

ATTACHMENT 3

AUDIT OPEN ITEM RESPONSES

A NRC onsite audit of the implementation of Orders EA-12-049 and EA-12-051 was conducted at Palisades Nuclear Plant (PNP) during the week of June 15, 2015. As documented in Attachment 3 of the audit report¹ and as clarified in an NRC email dated September 23, 2015, four audit items required additional licensee input at the conclusion of the audit. Entergy Nuclear Operations, Inc. (ENO) provided responses to the four items via the ePortal, and the items were subsequently closed. Summaries of the ENO responses are provided below.

Audit Item OI 3.1.5.3.A

The licensee's response uses "engineering judgement" in several instances. While some basis for the judgement is provided for the deployment vehicles/equipment, other FLEX equipment, such as portable FLEX generators and FLEX pumps, are not addressed. Typically, FLEX equipment specifications list the maximum and minimum ambient operating temperatures for the equipment. Palisades is requested to list the maximum and minimum ambient operating and storage temperatures for the FLEX equipment that will be deployed and confirm that these temperatures are bounded by the maximum/minimum ambient temperature for the Palisades site/storage locations.

Audit Item OI 3.1.5.1 was closed to this item with the understanding that both high and low temperature extremes would be addressed for deployment and storage. CR-PLP-2015-02482 is referenced in the response to OI 3.1.5.1, but the NRC reviewer requests that the log procedure, once it's updated, be submitted on the docket so it can be referenced in the final NRC compliance SE. Palisades FLEX information also indicates that block heaters and water jacket heaters will be relied on, so the NRC reviewer will be looking for the document to reference that confirms the equipment has those capabilities (preferably vendor spec sheets, though sometimes it's an EC).

Entergy Nuclear Operations, Inc. (ENO) Response

Per the PNP Final Safety Analysis Report (FSAR), the site design minimum and maximum ambient temperatures are -10°F and 95°F, respectively. For the FLEX equipment that will be deployed, the equipment minimum and maximum ambient operating and storage temperatures are equal to or bound the site design ambient temperatures, as shown in the table below.

	Item	Min Amb Temp (°F)	Max Amb Temp (°F)
1.	480 VAC FLEX Hi Power Generator	-10	110
2.	500 GPM Hale Pump	-18	124
3.	Chevy 3500 FLEX Truck	-40	158
4.	Case 821-F Front End Loader	-13	125
5.	Magnum Light Tower	-40	185

¹ NRC letter, "Palisades Nuclear Plant – Report for the Audit Regarding Implementation of Mitigating Strategies and Reliable Spent Fuel Pool Instrumentation Related to Orders EA-12-049 and EA-12-051 (TAC Nos. MF0768 and MF0769," dated October 13, 2015 (ADAMS Accession No. ML15272A324).

ATTACHMENT 3

AUDIT OPEN ITEM RESPONSES

6.	Cummins EP Comm Generator	-20	120
7.	Fuel Transfer Pump	-15	150
8.	4160 V / 2400 V Phase 3 Transformer	-13	104

As discussed above, the response to OI 3.1.5.1 references condition report CR-PLP-2015-02482, corrective action (CA) 28, which updated SOP-23, "Plant Heating System," Attachment 14, "Actions When Outside Temperatures Are Less Than 20°F," to require a check of the following items every shift when ambient temperatures fall or remain below 20°F, and to document completion in the Operations narrative log:

- for the FLEX Storage Building – A, the block heaters for the diesel-driven components are on and the battery tenders are operating properly, and
- for the FLEX Storage Building – B, the block heaters for the diesel driven components are on, and the building heaters and the battery tenders are operating properly.

The revised Attachment 14 of SOP-23 is provided in Attachment 6.

Photographs of block heaters and battery tenders for applicable FLEX equipment were provided in the responses to the audit open items uploaded to the ePortal.

Audit Item CI 3.2.1.F

The turbine building seismic evaluation was performed as part of the answer to 3.2.1.F. The licensee's planned routes for SFP and Core cooling hoses are routed into the turbine building, to the FLEX manifold, around either side of the turbine then to the various connection points. The licensee's FLEX presentation appears to show that the hose for the AFW and SFP connections pass through a common door from the turbine building to the auxiliary building. Given recent seismic evaluation concerns at other sites, the NRC staff requests that the licensee determine if the Palisade's FLEX strategy includes enough hose to stage the FLEX manifold outside the turbine building and deploy hose around the turbine building, past the CST and T-81, past the alternate location for the FLEX EDG and into the door adjacent to what appears to be door 169 and 142, thus bypassing most of the hose route through the turbine building. Also, the NRC reviewer requests that calculation C-017, referenced in PLP-RPT-13-00050, be placed on the E-Portal.

P-8B Pump Steam Supply Piping: – Pages 23, 24, 28 and 29 of the report PLP-RPT-13-00050 discuss tornado missile protection of the TDAFWP steam supply piping. Although a walkdown onsite was performed, the NRC staff requests additional detail to support completing the final compliance SE. Report PLP-RPT-13-00050 indicates that the piping is located near the center of the turbine building, near columns and is shielded by a multitude of equipment, steel, concrete and piping. The NRC staff is requesting more detail, such as a drawing(s) that highlighting the piping layout/location. Also please include more detail regarding the equipment, etc. that is credited to provide "shielding;" photos of the piping and intervening structures would also be helpful.

