Schroeder, Daniel

From: Ennis, Rick NRR OL
Sent: Monday, May 10, 2010 7:31 AM
To: Schroeder, Daniel; Balian, Harry
Cc: Burritt, Arthur; Cline, Leonard; Chernoff, Harold; Schulten, Carl; Conte, Richard
Subject: FW: Salem Unit 2/1 AFW Pipe Degradation
Attachments: SL1 AFW Degradation Telecon of 04-28-2010.doc

Dan/Harry,

In item "f" in the Rich's summary of the open issues discussed on 4/28 (attached), he indicates that PSEG entered SR 4.0.3 for a missed surveillance evidently after it was discovered that the ASME Code ISI pressure test required by IWA-5244 was not performed for the Salem 2 buried AFW piping. If you have been following the various emails on this topic, there is some confusion regarding whether this ISI test is actually considered a TS surveillance. There is some language in Salem 2 SR 4.0.5 and SR 4.4.11.1 (Structural Integrity) where I think you could make an argument either way regarding whether ISI activities are considered a surveillance. However, the wording in SR 4.4.11.1 (reference to SR 4.0.5) could be interpreted as only applying to the RCP flywheel and the SR does not specifically discuss the pressure test. Note, the Salem Unit 1 surveillance for Structural Integrity (4.4.10.1.1) is written slightly differently such that it is clear that the requirements of SR 4.0.5 are separate from the flywheel testing.

Does the Salem 2 surveillance test procedure for SR 4.4.11.1 make reference to IWA-5244? If not, does the CR associated with not performing this test indicate why the licensee thought they could use the missed surveillance provisions of SR 4.0.3?

Thanks,

Rick

From: Conte, Richard RI
Sent: Friday, May 07, 2010 4:10 PM
To: Burritt, Arthur; Ennis, Rick; Lupold, Timothy; Manoly, Kamal; OHara, Timothy; Patnaik, Prakash; Schroeder, Daniel; Schulten, Carl; Tsao, John
Cc: DeFrancisco, Anne; Balian, Harry; Bowman, Eric; Brown, Michael; Cahill, Christopher; Chernoff, Harold; Gardocki, Stanley; Gray, Harold; Hardies, Robert; Hoffman, Keith; Holston, William; Modes, Michael; Pelton, David; Robinson, Jay; Sanders, Carleen; Schmidt, Wayne; Thorp, John; Taylor, Robert
Subject: Salem Unit 2/1 AFW Pipe Degradation

We need another Conference to discuss developments since the April 28 telecon. See attached file for summary and actions along with residual actions. I am looking for Monday pm since Region I is in a counterparts meeting for Tues thru Thursday, can do Thursday pm. I am off Friday.

Some of you may have gotten emails today on entering the TS LCO related to structural integrity and how well it does or does not mesh with rule and code per 10 CFR 50.55a. These residual issues are right after the problem summary in the attached file. During the call we can summarize discuss point and counterpoint.

1. Does the licensee need a code relief request to cover:
    a. Time from now to the outage in 2011 IAW 10 CFR 50.55a (g) (5) (iii) as impractical to perform?
    b. Cover the first two periods of the current 10 year interval IAW 10 CFR 50.55a (g) (5) (iii) impractical to perform (they could have done it during there outages) or (iv), post ISI interval review?

C/151

2. Should staff inform PSEG they are violating TS LCO on structural integrity regardless of how ambiguously it is written. Do we really understand the consequence of this action.

3. For this case, do the rule/code requirements stand alone and what are they – evaluation of suitability for service in light of not doing the pressure drop test for Unit 2.

I hope to have a conference bridge all afternoon. Hopefully key players as noted in addressee list can communicate their availabiltiy in the pm preferrably 300pm but I am open to 1 2 or 3pm. If you want to be considered as a key player let me know.

RF

Summary of Telecon Internal to NRC staff 4/28/10

Attendees (please sent email to correct list if wrong):

Cahill, Christopher; Gray, Harold; Hardies, Robert; Lupold, Timothy; Harry; Modes, Michael; OHara, Timothy; Ennis, Rick; Tsao, John; Manoly, Kamal; Patnaik, Prakash; Bowman, Eric; Schulten, Carl

This summary also includes additional reviews and questions after the call.

