

From: Christopher Grimes
To: Evangelos Marinos
Date: Wed, Nov 24, 2004 2:19 PM
Subject: Re: UFM End Game

Angelo: I appreciate the time that you took to respond to my UFM end-game summary. In the interest of trying to communicate the desired outcome of this issue clearly and fairly, I will respond to each of your comments and attempt to explain why I believe these summary statements represent a balanced approach to closure. Your comments are consistent with your past position on this issue, as you stated during the meeting. Your comments also reflect your strong personal opinion on this matter, which are not always shared by others on the staff. We encourage the staff to speak freely and express differing views. At the same time, we have invested a substantial amount of time and effort trying to resolve this issue in a way that satisfies everyone on the staff (not Caldon or Westinghouse); the efforts over the last several months have convinced me that we cannot satisfy all of the involved NRC staff.

I am sharing this response only with those who have a need to know that I have responded. However, I do not mind sharing these responses with anyone who has an interest in this matter. My response follow each of your comments:

>>> Evangelos Marinos 11/16/04 1:57PM >>>
Chris,

With regard to your summary of UFM End Game Meeting of 11/3/04 I have the following comments:

1. In your first bullet you state that "The UFM Task Group only looked at a snap shot of the thermohydraulic aspects of the issue, and several of the Task Group questions were left unanswered."

There are troubling aspects with the above statement. In my view a "snap shot" if not proven to accurately reflect technical facts, should not be used to make final conclusions and more importantly be used as a sole basis for closing allegations.

With the further statement that "several of the Task Group questions were left unanswered," I presume you refer to questions regarding the Westinghouse Cross flow instrument.

All questions raised by the Task Group were either answered in the original topical report CENPD-397-P-A dated August 1999 and supplements reviewed by SRXB/EEIB, the subsequent Topical report WCAP-15689-P reviewed by EEIB, responses by Westinghouse dated January 16, 2004 to allegation questions included in a letter to Westinghouse dated October 22, 2003 and further the Westinghouse response to Task Group questions dated May 3, 2004 which the Task Group ignored as stated in memo from J. Wermiel to T. Quay dated May 20, 2004.

Response: *Jerry characterized the Task Group effort as a "snap shot" and I used that phrase to characterize the limitations of their efforts. Because of the schedule established for the Task Group, they did not get the opportunity to follow all of their questions to conclusion. Both Westinghouse and Caldon have described the Task Group activity as limited; however, the forwarding letters for the two Task Group reports explain the extent to which their work was sufficient to draw conclusions which can be used to substantiate or deny the substance of an allegation, based on further NRC actions to address the substance of any allegation. It is unfair to say that the Task Group "ignored" any information; whether they didn't find the information from Westinghouse compelling or germane, or simply didn't have time, they believed that further information was needed to resolve the Crossflow accuracy claims. The fact that Westinghouse and the Crossflow users stated in June and again in September that further efforts were needed, and continue to state that further efforts are needed before all of the Crossflow users can validate the installed accuracy (whether for regulatory purposes or commercial interests) demonstrates that corrective action has been and continues to be taken; whether that action has any bearing on the staff's topical report evaluation or whether the topical report evaluation provides a complete basis for compliance has not been established. As Jose explained on Nov 3, the Task Group effort needs to be extended to*

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resolve the thermohydraulic aspects of the UFM accuracy.

2. In your second bullet you state that "considering the time that has lapsed in the development of a proposed bulletin and the extent of public feedback, a bulletin is not the appropriate generic communication."

The subject bulletin was prepared and endorsed by all involved in accordance with the approved schedule and a public meeting was held on July 1, 2004 to inform UFM users of the staff planned action. The "public feedback" you refer to, I believe relates only to Caldon's violent objection to the bulletin because the actions proposed will put Caldon "out of business" as they whispered to each other during the public meeting and overheard by a number of the staff present.

Furthermore, following the public meeting Caldon requested a private meeting with the staff which was granted. At the meeting attended by Caldon's management, its consultant and attorney Caldon indicated that they had assurances from NRC management that their instrument was not going to be included in the bulletin. I stated to them that I had no such guidance and that my understanding was that the bulletin should be based on technical merit.

