

Indian Point 2 (IP2) Steam Generator (SG) Tube Failure  
Lessons-Learned Task Group  
(TAC No. MA9163)

Task Group Notes - Discussion with members of the Region I Office - 7/20/00

Attendees: Scott Newberry, Rick Ennis and Jimi Yerokun

Hubert Miller, Regional Administrator, Region I - 10:00 A.M.

Scott Newberry provided an overview of the Task Group's mission using the "Approach and Output" slides. Hub Miller then provided the following insights/observations/comments:

The lack of highly prescriptive, detailed requirements can be used as a basis for holding licensees accountable for effective management of steam generator degradation inspections consistent with broad requirements of our regulations (e.g. appendix B). Maybe the previously abandoned rulemaking on steam generators should be reexamined. Because we do not have specific requirements, does not mean that we can't (nor shouldn't) hold licensees accountable."

The SG special inspection team is concluding that ConEd did a poor job at their SG examination.

Mr. Miller provided the team a one page summary of issues at IP2 titled "Steam Generator Expectations." This summary stated the following:

"Did the licensee effectively implement a program of steam generator inspections which:

- was founded upon and accounted for the known and likely potential degradation mechanisms that could be occurring
- was sensitive to and accounted for conditions that increased the susceptibility of tubes to these degradation mechanisms
- accounted and compensated for conditions that challenged or limited detection capabilities
- adjusted or modified inspection methods and analysis during the inspection process to account for anomalies and other new conditions encountered

All of the above to provide reasonable assurance of steam generator tube integrity."

Hub agreed that the task group should visit the site to put issues in the right perspective. He indicated we should understand industry views and suggested that the group talk to NEI to understand where they are coming from.

In trying to get a sense of how licensees in general, approach steam generator inspections, Hub indicated that he spoke to other utilities about the issue. There were some good licensees out there. For example, Salem was good and had technical expertise on their staff. They are knowledgeable of the types of probes, degradation mechanisms and steam generator chemistry. They are also active with EPRI and others. They don't turn over their steam generator examination to contractors such as Westinghouse with little technical

direction and oversight. They have built in lots of checks and balances. They have other review layers as well. Calvert Cliffs and Beaver Valley who have had challenging steam generator conditions have had similar programs. IP2 did not have near as much in house technical expertise to add value to the process. It appears they should have compensated and done more during the inspection when noise was encountered since there was too much uncertainty especially where conditions which increased susceptibility to tube degradation existed.

Hub indicated we needed not to look just at the vendor but at the overall steam generator inspection activity that the licensee is ultimately responsible for.

He felt it would be important for the task group to assess agency oversight of steam generators issues in the context of the full spectrum of issues that we must address in regulatory/overseeing operating plants. This is important since we have limited resources to assess many competing issues. The relative risk associated with all activities must be weighed to avoid reacting excessively to steam generators as a single issue.

He felt that the NRC should have an adequate process for ensuring his summary of "Steam Generator Expectations." If there are inspection procedures that aid in this, then it should be okay.

As to whether the region should have been more tuned to the site, Hub indicated that the region did a lot during the IP2's extended shutdown in 1997. The region was stretched looking at the numerous known issues pressing at that time. Steam generator issues were not a focus area.

Although there was no impact on public itself, we still must hold licensees accountable in a manner consistent with our enforcement process.

Hub felt we should explore the issue of regional resources and expertise of our inspectors. He hopes that our inspectors will be able to evaluate and get an impression of the level of technical expertise that a licensee possesses. We may need inspection procedure changes to enable the inspectors to do this.

Steam Generator expectations could, arguably, be covered by 10 CFR 50, Appendix B, Criterion IX, "Control of Special Processes", or Criterion XVI, "Corrective Action." We shouldn't have to point to a specific guidance or requirement. The expectations should be covered.

Finally, Hub suggested that while these issues should be looked at, we should remember that there are several other issues that have to be dealt with.

Pete Eselgroth, Branch Chief, IP2 - 1:00 P.M.

**Primary-to-Secondary Leakage:**

The residents brought up the leakage issue and it was well followed by DRS with support from NRR. The feedback was that the leakage was not up to the concern level yet and to keep an eye on it. DRS and NRR probably consulted the EPRI guidance on Primary-to-Secondary leakage. Given the same leakage amount, would something be done different now? - No, the leakage was not indicative of an imminent failure. If they had shut down at the low leakage, they would have had difficulty in finding where the leak was coming from.

**Oversight:**

The agency should probably put more regulatory oversight on steam generator tube integrity.

