January 8, 2004

MEMORANDUM TO: Stephen Dembek, Chief, Section 2
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

FROM: Meena Khanna, Project Manager, Section 2 **/RA/**
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF NOVEMBER 20, 2003, MEETING WITH WESTINGHOUSE ON THE DISCUSSION OF UPCOMING AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION XI PROPOSALS FOR THE DECEMBER MEETING

On November 20, 2003, representatives of the Westinghouse Electric Company met with the NRC staff to discuss the upcoming ASME code activities for the December ASME meeting, which included the following: acceptance criteria for leaking tanks and low-pressure vessels, inspection requirements for heat exchangers, and flaw evaluation rules and acceptance criteria for bottom head penetrations. Westinghouse provided a discussion of each of these topics. A summary of each topic is provided below.

Acceptance Criteria for Leaking Tanks and Low-Pressure Vessels

Westinghouse provided the staff with background information, which included the Code requirements for flaws in vessels and tanks. IWA-5250(a) requires the repair/replacement of leaking components, with an exception of the buried components with acceptable leakage, and IWC-3122.3 and IWC-3132.3 allow for an analytical evaluation. The Westinghouse representative then indicated that the methodology of the new code case for vessels/tanks included: flaw detection, repair practicality evaluation, flaw characterization, root cause evaluation, flaw evaluation, flaw growth evaluation, and subsequent examinations. A flow chart was provided which illustrated the details of the methodology of the new code case.

In conclusion, Westinghouse provided some key points for the new code case for flaws in vessels and tanks, which included the following:

- the provisions of the code case are focused on structural integrity and that the evaluation was based on firmly established Section XI methods,
- the supplemental surveillance/inspection confirms the ongoing structural integrity,
- a precedent was established with GL 90-05 and N-513,
- when practical, repairs should be performed for inaccessible flaws,
- a maximum size is assumed,
- through-wall flaws are included, and
- the safety issues regarding operation are minimized by limiting the code case to Class 2 or 3, moderate energy vessels and tanks.

Revision of Inspection Requirements for the Regenerative and Residual Heat Exchangers

Westinghouse continued the meeting with a discussion regarding a proposal to revise the inservice inspection requirements for the regenerative and residual heat exchangers, from volumetric plus surface exams to visual. The basis for this proposal was due to the large flaw tolerance, low risk of core damage, and good service experience, combined with the high man-rem dose required for inspections that are presently required.

Westinghouse provided a summary of the typical geometry and pressures of the regenerative and residual heat exchangers. Results of the service history of these heat exchangers were discussed. No reportable indications were found with the US plants, except for a steam leak at Susquehanna, in 1996. At the Tsuruga plant in Japan, a large leak was reported in a 3-shell regenerative heat exchanger in 1999. However, Westinghouse indicated that the cause was determined to be a design problem, which doesn't exist with the US plants.

Westinghouse provided a discussion about the flaw tolerance, which has been determined to be very high. Westinghouse also noted that the inspection and service experience has been very good. Also, with respect to risk, Westinghouse indicated that the conversion to a visual inspection would result in a change in core damage frequency small enough to be inconsequential, in accordance with Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis." Westinghouse stated that examples of man-rem dosage from inspections have been reported as "very high dose" for the regenerative heat exchangers. In conclusion, Westinghouse stated that the current inspection requirements could be safely changed.

Evaluation of Upper and Bottom Head Penetrations

The last topic that was discussed was the background and technical basis for the evaluation of the upper and bottom head penetration flaws. Westinghouse indicated that only two changes were proposed to the existing Code. The word "upper" was removed and the titles of the acceptance table were revised from ASME Code Case IWB-3663. Westinghouse presented the differences of the Westinghouse design vs. the Babcock &Wilcox design. In addition, Westinghouse discussed flaw characterization, the evaluation process, stress corrosion crack (SCC) growth, an example calculation to verify SCC, fatigue crack growth, flaw acceptance criteria, and an example application with respect to the reactor vessel head penetrations. The staff recommended that Westinghouse address the remainder of the reactor vessel head, e.g., the pressurizer. The staff then expressed its appreciation to Westinghouse for the presentations.

An attendance list is provided in the enclosure. The slides used during the meeting are available in ADAMS under accession number ML033520369.

Project No. 700

Enclosure: Meeting Attendees

cc w/enclosure:
Mr. Gordon Bischoff, Manager
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Mr. John S. Galembush, Acting Manager
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MEETING WITH WESTINGHOUSE

NOVEMBER 20, 2003

ATTENDANCE LIST

**WESTINGHOUSE**

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P. Strauch

**NRC**

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T. Sullivan
M. Khanna
M. Mitchell
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G. Georgiev
T. McLellan
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