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U.S. Nuclear Regulatory Commission
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Subject: UFM Technology Update

- References: 1) Letter, J. A. Gresham (Westinghouse) to B. W. Sheron (NRC), "Westinghouse Conclusions Regarding Recent CROSSFLOW Ultrasonic Flow Measurement System Performance Events," LTR-NRC-04-37, June 18, 2004.
- 2) Letter, F. P. Schiffley (WOG) to G. Shukla (NRC), "Westinghouse Owners Group, CROSSFLOW Task Force: Feedback Regarding Westinghouse Technical Bulletin, TB-04-4," WOG-04-310, June 8, 2004.

Dear Mr. Grimes:

Westinghouse Electric Company LLC (Westinghouse) would like to take the opportunity to provide the Nuclear Regulatory Commission (NRC), with an update of the commitments made in Reference (1). The activities associated with these commitments are being undertaken by Westinghouse, its CROSSFLOW partner, the Advanced Measurement and Analysis Group, Inc. (AMAG) and the Westinghouse Owners Group (WOG) CROSSFLOW Task Force (CTF). This update builds upon the information provided in the Westinghouse letter of June 18, 2004 (Reference 1), the Westinghouse Owners Group Letter of June 8, 2004 (Reference 2), and, most recently, the information presented by the WOG CTF at your public ultrasonic flow measurement meeting of September 17, 2004.

As noted in Reference 1, Westinghouse/AMAG committed to reassessing all current CROSSFLOW installations against the lessons learned. As planned, the assessments for the CROSSFLOW applications supporting an Appendix K Margin Uncertainty Recapture (MUR) power uprate were performed first, followed by those CROSSFLOW applications supporting only power recovery. A list of CROSSFLOW systems that have been assessed in this process are provided in Table 1 (attached). The Westinghouse/AMAG validation process consists of a rigorous review of CROSSFLOW installation piping configurations and any pipe intrusions to confirm that the flow velocity profile correction factor properly accounts for all hydraulic effects. The validation also includes analysis of the CROSSFLOW signal spectrum to confirm that no acoustic signal contamination is present in each installation. The CROSSFLOW user utility scope includes analysis of UFM performance to confirm use consistent with the baseline certified configuration and that system configuration and plant procedures provide sufficient protection from the use of any erroneous readings that could result from plant configurations not consistent with the original baseline conditions. Westinghouse/AMAG have issued draft validation reports for each domestic CROSSFLOW installation that is operating, or is preparing to operate, and have provided those draft reports to the individual utilities for review and comment.

In Reference 1, Westinghouse/AMAG expressed confidence that reasonable assurance existed that current CROSSFLOW installations were performing properly, safely and within the licensing basis. Following the technical portion of the validation activity, Westinghouse/AMAG find that, with the exception of three installations that require further validation work, this assurance is maintained.

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Two of the three CROSSFLOW installations that require further validation work are not currently operating and have undertaken programs to fully comply with the installation and application requirements before they are returned to service. We understand that the CROSSFLOW system at the third installation is currently operating; however, the utility has confirmed that the plant is being operated well below its licensed thermal power limit, due to other unrelated constraints. Westinghouse/AMAG have re-enforced the recommendations in CROSSFLOW Technical Bulletins and a Nuclear Safety Advisory Letter with the utility that is currently operating their CROSSFLOW system, for which further validation work is needed.

Assuming utility comments on all baseline validation reports are received by the end of October 2004, Westinghouse/AMAG expects to review, incorporate the comments and issue the final version of the reports to the CROSSFLOW users by the end of November 2004. Westinghouse/AMAG defers to the utilities, perhaps through the WOG CTF, to discuss any pertinent findings from the baseline validation assessments with the NRC.

As it has done from the beginning, Westinghouse/AMAG and now the WOG CTF will continue to keep the NRC informed regarding ongoing progress and the ultimate conclusions drawn once all investigative activities and evaluations are completed. In the interim, please feel free to contact me regarding any questions that you may have regarding this matter.

Very truly yours,



R. M. Span, Acting Manager
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Table 1
 CROSSFLOW Baseline Installation Validations Performed

| CROSSFLOW Installation | Used for Appendix K Margin Uncertainty Recovery Power Uprate | Used for Venturi Power Recovery |
|------------------------------------|---|------------------------------------|
| Salem Unit 1 | X | |
| Salem Unit 2 | X | |
| Hope Creek | X | |
| Kewaunee | X | |
| Hatch Unit 1 | X | |
| Hatch Unit 2 | X | |
| South Texas Project Unit 1 | X | |
| South Texas Project Unit 2 | X | |
| San Onofre Unit 2 | X | |
| San Onofre Unit 3 | X | |
| Pilgrim | X | |
| Calvert Cliffs Unit 1 ² | | X |
| Calvert Cliffs Unit 2 ² | | X |
| Palisades ^{2,3} | X ¹ | X |
| Duane Arnold ³ | | X |
| Diablo Canyon Unit 1 | | X |
| Diablo Canyon Unit 2 | | X |
| Vermont Yankee ^{2,3} | | X |

¹ not yet implemented

² CROSSFLOW system not currently operating

³ further validation is required