

IP2 Lessons-Learned Task Group  
July 19, 2000 9:00 A.M. Discussion with Stephanie Coffin, EMCB

Task Group Members: Joe Donoghue, Jack Goldberg, Louise Lund, Alan Rubin and Jimi Yerokun

Noise Levels in the Data

Based on the industry presentations at the workshop, how do the rest of the older plants compare with IP2 as far as noise levels in the data? She heard a presentation by NEI on the noise levels at Kewaunee and Prairie Island, which industry implied have the highest noise levels. The graphs presented indicated that the levels of noise at the two plants were much lower than at IP2. Even if IP2 couldn't recognize the noise problem, certainly Westinghouse should have been able to compare the IP2 noise with other plants noise.

Phone Calls

She mentioned that the SG group has been making these phone calls to the licensees for over six years. As time progressed, some licensees complained, saying that the calls were intrusive and took a lot of preparation time for the licensee who was in the middle of an outage. We quit doing the calls for plants with Alloy 690 and Alloy 600 Thermally Treated tubes because the licensees weren't finding any reportable degradation, but have continued the calls with plants that have Alloy 600 MA tubes. There is a checklist for the staff making the call and a list of questions sent to the licensee before the phone call. She believes the phone calls are very useful and should be continued. She also mentioned that the phone calls are a useful training tool for the staff.

She mentioned two examples, ANO-2 and Palo Verde, where having the phone calls alerted the staff to potential concerns about the quality of tube inspections and compliance issues that could have been missed otherwise. Even with the phone calls, we're still dependent on the information that the licensee provides and the timing of the phone calls with respect to what they have found before the phone call. The staff try to end the phone call by asking the licensee to contact the staff if they find any new forms of degradation and after the in-situ pressure tests to let us know that everything was satisfactory. With respect to IP2, she thought that we never really talked to them much.

Role of Regional Inspections

She believed that the attention that Ian Barnes brought to the SG inspections in Region IV helped improve the quality of the licensee inspections and helped focus our attention on specific plants that had particular SG problems. She could see some value in conducting some regional SG inspections in plants with Alloy 600 MA tubes, in a similar manner to what Ian Barnes did in Region IV.

Post-Inspection Reports

She indicated that the post inspection reports that were sent to the staff after SG outages are not always reviewed due to resource and time constraints. Sometimes they are reviewed if there is an ongoing concern about a problem at a certain plant. She mentioned that the reports are not provided in a standard format, therefore they are not consistent with what is

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included or excluded, and sometimes don't provide enough detail to be helpful. She suggested that it would be very helpful in reviewing the reports to have a standard format with a certain amount of detail requested.

### Comments About the Current IP2 SG Management Program

She believes that IP2 management is very weak on SG matters and has no grasp as to what's going on. They rely totally on Westinghouse, the vendor who provides their SG services. Some of the issues that concerned her were the training program and the analyst guidelines. They were poor, and still need some work. She was more concerned with Westinghouse's attitude and performance than with IP2's since Westinghouse has the industry knowledge and experience with SG tube examinations. She believes that they could have done better at IP2. IP2 management is so poor on SG issues that they did not follow the principle that when you find a new degradation mechanism, you must look to see if there is more. The staff has been accused of using a higher standard for IP2 restart than ever used before. This may or may not be so, and if it is, there may be good reasons, such as the tube rupture and the poor SG management capability of Con Ed.

### High-Frequency Probe

Even though the submittals from ConEd would seem to suggest that high-frequency probes had not been used previously for SG inspections, they had been used for top-of-the-tubesheet inspections at Maine Yankee in 1994 and she thinks in sleeve weld indications in either Kewaunee or Prairie Island prior to 1997. She doesn't remember the vendors that were involved, but thinks it was ABB for Maine Yankee.