Problem Summary:

As a result of implementation the PSEG buried pipe program, significant degradation of the No. 14 and 12 Auxiliary Feedwater Piping was identified – the yard section was replaced and the FHB section was abandoned in place with new piping routed above grade inside the FHB with code compliant pressure testing in each of the sections. Based on inspector questioning, PSEG wrote an internal notification reporting that the ASME code required pressure drop test for buried Class 3 piping (an inservice inspection) had never been done (IWA-5244 test). PSEG then entered a number of TS LCO for AFW and structural integrity (???? – trying to confirm) and the section 4.0 of the TS and starting developing an operability determination for Unit 2 current operations and for Unit 1 from an historical viewpoint.

More specifically, PSEG has developed an operability review for Unit 2 based on information in response to the noted unit 1 degradation on the corresponding headers in Unit 2 Nos. 24 and 21. They are also developing a past operability review for Unit 1 which includes finite element analysis in order to assess the structural integrity of the AFW piping and a technical evaluation to support a revised minimum wall thickness based on a revised pressure rating in order to support the historical view. Along with this the current design rating for both units is 1950 psi the basis of which remains unknown.

For Unit 1, the apparent cause is little to no coating application of the yard section of buried piping. An extent of condition was developed as a part of a root cause report that will not be finalized until the end of May 2010. Unit 2 is operating and has similar piping but the difference appears to be in the use of a better coating application based on 1994 information in the yard area and 2010 information based on a dig inside Unit 2 FHB to expose the upper header No. 24 and assess the coating and take some UT measurements.

Issues Subsequent to the April 28, 2010 conference call internal to NRC:

1. Does the licensee need a code relief request to cover:
    a. Time from now to the outage in 2011 IAW 10 CFR 50.55a (g) (5) (iii) as impractical to perform?
    b. Cover the first two periods of the current 10 year interval IAW 10 CFR 50.55a (g) (5) (iii) impractical to perform (they could have done it during there outages) or (iv), post ISI interval review?

2. Should staff inform PSEG they are violating TS LCO on structural integrity regardless of how ambiguously it is written. Do we really understand the consequence of this action.

3. For this case, do the rule/code requirements stand alone and what are they – evaluation of suitability for service in light of not doing the pressure drop test for Unit 2.

RI

Open Issues as discussed on April 28, 2010 conference call internal to NRC:

1. Staff view of Unit 1 yard section FEA and its applicability to Unit 2 – see below Unit 1 Operability Determination.

2. Staff view of analysis for reduced design pressure form 1950 to 1275 psi for Unit 1 past historical look – Lupold to get back to us, they claim they never saw it.

3. Adequacy on the use of the Unit 2 TS section 4.0.1 and 4.0.3 and 4.0.5 – see below on Unit 2 Operability Determination

4. Adequacy of Unit 2 Operability Determination

    a. There are no immediate safety issues.

    b. Licensee reviewing for explicit statement on the evaluation for suitability in this case structural integrity per sections IWA 4160, 4170, and 4180 of their code version.

    c. Staff needed to better understand condition of Unit 2 FHB deep section as to coated or not and adequacy of intact portion with wetted sand conditions with no past pressure drop test – licensee information limited from 2010.

    d. Staff needed to better understand condition of Unit 2 buried yard section with no past pressure drop test – licensee information limited from 1994.

    e. In light of the limited information above, we will need to look at the PSEG final Operability Evaluation for the U2 AFW buried piping or other document related to suitability for service. Licensee information is limited to an inference that coating was applied to Unit 2 unlike Unit 1 and Unit 2 is in better shape. Region I SRA support the PSEG risk assessment of only a slight increase in risk until the IWA-5244 test is done at the next U2 RFO (spring 2011).