The region sometimes listen to the NRR/Licensee operational assessment phone calls. He thinks it's a good idea that the region is involved even though they usually don't have any input on the call.

Pete feels that NRC inspector plus a contractor should be present at the sites during eddy current analysis. We should probably have more involvement.

**Event Response:**

The response was handled well. The consideration for the response level was based on the old and new oversight processes. Nothing indicates that the agency needs to tweak the oversight program. But the program could be questioned in the sense that the new program has risk focus and does not take past plant practice into consideration. Recent experiences could be factored into risk considerations.

**New oversight Process:**

The new oversight process doesn't look at processes (e.g., Corrective Action Program) and balance of plant (BOP) equipment as much as the old SALP process. This could be a problem if the licensee does a poor job in these areas. For example, IP2 did well in the event response, but they had equipment and procedure problems. The new oversight process does not even look in the BOP areas where there could be some important issues.

The old SALP process would look at a bunch of smaller issues and lump them together to make a finding. New oversight process does not have a means to lump a bunch of greens into a white.

The success of the new oversight program is as much with the Industry as the NRC. It won't sniff out problems until an event occurs. Even if there is no impact to the public, it could be significant.

**Industry Impact:**

Depending on the agency's goals there could be a big or not so big impact on the industry. The possible goals for SG tube integrity could be:

- 1) No tube failures (big impact on industry)
- 2) Minimize tube failures (not so big impact on industry)

With our actions related to IP2, it now appears that no failures is our goal.

**IP2 Management:**

As for IP2's Operating Experience program, Pete thinks IP2 was not in touch enough with the rest of the industry. As for their Corrective Action program, he thinks they are still in the stone age. There are high backlog and work control problems. They have little buy-in from line management on their new CA process.

What's missing at IP2 is people that are beginning to bond together and start showing improvement. People are still fragmented.

Pete said he was not comfortable with the plant (he's been the IP2 BC since January 2000). But based on what we have now, we should have a way to improve the process.

**Leakage Monitoring:**

The staff did pretty well. It was brought up, discussed (DRS, and front office) and well followed by the resident inspectors. Although, the resident interest and coverage were not specifically called for in NRC Inspection Procedures. It took a skilled inspector to quickly recognize and follow up on the issue.

Before the tube failed, leakage was less than the first level of EPRI's monitoring level. In light of this, if any better technical guidance could be developed to differentiate leaks (i.e. which ones are relatively benign and which are precursors to failure) it would be helpful to everyone.

**Steam Generator Inspection Program:**

ISI is a small portion of the inspection program. There are currently no good ways for Headquarters and Region I to develop a short list of plants that would require higher inspection focus in a specific technical area, or issue, or component. We train people at Zetec, but we still do not have the expertise like the licensees. We also do not devote a lot of time to ISI.

Should we do more in the ISI area? Randy said, he did not know.

Should we have a list of higher focus plants for specific areas (e.g. S/Gs, vessel, ISI, Fire Protection, EP, Service Water)? Randy said Yes.

He noted that IP2 had not been involved with the industry much.

Randy also indicated that he felt that inspector training should be reviewed. We have been trending towards generalists that could make the initial call. But we probably could use steam generator experts.

The region (DRS) is doing a look at skill set of inspectors for the program requirements. The inspection program for steam generators does not currently specify specialized skills. The program guidance for this type of specialized inspector training is still lacking.

**The Amendment:**

It appeared to be administrative in nature. The RAI asked good questions, but when bad answers came back from IP2, they were not recognized.

Should the region be involved in license amendment requests? It would depend on having a short list of plants that would need that type of oversight. The region can not be involved in all amendment requests.

There should be some link between the licensing and the inspection processes. For example, if the NRR safety evaluation relies heavily on a statement from the licensee on a risk-significant issue, the Region could perform an inspection to verify the statement.

**The New Inspection Process:**

Because of the IP2 issues, the new inspection process should not be abandoned or even swayed. The old versus the new processes are neutral to the IP2 issues. The new process is good overall.

**IP2's Management:**

Overall, there was increased NRC attention on IP2 in 1995 - 1997 time frame. IP2 culture is not conducive to accepting outside criticism or even being self critical. It's a tough culture. The 1997 outage was a brute force effort.

ConEd completed an Independent Self Assessment in Spring of 1998. They came up with the IP2 Plan for Excellence. The plan was not well implemented. There were budget constraints and lack of commitment.

Finally, Randy has recommended completing the 95002 supplemental inspection covering Steam Generators, EP and Degraded Equipment at IP2.