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PNP 2015-061

August 28, 2015

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
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SUBJECT: Palisades Nuclear Plant Fifth 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. 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 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 Operation, 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 Operation, 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)
8. Entergy Nuclear Operation, Inc. letter to NRC, PNP 2014-085, *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),* dated August 28, 2014 (ADAMS Accession No. ML14240A279)
9. 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)
10. Entergy Nuclear Operation, Inc. letter to NRC, PNP 2015-007, *Palisades Nuclear Plant Fourth 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 27, 2015 (ADAMS Accession No. ML15062A011)

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 0 (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. Reference 8 provided the third six-month status report. In

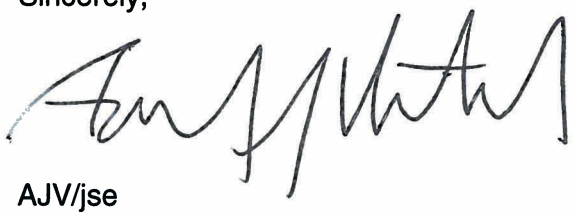
Reference 9, the NRC issued an interim staff evaluation for the PNP overall integrated plan. Reference 10 provided the fourth six-month status report.

The purpose of this letter is to provide the fifth 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, 2015.

Sincerely,



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Attachment: Palisades Nuclear Plant Fifth 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 Fifth 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 coping 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, 2015, and are current as of July 31, 2015.

- Fourth Six-Month Status Report — February 2015
- Develop Strategies with NSRC – March 2015
- Perform Staffing Analysis – April 2015
- Purchase and Procure On-site FLEX Equipment – July 2015
- Fifth Six-Month Status Report — Complete with submission of this document in August 2015.

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.

- Training Complete

  The Training Complete milestone completion date has been changed to October 2015. This new milestone target completion date does not impact the Order implementation date.

- Validation / Demonstration

  The Validation / Demonstration milestone completion date has been changed to September 2015. This new milestone target completion date does not impact the Order implementation date.

- Submit Completion Report

  The Submit Completion Report milestone completion date has been changed to December 2015. This new milestone target completion date does not impact the Order implementation date.

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

Milestone	Target Completion Date*	Activity Status	Revised Target Completion Date
Validation / Demonstration	Oct 2015	Started	Sept 2015
Submit Completion Report	Oct 2015	Not Started	Dec 2015

*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 the Overall Integrated Plan (Reference 1). However, since the last update, three items have been identified as alternate approaches to NEI 12-06, Revision 0, "Diverse and Flexible Coping Strategies," (Reference 7) for meeting the Order. NRC Interim Staff Guidance JLD-ISG-2012-01 (Reference 66) states that licensees may use other methods for compliance with Order EA-12-049 as an alternative to meeting NEI 12-06. The NRC requested that alternate approaches be included in a future FLEX six-month status report during the June 2015 NRC Audit Visit. These items are discussed below.

- **FLEX Storage Strategy Alternate Approach**

  Palisades' strategy for the deployment of FLEX equipment following a seismic event is an alternate approach to NEI 12-06 for meeting the Order. NEI 12-06, Section 5.3.2 (1) states: "If the equipment needs to be moved from a storage location to a different point for deployment, the route to be traveled should be reviewed for potential soil liquefaction that could impede movement following a severe seismic event."

  Soil test borings were performed on site and soil liquefaction susceptibility was identified. Analysis determined that the soil outside the Protected Area (PA) was susceptible to liquefaction after a seismic event. Liquefiable soil would likely cause differential settlements of soil along the deployment path, resulting in roads that could not be traversed. At the same time, there is minimal area inside the PA to house a building that could withstand all beyond-design-basis external events (BDBEE). The solution to this problem is to house FLEX equipment in two structures that will each withstand a portion of the required BDBEE such that at least one set of portable FLEX equipment will be available and accessible for any and all BDBEE consistent with NEI 12-06, Section 11.3.3. The storage location inside the PA consists of a pre-engineered metal building (FLEX Storage Building – A) designed to withstand extreme temperature, probable maximum flood, and seismic BDBEE, while the storage location outside the PA is a reinforced concrete building (FLEX Storage Building – B) designed to withstand extreme temperature, probable maximum flood, and high wind BDBEE, including tornado generated missiles, as well as seismic BDBEE for protection of the Phase 3 equipment which will be stored in the building.

