



Docket No. 70-36
License No. SNM-33

Director,
Office of Nuclear Materials Safety and Safeguards
U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

Subject: Request to Amend Chapter 4 of SMN-33 to Take Credit for Neutron Absorbers Contained in Fuel Pellets.

Gentlemen:

ABB Combustion Engineering hereby submits a request to amend Chapter 4, "Nuclear Criticality Safety," of SMN-33 to include taking credit for verified neutron absorbers contained within fuel pellets, as discussed with Mr. Harry Felsher of your staff. This provision and the associated design, verification, and inspection requirements have been included in Section 4.2.1.3(e). The affected pages of the license application are listed in Enclosure I. The revised pages are contained in Enclosure II. Provided for your use are six copies of this transmittal.

If you have any questions please contact Mr. Robert Maurer of my staff at (636) 937-4691, Ext. 425, or me at Ext. 399.

Sincerely,

ABB COMBUSTION ENGINEERING NUCLEAR POWER, INC.

Robert W. Sharkey
Director, Regulatory Affairs

12-6-99
Date

cc: Sean Soong

RA99/164

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ABB CE Nuclear Power, Inc.

Enclosure I to RA99/164

**ABB COMBUSTION ENGINEERING NUCLEAR POWER, INC.
Amendment Request to Take Credit for Neutron Absorbers
Contained in Fuel Pellets.
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Enclosure II to RA99/164

**ABB COMBUSTION ENGINEERING NUCLEAR POWER, INC.
Amendment Request to Take Credit for Neutron Absorbers Contained in
Fuel Pellets.
AFFECTED PAGES**

December 6, 1999

- (e) Criticality safety evaluations shall only take credit for fixed neutron absorbers or neutron absorbers contained in fuel pellets. Criticality safety evaluations shall not take credit for soluble neutron absorbers or for neutron absorbers within bulk powder systems. Criticality safety evaluations taking credit for neutron absorption, shall use validated methodologies. The criticality safety evaluations shall address the possibility of depletion of the parasitic isotope(s) in fixed neutron absorbers. Borosilicate-glass raschig rings may be used in solutions of fissile material in a manner consistent with ANSI/ANS 8.5-1986. Criticality safety evaluations completed after December 1999, shall demonstrate that the use of neutron absorbers is within a manner consistent with ANSI/ANS 8.21-1995.

Criticality safety evaluations that rely on neutron absorbers contained in fuel pellets shall meet the following design, verification, and inspection requirements:

1. The neutron absorber shall be designed to maintain its required neutron absorption for the entire time period it will be used.
2. Manufacturer tolerance and uncertainties in measurement shall be accounted for in determining the specifications of the neutron absorber.
3. The potential for neutron absorber degradation due to physical or chemical changes shall be assessed.
4. The impact of normal and credible abnormal operating conditions shall be evaluated.

5. The specifications for the neutron absorber (for example, homogeneity of the neutron absorber) shall be verified prior to use of the neutron absorber.
 6. Testing methods for verifying the presence of the neutron absorber shall be calibrated to traceable material standards.
- (f) Whenever criticality safety is directly dependent on the integrity of a fixture, container, storage rack or other structure, design shall include consideration of structural integrity.
 - (g) Computer analysis methods shall be validated in accordance with the criteria of Section 4.2.3.2 and Regulatory Guide 3.4, Revision 2, dated March 1986, "Nuclear Criticality Safety in Operations with Fissionable Materials at Fuels and Materials Facilities". The highest effective multiplication factor derived by the validated analytical methods for credible operating conditions shall be less than or equal to 0.95 including applicable biases and calculational uncertainties.
 - (h) The analytical method(s) used for the safety evaluation of SIUs and the source of validation of the methods shall be specified.
 - (i) Mass control shall be administered using a calibrated mass measurement instrument.
 - (j) Volume control shall be administered by the following methods: 1) geometric devices to restrict the volume; or 2) engineered devices or instrumentation to limit the accumulation of SNM.