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PNP 2015-088 EA-15-171

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

Subject: Reply to an Apparent Violation in Inspection Report 2015012; EA-15-171, Revision 1

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

References:
1. Letter from Nuclear Regulatory Commission to Entergy Nuclear Operations, Inc. dated September 17, 2015, "Palisades Nuclear Plant NRC Inspection Report 05000255/2015012"
2. Letter from Entergy Nuclear Operations, Inc. dated September 26, 2015, "10-Day Response to an Apparent Violation in IR 2015012; EA-15-171"
3. Letter from Entergy Nuclear Operations, Inc. dated October 17, 2015, "Reply to an Apparent Violation in Inspection Report 2015012; EA-15-171"

Dear Sir or Madam:

On September 17, 2015, the Nuclear Regulatory Commission (NRC) issued Inspection Report 2015012 to Entergy Nuclear Operations, Inc (ENO). The inspection report identified a preliminary finding defined as an Apparent Violation (AV) of 10 CFR 50.9, "Completeness and Accuracy of Information." The finding relates to the failure to provide information to the NRC that was complete and accurate in all material respects in letter PNP 2014-015, "Relief Request Number 4-18 – Proposed Alternative Use of Alternate ASME Code Case N-117-1 Baseline Examination," submitted to the NRC on February 25, 2014. The issue resulted from an error in a calculation supporting the analysis results provided in the letter, which once identified by site personnel, was immediately reported to the NRC.

The inspection report provided ENO the option to attend a pre-decisional enforcement conference, or submit the ENO position on the finding, in writing, within 30 days. A

30-day written response was submitted on October 17, 2015. On October 22, 2015, the NRC verbally requested additional information. This response provides the requested information and supersedes the October 17, 2015, submittal in its entirety. The revised 30-day response is provided in Attachment 1.

ENO fully acknowledges that a performance deficiency occurred, and does not dispute the AV.

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

Sincerely,

AJV/bed

Attachment 1: Reply to an Apparent Violation in Inspection Report 2015012; EA-15-171, Revision 1

CC Administrator, Region III, USNRC
Project Manager, Palisades, USNRC
Resident Inspector, Palisades, USNRC

1. Reason for the Apparent Violation

In refueling outage 1R23 in early 2014, Entergy Nuclear Operations (ENO) sought relief from an inspection requirement for two-inch and larger Alloy 600 hot and cold leg branch connection dissimilar metal welds within the scope of ASME Code Case N-770-1 at the Palisades Nuclear Plant (PNP). Structural Integrity Associates Inc. (SIA) was contracted to develop calculations to submit with the relief request (RR). These calculations concluded that there was no safety concern related to the welds cracking due to primary water stress corrosion cracking (PWSCC). The issue resulted in the submittal of RR 4-18 requesting relief from the requirements of ASME Section XI Code Case N-770-1, and 10 CFR 50.55a (g)(6)(ii)(F) items (1) and (3), which address performing the required baseline examinations. The NRC provided verbal acceptance on March 12, 2014, and subsequently, issued a Safety Evaluation for RR 4-18, on September 4, 2014, based on the information submitted.

Upon determination by SIA that an error had occurred in calculation 1200895.306, which was performed in support of RR 4-18, PNP was contacted and a conference call was held on February 27, 2015. The error resulted in a reduction of the postulated time to leakage in a hot leg drain nozzle. The error was caused by the Analysis System (ANSYS) modeling and calculation software macro developed by SIA that used an incorrect selection process for applying the pressure for the hydrostatic and normal operating condition cycles. This error propagated through the SIA calculations that were included with RR 4-18. The PNP Regulatory Assurance Manager immediately notified the NRC that a possible 10 CFR 50.9 issue had been identified.

PNP subsequently reviewed the SIA evaluation of the error. The primary causes from the SIA report included the following human performance (HU) errors and/or error traps:

- use of an incorrect selection process
- checker review not detailed
- reliance on a previous residual evaluation
- not enough time was taken to plot each of the pressure cases
- high degree of confidence
- over-reliance on the macro system by both preparers and checkers
- ANSYS macros do not consistently receive the same level of review and validation as other software used in safety-related applications

