Xcel Energy®

Prairie Island Nuclear Generating Plant
1717 Wakonade Drive East
Welch, MN 55089

February 26, 2013

L-PI-13-007
10 CFR 2.202

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

Prairie Island Nuclear Generating Plant Units 1 and 2
Docket Nos. 50-282 and 50-306
Renewed License Nos. DPR-42 and DPR-60

Prairie Island Nuclear Generating Plant's Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)

References:

1. NRC Order Number EA-12-049, "Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events," dated March 12, 2012 (ADAMs Accession Number ML12054A736).

2. NRC Interim Staff Guidance JLD-ISG-2012-01, "Compliance with Order EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External events," Revision 0, dated August 29, 2012 (ADAMs Accession Number ML12229A174).

3. NEI 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," Revision 0, dated August, 2012.

4. NSPM Letter to NRC, "Initial Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)," dated October 29, 2012 (ADAMs Accession Number ML12305A287).

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued an Order (Reference 1) to all NRC power reactor licensees and holders of construction permits in active or deferred status. Reference 1 was immediately effective and directs Northern States Power Company, a Minnesota corporation (NSPM), d/b/a Xcel Energy, to develop, implement, and maintain guidance and strategies to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities following a beyond-design-basis external event for the Prairie Island Nuclear Generating Plant (PINGP). Specific requirements are outlined in Attachment 2 of Reference 1.

Reference 1 requires submission of an Overall Integrated Plan by February 28, 2013. The NRC Interim Staff Guidance (ISG) (Reference 2) was issued August 29, 2012 which endorses industry guidance document Nuclear Energy Institute (NEI) 12-06, Revision 0 (Reference 3) with clarifications and exceptions identified in Reference 2. Reference 3 provides direction regarding the content of this Overall Integrated Plan.

Reference 4 provided the NSPM initial status report regarding mitigation strategies, as required by Reference 1.

The purpose of this letter is to provide the Overall Integrated Plan pursuant to Section IV, Condition C.1, of Reference 1. Included in the Overall Integrated Plan is a description of how compliance with the requirements described in Attachment 2 of Reference 1 will be achieved. The enclosed Overall Integrated Plan considers the guidance of References 2 and 3.

The enclosed Overall Integrated Plan is based on conceptual design information. Final design details and associated procedure guidance, as well as any revisions to the information contained in the Enclosure, will be provided in the six-month status reports required by Reference 1.

Please contact Jennie Eckholt, Licensing Engineer, at 612-330-5788, if additional information or clarification is required.

Summary of Commitments

This letter makes no new commitments and no revisions to existing commitments.

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

Executed on February 26, 2013.

James E. Lynch
Site Vice President, Prairie Island Nuclear Generating Plant
Northern States Power Company - Minnesota

Enclosure

cc: Administrator, Region III, USNRC
Director of Nuclear Reactor Regulation (NRR), USNRC
NRR Project Manager, PINGP, USNRC
Senior Resident Inspector, PINGP, USNRC

ENCLOSURE

Prairie Island Nuclear Generating Plant

NRC Order EA-12-049

Overall Integrated Plan

(67 Pages to Follow)

General Integrated Plan Elements (PWR and BWR)	
Determine Applicable Extreme External Hazard **References:** **-NEI 12-06, Section 4.0-9.0** **-JLD-ISG-2012-0, Section 1.0**	*Input the hazards applicable to the site; seismic, external flood, high winds, snow, ice, cold, high temperatures.* *Describe how NEI 12-06, Sections 5 – 9, were applied and the basis for why the plant screened out for certain hazards.* The applicable extreme external hazards for the Prairie Island Nuclear Generating Plant (PINGP) are seismic, flooding, high winds, snow, ice and extreme cold, and high temperatures as outlined below. Seismic Hazard Assessment: Consistent with NEI 12-06, Section 5.2, all sites will address seismic hazards. Therefore, seismic hazards are applicable to the PINGP. The design basis earthquake (DBE) is based upon a maximum horizontal ground acceleration of 0.12g and the associated response spectra are given in Plate 4.6, Appendix E of the PINGP USAR. The vertical ground acceleration is equal to two-thirds of the horizontal ground acceleration. Structures classified as Class I at the PINGP are designed for the licensing basis DBE. **Protection** of FLEX Equipment from seismic hazard: NSPM plans to construct two separate storage locations to meet the guidance of NEI 12-06. The equipment will be stored in structures that are designed to the American Society of Civil Engineers (ASCE) 7-10, *Minimum Design Loads for Buildings and Other Structures*, or an evaluated equivalent so that at least one of the storage locations can be expected to withstand the seismic event, consistent with NEI 12-06 Section 5.3. The final storage locations for the FLEX equipment will be determined and designed during the design process, and the final locations will be provided in the subsequent six month status reports. Large portable FLEX equipment will be secured for a seismic event and located so that it is not damaged by other items in a seismic event. **Deployment** of FLEX Equipment following seismic event: As described in PINGP USAR, Appendix E, liquefaction is not expected at the site during the postulated DBE. Deployment pathways for FLEX equipment from the proposed storage location(s) will include the potential for debris due to non-

General Integrated Plan Elements (PWR and BWR)

seismically designed structures. Debris removal equipment onsite will be capable of clearing pathways for deployment.

External Flood Hazard Assessment:

External flooding events are applicable to the PINGP. As described in PINGP USAR Section 2.4, the current design bases flood for the PINGP is a flood on the Mississippi River. The flood is a relatively slow developing event; developing over several days with actions based on three-day forecasts of river water level. Finished site grade is at elevation 695 ft. Maximum predicted flood water level is 703.6 ft with wave run-up to elevation 706.7 feet. Site grade would be flooded for approximately 13 days. Based on flood analysis information in PINGP USAR Appendix F, access to the site could be flooded for up to approximately 20 days.

Protection of FLEX Equipment from external flood hazard:

NSPM plans to construct two separate storage locations to meet the guidance of NEI 12-06. The equipment will be stored in structures that are designed to the ASCE 7-10, or an evaluated equivalent. The buildings will not be designed to withstand an external flood because the flood hazard has ample warning time to allow deployment of FLEX equipment. The planned new storage buildings will be located at elevations that prevent a flood from impacting access to FLEX equipment during the early stages of the flood.

Deployment of FLEX Equipment for flooding event:

There will be sufficient time for pre-staging of the Phase 2 FLEX equipment within the flood-protected areas of the building or above the flood level before the design basis flood level is reached. Phase 3 equipment from the Regional Response Center can be requested prior to the flooding of the main access road and set up on site in advance of the probable maximum flood. Plant procedures require shut down in preparation for flooding. Current procedures require the plant to shut down when the river level is predicted to exceed elevation 692 feet. Backup power supplies and pumps will be pre-staged as part of the plant procedures for construction of flood protection features. No other beyond design basis event is assumed to occur with the flood; therefore makeup from the Condensate Storage Tanks will be available. Portable pumps will be moved as necessary to ensure that they are protected from the flood but also have access to a water supply.

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High Wind Hazard Assessment:

The PINGP is located at 92° 37.9' west longitude and 44° 37.3' north latitude. As described in NEI 12-06, Section 7.2.1, tornadoes with the capacity to do significant damage are generally considered to be those with winds above 130 mph. Figure 7-2 in NEI 12-06 provides recommended design wind speeds for probability level of 10^{-6} per year of 191 mph based on the plant location. A tornado event has very little warning to enable anticipatory plant response. The design bases wind speed for the PINGP is 100 mph. Design bases tornado loadings are a pressure drop to 3 psi in 3 seconds, peripheral wind velocity of 300 mph with a forward progression of 60 mph.

Tornado missiles design parameters are provided in PINGP USAR Table 12.2-9 and Table 12.2-43.

Protection of FLEX Equipment from high wind hazard:

NSPM plans to construct two separate storage locations to meet the guidance of NEI 12-06. The equipment will be stored in structures that are designed to the ASCE 7-10, or an evaluated equivalent. Large portable FLEX equipment will be secured for a high wind event and located so that it is not damaged by other items in a high wind event. The location of the structures will be selected considering the predominant tornado travel paths from the West or West Southwesterly direction, thus FLEX equipment will be stored in diverse locations in a North-South arrangement with sufficient separation distance such that "N sets" of equipment are protected and deployable after a tornado.

Deployment of FLEX Equipment following high wind event:

Following a high wind event, deployment of FLEX equipment could be impaired by large debris. Debris removal equipment will be provided to ensure a clear path for deployment of FLEX equipment is available. The debris removal equipment will be protected to ensure it is available after a tornado.

Extreme Cold Hazard Assessment:

Snow, Ice and Extreme Cold hazards are applicable to the PINGP, consistent with NEI 12-06 Section 8.2. The design basis for the PINGP is snow load of 50 lbs per sq ft of horizontal projected area for structures and components exposed to snow. The PINGP USAR is not specific with regards to values for design for ice or cold;

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however, the extreme cold temperature recorded in the Twin Cities is -34°F based on temperature data available from the University of Minnesota.

Protection of FLEX Equipment from extreme cold hazard:

NSPM plans to construct two separate storage locations to meet the guidance of NEI 12-06. The equipment will be stored in structures that are designed to the ASCE 7-10, or an evaluated equivalent, consistent with NEI 12-06 Section 8.3. Buildings will be provided with adequate heating to maintain a temperature that will ensure equipment is likely to function when called upon,, and will also be designed to withstand required snow and ice loads.

Deployment of FLEX Equipment following extreme cold event:

Personal protection gear will be available for use by plant personnel during deployment for extreme cold protection. Snow removal is a normal activity at the plant site because of the climate. Reasonable access to FLEX equipment will be maintained throughout a snow event. Ice management will be performed as required such that large FLEX equipment can be moved by vehicles. Debris removal equipment will be able to move through expected snow accumulations and can also be used to move portable equipment.

<u>Extreme High Temperature Hazard Assessment:</u>

Consistent with NEI 12-06 Section 9.2, all sites will address high temperatures. The PINGP USAR is not specific with regards to values for design for heat; however, the extreme hot temperature recorded in the Twin Cities is 108°F based on temperature data available from the University of Minnesota.

Protection of FLEX Equipment from extreme high temperature hazard:

NSPM plans to construct two separate storage locations to meet the guidance of NEI 12-06. The equipment will be stored in structures that are designed to the ASCE 7-10, or an evaluated equivalent. Buildings will be provided with adequate ventilation to maintain reasonable storage temperatures.

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	Deployment of FLEX Equipment following extreme high temperature event: High temperature is not expected to impact the deployment of FLEX equipment. All FLEX equipment will be procured to be suitable for use in peak temperatures for the region. In summary, seismic, flood, high winds, extreme cold, and extreme high temperature hazards are applicable to PINGP.
Key Site assumptions to implement NEI 12-06 strategies. **Reference:** **-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.* • *Exceptions for the site security plan or other (license/site specific) requirements of 10 CFR may be required.* • *Deployment resources are assumed to begin arriving at hour 6 and fully staffed by 24 hours.* The following key assumptions are used in development and implementation of FLEX strategies at PINGP. • General Criteria and Baseline Assumptions outlined in NEI 12-06 Section 3.2.1 for PWRs will be assumed. • 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. • Exceptions for the site security plan or other site specific regulatory requirements may be required. • Deployment resources are assumed to begin arriving at 6 hours and fully staffed by 24 hours. • The Diesel Driven Cooling Water Pumps operate and Emergency Intake Pipe is available to provide emergency access to the Mississippi River. • Debris removal equipment will be reasonably protected from the applicable external events such that it is likely to remain functional and deployable. • This plan defines strategies capable of mitigating a simultaneous loss of all alternating current (ac) power and loss of normal

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	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 SFP cooling capabilities at all units on a site. Though specific strategies are being developed, due to the inability to anticipate all possible scenarios, the strategies are also 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 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).
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. **References:** **-JLD-ISG-2012-01** **-NEI 12-06, Section 13.1**	*Include a description of any alternatives to the guidance, and provide a milestone schedule of planned action.* NSPM has no known deviations to the guidelines in JLD-ISG-2012-01 and NEI 12-06. If deviations are identified, then the deviations will be communicated in a future six month status report following identification, as required by Order EA-12-049.

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Provide a sequence of events and identify any time constraint required for success including the technical basis for the time constraint. **References:** **-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 walk through 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).* General : 1. Analysis is provided in WCAP 17601-P (Reference 1), including a description of the analysis methods. Attachment 1B provides a summary of reference analysis deviations for key parameters of interest. As described in WCAP-17601-P, Section 4.1.1.1, the analyses included cases that are applicable to or bounding for the PINGP. As described at the bottom of page 4-1 of WCAP-17601-P, "Several of the significant variables in this analysis with regard to plant modeling are RCS volume, accumulator volume, accumulator cover gas pressure, and of course, RCP seal leakage rates. Since the RCS volumes are quasi-linear between all Westinghouse NSSS designs (i.e., two, three and four loop), as is RCS leakage (based on number of RCPs), use of one case is considered acceptable as a reasonable representation. As confirmation to the use of the Std 412 design for this representation, a comparison is made between representative two, three and four loop designs with regard to overall RCS and accumulator volumes." The confirmation of this analysis for the PINGP is provided on Table 4.1.1-1 of WCAP-17601-P. Important inputs and assumptions used in the analyses are identified in Section 4.2.1 (Common to All Plant types) and Section 4.2.2 (Westinghouse Unique Assumptions). NSPM is consistent with these inputs and assumptions.

