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From: [REDACTED]
To: "Gregory Cwalina" <GCC@nrc.gov>
Date: Wed, Jun 16, 2004 11:47 PM
Subject: Comments on May 25th Westinghouse Meeting with NRC

Greg:

The non-proprietary meeting notes from the May 25th meeting have become available on ADAMS, and we have had a chance to review them. I am certain that the points below were noted by the technical reviewers at NRC, but for completeness I have recorded them here.

- 1) On page 8, Westinghouse notes that if the Crossflow is to be used for multiple alignments, each alignment should be base lined. This implies a calibration. If the accuracy of the crossflow meter is 0.3 to 0.5% as claimed, to what should the crossflow meter be base lined or calibrated for each alignment? What is the basis for declaring that one alignment is correct over another. This is the fundamental problem at Fort Calhoun. At that site I understand that Westinghouse is trying to tell Fort Calhoun not to worry because one alignment is conservative. How do they know that the other alignment is not non-conservative?
- 2) On Page 11, two items are identified as not properly defined that have led to confusion. If they have led to confusion in the public documents, should not the clarifications be public?
- 3) On page 30, the data from Hatch clearly demonstrates the inaccuracy and poor repeatability of the nozzle data. Yet these devices are important inputs to base lining, calibrating, or proving accuracy of the Crossflow meter in Westinghouse's methodologies and bases for Crossflow. In other venues, Westinghouse has and continues to suggest to customers that an MUR uprate of 0.7 to 1% can be justified by existing nozzles. Presumably they can support these uncertainties by pointing out a number of cases where their indications agree with Crossflow, thus proving the accuracy of both devices. In fact, the data from the population of nozzles demonstrate a legitimate accuracy expectation of about 1.5% as originally calculated and allowed for in Appendix K.
- 4) On pages 34, 35, 36, and 37, data for each of four correction factors determined by Crossflow reveal wander of between 0.25 and 0.5% over relatively short time periods. These data do not appear to be consistent with the stated absolute accuracies of the loop Crossflow meters (0.46%).
- 5) On page 59, Westinghouse continues to list signal contamination as the root cause despite evidence of at least another contributor. The Header measurements (without Bypass flow) were determined to be in error by amounts exceeding 1% even though they had been declared free of signal contamination.
- 6) On page 60, Westinghouse suggests that the Crossflow meter self-identified the outside design basis performance. In fact, the term self-identification is entirely misleading because the identification relied entirely on the nozzle indication.

It is also noted that the Cf shift is most likely caused by.... This speculation is not proven and reliance on this assumption does not

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constitute a basis for a bounding analysis of uncertainties.

Westinghouse blames the error cited here on lack of stable conditions as proven by CFD and laboratory modeling. As noted above, the header measurements met the conditions of the Crossflow topical report, yet were found to be in error even when there was no bypass flow. Does not this conclusion completely contradict the assumptions of the Crossflow topical report and remove the basic assumption for every meter installed on the basis of this assumption?

7) In the Hatch data, Westinghouse plots the output of nozzles at two different times and Crossflow vs 1st stage pressure over about 90 to 100% power. In the NSAL, Westinghouse offers guidance to customers that this data could be used to verify that the Crossflow meter is accurate within accuracy claims.

It is important to note that the nozzles are nearly perfectly linear with respect to the 1st stage pressure, but the absolute calibration coefficient between the two tests are different by 1.8%. This shows that this data may not be used to determine the absolute accuracy of an instrument as suggested in the NSAL. At the same time, the data for the Crossflow meter shows a non-linearity with respect to 1st stage pressure. According to the NSAL, this data should have resulted in their termination of the use of the Crossflow meters at Hatch until some additional analysis could explain this non-linearity. No such action has been taken, even though Westinghouse is clearly aware of the discrepancy.

Please keep in mind these points as the NRC continues their review and asks for additional information from Westinghouse, as they indicate a persistent discrepancy in approach and instructions to users for the Crossflow system.

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CC:

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