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UniStar
NUCLEAR ENERGY

10 CFR 50.4
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August 3, 2012

UN#12-079

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 359, Internally Generated Missiles (Outside Containment)

Reference: Surinder Arora (NRC) to Paul Infanger (UniStar Nuclear Energy), "CCNPP3 - Final RAI 359 BPTS 6564," email dated July 16, 2012

The purpose of this letter is to respond to the RAI identified in the NRC e-mail correspondence to UniStar Nuclear Energy, dated July 16, 2012 (Reference). This RAI addresses Internally Generated Missiles (Outside Containment), as discussed in Section 3.5.1.1 of the Final Safety Analysis Report (FSAR), as submitted in Part 2 of the Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3 Combined License Application (COLA), Revision 8.

Enclosure 1 provides our response to RAI No. 359, Questions 03.05.01.01-1 and -2 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 a Table of Changes to the CCNPP Unit 3 COLA associated with the RAI 359 response.

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

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NRO

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 August 3, 2012

Mark T. Finley

Enclosures: 1) Response to NRC Request for Additional Information RAI No. 359, Internally Generated Missiles (Outside Containment), Calvert Cliffs Nuclear Power Plant, Unit 3

2) Table of Changes to CCNPP Unit 3 COLA Associated with the Response to RAI 359, 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
Getachew Tesfaye, 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

Response to NRC Request for Additional Information
RAI No. 359, Internally Generated Missiles (Outside Containment)
Calvert Cliffs Nuclear Power Plant, Unit 3

RAI 359

Question 03.05.01.01-1

GDC 4, in part, requires SSCs to be protected from internally generated missiles. COL Item 3.5-8 was included in the EPR FSAR to address control of unsecured pressurized gas cylinders from becoming missiles. To address this COL Item, the applicant proposed a revision to COL/FSAR section 3.5.1.1.3 that stated, "Portable and temporary cylinders and cylinders periodically replaced in safety-related areas are constructed and handled in accordance with applicable Department of Transportation requirements for seamless steel cylinders". The staff finds that the applicant has not addressed the COL item and described the control measures provided to prevent the impact of such missiles on safety-related SSCs.

NUREG/CR-3551 discusses how portable compressed gas cylinders pose a significant missile hazard if not properly controlled, secured or restrained. Implementation of controls will minimize missiles generated outside containment resulting from unsecured and non-seismically restrained compressed gas cylinders during a seismic event.

As requested in COL Item 3.5-8, the applicant is to establish/provide procedures or similar controls which ensure that pressurized gas cylinders be either removed or seismically restrained during power operation to prevent them from becoming missiles. Include this information in the FSAR and provide a markup in your response.

Response

The response to Combined License (COL) Item 3.5-8 is being revised in Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3 Combined License Application (COLA) Part 2 FSAR Section 3.5.1.1.3, and CCNPP Unit 3 COLA Part 10: Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) Appendix A, Section 2 (COL Items) to provide procedures or similar controls which ensure that pressurized gas cylinders be either removed or seismically restrained during power operation to prevent them from becoming missiles.

COLA Impact

CCNPP Unit 3 FSAR Chapter 3 will be updated as follows in a future COLA revision:

3.5.1.1.3 Missile Prevention and Protection Outside Containment

The U.S. EPR FSAR includes the following COL item in Section 3.5.1.1.3:

> A COL applicant that references the U.S. EPR design certification will describe controls to confirm that unsecured compressed gas cylinders will be either removed or seismically supported when not in use to prevent them from becoming missiles.

This COL item is addressed as follows:

~~{High-pressure gas cylinders permanently installed in safety-related areas are constructed to the criteria of ASME Code, Section III or Section VIII. Portable and temporary cylinders and cylinders periodically replaced in safety-related areas are constructed and handled in accordance with applicable Department of Transportation requirements for seamless steel~~

~~cylinders.~~Calvert Cliffs 3 Nuclear Project, LLC and UniStar Nuclear Operating Services, LLC shall, prior to initial fuel load, have plant procedures in place that specify that unsecured equipment, including portable pressurized gas cylinders, located inside or outside containment and required for maintenance or undergoing maintenance, is to be removed from containment prior to operation, moved to a location where the equipment is not a potential hazard to SSCs important to safety, or seismically restrained to prevent the equipment from becoming a missile.}

...

