 |
| Unit 2 Outage Implementation | Oct 2015 | Not Started | |

* Refer to Section 8 for an explanation of Milestone changes.

4 Changes to Compliance Method

By letter dated February 28, 2013, Dominion provided an OIP to address Beyond-Design-Basis (BDB) events at Surry Power Station (Surry) Units 1 and 2 (Reference 1) as required by Order Number EA-12-049, dated March 12, 2012 (Reference 2). The following are changes to the compliance method information provided in the Surry OIP; however, the changes continue to meet NEI 12-06 (Reference 3):

- a) Details of the alternate connection strategy for Auxiliary Feedwater (AFW) injection, as described in Section B.2 – PWR Portable Equipment Phase 2 and shown on OIP Figure 3, have changed for Surry Units 1 and 2. The tie-in locations at valve 1-FW-57 (Unit 1) and 2-FW-57 (Unit 2) will no longer be used as the alternate AFW injection connections. The re-located connections described below are more readily accessible and serve the same function in the alternate strategy.

For Unit 1, the bonnet assembly of the AFW cross-connect isolation motor-operated valve (MOV) 1-FW-MOV-160B, located in the Unit 2 AFW Pump House, will be removed and a flanged temporary hose connection adapter will be installed on the valve to support connecting the BDB AFW pump to the Unit 1 AFW cross-connect line. The location of 1-FW-MOV-160B allows for easy hose routing and is within a safety related structure.

For Unit 2, the bonnet assembly of the AFW cross-connect isolation MOV 2-FW-MOV-260B, located in the Unit 1 AFW Pump House, will be removed and a flanged temporary hose connection adapter will be installed on the valve to support connecting the BDB AFW pump to the Unit 2 AFW cross-connect line. The location of 2-FW-MOV-260B allows for easy hose routing and is within a safety related structure.

A revised OIP Figure 3 is attached. This figure represents the Unit 1 configuration only but is typical for both units.

- b) Details of the strategy for the portable diesel generators (DGs) used to re-power the 120VAC vital bus circuits, as described in Section F1.2 – PWR Portable Equipment Phase 2, have changed for Surry Units 1 and 2. A single 120/240VAC DG per unit will be sized to accommodate the necessary electrical loads for that unit and will power both BDB distribution panels for that unit. Thus, the deployment of two 120/240 VAC DGs per unit as shown in Figure 7 of the previously submitted OIP is no longer being pursued, and a revised Figure 7 is attached. Figure 8 is not revised since the single 120/240VAC DG location is the same as the two DGs for each unit as stated in the OIP. Figure 9 was a typical schematic of the connections from one of two 120/240VAC DGs. A revised Figure 9 showing the current connections for the 120/240VAC DG (Unit 1 only) is attached. A spare 120/240VAC DG will be purchased; however, as stated in the OIP, the 480VAC DG is considered the alternate re-powering source for instrumentation.
- c) Details of the modification to the steam generator (SG) power-operated relief valves (PORVs), as described in Section B.1 – PWR Installed Equipment Phase 1, have changed for Surry Units 1 and 2. Although the overall strategy has not been altered, the details of the modification have been revised to provide a more suitable option that will continue to allow for local manual operation of the SG PORVs. Instead of a modification to add hand wheels to the valves, the SG PORVs will be modified to add a protected backup air bottle system which will be installed in the Main Steam Valve House (MSVH) AFW pump room. Local manual operation of the SG PORVs using the protected backup air bottle system will continue to allow control of RCS cooldown to support the reactor core cooling and decay heat removal Phase 1 strategy.
- d) Changes to the timing of the RCS Injection strategy have been made. The strategy for RCS injection for inventory and reactivity control has been moved from a Phase 3 activity to a Phase 2 activity. The details and descriptions provided in Section C.3 of the OIP for RCS injection for the Phase 3 activity continue to be the same for the Phase 2 strategy for RCS injection, including the time at which natural circulation capability is lost, i.e., approximately 33 hours

based on WCAP-17601 (Reference 5) and ETE-NAF-2012-0150 (Reference 9). For conservatism and margin to account for uncertainty within the calculations and unanticipated deployment issues, a time of 16 hours has been chosen, which provides significant margin (by a factor of 2) prior to loss of natural circulation and the start of reflux boiling.