  Liquefaction only impacts deployment of equipment from the reinforced concrete building (FLEX Storage Building – B) located outside of the PA. During the seismic event, equipment will be deployed from the pre-engineered metal building inside the PA (FLEX Storage Building – A) where there are no liquefaction concerns.

  This alternate approach was reviewed by the NRC during the June 2015 NRC Audit Visit at Palisades and no new open items were identified for this approach.

T-81 Missile Shielding Alternate Approach

This discussion provides the justification of an alternate approach to NEI 12-06 to meet the Order regarding tornado and tornado missiles evaluations and the method for addressing the tornado generated automobile missile hazard as it applies to evaluation of the primary system makeup storage tank (T-81).

All the equipment needed to meet the Phase 1 strategy are found to be robust with the exception of T-81 foundation anchor bolts for an automobile tornado missile hazard.

T-81 was not required to meet tornado wind and missile protection criteria for the original design of the plant. As part of the FLEX strategy, use of the tank is desired. Modifications are being made to enhance T-81 as well as the condensate storage tank (T-2). These modifications will strengthen both tanks to meet the requirements for tornado and tornado missiles with the single exception of T-81 for an automobile missile hazard (both tanks are fully protected against the missile hazards exclusive of an automobile missile hazard for T-81 only).

In lieu of specifically protecting T-81 from an automobile missile hazard, a qualitative evaluation has been performed which demonstrates that protection is not required to credit T-81 as robust. For the following reasons, an alternate approach to tank protection against an automobile missile hazard is justified:

- The tank is partially protected from all sides by intervening structures.
- The probability of occurrence of a tornado is reasonably low.
- Site procedures will institute specific mitigating actions to remove/restrain all objects that are characteristic of the automobile/large object missile hazard from the zone of concern in advance of the occurrence of a tornado, thereby removing the potential hazard of concern.
- Procedural identification and control of alternate sources of water should T-81 become unavailable.

[EU1]This alternate approach, as documented in a white paper entitled "Tornado Generated Missile Hazard Evaluation for the Primary System Makeup Storage Tank (T-81)," was reviewed by the NRC during the June 2015 NRC Audit Visit at Palisades and no new open items were identified for this approach.

Use of Installed Charging Pumps in Lieu of Portable Pumps

Palisades' strategy to use installed charging pumps as the primary and alternate means of primary coolant system (PCS) makeup is an alternate approach to NEI 12-06 for meeting the Order. NEI 12-06, Section 3.2.2 (13) states: "Regardless of installed coping capability, all plants will include the ability to use portable pumps to provide RPV/RCS/SG makeup as a means to provide a diverse capability beyond installed equipment..."

Though an alternate approach to NEI 12-06, this strategy is deemed to meet the diversity requirements because each pump is powered from a separate safety related load center, each with a primary and alternate strategy for receiving power from the FLEX generator. Additionally, the load centers can be cross-tied and either charging pump can be powered by either connection point to provide a reliable primary and alternate connection point (separate safety-related trains) for each charging pump.

Palisades has two independent flowpaths to inject water to the PCS. Each flowpath utilizes a different system for discharging water to the PCS. One path allows flow to be directed to the high pressure safety injection (HPSI) header and on to the PCS while the normal flow path is through the chemical volume control system (CVCS) regenerative heat exchanger to the PCS. The HPSI system branch connection is an independent piping path off the common header and separate from the CVCS connection. Each charging pump and diverse flowpath can be physically isolated from one another (pump discharge valves and header isolation valves) should either be compromised. Each piping flow path has been validated to be robust in accordance with NEI 12-06. Valves which are required to align either flow path are powered by the FLEX generator and procedures for valve operation are addressed in the FLEX Support Guidelines (FSGs).

This Palisades FLEX strategy promotes success by utilizing robust plant equipment that is located within a structure that is protected from all Palisades design basis external events (i.e., auxiliary building) and reduces the number of operator actions required to place that equipment into operation.

This alternate approach was reviewed by the NRC during the June 2015 NRC Audit Visit at Palisades and no new open items were identified for this approach.

