

May 12, 2006

Bill Eaton, BWRVIP Chairman
Entergy Operations, Inc.
Echelon One
1340 Echelon Parkway
Jackson, MS 39213-8202

SUBJECT: COMMENTS AND SUGGESTIONS REGARDING THE BWRVIP-145
REPORT: BWR VESSEL AND INTERNALS PROJECT, EVALUATION OF
SUSQUEHANNA UNIT 2 TOP GUIDE AND CORE SHROUD MATERIAL
SAMPLES USING RAMA FLUENCE METHODOLOGY (TAC NO. MD0043)

Dear Mr. Eaton:

By letter dated November 14, 2005, the Boiling Water Reactor Vessel and Internals Project (BWRVIP) submitted for NRC staff review, Electric Power Research Institute (EPRI) Technical Report (TR) 1011694, "BWR Vessel and Internals Project, Evaluation of Susquehanna Unit 2 Top Guide and Core Shroud Material Samples Using RAMA Fluence Methodology (BWRVIP-145)." The BWRVIP-145 report provides a comparison of the fluence predicted by the RAMA Fluence Methodology to the fluence of material samples removed from the shroud and top guide at the Susquehanna Unit 2 nuclear plant.

The staff has determined that there is sufficient information to proceed with the safety evaluation. However, the staff has identified a few comments and suggestions. The staff believes that the BWRVIP responses to these suggestions would improve the usefulness of the report and enhance the staff's understanding of the Radiation Analysis Modeling Application (RAMA) capabilities in regions close to the reactor pressure vessel core boundaries.

B. Eaton

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In order to complete the staff's review of the BWRVIP-145 report in an efficient and effective manner, the staff requests that if you elect to respond to the enclosed comments and suggestions, that you do so no later than six months from the date of this letter. If you choose not to respond to the staff's comments and suggestions, please contact Meena Khanna at (301) 415-2150 to indicate that to her so that the staff can proceed with its review of the BWRVIP-145 report. In addition, if you have any other questions regarding the enclosed comments and suggestions please contact Ms. Khanna.

Sincerely,

/RA/

Matthew A. Mitchell, Chief
Vessels & Internals Integrity Branch
Division of Component Integrity
Office of Nuclear Reactor Regulation

Project No. 704

Enclosure:
Comments and Suggestions
Regarding the BWRVIP-145 Report

cc: BWRVIP Service List

B. Eaton

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Sincerely,

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Matthew A. Mitchell, Chief
Vessels & Internals Integrity Branch
Division of Component Integrity
Office of Nuclear Reactor Regulation

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Enclosure:
Comments and Suggestions
Regarding the BWRVIP-145 Reports

cc: BWRVIP Service List

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COMMENTS AND SUGGESTIONS REGARDING THE BWRVIP-145 REPORT:
BWR VESSEL AND INTERNALS PROJECT, EVALUATION OF SUSQUEHANNA UNIT 2
TOP GUIDE AND CORE SHROUD MATERIAL SAMPLES
USING RAMA FLUENCE METHODOLOGY

The staff's comments include the following:

1. The staff noted that the subject of this report fills a gap in existing methods and data for reactor internals dosimetry and fluence. Significant difficulties were experienced in using the conventional discrete ordinates method in calculating the fluence values for components away from the middle plane. However, the RAMA fluence methodology seems to be able to overcome such problems albeit with increased effort.
2. The staff is pleased to see that the BWRVIP will follow this effort with thermal fluxes for the RPV internals. This is another void that needed to be filled.

The staff's suggestions include the following:

1. The report correctly states that no specific guidelines have been established for the acceptable prediction bias and uncertainty for the RPV shroud and top guide components. There are two reasons for this lack of acceptance criteria, which include: (1) the difficulty of establishing feasible uncertainties and (2) the spectrum of potential uses.

The staff agrees that RAMA seems to have overcome some of these difficulties. However, the staff recommends that the BWRVIP propose acceptance criteria for the fluence bias and uncertainty, as related to the intended purpose of the measurements and/or calculations.

2. The staff recommends that the BWRVIP analyze a number of existing shroud measurements to form a reference or benchmarking database and add this information to the BWRVIP-145 report.
3. Inspection of the results listed in the tables of Sections 5 and 6 of the BWRVIP-145 report indicates a calculation to measurement (C/M) bias towards the higher calculated values. In addition to the observations discussed in Section 2.3 of the BWRVIP-145 report, the staff recommends that the BWRVIP consider adding the following observations to the report: (a) the spectral coverage for iron and nickel (that are represented in the measurements) is limited and (b) the addition of measurements to include copper and/or titanium could establish or eliminate the apparent bias.

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ENCLOSURE