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NUCLEAR ENERGY

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April 30, 2013

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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
Supplemental Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3,
RAI 325, Information Systems Important to Safety

References:
1) Surinder Arora (NRC) to Paul Infanger (UniStar Nuclear Energy), "FINAL RAI 325 ICE1 6066, dated October 12, 2011

2) UniStar Nuclear Energy Letter UN#12-151, from Mark T. Finley to Document Control Desk, U.S. NRC, Calvert Cliffs Nuclear Power Plant, Unit 3, RAI 325, Information Systems Important to Safety, dated December 20. 2012

The purpose of this letter is to provide a supplemental response to the request for additional information (RAI) identified in the NRC e-mail correspondence to UniStar Nuclear Energy, dated October 12, 2011 (Reference 1). This RAI addresses Information Systems Important to Safety, as discussed in Section 07.05 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 9.

Reference 2 provided the response to RAI 325, Question 07.05-1. Subsequently, during a public meeting on March 18, 2013, NRC provided feedback on the initial response to the RAI. Enclosure 1 provides our supplemental response to RAI No. 325, Question 07.05-1 addressing the comments discussed at the public meeting, and includes revised COLA content. Enclosure 2 provides the COLA impact of the response to RAI 325 Question 07.05-1. A Licensing Basis Document Change Request has been initiated to incorporate these changes into a future revision of the COLA.

Enclosure 3 provides a Table of Changes to the COLA associated with this supplemental RAI 325 response.

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Our response does not include any new regulatory commitments. This letter and its enclosures do not contain any sensitive or proprietary information.

If there are any questions regarding this transmittal, please contact me at (410) 369-1907 or Mr. Wayne A. Massie at (410) 369-1910.

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

Executed on April 30, 2013

Mark T. Finley

Enclosures:
1) Supplemental Response to NRC Request for Additional Information RAI No. 325, Question 07.05-1, Information Systems Important to Safety, Calvert Cliffs Nuclear Power Plant, Unit 3
2) Changes to CCNPP Unit 3 COLA Associated with the Supplemental Response to RAI 325, Question 07.05-1, Calvert Cliffs Nuclear Power Plant, Unit 3
3) Table of Changes to CCNPP Unit 3 COLA Associated with Supplemental Response to RAI No. 325

cc: Surinder Arora, NRC Project Manager, U.S. EPR Projects Branch
Laura Quinn-Willingham, NRC Environmental Project Manager, U.S. EPR COL Application
Amy Snyder, NRC Project Manager, U.S. EPR DC Application, (w/o enclosures)
Patricia Holahan, Acting Deputy Regional Administrator, NRC Region II, (w/o enclosures)
Silas Kennedy, U.S. NRC Resident Inspector, CCNPP, Units 1 and 2,
David Lew, Deputy Regional Administrator, NRC Region I (w/o enclosures)

Enclosure 1

Supplemental Response to NRC Request for Additional Information
RAI No. 325, Question 07.05-1,
Information Systems Important to Safety,
Calvert Cliffs Nuclear Power Plant, Unit 3

NRC Feedback Comment on Initial Response to RAI 325, Question 07.05-1

Response to RAI 325, Q07.05-1 was submitted to NRC by UniStar letter UN#12-151 dated December 20, 2012. Subsequently, during a public meeting on March 18, 2013, NRC provided feedback on the initial response to the RAI. This supplemental response to RAI 325, Q07.05-1 addresses the following NRC comments including NRC I&C.

Reviewer comments on I&C aspects noted below:

- Feedback Comment 1 – Reference 2 Page 10/17 – consider adding valve numbers in the description for FSAR 9.2.5.3.2, UHS makeup water system isolation valves
- Feedback Comment 2 - Reference 2 Page 10/17 – consider adding "automatically" to open or close valves.
- Feedback Comment 3 - Reference 2 Page 13/17 - bottom three lines appear to be out of place and should be deleted.
- Feedback Comment 4 (I&C Issue 1) –Reference 2 Page 2 – UniStar response discusses seven site-specific systems, but only notes SAS control for two systems. Please clarify why only two site-specific systems are controlled by SAS, what controls the others?
- Feedback Comment 5 (I&C Issue 2) –Reference 2 Page 5/17, 4th paragraph – UniStar response and the Table of Changes indicates that Section 7.6 is modified, yet the COLA markups include nothing from Section 7.6.
- Feedback Comment 6 (I&C Issue 3) –Reference 2 Page 6/17 – UniStar uses the term 'comparable information' is provided. What does comparable information mean?
- Feedback Comment 7 (I&C Issue 4) –Reference 2 Page 9/17, Table 7.4-1 and Table 7.4-2 – UniStar notes that this table is a supplement to DC table, yet different column headings exist on the two tables. Is this correct?

