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UniStar
NUCLEAR ENERGY

10 CFR 50.4
10 CFR 52.79

July 5, 2013

UN#13-084

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: UniStar Nuclear Energy, NRC Docket No. 52-016
Revised Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3,
RAIs 379 and 388, Probabilistic Risk Assessment and Severe Accident Evaluation

References:

1) Surinder Arora (NRC) to Paul Infanger (UniStar Nuclear Energy), "CCNPP3 - FINAL RAI 379 BPFP 6892," email dated November 8, 2012

2) Surinder Arora (NRC) to Paul Infanger (UniStar Nuclear Energy), "CCNPP3 - FINAL RAI 388 BPFP 7060," email dated April 1, 2013

3) UniStar Nuclear Energy Letter UN#13-009, from Mark T. Finley to Document Control Desk, U.S. NRC, Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAI 379, Probabilistic Risk Assessment and Severe Accident Evaluation, dated February 22, 2013

4) UniStar Nuclear Energy Letter UN#13-045, from Mark T. Finley to Document Control Desk, U.S. NRC, Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAI 388, Probabilistic Risk Assessment and Severe Accident Evaluation, dated April 18, 2013

5) UniStar Nuclear Energy Letter UN#13-073, from Mark T. Finley to Document Control Desk, U.S. NRC, Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAIs 379 and 388, Probabilistic Risk Assessment and Severe Accident Evaluation, dated June 14, 2013

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6) UniStar Nuclear Energy Letter UN#12-093, from Mark T. Finley to Document Control Desk, U.S. NRC, Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAI 345, Vibratory Ground Motion, dated September 12, 2012

7) UniStar Nuclear Energy Letter UN#12-137, from Mark T. Finley to Document Control Desk, U.S. NRC, Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAI 347, Spent Fuel Pool Cooling and Cleanup System, dated November 27, 2012

8) UniStar Nuclear Energy Letter UN#13-013, from Mark T. Finley to Document Control Desk, U.S. NRC, Revised Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAI 346, Emergency Planning, dated February 25, 2013

The purpose of this letter is to provide a revised response to the requests for additional information (RAIs) identified in the NRC e-mail correspondence to UniStar Nuclear Energy, dated November 8, 2012 (Reference 1) and April 1, 2013 (Reference 2). These RAIs address Probabilistic Risk Assessment and Severe Accident Evaluation, as discussed in Chapter 19 of the Final Safety Analysis Report (FSAR), as submitted in Part 2 of the Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3 Combined License Application (COLA), Revision 9, pertaining to the Fukushima Near-Term Task Force (NTTF) Recommendation No. 4.2. Additionally, NTTF Recommendation No. 7.1 is also being addressed through the response to RAI 388 (this response) regarding the enhancement of spent fuel makeup capability and instrumentation in the spent fuel pool.

Reference 3 indicated that a response to RAI 379, Question 19-27, would be provided to the NRC by June 15, 2013. Reference 4 indicated that a response to RAI 388, Question 19-30, would be provided to the NRC by June 15, 2013. This letter supersedes the RAI No. 379, Question 19-27, and RAI No. 388, Question 19-30 response transmitted on June 14, 2013 (Reference 5) in its entirety.

Enclosure 1 provides our revised response to RAI No. 379, Question 19-27, and RAI No. 388, Question 19-30, and includes revised COLA content. Licensing Basis Document Change Requests have been initiated to incorporate these changes into a future revision of the COLA.

Note that the COLA markup associated with this response, for Chapter 19, also provides a summary of CCNPP Unit 3 Fukushima responses submitted to date (new FSAR Section 19.2.8). As subsequent RAI responses are submitted, whether directly Fukushima related, or indirectly (RAIs 308, 314, and 315), this new FSAR Section 19.2.8 will be updated accordingly. The Fukushima NTTF Recommendation 2.1, regarding seismic and flooding hazards, is being addressed through responses to RAIs 308, 314, and 315. Reference 6 served to address the portion of Fukushima NTTF Recommendation 2.1 involving the need to consider the latest available information in the site probabilistic seismic hazard analysis (PSHA).

Reference 7 provided the response to RAI No. 347, which was related to Fukushima NTTF Recommendation No. 7.1. The RAI No. 347 response indicated that the training program to demonstrate that spent fuel pool instrumentation will be maintained available in an extended loss of AC power will be addressed by means of COL Item 13.2-2.

Fukushima NTTF Recommendation 9.3 was addressed in the response to RAI 346, Emergency Planning (Reference 8).

Enclosure 2 is the CCNPP Unit 3 FLEX Integrated Plan. Enclosure 3 provides a Table of Changes to the CCNPP Unit 3 COLA associated with the RAI 379 and RAI 388 responses. As identified in the Enclosure 3 Table of Changes, this response adds two new License Conditions not previously in the CCNPP Unit 3 COLA.

Our response does not include any new regulatory commitments. This letter, and its enclosures, does not contain any sensitive or proprietary information.

If there are any questions regarding this transmittal, please contact me at (410) 369-1907 or Mr. Wayne A. Massie at (410) 369-1910.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on July 5, 2013

Mark T. Finley

Enclosures:
1) Revised Response to NRC Request for Additional Information, RAI 379, Question 19-27, and RAI 388, Question 19-30, Probabilistic Risk Assessment and Severe Accident Evaluation, Calvert Cliffs Nuclear Power Plant, Unit 3
2) CCNPP Unit 3 FLEX Integrated Plan
3) Table of Changes to CCNPP Unit 3 COLA Associated with the Revised Responses to RAI 379 and RAI 388, Calvert Cliffs Nuclear Power Plant, Unit 3

cc: Surinder Arora, NRC Project Manager, U.S. EPR Projects Branch
John Fringer, NRC Environmental Project Manager, U.S. EPR COL Application
Amy Snyder, NRC Project Manager, U.S. EPR DC Application, (w/o enclosures)
Patricia Holahan, Acting Deputy Regional Administrator, NRC Region II, (w/o enclosures)
Silas Kennedy, U.S. NRC Resident Inspector, CCNPP, Units 1 and 2,
David Lew, Deputy Regional Administrator, NRC Region I (w/o enclosures)

Enclosure 1

**Revised Response to NRC Request for Additional Information,
RAI 379, Question 19-27, and RAI 388, Question 19-30,
Probabilistic Risk Assessment and Severe Accident Evaluation,
Calvert Cliffs Nuclear Power Plant, Unit 3**

RAI No 379

Question 19-27

The NRC staff has been directed by the Commission to implement the Fukushima Near-Term Task Force Recommendations, as presented in SECY-12-0025, "Proposed Orders and Requests for Information in Response to Lessons Learned from Japan's March 11, 2011, Great Tohoku Earthquake and Tsunami", dated February 12, 2012. This request for additional information specifically addresses Recommendation 4.2 on Mitigating Strategies, as described in Attachment 2 to Order EA-12-049. The NRC staff understands that a COL applicant referencing the EPR design would implement actions to address these provisions, and that you would propose a license condition that would require such actions. In your response, please specifically include in the text of any proposed license condition the extent of your commitment to follow the guidance in JLD-ISG-2012-01, or any alternative approaches.

Response

A License Condition has been added to the Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3 Combined License Application (COLA) Part 10, Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) and ITAAC Closure, consistent with Recommendation 4.2 on Mitigating Strategies, as described in Attachment 2 to Order EA-12-049, and includes the extent of our commitment to follow the guidance in JLD-ISG-2012-01.

COLA Impact

CCNPP Unit 3 COLA Part 10, ITAAC, License Condition 10, Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) and ITAAC Closure, is added as follows:

APPENDIX A- PROPOSED COMBINED LICENSE CONDITIONS

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9. ENVIRONMENTAL PROTECTION PLAN

Operating licenses typically have included the following condition related to environmental protection.

PROPOSED LICENSE CONDITION:

The issuance of this COL, subject to the Environmental Protection Plan and the conditions for the protection of the environment set forth herein, is in accordance with the National Environmental Policy Act of 1969, as amended, and with applicable sections of 10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," as referenced by Subpart C of 10 CFR Part 52, "Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Power Plants," and all applicable requirements therein have been satisfied.

10. MITIGATION STRATEGIES FOR BEYOND-DESIGN-BASIS EXTERNAL EVENTS

PROPOSED LICENSE CONDITION:

Prior to initial fuel load, the following requirements will be addressed using the guidance contained in 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:

a. Guidance and strategies to maintain or restore core cooling, containment and spent fuel pool cooling capabilities following a beyond-design-basis external event will be developed, implemented, and maintained.
b. These strategies must be capable of mitigating a simultaneous loss of all ac power and loss of normal access to the normal heat sink and have adequate capacity to address challenges to core cooling, containment, and spent fuel pool cooling capabilities.
c. Reasonable protection for the associated equipment from external events must be provided. Such protection must demonstrate that there is adequate capacity to address challenges to core cooling, containment, and spent fuel pool cooling capabilities.
d. There will be a capability to implement the strategies in all modes.
e. Full compliance shall include procedures, guidance, training, and acquisition, staging, or installing of equipment needed for the strategies.

An overall integrated plan will be developed 180 days prior to initial fuel load, including a description of how compliance with the requirements described in this license condition will be achieved.

RAI No 388

Question 19-30

THIS RAI IS A SUPPLEMENT TO RAI 379 (eRAI 6892)

The NRC staff has been directed by the Commission to implement the Fukushima Near-Term Task Force Recommendations, as presented in SECY-12-0025, "Proposed Orders and Requests for Information in Response to Lessons Learned from Japan's March 11, 2011, Great Tohoku Earthquake and Tsunami," dated February 12, 2012. This request for additional information specifically addresses Recommendation 4.2 on Mitigating Strategies, as described in Attachment 2 to Order EA-12-049.

The NRC staff request that you address the following in regards to provision for mitigating strategies required by Fukushima Near-Term Task Force Recommendation 4.2:

A. Applicable Beyond-Design-Basis External Events

Identify and characterize all the applicable site specific beyond-design-basis external events (e.g., earthquake, high winds, and external flooding ...etc.) that are subject to the mitigation strategies. Identification involves determining whether the type of hazard applies to the site. Characterization focuses on the likely nature of the challenge (e.g., station blackout and loss of normal access to the ultimate heat sinks) in terms of timing, severity, and persistence. NEI 12-06, Section 4.1, "Site-Specific Identification of Applicable Hazards,"

B. Three-Phase Approach for mitigating Beyond-Design-Basis External Events

Order EA-12-049 requires a three-phase approach for mitigating beyond-design-basis external events. These mitigation strategies must be capable of mitigating a simultaneous loss of all ac power and loss of normal access to the ultimate heat sink and have adequate capacity to address challenges to core cooling, containment, and spent fuel pool (SFP) cooling capabilities at all units on a site. The applicant is requested to identify all the necessary (existing and new) equipment to demonstrate adequate capability to perform the mitigation functions for each of the three phases.

1. For the **Initial Phase**, which requires the use of installed equipment and resources to maintain or restore core cooling, containment and SFP cooling capabilities.

   a) Explain how the Calvert Cliffs Unit 3 establish adequate capabilities for the specified functions assuming a simultaneous loss of all ac power, with the exception of buses supplied by safety-related batteries through inverters, and loss of normal access to the ultimate heat sink.

   b) Identify all the installed equipments and resources that are used for (1) core cooling, (2) containment function, and (3) SFP cooling during the initial phase.

   c) Determine the duration of the initial phase. Explain the bases for the determination, and identify all the supplemental equipments required to address the issues of station blackout and loss of normal access to the ultimate heat sinks for the duration of the initial phase. Address the availability, and accessibility of these equipments following the

external events (e.g., the earthquake, flooding, and high wind condition) including the seismic capability of the power supplies and water sources.

d) Identify all the connections between the supplemental equipments and the installed DBE equipments to address the issues of station blackout and loss of normal access to the ultimate heat sinks and how to connect and integrate the supplemental equipments with the installed DBE equipments to perform the specified functions for core cooling, containment function, and SFP cooling respectively. Also discuss protection and accessibility of the connection points so that they remain viable during and after the event.

2. For the **Transition Phase**, during which the heat loads are significantly reduced from the initial phase, but the issues of station blackout and loss of normal access to the ultimate heat sinks remain. Sufficient, portable, onsite equipment and consumables to maintain or restore these functions (core cooling, containment,. and SFP cooling) until they can be accomplished with resources brought from off site are required.

   a) Explain how the Calvert Cliffs Unit 3 establish adequate capabilities for the specified functions assuming a simultaneous loss of all ac power, with the exception of buses supplied by safety-related batteries through inverters, and loss of normal access to the ultimate heat sink.

   b) Identify all the portable, onsite equipment and resources for the transition phase, and demonstrate the adequacy of the capability for each of the three specified functions (e.g., flow rate requirements for core cooling, SFP cooling, and containment function) assuming station blackout and loss of normal access to the ultimate heat sinks remain.

   c) Determine the duration of the transition phase. Explain the bases for the determination. Describe how to transfer from the initial phase installed equipment to the transition phase equipment.

   d) Discuss the connections between the supplemental equipments and the installed equipments and how to integrate the supplemental equipments with the installed equipment to perform the required functions for core cooling, containment heat removal, and SFP cooling respectively. Also discuss protection and accessibility of the connection points so that they remain viable during and after the event.

   e) Discuss the instrumentation and control of the mitigation equipments.

   f) Following beyond-design-basis events, equipment being relied upon to support the transition phase could be damaged. (1) How would the applicant provide reasonable protection for the associated equipment from external events? (2) How are the required equipment protected from the beyond-design-basis events? Discuss the functional capability of piping, valves, pumps, heat exchangers, power supplies, instrument and controls, and water sources following beyond-design-basis external event.

3. For the **Final Phase,** the heat loads are further reduced from the transition phase. The final phase requires obtaining sufficient offsite resources to sustain critical safety functions indefinitely. NEI 12-06 Section 10 provides guidance. The applicant is requested to define

site-specific FLEX capability and identify the equipment and demonstrate adequate capability for the final phase.

a) Determine the required coping capability (i.e. heat load, flow rates for (1) core cooling, (2) containment function, and (3) SFP cooling) in the final phase.

b) Identify all the required offsite equipment and resources for the final phase.

c) Explain how the offsite equipment will integrate with the onsite equipment to perform the required functions described in the Order.

d) How soon are the offsite resources required?

e) Demonstrate how the coping capability (e.g., power supply, water sources) can be sustained indefinitely.

C. FLEX Program

NRC Order EA-12-049 requires all applicants to develop, implement, and maintain guidance and strategies to maintain or restore core cooling, containment and SFP cooling capabilities following a beyond- design-basis external event.

a) Describe the guidance and strategies to be used for Calvert Cliff Unit 3 to fulfill the key safety functions of core cooling, containment integrity, and spent fuel cooling. Include in the discussion the extent that NEI 12-06 will be followed, as well as a description of any alternatives to the NEI 12-06 guidance.

b) Identify what portions of the FLEX program (NEI 12-06) are applicable, and what portions are not applicable and why not. For the applicable portions, demonstrate how to implement.

c) Provide an integrated plan regarding key assumptions associated with the implementation of the guidance and strategies required by Order EA-12-049.

d) Describe the content of the procedures and training, and provide the completion schedule, and proper commitment or license condition in the FSAR.

D. Multi-Unit Concern

The mitigating strategies were developed in the context of a localized event that was envisioned to challenge portions of a single unit. The event at Fukushima, demonstrate that beyond-design-basis external events may adversely affect multi-units. Please address the multi-unit concern in accordance with NRC Order EA-12-049, "Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events."

E. FSAR Revision

Revise the FSAR to provide a comprehensive discussion to respond to the Order EA-12-049 by addressing all the key issues identified in the above RAIs.

Response

Fukushima Near-Term Task Force Recommendation 4.2 is addressed in this response. Additionally, Fukushima Near-Term Task Force Recommendation 7.1 is also being addressed through the response to RAI 388 (this response) regarding the enhancement of spent fuel makeup capability and instrumentation in the spent fuel pool.

A. Applicable Beyond-Design-Basis External Events

The applicable site specific beyond-design-basis external events that are subject to the mitigation strategies for Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3 are identified and characterized in the Flex Integrated Plan, Section A.1, "Determine Applicable Extreme External Hazard."