ATTACHMENT 3

AUDIT OPEN ITEM RESPONSES

ENO Response

There is more than sufficient hose available in either of the FLEX storage buildings to go around the turbine building to connect the FLEX pump and the auxiliary feedwater (AFW) core cooling connection, and also to support the hose routings for all three spent fuel pool (SFP) cooling strategies. The plant's planned strategy remains to route the hoses through the turbine building, but there is sufficient hose to support the alternate routings, for defense-in-depth. Calculation C-017, "Fragility of Structural Steel Frame of Turbine Building at Palisades for IPEEE," was uploaded to the ePortal as requested.

The turbine-driven auxiliary feedwater (TDAFW) pump P-8B steam supply piping and valve CV-0522B are located near the center of the turbine building and protected (shielded) overhead by piping and structural steel (i.e., brace and beams). The piping is also shielded by steel columns, concrete walls and various types of large equipment (i.e., moisture separator and heater drain tank T-5, drain coolers E-7A and E-7B, feedwater heaters E-4A and E-4B, condenser E-10, etc.). The piping is also shielded by the auxiliary building to the east and the pipe gallery, tank farm and water treatment building to the west. Therefore, the TDAFW steam supply piping and CV-0522B are considered reasonably protected from tornado missiles by virtue of its location at the center of a structure that has been evaluated to remain intact and by the presence of other intervening structures, systems and components (SSCs) adjacent to and surrounding the piping and valve. Supporting documentation with additional detail, photographs, and drawings is provided in the ePortal.

Audit Item CI 3.2.4.7.A

The latest response notes that corrective action item CA-12 of CR-PLP-2015-02482 has been issued to track the individual listed items listed in the response to closure. Please provide the text of the CA-12 of CR-PLP-2015-02482 for NRC staff review.

ENO Response

Corrective action CA-12 of condition report CR-PLP-2015-02482 requested that the missile protection strategy for the primary system makeup storage tank (T-81) be documented as an alternate to NEI 12-06, Revision 0, in the next six-month FLEX update. The missile protection strategy for T-81 indeed was provided in the subsequent six-month FLEX update.² The following is a summary characterizing the complete alternate approach to tornado wind missile protection for tank T-81 and includes information from the response to CA-12 of CR-PLP-2015-02482:

Tanks T-81 and the condensate storage tank (CST, T-2) are protected from all applicable tornado missile hazards with the exception that T-81 is not protected for the automobile-like missile by traditional missile shielding. The tank is shielded from all sides by the following intervening structures:

² ENO letter to NRC, PNP 2015-061, "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)," dated August 28, 2015 (ADAMS Accession No. ML15240A074).

ATTACHMENT 3

AUDIT OPEN ITEM RESPONSES

- Water treatment building from the south, and,
- The cooling tower pump house from the west, and,
- The maintenance annex structure and the CST from the north, and,
- The turbine building from the east.

A site zone of influence walk-down was also performed, and any structures that were considered to be representative of the mass of an automobile (chemical totes, shipping containers, etc.) were evaluated for the potential to become airborne missiles. Those items that were determined to have the potential to become missiles were restrained through implementation of physical modifications under ECN 56234. An action trigger has been formally institutionalized in abnormal operating procedure AOP-38, "Acts of Nature," to remove any vehicles located on the access road west of the turbine building prior to entry into extreme wind and/or tornado weather conditions. Lastly, formal guidance has been placed in FSG-6, "Alternate CST (T-2) Makeup," and FIG-6, "Filling T-2 (CST) From Fire Header," to provide an alternate means of makeup to the CST within 3.5 hours should T-81 be found compromised by damage assessments conducted immediately following the event.

The discussion above demonstrates reasonable tornado wind missile protection for tank T-81. This method of missile protection is an alternate to the guidance of NEI 12-06. Documents in support of this discussion are posted in the ePortal.

Audit Item 12-E

Section 4 of the Palisades 5th 6-Month Update (ML15240A053) identifies the FLEX storage configuration as an Alternative to NEI 12-06, Rev. 0. The alternative utilizes two storage locations to protect N sets of FLEX equipment from all hazards. The alternative approach does not protect N+1 FLEX equipment from all applicable BDBEE hazards as stipulated in Section 10.1 of the guidance. Thus, when a piece of FLEX equipment is out of service, the site capability is less than N.

The FLEX unavailability time allowance of 90 days (NEI 12-06, Rev.0, 11.5.3.b) is predicated on protection of N+1 sets of equipment such that site capability is still N when one piece of FLEX equipment is unavailable. Therefore, the 90 day unavailability allowance is not applicable to the Palisades FLEX storage configuration.

Entergy must propose and justify a reduced unavailability allowance time commensurate with the Palisades FLEX storage configuration alternative.

ENO Response

For the FLEX equipment kept in the two storage locations, in which N+1 FLEX equipment is not protected from all hazards, the unavailability allowance time specified is 45 days rather than 90 days. This 45-day allowance time was incorporated into the PNP Operating Requirements Manual, Revision 14.

The 90-day FLEX outage time for one of two functionally redundant components is based on a typical plant 12 week maintenance schedule. Twelve weeks allows an appropriate

ATTACHMENT 3

AUDIT OPEN ITEM RESPONSES

amount of time for scoping work, procuring parts and planning the activity without adversely impacting other planned maintenance activities.

In the specific case of one of two functionally redundant components for which the remaining component is not fully protected from all beyond-design-basis external events (BDBEEs), a 45-day time limit was established. The 45-day limit represents the typical six week maintenance schedule. Aligning the unavailability to the site work management program keeps maintenance of spare FLEX equipment from inappropriately superseding other more risk-significant work activities.

Allowing a FLEX equipment service outage time of no more than 45 days ensures that the "alternate" FLEX equipment storage strategy at PNP meets the intent of NEI 12-06 such that N+1 equipment capability is not adversely impacted.