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 3). A fourth table includes a listing of all audit questions and the status of each item. A fifth table includes the FLEX related NRC Audit Visit (Reference 5) open items, which includes open items on previously issued ISE Open and Confirmatory Items and new Safety Evaluation (SE) Open Items that were not closed during the June 2015 NRC Audit Visit, and their status.

Note that during the June 2015 NRC Audit Visit the NRC utilized a spreadsheet entitled Palisades Nuclear Plant, SE Item Tracker to maintain a status of Open Items associated with development of the NRC's Safety Evaluation. The SE Tracker numbered each item with an Audit Item No. based on the category of the Open Item. The categories were:

A. ISE Open and Confirmatory Items (Audit Item OI-xxxxx or CI-xxxxx)
B. Audit Questions (Audit Item x-B)
C. Licensee OIP Open Items (Audit Item x-C)
D. SFP Instrumentation RAIs (Audit Item SRAI-x-D)
E. Combined SE Template Technical Review Gaps (Audit Item x-E)

In the Status columns of the following tables, closed items are identified by the phrase "This item was closed during the June 2015 NRC Audit Visit."

Overall Integrated Plan Open Item	Status
OI1. Perform analysis on Palisades' susceptibility to soil liquefaction and potential consequences on the FLEX implementation plan.	This item was closed during the June 2015 NRC Audit Visit (Reference 5). See Section 4 above.
OI2. Develop Phase 3 deployment strategy with correspondence with the RRC.	This item was closed during the June 2015 NRC Audit Visit (Reference 5).
OI3. Evaluate the need to missile protect primary system makeup storage tank (T-81) and other external tanks.	This item was closed during the June 2015 NRC Audit Visit (Reference 5). See Section 4 above and resolution of ISE CI 3.2.4.7.A and SE Tracker Audit Item CI 3.2.4.7.A below.
OI4. Select the location of FLEX equipment storage facility.	This item was closed during the June 2015 NRC Audit Visit (Reference 5).
OI5. Perform seismic evaluation of turbine-driven auxiliary feedwater pump (TDAFWP) driver K-8.	This item was closed during the June 2015 NRC Audit Visit (Reference 5).
OI6. Evaluate strategies to extend battery coping time.	This item was closed during the June 2015 NRC Audit Visit (Reference 5).
OI7. Evaluate sources of non-borated water in addition to condensate storage tank (T-2) and T-81.	This item was closed during the June 2015 NRC Audit Visit (Reference 5).
OI8. Palisades Probabilistic Risk Assessment (PRA) to provide justification why battery room ventilation is not required until 24 hours.	This item was closed during the June 2015 NRC Audit Visit (Reference 5).
OI9. Evaluate the effects of FLEX on security procedures.	This item was closed during the June 2015 NRC Audit Visit (Reference 5).
OI10. Evaluate requirements of mobile purification unit from RRC.	This item was closed during the June 2015 NRC Audit Visit (Reference 5).
OI11. Evaluate requirements of mobile boration unit from RRC.	This item was closed during the June 2015 NRC Audit Visit (Reference 5).
OI12. Evaluate methods of venting the fuel handling building.	This item was closed during the June 2015 NRC Audit Visit (Reference 5).
OI13. Evaluate the use of high-efficiency LED lighting.	This item was closed during the June 2015 NRC Audit Visit (Reference 5).
OI14. Perform evaluation to determine if additional parameters will need to be monitored during FLEX activities.	This item was closed during the June 2015 NRC Audit Visit (Reference 5).
OI15. Perform analysis to ensure survivability of containment.	This item was closed during the June 2015 NRC Audit Visit (Reference 5).
OI16. Evaluate borated water sources in addition to safety injection refueling water tank (SIRWT).	This item was closed during the June 2015 NRC Audit Visit (Reference 5).
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.	This item was closed during the June 2015 NRC Audit Visit (Reference 5).
OI18. Evaluate a location to install a tee in the	This item was closed during the June

Overall Integrated Plan Open Item	Status
service water system to allow the ultimate heat sink (UHS) FLEX pump to provide cooling.	2015 NRC Audit Visit (Reference 5).
OI19. Evaluate the use of lake water to cool the steam generators during an extended loss of ac power (ELAP).	This item was closed during the June 2015 NRC Audit Visit (Reference 5).
OI20. Evaluate time until primary coolant system (PCS) makeup is necessary in Modes 5 & 6.	This item was closed during the June 2015 NRC Audit Visit (Reference 5).
OI21. Evaluate connection to ensure cooling water can be provided for containment air fans.	This item was closed during the June 2015 NRC Audit Visit (Reference 5).
OI22. Evaluate the robustness of the charging pumps.	This item was closed during the June 2015 NRC Audit Visit (Reference 5).

