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10 CFR 50.4
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October 26, 2010

UN#10-259

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: UniStar Nuclear Energy, NRC Docket No. 52-016
Response to Request for Additional Information for the
Calvert Cliffs Nuclear Power Plant, Unit 3,
RAI 256, Structural and Systems Engineering – Inspections, Tests, Analyses,
and Acceptance Criteria

References: 1) Surinder Arora (NRC) to Robert Poche (UniStar Nuclear Energy), "FINAL
RAI 256 SEB2 4858" email dated August 3, 2010

2) Greg Gibson to Document Control Desk, Response to Request for Additional
Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAI 256, Structural
and Systems Engineering – Inspections, Tests, Analyses, and Acceptance
Criteria, UN#10-238, dated September 1, 2010.

The purpose of this letter is to respond to the request for additional information (RAI) identified in the NRC e-mail correspondence to UniStar Nuclear Energy, dated August 3, 2010 (Reference 1). This RAI addresses Structural and Systems Engineering - Inspections, Tests, Analyses, and Acceptance Criteria, as discussed in Appendix B of the Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC), as submitted in Part 10 of the Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3 Combined License Application (COLA), Revision 6.

DDAL
NRD

UniStar Nuclear Energy provided a schedule for the response to RAI No. 256, Question 14.03.02-7 in Reference 2. The response was scheduled to be provided to the NRC by October 26, 2010. The enclosure provides our response to RAI No. 256 Question 14.03.02-7 and includes revised COLA content. A Licensing Basis Document Change Request has been initiated to incorporate these changes into a future revision of the COLA.

There are no regulatory commitments identified in this letter. This letter does not contain any proprietary or sensitive information.

If there are any questions regarding this transmittal, please contact me at (410) 470-4205, or Mr. Wayne A. Massie at (410) 470-5503.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on October 26, 2010



Greg Gibson

Enclosure: Response to NRC Request for Additional Information RAI No. 256, Question 14.03.02-7, Structural and Systems Engineering - Inspections, Tests, Analyses, and Acceptance Criteria, Calvert Cliffs Nuclear Power Plant, Unit 3

cc: Surinder Arora, NRC Project Manager, U.S. EPR Projects Branch
Laura Quinn, NRC Environmental Project Manager, U.S. EPR COL Application
Getachew Tesfaye, NRC Project Manager, U.S. EPR DC Application
Loren Plisco, Deputy Regional Administrator, NRC Region II
Silas Kennedy, U.S. NRC Resident Inspector, CCNPP, Units 1 and 2
U.S. NRC Region I Office

Enclosure
Response to NRC Request for Additional Information, RAI No. 256
Question 14.03.02-7
Structural and Systems Engineering – Inspections, Tests, Analyses, and Acceptance
Criteria
Calvert Cliffs Nuclear Power Plant, Unit 3

RAI No. 256

NRC Question 14.03.02-7

The staff reviewed the response to Question 14.03.02-2 M provided in UniStar Letter UN#10-017 dated January 29, 2010 (ML100340596) and determined that the applicant's proposed revisions to the ITAAC tables, identified in its RAI response, address most of the items in the staff's RAI. However, the following items need additional clarification before the staff can make a final determination about the acceptability and completeness of the ITAAC revisions. Therefore the staff requests that the applicant submit the following supplemental information:

1. For the Turbine and Switchgear Buildings (also referred to as the common Turbine Island (TI) structure), the applicant's response did not state which criterion in SRP 3.7.2, Item 8 was being utilized to satisfy the requirements for the design of non-Category I structures. The applicant's response states that the TI structure is analyzed and designed for site-specific SSE loads. Thus, it appears that Criterion C is being utilized. If this is the case, the applicant is requested to clarify that the TI structure will be analyzed and designed to the same requirements as other Seismic Category I structures. If not, the applicant is requested to describe the analysis and design criteria being used for the TI structure and demonstrate that, under SSE conditions, the margin of safety for the structure is equivalent to that of Category I structures. Also, explain where this information is included in the FSAR; otherwise, include the information in the appropriate section(s) of the FSAR.