B. Three-Phase Approach for mitigating Beyond-Design-Basis External Events

1. In the **Initial Phase** for CCNPP Unit 3:

   a) The means for establishing adequate capabilities for the specified functions assuming a simultaneous loss of all ac power, with the exception of buses supplied by safety-related batteries through inverters, and loss of normal access to the ultimate heat sink, is described in the following sections of the FLEX Integrated Plan:

      (1) Section B "Maintain Core Cooling & Heat Removal,"

      (2) Section C "Maintain RCS Inventory Control,"

      (3) Section D "Maintain Containment,"

      (4) Section E "Maintain Spent Fuel Pool Cooling,"

      (5) Section F "Safety Functions Support."

   b) The installed equipment and resources that are used for (1) core cooling, (2) containment function, and (3) SFP cooling during the initial phase are described in FLEX Integrated Plan:

      (1) Section B.1 "PWR Installed Equipment Phase 1" and Section C.1 "PWR Installed Equipment Phase 1" for core cooling and RCS inventory control,

      (2) Section D.1 "PWR Installed Equipment Phase 1" for the containment function,

      (3) Section E.1 "PWR Installed Equipment Phase 1" for SFP cooling.

      Section F.1 "PWR Installed Equipment Phase 1" provides safety function support for these functions.

   c) The duration of the initial phase is based on the time from event initiation to the time the first item of portable equipment is placed in service. The duration of the initial phase when the plant is in Modes 1-5 is seven hours, based on use of portable equipment to maintain the Safeguard Building 1, Safeguard Building 2, and the Main Control Room temperatures within the limits stated in ANP-10329, "U.S. EPR Mitigation Strategies for Extended Loss of AC Power Event" Sections 4.1.3.5 "Safeguard Building Heatup Analysis" and 4.1.3.6, "Main Control Room Heatup Analysis."

The duration of the initial phase when the plant is in Mode 6 with the Reactor Vessel (RV) head off, is two hours based on use of pre-staged portable equipment to maintain core cooling and heat removal after accumulator inventory depletion. The portable equipment deployment time is listed in the sequence of events in ANP-10329 Tables 4-8 and 4-9.

The duration of each phase is summarized in the Flex Integrated Plan, Attachments 6 and 7.

The initial phase requires the use of installed equipment; therefore, no supplemental (i.e., portable) equipment is required as stated in ANP-10329. Since no supplemental equipment is required, the availability and accessibility of this equipment following the external events, including the seismic capability of the power supplies and water sources, does not apply to the initial phase.

d) There are no connections between the supplemental equipment and the installed DBE equipment in the initial phase. Therefore, how to connect and integrate the supplemental equipment with the installed DBE equipment, and the protection and accessibility of the connection points so that they remain viable during and after the event, does not apply to the initial phase.

2. In the **Transition Phase** for CCNPP Unit 3:

a) The means for establishing adequate capabilities for the specified functions assuming a simultaneous loss of all ac power, with the exception of buses supplied by safety-related batteries through inverters, and loss of normal access to the ultimate heat sink, is described in the following sections of Attachment B-1 "FLEX Integrated Plan":

(1) Section B "Maintain Core Cooling & Heat Removal,"

(2) Section C "Maintain RCS Inventory Control,"

(3) Section D "Maintain Containment,"

(4) Section E "Maintain Spent Fuel Pool Cooling,"

(5) Section F "Safety Functions Support."

b) The portable, onsite equipment and resources for the transition phase are identified in Attachment B-1 "FLEX Integrated Plan":

(1) Section B.2 "PWR Portable Equipment Phase 2" for core cooling and heat removal,

(2) Section C.2 "PWR Portable Equipment Phase 2" for RCS inventory control,

(3) Section D.2 "PWR Portable Equipment Phase 2" for the containment function,

(4) Section E.2 "PWR Portable Equipment Phase 2" for spent fuel pool cooling,

(5) Section F.2 "PWR Portable Equipment Phase 2" for safety functions support.

The Flex Integrated Plan, Table 1, "PWR Portable Equipment Phase 2," lists the transition phase portable equipment.

The portable equipment listed in ANP-10329 Table 4-10 meets the minimum required performance established in ANP-10329 Section 4.1.3. This demonstrates the adequacy of the portable equipment for each of the specified functions, assuming extended loss of AC power (ELAP) and loss of normal access to the ultimate heat sink.

c) The duration of the transition phase is based on the time from the initial deployment of portable equipment to the time consumables and additional equipment are available from offsite.

The duration of the transition phase when the plant is in Modes 1-5 is 17 hours, based on the expected offsite response time of 24 hours after event initiation.

The duration of the transition phase, when the plant is in Mode 6 with the Reactor Vessel head removed, is 22 hours based on the expected offsite response time of 24 hours after event initiation.

The actions required to transfer from the initial phase installed equipment to the transition phase equipment are described in ANP-10329 Section 4.1.5.

d) The connections between the supplemental (i.e., portable) equipment and the installed equipment, and the integration of the portable with the installed equipment, are described in ANP-10329 Section 4.1.5.

Protection of the connection points so that they remain viable during and after the event is described in Attachment B-1 "FLEX Integrated Plan":

(1) Section B.2.3, "Deployment Conceptual Design," "Protection of Connections" for core cooling & heat removal,

(2) Section C.2.3, "Deployment Conceptual Design," "Protection of Connections" for RCS inventory control,

(3) Section D.2.3, "Deployment Conceptual Design," "Protection of Connections" for the containment function,

(4) Section E.2.3, "Deployment Conceptual Design," "Protection of Connections" for spent fuel pool cooling,

(5) Section F.2.3, "Deployment Conceptual Design," "Protection of Connections" for safety functions support.

Connection point accessibility is addressed in the Flex Integrated Plan, Section A.2, "Key Site assumptions to implement NEI 12-06 strategies."

e) The instrumentation and control of the mitigation equipment is described in Attachment B-1 "FLEX Integrated Plan":

(1) Section B.2.1 "Details," "Key Reactor Parameters" for core cooling & heat removal,

(2) Section C.2.1 "Details," "Key Reactor Parameters" for RCS inventory control,

(3) Section D.2.1 "Details," "Key Containment Parameters" for the containment function,

(4) Section E.2.1 "Details," "Key SFP Parameters" for spent fuel pool cooling,

(5) Section F.2.1 "Details," "Key Parameters" for safety functions support.

f) Following beyond-design-basis events, equipment being relied upon to support the transition phase could be damaged.

(1) Reasonable protection for associated equipment from external events is provided as described in ANP-10329 Section 4.1.4.

(2) Required equipment is protected from the beyond-design-basis events, and the functional capability of piping, valves, pumps, heat exchangers, power supplies, instrument and controls, and water sources following beyond-design-basis external event is described in Appendix D "FLEX Integrated Plan," as follows:

(3) Section B "Maintain Core Cooling & Heat Removal,"

(4) Section C "Maintain RCS Inventory Control,"

(5) Section D "Maintain Containment,"

(6) Section E "Maintain Spent Fuel Pool Cooling,"

(7) Section F "Safety Functions Support."

3. In the **Final Phase** for CCNPP Unit 3:

a) The required coping capability with respect to heat loads and flow rates in the final phase is addressed as follows:

(1) the required coping capability for core cooling is bounded by the coping capability analyzed in ANP-10329 Section 4.1.3.1 and 4.1.3.2,

(2) the required coping capability for the containment function is addressed in ANP-10329 Section 4.1.3.4 and the Flex Integrated Plan, Section D.3, "PWR Portable Equipment Phase 3,"

(3) the required coping capability for SFP cooling is bounded by the coping capability analyzed in ANP-10329 Section 4.1.3.

b) The required offsite equipment and resources for the final phase are identified in the Flex Integrated Plan, Table 2 and Table 3.

c) The offsite equipment will integrate with the onsite equipment to perform the required functions as described in ANP-10329 Table 4-10; the Flex Integrated Plan, Section A.2, "Key Site assumptions to implement NEI 12-06 strategies;" and the Flex Integrated Plan, Section A.9, "Describe Regional Response Center plan."

d) Transition phase equipment listed in 2 b) above; water sources listed in the Flex Integrated Plan, Attachment 4, "Makeup Water Sources;" and onsite fuel supplies, are capable of extending plant coping capability to beyond the time when offsite resources are initially available, which is approximately 24 hours after event initiation.

e) The coping capability (e.g., power supply, water sources) can be sustained indefinitely as demonstrated in ANP-10329 Section 4.1 and the Flex Integrated Plan, Section A.9, "Describe Regional Response Center Plan."

C. FLEX Program

a) The guidance and strategies to be used for Calvert Cliff Unit 3 to fulfill the key safety functions of core cooling, containment integrity, and spent fuel cooling are described in

the Flex Integrated Plan. A discussion of the extent that NEI 12-06 will be followed and a description of any alternatives to the NEI 12-06 guidance are provided in the Flex Integrated Plan, Section A.3.

b) All portions of the FLEX program (NEI 12-06) are applicable, with the exception of the portions that address boiling water reactors since CCNPP Unit 3 is a pressurized water reactor. The Flex Integrated Plan describes how NEI 12-06 is implemented.

c) An integrated plan regarding key assumptions associated with the implementation of the guidance and strategies required by Order EA-12-049 is in the Flex Integrated Plan, Section A.2.

d) Procedure and training development, including the completion schedule, is described in Attachment B-1 "FLEX Integrated Plan."

D. Multi-Unit Concern

CCNPP Unit 3 is a single unit site. The strategies formulated to respond to EA-12-049 are for a single unit site and do not rely on staffing, equipment and or strategies from other Units co-located to the CCNPP Unit 3 property. Currently submitted responses from co-located units do not rely on strategies formulated by CCNPP Unit 3.

E. FSAR Revision

COLA Impact

The CCNPP Unit 3 Combined License Application (COLA) Part 2, Final Safety Analysis Report (FSAR), has been revised as follows:

Table 1.8-2— FSAR Sections that Address COL Items

Item No.	Description	Section
...		
19.2-1	A COL applicant that references the U.S. EPR design certification will develop and implement severe accident management guidelines using the Operating Strategies for Severe Accidents (OSSA) methodology described in U.S. EPR FSAR Section 19.2.5 and in ANP-10314, Revision 0, "The Operating Strategies for Severe Accidents Methodology for the U.S. EPR Technical Report."	19.2.5
19.2-2	AREVA Technical Report ANP-10329 discusses the Phase 1, Phase 2, and Phase 3 actions that are performed to mitigate an ELAP event. A COL applicant that references the U.S. EPR design certification will address the actions listed in Table 19.2-6. The COL applicant will also address obtaining sufficient offsite resources to sustain core cooling, containment, and spent fuel pool cooling functions indefinitely.	19.2.8

19.2.7 Beyond Design Basis Large Commercial Aircraft Impact Assessment

No departures or supplements.

19.2.8 Beyond Design Beyond Design Basis Extended Loss of AC Power Assessment

{The COL Applicant is responsible for addressing Phases 2 and 3 in the CCNPP Unit 3 FSAR.

Fukushima Near-Term Task Force Recommendation 7.1 is addressed through enhancement of spent fuel makeup capability and instrumentation in the spent fuel pool. The training program to demonstrate that spent fuel pool instrumentation will be maintained available in an extended loss of AC power is addressed by means of COL Item 13.2-2.

Fukushima Near-Term Task Force Recommendation 9.3 is addressed by COL Item 13.3-2 addressing Emergency Preparedness Communications and Staffing.

Fukushima Near-Term Task Force Recommendations 4.2 and 7.1 are addressed by means of the COL Item 19.2-2 described below.}

The U.S. EPR FSAR includes the following COL Item in Section 19.2.8:

AREVA Technical Report ANP-10329 discusses the Phase 1, Phase 2, and Phase 3 actions that are performed to mitigate an ELAP event. A COL applicant that references the U.S. EPR design certification will address the actions listed in Table 19.2-6. The COL applicant will also

address obtaining sufficient offsite resources to sustain core cooling, containment, and spent fuel pool cooling functions indefinitely.

The COL Item is addressed as follows:

{The COL Responsibilities listed in U.S. EPR Design Certification FSAR Table 19.2-6 and the actions necessary to obtain sufficient offsite resources to sustain core cooling, containment, and spent fuel pool cooling functions indefinitely are described in the FLEX Integrated Plan.}

~~19.2.8~~ 19.2.9 References

No departures or supplements.

The CCNPP Unit 3 COLA Part 10, Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) and ITAAC Closure, has been revised as follows:

APPENDIX A- PROPOSED COMBINED LICENSE CONDITIONS

...

COL Item 19.2-1 in Section 19.2.5

Severe accident management guidelines will be developed and implemented using the Operating Strategies for Severe Accidents (OSSA) methodology described in U.S. EPR FSAR Section 19.2.5 and in ANP-10314, Revision 0, "The Operating Strategies for Severe Accidents Methodology for the U.S. EPR Technical Report."

COL Item 19.2-2 in Section 19.2.8

{The COL Responsibilities listed in U.S. EPR Design Certification FSAR Table 19.2-6 and the actions necessary to obtain sufficient offsite resources to sustain core cooling, containment, and spent fuel pool cooling functions indefinitely are described in the FLEX Integrated Plan.}

Enclosure 2

CCNPP Unit 3 FLEX Integrated Plan

CCNPP Unit 3 FLEX Integrated Plan

Revision 0

6/14/13

A: General Integrated Plan Elements	
A.1: Determine Applicable Extreme External Hazard **Ref: NEI 12-06 section 4.0 -9.0** **JLD-ISG-2012-01 section 1.0**	*Input the hazards applicable to the site; seismic, external flood, high winds, snow, ice, cold, high temps.* *Describe how NEI 12-06 sections 5 – 9 were applied and the basis for why the plant screened out for certain hazards.*

The Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3 site is located on the western shore of the Chesapeake Bay, near the town of Lusby in Calvert County Maryland. The plant's nuclear steam supply system (NSSS) is a pressurized water reactor designed by AREVA NP. The balance of plant was designed by Bechtel North American Power Corporation (Bechtel).

The applicable extreme external hazards for CCNPP Unit 3 are seismic, external flooding, high winds (including tornadoes), snow, ice, extreme cold and high temperatures, as detailed below.

Seismic:
CCNPP Unit 3 Final Safety Analysis Report (FSAR) Section 2.5 describes the site-specific seismic design characteristics for CCNPP Unit 3.

The U.S. EPR seismic design envelops the CCNPP Unit 3 site by an adequate margin, except at the very low frequencies. A site-specific Soil Structure Interaction (SSI) analysis and structural reconciliation process is being implemented as described in CCNPP Unit 3 FSAR Section 2.5.2.6. The analysis will provide the In-Structure Response Spectra that results from applying the site-specific input ground motion, which incorporates the latest Seismic Source models for the Central and Eastern United States.

NEI 12-06 (Reference 2) Section 5.2 requires sites to address hazards associated to earthquake ground motion. Hazards applicable to the CCNPP Unit 3 are mainly structural demand from ground acceleration, liquefaction, and slope stability. Therefore, a seismic hazard assessment, a liquefaction analysis, and a slope stability analysis are performed for the CCNPP Unit 3 site. Per CCNPP Unit 3 FSAR Table 2.0-1 and Section 2.5.4.8.9, liquefaction is not a concern at CCNPP Unit 3. Per CCNPP Unit 3 FSAR Section 2.5, slopes at the site, both natural and man-made, have adequate Factors of Safety.

External Flood:
As stated in CCNPP Unit 3 FSAR Section 3.4, Seismic Category I structures, systems and components (SSC) can withstand the effects of flooding due to natural phenomena or onsite equipment failures without losing the capability to perform their safety-related functions. The maximum flood and ground water elevations for the U.S. EPR are shown in CCNPP Unit 3 FSAR Table 2.0-1.

ANP-10329, "U.S. EPR Mitigation Strategies for Extended Loss of AC Power Event," (Reference 1) Section 4.1.4, indicates that the Fire Protection Building and the fire water storage tanks are the only nonsafety-related structures that are credited for Phase 1 event mitigation of an extended loss of AC power (ELAP) event. Taking this into account, the Fire Protection Building and the fire water storage tanks are designed and constructed at least one foot above the flood elevation.

A: General Integrated Plan Elements

CCNPP Unit 3 FSAR Section 3.4.2 states that the U.S. EPR FSAR requires the Probable Maximum Flood (PMF) elevation to be 1 ft. (0.3 m) below finished yard grade. This requirement envelops the CCNPP Unit 3 maximum flood level for safety-related structures, except the Ultimate Heat Sink (UHS) Makeup Water Intake Structure. The UHS Makeup Water Intake Structure is located at the shoreline. Since the UHS Makeup Water Intake Structure is classified as a safety-related building, it will be designed to meet the requirements of Regulatory Guide 1.27 (NRC, 1976). The UHS Makeup Water Intake Structure is designed to be watertight to prevent internal flooding of the buildings. The UHS Makeup Water Intake Structure is described in CCNPP Unit 3 FSAR Section 2.4.10, Section 3.4.3.10, Section 3.8.5 and Section 9.2.5.

Therefore, per NEI 12-06 (Reference 2) Section 6.2.1, CCNPP Unit 3 is a "dry" site, with the exception of the UHS Makeup Water Intake Structure because it is below the maximum flood level.

