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10 CFR 50.4  
10 CFR 52.79

November 04, 2010

UN#10-268

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 267, Structural and Systems Engineering – Inspections, Tests, Analyses,  
and Acceptance Criteria

References: Surinder Arora (NRC) to Robert Poche (UniStar Nuclear Energy), "FINAL  
RAI 267 CTSB 4432" email dated October 7, 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 October 7, 2010 (Reference). 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.

The enclosure provides our response to RAI No. 267 Question 14.03.02-8 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.

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NRC

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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 November 4, 2010

A handwritten signature in black ink, appearing to read 'Greg Gibson', with a long horizontal line extending to the right.

Greg Gibson

Enclosure: Response to NRC Request for Additional Information RAI No. 267, Question 14.03.02-8, 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  
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GTG/JV/mdf

UN#10-268

**Enclosure**  
**Response to NRC Request for Additional Information, RAI No. 267**  
**Question 14.03.02-8**  
**Structural and Systems Engineering – Inspections, Tests, Analyses, and Acceptance**  
**Criteria**  
**Calvert Cliffs Nuclear Power Plant, Unit 3**

**RAI No. 267**

**NRC Question 14.03.02-8**

ITAAC Item 1.c in Table 2.4-7

The staff requested the applicant in RAI 1685, Question 6202 to include an "analysis" in the ITA of this ITAAC in addition to the "inspection" because structural capability is not typically measured by visual observation, but by "tests or/and analyses." The "inspection" can be used to verify that the as-built bulkhead retaining wall was built in accordance with the "approved design", but that "inspection" cannot verify that as-built bulkhead retaining wall can resist the impact of "wave forces." To determine the structural integrity of the bulkhead retaining wall to a variety of wave forces or to the largest wave force expected would require "tests or/and analyses." The applicant in its response modified the ITA by adding the words "and/or analysis" after the word "inspection." The staff does not agree with that change. The ITA should have been modified to include both an "inspection and an analysis." The "analysis" to verify the structural capability of the bulkhead retaining wall to the expected wave forces, and an "inspection" to verify that the bulkhead retaining wall was built in accordance with the "approved design and the analysis." This RAI question requests that the applicant modify the ITA of this ITAAC to include both an "inspection and an analysis." This RAI question is also applicable to the following ITAAC:

ITAAC Items 2, 3, and 6 in Table 2.4-7

ITAAC Items 1 and 4 in Table 2.4-8

ITAAC Item 5 in Table 2.4-9

ITAAC Item 2 in Table 2.4-10

ITAAC Item 2 in Table 2.4-11

ITAAC Item 2 in Table 2.4-12

ITAAC Item 1 in Table 2.4-13

ITAAC Item 1 in Table 2.4-14

ITAAC Item 1 in Table 2.4-15

ITAAC Item 1 in Table 2.4-16

ITAAC Item 1 in Table 2.4-17

ITAAC Item 1 in Table 2.4-18

ITAAC Item 1 in Table 2.4-19

ITAAC Item 1 in Table 2.4-20

ITAAC Item 3 in Table 2.4-21

ITAAC Item 3 in Table 2.4-22

ITAAC Item 4 in Table 2.4-24

ITAAC Item 3 in Table 2.4-29

**Response**

The ITAAC Items in Question 14.03.02-8 have been addressed as follows:

