From: Sikhindra Mitra
To: Stewart, Roger
Date: 5/14/03 2:36PM
Subject: Clarification of RAI response

Roger,

Following are the additional response items.

SK

J The LRA stated that one of the replacement connections used a saddle-shaped reinforcement plate, and the other five were replaced using a pad plate reinforcement. In its response to the RAI, The applicant indicated that only the three connections downstream of the motor-driven AFW pumps were replaced with the thermal sleeve design in the early 1970's. There is an apparent inconsistency between the two. This is defined as open item 4.3.2-1.

The LRA reported that " The saddle configuration was latter determined to result in considerably more fatigue than the pad plate configuration, and it was replaced with a pad plate reinforcement design in 1995. In conjunction with that modification a fatigue calculation was performed for this feedwater branch connection reinforcement plate. This analysis is considered to be a TLAA." In its response to the RAI, the applicant stated that during the license renewal review of this fatigue analysis, an error was discovered, and the analysis was revised. Whether it was a design modification or a correction of error need to ne clarified as part of the resolution of open item 4.3.2-1. The resulting CUF from the revised fatigue calculation was 0.99 based upon a reduced number of postulated design transients and SDAFW pump surveillance tests. These postulated numbers of transients are being incorporated as limits in the FMP. The staff finds that CUF of 0.99 for 40-year life does not justify the RAI response that "At the current rates of occurrence, the limits would be reached at approximately year 50........". This shall also be clarified as part of the resolution of open item 4.3.2-1. Since the reduced numbers of transients is less than the 60-year projected cycles, additional actions may be required for these components for the period of extended operation. Prior to exceeding the reduced transient limits, the components will either be re-analyzed or replaced. The FMP will be updated to reflect changes in the design basis, when appropriate.

In response to part iii) of the RAI, the applicant performed reviews during the RNP Integrated Plant Assessment and found no nonstandard components used in safety systems, including each type of AFW/FW connection, on the basis that the designs meet the ANSI B31.1 requirements. The staff disagrees with this assessment since the fatigue analysis, considered as a TLAA, was performed to the requirements of ASME Section III Code. This also needs to be resolved as part of open item 4.3.2-1.

The current ISI Program at RNP already includes each of the critical welds for the surge line, which directly examines the limiting component in the plant (the hot leg nozzle). The three welds on the other end of the surge line near the pressurizer surge nozzle are also examined. Each of these locations has been examined during the current operating period, and no unacceptable indications were present. Further examinations are required at least once during each 10-year ISI interval thereafter. The frequency of inspections is specified by Section XI requirements. The staff finds the justification on the inspection interval inadequate to demonstrate that the examinations at the 10-tear interval will prevent any crack from becoming

unstable before the next inspection. The completed EAF-adjusted environmental fatigue analysis calculated a CUF of 14.7 for a 40-year plant life at the limiting location using current methodology. This could be interpreted to mean that, using the same methodology, additional fatigue usage factor of 3.7 could be accumulated during the 10-year inspection interval. This is defined as open item 4.3.2-2. Although the applicant further stated that suitable analyses will be prepared prior to the period of extended operation to demonstrate that a postulated fatigue crack will not grow sufficiently during the inspection interval to exceed the critical flaw size associated with unstable growth, the resolution of this open item is pending on the applicant to provide additional analytical justification on the inspection interval.

K. In response to RAI 4.5-1, the applicant has provided a Table of predicted prestressing values at various times after the initial prestressing of tendons. Normally, these values are estimated up to the end of the current license, and at the end of the extended period of operation (i.e. at 40 years and 60 years). However, the Table provides values at 50 years and 60 years. In this context, I need a clarification of the Table.

L. 1) LRA Section B.3.7, states that the fire water system is consistent with XI.M27, "Fire Water System," as identified in the GALL report with certain changes. In order for the staff to evaluate the adequacy of the applicant's fire protection program and reach a conclusion that it is consistent with the guidance in GALL, the staff requests the applicant to confirm the following:

a) A 10 year frequency was identified for the UT examination of above ground fire water piping. Provide the basis for using 10 years as a frequency.

2) LRA Section B.3.1 states that the fire protection program is consistent with XI.M26, "Fire Protection," as identified in the GALL report, with certain changes. In order for the staff to evaluate the adequacy of the applicant's fire protection program and reach a conclusion that it is consistent with the guidance in GALL, the staff requests the applicant to confirm the following:

a) The inspection of fire doors will occur on a semi-annual basis augmented with frequent inspections during operator rounds and additional inspections. Inspection likely include inspections for holes in doors, clearances, corrosion, latches, closing mechanisms, etc. Verify that such inspections are performed, and clarify if the inspections for items discussed above are performed during operator rounds or during the semi-annual inspection.

b) The inspection of fire barriers at RNP will be performed every 10 years, rather than the once per refueling cycle as specified in GALL. Clarify how the RNP process for barrier inspection will ensure that the extended duration between inspections will adequately address aging.

M. RAI 2.3.1.3-1 (Pressurizer spray head)

Please discuss the role of the pressurizer spray head in post-accident shutdown procedures, particularly in situations involving fire or steam generator tube rupture. Show that the pressurizer spray head does not meet the criteria of 10 CFR 54.4(a) for inclusion in the LRA scope.

The pressurizer spray head contributes to two of the four preferred methods listed in UFSAR 15.6.3.2.1 for primary side depressurization after a steam generator tube rupture. Although the depressurization function of the pressurizer spray head is not in its design basis, depressurization is still relied upon for post-accident operations, and discounting the pressurizer spray head puts more emphasis upon the remaining two methods. The depressurization function is not in the design bases of the remaining methods either. Could this approach lead ultimately lead to reliance upon four methods of unknown or unproven availabilities?

Is the pressurizer spray head used by the auxiliary spray system to transition from hot shutdown to cold shutdown?

Since the pressurizer spray head is connected to safety-related (pressure boundary) piping, its failure (e.g., by clogging) should be considered in terms of any effects it might have upon the safety-related piping and its functions.

RAI 2.3.1.6-1 (Steam generator feedring)

The steam generator feedring is connected to safety-related piping, which carries auxiliary feedwater to the steam generator shell. Its failure (e.g., by clogging or by losing a J-tube) should be considered in terms of any effects it might have upon the safety-related piping and its functions.

One of these effects could be water hammer. The licensee cites an NRC conclusion that water hammer would not be likely to occur if auxiliary feedwater is limited to 400 gpm. What would limit auxiliary feedwater to 400 gpm? For example, consider a total loss of feedwater accident in which there is no failure in the auxiliary feedwater system, and full-rated auxiliary feedwater flow is delivered.

The situation here is a safety-related pipe, delivering auxiliary feedwater through an out-of-scope component (the feedring) into another safety-related component (the steam generator shell). A failure in the feedring could affect safety-related components in upstream and downstream locations. Consider, for example, a rapid shell-side depressurization (e.g., a steam line break or safety valve opening), causing a degraded J-tube to snap off the feedring and impact upon internal steam generator components, or even block steam flow.

N. RAI 3.4.1-5: Some plant have identified when cooling water was supplied continuously to the oil reservoirs, water was regularly found in the oil. When this was changed so that cooling was supplied only when the pump was running and stopped when the pump was in standby, water was no longer found in the reservoir. Has this been observed at Robinson? Also, is the oil side of the coolers clean, inspected, and tested periodically?

RAI 3.4.1-12: If aging effects such as cracking were not managed, how would the structural integrity of the 126 inch diameter concrete circulating water system discharge piping be maintained during a seismic event?

CC: Clements, Talmage; Kozyra, Jan

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