2. For the Circulating Water System (CWS) Makeup Water Intake Structure (MWIS), the applicant's response states that the design methodology for the steel superstructure meets the Acceptance Criteria 8.B of SRP 3.7.2. As stated in the original RAI, if criterion B is utilized, the applicant was requested to include as part of the ITAAC the technical basis for the determination that collapse of the non-Category I structure is acceptable. This should include a description of any additional loads imposed on any Category I SSCs that could be impacted and the method used to conclude that these loads are not damaging. Also, any protective shields installed to prevent direct impact on Category I SSCs should be described. The applicant's response did not provide this information and it is requested again to complete the response to this RAI. Without this information, the staff will not be able to conclude that the design methodology for the steel superstructure of the Circulating Water System (CWS) Makeup Water Intake Structure (MWIS) meets the Acceptance Criteria 8.B of SRP 3.7.2.

3. Based on the response to Items 1 and 2, the applicant is requested to update Tables 2.4-11, 12 and 19, accordingly.

4. The response to Question 14.03.02-2 M states that the Turbine Building, Switchgear Building and Circulating Water System Makeup Water Intake Structure are classified as Seismic Category II structures. However, CCNPP Unit 3 FSAR, Rev. 6, Table 3.2-1 states that these three structures are classified as "CS." Please clarify the classification of these structures, and revise the classification of these structures in the FSAR, Table 3.2-1, if necessary.

5. During its review of the response to RAI 14.03.02-2 M, the staff realized that Part 10 - ITAAC, Appendix B, Tables 2.4-11 through 2.4-20 may not cover all the non-Category I structures. For all of the non-Category I structures not covered by Appendix B Tables 2.4-11 through 2.4-20, including all Category II and Category II-SSE structures, provide the information requested in

RAI 14.03.02-M. Also, include an ITAAC, Appendix B table for each of these structures or reference an existing Appendix B table that includes the requested information.

Response

1. Turbine Building and Switchgear Buildings (also referred to as the Turbine Island (TI) structure) are classified as Seismic Category II structures. These structures will be analyzed and designed to the requirements of Seismic Category I structures using site-specific SSE loads. This design methodology meets the NUREG 0800 SRP 3.7.2 Acceptance Criterion 8.C. The analysis and design methodology will be included in the update of FSAR Subsection 3.7.2.8 as part of response to RAI 253, Question 03.07.02-46.
2. In UN#10-160¹, COLA Part 10 (ITAAC) Appendix B Table 2.4-19 Item 1 was divided into two parts, one for analysis and one for inspection. The first part is to conduct an analysis to conclude that the design meets requirements. The second part is to confirm that the as-built structures agree with construction drawings and that deviations from the approved design are reconciled. The analysis will demonstrate that the steel superstructure meets the Acceptance Criteria 8.B of SRP 3.7.2. During review, it was noted that Item 1.a incorrectly referred to as-built structures rather than as-designed. This is updated as shown in the attached markup of Table 2.4-19.
3. ITAAC Appendix B Tables 2.4-11, 2.4-12, and 2.4-19 for the Seismic Category II Turbine Building, Switchgear Building, and Circulating Water Makeup Intake Structure previously provided in UN#10-160¹, are updated as shown in the attached markups according to the response to Part 1 and Part 2 above. References to FSAR Sections and SRP parts are not included in the text of the ITAAC Tables as explained in UN#10-160¹.
4. The revised classification (from CS to Seismic Category II) for the Switchgear Building and Turbine Building was provided to the NRC in UNE response to RAI No. 109, Question 03.02.01-5 in letter UN#10-003², dated January 14, 2010.

The revised classification (from CS to Seismic Category II) for the Circulating Water System Makeup Intake Structure was provided in the UNE response to RAI No. 182, in letter UN#10-062³, dated March 12, 2010.

These letters were issued after the Calvert Cliffs Unit 3 COLA, Revision 6, and included revisions to FSAR Table 3.2-1.

5. FSAR Figures 2.1-5 (CCNPP Unit 3 Enlargement), 2.4-2 (Site Utilization Plot Plan), 2.4-51 (UHS Make-Up Intake Structure) show the CCNPP Unit 3 structures. The non-Category I structures identified in these figures, including Category II and Category II-SSE structures, are covered by COLA Part 10 (ITAAC) Appendix B Tables 2.4-4, 2.4-5, 2.4-10 through 2.4-20, 2.4-34 through 2.4-36. It is noted that the Table 2.4-34 (Waste Water Treatment Facility),

¹ UniStar Nuclear Energy Letter UN#10-160, from Greg Gibson to Document Control Desk, U.S. NRC, Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAI No. 118, Inspections, Tests, Analyses, and Acceptance Criteria, dated June 18, 2010