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 was closed during the June 2015 NRC Audit Visit (Reference 5). See Section 4 above.
3.1.1.2.B	Evaluate the potential need for a power source to move or deploy the equipment (e.g., to open the door from a storage location).	This item was closed during the June 2015 NRC Audit Visit (Reference 5).
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 was closed during the June 2015 NRC Audit Visit (Reference 5).
3.1.1.3.B	Evaluate the potential for ground water to impact the mitigating strategies.	This item was closed during the June 2015 NRC Audit Visit (Reference 5).
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 was closed during the June 2015 NRC Audit Visit (Reference 5).
3.1.5.3.A	Evaluate the potential for high temperature hazards to impact the deployment of FLEX equipment.	This item was statused as Open during the June 2015 NRC Audit Visit (Reference 5). See the June 2015 NRC Audit Visit FLEX Related Open Items table (below) Audit Item OI 3.1.5.3.A for status.
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 was closed during the June 2015 NRC Audit Visit (Reference 5).
3.2.1.9.B	Provide additional justification for the alternate	This item was closed during

	approach to NEI 12-06 involving the use of installed charging pumps.	the June 2015 NRC Audit Visit (Reference 5). See Section 4 above.

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 was closed during the June 2015 NRC Audit Visit (Reference 5).
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 was closed during the June 2015 NRC Audit Visit (Reference 5).
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 was closed during the June 2015 NRC Audit Visit (Reference 5).
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 was statused as Open during the June 2015 NRC Audit Visit (Reference 5). See the June 2015 NRC Audit Visit FLEX Related Open Items table (below) Audit Item CI 3.2.1.C for status.
3.2.1.D	Confirm the availability and adequacy of a borated water supply to support the PCS makeup strategy.	This item was closed during the June 2015 NRC Audit Visit (Reference 5).
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 was closed during the June 2015 NRC Audit Visit (Reference 5).
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 was statused as Open during the June 2015 NRC Audit Visit (Reference 5). See the June 2015 NRC Audit Visit FLEX Related Open Items table (below) Audit Item CI 3.2.1.F for status.
3.2.1.1.A	Confirm that the use of Combustion Engineering	This item was closed

Interim Staff Evaluation Confirmatory Items		Status
	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.	during the June 2015 NRC Audit Visit (Reference 5).
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 he 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 was statused as Open during the June 2015 NRC Audit Visit (Reference 5). See the June 2015 NRC Audit Visit FLEX Related Open Items table (below) Audit Item CI 3.2.1.2.A for status.
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 was closed during the June 2015 NRC Audit Visit (Reference 5).
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 was closed during the June 2015 NRC Audit Visit (Reference 5).
3.2.1.3.A	Confirm the applicability of ANS 5.1-1979 + 2 sigma decay heat curve.	This item was statused as Open during the June 2015 NRC Audit Visit (Reference 5). See the June 2015 NRC Audit Visit FLEX Related Open Items table (below) Audit Item CI 3.2.1.3.A for status.
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 was closed during the June 2015 NRC Audit Visit (Reference 5).

