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PNP 2014-085

August 28, 2014

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
11555 Rockville Pike  
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SUBJECT: Palisades Nuclear Plant Third Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)

Palisades Nuclear Plant  
Docket No. 50-255  
License No. DPR-20

- REFERENCES:
1. NRC Order Number EA-12-049, *Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events*, dated March 12, 2012 (ADAMS Accession No. 12054A736)
  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 No. ML12229A174)
  3. NEI 12-06, *Diverse and Flexible Coping Strategies (FLEX) Implementation Guide*, Revision 0, dated August 2012 (ADAMS Accession No. ML12242A378)
  4. Entergy Nuclear Operations, Inc. letter to NRC, PNP 2012-091, *Initial Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)*, dated October 25, 2012 (ADAMS Accession No. ML12300A065)
  5. Entergy Nuclear Operations, Inc. letter to NRC, PNP 2013-010, *Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)*, dated February 28, 2013 (ADAMS Accession No. ML13246A399)

6. Entergy Nuclear Operations, Inc. letter to NRC, PNP 2013-064, *Palisades Nuclear Plant First Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)*, dated August 28, 2013 (ADAMS Accession No. ML13241A234)
7. Entergy Nuclear Operations, Inc. letter to NRC, PNP 2014-011, *Palisades Nuclear Plant Second Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)*, dated February 28, 2014 (ADAMS Accession No. ML14059A078)

Dear Sir or Madam:

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

Reference 1 required submission of an initial status report 60 days following issuance of the final interim staff guidance (Reference 2) and an overall integrated plan pursuant to Section IV, Condition C. Reference 2 endorses industry guidance document NEI 12-06, Revision 1 (Reference 3) with clarifications and exceptions identified in Reference 2. Reference 4 provided the Palisades Nuclear Plant (PNP) initial status report regarding mitigation strategies. Reference 5 provided the PNP overall integrated plan.

Reference 1 requires submission of a status report at six-month intervals following submittal of the overall integrated plan. Reference 3 provides direction regarding the content of the status reports. Reference 6 provided the first six-month status report. Reference 7 provided the second six-month status report.

The purpose of this letter is to provide the third six-month status report pursuant to Section IV, Condition C.2, of Reference 1, that delineates progress made in implementing the requirements of Reference 1. The attachment provides an update of milestone accomplishments, including any changes to the compliance method, schedule, or need for relief and the basis, if any.

This letter contains no new commitments and no revised commitments.

I declare under penalty of perjury that the foregoing is true and correct; executed on August 28, 2014.

Sincerely,

A handwritten signature in black ink, appearing to read "Amy J. Seaton". The signature is fluid and cursive, with the first name "Amy" and last name "Seaton" clearly distinguishable.

ajv/jse

Attachment: Palisades Nuclear Plant Third Six-Month Status Report in Response to March 12, 2012, Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)

cc: Office Director, NRR, USNRC  
Administrator, Region III, USNRC  
Project Manager, Palisades, USNRC  
Resident Inspector, Palisades, USNRC

## **ATTACHMENT**

### **Palisades Nuclear Plant Third Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)**

## **1 Introduction**

Entergy Nuclear Operations, Inc. (ENO) developed for Palisades Nuclear Plant (PNP) an overall integrated plan (Reference 1), which documented the diverse and flexible strategies (FLEX), in response to Reference 2. This attachment provides an update of milestone accomplishments since submittal of the last status report (Reference 4), including any changes to the compliance method, schedule, or need for relief/relaxation and the basis, if any.

## **2 Milestone Accomplishments**

The following milestone(s) have been completed since January 31, 2014, and are current as of July 31, 2014.

- Second Six-Month Status Report — February 2014
- Modifications Evaluation – April 2014
- N-1 Walkdown – February 2014
- Third Six-Month Status Report — Complete with submission of this document in August 2014.

## **3 Milestone Schedule Status**

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

- Perform Staffing Analysis

The Perform Staffing Analysis milestone completion date has been changed to April 2015. This new milestone target completion date does not impact the Order implementation date.

- Modifications – Design Engineering

The Design Engineering milestone completion date has been changed to September 2014. This new milestone target completion date does not impact the Order implementation date.

- On-site FLEX Equipment - Purchase and Procure

The On-Site FLEX Equipment Purchase and Procure milestone completion date has been changed to August 2015. This new milestone target completion date does not impact the Order implementation date.

