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PNP 2014-010

February 28, 2014

U.S. Nuclear Regulatory Commission  
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SUBJECT: Palisades Nuclear Plant Second Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051)

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

- REFERENCES:
1. NRC Order Number EA-12-051, *Order To Modify Licenses With Regard To Reliable Spent Fuel Pool Instrumentation*, dated March 12, 2012 (ADAMS Accession No. ML12054A682)
  2. NRC Interim Staff Guidance JLD-ISG-2012-03, *Compliance with Order EA-12-051, Reliable Spent Fuel Pool Instrumentation*, Revision 0, dated August 29, 2012 (ADAMS Accession No. ML12221A339)
  3. NEI 12-02, *Industry Guidance for Compliance with NRC Order EA-12-051, "To Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation,"* Revision 1, dated August 2012 (ADAMS Accession No. ML12240A307)
  4. Entergy Nuclear Operations, Inc. (ENO) letter to NRC, PNP 2012-092, *Initial Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051)*, dated October 25, 2012 (ADAMS Accession No. ML12300A067)
  5. Entergy Nuclear Operations, Inc. (ENO) letter to NRC, PNP 2013-009, *Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying License With Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051)*, dated February 28, 2013 (ADAMS Accession No. ML13060A360)
  6. NRC Interim Staff Evaluation, *Palisades – Interim Staff Evaluation and Request for Additional Information Regarding the Overall Integrated Plan for Implementation of Order EA-12-051, Reliable Spent Fuel Pool Instrumentation (TAC No. MF0769)*, dated November 26, 2013 (ADAMS Accession No. ML13312A423)

Dear Sir or Madam:

On March 12, 2012, the Nuclear Regulatory Commission (NRC) issued an order (Reference 1) to Entergy Nuclear Operations, Inc. (ENO). This order was immediately effective and directed ENO to install reliable spent fuel pool level instrumentation at the Palisades Nuclear Plant (PNP).

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 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 2 endorses industry guidance document NEI 12-02, Revision 1 (Reference 3) with clarifications and exceptions identified in Reference 2. Reference 4 provided the PNP initial status report regarding mitigation strategies. Reference 5 provided the PNP overall integrated plan. Reference 6 contains a request for additional information regarding the overall integrated plan for implementation of Order EA-12-051.

The purpose of this letter is to provide the second 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 attached report provides an update of milestone accomplishments since the last status report, including any changes to the compliance method, schedule, or need for relief and the basis, if any.

This letter also provides information in response to the request for additional information in Reference 6.

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 February 28, 2014.

Sincerely,



ajv/jse

Attachment: Palisades Nuclear Plant Second Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051)

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

## **Attachment**

# **Palisades Nuclear Plant Second Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051)**

## **1 Introduction**

Entergy Nuclear Operations, Inc. (ENO) developed for Palisades Nuclear Plant (PNP) an overall integrated plan (Reference 1), documenting the requirements to install reliable spent fuel pool level instrumentation (SFPI), in response to Reference 2. This attachment provides an update of milestone accomplishments since the last status report, 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 July 31, 2013, and are current as of January 31, 2014:

- Response to NRC request for additional information dated July 18, 2013 (Reference 3).
- Although not part of the original milestone schedule, ENO received an Interim Staff Evaluation (ISE) for PNP from the NRC on November 26, 2013 (Reference 4). The ISE also includes requests for additional information (RAIs) for NRC staff to complete its review. NRC staff clarified during the November 26, 2013, public meeting that the Interim Staff Evaluation questions supersede any previous requests for information issued by the staff concerning the spent fuel pool instrumentation (Reference 5). Therefore, the RAIs dated July 18, 2013 (Reference 3), are considered superseded by the RAIs contained in the ISE. The addition of this milestone and target completion date does not impact the Order implementation date.

### 3 Milestone Schedule Status

The following provides a line item update to milestone schedule to support 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.

