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10 CFR 50.4 10 CFR 52.79

April 25, 2013

UN#13-050

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

Subject: UniStar Nuclear Energy, NRC Docket No. 52-016 Supplemental Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAI 333, Other Seismic Category I Structures

## References: 1) Surinder Arora (NRC) to Paul Infanger (UniStar Nuclear Energy), "FINAL RAI 333 SEB2 6214, dated January 20, 2012

 UniStar Nuclear Energy Letter UN#12-155, from Mark T. Finley to Document Control Desk, U.S. NRC, Partial Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAI 333, Other Seismic Category I Structures, dated December 20, 2012

The purpose of this letter is to provide a supplemental response to the request for additional information (RAI) identified in the NRC e-mail correspondence to UniStar Nuclear Energy (UNE), dated January 20, 2012 (Reference 1). This RAI addresses Other Seismic Category I Structures, as discussed in Section 3.8 of the Final Safety Analysis Report (FSAR), as submitted in the Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3 Combined License Application (COLA), Revision 9.

Reference 2, dated December 20, 2012, provided our original response to RAI 333, Question 03.08.04-29. The Reference 2 response provided design information for site-specific Seismic Category I buried duct banks and buried piping.



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This supplement is motivated by feedback on the Reference 2 response provided at a public meeting on March 18, 2013. The feedback consisted of a four-part supplemental information request. The first two supplemental information requests question what long-term operational inspection programs will be in place for the inspection of internal Essential Service Water System (ESWS) and Ultimate Heat Sink (UHS) mortar piping; and for internal epoxy lined ESWS piping. The third supplemental information request asks how repairs are made if cement lining or epoxy lining degrades. The fourth supplemental information request involves the need for Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) related to concrete/mortar and epoxy coatings on ESW/UHS pipe. The fourth supplemental information request also requests an ITAAC for waterproofing.

Enclosure 1 provides our response to the four supplemental information requests 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.

Enclosure 2 provides an updated table of changes to the CCNPP Unit 3 COLA associated with the RAI 333, Question 03.08.04-29 response.

This supplementary response does not include any new regulatory commitments. This letter does not contain any sensitive or proprietary information.

If there are any questions regarding this transmittal, please contact me at (410) 369-1907 or Mr. Wayne A. Massie at (410) 369-1910.

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

Executed on April 25, 2013

Mark T. Finley

- Enclosures: 1) Supplemental Response to NRC Request for Additional Information, RAI 333, Question 03.08.04-29, Other Seismic Category I Structures, Calvert Cliffs Nuclear Power Plant, Unit 3
  - 2) Table of Changes to CCNPP Unit 3 COLA Associated with the Supplemental Response to RAI 333, Question 03.08.04-29, Calvert Cliffs Nuclear Power Plant, Unit 3
- cc: Surinder Arora, NRC Project Manager, U.S. EPR Projects Branch Laura Quinn-Willingham, NRC Environmental Project Manager, U.S. EPR COL Application Amy Snyder, NRC Project Manager, U.S. EPR DC Application, (w/o enclosures) Patricia Holahan, Acting Deputy Regional Administrator, NRC Region II, (w/o enclosures) Silas Kennedy, U.S. NRC Resident Inspector, CCNPP, Units 1 and 2, David Lew, Deputy Regional Administrator, NRC Region I (w/o enclosures)

## Enclosure 1

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Supplemental Response to NRC Request for Additional Information, RAI 333, Question 03.08.04-29, Other Seismic Category I Structures, Calvert Cliffs Nuclear Power Plant, Unit 3

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### NRC Feedback on UNE's Response to RAI 333, Question 03.08.04-29

UniStar Nuclear Energy (UNE) submitted the response to RAI 333, Question 03.08.04-29 in UNE letter UN#12-155<sup>1</sup>. The NRC provided formal feedback on this response at a public meeting on March 18, 2013, requesting the supplemental information denoted below.

### Supplemental Information Request 1:

What long term "operational" inspection program will be in place for the inspection of the internal mortar piping for the Essential Service Water System (ESWS) and Ultimate Heat Sink (UHS) piping. This should be addressed in the Final Safety Analysis Report (FSAR).