- Create PNP FLEX FSG

The Create PNP FLEX FSG milestone completion date has been changed to December 2014. This new milestone target completion date does not impact the Order implementation date.

<b>Milestone</b>	<b>Target Completion Date*</b>	<b>Activity Status</b>	<b>Revised Target Completion Date</b>
<b>Submit Overall Integrated Implementation Plan</b>	Feb 2013	Complete	
<b>Six-Month Status Updates</b>			
Update 1	Aug 2013	Complete	
Update 2	Feb 2014	Complete	
Update 3	Aug 2014	Complete	
Update 4	Feb 2015	Not Started	
Update 5	Aug 2015	Not Started	
<b>FLEX Strategy Evaluation</b>	Jan 2014	Complete	
<b>Perform Staffing Analysis</b>	Apr 2014	Started	Apr 2015
<b>Modifications</b>			
Modifications Evaluation	Apr 2014	Complete	
Engineering and Implementation			
N-1 Walkdown	Feb 2014	Complete	
Design Engineering	May 2014	In Progress	September 2014
Implementation Outage	Oct 2015	Not Started	
<b>On-site FLEX Equipment</b>			
Purchase and Procure	Jun 2014	Started	Aug 2015
<b>Off-site FLEX Equipment</b>			
Develop Strategies with RRC	Jan 2015	Started	
Install Off-Site Delivery Station (If Necessary)	Oct 2015	Not Started	
<b>Procedures</b>			
Pressurized Water Reactor Owners Group (PWROG) issues Nuclear Steam Supply System (NSSS)-Specific Guidelines	Jun 2013	Complete	
Create PNP FLEX FSG	Mar 2015	Started	Dec 2014
Create Maintenance Procedures	Mar 2015	Not Started	
<b>Training</b>			
Develop Training Plan	Jun 2015	Not Started	
Training Complete	Sept 2015	Not Started	

<b>Milestone</b>	<b>Target Completion Date*</b>	<b>Activity Status</b>	<b>Revised Target Completion Date</b>
<b>Validation / Demonstration</b>	Oct 2015	Not Started	
<b>Submit Completion Report</b>	Oct 2015	Not Started	

\*Target Completion Date is the last submitted date from either the overall integrated plan or previous six-month status reports.

## 4 Changes to Compliance Method

There are no changes to the compliance method as documented in previous correspondence.

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

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

## 6 Open Items from Overall Integrated Plan and Interim Staff Evaluation

The following tables provide a summary and status of any open items documented in the overall integrated plan and any open items or confirmatory items documented in Interim Staff Evaluation (ISE) (Reference 5). A fourth table includes a listing of audit questions and the status of each item.

<b>Overall Integrated Plan Open Item</b>	<b>Status</b>
OI1. Perform analysis on Palisades' susceptibility to soil liquefaction and potential consequences on the FLEX implementation plan.	Complete/Closed  Borings were performed on site and soil liquefaction susceptibility was identified along the FLEX equipment deployment route outside the PA. Based on this information a set of FLEX equipment will be stored inside the protected area (PA) for the seismic event. The other set of FLEX equipment will be stored outside of the PA and be protected against the tornado event. Both locations will be protected against other applicable (screened-in) beyond-design-basis external events (BDBEEs). Additional planning is under way to address other impacts to equipment storage and deployment. This Open Item is related to ISE Open Item 3.1.1.2.A and is addressed on updated Audit Question (AQ) response spreadsheet on the ePortal.
OI2. Develop Phase 3 deployment strategy with correspondence with the RRC.	Started  Staging areas have been identified. The National SAFER Response Center (NSRC) [formerly known as the Regional Response Center (RRC)] kickoff meeting was conducted on 7/22/14 to complete checklist as