Based on the above, it is clear that lasting and sustainable actions to avoid future vendor HU errors are required. Although this vendor task was considered complex technical work beyond ENO capability, an HU pre-job brief for this contract was not performed in accordance with EN-HU-04, "Engineering Task Risk and Rigor." Conducting a pre-job brief may have stopped this event from

occurring because Attachment 9.4, "Engineering Pre-job Brief Form," is comprehensive and drives discussions that may lead to application of the appropriate mitigating actions to avoid errors. However, using all of the procedure attachments needed to perform an assessment of HU tools would provide an even greater certainty for success. For instance, completion of Attachments 9.1, "Consequence Risk Factors," and 9.2, "Human Performance Risk Factors," would prompt the user to recognize the risk (both nuclear and regulatory) and the need for mitigating actions. For example, the attachments contain the following:

Consequence Risk Factors (Ask: if a mistake is made, what can happen?)	**Risk Level**	**Recommended Compensating Actions (Suggested tools / barriers / actions to reduce or eliminate the risk of making errors)**
☐ Complex operability determination or operability evaluation.	M	Review Technical Specification, surveillance requirements, and Bases prior to performing task. Discuss with Senior Licensed Operator.
☐ Adverse impact on outage (<24 hours) or project critical path	L	Prepare contingency plan. Consider making a project or HIT team. Discuss with Outage Management.

Human Performance Risk Factors (Ask; What can lead me to make a mistake on this task?)	**Recommended Compensating Actions (Suggested tools / barriers / actions to reduce or eliminate the risk of making errors)**
☐ Overconfidence / complacency, "can-do attitude"	Emphasize STAR, procedural compliance and place keeping. Consider assigning a trainee to help the lead focus.
☐ High Complexity	Assign peer reviewer or assistant. Validate inputs and methodology. Refer to Attachment 9.6 for ITPR.
☐ High workload/schedule pressure	Consider rescheduling or reassigning other tasks. Ensure that schedule is necessary. Ensure scope of task is correct. Confirm ACTUAL need for due date. Do not lower standards, and base delivery date on an error-free product

Attachment 9.3, "Process Risk Factors," delineates pertinent risk factors that would have prompted mitigating action discussions such as:

Process Risk Factors (Ask: What could lead me to make a mistake?)	**Recommended Compensating Actions (Suggested tools / barriers / actions to reduce or eliminate the risk of making errors)**
☐ Is an outside organization providing significant inputs?	How will their input be validated? Plant visit, review of their inputs and methods? Inputs, especially Non Station Personnel inputs, should be provided in writing and verified first-hand when possible. Avoid over reliance on Non Station Personnel. Question Non Station Personnel's methodology and assumptions. Ask for industry contacts in similar situation. Contact industry to determine whether or not Non Station Personnel input is within envelope of industry operating experience. Refer to Attachment 9.6 for ITPR.
☐ Are multiple parties involved such that errors may be introduced via communication channels?	Establish expectations where needed. Determine methods. Avoid e-mail as sole communication method. Emphasize use of 3-way communication and phonetic alphabet for critical information. Clarify how scope, progress, results and consequences will be communicated before, during and after the task.

In summary, the current version of procedure EN-HU-104, "Engineering Task Risk and Rigor," contains tools that would assure success going forward. Although the typical HU pre-job brief is comprehensive, using the additional attachments to perform an assessment of HU tools would provide an even greater certainty for success. Completion of these additional forms will allow the user to recognize the risk (both nuclear and regulatory) and the need for mitigating actions.

2. <u>Corrective Steps Taken and Results Achieved</u>

In addition to correcting the macro, SIA reviewed similar projects performed for PNP since 2011 to ensure that the macro with the error had not been used.

On May 21, 2015, SIA sent Letter Report 1400669.402.R0, "Residual Stress Evaluation Error in Structural Integrity Calculation No. 1200895.306, Rev. 0 and its Impact on Entergy Relief Request RR 4-18," to PNP. On May 22, 2015, RR 4-21 was submitted to the NRC by PNP. This RR corrected the errors in SIA Calculation 1200895.306.

PNP employees were required to complete training, "10 CFR 50.5 and 50.9 – Easy to Remember, Costly to Forget." This action was completed on September 29, 2015.

3. Corrective Steps that Will be Taken

A revision to EN-HU-104 is being completed that will require that pre-job briefs for complex technical work beyond ENO capability use all appropriate HU attachments in order to ensure a full discussion of HU tool usage. This change will ensure that a full HU assessment will be performed to enhance the quality of the required pre-job brief held with the vendor. This action will be completed by March 31, 2016.

The Engineering Director will provide a lessons learned presentation to PNP engineering staff by February 15, 2016.

4. Date When Full Compliance Will be Achieved

Compliance was achieved on May 22, 2015, when Relief Request RR 4-21 was submitted to correct the errors in SIA Calculation 1200895.306, which had been submitted in support of RR 4-18.