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10 CFR 50.4
10 CFR 52.79

April 15, 2010

UN#10-115

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: UniStar Nuclear Energy, NRC Docket No. 52-016
Calvert Cliffs Nuclear Power Plant, Unit 3,
Submission of Missing Pages from letter UN#09-519

Reference: UniStar Nuclear Energy Letter UN#09-519, from Greg Gibson to Document Control Desk, U.S. NRC, Update to Calvert Cliffs Nuclear Power Plant, Unit 3 FSAR Section 3.7 and response to FSAR Section 3.7 RAI sets 19, 25, 58, 63, 65, 112, 113, 139, 158, 159, 167, 168, 179, 180, 181, and 193, dated December 29, 2009.

The purpose of this letter is to provide four pages that were missing from the end of Enclosure 2 of letter UN#09-519 (Reference). The missing four pages contain information regarding RAIs 19, 25, and 193 that describes how they were addressed in the FSAR markup provided as Enclosure 1 of UN#09-519.

The enclosure contains the four pages, identified as Enclosure 2 of UN#09-519 and numbered as pages 101 through 104.

There are no regulatory commitments identified in this letter. This letter does not contain any proprietary or sensitive information.

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If there are any questions regarding this transmittal, please contact me at (410) 470-4205, or Mr. Wayne A. Massie at (410) 470-5503.

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

Executed on April 15, 2010



Greg Gibson

Enclosure: Pages 101 through 104 of Enclosure 2 of letter UN#09-519, 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/SJS/mdf

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Enclosure

Pages 101 through 104 of Enclosure 2 of letter UN#09-519,

Calvert Cliffs Nuclear Power Plant, Unit 3

03.07.04-1

In order to determine whether plant shutdown is required after an earthquake, Regulatory Position 4.1.1 of Regulatory Guide 1.166 states that “[t]he OBE [operating basis earthquake ground motion] response spectrum check is performed using the lower of:

1. The spectrum used in the certified standard design, or
2. A spectrum other than (1) used in the design of any Seismic Category I structure.”

Section 3.7.4.4 of the U.S. EPR FSAR states that “the application of OBE Exceedance Criteria is based on the following:

“i. For the certified design portion of the plant, the OBE ground motion is one-third of the certified seismic design response spectra (CSDRS).

“ii. For the safety-related noncertified design portion of the plant, the OBE ground motion is one-third of the site-specific SSE design motion response spectra, as described in Section 3.7.1.

“iii. The threshold response spectrum ordinate criterion to be used in conjunction with RG 1.166 is the lowest of (i) and (ii).”

Section 3.7.1.1.1 of the applicant’s FSAR states that “[t]he horizontal SSE [safe-shutdown earthquake] ground motion is defined as the envelope of the GMRS [Ground Motion Response Spectra] and the set of CSDRS [Certified Seismic Design Response Spectra] curves anchored at 0.1 g peak ground acceleration. The vertical SSE spectrum is defined as the vertical GMRS.” In addition, the applicant’s FSAR, in Section 3.7.1.1.1, describes the design response spectra of several site-specific Category I structures (including the Ultimate Heat Sink Makeup Water Intake Structure), which differ from the SSE. The NRC staff requests the applicant to specify the OBE which would be used to determine whether shutdown would be required following a seismic event.

Original Response

UN#09-372

Update

The previous response provided in UniStar letter UN#09-372 is partially applicable. Note that referenced section, table and figure numbers have changed.

Development of the Site SSE is described in Section 3.7.1.1.1.1.

The site OBE is addressed in the response to RAI 193 Question 03.07.04-4

03.07.04-2

Regulatory Guide (RG) 1.12 states that “free-field sensors should be located and installed so that they record the motion of the ground surface and so that the effects associated with surface features, buildings, and components on the recorded ground motion will be insignificant.”

In the applicant’s FSAR, section 3.7.4.2.1, the applicant states that “[t]he free-field acceleration sensor is located on the base mat of the Fire Protection Building This location is sufficiently distant from nearby structures that they have no significant influence on the recorded free-field seismic motion.”