### **Response to Supplemental Information Request 1:**

Accessibility for inspection of the interior lining of ESWS and UHS Systems buried piping (e.g., vaults with removable spool pieces, bypass sections), will be provided in the system during detail design phase, to enable remote video type equipment to be inserted into the pipe to perform visual examination of the interior of the piping. Periodic inspection requirements of the interior lining of safety-related piping will be added to an appropriate plant inspection program.

Combined License Application (COLA) FSAR Sections 6.6.2, 9.2.1.6, and 9.2.5.6 have been updated to reflect the above response.

### Supplemental Information Request 2:

What long term "operational" inspection program will be in place for the inspection of the internal epoxy lined piping for the ESWS piping. This should be addressed in the FSAR.

### **Response to Supplemental Information Request 2:**

Same response as the response to Supplemental Information Request 1.

### Supplemental Information Request 3:

How are repairs made if the 'cement lining' or 'epoxy line' degrades? Describe in the FSAR if the 60" dia. piping can be dewatered for repairs. Are there stop logs at both suction and the pump house?

## **Response to Supplemental Information Request 3**:

Normal plant repair and maintenance procedures will address the buried piping lining degradation. For unacceptable damage found within the fusion bonded epoxy in 10" diameter pipe, a portion of pipe would be dug up and replaced as repairing internal defects of a 10" diameter pipe would not be practical. Repairs to internal cement mortar lining in 30" or 60" diameter pipes are feasible. Dewatering of 60" diameter piping would be required for internal

<sup>&</sup>lt;sup>1</sup> UniStar Nuclear Energy Letter UN#12-155, from Mark T. Finley to Document Control Desk, U.S. NRC, Partial Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAI 333, Other Seismic Category I Structures, dated December 20, 2012

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repair, and methods to achieve this dewatered condition (e.g., stop logs, doors) will be developed during the detailed design phase.

COLA FSAR Sections 9.2.1.6 and 9.2.5.6 have been updated to reflect the above response.

# Supplemental Information Request 4: UNE letter UN#12-155 (Enclosure 2, Page 39 of 40) (FSAR Markups)

ITAAC missing related to the concrete/mortar and epoxy coatings on the ESW/UHS pipe (inside wall). Also, no ITAAC found for waterproofing.

## **Response to Supplemental Information Request 4**:

A new row (Item 9) has been added to COLA Part 10, Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) Table 2.4-8 in order to address the concrete/mortar and epoxy coatings on the ESW/UHS pipe (inside wall). The existing ITAAC Table 2.4-8, Item 8, provides the ITAAC for waterproofing.

COLA ITAAC Table 2.4-8 has been updated to reflect the above response.

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## **COLA Impact**

FSAR Section 6.6.2 has been updated as follows:

## 6.6.2 Accessibility

{This section of the U.S. EPR FSAR is incorporated by reference with the following supplement.

Design considerations other than access provisions described in ASME Section XI paragraph IWA-1500, will be needed for specific buried Essential Service Water (ESW) and UHS Makeup Water System components to render inservice inspections practical. In lieu of a visual examination of buried components, the examination requirement shall be satisfied by performing a test that determines the rate of pressure loss or a test that determines the change in flow rate between the isolation valves at each end of the buried piping-segment, in accordance with ASME Section XI, paragraph IWA5244.

The ability to visually inspect the interior lining of ESWS buried 30" diameter and 10" diameter piping will be designed into the system (e.g., vaults with removable spool pieces, bypass sections.}

FSAR Section 9.2.1.6 has been updated as follows:

## 9.2.1.6 Inspection and Testing Requirements

{Inservice inspection of the ESW System including piping, valves, pumps and components is performed as identified in Section 6.6, in accordance with the requirements of ASME Section XI and ASME OM Code. The installation and design of the ESW System provides accessibility, as described in Section 6.6.2, for the performance of periodic inservice inspection. The frequency of inservice inspection, via flow or pressure tests, for buried piping segments is described in Section 6.6.4, to ensure system integrity beyond the ASME Section XI code requirement.