Overall Integrated Plan Open Item	Status
	approved by AREVA. The NSRC and Palisades are in process of developing Site Response Plans. This Open Item is related to ISE Confirmatory Item 3.4.A and is addressed on updated AQ response spreadsheet on the ePortal.
OI3. Evaluate the need to missile protect primary system makeup storage tank (T-81) and other external tanks.	<p>Complete/Closed</p> <p>The condensate storage tank (CST) (T-2) and T-81 are cross-connected such that upon depletion of the CST, at approximately 4 hours, the inventory in tank T-81 can also be gravity fed to the TDAFW pump. To allow credit for an 8 hour supply, tanks T-2 and T-81 will be missile protected. Following the required modifications, tanks T-2 and T-81 will be considered robust against all of the applicable tornado missile hazards described on Table 2 of RG 1.76, Rev. 1, with the single exception of tank T-81 foundation mounting bolts. Tank T-81 would be fully protected against the design basis tornado missile hazards of a 6-inch Schedule 40 steel pipe and a 1-inch diameter solid steel sphere (the exception being anchor bolting for the automobile missile hazard impact). A white paper describing the tornado generated missile hazard evaluation for tank T-81 has been posted to the ePortal.</p> <p>This Open Item is also addressed by updated AQ PAL-044 response.</p>
OI4. Select the location of FLEX equipment storage facility.	<p>Complete/Closed</p> <p>Refer to OI1. One set of equipment will be stored in a new structure inside the PA designed for the Seismic event. An additional set(s) of equipment will be stored outside the PA in a structure(s) providing an appropriate level of protection for the tornado event. Both sets will be protected against other applicable (screened-in) BDBEE external hazards.</p>
OI5. Perform seismic evaluation of turbine-driven auxiliary feedwater pump (TDAFWP) driver K-8.	<p>Complete/Closed</p> <p>Seismic evaluation documents the seismic qualification of the pump and associated components. The TDAFW pump is qualified with the exception of an outlier related to a check for bolt tightness. Bolt tightness on the pump is being performed under WO# 372138 and documented under EC 46465.</p>
OI6. Evaluate strategies to extend battery coping time.	<p>Complete/Closed</p> <p>The battery load shedding strategy has been revised to extend the battery coping time through shedding loads in addition to those identified in the station blackout procedure. The results indicate a coping time of at least 8 hours for the installed batteries</p>



Overall Integrated Plan Open Item	Status
	accompanying the expected deep load shed list. This Open Item is addressed by updated AQ PAL-018 response.
OI7. Evaluate sources of non-borated water in addition to condensate storage tank (T-2) and T-81.	<p>Complete/Closed</p> <p>After depletion of T-2 and T-81, makeup to the steam generators (SGs) will be from a portable pump with the credited suction source being Lake Michigan. Modifications to credit sources of non-borated water for sources other than T-2, T-81 and Lake Michigan were determined to not be required.</p>
OI8. Palisades Probabilistic Risk Assessment (PRA) to provide justification why battery room ventilation is not required until 24 hours.	<p>Complete/Closed</p> <p>Palisades PRA provided multiple evaluations for battery room hydrogen generation. It was determined that supplemental ventilation is required approximately 1.5 hours after charging begins for removal of hydrogen. Ventilation is not required for Phase 2 temperature control. This supplemental ventilation has been included in the Palisades strategy. This Open Item is addressed by updated AQ PAL-025 response.</p>
OI9. Evaluate the effects of FLEX on security procedures.	<p>Started</p> <p>The security plan/program will be updated to correspond to FLEX procedures.</p>
OI10. Evaluate requirements of mobile purification unit from RRC.	<p>Complete/Closed</p> <p>It was determined that the 250 gpm NSRC demineralized water treatment unit is preferred over the 100 gpm NSRC reverse osmosis unit in order to support SG makeup and provide makeup to the NSRC mobile boration unit. The mobile purification unit is only required to enhance Phase 3 actions post 72 hours.</p>
OI11. Evaluate requirements of mobile boration unit from RRC.	<p>Complete/Closed</p> <p>Current strategy is to have adequate borated water inventory onsite for 72 hours to cope with any BDBEE. Therefore, the requirements of the mobile boration unit from NSRC is only required to enhance Phase 3 actions post 72 hours.</p>
OI12. Evaluate methods of venting the fuel handling building.	<p>Complete/Closed</p> <p>The strategy for venting the fuel handling building will be to open an existing double leaf door/hatch on the roof of the building.</p>
OI13. Evaluate the use of high-efficiency LED lighting.	<p>Complete/Closed</p> <p>The use of high-efficiency LED lighting has been evaluated for its impact to battery coping time and control room heat loads. LED lighting would have</p>



