CCNPP3eRAIPEm Resource

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Sent: Thursday, January 05, 2012 2:58 PM
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Cc: CCNPP3eRAIPEm Resource; Segala, John; Wheeler, Larry; Wilson, Anthony; Vrahoretis, Susan; McKenna, Eileen; Hearn, Peter
Subject: Draft RAI 336 SBPA 6230
Attachments: DRAFT RAI 336 SBPA 6230.doc

Attached is DRAFT RAI No. 336 (eRAI No. 6230). You have until January 20, 2012 to review it and decide whether you need a conference call to discuss the RAI before the final issuance. After the phone call or after January 20, 2012, the RAI will be finalized and sent to you for your response. You will then have 30 days to provide a technically complete response or an expected response date for the RAI.

Thanks

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Request for Additional Information No. 336(eRAI 6230)
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1/5/2012

Calvert Cliffs Unit 3
UniStar
Docket No. 52-016
SRP Section: 09.02.05 - Ultimate Heat Sink
Application Section: 9.2.5

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

09.02.05-23

10 CFR 50.36, Technical Specifications (TS) states that each applicant for a license authorizing operation of a production or utilization facility shall include in his application proposed technical specifications in accordance with the requirements of this section.

In addition, a TS limiting condition for operation (LCO) of a nuclear reactor must be established for each item meeting one or more of the following criteria:

(A) *Criterion 1*. Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary.

(B) *Criterion 2*. A process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier.

(C) *Criterion 3*. 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.

(D) *Criterion 4*. A structure, system, or component which operating experience or probabilistic risk assessment has shown to be significant to public health and safety.

Criterion 3 is applicable for the UHS makeup water system since the UHS makeup water system is necessary to supply water for the UHS cooling tower basin and supports long term heat removal post DBA. The important-to-safety system and component it supports are the component cooling water system and emergency diesel generators.
The applicant should describe in the CCNPP Unit 3 application those TS LCO and surveillance requirements (SR). Without the UHS makeup water system there is a potential that the essential cooling water system pumps would fail due to the loss of net positive suction head (NPSH) and long term cooling water would be lost for EDG and core cooling support.

Considerations for TS LCO, SR, and associated TS Bases should include:

· UHS makeup water system supply temperature
· UHS makeup water level (required to support proper operations of the makeup water pumps)
· UHS travelling screens and screen water pumps (assured flow path)
· UHS makeup water system readiness to provide a required flow path in a required time of, but no longer than 72 hours.

09.02.05-24

Follow-up to RAI 279 (eRAI 2618), Question 09.02.05-7

Original question:

According to Standard Review Plan (SRP) 9.2.5 the overall arrangement of the ultimate heat sink (UHS) and, in this case, the UHS makeup which is outside the scope of the U.S. EPR design certification needs to comply with GDC 44. The description of the UHS in CCNPP Unit 3 Final Safety Analysis Report (FSAR) Section 9.2.5 and the drawing in FSAR Figure 9.2-3 are incomplete or inaccurate. Revise the FSAR to address the following considerations:

Part 3: FSAR Figure 9.2-3 does not show the location of indications (e.g., local, remote panel, control room, remote shutdown panel), and does not identify the instruments that provide input to a process computer and/or have alarm and automatic actuation functions.

Part 14: FSAR Section 9.2.5 does not specifically describe the ESW basin level controller (automatically or manually) when in normal makeup or safety related UHS makeup. Describe the types of valves which are used for controls (gates, globes, butterfly, etc).

Follow-up questions:

For Item 3, the applicant has not adequately addressed this item related to instrumentation and controls (I&C). Some of the information is missing from the CCNPP Unit 3 FSAR or needs to be clarified. Specifically, the applicant should address the following items:

· FSAR 9.2.5.7.1, missing strainer motor status, traveling screen motor and screen wash pump/motor status
· FSAR 9.2.5.7.2, missing loss of heat tracing alarm
· For Table 9.2-2, verify that all of the I&C signals that trip the UHS makeup pumps are from safety related signals (traveling screen level, and motor bearing)

For Item 14, the applicant has not fully addressed this item related to the basin level controls in the CCNPP Unit 3 FSAR. The applicant should address this following:

· The U.S. EPR FSAR Revision 3, Section 9.2.1.3.5 states that the ESWS emergency makeup water isolation valve, 30PED10/20/30/40 AA021, is shut during normal operations. Upon receipt of an SI signal, the valve opens automatically to establish the flow path from the ESWS emergency makeup system to the tower basin. After 72 hours have elapsed under DBA

conditions, the emergency makeup water system isolation valves (modulate) the flow of emergency makeup water to the cooling tower basins to maintain tower basin water levels within the established operating limits.
The applicant stated in their RAI response that AA021 is completely open after the system is full and did not address that AA021 may be already opened due to the SI signal.
Since the emergency makeup water isolation valve, 30PED10/20/30/40 AA021 gets an open signal on a SI, the filling of the system should be re-evaluated and clearly described in the CCNPP Unit 3 FSAR related to the description in the U.S. EPR Design Certification.