² UniStar Nuclear Energy Letter UN#10-003, from Greg Gibson to Document Control Desk, U.S. NRC, Submittal of Response to RAI No. 109, Question 03.02.01-5, Seismic Classification, dated January 14, 2010

³ UniStar Nuclear Energy Letter UN#10-062, from Greg Gibson to Document Control Desk, U.S. NRC, Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAI No. 182, System Quality Group Classification, dated March 12, 2010

Table 2.4-35 (Access Building) and Table 2.4-36 (Sheet Pile Wall) were added as part of response to RAI 182, Question 03.02.02-2, in letter UN#10-078⁴, dated March 26, 2010.

The Access Building is classified as Seismic Category II structure and will be designed to satisfy SRP 3.7.2 Acceptance Criterion 8.C.

The Sheet Pile Wall is located approximately 30 ft from the north end of the Seismic Category I Buried Intake Pipes as shown in FSAR Figure 2.4-51. Due to the layout and distance of the Sheet Pile Wall, the collapse of the Sheet Pile Wall cannot impact the safety function of buried intake pipes. Therefore, seismic interaction is precluded based on SRP 3.7.2 Acceptance Criterion 8.A.

FSAR Subsection 3.7.2.8 will be updated as part of the response to RAI 253, Question 03.07.02-46 to include the analysis and design methodology for the Access Building, and a discussion on the seismic interaction of the Sheet Pile Wall will also be updated in FSAR Subsection 3.7.2.8.

Proposed COLA FSAR Revision:

The FSAR Subsection 3.7.2.8 update as discussed above will be provided with the response to RAI 253, Question 03.07.02-46.

Proposed COLA Part 10 ITAAC Revision:

COLA Part 10 ITAAC is being updated as follows: (The base ITAAC text includes the changes provided previously in UN#10-160¹ and UN#10-017⁵):

⁴ UniStar Nuclear Energy Letter UN#10-078, from Greg Gibson to Document Control Desk, U.S. NRC, Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAI No. 182, System Quality Group Classification, dated March 26, 2010

⁵ UniStar Nuclear Energy Letter UN#10-017, from Greg Gibson to Document Control Desk, U.S. NRC, Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAI No. 118, Structural and Systems Engineering Inspections, Tests, Analyses, and Acceptance Criteria, dated January 29, 2010

Table 2.4-11—{Turbine Building Inspections, Tests, Analyses, and Acceptance Criteria}

	Commitment Wording	Inspection, Tests, or Analysis	Acceptance Criteria
2	The Turbine Building does not impact the ability of any safety-related structure, system, or component to perform its safety function following a seismic event.	a. An analysis of the Turbine Building structure design will be performed to determine that it will not impact the ability of any safety-related structure, system, or component to perform its safety function following a seismic event.	a. A report exists and concludes that under seismic loads the as-designed Turbine Building will not impact the ability of any safety-related structure, system or component to perform its safety function. <u>The report also concludes that the design of the Turbine Building is to the same requirements as a Seismic Category I structure.</u> The report confirms that the Safe Shutdown Earthquake (SSE) load combinations specified in AISC N690 and ACI 349, as applicable, are used for the design of the Lateral Force Resisting System of the Turbine Building. In addition, the report confirms that the separation distance between the as-designed Turbine Building and the nearest Seismic Category-I structure, system or component is sufficient to preclude interaction.
2		b. An inspection will be performed to verify the as-built Turbine Building is installed as specified on the construction drawings and deviations from the approved design have been reconciled.	b. A report exists that concludes the as-built Turbine Building agrees with construction drawings and deviations from the approved design are reconciled.

Table 2.4-12—{Switchgear Building Inspections, Tests, Analyses, and Acceptance Criteria}

	Commitment Wording	Inspection, Tests, or Analysis	Acceptance Criteria
2	The Switchgear Building does not impact the ability of any safety-related structure, system, or component to perform its safety function following a seismic event.	a. An analysis of the Switchgear Building structure design will be performed to determine that it will not impact the ability of any safety-related structure, system, or component to perform its safety function following a seismic event.	a. A report exists and concludes that under seismic loads the as-designed Switchgear Building will not impact the ability of any safety-related structure, system or component to perform its safety function. <u>The report also concludes that the design of the Switchgear Building is to the same requirements as a Seismic Category I structure.</u> The report confirms that the Safe Shutdown Earthquake (SSE) load combinations specified in AISC N690 and ACI 349, as applicable, are used for the design of the Lateral Force Resisting System of the Switchgear Building. In addition, the report confirms that the separation distance between the as-designed Switchgear Building and the nearest Seismic Category I structure, system or component is sufficient to preclude interaction.
2		b. An inspection will be performed to verify the as-built Switchgear Building is installed as specified on the construction drawings and deviations from the approved design have been reconciled.	b. A report exists that concludes the as-built Switchgear Building agrees with construction drawings and deviations from the approved design are reconciled.

