CCNPP3COLA PEmails

From: Arora, Surinder
Sent: Thursday, September 03, 2009 10:05 AM
To: Poche, Robert; katie.thurstin@unistarnuclear.com; Jennifer.McQueeney@unistarnuclear.com; michael.stevenson@unistarnuclear.com
Cc: CCNPP3COL Resource; Ng, Ching; Dixon-Herrity, Jennifer; Colaccino, Joseph; Miernicki, Michael; Biggins, James; Simon, Marcia; Vrahoretis, Susan
Subject: CCNPP3 - DRAFT RAI 161 EMB2 3365
Attachments: Draft RAI 161 EMB2 3365.doc

Rob,

Attached is DRAFT RAI No. 161 (eRAI No. 3365). You have until September 18, 2009 to review it and decide whether you need a conference call to discuss it before the final issuance. After the call or after September 18, 2009, the RAI will be finalized and sent to you for response. You will then have 30 days to respond.

Thanks.

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Return Notification: No
Reply Requested: Yes
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Request for Additional Information No. 161 (eRAI 3365)
Draft
9/3/2009

Calvert Cliffs Unit 3
UniStar
Docket No. 52-016
SRP Section: 14.03.03 - Piping Systems and Components - Inspections, Tests, Analyses, and Acceptance Criteria
Application Section: Part 10, ITAAC

QUESTIONS for Engineering Mechanics Branch 2 (ESBWR/ABWR Projects) (EMB2)

14.03.03-2

This is a supplemental RAI for RAI No. 70, Question 14.03.03-01

10 CFR 52.80(a) requires that a COL application must contain:

"(a) The proposed inspections, tests, and analyses [ITA], including those applicable to emergency planning, that the licensee shall perform, and the acceptance criteria [AC] that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, the facility has been constructed and will be operated in conformity with the combined license, the provisions of the [Atomic Energy] Act, and the Commission's rules and regulations."

RG 1.206, C.II.1.1 states that acceptance criteria should be objective and unambiguous.

In its letter dated May 28, 2009, UniStar Nuclear Energy responded to RAI No. 70, Question 14.03.03-01 by revising the ITAAC in Part 10 of the Calvert Cliffs Nuclear Power Plant Unit 3 COL application, Appendix B, Table 2.4-24, item 9 to account for various activities of the design, construction, installation and inspection. In the markup, there is only one "Commitment Wording" when there are <u>four</u> sub-entries (9a, 9b, 9c, and 9d) for ITA and AC.

To enhance the inspectibility of ITAAC, the staff requests the applicant to separate the "Commitment Wording" into 9a, 9b, and 9c such that there are <u>three</u> distinct commitments demonstrating that the piping i) is designed in accordance with ASME Code Section III requirements; ii) is fabricated, installed, and inspected in accordance with ASME Code Section III requirements; and iii) is reconciled with design requirements. It should be noted that the staff have expounded on the three ITAAC for ASME Code Section III piping in RAI 14.03.03-01. Furthermore, the three-ITAAC format for ASME Code Section III piping (also for ASME Code Section III components) has been incorporated (through RAI) in the EPR DCD Tier 1.

(1) ITAAC for design - In the ITA and AC of the proposed ITAAC 9a, the staff found that an analysis of the piping systems is not appropriate to verify the design of piping system. Rather, an acceptable ITA for piping design is to indicate that the inspection of ASME Section III Code Design Reports (NCA-3550) and required documents will be performed. The staff requested the applicant to make appropriate change to the ITA to reflect that

an inspection will be performed. In the AC of the proposed ITAAC 9a, the staff requested the applicant to modify the AC to "ASME Section III Code Design Reports (NCA-3550) (certified, when required by ASME Code) exist and conclude that …"

(2) ITAAC for fabrication and installation – Rather than dividing the activities into 9b and 9d, a single ITAAC for fabrication and installation is acceptable. As delineated in the original RAI, an acceptable ITA for piping fabrication and installation is to indicate that the inspection of the piping will be conducted. According to the RAI response, the AC was modified to include ASME Code Section III data reports. To avoid ambiguity, the staff requests the applicant to modify the AC to "ASME Code Data Report(s) (certified, when required by ASME Code) and inspection reports (including N-5 Data Reports where applicable) exist and conclude that the piping identified in Figure 2.4-1 as ASME Section III is fabricated, installed, and inspected in accordance with ASME Code Section III requirements."

(3) ITAAC for as-built reconciliation – The ITA and AC proposed in ITAAC 9c is not acceptable for as-built reconciliation. Rather than performing an "installation" in ITA, an analysis should be performed. An acceptable ITA is to indicate that a reconciliation analysis of the piping using the as-designed and as-built information and ASME Section III Code Design Reports (NCA-3550) will be performed. An acceptable AC is to indicate that "ASME Section III Code Design Report(s) (certified, when required by ASME Code) exist and conclude that the design reconciliation has been completed in accordance with the ASME Code for as-built reconciliation of the piping identified in Figure 2.4-1 as ASME Code Section III. The report documents the results of the reconciliation analysis."

(4) The three-ITAAC approach is also applicable to Item 8 for ASME Code Section III components. The applicant is requested to modify the proposed ITAAC 8a, 8b, 8c, and 8d according to the discussions in (1), (2), and (3).

14.03.03-3

<u>Seismic Category I Equipment</u>

10 CFR 52.80(a) requires that a COL application must contain:

"(a) The proposed inspections, tests, and analyses [ITA], including those applicable to emergency planning, that the licensee shall perform, and the acceptance criteria [AC] that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, the facility has been constructed and will be operated in conformity with the combined license, the provisions of the [Atomic Energy] Act, and the Commission's rules and regulations."