    f. PSEG entered TS 4.0.3 on missed surveillance and this resulted in the above noted risk assessment:

        i. Staff informed PSEG of TIA at Pilgrim dated December 31, 2008 (ml083660174), a missed surveillance is different from a surveillance never done. With a missed surveillance, one has a basis or starting point for satisfactory conditions assuming the test past. If the test was never done then what is the basis for satisfactory conditions (can't go on the hunch that it may pass – see Ennis email of 4/26/10 which sparked the conference call.

    g. PSEG entered TS 4.01 and 4.0.5 on failure to conduct a surveillance test and this resulted in entering AFW LCO and ??? possibly the 3.4.11.1 LCO on structural integrity for code class 3 components. This then resulted in operability determinations:

        i. Based on a past TIA at Clinton (2010-001 dated April 19, 2010 (ml101100101)), there is separation of code ISI/IST from Surveillance testing. Salem Unit 1 and 2 TS 4.0.5 seems to define surveillance as ASME code ISI

RI

for components and IST for Pumps and Valves. Based on past practice and current TSB position, the code ISI requirements should be separated from TS requirements. Per rule in 10CFr 50.55a section f and g, any conflicts between code and TS must result in a TS amendment request. The licensee has an amendment request as of Sept. 23, 2009, but based on recent review it is not clear how the structural integrity LCO is being addressed (10 CFR 50.55a f and g sections f (5) (ii) and g (5) (ii)).

ii. The issue of technical specification, ASME vs. surveillance, was resolved with the Tech Spec Branch on the line. ASME is invoked "in isolation" of the tech spec and does not connect to surveillance requirement regardless of how stated in the LCO for maintaining structural integrity is written in accordance with ISI requirement per related TS surveillance requirement.

5. Unit 2 Risk Assessment done per TS 4.0.3 – SRA Cahill reported being satisfied with the risk assessment done by PSEG. The risk assessment has information value and it supports a determination of a slight increase in risk (CCDP) waiting for the next refueling outage for Unit 2 for a more thorough inspection of coating and pressure drop test be done on the Nos. 24 and 22 AFW headers.

6. Adequacy of Unit 1 Operability Determination

   a. Staff needs to understand condition of FHB deep section as to coated or not and adequacy of intact portion with wetted sand conditions) – licensee information limited - historical issue on significance for NRC identified finding of failure to conduct ISI (pressure drop test) per code.

   b. Tsao comments on FEA were addressed:

      i. Page 4, last paragraph. The licensee stated that the worst wall thickness is 0.077 inch. Confirm that the minimum allowable pipe wall thickness is 0.190 inch as shown on page 5, second paragraph.

      ii. The stress analysis needs to include detailed pipe wall thickness measurements in all 5 subject AFW pipes so that the reviewer can understand the extent of the wall thinning

   c. Based on review with Kamal Manoly, we are going to engage the licensee technical staff on four residual questions since the FEA (see also Tsao questions in Attachment 2) appears to be a final document (answers may be addressed in the Unit 1 operability determination).

      i. Was the seismic input considered in the structural integrity analysis?

         For the U1 structural integrity evaluation what is the contribution of seismic induced stresses? This is to establish the magnitude of the seismic stresses in comparison to the pressure induced stresses. It is expected that the pressure induced stresses will be the dominant stress source.

      ii. What was the basis for the averaging of loads on the piping analysis?

RI

For the U1 finite element analysis, confirm that the area of compensation for the missing material at the deepest pit (0.077") was within the Code calculation requirements.

iii. What documented evidence can be supplied to show a coating of what type was applied to the Unit 2 AFW piping? These are still unknowns.

iv. What does the supplier of the coating suggest is the life of the coating? How long was the coating expected to be effective? This is still unknown.

d. With respect to d above, the results where conveyed to DRP BC who agreed with the stated position and agreed to assist in setting up a staff-to-staff discussion on the above points with PSEG. DRS BC communicated the above issues on Friday 4/30/10. A telecom with Kamal Manoly occurred on Monday May 3 to address the c.i and c.ii issues? At the out-brief for Wednesday May 5, items c.iii and c.iv were discussed with the licensee as an issue associated with difficulty in retrieving design or as installed information – they acknowledged the issue.

e. Headquarters review of tech eval on reduced pressure rating from 1950 to 1275.