<u>Periodic inspection requirements of interior lining of the buried 30" diameter and 10" diameter piping will be part of an appropriate plant inspection program.</u>}

FSAR Section 9.2.5.6 has been updated as follows:

### 9.2.5.6 Inspection and Testing Requirements

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Routine inspection and maintenance activities as established by the plant procedures identify any degradation and correct performance gaps due to corrosion, erosion, protective coating failure, silting and biofouling.

The ability to visually inspect the interior of 60" diameter UHS System buried piping (e.g., vaults with removable spool pieces) and provision for dewatering any of the two pipes will be designed

into the system during detailed design phase. Periodic inspection requirements of interior lining of buried piping will be part of an appropriate plant inspection program.

Finally, in accordance with U.S. EPR Surveillance Requirements provided in Chapter 16, periodic surveillance testing of the system, including the safety-related isolation valves, provides continuing assurance of the system's ongoing capability to perform its design function. Surveillance testing includes system performance tests and inspection of individual components, as appropriate to their importance to system function and their tendency to degrade due to their operational conditions and environment.

The inspection and testing provisions described above are subject to programmatic requirements and procedural controls as described in Section 13.5.}

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COLA Part 10 Table 2.4-8 has been updated as follows:

## Table 2.4-8—{Buried Conduit and Duct Banks, and Pipe and Pipe Ducts Inspections, Tests, Analyses, and Acceptance Criteria}

	Commitment Wording	Inspection, Tests, or Analysis	Acceptance Criteria
8	Protective measures for buried Seismic Category I steel/iron pipes include protective waterproof wrapping or coating.	An inspection of the as-built steel/iron piping will be conducted.	A report concludes that the as-built buried Seismic Category I steel/iron pipes are protected by a protective waterproof wrapping or coating.
<u>9</u>	Protective measures for buried Seismic Category I steel pipes (ESW/UHS piping) include protective concrete/mortar lining for the 30" and 60 " diameter pipes and epoxy lining for the 10" diameter pipes.	An inspection of the as-built ESW/UHS piping will be conducted.	A report concludes that the as-built buried Seismic Category I steel pipes (ESW/UHS piping) are protected by concrete/mortar lining for the 30" and 60" diameter pipes and epoxy lining for the 10" diameter pipes.

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Enclosure 2

Table of Changes to CCNPP Unit 3 COLA Associated with the Supplemental Response to RAI No. 333, Questions 03.08.04-29, Calvert Cliffs Nuclear Power Plant, Unit 3

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## Table of Changes to CCNPP Unit 3 COLA

#### Associated with the Supplemental Response to RAI No. 333

Change ID #	Subsection	Type of Change	Description of Change
Part 2 – F	SAR		
CC3-11- 0116	6.6.2	Incorporate COLA markups associated with the response to RAI 279, Ultimate Heat Sink, Questions 09.02.5-5, 8, and 14 <sup>2</sup> .	The response to RAI 279, Ultimate Heat Sink, Questions 09.02.5-5, 8, and 14 <sup>2</sup> added text to Section 6.6.2.
CC3-13- 0076	6.6.2	Incorporate COLA markups associated with the Supplemental RAI 333, Question 03.08.04-29 response (this response).	Text is added which addresses the ability to visually inspect the interior lining of ESWS buried 30" diameter and 10" diameter piping as part of the Supplemental RAI 333, Question 03.08.04-29 response (this response).
CC3-12- 0101	9.2.1.6	Incorporate COLA markups associated with the response to RAI 333, Question 03.08.04-31 <sup>3</sup> .	The response to RAI 333, Other Seismic Category I Structures, Question 03.08.04-31 <sup>3</sup> added text to Section 9.2.1.6.
CC3-13- 0076	9.2.1.6	Incorporate COLA markups associated with the Supplemental RAI 333, Question 03.08.04-29 response (this response).	Text is added, which indicates that periodic inspection requirements of interior lining of the buried 30" diameter and 10" diameter piping will be part of an appropriate plant inspection program, as part of the Supplemental RAI 333, Question 03.08.04- 29 response (this response).