ITAAC Table#, Item	Disposition
Table 2.4-7, Item 1.c	Deleted in UN#09-496 as part of the response to RAI 118, Question 14.03.02 I <sup>1</sup> .
Table 2.4-7, Item 2	This item was divided into analysis and inspection parts in UN#09-496 as part of the response to RAI 118, Question 14.03.02 I <sup>1</sup> . It was subsequently further modified in UN#10-090 as part of the response to RAI 161, Question 14.03.03-2 <sup>2</sup> and UN#10-160 as part of the response to RAI 118, Question 14.03.02 H <sup>3</sup> .
Table 2.4-7, Item 3	Deleted in UN#09-496 as part of the response to RAI 118, Question 14.03.02 I <sup>1</sup> .
Table 2.4-7, Item 6	Deleted in UN#09-496 as part of the response to RAI 118, Question 14.03.02 I <sup>1</sup> .
Table 2.4-8, Item 1	This item was divided into analysis and inspection parts in UN#09-496 as part of the response to RAI 118, Question 14.03.02 J <sup>1</sup> . It was subsequently further modified in UN#10-090 as part of the response to RAI 161, Question 14.03.03-3 <sup>2</sup> and UN#10-160 as part of the response to RAI 118, Question 14.03.02 H <sup>3</sup> .
Table 2.4-8, Item 4	This item was deleted in UN#09-496 as part of the response to RAI 118, Question 14.03.02 J <sup>1</sup> .
Table 2.4-9, Item 5	This item was divided into analysis and inspection parts in UN#09-496 as part of the response to RAI 118, Question 14.03.02 J <sup>1</sup> . It was subsequently further modified in UN#10-090 as part of the response to RAI 161, Question 14.03.03-3 <sup>2</sup> and UN#10-160 as part of the response to RAI 118, Question 14.03.02 H <sup>3</sup> .
Table 2.4-10, Item 2	This item was divided into analysis and inspection parts in UN#09-496 as part of the response to RAI 118, Question 14.03.02 L <sup>1</sup> . It was subsequently further modified in UN#10-160 as part of the response to RAI 118, Question 14.03.02 H <sup>3</sup> .
Table 2.4-11, Item 2	This item was divided into analysis and inspection parts in UN#10-160 as part of the response to RAI 118, Question 14.03.02 H <sup>3</sup> .

<sup>1</sup> UniStar Nuclear Energy Letter UN#09-496, 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 (ITAAC), dated December 4, 2009

<sup>2</sup> UniStar Nuclear Energy Letter UN#10-090, 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. 161, Piping Systems and Components- Inspections, Tests, Analyses, and Acceptance Criteria, dated March 31, 2010

<sup>3</sup> 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

Table 2.4-12, Item 2	This item was divided into analysis and inspection parts in UN#10-160 as part of the response to RAI 118, Question 14.03.02 H <sup>3</sup> .
Table 2.4-13, Item 1	This item was provided with inspection values in UN#10-017 as part of the response to RAI 118, Question 14.03.02 M <sup>4</sup> , and subsequently further modified in UN#10-160 as part of the response to RAI 118, Question 14.03.02 H <sup>3</sup> . The term for distances to Seismic Category I structures, systems, and components is changed from approximately to greater than in the attached markups to provide a better Acceptance Criteria measure for inspections.
Table 2.4-14, Item 1	This item was provided with inspection values in UN#10-017 as part of the response to RAI 118, Question 14.03.02 M <sup>4</sup> , and subsequently further modified in UN#10-160 as part of the response to RAI 118, Question 14.03.02 H <sup>3</sup> . The term for distances to Seismic Category I structures, systems, and components is changed from approximately to greater than in the attached markups to provide a better Acceptance Criteria measure for inspections.
Table 2.4-15, Item 1	This item was provided with inspection values in UN#10-017 as part of the response to RAI 118, Question 14.03.02 M <sup>4</sup> , and subsequently further modified in UN#10-160 as part of the response to RAI 118, Question 14.03.02 H <sup>3</sup> . The term for distances to Seismic Category I structures, systems, and components is changed from approximately to greater than in the attached markups to provide a better Acceptance Criteria measure for inspections.
Table 2.4-16, Item 1	This item was provided with inspection values in UN#10-017 as part of the response to RAI 118, Question 14.03.02 M <sup>4</sup> , and subsequently further modified in UN#10-160 as part of the response to RAI 118, Question 14.03.02 H <sup>3</sup> . The term for distances to Seismic Category I structures, systems, and components is changed from approximately to greater than in the attached markups to provide a better Acceptance Criteria measure for inspections.
Table 2.4-17, Item 1	This item was provided with inspection values in UN#10-017 as part of the response to RAI 118, Question 14.03.02 M <sup>4</sup> , and subsequently further modified in UN#10-160 as part of the response to RAI 118, Question 14.03.02 H <sup>3</sup> . The term for distances to Seismic Category I structures, systems, and components is changed from approximately to greater than in the attached markups to provide a better Acceptance Criteria measure for inspections.