- e) The quantities of BDB equipment stated in OIP Table 1, PWR Portable Equipment Phase 2, and OIP Table 2, PWR Portable Equipment Phase 3, have changed. Per Footnote 1 to Table 1, the quantities were based on the assumption that two storage buildings would be available to store BDB equipment pending completion of the study to determine the details of the BDB Storage Building(s). Open Item No. 6 has been completed, and the decision to have one storage building is documented in Section 6 of this update. A revised Table 1 is attached.

As discussed in the previous item d), Surry will purchase and store BDB RCS Injection pumps for use in the Phase 2 RCS Inventory strategy. These pumps are being added to the revised Table 1 for Phase 2 equipment.

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

Dominion expects to comply with the Order implementation date and no required relief/relaxation has been identified at this time.

6 Open Items from Overall Integrated Plan

The following table provides a summary of the open items documented in Attachment 2B of the OIP and the status of each item.

| Overall Integrated Plan Open Item | | |
|--|---|--|
| OI # | Description | Status |
| 1 | Verify response times listed in timeline and perform staffing assessment. | Not started. Scheduled completion date: December 2014 |
| 2 | Preliminary analyses have been performed to determine the Class 1E battery life based on implementation of load stripping actions. The final battery life duration will be provided when the analyses are completed. | Complete. (Reference 4) |
| 3 | Preliminary analyses have been performed to determine the time to steam generator overfill without operator action to reduce AFW flow, time to steam generator dryout without AFW flow, and time to depletion of the useable volume of the ECST and ECMT. The final durations will be provided when the analyses are completed. | Complete. (Reference 4) |

| Overall Integrated Plan Open Item | | |
|--|---|--|
| OI # | Description | Status |
| 4 | 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. | Started. Scheduled completion date is revised from December 2013 to October 2013 ** |
| 5 | Analyses will be performed to develop fluid components performance requirements and confirm fluid hydraulic-related strategy objectives can be met. | Started. Scheduled completion date: September 2013 |
| 6 | 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. | Complete. A single 10,000 sq. ft. Type 1 building will be constructed at Surry for storage of BDB equipment. The building will be designed to meet the plant's design basis for the Safe Shutdown Earthquake, high wind hazards, snow, ice and cold conditions, and will be located above the flood elevation from the most recent site flooding analysis. The BDB Storage Building will be sited just east of the south employee parking lot, inside the Owner Controlled Area. The location lies in an area between the Surry Nuclear Information Center and the intake canal. This update provides the supplemental information referred to in this open item. |
| 7 | FLEX Support Guidelines (FSGs) will be developed in accordance with PWROG guidance. Existing procedures will be revised as necessary to implement FSGs. | Started. Scheduled completion date: September 2014 |

| Overall Integrated Plan Open Item | | |
|--|--|---|
| OI # | Description | Status |
| 8 | 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. | Not started. Scheduled completion date: December 2014 |
| 9 | An overall program document will be developed to maintain the FLEX strategies and their bases and to provide configuration control and change management for the FLEX Program. | Started. Scheduled completion date: December 2014 |
| 10 | The Dominion 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). | Started. Scheduled completion date: December 2014 |
| 11 | Plant modifications will be completed for permanent plant changes required for implementation of FLEX strategies. | Started. Scheduled completion date: See Milestone Schedule. |
| 12 | The following actions will be completed to qualify the ECMT as a source of water to the TDAFW pump in response to an ELAP/LUHS event: (1) Upgrade the piping system from the ECMT to the TDAFW pump suction to Seismic Category I, (2) Modify the TDAFW pump discharge piping to install local AFW flowrate indication, and (3) Confirm adequate TDAFW pump NPSH with flow from the ECMT through the idle AFW booster pumps ** | Started. Scheduled completion date is revised from December 2013 to May 2015 ** |
| 13 | Complete the evaluation of TDAFW pump long term operation with ≤ 290 psig inlet steam pressure. | Complete. TDAFW pump operation and adequate AFW flow to the SGs at SG pressures ≤ 290 psig has been confirmed. (Reference 6) |
| 14 | 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. | Started. Scheduled completion date: September 2013 |
| 15 | Analyses will be performed to develop electrical components performance requirements and confirm electrical loading-related strategy objectives can be met. | Complete. The 120/240VAC DGs have each been sized at a rating of 25KW. A |