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The PWR Owners Group (PWROG) developed a Core Cooling Position Paper to support plants with the implementation of WCAP-17601-P. Consistent with the Core Cooling Position Paper, comparison of the PINGP to WCAP-17601-P Section 5.4.2.1 shows that the PINGP core thermal power is less than that assumed in the WCAP and the total steam relief capability is greater than that assumed in the WCAP.

Therefore, WCAP-17601-P can be applied to PINGP.

2. Analysis of time to restore Auxiliary Feedwater (AFW) following a loss of offsite power due to an External Event was performed using the RETRAN computer code.
3. Containment integrity was reviewed using the CONTEMPT-LT/028 computer code.
4. Environmental conditions within the station compartments were evaluated using the GOTHIC and HEATSINK computer models.

Discussion of time constraints identified in Attachment 1A table.

1. Entry into ELAP (20 minutes – Attachment 1A, Item 3). Time period of twenty minutes is selected conservatively to ensure that Extended Loss of AC Power (ELAP) entry conditions can be verified by control room staff and it is validated that alternate AC sources are not available. PINGP has two safety-related emergency diesel generators per unit. The capability exists to cross-tie the non-SBO units Emergency Diesel Generator to the SBO unit. As described in PINGP USAR Section 8.4.4, it has been demonstrated by testing that alternate AC (AAC) from the non-SBO unit's Emergency Diesel Generator is available and the interconnecting bus ties can be manually closed within ten minutes of the realization that an SBO condition exists to provide power to the required loads on the SBO unit. Given the 10 minute time frame for SBO realization and actions to provide power to the SBO unit, the operators will realize that an ELAP condition exists at this time. Therefore, twenty minutes is a reasonable assumption. ELAP entry conditions are:

   I. Loss of Offsite Power

   II. Loss of all Emergency Diesels

   III. Any doubt exists that 4160 VAC power can be restored within twenty minutes of the event.

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NSPM will perform a walkthrough demonstration of the ability to complete these actions within the time constraint.

2. Reducing Cooling Water System Flow Demand (4 hours – Attachment 1A, Item 9). During an ELAP, the preferred water supply to the Turbine Driven Auxiliary Feedwater (TDAFW) Pumps is from the Condensate Storage Tanks (CSTs). There are three CSTs located at PINGP. The CSTs are located on the east side of the Unit 1 Turbine Building (11 CST) and the west side of the Unit 2 Turbine Building (21 CST and 22 CST), and are approximately 450 feet apart (see locations shown on Figure 1). The CSTs are cross-connected, such that the water in the three CSTs is available to both Units' TDAFW pumps. The CSTs are not seismically designed; however, analyses have been performed which demonstrate that there is reasonable assurance that the CSTs would be available following a seismic event. As shown on Figure 1, the CSTs are located on opposite sides of the Turbine Building and located such that substantial portions of the tanks are protected from tornado missiles by Class I structures. In an ELAP event, the Cooling Water System (safety related system) would provide the source of water to the TDAFW Pumps. In an ELAP event, the cooling water (CL) system is supplied from two Diesel Driven Driven Cooling Water Pumps (DDCLP). Each DDCLP has its own dedicated diesel engine and does not rely on AC power. The suction supply to the DDCLP is from a safeguards bay inside the Plant Screenhouse that can be supplied from the normal intake or from a dedicated emergency cooling water intake line. As described in PINGP USAR Section 10.4.1.2.2, the Emergency Cooling Water Intake provides water to maintain safe shutdown for both units after a Design Basis Earthquake. This intake is a 36 inch pipe buried approximately 40 feet below the Circulating Water Intake Canal water level in nonliquefiable soil, connecting the screenwell to a submerged intake crib in a branch channel of the Mississippi River. This Emergency Cooling Water Intake is a Class I structure as is the Approach canal which supplies its intake crib from the main channel of the Mississippi River. The intake crib is designed to exclude trash, and means are provided for back flushing. Back flushing is performed on a monthly basis to ensure that the line remains unobstructed. Furthermore, as described in PINGP USAR Section 10.4.1.2.2, lateral movements of liquefied soil layers are not expected in the intake area, nor is it expected a covering of the intake itself, because the intake crib is located in a 575 foot wide intake

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	canal which has been sized by applying the 25 to 1 slough angle. The 36 inch pipe, intake crib, and the approach canal between the Mississippi River and intake crib are Class I. If the 36 inch pipe is the only source of water available to the DDCLPs, operator actions are necessary to reduce the system demand to within the capacity of the line. Operators would initiate actions to reduce CL system flow demand based on low bay water level. A means to monitor bay level and initiation of actions to reduce flow demand will be included as part of the FLEX Support Guidelines (FSG). As described in PINGP USAR Section 10.4.1, there are more than four hours available to perform these actions. NSPM will perform a walkthrough demonstration of the ability to complete these actions within the time constraint. 3. Cooling Water System Aligned to Provide Suction Water Supply to TDAFW Pumps (72 minutes – Attachment 1A, Item 5). With the assumed loss of the CSTs, the TDAFW Pumps would automatically trip on low suction pressure, protecting the pump from damage due to a loss of the suction water supply. Aligning the CL system to the suction of the TDAFW Pumps requires local manual operation of Motor Operated Valve (MOV) per pump and then locally restarting the TDAFW Pump. These actions are provided within current plant procedures. Analyses (using the RETRAN computer code) demonstrate that at least 72 minutes are available to restore AFW flow to the Steam Generators. NSPM will perform a walkthrough demonstration of the ability to complete these actions within the time constraint. 4. Repower MCCs for Fuel Oil Transfer Pump (8 hours – Attachment 1A, Item 11). The fuel oil supply to each DDCLP is from its associated Fuel Oil Day Tank (FODT). The FODT contains sufficient fuel oil to support approximately 8 hours of DDCLP operation. In order to ensure continued availability of the CL supply to the TDAFW Pumps (or the portable pump), a portable FLEX diesel generator will be installed to repower 480VAC Motor Control Centers (MCC) 1AB1 or 1AB2 in the Plant Screenhouse. The primary means to repower a Fuel Oil Transfer Pump will be to repower MCC 1AB2 from a portable FLEX diesel generator. Repowering the Fuel Oil Transfer Pump allows refilling the associated FODT from the associated Fuel Oil Storage Tank (FOST). The alternate means to repower a Fuel Oil Transfer Pump will be to repower MCC 1AB1 from a portable FLEX diesel generator to allow

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	refilling the associated FODT from the FOST. Restoration of power to MCCs 1AB1 or 1AB2 will also restore the HVAC system for the DDCLPs. NSPM will perform a walkthrough demonstration of the ability to complete these actions within the time constraint. 5. <u>DC Load Management (60 and 90 minutes – Attachment 1A, Items 4 and 6).</u> DC power is provided by two trains of batteries for each Unit (Batteries 11 and 12 in Unit 1, and Batteries 21 and 22 in Unit 2). The power supply to essential instrumentation is from the Instrument Inverters, which are powered from the safeguard batteries. Load shedding will be performed in order to extend battery operational times. The strategy for the load shedding will be to reduce the load on the batteries through use of relatively simple actions (opening DC Panel Breakers). The load shedding will focus on two DC Panels for each Battery and reduces the overall load while maintaining essential instrumentation. It is assumed that panel breakers at the four panels in the Battery Rooms are opened at 60 minutes and that the panel breakers at the four panels in the Relay Room are opened at 90 minutes. Preliminary estimates indicate that battery life can be extended up to at least 16 hours with this load shedding scheme. The battery depletion calculation is currently being finalized to account for these changes. If the results are different than reported herein, this will be reported in a six month status report, as required by Order EA-12-049. Prior to the batteries being depleted, portable 480VAC generators will be installed to provide power to the DC system and to recharge the batteries. The Battery Charger and Instrument Inverters are supplied from MCCs 1AC1 and 1AC2 in Unit 1 and 2AC1 and 2AC2 in Unit 2. Two portable FLEX diesel generators will be provided; one to repower MCCs 1AC1 and 2AC1 and the other to repower MCCs 1AC2 and 2AC2. The primary means to restore a train of DC in each Unit will be to repower MCCs 1AC2 and 2AC2. The alternate means to restore a train of DC in each unit will be to repower MCCs 1AC1 and 2AC1. This action will be designed to restore the Battery Chargers and all of the Safety Related Instrument Inverters (which will restore all channels of essential instrumentation), and the Emergency Lighting System (as applicable) in the associated train. NSPM will perform a walkthrough demonstration of the ability to complete these actions within the time constraint.

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6. Provide Ventilation to Battery Rooms (18 hours – Attachment 1A, Item 15). During an ELAP, the normal HVAC to the Battery Rooms would be lost. However, the loads inside of the Battery Rooms would continue to operate. Based on continued heat rejection from operating equipment (e.g., Instrument Inverters), it is expected that the room temperature would increase. Analyses show that by opening Battery Room doors, prior to 18 hours after the event, natural circulation provides sufficient air flow to maintain the temperature in the Battery Rooms to less than the limiting value of 120°F. This room heatup analysis does not include reductions in heat rejection rates due to load shedding. Thus, this analysis is conservative for the ELAP scenario. NSPM will perform a walkthrough demonstration of the ability to complete these actions within the time constraint.

7. Provide Ventilation to Control Room (11.7 hours – Attachment 1A, Item 13). During an ELAP, the normal HVAC to the Control Room would be lost. However, the loads inside of the Control Room would continue to operate. Based on continued heat rejection from operating equipment (e.g., Panels, Instrumentation and Controls, etc.) and personnel, it is expected that the room temperature would increase. Analyses show that by reducing some heat sources and opening Control Room doors, prior to 11.7 hours after the event, natural circulation provides sufficient air flow to preclude the temperature in the Control Room from exceeding 120°F and reducing the temperature to a steady state value of approximately 106°F. NSPM will perform a walkthrough demonstration of the ability to complete these actions within the time constraint.

8. Install Portable Reactor Coolant System Makeup Pump (33 hours – Attachment 1A, Item 17). WCAP-17601-P shows that, to preclude loss of natural circulation cooling, makeup needs to be provided within approximately the first 33 hours. NSPM will perform a walkthrough demonstration of the ability to complete these actions within the time constraint.

9. Pre-Stage Equipment on Spent Fuel Pool Floor (33 hours – Attachment 1A, Item 18). To avoid concerns related to habitability during installation, the strategy will be to install the makeup hose prior to pool boiling. During the initial part of Phase 2, SFP cooling is provided by allowing the pool

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	liquid to heat-up and then boil. For the ELAP scenario, the time to boiling is expected to be greater than 33 hours. Reference: WCAP 17601-P, *Reactor Coolant System Response to the Extended Loss of AC Power Event for Westinghouse, Combustion Engineering and Babcock and Wilcox NSSS Designs*, Revision 0, August 2012.
Identify how strategies will be deployed in all modes. **Reference:** **-NEI 12-06, Section 13.1.6**	*Describe how the strategies will be deployed in all modes.* Connection points for RCS makeup described in this response can be used during all modes. During modes where Steam Generators (SG) are available, heat removal will be performed as described in the strategies herein. In Mode 5 and Mode 6 with the SGs not available and the refueling cavity not filled, the RWST can be gravity drained to the RCS to maintain RCS inventory. As noted in NEI 12-06, Table D-1, there may be short periods of time during Modes 5 and 6 where plant configurations may preclude use of this strategy. A portable pump (described below) can be used to take suction from the RWST and provide sufficient inventory to maintain RCS water level. In Mode 6 with the refueling cavity filled, the water in the cavity provides sufficient volume to support heat removal for a substantial time period. A portable pump can be installed to maintain water level above the top of reactor vessel flange. Strategies discussed below for addressing the containment are developed assuming the reactors are in Mode 1. These conditions are bounding for other modes of operation. Strategies will be driven by qualified programs and procedures, including administrative controls to ensure that FLEX portable equipment remains available and deployment will be possible in all modes. Specifically, outage arrangements will not prevent FLEX portable equipment deployment.

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Provide a milestone schedule. This schedule should include:
• **Modifications timeline**
  ○ **Phase 1 Modifications**
  ○ **Phase 2 Modifications**
  ○ **Phase 3 Modifications**
• **Procedure guidance development complete**
  ○ **Strategies**
  ○ **Maintenance**
• **Storage plan (reasonable protection)**
• **Staffing analysis completion**
• **FLEX equipment acquisition timeline**
• **Training completion for the strategies**
• **Regional Response Centers operational**
 	
Reference:
-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 in Attachment 2.

