

PMSTPCOL NPEmails

From: Umana, Jessica
Sent: Monday, December 16, 2013 11:40 AM
To: STPCOL
Subject: FW: December 4, 2013 Closed Meeting
Attachments: Needed Items for WCAP17275.docx

From: Tai, Tom
Sent: Tuesday, November 26, 2013 1:07 PM
To: Forsaty, Fred; Budzynski, John; Thomas, George; Gilmer, James
Cc: Donoghue, Joseph; Tomkins, James (jetomkins@STPEGS.COM); 'Scott Head' (smhead@ninallc.net); 'wemookhoek@stpegs.com' (wemookhoek@stpegs.com); Umana, Jessica
Subject: December 4, 2013 Closed Meeting

To All,

This is to confirm that we will hold a closed meeting on December 4, 2013 at the Westinghouse Twinbrrrok office, Rockville, MD, to discuss outstanding issues on the control rod blade topical report, WCAP-17275-P. The topics of discussion is in the attached, which we also discussed during the November 13 telephone conference.

The meeting is currently scheduled from 9 am to 4 pm.

Because I'll be on vacation on the 4th, I'll arrange for another PM to accompany the meeting.

Regards

Tom Tai
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Needed Items for WCAP-17275 Review

11/6/13

- 1) Does the CR99N/CR82N meet the design bases established in WCAP-16182 Rev 0, or are the less conservative design bases defined in WCAP-16182 Rev 1 necessary? This is a major issue because the design bases of WCAP-16182 Rev 1 have not yet been approved by NRC and may pose a challenge for this review. WCAP-17275 refers specifically to WCAP-16182 Rev 1, which deviates substantially from the limits defined in Rev 0 and ASME Section III. Per SRP 4.2, the proposed stress limits of WCAP-17275 require justification. If the higher limits of WCAP-16182 Rev 1 are not necessary, this review can be expedited by Westinghouse providing evidence that the CR99 and CR82 N-lattice designs meet the more conservative WCAP-16182 Rev 0 design bases. If this is not an option, the applicant needs to provide justification for the new design bases. WCAP-17275 and WCAP-16182 Rev 1 do not contain any information that justifies the higher stress limits they propose.
- 2) The reviewers require certain dimensions that are not identified in WCAP-17275 to construct confirmatory models of the control blade components. Figure 6-5 of WCAP-17275 shows the features of the blade section geometry. It is understood that the depth of the hole and the pitch may vary along the axis of the rod. It is expected that the scram analyses considered a certain critical cross section, where the stresses are most limiting. For the critical horizontal section:
 - a. What is the total length of one blade wing from the outer edge to the face closest to the centerline?
 - b. There appears to be a cone at the base of the drill hole. What is the angle or depth of the cone?
 - c. There appears to be a chamfer on the outside of the blade near the centerline. Please define its angle and a linear dimension to specify its geometry.
 - d. The outer edge appears to have an inner radius equal to the hole radius and a wall thickness equal to the outer wall thickness. Please confirm that this is correct or provide a corrected description of the outer edge geometry.
 - e. What are the hole diameter, hole pitch, hole depth, hole outer wall thickness, and hole ligament thickness at the critical horizontal section? Also identify the height of the critical section relative to the top or bottom of the control rod.
 - f. Do the CR99-N and CR82-N share the same dimensions and critical cross section? If not, please identify any geometric differences between them.
- 3) The reviewers also need geometric information on the socket and connection piece to perform stress and collapse analyses, to confirm the evaluation described in Section 6.4.3.2 of WCAP-17275. Please provide a dimensioned sketch of these components and identify the welds and weld quality factors of the components involved.
- 4) The reviewers also require load information to construct confirmatory models.

- a. What is the maximum acceleration load on the control blade during scram and failed-buffer scram? Please explain how this was determined and provide a reference to the testing or analytical work that determined the scram loads.
- b. What is the maximum scram load in Newtons applied to the critical cross section in the scram and failed buffer scram load cases? If this differs from CR99-N to CR82-N please provide both.
- c. What is the peak scram force applied to the socket and connection piece? How was this determined?
- d. What is the peak lateral deflection of the control rod during a design basis safe shutdown earthquake?