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From: N. Kaly Kalyanam
To: Bryan Miller
Date: 3/2/04 11:10AM
Subject: RAI from SPLB - Angelo Stubbs

Bryan:

I am enclosing the draft RAI from Angelo Stubbs.

Please review the questions and let me know if you can respond to them within thirty days of receipt of the formal RAI.

Thanks

Kaly

Docket No. 50-382

TAC No. MC1355.

OFFICE OF NUCLEAR REACTOR REGULATION
DRAFT REQUEST FOR ADDITIONAL INFORMATION
LICENSE AMENDMENT REQUEST FOR EXTENDED POWER UPRATE
WATERFORD STEAM ELECTRIC STATION, UNIT 3
DOCKET NOs: 50-382 (TAC NO. MC1355)

1. Please explain how the Equipment and Floor Drainage System is impacted by the EPU.

2. Section 2.5.5.3 of the licensee's November 13, 2003 license amendment request, addresses the impact of EPU on the Reactor Auxiliary Cooling Water Systems. In the evaluation section, it is stated that " Under EPU conditions, the maximum heat load from containment during a LOCA is lower than the maximum heat load considered on the CCWS and ACCWS systems under pre-Uprate conditions. The containment heat load under EPU conditions was determined using a more detailed evaluation of the containment heat loads than was performed previously under Pre-EPU conditions."

   A. Provide the pre-EPU and post-EPU heat loads for the CCWS and ACCWS systems.

   B Explain, in detail, the differences in the methods and assumptions use to calculate the pre-EPU and post-EPU heat loads. Identify what conservatism, if any, has been removed, and provide appropriate justification for the changes made in the way the heat load was calculated for post-EPU plant operation.

3. Section 2.5.5.4 of the licensee's November 13, 2003 license amendment request, addresses the impact of EPU on the Ultimate Heat Sink. The EPU evaluation arrived at lower peak heat loads than those used in the current UHS analysis, due to lower maximum CCWS heat loads that resulted from a more detailed evaluation of post-accident heat loads. Please discuss how the UHS analyses were performed, and identify any differences in the analysis methods, assumptions or inputs between the pre-EPU evaluation and the post-Evaluation.

4. Section 2.5.5.5 of the licensee's November 13, 2003 license amendment request, addresses the impact of EPU on the Emergency Feedwater System. In the Evaluation Section the licensee states "Although EPU will cause an increase in the decay heat, engineering evaluations for the EPU determined that no change to the EFW performance (flow rate and delivery pressure) is required." Please provide additional details on the analysis used to support the above statement. Explain how the increased heat load is accommodated by the EFW system without any change in the system performance requirements.

5. In Section 2.5.5.5 it is also stated that " The increased demand for condensate requirements for cooldown as a result of EPU can be met with the current system configuration and operation." Please provide both the total inventory required by EFW for cooldown, and the total inventory available for use by the EFW system for the post-EPU plant.

6. As a result of plant operation at the proposed extended power uprate (EPU) level, the decay heat load for any specific discharge fuel scenario will increase. In section 2.5.5.1 of the Waterford 3 EPU submittal, it is stated that for power uprate conditions the

maximum bulk pool temperature limit of 140°F for normal refueling outage will not be exceeded and that the maximum bulk pool temperature limit of 155 °F for full core offload will not be exceeded. However, a detailed discussion of the Spent Fuel Pool evaluations performed to support the above statements was not provided. Based on the plants current spent fuel pool analysis, the peak fuel pool temperature for the normal discharge case is 139.4°F, and for the full core discharge is 151.6°F. Please provide the following information for both pre-uprate, and post-uprate operation.

A. Please provide for both pre-uprate, and post-uprate operation, the methodology and assumptions (i.e. number of fuel assemblies off loaded, hold time, number of previously discharged fuel assemblies in the SFP, ultimate heat sink temperature, etc.) used in the SFP thermal-hydraulic analysis for each scenario analyzed. Also, provide the spent fuel pool bulk temperature results for both the pre-EPU, and post-EPU plant, and identify any changes made to the SFP analysis for the EPU evaluation.

B. In the event of loss of the Spent Fuel Pool Cooling System, what impact does the EPU have on the time for the SFP temperature to rise from the maximum bulk pool temperature limit of 140°F to boiling at 212°F. Confirm that the time to boiloff the post-EPU plant is sufficient to allow mitigative actions, and that makeup water requirements are within the system capacity.

C. The SFP heat loads and corresponding peak calculated temperatures during planned (normal) refueling outages under partial and full core off-load conditions, and unplanned (abnormal) full-core offload outages for both pre-urate, and post-uprate conditions.

7. In section 2.5.8.1 of the EPU submittal, it is stated that "The fuel oil consumption rates were based on actual measured rates as opposed to vendor supplied rates determined when the EDGs were new. The consumption rates used in the evaluation were less than the vendor-supplied rates used in the Analysis of Record, but greater than the measured rates." Please provide the following information:

A. The consumption rate assumed in the current Analysis of Record.
B. The measured consumption rates, and conditions under which they were measured.
C. The consumption rate assumed in the EPU evaluation, and the corresponding fuel oil requirements for post-DBA operation.
D. A detailed discussion on how the consumption rates used for the EPU analysis was selected. Include discussions uncertainties associated with the measured data, and margins applied to the assumed consumption rate.

8. In section 2.5.8.1 of the submittal, it is stated that " A time-dependent load profile was developed based on expected power requirements and run time of each component powered by the EDG under accident conditions. This evaluation considered the ECCS performance and containment design analyses, along with engineering judgement for long-term portion of the event and components not modeled in those analyses. Please identify the parts of the analysis were engineering judgement was used and provide the appropriate rationale.