Greg Gibson
Vice President, Regulatory Affairs

750 East Pratt Street, Suite 1600
Baltimore, Maryland 21202

UniStar
NUCLEAR ENERGY

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April 15, 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. 83, Control Room Habitability System

References: 1) John Rycyna (NRC) to Robert Poche (UniStar), "RAI No 83 SPCV 1701.doc (PUBLIC)" email dated March 23, 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 23, 2009 (Reference 1). This RAI addresses the Control Room Habitability System, as discussed in Section 6.4 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. 83, Question 06.04-4 which includes revised COLA content. A Licensing Basis Document Change Request has been initiated to incorporate this change in a future revision of the COLA.

Our response to Question 06.04-4 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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I declare under penalty of perjury that the foregoing is true and correct.

Executed on April 15, 2009

Greg Gibson

Enclosure: Response to NRC Request for Additional Information, RAI No. 83, Question 06.04-4, Control Room Habitability System, 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

UN#09-196

Enclosure

**Response to NRC Request for Additional Information, RAI No. 83,
Question 06.04-4, Control Room Habitability System,
Calvert Cliffs Nuclear Power Plant, Unit 3**

RAI No. 83

Question 06.04-4

Exposure to Control Room Occupants

10 CFR Part 50 App. A, General Design Criteria (GDC) 19 requires that control rooms be maintained in safe condition under accident conditions, including loss of coolant accidents (LOCAs). This requirement applies to the control room of a nearby unit at a multi-unit site as well as the control room of the affected plant. In the case of the CCNPP, it needs to be established that a LOCA at Unit 3 will not result in unacceptable radiation exposures in the Unit 1 and Unit 2 control rooms, and it needs to be established that a LOCA either at Unit 1 or Unit 2 will not violate safe conditions in the Unit 3 control room.

In Section 6.4.4 of the CCNPP Unit 3 FSAR, the applicant stated that:

- The main control room dose to Units 1 and 2 from a LOCA in Unit 3 is less than 2.0 rem total effective dose equivalent (TEDE), and

- The main control room dose to Unit 3 from a LOCA in either Unit 1 or Unit 2 is acceptable because the Unit 3 control room is better designed and equipped for radiological exposure control. It is equipped with safety-related radiation monitors in the heating, ventilation, and air conditioning (HVAC) intake ducts and would isolate in a timely manner.

What are the differences between the Unit 3 and the Units 1 and 2 control room designs with respect to protection against radiation exposure? Are there safety-related monitors in the Units 1 and 2 HVAC intakes? What makes the Unit 3 control room better designed and equipped for radiological exposure control?

Response

The CCNPP Unit 3 main control room (MCR) dose from a loss of cooling accident (LOCA) in either CCNPP Units 1 or 2 has been qualitatively dispositioned as follows:

- A radiological evaluation of CCNPP Units 1 and 2 MCR dose from a LOCA in CCNPP Unit 3 has been performed. The MCR dose to CCNPP Units 1 and 2 due to a LOCA event at CCNPP Unit 3 is calculated to be less than 2.0 rem total effective dose equivalent or TEDE. These results demonstrate that General Design Criteria (GDC) 19 is met for CCNPP Units 1 and 2.
- The radiological evaluation of the CCNPP Unit 3 MCR and technical support center demonstrates compliance with GDC 19 as discussed in Design Certification FSAR, Tier 2, Sections 6.4.4 and 15.0.3.
- Core inventory and LOCA source term from either CCNPP Units 1 or 2 are less than that of CCNPP Unit 3. This is due to the fact that CCNPP Units 1 and 2 have lower power levels and lower allowable containment leakage rate (L_a) than CCNPP Unit 3.

- The CCNPP Unit 3 MCR envelope differs from existing U.S. nuclear power plants. The most significant design feature difference is the increased thickness of concrete surrounding the MCR. This structural design feature provides improved shielding from external sources of radiation.

- The CCNPP Unit 3 MCR HVAC intakes include safety-related monitors that automatically isolate the MCR envelope. The MCR model for radiological evaluations is described in U.S. EPR Design Certification FSAR, Tier 2, Section 15.0.3.4.1.

Therefore, due to a reduced source term and lower leakage rate from a CCNPP Unit 1 or Unit 2 LOCA (compared to a CCNPP Unit 3 LOCA) there is a reduced envelope dose impinging on the CCNPP Unit 3 MCR. This, coupled with increased shielding and HVAC intake duct safety-related monitors that automatically isolate the MCR envelope, will maintain the CCNPP Unit 3 MCR dose from a CCNPP Unit 1 or Unit 2 LOCA to below that of a CCNPP Unit 3 LOCA.

The presence, use and/or operation of these systems are not included as license conditions in the CCNPP Unit 3 COL.

COLA Impact:

The CCNPP Unit 3 FSAR Section 6.4.4 will be revised as follows:

This COL Item is addressed as follows:

~~{The main control room dose to CCNPP Units 1 and 2 from a CCNPP Unit 3 LOCA is less than 2.0 rem TEDE. This dose is well below the regulatory dose acceptance criterion of 5 rem TEDE. The CCNPP Unit 3 Main Control Room (MCR) is better designed and equipped for radiological exposure control. Therefore, a LOCA in CCNPP Unit 1 or 2, which already meets the acceptance criteria for the applicable control room, will also meet the acceptance criteria for the CCNPP Unit 3 Main Control Room. The CCNPP Unit 3 MCR is equipped with safety-related radiation monitors in the HVAC intake ducts and would isolate in a timely manner. The CCNPP Unit 3 MCR HVAC emergency filtration system design basis accident configuration is described in U.S. EPR FSAR 15.0.3.}~~ {The main control room (MCR) dose to CCNPP Units 1 and 2 from a CCNPP Unit 3 LOCA is less than 2.0 rem total effective dose equivalent (TEDE). This dose is below the regulatory dose acceptance criterion of 5 rem TEDE. The CCNPP Unit 3 MCR dose from a LOCA in CCNPP Unit 1 or 2 will be less than CCNPP Units 1 and 2 dose from a CCNPP Unit 3 LOCA, which also meets the regulatory dose acceptance criterion of 5 rem TEDE.

The CCNPP Unit 3 MCR is equipped with safety-related radiation monitors in the HVAC intake ducts and would isolate in a timely manner. The CCNPP Unit 3 MCR HVAC emergency filtration system design basis accident configuration is described in U.S. EPR FSAR Section 15.0.3.}