PrairieIslandNPEm Resource

From: Richard Plasse
Sent: Tuesday, February 10, 2009 1:21 PM
To: Eckholt, Gene F.; Vincent, Robert
Subject: FW: Some more RAI for Prairie Island
Attachments: PINGP RAI response follow-up and new items (Yang on Metal fatig).doc

revised draft for telecon

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Mail Envelope Properties (Richard.Plasse@nrc.gov20090210132000)

Subject: FW: Some more RAI for Prairie Island
Sent Date: 2/10/2009 1:20:58 PM
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From: Richard Plasse

Created By: Richard.Plasse@nrc.gov

Recipients:
"Eckholt, Gene F." <Gene.Eckholt@xenuclear.com>
Tracking Status: None
"Vincent, Robert" <Robert.Vincent@xenuclear.com>
Tracking Status: None

Post Office:

Files	Size	Date & Time
MESSAGE	27	2/10/2009 1:20:00 PM
PINGP RAI response follow-up and new items (Yang on Metal fatig).doc	61434	

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Priority: Standard
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Part I – Seeking clarification on some of the PINGP responses to previous RAIs in metal fatigue area

Near the end of NSPM response to RAI 4.3.1.4-1, second last paragraph, it appears as follows:

> *The calculation of the primary nozzle CUFs performed in 1969 for Unit 2 is based on photoelastic and thermal transient analyses considering the* ***worst case normal and upset loading conditions****. The maximum peak stress intensity considering worst case normal and upset conditions was conservatively applied for the total number of design cyclic applications (i.e.,* ***24,000*** *cyclic applications for all transients the unit must undergo, which bounds the applicable design transients in Table 4.3-1 of the PINGP LRA). This resulted in a very conservative cumulative usage factor of 0.88 for the inside surface of the primary inlet nozzle base metal.*

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(a) Please explain exactly what "worst case normal and upset loading conditions" means and identify it from the transients listed in LRA Table 4.3-1. If the worst loading condition is not one of the transients listed in LRA Table 4.3-1, explain why. In either case, provide basis to show it is the worst loading condition.

(b) Please explain how you came up with 24000 cycles. The staff tried different ways of adding cycles for the transients listed in Table 4.3-1 of the PING LRA without a match.

Side question:

(1) OBE is not included in LRA Table 4.3-1. Why not? Did you include OBE in fatigue calculations?
(2) Is PINGP Westinghouse design plant?

~~(3) In LRA Section 4.7.3, on Page 4.7-4, at the beginning of 2nd paragraph: it says that~~

> ~~*In an effort to revise the RCP flywheel inspection frequency and scope, NMC submitted a License Amendment Request in 2004 based on WCAP-15666, "Revision to Reactor Coolant Pump Flywheel Inspection Program" (Reference 22)....*~~

~~With what is the quoted phrase "Revision to Reactor Coolant Pump Flywheel Inspection Program" associated? Neither does it match the title of WCAP-15666, nor does it match the title embedded in Reference 22, which appears as:~~

> ~~*22. NMC letter to NRC dated October 15, 2004, Application for Technical Specification Improvement to Extend the Inspection Interval for Reactor Coolant Pump Flywheels Using the Consolidated Line Item Improvement Process*~~

~~Applicant: notice the obvious discrepancy between Section 4.7.3 and A4.7 on this matter!~~

~~(a) Clarify. (b) Is there a document number for the letter? What is the inspection interval requested in the letter? Was it approved? Please fax the letter.~~

Part II – additional RAI

RAI 4.3.1-1

The PINGP metal fatigue of reactor coolant pressure boundary management program relies on transient cycle monitoring to evaluate the fatigue usage described in the license renewal application. This approach tracks the number of occurrences of significant thermal and pressure transients (significant events) and compares the cumulative cycles, projected to cover the renewal period, against the number of design cycles specified in the design specifications. The projected cycles are then used to evaluate the total cumulative usage factor (CUF) which covers the period of extended operation. For this approach to work, none of the significant events tracked should produce stresses greater than those that would be produced by the design transients. That is, the P-T (Temperature and Pressure) characteristics, including their values, ranges, and rates, all must be bounded within those defined in the design specifications. ~~Please provide~~

(a) ~~Additional information~~Please describe the procedures that PINGP has been using for tracking thermal activities so the staff can confirm that ~~the~~ the PINGP aging management program will ensure that P-T characteristics, including their values, ranges, and rates remain bounded within the range defined in the design specifications during the renewed license term.

(b) Please provide ~~H~~histogram (cycle accumulating charts) of heatup transient tracking history, and the histogram for the cooldown transient as well.

RAI 4.3.3-1

The last row of LRA Table 4.3-8 shows that the F_{en} for RHR Class 1 Piping Tee is 2.55 for stainless steels. Text of the LRA, the 1st line on Page 4.3-24, indicates that this is the bounding F_{en}. Please explain why this value is bounding when the true bounding F_{en} for stainless steels is 15.35. The value F_{en}=2.55 will arrive under two conditions, as indicated on Page 4.3-23 of LRA

(a) $T<200\ ^{o}C$, any ε, any DO
(b) $T \geq 200°C$, $\varepsilon \geq 0.4\%/sec$, any DO

If you used condition (a) for your F_{en} calculation, specify the T value used. If you used condition (b), specify the ε values with basis. Clarify these questions and revise the LRA appropriately. If you used the true bounding value15.35 for the Class 1 Piping Tee, reflect it on the last row of LRA Table 4.3-8 and make any necessary adjustments.