| Overall Integrated Plan Open Item | | |
|--|---|--|
| OI # | Description | Status |
| | | single DG will be sufficient to handle the necessary loads for a single unit. A total of three (3) 120/240VAC DGs will be stored in the BDB Storage Building for deployment as needed. The 480VAC DGs have each been sized at a rating of 200KW. The two (2) 480VAC DGs will be stored in the BDB Storage Building for deployment as needed. (Reference 8) |
| 16 | An evaluation of all BDB equipment fuel consumption and required re-fill strategies will be developed including any gasoline required for small miscellaneous equipment. | Not started. Scheduled completion date: June 2014 |
| 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. | Started. Scheduled completion date: June 2014 |
| 18 | A communications study will be performed in accordance with the statements made in response to Recommendation 9.3 of the 10 CFR 50.54(f) letter dated March 12, 2012 in Dominion letter S/N 12-208F dated October 29, 2012. ** | Started. Scheduled completion date: Consistent with Recommendation 9.3 implementation dates. |
| 19 | 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. | Not started. Scheduled completion date: June 2014 |
| 20 | The equipment listed in Table 1 will be procured. ** | Not started. Scheduled completion date is revised from June 2014 to August 2014 ** |

** Refer to Section 8 for an explanation of changes to Open Items.

7 Potential Draft Safety Evaluation Impacts

There are no potential impacts to the Draft Safety Evaluation identified at this time.

8 Supplemental Information

This supplemental information provides details of changes identified in the status updates above and addresses the following topics: a) Open Item No. 4, b) Open Item No. 12, c) Open Item No. 18, d) Open Item No. 20, e) Milestone 'Issue FSGs', f) Milestone 'Procure Equipment', and g) the addition of Milestone "Validation Walk-throughs or Demonstration of FLEX Strategies and Procedures."

- a) **Surry, Open Item 4:** The Open Item completion date is revised to October 2013 to be consistent with the revised completion date for the Milestone "Develop Strategies."
- b) **Surry, Open Item 12:** The updated completion date allows for the required modifications to be implemented and accurately reflects the updated milestone schedule activity for 'Implement Modifications'. The revision to the wording for part (3) of this Open Item more accurately reflects the planned activities to determine and validate that adequate TDAFW pump NPSH from the ECMT through the idle AFW booster pumps is available to qualify the ECMT as a source of water to the TDAFW pump in response to an ELAP/LUHS event. The revised Open Item 12, part (3) and revised completion schedule are as follows:

Open Item 12, part (3): Confirm adequate TDAFW pump NPSH from the ECMT through the idle AFW booster pump using conservative analysis.
Completion Schedule: May 2015

- c) **Surry, Open Item 18:** The revision to the wording more accurately reflects the planned activities to determine and validate that adequate communications are available to implement FLEX strategies in all phases of the response to an ELAP/LUHS event. The revised Open Item 18 is as follows:

A comprehensive study of communication capabilities is being performed in accordance with the statements made in Dominion 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 Surry. Validation of communications required to implement FLEX strategies will be performed as part of Open Item No. 1.

