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August 11, 2009

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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 No. 122, Missiles Generated by Tornadoes and Extreme Winds

Reference: John Rycyna (NRC) to Robert Poche (UniStar Nuclear Energy), "RAI No 122
SBPB 2449.doc" email dated July 14, 2009

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 July 14, 2009 (Reference). This RAI addresses Missiles Generated by Tornadoes and Extreme Winds, as discussed in Section 3.5.1 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 5.

The enclosure provides our response to RAI No. 122, Question 03.05.01.04-1 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. Our response to Question 03.05.01.04-1 does not include any new regulatory commitments.

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If there are any questions regarding this transmittal, please contact me at (410) 470-4205, or Mr. Michael J. Yox at (410) 495-2436.

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

Executed on August 11, 2009

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. 122, Question 03.05.01.04-1, Missiles Generated by Tornadoes and Extreme Winds, Calvert Cliffs Nuclear Power Plant, Unit 3

cc: John Rycyna, NRC Project Manager, U.S. EPR COL Application
Laura Quinn, NRC Environmental Project Manager, U.S. EPR COL Application
Getachew Tesfaye, NRC Project Manager, U.S. EPR DC Application (w/o enclosure)
Loren Plisco, Deputy Regional Administrator, NRC Region II (w/o enclosure)
Silas Kennedy, U.S. NRC Resident Inspector, CCNPP, Units 1 and 2
U.S. NRC Region I Office

GTG/SFW/kat

Enclosure

**Response to NRC Request for Additional Information RAI No. 122,
Question 03.05.01.04-1, Missiles Generated by Tornadoes and Extreme Winds,
Calvert Cliffs Nuclear Power Plant, Unit 3**

RAI No. 122

Question 03.05.01.04-1

GDC 4 requires, in part, that structures, systems and components (SSCs) important to safety shall be appropriately protected against the effects of missiles generated from tornadoes or extreme winds. In the Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3 FSAR, Revision 2, Section 3.5.1.4, "Missiles Generated by Tornadoes and Extreme Winds," UniStar (applicant) stated that Category I structures on the Nuclear Island (NI) basemat meet the Region I tornado missile protection requirements. Additionally, the walls and roof slabs of all Category I structures outside the NI basemat meet the Region I tornado missile protection requirements including automobile missile impacts for all elevations except for the roof slab of the Essential Service Water Cooling Tower (ESWCT) and pump structures. UniStar concluded that since the height of the ESWCT and pump structures is approximately 29 m (96 ft), which is above the maximum automobile missile impact height of 23.8 m (78 ft), the roof slabs on these structures would not require automobile missile evaluation. However, as shown in EPR FSAR Tier 2 Revision 0, Figure 3.8-101, the staff found that the elevation of the essential service water (ESW) pump structure roof slab is 19.2 m (63 ft), which is below the maximum automobile missile impact height. Therefore, provide discussion to verify that the ESW pump structure roof slab is capable of withstanding the impact of an automobile missile.

Response

The elevation of the essential service water cooling tower (ESWCT) is approximately 29 m (96 ft), which is above the maximum automobile missile impact height. The essential service water (ESW) pump structure roof slab is at an elevation of 19.2 m (63 ft), which is below the maximum height for which the automobile missile impact must be evaluated. Therefore, the roof slab of the ESW pump structure must be designed to withstand the impact of an automobile missile. The ESW pump structure roof slab meets Region I tornado missile protection requirements, including verification that the roof slab can withstand the impact of an automobile missile.

Section 3.5.1.4 of the Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3 FSAR, will be revised to clarify the difference in elevation between the ESW pump structure roof slab and the adjoining ESW cooling tower roof structure. The CCNPP Unit 3 FSAR will be revised to state the roof slab of the ESW pump structure will meet Region I tornado missile protection requirements; including verification that the roof slab can withstand the impact of an automobile missile. Additionally, Section 3.5.1.4 will be supplemented to indicate that both the Ultimate Heat Sink (UHS) Makeup Water Intake Structure and UHS Electrical Building are also designed to withstand the impact of the Region I design-basis missile spectrum, including the automobile.

COLA Impact

FSAR Section 3.5.1.4 of the CCNPP Unit 3 FSAR will be revised as follows in a future COLA revision:

3.5.1.4 Missiles Generated by Tornadoes and Extreme Winds

Likewise, the U.S. EPR standard design of all Category I structures outside the NI base mat are constructed of reinforced concrete and all wall and roof slabs meet the Region I design-basis

missile spectrum, including the automobile missile guidance of Regulatory Guide 1.76 (NRC, 2007a) for all structural elevations. {An exception to the previous statement is that for the Essential Service Water Cooling Tower and pump structures, the automobile missile impact is considered on all wall elements at all elevations, but not the roof slab. The highest elevation within the 0.5 mile (0.8 km) radius at CCNPP Unit 3 is at an approximate elevation of 130 ft (39.6 m). Adding the 30 ft (9.1 m) requirement, all elements below elevation 160 ft (48.8 m) require evaluation of the automobile missile. Normal grade elevation at the Essential Service Water Cooling Tower and pump structures is approximately 82 ft (25 m). Therefore, structural elements less than 78 ft (23.8 m) high require automobile missile evaluation. The height of the Essential Service Water Cooling Tower and pump structures is approximately 96 ft (29 m) and the adjoining pumphouse roof slab is at approximately 63 ft (19 m) elevation. Hence, the roof slabs on these structures do not require automobile missile evaluation. Automobile missile impact is considered in pumphouse structure roof slab design but is not postulated for the Essential Service Water Cooling Tower roof slab design because the elevation of this roof slab is above the maximum height at which evaluation of the automobile missile must be evaluated.

The site-specific Seismic Category I Ultimate Heat Sink (UHS) Makeup Water Intake Structure and UHS Electrical Building are constructed of reinforced concrete, and the missile barrier walls and roof slabs meet Region 1 design-basis missile spectrum, including the automobile missile guidance of Regulatory Guide 1.76 (NRC, 2007a). On this basis, the site-specific conditions are conservatively enveloped for all required elevations.

Thus, by the standard U.S. EPR meeting the Region I tornado missile spectrum requirements for all Category I structures, the site-specific conditions at CCNPP Unit 3 are in compliance with all Regulatory Guide 1.76 (NRC, 2007a) tornado missile requirements.}