<sup>&</sup>lt;sup>2</sup>UniStar Nuclear Energy Letter UN#11-173, 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 279, Ultimate Heat Sink, dated June 3, 2011

<sup>&</sup>lt;sup>3</sup>UniStar Nuclear Energy Letter UN#12-042, from Mark T. Finley to Document Control Desk, U.S. NRC, Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAI 333, Other Seismic Category I Structures, dated May 11, 2012

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Change ID #	Subsection	Type of Change	Description of Change	
CC3-11- 0124	9.2.5.6	Incorporate COLA markups associated with the response to RAI 279, Ultimate Heat Sink, Question 09.02.5- 13 <sup>4</sup> .	The response to RAI 279, Ultimate Heat Sink, Question 09.02.5-13 <sup>4</sup> added text to Section 9.2.5.6.	
CC3-13- 0076	9.2.5.6	Incorporate COLA markups associated with the Supplemental RAI 333, Question 03.08.04-29 response (this response).	Text is added, which addresses the ability to visually inspect the interior of 60" diameter UHS System buried piping, as part of the Supplemental RAI 333, Question 03.08.04- 29 response (this response).	
Part 10 – Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) and ITAAC Closure				
CC3-10- 0204	Table 2.4-8	Incorporation of DCD Revision 1 changes.	Items 1, 2, 3, and 4 in Table 2.4-8 were revised as part of the work to incorporate DCD Revision 1 changes into the COLA. The title of the table was changed and the term "duct banks and pipes" was changed to "conduit and duct banks and pipe and pipe ducts" in a number of places.	
CC3-10- 0342	Table 2.4-8	Incorporate COLA markups associated with the response to RAI 274, Question $14.03.02-12^5$ .	Items 3 and 4 in Table 2.4-8 were revised as part of the RAI 274, Question 14.03.02- 12 <sup>4</sup> response. The use of the phrase, "A report exists that concludes" was revised to read, "A report exists which reconciles"	
CC3-12- 0168	Table 2.4-8	Incorporate COLA markups associated with the response to RAI 360, Question 14.03-22 <sup>6</sup> .	Item 4 in Table 2.4-8 was revised as part of the RAI 360, Question 14.03-22 <sup>5</sup> response. The reference to ANSI/AISC N690 was deleted.	

<sup>&</sup>lt;sup>4</sup>UniStar Nuclear Energy Letter UN#11-197, 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 279, Ultimate Heat Sink, dated June 30, 2011

<sup>&</sup>lt;sup>5</sup>UniStar Nuclear Energy Letter UN#11-001, 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 269, RAI 270, and RAI 274, Structural and Systems Engineering – Inspections, Tests, Analyses, and Acceptance Criteria, dated January 13, 2011

<sup>&</sup>lt;sup>6</sup>UniStar Nuclear Energy Letter UN#12-104, from Mark T. Finley to Document Control Desk, U.S. NRC, Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAI 360 and 361, Inspections, Tests, Analyses, and Acceptance Criteria, dated October 18, 2012

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Change	Subsection	Type of Change	Description of Change
CC3-12- 0233	Table 2.4-8	Incorporate COLA markups associated with the response to RAI 333, Question 03.08.04-29 <sup>1</sup> .	A figure reference was corrected in Item 2 of Table 2.4-8 and a section number was added to Items 3 and 4 of Table 2.4-8 as part of the RAI 333, Question 03.08.04-29 <sup>1</sup> response.
CC3-13- 0076	Table 2.4-8	Incorporate COLA markups associated with the Supplemental RAI 333, Question 03.08.04-29 response (this response).	Added a new Item 9 to Table 2.4-8 to address the protective concrete/mortar lining for the 30" and 60" diameter pipes and epoxy lining for the 10" diameter pipes, as part of the Supplemental RAI 333, Question 03.08.04-29 response (this response).