Table 2.4-19—{Circulating Water Makeup Intake Structure Inspections, Tests, Analyses, and Acceptance Criteria}

	Commitment Wording	Inspection, Tests, or Analysis	Acceptance Criteria
1	<p>The Circulating Water Makeup Intake Structure does not impact the ability of any safety-related structure, system, or component to perform its safety function following a seismic event.</p>	<p>a. An analysis of the <u>as-designed</u> built structure will be conducted.</p>	<p>a. A report exists and concludes that under seismic loads the <u>as-designed</u> built Circulating Water Makeup Intake Structure will not impact the ability of any safety-related structure, system or component to perform its safety function. The report confirms that the: · <u>As-designed</u> built reinforced concrete embedded structure of the Circulating Water Makeup Intake Structure is designed to the same requirements as a Seismic Category I structure. · Collapse of the <u>as-designed</u> above-grade steel superstructure does not impair the integrity of Seismic Category I structures, systems or components, nor result in incapacitating injury to control room occupants.</p>
		<p>b. An inspection will be performed to verify the as-built Circulating Water Makeup Intake Structure is installed as specified on the construction drawings and deviations from the approved design have been reconciled.</p>	<p>b. A report exists that concludes the as-built Circulating Water Makeup Intake Structure agrees with construction drawings and deviations from the approved design are reconciled.</p>

Table 2.4-35—{Access Building Inspections, Tests, Analyses, and Acceptance Criteria}

	Commitment Wording	Inspection, Tests, or Analysis	Acceptance Criteria
1	The Access Building (AB) does not impact the ability of any safety-related structure, system or component to perform its safety function under applicable Extreme Environmental Loads.	a. An analysis of the Access Building will be performed to determine that it will not impact the ability of any safety-related structure, system or component to perform its safety function under Extreme Environmental Loads.	a. A report exists that concludes that under applicable Extreme Environmental Loads, the Access Building will not collapse and impact the ability of any safety-related structure, system or component to perform its safety function. <u>The report also confirms that the as-built structure of the Access Building is designed to the same requirements as a Seismic Category I structure.</u> The report confirms that the minimum separation distance of the Access Building from the nearest safety-related Structure, System or Component, is sufficient to preclude interaction.
1		b. An inspection will be performed to verify the as-built Access Building is installed as specified on the construction drawings and deviations from the approved design have been reconciled.	b. A report exists that concludes that the as-built Access Building agrees with construction drawings and deviations from the approved design are reconciled.

Tables 2.4-36—{Sheet Pile Wall Inspections, Tests, Analyses, and Acceptance Criteria}

	Commitment Wording	Inspection, Tests, or Analysis	Acceptance Criteria
1	<p>The Sheet Pile Wall does not impact the ability of any safety-related structure, system or components to perform its safety function under Extreme Environmental Loads specified.</p>	<p>a. An analysis of the Sheet Pile Wall will be performed to determine that it will not impact the ability of any safety-related structure, system or component to perform its safety function under Extreme Environmental Loads.</p>	<p>a. A report exists that concludes that under applicable Extreme Environmental Loads, the Sheet Pile Wall will not collapse and impact the ability of any safety-related structure, system or component to perform its safety function. <u>The report also confirms that the minimum separation distance of the as-built Sheet Pile Wall from the nearest Seismic Category I structure, system or component is greater than 30 ft. The report confirms that the minimum separation distance of the Sheet Pile Wall from the nearest safety-related Structure, System or Component, is sufficient to preclude interaction.</u></p>
		<p>b. An inspection will be performed to verify the as-built Sheet Pile Wall is installed as specified on the construction drawings and deviations from the approved design have been reconciled.</p>	<p>b. A report exists that concludes that the as-built Sheet Pile Wall agrees with construction drawings and deviations from the approved design are reconciled.</p>