Interim Staff Evaluation Confirmatory Items		Status
3.2.1.5.B	Confirm whether further instrumentation is needed based upon ongoing ELAP evaluations.	This item was closed during the June 2015 NRC Audit Visit (Reference 5).
3.2.1.6.A	Complete validation of the SOE timeline.	This item was closed during the June 2015 NRC Audit Visit (Reference 5).
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 was closed during the June 2015 NRC Audit Visit (Reference 5).
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 was closed during the June 2015 NRC Audit Visit (Reference 5).
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 was closed during the June 2015 NRC Audit Visit (Reference 5).
3.2.3.A	Confirm the plan assumptions for containment cooling, after completion of the containment response analysis.	This item was closed during the June 2015 NRC Audit Visit (Reference 5).
3.2.4.1.A	Confirm whether supplemental cooling is required for components or systems used in the mitigating strategies plan.	This item was closed during the June 2015 NRC Audit Visit (Reference 5).
3.2.4.1.B	Confirm the connection point for the UHS FLEX Pump to the Service Water System.	This item was closed during the June 2015 NRC Audit Visit (Reference 5).
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 was closed during the June 2015 NRC Audit Visit (Reference 5).
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 was closed during the June 2015 NRC Audit Visit (Reference 5).
3.2.4.3.A	Confirm whether heat tracing is required for borated water systems.	This item was closed during the June 2015 NRC Audit Visit (Reference 5).
3.2.4.4.A	Confirm that communication enhancements credited in the NRC's communication assessment {ADAMS Accession No. ML13129A219) are completed as planned.	This item was closed during the June 2015 NRC Audit Visit (Reference 5).
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 was closed during the June 2015 NRC Audit Visit (Reference 5).

Interim Staff Evaluation Confirmatory Items		Status
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 was statused as Open during the June 2015 NRC Audit Visit (Reference 5). See the June 2015 NRC Audit Visit FLEX Related Open Items table (below) Audit Item CI 3.2.4.7.A for status.
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 was closed during the June 2015 NRC Audit Visit (Reference 5).
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 was closed during the June 2015 NRC Audit Visit (Reference 5).
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 was closed during the June 2015 NRC Audit Visit (Reference 5).

Audit Question	Status	Completion or Target Date
PAL-002	This item was closed during the June 2015 NRC Audit Visit (Reference 5).	
PAL-003	This item was closed during the June 2015 NRC Audit Visit (Reference 5). (Associated with ISE Confirmatory Item 3.2.1.1.A)	
PAL-004	This item was closed during the June 2015 NRC Audit Visit (Reference 5). (Associated with ISE Confirmatory Items 3.2.1.2.A, 3.2.1.2.B, 3.2.1.2.C)	
PAL-007	This item was closed during the June 2015 NRC Audit Visit (Reference 5). (Associated with ISE Confirmatory Item 3.2.4.3.A)	
PAL-008	This item was closed during the June 2015 NRC Audit Visit (Reference 5).	
PAL-011	This item was closed during the June 2015 NRC Audit Visit (Reference 5). (Associated with ISE Confirmatory Items 3.2.1.A, 3.2.1.B, 3.2.1.6.B)	
PAL-012	This item was closed during the June 2015 NRC Audit Visit (Reference 5). (Associated with ISE Confirmatory Item 3.2.1.3.A)	
PAL-013	This item was closed during the June 2015 NRC Audit	

Audit Question	Status	Completion or Target Date
	Visit (Reference 5). (Associated with ISE Confirmatory Items 3.2.1.5.A, 3.2.1.5.B)	
PAL-014	This item was closed during the June 2015 NRC Audit Visit (Reference 5). (Associated with ISE Confirmatory Item 3.2.1.9.A)	
PAL-015	This item was closed during the June 2015 NRC Audit Visit (Reference 5). (Associated with ISE Open Item 3.2.1.8.A)	
PAL-016	This item was closed during the June 2015 NRC Audit Visit (Reference 5).	
PAL-017	This item was closed during the June 2015 NRC Audit Visit (Reference 5).	
PAL-018	This item was closed during the June 2015 NRC Audit Visit (Reference 5). (Associated with ISE Confirmatory Item 3.2.4.10.A)	
PAL-019	This item was closed during the June 2015 NRC Audit Visit (Reference 5).	
PAL-020	This item was closed during the June 2015 NRC Audit Visit (Reference 5).	
PAL-021	This item was closed during the June 2015 NRC Audit Visit (Reference 5).	
PAL-022	This item was closed during the June 2015 NRC Audit Visit (Reference 5).	
PAL-023	This item was closed during the June 2015 NRC Audit Visit (Reference 5). (Associated with ISE Confirmatory Item 3.2.4.2.A)	
PAL-024	This item was closed during the June 2015 NRC Audit Visit (Reference 5).	
PAL-025	This item was closed during the June 2015 NRC Audit Visit (Reference 5). (Associated with ISE Confirmatory Item 3.2.4.2.B)	
PAL-026	This item was closed during the June 2015 NRC Audit Visit (Reference 5).	
PAL-027	This item was closed during the June 2015 NRC Audit Visit (Reference 5). (Associated with ISE Confirmatory Item 3.2.1.5.B)	
PAL-028	This item was closed during the June 2015 NRC Audit Visit (Reference 5).	
PAL-030	This item was closed during the June 2015 NRC Audit Visit (Reference 5). (Associated with ISE Confirmatory Item 3.2.1.6.A)	
PAL-033	This item was closed during the June 2015 NRC Audit	