Response to NRC Question 07.05-1:

Feedback Comment 1 - Reference 2 Page 10/17 – consider adding valve numbers in the description for FSAR 9.2.5.3.2, UHS makeup water system isolation valves

Feedback Comment 1 Response – Added valve numbers in the markup of description for FSAR 9.2.5.3.2, UHS makeup water system isolation valves.

Feedback Comment 2 - Reference 2 Page 10/17 – consider adding "automatically" to open or close valves.

Feedback Comment 2 Response - Added "automatically" to open or close valves in the FSAR Markup.

Feedback Comment 3 - Reference 2 Page 13/17 - bottom three lines appear to be out of place and should be deleted.

Feedback Comment 3 Response - Reference 2 Page 13/17 – deleted bottom three lines.

Feedback Comment 4 (I&C Issue 1) - Reference 2 Page 2 – UniStar response discusses seven site-specific systems, but only notes SAS control for two systems. Please clarify why only two site-specific systems are controlled by SAS, what controls the others?

Feedback Comment 4 (I&C Issue 1) Response - Refer to the following Table 7.1-1 supplement. Information included for an additional site-specific system controlled by SAS. Note: There are only two systems that have SAS controls.

Table 7.1-1— {SAS Automatic Safety Function (Site-Specific) Sheet 1 of 1

System	Function Name	Function Safety Basis	Interdivisional Communications	Types of Data	Signal Selection Type	Comments
UHS Makeup Water Intake Structure Ventilation System	Remove heat generated by UHS Makeup Water System	This function is described in Section 9.4.15.3.	No	NA	NA	

For the controls of remaining five systems, see table below:

SYSTEM	Control
Essential Service Water System (ESWS) Normal Makeup system	Process Information and Control System (PICS)
ESWS (UHS) Emergency Makeup Water system	No Site Specific Automation Controls
ESWS (UHS) Makeup Water Bypass system	No Site Specific Automation Controls
ESWS Blowdown system	No Site Specific Automation Controls
ESWS Emergency Blowdown system	No Site Specific Automation Controls

Feedback Comment 5 (I&C Issue 2) - Reference 2 Page 5/17, 4th paragraph – UniStar response and the Table of Changes indicates that Section 7.6 is modified, yet the COLA markups include nothing from Section 7.6.

Feedback Comment 5 (I&C Issue 2) Response - This is typo, the reference to "7.6" is deleted.

Feedback Comment 6 (I&C Issue 3) - Reference 2 Page 6/17 – UniStar uses the term 'comparable information' is provided. What does comparable information mean?

Feedback Comment 6 (I&C Issue 3) Response – The term comparable information was used to indicate that the information in US EPR FSAR Table 7.1-5 and COLA FSAR Table 7.1-1 have the same headings and provide same type of information.

Feedback Comment 7 (I&C Issue 4) Reference 2 Page 9/17, Table 7.4-1 and Table 7.4-2 – UniStar notes that this table is a supplement to DC table, yet different column headings exist on the two tables. Is this correct?

Feedback Comment 7 (I&C Issue 4) Response - Yes, CCNPP Unit 3 Table 7.4-1 and Table 7.4-2 are not a supplement to any table in the U.S. EPR FSAR Subsection 7.4.1.2. These tables are provided as a supplement to the description in U.S. EPR FSAR Subsection 7.4.1.2 for the site-specific components and monitoring functions used to achieve safe shutdown.

COLA Impact

Enclosure 2 provides the COLA markups associated with the supplemental response to RAI 325 Question 07.05-1.

Enclosure 2

Changes to CCNPP Unit 3 COLA
Associated with the Supplemental Response to RAI 325, Question 07.05-1,
Calvert Cliffs Nuclear Power Plant, Unit 3

Table 7.1-1— {SAS Automatic Safety Function (Site-Specific) Sheet 1 of 1

System[1]	Function Name [2]	Function Safety Base[3]	Interdivision Communications[4]	Type of Data[5]	Signal Selection Type[6]	Comments
UHS Makeup Water System	ESWS emergency Makeup Water alignment	This function is described in Section 9.2.5.7.3	NO	NA	NA	
UHS Makeup Water Intake Structure Ventilation System	Remove heat generated by UHS Makeup Water System	This function is described in Section 9.4.15.3.	No	NA	NA	

Notes:

1. System – Mechanical system described in the referenced FSAR section.
2. Function Name – The automatic safety-related function is controlled by SAS in each mechanical system.
3. Function Safety Basis – Safety-related functions that provide reasonable assurance of either:
   - The integrity of the reactor coolant pressure boundary.
   - The capability to shut down the reactor and maintain it in a safe shutdown condition.
   - The capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposures.
4. Interdivisional Communication – Point-to-point data communications between different safety divisions of SAS.
5. Type of Data – Analog or Discrete Signal. This column is meant to indicate the type of information sent between divisions, not the transmission means by which the information is sent (hardwired, data message, etc.).
6. Signal Selection Type – Vote. Vote is defined as:
   - 1 out of x, where x is the number of inputs to the logic block. If one or more inputs is TRUE, then the output will be TRUE. This logic may be implemented with an OR gate.
   - x out of x, where x is the number of inputs to the logic block. If x number of inputs are TRUE, then the output will be TRUE. This logic may be implemented using an AND gate.
   - y out of x, where x is the number of inputs to the logic block and y is a value between 2 and

limiting condition between the available and required NPSH is approximately 33.3 feet. The total developed head (TDH) for the UHS Makeup Water pump is 180 ft. TDH is calculated considering the pressure drop through the piping, valves and components, suction head, and the static head. In order to provide a more conservative result for the UHS Makeup Water pump TDH, a 10% margin is included in the calculated value of 180 ft. Water level is continuously measured and monitored by safety-related instrumentation in the UHS Makeup Water Intake Structure to initiate proper (automatic or operator initiated) operation of the traveling screen. Hence the minimum water level is maintained for safe pump operation. The design low water level at the UHS Makeup Water pump suction pit is at EL -11.7 feet. The minimum water level at the UHS Makeup Water pump suction pit considers a head loss of 1.5 ft across the traveling screen.

UHS Makeup Water System Isolation Valves

The UHS Makeup Water System isolation valves are safety-related MOVs and manual valves designed to ASME Section III, Class 3 requirements, and are made of super austenitic stainless steel, which is compatible with the brackish UHS makeup water. For each train, there are MOVs for the UHS Makeup Water System Pump isolation, minimum flow recirculation, pump discharge strainer blowdown isolation, traveling screen wash isolation, and the U.S. EPR Emergency Makeup Water System isolation at the ESWS cooling tower basin. Manual valves are provided for the UHS Makeup Water System test bypass isolation, UHS Makeup Keep-fill line isolation, and Post-DBA UHS Makeup Keep-fill isolation.

Leakage rates for boundary isolation valves are based on ASME OM Code 2004 Edition, Subsection ISTC. The design of the UHS Makeup Water System pump capacity considers the expected valve seat leakage for the boundary isolation valves. Since UHS Makeup pump capacity has significant margin, boundary valve leakage rates are inconsequential.

For operating trains, the following describes the operation of key systems valves:

The UHS Makeup Water pump discharge isolation valves, 30PED10/20/30/40 AA001, are normally closed. Upon the receipt of SI signal, the ESWS normal blowdown valves (30PEB 10/20/30/40 AA016) and emergency blowdown motor operated valves (30PEB 10/20/30/40 AA003)~~s~~ are automatically closed, the ESWS emergency makeup water motor operated isolation valves~~s~~ (30PEB 10/20/30/40 AA0021) are automatically opened, and the ESWS normal makeup water motor operated isolation valves (30PEB 10/20/30/40 AA019) are automatically closed. Upon the receipt of SI signal coincident with Low-Low UHS cooling tower basin water level signal, the UHS makeup water pumps are started manually against closed motor operated UHS Makeup Water pumps discharge isolation valves (30PEB 10/20/30/40 AA013) and UHS Makeup Water pump minimum flow valves (30PEB 10/20/30/40 AA002). The pump minimum flow valves are automatically opened to

establish the pump minimum flow requirement. Once minimum flow is achieved, the pumps discharge isolation valves will be automatically opened to fill the UHS cooling tower basin with Chesapeake Bay water and maintain the basin water level within the established operating limits. The UHS Makeup Water pump discharge isolation valves are automatically closed on a pump stop signal.

The UHS Makeup Water pump minimum flow valves, 30PED10/20/30/40 AA002, are normally closed during normal operations. Following an SI signal coincident with a Low-Low UHS cooling tower basin water level signal and manual operation to start the UHS Makeup water pump, the pump minimum flow recirculation valves are automatically opened and modulate to maintain the pump minimum flow requirement. Once the pump's minimum flow requirement is achieved, UHS Makeup Water pump discharge valves (30PEB 10/20/30/40 AA001) start opening and minimum flow recirculation valves start closing to provide makeup water to the UHS tower basin. Once the UHS cooling tower basin is filled to its operating level, the ESW Emergency makeup water isolation valve (30PEB 10/20/30/40 AA021) is automatically closed and the UHS Makeup Water pump minimum flow valve (30PEB 10/20/30/40 AA002) start reopening to maintain the pump minimum flow requirement.