As you know Caldon has continued its campaign to derail the bulletin by asserting that the venturi/nozzle is an unacceptable standard for measuring the UFM accuracy, while the cross flow users have endorsed it.

Venturi/nozzle instrument loops when properly adjusted have a proven accuracy of .2% to .3%, until fouling, which may occur during prolonged use, whereby readings would become inaccurate in the conservative direction costing utilities revenue because power levels would be lower than indicated by the instrumentation. Hence the need for UFM's.

Caldon's conduct has been of concern and I believe an OI / IG investigation may be appropriate at this time.

Response: *We planned a bulletin and we discussed that plan in a public meeting on July 1, the ACRS meeting on July 8 and a followup public meeting on September 17. Our justification for issuing a bulletin, which is that form of generic communication that is designed to promptly address issues of urgent safety significance, was limited to compliance with the licensed power level. Jose carefully explained to the ACRS why he non-concurred in the plan. The ACRS was similarly skeptical in the urgency and need for the action, and our presentation to them was not compelling. In an effort to try to recover the plan, I had hoped that the licensees could provide information on the actions they have taken to bolster the justification. The public feedback I refer to comes from Caldon, Westinghouse, licensees and the ACRS. The Westinghouse Owners stated that they believed this issue only warrants an information notice.*

Caldon has not disputed the accuracy of nozzles - they might have argued that the nozzles are not as accurate as the chordal device, if we'd given them the opportunity. The purpose of the generic communication is not to punish either Caldon or Westinghouse; ultimately, the licensees bear the responsibility to demonstrate the accuracy of the instruments they rely on for safety functions or compliance. If licensees want to use ASME nozzles or some other scheme to calibrate the UFM, regardless of who manufactured it. It's not at all clear why the accuracy of a nozzle has anything to do with the form of the generic communication.

I'm not sure what private meeting you refer to. I recall that, following the July 1 meeting the you and others of the staff met with Caldon to ostensibly to discuss proprietary data related to the accuracy of their chordal instrument. I am not aware that of any "assurances" NRC management has made to Caldon. I do know that Commissioner McGaffigan would like to know what justification we have for including the chordal instrument in any generic communication. Caldon has consistently argued that, while there are several reported cases of external instrument incidents, there have been no reported incidents with the chordal instrument that justify requiring any action.

If you believe that the conduct of any of the parties in this matter involves illegal, unethical or questionable behavior, I encourage you to report that behavior to the Office of the Inspector General, in whatever way is most convenient. Referrals to OI have to be specific to a licensed activity, and have separate referral procedures.

3. In your third bullet you further state that "The priority of this issue is difficult to maintain because it is not a significant safety issue, it is a compliance issue."

Safety significance, can only be determined when power levels can be accurately measured, to assure that ECCS analyses are valid.

Without the use of UFM's Appendix K requires ECCS analyses at a power level of 2% above instrument indicated power to account for instrument uncertainties associated with the venturi/nozzle instrument loop readings. Given, therefore, that fouling of venturi/nozzles will result in additional conservatism, ECCS analyses are not likely to be invalidated. The use of UFM's, however, reduce the conservatism from 2% to between .5% to .3% and if this accuracy cannot be maintained ECCS analyses will be invalidated.

The concern becomes more significant when plants are granted Extended Power Uprates, where SCRAM margins are reduced and decay heat is increased.

Response: *I agree that it may be overly simplistic to say that this issue has no safety significance. Jose described the lack of safety significance to the ACRS in some detail. In our meeting on Nov 3, Jerry described a lack of safety significance relative to the margins in the Appendix K analyses. Clearly, if a licensee used a best-estimate analysis in accordance with §50.46 for ECCS design, and claimed an accuracy of 0.3% when the measurement could only achieve an accuracy of 1.5%, they will erode the safety margins in the ECCS design, but those margins are still relatively large compared to the reported inaccuracies. Based on contrasting the measurement error and the ECCS margins, it would be difficult for us to demonstrate that this issue represents an immediate threat to public health and safety which is the usual threshold for a bulletin.*

4. In your fourth bullet you indicate that "The Westinghouse 10/19/04 letter..... does not describe the validation standards and, in addition to deferring to the utilities and/or the WOG to discuss pertinent findings of the validations....."