Audit Question	Status	Completion or Target Date
	Visit (Reference 5). (Associated with ISE Confirmatory Item 3.2.4.10.A)	
PAL-035	This item was closed during the June 2015 NRC Audit Visit (Reference 5). (Associated with ISE Confirmatory Item 3.2.1.5.B)	
PAL-036	This item was closed during the June 2015 NRC Audit Visit (Reference 5).	
PAL-037	This item was closed during the June 2015 NRC Audit Visit (Reference 5).	
PAL-039	This item was closed during the June 2015 NRC Audit Visit (Reference 5).	
PAL-040	This item was closed during the June 2015 NRC Audit Visit (Reference 5).	
PAL-041	This item was closed during the June 2015 NRC Audit Visit (Reference 5). (Associated with ISE Open Item 3.2.1.9.B)	
PAL-043	This item was closed during the June 2015 NRC Audit Visit (Reference 5). (Associated with ISE Confirmatory Item 3.2.1.F)	
PAL-044	This item was closed during the June 2015 NRC Audit Visit (Reference 5). (Associated with ISE Confirmatory Item 3.2.4.7.A)	
PAL-045	This item was closed during the June 2015 NRC Audit Visit (Reference 5). (Associated with ISE Confirmatory Item 3.2.4.7.B)	
PAL-046	This item was closed during the June 2015 NRC Audit Visit (Reference 5).	
PAL-047	This item was closed during the June 2015 NRC Audit Visit (Reference 5). (Associated with ISE Confirmatory Item 3.2.1.C)	
PAL-048	This item was closed during the June 2015 NRC Audit Visit (Reference 5).(Associated with ISE Confirmatory Item 3.2.1.D)	
PAL-049	This item was closed during the June 2015 NRC Audit Visit (Reference 5).	
PAL-050	This item was closed during the June 2015 NRC Audit Visit (Reference 5). (Associated with ISE Confirmatory Item 3.2.3.A)	
PAL-051	This item was closed during the June 2015 NRC Audit Visit (Reference 5).	
PAL-053	This item was closed during the June 2015 NRC Audit Visit (Reference 5). (Associated with ISE Confirmatory	

Audit Question	Status	Completion or Target Date
	Item 3.2.3.A)	
PAL-054	This item was closed during the June 2015 NRC Audit Visit (Reference 5).	
PAL-055	This item was closed during the June 2015 NRC Audit Visit (Reference 5). (Associated with ISE Confirmatory Item 3.2.1.E)	
PAL-056	This item was closed during the June 2015 NRC Audit Visit (Reference 5).	
PAL-057	This item was closed during the June 2015 NRC Audit Visit (Reference 5).	

NOTE:

During the June 2015 Audit Visit, additional information related to each Open Item was provided to the NRC for review. By the end of the NRC Audit Visit, the NRC verbally had statused each open item and indicated what the staff needed to close the Open Items. The "Status" column in the table below reflects the current activity in progress to close the Open Items.

