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10 CFR 50.4
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April 6, 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. 73, Site Proximity Missiles (Except Aircraft)

References: 1) John Rycyna (NRC) to Robert Poche (UniStar), "RAI No 73 RSAC 1603.doc
(PUBLIC)" email dated March 11, 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 March 11, 2009 (Reference 1). This RAI addresses Site Proximity Missiles (Except Aircraft), as discussed in Section 3.5 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 4.

The enclosure provides our response to RAI No. 73, Question 03.05.01.05-1 which 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 03.05.01.05-1 does not include any new regulatory commitments.

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

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NRC

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

Executed on April 6, 2009



Greg Gibson

Enclosure: Response to NRC Request for Additional Information RAI No. 73, Question
03.05.01.05-1, Site Proximity Missiles (Except Aircraft), 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

Enclosure
UN#09-167

Enclosure

**Response to NRC Request for Additional Information
RAI No. 73, Question 03.05.01.05-1, Site Proximity Missiles (Except Aircraft)
Calvert Cliffs Nuclear Power Plant, Unit 3**

RAI No. 73

Question 03.05.01.05-1

RG 1.206 (Standard Review Plan) section C.I. 3.5.1.5 provides guidance regarding the information that is needed to ensure potential hazards in the site vicinity are identified and evaluated to meet the siting criteria in 10 CFR 100.20 and 10 CFR 100.21. Provide an assessment of the potential for the turbine missile generation of Units 1 and 2 affecting the safe operation of the proposed Unit 3, or justify an alternative.

Response

CCNPP Units 1 and 2 are in the vicinity of the CCNPP Unit 3 site. Regulatory Guide 1.206 Section C.I 3.5.1.5 requires the applicant to "identify the SSCs listed in Section 3.5.2 of the FSAR that have the potential for unacceptable missile damage and estimate the total probability of the missiles striking a vulnerable critical area of the plant."

Regulatory Guide 1.115^[1] provides that protection of essential systems or structures against direct strikes by low-trajectory turbine missiles can be provided by appropriate placement and orientation of the turbine units. In accordance with Regulatory Guide 1.115, protection of an essential system is acceptable if the system and any protecting structure are located outside the low trajectory missile strike zones, defined by ± 25 -degree lines emanating from the centers of the first and last low-pressure turbine end (last stage) wheels. Regulatory Guide 1.115 concludes that protecting essential systems by excluding them from the low-trajectory hazard zone has less uncertainty than other methods and thus is the preferred method of protection.

The potential for turbine missiles from CCNPP Units 1 and 2 affecting the safe operation of CCNPP Unit 3 can be demonstrated through evaluation of the CCNPP Units 1 and 2 turbine orientation with respect to important to safety SSCs for CCNPP Unit 3. As shown in Figure 1, the orientation of the CCNPP Units 1 and 2 turbines places the CCNPP Unit 3 SSCs important to safety outside of the low-trajectory turbine missile strike zones. As a result, it is concluded that CCNPP Unit 3 safety-related SSCs listed in Section 3.5.2 of the FSAR are acceptably protected against high-energy, low-trajectory turbine missiles from CCNPP Units 1 and 2. Given that these SSCs are adequately protected from unacceptable missile damage, the Regulatory Guide 1.206 guidance to "estimate the total probability of the missiles striking a vulnerable critical area of the plant" and identify "specific missile description, including size, shape, weight, energy, material properties and trajectory" for SSCs are not applicable.

COLA Impact

COLA Part 2 (FSAR) Section 3.5.1.3 will be revised as follows:

{CCNPP Units 1 and 2 FSAR Section 5.3.1.2, indicates that the probability of turbine missile generation (P_1) for the CCNPP Units 1 and 2 turbines is less than $1E-5$ per year, which is below the threshold value of ~~$4E-4$~~ $1E-5$ described in CCNPP Units 1 and 2 UFSAR Section 5.3.1.1 Regulatory Guide 1.115 (NRC, 1977). The orientation of CCNPP Unit 1 and Unit 2 turbines has been evaluated and SSCs important to the safety of CCNPP Unit 3 are located outside the low

^[1] U. S. Nuclear Regulatory Commission, RG 1.115, Protection Against Low-Trajectory Turbine Missiles, July 1977.

trajectory strike zones as described in Regulatory Guide 1.115. Therefore, CCNPP Unit 3 safety-related SSC are adequately protected from potential CCNPP Unit 1 and Unit 2 turbine missiles.}

COLA Part 2 (FSAR) Section 3.5.1.5 will be revised as follows:

{From Section 2.2 and 3.5.1.3 (turbine missile generation of CCNPP Units 1 and 2), none of the potential site-specific external event hazards evaluated (except aircraft hazards which are discussed below) resulted in an unacceptable affect effect important to the safe operation of CCNPP Unit 3. This conclusion is substantiated by each potential external hazard either being screened based on: 1) applicable regulatory guidance; or, 2) the hazard contribution to core damage frequency (CDF) was deemed to be being less than 1E-6 per year.}

Figure 1: Low-Trajectory Turbine Missile Strike Zones from CCNPP Units 1 and 2

