NRR-PMDAPEm Resource

From: Regner, Lisa
Sent: Tuesday, April 15, 2014 4:32 PM
To: Lee, Henry (hlee0@tva.gov)
Cc: Regner, Lisa; Casto, Greg; Purciarello, Gerard; McBrearty, Michael
Subject: RAIs for UHS LAR

Henry,
Below are DRAFT RAI questions for the UHS Temperature Limitations Supporting Alternate ERCW Loop Alignments.
Please let me know if you'd like a clarification phone call.
Lisa

RAI-1 Background
The licensee license amendment states, "With one unit shutdown and the Reactor Coolant System (RCS) temperature < 200 degrees Fahrenheit (°F), minimum combined safety requirements for one "accident" unit and one "non-accident" unit, or two "non-accident" units, are met by only one pump on one plant train when the ERCW system is aligned as delineated in the proposed TS Bases."

Issue
Assume the following simultaneous plant conditions:
a) The plants are in either an Outage 1 or Outage 3 scenario as defined in your license amendment request where one unit is in Mode 5 and the other unit has a LOCA.
b) The Mode 5 shutdown unit has been brought to Mode 5 in the fastest allowed time by procedure where the remaining decay heat is at its maximum.
c) Decay heat is at maximum possible considering all times in core life
d) The assumed single failure is the A Train ERCW leaving only B Train ERCW components where the only CCS HX receiving ERCW flow is 0B1/0B2

Request
a.) For the above conditions, please identify the total required ERCW flow rate necessary to the CCS HX in order to mitigate a LOCA in one unit and simultaneously remove maximum decay heat in the other unit that has just entered Mode 5. Identify all assumptions.

b.) For the above conditions, please explain how the CCS HX 0B1/0B2 is able to mitigate the LOCA in one unit and keep the other unit in Mode 5 in the above described conditions.

RAI-2 Background
FSAR Section 9.2.2.2 on ERCW states that the primary cooling source for each diesel generator heat exchangers is from the Unit 1 headers. Each diesel also has an alternate supply from the unit 2 headers of the opposite train.

Request
a.) Describe how the primary cooling source of ERCW is supplied to each diesel generator by describing what ERCW valves are opened automatically and manually upon diesel generator startup.
b.) Similarly describe how the alternate supply of ERCW is supplied to each diesel generator and what ERCW valves are opened automatically and manually upon diesel generator startup.
c.) Describe how the alternate supply of ERCW replaces the primary source of ERCW.

RAI-3 Background

Sequoyah has proposed ERCW lineups to allow Strainer Outage and has performed calculations stating that there is sufficient ERCW flow to mitigate a Design Basis Accident in one unit and maintain the non-accident unit in hot standby. In an RAI dated November 11, 2013, the NRC staff asked the licensee to describe calculations that show that the non-accident unit can be cooled down in accordance with the guidance of Regulatory Guide 1.27, which was specified in the original submittal dated October 2, 2013. Sequoyah stated in their response dated December 11, 2013 that "because the SQN UFSAR does not place any limit on cool down time for the non-accident unit, TVA does not have formal calculations that demonstrate cool down time.

Issue
SQN Technical Specification (TS) 3.7.4, "Essential Raw Cooling Water System," requires at least two independent essential raw water cooling loops to be OPERABLE. Both Units 1 and 2 have these TS. If any ERCW loop is inoperable the TS ACTION requires cold shutdown within the specified times.

In the Strainer Outage Cases, a DBA is assumed in one unit with a single failure of one of the ERCW loops. With ERCW being a shared system, the failure of one ERCW loop places the non-accident unit in TS 3.7.4 ACTION where cold shutdown is required within the specified time.

Request
Identify and discuss additional action needed to confirm that Sequoyah can comply with TS 3.7.4 ACTION for the non-accident unit for both the Strainer Outage Cases and now during current operation.

RAI-4 Background
The licensee has listed in the license amendment request that each emergency diesel generator (EDG) heat exchanger requires 522 GPM of ERCW at 87°F temperature.

Request
Please provide the vendor data sheets for the EDGs that list a) the design flow rate and temperature for the ERCW that cools the EDG heat exchangers, and b) the corresponding fouling factors and heat transferred for the EDG heat exchangers cooled by ERCW.

