PrairieIslandNPEm Resource

From: Eckholt, Gene F. [Gene.Eckholt@xenuclear.com]
Sent: Monday, May 04, 2009 11:11 AM
To: Plasse, Richard
Subject: Information to Support Call
Attachments: Draft Response to NRC Questions related to L-PI-09-060_PML (090504).doc

Information to support this afternoons call is attached.

<<Draft Response to NRC Questions related to L-PI-09-060_PML (090504).doc>>

Hearing Identifier: Prairie_Island_NonPublic
Email Number: 1035

Mail Envelope Properties (7A9B2084CC9CEC45828E829CBF20D638033F6C7F)

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Sent Date: 5/4/2009 11:11:17 AM
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From: Eckholt, Gene F.

Created By: Gene.Eckholt@xenuclear.com

Recipients:
"Plasse, Richard" <Richard.Plasse@nrc.gov>
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Follow-up questions regarding the supplemental information submitted by NSPM

Reviewing the NSPM letter L-PI-09-060, dated 4/28/2009, titled "Supplemental Information Closing License Renewal Commitment Number 36 Regarding Application for Renewed Operating Licenses", the staff found several areas need clarification, as described below:

(A) On Page 1 of Enclosure 1, 3rd paragraph states "… The results of those analyses are being incorporated into the LRA …". Does this mean that NSPM will issue a new version of LRA? If not, please explain.

Response: NSPM does not intend to submit or issue a new version of the PINGP LRA. Enclosure 1 of the 4/28/09 letter provides the LRA amendment necessary to address LR Commitment No. 36. As stated in the preamble to the response, "LRA Section 4.3.3 … is revised in its entirety to read as follows". The content of Enclosure 1 is intended to replace the original LRA text in Section 4.3.3, Environmentally-Assisted Fatigue (GSI-190). This is the same methodology that has been used for all RAI responses that have resulted in a necessary change to the PINGP LRA, as submitted.

(B) On Page 2 of Enclosure 1, paragraphs under the subsection titled "Determination of Fatigue Usage Unadjusted for Environmental Effects" contained in the NSPM letter L-PI-09-060, under Section 4.3.3, describes the transients used for the Safety injection accumulator nozzle, charging nozzle, and PZR surge line hot leg nozzle. Some of the transients used in fatigue evaluations for these components are not included in LRA Table 4.3-1. These undefined transients are listed below.

inadvertent RCS depressurization, inadvertent auxiliary spray actuation, control rod drop, excessive feedwater flow, RCS refueling, OBE, inadvertent accumulator blowdown, RHR operation during plant cooldown, high head safety injection

Request:

(1) Specify the number of design cycles for the transients listed above as well as the cycles most recently accrued and the cycles projected for 60 years.

(2) Confirm that **all** transients (including those listed above) used for the fatigue analysis have been tracked and monitored since the plant startup and tracking for all transients that may contribute fatigue usage will be continued during the period of extended operation.

Response: (1) Per the Westinghouse Systems Standard, the number of design cycles for the transients of interest are as follows:

Inadvertent RCS depressurization – 20
Inadvertent auxiliary spray actuation – 10
Control rod drop – 80
Excessive feedwater flow – 30

RCS refueling – 80
OBE – 50
Inadvertent accumulator blowdown – 4
RHR operation during plant cooldown – 200
High head safety injection – 89

For the fatigue analyses of the PINGP SI accumulator nozzle and RHR Tee, the following numbers of transients were analyzed (single analysis for both Units):

Inadvertent RCS depressurization – 20
RCS refueling – 80
OBE – 5 OBE events with 10 cycles each
Inadvertent accumulator blowdown – 4
RHR operation during plant cooldown – 800
High head safety injection – Transient not considered in analyses as there is no flow path from SI pumps to the SI accumulator nozzle or RHR Tee at PINGP.

