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Trip Report #1770
NRC/Seabrook Meeting of December 16, 2005
Release Date: January 5, 2005

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Herb Estrada

Steve Hale

Ed Miller

Warren Lyons

A-80

Trip Report #1770
NRC/Seabrook Meeting

Date: December 16, 2005

Time: 0900-1700

Purpose: Discuss items of Potential Concern related to UFM's for MUR
Uprates

Attendees:

<u>Name</u>	<u>Title</u>	<u>Phone</u>
Allen Howe	NRC Chief I&C Branch	
John Nakoski	NRC Chief Reactor Systems Branch	
Yuri Orechko	NRC UFM Reviewer	
Ed Miller	Seabrook NRC Project Manager	
Tom Alshouse	NRC Lead Power Uprates	
Daryl Roberts	NRC Branch Chief Plant Licensing	
Warren Lyons	NRC Lead UFM Reviewer	
Steve Hale	Seabrook Uprate Manager	
Howard Onerato	Seabrook MUR Uprate Lead	
Bob Dean	Seabrook Lead Engineer	
Mike O'Keefe	Seabrook Licensing Manager	
Herb Estrada	Caldon Chief Engineer	
Cal Hastings	Caldon CEO	
Ernie Hauser	Caldon V.P. Sales and Marketing	

PURPOSE:

The NRC has raised questions related to the validation of the installation of the installation of the CROSSFLOW ultrasonic flowmeter system offered by Westinghouse. In resolving these questions, the NRC Staff has found that some of the identified issues may not be restricted to the CROSSFLO UFM System. In order to make a final determination on the acceptability of the Seabrook Amendment request, the NRC staff must complete an assessment to determine the applicability of these concerns to the Caldon LEFM CheckPlus System. The purpose of this meeting was for the NRC to engage Caldon in discussions to facilitate their review, and to prepare any comments to the planned calibration testing that will occur at Alden Research Laboratories during the week of January 16, 2006 and will be witnessed by NRC Staff.

In prior correspondence NRC provide an outline entitled "Topical Areas of Concern Highlighting Profile Considerations for Plant Ultrasonic Flow Meter Uncertainty Applications", which is attached to this report.

MEETING SUMMARY:

A presentation was jointly prepared by Caldon and FPLE-Seabrook to address the NRC Staff areas of concern. The presentation is identified as Caldon PR542 Non-Proprietary), and a copy is an appendix to this report. To support the presentation, Caldon also provided Information Package 18 (Proprietary) with a request for withholding and Information Package 19 (Non-Proprietary). Caldon has subsequently received notification from the NRC that Information Package 18 was accepted as Proprietary, by NRC Letter dated December 16, 2005. No further action on this item is therefore required.

Steve Hale offered introductory remarks and noted that FPLE-Seabrook went into the MUR Uprate project with their eyes wide open and were dedicated to implementing the lessons learned from some licensees. He further stated that it was their judgment that Caldon had provided the best information and the LEFM CheckPlus was the best choice.

Cal Hastings noted that Caldon was happy to be with the NRC Staff again and noted that there had been quite a dry spell in the MUR uprate market but that the Seabrook request was the first in a line of new uprate requests that will be coming through now.

Ernie Hauser noted that Caldon had studied the NRC Staff Topical Areas of Concern document and had arranged our presentation to address these areas in the order the NRC had listed them in that document after a brief introduction on the basic principles of the LEFM CheckPlus System. He also noted that Caldon had come with the intention of answering all questions in the meeting, but would be happy to come back or continue discussions at ARL if that could not be accomplished in this meeting. Ernie then introduced Herb Estrada as the primary presenter.

RESULTS AND CONCLUSIONS:

The meeting officially adjourned at 5:00 PM at the close of the presentation. All information in the presentation had been covered during the meeting. NRC Staff had been referred to ER-262 a number of times during the meeting for additional background and the understanding was that they would go to Caldon's website to obtain that information for additional study.

