

EJ

**From:** Evangelos Marinos  
**To:** Warren Lyon  
**Date:** Thu, Oct 19, 2006 2:14 PM  
**Subject:** Fwd: Westinghouse Crossflow Safety Evaluation ( My non-concurrence)

Warren,

Per Tom Martin's request I am informing you of my non- concurrence to your subject SE. My reasons are as follows:

- 1) You have not addressed any of my concerns that I identified in my e- mail, to Jim Dyer, dated 08/21/2006 and my e- mail to Tom Martin dated 10/03/2006.
- 2) In addition I have the following concern with regard to your fundamental misunderstanding of the role of the venturi in the " Post Installation Monitoring and Calibration."

What is fundamentally missing in your understanding is the fact that venturi fouling results in flow indication in the conservative direction. Therefore, alarms for adjusting the correction factor with a fouled venturi will result in a conservative reading bounded again by the conservative value of the alarm setting. Other plant parameters are used for assessment of venturi fouling trends. Licensees periodically evaluate, from a power efficiency perspective, whether cleaning the venturi will be cost effective for increasing real power to meet the indicated power level.

The real benefit for using the UFM is to obtain relaxation from the Appendix K penalty of 2% at a clean venturi accuracy level with a very small correction factor provided by the UFM. Therefore, the venturi correction factor from the UFM allows the plant to operate at a new licensed higher power level, and even when the venturi becomes fouled and the power level reduces it remains higher than the previously licensed thermal power and provides benefit.

Furthermore, in the event of an inadvertent venturi defouling, during plant operation, the UFM will alarm and call for correction factor change in the direction of the value determined in the initial implementation of the UFM, with the clean venturi. This correction factor is not applied automatically to the feedwater control system. It only provides information to the operator for manual action.

As you know I have presented these operational aspects previously to the LT/ET and I also proposed, for easier understanding, that this instrument be viewed as a " Block Box" with certain performance requirements , if it can be validated against a known standard which this instrument has been.

>>> Thomas Martin 10/18/2006 9:28 AM >>>

Attached is a safety evaluation and letter that DSS is proposing to send to Westinghouse withdrawing our approval of the Crossflow instrument topical report. We have recently made adjustments to this document, based in part on your input. I understand from your email dated October 3, 2006, that you may still have concerns about our approach, and I am sending this information to you for review so that you can exercise a non-concurrence with this decision, should you so decide. If you decide to non-concur, please provide the basis for your non-concurrence to the document sponsor (Warren Lyon) with a copy to me and your supervisor. Your response is requested by October 23, 2006.

**CC:** Bruce Boger; Catherine Haney; Christopher P Jackson; Gary Holahan; Ho Nieh; Iqbal Ahmed; Jared Wermiel; Jim Dyer; John Grobe; John Nakoski; Jose Calvo; Thomas Martin; Tim McGinty; Timothy Collins

Att to  
e-2

October , 2006

MEMORANDUM TO: Ho Nieh, Deputy Director  
Division of Policy and Rulemaking  
Office of Nuclear Reactor Regulation

FROM: Thomas O. Martin, Director,  
Division of Safety Systems  
Office of Nuclear Reactor Regulation

SUBJECT: NRC STAFF ASSESSMENT OF THE WESTINGHOUSE / ADVANCE  
MEASUREMENT AND ANALYSIS GROUP (W/AMAG) CROSSFLOW  
ULTRASONIC FLOWMETER (UFM)

Reference: "Improved Flow Measurement Accuracy Using Crossflow Ultrasonic Flow  
Measurement Technology," ABB Combustion Engineering, CENPD-397-  
P-A, ML052070504, May 31, 2000. (Proprietary)

We have completed our reassessment of the CROSSFLOW UFM topical report. The NRC staff finds that (1) the use of CROSSFLOW calibration derived from the laboratory testing described in the topical report and other documentation is not acceptable; (2) the use of in-situ (in-plant) calibration, as currently described in the topical report, is not sufficiently detailed to serve as a basis for future licensing submittals; (3) the ranges of flows and plant configurations that define where CROSSFLOW can be used, as currently described in the topical report, were not adequately described; and (4) as currently described in the topical report, the description of the installation and use of CROSSFLOW was not consistent with the actual calibration and commissioning practices necessary to establish reasonable assurance that CROSSFLOW would function as expected within the claimed uncertainty. Accordingly, pending a revision to the topical report that demonstrates the adequacy of the CROSSFLOW UFM, the previously approved CENPD-397-P topical report is not acceptable as a basis for future licensing actions using CROSSFLOW to determine feedwater flow rate and NRC staff approval of the topical report should be withdrawn.

We recommend that you transmit the enclosed letter to Westinghouse to inform them of our findings.

CONTACT: Warren Lyon  
301-415-2897

Enclosure: As stated

717

October , 2006

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Division of Policy and Rulemaking  
Office of Nuclear Reactor Regulation

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CONTACT: Warren Lyon  
301-415-2897

Enclosure: As stated

DISTRIBUTION: SPWB/RF I. Ahmed T. Alexion A. Howe C. Jackson  
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J. Wermiel P. Rebstock

ACCESSION NUMBER:

OFFICE	DSS/SPWB	DSS/SLS	BC/DSS/SPWB	BC/DE/EICB	DD/DSS	D/DSS
NAME	WLyon	TCollins	JNakoski	AHowe*	JWermiel	TMartin
DATE	9/ 20 /06	9/ 20 /06	9/ 20 /06	10/ 13 /06	9/ 21 /06	9/ /06

\*With comments that have been addressed in this report revision.

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Pages 4 through 14 redacted for the following reasons:

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(b)(4); (b)(5)