

NRR-PMDAPEm Resource

From: Rankin, Jennivine
Sent: Friday, August 15, 2014 9:25 AM
To: 'steamshovel2002@yahoo.com'
Subject: Palisades 2.206 Petition - OEDO-14-00145; Initial Recommendation (MF3608)

Mr. Mulligan,

My name is Jennie Rankin. I have been assigned as the new petition manager for your 10 CFR 2.206 petition dated March 5, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14071A006). This petition was supplemented by your address to the Petition Review Board (PRB) on April 8, 2014 (ADAMS Accession No. ML14143A212) and by email dated May 21, 2014 (ADAMS Accession No. ML14142A101). In your petition, you request a number of actions to be taken by the NRC and Entergy Nuclear Operations, Inc. (the licensee, ENO) for equipment failures at Palisades Nuclear Plant (PNP). As the basis for your request, you state that there have been various recent plant events and equipment failures at PNP, such as Primary Coolant Pump (PCP) impeller pieces breaking off and lodging in the reactor vessel, leakage from the safety injection refueling water tank (SIRWT), and flaws in the Control Rod Drive Mechanisms (CRDM). I would like to note that during the spring 2014 refueling outage, all of the CRDM housings were replaced with new CRDM housings that incorporated a design change in an effort to eliminate the cause of the cracking. In 2013, ENO replaced most of the SIRWT bottom, along with other repairs to ensure any water leaking from the SIRWT would be captured and collected. No leakage from the SIRWT has been noted since these repairs in 2013. I also would like to express my appreciation for voicing your concerns regarding these matters to the U.S. Nuclear Regulatory Commission (NRC).

The PRB is comprised of representatives from the following technical divisions within the NRC's Office of Nuclear Reactor Regulation: Component Performance, NDE and Testing Branch and, Vessels and Integrity Branch, within the Division of Engineering; Reactor System Branch, and Nuclear Performance and Code Review Branch within the Division of Safety Systems. The PRB initially met on March 14, 2014. At this meeting, the PRB reviewed your request for immediate action to prevent PNP restart due to a piece of impeller that was lodged between the reactor vessel and the flow skirt. It was determined that there were no safety significant concerns to prevent the plant from restarting as scheduled. Likewise, your request to immediately shutdown PNP until the PCPs are replaced was reviewed and it was determined that there were no safety significant concerns that would require a plant shutdown. This was communicated to you by email dated March 19, 2014 (ADAMS Accession No. ML14083A680). The PRB met again on May 19 and July 28, 2014, to discuss your petition, as supplemented, and in accordance with the criteria for review and rejection described in Management Directive (MD) 8.11, "Review Process for 10 CFR 2.206 Petitions." The PRB determined that the following requests from your petition meet the criteria for review in accordance with MD 8.11:

1. Request for PNP to open every PCP for inspection and clear up all flaws.
2. Request for PNP to replace the PCP's with a design for their intended duty.
3. Request an Office of Inspector General (OIG) inspection on why there are different analysis criteria for similar PCP events between the NRC regions.
4. Request a ten million dollar fine over these events.
5. Request for PNP to return to yellow or red status, and intensify NRC monitoring of PNP.

I have referred to the OIG those allegations of NRC wrongdoing contained in your petition and in the transcript of when you addressed the PRB on April 8, 2014. I have also forwarded your request for OIG investigation regarding why there are different analysis criteria for similar PCP events between the NRC regions, as stated in item number 3 above.

Your remaining requests do not meet the criteria for review, either because they are not requests for enforcement-related action or because they are issues that have already been the subject of NRC staff review and evaluation for which a resolution has been achieved and the issues have been resolved. Although many

of your requests do not meet the criteria of MD 8.11, the NRC staff appreciates your concerns and the below paragraphs explain why your requests were not accepted into the 2.206 process.

Concerns with NRC staff monitoring of PCP impeller issues
(Issue Nos. 1, 2, 11, 12, 14 of petition dated March 5, 2014)

This issue regarding failure of the PCP impellers resulting in pieces breaking free in the reactor vessel is being tracked by Region III through the Reactor Oversight Process (ROP). Region III staff, in addition to the resident inspection staff at PCP, have followed, and will continue to follow up with the licensee regarding the licensee's corrective actions, in accordance with ROP activities. On August 8, 2012, Region III documented a finding of very-low safety significance and associated non-cited violation for the failure of the licensee to operate the PCPs in accordance with their design operating criteria (ADAMS Accession No. ML12221A340). Region III recently documented their inspection findings in the Palisades Nuclear Plant Integrated Inspection Report dated May 7, 2014 (ML14127A543). The report states the following:

Because the PCP-C impeller was replaced with a new impeller this outage, PCP-B was the only pump that remained in service with a refurbished impeller that was more susceptible to the fatigue-related failures that have been observed.

However, a review of the licensee's evaluation to justify continued operation of PCP-B with a potentially cracked impeller continues. Additionally, the inspectors continue to review the licensee's corrective actions to date and going forward to determine whether the licensee plans to eliminate the known susceptibility of impeller pieces breaking off.

In addition to continued monitoring of this issue under the ROP, Region III staff have addressed this issue at the public End-of-Cycle meetings conducted in South Haven, Michigan (ADAMS Accession Nos. ML14192B384 and ML14175A284 for meeting summary and NRC meeting slides). During the public End-of-Cycle meeting, the NRC staff presented a discussion on the reactor vessel foreign material inspection that occurred during the 2014 refueling outage and provided a poster session to answer any additional questions regarding foreign material caused by the failure of the impellers.