OK

Ennis Summary of April 28, 2010

The following is a summary of the internal NRC call held on 4/27/10 to discuss issues associated with the Salem Unit 2 AFW piping. These issues were raised following licensee discovery of degradation of the Salem Unit 1 AFW buried piping and the subsequent extent of condition review.

1) The licensee has never performed the pressure testing required by paragraph IWA-5244 of Section XI of the ASME Code for the buried AFW piping. Technical Specification (TS) Surveillance Requirement (SR) 4.0.5 provides requirements regarding inservice inspection and inservice testing of ASME Code Class 1, 2, and 3 components. SR 4.0.5.d states that "[p]erformance of the above inservice inspection and testing activities shall be in addition to other specified Surveillance Requirements." Therefore, the testing required by IWA-5244 is considered a TS surveillance requirement.

2) SR 4.0.3 allows a delay in the performance of a SR when it is discovered that a surveillance was not performed within its specified frequency (i.e., missed surveillance). PSEG is currently invoking the provisions of SR 4.0.3 to justify not performing the IWA-5244 testing for the AFW piping until the next outage.

3) A Pilgrim TIA dated 1/23/09 (ML083660174) states that "the NRC staff's position is that a missed SR is different than an SR that was never performed." Some of the key points in the TIA supporting this position are as follows:

   a) Use of the word "frequency" [in SR 4.0.3] establishes an interval, a period of time, that includes an initial performance of the SR, and a specified time period to re-perform the SR thereafter, i.e., to repeat the surveillance.

   b) SRs are performed at frequencies that are more often than the mean-time to failure of particular systems. Thus, most SRs confirm that SSCs are operable given an operable finding at the previous testing interval.

   Based on the TIA, PSEG's use of SR 4.0.3 to justify a delay in performing a surveillance that never has been performed is contrary to the NRC staff's current interpretation on use of SR 4.0.3.

4) SR 4.0.1 states, in part, that "[f]ailure to perform a Surveillance within the specified frequency shall be failure to meet the Limiting Condition for Operation, except as provided in Specification 4.0.3. Since SR 4.0.3 is not applicable to surveillances that have never been performed, Salem Unit 2 does not meet LCO 3.4.11.1 which states "[t]he structural integrity of ASME Code Class 1, 2 and 3 components shall be maintained in accordance with Specification 4.4.11.1." Note, SR 4.4.11.1 references SR 4.0.5 as the surveillances required to demonstrate structural integrity of the ASME Code Class 1, 2 and 3 components. The AFW piping is Code Class 3. Action c in LCO 3.4.11.1 states that:

   > With the structural integrity of any ASME Code Class 3 component(s) not conforming to the above requirements, restore the structural integrity of the affected component(s) to within its limit or isolate the affected component(s) from service.

OK

The above Action Statement has no time limit.

5) The licensee is currently evaluating the structural integrity of the Salem Unit 2 AFW buried piping. If the licensee concludes that the structural integrity is acceptable, then Salem Unit 2 would no longer be in Action c of LCO 3.4.11.1 (i.e., structural integrity would be restored in accordance with Action c). If the licensee concludes that the structural integrity is not acceptable, they would need to isolate the affected components from service in accordance with Action c. Isolation of the affected AFW piping would put them in the Action b in LCO 3.7.1.2 for two inoperable AFW pumps. [Region I, please confirm number of AFW trains that would be inoperable] This would result in a plant shutdown.

6) Failure to perform the testing required by IWA-5244 is a violation of ASME XI. The licensee would not need to submit a relief request if they are planning to do the test the next outage.

7) The licensee believes that the Salem Unit 2 AFW buried piping is in better condition that the Unit 1 piping. Region I will continue to review the licensee's efforts on these issues. The NRC staff is not aware of any information at this point indicating a lack of structural integrity for the Salem Unit 2 AFW buried piping.