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From: Christopher Grimes
To: Jose Calvo
Date: Tue, Jun 22, 2004 1:37 PM
Subject: Re: Bulletin on Ultrasonic Flow Meters

Jose: Except for the style, is there any other part of the messages in the communication plan that you take exception to?

Similarly, how do you propose to respond to Westinghouse, in response to the attached yellow ticket? Note that the response is due by July 6.

>>> Jose Calvo 06/22/04 11:53AM >>>
The EEIB was directed to prepare a bulletin on ultrasonic flow meters (UFMs) to advise licensees that there are potential questions regarding the application of UFMs supplied by Westinghouse (W) and Caldon. The bulletin would require that licensees determine that their nuclear power plants (NPPs) are not operated above the licensed thermal power level or outside the licensed design basis.

I have on several occasions indicated that issuing a bulletin to convey potential questions regarding UFMs would be considered overkill. I have been asked to provide the reasons for my disagreement in writing. I was not able to bring this to your attention in writing until now, because the information that I needed to make my case was not available until recently. I am offering for your consideration a different approach to resolve this issue.

Why is it overkill? Because there is no safety significance, no urgency, and recently I found out at a meeting with licensee's representatives and W on May 25, 2004 that there is no generic implications that would challenge the W flow meter. Furthermore, a recent letter from the Westinghouse Owners Group attested that its investigations have not revealed any generic issues with the W flow meter technology rather plant specific installations issues were noted. A generic informative communication raising awareness about the questions raised about the application of UFMs in NPPs would be more than sufficient.

(SEE OTHER RECOMMENDATIONS AT THE END OF EMAIL)

Allow me to summarize the reasons for my reservations about the bulletin and place this issue in proper prospective.

(1) There is no safety significance-- The UFM provides information to the Plant Computer/Process Computer (PC) to be used for calibrating the flow derived from the venturi which is also an input to the PC. The PC includes a program for calculating thermal power and the output from this program is displayed to the operator. There is no automatic action taken. The operator verifies independently of the PC, using other secondary plant parameter readings and expected process values correlated to thermal power, that the current calculated thermal power output is acceptable. The operator can then manually increase or decrease the power level very slowly, in the BWRs by adjusting the speed of the reactor recirculating water pumps, and in the PWRs by adjusting the turbine control valves or adjusting the boric acid concentration in the reactor via the letdown or makeup system. The PC continuously computes thermal power and displays the output of the calculation to the operator to verify that the power adjustments provide the expected results. These practices to verify independently the sanity of the PC calculated thermal power are included in plant procedures and are followed irrespective of whether you have a UFM or venturi, or both installed in the NPP.

The accuracy of the UFM or venturi delta pressure cannot be assured all the time. However the PC is programed to validate the accuracy of the flow inputs and other parameter readings, as well as the operator using independent means from the secondary plant verifies the accuracy of the calculated thermal power. In addition, UFMs have self- diagnostics that will alarm when conditions are found outside acceptable operating limits for a particular installation. As long as the operator is in control, any failure in the flow monitor devices or the PC would not have any safety consequences. Furthermore if the plant

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computer fails, the operator will reduce power manually, if required. Thereafter thermal power is calculated by hand.

When there is only one channel made up of single components, it cannot be concluded that all malfunctions in that channel would lead to fail-safe conditions. Therefore to enhance the reliability of the single channel either another channel is installed that is redundant and independent of the existing one, or the operator is used as the second channel which is the case here.

Since the operator has the final decision to manually increase or decrease power, irrespective of the performance of the UFM or venturi, via independent means, it can be concluded that the failure of the UFM including the loss of accuracy has no safety significance.

(2) Urgency-- If there is no safety significance, there is no urgency. However, since the issue has been around three or four years and recently was brought to the public's attention by the media, the public may be perceiving that this issue is significant to health and safety. The agency needs to correct the public's perception by placing this issue in proper prospective and making the public and the licensees aware of those potential questions concerning the application of UFMs in NPPs, or publically endorsing what has already been done by the suppliers of UFMs.

3) There are no generic implications-- Two events involving the W's product; one event that occurred at the Byron and Braidwood plants has been identified as one of the bases for establishing generic implications. The other event involving Fort Calhoun has been identified, in support of the basis for establishing generic implications. However, the text in the bulletin discredited this particular event. This is because the expected accuracy of the UFM is required to be confirmed during commissioning of the instrument before final acceptance of the UFM by the licensee. This requirement is stipulated in the measurement uncertainty recapture (MUR) uprate SER for each individual NPP. With regard to Caldon's product, River Bend was the only plant identified having problems with UFMs. There is no other event that can be referred to in order to strengthen the generic implications to justify issuing the bulletin. The point has been made before that the consequences of an UFM failure can be acceptably mitigated by the operator. Then, why the licensee of Byron and Braidwood and the licensee of River Bend did not detect the over power condition for more than 1-year? The licensee's representatives at the May 25, 2004 meeting (who have UFM's installed at their facilities) could not understand it either. A generic informative communication raising awareness about potential questions on the UFMs could bring to the attention of all the licensees the importance of utilizing independent secondary plant information to verify the accuracy of the calculated thermal power.

(4) Licensing Basis/Design Basis-- What are the basis that would ensure that the licensed power level will not be exceeded? I believe that the procedures used by the operator to verify that the calculated thermal power is not exceeded are the licensing basis. If this is the case, it may have backfit implications if these procedures are considered to be the basis, since they were not addressed during the review of the NPP's original license application and its subsequent amendments. Keep in mind that the equipment utilized to calculate thermal power has been always considered as non-safety related and the staff therefore may have only performed a coarsely review of such equipment and it is questionable whether these procedures are included in the UFSAR. The staff should seek the assistance of OGC in this regard before the staff moves forward with the resolution of this issue.

(5) RECOMMENDATIONS--The staff need to engage the licensees who are using UFMs to determine whether the accuracy of secondary plant parameter readings and expected process values correlated to thermal power are accurate enough to be used to verify the accuracy of the calculated thermal power by the Plant Computer/Process Computer (PC) based on the UFM. Also, the staff in concert with the licensees need to determine whether the calorimetric surveillance intervals specified in the Technical Specifications reflect the reduction in margin between the new thermal power based on the UFM and the 10 CFR 50 Appendix K limit.

I am available to further discuss this at your convenience.

CC: Evangelos Marinos; Richard Barrett