For the fatigue analyses of the PINGP Hot Leg Surge Nozzle, the following numbers of transients were analyzed (bounding case for both Units):

Inadvertent RCS depressurization – 1
Inadvertent auxiliary spray actuation – 2
Control rod drop – 120
Excessive feedwater flow – 45
RCS refueling – 42
OBE – 1 OBE event including 20 internal cycles

For the fatigue analyses of the PINGP Charging Nozzles, the following numbers of transients were analyzed (U1 / U2):

Inadvertent RCS depressurization – 1 / 1
Inadvertent auxiliary spray actuation – 2 / 1
Excessive feedwater flow – 45 / 45
RCS refueling – 39 / 42
OBE – 2 OBE events with 10 cycles each

ADDITIONAL TRANSIENTS	Cycles accrued to date (2/26/07)		Cycles projected for 60 years	
	Unit 1	Unit 2	Unit 1	Unit 2
Inadvertent RCS depressurization (Historically, not counted.)	0	0	0	0
Inadvertent auxiliary spray actuation	1	0	1.2	0
Control rod drop (Historically, not counted.)	No data	No data	--	--
Excessive feedwater flow (Historically, not counted.)	No data	No data	--	--
RCS refueling	23	23	38.1	41.1
OBE (Historically, not counted.)	0	0	0	0
Inadvertent accumulator blowdown (Historically, not counted.)	0	0	0	0
RHR operation during plant cooldown (Historically, not counted.)	187	163	295.6	258.6
High head safety injection	1	0	1.6	0

Not all of the additional transients have been tracked and monitored since initial plant startup. As stated in NSPM Letter L-PI-09-060, "The additional transients and revised cycle limits used in the fatigue evaluation will be added to the Metal Fatigue of Reactor Coolant Pressure Boundary Program in conjunction with License Renewal Commitment No. 33, and environmentally-assisted fatigue at the charging nozzle will be managed during the period of extended operation using cycle counting in accordance with 10 CFR 54.21(c)(1)(iii)."

(C) On Page 3, the top paragraph states "… charging/letdown system flow shutoff and flow change transients were defined based on a standard set of

Westinghouse design transients for auxiliary systems, as modified for the expected number of occurrences at 60 years…”.

Request:

(1) Provide basis for making the cycle modification on the flow shutoff and the flow change transients and specify the actual cycles used for the analysis.

Response:

For the fatigue analyses of the PINGP Charging Nozzles, the following numbers of charging/letdown flow transients were analyzed (U1 / U2):

Charging & letdown flow shutoff & return to service – 7 / 18 (Design = 60)
Letdown flow shutoff with prompt return to service – 55 / 75 (Design = 200)
Letdown flow shutoff with delayed return to service – 3 / 30 (Design = 20)
Charging flow shutoff with prompt return to service – 5 / 10 (Design = 20)
Charging flow shutoff with delayed return to service – 8 / 3 (Design = 20)
Charging flow step decrease & return to normal – 36,000 / 36,000 (Design = 24,000)
Charging flow step increase & return to normal – 36,000 / 36,000 (Design = 24,000)
Letdown flow step decrease & return to normal – 3000 / 3000 (Design = 2000)
Letdown flow step increase & return to normal – 36,000 / 36,000 (Design = 24,000)

Charging & Letdown flow shutoff transients have historically been tracked by the PINGP Metal Fatigue of Reactor Coolant Pressure Boundary Program. The numbers of these transient used in the analyses were based upon Unit-specific transient projections for 60 years of operation. The transient projections were made using a linear extrapolation of historical transient counts.

Charging & Letdown flow change transient events have not been counted in the past. The numbers of these transients used in the analyses were based upon increasing the 40-year design values by 50% to account for an additional 20 years of operation.

(D) LRA Table 4.3-8 shows the results of environmentally assisted cumulative fatigue usage (CUF_{en}) for the NUREG/CR-6260 components. For the nozzle components, it is unclear exactly for what spot/location of the nozzles the CUF values are representing. Example: nozzle safe end; nozzle knuckle (nose); etc.

Request:
Please specify for spots/locations where the CUF shown in Table 4.3-8 is representing. Consider the following nozzles.

(1) Surge line hot leg nozzle: Path 5, surge pipe-to-nozzle weld, on the nozzle

(2) Safety injection accumulator nozzle: Pipe-to-nozzle weld

(3) Charging system nozzle: Path 4I, charging nozzle-to-charging pipe weld root, inside surface

5/4/09
PML