From: Peter Tam
To: INTERNET:Clyde.Mackaman@nmp.cn.com; INTernet:Denise.Wolniak@nmp.cn.com; internet:steven.leonard@nmp.cn.com
Date: 4/24/03 8:44AM
Subject: NMP1 P-T Limits Curve Amendment - Issues for Discussion

Clyde:

Our Reactor Systems Branch has completed its review of your 11/15/02 application for amendment. Based on this review, we plan to approve your proposed use of the curves for 23.38 (in lieu of 28) EFPYs. If you agree, we would request that you revise all the curves with a label to limit their usefulness to 23.38 EFPYs, similar to what Pilgrim and Susquehanna did for similar amendments. If you disagree with this assessment and would like to pursue 28 EFPYs, we would be glad to discuss with you the following issues in a conference call:

Benchmarking - The licensee used the computer program DORT to calculate two-dimensional (r,z) and (r,) flux distributions, and were combined to produce a three-dimensional flux (fluence) distribution. The cross sections were obtained from BUGLE-96. The BUGLE-96 values are derived from the ENDF/B-VI file, the recommended cross section set in RG 1.190. The licensee derived the neutron sources using the power distribution and the ORIGEN 2.1 code. It is not clear to the NRC staff why this code was used since fuel composition as a function of burnup should be available from reload reports or the licensee.

Poolside Critical Assembly (PCA) Benchmark - The arrangement analyzed has a 12-cm gap between the core and the thermal shield and a 13-cm gap between the thermal shield and the vessel. However, the core-to-shroud distances in Unit 1 range from 10 to about 40 cm and the shroud-to-vessel distance is about 40 cm. The arrangement chosen is not representative of a BWR geometry. In addition, the test excluded the Rh-103 and U-238 detectors. The licensee's justification was that the Rh-103 detector is not commonly used due to its short half-life; therefore, the cross sections are not well known. Based on NUREG/CR-6115 (ORNL/TM-13205), the NRC staff disagrees with the justification provided. The licensee's basis for rejecting the U-238 dosimeter was due to cross section difficulties. The purpose of benchmarking is to demonstrate the ability of the methodology as an integrated tool to calculate the dosimeter activation. Based on this review, the benchmarking appears not successful because it analyzed the wrong geometry and rejected dosimeters without a reasonable justification.

NMP1 Surveillance Capsule at 210-Degree Azimuthal - The NRC staff reviewed the NMP1 210-degree surveillance capsule report (the capsule was removed at the end of cycle 12 at 16.81 EFPYs). This report does not include any information on the methodology of neutronic calculations and in addition indicates substantial discrepancies between the Cu, Fe and Ni dosimeters. The report recommends the fluence value based on the Cu results, yet Cu activation represents a small part of the spectrum compared to Fe and Ni. Fe and Ni results are also available. Because the neutronic methodology was not presented and because of very large discrepancies in the dosimeter response, the NRC staff finds that the NMP1 210-degree surveillance capsule results do not support the benchmarking of the fluence calculational methodology.

Surveillance Capsules Used in the Proposed Benchmarking - The licensee removed, tested, and analyzed a total of 5 surveillance capsules from both Nine Mile Point units. However, only

two were proposed in the submitted benchmarking analysis. As stated in RG 1.190, one of the objectives of benchmarking is to determine potential bias in the calculation of the best estimate which requires that all of the existing data be used. This licensee ignored the existence of 3 Nine Mile Point capsules and made no effort to determine the existence of a bias. The benchmarking effort appears incomplete.

This e-mail aims solely to prepare you for a conference call. It does not formally state an NRC staff position, nor does it formally request for additional information.

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