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3/22/2000

The following is a list of information EMCB expects to receive from the licensee supplementing information to be provided in response to the staff's RAI dated March 14, 2000, in order to support development of a final paper subsequent to the IP2 steam generator tube failure:

- Need inspection results, i.e., number, location, size, type of indications found in all 4 steam generators for both the 1997 and 2000 inspections. Also, provide separate list of pluggable indications and reasons for plugging.

- Need results of secondary side examinations completed in the 1997 and 2000 outages, i.e., hourglassing and other observations such as cracking of TSPs for all TSPs. This should include videos of hill side port examinations (and still photos if available) of the fifth and sixth support elevations.

- Need trending analysis of dents in the upper support plates and ovalization of rows 2, 3, and 4 u-bends. This trending analysis should be displayed in graphical or tabular form as appropriate to best illustrate the trends. A summary discussion should be provided of denting trends in the lower support plates. The licensee's July 29, 1997 inspection reported 20 tubes (mostly SG 22) failed to pass the .610 bobbin in rows 2 and 3. Were these tubes able to pass a .610 or larger bobbin in earlier inspections? Have the row 2 - 4 u-bends been inspected with bobbin during current inspection so as to contribute to the above trending analysis?

- Provide the site-specific program equivalency validation information.

- Need structural analysis of TSPs assessing TSP structural integrity and deformation (including hourglassing) over the next inspection interval and impact of the predicted displacements on u-bend integrity and propensity to cracking. This analysis should be benchmarked against the inspection results from this outage and the results of trending analyses of denting progression.

- Provide description of leakage monitoring program to be implemented upon plant restart, including monitoring systems, surveillance intervals, action levels, alarm setpoints, and leakage criteria for initiating plant shutdown.

- Need to response to suggestion that licensee perform helium leak test.

- Provide description operational assessment demonstrating that adequate structural and leakage integrity will be maintained until the next scheduled inspection for each degradation mechanism. This description should include a discussion of the input parameters (including flaw growth rates, flaw size measurement errors) and predictive structural and leakage models used in the assessment. Methods for accounting for flaws not detected during the inspection or initiating after the inspection should be discussed.

- Need completed Appendix K of EPRI SG Guidelines checklist for a forced outage.

- Need responses to C. Dodd's inspection recommendations for the low row U-bends which include: (1) use a high frequency +Point probe, (2) use the midrange +Point run at 500kHz, (3) try a 400/100 kHz mix and/or (4) analyze using the 400 kHz channel. In addition, regarding the overall SG inspection program, need to improve analyst

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guidelines (e.g., clear setup guidelines, clear and objective noise criteria), and also need to develop a formal training program to incorporate "lessons learned."

- Assess u-bend stress levels in the rows 2 - 4, broken down by residual stress introduced during fabrication, stress from denting related causes (including support plate deformation and hourglassing), thermally induced stress, and pressure induced stress.
- Assess material susceptability to IGSCC for the heats used at IP-2 rows 2 - 4.
- Assess the time to crack initiation in initial tubes for rows 2, 3, and 4 u-bends.
- Need specific SG tube selection information for in-situ pressure testing for each defect mechanism.
- Need results of condition monitoring assessment for each defect mechanism, including results of the insitu pressure tests.
- For all indications identified in the U-bend, Cecco and bobbin coil inspections, identify which indications were called by a single analyst versus those indications that were called by both analysts.
- Need to identify how many tubes are affected by the "pilgering" type noise at the TTS and need to understand how the licensee plans to disposition these tubes so affected.
- Need C. Dodd to complete his review of the licensee's eddy current inspection.
- Need to identify how many tubes are affected by the "blind spot" located at the upper span of tubing between the TTS and 1H span and need to understand how the licensee plans to disposition these tubes so affected.
- Need licensee's written acceptance criteria for the secondary side hydro test.
- Need to identify the number of tubes inspected with probes smaller than 0.700 inches in diameter. For these tubes, document the eddy current indications identified in these inspections (both Cecco and bobbin results, as well as RPC results).
- Need 2000 loose parts safety evaluation.
- Upon receipt of this information from the licensee (it may not be realistic to expect we'll get a satisfactory answer to the question regarding the helium leak test and C. Dodd's inspection recommendations and we may not get info on single versus multiple analyst calls and the number of SG tubes with large horizontal noise at top of tubesheet), it should take the staff two and a half to three weeks to write a paper.

Given that the licensee will want to restart and only run for an additional two months or so, the staff will not need to complete the entire effort described above to support a plant restart for a two month period provided the staff finds the preliminary operational assessment addressing this time frame to be adequate.

It should be understood that there are competing factors for the staff resources needed to complete this effort. They are as follows:

- Emmett will be involved for about 2 days in the near future to support DPO resolution efforts
- Emmett is needed to review at least 2 SEs written by other EMCB staff members that are needed to support upcoming spring outages
- Emmett has one day of annual leave
- Emmett has to come to closure on two ANO-2 SG amendment requests
- EMCB is moving from the 7 to 9 floor Thursday and Friday of this week
- Stephanie has a three day welding course
- EMCB needs to address enforcement concerns at Sequoyah regarding recent SG issue
- EMCB technical support is needed to address one 2.206 petition on IP-2 and to provide technical support for another ticket regarding Salem Sgs
- EMCB needs to continue to address the B&W large break LOCA issue which may extend beyond B&W design plants
- EMCB will be supporting a SG discussion at the Reg Info Conference next week
- EMCB is developing Qs and As to support response to the release of the RES and NRR letters regarding the RES independent evaluation of the staff SE that granted an extension of the operating period

Given these competing factors, it may not be reasonable to expect the staff to complete the work required to support IP2 restart in the two and a half to three weeks immediately following receipt of the above information.