In regards to your concerns on why the broken vanes were not reported to the NRC by a Licensee Event Report (LER) or event notification, the requirements for reporting events to the NRC are in accordance with 10 CFR 50.72 and 50.73. NUREG-1022, Revision 3, "Event Report Guidelines 10 CFR 50.72 and 50.73" (ADAMS Accession No. ML13032A220) contains guidelines that the NRC staff considers acceptable for use in meeting the requirements of 10 CFR 50.72 and 10 CFR 50.73. Section 3.0 of NUREG-1022 provides examples and discussion of events that would require event notification or an LER. Region III monitors conformance with 10 CFR 50.72 and 50.73 through ROP activities and did not consider the impeller issues at Palisades to warrant notification in accordance with 10 CFR 50.72 and 50.73.

In regards to your concern on plant debris discovered in the primary side of the steam generators, specifically the impact of loose impeller pieces causing potential wear on the steam generator tubes, PNP's technical specifications (TS) section 5.6.8 requires the licensee to submit a steam generator tube inspection report to the NRC. This report includes the active degradation mechanisms including foreign objects wear (regardless of origin), location and measured sizes of service induced indications, and any corrective actions (e.g., tube plugging) taken in response to the inspection findings. The NRC staff reviews these reports to ensure that the licensee is detecting potential tube degradation. The NRC staff documents their review in a letter to the licensee, which is made publically available in ADAMS.

Concerns with the design and operation of the PCP impellers
(Issue Nos. 7 and 8 of 2.206 petition dated March 5, 2014 and
Issue Nos. 5, 6, and 7 of supplemental email dated May 21, 2014)

You raised the following concerns:

- a. Sequencing of the PCP during startup and shutdown conditions.

- b. Potential erosion of the coolant piping walls from metal blade particles.
- c. Failure of large pieces of the impeller.

The NRC staff notes that the requests regarding the above 3 concerns were not a request for an enforcement action and thus, did not meet the acceptance criteria in accordance to MD 8.11. The NRC staff understands your concerns and notes that these concerns are closely related to two of the accepted requests (Numbers 1 and 2 above), and will take your underlying concerns into consideration during the review of the accepted requests.

Concerns with pieces of broken impeller causing fuel damage
(Issue Nos. 1, 2, 3, and 4 of supplemental email dated May 21, 2014)

Many of your requests stem from your concern that broken pieces of impeller (small metal particles) can ultimately cause fuel damage. As a result of the October 2011 vibration event and the subsequent review of the licensee's operability determination, the NRC staff studied the following potential issues associated with broken impeller pieces (various sizes):

1. Interactions within the PCP including impeding flow, impact with other vanes, impeding pump coastdown, pressure boundary damage, and Final Safety Analysis Report (FSAR) impacts.
2. Passage through a reactor coolant system cold leg including potential impact with a resistance temperature device and pressure boundary damage.
3. Passage / lodging in the reactor vessel (RV) annulus including pressure boundary damage.
4. Behavior after leaving the RV annulus including potential interactions in the lower plenum, blockage of flow channels, fuel cladding damage, and control rod jamming.
5. Effects of a piece moving upstream of the PCP.

The NRC staff concluded there were no significant safety concerns resulting from broken pieces of impeller causing fuel damage due to several factors. Impeller pieces are likely to remain stuck at the flow skirt or at the bottom of the vessel as evidenced by the discovery of previous pieces. Flow conditions are insufficient to elevate larger pieces that may pass through the gap between the flow skirt and vessel wall to the lower core support plate. Should the impeller pieces be small enough to be transported up and through the gaps (a highly unlikely occurrence), the impeller piece would have to become lodged in a position to cause erosion of the fuel cladding. If this occurs, the activity levels in the primary coolant system would increase. Radiation monitoring would detect this increase in PCS levels, and the reactor would be shutdown in accordance with the licensee's technical specification 3.4.16, "PCS Specific Activity."

Requests for licensee information
(Issue Nos. 4 and 9 of the 2.206 petition dated March 5, 2014)

In regards to your request for Palisades to disclose internal Entergy reports regarding whether the PCPs were operated outside their design bases, the NRC staff does not require the licensee to disclose internal documents for public inspection as part of the 2.206 process. As part of the inspection process under the ROP, Entergy documents have been, and will continue to be reviewed, and any findings will be documented in the applicable inspection reports which are made publically available.

In regards to your request for Entergy to explain their decision for weld repair of the PCP impellers and details on how other plants have repaired their impellers, the NRC staff notes that this request is not a request for enforcement related action and thus, did not meet the acceptance criteria in accordance to MD 8.11. The NRC staff understands your concern and notes that these concerns are closely related to two of the accepted requests (Number 1 and 3 above). During the process of reviewing accepted request Number 1, the NRC will take your concern into consideration.

In accordance with MD 8.11, you have the opportunity to address the PRB to comment on the initial recommendations, either in person at the NRC Headquarters in Rockville, Maryland, or by telephone conference. Please advise me by return email if you would like to address the PRB. If you would like to meet in person, I will need to schedule a formal public meeting at the NRC Headquarters. If you would prefer to

address the PRB via telephone, the NRC staff is available for a conference call at 10 AM ET on September 3, 2014. If I do not hear from you by *August 22, 2014*, I will move forward to process the acknowledgement letter which will contain our final recommendations for accepting your petition in part.

Thank you,
Jennie Rankin

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