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From: "MILLER, D BRYAN" <dmill14@entergy.com>
To: "KALYANAM, N. KALY" <nxc@nrc.gov>
Date: 3/2/04 10:22AM
Subject: FW: The RAI from John Tsao

-----Original Message-----

From: N. Kaly Kalyanam [mailto:NXK@nrc.gov]
Sent: Monday, January 12, 2004 2:09 PM
To: MILLER, D BRYAN
Subject: The RAI from John Tsao

is attached.

Docket 50-382

MC 1355

**REQUEST FOR ADDITIONAL INFORMATION
WATERFORD EXTENDED POWER UPRATE
MATERIALS AND CHEMICAL ENGINEERING BRANCH
REVIEWER: JOHN TSAO, 1/12/04**

RAI 2.1.7-1 The NRC has revised the regulatory guidance regarding protective coating used inside the containment. The revised guidance are Regulatory Guide 1.54, "Service Level I, II, and III Protective Coatings Applied to Nuclear Power Plants," Revision 1, July 2000, and Standard Review Plan (SRP) Section 6.1.2, "Protective Coating Systems (Paints)-Organic Materials," draft Revision 3, April 1996. It seems that the protective coating discussed in Section 2.1.7 in the Waterford 3 extended power uprate report is not consistent with the above guidance. For example, the ANSI standards mentioned in Section 2.1.7 are no longer used in Regulatory Guide 1.54. The licensee needs to revise its assessment of the protective coating systems as discussed in section 2.1.7 in the Waterford extended power uprate report and update Waterford 3 FSAR 6.1.2.1 to be consistent with Regulatory Guide 1.54, Revision 1, July 2000, and SRP 6.1.2, draft Revision 3, April 1996.

RAI 2.1.8-1 In order for the staff to evaluate the acceptability of the flow-accelerated corrosion (FAC) program, the staff has asked licensees to provide a list of the components in the program most susceptible to FAC. The list should include initial wall thickness (nominal), current wall thickness and the future predicted wall thickness. In Table 2.1-3 of the Waterford power uprate report, the licensee shows the most significant increases in wear rate. However, the staff is not clear whether the pipes with the significant increase in wear rate in Table 2.1-3 are also the most susceptible to flow-accelerated corrosion. Clarify whether the seven piping listed in Table 2.1-3 are the most susceptible piping to flow accelerated corrosion. If they are, provide initial and current wall thickness of these piping, and predicted wall thickness of these piping in the current operating conditions and post-uprated conditions. If they are not, provide the aforementioned wall thickness data of a sample of the most susceptible piping systems.

RAI 2.1.8-2 The pipe wall thinning caused by flow-accelerated corrosion is predicted by the EPRI's CHECWORKS computer code. In order to allow the staff to evaluate the accuracy of these predictions, the licensee should provide examples of the piping components for which wall thinning is predicted by the code based on the current operating conditions and at the same time measured by ultrasonic testing or any other method employed in Waterford 3. This procedure (predicted wall thickness vs. measured wall thickness comparison) will show the effectiveness of CHECWORKS in predicting the as-found condition.

RAI 2.1.8-3 In the last paragraph on page 2.1-11 of the Waterford power uprate report, the licensee states that during each outage, inspections are performed based on an aggressive program to identify piping in need of replacement. (1) Discuss the inspection technique and inspection scope (e.g., how many piping systems are inspected) in the Waterford flow accelerated corrosion program. (2) The licensee also states that "...Repairs are performed to preclude falling below minimum wall thickness..." Discuss specific subsection in the ASME Code from which the minimum wall thickness is calculated.

RAI 2.1.8-4 In the first paragraph on page 2.1-12 of the Waterford power uprate report, the licensee states that "...if the measured wall thickness at the current refueling outage, and/or, the projected wall thickness at the next refueling outage falls below the code allowable wall thickness, the piping should be replaced..." The staff is not clear what is meant by "the code allowable wall thickness" in the licensee's statement. The ASME code does allow pipe wall

thickness to fall below the nominal wall thickness but not the minimum wall thickness. (1) Clarify the "code allowable wall thickness" on page 2.1-12. (2) Discuss the limit on the percentage of wall thickness below which the pipe is replaced. (3) Discuss whether the pipe replacement due to flow-accelerated corrosion is consistent with (a) ASME Code, Section XI, Case N-597-1, which is referenced in Regulatory guide 1.147, Revision 13, June 2003; and (b) EPRI Report, "Recommendations for an Effective Flow-Accelerated Corrosion Program," NSAC-202L-R2, April 1999..

RAI 2.1.9-1 In Section 2.1.9 of the Waterford power uprate report, the licensee states that Waterford 3 has implemented the requirement of NEI 97-06 Steam Generator Program Guidelines. It is recommended in NEI 97-06, Revision 1, January 2001, that primary-to-secondary operational leakage be limited to 150 gallons per day per steam generator. However, in the proposed changes to Technical Specifications 3.4.5.2c, the licensee proposes to change the primary-to-secondary operational leakage from 720 gallons per day per steam generator to 540 gallons per day per steam generator. Discuss why NEI 97-06 recommended operational leakage limit of 150 gallons per day per steam generator is not being adopted even though NEI 97-06 is implemented at the Waterford Steam Electric Station, Unit 3.

RAI 2.1.10-1 The licensee states that feedwater flow will be increased as a result of extended power uprate, and the capacity of the steam generator blowdown system under power uprated conditions will still be adequate to maintain chemistry in the secondary systems. (1) Discuss the feedwater flow increase in the power uprated conditions as a percentage of the original rated flow. (2) If the blowdown flow is increased as a result of increased feedwater flow rate, provide a percentage of the increase in terms of original rated flow, and (3) Discuss whether the blowdown demineralizers are adequate to treat the increased blowdown flow rate under the power uprated conditions.

RAI 2.1.12-1 Clarify whether the Waterford primary and secondary water chemistry programs follow the primary and secondary water chemistry guidelines in EPRI reports TR-105714 and TR-102134, respectively. (1) Clarify which revision of the EPRI reports are currently being used at Waterford 3, and (2) Clarify whether procedures are implemented at Waterford 3 to adopt the latest version of the EPRI water chemistry reports if they are revised in the future.