CCNPP Unit 3 Part 10 ITAAC will be updated as follows in a future COLA revision:

...

COL Item 3.5-1 in Section 3.5.1.2.3

{Calvert Cliffs 3 Nuclear Project, LLC and UniStar Nuclear Operating Services, LLC} shall establish plant procedural controls to ensure that unsecured maintenance equipment, including that required for maintenance and that are undergoing maintenance, will be removed from containment prior to operation, moved to a location where it is not a potential hazard to safety-related SSCs, or seismically restrained to prevent it from becoming a missile. Prior to initial fuel load, this requirement shall be incorporated into a plant procedure that controls the conduct of maintenance.

COL Item 3.5-8 in Section 3.5.1.1.3

{Calvert Cliffs 3 Nuclear Project, LLC and UniStar Nuclear Operating Services, LLC shall, prior to initial fuel load, have plant procedures in place that specify that unsecured equipment, including portable pressurized gas cylinders, located inside or outside containment and required for maintenance or undergoing maintenance, is to be removed from containment prior to operation, moved to a location where the equipment is not a potential hazard to SSCs important to safety, or seismically restrained to prevent the equipment from becoming a missile.}

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RAI 359

Question 03.05.01.01-2

GDC 4, in part, requires SSCs to be protected from internally generated missiles. Maintenance equipment not secured or removed from an area is a potential gravitational missile source. Therefore, COL Item 3.5-8 was included in the COL FSAR to address controls to avoid unsecured maintenance equipment in safety-related building areas. To address this COL Item, the applicant proposed a revision COL/FSAR section 3.5.1.1.3 to indicate that safety-related SSCs in the vicinity of temporarily installed structures or components will be declared inoperable until the temporary structure or component is removed OR an evaluation to demonstrate no adverse impact can occur is performed.

The staff finds declaring safety related SSCs inoperable during maintenance acceptable, since such controls will minimize gravitational missiles generated from equipment used for maintenance. It is not clear to the staff what analyses or controls are used to declare components inoperable when maintenance is being performed near S/R SSCs. Additionally, the staff has not received any evaluation and is unclear when the option of an evaluation will be performed to demonstrate no adverse impact.

As a result, the applicant has not addressed the COL item to describe any control measures to prevent the impact of such missiles on safety-related SSCs. As requested by COL action item, the applicant is to establish/provide procedures or similar controls which ensure that equipment, such as a hoist that is required during maintenance, be either removed or seismically restrained following maintenance to prevent it from becoming a missile. Include this information in the FSAR and provide a markup in your response.

Response

The response to Combined License (COL) Item 3.5-9 is being revised in Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3 Combined License Application (COLA) Part 2 FSAR Section 3.5.1.1.3, and CCNPP Unit 3 COLA Part 10: Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) Appendix A, Section 2 (COL Items) to establish/provide procedures or similar controls which ensure that equipment be either removed or seismically restrained following maintenance to prevent it from becoming a missile.

COLA Impact

CCNPP Unit 3 FSAR Chapter 3 will be updated as follows in a future COLA revision:

3.5.1.1.3 Missile Prevention and Protection Outside Containment

...

The U.S. EPR FSAR includes the following COL item in Section 3.5.1.1.3:

A COL applicant that references the U.S. EPR design certification will describe controls to confirm that unsecured maintenance equipment, including that required for maintenance and that are undergoing maintenance, will be either removed or seismically supported when not in use to prevent it from becoming a missile.