Westinghouse has described validation standards in the topical reports, presentations, and letters to the staff. These standards include laboratory and in situ plant performance data compared to measurement standards of known accuracy, which have not been formally disputed by the staff. Moreover, the WOG has offered to perform additional in situ tests at other sites to further confirm the accuracy of the Cross flow instrument.

Caldon and users of the Caldon instrument have not reported any in situ tests. However, despite Caldon's public and private protestations against the use of venturi / nozzle instrument loops for determining performance of their instrument, they have relied on this instrument loop at Palo Verde for determining the extend of overpower at the plant. Their claim of only 1% overpower has not been evaluated by NRR. As you know there are no other means presently available for determining feedwater flow rates and if Caldon is allowed to prevail in its unfounded claim of the venturi / nozzle inaccuracy, there will be a broader question regarding plant licensed thermal power and the integrity of UFM's. Therefore, proposing inference of UFM accuracy from other parameters will not be accurate, since the feedwater flow constitutes approximately 80% of the calorimetric uncertainty.

Response: *Individual licensees, like Diablo Canyon, Ft Calhoun and Kewaunee have described extensive in-situ testing efforts to ensure that the Crossflow instrument is operating to the desired accuracy because of the impact of plant-specific configurations on the assumed flow profile, as well as signal noise. I had hoped that Westinghouse could explain generically what additional efforts were needed since they began implementing corrective actions in June, to validate the plant specific installations to inform our generic communication. Instead, the Westinghouse letter of 10/19/04*

essentially tells us to ask the licensees what additional efforts they have undertaken, which are not described in the topical reports, presentations or letters. I was also disappointed that the WOG did not take the opportunity to endorse the Westinghouse letter like they did in June, with a description of what they have accomplished since June to provide a consistent basis for validating the installed accuracy of the Crossflow instruments. The Caldon users, conversely, have not reported any problems with the installed accuracy of the chordal instruments, and the Task Group report explains why the chordal instrument is different. We have not demonstrated, thermohdraulically, why calibration of the chordal instrument is necessary and the Caldon users stated that they consider the cost of a calibrating nozzle unwarranted. I do not recall that Caldon challenged the need for calibration for their clamp-on device. Palo Verde stated that they did not report a 3% inaccuracy, as is stated in our presentation to the ACRS; the need to evaluate their overpower condition would seem to depend on whether they want to use it to measure power in the future.

The more important issue resulting from the lack of substance in the Westinghouse 10/19/04 letter is whether that will cause us to have to formally withdraw the findings in the Jan 28, 2003 SE on ER-262. Since Westinghouse has not revealed the extent of the actions they have taken to validate the installation limitations, I'm not sure how we can continue to support ... "(Crossflow) flowmeter is not as sensitive to upstream flow perturbations as a clamp-on transit-time flowmeter (External LEFM)." Perhaps that conclusion could be justified if the Palo Verde external LEFM had experienced a 3% error.

We have spent the last four months arguing about whether nozzles are sufficiently accurate to calibrate all UFM's. I believe it's time to simply ask all licensees what actions they have taken, and what actions they believe are sufficient, to confirm the accuracy they want to claim for whatever UFM they choose to measure feedwater flow, and then judge the sufficiency of those actions to ensure that the plant will operate within its licensed power level.

>>> Christopher Grimes 11/12/04 03:17PM >>>

Attached is a summary of our meeting on Nov 3 to develop an end-game for the UFM issue. I'd appreciate any comments, clarifications or corrections on this summary by COB 11/17/04 (when Bruce is back). In the interim, I'll work with George to get our communications plan updated and I'll work with Greg to get the allegation responses completed.

CC: Bruce Boger; George Dick; Jared Wermiel; Jose Calvo; Richard Barrett; Suzanne Black