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10 CFR 50.4
10 CFR 52.79

July 13, 2009

UN#09-300

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. 119, Radiation Sources

Reference: John Rycyna (NRC) to Robert Poche (UniStar Nuclear Energy), "RAI No 119
CHPB 2215.doc" email dated June 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 June 11, 2009 (Reference). This RAI addresses Radiation Sources, as discussed in Section 12.2 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 5.

The enclosure provides our response to RAI No. 119, Question 12.02-2, 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. Our response to Question 12.02-2 does not include any new regulatory commitments.

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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 July 13, 2009

A handwritten signature in black ink, appearing to read 'Greg Gibson', with a long horizontal line extending to the right.

Greg Gibson

Enclosure: Response to NRC Request for Additional Information RAI No. 119, Question 12.02-2, Radiation Sources, 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

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Enclosure

**Response to NRC Request for Additional Information
RAI No. 119, Question 12.02-2, Radiation Sources
Calvert Cliffs Nuclear Power Plant, Unit 3**

RAI No. 119

Question 12.02-2

Section 12.2.1.13, Miscellaneous Sources, of the applicant's FSAR states:

"The U.S. EPR FSAR includes the following COL Item in Section 12.2.1.13:

A COL applicant that references the U.S. EPR design certification will provide site-specific information for required radiation sources containing byproduct, source, and special nuclear material that may warrant shielding design considerations. This site-specific information will include a listing of isotope, quantity, form, and use of all sources in this latter category that exceed 100 millicuries.

This COL item is addressed as follows:

The following radiation sources have been identified to be required.

Isotope	Quantity	Form	Use
Cf-252	0.5 Ci	Sealed Source	Primary Start-up Source
Sb-Be	3E+06 Ci	Sealed Source	Secondary Source
Cs-137	400 Ci	Sealed Source	Secondary Source
Cs-137	{130 mCi}	Sealed Source	Calibration
{Am-241	0.03 uCi	Sealed Source	Calibration}"

- a) Section 12.2, Radiation Sources, of NUREG-0800, "Standard Review Plan for Licensing of Nuclear Power Plants," states:

"...Contained Sources. The description of radiation sources,...This description should include isotopic composition, location in the plant, source strength and source geometry, and the basis for the values..."

The applicant's FSAR, in Section 12.2.1.13, does not include a description of the location of the sources, the source geometry or the basis for the values in the source list as described in NUREG-0800. Please provide this information, or justify an alternative.

- b) 10 CFR 20.1801 requires licensees to secure from unauthorized removal or access, additional materials that are stored in controlled or unrestricted areas. Describe how the contained sources described in Section 12.2.1.13 (response to COL item 12.2-1), and any additional by-product, source, or special nuclear material sources that are not a part of the permanent plant design will be secured in accordance with 10 CFR 20.1801. Describe how the materials will be tracked. What procedures will govern the control and use of these sources?

Response

- a) The primary and secondary neutron source rods are discussed in U.S. EPR FSAR Section 4.2.2.10, and are shown in U.S. EPR FSAR Figures 4.2-19 and 4.2-20. U.S. EPR FSAR Section 12.3.1.6 and U.S. EPR Figure 12.3-16 describe the portable instrument calibration facility, which stores the calibration sources.

The Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3 COLA FSAR Section 12.2.1.13 will be revised to include the source geometry, source location, and basis for the source strength values provided.

- b) Source Security and Tracking

NEI 07-03, Generic FSAR Template Guidance for Radiation Protection Program Description, presents the applicable program specifications for the secure storage and tracking of contained radiation sources. CCNPP Unit 3 COLA FSAR Section 12.5 incorporates NEI 07-03 by reference. NEI 07-03, Section 12.5.3.1 states, "A radioactive materials storage area(s) is established, as needed and in accordance with 10 CFR 20.1801, that provides for secure storage of licensed radioactive material to prevent unauthorized removal or access." In addition, NEI 07-03, Section 12.5.4.10, Radioactive Material Control, states, "(p)rocedures are established, implemented and maintained that assure compliance with the requirements of 10 CFR 20.1801... to assure positive control over licensed radioactive material..."

