

September 25, 2007

MEMORANDUM TO: Evangelos C. Marinos, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

FROM: Luis A. Reyes */RA/*
Executive Director for Operations

SUBJECT: DIFFERING PROFESSIONAL OPINION APPEAL INVOLVING
WESTINGHOUSE CROSSFLOW ULTRASONIC FLOW
INSTRUMENTS (DPO-2006-006)

The purpose of this memorandum is to inform you of my considerations and conclusions regarding the appeal you submitted on July 18, 2007, on the subject Differing Professional Opinion (DPO).

BACKGROUND:

On November 9, 2006, the Office of Nuclear Reactor Regulation (NRR) prepared a draft safety evaluation regarding the Westinghouse/AMAG Crossflow ultrasonic flow meter (UFM). This draft safety evaluation documents the basis for suspending the staff's previous March 2000 approval of Combustion Engineering/AMAG (now Westinghouse/AMAG) topical report CENPD-397-P, "Improved Flow Measurement Accuracy Using Crossflow Ultrasonic Flow Measurement Technology." Based on documented problems some nuclear power plant operators have experienced while implementing the Westinghouse Crossflow UFM system and on information obtained through the agency's allegation program, the staff concluded that topical report CENPD-397-P did not provide a sufficient theoretical or experimental basis to generically disposition these issues. Also, the topical report did not provide reasonable assurance that the Crossflow UFM would function as expected within the claimed uncertainty. The draft safety evaluation was sent to Westinghouse on March 13, 2007, who agreed that some of the information in the topical report was insufficient and, in some cases, incorrect.

During the development of the draft safety evaluation, you provided a non-concurrence on the document. In your non-concurrence, you discussed a number of technical issues that you believed supported your conclusion that the staff did not have a sufficient basis for concluding that topical report CENPD-397-P no longer provided reasonable assurance that the Crossflow UFM would function within the claimed uncertainty. In a memorandum dated November 9, 2006, the Director of the Division of Safety Systems, NRR, documented the results of a review of the issues identified in your non-concurrence. The director concluded that the draft safety evaluation did provide a sufficient basis for the proposed suspension, that topical paper CENPD-397-P was not acceptable, and that Crossflow UFM operation was not always as described in topical paper CENPD-397-P or in the findings of the associated safety evaluation.

On December 18, 2006, you submitted DPO-2006-006 wherein you stated that you continued to support the staff's original conclusion regarding the suitability of the Crossflow UFM as documented in the March 20, 2000, safety evaluation. Additional concerns you discussed in your DPO submittal included:

- The conclusions drawn by an independent task group, formed in 2004 to review the suitability of the Westinghouse Crossflow UFM, were contradictory, unsupported and contrary;
- The staff's conclusions were meant to "accommodate" one of Westinghouse's competitors;
- The staff's decision would ultimately damage the nuclear industry's options to apply sound technologies to assure safety and efficiency in the use of our national resources;
- The facts presented by Westinghouse in topical report CENPD-397-P supporting the use of Crossflow UFM were "undisputable;" and
- You stated that you provided a non-concurrence on the draft safety evaluation report and that you considered management's response to this non-concurrence to be unsatisfactory.

In accordance with Management Directive 10.159, "The NRC Differing Professional Opinions Program," a DPO Ad-Hoc Review Panel (the panel) was established to perform an independent review of your concerns. The panel met with you to ensure your issues were mutually understood and to develop a mutually acceptable statement of concern. The panel's review focused on the main technical issues outlined in the draft safety evaluation suspending the previous staff approval of topical report CENPD-397-P. These technical issues included laboratory calibrations, in-situ calibrations, installation and commissioning, and post installation monitoring and calibration. The panel reviewed pertinent documentation on the Westinghouse Crossflow UFM, interviewed associated NRC staff and Westinghouse personnel, and held discussions with licensees currently using the Westinghouse Crossflow UFM. A complete listing of documents reviewed and interviews conducted were included in the panel's final report dated June 12, 2007.

