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UniStar
NUCLEAR ENERGY

10 CFR 50.4
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October 28, 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. 170, Offsite Power System

Reference: Surinder Arora (NRC) to Robert Poche (UniStar Nuclear Energy), "FINAL RAI No. 170 EEB 3485" email dated September 29, 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 September 29, 2009 (Reference). This RAI addresses Offsite Power System, as discussed in Section 8.2 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.

The enclosure provides our response to RAI No. 170, Question 08.02-10. Our response to RAI No. 170 Question 08.02-10 does not include any new regulatory commitments and does not impact COLA content. Our response to RAI No. 170 Question 08.02-10 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) 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 October 28, 2009

Greg Gibson

Enclosure: Response to NRC Request for Additional Information RAI No. 170, Question 08.02-10, Offsite Power 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/SFW/mdf

Enclosure

Response to NRC Request for Additional Information RAI No. 170
Question 08.02 10, Offsite Power System
Calvert Cliffs Nuclear Power Plant, Unit 3

RAI No. 170

Question 08.02-10:

The response to RAI No. 110, Question 08.02-8 dated June 17, 2009, stated that the CCNPP3 COLA FSAR Section 2.4 on Hydrological Engineering discusses the detailed design considerations for the site specific probable maximum flood level (PMF). Section 2.4.12.5 of the FSAR states that the proposed grade elevation of the nuclear island is approximately 85 ft MSL, and the ground water elevations within the surficial aquifer range approximately from elevation 68 to 85.7 ft MSL, with the highest observed elevations occurring in the CCNPP3 power block area. Since the highest range of ground water level is above the proposed grade level of the power block, and if the switchyard is located at the same elevation as that of the nuclear island, under severe weather conditions this could potentially create water logging at the site and long term submergence of underground cables related to the switchyard. Please explain the effectiveness of the proposed dewatering systems (temporary or permanent sump pumps), including the estimated duration of submergence conditions and the monitoring system, under conditions of high ground water level at or above the proposed grade elevation, in order to protect systems, structures, and components (SSCs).

Response

Figure 2.5-129 (Site Grading Plan) in Revision 6 of the Final Safety Analysis Report (FSAR) for Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3 shows the switchyard finished grade elevation is approximately 98'-0". FSAR Subsection 2.4.12.5 states the proposed maximum grade elevation of the nuclear island is approximately 83' MSL. Therefore, the finished grade level of the switchyard is approximately 15' above the proposed grade level of the nuclear island, not at the same elevation as stated in NRC Question 08.02-10. As stated in the CCNPP Unit 3 FSAR, pre-construction ground water elevation ranges from 68' to 87.5' MSL in the power block area. FSAR Subsection 2.4.12.5 further addresses that due to cut and fill operations, site grading and construction activities (i.e. post construction), the water levels in the surficial aquifer will change. FSAR Subsection 2.4.12.5 states that the post construction maximum ground water level in the nuclear island area is 72 ft MSL. Since the maximum post construction ground water level is less than the proposed finished grade level, the water logging and submergence issue due to high ground water at or above the proposed finished grade described in Question 08.02-10 is not credible.

The top of electrical manholes are installed approximately 12" above grade level. Manholes have a sump well for either temporary or permanent sump pump as necessary. The area around the manholes is graded away from the manhole as a high point towards the low point grade. Underground duct banks are sloped away from buildings toward manholes. Duct banks are sloped towards low point manholes within the duct bank system and permanent sump pumps are installed in several predetermined manholes. Manholes are constructed and installed using proper waterstop materials, as required. The sump pumps are used to remove intruding ground water from the duct bank system.

The electrical cable trench system has a solid bottom with the top of the trench approximately 12" above grade. The area around the cable trench is graded away from the trench as a high point towards the low point grade. The trenches are sloped from a high point to a low point where sump wells are located for sump pump installation. Permanent sump pumps are installed in low points in the trench system. Cable trenches are constructed and installed using proper waterstop materials, as required.

Both the duct bank and cable trench systems have a water level high/high point visual alarm system for permanent sump pumps. The visual alarms will not allow reset until the water is below the high/high point.

The approach of using passive and active ground water removal methods supports the CCNPP Unit 3 goal to minimize the length of time cables are in a wet environment.

COLA Impact

FSAR Section 3.8.4.1.8 will be supplemented as follows in a future COLA revision:

3.8.4.1.8 Buried Conduit and Duct Banks

Where buried safety-related electrical duct banks and the UHS makeup water pipes traversing the UHS Makeup Water Intake Structure and the four ESWBs need to be above each other, the buried electrical duct banks are located below the pipes to facilitate future pipe maintenance. To facilitate cable pulling and routing, electrical manholes are provided at strategic locations.}

Based on current ground water conditions and the anticipated facility surface grade between elevations of 72 to 85 ft (21.9 to 25.9 m), ground water is expected to be encountered at depths of 6 to 16 ft (1.8 to 4.9 m) below grade. Therefore, underground duct banks are sloped away from buildings toward manholes. Duct banks are sloped toward low point manholes within the duct bank system and permanent sump pumps are installed in several predetermined manholes. The sump pumps are used to remove intruding ground water from the duct bank system. Manholes are constructed and installed using proper waterstop materials, as required.

Surface water controls to minimize precipitation infiltration and the redirection of surface runoff away from the facility area are expected, further minimizing water infiltration to the ground water system beneath the site. For example, the top of electrical manholes are installed approximately 12" above grade level. Additionally, the area around the manholes is graded away from the manhole as a high point towards the low point grade.

Electrical manholes within the facility area are expected to be at depths of 10 to 15 ft (3 to 4.6 m) below grade and, therefore, have the potential for encountering ground water that may eventually leak into these structures. Therefore, the electrical cable trench system has a solid bottom with the top of the trench approximately 12" above grade. The area around the cable trench is graded away from the trench as a high point toward the low point grade. The trenches are sloped from a high point to a low point where sump wells are located for sump pump installation. Permanent sump pumps are installed in low points in the trench system as necessary. Cable trenches are constructed and installed using proper waterstop materials, as required.

Both the duct bank and cable trench systems have a water level high/high point visual alarm system for permanent sump pumps. The visual alarms will not allow reset until the water is below the high/high point.}