Overall Integrated Plan Open Item	Status
	minimal impact and is not required or recommended.
OI14. Perform evaluation to determine if additional parameters will need to be monitored during FLEX activities.	<p>Complete/Closed</p> <p>In addition to NEI 12-06, PWROG FLEX guidance was reviewed for key parameter monitoring. The NEI 12-06 and PWROG guidance regarding recommended instrumentation has been incorporated into the FLEX strategy and the power supply for these instruments evaluated. All the credited instruments are powered by battery/DC buses and available throughout the event.</p>
OI15. Perform analysis to ensure survivability of containment.	<p>Complete/Closed</p> <p>Containment analysis has been completed using the Modular Accident Analysis Program (MAAP). Results of this analysis show containment design parameters will not be exceeded for the at-power scenario (i.e., event initiating in Mode 1). For the most conservative shutdown scenario (i.e., Mode 5 reduced inventory), results of the analysis show that a vent path will be required to prevent exceeding the design limits of containment. Containment vent paths that could be used are the personnel air lock, the emergency air lock, or the equipment hatch. Procedural controls will be established using the supplemental guidance provided in the NRC-endorsed NEI position paper titled "Shutdown / Refueling Modes." This Open Item is addressed by updated AQ PAL-050 response.</p>
OI16. Evaluate borated water sources in addition to safety injection refueling water tank (SIRWT).	<p>Complete/Closed</p> <p>All additional sources of borated water were evaluated for use following a BDBEE. This Open Item is addressed by updated AQ PAL-048 response.</p>
OI17. Entergy, for the Palisades site, will negotiate and execute a contract with Strategic Alliance for FLEX Emergency Response (SAFER) that will meet the requirements of NEI 12-06, Section 12.	<p>Complete/Closed</p>
OI18. Evaluate a location to install a tee in the service water system to allow the ultimate heat sink (UHS) FLEX pump to provide cooling.	<p>Complete/Closed</p> <p>Several locations in the service water system were evaluated. A pipe elbow downstream of service water system (SWS) pump P-7C was identified as the best location for connecting a pipe tee to allow flow from the NSRC UHS pump. This Open Item is related to ISE Confirmatory Item 3.2.4.1.B and is addressed on updated AQ response spreadsheet on the ePortal.</p>

Overall Integrated Plan Open Item		Status
OI19. Evaluate the use of lake water to cool the steam generators during an extended loss of ac power (ELAP).		<p>Complete/Closed</p> <p>An analysis has been completed that determined the impacts on the steam generators when using lake water as the makeup source. The analysis determined that the heat transfer capability of each steam generator was diminished by approximately 4.4% after 120 hours. This reduction in heat transfer capability was determined to be inconsequential due to the reduced decay heat load by 120 hours into the event and therefore is acceptable.</p>
OI20. Evaluate time until primary coolant system (PCS) makeup is necessary in Modes 5 & 6.		<p>Complete/Closed</p> <p>An evaluation was performed that documented the time until PCS makeup is required in shutdown modes. The time when makeup is required varies greatly depending on the status of the PCS when the event occurs (i.e., PCS level, pressure, and temperature). The most limiting scenario was found to be such that PCS makeup could be required as early as one hour after the event if the PCS is vented and at reduced inventory. High risk evolutions such as vented PCS and reduced inventory will be managed by outage risk planning and contingency actions such as pre-staging equipment as discussed in the NEI position paper titled "Shutdown / Refueling Modes."</p>
OI21. Evaluate connection to ensure cooling water can be provided for containment air fans.		<p>Complete/Closed</p> <p>Cooling water flow to the containment air fans is through the service water system addressed in the status update to OI 18. Connection of the NSRC supplied FLEX UHS pump to the SWS will provide the necessary means/connection for cooling water flow to the containment air coolers.</p>
OI22. Evaluate the robustness of the charging pumps.		<p>Complete/Closed</p> <p>The charging pumps have been evaluated as robust for all applicable external events (seismic, tornado, high temperature, low temperature and flooding). This Open Item is addressed by updated AQ PAL-041 response.</p>

Interim Staff Evaluation Open Items		Status
3.1.1.2.A	Evaluate the impact of potential soil liquefaction on deployment of portable FLEX equipment.	This item is addressed on updated Audit Question (AQ) response spreadsheet on the ePortal.
3.1.1.2.B	Evaluate the potential need for a power source to move or deploy the equipment (e.g., to open	This item is addressed on updated AQ response