June 2015 NRC Audit Visit FLEX Related Open Items		
Audit Item Reference	**Item Description**	**Status (Post Audit)**
OI 3.1.5.3.A	Evaluate the potential for high temperature hazards to impact the deployment of FLEX equipment.	Open In progress; expected completion date is October 2015.
CI 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.	Open Pending NRC review, no further Entergy action required.
CI 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.	Open Pending NRC review, no further Entergy action required.
CI 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	Open The Palisades FLEX strategy is consistent with the current CENTS Analysis (CN-SEE-II-13-5, Rev. 1) with respect to the timing and flow rate at which PCS makeup is required to maintain single phase natural circulation and for achieving adequate

June 2015 NRC Audit Visit FLEX Related Open Items		
Audit Item Reference	**Item Description**	**Status (Post Audit)**
	paper addressing the PCP seal leakage for Combustion Engineering plants (ADAMS Accession No. ML13235A151, non-publicly available), justification should be provided.	shutdown margin through PCS boration. The CENTS analysis assumes an initial PCP seal leakage rate of 15 gpm/pump. Consistent with this analysis, the Palisades strategy assumes an initial PCP seal leakage rate of 15 gpm/pump for the determining time at which PCS makeup is required, but does not assume this leakage rate indefinitely. New analysis by Flowserve (PCP Seal Vendor) has been performed that determines a new PCP seal leakage rate of 1.5 gpm is applicable to Palisades. Following NRC endorsement of this FlowServe analysis, Palisades will review the analysis to ensure applicability to the installed seals. Once it is determined that the new Flowserve analysis is applicable to the installed seals, Palisades may pursue a revision to the CENTS analysis which uses the seal leakage rate of 1.5 gpm/pump as opposed 15 gpm/pump used in the current analysis. If credited, the new CENTS analysis will provide additional margin in the timeline for establishing PCS makeup.
CI 3.2.1.3.A	Confirm the applicability of ANS 5.1-1979 + 2 sigma decay heat curve.	Open Pending NRC review, no further Entergy action required.
CI 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.	Open (Reference Entergy Correction Action CR-PLP-2015-02482, CA-12) In progress; expected completion date is October 2015. Additionally, see Section 4 for justification of the alternate approach for meeting the Order for T-81 Missile Shielding. Palisades recognizes that T-81 is not fully protected from missile hazards, which means relying on the tanks could be an alternative to NEI 12-06. The following steps are being taken as justification for this alternate approach.

June 2015 NRC Audit Visit FLEX Related Open Items		
Audit Item Reference	**Item Description**	**Status (Post Audit)**
		- EC 48187 has been revised (ECN 56234) to prevent chemical totes T-989, T-990, and a resin storage cask from becoming air-borne during a BDBEE and striking T-81. A whitepaper that documents the walkdown preceding ECN 56234 showing all items evaluated as potential missiles will be posted to the NRC ePortal for review. - AOP-38 (Acts of Nature) is being revised to ensure that all potential transient missile hazards are removed from T-81 proximity in the event tornado/wind conditions of sufficient magnitude are imminent. - FSG-6 (Alternate CST Makeup) is being revised to address the need to perform one of the compensatory actions to line up alternate water makeup sources within approximately 4 hours if T-81 were found to be structurally compromised (e.g., use EOP Supplement 31, "Supply AFW Pumps From Alternate Sources" or FIG- 6, "Filling T-2 (CST) From Fire Header").
1-E	Provide a detailed discussion on the capability of equipment (in containment, the auxiliary building (TDAFW pump room), the main control room, the electrical switchgear rooms, and the ADV rooms in particular) to perform their expected functions under ELAP conditions (i.e., temperature, pressure, radiation, humidity, etc.) for an indefinite period	Open (Reference Entergy Correction Action CR-PLP-2015-02482, CA-24) In progress; expected completion date is October 2015.

7 Potential Interim Staff Evaluation Impacts

There are no additional potential impacts to the Interim Staff Evaluation since the last status report identified at this time.

8 References

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

1. 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)
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. 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)
4. Entergy Nuclear Operations, Inc. letter to NRC, PNP 2015-007, *Palisades Nuclear Plant Fourth 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 27, 2015 (ADAMS Accession No. ML15062A011)
5. *Palisades Nuclear Plant - Plan for the Onsite Audit Regarding Implementation of Mitigating Strategies and Reliable Spent Fuel Instrumentation Related To Orders EA-12-049 and EA-12-051 (TAC NOS. MF0768 and MF0769)*, dated April 22, 2015 (ML15110A051)
6. 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)
7. NEI 12-06, *Diverse and Flexible Coping Strategies (FLEX) Implementation Guide,* Revision 0, dated August 2012 (ADAMS Accession No. ML12242A378)