PMNorthAnna3COLPEmails Resource

From: Patel, Chandu
Sent: Wednesday, January 18, 2012 11:18 AM
To: 'na3raidommailbox@dom.com'
Cc: Weisman, Robert; PMNorthAnna3COLPEmails Resource; Kallan, Paul; Wheeler, Larry
Subject: Draft RAI 6198, FSAR Section 9.2.5, North Anna 3 COLA (52-017)
Attachments: Draft RAI 6198.doc

Hi All,

Please see attached draft RAI 6198 (Section 9.2.5), for North Anna 3 COLA. I would like to request Dominion to let me know if it needs any clarification on this RAI before COB January 23, 2012. Otherwise, it will be issued as final after January 23, 2012. For other people, it is for information only.

Thanks,
Chandu Patel, Lead Project Manager
North Anna 3 COLA

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From: Patel, Chandu

Created By: Chandu.Patel@nrc.gov

Recipients:
"Weisman, Robert" <Robert.Weisman@nrc.gov>
Tracking Status: None
"PMNorthAnna3COLPEmails Resource" <PMNorthAnna3COLPEmails.Resource@nrc.gov>
Tracking Status: None
"Kallan, Paul" <Paul.Kallan@nrc.gov>
Tracking Status: None
"Wheeler, Larry" <Larry.Wheeler@nrc.gov>
Tracking Status: None
"'na3raidommailbox@dom.com'" <na3raidommailbox@dom.com>
Tracking Status: None

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Request for Additional Information No. 6198 (Draft)
North Anna, Unit 3
Dominion
Docket No. 52-017
SRP Section: 09.02.05 - Ultimate Heat Sink
Application Section: 9.2.5

QUESTIONS for Balance of Plant Branch 1 (AP1000/EPR Projects) (SBPA)

09.02.05-***

10 CFR 50.36(c)(2)(ii) states that a technical specification (TS) limiting condition for operation (LCO) of a nuclear reactor must be established for each item meeting one or more of four listed criteria. The third criterion provides that a TS LCO is required for "[a] structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier." The UHS is the sink for heat removed from the reactor core following all accidents and anticipated operational occurrences in which the unit is cooled down and placed on residual heat removal (RHR) operation. The operating limits are based on conservative heat transfer analyses for the worst case Loss-of-Coolant-Accident (LOCA). The UHS satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii).

The North Anna 3 uses mechanical draft cooling towers (MDCT) for its ultimate heat sink (UHS). Regulatory Position 4 from Regulatory Guide (RG) 1.27 (1976), "Ultimate Heat Sink for Nuclear Power Plants," states, in part, that the technical specifications for the plant should include provisions for actions to be taken in the event that conditions threaten partial loss of the capability of the UHS. There are already surveillance requirements in TS 3.7.9 for the UHS cooling tower basin water temperature (SR 3.7.9.2) and level (SR 3.7.9.1). For a MDCT, wet bulb (WB) temperature dictates the cooling tower's heat removal capacity. The higher the ambient WB temperature the worse the cooling performance of the tower. A higher WB temperature than previously analyzed would threaten the cooling capability of the MDCT UHS. Thus, if RG 1.27 is followed, plants that use MDCTs for their UHS should incorporate an ambient WB temperature surveillance requirement in their TS.

Section 2.3.1.3.8, "Meteorological Data for Evaluating the Ultimate Heat Sink," in the North Anna ESP SSAR, which is incorporated by reference into Section 2.3.1 of the North Anna FSAR, establishes the design basis wet bulb temperature as 78.3° F. The ambient WB temperature greatly influences the heat removal capacity and efficiency of the MDCT and may simultaneously affect all four trains of the UHS, which is used to protect fission product barriers. Thus, the staff needs assurance that the assumptions used to calculate the UHS cooling capability bound actual conditions.

a. Describe how the 1-day and 5-day worst time periods discussed in SSAR Section 2.3.1.3.8 were used in the design of the UHS.

b. Describe in the NAPS 3 FSAR the condition of the UHS that would exist if the ambient WB temperature exceeds the UHS design basis 78.3° F.

c. Describe in the NAPS 3 TS bases the UHS WB temperature margins.

d. Provide justification for why the TS surveillance requirements for UHS water temperature and level provide assurance, in accordance with RG 1.27, that if the ambient WB is exceeded, the UHS is still able to perform its intended heat removal function. If the UHS is determined to be unable to perform its intended heat removal function if the ambient WB is exceeded, then create an NAPS 3 TS surveillance (and associated TS Bases) for ambient WB temperature as it relates to cooling tower performance. Also, describe in the NAPS 3 TS Bases how ambient WB is to be measured and on what frequency.