April 19, 2002

MEMORANDUM TO: Leslie Barnett, Acting Director
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

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

SUBJECT: SUMMARY OF MARCH 20, 2002, MEETING WITH WESTINGHOUSE ELECTRIC COMPANY ON STEAM GENERATOR WATER LEVEL UNCERTAINTY ISSUES

On March 20, 2002, representatives from the Westinghouse Electric Company (W) met with the NRC staff to discuss issues related to water level indication and setpoint anomalies associated with the mid-deck plate effects in Westinghouse (W) steam generators (SG). A list of the meeting attendees is attached. The slides presented at the meeting are available in ADAMS under the accession number ML020990429. The meeting focused on actions to date, an overview of the physical phenomena, a discussion of Nuclear Safety Advisory Letters (NSALs) 02-3, 02-4 and 02-5, utility responses to the NSALs, and future actions anticipated.

W provided a chronology of monitoring for the mid-deck plate differential pressure (dp) phenomena including laboratory testing, uncertainty calculations, technical review team meetings, and the assessment of reportability. Engineering analyses for each plant was reported to have been completed by mid-December 2001. A SG water level workshop was held in late February and was well attended by the industry. In addition, a W Owners Group (WOG) Executive Committee briefing took place in early March 2002.

Details of the SG internal configurations were provided on the various types of W SGs; particularly those with short primary downcomers and submerged primary downcomers. The basic operation of primary separators was described. It was explained that primary separator bypass steam is responsible for the phenomena. In some product line SGs, it was explained that steam flow through the mid-deck vent area will result in a measurable pressure drop. The several SG types not having this problem have very large mid-deck plate vent areas and large annuluses between deck and shell. It was explained that reducing the mid-deck plate vent area aids in reducing moisture carryover from the SG and therefore needs to be considered carefully. It was pointed out that the addition of separator downcomer restrictors and mid-deck plates brought moisture carryover into an acceptable range.

It was shown that mid-deck plate pressure losses correlate well with steam flow rate and that the plate open area variations have a significant impact. In addition, circulation ratio and steam pressure variations have a negligible impact. A reduction of SG water level below nominal does not affect the mid-deck plate pressure loss.

W completed the presentation with a detailed description of each of the NSALs and then opened the meeting to general discussion. No regulatory decisions or determinations were made at the meeting.

Project No. 700

Attachment: Meeting Attendees

cc w/attachment: See next page

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Project No. 700

Attachment: Meeting Attendees

cc w/attachment: See next page

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MEETING WITH WESTINGHOUSE ELECTRIC COMPANY

STEAM GENERATOR MID-DECK PLATE DIFFERENTIAL PRESSURE PHENOMENA

MARCH 20, 2002

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