<sup>4</sup> 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 2.4-18, Item 1	This item was provided with inspection values in UN#10-017 as part of the response to RAI 118, Question 14.03.02 M <sup>4</sup> , and subsequently further modified in UN#10-160 as part of the response to RAI 118, Question 14.03.02 H <sup>3</sup> . The term for distances to Seismic Category I structures, systems, and components is changed from approximately to greater than in the attached markups to provide a better Acceptance Criteria measure for inspections.
Table 2.4-19, Item 1	This item was divided into analysis and inspection parts in UN#10-160 as part of the response to RAI 118, Question 14.03.02 H <sup>3</sup> .
Table 2.4-20, Item 1	This item was provided with inspection values in UN#10-017 as part of the response to RAI 118, Question 14.03.02 M <sup>4</sup> , and subsequently further modified in UN#10-160 as part of the response to RAI 118, Question 14.03.02 H <sup>3</sup> . The term for distances to Seismic Category I structures, systems, and components is changed from approximately to greater than in the attached markups to provide a better Acceptance Criteria measure for inspections.
Table 2.4-21, Item 3	This item has been divided into analysis and inspection parts as described in the attached markups. The terminology and manner of ITAAC arrangement is made to correspond to similar Design Certification ITAAC.
Table 2.4-22, Item 3	This item has been divided into analysis and inspection parts as described in the attached markups. The terminology and manner of ITAAC arrangement is made to correspond to similar Design Certification ITAAC.
Table 2.4-24, Item 4	This item has been divided into analysis and inspection parts as described in the attached markups. The terminology and manner of ITAAC arrangement is made to correspond to similar Design Certification ITAAC.
Table 2.4-29, Item 3	This item was divided into analysis and inspection parts in UN#10-160 as part of the response to RAI 118, Question 14.03.02 H <sup>3</sup> .

**Proposed COLA Part 10 ITAAC Revision:**

COLA Part 10 (ITAAC) Appendix B, Tables 2.4-13, 2.4-14, 2.4-15, 2.4-16, 2.4-17, 2.4-18, and 2.4-20 are updated such that the term for distances to Seismic Category I structures, systems, and components is changed from approximately to greater than, as shown in the attached markups.

COLA Part 10 (ITAAC) Appendix B, Tables 2.4-21, 2.4-22, and 2.4-24 are updated to include separate analysis and inspection parts, as shown in the attached markups.

**Table 2.4-13—{Warehouse Building Inspections, Tests, Analyses, and Acceptance Criteria}**

	Commitment Wording	Inspection, Tests, or Analysis	Acceptance Criteria
1	The Warehouse Building does not impact the ability of any safety-related structure, system, or component to perform its safety function following a seismic event.	An inspection of the as-built structure will be conducted.	A report exists and concludes that under seismic loads the as-built Warehouse Building will not impact the ability of any safety-related structure, system or component to perform its safety function. The report confirms that the minimum separation distance of the as-built Warehouse Building from the nearest Seismic Category I structure, system or component is <u>greater than</u> approximately 200 ft.

**Table 2.4-14—{Security Access Building Inspections, Tests, Analyses, and Acceptance Criteria}**

	Commitment Wording	Inspection, Tests, or Analysis	Acceptance Criteria
1	The Security Access Building does not impact the ability of any safety-related structure, system, or component to perform its safety function following a seismic event.	An inspection of the as-built structure will be conducted.	A report exists and concludes that under seismic loads the as-built Security Access Building will not impact the ability of any safety-related structure, system or component to perform its safety function. The report confirms that the minimum separation distance of the as-built Security Access Building from the nearest Seismic Category I structure, system or component is <u>greater than</u> approximately 200 ft.