### 1997 Inspection

ConEd/Westinghouse didn't follow EPRI guidelines for Plus Point Probe set-up, but even if they had, it wouldn't have bought them much. This is because of the high levels of noise in the data from the u-bends. She believed that the NDE call for the tube that failed, R2C5, was a difficult call for the analyst. However, there were some other calls in the U-bends that were missed that she thought were not as difficult to detect. She mentioned the human factors difficulty in analyzing the data, how the analysts often work 12 hour shifts during the outage and under a great amount of time pressure to complete the work. She mentioned that the staff has been previously nervous about accepting a computer automated analysis in place of one of the independent analysts.

### EPRI Guidelines

She stated that the licensees can follow the EPRI guidelines, but still not get a quality inspection. This is because the guidelines are a minimum standard, and are generic; there may be plant-specific issues that should be considered by the licensee when applying the industry guidelines. Some of the improvements to the guidelines that will be coming out as a result of the IP-2 event are guidelines on data quality (noise levels, etc.). She doesn't understand why the industry is reluctant to recommend, or at least discuss, the high frequency probe in their guidelines, because it would appear to her that there is no down side to doing that. When NEI was asked by the staff whether it was considering modifying the guidance to include the use of high frequency probes for low row U-bends, NEI said "no."

### Probability of Detection

She mentioned that it can be difficult to assess probability of detection (POD) is for an inspection. Often, the staff relies on how small differences in the POD change the outcome, and worry less if the outcome doesn't vary significantly. For IP2, the outcome is very sensitive to POD. They have been told that the threshold of detection in the U-bends is about 50-60% throughwall, but the POD could be worse than that. She mentioned that the significance of POD depends a lot on the examination results. If there are no real issues, then what and how the POD is determined would not matter very much. However, when there are issues such as in IP2's case, the POD becomes significant. At IP2, it is likely that the stresses in the u-bend of row 3 tubes are as bad as the row 2 tubes. Then, the POD is important in determining if the row 3 tubes should be plugged or not. IP2 plugged the row 2 tubes this outage, and this led to a derating of power down to 97%. Plugging row 3 may result in an additional 3% derating.

### Research Review

She felt that asking RES to do this review put RES in an awkward position, especially since NRR asked them to do it before the root cause of the problem was ascertained. She also said that the RES review could not take into consideration the NRR regulatory perspective. She felt that RES could have been harder on the licensee instead of NRR. She also mentioned that not everyone in the group has the same level of expertise and experience to recognize the significance of all inspection findings, and some things will be missed. She did not point out any technical differences that she had with the RES review.

### SG Regulatory Framework

She agreed with the characterization of the SG regulations as hard to enforce and that the Technical Specifications were unenforceable. She said that a rule, had it been implemented, would have been easier to enforce than the current regulations. She also believes that the industry might have found it easier to follow clear guidelines from a rule than the ad-hoc situation that exists today. She questioned how much inspection oversight we need to have with the licensees, since we are supposed to be moving to a more "performance-based" regulatory scheme. She assumed that the performance-based program would put more responsibility on the licensee to adequately manage the degradation in their steam generators, and less responsibility on the staff to oversee their inspections and question the decisions made from the data gathered from the inspections. In addition, the definition of a "quality" SG tube inspection is not contained in staff guidance. She believed that the IP2 tube rupture incident is a perfect test for performance-based regulation to see if the staff was ready to follow this policy even if that meant living with an occasional tube failure, which was unpalatable to the public. Westinghouse's defensive attitude is a concern, in her opinion. It appears to her that Westinghouse never admits a mistake. Westinghouse knows the significance of hour-glassing and apex cracks and should have known during the 97 inspection that there was a problem warranting further examination or analysis.[S.C. thought that the comments on W belonged in the earlier Section on the IP2 SG management program.]

### 2000 Inspection

During the 2000 inspection, Con Ed was planning on applying the standard inspection technique (i.e., midrange frequency Plus-Point probe) but the staff drove Con Ed to use a more sensitive technique (e.g., high frequency Plus-Point probe). ConEd/Westinghouse used

the best techniques readily available for the 2000 inspection. ConEd's problems with training and procedures still exist, although they made some progress. Using the high frequency probes allowed them to better detect ID initiated cracks: i.e., PWSCC.