Identify how the programmatic controls will be met. **Reference:** **-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.* NSPM will implement an administrative program in accordance with NEI 12-06, Section 11. FLEX strategies and their basis will be maintained in an overall program document, which will contain the basis for the ongoing maintenance and testing chosen for the FLEX equipment. This will include standard industry preventative maintenance (PM) with scope and frequency established considering EPRI guidelines and manufacturer recommendations. FLEX equipment will be procured as commercial equipment unless credited for other functions; then the quality attributes of the other

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	functions apply. Existing plant configuration control procedures will be modified to ensure that changes to the plant design, physical plant layout, roads, buildings, and miscellaneous structures will not adversely impact the approved FLEX strategies.
Describe training plan	*List training plans for affected organizations or describe the plan for training development.* Training for FLEX strategies will be established in accordance with NEI 12-06, Section 11.6. The Systematic Approach to Training (SAT) will be followed.
Describe Regional Response Center plan	The industry will establish two (2) Regional Response Centers (RRC) to support utilities during beyond design basis events. NSPM has signed a participation contract with the Strategic Alliance for FLEX Emergency Response (SAFER). Each RRC will hold five (5) sets of equipment, four (4) of which will be able to be fully deployed when request, the fifth set will have equipment in a maintenance cycle. Equipment will be moved from an RRC to a local assemble 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.
Notes: None.	

Maintain Core Cooling and Heat Removal

PWR Installed Equipment Phase 1

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 SG for Makeup with Portable Injection Source**
- **Sustained Source of Water**

Reference: JLD-ISG-2012-01, Sections 2 and 3

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.

At the initiation of the event operators will enter PINGP's Emergency Operating Procedure (EOP) ECA 0.0, *Loss of All Safeguards AC Power*. The FLEX Support Guidelines (FSGs) will be entered as directed in ECA-0.0 when it is recognized that an ELAP condition has occurred. Command and control of the site will be maintained within the EOPs. Operators will begin DC electrical load shedding and will begin to cool down the plant to approximately 430°F (T_{cold}). Steam generator (SG) pressure will be maintained at approximately 350 psig. The terminal pressure for SG depressurization is determined following the guidance in "PWROG Core Cooling Position Paper" to preclude nitrogen injection from the Safety Injection (SI) Accumulators into the Reactor Coolant System (RCS). The units will be cooled down and depressurized to reduce the leakage out the RCP seals and to facilitate inventory injection from the SI Accumulators.

Core cooling and heat removal would be accomplished using the Steam Generators and Turbine Driven Auxiliary Feedwater Pump (TDAFWP). Each unit has a safety related TDAFWP. The steam from the Steam Generators (SG) provides the motive force to drive the turbine for the pump. As described in PINGP USAR Section 11.9.2.2, the TDAFW Pump will automatically start on several signals that would be present during an ELAP event (i.e., low-low water level in either SG, trip of both MFW Pumps, Loss of both 4.16 KV normal buses). Furthermore, PINGP USAR Section 11.9.2.2 describes that the TDAFWP can be started locally or remotely from the control room. Steam would be initially released from the SG using the SG PORV until the associated accumulator depressurizes. When the SG PORV becomes unavailable due to lack of control air supply, heat will be removed via steam release through the Steam Generator Safety Valves. The analysis in WCAP-17601-P assumes that plant cooldown would be commenced after the first two hours. For plant cooldown, steam would be released using the SG Power Operated Relief Valves (PORV). Each SG has one PORV. The SG PORVs can be operated locally using the valve handwheels. AFW flow is controlled locally per plant procedures. This requires operator action in the AFW Pump Room to locally operate MOVs to throttle AFW flow.

As described in PINGP USAR Section 11.9.2.2, auxiliary feedwater system coolant sources are redundant and diverse. The normal source is by gravity feed from the three cross-connected 150,000 gallon Condensate Storage Tanks (CSTs). The safety related water supply is provided by the Design Class I

[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.

Maintain Core Cooling and Heat Removal

PWR Installed Equipment Phase 1

Cooling Water (CL) System.

- The CSTs will be the preferred water supply for the TDAFWP, if available following an ELAP event. Minimum water volume in the CSTs is specified in plant Technical Specifications. At Technical Specification minimum water volumes, the CSTs provide sufficient water to maintain hot shutdown for two hours followed by cooldown to 350°F within the subsequent six hours. Methods will be available to refill the CST(s) during an ELAP using a portable FLEX pump. The CSTs are not seismically designed; however, analyses have been performed which demonstrate that there is reasonable assurance that the CSTs would be available following a seismic event. There are three CSTs located at PINGP. The CSTs are located on the east side of the Unit 1 Turbine Building (11 CST) and the west side of the Unit 2 Turbine Building (21 CST and 22 CST), approximately 450 feet apart (see locations shown on Figure 1). As shown on Figure 1 in Attachment 3, the CSTs are located such that a substantial portions of the tanks are protected from tornado missiles by Class I structures. Tank location and protection minimizes the probability that all three CSTs would be damaged by a single tornado event. However, NSPM will not rely on the CSTs as the primary makeup water source in an ELAP event, as the CSTs are not protected from all external hazards.

- The CL System, which is a safety related system, would provide the credited source of water to the TDAFW Pumps. In an ELAP event, the CL system will be supplied from two Diesel Driven Cooling Water Pumps (DDCLPs). Each DDCLP has its own dedicated diesel engine and does not rely on AC power. The suction supply to the DDCLP pulls from a safeguards bay inside the Plant Screenhouse that can be supplied from the normal intake or from a dedicated emergency cooling water intake line. As described in PINGP USAR Section 10.4.1.2.2, the Emergency Cooling Water Intake provides water to maintain safe shutdown for both units after a Design Basis Earthquake. This intake is a 36 inch pipe buried approximately 40 feet below the Circulating Water Intake Canal water level in nonliquefiable soil, connecting the screenwell to a submerged intake crib in a branch channel of the Mississippi River. This Emergency Cooling Water Intake is a Class I structure as is the Approach canal which supplies the intake crib from the main channel of the Mississippi River. The intake crib is designed to exclude trash, and means are provided for back flushing. Back flushing is performed on a monthly basis to ensure that the line remains unobstructed. Furthermore, as described in PINGP USAR Section 10.4.1.2.2, lateral movements of liquefied soil layers are not expected in the intake area, nor is it expected that a covering of the intake itself, because the intake crib is located in a 575 foot wide intake canal which has been sized by applying the 25 to 1 slough angle. If the 36 inch pipe is the only source of water available to the DDCLPs, operator actions are necessary to reduce the system flow demand to within the capacity of the line. Operators would initiate actions to reduce CL system flow demand based on low bay water level. As described in PINGP USAR Section 10.4.1.2.2, there are four hours available to perform these actions. With the assumed loss of the CSTs, the TDAFW Pumps would automatically trip on low suction pressure, protecting the pump from damage due to a loss of suction water supply. Aligning the CL system to the suction of the TDAFW Pumps requires local manual operation of one Motor Operated Valve (MOV) per pump and then locally restarting the TDAFW Pump. These actions are provided within current plant procedures. Analyses demonstrate that there is at least 72 minutes available to restore AFW flow to the Steam Generators.

Maintain Core Cooling and Heat Removal

PWR Installed Equipment Phase 1

DDCLP operation is dependent on having sufficient fuel oil available in the associated Fuel Oil Day Tank. The available fuel in the DDCLP Fuel Oil Day Tank provides up to approximately eight (8) hours of DDCLP operation.

Details:

Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation.* Actions to address core cooling during Phase 1 are currently addressed within PINGP's EOP ECA 0.0, *Loss of All Safeguards AC Power*. ECA 0.0 will be updated, as necessary, to reflect the results from the ELAP related analyses. NSPM FSGs will be developed to support the ELAP event. These procedures will be developed in conjunction with the PWR Owners Group (PWROG).
Identify modifications	*List modifications and describe how they support coping time.* No modifications were identified to increase Phase 1 coping capability for core cooling and heat removal.
Key Reactor Parameters	*List instrumentation credited for this coping evaluation Phase.*

RCS Essential Instrumentation	Safety Function
RCS Hot Leg Temperature	RCS coolant inventory and heat removal
RCS Cold Leg Temperature	RCS coolant inventory and heat removal
RCS Wide Range Pressure	RCS pressure boundary and pressure control
Steam Generator Levels	SG secondary side inventory and heat removal
Core Exit Thermocouples (CETs)	RCS coolant inventory and heat removal
Pressurizer Level	RCS coolant inventory
RVLIS	RCS coolant inventory
AFW Pump Flow	Heat removal
SG Pressure	SG secondary side inventory and heat removal
CST Level	Availability of preferred water supply to TDAFWP
Neutron Flux/Startup Rate	Confirmation that reactor is subcritical

Maintain Core Cooling and Heat Removal
PWR Installed Equipment Phase 1
Notes: None.

Maintain Core Cooling and Heat Removal

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.

Following plant cooldown to ~350 psig SG pressure, continued heat removal would be accomplished using the Turbine Driven Auxiliary Feedwater Pump (TDAFWP). The steam from the Steam Generators (SG) would provide the motive force to drive the pump. Additional steam would be released using the SG PORV for heat removal. As described for Phase 1, the SG PORVs can be operated locally using the valve handwheels. AFW flow will be controlled locally in the AFW Pump Rooms per existing plant procedures.

As a backup to the TDAFW Pump, portable feedwater capability will be installed. The discharge from the portable pump will be split to provide flow into a connection into the AFW lines downstream of each Motor Driven AFW Pumps (MDAFWP) – shown on Figure 3 in Attachment 3. This will provide flow to the SGs in both Units. In addition, the AFW System includes the capability to cross-connect the piping downstream of each MDAWFP. This cross-connection would provide the capability to feed the SGs for one or both of the Units from either of the two FLEX connection points.

Water supply to the TDAFW Pump will be supplied from either the CST (if available) or the CL System using a DDCLP. Availability of the CL supply from a DDCLP is discussed in the previous section on Phase 1. During Phase 1, the fuel oil supply to the DDCLPs will be supplied from the associated Fuel Oil Day Tank (FODT). The FODT contains sufficient fuel oil to support approximately 8 hours of DDCLP operation. In order to ensure continued availability of the CL supply to the TDAFW Pumps, a portable FLEX diesel generator will be installed to repower 480VAC Motor Control Centers (MCC) 1AB1 or 1AB2 in the Plant Screenhouse. Repowering MCCs 1AB1 or 1AB2 will repower the Fuel Oil Transfer Pumps to allow refilling the FODTs from the associated fuel oil storage tanks (FOST). The FOST has sufficient fuel oil to supply the DDCLP for greater than 72 hours.

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.* ECA 0.0 will be updated, as necessary, to reflect the results from the ELAP related analyses. NSPM FSGs will be developed to support the ELAP event. These procedures will be developed in conjunction with the PWROG.
Identify modifications	*List modifications necessary for Phase 2.* Mechanical connections to the AFW System will be added. Electrical connections to MCCs 1AB1 and 1AB2 will be added.

Maintain Core Cooling and Heat Removal	
PWR Portable Equipment Phase 2	
Key Reactor Parameters	*List instrumentation credited or recovered for this coping evaluation.* Same instrumentation as Phase 1 except for instrumentation associated with the portable FLEX equipment.
Storage / Protection of Equipment : **Describe storage / protection plan or schedule to determine storage requirements**	
Seismic	*List how equipment is protected or schedule to protect.* See discussion under "Determine Applicable Extreme External Hazard" section for protection of equipment from seismic events.
Flooding Note: if stored below current flood level, then ensure procedures exist to move equipment prior to exceeding flood level.	*List how equipment is protected or schedule to protect.* See discussion under "Determine Applicable Extreme External Hazard" section for protection of equipment from external flooding.
Severe Storms with High Winds	*List how equipment is protected or schedule to protect.* See discussion under "Determine Applicable Extreme External Hazard" section for protection of equipment from high winds.
Snow, Ice, and Extreme Cold	*List how equipment is protected or schedule to protect.* See discussion under "Determine Applicable Extreme External Hazard" section for protection of equipment from snow, ice and extreme cold.
High Temperatures	*List how equipment is protected or schedule to protect.* See discussion under "Determine Applicable Extreme External Hazard" section for protection of equipment from high temperatures.

Maintain Core Cooling and Heat Removal		
PWR Portable Equipment Phase 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.*
Storage locations and structure(s) have not yet been decided. Figure 2 in Attachment 3 identifies clear deployment paths onsite for the transportation of FLEX equipment. Portable diesel driven pumps (low pressure and booster pump) will be deployed from the storage location. For this function, clear deployment paths from the identified roads to the Plant Screenhouse and Turbine Building are shown in Figure 2. Debris removal equipment will be available to clear debris from the deployment path.	No modifications have been identified to address Phase 2 deployment issues. Any additional modifications identified will be communicated in the six month status reports.	The AFW Pump Room is in a Class I area of the Turbine Building. Thus, connections inside the AFW Pump Rooms are protected. Multiple access pathways exist for hose and cable routing to connection points. Debris removal equipment will be available to clear debris, as necessary, to facilitate access.
Portable 480 VAC diesel generators will be deployed from the storage location. For this function, clear deployment paths are shown from the identified roads to the Plant Screenhouse and Turbine Building in Figure 2 of Attachment 3. Debris removal equipment will be available to clear debris from the deployment path.	No modifications have been identified for Phase 2 deployment issues. Any additional modifications identified will be communicated in the six month status reports.	The DDCLP Rooms are in a Class I area of the Plant Screenhouse. Thus, connections at MCCs 1AB1 and 1AB2 are protected. In order to access the connection point from the FLEX diesel generator, the cabling will be routed through part of the Screenhouse that is not designed for Class I loads. Debris removal equipment will be available to clear debris in the Screenhouse to facilitate access.
Notes: None.		