- d) **Surry, Open Item 20**: The revision to the wording more accurately reflects the equipment that will be purchased and delivered to the site. The updated completion schedule accurately reflects the Milestone schedule. The revised Open Item and revised completion schedule are as follows:

Open Item 20: The equipment listed in Table 1 will be received on site.
Completion Schedule: August 2014

- e) **Surry Milestone 'Issue FSGs'**: The revision to the wording more accurately reflects the actual scope of the tasks as they occur. The revised Milestone Task is as follows:

Milestone Task: Issue FSGs and Associated Procedure Revisions

- f) **Surry Milestone 'Procure Equipment'**: The revision to the wording more accurately reflects the actual tasks as they occur in sequence. The revised milestone task is the successor to 'Purchase Equipment'. The revised Milestone Task is as follows:

Milestone Task: Receive Equipment

- g) **Surry Milestone 'Validation Walk-throughs or Demonstration of FLEX Strategies and Procedures'**: This milestone was added for consistency with template and industry formats. It corresponds to the activity previously identified in Open Item No. 1. The scheduled milestone date is the same as the open item completion date. By this date, sufficient FLEX equipment will be available to perform the walk-throughs and procedures will be in a near final form and will rely on the walk-throughs for validation prior to final issuance.

9 References

The following references support the updates to the Overall Integrated Plan described in this enclosure.

1. "Dominion'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)," Serial No. 12-163B, dated February 28, 2013.
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. Dominion letter, "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)," Serial No. 12-163C, dated April 30, 2013.
5. WCAP-17601, "Reactor Coolant System Response to the Extended Loss of AC Power Event for Westinghouse, Combustion Engineering and Babcock & Wilcox NSSS Designs", August 2012.
6. Dominion Calculation ME-0969, "Evaluation of the TDAFW Pump Performance at Low Steam Generator Pressures," August 2013.
7. Engineering Technical Evaluation, ETE-CPR-2012-0011, "Beyond Design Basis – FLEX Strategy Overall Integrated Plan Basis Document," Revision 1, August 2013.
8. Dominion Calculation EE-0864, "Surry Power Station Beyond Design Basis - FLEX Electrical 480VAC and 120VAC System Loading Analysis," Revision 0, April 2013.
9. Engineering Technical Evaluation, ETE-NAF-2012-0150, "Evaluation of Core Cooling Coping for Extended Loss of AC Power (ELAP) and Proposed Input for Dominion's Response to NRC Order EA-12-049 for Dominion Fleet," Revision 0, January 2013.

Table 1 – PWR Portable Equipment Phase 2¹ [Open Item 20]

| <i>Use and (potential / flexibility) Diverse Uses</i> | | | | | | <i>Performance Criteria</i> | <i>Maintenance</i> |
|---|------|------------------------------|-----|-----------------|---------------|-----------------------------|--|
| <i>List Portable Equipment</i> | Core | Containment [Open Item 4] | SFP | Instrumentation | Accessibility | | Maintenance / Preventive Maintenance requirements |
| BDB High Capacity diesel-driven pump (2) and assoc. hoses and fittings | X | | X | | | 1200 gpm ⁴ | Will follow EPRI template requirements |
| BDB AFW pump (3) and assoc. hoses and fittings | X | | | | | 300 gpm ⁴ | Will follow EPRI template requirements |
| BDB RCS Injection pump (2) and assoc. hoses and fittings | X | | | | | 40 gpm | Will follow EPRI template requirements |
| 120/240V AC generators (3) ³ and associated cables, connectors and switchgear | | | | X | | 20 kW | Will follow EPRI template requirements |
| 120/240V AC generators (8) ² and associated cables, connectors and switchgear (to power support equipment) | | | | | X | 5-6.5 kW | Will follow EPRI template requirements |