High Wind Hazard Assessment:
As stated in CCNPP Unit 3 FSAR Table 2.1-1, CCNPP Unit 3 is located at 38° 25' 40.85225" N latitude and 76° 26' 19.26254" W longitude (NAD 27). This location is approximately 10.5 miles southeast of the town of Prince Frederick, Maryland. Per NEI 12-06 (Reference 2) Figure 7-1, Contours of Peak-Gust Wind Speeds at 10-m Height in Flat Open Terrain, Annual Exceedance Probability of 10^{-6}, CCNPP Unit 3 has a 10^{-6}/year chance of a hurricane induced peak-gust wind speed of 150 - 160 miles per hour.

Per NEI 12-06 (Reference 2) Figure 7-2, Recommended Tornado Design Wind Speeds for the 10^{-6}/yr. Probability Level, CCNPP Unit 3 has a 10^{-6}/year chance of tornado wind speeds of 166 miles per hour. As this is greater than the NEI 12-06 (Reference 2) threshold of 130 mph, the site will address tornado hazards impacting FLEX deployment.

Therefore, a high wind hazard assessment is applicable to CCNPP Unit 3.

Snow, Ice and Extreme Cold Hazard Assessment:
NEI 12-06 (Reference 2) Section 8.2.1 includes the need to consider extreme snowfall and low temperatures at plant sites in the United States above the 35th parallel. CCNPP Unit 3 is located above the 35th parallel and thus the capability to address hindrances caused by extreme snowfall with snow removal equipment needs to be provided. NEI 12-06 (Reference 2) Figure 8-2 "Maximum Ice Storm Severity" indicates that CCNPP Unit 3 is located within the region characterized by the Electric Power Research Institute (EPRI) as ice severity level 4.

Per CCNPP Unit 3 FSAR Section 2.3.1.2.2.10, Snow Storms, the record 1-day snowfall events are presented in Table 2.3-103. The highest 1-day snowfall event was measured on February 19, 1979, at Owings Ferry Landing, Maryland, with a snowfall of 26.0 in (660.4 mm) and a period of record from 1917 through 1998. Per CCNPP Unit 3 FSAR Section 2.3.1.2.2.12, Snow/Ice Load on Roofs of Safety Related Structures, the extreme winter precipitation live roof load is 38.0 lb./ft^2 (185.5 kg/m^2). This site-specific extreme winter precipitation live roof load is bounded by the U.S. EPR design value.

Per CCNPP Unit 3 FSAR Section 2.3.1.2.2.16, the lowest recorded minimum temperature value of -14°F (-25.6°C) is the extreme minimum annual site temperature.

The HVAC systems that are safety-related and are designed to 0% exceedance temperature values (115°F dry bulb temperature and coincident 80°F wet bulb temperature; -40°F dry bulb temperature) are:

- Containment Building Ventilation System (CCNPP Unit 3 FSAR Section 9.4.7)
- Annulus Building Ventilation System (Section 9.4.7)
- Safeguard Building Controlled-Area Ventilation System (Section 9.4.5)
- Main Control Room AC System (Section 9.4.1)

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- Electrical Division of Safeguard Building Ventilation Systems (Section 9.4.6)
- Emergency Power Generating Building Ventilation System (Section 9.4.9)
- Fuel Building Ventilation System (Section 9.4.2)
- Essential Service Water Ventilation System (Section 9.4.11)

The UHS Makeup Water and Electrical Distribution Ventilation System (CCNPP Unit 3 Section 9.4.15) is safety-related, and is designed to site specific 0% exceedance temperature values (102°F dry bulb temperature coincident 80°F wet bulb temperature; 0°F dry bulb temperature).

The Fire Protection Building Ventilation System (CCNPP Unit 3 Section 9.4.16) is nonsafety-related, augmented quality and is designed to 0% exceedance temperature values (115°F dry bulb temperature and coincident 80°F wet bulb temperature; -40°F dry bulb temperature).

Ice effects are discussed in CCNPP Unit 3 FSAR Section 2.4.7.

Therefore, a snow, ice and extreme cold hazard assessment is applicable to CCNPP Unit 3.

Extreme High Temperature Hazard Assessment:
Per NEI 12-06 (Reference 2) Section 9.2, sites will address high temperatures. In the Chesapeake Bay western shore region of Maryland summers are warm and humid, with rare periods of extremely hot weather over 100°F. As stated in CCNPP Unit 3 FSAR Section 2.3.1.2.2.16, the highest recorded maximum temperature value of 106°F (41.1°C) is the extreme maximum annual site temperature. Extreme high temperatures are not expected to impact the utilization of off-site resources or the ability of personnel to implement the required FLEX strategies.

Therefore, an extreme high temperature assessment is applicable to CCNPP Unit 3.

The UHS Makeup Water Intake Structure is not credited in any FLEX strategies; therefore, extreme external hazard assessments are not applicable to the UHS Makeup Water Intake Structure.

NEI 12-06 (Reference 2) has requirements for N+1 for FLEX equipment that directly supports key safety functions. The N+1 requirement addresses FLEX equipment reliability and reasonable protection. No one event, external or reliability based, can reasonably fail the site FLEX capability (i.e., a reliability failure and an external event failure are not required to be considered simultaneously). The intent of reasonable protection is defined in NEI 12-06 (Reference 2) Section 11.3.3 as, "FLEX mitigation equipment should be stored in a location or locations informed by evaluations performed per Sections 5 through 9 such that no one external event can reasonably fail the site FLEX capability (N)."

CCNPP Unit 3 portable equipment storage locations will satisfy these requirements as follows:

- Two buildings built to ASCE 7-10 for hurricane wind speeds.
- Tornadoes and wind-generated missiles will be accounted for by separation of the storage locations. NEI 12-06 (Reference 2) Section 7.3.1.1.c allows reasonable protection by separation for tornadoes only, so the buildings need to be hurricane protected.
- Axis of separation and equipment tie down will be considered.
- Each location will contain N sets of equipment.
- Large portable FLEX equipment such as pumps and power supplies stored outside a structure will be secured as appropriate to protect them during a seismic event. Evaluations will be performed for seismic interactions to ensure equipment is not damaged by non-seismically robust components or structures.

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- Buildings will be located above the PMF and will be accessible to support deployment in a timely manner.
- Buildings will be environmentally controlled to maintain functionality of the equipment.

A.2: Key Site assumptions to implement NEI 12-06 strategies. **Ref: NEI 12-06 section 3.2.1**	*Provide key assumptions associated with implementation of FLEX Strategies:* • *Flood and seismic re-evaluations pursuant to the 10 CFR 50.54(f) letter of March 12, 2012 are not completed and therefore not assumed in this submittal. As the re-evaluations are completed, appropriate issues will be entered into the corrective action system and addressed on a schedule commensurate with other licensing bases changes.* • *Exceptions for the site security plan or other (license/site specific) requirements of 10CFR may be required.* • *Deployment resources are assumed to begin arriving at hour 6 and fully staffed by 24 hours.* • *Certain Technical Specifications cannot be complied with during FLEX implementation.*

Key assumptions associated with implementation of FLEX Strategies for CCNPP Unit 3 are described below:

- A staffing assessment will be performed as required by the NTTF recommendation 9.3 for staffing.
- Entry into Extended Loss of AC Power (ELAP) will occur at ten minutes from event initiation.
- The designed hardened connections will be protected against external hazards.
- Detailed equipment deployment strategies will be developed at least 180 days prior to initial fuel load.
- Phase 2 FLEX components will be stored at the site in a location or locations such that they are reasonably protected and that no one external event can reasonably fail the site FLEX capability. Provision will be made for multiple sets of portable on-site equipment stored in diverse locations or through storage in structures designed to reasonably protect from applicable external events.
- Maximum expected room temperatures for habitability or equipment availability are discussed in ANP-10329 (Reference 1).
- This plan defines strategies capable of mitigating a simultaneous loss of all alternating current (ac) power and loss of normal access to the ultimate heat sink resulting from a beyond-design-basis event, by providing adequate capability to maintain or restore core cooling, containment, and Spent Fuel Pool (SFP) cooling capabilities on a site. Though specific strategies are being developed, due to the inability to anticipate all possible scenarios, the strategies are diverse and flexible to encompass a wide range of possible conditions. These pre-planned strategies developed to protect the public health and safety will be incorporated into the unit emergency operating procedures (EOP) in accordance with established EOP change processes, and their impact to the design basis capabilities of the unit evaluated under 10 CFR 50.59. The plant Technical Specifications contain the limiting conditions for normal unit operations to ensure that design safety features are available to respond to a design basis accident and direct the required actions to be taken when the limiting conditions are not met. The result of the beyond-design-basis event may place the plant in a condition where it cannot comply with certain Technical Specifications and/or with its Security Plan, and, as such, may warrant invocation of 10 CFR 50.54(x) and/or 10 CFR 73.55(p). (Reference 3)
- FLEX equipment storage location(s) have not been selected. Implementation routes will be defined upon finalizing a location or locations for FLEX equipment storage location(s). Requirements, options, and strategies will be developed to provide reasonably protected storage on site for the FLEX portable equipment. A protected storage location or locations for the FLEX equipment will be developed and built to the design requirements of NEI 12-06 (Reference 2).

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• "Robust" as used in this document means that the design of the SSC either meets the current plant design basis for the applicable external hazards or has been shown by analysis or test to meet or exceed the current design basis. This definition is consistent with NEI 12-06 (Reference 2). • Personnel resources are assumed to already be onsite for predicted severe weather events or other slower moving events, and begin arriving at the site after 6 hours for fast moving events with full staffing reached at 24 hours. The FLEX coping strategy will provide the capability to sustain functions "indefinitely." • The Regional Response Center (RRC) will be able to provide equipment to the site within 24 hours of requesting the equipment. The 24 hours is based on 20 hours for equipment and resources to arrive at the offsite CCNPP Unit 3 staging location and an assumed four hours to relocate the equipment to the site. The four hours accounts for the time required for possible removal of flood or severe weather related debris, equipment transport from the offsite location to the onsite location, and to connect the equipment. • NEI 12-06 (Reference 2) Section 3.2 Performance Attributes, states "...installed equipment that is designed to be robust with respect to design basis external events is assumed to be fully available." • NEI 12-06 (Reference 2) Section 3.2.1.3 Initial Conditions, (6) states "Permanent plant equipment that is contained in structures with designs that are robust with respect to seismic events, floods and high winds and associated missiles are available." • NEI 12-06 (Reference 2) Section 3.2.1.3 (8) states "Installed electrical distribution systems...remain available provided they are protected..." • Standard electrical and mechanical connectors compatible with site connections, as stated in NEI 12-06 (Reference 2) Section 3.3 and Section 12.2, are utilized for portable equipment. • The remaining items in NEI 12-06 (Reference 2) Section 3.2.1.3 are incorporated in this document. • The portable diesel powered equipment will run off the same fuel utilized for the emergency diesel generators (EDG) and station blackout (SBO) diesels.	
A.3: Extent to which the guidance, JLD-ISG-2012-01 and NEI 12-06, are being followed. Identify any deviations to JLD-ISG-2012-01 and NEI 12-06. **Ref: JLD-ISG-2012-01** **NEI 12-06 13.1**	*Include a description of any alternatives to the guidance, and provide a milestone schedule of planned action.* CCNPP Unit 3 conforms to JLD-ISG-2012-01, and NEI 12-06 (Reference 2) with certain clarifications, as described in ANP-10329 (Reference 1) Section 2.1.

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A.4: Provide a sequence of events and identify any time constraint required for success including the technical basis for the time constraint. **Ref: NEI 12-06 section 3.2.1.7** **JLD-ISG-2012-01 section 2.1**	*Strategies that have a time constraint to be successful should be identified with a technical basis and a justification provided that the time can reasonably be met (for example, a walkthrough of deployment).* *Describe in detail in this section the technical basis for the time constraint identified on the sequence of events timeline Attachment 1A* *See attached sequence of events timeline (Attachment 1A).* *Technical Basis Support information, see attached NSSS Significant Reference Analysis Deviation Table (Attachment 1B)* The sequence of events and technical basis for time constraints are provided in ANP-10329 (Reference 1) Section 4.1.6. The sequence of events for ELAP initiated in Modes 1 through 5 is provided in ANP-10329 (Reference 1) Table 4-8, and the sequence of events for ELAP initiated in Mode 6 is provided in ANP-10329 (Reference 1) Table 4-9. The analytical bases for the time constraints are described in more detail in ANP-10329 (Reference 1) Section 4.1.3.
A.5: Identify how strategies will be deployed in all modes. **Ref: NEI 12-06 section 13.1.6**	*Describe how the strategies will be deployed in all modes.* An administrative program will be provided to document the FLEX deployment strategy and to govern marking of setup locations and primary and alternate pathways, maintaining the pathways clear, and clearing the pathways. Identified FLEX paths and deployment areas will be accessible during modes of operation. Transportation strategies will be developed to move equipment from the equipment staging area to where the equipment is needed. The administrative program will monitor transportation route availability and provide required compensatory actions if routes become unavailable. These details will be included in the plant specific FLEX Response Plan. The FLEX Response Plan is an agreement between the site and the RRC defining the specific equipment required for the site, the priority of delivery of the equipment, and the delivery logistics for the equipment.) A suitable local staging area for portable FLEX equipment to be delivered from the RRC to the site will be established.

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A.6: Provide a milestone schedule. This schedule should include:
• **Modifications timeline**
  o **Phase 1 Modifications**
  o **Phase 2 Modifications**
  o **Phase 3 Modifications**
• **Procedure guidance development complete**
  o **Strategies**
  o **Maintenance**
• **Storage plan (reasonable protection)**
• **Staffing analysis completion**
• **FLEX equipment acquisition timeline**
• **Training completion for the strategies**
• **Regional Response Centers operational**
 	
Ref: NEI 12-06 section 13.1
	The dates specifically required by the order are obligated or committed dates. Other dates are planned dates subject to change. Updates will be provided in the periodic (six month) status reports.
	See attached milestone schedule Attachment 2
	Development of a milestone schedule is not applicable to CCNPP Unit 3 since it is a pre-construction plant. Actions required by this document will be implemented at least 180 days prior to initial fuel load at CCNPP Unit 3.

A.7: Identify how the programmatic controls will be met. **Ref: NEI 12-06 section 11** **JLD-ISG-2012-01 section 6.0**	*Provide a description of the programmatic controls equipment protection, storage and deployment and equipment quality. See section 11 in NEI 12-06. Storage of equipment, 11.3, will be documented in later sections of this template and need not be included in this section. See section 6.0 of JLD-ISG-2012-01.* CCNPP Unit 3 will implement an administrative program whereby the equipment used in these strategies will be controlled with respect to configuration control, maintenance and testing. Preventative Maintenance (PM) activities and inventories will be established for required components and testing procedures will be developed and frequencies established based on type of equipment and considerations made within EPRI guidelines. These programs, maintenance requirements, and procedures, which are part of the CCNPP Unit 3 operational programs, will be in place at least 180 days prior to initial fuel load at CCNPP Unit 3.) Procedures or FLEX Support Guidelines (FSG) will be developed. The FSGs will be in place 180 days prior to initial fuel load at CCNPP Unit 3.

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A.8: Describe training plan	*List training plans for affected organizations or describe the plan for training development* The Systematic Approach to Training (SAT) will be used to evaluate required training for station personnel based upon plant equipment and procedures that result from implementation of the strategies described in this report. CCNPP Unit 3 will develop procedures based on industry guidance from the Owners Groups, EPRI, and NEI as part of the Procedure Development Plan described in CCNPP Unit 3 FSAR Section 13.5. The procedures, training, and any walk-through validation will be in place and completed at least 180 days prior to the initial fuel load of CCNPP Unit 3.
A.9: Describe Regional Response Center plan	The industry will establish two (2) Regional Response Centers (RRC) to support utilities during beyond design basis events. Each RRC will hold five (5) sets of equipment, four (4) of which will be able to be fully deployed when requested. The fifth set will have equipment in a maintenance cycle. Equipment will be moved from an RRC to a local Assembly Area, established by the SAFER team and the utility. Communications will be established between the affected nuclear site and the SAFER team and required equipment moved to the site as needed. First arriving equipment, as established during development of the nuclear site's playbook, will be delivered to the site within 24 hours from the initial request. The RRC that will support CCNPP Unit 3 is located in Memphis, Tennessee. The alternate RRC will be located in Phoenix, AZ. Potential helicopter landing zones and local staging areas are shown in Attachments 8 and 9.