RG 1.206, C.II.1.1 states that acceptance criteria should be objective and unambiguous.

In the Calvert Cliffs Nuclear Power Plant, Unit 3 COL application, Part 10, ITAAC, Appendix B, Table 2.4-24, item 5, the applicant states in the Commitment Wording that "The following UHS Makeup Water System equipment is designated as Seismic

Category I, and is designed to withstand a design basis seismic load without loss of safety function."

(1) In its letter dated May 28, 2009, UniStar Nuclear Energy responded to RAI No. 70, Question 14.03.03-01 by revising the ITAAC in Part 10 of the Calvert Cliffs Nuclear Power Plant Unit 3 COL application, Appendix B, Table 2.4-24, item 9. In the RAI response, the applicant added the Table 2.4-32, UHS Makeup Water System Component Mechanical Design to the FSAR. The table identified the seismic categories of equipment in the UHS Makeup Water System. The staff requested the change the Commitment Wording in item 5 of Table 2.4-24 to reference the new Table 2.4-32 as follow: "The Seismic Category I equipment identified in Table 2.4-32 can withstand seismic design basis loads without loss of safety-function."

(2) In item 5a, the AC stated that the as-installed UHS Makeup Water System equipment designated as Seismic Category I can withstand a design basis seismic load without loss of safety function. It is not clear to the staff how the AC can be concluded by the proposed ITA. For the as-built equipment, an acceptable ITAAC is to require a reconciliation analysis of the as-built equipment for all the design-basis loads and acceptance criteria. The analysis results are to be documented in analysis report(s). During the review of the ITAAC for Seismic Category I equipment in the EPR FSAR Tier 1, the staff identified the same concern to AREVA. The staff indicated that an acceptable approach to address ITAAC for Seismic Category I equipment is as follows:

The 2nd column ITA
a. Type tests, analyses, or a combination of type tests and analyses will be performed on the Seismic Category I equipment identified in Table 2.4-32 using analytical assumptions, or under conditions, which bound the Seismic Category I design requirements.

b. Inspections will be performed of the as-installed seismic Category I equipment listed in
Table 2.4-32 to verify that the equipment including anchorage is seismically bounded by the tested or analyzed conditions.

The 3rd column AC
a. Test/analysis reports exist and conclude that the seismic Category I equipment listed in
Table 2.4-32 can withstand seismic design basis loads without loss of safety function.

b. Inspection reports exist and conclude that the as-installed seismic Category I equipment listed in Table 2.4-32 including anchorage are seismically bounded by the tested or analyzed conditions.

The staff requests the applicant to evaluate these deficiencies in (1) and (2) and revise the ITAAC for Seismic Category I equipment. This question is also applicable to Table 2.4-21, Table 2.4-22, Table 2.4-23, Table 2.4-28, Table 2.4-31 and other systems that consist of Seismic Category I equipment.

14.03.03-4

Seismic Category II Equipment

10 CFR 52.80(a) requires that a COL application must contain:

"(a) The proposed inspections, tests, and analyses [ITA], including those applicable to emergency planning, that the licensee shall perform, and the acceptance criteria [AC] that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, the facility has been constructed and will be operated in conformity with the combined license, the provisions of the [Atomic Energy] Act, and the Commission's rules and regulations." RG 1.206, C.II.1.1 also states that acceptance criteria should be objective and unambiguous.

In the Calvert Cliffs Nuclear Power Plant, Unit 3 COL application, Part 10, ITAAC, Appendix B, Table 2.4-24, items 6 and 7, the applicant provided ITAAC for Seismic Category II equipment.

(1) In its letter dated May 28, 2009, UniStar Nuclear Energy responded to RAI No. 70, Question 14.03.03-01 by revising the ITAAC in Part 10 of the Calvert Cliffs Nuclear Power Plant Unit 3 COL application, Appendix B, Table 2.4-24, item 9. In the RAI response, the applicant added the Table 2.4-32, UHS Makeup Water System Component Mechanical Design to the FSAR. The table identified the seismic categories of equipment in the UHS Makeup Water System. The staff requested the applicant to make appropriate changes in ITAAC items 6 and 7 of Table 2.4-24 to reference the new Table 2.4-32.

(2) Item 6 Commitment Wording states that Seismic Category II piping and equipment can withstand seismic design basis loads without impacting the capability of equipment designated as Seismic Category I from performing its safety function. An inspection of the as-built equipment is proposed by the applicant as the ITA. The staff finds that an inspection alone cannot satisfy the Commitment Wording requirement. Verification of equipment capability to resist seismic load is typically established by tests, analyses, or both as it is usually not practical to verify the equipment capability by visual observation. The staff requests the applicant to modify the ITA.

(3) For Item 6, the staff finds that it is not acceptable to have the Commitment Wording being more specific than the AC. The AC should more closely duplicate the Commitment Wording indicated that the Seismic Category II piping and equipment can withstand seismic design basis loads without impacting the capability of equipment designated as Seismic Category I from performing its safety function. Furthermore, it is not clear to the staff how the AC can be concluded by the proposed ITA. As discussed in (2), an acceptable ITAAC is to include an analysis and the results to be documented in analysis report(s). Thus, an acceptable AC can consist of the wordings "Report(s) exist and conclude that …"

The staff requests the applicant to revise items 6 and 7 accordingly to address (1), (2), and (3). This question is also applicable to other systems that consist of Seismic Category II equipment.