Maintain Core Cooling and Heat Removal

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 FLEX equipment for PINGP includes installation of two 4.16 kV generators provided by the Regional Response Center (RRC). The RRC 4.16 kV generators will be used to repower a 4.16 kV safeguard bus in each Unit. Alternate connection points for each unit will be provided to the opposite train inside the 4.16 kV Bus Rooms in the Turbine Building (Unit 1) and the D5/D6 Building (Unit 2). With a 4.16 kV bus repowered, loads such as a MDAFW Pump can be operated to maintain stable plant conditions such as continuing heat removal using the SGs.

Each of the 4.16 kV Regional Response Center FLEX diesel generators will be capable of carrying approximately 2000 kW load, which will be sufficient to carry all of the loads on a 4.16 kV safeguard bus necessary to support the Phase 3 FLEX strategies for one unit. This load will be confirmed once the design process is complete. If necessary, any changes will be reported in the six month status report. Loads previously shed will be reestablished to provide breaker control functions.

In addition to the 4160 V diesel generators, the Regional Response Center may provide backups for active Phase 2 FLEX equipment that will continue to be used in Phase 3, and consumables such as fuel and compressed gas supplies to support continued operation of equipment in Phase 3.

Phase 3 equipment for PINGP will include water filtration capability to enable providing a long term water supply that meets plant requirements for the RCS and for the secondary side of the SGs.

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.* ECA 0.0 will be updated, as necessary, to reflect the results from the ELAP related analyses. NSPM FSGs will be developed to support the ELAP event. These procedures will be developed in conjunction with the PWROG.
Identify modifications	*List modifications necessary for Phase 3.* Electrical connections will be installed to safeguards 4.16 kV buses.
Key Reactor Parameters	*List instrumentation credited or recovered for this coping evaluation.* Same instrumentation as Phase 1 except for instrumentation associated with the portable equipment.

Maintain Core Cooling and Heat Removal		
PWR Portable Equipment Phase 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.	*Identify modifications.*	*Identify how the connection is protected.*
Phase 3 equipment will be provided by the Regional Response Center (RRC) which is tentatively planned to be located in Memphis, TN, with a redundant center located in Phoenix, AZ. Deployment routes from the staging area to the site will be determined based on an assessment of the equipment to be deployed and damage in the affects areas. Equipment transported to the site will be either immediately staged at the point of use location (pumps and generators) or temporarily stored at a lay down area. Deployment paths identified in Figure 2 in Attachment 3 will be used to move equipment as necessary on-site.	No modifications identified for Phase 3 deployment issues. Any additional modifications identified will be communicated in the six month status reports.	The FLEX diesel generator connection points will be located inside the 4.16 kV Bus Rooms in the Turbine Building (Unit 1) and the D5/D6 Building (Unit 2). Both of these areas are Class I areas and provide adequate protection for the connection. Multiple access pathways exist for hose and cable routing to connection points. Debris removal equipment will be available to clear debris, as necessary, to facilitate access.
Notes: None.		

Maintain RCS Inventory Control

PWR Installed Equipment Phase 1

Determine Baseline coping capability with installed coping[2] 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**

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.

WCAP-17601-P shows that there are more than 55 hours available before the core is uncovered. However, to preclude loss of natural circulation cooling, makeup water needs to be provided within the first 33 hours. This conclusion is based on the current RCP seal design at the PINGP. In a letter sent to the NRC on September 28, 2012 titled, "License Amendment Request to Adopt NFPA 805 Performance-Based Standard for Fire Protection for Light Water Reactors," NSPM proposed a modification to install new RCP seals that would not be subject to excessive leakage if all seal cooling is lost. Until the modification of the RCP seals is finalized, the PINGP ELAP strategy will be based on the existing seal design.

As described in Phase 1 for core cooling, SG pressure used for cooldown is based on a minimum SG pressure to maintain the core subcritical and preclude nitrogen injection from the SI Accumulators. PA-PSC-0965, PWROG Core Cooling Position Paper, provides a methodology for determination of SG pressure to prevent nitrogen injection from the SI Accumulators. For PINGP, the calculation implementing this methodology shows that SG pressure should be maintained at approximately 350 psig.

Analysis has been performed to determine required boron concentrations to maintain the reactor subcritical ($k_{eff} < 0.99$) throughout the operating cycle, which includes beginning-of-cycle (BOC), middle-of-cycle (MC), and end-of-cycle (EOC). Additional calculations have been performed that demonstrate that the volume of water injected from the SI Accumulators during the cooldown and depressurization provides sufficient boron to meet the RCS boron concentration requirements to maintain the reactor subcritical down to a RCS temperature of 350°F.

Because the time required to provide makeup water is greater than 8 hours, no additional actions are required for phase 1.

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[2] 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.

<table>
<tr><th colspan="2">Maintain RCS Inventory Control</th></tr>
<tr><th colspan="2">PWR Installed Equipment Phase 1</th></tr>
<tr><th colspan="2">Details:</th></tr>
<tr><td>Provide a brief description of Procedures / Strategies / Guidelines</td><td>Confirm that procedure/guidance exists or will be developed to support implementation.

Actions to address RCS inventory control during Phase 1 are currently addressed within PINGP's EOP ECA 0.0, Loss of All Safeguards AC Power. ECA 0.0 will be updated, as necessary, to reflect the results from the ELAP related analyses. NSPM FSGs will be developed to support the ELAP event. These procedures will be developed in conjunction with the PWROG.</td></tr>
<tr><td>Identify modifications</td><td>List modifications.

No modifications were identified to increase Phase 1 coping capability for RCS inventory control. NSPM is currently evaluating the option to credit the low leakage RCP seals for the ELAP strategy, which could increase the coping time for Phase 1. Until a decision on the RCP seals is made, the strategy to Maintain RCS Inventory Control will be based on the existing RCP seal design.</td></tr>
<tr><td>Key Reactor Parameters</td><td>List instrumentation credited for this coping evaluation.

<table>
<tr><th>RCS Essential Instrumentation</th><th>Safety Function</th></tr>
<tr><td>RCS Hot Leg Temperature</td><td>RCS coolant inventory and heat removal</td></tr>
<tr><td>RCS Cold Leg Temperature</td><td>RCS coolant inventory and heat removal</td></tr>
<tr><td>RCS Wide Range Pressure</td><td>RCS pressure boundary and pressure control</td></tr>
<tr><td>Core Exit Thermocouples (CETs)</td><td>RCS coolant inventory and heat removal</td></tr>
<tr><td>Pressurizer Level</td><td>RCS coolant inventory</td></tr>
<tr><td>RVLIS</td><td>RCS coolant inventory</td></tr>
<tr><td>SG Pressure</td><td>SG secondary side inventory and heat removal</td></tr>
<tr><td>Neutron Flux/Startup Rate</td><td>Confirmation that reactor is subcritical</td></tr>
</table>
</td></tr>
</table>

Maintain RCS Inventory Control
PWR Installed Equipment Phase 1
Notes: None.

Maintain RCS Inventory Control

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.

As described in Phase 1, WCAP-17601-P shows that to preclude loss of natural circulation cooling, makeup water needs to be provided within approximately the first 33 hours of the ELAP event. This time frame could be extended to several days if the RCP seal packages were replaced with a low leakage design.

During Phase 2 coping, the RCS will be maintained at approximately 350 psig to preclude nitrogen injection from the SI Accumulators into the RCS and to ensure that the reactor is maintained subcritical. During Phase 2, the capability to supply makeup water will be provided. Redundant RCS makeup capabilities will be provided as follows.

- A portable FLEX makeup water pump will be staged in the Auxiliary Building. A connection to each unit's Chemical Volume Control System (CVCS) will be provided from the portable electric pump. This connection is shown on Figure 4 in Attachment 3. A portable FLEX diesel generator will be provided with cabling to power the electric FLEX makeup water pump. The FLEX makeup water pump will be sized to accommodate the makeup requirements for both units. WCAP-17601-P, Section 3.1.1, indicates that the makeup requirement for a single unit is 20 gpm at 1500 psig.

- An alternate RCS connection point will be provided in each unit's CVCS. The alternate connection points, once identified in the design process, will be provided in a six month status report. Similar to the primary means, a portable FLEX makeup water pump will be staged in the Auxiliary Building. A portable FLEX diesel generator will be provided with cabling to power the electric FLEX makeup water pump.

Primary and Alternate makeup capabilities will be provided using this combination of FLEX equipment.

The water supply to the makeup pumps will be of sufficient quantity to meet chemistry requirements (e.g., boric acid concentration). Provided that the RCS is maintained at, or above, approximately 350 psig, the water volume injected from the SI Accumulators provides sufficient boron to maintain the reactor subcritical. The boron concentration in the water source to the makeup pumps will be greater than the boron concentration in the RCS to avoid the potential for dilution. At PINGP, there are two Class I designed sources of borated water that can be used for Phase 2. These sources are the following:

- Reactor Water Storage Tank (RWST) – The boron concentration in the RWST is maintained between 2600 and 3500 ppm per Technical Specification 3.5.4. There are two storage tanks with 265,000 gallons per tank.
- Boric Acid Storage Tank – The boric acid storage tanks are typically maintained at 12 weight percent. This source may not be available due to loss of tank heating and piping heat trace. There are three boric acid storage tanks with a 5,000 gallon capacity per tank.

Maintain RCS Inventory Control	
PWR Portable Equipment Phase 2	
As described above, provided that the RCS is maintained at, or above, 350°F, the volume injected from the SI Accumulators provides sufficient boron to maintain the reactor subcritical. The SI Accumulators inject into the RCS cold legs. Natural circulation flow in the RCS mixes the boron injected from the SI Accumulators with the balance of the RCS. The available free volume in the RCS is more than sufficient to accommodate the volume injected from both SI Accumulators during RCS depressurization to a SG pressure of 350 psig. Thus, a RCS letdown path is not required during Phase 2.	
Details:	
Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation.* ECA 0.0 will be updated, as necessary, to reflect the results from the ELAP related analyses. NSPM FSGs will be developed to support the ELAP event. These procedures will be developed in conjunction with the PWROG.
Identify modifications	*List modifications.* Connection points for the FLEX makeup water pump suction and discharge for both the primary and alternate makeup paths will be installed on both units.
Key Reactor Parameters	*List instrumentation credited or recovered for this coping evaluation.* Same instrumentation as Phase 1 except for instrumentation associated with the portable FLEX equipment.
Storage / Protection of Equipment: **Describe storage / protection plan or schedule to determine storage requirements**	
Seismic	*List how equipment is protected or schedule to protect.* See discussion under "Determine Applicable Extreme External Hazard" section for protection of equipment from seismic events.
Flooding Note: if stored below current flood level, then ensure procedures exist to move equipment prior to exceeding flood level.	*List how equipment is protected or schedule to protect.* See discussion under "Determine Applicable Extreme External Hazard" section for protection of equipment from external flooding.

Maintain RCS Inventory Control	
PWR Portable Equipment Phase 2	
Severe Storms with High Winds	*List how equipment is protected or schedule to protect.* See discussion under "Determine Applicable Extreme External Hazard" section for protection of equipment from high winds.
Snow, Ice, and Extreme Cold	*List how equipment is protected or schedule to protect.* See discussion under "Determine Applicable Extreme External Hazard" section for protection of equipment from snow, ice and extreme cold.
High Temperatures	*List how equipment is protected or schedule to protect.* See discussion under "Determine Applicable Extreme External Hazard" section for protection of equipment from high temperatures.

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*
Storage locations and structure(s) have not yet been decided. Figure 2 in Attachment 3 identifies clear deployment paths onsite for the transportation of FLEX equipment. Portable FLEX diesel generator(s) will be deployed from the storage location. For this function, a clear deployment path has been shown from the identified roads to the Turbine Building in Figure 2. Debris removal equipment will be available to clear debris from the deployment path.	No modifications have been identified to address Phase 2 deployment issues. Any additional modifications identified will be communicated in the six month status reports.	The connections will be made inside the Auxiliary Building which is a Class I structure. Thus, connections inside the Auxiliary Building will be protected. Multiple access pathways exist for hose and cable routing to connection points. Debris removal equipment will be available to clear debris, if necessary.

Maintain RCS Inventory Control
PWR Portable Equipment Phase 2
Notes:

Maintain RCS Inventory Control

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 FLEX equipment for PINGP includes installation of two 4.16 kV FLEX diesel generators provided from the Regional Response Center (RRC). Alternate connection points for each unit will be provided to the opposite train inside the 4.16 kV Bus Rooms in the Turbine Building (Unit 1) and the D5/D6 Building (Unit 2). The RRC 4.16 kV generators will be used to repower the CVCS pumps to provide normal makeup to the RCS.

Each of the 4.16 kV Regional Response Center FLEX diesel generators will be capable of carrying approximately 2000 kW load which will be sufficient to carry all of the loads on a 4.16 kV safeguard bus necessary to support the Phase 3 FLEX strategies for one unit. These loads include a CVCS pump and its support equipment such as MOVs, room coolers, etc. This load will be confirmed once the design process is complete. If necessary, any changes will be reported in the six month status report. Loads previously shed will be reestablished to provide breaker control functions.