· Provide a discussion of using the screen wash pumps for filling the UHS makeup system, that is, the initial fill of the UHS makeup system is not adequately described in the FSAR. Also the initial fill line shown in Figure 9.2-3 is confusing with the text provided for the markup for 9.2.5.3.2. The CCNPP Unit 3 FSAR should be corrected.
· The markup for Section 9.2.5.3.2 is confusing since various valves are opened and closed and it is unclear if these valves are manually opened, opened from the MCR, open locally from a control panel, or automatically opened. The CCNPP Unit 3 FSAR should be corrected.

09.02.05-25

Follow-up to RAI 279 (eRAI 2618), Question 09.02.05-14

Original question:

General Design Criteria (GDC) 45 requires the ultimate heat sink (UHS) and UHS makeup water system to be designed so that periodic inspections of piping and components can be performed to assure that the integrity and capability of the system will be maintained over time. CCNPP Unit 3 FSAR Section 9.2.5.6 indicates that periodic inspections will be performed, but does not describe the extent and nature of these inspections and the procedural controls that will be implemented to assure that the UHS is adequately maintained over time. The accessibility and periodic inspection of safety related buried piping and yard MOVs is of particular interest. Provide additional information in FSAR Section 9.2.5 to describe the extent and nature of inspections that will be performed and the procedural controls that will be implemented commensurate with the GDC 45 requirement. Also, confirm in the FSAR that the UHS makeup water system complies with GDC 45.

Follow-up questions:

The applicant responded to this original RAI question with the following text.
Related to GDC 45, the UHS makeup water system is a safety-related ASME Code Class 3 system. This system has relatively ‘small diameter’ underground carbon steel piping that is coated with 2-layer fusion bonded epoxy both on the exterior and interior surfaces. Additionally, exterior surfaces exposed to the soil shall be cathodically protected. Normally, the system piping is in dry layup.

· Clarify in the CCNPP Unit 3 FSAR the meaning of “relatively small diameter”. Typically, small diameter piping is referred to a 2” and smaller and 2” diameter piping may not allow the required system flows.

09.02.05-26

Follow-up to RAI 279 (eRAI 2618), Question 09.02.05-4

Original question:

The ultimate heat sink (UHS) must be able to withstand natural phenomena without the loss of function in accordance with General Design Criteria (GDC) 2 requirements.

Follow-up question:

CCNPP Unit 3 FSAR Section 9.2.5.2.4, “ESWS Makeup Water Chemical Treatment,” states:

> The UHS Makeup Water System is normally in standby mode, and its brackish water is therefore stagnant. Specific chemistry requirements are defined to minimize corrosion, prevent scale formation, and limit biological and sedimentary fouling that could inhibit UHS Makeup Water flow. In addition, there are chemical additives used in the ESWS cooling towers to reduce scaling and corrosion, and to treat potential biological contaminants, which are added via the normal ESWS piping. The ESW makeup chemical treatment system provides the chemistry control in both instances. The treatment system consists of multiple skid-mounted arrangements, one for each division's ESWS cooling tower and at least one for the UHS Makeup Water Intake Structure to service each UHS Makeup Water System division's train. Each skid contains the equipment. Instrumentation and controls to fulfill the system's function of both monitoring and adjusting water chemistry.

· Clarify in the CCNPP Unit 3 FSAR that the skid-mounted chemical treatment system, located at the UHS Makeup Water Intake Structure meets GDC 2 as it related to the UHS.

09.02.05-27

Follow-up to RAI 279 (eRAI 2618), Question 09.02.05-17

Original question:

According to Standard Review Plan (SRP) 9.2.5, the overall arrangement of the ultimate heat sink (UHS) needs to comply with GDC 44. The staff reviewed the inspection, tests, analysis, and acceptance criteria (ITAAC) information provided in the CCNPP Unit 3 application, Part 10, Table 2.4-9 and Table 2.4-24, to confirm completeness and consistency with the plant design basis as described in CCNPP Unit 3 FSAR Section 9.2.5. The staff found that the ITAAC information is incomplete, inconsistent, inaccurate, or that clarification is needed.

Follow-up question:

Justify the following items in the CCNPP Unit 3 application, Part 10 - ITAAC.

- EPR FSAR, Tier 1, Section 2.7.11, Item 8.2 states that the site-specific emergency makeup water system provides water to each ESW cooling tower basin at a temperature below the maximum ESWS supply temperature of 95 °F (35 °C).
- EPR FSAR, Tier 1, Section 2.7.11, Item 8.4 states that the site-specific emergency makeup water system provides a means to limit corrosion, scaling, and biological contaminants in order to minimize component fouling for a minimum of 30 days post-DBA.
- The semi-automatic fill of the UHS makeup water system is not specifically addressed under Part 10-ITAAC. A ITAAC should exists for the placing of the four trains of UHS makeup water system from dry-layup to filled and vented, without the introduction of a water hammer.