| Table 1 – PWR Portable Equipment Phase 2¹ [Open Item 20] | | | | | | | |
|---|------|------------------------------|-----|-----------------|---------------|-----------------------------|--|
| <i>Use and (potential / flexibility) Diverse Uses</i> | | | | | | <i>Performance Criteria</i> | <i>Maintenance</i> |
| <i>List Portable Equipment</i> | Core | Containment [Open Item 4] | SFP | Instrumentation | Accessibility | | Maintenance / Preventive Maintenance requirements |
| 480V AC generators (2) ³ and associated cables, connectors and switchgear (to re-power battery chargers, inverters, and Vital Buses) | | | | X | | 200 kW | Will follow EPRI template requirements |
| Portable boric acid batching tank (2) | X | | | | | | Will follow EPRI template requirements |
| Light plants (4) ² | | | | | X | | Will follow EPRI template requirements |
| Front end loader (1) ² | | | | | X | | Will follow EPRI template requirements |
| Tow vehicles (2) ² | | | | | X | | Will follow EPRI template requirements |

| Table 1 – PWR Portable Equipment Phase 2¹ [Open Item 20] | | | | | | | |
|--|------|------------------------------|-----|-----------------|---------------|-----------------------------|--|
| <i>Use and (potential / flexibility) Diverse Uses</i> | | | | | | <i>Performance Criteria</i> | <i>Maintenance</i> |
| <i>List Portable Equipment</i> | Core | Containment [Open Item 4] | SFP | Instrumentation | Accessibility | | Maintenance / Preventive Maintenance requirements |
| Hose trailer or utility vehicle (2) ² | | | | | X | | Will follow EPRI template requirements |
| Fans / blowers (10) ² | | | | | X | | Will follow EPRI template requirements |
| Air compressors (6) ² | | | | | X | | Will follow EPRI template requirements |
| Fuel carts with transfer pumps (2) ² | | | | | X | | Will follow EPRI template requirements |
| Communications equipment ⁵ | | | | | X | | Will follow EPRI template requirements |
| Misc. debris removal equipment (2 sets) ² | | | | | X | | Will follow EPRI template requirements |

Table 1 – PWR Portable Equipment Phase 2¹ [Open Item 20]

| <i>Use and (potential / flexibility) Diverse Uses</i> | | | | | | <i>Performance Criteria</i> | <i>Maintenance</i> |
|--|------|------------------------------|-----|-----------------|---------------|-----------------------------|--|
| <i>List Portable Equipment</i> | Core | Containment [Open Item 4] | SFP | Instrumentation | Accessibility | | Maintenance / Preventive Maintenance requirements |
| Misc. Support Equipment (2 sets) ² | | | | | X | | Will follow EPRI template requirements |
| Cables for 4160 VAC generator connections (4 sets) | | | | X | X | | |

NOTES:

1. This table is based on one BDB Storage Building.
2. Support equipment. Not required to meet N+1.
3. 480V AC generators are an alternate strategy to the 120/240V AC generators. Therefore, only N is required.
4. Preliminary performance criteria. Final performance criteria will be determined by the hydraulic analyses performed in accordance with the design process [Open Item 5].
5. Equipment purchased in response to the results of the 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 | | | | | | | |
|---|------|------------------------------|-----|-----------------|---------------|-----------------------------|--------------|
| <i>Use and (potential / flexibility) Diverse Uses</i> | | | | | | <i>Performance Criteria</i> | <i>Notes</i> |
| <i>List portable equipment</i> | Core | Containment [Open Item 2] | SFP | Instrumentation | Accessibility | | |
| 4kV generators ¹ (2) and associated cables, connectors and switchgear | X | | | X | | 1.6 - 2 MW | |
| NOTE: 1. Preliminary performance criteria. Final performance criteria will be determined by the electrical loading analyses performed in accordance with the design process. RRC equipment will meet the required performance criteria. | | | | | | | |

