ArevaEPRDCPEm Resource

From: Gleaves, Bill
Sent: Friday, March 28, 2014 3:01 PM
To: usepr@areva.com; ArevaEPRDCPEm Resource
Cc: Nathan Hottle (Nathan.Hottle@areva.com); Segala, John; Frankl, Istvan; Budzynski, John; Lu, Shanlai; Wunder, George; HOLM Jerald (EXTERNAL AREVA) (jerald.holm.ext@areva.com)
Subject: U.S. EPR DC - Draft RAI on SRP 15.08 (Follow-up RAI to RAI 582, Question 15.08-1)

Importance: High

Jerry,

This can be taken as draft RAIs or as feedback on the last RAI responses. Your choice.

The subject is generally, "Anticipated Transients Without Scram or ATWS." During the review of the "increase in steam flow" event, the staff is concerned that the analysis for open turbine bypass valves (each of the 6 capable of ~12% capacity) may raise questions on the design of the system to prevent the 4 steam generators from drying out, thus potentially resulting in fuel damage. The NRC concluded that 6 open turbine bypass valves is the most limiting case for this event instead of 5 open TBVs as proposed by the AREVA. Our conclusion is based on the applicant's used of the "High SG Pressure Drop" trip, which is not part of DAS trips, in their ATWS sensitivity study. When this trip is removed from the ATWS sensitivity study, the remaining data strongly suggest that 6 TBVs is correct.

The 3 draft RAI questions are as follows and are in reference to AREVA Calculation Summary Sheet DOC 32-9043959-001:

Draft Question 1:
In Table 5-1, data indicates that for 60% (6 TBVs open) increase in steam flow event (ISFE), the reactor trips at 6.66 seconds due to "High SG Pressure Drop" trip. This trip is credited in Table 7.2-1, "Reactor Trip Variables" but not in Table 7.8-1, "Diverse Actuation Function Response Times." However, the applicant is taking credit for this trip in the ATWS the analysis while stating in FSAR Subsection 15.8 that "An ATWS event occurs when the control rods fail to insert following the generation of an RT signal." Therefore, this trip should be removed from the ATWS sensitivity study and, from the Table 5-1 remaining data; the staff considers 6 open TBVs as the most limiting case for the "increase in steam flow" event. Perform the ATWS analysis with 6 open TBVs or provide justification for using protection system "High SG Pressure Drop" trip in your ATWS sensitivity.

Draft Question 2:
In Table 5-1, for 50% ISFE, the reactor trip occurs at 8.14 seconds and the DNBR Trip occurs at 7.9 seconds. However, the note in the table states that "*Reactor trip for these cases was a manually entered time of 7.1 seconds…) Provide an explanation to why a manual trip was initiated for this event and does this affect the TBV sensitivity study for the ATWS event?

Draft Question 3:
In Table 5-1, the "Min Core Flow Rate" is approximately 4450 m3/hr for these events except for the 50% ISFE with "no LOOP" which is recorded as 103361. Explain the reason for the difference in values.

Billy

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