B: Maintain Core Cooling & Heat Removal	
Determine Baseline coping capability with installed coping[1] modifications not including FLEX modifications, utilizing methods described in Table 3-2 of NEI 12-06: • **AFW/EFW** • **Depressurize Steam Generator (SG) for Makeup with Portable Injection Source** • **Sustained Source of Water** Ref: JLD-ISG-2012-01 section 2 and 3	
B.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 core cooling. Identify methods (AFW/EFW) and strategy(-ies) utilized to achieve this coping time. In Modes 1 through 5, secondary feed and bleed cooling is used to maintain core cooling as described in ANP-10329 (Reference 1) Section 4.1.5.2. This mode of core cooling requires depressurization of the SGs to 100 psia to allow SG feed from a diesel driven fire pump via the EFW system. In Mode 6 with the Reactor Vessel (RV) head removed, primary feed and bleed cooling is used to maintain core cooling as described in ANP-10329 (Reference 1) Section 4.1.5.3. In Phase 1 the accumulators are used as an injection source, by opening the accumulator outlet isolation valves to pre-determined positions that ensure adequate flow for core cooling. The duration of each phase is summarized in Attachment 6 and 7.	
B.1.1: Details:	
Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation.* CCNPP Unit 3 will develop procedures based on industry guidance from the Owners Groups, EPRI, and NEI, as part of the Procedure Development Plan described in FSAR Section 13.5 that implement the strategies described in ANP-10329 (Reference 1) Sections 4.1.5.2 and 4.1.5.3. The procedures, training, and any walk-through validation will be in place and completed at least 180 days prior to the initial fuel load of CCNPP Unit 3. These procedures and/or guidelines will support the symptom based command and control strategies developed in the EOPs and Abnormal Operating Procedures (AOP), and include Standard Post Trip Actions, Station Blackout, Abnormal Shutdown Cooling Conditions, and Loss of Offsite Power.
Identify modifications	*List modifications and describe how they support coping time.* None required. The design features implemented to support FLEX strategies are described in ANP-10329 (Reference 1).
Key Reactor Parameters	*List instrumentation credited for this coping evaluation phase.* Instrumentation and controls credited during an ELAP event are described in ANP-10329 (Reference 1), Section 4.1.5.6.
Notes: Actions required to ensure continuous power to essential instrumentation are discussed in ANP-10329 (Reference 1) Section 4.1.5.1.	

[1] 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.

B: Maintain Core Cooling & Heat Removal

B.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 core cooling. Identify methods and strategy(ies) utilized to achieve this coping time.

Phase 2 of core cooling and heat removal is accomplished with secondary feed and bleed cooling used to maintain core cooling for events initiated in Modes 1 through 5 and is described in ANP-10329 (Reference 1) Section 4.1.5.2. The following portable equipment will be provided to maintain core cooling in Phase 2:

- Portable self-powered SG Feed Pump (in the event that the diesel driven fire pumps are not available)
- Portable means to refill fire water storage tank (approximately 17 hours) (potential sources of makeup water are listed in Attachment 4)
- Portable means to refill fire pump diesel tanks from onsite diesel fuel oil tanks (approximately every 3.5 days)

Phase 2 of core cooling and heat removal for events initiated in Mode 6 with the RV head removed is described in ANP-10329 (Reference 1) Section 4.1.5.3 using primary side feed and bleed cooling. A source of pumped injection is required to be placed in service prior to exhaustion of the available accumulator inventory, at approximately 2 hours after event initiation. The following equipment will be provided to maintain core cooling in Phase 2:

- Pre-staged Primary Coolant Injection Pump powered from the ELAP Diesel Generator (DG)
- Portable ELAP generators to provide an alternate means to power the Primary Coolant Injection Pump

Actions required to power the Primary Coolant Injection Pump from the ELAP DG are discussed in ANP-10329 (Reference 1) Section 4.1.5.1.

Performance requirements for portable equipment are described in ANP-10329 (Reference 1) Section 4.1.7.

In order to provide reliability and availability of the FLEX equipment required to meet these capabilities, CCNPP Unit 3 will have sufficient portable equipment to address functions on-site, plus one additional spare, (i.e., an N+1 capability, where "N" is the number of units on-site). Thus, CCNPP Unit 3 would nominally have at least two portable pumps, two sets of portable ac power supplies, two sets of hoses and cables, etc. It is also acceptable to have multiple strategies to accomplish a function (e.g., two separate means to power the Primary Coolant Injection Pump). In this case, the equipment associated with each strategy does not require N+1. The N+1 capability applies to the portable FLEX equipment described in NEI 12-06 (Reference 2) Table 3-2 PWR FLEX Baseline Capability (i.e., that equipment that directly supports maintenance of the key safety functions).

CCNPP Unit 3 will have permanent, installed connection points for portable fluid and electrical equipment for Phase 2. CCNPP Unit 3 portable equipment mechanical connections will have a primary and an alternate connection or delivery point. Electrical diversity will be accomplished by having an ELAP DG installed in the Fire Protection Building and alternate electrical connections in Safeguards Building 2 for portable ELAP generators.

The duration of each phase is summarized in Attachment 6 and 7.

B: Maintain Core Cooling & Heat Removal	
B.2.1: Details:	
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.* CCNPP Unit 3 will develop procedures based on industry guidance from the Owners Groups, EPRI, and NEI, as part of the Procedure Development Plan described in FSAR Section 13.5 that implement the strategies described in ANP-10329 (Reference 1) Sections 4.1.5.2 and 4.1.5.3. The procedures, training, and any walk-through validation will be in place and completed at least 180 days prior to the initial fuel load of CCNPP Unit 3. These procedures and/or guidelines will support the symptom based command and control strategies developed in the EOPs and AOPs, and include Standard Post Trip Actions, Station Blackout, Abnormal Shutdown Cooling Conditions, and Loss of Offsite Power.
Identify modifications	*List modifications necessary for phase 2* None required. The design features implemented to support FLEX strategies are described in ANP-10329 (Reference 1).
Key Reactor Parameters	*List instrumentation credited or recovered for this coping evaluation.* Instrumentation and controls credited during an ELAP event are described in ANP-10329 (Reference 1) Section 4.1.5.6.
B.2.2: Storage / Protection of Equipment : **Describe storage / protection plan or schedule to determine storage requirements**	
Seismic	*List Protection or schedule to protect* Structures to provide protection of the FLEX equipment will be constructed to meet the requirements identified in NEI 12-06 (Reference 2) Section 11. The construction of the structures will be completed at least 180 days prior to initial fuel load. CCNPP Unit 3 procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the hazards applicable to CCNPP Unit 3.
Flooding Note: if stored below current flood level, then ensure procedures exist to move equipment prior to exceeding flood level.	*List Protection or schedule to protect* Structures to provide protection of the FLEX equipment will be constructed to meet the requirements identified in NEI 12-06 (Reference 2) Section 11. The construction of the structures will be completed at least 180 days prior to initial fuel load. CCNPP Unit 3 procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the hazards applicable to CCNPP Unit 3.
Severe Storms with High Winds	*List Protection or schedule to protect* Structures to provide protection of the FLEX equipment will be constructed to meet the requirements identified in NEI 12-06 (Reference 2) Section 11. The construction of the structures will be completed at least 180 days prior to initial fuel load. CCNPP Unit 3 procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the hazards applicable to CCNPP Unit 3.

B: Maintain Core Cooling & Heat Removal	
Snow, Ice, and Extreme Cold	*List Protection or schedule to protect* Structures to provide protection of the FLEX equipment will be constructed to meet the requirements identified in NEI 12-06 (Reference 2) Section 11. The construction of the structures will be completed at least 180 days prior to initial fuel load. CCNPP Unit 3 procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the hazards applicable to CCNPP Unit 3.
High Temperatures	*List Protection or schedule to protect* Structures to provide protection of the FLEX equipment will be constructed to meet the requirements identified in NEI 12-06 (Reference 2) Section 11. The construction of the structures will be completed at least 180 days prior to initial fuel load. CCNPP Unit 3 procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the hazards applicable to CCNPP Unit 3. Storage structures will be ventilated to allow equipment to function.

B.2.3: Deployment Conceptual Design
(Attachment 3 contains Conceptual Sketches)

Strategy	**Modifications**	**Protection of connections**
Identify Strategy including how the equipment will be deployed to the point of use. Detailed equipment deployment strategies will be developed at least 180 days prior to initial fuel load.	*Identify modifications*	*Identify how the connection is protected*
Secondary Feed and Bleed (Modes 1-5): Portable self-powered SG Feed Pump.	None required.	Two connection locations are provided for the portable, self-powered pump to inject into EFW discharge cross-tie header. One connection is at the exterior of Safeguards Building 1 and one is at the Fire Protection Building. One connection on the Fire Water Storage Tanks outlet cross-tie line is also provided to provide suction to a portable, self-powered pump from the Fire Water Storage Tanks as an alternative to a portable water supply. (ANP-10329 (Reference 1) Figure 4-17)
Secondary Feed and Bleed (Modes 1-5): Portable means to refill fire water storage tank.	None required.	Each Fire Water Storage Tank is provided with a six inch seismically qualified connection and isolation valve for makeup from a portable self-powered pump. Fire Water Storage Tanks meet NEI reasonable protection standards.

B: Maintain Core Cooling & Heat Removal		
Secondary Feed and Bleed (Modes 1-5): Portable means to refill fire pump diesel tanks.	None required.	One connection is provided for each diesel driven fire pump fuel oil tank. The connections are located on the exterior of the reasonably protected Fire Protection Building.
Primary Feed and Bleed (Mode 6 with RV head removed): Pre-staged Primary Coolant Injection Pump powered from the ELAP DG	None required.	The pump mechanical connections are permanent. The pump motor is manually connected to the output of the ELAP DG or portable ELAP generators when required. The mechanical and electrical connections are located in the reasonably protected Safeguard Building 1. Connections meet the NEI 12-06 (Reference 2) reasonable protection standards. (ANP-10329 (Reference 1) Figures 4-14 and 4-18)
Notes: Actions required to ensure continuous power to essential instrumentation are discussed in ANP-10329 (Reference 1) Section 4.1.5.1.		

B: Maintain Core Cooling & Heat Removal		
B.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 core cooling. Identify methods and strategy(ies) utilized to achieve this coping time. Phase 3 of secondary feed and bleed cooling (Modes 1-5) will continue to utilize equipment relied upon during Phase 2 event mitigation. Actions are required in Phase 3 to provide continued replenishment of the fire water storage tank and diesel driven fire pump fuel tanks. If the portable self-powered SG Feed Pump is being used, replenishment of the suction source and fuel supply will be required. Phase 3 of primary feed and bleed cooling (Mode 6 with RV head removed) will continue to utilize equipment relied upon during Phase 2 event mitigation. Actions are required in Phase 3 to provide replenishment of the fuel supplies for the ELAP DG or portable ELAP generators. The duration of each phase is summarized in Attachment 6 and 7.		
B.3.1: Details:		
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.* CCNPP Unit 3 will develop procedures based on industry guidance from the Owners Groups, EPRI, and NEI, as part of the Procedure Development Plan described in FSAR Section 13.5 that implement the strategies described in ANP-10329 (Reference 1) Sections 4.1.5.2 and 4.1.5.3. The procedures, training, and any walk-through validation will be in place and completed at least 180 days prior to the initial fuel load of CCNPP Unit 3. These procedures and/or guidelines will support the symptom based command and control strategies developed in the EOPs and AOPs, and include Standard Post Trip Actions, Station Blackout, Abnormal Shutdown Cooling Conditions, and Loss of Offsite Power.	
Identify modifications	*List modifications necessary for phase 3* Not Applicable	
Key Reactor Parameters	*List instrumentation credited or recovered for this coping evaluation.* Instrumentation and controls credited during an ELAP event are described in ANP-10329 (Reference 1), Section 4.1.5.6.	
B.3.2: Deployment Conceptual Design (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of connections**
Identify Strategy including how the equipment will be deployed to the point of use. Detailed equipment deployment strategies will be developed at least 180 days prior to initial fuel load.	*Identify modifications*	*Identify how the connection is protected*
Secondary Feed and Bleed (Modes 1-5): Portable self-powered SG Feed Pump	None required.	Two connection locations are provided for the portable, self-powered pump to inject into EFW discharge cross-tie header. One connection is at the exterior of Safeguards Building 1 and one is at the Fire Protection Building.

B: Maintain Core Cooling & Heat Removal		
B.3: PWR Portable Equipment Phase 3		
		One connection on the Fire Water Storage Tanks outlet cross-tie line is also provided to provide suction to portable, self-powered pump from the Fire Water Storage Tanks as an alternative to a portable water supply.
Secondary Feed and Bleed (Modes 1-5): Portable means to refill fire water storage tank.	None required.	Each Fire Water Storage Tank is provided with a six inch seismically qualified connection and isolation valve for makeup from a portable self-powered pump. Fire Water Storage Tanks meet NEI reasonable protection standards.
Secondary Feed and Bleed (Modes 1-5): Portable means to refill fire pump diesel tanks.	None required.	One connection is provided for each diesel driven fire pump fuel oil tank. The connections are located on the exterior of the reasonably protected Fire Protection Building.
Primary Feed and Bleed (Mode 6 with RV head removed): Pre-staged Primary Coolant Injection Pump powered from the ELAP DG	None required.	The pump mechanical connections are permanent. The pump motor is manually connected to the output of the ELAP DG or portable ELAP generators when required. The mechanical and electrical connections are located in the reasonably protected Safeguard Building 1. Connections meet the NEI 12-06 (Reference 2) reasonable protection standards. (ANP-10329 (Reference 1) Figures 4-14 and 4-18)
Notes: Actions required to ensure continuous power to essential instrumentation are discussed in ANP-10329 (Reference 1) Section 4.1.5.1.		

C: Maintain RCS Inventory Control

Determine Baseline coping capability with installed coping[1] modifications not including FLEX modifications, utilizing methods described in Table 3-2 of NEI 12-06:

- **Low Leak RCP Seals or RCS makeup required**
- **All Plants Provide Means to Provide Borated RCS Makeup**

C.1: PWR Installed Equipment Phase 1:

Provide a general description of the coping strategies using installed equipment including modifications that are proposed to maintain core cooling. Identify methods (Low Leak RCP Seals and/or borated high pressure RCS makeup)and strategy(ies) utilized to achieve this coping time.

In Modes 1 through 5, RCS inventory is controlled by minimizing RCS inventory losses and providing a source of RCS makeup. RCS inventory losses are minimized in Phase 1 of event mitigation by automatic isolation of letdown, isolation of pressurizer continuous degasification, and closure of the RCP Stand Still Seals, as described in ANP-10329 (Reference 1), Section 4.1.5.2.1.2. RCS makeup is provided by accumulator injection as described in ANP-10329 (Reference 1) Section 4.1.5.2.1.1.

In Mode 6 with the RV head removed, the accumulators are used to control RCS inventory in Phase 1. The accumulator outlet isolation valves are opened to pre-determined positions that ensure adequate flow to replace inventory lost to boil off, as described in ANP-10329 (Reference 1) Section 4.1.5.3.1.

The duration of each phase is summarized in Attachment 6 and 7.

C.1.1: Details:

Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation* CCNPP Unit 3 will develop procedures based on industry guidance from the Owners Groups, EPRI, and NEI, as part of the Procedure Development Plan described in FSAR Section 13.5 that implement the strategies described in ANP-10329 (Reference 1) Sections 4.1.5.2 and 4.1.5.3. The procedures, training, and any walk-through validation will be in place and completed at least 180 days prior to the initial fuel load of CCNPP Unit 3. These procedures and/or guidelines will support the symptom based command and control strategies developed in the EOPs and AOPs, and include Standard Post Trip Actions, Station Blackout, Abnormal Shutdown Cooling Conditions, and Loss of Offsite Power.
Identify modifications	*List modifications* None required. The design features implemented to support FLEX strategies are described in ANP-10329 (Reference 1).
Key Reactor Parameters	*List instrumentation credited for this coping evaluation.* Instrumentation and controls credited during an ELAP event are described in ANP-10329 (Reference 1), Section 4.1.5.6.
Notes: Actions required to ensure continuous power to essential instrumentation are discussed in ANP-10329 (Reference 1) Section 4.1.5.1.	

C: Maintain RCS Inventory Control

C.2: PWR Portable Equipment Phase 2:

Provide a general description of the coping strategies using on-site portable equipment including modifications that are proposed to maintain core cooling. Identify methods (Low Leak RCP Seals and/or borated high pressure RCS makeup)and strategy(ies) utilized to achieve this coping time.

Phase 2 RCS inventory control for events initiated in Modes 1 through 5 is described in ANP-10329 (Reference 1), Section 4.1.5.2.1.1. A source of pumped injection is required to be placed in service prior to exhaustion of the available accumulator inventory, at approximately 24 hours after event initiation. The following portable equipment will be provided to maintain core cooling in Phase 2:

- Portable self-powered RCS makeup pump (medium pressure)
- Portable borated water suction supply source for portable self-powered RCS makeup pump (medium pressure)

Phase 2 RCS inventory control for events initiated in Mode 6 with the RV head removed is described in ANP-10329 (Reference 1) Section 4.1.5.3. A source of pumped injection is required to be placed in service prior to exhaustion of the available accumulator inventory, at approximately two hours after event initiation. The following equipment will be provided to maintain core cooling in Phase 2:

- Pre-staged Primary Coolant Injection Pump powered from the ELAP DG
- Portable ELAP generators to provide an alternate means to power the Primary Coolant Injection Pump

Actions required to power the Primary Coolant Injection Pump from the ELAP DG are discussed in ANP-10329 (Reference 1) Section 4.1.5.1.