Also, to aid in the security and tracking of sources, 10 CFR 20.2207 requires each licensee who receives a nationally tracked source to complete and submit a National Source Tracking Transaction Report (NRC Form 748). Of the sources listed in FSAR 12.2.1.13, the 400 curie Cs-137 source meets the requirements of 10 CFR 20.2207 (sources greater than 27 curies and less than 2700 curies are Cat 2); and therefore, a report must be submitted to the NRC no later than the next business day after the transaction to procure the source has occurred.

Procedures

Radiation protection plant procedures are part of the CCNPP Unit 3 Radiation Protection Program. NEI 07-03, Section 12.5 part 1.d states, "procedures will be established, implemented and maintained sufficient to maintain adequate control over the receipt, storage and use of radioactive materials possessed under this license and as necessary to assure compliance with 10 CFR 19.11 and 19.12 and the applicable portions of 10 CFR Part 20, commensurate with the types and quantities of radioactive materials received and possessed under this license." The procedures described in NEI 07-03, Section 12.5.4 (including 12.5.4.10), establish the controls for the use of the additional contained by-product, source or special nuclear material sources. Specifically, NEI 07-03 Section 12.5.4 states, "(r)adiation protection procedures are established, implemented and maintained sufficient to provide adequate control over the receipt, possession, use, transfer, and disposal of byproduct, source and special nuclear material to assure compliance with applicable requirements in 10 CFR Part 19, 20, 50, 70 and 71."

COLA Impact

FSAR Section 12.2.1.13 will be updated as follows in a future COLA revision. The addition of the 3 Ci AmBe source to FSAR Section 12.2.1.13 reflects the incorporation of the UniStar Nuclear Energy response to NRC RAI No. 108, Question 12.02-1¹.

12.2.1.13 Miscellaneous Sources

The U.S. EPR FSAR includes the following COL Item in Section 12.2.1.13:

A COL applicant that references the U.S. EPR design certification will provide site-specific information for required radiation sources containing byproduct, source, and special nuclear material that may warrant shielding design considerations. This site-specific information will include a listing of isotope, quantity, form, and use of all sources in this latter category that exceed 100 millicuries.

This COL Item is addressed as follows:

The following radiation sources have been identified to be required.

<u>Isotope</u>	<u>Quantity</u>	<u>Form</u>	<u>Geometry</u>	<u>Use</u>	<u>Location</u>
Cf-252	0.5 Ci (note a)	Sealed Source	Source Rod	Primary Start-up Source	Reactor Core
Sb-Be	3E+06 Ci (note b)	Sealed Source	Source Rod	Secondary Source	Reactor Core
Cs-137	400 Ci (note c)	Sealed Source	Special form sealed capsule	Calibration	Elevation 0 feet of Access Building
{Cs-137	130 mCi (note c)	Sealed Source	Special form sealed capsule	Calibration}	Elevation 0 feet of Access Building}
{Am-241	0.03 µCi (note d)	Sealed Source	Planchet	Calibration}	Elevation 0 feet of Access Building}
{AmBe	3 Ci (note e)	Sealed Source	Special form sealed capsule	Calibration}	Elevation 0 feet of Access Building}

Notes:

- a. As calculated, based on 2E+09 neutrons/sec at the beginning of life, 2.3E+12 neutron/sec-g spontaneous fission neutron emission rate, and 538 Ci/g specific activity for Cf-252.
- b. Based on an end of fuel cycle activation of 5.95E+08 Ci/m³ and 4.22E-3 m³ volume for three secondary source rods.
- c. Based on data from box calibrator vendors.

¹ G. Gibson (UniStar) to Document Control Desk (NRC), UN#09-242, "Response to Request for Additional Information for the Calvert Cliffs Nuclear Power Plant, Unit 3, RAI No. 108, Radiation Sources," dated May 20, 2009.

{d. Based on data from source manufacturers.}

{e. Nominal size required to achieve proper dose rates for performing source checks of neutron detecting instruments.}