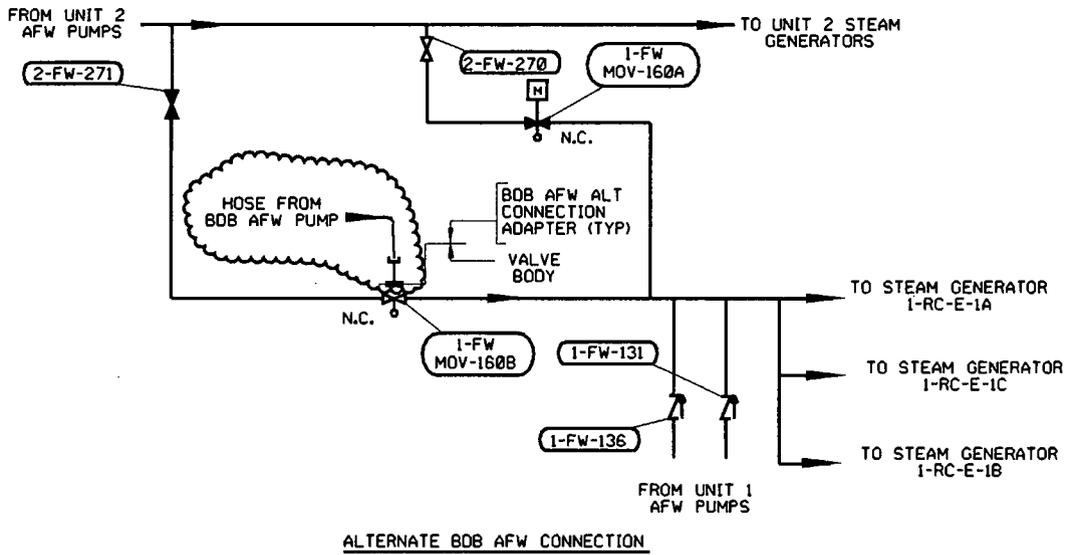
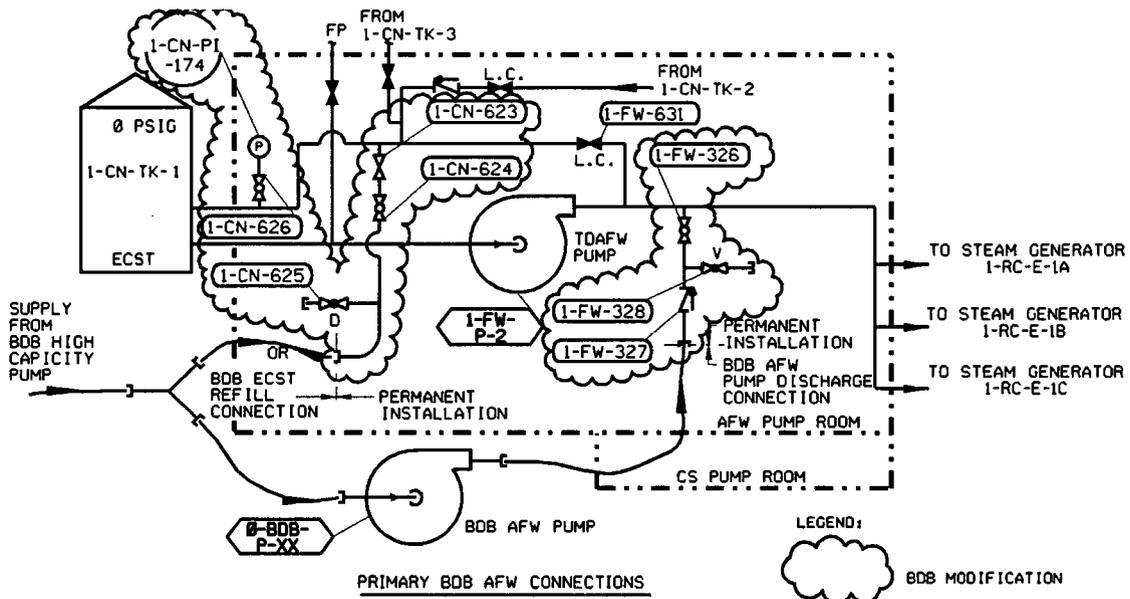


FIGURE 3 (AUGUST 2013 UPDATE)
 CORE COOLING AND DECAY HEAT REMOVAL
 PRIMARY AND ALTERNATE MECHANICAL CONNECTIONS
 SURRY POWER STATION