Performance requirements for portable equipment are described in ANP-10329 (Reference 1) Section 4.1.7.

In order to provide reliability and availability of the FLEX equipment required to meet these capabilities, CCNPP Unit 3 will have sufficient portable equipment to address functions on-site, plus one additional spare, (i.e., an N+1 capability, where "N" is the number of units on-site). Thus, CCNPP Unit 3 would nominally have at least two portable pumps, two sets of portable ac power supplies, two sets of hoses and cables, etc. It is also acceptable to have multiple strategies to accomplish a function (e.g., two separate means to power the Primary Coolant Injection Pump). In this case, the equipment associated with each strategy does not require N+1. The N+1 capability applies to the portable FLEX equipment described in NEI 12-06 (Reference 2) Table 3-2 PWR FLEX Baseline Capability (i.e., that equipment that directly supports maintenance of the key safety functions).

CCNPP Unit 3 will have permanent, installed connection points for portable fluid and electrical equipment for Phase 2. CCNPP Unit 3 portable equipment mechanical connections will have a primary and an alternate connection or delivery point. Electrical diversity will be accomplished by having an ELAP DG installed in the Fire Protection Building and alternate electrical connections in Safeguards Building 2 for portable ELAP generators.

The duration of each phase is summarized in Attachment 6 and 7.

C.2.1: Details:

Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation* CCNPP Unit 3 will develop procedures based on industry guidance from the Owners Groups, EPRI, and NEI, as part of the Procedure Development Plan described in FSAR Section 13.5 that implement the strategies described in ANP-10329 (Reference 1) Sections 4.1.5.2 and 4.1.5.3. The procedures,

C: Maintain RCS Inventory Control	
C.2: PWR Portable Equipment Phase 2:	
	training, and any walk-through validation will be in place and completed at least 180 days prior to the initial fuel load of CCNPP Unit 3. These procedures and/or guidelines will support the symptom based command and control strategies developed in the EOPs and AOPs, and include Standard Post Trip Actions, Station Blackout, Abnormal Shutdown Cooling Conditions, and Loss of Offsite Power.
Identify modifications	*List modifications* None required. The design features implemented to support FLEX strategies are described in ANP-10329 (Reference 1).
Key Reactor Parameters	*List instrumentation credited or recovered for this coping evaluation.* Instrumentation and controls credited during an ELAP event are described in ANP-10329 (Reference 1), Section 4.1.5.6.
C.2.2: Storage / Protection of Equipment: **Describe storage / protection plan or schedule to determine storage requirements**	
Seismic	*List Protection or schedule to protect* Structures to provide protection of the FLEX equipment will be constructed to meet the requirements identified in NEI 12-06 (Reference 2) Section 11. The construction of the structures will be completed at least 180 days prior to initial fuel load. CCNPP Unit 3 procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the hazards applicable to CCNPP Unit 3.
Flooding Note: if stored below current flood level, then ensure procedures exist to move equipment prior to exceeding flood level.	*List Protection or schedule to protect* Structures to provide protection of the FLEX equipment will be constructed to meet the requirements identified in NEI 12-06 (Reference 2) Section 11. The construction of the structures will be completed at least 180 days prior to initial fuel load. CCNPP Unit 3 procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the hazards applicable to CCNPP Unit 3.
Severe Storms with High Winds	*List Protection or schedule to protect* Structures to provide protection of the FLEX equipment will be constructed to meet the requirements identified in NEI 12-06 (Reference 2) Section 11. The construction of the structures will be completed at least 180 days prior to initial fuel load. CCNPP Unit 3 procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the hazards applicable to CCNPP Unit 3.
Snow, Ice, and Extreme Cold	*List Protection or schedule to protect* Structures to provide protection of the FLEX equipment will be constructed to meet the requirements identified in NEI 12-06 (Reference 2) Section 11. The construction of the structures will be completed at least 180 days prior to initial fuel load. CCNPP Unit 3 procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the hazards applicable to CCNPP Unit 3.
High Temperatures	*List Protection or schedule to protect* Structures to provide protection of the FLEX equipment will be constructed to meet the requirements identified in NEI 12-06 (Reference 2) Section 11. The construction of the structures will be completed at least 180 days prior to initial fuel load. CCNPP Unit 3 procedures and programs will be developed to

C: Maintain RCS Inventory Control		
C.2: PWR Portable Equipment Phase 2:		
	address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the hazards applicable to CCNPP Unit 3. Storage structures will be ventilated to allow equipment to function.	
C.2.3: Deployment Conceptual Modification (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of connections**
Identify Strategy including how the equipment will be deployed to the point of use. Detailed equipment deployment strategies will be developed at least 180 days prior to initial fuel load.	*Identify modifications*	*Identify how the connection is protected*
Secondary Feed Bleed (Modes 1-5): Portable self-powered RCS makeup pump (medium pressure)	None required.	Two connections are provided on Extra Borating System (EBS) discharge line vents (one on Train 1 and one on Train 4) to allow installation of a portable self-powered RCS makeup pump (medium pressure). The connections satisfy the FLEX diversity criterion because the Fuel Building (FB) is protected, and the two valves are located in different zones of the FB. (ANP-10329 (Reference 1) Figure 4-15)
Primary Feed Bleed (Mode 6 with RV head removed): Pre-staged Primary Coolant Injection Pump powered from the ELAP DG	None required.	The pump mechanical connections are permanent. The pump motor is manually connected to the output of the ELAP DG or portable ELAP generators when required. The mechanical and electrical connections are located in the reasonably protected Safeguard Building 1. Connections meet the NEI 12-06 (Reference 2) reasonable protection standards. (ANP-10329 (Reference 1) Figures 4-14 and 4-18)
Notes: Actions required to ensure continuous power to essential instrumentation are discussed in ANP-10329 (Reference 1) Section 4.1.5.1.		

C: Maintain RCS Inventory Control	
C.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 core cooling. Identify methods (Low Leak RCP Seals and/or borated high pressure RCS makeup)and strategy(ies) utilized to achieve this coping time. Phase 3 of RCS inventory control during secondary feed and bleed cooling (Modes 1-5) will continue to utilize equipment relied upon during Phase 2 event mitigation. Actions are required in Phase 3 to replenish fuel supply and borated suction source supply for the portable self-powered RCS makeup pump (medium pressure). Phase 3 of RCS inventory control during primary feed and bleed cooling (Mode 6 with RV head removed) will continue to utilize equipment relied upon during Phase 2 event mitigation. Actions are required in Phase 3 to provide replenishment of the fuel supplies for the ELAP DG or portable ELAP generators. The duration of each phase is summarized in Attachment 6 and 7.	
C.3.1: Details:	
Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation* CCNPP Unit 3 will develop procedures based on industry guidance from the Owners Groups, EPRI, and NEI, as part of the Procedure Development Plan described in FSAR Section 13.5 that implement the strategies described in ANP-10329 (Reference 1) Sections 4.1.5.2 and 4.1.5.3. The procedures, training, and any walk-through validation will be in place and completed at least 180 days prior to the initial fuel load of CCNPP Unit 3. These procedures and/or guidelines will support the symptom based command and control strategies developed in the EOPs and AOPs, and include Standard Post Trip Actions, Station Blackout, Abnormal Shutdown Cooling Conditions, and Loss of Offsite Power.
Identify modifications	*List modifications* None required. The design features implemented to support FLEX strategies are described in ANP-10329 (Reference 1).
Key Reactor Parameters	*List instrumentation credited or recovered for this coping evaluation.* Instrumentation and controls credited during an ELAP event are described in ANP-10329 (Reference 1) Section 4.1.5.6.

C: Maintain RCS Inventory Control		
C.3: PWR Portable Equipment Phase 3:		
C.3.2: Deployment Conceptual Modification (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of connections**
Identify Strategy including how the equipment will be deployed to the point of use. Detailed equipment deployment strategies will be developed at least 180 days prior to initial fuel load.	*Identify modifications*	*Identify how the connection is protected*
Secondary Feed and Bleed (Modes 1-5): Portable self-powered RCS makeup pump (medium pressure)	None required.	Two connections are provided on EBS discharge line vents (one on Train 1 and one on Train 4) to allow installation of a Portable self-powered RCS makeup pump (medium pressure). The connections satisfy the FLEX diversity criterion because the FB is protected, and the two valves are located in different zones of the FB.
Primary Feed and Bleed (Mode 6 with RV head removed): Pre-staged Primary Coolant Injection Pump powered from the ELAP DG	None required.	The pump mechanical connections are permanent. The pump motor is manually connected to the output of the ELAP DG or portable ELAP generators when required. The mechanical and electrical connections are located in the reasonably protected Safeguard Building 1. Connections meet the NEI 12-06 (Reference 2) reasonable protection standards. (ANP-10329 (Reference 1) Figures 4-14 and 4-18)
Notes: Actions required to ensure continuous power to essential instrumentation are discussed in ANP-10329 (Reference 1) Section 4.1.5.1.		

D: Maintain Containment	
Determine Baseline coping capability with installed coping[1] modifications not including FLEX modifications, utilizing methods described in Table 3-2 of NEI 12-06: • Containment Spray • Hydrogen igniters (ice condenser containments only)	
D.1: PWR Installed Equipment Phase 1:	
Provide a general description of the coping strategies using installed equipment including modifications that are proposed to maintain containment. Identify methods (containment spray/Hydrogen igniter) and strategy(ies) utilized to achieve this coping time. There are no phase 1 actions required to maintain containment pressure within limits. ANP-10329 (Reference 1), Section 4.1.3.4 describes analyses that demonstrate that the containment pressurizes at a slow rate. Adequate time is available to implement Phase 2 actions for containment pressure control before the containment approaches pressure limits. The duration of each phase is summarized in Attachment 6 and 7.	
D.1.1: Details:	
Provide a brief description of Procedures / Strategies / Guidelines	*N/A*
Identify modifications	*N/A*
Key Containment Parameters	*List instrumentation credited for this coping evaluation.* Instrumentation and controls credited during an ELAP event are described in ANP-10329 (Reference 1), Section 4.1.5.6.
Notes:	

D: Maintain Containment

D.2: PWR Portable Equipment Phase 2:

Provide a general description of the coping strategies using on-site portable equipment including modifications that are proposed to maintain containment. Identify methods (containment spray/hydrogen igniters) and strategy(ies) utilized to achieve this coping time.

ANP-10329 (Reference 1), Section 4.1.5.4 describes Phase 2 actions required for containment pressure control. Two diverse methods of containment pressure control are provided:

1) Containment venting through the low flow purge system, described in ANP-10329 (Reference 1) Section 4.1.5.4.1.
2) Containment spray, described in ANP-10329 (Reference 1) Section 4.1.5.4.2.

A portable air supply (compressor or gas bottle) will be provided to open the low flow purge inside containment isolation valve.

In order to provide reliability and availability of the FLEX equipment required to meet these capabilities, CCNPP Unit 3 will have sufficient portable equipment to address functions on-site, plus one additional spare, (i.e., an N+1 capability, where "N" is the number of units on-site). Thus, CCNPP Unit 3 would nominally have at least two portable pumps, two sets of portable ac power supplies, two sets of hoses and cables, etc. It is also acceptable to have multiple strategies to accomplish a function (e.g., two separate means to power the Primary Coolant Injection Pump). In this case, the equipment associated with each strategy does not require N+1. The N+1 capability applies to the portable FLEX equipment described in NEI 12-06 (Reference 2) Table 3-2 PWR FLEX Baseline Capability (i.e., that equipment that directly supports maintenance of the key safety functions).

CCNPP Unit 3 will have permanent, installed connection points for portable fluid and electrical equipment for Phase 2. CCNPP Unit 3 portable equipment mechanical connections will have a primary and an alternate connection or delivery point. Electrical diversity will be accomplished by having an ELAP DG installed in the Fire Protection Building and alternate electrical connections in Safeguards Building 2 for portable ELAP generators.

The duration of each phase is summarized in Attachment 6 and 7.

The following portable equipment will be provided to support initiation of containment spray:

- Portable self-powered containment spray pump
- Portable borated water supply for spray pump suction

Performance requirements for portable equipment are described in ANP-10329 (Reference 1) Section 4.1.7.

D.2.1: Details:

Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation* CCNPP Unit 3 will develop procedures based on industry guidance from the Owners Groups, EPRI, and NEI, as part of the Procedure Development Plan described in FSAR Section 13.5 that implement the strategies described in ANP-10329 (Reference 1) Section 4.1.5.4. The procedures, training, and any walk-through validation will be in place and completed at least 180 days prior to the initial fuel load of CCNPP Unit 3. These procedures and/or guidelines will support the symptom based command and control strategies developed in the EOPs and AOPs, and include Standard Post Trip Actions, Station Blackout, Abnormal Shutdown Cooling Conditions, and Loss of Offsite Power.

D: Maintain Containment	
Identify modifications	*List modifications* None required. The design features implemented to support FLEX strategies are described in ANP-10329 (Reference 1).
Key Containment Parameters	*List instrumentation credited or recovered for this coping evaluation.* Instrumentation and controls credited during an ELAP event are described in ANP-10329 (Reference 1), Section 4.1.5.6.
D.2.2: Storage / Protection of Equipment: Describe storage / protection plan or schedule to determine storage requirements	
Seismic	*List Protection or schedule to protect* Structures to provide protection of the FLEX equipment will be constructed to meet the requirements identified in NEI 12-06 (Reference 2) Section 11. The construction of the structures will be completed at least 180 days prior to initial fuel load. CCNPP Unit 3 procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the hazards applicable to CCNPP Unit 3.
Flooding	*List Protection or schedule to protect* Structures to provide protection of the FLEX equipment will be constructed to meet the requirements identified in NEI 12-06 (Reference 2) Section 11. The construction of the structures will be completed at least 180 days prior to initial fuel load. CCNPP Unit 3 procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the hazards applicable to CCNPP Unit 3.
Severe Storms with High Winds	*List Protection or schedule to protect* Structures to provide protection of the FLEX equipment will be constructed to meet the requirements identified in NEI 12-06 (Reference 2) Section 11. The construction of the structures will be completed at least 180 days prior to initial fuel load. CCNPP Unit 3 procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the hazards applicable to CCNPP Unit 3.
Snow, Ice, and Extreme Cold	*List Protection or schedule to protect* Structures to provide protection of the FLEX equipment will be constructed to meet the requirements identified in NEI 12-06 (Reference 2) Section 11. The construction of the structures will be completed at least 180 days prior to initial fuel load. CCNPP Unit 3 procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the hazards applicable to CCNPP Unit 3.
High Temperatures	*List Protection or schedule to protect* Structures to provide protection of the FLEX equipment will be constructed to meet the requirements identified in NEI 12-06 (Reference 2) Section 11. The construction of the structures will be completed at least 180 days prior to initial fuel load. CCNPP Unit 3 procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the hazards applicable to CCNPP Unit 3. Storage structures will be ventilated to allow equipment to function.

D: Maintain Containment		
D.2.3: Deployment Conceptual Modification (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of connections**
Identify Strategy including how the equipment will be deployed to the point of use.	*Identify modifications*	*Identify how the connection is protected*
Containment venting: Portable Air Supply	None required.	A connection is provided in the reasonably protected Fuel Building (FB) to connect portable air supply. Connection and piping meet NEI reasonable protection standards.
Containment Spray: Portable self-powered Containment Spray Pump	None required.	The preferred connection point for the portable self-powered containment spray pump is at the blind flange on the six-inch line connecting to the suction of the Severe Accident Heat Removal System (SAHRS) spray pump. Three additional blind-flanged connection points on lines connected to the SAHRS spray pump discharge are provided to meet the FLEX diversity criterion. These connections are located in the reasonably protected Safeguard Building 4 at grade level. (ANP-10329 (Reference 1) Figure 4-19)
Notes: Actions required to ensure continuous power to essential instrumentation are discussed in ANP-10329 (Reference 1) Section 4.1.5.1.		