In their final report, the panel concluded that while the Westinghouse Crossflow UFM is capable of measuring fluid flow rate, topical report CENPD-397-P does not provide sufficient information to generically ensure the Crossflow UFM will function within its claimed accuracy. The panel concluded that the staff's draft safety evaluation suspending the previous approval of the topical report provides sufficient basis for the proposed suspension. Finally, the panel concluded that your non-concurrence with the draft safety evaluation was appropriately handled both from a process and a technical perspective.

In a memorandum dated June 29, 2007, the NRR Office Director (OD) provided the management decision regarding the DPO. The OD agreed with the conclusions and recommendations made by the panel in their final report. The recommendations were tasked to NRR staff for appropriate action.

On July 18, 2007, you submitted an appeal to DPO-2007-006 because the OD's decision relied, in part, on the DPO Ad-Hoc panel's final report which you believe failed to:

- Recognize the management conclusions in an associated allegation response;
- Acknowledge that ALL nuclear power plants licensed to operate with the Westinghouse/AMAG UFM have not reported over-power conditions;
- Acknowledge that observed over-power conditions relate to the misuse of the [Westinghouse Crossflow UFM] instrument in a non-power uprate application where NRC approval was not granted and that installation was made prior to approval of the topical report by the staff;
- Acknowledge that the topical report already incorporated provisions for in-situ testing in specific applications where the instrument does not meet its expected calculated accuracy during implementation and prior to declaring the instrument operable. The report also failed to recognize that there are plants being held hostage by the authors of the draft safety evaluation, which requires withdrawal of the original topical report, notwithstanding the panel chair's concurrence on the original safety evaluation that approved the technology;
- Recognize that Westinghouse is not in a position to assure that in-situ calibration will be conducted to national consensus standards; and
- Adequately quantify their concerns that a bias that may exist, in some instances, can cause an increase in the instrument inaccuracy by more than the 0.5% uncertainty assumed by Westinghouse.

EXECUTIVE DIRECTOR FOR OPERATIONS REVIEW AND DECISION:

When I received your appeal, I initiated an extensive review of the available information related to DPO-2006-006. I reviewed many documents including, but not limited to: the DPO you originally submitted; the June 12, 2007, Ad-Hoc Review Panel Final Report; the OD's decision regarding your DPO; and your appeal of the OD's decision. To understand the issues fully, I met with members of the DPO panel on September 11, 2007, and I met with you on September 12, 2007. My review was limited to the technical issues you raised.

First, I would like to commend you on a package that was well-researched, and insightful. However, based on all the available information I have reviewed, I support the conclusions made by the panel in their final report. The basis for my decision is as follows:

- While I agree with suspending the approval of topical report CENPD-397-P, I have no concerns with the staff's original approval of the topical report since it was based on the best information available at that time (2000);
- Westinghouse, the submitter of topical report CENPD-397-P, agreed that some of the information in the topical report was insufficient and, in some cases, was incorrect;
- The topical paper does not provide a sufficient theoretical or experimental basis to "generically" disposition issues identified through staff review of operating experience information;
- Because the Westinghouse Crossflow UFM is mounted external to system piping, additional information would be required to understand how instrument accuracy is effected by various installation methodologies, changing conditions within piping over time, in-situ calibration and commissioning methodologies, and post-installation monitoring and calibration; and
- Suspending approval for the future use of topical paper CENPD-397-P would have little or no impact on licensees currently using the Westinghouse Crossflow UFM.

E. Marinos

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Based on these considerations, I have concluded that the actions taken by staff in response to your DPO were adequate.

I want to thank you for bringing your concerns to my attention. Your DPO was well thought out and researched. As you know, our agency relies on its staff members to raise concerns regarding decisions so that they can be properly considered. Your perseverance in raising these concerns demonstrates your dedication to safety that is the foundation of the agency's excellent staff, and I applaud your efforts in this regard. I take concerns such as the ones you raised very seriously, and hope that my interactions with you have shown my complete and thorough review of your concerns in making my decision.

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DISTRIBUTION: (DPO-2006-006)/EDATS: OEDO-2007-0546

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