The UHS Makeup water traveling screen wash isolation valve, 30PED10/20/30/40 AA005 is closed during normal plant operation. The traveling screen wash isolation valve opens on a differential water level across the screens or on a timer basis, once the UHS Makeup pump has established the minimum required pump flow. With the traveling screen wash isolation valve open, pressurized water cleans the traveling screens of debris as the screens rotate.

The UHS Makeup Water pump discharge strainer blowdown isolation valve, 30PED10/20/30/40 AA006, is cycled open and shut automatically as necessary during UHS Makeup Water System pump operation to provide a flow path for debris removal from the pump discharge strainer during the automatic backwash cycle. The pressure relief backwash process of the filter is initiated by either the signal of differential pressure measuring system, a timer, after the start of the UHS Makeup Water pump, or via manual operator initiation. The pump discharge strainer blowdown isolation valve opens and the drive motor is energized.

The manual UHS Makeup Water System test bypass isolation valve, 30PED10/20/30/40 AA008 is locked closed during normal operation and remains locked closed for post accident operation.

The manual UHS Makeup Keep-Fill line isolation valve, 30PED10/20/30/40 AA028 and the manual Post-DBA UHS Makeup Keep-Fill line isolation valve 30PED10/20/30/40 AA029 are open during normal plant operation and remain open during post accident conditions.

UHS Makeup Water System Self Cleaning Strainers

- ESWS emergency makeup water isolation valve (opened)
- ESWS normal makeup water isolation valve (closed)
- ESWS normal and emergency blowdown isolation valves (closed)

9.2.5.7.3.1 Operator Action to fill the UHS Cooling Tower Basin

After the receipt of a safety injection signal, operator action is required to start the UHS makeup water pump manually from the main control room to maintain UHS tower water level.

There are no interlocks or permissives for starting the UHS makeup water pumps. This is a departure from the U.S. EPR FSAR, Tier 2 Table 9.2.1-3, which lists a pump start permissive associated with "Cooling tower basin water level Lo-Lo-Lo"

9.2.5.7.3.2 Auto Actuation after Pump Start Manually

The following take place automatically after the start of the UHS Makeup Water pump

- The UHS Makeup Water pump minimum flow recirculation valves are opened
- The UHS Makeup Water pump discharge isolation valves are opened after the flow through the UHS Makeup Water pump exceeds the minimum pump flow required.
- The UHS Makeup Water pump minimum flow recirculation valves closes and modulates as needed to maintain minimum flow.

~~The following valves are automatically re-aligned in response to a pump start/stop~~

- ~~UHS Makeup Water pump discharge isolation valves (Open/Closed)~~
- ~~UHS Makeup Water pump recirculation valves (Open/Closed)~~

9.2.5.8 References

{**NCDC, 2008.** U.S. Department of Commerce, National Oceanographic and Atmospheric Administration, National Climatic Data Center, Integrated Surface Hourly Observations Dataset, Patuxent River Naval Air Station, Maryland, 1978-2007, purchased 2008.

PAXNAS. Hourly Surface Observations, 1975-2006, obtained from the National Climatic Data Center.}

9.2.6

Enclosure 3

Table of Changes to CCNPP Unit 3 COLA Associated with Supplemental Response to RAI No. 325

Table of Changes to CCNPP Unit 3 COLA Associated with Response to RAI No. 325

Change ID #	Subsection	Type of Change	Description of Change
Part 2 FSAR			
12-0238	1.8.2, 7.4, 7.4.1.2, 7.4.1.2.12, 7.4.1.2.14, 7.6, 9.2.5.3.2, 9.2.5.4.2, 9.2.5.5, 9.2.5.7, 9.2.5.7.3, 9.2.5.7.3.1, 9.2.5.7.3.2, 9.4.15.5 and Tables 7.1-1, 7.4-1 and 7.4-2	Incorporate COLA markups associated with the response to RAI 325 Question 07.05-1[1].	The response to RAI 325 Question 07.05-1 adds a departure and makes multiple changes associated with the UHS Makeup Water System. Letter UN#12-151.
13-0083	Table 7.1-1, 9.2.5.3.2, and 9.2.5.7.3.2	Incorporate COLA markups associated with the supplemental response to RAI 325 Question 07.05-1.	The Supplemental response to RAI 325 Question 07.05-1 adds a line item to Table 7.1-1, adds valve numbers to Section 9.2.5.3.2 and deletes information from Section 9.2.5.7.3.2 (this letter).

[1] UniStar Nuclear Energy Letter UN#12-151 from Mark T. Finley to Document Control Desk, U.S. NRC, Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAI 325, Information Systems Important to Safety, Calvert Cliffs Nuclear Power Plant, Unit 3, dated December 20, 2012