	the door from a storage location).	spreadsheet on the ePortal.
3.1.1.3.A	Evaluate impacts from large internal flooding sources that are not seismically robust and the potential impact on the mitigating strategies.	This item is addressed on updated AQ response spreadsheet on the ePortal.
3.1.1.3.B	Evaluate the potential for ground water to impact the mitigating strategies.	This item is addressed on updated AQ response spreadsheet on the ePortal.
3.1.5.1.A	Evaluate the potential for high temperature hazards to impact the functionality of FLEX equipment in the FLEX storage facility.	This item is addressed on updated AQ response spreadsheet on the ePortal.
3.1.5.3.A	Evaluate the potential for high temperature hazards to impact the deployment of FLEX equipment.	This item is addressed on updated AQ response spreadsheet on the ePortal.
3.2.1.8.A	Verify resolution of the generic concern associated with the modeling of the timing and uniformity of the mixing of a liquid boric acid solution injected into the PCS under natural circulation conditions potentially involving two-phase flow.	This item is addressed by updated AQ PAL-015 response.
3.2.1.9.B	Provide additional justification for the alternate approach to NEI 12-06 involving the use of installed charging pumps.	This item is addressed by updated AQ PAL-041 response.

Interim Staff Evaluation Confirmatory Items		Status
3.1.3.1.A	Confirm that the FLEX storage facility(s) will meet the plant's design-basis tornado wind speed of 300 mph or will be designed or evaluated equivalent to ASCE 7-10 using a tornado wind speed of 230 mph with separation and diversity between the storage locations. If the method of protection chosen is the later, confirm that separation and diversity is adequate.	This item is addressed on updated AQ response spreadsheet on the ePortal.
3.2.1.A	Confirm that the operator actions times in the first 20 minutes of the event are adequate and reasonably achievable when the associated ELAP procedures are developed and validated.	This item is addressed by updated AQ PAL-011 response.
3.2.1.B	Confirm the robustness of the charging pump control circuit or provide FLEX procedure guidance to manually operate the charging pumps by breaker operation.	This item is addressed by updated AQ PAL-011 response.
3.2.1.C	Confirm the seismic robustness of the BAST piping to support use of the BAST water as a supply source for the charging pumps.	This item is addressed by updated AQ PAL-047 response.
3.2.1.D	Confirm the availability and adequacy of a borated water supply to support the PCS makeup strategy.	This item is addressed by updated AQ PAL-048 response.

<b>Interim Staff Evaluation Confirmatory Items</b>		<b>Status</b>
3.2.1.E	Confirm the continued functionality of the Atmospheric Dump Valves in the context of a tornado missile hazard during an ELAP in order to support a symmetric cooldown. Alternatively, address the effects of asymmetric natural circulation cooldown.	This item is addressed by updated AQ PAL-055 response.
3.2.1.F	Confirm the ability of any non-safety related equipment to function as credited in the mitigation strategies in accordance with the external event criteria described in NEI-12-06.	This item is addressed by updated AQ PAL-043 response.
3.2.1.1.A	Confirm that the use of Combustion Engineering Nuclear Transient Simulator (CENTS) in the ELAP analysis is limited to the flow conditions prior to reflux boiling initiation. This confirmation should include a description of the CENTS-calculated flow quality at the top of the SG U-tube for the condition when two-phase natural circulation ends and reflux boiling initiates.	This item is addressed by updated AQ PAL-003 response.
3.2.1.2.A	Confirm the Primary Coolant Pump (PCP) seal leakage rate assumed in the ELAP analysis is justified. Specifically, if the PCP seal leakage rate used in the plant-specific analysis is less than the upper bound expectation for the seal leakage rate (15 gpm/seal) discussed in the PWROG position paper addressing the PCP seal leakage for Combustion Engineering plants (ADAMS Accession No. ML13235A151, non-publicly available), justification should be provided.	This item is addressed by updated AQ PAL-004 response.
3.2.1.2.B	Confirm whether seal failure will occur or not when subcooling of the coolant in the PCS cold-legs is greater than 50 degrees Fahrenheit (°F). This evaluation should specify the seal leakage flow assumed for the ELAP from time zero to the timeframe when subcooling in the PCS cold-legs decreases to 50°F, and provide justification for the assumed leakage rate.	This item is addressed by updated AQ PAL-004 response.
3.2.1.2.C	If the Integrated Plan is changed to credit isolation of controlled bleed-off (CBO), confirm the assumption that the integrity of the PCP seals can be maintained, and the seal leakage rate is less than 1 gpm per PCP during an ELAP before CBO is isolated. This evaluation should provide the maximum temperature and pressure and minimum subcooling of the coolant in the PCS cold legs during the ELAP before CBO isolation. If CBO isolation is being assumed, justify the sequence of events (SOE) and time constraints so established.	This item is addressed by updated AQ PAL-004 response.