According to the applicant’s FSAR, Figure 1.2-1, the Fire Protection building is adjacent to two Fire Protection Storage Tanks. The NRC staff is concerned that these storage tanks may be potential sources of seismic noise, and requests the applicant to provide justification to show that the effects associated with these storage tanks are insignificant.

Original Response

UN#09-102

Update

The previous response provided in UniStar letter UN#09-102 is still applicable.

Information regarding the field mounted sensors is provided in FSAR Section 3.7.4.2.1

03.07.04-3

Regulatory Guide (RG) 1.12 states that “free-field sensors should be located and installed so that they record the motion of the ground surface and so that the effects associated with surface features, buildings, and components on the recorded ground motion will be insignificant.”

In the applicant’s FSAR, section 3.7.4.2.1, the applicant states that “[t]he free-field acceleration sensor is located on the base mat of the Fire Protection Building This location is sufficiently distant from nearby structures that they have no significant influence on the recorded free-field seismic motion. . . . In addition, the plan dimensions of the Fire Protection Building are small enough that its base mat will not have a significant filtering effect on the free-field motion.”

According to the applicant’s FSAR, Figure 1.2-1, the plan dimensions of the Fire Protection Building are approximately 40 ft. by 20 ft. The NRC staff requests the applicants to provide additional information to justify their assumption that seismic records obtained in the Fire Protection Building will adequately reflect “free-field” conditions. This information should also include a discussion of the embedment depth of the foundation, and a description of how the acceleration sensor will be installed within the Fire Protection Building.

Original Response

UN#09-102

Update

The previous response provided in UniStar letter UN#09-102 is still applicable.

Information regarding the field mounted sensors is provided in FSAR Section 3.7.4.2.1

03.07.04-4

In RAI 3.7.4-1, the staff asked the applicant to specify the OBE which would be used to determine whether shutdown would be required following a seismic event. Although the U.S. EPR DCD defined the OBE ground motion to be used in the RG 1.166 response spectra exceedance determination, the staff requested additional clarification from the COL applicant because of the presence of site-specific Category I structures (including the Ultimate Heat Sink Makeup Water Intake Structure), whose design response spectra may differ from the CSDRS and the SSE). In response to RAI 3.7.4.1, the applicant stated that the OBE is one-third the site SSE spectrum, and defined the site SSE as the envelope of the U.S. EPR FSAR European Utility Requirements (EUR) Soft Soil spectrum anchored at 0.15 g and the Regulatory Guide 1.60 spectrum anchored at 0.10 g.

RG 1.166 states that the OBE response spectrum check is performed using the lower of: 1) The spectrum used in the certified design, or 2) A spectrum other than (1) used in the design of any Seismic Category I structure. Based on its review of the applicant's response to RAI 3.7.4-1, the staff could not determine whether the OBE is consistent with the guidance provided in RG 1.166, because the applicant did not discuss the design response spectra of the site-specific Category I structures, which may differ from the CSDRS and the SSE.

The staff requests the applicant to discuss the appropriateness of the OBE with respect to the design spectra of the site-specific Category I structures. The staff also requests that the applicant clearly indicate the OBE in FSAR Section 3.7.4 and plot the OBE as part of FSAR Figure 3.7-5, which was provided by the applicant in its RAI response.

Response

CCNPP Unit 3 FSAR Section 3.7.1.1.1 and Section 3.7.4.4 will be revised to define the shutdown operating basis earthquake (OBE) as the composite earthquake consisting of one-third site-specific SSE (anchored at 0.05g) and EUR Soft Soil spectrum anchored at 0.10g in the low frequency (approximately 0.36Hz and below). This is in accordance with RG 1.166.

CCNPP Unit 3 FSAR Figure 3.7-6 includes a plot of the OBE.

This response supplements the response previously provided in RAI-19, Rev 2.

COLA Impact

See revised FSAR Section 3.7 in Enclosure 1 of this letter.