In addition to the 4160 V diesel generators, the Regional Response Center may provide backups for active Phase 2 FLEX equipment that will continue to be used in Phase 3, and consumables such as fuel and compressed gas supplies to support continued operation of equipment in Phase 3.

Phase 3 equipment for PINGP will include the capability to mix higher concentration boric acid supplies to use as part of the RCS makeup capability. This capability includes a tank, mixer, and bags of boric acid. Power will be provided for the tank and piping to meet boric acid solubility requirements.

Details:

Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation.* ECA 0.0 will be updated, as necessary, to reflect the results from the ELAP related analyses. NSPM FSGs will be developed to support the ELAP event. These procedures will be developed in conjunction with the PWROG.
Identify modifications	*List modifications.* Electrical connections will be installed to safeguards 4.16 kV buses.
Key Reactor Parameters	*List instrumentation credited or recovered for this coping evaluation.* Same instrumentation as Phase 1 except for instrumentation associated with the portable equipment.

Maintain RCS Inventory Control

PWR Portable Equipment Phase 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.*
Phase 3 equipment will be provided by the Regional Response Center (RRC) which is tentatively planned to be located in Memphis, TN, with a redundant center located in Phoenix, AZ. Deployment routes from the staging area to the site will be determined based on an assessment of the equipment to be deployed and damage in the affects areas. Equipment transported to the site will be either immediately staged at the point of use location (pumps and generators) or temporarily stored at a lay down area. Deployment paths identified in Figure 2 in Attachment 3 will be used to move equipment as necessary on-site.	No modifications identified for Phase 3 deployment issues. Any additional modifications identified will be communicated in the six month status reports.	FLEX diesel generator connection points will be located inside the 4.16 kV Bus Rooms in the Turbine Building (Unit 1) and D5/D6 Building (Unit 2). Both of these areas are Class I areas and provide adequate protection for the connection. Multiple access pathways exist for hose and cable routing to connection points. Debris removal equipment will be available to clear debris, as necessary.

Notes:

None.

Maintain Containment

PWR Installed Equipment Phase 1

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

- **Containment Spray**
- **Hydrogen igniters (ice condenser containments only)**

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.

Containment pressure and temperature analyses were performed using mass and energy release rates associated with RCP seal package leak rate from WCAP-17601-P with an additional 1 gpm leak rate assumed from the RCS. The analyses' results show that containment pressure and temperature remain below the limits beyond seven days. Therefore, no actions are needed regarding containment pressure and temperature during Phase 1.

Details:

Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation.* Actions to ensure that containment is isolated and to monitor containment conditions (i.e., containment pressure) during Phase 1 are currently addressed within PINGP's EOP ECA 0.0, *Loss of All Safeguards AC Power*. ECA 0.0 will be updated, as necessary, to reflect the results from the ELAP related analyses. NSPM FSGs will be developed to support the ELAP event. These procedures will be developed in conjunction with the PWR Owners Group (PWROG).
Identify modifications	*List modifications.* No modifications are required for Phase 1 coping for containment.
Key Containment Parameters	*List instrumentation credited for this coping evaluation.*

Containment Essential Instrumentation	Safety Function
Containment Pressure	Monitor containment pressure

[3] 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.

Maintain Containment
PWR Installed Equipment Phase 1
Notes: None.

Maintain Containment	
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 (containment spray/hydrogen igniters) and strategy(ies) utilized to achieve this coping time. Containment pressure and temperature analyses were performed using mass and energy release rates associated with RCP seal package leak rate from WCAP-17601-P with an additional 1 gpm leak rate assumed from the RCS. The analyses results show that containment pressure and temperature remain below limits well past seven days. Therefore, no actions are needed regarding containment pressure and temperature during Phase 2.	
Details:	
Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation.* Actions to ensure that containment is isolated and to monitor containment conditions (i.e., containment pressure) during Phase 2 are currently addressed within PINGP's EOP ECA 0.0, *Loss of All Safeguards AC Power*. ECA 0.0 will be updated, as necessary, to reflect the results from the ELAP related analyses. NSPM FSGs will be developed to support the ELAP event. These procedures will be developed in conjunction with the PWR Owners Group (PWROG).
Identify modifications	*List modifications.* No modifications are required for Phase 2 coping.
Key Containment Parameters	*List instrumentation credited or recovered for this coping evaluation.* Same instrumentation as Phase 1.
Storage / Protection of Equipment: **Describe storage / protection plan or schedule to determine storage requirements**	
Seismic	*List how equipment is protected or schedule to protect.* See discussion under "Determine Applicable Extreme External Hazard" section for protection of equipment from seismic events.
Flooding	*List how equipment is protected or schedule to protect.* See discussion under "Determine Applicable Extreme External Hazard" section for protection of equipment from external flooding.

Maintain Containment		
PWR Portable Equipment Phase 2		
Severe Storms with High Winds	*List how equipment is protected or schedule to protect.* See discussion under "Determine Applicable Extreme External Hazard" section for protection of equipment from high winds.	
Snow, Ice, and Extreme Cold	*List how equipment is protected or schedule to protect.* See discussion under "Determine Applicable Extreme External Hazard" section for protection of equipment from snow, ice and extreme cold.	
High Temperatures	*List how equipment is protected or schedule to protect.* See discussion under "Determine Applicable Extreme External Hazard" section for protection of equipment from high temperatures.	
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.*
No portable equipment is required to maintain containment during Phase 2.	N/A	N/A
Notes:		

Maintain Containment

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 (containment spray/hydrogen igniters) and strategy(ies) utilized to achieve this coping time.

Phase 3 equipment for PINGP includes installation of two 4.16 kV generators provided from the Regional Response Center (RRC). Alternate connection points for each unit will be provided to the opposite train inside the 4.16 kV Bus Rooms in the Turbine Building (Unit 1) and the D5/D6 Building (Unit 2). The RRC 4.16 kV generators will be used to repower at least one containment fan coil unit (CFCU). Cooling water to the operating CFCU(s) will be provided using a DDCLP or a repowered motor driven cooling water pump (121 MDCLP). With one fan coil unit running inside of each containment, containment pressure and temperature can be controlled.

Each of the 4.16 kV Regional Response Center FLEX diesel generators will be capable of carrying approximately 2000 kW load which will be sufficient to carry all of the loads on a 4.16 kV safeguard bus necessary to support the Phase 3 FLEX strategies for providing containment heat removal for one unit. This load will be confirmed once the design process is complete. If necessary, any changes will be reported in the six month status report. Loads previously shed will be reestablished to provide breaker control functions.

Details:	
Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation.* ECA 0.0 will be updated, as necessary, to reflect the results from the ELAP related analyses. NSPM FSGs will be developed to support the ELAP event. These procedures will be developed in conjunction with the PWR Owners Group (PWROG).
Identify modifications	*List modifications.* Electrical connections will be installed to safeguards 4.16 kV buses.
Key Containment Parameters	*List instrumentation credited or recovered for this coping evaluation.* Same instrumentation as Phase 1 except for instrumentation associated with the portable equipment.

Maintain Containment		
PWR Portable Equipment Phase 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.*
Phase 3 equipment will be provided by the Regional Response Center (RRC) which is tentatively planned to be located in Memphis, TN, with a redundant center in Phoenix, AZ. Deployment routes from the staging area to the site will be determined based on an assessment of the equipment to be deployed and damage in the affects areas. Deployment paths identified in Figure 2 in Attachment 3 will be used to move equipment as necessary on-site.	No modifications identified for Phase 3 deployment issues. Any additional modifications identified will be communicated in the six month status reports.	FLEX diesel generator connection points will be located inside the 4.16 kV Bus Rooms in the Turbine Building (Unit 1) and D5/D6 Building (Unit 2). Both of these areas are Class I areas and provide adequate protection for the connection. Multiple access pathways exist for hose and cable routing to connection points. Debris removal equipment will be available to clear debris, if necessary.
Notes: None.		

Maintain Spent Fuel Pool Cooling

PWR Installed Equipment Phase 1

Determine Baseline coping capability with installed coping[4] modifications not including FLEX modifications, utilizing methods described in Table 3-2 of NEI 12-06:

- **Makeup with Portable Injection Source**

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.

No actions will be required to maintain Spent Fuel Pool (SFP) cooling in Phase 1.

As described in NEI 12-06, Section 3.2.1.2, prior to the ELAP event, it should be assumed that the reactors have been operating at 100 percent rated thermal power for at least 100 days or have just been shut down from such a power history as required by plant procedures in advance of the impending event. Under this assumption, boiling has been calculated not to occur until greater than 33 hours from the event without the presence of a recently discharged full core offload. Therefore, actions to maintain SFP cooling will not be required for Phase 1.

SFP level will be monitored throughout the ELAP event, utilizing the instrumentation installed to meet NRC Order EA-12-051.

Details:

Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation.* Actions to monitor SFP level during Phase 1 are currently addressed within PINGP's EOP ECA 0.0, *Loss of All Safeguards AC Power*. ECA 0.0 will be updated, as necessary, to reflect the results from the ELAP related analyses. NSPM FSGs will be developed to support the ELAP event. These procedures will be developed in conjunction with the PWR Owners Group (PWROG).
Identify modifications	*List modifications.* No modifications are required for Phase 1.
Key SFP Parameter	*List instrumentation credited or recovered for this coping evaluation.* SFP water level instrumentation will be installed to meet NRC Order EA-12-051.

[4] 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.

Maintain Spent Fuel Pool Cooling
PWR Installed Equipment Phase 1
Notes: None.

Maintain Spent Fuel Pool Cooling	
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. As discussed in the Phase 1 section, the time to boiling will be greater than 33 hours, assuming normal conditions (i.e., without a recently discharged full core offload). The portable hoses and connections in the vicinity of the spent fuel pool will be installed prior to the start of the SFP boiling to ensure reasonable accessibility for personnel. Also, the SFP level will be monitored utilizing the instrumentation installed to meet NRC Order EA-12-051. When the SFP reaches a particular level, actions will be taken to provide makeup to the SFP. This level will be higher than the Level 2 defined in NSPM's response to NRC Order EA-12-051. The final setpoint for the level will be determined during the design process, and provided in a six month status report. For outage conditions when a full core offload may exist, boiling may occur in as soon as 8 hours. However, additional personnel will be available during an outage to install hoses in the vicinity of the spent fuel pool using PINGP's current EOP ECA 0.0. Per the PINGP USAR Section 10.2.2.3, the maximum boil-off rate when a full core offload condition exists in the SFP is 66 gpm. Assuming this boil-off rate, the SFP level will remain above the top of the fuel assemblies for greater than 56 hours. NSPM will install a portable pump to provide makeup water to the SFP within the time periods discussed above. If the SFP area is inaccessible, a backup capability that does not require access to the SFP area will be provided through a connection to the SFP Skimmer System. The capacity of the makeup system will exceed the maximum SFP boil-off rate of 66 gpm.	
Details:	
Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation.* Actions to monitor SFP level during Phase 1 are currently addressed within EOP ECA 0.0, *Loss of All Safeguards AC Power*. Current plant procedures provide guidance to makeup water to the SFP using a portable pump. Additional guidance will be provided to use the SFP Skimmer System as an alternate connection that does not require access to the SFP deck area. ECA 0.0 will be updated, as necessary, to reflect the results from the ELAP related analyses. NSPM FSGs will be developed to support the ELAP event. These procedures will be developed in conjunction with the PWR Owners Group (PWROG).

Maintain Spent Fuel Pool Cooling	
PWR Portable Equipment Phase 2	
Identify modifications	*List modifications.* A 2 ½ inch hose connection will be added to the SFP skimmer system to allow makeup to the SFP without requiring access to the SFP deck area.
Key SFP Parameter	*List instrumentation credited or recovered for this coping evaluation.* Same instrumentation as Phase 1 except for instrumentation associated with the portable equipment.
Storage / Protection of Equipment: **Describe storage / protection plan or schedule to determine storage requirements**	
Seismic	*List how equipment is protected or schedule to protect.* See discussion under "Determine Applicable Extreme External Hazard" section for protection of equipment from seismic events.
Flooding Note: if stored below current flood level, then ensure procedures exist to move equipment prior to exceeding flood level.	*List how equipment is protected or schedule to protect.* See discussion under "Determine Applicable Extreme External Hazard" section for protection of equipment from external flooding.
Severe Storms with High Winds	*List how equipment is protected or schedule to protect.* See discussion under "Determine Applicable Extreme External Hazard" section for protection of equipment from high winds.
Snow, Ice, and Extreme Cold	*List how equipment is protected or schedule to protect.* See discussion under "Determine Applicable Extreme External Hazard" section for protection of equipment from snow, ice and extreme cold.
High Temperatures	*List how equipment is protected or schedule to protect.* See discussion under "Determine Applicable Extreme External Hazard" section for protection of equipment from high temperatures.