Interim Staff Evaluation Confirmatory Items		Status
3.2.1.3.A	Confirm the applicability of ANS 5.1-1979 + 2 sigma decay heat curve.	This item is addressed by updated AQ PAL-012 response.
3.2.1.5.A	Confirm the containment temperature, pressure, and moisture profiles during the ELAP event, and justify the adequacy of the computer codes/methodologies, and assumptions used in the analysis.	This item is addressed by updated AQ PAL-013 response.
3.2.1.5.B	Confirm whether further instrumentation is needed based upon ongoing ELAP evaluations.	This item is addressed by updated AQ PAL-013, AQ PAL-027 and AQ PAL-035 responses.
3.2.1.6.A	Complete validation of the SOE timeline.	This item is addressed by updated AQ PAL-030 response.
3.2.1.6.B	In the audit process, the licensee has indicated that an assessment has been performed identifying potential changes to the SOE. Confirm that a final SOE has been developed incorporating any identified changes.	This item is addressed by updated AQ PAL-011 response.
3.2.1.9.A	Confirm that the ability to line up portable pumps is consistent with the times assumed in the final version of the Integrated Plan.	This item is addressed by updated AQ PAL-014 response.
3.2.2.A	Resolve the discrepancy between the licensee-determined flow rate of 100 gallons per minute (gpm) SFP spray and the 250 gpm performance attribute of NEI 12-06, Table D-3.	This item is addressed on updated AQ response spreadsheet on the ePortal.
3.2.3.A	Confirm the plan assumptions for containment cooling, after completion of the containment response analysis.	This item is addressed by updated AQ PAL-050 and AQ PAL-053 responses.
3.2.4.1.A	Confirm whether supplemental cooling is required for components or systems used in the mitigating strategies plan.	This item is addressed on updated AQ response spreadsheet on the ePortal.
3.2.4.1.B	Confirm the connection point for the UHS FLEX Pump to the Service Water System.	This item is addressed on updated AQ response spreadsheet on the ePortal.
3.2.4.2.A	Confirm the adequacy of the ventilation provided in the battery room to protect the batteries from the effects of extreme high and low temperatures.	This item is addressed by updated AQ PAL-023 response.
3.2.4.2.B	Confirm the adequacy of battery room ventilation to prevent hydrogen accumulation while recharging the batteries in Phase 2 or Phase 3.	This item is addressed by updated AQ PAL-025 response.



<b>Interim Staff Evaluation Confirmatory Items</b>		<b>Status</b>
3.2.4.3.A	Confirm whether heat tracing is required for borated water systems.	This item is addressed by updated AQ PAL-007 response.
3.2.4.4.A	Confirm that communication enhancements credited in the NRC's communication assessment {ADAMS Accession No. ML13129A219) are completed as planned.	NRC Confirmatory Action
3.2.4.6.A	Confirm that habitability limits will be maintained and/or operator protective measures will be employed in all phases of an ELAP to ensure operators will be capable of FLEX strategy execution under adverse temperature conditions.	This item is addressed on updated AQ response spreadsheet on the ePortal.
3.2.4.7.A	Confirm that the evaluation of the CST and T-81 shows that the tank qualification is consistent with the strategy and the provisions of NEI 12-06.	This item is addressed by updated AQ PAL-044 response.
3.2.4.7.B	Confirm that the FLEX Support Guidelines provide clear criteria for transferring to the next preferred source of water when refilling the CST.	This item is addressed by updated AQ PAL-045 response.
3.2.4.10.A	Confirm that the load shed calculation verifies adequate battery capacity with sufficient margin throughout Phase 1 to assure the battery does not get depleted prior to charging, and the results of the analysis are properly integrated into the overall strategy.	This item is addressed by updated AQ PAL-018 and AQ PAL-033 responses.
3.4.A	Confirm that plans for the deployment of portable equipment used to implement the response conform to the criteria of NEI 12-06, Section 12.2, with regards to considerations 2 through 10.	This item is addressed on updated AQ response spreadsheet on the ePortal.