Several questions were raised about the proposed Alden Labs test plan.

1) There is a 'T' in one of the lines upstream of the planned LEFM CheckPlus location. The flow at high power is through the cross bar of the T; the start-up feed pump line, isolated during high power operation, enters the main feed line from the branch. Subsequent to the meeting, Ed Madera and Bob Dean confirmed that the Startup feed pump 'T' was actually 9 L/D upstream from a 90 degree elbow which is, in turn, about 8/L/D upstream of a lateral which combines the discharges of the two high pressure heaters. The lateral is in turn, approximately 6 L/D upstream from the LEFM. Since the ARL test model starts downstream of the location of the T and is designed to vary the inlet conditions to the lateral significantly to account for the uncertainty created by such effects, Caldon considers the model plan to be sufficient with respect to this hydraulic feature. As a consequence of this finding, no action has been taken to modify the test plan for this issue. However, an action item is listed to address this issue via a phone call with the NRC staff.

2) Flush (no protrusion) vent and drain lines were also identified upstream of the planned LEFM location and there was a concern about the effect these connections may have on the LEFM calibration. The vent and drain lines are hydraulically closer to the LEFM CheckPlus flow element than the T (they are downstream of the lateral). It has therefore been decided to add this feature to the model. The test plan has been revised and ARL has been notified and was provided with revised drawings prior to the date of this report. The NRC Staff will be informed via telephone call.

A number of questions and requests for additional information were raised by the staff and they will be listed in the "Action Items" section of this report.

ACTION ITEMS:

- 1) Warren Lyons requested Users Group Meeting Minutes. Leeanne Jozwiak will coordinate this action so that Warren has the material from the 2004 and 2005 Users Group Meeting by January 6, 2005. Leeanne will discuss options for handling proprietary information with Ed Miller from NRC.
- 2) Warren and Yuri requested that Alden Labs prepare a presentation of their facility uncertainty analysis during their visit the week of January 16. ARL has been contacted and will plan for the discussion.

- 3) Warren requested a copy of the Engineering Report documenting the cross testing (transfer calibration) results of the ten inch eight path meter at Alden Research Laboratories and the National Metrology Institute of Japan. The report number is ER-313 and it is proprietary. Leeanne Jozwiak will coordinate with Ed Miller to provide this report to NRC.
- 4) Warren requested a listing of LEFM CheckPlus Alarms and their link to Table 6-1 of ER-80P. Caldon will prepare a listing of the alarms and their relationship to the items of Table 6-1. This will be provided during the meetings of the week of January 16 for discussion. Herb Estrada will take the action to prepare this document.
- 5) Warren and Yuri asked whether the alarmed amount of change in Profile Flatness could be treated as a random uncertainty or should more properly be treated as a bias and added to the total. Herb Estrada will prepare notes of the important issues for this discussion and we will plan to go over them during the week at ARL
- 6) A formal invitation should be sent to the NRC to attend the Calibration testing from January 17 through 19. This action is to be completed by January 3, 2006.
- 7) Warren requested information on the change-out of transducers. Caldon will provide this information the week of January 16 and formal disposition of submittal will be determined at that time.
- 8) Several comments were made by the staff on the testing plan for the calibration at ARL. The first comment was about the absence in the model of the flush and vent lines which will be upstream of the LEFM in the plant after installation. This feature has been added to the model for the calibration. The second comment concerned the potential effects of the start-up feed pump line upstream of the LEFM. This line is normally closed, but there was some question about whether the T would create a hydraulic effect that would affect the calibration. This item is discussed in the body of the report and is not repeated here. No action to add the start-up line to the model is therefore required.
- 9) An action item to provide a copy of CIB 119 was noted. This CIB addresses the items required to verify that the LEFM CheckPlus is operating within its uncertainty bounds. Leeanne Jozwiak will coordinate providing this document for the staff.

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