Maintain Spent Fuel Pool Cooling		
PWR Portable Equipment Phase 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.*
Storage locations and structure(s) have not yet been decided. Figure 2 in Attachment 3 identifies clear deployment paths onsite for the transportation of FLEX equipment. Portable diesel driven pumps will be deployed from the storage locations. For this function, a clear deployment path has been shown from the identified roads to the Auxiliary Building access location in Figure 2. Debris removal equipment will be available to clear debris from the deployment path.	No modifications have been identified to address Phase 2 deployment issues. Any additional modifications identified will be communicated in the six month status reports.	The SFP and SFP Enclosure are Class I structures and are, thus, protected. Multiple access pathways exist for routing hose to connection points. Debris removal equipment will be available to clear debris, if necessary, to facilitate access. The alternate connection to the SFP skimmer system will be in an area not designed for Class I loads.
Notes: None.		

Maintain Spent Fuel Pool Cooling
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 equipment for PINGP includes installation of two 4.16 kV FLEX diesel generators provided from the Regional Response Center (RRC). Alternate connection points for each unit will be provided to the opposite train inside the 4.16 kV Bus Rooms in the Turbine Building (Unit 1) and the D5/D6 Building (Unit 2). The RRC 4.16 kV generators will provide the option to repower a SFP Cooling or CC Pumps and associated support equipment to restore normal SFP cooling or makeup. Each of the 4.16 kV Regional Response Center FLEX diesel generators will be capable of carrying approximately 2000 kW load, which will be sufficient to carry all of the loads on a 4.16 kV safeguard bus necessary to support the Phase 3 FLEX strategies, including restoration of SFP cooling or continuing to provide makeup water to the SFP. This load will be confirmed once the design process is complete. If necessary, any changes will be reported in the six month status report. Loads previously shed will be reestablished to provide breaker control functions. In addition to the 4160 V diesel generators, the Regional Response Center may provide backups for active Phase 2 FLEX equipment that will continue to be used in Phase 3, and consumables such as fuel and compressed gas supplies to support continued operation of equipment in Phase 3.

Details:	
Provide a brief description of Procedures / Strategies / Guidelines	*Confirm that procedure/guidance exists or will be developed to support implementation.* Actions to monitor SFP level during Phase 1 are currently addressed within PINGP's EOP ECA 0.0, *Loss of All Safeguards AC Power*. Current plant procedures provide guidance to provide makeup water to the SFP using a portable pump. Additional guidance will be provided to use the SFP Skimmer system as an alternate connection that does not require access to the SFP deck area. ECA 0.0 will be updated, as necessary, to reflect the results from the ELAP related analyses. NSPM FSGs will be developed to support the ELAP event. These procedures will be developed in conjunction with the PWR Owners Group (PWROG).
Identify modifications	*List modifications.* Electrical connections will be installed to safeguards 4.16 kV buses.

Maintain Spent Fuel Pool Cooling		
PWR Portable Equipment Phase 3		
Key SFP Parameter	*List instrumentation credited or recovered for this coping evaluation.* Same instrumentation as Phase 1 except for instrumentation associated with the portable equipment.	
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.*
Phase 3 equipment will be provided by the Regional Response Center (RRC) which is tentatively planned to be located in Memphis, TN, with a redundant location in Phoenix, AZ. Deployment routes from the staging area to the site will be determined based on an assessment of the equipment to be deployed and damage in the affects areas. Deployment paths identified in Figure 2 in Attachment 3 will be used to move equipment as necessary on-site.	No modifications identified for Phase 3 deployment issues. Any additional modifications identified will be communicated in the six month status reports.	FLEX diesel generator connection points will be located inside the 4.16 kV Bus Rooms in the Turbine Building (Unit 1) and D5/D6 Building (Unit 2). Both of these areas are Class I areas and provide adequate protection for the connection. Multiple access pathways exist for hose and cable routing to connection points. Debris removal equipment will be available to clear debris, if necessary.
Notes:		

Safety Functions Support

PWR Installed Equipment Phase 1

Determine Baseline coping capability with installed coping[5] modifications not including FLEX modifications.

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.

Safety functions support includes DC power, ventilation, lighting, and communications. Each of these is discussed below relative to Phase 1 for permanently installed equipment.

DC Power

DC power is provided by two trains of batteries for each Unit (Batteries 11 and 12 in Unit 1, and Batteries 21 and 22 in Unit 2). The power supply to the essential instruments described in the previous sections is from the Instrument Inverters, which are powered from the safeguard batteries. Load shedding will be performed in order to extend battery depletion times. The strategy for the load shedding will be to reduce the load on the Batteries through use of relatively simple actions like opening DC Panel Breakers. The load shedding will focus on two DC Panels, one in the Battery Room and one in the Relay Room, for each Battery, and will be designed to reduce the overall load while maintaining essential instrumentation.

Preliminary calculations indicate that battery life can be extended to beyond 16 hours with straightforward load shedding. If the results are different when the calculations are approved, this will be reported in a six month status report to the NRC.

Field Instrument Readings

The capability will exist to take field readings of important plant parameters using non-electrical gauges/indicators or with installed transmitters through the use of hand held meters. A reference source of field reading locations and instructions will be compiled. Some of the field reading locations may be at the containment penetrations.

Control Room Environmental Conditions

A loss of Control Room cooling is addressed in current plant procedures; which include actions to open panel doors in the Control Room, reduce heat loads and provide natural circulation air flow or a temporary fan. Calculations performed to evaluate temperature transients in the Control Room include a case for reduced heat load and natural circulation provided by opening the doors between the Control Room and Turbine Building. The results show that the doors would need to be opened at about 11.7 hours to maintain the Control Room temperature less than the acceptance criteria of 120°F. After the doors are open, the Control Room temperature stabilizes at approximately 106°F. Thus, the analysis indicates that no actions are needed during Phase 1 to provide Control Room cooling. However, it may be desirable to take actions

[5] 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.

Safety Functions Support

PWR Installed Equipment Phase 1

(i.e., open doors) sooner based on human comfort considerations. These considerations will be factored into the procedures.

TDAFW Pump Room Environmental Conditions

A calculation of the loss of AFW Pump room cooling shows that, without cooling, the temperature in the rooms does not increase above temperatures that will adversely impact equipment in the room. Because the calculation assumes operation of equipment such as air compressors and motor driven AFW pumps that will not be operating, the inputs to this calculation are conservative relative to the ELAP scenario. In the ELAP scenario, the heat rejection rates to the room are based on the TDAFW Pumps operating. Based on the lower heat rejection rates, the temperatures in the room would be lower in an ELAP than predicted in current calculation. In addition to equipment capability, operator actions are required in the AFW Pump rooms for an ELAP. To be conservative, doors will be opened, as necessary, between the AFW Pump Rooms and the Turbine Building in order to maintain room temperatures acceptable for personnel.

Battery Rooms Environmental Conditions

Cooling for the Battery Rooms is provided by opening doors per PINGP EOP ECA 0.0, *Loss of All Safeguards AC Power*. Calculations performed to evaluate temperature transients in the Battery Rooms demonstrate that opening the doors between the Battery Rooms and the Turbine Building at approximately 18 hours maintains the temperature in the Battery Rooms less than the limiting value of 120°F. Thus, no actions are required during Phase 1 to provide battery room cooling.

Diesel Driven Cooling Water Pump Room Environmental Conditions

For an ELAP scenario, DDCLP Room temperature response with the ventilation system not functioning has been determined through testing. The testing demonstrated that with outside ambient air temperature of approximately 85°F, the room temperature did not exceed 100°F. The maximum acceptable temperature in the DDCLP Room is 135°F. Thus, there is reasonable assurance that, even with elevated outside air temperatures, the temperature in the pump rooms will not reach unacceptable levels during Phase 1.

Lighting

Lighting is required for operator actions and access in the plant to implement actions associated with the procedures. Emergency Lighting will not be available due to being stripped from the Batteries in order to extend battery capability. Available lighting will be the battery backed Appendix R light units and portable lighting that personnel can use such as head lamps and flashlights.

Communications

A Communications Assessment was performed as a result of the information requested for NTTF Recommendation 9.3 in the March 12, 2012 NRC's 10 CFR 50.54(f) letter. This Communications Assessment was provided by NSPM to the NRC in a letter dated October 31, 2012, and supplemented on February 20, 2013. NSPM will implement recommendations from the Communications Assessment in coordination with development of FLEX mitigating strategies four months prior to the beginning of the PINGP 2R29 refueling outage or December 31, 2016, whichever comes first.

<table>
<tr><th colspan="2">Safety Functions Support</th></tr>
<tr><th colspan="2">PWR Installed Equipment Phase 1</th></tr>
<tr><th colspan="2">Details:</th></tr>
<tr><td>Provide a brief description of Procedures / Strategies / Guidelines</td><td>Confirm that procedure/guidance exists or will be developed to support implementation.

ECA 0.0 will be updated, as necessary, to reflect the results from the ELAP related analyses. NSPM FSGs will be developed to support the ELAP event. These procedures will be developed in conjunction with the PWR Owners Group (PWROG). Procedure changes will be made to identify doors that need to be opened to maintain area temperatures.</td></tr>
<tr><td>Identify modifications</td><td>List modifications and describe how they support coping time.

Use of light emitting diode (LED) components for Appendix R lighting units will also be evaluated.</td></tr>
<tr><td>Key Parameters</td><td>List instrumentation credited for this coping evaluation phase.

<table><tr><th>Safety Functions Support Essential Instrumentation</th><th>Safety Function</th></tr><tr><td>Battery Capacity/DC Bus Voltage</td><td>DC System conditions</td></tr></table>
Battery voltage indication may be monitored locally at the Batteries.</td></tr>
<tr><td colspan="2">Notes:

None.</td></tr>
</table>

Safety Functions Support
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.

Safety functions support includes DC power, ventilation, lighting, and communications. Each of these supports is discussed below relative to the Phase 2 for portable equipment.

DC Power and Fuel Oil Transfer Pumps for DDCLPs

Two portable 480VAC generators (primary and alternate connections) will be installed to provide power to the DC system and to recharge the batteries and power the fuel oil transfer pumps to support DDCLP operation. The primary connection will be to MCCs 1AC2 and 2AC2 to repower the associated Battery Chargers and Instrument Inverters, and MCC 1AB2 for the associated Fuel Oil Transfer Pump. The alternate connection point will be to MCCs 1AC1 and 2AC1 to repower the associated Battery Chargers and Instrument Inverters, and MCC 1AB1 for the associated Fuel Oil Transfer Pump.

Control Room Environmental Conditions

As described above, no actions in addition to opening doors are necessary to maintain the environmental conditions in the Control Room. If desired, portable fans will be available and can be installed to further reduce room temperatures.

TDAFW Pump Room Environmental Conditions

As described above, no actions in addition to opening doors are necessary to maintain the environmental conditions in the AFW Pump Room. In addition, portable fans will be available and can be installed to further reduce room temperatures.

Battery Rooms Environmental Conditions

As described above, no actions in addition to opening doors are necessary to maintain the environmental conditions in the Battery Rooms. Additional formal analysis will be performed to determine the timing and scope of the supplemental cooling or hydrogen ventilation required, and the results of this analysis will be provided in a six-month status report.

Diesel Driven Cooling Water Pump Room Environmental Conditions

As described above in the discussion related to the fuel oil transfer pumps, a portable FLEX diesel generator will be installed to repower 480VAC Motor Control Centers (MCC) 1AB1 or 1AB2 in the Plant Screenhouse. In addition to repowering the fuel oil transfer pumps, this will also restore the HVAC system for the DDCLP Rooms.

Lighting

With the use of a portable generator to the DC system, described above, the Emergency Lighting System will be restored.

Safety Functions Support	
PWR Portable Equipment Phase 2	
Communications See discussion in the Safety Functions Support – PWR Portable Equipment Phase 1 section for communication strategies. **Diesel Fuel** Portable equipment used in Phase 2 will be equipped with fuel storage tanks sufficient for at least 24 hours of operation without refueling to minimize actions required to keep equipment running. Portable fuel containers can be used to refuel equipment, and the fuel stored in day tanks for the Emergency Diesel Generators will be available.	
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.* ECA 0.0 will be updated, as necessary, to reflect the results from the ELAP related analyses. NSPM FSGs will be developed to support the ELAP event. These procedures will be developed in conjunction with the PWR Owners Group (PWROG).
Identify modifications	*List modifications necessary for phase 2.* Electrical connections to MCCs 1AB1 and 1AB2 will be provided to enable providing primary and alternate portable power supply to the DDCLP fuel oil transfer pumps. Electrical connections to MCCs 1AC1, 1AC2, 2AC1, and 2AC2 will be provided to enable providing primary and backup portable power supply to the Batteries and associated loads such as Instrument Inverters and Emergency Lighting.
Key Parameters	*List instrumentation credited or recovered for this coping evaluation.* Same instrumentation as Phase 1 except for instrumentation associated with the portable FLEX diesel generators.
Storage / Protection of Equipment : **Describe storage / protection plan or schedule to determine storage requirements**	
Seismic	*List how equipment is protected or schedule to protect.* See discussion under "Determine Applicable Extreme External Hazard" section for protection of equipment from seismic events.