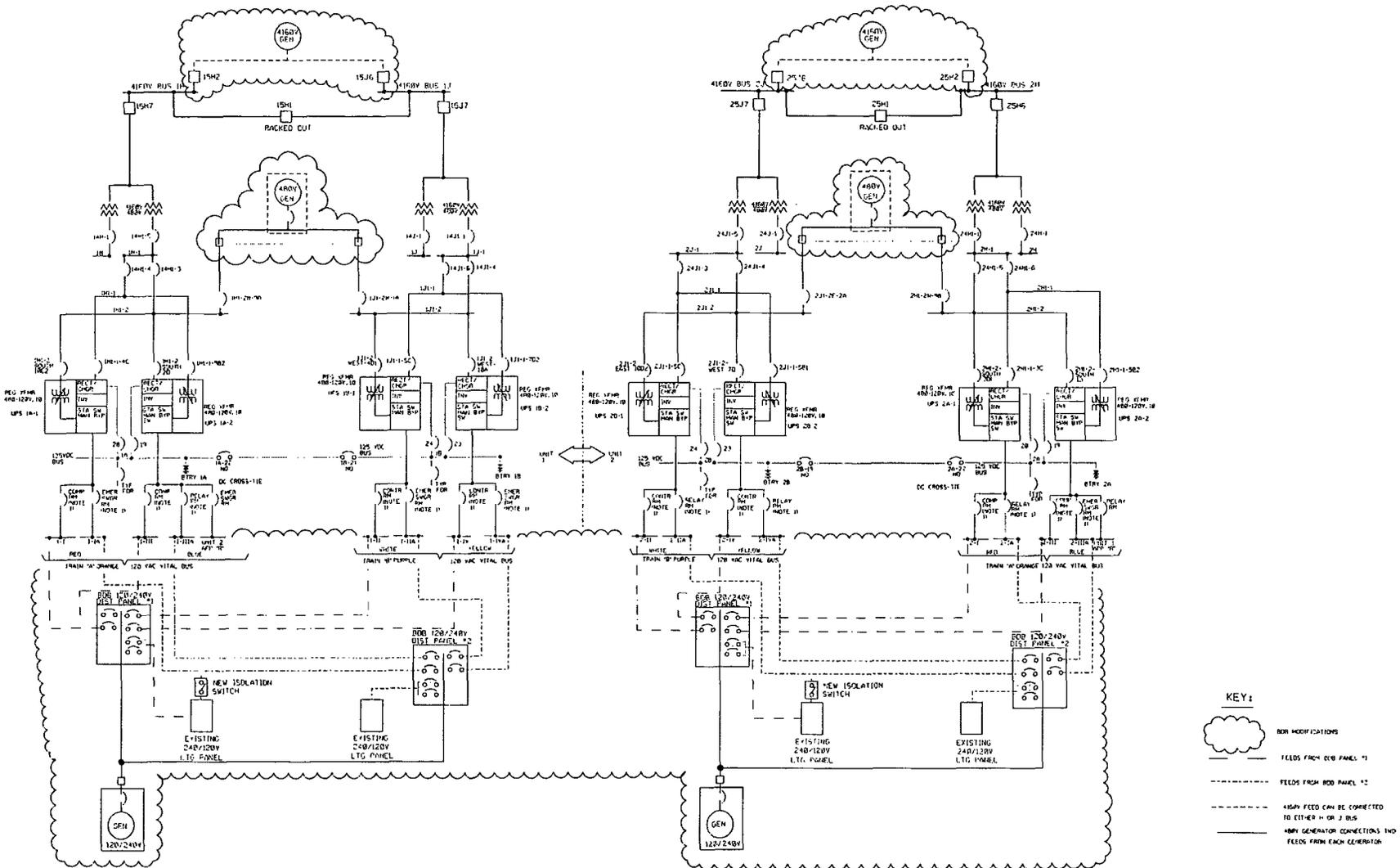
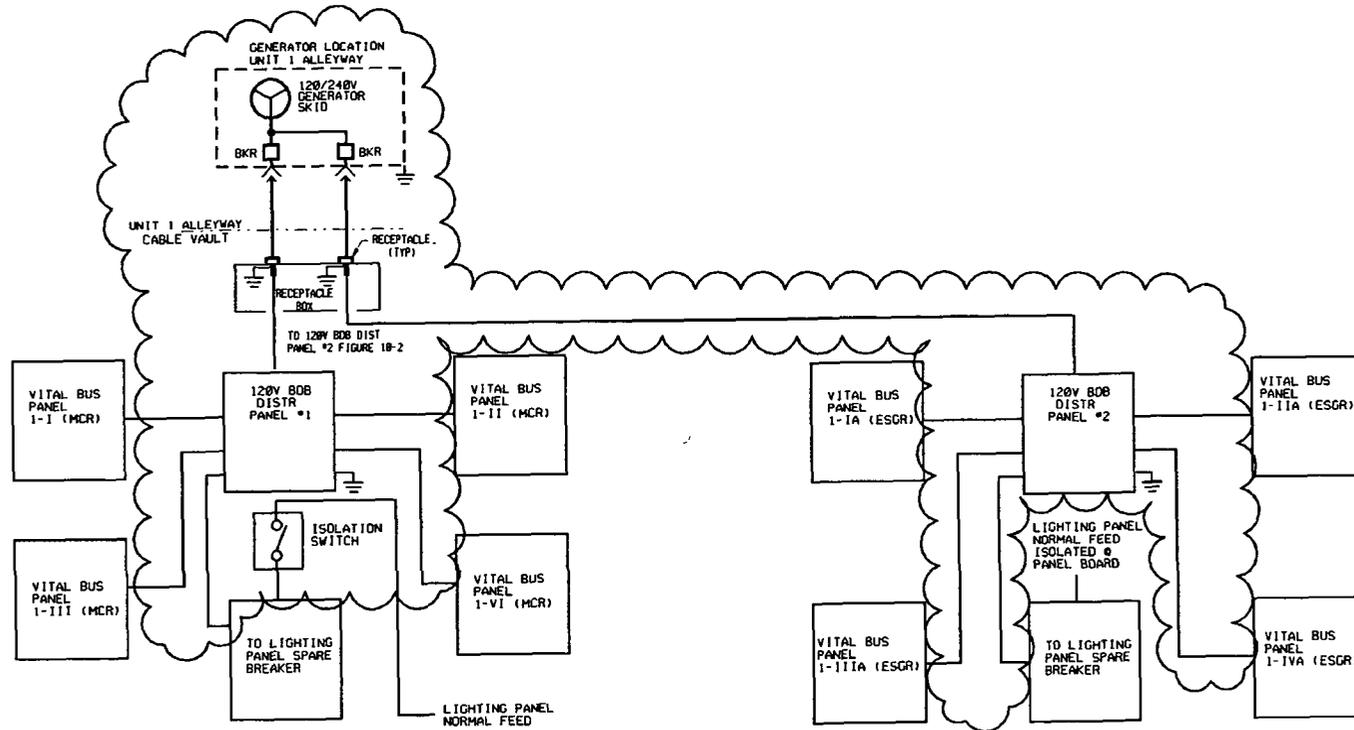


FIGURE 7 (AUGUST 2013 UPDATE)
 BDB FLEX STRATEGY ELECTRICAL CONNECTIONS
 ONE LINE DIAGRAM
 SURRY POWER STATION



NOTE: UNIT 2 SIMILAR

KEY:
 MCR - MAIN CONTROL ROOM
 ESGR - EMERGENCY SWGR ROOM
 BOB MODIFICATION

FIGURE 9 (AUGUST 2013 UPDATE)
 120/240 VAC GENERATOR ELECTRICAL CONNECTIONS
 SURRY POWER STATION