From: James Trapp
To: Wayne Schmidt
Date: Wed, Aug 23, 2000 12:45 PM
Subject: GOOD JOB!

Your briefing sounded goo on the phone!

I've attached a Rev. to the report. Like I said, I have no strong feelings if you want to leave it as is. I simply rearranged your paragraphs to put the guidance stuff first and the finding specific issues last. I also changed the draft NUREG reference to the SDP appendix H. I don't think that appendix H was issued at the time steve did his analysis. I also added a reference NUREG for the .5 assumption, since CE questioned this and I don't believe it's captured in Steve's assessment. Please look at it carefully and see if there is anything you would like to use. I did it quickly and it hasn't been peer reviewed!

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From: Wayne Schmidt
To: Steven Long
Date: Thu, Aug 24, 2000 8:27 AM
Subject: Fwd: GOOD JOB!

Yesterday went well - I think that Brian H. will do a littel more lead-in to the delta CDF and CCDP up-front, to make it standout more.

Couls you plese take alook at the report writeup that Jim Trapp proposes I don't think there is any content change and it does sound better than what I put together.

1R4 Risk Significance - Event and Core Damage Frequence and Large Early Release

a. Inspection Scope

The team reviewed the actual consequences of the event and potential consequences of an SGTR given the performance finding discussed in Section 4OA1.1. This analysis was conducted in accordance with the Reactor Safety SDP - Phase 3.

b. Risk Assessments

.1 Actual Consequences

There were no actual consequences of the February 15, 2000, event. No radioactivity was measured off-site above normal background levels and, consequently, the event did not impact the public health and safety. The licensee's staff acted to protect the health and safety of the public. Specifically, the operators appropriately took those actions in the emergency operating procedures to trip the reactor, isolate the affected SG, and depressurize the reactor coolant system. Additionally, the necessary event mitigation systems worked properly.

.2 Potential Consequences

The following is a synopsis of the more detailed risk assessment developed by the NRC staff, included as Attachment 1 to this report.

The current guidance for assigning risk significance for inspection findings is provided in Inspection NRC Manual Chapter (IMC) 0609, Appendix H, "Containment Integrity SDP." The following thresholds are provided in IMC 0609 for establishing the risk significance color for inspection findings.

Table 1 Risk Significance Based on LERF and CDF

Frequency Range/ry	SDP Based on CDF	SDP Based on LERF
$\geq 10^{-4}$	Red	Red
$< 10^{-4} - 10^{-5}$	Yellow	Red
$<10^{-5} - 10^{-6}$	White	Yellow
$<10^{-6} - 10^{-7}$	Green	White
$<10^{-7}$	Green	Green

The guidance also states that for SGTR events, the change in large early release frequency (delta LERF) is equivalent to the change in core damage frequency (delta CDF). This assumption is made because the majority of the SGTR sequences which result in core damage assume that a secondary main steam pressure relief valve fails to close. A failed open main steam pressure relief valve would allow a direct pathway from the core to the environment following a SGTR.

The primary to secondary leakage from the apex crack in SG 24 tube R2C5 did not reach the maximum SGTR flow rate assumed in the accident analysis. The maximum flow rate was not experienced because the remaining crack ligaments in the flaw area limited the size of the opening. However, under different conditions, the flaw could have resulted in a larger opening in the steam generator tube and thus a higher SGTR leak rate. Therefore, the risk analysis performed estimated the probability that the flawed tube could have ruptured. Based on historical information provided in NUREG/CR 6365,"Steam Generator Tube Failures," the probability of a tube rupturing for the type of tube flaws identified at Indian Point was estimated to be 0.5.

The risk associated with the condition of the tubes during Cycle 14 comes from several potential initiating events:

1. Spontaneous rupture of a tube, not successfully mitigated by plant operators, causing core damage and bypass of the containment by large radioactive releases.

2. Rupture of one or more tubes induced by a steam system depressurization event, not successfully mitigated by plant operators, causing core damage and bypass of the containment by large radioactive releases.

3. Rupture of one or more tubes induced by a reactor system over-pressurization event, causing core damage and bypass of the containment by large radioactive releases.

4. A core damage event that occurs with the reactor system at normal operating pressure, inducing tube rupture by increasing tube temperature and/or tube differential pressure, causing bypass of the containment by large radioactive releases.

The NRC staff determined that the performance issues identified in this inspection report, changed the SGT failure frequency to 1 failure per year. This assumption was based on the as-left condition of the steam generator tubes following the 1997 inspection. Based on these assumptions, a delta CDF/LERF for an SGTR of approximately 1E-04 /reactor year (RY) was calculated. In accordance with IMC 0609, findings with a delta-CDF in excess of 1E-4 or delta-LERF greater the 1E-5 are assigned a risk significance color of red. Therefore, these findings result in an issue of high safety significance (red) as determined by the SDP.