**Table 2.4-15—{Central Gas Supply Building Inspections, Tests, Analyses, and Acceptance Criteria}**

	Commitment Wording	Inspection, Tests, or Analysis	Acceptance Criteria
1	The Central Gas Supply Building does not impact the ability of any safety-related structure, system, or component to perform its safety function following a seismic event.	An inspection of the as-built structure will be conducted.	A report exists and concludes that under seismic loads the as-built Central Gas Supply Building will not impact the ability of any safety-related structure, system or component to perform its safety function. The report confirms that the minimum separation distance of the as-built Central Gas Supply Building from the nearest Seismic Category I structure, system or component is <u>greater than approximately 1600 ft.</u>

**Table 2.4-16—{Grid Systems Control Building Inspections, Tests, Analyses, and Acceptance Criteria}**

	Commitment Wording	Inspection, Tests, or Analysis	Acceptance Criteria
1	The Grid Systems Control Building does not impact the ability of any safety-related structure, system, or component to perform its safety function following a seismic event.	An inspection of the as-built structure will be conducted.	A report exists and concludes that under seismic loads the as-built Grid Systems Control Building will not impact the ability of any safety-related structure, system or component to perform its safety function. The report confirms that the minimum separation distance of the as-built Grid Systems Control Building from the nearest Seismic Category I structure, system or component is <u>greater than approximately 700 ft.</u>

**Table 2.4-17—{Circulating Water Cooling Tower Structure Inspections, Tests, Analyses, and Acceptance Criteria}**

	Commitment Wording	Inspection, Tests, or Analysis	Acceptance Criteria
1	The Circulating Water Cooling Tower Structure does not impact the ability of any safety-related structure, system, or component to perform its safety function following a seismic event.	An inspection of the as-built structure will be conducted.	A report exists and concludes that under seismic loads the as-built Circulating Water Cooling Tower Structure will not impact the ability of any safety-related structure, system or component to perform its safety function. The report confirms that the minimum separation distance of the as-built Circulating Water Cooling Tower Structure from the nearest Seismic Category I structure, system or component is <u>greater than approximately 1800 ft.</u>

**Table 2.4-18—{Circulating Water Pump Building Inspections, Tests, Analyses, and Acceptance Criteria}**

	Commitment Wording	Inspection, Tests, or Analysis	Acceptance Criteria
1	The Circulating Water Pump Building does not impact the ability of any safety-related structure, system, or component to perform its safety function following a seismic event.	An inspection of the as-built structure will be conducted.	A report exists and concludes that under seismic loads the as-built Circulating Water Pump Building will not impact the ability of any safety-related structure, system or component to perform its safety function. The report confirms that the minimum separation distance of the as-built Circulating Water Pump Building from the nearest Seismic Category I structure, system or component is <u>greater than approximately 1700 ft.</u>

**Table 2.4-20—{Desalinization / Water Treatment Building Inspections, Tests, Analyses, and Acceptance Criteria}**

	Commitment Wording	Inspection, Tests, or Analysis	Acceptance Criteria
1	The Desalinization / Water Treatment Building does not impact the ability of any safety-related structure, system, or component to perform its safety function following a seismic event.	An inspection of the as-built structure will be conducted.	A report exists and concludes that under seismic loads the as-built Desalinization / Water Treatment Building will not impact the ability of any safety-related structure, system or component to perform its safety function. The report confirms that the minimum separation distance of the as-built Desalinization / Water Treatment Building from the nearest Seismic Category I structure, system or component is <u>greater than approximately 1600 ft.</u>

**Table 2.4-21—{Ultimate Heat Sink Makeup Water Intake Structure Ventilation System Inspections, Tests, Analyses, and Acceptance Criteria}**