D: Maintain Containment	
D.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 containment. Identify methods (containment spray/hydrogen igniters) and strategy(ies) utilized to achieve this coping time. Phase 3 of containment pressure control will continue to utilize equipment relied upon during Phase 2 event mitigation. Actions are required in Phase 3 to replenish the portable self-powered containment spray pump fuel supply and borated suction source if containment spray is being used. The following are required: • A method to remove water from Containment or utilize water from the IRWST during long term Containment spray as well as the supporting timing and performance evaluations will be developed. • A method to replenish the IRWST during Containment venting as well as the supporting timing and performance evaluations will be developed. • A method to remove heat from the IRWST as well as the supporting timing and performance evaluations will be developed. The duration of each phase is summarized in Attachment 6 and 7.	
D.3.1: Details:	
Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation* CCNPP Unit 3 will develop procedures based on industry guidance from the Owners Groups, EPRI, and NEI, as part of the Procedure Development Plan

D: Maintain Containment		
	described in FSAR Section 13.5 that implement the strategies developed as a result of Open Items 13, 14 and 15. The procedures, training, and any walk-through validation will be in place and completed at least 180 days prior to the initial fuel load of CCNPP Unit 3. These procedures and/or guidelines will support the symptom based command and control strategies developed in the EOPs and AOPs, and include Standard Post Trip Actions, Station Blackout, Abnormal Shutdown Cooling Conditions, and Loss of Offsite Power.	
Identify modifications	*List modifications* None required. The design features implemented to support FLEX strategies are described in ANP-10329 (Reference 1).	
Key Containment Parameters	*List instrumentation credited or recovered for this coping evaluation.* Instrumentation and controls credited during an ELAP event are described in ANP-10329 (Reference 1), Section 4.1.5.6.	
D.3.2: Deployment Conceptual Modification (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of connections**
Identify Strategy including how the equipment will be deployed to the point of use. Detailed equipment deployment strategies will be developed at least 180 days prior to initial fuel load.	*Identify modifications*	*Identify how the connection is protected*
Containment venting: Portable Air Supply	None required.	A connection is provided in the reasonably protected FB to connect portable air supply. Connection and piping meet NEI reasonable protection standards.
Containment Spray: Portable self-powered Containment Spray Pump	None required.	The preferred connection point for the portable self-powered containment spray pump is at the blind flange on the six-inch line connecting to the suction of the SAHRS spray pump. Three additional blind-flanged connection points on lines connected to the SAHRS spray pump discharge are provided to meet the FLEX diversity criterion. These connections are located in the reasonably protected Safeguard Building 4 at grade level.
Notes: Actions required to ensure continuous power to essential instrumentation are discussed in ANP-10329 (Reference 1) Section 4.1.5.1.		

E: Maintain Spent Fuel Pool Cooling	
Determine Baseline coping capability with installed coping[1] modifications not including FLEX modifications, utilizing methods described in Table 3-2 of NEI 12-06: • **Makeup with Portable Injection Source**	
E.1: PWR Installed Equipment Phase 1:	
Provide a general description of the coping strategies using installed equipment including modifications that are proposed to maintain spent fuel pool cooling. Identify methods (makeup via portable injection source)and strategy(ies) utilized to achieve this coping time. ANP-10329 (Reference 1), Section 4.1.3.8 describes analyses that demonstrate that operators have approximately 35 hours to restore SFP cooling and/or makeup. Therefore, adequate time is available to implement Phase 2 actions before fuel is uncovered. The only action required in Phase 1 is to monitor SFP level and provide a vent path for the steam generated by boiling in the SFP. Alignment of the vent path is described in ANP-10329 (Reference 1) Section 4.1.5.5. The duration of each phase is summarized in Attachment 6 and 7.	
E.1.1: Details:	
Provide a brief description of Procedures / Strategies / Guidelines	CCNPP Unit 3 will develop procedures based on industry guidance from the Owners Groups, EPRI, and NEI, as part of the Procedure Development Plan described in FSAR Section 13.5 that implement the strategies described in ANP-10329 (Reference 1) Section 4.1.5.5. The procedures, training, and any walk-through validation will be in place and completed at least 180 days prior to the initial fuel load of CCNPP Unit 3. These procedures and/or guidelines will support the symptom based command and control strategies developed in the EOPs and AOPs, and include Standard Post Trip Actions, Station Blackout, Abnormal Shutdown Cooling Conditions, and Loss of Offsite Power.
Identify modifications	None required. The design features implemented to support FLEX strategies are described in ANP-10329 (Reference 1).
Key SFP Parameter	SFP level instrumentation credited during an ELAP event are described in ANP-10329 (Reference 1), "U.S. EPR Mitigation Strategies for Extended Loss of AC Power Event," Section 4.2.1.2.
Notes:	

E: Maintain Spent Fuel Pool Cooling

E.2: PWR Portable Equipment Phase 2:

Provide a general description of the coping strategies using on-site portable equipment including modifications that are proposed to maintain spent fuel pool cooling. Identify methods (makeup via portable injection source)and strategy(ies) utilized to achieve this coping time.

Phase 2 actions to maintain spent fuel pool cooling are described in ANP-10329 (Reference 1), Section 4.1.5.5. A source of spent fuel pool makeup is required to be placed in service to prevent uncovery of the fuel in the SFP (approximately 35 hours). A portable self-powered SFP makeup pump will be provided for makeup to the SFP in Phase 2 within 22 hours of event initiation in order to maintain at least 10 feet of water inventory over the fuel assemblies. Connections are also provided to allow SFP makeup from the Fire Protection system.

In order to provide reliability and availability of the FLEX equipment required to meet these capabilities, CCNPP Unit 3 will have sufficient portable equipment to address functions on-site, plus one additional spare, (i.e., an N+1 capability, where "N" is the number of units on-site). Thus, CCNPP Unit 3 would nominally have at least two portable pumps, two sets of portable ac power supplies, two sets of hoses and cables, etc. It is also acceptable to have multiple strategies to accomplish a function (e.g., two separate means to power the Primary Coolant Injection Pump). In this case, the equipment associated with each strategy does not require N+1. The N+1 capability applies to the portable FLEX equipment described in NEI 12-06 (Reference 2) Table 3-2 PWR FLEX Baseline Capability (i.e., that equipment that directly supports maintenance of the key safety functions).

CCNPP Unit 3 will have permanent, installed connection points for portable fluid and electrical equipment for Phase 2. CCNPP Unit 3 portable equipment mechanical connections will have a primary and an alternate connection or delivery point. Electrical diversity will be accomplished by having an ELAP DG installed in the Fire Protection Building and alternate electrical connections in Safeguards Building 2 for portable ELAP generators.

The duration of each phase is summarized in Attachment 6 and 7.

E.2.1: Details:

Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation* CCNPP Unit 3 will develop procedures based on industry guidance from the Owners Groups, EPRI, and NEI, as part of the Procedure Development Plan described in FSAR Section 13.5 that implement the strategies described in ANP-10329 (Reference 1) Section 4.1.5.5. The procedures, training, and any walk-through validation will be in place and completed at least 180 days prior to the initial fuel load of CCNPP Unit 3. These procedures and/or guidelines will support the symptom based command and control strategies developed in the EOPs and AOPs, and include Standard Post Trip Actions, Station Blackout, Abnormal Shutdown Cooling Conditions, and Loss of Offsite Power.
Identify modifications	*List modifications* Not Applicable
Key SFP Parameter	SFP level instrumentation credited during an ELAP event are described in ANP-10329 (Reference 1) Section 4.2.1.2.

E: Maintain Spent Fuel Pool Cooling	
E.2: PWR Portable Equipment Phase 2:	
E.2.2: Storage / Protection of Equipment: Describe storage / protection plan or schedule to determine storage requirements	
Seismic	*List Protection or schedule to protect* Structures to provide protection of the FLEX equipment will be constructed to meet the requirements identified in NEI 12-06 (Reference 2) Section 11. The construction of the structures will be completed at least 180 days prior to initial fuel load. CCNPP Unit 3 procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the hazards applicable to CCNPP Unit 3.
Flooding	*List Protection or schedule to protect* Structures to provide protection of the FLEX equipment will be constructed to meet the requirements identified in NEI 12-06 (Reference 2) Section 11. The construction of the structures will be completed at least 180 days prior to initial fuel load. CCNPP Unit 3 procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the hazards applicable to CCNPP Unit 3.
Severe Storms with High Winds	*List Protection or schedule to protect* Structures to provide protection of the FLEX equipment will be constructed to meet the requirements identified in NEI 12-06 (Reference 2) Section 11. The construction of the structures will be completed at least 180 days prior to initial fuel load. CCNPP Unit 3 procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the hazards applicable to CCNPP Unit 3.
Snow, Ice, and Extreme Cold	*List Protection or schedule to protect* Structures to provide protection of the FLEX equipment will be constructed to meet the requirements identified in NEI 12-06 (Reference 2) Section 11. The construction of the structures will be completed at least 180 days prior to initial fuel load. CCNPP Unit 3 procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the hazards applicable to CCNPP Unit 3.
High Temperatures	*List Protection or schedule to protect* Structures to provide protection of the FLEX equipment will be constructed to meet the requirements identified in NEI 12-06 (Reference 2) Section 11. The construction of the structures will be completed at least 180 days prior to initial fuel load. CCNPP Unit 3 procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the hazards applicable to CCNPP Unit 3. Storage structures will be ventilated to allow equipment to function.

E: Maintain Spent Fuel Pool Cooling		
E.2: PWR Portable Equipment Phase 2:		
E.2.3: Deployment Conceptual Design (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of connections**
Identify Strategy including how the equipment will be deployed to the point of use. Detailed equipment deployment strategies will be developed at least 180 days prior to initial fuel load.	*Identify modifications*	*Identify how the connection is protected*
SFP Makeup: Portable self-powered SFP Makeup Pump	None required.	Two separate and independent hose connections, located at grade elevation on the opposite sides of the FB exterior are provided. A pumper truck or portable pump can be attached to the connections The two external connections satisfy the FLEX diversity criterion because the FB is adequately protected and the two connections are located on opposite sides of the FB.
SFP Makeup: SFP Makeup from Fire Protection System	None required.	Two separate, but redundant trains that are physically located on opposite sides of the SFP are provided. Each of these redundant trains contains permanently installed connections to the fire protection system within the stair towers between the FB and the Safeguard Buildings 1 and 4. Flow paths to the SFP for this portion of the fire protection system are aligned using manual valves.
Notes:		

E: Maintain Spent Fuel Pool Cooling		
E.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 spent fuel pool cooling. Identify methods (makeup via portable injection source)and strategy(ies) utilized to achieve this coping time. Phase 3 of SFP cooling will continue to utilize equipment relied upon during Phase 2 event mitigation. Actions are required in Phase 3 to replenish the suction supply source for the portable self-powered SFP makeup pump, or to replenish the Fire Water Storage Tanks if the Fire Protection System is being used for SFP makeup. The duration of each phase is summarized in Attachment 6 and 7.		
E.3.1: Details:		
Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation* CCNPP Unit 3 will develop procedures based on industry guidance from the Owners Groups, EPRI, and NEI, as part of the Procedure Development Plan described in FSAR Section 13.5 that implement the strategies described in ANP-10329 (Reference 1) Section 4.1.5.5. The procedures, training, and any walk-through validation will be in place and completed at least 180 days prior to the initial fuel load of CCNPP Unit 3. These procedures and/or guidelines will support the symptom based command and control strategies developed in the EOPs and AOPs, and include Standard Post Trip Actions, Station Blackout, Abnormal Shutdown Cooling Conditions, and Loss of Offsite Power.	
Identify modifications	*List modifications* None required. The design features implemented to support FLEX strategies are described in ANP-10329 (Reference 1).	
Key SFP Parameter	SFP level instrumentation credited during an ELAP event are described in ANP-10329 (Reference 1), Section 4.2.1.2.	
E.3.2: Deployment Conceptual Design (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of connections**
Identify Strategy including how the equipment will be deployed to the point of use. Detailed equipment deployment strategies will be developed at least 180 days prior to initial fuel load.	*Identify modifications*	*Identify how the connection is protected*
SFP Makeup: Portable self-powered SFP Makeup Pump	None required.	Two separate and independent hose connections, located at grade elevation level on the exterior of the FB are provided, on opposite sides of the building, to attach a pumper truck or portable pump. The two external connections satisfy the FLEX diversity criterion because the FB is adequately protected and the two connections are located on opposite sides of the FB.
SFP Makeup: SFP Makeup from Fire Protection System	None required.	Two separate, but redundant trains that are physically located on opposite sides of the SFP are provided. Each of these redundant trains contains permanently installed

E: Maintain Spent Fuel Pool Cooling		
E.3: PWR Portable Equipment Phase 3:		
		connections to the fire protection system within the stair towers between the FB and the SBs 1 and 4. Flow paths to the SFP for this portion of the fire protection system are aligned using manual valves.
Notes:		

F: Safety Functions Support	
Determine Baseline coping capability with installed coping[1] modifications not including FLEX modifications.	
F.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. AC and DC Power Phase 1 coping strategies for AC and DC power are described in ANP 10329, "U.S. EPR Mitigation Strategies for Extended Loss of AC Power Event," Section 4.1.5.1. Actions are required to open load shed breakers from the MCR and locally de-energize specified I&C cabinets to extend battery availability to eight hours and 30 minutes. Lighting Phase 1 coping strategies for plant lighting are described in ANP-10329 (Reference 1) Section 4.1.5.7.1. The special emergency lighting in the MCR is supplied by Divisions 2 and 3 EUPS buses. The portion of the lighting supplied by Division 2 will remain available indefinitely; the portion powered from Division 3 will remain available until Division 3 EUPS buses are de-energized, at eight hours and 30 minutes. Escape route egress battery pack lighting and battery pack emergency lighting will remain available until their battery packs are depleted, at 90 minutes and eight hours respectively. Operators will use flashlights and portable lighting as required. Communications Phase 1 coping strategies for communications are described in ANP-10329 (Reference 1) Section 4.1.5.7.2. Portable wireless communication base stations are powered from Divisions 2 and 3 EUPS buses. At least two of the portable wireless communication subsystem base stations will have power available throughout the ELAP event. The sound powered phone system requires no power and will remain available. HVAC Phase 1 coping strategies for HVAC are described in ANP-10329 (Reference 1) Section 4.1.5.7.3. Actions are required to open several doors to ensure that temperatures remain within limits. The duration of each phase is summarized in Attachment 6 and 7. The Fire Protection Building HVAC system design provides ventilation to the Fire Protection Building during Phase 1, 2, and 3 ELAP event mitigation.	
F.1.1: Details:	
Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation.* CCNPP Unit 3 will develop procedures based on industry guidance from the Owners Groups, EPRI, and NEI, as part of the Procedure Development Plan described in FSAR Section 13.5 that implement the strategies described in ANP-10329 (Reference 1) Section 4.1.5.1 and 4.1.5.7. The procedures, training, and any walk-through validation will be in place and completed at least 180 days prior to the initial fuel load of CCNPP Unit 3. These procedures and/or guidelines will support the symptom based command and control strategies developed in the EOPs and AOPs, and include Standard Post Trip Actions, Station Blackout, Abnormal Shutdown Cooling Conditions, and Loss of Offsite Power.

F: Safety Functions Support	
Identify modifications	*List modifications and describe how they support coping time.* None required. The design features implemented to support FLEX strategies are described in ANP-10329 (Reference 1).
Key Parameters	*List instrumentation credited for this coping evaluation phase.* Instrumentation and controls credited during an ELAP event are described in ANP-10329 (Reference 1), Sections 4.2.1.2 and 4.1.5.6.
Notes: Actions required to ensure continuous power to essential instrumentation are discussed in ANP-10329 (Reference 1) Section 4.1.5.1.	

F: Safety Functions Support

F.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.

AC and DC Power

Phase 2 coping strategies for AC and DC power are described in ANP-10329 (Reference 1), Section 4.1.5.1. Actions are required to energize the Division 1 and Division 2 battery chargers from the ELAP diesel generator or from portable ELAP generators to maintain the 250V DC switchboards and the EUPS buses energized. Actions are required to replenish the ELAP diesel generator fuel oil storage tank or the portable ELAP generator (within 10 hours).

Lighting

Phase 2 coping strategies for plant lighting are described in ANP-10329 (Reference 1) Section 4.1.5.7.1. Actions are required to energize the Division 1 and Division 2 battery chargers from the ELAP diesel generator or from portable ELAP generators to maintain the 250 VDC switchboards and the EUPS buses energized. Self-powered portable lighting units will be deployed to support implementation of mitigation strategies as required.

Communications

Phase 2 coping strategies for communications are described in ANP-10329 (Reference 1) Section 4.1.5.7.2. Actions are required to energize the Division 1 and Division 2 battery chargers from the ELAP diesel generator or from portable ELAP generators to maintain the 250V DC switchboards and the EUPS buses energized. Portable communication equipment will be utilized as required.