Milestone	Target Completion Date <sup>†</sup>	Activity Status	Revised Target Completion Date
Reliable SFPI Installed	Fall 2015 Refueling Outage	In Progress	N/A
Response to NRC Request for Additional Information (received July 18, 2013) (Reference 3)	August 19, 2013	Submitted August 19, 2013	N/A
Response to NRC ISE Request for Additional Information (received November 26, 2013)	March 31, 2015	See Section 6	N/A

<sup>†</sup>Target Completion Date is the last submitted date from either the overall integrated plan or previous six-month update.

### 4 Changes to Compliance Method

Attachment 1 of the Overall Integrated Plan (Reference 1) shows Channel A mounted against the north wall near the northwest corner of the Spent Fuel Pool (SFP). The location of Channel A has been moved to the west wall near the northwest corner of the SFP. See Section 7 for additional discussion. Section 7 also contains a figure with the new cable routing for the SFP area.

Section 6 of the Overall Integrated Plan states that SFPI cables in the SFP area shall be routed in seismically mounted rigid metal conduit. This is true for the coaxial cable, but does not apply to the SiO<sub>2</sub> stainless steel armored cable. See Section 7 for additional discussion.

Attachment 2 of the Overall Integrated Plan shows SFPI Channel A being powered by MCC-7 via Lighting Panel EL-25. SFPI Channel A will now be powered by MCC-1 via Lighting Panel EL-25B.

### 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**

As discussed in Section 2, ENO has received an Interim Staff Evaluation for PNP that includes 18 RAIs. Responses to the RAIs are due by March 31, 2015, and are discussed in Section 9 of this six-month status report. The following table provides a status of the RAIs documented in the Interim Staff Evaluation.

<b>RAI #</b>	<b>Response Status</b>
1	In Progress
2	In Progress
3	In Progress
4	In Progress
5	In Progress
6	In Progress
7	In Progress
8	In Progress
9	In Progress
10	In Progress
11	In Progress
12	In Progress
13	In Progress
14	In Progress
15	In Progress
16	In Progress
17	In Progress
18	In Progress

## 7 Potential Interim Staff Evaluation Impacts

Section 3.4 of the Interim Staff Evaluation discusses the arrangement of the SFPI channels and references the sketch in Attachment 1 of the Overall Integrated Plan. As discussed in Section 4, the location of the Channel A level instrument has been moved to the west SFP wall, within 12" of the northwest SFP corner. The updated sketch of the SFPI arrangement showing the new cable routing is provided below in Figure 1.

