From: N. Kaly Kalyanam
To: Bryan Miller
Date: 2/18/04 3:23PM
Subject: RAI from I&C

ia attched. Please review the questions and let me know if your response can be provided in 30 days from the date of the formal RAI.

Thanks

Kaly

Docket 50-382

MC1355

REQUEST FOR ADDITIONAL INFORMATION

INSTRUMENTATION AND CONTROLS (I&C) SECTION

WATERFORD STEAM ELECTRIC STATION, UNIT 3

EXTENDED POWER UPRATE (EPU) REQUEST

TAC NO. MC1355

The I & C section requires the following information to complete its review.

1. Discuss the instrument setpoint methodology used to calculate trip setpoints and allowable values of the plant parameters affected by the EPU. If your methodology has not been previously reviewed by the NRC staff, then please submit a copy of plant instrument setpoint methodology for staff's review and approval. If you use method 3 specified in ISA S67.04.02, then confirm that a check calculation is performed to account for all loop uncertainties not measured during the Channel Operational Test (COT)/Channel Functional Test. Please assure that adequate margin exists between the Analytical Limit (AL) and the Allowable Value (AV) that equals or exceeds the value of uncertainties not measured during the COT. Provide documentation of the calculation which demonstrates the existence of adequate margin. Discuss how the channel operability is determined for each of the plant parameters affected by the power uprate.

2. The Waterford 3 EPU Report (W3F1-2003-0074), page 2.13-10 stated that as part of the power uprate, the response times for CPCS low DNBR and high LPD trips were reviewed and enhancements to clarify the time requirements were identified, which included reductions in some of the times required to be assumed safety analyses. Identify these response time reduction items and the related safety analysis sections.

3. The Waterford 3 EPU Report page 2.4-1 stated that the EPU also affects the atmospheric dump valve (ADV) controllers. The existing ADV analog controllers are being replaced with more accurate digital controllers. Because the ADV controllers perform safety related functions, 10 CFR 50 Appendix A, General Design Criterion (GDC) 1, "Quality Standards and Records," requires in part that structures, systems, and components important to safety shall be designed, fabricated, and tested to quality standards commensurate with the importance of the safety functions to be performed, 10 CFR 50.55a(h) requires in part that protection systems satisfy the criteria of IEEE Std. 603, "IEEE Standard Criteria for Safety Systems for Nuclear Power Generating Stations." Discuss the modification package of the ADV controllers to be installed at the Waterford 3 and address the following design requirements:

   (1) Comply with IEEE-603 (or IEEE-279) requirements.
   (2) Software life cycle process planning
   (3) Design verification and validation process
   (4) Configuration management process
   (5) Maintenance, testing, and calibration process
   (6) Environmental considerations (EMI/RFI, temperature, humidity).

4. If ADV controllers use the commercial software-based devices, the digital components to be used in safety systems must be qualified for their intended application. Address the Waterford-3 plant-specific dedication of commercial grade digital equipment for nuclear safety application with respect to the guidance provided in NRC Standard Review Plan (SRP), Appendix 7.0-A, Section C.3.8, "Review of the Acceptance of Commercial-Grade Digital Equipment," and SRP Section 7.1, "Acceptance Criteria on Supplemental Guidance for Digital Computer-Based Safety Systems."

5. The ADVs are credited for small break LOCA (SBLOCA) mitigation at greater than 70% rated power and a new Technical Specification (TS) was proposed. Because ADV controllers are digital devices, the common mode failure due to software error should be considered. Additional surveillance may be required after detecting one ADV inoperable. Discuss the adequacy of the proposed TS with respect to the common mode failure concern.

6. The Waterford 3 EPU Report Section 2.13.1.1.4.1, "General Description of the Event," stated that an ADV may be inadvertently opened due to operator error or due to a failure in the ADV control system. Analyze the consequence for inadvertently open all ADVs due to a common mode failure at ADV digital controllers.

7. In Attachment 1, "Analysis of Proposed Technical Specification Changes," Section 4.0 stated that in an effort to improve clarity for the Operators, the word "indicated" or phrase "an indicated" is being added to identify those values in TS that can be compared directly to plant instrument readings to ensure TS compliance. The staff considers that the plant instrument readings from indicators can only be used for channel check to detect a gross failure of an instrument channel. It is not acceptable to be used for TS compliance. There is no assurance that the "indicated" reading is reliable and conservative. The number in the TS should be based on safety analysis, and not on instrument indication. Therefore, the word "indicated" or "an indicated" should not be used in the TS.

8. FSAR Section 7.8.3.2, "Diverse Emergency Feedwater Actuation System (DEFAS)," stated that the DEFAS actuation signals are interlocked with steam generator pressure. The power uprate requires setpoint change on "steam generator pressure-low." Verify that the proposed setpoint change does not affect the DEFAS operation or cause inadvertent actuation of the DEFAS.

9. Verify the inconsistency between TS and BASES. For example, TS 3/4.2.6, "Reactor Coolant Cold Leg Temperature," LCO 3.2.6 states "The reactor coolant cold leg temperature shall be maintained between 536°F and 549°F," while Bases 3/4.2.6 Insert states "The safety analysis assumes that cold leg temperature is maintained between 553°F and 552°F or indicated temperatures of 556°F and 549°F."