Greg Gibson
Vice President, Regulatory Affairs

750 East Pratt Street, Suite 1600
Baltimore, Maryland 21202

UniStar
NUCLEAR ENERGY

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December 4, 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. 129, Circulating Water System

References:

1) John Rycyna (NRC) to Robert Poche (UniStar Nuclear Energy), "RAI No 129 CIB 2619.doc " email dated July 28, 2009

2) UniStar Nuclear Energy Letter UN#09-465, from Greg Gibson to Document Control Desk, U.S. NRC, Response to RAI No. 129, Circulating Water System, dated October 28, 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 28, 2009 (Reference 1). This RAI addresses the Circulating Water System, as discussed in Section 10.4.5 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 6.

Reference 2 provided a December 4, 2009 schedule for the response for Question 10.04.05-2.

The enclosure provides our response to RAI No.129, Question 10.04.05-2, 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.

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NRO

Our 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) 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 December 4, 2009

Greg Gibson

Enclosures: Response to NRC Request for Additional Information, RAI No. 129, Question 10.04.05-2, Circulating Water System, Calvert Cliffs Nuclear Power Plant, Unit 3

cc: Surinder Arora, NRC Project Manager, U.S. EPR Projects Branch
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/JMR/mdf

Enclosure

Response to NRC Request for Additional Information, RAI No. 129, Question 10.04.05-2, Circulating Water System, Calvert Cliffs Nuclear Power Plant, Unit 3

RAI No 129

Question 10.04.05-2

COL Information Item 10.4-4 requires the COL applicant to provide methods for control of water chemistry, and to provide the specific chemicals used within the chemical treatment system. The Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3 Final Safety Analysis Report (FSAR), Section 10.4.5.2.2, provided a listing of the chemicals to be added for treatment of the circulating water system (CWS) water. The list included a corrosion inhibitor, scale inhibitor, and dispersant; however, the specific chemicals to be used were not identified because the three chemicals were described as proprietary (supplier-specific). The description of the CWS also did not identify the materials of the piping, cooling towers, or other major system components.

In order to evaluate the compatibility of the treatment chemicals with the CWS materials, the staff requests the following:

1. Identify the primary material types to be used for the piping and components of the CWS that will come in contact with the circulating water.

2. Describe the criteria or process that will be used to ensure the compatibility of the proprietary corrosion inhibitor, scale inhibitor, and dispersant with the system materials.

Response

1. The primary materials utilized for the piping and components of the Circulating Water System (CWS) that come in contact with the circulating water are discussed in FSAR Section 10.4.1.2. This information will be supplemented with the additional material updates to FSAR Subsections 10.4.1.2 and 10.4.5.2, as shown below under COLA Impact.

2. For CCNPP Unit 3, the water quality control focuses on corrosion/scaling control and preventing silt deposition and biofouling control. The chemicals chosen for use are compatible with the system metallurgy and are monitored for optimizing chemical feeds with periodic testing of metallic parts (using immersed metal coupons) to minimize metal loss (measured in mils per year) from the system.

COLA Impact

The CCNPP Unit 3 FSAR Subsections 10.4.1.2 and 10.4.5.2 will be revised as shown below in a future revision of the COLA.

10.4.1.2 System Description

{The site-specific main condenser for CCNPP Unit 3 will be comprised of titanium tubes and titanium-clad tube sheet.} Additionally, the condenser waterboxes will be lined or coated with a material compatible with the circulating water. Condenser expansion joints will be constructed of chlorobutyl elastomer, ethylene-propylene diene monomer (EPDM), or equivalent.}

10.4.5.2.1 General Description

In the Turbine Building, the majority of the CWS flow is directed through the main condenser, where the water removes (primarily) latent heat of vaporization from the turbine exhaust steam. The water travels through the three condenser shells (tube side), which are arranged in series, and then returns to the CWS cooling tower via the CWS return piping. The underground circulating water pipe is concrete while the above ground pipe is carbon steel with a protective lining or coating. Additionally, carbon steel valves will be lined or coated with a protective coating compatible with the circulating water. Small bore piping will be of a material compatible with the circulating water.

10.4.5.2.2 Component Description

Cooling Towers

{The CCNPP Unit 3 cooling tower is a plume-abated forced draft cooling tower. The tower structure dimensions are represented in Table 10.4-1 and will be surrounded by a wind wall. The tower has the ability to function as an all-wet system or a hybrid system.

The circulating water pump forebay, cooling tower, and cooling tower basin is comprised of reinforced concrete. The cooling tower basin is supported by a reinforced concrete foundation. Internal construction materials of the cooling tower include fiberglass-reinforced plastic (FRP) or polyvinyl chloride (PVC) for piping laterals, polypropylene for spray nozzles, and PVC for fill material and drift eliminators. Additionally, the heat exchangers for the cooling tower hybrid system are constructed of titanium or equivalent.

10.4.5.2.2 Component Description

Circulating Water Pumps

{Four 25% capacity vertical turbine pumps, each capable of delivering approximately 200,000 gpm (757,083 lpm), are used to provide flow for the CWS. The pumps draw water from the cooling tower basin and deliver it to two concrete supply pipes each 11 feet (3.3 meters) in diameter. Each pump is driven by a motor rated at 11,000 HP (8 MW). The pumps are sized to provide sufficient head to overcome energy losses due to friction, piping elevation changes, and static head requirements for the cooling tower.} The circulating water pump materials are compatible with the circulating water quality. Pump components in contact with the circulating water (i.e., suction bell, impeller, impeller shrouds, columns) are duplex stainless steel or equivalent.}

10.4.5.2.2 Component Description

Cooling Tower Makeup System

The screen wash system consists of two screen wash pumps (single shaft) that provide a pressurized spray to remove debris from the traveling screens. The CWS makeup system is shown in Figure 10.4-3. The CWS makeup water intake structure is shown in Figures 10.4-4 and 10.4-5.}

The CCNPP Unit 3 CWS makeup system piping is compatible with the water chemistry of the Chesapeake Bay and as such is composed of either high density polyethylene (HDPE) or FRP pipe. The CWS makeup system pump components in contact with the Chesapeake Bay water are of similar materials as described for the CWS pumps.}

10.4.5.2.2 Component Description

Cooling Tower Blowdown System

{The nonsafety-related CWS blowdown system consists of piping, valves, and associated instrumentation and controls that convey water from the CWS cooling tower basin to the retention basin prior to its discharge through the seal well to the Chesapeake Bay. Blowdown rate from the cooling tower is controlled by a motor operated control valve. The CWS blowdown system piping is compatible with the circulating water and as such is composed of either HDPE or FRP pipe.