Safety Functions Support	
PWR Portable Equipment Phase 2	
Flooding Note: if stored below current flood level, then ensure procedures exist to move equipment prior to exceeding flood level.	*List how equipment is protected or schedule to protect.* See discussion under "Determine Applicable Extreme External Hazard" section for protection of equipment from external flooding.
Severe Storms with High Winds	*List how equipment is protected or schedule to protect.* See discussion under "Determine Applicable Extreme External Hazard" section for protection of equipment from high winds.
Snow, Ice, and Extreme Cold	*List how equipment is protected or schedule to protect.* See discussion under "Determine Applicable Extreme External Hazard" section for protection of equipment from snow, ice and extreme cold.
High Temperatures	*List how equipment is protected or schedule to protect.* See discussion under "Determine Applicable Extreme External Hazard" section for protection of equipment from high temperatures.

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*
Storage locations and structure(s) have not yet been decided. Figure 2 in Attachment 3 identifies clear deployment paths onsite for the transportation of FLEX equipment. For this function, a clear deployment path has been shown from the identified roads to the area between the Plant Screenhouse and the Turbine Building in Figure 2. Debris removal equipment will be available to clear debris from the deployment path.	No modifications have been identified for Phase 2 deployment issues. Any additional modifications identified will be communicated in the six month status reports.	The Battery Rooms are located in a Class I area of the Turbine Building. Thus, connections to MCCs 1AC1, 1AC2, 2AC1, and 2AC2 are protected. Multiple access pathways exist for hose and cable routing to connection points. Debris removal equipment will be available to clear debris, if necessary. The DDCLP Rooms are in a Class I area of the Plant Screenhouse. Thus, connections at MCCs 1AB1 and 1AB2 are protected. Multiple access pathways exist for hose and cable routing to connection points. Debris removal equipment will be available to clear debris, if necessary.

Safety Functions Support
PWR Portable Equipment Phase 2
Notes:

Safety Functions Support

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 equipment for PINGP includes installation of two 4.16 kV generators provided from the Regional Response Center (RRC). Alternate connection points for each unit will be provided to the opposite train inside the 4.16 kV Bus Rooms in the Turbine Building (Unit 1) and the D5/D6 Building (Unit 2). The RRC 4.16 kV generators can be used to repower room cooling systems for the Control Room and AFW Pump Room.

Each of the 4.16 kV Regional Response Center FLEX diesel generators will be capable of carrying approximately 2000 kW load which will be sufficient to carry all of the loads on a 4.16 kV safeguard bus necessary to support the Phase 3 FLEX strategies for one unit, including restoration of area cooling. This load will be confirmed once the design process is complete. If necessary, any changes will be reported in the six month status report. Loads previously shed will be reestablished to provide breaker control functions.

Phase 3 equipment for PINGP will include water filtration capability to enable providing a long term water supply that meets plant requirements for the RCS and for the secondary side of the Steam Generators.

Phase 3 equipment for PINGP will include the capability to mix higher concentration boric acid supplies to use as part of the RCS makeup capability. This capability includes a tank, mixer, and bags of boric acid. Power will be provided for the tank and piping to meet boric acid solubility requirements.

In addition to the 4160 V diesel generators, the Regional Response Center may provide backups for active Phase 2 FLEX equipment that will continue to be used in Phase 3, and consumables such as fuel and compressed gas supplies to support continued operation of equipment in Phase 3.

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.* ECA 0.0 will be updated, as necessary, to reflect the results from the ELAP related analyses. NSPM FSGs will be developed to support the ELAP event. These procedures will be developed in conjunction with the PWR Owners Group (PWROG).
Identify modifications	*List modifications necessary for Phase 3.* Electrical connections will be installed to safeguards 4.16 kV buses.
Key Parameters	*List instrumentation credited or recovered for this coping evaluation.* Same instrumentation as Phase 1 except for instrumentation associated with the portable equipment.

Safety Functions Support		
PWR Portable Equipment Phase 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.	*Identify modifications.*	*Identify how the connection is protected.*
Phase 3 equipment will be provided by the Regional Response Center (RRC) which is tentatively planned to be located in Memphis, TN, with a redundant location in Phoenix, AZ. Deployment routes from the staging area to the site will be determined based on an assessment of the equipment to be deployed and damage in the affects areas. Deployment paths identified in Figure 2 in Attachment 3 will be used to move equipment as necessary on-site.	No modifications identified for Phase 3 deployment issues. Any additional modifications identified will be communicated in the six month status reports.	FLEX diesel generator connection points are located inside the 4.16 kV Bus Rooms in the Turbine Building (Unit 1) and the D5/D6 Building (Unit 2). Both of these areas are Class I areas and provide adequate protection for the connection. Multiple access pathways exist for hose and cable routing to connection points. Debris removal equipment will be available to clear debris, if necessary.
Notes:		

PWR Portable Equipment Phase 2							
Use and (potential / flexibility) diverse uses						*Performance Criteria*	*Maintenance*
List portable equipment[1,2]	Core	Containment	SFP	Instrumentation	Accessibility		Maintenance / PM requirements
Two (2) RCS Makeup Pumps – Electric Motor (shared between the two units)	**X**					50 gpm at 1500 psig and required hoses.	Will follow EPRI template requirements
Two (2) Low Pressure SFP Makeup Pumps - Diesel Driven			**X**			Capable of providing at least 66 gpm and required hoses. This meets SFP makeup requirements.	Will follow EPRI template requirements
Two (2) SG Makeup Pumps – Diesel Driven[3] (shared between the two units)	**X**					400 gpm and discharge pressure sufficient to provide required flow against SG backpressure of 350 psig.	Will follow EPRI template requirements
Two (2) 480 VAC Generators (shared between the two units)	**X**			**X**	**X**	500 kW and required cables. Sufficient power to re-power MCCs in Battery Room and Screenhouse.	Will follow EPRI template requirements
Two (2) 480 VAC Generators (shared between the two units)	**X**					Electrical capacity (kW) sufficient to power RCS makeup pump, and required cables	Will follow EPRI template requirements
Two (2) Vehicles					**X**	Vehicles that can tow pumps and generators	Will follow EPRI template requirements
Flatbed Trailer(s)					**X**	Means to store and transport hoses, strainers, cables, and miscellaneous equipment	Will follow EPRI template requirements

PWR Portable Equipment Phase 2							
Use and (potential / flexibility) diverse uses						*Performance Criteria*	*Maintenance*
List portable equipment[1,2]	Core	Containment	SFP	Instrumentation	Accessibility		Maintenance / PM requirements
Front End Loader or Similar					**X**	Debris removal and alternate for equipment placement	Will follow EPRI template requirements
Four (4) Portable Fans and Ducting	**X**	**X**				N/A	Will follow EPRI template requirements

(1) Represents quantity to meet "N+1" criteria, if applicable.
(2) The portable equipment includes all necessary hardware to connect hoses, power supplies, etc.
(3) May be a single pump or tandem set of pumps in series.

PWR Portable Equipment Phase 3							
Use and (potential / flexibility) diverse uses						*Performance Criteria*	*Notes*
List portable equipment[1]	Core	Containment	SFP	Instrumentation	Accessibility		
Two (2) 4160 VAC Generators	**X**	**X**	**X**	**X**		2000 KW	Portable 4160 VAC generator will power one installed train of equipment.
Water Purification	**X**		**X**			N/A	
Boric Acid Batch Tank	**X**					N/A	
One (1) Diesel Generator fuel transfer pump and hoses	**X**	**X**	**X**	**X**		N/A	Supply as required. To ensure transfer capability of site fuel to portable equipment.
Two (2) sets of Cables for connecting portable generators	**X**	**X**	**X**	**X**		N/A	Supply as required.
Connections for RRC equipment					**X**	N/A	Ensures RRC portable equipment can be connected to plant-specific locations.

(1) Represents portable equipment supplied from RRC to Phase 3.

Attachment 1A
Sequence of Events Timeline

Action Item	Elapsed Time	Action	ELAP Time Constraint Y/N [6]	Remarks / Applicability
	0	Event Starts	NA	Plant @100% power prior to event occurring
1	60 sec	TDAFW Starts – AFW Begins to all SGs	N	Design bases for SBO event
2	3 min	ECA 0.0 (*Loss of All Safeguards AC Power*) is Entered	N	Estimated Completion Time.
3	20 min	Determination Made that AC Power is Lost and Cannot be Recovered - Enter ELAP Procedure	Y	Event required failure, NEI 12-06 section 3.2.1.7 applicable
4	60 min	First set of DC Load shed Complete	Y	NEI 12-06 section 3.2.1.7 applicable
5	72 min	Cooling Water System Aligned to provide Suction Water Supply to TDAFW Pumps	Y	NEI 12-06 section 3.2.1.7 applicable
6	90 min	DC Load shed Complete	Y	NEI 12-06 section 3.2.1.7 applicable
7	2 hr	Start Cooldown @ approximately 70°F/hr	N	WCAP-17601-P, Table 5.2.2-1, Consistent with Attachment 1B
8	3.54 hr	SI Accumulators Begin to Inject	N	WCAP-17601-P, Table 5.2.2-1
9	4 hr	Reduce CL Flow Demand	Y	NEI 12-06 section 3.2.1.7 applicable
10	4.13 hr	Cooldown completed to Steam Generator Pressure of 350 psig	N	WCAP-17601-P, Table 5.2.2-1
11	8 hr	Provide power to Motor Control Centers 1AB1 and 1AB2 to Maintain Fuel Oil Supply to Diesel Driven Cooling Water Pumps	Y	NEI 12-06 section 3.2.1.7 applicable
12	8 hr	Provide Ventilation to AFW Pump Rooms – Opening Doors (If necessary)	N	Not required to maintain equipment operability. Opening makes room more habitable for operators to perform actions.
13	11.7 hr	Provide Ventilation to Control Room – Opening Doors	Y	NEI 12-06 section 3.2.1.7 applicable
14	16 hr	Provide power to Motor Control Centers 1AC1, 1AC2, 2AC1, and 2AC2 to Maintain DC	Y	NEI 12-06 section 3.2.1.7 applicable
15	18 hr	Provide Ventilation to Battery Rooms – Opening Doors	Y	NEI 12-06 section 3.2.1.7 applicable

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

Action Item	Elapsed Time	Action	ELAP Time Constraint Y/N [6]	Remarks / Applicability
16	24 hr	Install Portable Secondary Makeup Pump	N	Plant equipment meets coping requirements through Phase 2. 24 hours conservatively bounds loss of Natural Circulation cooling at 33 hours.
17	33 hr	Install Portable Reactor Coolant System Makeup Pump	Y	NEI 12-06 section 3.2.1.7 applicable
18	33 hr	Pre-stage makeup water source equipment in the vicinity of the SFP	Y	NEI 12-06 section 3.2.1.7 applicable
19	72 hr	Portable generators (from RRC) installed and supplying 4KV loads		End of analytical simulation
20	72 hr	End of generic WCAP analysis		End of analytical simulation

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
	NONE	N/A	N/A	N/A	N/A

Attachment 2
Milestone Schedule

The following milestone schedule is provided. The dates are planning dates subject to change as design and implementation details are developed. Any changes to the following target dates will be reflected in the subsequent six month status reports.

Original Target Date	Activity	Status *{Include date changes in this column}*
October 2012	Submit 60 Day Status Report	Complete
February 2013	Submit Overall Integrated Implementation Plan	Complete with this submittal
August 2013	Submit Six Month Status Report	
September 2013	Commence Engineering Modification Design – Phase 2 and 3	
February 2014	Submit Six Month Status Report	
(TBD)	Regional Response Center Operational	
April 2014	Procure Equipment	
August 2014	Submit Six Month Status Report	
August 2014	Commence Installation for Online Modifications – Phase 2 and 3	
December 2014	Implement Storage	
December 2014	Issue Maintenance Procedures	
February 2015	Implement Training	
February 2015	Submit Six Month Status Report	
Four months prior to 2R29	Submit Phase 2 Staffing Assessment	
Four months prior to 2R29	Implement Communications Recommendations	
June 2015	Issue Procedures updated for FLEX strategies	
August 2015	Submit Six Month Status Report	
Fall 2015	Unit 2 Implementation Outage	
February 2016	Submit Six Month Status Report	
Spring 2016	Unit 1 Implementation Outage	
June 2016	Deployment Demonstration	
August 2016	Submit Completion Report	