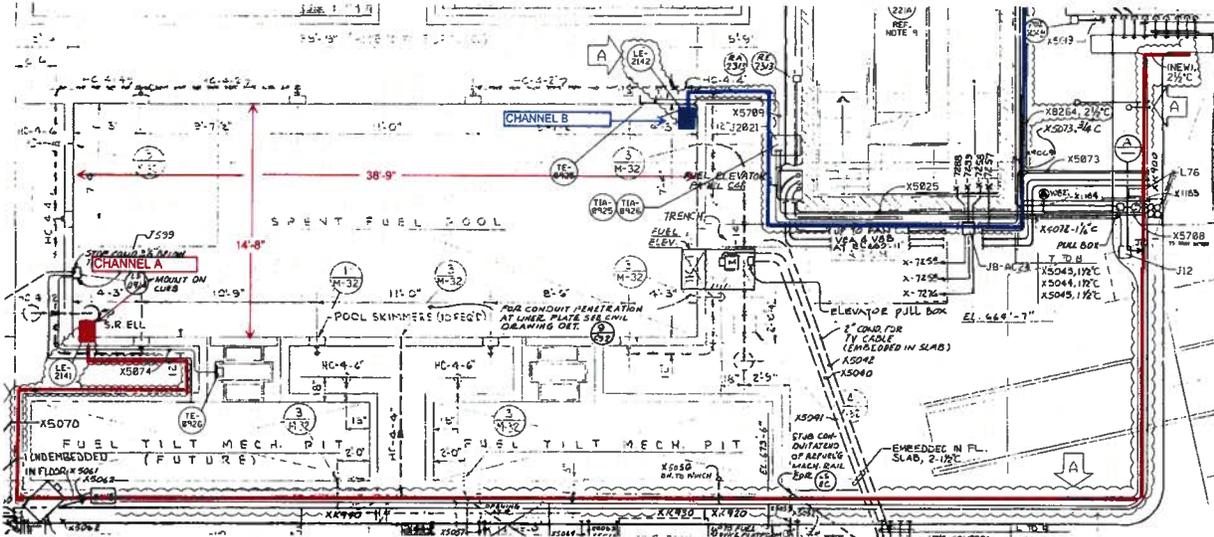


Figure 1: SFP Area Plan View

Section 3.4 of the Interim Staff Evaluation also refers to a statement that declares cables in the SFP area will be routed in seismically mounted rigid metal conduit. It should be noted that this statement does not apply to the first 20 ft. of cable run, which is comprised of SiO<sub>2</sub> stainless steel armored cable. The SiO<sub>2</sub> stainless steel armored cable then transitions to coaxial cable, at which point the coaxial cable will be installed in seismically mounted rigid metal conduit for the remainder of the run in the SFP area. This cable installation is applicable to both Channel A and Channel B.

There are no additional potential impacts to the Interim Staff Evaluation identified at this time except for those identified in Section 6.

## 8 References

The following references support the updates to the overall integrated plan described in this attachment.

1. ENO letter to NRC, PNP 2013-009, *Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying License With Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051)*, dated February 28, 2013 (ADAMS Accession No. ML13060A360)
2. NRC Order Number EA-12-051, *Order To Modify Licenses With Regard To Reliable Spent Fuel Pool Instrumentation*, dated March 12, 2012 (ADAMS Accession No. ML12054A682)
3. NRC email to ENO, *Palisades Nuclear Plant – Requests for Additional Information Regarding Overall Integrated Plan for Reliable Spent Fuel Pool Instrumentation (TAC MF0769)*, dated July 18, 2013 (ADAMS Accession No. ML13200A328)
4. NRC letter to ENO, *Palisades – Interim Staff Evaluation and Request for Additional Information Regarding the Overall Integrated Plan for Implementation of Order EA-12-051, Reliable Spent Fuel Pool Instrumentation (TAC NO. MF0769)*, dated November 26, 2013 (ADAMS Accession No. ML13312A423)
5. *Summary of the November 26, 2013, Public Meeting to Discuss Industry Responses to Staff Interim Evaluations for Spent Fuel Pool Instrumentation*, dated December 26, 2013 (ML13347B030).

## **9 Responses to the Interim Staff Evaluation Requests for Additional Information**

### ***RAI #1***

*Given the potential for varied dose rates from other materials stored in the SFP, please describe how level 2 will be adjusted to other than the elevation provided in section 2 above.*

#### **ENO Response:**

This response will be provided in a future update.

### ***RAI #2***

*Please provide the analyses verifying the seismic capability of the level probes, the mounting brackets, and the electronics units, and provide the results of the analysis of the combined maximum seismic and hydrodynamic forces on the cantilevered portion of the assembly exposed to the potential sloshing effects. Show that the SFP instrument design configuration will be maintained during and following the maximum seismic ground motion considered in the design of the SFP structure.*

#### **ENO Response:**

This response will be provided in a future update.

### ***RAI #3***

*For each of the mounting attachments required to attach SFP Level equipment to plant structures, please describe the design inputs, and the methodology that will be used to qualify the structural integrity of the affected structures/equipment.*

#### **ENO Response:**

This response will be provided in a future update.

### ***RAI #4***

*Please address how other hardware stored in the SFP will not create adverse interaction with the fixed instrument location(s).*

#### **ENO Response:**

This response will be provided in a future update.

**RAI #5**

*Please provide analysis of the maximum expected radiological conditions (dose rate and total integrated dose) to which the sensor electronics will be exposed. Also, please provide documentation indicating the radiological dosage the electronics for this equipment are capable of withstanding. Please discuss the time period over which the analyzed total integrated dose is evaluated to be applied.*

**ENO Response:**

This response will be provided in a future update.