HVAC

Phase 2 coping strategies for HVAC are described in ANP-10329 (Reference 1) Section 4.1.5.7.3. Actions are required to Power Divisions 1 and 2 Class 1E batteries and EPSS 480V Motor Control Center (MCC) 31/32BNB01 using either a pre-staged ELAP diesel generator in the Fire Protection Building or by portable ELAP generators. Actions are also required to start Electrical Division of Safeguard Building Ventilation System Trains 1 and 2 supply, exhaust, and battery room fans, and to provide portable cooler in MCR with heat exhaust to Safeguard Building 3 (within 7 hours).

In order to provide reliability and availability of the FLEX equipment required to meet these capabilities, CCNPP Unit 3 will have sufficient portable equipment to address functions on-site, plus one additional spare, (i.e., an N+1 capability, where "N" is the number of units on-site). Thus, CCNPP Unit 3 would nominally have at least two portable pumps, two sets of portable ac power supplies, two sets of hoses and cables, etc. It is also acceptable to have multiple strategies to accomplish a function (e.g., two separate means to power the Primary Coolant Injection Pump). In this case, the equipment associated with each strategy does not require N+1. The N+1 capability applies to the portable FLEX equipment described in NEI 12-06 (Reference 2) Table 3-2 PWR FLEX Baseline Capability (i.e., that equipment that directly supports maintenance of the key safety functions).

CCNPP Unit 3 will have permanent, installed connection points for portable fluid and electrical equipment for Phase 2. CCNPP Unit 3 portable equipment mechanical connections will have a primary and an alternate connection or delivery point. Electrical diversity will be accomplished by having an ELAP DG installed in the Fire Protection Building and alternate electrical connections in Safeguards Building 2 for portable ELAP generators.

The duration of each phase is summarized in Attachment 6 and 7. The Fire Protection Building HVAC system design provides ventilation to the Fire Protection Building during Phase 1, 2, and 3 ELAP event mitigation.

F: Safety Functions Support	
F.2: PWR Portable Equipment Phase 2	
F.2.1: Details:	
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.* CCNPP Unit 3 will develop procedures based on industry guidance from the Owners Groups, EPRI, and NEI, as part of the Procedure Development Plan described in FSAR Section 13.5 that implement the strategies described in ANP-10329 (Reference 1) Section 4.1.5.1 and 4.1.5.7. The procedures, training, and any walk-through validation will be in place and completed at least 180 days prior to the initial fuel load of CCNPP Unit 3. These procedures and/or guidelines will support the symptom based command and control strategies developed in the EOPs and AOPs, and include Standard Post Trip Actions, Station Blackout, Abnormal Shutdown Cooling Conditions, and Loss of Offsite Power.
Identify modifications	*List modifications necessary for phase 2* None required. The design features implemented to support FLEX strategies are described in ANP-10329 (Reference 1).
Key Parameters	*List instrumentation credited or recovered for this coping evaluation.* Instrumentation and controls credited during an ELAP event are described in ANP-10329 (Reference 1), Sections 4.2.1.2 and 4.1.5.6.
F.2.2: Storage / Protection of Equipment : **Describe storage / protection plan or schedule to determine storage requirements**	
Seismic	*List Protection or schedule to protect* Structures to provide protection of the FLEX equipment will be constructed to meet the requirements identified in NEI 12-06 (Reference 2) Section 11. The construction of the structures will be completed at least 180 days prior to initial fuel load. CCNPP Unit 3 procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the hazards applicable to CCNPP Unit 3.
Flooding Note: if stored below current flood level, then ensure procedures exist to move equipment prior to exceeding flood level.	*List Protection or schedule to protect* Structures to provide protection of the FLEX equipment will be constructed to meet the requirements identified in NEI 12-06 (Reference 2) Section 11. The construction of the structures will be completed at least 180 days prior to initial fuel load. CCNPP Unit 3 procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the hazards applicable to CCNPP Unit 3.

F: Safety Functions Support	
F.2: PWR Portable Equipment Phase 2	
Severe Storms with High Winds	*List Protection or schedule to protect* Structures to provide protection of the FLEX equipment will be constructed to meet the requirements identified in NEI 12-06 (Reference 2) Section 11. The construction of the structures will be completed at least 180 days prior to initial fuel load. CCNPP Unit 3 procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the hazards applicable to CCNPP Unit 3.
Snow, Ice, and Extreme Cold	*List Protection or schedule to protect* Structures to provide protection of the FLEX equipment will be constructed to meet the requirements identified in NEI 12-06 (Reference 2) Section 11. The construction of the structures will be completed at least 180 days prior to initial fuel load. CCNPP Unit 3 procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the hazards applicable to CCNPP Unit 3.
High Temperatures	*List Protection or schedule to protect* Structures to provide protection of the FLEX equipment will be constructed to meet the requirements identified in NEI 12-06 (Reference 2) Section 11. The construction of the structures will be completed at least 180 days prior to initial fuel load. CCNPP Unit 3 procedures and programs will be developed to address storage structure requirements, haul path requirements, and FLEX equipment requirements relative to the hazards applicable to CCNPP Unit 3. Storage structures will be ventilated to allow equipment to function.

F: Safety Functions Support		
F.2: PWR Portable Equipment Phase 2		
F.2.3: Deployment Conceptual Design (Attachment 3 contains Conceptual Sketches)		
Strategy	**Modifications**	**Protection of connections**
Identify Strategy including how the equipment will be deployed to the point of use. Detailed equipment deployment strategies will be developed at least 180 days prior to initial fuel load.	*Identify modifications*	*Identify how the connection is protected*
Maintain AC and DC Power, Lighting, Communications, and HVAC: Energize Divisions 1 and 2 Battery Chargers and EPSS 480V MCC 31/32BNB01 from ELAP DG	None required	ELAP DG is connected to 31/32BMB using permanently installed transfer switches located in reasonably protected Safeguard Buildings 1 and 2. Permanently installed breakers are used to align power to EPSS 480V MCC 31/32BNB01 from 31/32BMB. (ANP-10329 (Reference 1) Figure 4-14)
Maintain AC and DC Power, Lighting, Communications, and HVAC: Energize Divisions 1 and 2 Battery Chargers and EPSS 480V MCC 31/32BNB01 from Portable ELAP Generators	None required	Portable ELAP generators are connected to transfer switches inside reasonably protected Safeguard Building 2.
Maintain HVAC: MCR Portable Cooler	None required	No connections required. Portable power supply and ducting will be used.
Notes: Actions required to ensure continuous power to essential instrumentation are discussed in ANP-10329 (Reference 1) Section 4.1.5.1.		

F: Safety Functions Support

F.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.

Phase 3 of maintenance of support functions will continue to utilize equipment relied upon during Phase 2 event mitigation. Actions are required in Phase 3 to replenish fuel supply for ELAP DG or portable ELAP generators and for portable self-powered lighting units.

The duration of each phase is summarized in Attachment 6 and 7.

The Fire Protection Building HVAC system design provides ventilation to the Fire Protection Building during Phase 1, 2, and 3 ELAP event mitigation.

F.3.1: Details:

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.* CCNPP Unit 3 will develop procedures based on industry guidance from the Owners Groups, EPRI, and NEI, as part of the Procedure Development Plan described in FSAR Section 13.5 that implement the strategies described in ANP-10329 (Reference 1) Section 4.1.5.1 and 4.1.5.7. The procedures, training, and any walk-through validation will be in place and completed at least 180 days prior to the initial fuel load of CCNPP Unit 3. These procedures and/or guidelines will support the symptom based command and control strategies developed in the EOPs and AOPs, and include Standard Post Trip Actions, Station Blackout, Abnormal Shutdown Cooling Conditions, and Loss of Offsite Power.
Identify modifications	*List modifications necessary for phase 3* Not Applicable
Key Parameters	*List instrumentation credited or recovered for this coping evaluation.* Instrumentation and controls credited during an ELAP event are described in ANP-10329 (Reference 1) Sections 4.2.1.2 and 4.1.5.6.

F.3.2: Deployment Conceptual Design
(Attachment 3 contains Conceptual Sketches)

Strategy	**Modifications**	**Protection of connections**
Identify Strategy including how the equipment will be deployed to the point of use.	*Identify modifications*	*Identify how the connection is protected*
Maintain AC and DC Power, Lighting, Communications, and HVAC: Energize Divisions 1 and 2 Battery Chargers and EPSS 480V MCC 31/32BNB01 from ELAP DG	None required	ELAP DG is connected to 31/32BMB using permanently installed transfer switches located in reasonably protected Safeguard Buildings 1 and 2. Permanently installed breakers used to align power to EPSS 480V MCC 31/32BNB01 from 31/32BMB.
Maintain AC and DC Power, Lighting, Communications, and HVAC:	None required	Portable ELAP generators are connected to transfer switches inside reasonably protected Safeguard Building 2.

F: Safety Functions Support		
F.3: PWR Portable Equipment Phase 3		
Energize Divisions 1 and 2 Battery Chargers and EPSS 480V MCC 31/32BNB01 from Portable ELAP Generators		
Maintain HVAC: MCR Portable Cooler	None required	No connections required. Portable power supply and ducting will be used.
Notes: Actions required to ensure continuous power to essential instrumentation are discussed in ANP-10329 (Reference 1) Section 4.1.5.1.		

References:

1. ANP-10329, "U.S. EPR Mitigation Strategies for Extended Loss of AC Power Event," Revision 0.
2. NEI 12-06, "Diverse And Flexible Coping Strategies (FLEX) Implementation Guide," Revision 0.
3. Task Interface Agreement (TIA) 2004-04, " Surry, Units 1&2, Letter, Re: Response to TIA 2004-04 Acceptability of Proceduralized Departures from TSs," (TAC Nos. MC4331 and MC4332)," dated September 12, 2006. (Accession No. ML060590273)

Table 1: PWR Portable Equipment Phase 2							
Use and (potential / flexibility) diverse uses						*Performance Criteria*	*Maintenance*
List portable equipment	Core	Containment	SFP	Instrumentation	Accessibility		Maintenance / PM requirements
Portable self-powered SG Feed Pump and hoses	X		(X)			See ANP-10329 (Reference 1) Table 4-10	Will follow EPRI template requirements
Portable self-powered RCS makeup pump (medium pressure) and hoses	X					See ANP-10329 (Reference 1) Table 4-10	Will follow EPRI template requirements
Portable Air Compressor or Pressurized Gas Bottle		X				See ANP-10329 (Reference 1) Table 4-10	Will follow EPRI template requirements
Portable self-powered Spray Pump and hoses	(X)	X	(X)			See ANP-10329 (Reference 1) Table 4-10	Will follow EPRI template requirements
Portable self-powered Spent Fuel Pool Makeup Pump and hoses			X			See ANP-10329 (Reference 1) Table 4-10	Will follow EPRI template requirements
Portable ELAP Generators	X			X	X	See ANP-10329 (Reference 1) Table 4-10	Will follow EPRI template requirements
MCR Portable Cooler and portable ducts					X	See ANP-10329 (Reference 1) Table 4-10	Will follow EPRI template requirements
Fuel tanker truck with transfer pump	X	X	X	X	X	2800 gallons	Will follow EPRI template requirements
Portable fuel transfer pump and hoses	X	X	X	X	X	>60 gpm	Will follow EPRI template requirements
Portable lube oil pump and hoses	X	X	X	X	X	>1 gpm	Will follow EPRI template requirements
Portable borated water tank	X	X				> 10,000 gallons	Will follow EPRI template requirements
Portable borated water mixing device	X	X				> 50 gpm	Will follow EPRI template requirements
Portable self-powered area lighting units					X	Standard diesel powered light tower	Will follow EPRI template requirements
Portable communications equipment	X	X	X	X	X		Will follow EPRI template requirements
High pressure hose	X	X					None
Low pressure hose	X	X	X	X	X		None
Electrical cabling	X			X	X		None

Table 2: PWR Portable Equipment Phase 3							
Use and (potential / flexibility) diverse uses						*Performance Criteria*	*Notes*
List portable equipment	Core	Containment	SFP	Instrumentation	Accessibility		
Portable self-powered SG Feed Pump and hoses	X		(X)			See ANP-10329 (Reference 1) Table 4-10	Backup to Transition Phase pump
Portable self-powered RCS makeup pump and hoses	X					See ANP-10329 (Reference 1) Table 4-10	Backup to Transition Phase pump
Portable Air Compressor		X				See ANP-10329 (Reference 1) Table 4-10	Backup to Transition Phase compressor
Pressurized Gas Bottle		X				See ANP-10329 (Reference 1) Table 4-10	Backup to Transition Phase bottle
Portable self-powered Spray Pump and hoses	(X)	X	(X)			See ANP-10329 (Reference 1) Table 4-10	Backup to Transition Phase pump
Portable self-powered Spent Fuel Pool Makeup Pump and hoses			X			See ANP-10329 (Reference 1) Table 4-10	Backup to Transition Phase pump
Portable ELAP Generators	X			X	X	See ANP-10329 (Reference 1) Table 4-10	Backup to Transition Phase generator
MCR Portable Cooler and portable ducts					X	See ANP-10329 (Reference 1) Table 4-10	Backup to Transition Phase cooler

Table 3: Phase 3 Response Equipment/Commodities	
Item	**Notes**
Radiation Protection Equipment • Survey instruments • Dosimetry • Off-site monitoring/sampling	
Commodities • Food • Potable water • Enriched borated water • Portable toilets	Develop an administrative program to govern the protection, maintenance, and distribution of consumables that will be stocked to support at least 24 hours of site operation independent of offsite support.
Fuel Requirements • Diesel fuel • Gasoline • Lube oil	Perform an analysis of the fuel consumption rate for all of the FLEX equipment that could be in operation during an ELAP for a period of 72 hours to determine a conservative refueling interval.
Heavy Equipment • Transportation equipment • Debris clearing equipment	

Attachment 1A
Sequence of Events Timeline

Action item	Elapsed Time	Action	Time Constraint Y/N [2]	Remarks / Applicability
		Refer to ANP-10329 (Reference 1) Section 4.1.6, for sequence of events timeline.		

[2] Instructions: Provide justification if No or NA is selected in the remark column If yes include technical basis discussion as requires by NEI 12-06 section 3.2.1.7

Attachment 1B
NSSS Significant Reference Analysis Deviation Table

Item	Parameter of interest	WCAP value (WCAP-17601-P August 2012 Revision 0)	WCAP page	Plant applied value	Gap and discussion
	This table is not applicable to the EPR. Refer to ANP-10329 (Reference 1) Section 4.1.3 for description of mitigation strategy analytical bases.				

Attachment 2
Milestone Schedule

Development of a milestone schedule is not applicable to CCNPP Unit 3 since it is a pre-construction plant. All actions required by this document will be implemented at least 180 days prior to initial fuel load at CCNPP Unit 3.

Attachment 3
Conceptual Sketches

(Conceptual sketches, as necessary to indicate equipment which is installed or equipment hookups necessary for the strategies.)

Refer to ANP-10329 (Reference 1) Figures 4-14, 4-15, 4-17, 4-18, 4-19, and 4-20 for conceptual sketches.

Detailed equipment deployment strategies will be developed at least 180 days prior to initial fuel load.