<b>Audit Question</b>	<b>Status</b>	<b>Completion or Target Date</b>
PAL-002	Closed*	
PAL-003	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.1.A)	
PAL-004	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.2.A)	
	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.2.B)	
	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.2.C)	
PAL-007	Updated response available on the ePortal (ISE Confirmatory Item 3.2.4.3.A)	
PAL-008	Updated response available on the ePortal	
PAL-011	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.A)	
	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.B)	
	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.6.B)	
PAL-012	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.3.A)	
PAL-013	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.5.A)	
	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.5.B)	
PAL-014	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.9.A)	
PAL-015	Updated response available on the ePortal (ISE Open Item 3.2.1.8.A)	
PAL-016	Updated response available on the ePortal	
PAL-017	In progress - This AQ response will be updated when information is available	Oct 2015
PAL-018	Updated response available on the ePortal (ISE Confirmatory Item 3.2.4.10.A)	
PAL-019	Updated response available on the ePortal	
PAL-020	Closed*	
PAL-021	Updated response available on the ePortal	
PAL-022	Closed*	
PAL-023	Updated response available on the ePortal (ISE	



<b>Audit Question</b>	<b>Status</b>	<b>Completion or Target Date</b>
	Confirmatory Item 3.2.4.2.A)	
PAL-024	Closed*	
PAL-025	Updated response available on the ePortal (ISE Confirmatory Item 3.2.4.2.B)	
PAL-026	Updated response available on the ePortal	
PAL-027	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.5.B)	
PAL-028	Updated response available on the ePortal	
PAL-030	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.6.A)	
PAL-033	Updated response available on the ePortal (ISE Confirmatory Item 3.2.4.10.A)	
PAL-035	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.5.B)	
PAL-036	Updated response available on the ePortal	
PAL-037	Updated response available on the ePortal	
PAL-039	Closed*	
PAL-040	Updated response available on the ePortal	
PAL-041	Updated response available on the ePortal (ISE Open Item 3.2.1.9.B)	
PAL-043	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.F)	
PAL-044	Updated response available on the ePortal (ISE Confirmatory Item 3.2.4.7.A)	
PAL-045	Updated response available on the ePortal (ISE Confirmatory Item 3.2.4.7.B)	
PAL-046	Updated response available on the ePortal	
PAL-047	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.C)	
PAL-048	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.D)	
PAL-049	Updated response available on the ePortal	
PAL-050	Updated response available on the ePortal (ISE Confirmatory Item 3.2.3.A)	
PAL-051	In progress - This AQ response will be updated when information is available	Feb 2015
PAL-053	Updated response available on the ePortal (ISE Confirmatory Item 3.2.3.A)	

<b>Audit Question</b>	<b>Status</b>	<b>Completion or Target Date</b>
PAL-054	Updated response available on the ePortal	
PAL-055	Updated response available on the ePortal (ISE Confirmatory Item 3.2.1.E)	
PAL-056	Closed*	
PAL-057	Updated response available on the ePortal	

\* Closed indicates that the ENO response is complete.

## 7 Potential Interim Staff Evaluation Impacts

The following items have been identified which have potential impact to the Interim Staff Evaluation (ISE) except for those identified in Section 6.

1. ISE/TER, Section 3.0, Page 5, second paragraph, the ISE states, “A portable FLEX generator will be connected to the existing plant electrical distribution system. ....Another FLEX diesel generator will power one of the installed plant charging....” The current strategy uses only one FLEX generator. This FLEX generator is sufficiently sized to carry all the loads that are planned for use in the Phase 2 FLEX strategy.
2. ISE/TER Section 3.1.1.2, Page 8, second paragraph, the TER states “On page 26 of the Integrated Plan, the licensee identified the connection point for the strategy to refill the condensate storage tank (CST) as being...” The Phase 2 core cooling strategy has changed such that the CST refill will not be used. Instead, inventory for feeding the steam generators in Phase 2 will be provided directly to the main feed water (MFW) system piping or the auxiliary feed water (AFW) system piping via hose connections, thereby bypassing the CST. The source of water for Phase 2 SG makeup will be directly from Lake Michigan using a portable FLEX pump staged on the west side of the Intake Structure.
3. ISE/TER Section 3.1.1.2, Page 8, fourth paragraph, the TER states, “...regarding SFP cooling water, the available suction sources for all the above options are the safety injection and refueling water storage tank (SIRWT) and Lake Michigan.” The current strategy does not credit the SIRWT. The SFP makeup suction source will be directly from Lake Michigan using the FLEX portable transfer pump.
4. ISE/TER Section 3.2.1, Page 28, sixth paragraph, the TER states, “...a design change is in the preliminary stages to modify the ADV backup nitrogen supply source from the High Pressure System to bottled nitrogen.” The design change/modification selected, and which will allow for the remote manual operation of the ADVs, is the installation of backup nitrogen bottles to last through Phase 1 and connection point for an air compressor to be connected to the Phase 2 FLEX generator.
5. ISE/TER Section 3.2.1.9, Page 46, last paragraph, the TER states, “...the FLEX pump that can be used for both SFP makeup and CST refill along...” The Phase 2 core cooling strategy has changed such that the CST refill will not be used. Instead,