	Commitment Wording	Inspection, Tests, or Analysis	Acceptance Criteria
3	<u>Electrical Independence is provided on connections between each</u> Each of the four divisions of the UHS Makeup Water Intake Structure Ventilation System shall be electrically independent.	<del>Inspections and/or analysis of the as-built system shall be conducted.</del>	<del>For the as-built UHS Makeup Water Intake Structure Ventilation System, electrical isolation exists between each division of Class 1E components and between Class 1E components and non-class 1E components.</del>
<u>3</u>		<u>a. Analyses will be performed to determine the test specification for electrical isolation devices on connections between the four UHS Makeup Water Intake Structure Ventilation System divisions.</u>	<u>a. A test plan exists that provides the test specification for determining whether a device is capable of preventing the propagation of credible electrical faults on connections between the four UHS Makeup Water Intake Structure Ventilation System divisions.</u>
<u>3</u>		<u>b. Type tests, analyses, or a combination of type tests and analyses will be performed on the electrical isolation devices between the four UHS Makeup Water Intake Structure Ventilation System divisions.</u>	<u>b. A report exists and concludes that the Class 1E isolation devices used between the four UHS Makeup Water Intake Structure Ventilation System divisions prevent the propagation of credible electrical faults.</u>
<u>3</u>		<u>c. Inspections will be performed on connections between the four UHS Makeup Water Intake Structure Ventilation System divisions.</u>	<u>c. Class 1E electrical isolation devices exist on connections between the four UHS Makeup Water Intake Structure Ventilation System divisions.</u>

**Table 2.4-22—{Ultimate Heat Sink Electrical Building Ventilation System Inspections, Tests, Analyses, and Acceptance Criteria}**

	Commitment Wording	Inspection, Tests, or Analysis	Acceptance Criteria
3	<u>Electrical Independence is provided on connections between each Each of the four Each divisions of the UHS Electrical Building Ventilation System shall be electrically independent.</u>	<del>Inspections and/or analysis of the as-built system shall be conducted.</del>	<del>For the as-built UHS Electrical Building System, electrical isolation exists between each division of Class 1E components and between Class 1E components and non-class 1E components.</del>
3		<u>a. Analyses will be performed to determine the test specification for electrical isolation devices on connections between the four UHS Electrical Building Ventilation System divisions.</u>	<u>a. A test plan exists that provides the test specification for determining whether a device is capable of preventing the propagation of credible electrical faults on connections between the four UHS Electrical Building Ventilation System divisions.</u>
3		<u>b. Type tests, analyses, or a combination of type tests and analyses will be performed on the electrical isolation devices between the four UHS Electrical Building Ventilation System divisions.</u>	<u>b. A report exists and concludes that the Class 1E isolation devices used between the four UHS Electrical Building Ventilation System divisions prevent the propagation of credible electrical faults.</u>
3		<u>c. Inspections will be performed on connections between the four UHS Electrical Building Ventilation System divisions.</u>	<u>c. Class 1E electrical isolation devices exist on connections between the four UHS Electrical Building Ventilation System divisions.</u>

**Table 2.4-24—{Ultimate Heat Sink Makeup Water System Inspections, Tests, Analyses, and Acceptance Criteria}**

	Commitment Wording	Inspection, Tests, or Analysis	Acceptance Criteria
43	<u>Electrical Independence is provided on connections between each of the four divisions of the UHS Makeup Water System shall be electrically independent.</u>	<del>Inspections and/or analysis of the as-built system shall be conducted.</del>	<del>For the as-built UHS Makeup Water, electrical isolation exists between each division of Class 1E components and between Class 1E components and non-class 1E components.</del>
3		<u>a. Analyses will be performed to determine the test specification for electrical isolation devices on connections between the four UHS Makeup Water System divisions.</u>	<u>a. A test plan exists that provides the test specification for determining whether a device is capable of preventing the propagation of credible electrical faults on connections between the four UHS Makeup Water System divisions.</u>
3		<u>b. Type tests, analyses, or a combination of type tests and analyses will be performed on the electrical isolation devices between the four UHS Makeup Water System divisions.</u>	<u>b. A report exists and concludes that the Class 1E isolation devices used between the four UHS Makeup Water System divisions prevent the propagation of credible electrical faults.</u>
3		<u>c. Inspections will be performed on connections between the four UHS Makeup Water System divisions.</u>	<u>c. Class 1E electrical isolation devices exist on connections between the four UHS Makeup Water System divisions.</u>