From: Kalyanam, Kaly
Sent: Tuesday, June 19, 2012 3:36 PM
To: MASON, MICHAEL E (WF3); POLLOCK, JIM
Subject: RAI on UHS LAR

Mike,

By letter dated October 13, 2011, as supplemented by letters dated November 25, 2011, and January 18 and April 3, 2012, Entergy Operations, Inc. (Entergy) made application to amend the Technical Specifications (TS) 3/4.7.4 Table 3.7-3, "Ultimate Heat Sink Minimum Fan Requirements Per Train." of the Waterford Steam Electric Station, Unit 3 (Waterford 3).

Since the 1-year metrics is approaching, the staff requests you to provide a response to the RAI below as soon as possible but within 30 days from the date of this email. This date was discussed with you on June 19, 2012.

Thanks

Kaly N, Kalyanam
PM, Waterford 3 and ANO 1 & 2
NRR/DORL/LPL4

REQUEST FOR ADDITIONAL INFORMATION

WATERFORD STEAM ELECTRIC STATION, UNIT 3

LICENSE AMENDMENT REQUEST TO REVISE TECHNICAL SPECIFICATION 3/4.7.4

TABLE 3.7-3, "ULTIMATE HEAT SINK MINIMUM FAN REQUIREMENTS PER TRAIN,"

DOCKET NO. 50-382

RAI-1

Background

The licensee has performed Calculation ECM95-008,"Ultimate Heat Sink Design Basis," to determine the Ultimate Heat Sink (UHS) design basis under LOCA conditions using the worst combination meteorological design parameters and to account for the impact of the replacement steam generators. When describing the heat transfer associated with the wet cooling towers, Q_{WCT}, the licensee used the relationship: $Q_{WCT} = mC_P (\Delta T)$, where m is the mass flow rate of water, C_P is the specific heat and, and ΔT is the cooling range.

Issue

This equation does not account for the evaporative cooling effect of a wet cooling tower which is normally expressed in terms of a change in enthalpy. Thus the calculated temperature of the water out of the cooling tower basin is affected, which affects the UHS design wet cooling tower (WCT) cooling range, the component cooling water (CCW) heat exchanger fouling factor and the graph shown in attachment 7.3 of the base calculation, among possible other effects.

Request

Please explain your use of the above described equation for the WCTs in calculation ECM95-008. What changes, if any, are necessary to calculation ECM95-008 and TS 3/4.7.4.

RAI-2

Background

In establishing the UHS design basis in Calculation ECM95-008,"Ultimate Heat Sink Design Basis," the licensee has assumed 100% tube capacity on the DCT and 95% tube capacity on the CCW heat exchanger and has used the manufacturer's performance curves for the DCT and WCT. The calculation's intent is to show that the dry cooling tower (DCT) with 15 fans and the WCT with 8 fans meets the LOCA heat removal requirements using the worst combination meteorological design parameters.

Issue

Tube fouling and wet cooling tower fill fouling can adversely affect the heat transfer capabilities of the DCT, WCT and CCW heat exchanger and thus adversely affect the assumptions and performance curves described above.

Request

Identify and describe the testing and maintenance that is performed on the DCT, WCT and CCW heat exchanger that verifies that these components are functioning as described in the design basis calculation ECM95-008.