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James H. Lash
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February 21, 2003
L-03-033

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

Subject: Beaver Valley Power Station, Unit No. 2
Docket No. 50-412, License No. NPF-73
Additional Information in Support of LAR No. 165
New Fuel Storage Racks Enrichment Limit

This letter provides the FirstEnergy Nuclear Operating Company (FENOC) response to a verbal NRC request for additional information received during a telecon on February 4, 2003, pertaining to FENOC letter L-03-011 dated January 30, 2003. The requested additional information is provided in Attachment A.

FENOC letter L-02-070 submitted License Amendment Request (LAR) No. 165 that proposed changes to the Beaver Valley Power Station (BVPS), Unit No. 2 Technical Specifications, which would allow new fuel (fresh fuel) with an enrichment limit of 5.00 weight percent U-235 to be placed and stored in the BVPS Unit 2 new fuel storage racks. FENOC letter L-03-011 provided supplemental information in response to an NRC request for additional information dated December 30, 2002.

The attached information does not change the evaluations or conclusions presented in FENOC letter L-02-070. If there are any questions concerning this matter, please contact Mr. Larry R. Freeland, Manager, Regulatory Affairs/Performance Improvement at 724-682-5284.

There are no regulatory commitments contained in this letter. I declare under penalty of perjury that the foregoing is true and correct. Executed on February 21, 2003.

Sincerely,

James H. Lash

A001

Attachments

c: Mr. T. G. Colburn, NRR Senior Project Manager
Mr. D. M. Kern, NRC Sr. Resident Inspector
Mr. H. J. Miller, NRC Region I Administrator
Mr. D. A. Allard, Director BRP/DEP
Mr. L. E. Ryan (BRP/DEP)

Letter L-03-033 - ATTACHMENT A

Additional Information in Support of
New Fuel Storage Rack Enrichment Limit Increase
for Beaver Valley Power Station, Unit No. 2
(License Amendment Request No. 165)

Additional Information on Application of Bias Uncertainty Term

By letter L-03-011 dated January 30, 2003, FENOC provided additional information to show that the WCAP-14416 method bias and uncertainty, as applied in the Beaver Valley Unit 2 Fresh Fuel Rack Analysis, is more conservative than the applicable guidance currently found in NUREG/CR-6698. However, the NRC staff noted that the method for applying the 95/95 bias uncertainty term differs between WCAP-14416 (approved in 1996) and NUREG/CR-6698 (issued in 2001).

In the original WCAP-14416 methodology, the 95/95 one-sided tolerance factor was multiplied by the standard deviation of the bias. The resulting 95/95 bias uncertainty value was then statistically combined with the standard deviation of the specific calculation when calculating the final Keff value. In reviewing NUREG/CR-6698, it is noted that the current recommended statistical method is to apply the 95/95 one-sided tolerance factor to the square root of the pooled variance (i.e., outside of the square root term). A revised Keff value for the limiting Beaver Valley Unit 2 Fresh Fuel Rack condition is presented below using both methods, and compared to the original limiting Keff value calculated using the WCAP-14416 methodology. The limiting case results shown below are all from the low density optimum moderation condition.

Original limiting Keff calculation (with WCAP-14416 bias and uncertainty applied, and WCAP-14416 statistical method):

$$Keff = (0.9361) + (0.0077) + \sqrt{0.00208^2 + 0.0030^2} = 0.94745$$

Revised limiting Keff calculation (with bias and uncertainty from letter L-03-011 Table 2 benchmark cases applied, and WCAP-14416 statistical method):

$$Keff = (0.9361) + (0.0011) + \sqrt{0.00208^2 + 0.0071^2} = 0.94460$$

Revised limiting Keff calculation (with bias and uncertainty from letter L-03-011 Table 2 benchmark cases applied, and NUREG/CR-6698 recommended statistical method):

$$Keff = (0.9361) + (0.0011) + 2.736\sqrt{0.00208^2 + 0.0026^2} = 0.94631$$

The above results confirm that the combined effect of applying the WCAP-14416 code bias and bias uncertainty results in larger more conservative Keff values (in this case, 0.94745), when compared to using a bias and bias uncertainty developed based on the NUREG/CR-6698 area of applicability criteria (in this case, 0.94631). All three Keff values remain below the limiting value of 0.95.

Confirmation of Basis for Exemption to 10 CFR 70.24

The NRC staff also requested FENOC to confirm that the basis for the Beaver Valley Power Station Unit 2 exemption to 10 CFR 70.24 remains valid. FENOC confirms that the basis for the exemption remains valid as described in current Operating License Section 2.D.3 which refers to License No. SNM-1954, dated April 9, 1986, which initially granted this exemption.