**RAI #6**

*Please provide information indicating the maximum expected ambient temperature in the room in which the sensor electronics will be located under BDB conditions with no ac power available to run Heating Ventilation and Air Conditioning (HVAC) systems, and whether the sensor electronics are capable of continuously performing required functions under this expected temperature condition.*

**ENO Response:**

This response will be provided in a future update.

**RAI #7**

*Please provide information indicating the maximum expected relative humidity in the room in which the sensor electronics will be located under BDB conditions, with no ac power available to run HVAC systems, and whether the sensor electronics are capable of continuously performing required functions under this expected humidity condition.*

**ENO Response:**

The response will be provided in a future update.

**RAI #8**

*Please provide a description of the specific method or combination of methods that will be used to demonstrate the reliability of the permanently installed equipment under BDB shock and vibration conditions. Identify the specific commercial and/or military standards that will be used to establish the testing requirements, and the specific acceleration levels and frequencies that will be simulated.*

**ENO Response:**

This response will be provided in a future update.

**#9**

*For RAI #8 above, please provide the results for the selected methods, tests and analyses used to demonstrate the qualification and reliability of the installed equipment in accordance with the Order requirements.*

**ENO Response:**

This response will be provided in a future update.

**RAI #10**

*Please provide an evaluation of the vendor analysis and seismic testing results and show that the instrument performance reliability, following exposure to simulated seismic conditions representative of the environment anticipated for the SFP structures at Palisades, has been adequately demonstrated.*

**ENO Response:**

This response will be provided in a future update.

**RAI #11**

*Please provide the NRC staff with the final configuration of the power supply source for each channel so the staff may conclude the two channels are independent from a power supply assignment perspective.*

**ENO Response:**

This response will be provided in a future update.

**RAI #12**

*Please provide the results of the calculation depicting the battery backup duty cycle requirements demonstrating battery capacity is sufficient to maintain the level indication function until offsite resource availability is reasonably assured.*

**ENO Response:**

This response will be provided in a future update.

**RAI #13**

*Please, provide an analysis verifying the proposed instrument performance is consistent with these estimated accuracy normal and BDB values. Please demonstrate the channels will retain these accuracy performance values following a loss of power and subsequent restoration of power.*

**ENO Response:**

This response will be provided in a future update.

**RAI #14**

*Please provide a description of the methodology that will be used for determining the maximum allowed deviation from the instrument channel design accuracy to be employed under normal operating conditions as an acceptance criterion for a calibration procedure to alert operators and technicians of the need for adjustment to within normal design accuracy.*

**ENO Response:**

This response will be provided in a future update.

**RAI #15**

*Please provide a description of the in-situ calibration process at the SFP location that will result in the channel calibration being maintained at its design accuracy.*

**ENO Response:**

This response will be provided in a future update.

**RAI #16**

*For the SFP level instrumentation backup display located in the radwaste control panel room, please describe the evaluation used to validate the display location can be accessed without unreasonable delay following a BDB event. Include the time available for personnel to access the display as credited in the evaluation, as well as the actual time (e.g., based on walk-throughs) that it will take for personnel to access the backup display. Additionally, please include a description of the radiological and environmental conditions on the paths personnel might take. Describe whether the display location remains habitable for radiological, heat and humidity, and other environmental conditions following a BDB event. Describe whether personnel are continuously stationed at the backup display or monitor the display periodically.*

**ENO Response:**

This response will be provided in a future update.

**RAI #17**

*Please provide a list of the procedures addressing operation (both normal and abnormal response), calibration, test, maintenance, and inspection that will be developed for use of the SFP instrumentation. The licensee is requested to include a brief description of the specific technical objectives to be achieved within each procedure.*

**ENO Response:**

This response will be provided in a future update.

**RAI #18**

*Please provide further information describing the maintenance and testing program the licensee will establish and implement to ensure that regular testing and calibration is performed and verified by inspection and audit to demonstrate conformance with design and system readiness requirements. Include a description of your plans for ensuring that necessary channel checks, functional tests, periodic calibration, and maintenance will be conducted for the level measurement system and its supporting equipment.*

**ENO Response:**

This response will be provided in a future update.