Attachment 3
Plant Figures and Conceptual Sketches

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

Figure 1 -
Plant Layout Depicting CST Locations

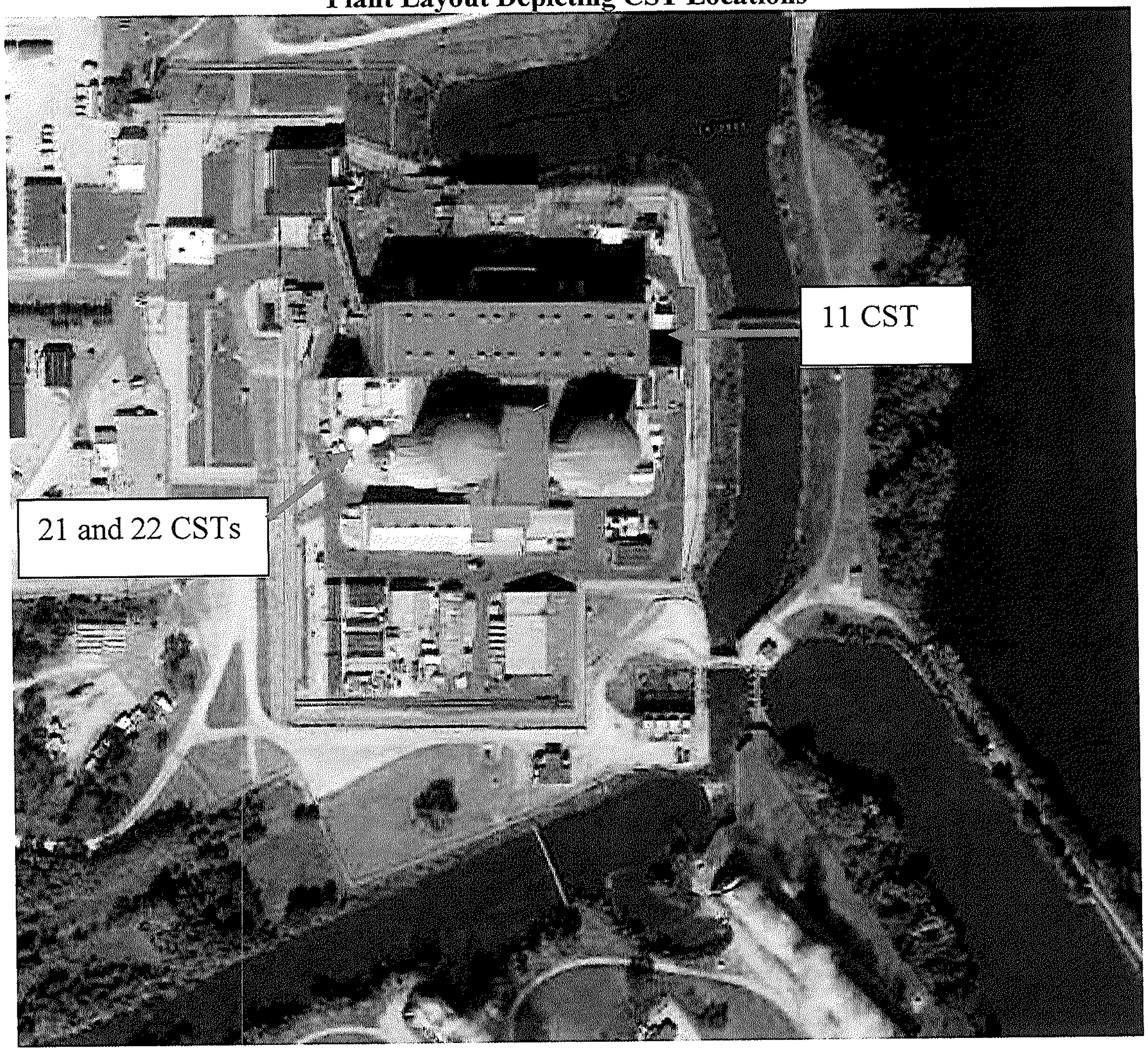


Figure 2 -
On-Site Equipment Deployment Routes
(identified pathways are preliminary and will be further evaluated during final design and implementation)

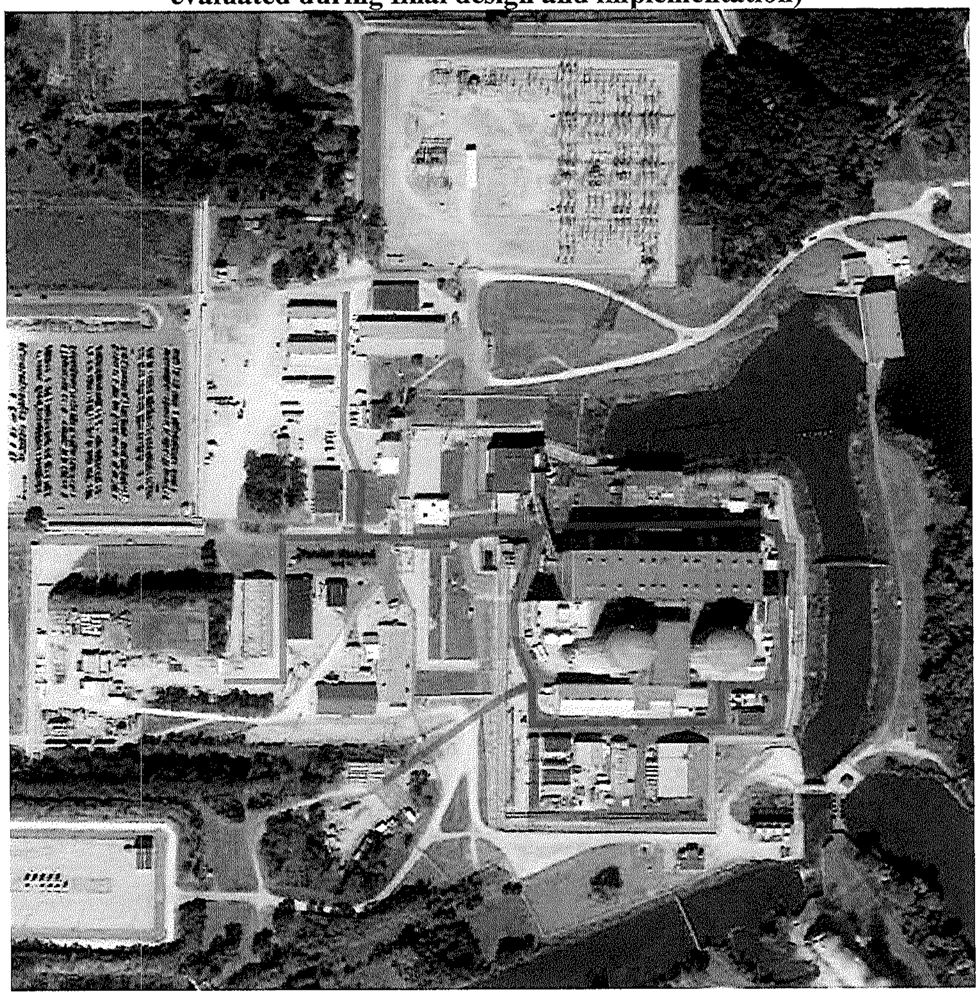


Figure 3 -
Portable Feedwater Connection Points

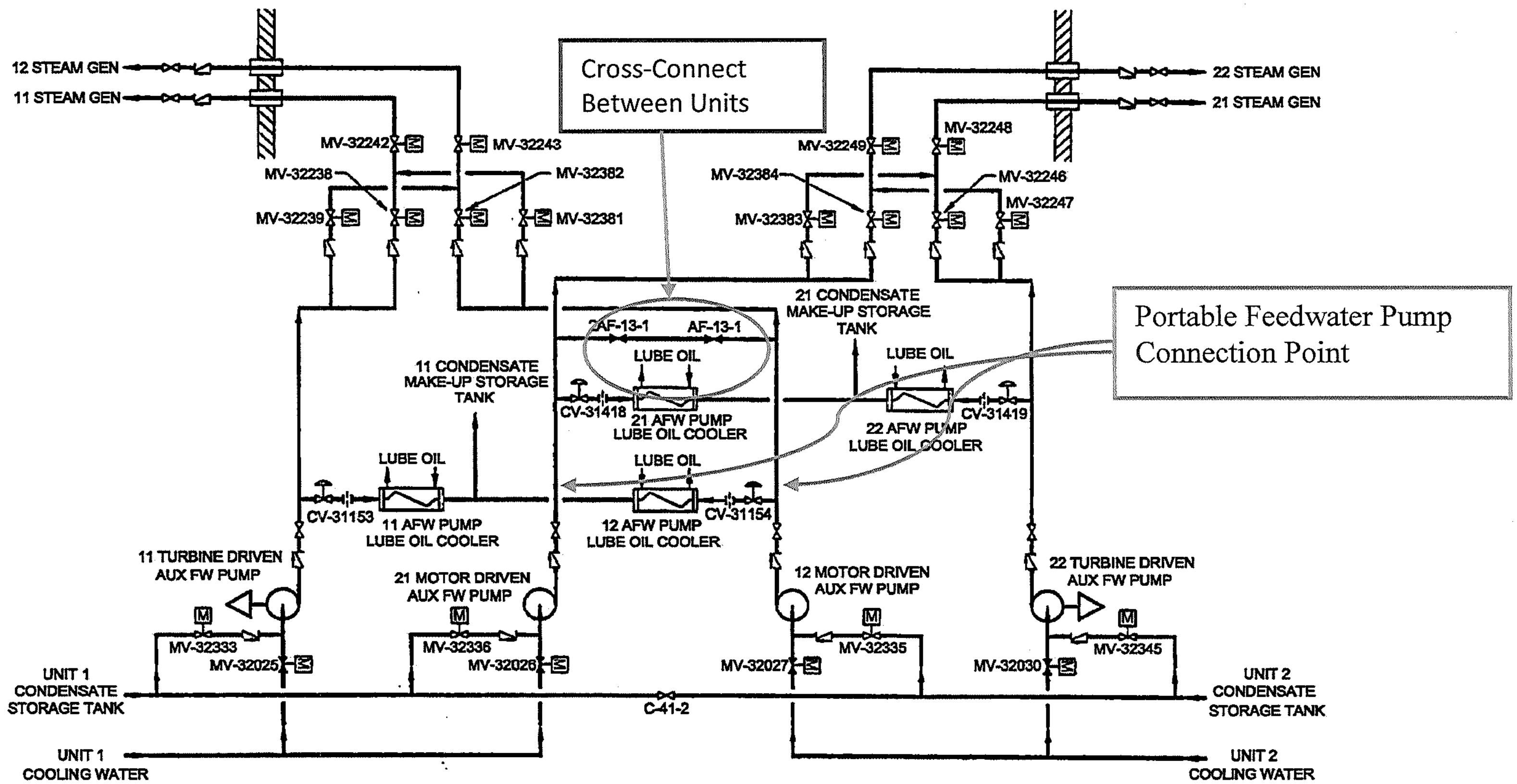
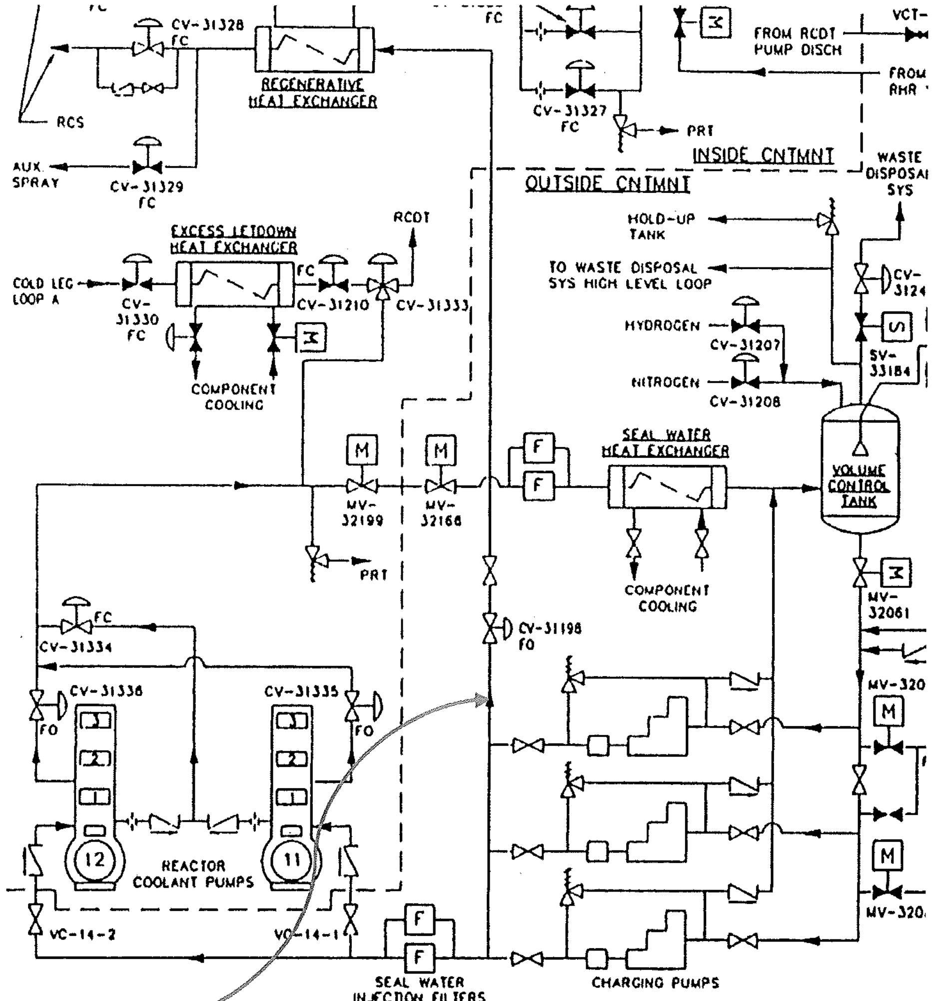


Figure 4 -
RCS Makeup Connection Pump



RCS Makeup Pump Connection – only one unit depicted, other unit is similar.