ATTACHMENT (1)

ADDITIONAL INFORMATION – LICENSE AMENDMENT FOR MEASUREMENT UNCERTAINTY RECAPTURE POWER UPRATE

Calvert Cliffs Nuclear Power Plant, Inc.
March 10, 2009

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During a phone call between Calvert Cliffs Nuclear Power Plant (Calvert Cliffs) and the Nuclear Regulatory Commission (NRC) on February 24, 2009, the NRC requested the following information concerning the Unit 1 and 2 fluence values:

NRC Question 1:

What is the difference between the cross-section data advocated by Regulatory Guide 1.190 (Reference 1) and that utilized in the Units 1 and 2 surveillance capsule reports (References 2 and 3)?

CCNPP Response:

The latest Calvert Cliffs Units 1 and 2 surveillance capsule analyses (References 2 and 3) were performed using the ENDF/B-V cross-section data base. Regulatory Guide 1.190 (Reference 1) recommends using the latest version ENDF/B-VI. Per footnote 2 of Regulatory Guide 1.190, "It should be noted that in many applications the ENDF/B-IV and the first three MODs of the ENDF/B-V iron cross-sections result in as much as ~20% under prediction of the vessel inner-wall fluence..." Thus, a conservative 20% bias is applied to the Calvert Cliffs fluence results.

NRC Question (2):

What is the difference in the end-of-extended-life (EOEL) vessel-clad interface fluence values using ENDF/B-V and ENDF/B-VI?

CCNPP Response:

For Unit 1, the fluence at EOEL [48 effective full power year (EFPY)] as calculated with ENDF/B-V cross-sections is 5.11E+19 n/cm^2, while the fluence at EOEL (48 EFPY) as calculated with ENDF/B-VI cross-sections is 6.13E+19 n/cm^2. The difference is 1.02E+19 n/cm^2. For Unit 2, the fluence at EOEL (48 EFPY) as calculated with ENDF/B-V cross-sections is 5.79E+19 n/cm^2, while the fluence at EOEL (48 EFPY) as calculated with ENDF/B-VI cross-sections is 6.95E+19 n/cm^2. The difference is 1.16E+19 n/cm^2.

NRC Question (3):

What is the difference between the projected fluence at the vessel-clad interface at the next surveillance capsule withdrawal and the EOEL fluence using ENDF/B-V cross-sections?

CCNPP Response:

For Unit 1, the fluence at EOEL (48 EFPY) as calculated with ENDF/B-V cross-sections is 5.11E+19 n/cm^2, while the fluence at EOC19 in 2010 (26.53 EFPY) as calculated with ENDF/B-V cross-sections is 3.25E+19 n/cm^2. The difference is 1.86E+19 n/cm^2. For Unit 2, the fluence at EOEL (48 EFPY) as calculated with ENDF/B-V cross-sections is 5.79E+19 n/cm^2, while the fluence at EOC18 in 2011 (27.20 EFPY) as calculated with ENDF/B-V cross-sections is 3.33E+19 n/cm^2. The difference is 2.46E+19 n/cm^2.

NRC Question (4):

Compare the margin terms from responses 2 and 3.

CCNPP Response:

For Unit 1, the difference in EOEL fluence using ENDF/B-V and ENDF/B-VI cross-sections is 1.02E+19 n/cm^2, while the difference in fluence at EOEL (48 EFPY) and at EOC19 in 2010 (26.53 EFPY) as calculated with ENDF/B-V cross-sections is 1.86E+19 n/cm^2. For Unit 2, the difference in EOEL fluence using ENDF/B-V and ENDF/B-VI cross-sections is 1.16E+19 n/cm^2, while the difference in fluence at EOEL (48 EFPY) and at EOC18 in 2011 (27.20 EFPY) as calculated with ENDF/B-V cross-sections is 2.46E+19 n/cm^2. Thus, the fluence margin between the next capsule withdrawal and EOEL exceeds the inverse margin from a change in cross section data base for both Units 1 and 2.

References:

1. Regulatory Guide 1.190, March 2001, Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence
2. Babcock & Wilcox (B&W) Report BAW-2160, June 1993, Analysis of Capsule 97° BG&E CCNPP Unit No. 1
3. Babcock & Wilcox (B&W) Report BAW-2199, February 1994, Analysis of Capsule 97° BG&E CCNPP Unit No. 2