This COL item is addressed as follows:

~~{Falling objects (i.e. gravitational missiles) heavy enough to generate a secondary missile are postulated as a result of movement of a heavy load or from a nonseismically designed structure, system, or component during a seismic event. Movements of heavy loads are controlled to protect safety-related structures, systems, and components, see subsection 9.1.5. Seismic Class I Safety-related structures, systems, or components are protected from non-Class I permanent structures, systems, or components by design. Safety-related Systems, Structures, or Components in the vicinity of temporarily installed structures or components will be declared inoperable until the temporary structure or component is removed or an evaluation to demonstrate no adverse impact can occur is performed. See Subsection 3.7.3.13 for additional discussion on the interaction of other systems with Seismic Category I systems. Valves, rotating equipment, vessels, and small fittings not otherwise considered to be credible missiles due to design features or other considerations are not considered to be a potential source of missiles when struck by a falling object.~~Calvert Cliffs 3 Nuclear Project, LLC and UniStar Nuclear Operating Services, LLC shall, prior to initial fuel load, establish plant procedural controls to ensure that unsecured maintenance equipment, including that required for maintenance and that are undergoing maintenance, will be removed from containment prior to operation, moved to a location where it is not a potential hazard to safety-related SSCs, or restrained to prevent it from becoming a missile.}

...

CCNPP Unit 3 Part 10 ITAAC will be updated as follows in a future COLA revision:

...

COL Item 3.5-1 in Section 3.5.1.2.3

{Calvert Cliffs 3 Nuclear Project, LLC and UniStar Nuclear Operating Services, LLC} shall establish plant procedural controls to ensure that unsecured maintenance equipment, including that required for maintenance and that are undergoing maintenance, will be removed from containment prior to operation, moved to a location where it is not a potential hazard to safety-related SSCs, or seismically restrained to prevent it from becoming a missile. Prior to initial fuel load, this requirement shall be incorporated into a plant procedure that controls the conduct of maintenance.

COL Item 3.5-9 in Section 3.5.1.1.3

{Calvert Cliffs 3 Nuclear Project, LLC and UniStar Nuclear Operating Services, LLC shall, prior to initial fuel load, establish plant procedural controls to ensure that unsecured maintenance equipment, including that required for maintenance and that are undergoing maintenance, will be removed from containment prior to operation, moved to a location where it is not a potential hazard to safety-related SSCs, or restrained to prevent it from becoming a missile.}

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Enclosure 2

Table of Changes to CCNPP Unit 3 COLA Associated with Response to RAI 359, Calvert Cliffs Nuclear Power Plant, Unit 3

Table of Changes to CCNPP Unit 3 COLA Associated with Response to RAI No. 359

Change ID #	Subsection	Type of Change	Description of Change
Part 2 – FSAR			
CC3-09-0235	3.5.1.1.3	Incorporation of U.S. EPR FSAR (DCD) Revision 1 changes into the CCNPP Unit 3 COLA.	The COL Item 3.5-8 and 3.5-9 responses were first entered into FSAR Section 3.5.1.1.3 in COLA Rev. 6 in response to new COL items in DCD Revision 1.
CC3-12-0146	3.5.1.1.3	Incorporate COLA markups associated with the response to RAI 359.	The responses to RAI 359 Questions 03.05.01.01-1 and -2 involved providing revised responses to COL Items 3.5-8 and 3.5-9.
Part 10 – ITAAC			
GN-09-0233	Appendix A, Section 2 (COL Items)	Incorporation of U.S. EPR FSAR (DCD) Revision 1 changes into the CCNPP Unit 3 COLA.	The COL Item 3.5-8 and 3.5-9 responses were first entered into Part 10 (ITAAC) in COLA Rev. 6 in response to new COL items in DCD Revision 1.
CC3-12-0146	Appendix A, Section 2 (COL Items)	Incorporate COLA markups associated with the response to RAI 359.	The responses to RAI 359 Questions 03.05.01.01-1 and -2 involved providing revised responses to COL Items 3.5-8 and 3.5-9.