Provide justification for any changes in the data of the vendor data sheet used to determine that 522 GPM ERCW is the required cooling water flow rate at 87°F.

RAI-5 Background
TVA has proposed that the change to LCO 3.7.5 for Unit 1 and Unit 2 be consistent with Improved Standard Technical Specifications (NUREG-1431), such that specifics associated with UHS temperature limitations are relocated to the Surveillance Requirements.

TS 3.7.9 of NUREG 1431 require the licensee to verify UHS temperature once per hour when the UHS temperature approaches within several degrees of the maximum allowed UHS temperature based on limitations of equipment.

Issue
The licensee's proposed change to the Surveillance Requirements requires UHS temperature verification at least once every 24 hours no matter what the UHS temperature, even at the maximum allowed temperature.

Request
Reword Surveillance Requirement 4.7.5.1 and/or TS 3.7.5 such that when ERCW supply temperature is within several degrees of the maximum temperature limits that verification of UHS temperature is hourly to be consistent with NUREG 1431.

RAI-6 Background

The licensee's submittal for TS Bases 3/4.7.4, "Essential Raw Cooling Water System," in discussing OPERABILITY uses the term "single active failure."

Section 5 of the licensee's submittal lists GDC 44 as an applicable regulatory requirement. GDC 44 requires consideration of a "single failure" which includes a single passive electrical failure.

Issue
The TS Bases is not consistent with GDC 44.

Request
The licensee should change the TS Bases to include a single passive electrical failure.

RAI-7 Background
Outage 3 as described in Table 4.2-6 lists the 1A and 1B EDGs as shutdown. For Outage 3, Tables 4.2-12 and 4.2-13 show EDGs 2A and 2B with ERCW flow and EDGs 1A and 1B without ERCW flow; this is consistent with Table 4.2-6 for Outage 3. With EDGs 1A and 1B without ERCW flow, the NRC staff notes that this lineup does not meet the Limiting Condition for Operation (LCO) for TS 3.8.1.2, Electrical Power Systems Shutdown, for Unit 1.

Request
Please identify all other Technical Specifications whose LCOs are not met for Outage 3; then also for Outage 1;and all Strainer Outage cases. Identify required TS actions and equipment to be declared INOPERABLE for each LCO not met.

RAI-8 Request
Please clarify the information presented in Tables 4.2-12 and 4.2-13 by answering the following questions:

a) Each table shows 1 EDG receiving ERCW flow. With the loss of either the A train or the B train as the single failure, does that mean 1 EDG is both mitigating the LOCA in one unit and keeping the non-accident unit in Mode 5? Explain.
b) Clarify the required ERCW flow for each EDG. Tables 4.2-12 and 4.2-13 show 1044 GPM needed for each EDG. Table 4.2-1 lists flow for EDG HX.

RAI-9 Background
The Strainer Outage cases listed in Tables 4.2-8 through 4.2-11 describe flow from two ERCW pumps through one strainer.

Request
Is the flow rate and differential pressure across the single operable strainer within design specifications? In answering this question identify for strainer outage cases1 through 8 the flow rate through the single operable strainer, the differential pressure across the strainer and compare that to the maximum allowed flow rate and differential pressure for each strainer as specified by the manufacturer and/or other limiting design criteria.

RAI-10 Background
In Outage Cases 1 thru 4 the 6" ESF header crossties and the 16" Aux Building crossties are all open.

Request
Explain the purposes for having these crossties open when aligning for Outages 1 thru 4.

RAI-11 Background

Table 4.2-6 states for Outages 2 and 4, the accident unit's FCV-67-146 may have to be placed in the 35% position in post recirculation in order to provide adequate flow to the LCC's to ensure EQ limits are not exceeded.

Request
Explain how the CCS is able to mitigate the MSLB in one unit and keep the other unit in Mode 5 when the accident unit's FCV-67-146 is in the 35% position as stated in Table 4.2-6. Do calculations support your response? Explain.

RAI-12 Background
Table B 3/4.7-1 for B loop One Pump Operation requires isolating ERCW flow to the 1B Control Rod Drive Vent Cooler.

Request
a) Provide justification for isolating 1B Control Rod Drive Vent Cooler, when Unit 1 is in Mode 1.
b) Why is this necessary for the B Loop of unit 1 only and not the A loop for unit 1 nor either loop for unit 2?

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