inventory for feeding the steam generators in Phase 2 will be provided directly to the main feed water (MFW) system piping or the auxiliary feed water (AFW) system piping via hose connections, thereby bypassing the CST. The source of water for Phase 2 SG makeup will be directly from Lake Michigan using a FLEX portable transfer pump.

6. ISE/TER Section 3.2.1.9, Page 47, first paragraph, the TER states, “...or CST refill pump (FLEX transfer pump) may be utilized to ...” The Phase 2 core cooling strategy has changed such that the CST refill will not be used. Instead inventory for feeding the steam generators will be provided by the FLEX portable transfer pump directly to the main feed water (MFW) system piping or the auxiliary feed water (AFW) system via hose connections, thereby bypassing the CST.
7. ISE/TER Section 3.2.2, Page 49, second paragraph, the TER states, “Since the SFP makeup and CST refill both have relatively...” The Phase 2 core cooling strategy has changes such that the CST refill will not be used. Instead inventory for feeding the steam generators will be provided by the FLEX portable transfer pump directly to the main feed water (MFW) system piping or the auxiliary feed water (AFW) system via hose connections, thereby bypassing the CST.
8. ISE/TER Section 3.2.2, Page 49, first paragraph, the TER states, “The available suction sources for all of the above options are the SIRWT and Lake Michigan.” The current strategy does not credit the SIRWT. The SFP makeup suction source will be Lake Michigan using the FLEX portable transfer pump.
9. ISE/TER Section 3.2.4.7, Page 57, last paragraph, the TER states, “...core cooling uses a portable FLEX transfer pump to refill the CST to prolong...” The Phase 2 core cooling strategy has changes such that the CST refill will not be used. Instead inventory for feeding the steam generators will be provided by the FLEX portable transfer pump directly to the main feed water (MFW) system piping or the auxiliary feed water (AFW) system via hose connections, thereby bypassing the CST.
10. ISE/TER Section 3.2.4.7, Page 58, fourth paragraph, the TER states, “...to connect portable pumps to refill the CST.” The Phase 2 core cooling strategy has changes such that the CST refill will not be used. Instead inventory for feeding the steam generators will be provided by the FLEX portable transfer pump directly to the main feed water (MFW) system piping or the auxiliary feed water (AFW) system via hose connections, thereby bypassing the CST.
11. ISE/TER Section 3.2.4.7, Page 58, first paragraph, the TER states, “...initiated at hour 24, the mobile water purification unit should be received from the RRC...” This timing was determined to be not required by the strategy as evaluated in EC 46465. EC 46465 determined that the use of Lake Michigan for up to 120 hours has inconsequential impact on Steam Generator fouling based on decay heat load present. Palisades will accept a mobile purification unit as evaluated for its use in EC 46465 at 72 hours for use in a long term Phase 3 strategy. Therefore the purification units will not be credited until 72 hours after the event.

## 8 References

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

1. ENO letter to NRC, PNP 2013-010, *Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)*, dated February 28, 2013 (ADAMS Accession No. ML13246A399).
2. NRC Order Number EA-12-049, *Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events*, dated March 12, 2012 (ADAMS Accession No. ML12054A736).
3. ENO letter to NRC, PNP 2013-064, *Palisades Nuclear Plant First Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)*, dated August 28, 2013 (ADAMS Accession No. ML13241A234).
4. ENO letter to NRC, PNP 2014-011, *Palisades Nuclear Plant Second Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)*, dated February 28, 2014 (ADAMS Accession No. ML14059A078).
5. NRC letter, *Palisades Nuclear Plant – Interim Staff Evaluation Regarding Overall Integrated Plan in Response to Order EA-12-049 (Mitigation Strategies) (TAC No. MF0768)*, dated February 10, 2014 (ADAMS Accession No. ML13365A264).