

PMSTPCOL PEmails

From: Tai, Tom
Sent: Wednesday, July 20, 2011 2:56 PM
To: Price, John E
Cc: STPCOL
Subject: FW: Topics for Phone Call with STP

John,

Topics for our discussion and future actions.

Tom Tai
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From: Wong, Yuken
Sent: Wednesday, July 20, 2011 11:49 AM
To: Tai, Tom
Subject: Topics for Phone Call with STP

Tom,

Below are the two topics that we want to discuss with STP:

1. Analysis Case 4: Ten pumps in-phase and maximum flow rate (i.e., [111%] of core flow). This produces symmetric flow distributions within the reactor vessel. Thus, maximum reactor coolant dynamic pressures would be present in the reactor core and in regions above the core (e.g., top guide and steam separators). This case is bounding because the [111%] flow rate in the maximum achievable at the 100% power level. In WCAP-17371-P, Rev. 2, Section 5.1.2 the applicant stated that the analyses for the internal components, except for the CRDH/CRGTs, ICGT/ICMHs, and stabilizers were done at a more conservative flow rate of [120%].

The staffed noted that only large components in downcomer (i.e., core shroud, shroud support, and shroud head) were analyzed with 120% flow rate in Analysis Case 4 as stated in WCAP-17371-P, Rev. 0, Section 6.2.1. Small components in downcomer (FW and LPCF sparger, RIP Guide Rails) and components above the core (steam separators and lifting rods, HPCP sparger and coupling) and component in lower plenum (CP and RIP DP lines) were not analyzed with a more conservative flow rate 120%.

2. In response to RAI 03.09.02-26 dated November 4, 2010, the applicant listed 4 tests which were performed to validate the CFD approach. These tests include cases of separated flow, rotating flow, branched flow, and turbulent flow. The validation tests results have been compared with theoretical or measured results, and it was concluded that the CFD results were sufficiently accurate for these test cases. Additional validation of the CFD model of the lower plenum was performed by comparing the velocity distributions of Case 4 conditions along a vertical measurement line with the 1/5th scale model test data. Although, good agreement was found between the velocity distribution patterns, the simulation results underestimated the maximum radial inward velocity by 18%. The applicant therefore accounted for this difference by including an additional safety margin of 18% to the computed FIV stresses. We need confirmation that this additional margin is included in the lower plenum component (i.e., CRGT/CRDH assemblies, ICGT/ICMH assemblies, stabilizers, CP DP lines, and RIP DP lines) analyses. Send the revised analyses, revised RAI 03.09.02-26 response, or Letter U7-C-NINA-NRC-110069.

Thanks,
Yuken

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"STPCOL" <STP.COL@nrc.gov>
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"Price, John E" <jeprice@STPEGS.COM>
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