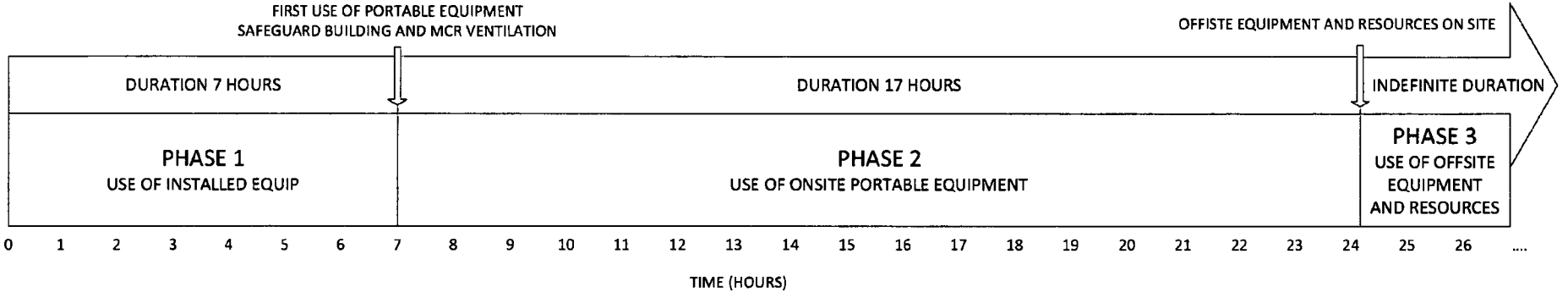
Attachment 4
Makeup Water Sources

Onsite Water Source	Approximate Capacity	Safety-Related Function Description, Reference (U.S. EPR™ FSAR Tier 2 Section)	Borated
Fire Water Tank #1	300,000 gal	Nonsafety related, (9.5.1)	No
Fire Water Tank #2	300,000 gal	Nonsafety related, (9.5.1)	No
Condenser Circulating Water Cooling Tower Basin	16,000,000 gal	Nonsafety related, (10.4.5)	No
Demineralized Water Storage Tank #1	423,000 gal	Nonsafety related, (9.2.3)	No
Demineralized Water Storage Tank #2	423,000 gal	Nonsafety related, (9.2.3)	No
Essential Service Water Basin #1	2,300,000 gal	Provides cooling to CCWS, EDG, and ESWPBVS, (9.2.1)	No
Essential Service Water Basin #2	2,300,000 gal	Provides cooling to CCWS, EDG, and ESWPBVS, (9.2.1)	No
Essential Service Water Basin #3	2,300,000 gal	Provides cooling to CCWS, EDG, and ESWPBVS, (9.2.1)	No
Essential Service Water Basin #4	2,300,000 gal	Provides cooling to CCWS, EDG, and ESWPBVS, (9.2.1)	No
Emergency Feed Water Tank #1	108,000 gal	Water Supply for restoration and maintaining of SG water inventory, (10.4.9)	No
Emergency Feed Water Tank #2	97,000 gal	Water Supply for restoration and maintaining of SG water inventory, (10.4.9)	No
Emergency Feed Water Tank #3	97,000 gal	Water Supply for restoration and maintaining of SG water inventory, (10.4.9)	No
Emergency Feed Water Tank #4	108,000 gal	Water Supply for restoration and maintaining of SG water inventory, (10.4.9)	No
Internal Refueling Water Storage Tank	500,000 gal	Borated Water Supply for the ECCS (6.3.2)	Yes
Chesapeake Bay	Unlimited	NonSafety Related	No

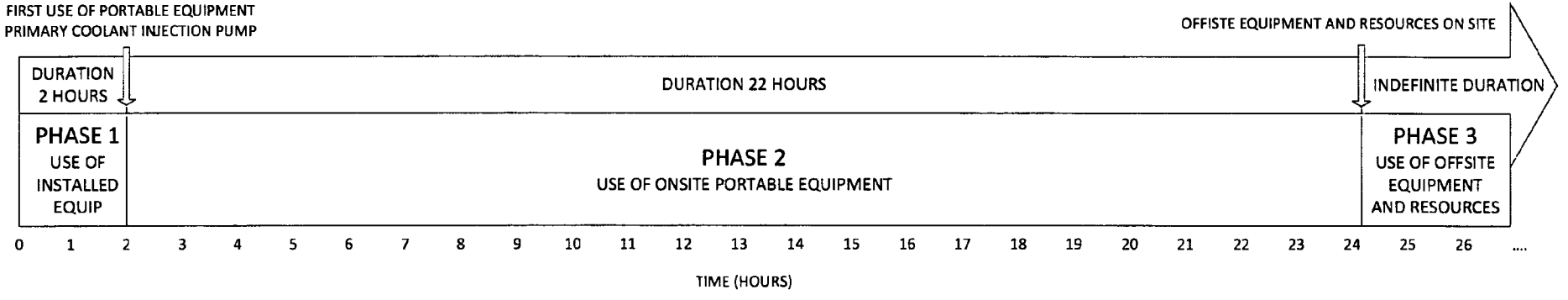
Attachment 5
Not Used

Attachment 6
Phase Timeline

PHASE TIMELINE MODES 1 - 5



PHASE TIMELINE MODE 6 RV HEAD REMOVED



Attachment 7
Phase Durations

	Initial Phase - uses installed equipment and resources and is based on the time from event initiation to the time the first item of portable equipment is placed in service	**Transition Phase - uses portable, on-site equipment and consumables and is based on the time from the initial deployment of portable equipment to the time consumables and additional equipment are available from offsite**	**Final Phase - uses off-site resources and begins 24 hours after event initiation when consumables and additional equipment are available from offsite until event termination**
Core Cooling			
Mode 1 -5	Duration: 0-17 = 17 hours based on fire water storage tank inventory	Duration: 17-24 = 7 hours based on the availability of onsite fuel oil, lube oil, and water for the diesel-driven fire pump	Starting at 24 hours (20 hours (RRC to staging area) + 4 hours - (staging area to site)) to provide core cooling until event termination based on the availability of additional Regional Response Center (RRC) resources
Mode 6 RV head removed	Duration: 0-2 = 2 hours based on accumulator capacity	Duration: 2-24 = 22 hours based on the availability of onsite fuel oil, lube oil, and water for the ELAP DG powering the primary coolant injection pump	Starting at 24 hours (20 hours (RRC to staging area) + 4 hours - (staging area to site)) to provide core cooling until event termination based on the availability of additional RRC resources
Maintain RCS Inventory Control			
Mode 1 -5	Duration: 0-24 = 24 hours based on accumulator capacity	Duration: 24-24 = 0 hours based on the need to connect a portable, self-powered, RCS makeup pump (medium pressure) with a borated water source	Starting at 24 hours (20 hours (RRC to staging area) + 4 hours - (staging area to site)) to provide inventory control until event termination based on the availability of additional RRC resources

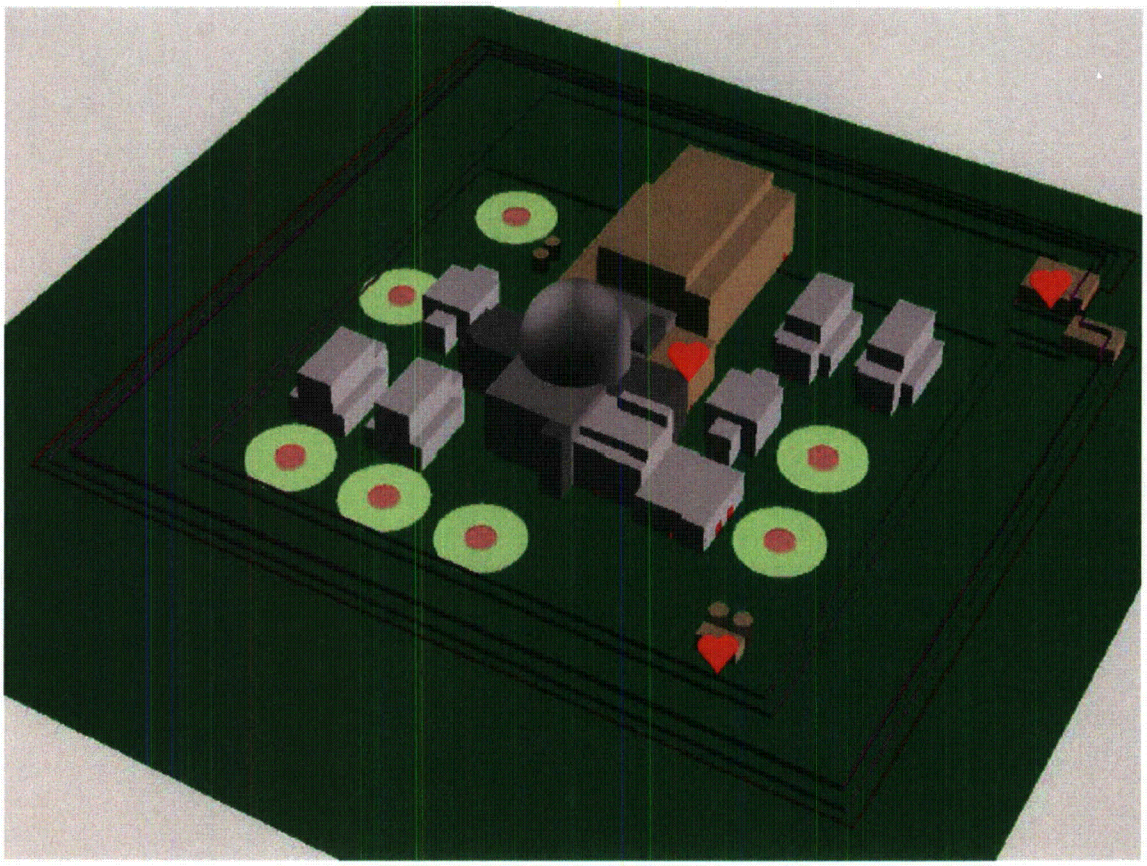
	Initial Phase - uses installed equipment and resources and is based on the time from event initiation to the time the first item of portable equipment is placed in service	**Transition Phase - uses portable, on-site equipment and consumables and is based on the time from the initial deployment of portable equipment to the time consumables and additional equipment are available from offsite**	**Final Phase - uses off-site resources and begins 24 hours after event initiation when consumables and additional equipment are available from offsite until event termination**
Mode 6 RV head removed	Duration: 0-2 = 2 hours based on accumulator capacity	Duration: 2-24 = 22 hours based on starting the ELAP diesel and the primary coolant injection pump and the availability of onsite fuel oil, lube oil, and water	Starting at 24 hours (20 hours (RRC to staging area) + 4 hours - (staging area to site)) to provide core cooling until event termination based on the availability of additional RRC resources
Containment			
Mode 1 -5			
Venting	Duration: 0-5.5 = 5.5 days venting not required based on Containment pressurization analysis	Duration: 5.5 days to event termination based on opening Containment vent valves with a portable air supply	No additional resources anticipated. Starting at 24 hours (20 hours (RRC to staging area) + 4 hours - (staging area to site)) to provide Containment pressure control until event termination based on the availability of additional RRC resources
Spray	Duration 0-14.76 = 14.76 days spray not required based on Containment pressurization analysis	Duration: 14.76 days to event termination by the initiation of Containment spray using a portable pump and a borated water supply	Starting at 24 hours (20 hours (RRC to staging area) + 4 hours - (staging area to site)) to provide Containment pressure control until event termination based on the availability of additional RRC resources
Mode 6 RV head removed			

	Initial Phase - uses installed equipment and resources and is based on the time from event initiation to the time the first item of portable equipment is placed in service	**Transition Phase - uses portable, on-site equipment and consumables and is based on the time from the initial deployment of portable equipment to the time consumables and additional equipment are available from offsite**	**Final Phase - uses off-site resources and begins 24 hours after event initiation when consumables and additional equipment are available from offsite until event termination**
Venting	Duration: 0-5 = 5 hours venting not required based on Containment pressurization analysis	Duration: 5 hours to event termination based on opening Containment vent valves with a portable air supply	No additional resources anticipated. Starting at 24 hours (20 hours (RRC to staging area) + 4 hours - (staging area to site)) to provide Containment pressure control based on the availability of additional RRC resources
Spray	Duration: 0-24 = 24 hours spray not required based on Containment pressurization analysis	Duration: 24 -24 = 0 hours by the initiation of Containment spray using a portable pump and a borated water supply	Starting at 24 hours (20 hours (RRC to staging area) + 4 hours - (staging area to site)) to provide Containment pressure control until event termination based on the availability of additional RRC resources
SFP cooling			
Mode 1 -6	Duration: 0-35 = 35 hours SFP makeup not required based on spent fuel pool boiling analysis.	Duration: 35 hours to event termination to provide makeup using the diesel-driven Fire pump or portable pump	Starting at 24 hours (20 hours (RRC to staging area) + 4 hours - (staging area to site)) to provide SFP makeup until event termination based on the availability of additional RRC resources
Safety Functions Support			
HVAC			

	Initial Phase - uses installed equipment and resources and is based on the time from event initiation to the time the first item of portable equipment is placed in service	**Transition Phase - uses portable, on-site equipment and consumables and is based on the time from the initial deployment of portable equipment to the time consumables and additional equipment are available from offsite**	**Final Phase - uses off-site resources and begins 24 hours after event initiation when consumables and additional equipment are available from offsite until event termination**
Mode 1 -5	Duration: 0-7 hours based on area heat-up analyses	Duration: 7-24 = 17 hours based on the need for repowering SG1/2 ventilation fans from ELAP diesel and MCR Portable AC	Starting at 24 hours (20 hours (RRC to staging area) + 4 hours (staging area to site)) based on the availability of additional RRC resources
Mode 6 RV head removed	Duration: 0-7 hours based on area heat-up analyses	Duration: 7-24 = 17 hours based on the need for repowering SG1/2 ventilation fans from ELAP diesel and MCR Portable AC	Starting at 24 hours (20 hours (RRC to staging area) + 4 hours (staging area to site)) based on the availability of additional RRC resources
AC and DC Power (including ELAP DG)	Duration: 0-8.5 hours based on load shedding analysis	Duration: 8.5-24 = 15.5 hours based on starting the ELAP diesel and repowering the battery chargers and the availability of onsite fuel oil, lube oil, and water	Starting at 24 hours (20 hours (RRC to staging area) + 4 hours - (staging area to site)) based on the availability of additional RRC resources
Communications	Duration: 0-8.5 hours based on load shedding analysis	Duration: 8.5-24 = 15.5 hours based on starting the ELAP diesel and repowering the battery chargers and the availability of onsite fuel oil, lube oil, and water	Starting at 24 hours (20 hours (RRC to staging area) + 4 hours - (staging area to site)) based on the availability of additional RRC resources

	Initial Phase - uses installed equipment and resources and is based on the time from event initiation to the time the first item of portable equipment is placed in service	**Transition Phase - uses portable, on-site equipment and consumables and is based on the time from the initial deployment of portable equipment to the time consumables and additional equipment are available from offsite**	**Final Phase - uses off-site resources and begins 24 hours after event initiation when consumables and additional equipment are available from offsite until event termination**
Lighting	Duration: 0-8.5 hours based on load shedding analysis	Duration: 8.5-24 = 15.5 hours based on starting the ELAP diesel and repowering the battery chargers and the availability of onsite fuel oil, lube oil, and water	Starting at 24 hours (20 hours (RRC to staging area) + 4 hours - (staging area to site)) based on the availability of additional RRC resources
Limiting Duration			
Modes 1-5	Duration: 0-7 hours based on area heat-up analyses	Duration: 7-24 = 17 hours based on powering installed Safeguards Building fans from ELAP DG.	Starting at 24 hours (20 hours (RRC to staging area) + 4 hours - (staging area to site)) based on the availability of additional RRC resources
Mode 6 RV head removed	Duration: 0-2 hours based on accumulator capacity	Duration: 2-24 = 22 hours based on powering Primary Coolant Injection Pump from ELAP DG.	Starting at 24 hours (20 hours (RRC to staging area) + 4 hours - (staging area to site)) based on the availability of additional RRC resources

Attachment 8
Potential Helicopter Landing Zones



50' red circles indicate landing sites inside 150' yellow circles indicating take-off/landing safe separatic
Triage areas are marked with red hearts

Attachment 9
Potential RRC Staging Areas

Enclosure 3

Table of Changes to CCNPP Unit 3 COLA Associated with the Revised Responses to RAI 379 and RAI 388,
Calvert Cliffs Nuclear Power Plant, Unit 3

Table of Changes to CCNPP Unit 3 COLA

Associated with the Revised Responses to RAI No. 379 and 388

Change ID #	Subsection	Type of Change	Description of Change
Part 2 – FSAR			
GN-13-0035	Table 1.8-2	Incorporate COLA markups associated with the response to RAI 388 Question 19-30.	The response to RAI 379 Question 19-27 adds a new COL Item 19.2-2 to Table 1.8-2.
GN-13-0035	19.2.8	Incorporate COLA markups associated with the response to RAI 388 Question 19-30.	The response to RAI 379 Question 19-27 adds a new COL Item 19.2-2 to Section 19.2.8.
CC3-13-0073	19.2.8	Incorporate COLA markups associated with the response to RAI 388 Question 19-30[3].	The response to RAI 379 Question 19-27 adds a new COL Item 19.2-2 to Section 19.2.8.
CC3-13-0105	19.2.8	Incorporate COLA markups associated with the revised response (this response) to RAI 388 Question 19-30.	The response to RAI 379 Question 19-30 adds a discussion of how Fukushima NTTF Recommendations are addressed. Section 19.2.8 also provides a discussion on how new COL Item 19.2-2 is addressed.
Part 10 – Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) and ITAAC Closure			
CC3-13-0073	Appendix A License Condition 19.2-2	Incorporate COLA markups associated with the response to RAI 388 Question 19-30.	The response to RAI 379 Question 19-27 adds a new License Condition 10 to Part 10 Appendix A.
GN-13-0035	Appendix A License Condition 10	Incorporate COLA markups associated with the response to RAI 379 Question 19-27.	The response to RAI 379 Question 19-27 adds a new License Condition 10 to Part 10 Appendix A.

[3] UniStar Nuclear Energy Letter UN#13-073, from Mark T. Finley to Document Control Desk, U.S. NRC, Response to Request for Additional Information for the Calvert Cliffs Nuclear Plant, Unit 3, RAIs 379 and 388, Probabilistic Risk Assessment and Severe Accident Evaluation, dated June 14, 2013