



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
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February 4, 2000

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Mr. T. A. Coleman, Vice President  
Government Relations  
Framatome Cogema Fuels  
3315 Old Forest Road  
P. O. Box 10935  
Lynchburg, Virginia 24506-0935

SUBJECT: REVISED SAFETY EVALUATION (SE) FOR TOPICAL REPORT BAW-10227P:  
"EVALUATION OF ADVANCED CLADDING AND STRUCTURAL MATERIAL (M5)  
IN PWR REACTOR FUEL" (TAC NO. M99903)

Dear Mr. Coleman:

By letter dated December 14, 1999, the Nuclear Regulatory Commission (NRC) staff issued the SE for Framatome Topical Report BAW-10227P, "Evaluation of Advanced Cladding and Structural Material (M5) in PWR Reactor Fuel." Subsequently, Framatome informed the NRC staff that a statement in the SE related to Framatome's small-break loss-of-coolant accident (SBLOCA) and large-break loss-of-coolant accident (LBLOCA) methodologies had unintentionally restricted the methodologies application to M5. Section 7 of the December 14, 1999, SE states, "The limitations and conditions identified in past SEs for the Framatome SBLOCA and LBLOCA models continue to apply." The SE for Topical Report BAW-10166P, "BEACH - Best Estimate Analysis Core Heat Transfer - A Computer Program for Reflood Heat Transfer," Revision 2, dated August 13, 1990, concluded that for analysis where cladding swell exceeds 20 percent, but the fuel does not rupture, the user should justify the acceptability of the methodology. For M5 fuel, cladding swell greater than 20 percent can occur at the extremes of the calculations.

By letter dated January 14, 2000, Framatome provided additional information to justify applicability of the LOCA methodologies to approximately 57 percent cladding swell. The staff accepts that the previous limit of 20 percent cladding swell for Framatome LOCA methodologies may be raised to 57 percent, as is documented in the revised SE (Enclosed) for BAW-10227P. Revision bars denote the changes from the SE dated December 14, 1999. The attached SE also contains minor editorial changes, and clarifies the staff's review of Framatome's evaluation models as they incorporate the material properties of M5 fuel. The staff's review of Revision 4 to Topical Report BAW-10164, "RELAP5MOD2-B&W, An Advanced Computer Program for Light Water Reactor LOCA and Non-LOCA Transient Analysis," which was provided in your submittals dated April 23 and September 24, 1999, will be provided under a separate cover.

The staff has completed its review of the subject report submitted by Framatome Cogema Fuels (FCF) by letter dated September 30, 1997, and the additional information submitted by letters dated February 5, April 23, July 29, September 24, and October 20, 1999, and January 14, 2000. On the basis of our review, the staff finds the subject report to be acceptable for referencing in license applications to the extent specified and under the limitations stated in the enclosed SE.

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Licensees who reference this topical report as part of fuel reload submittals should also submit exemption requests with regard to the provisions of 10 CFR 50.46, 10 CFR 50.44, and other applicable regulations that are relevant to particular fuel cladding materials.

The NRC staff will not repeat its review of the matters described in FCF Topical Report BAW-10227P, and found acceptable, when the report appears as a reference in license applications, except to ensure that the material presented applies to the specific plant involved. The NRC staff's acceptance applies only to the matters described in FCF Topical Report BAW-10227P.

In accordance with procedures established in NUREG-0390, the NRC staff requests that FCF publish accepted versions of the report, including the safety evaluation, in proprietary and non-proprietary forms within 3 months of receipt of this letter. The accepted versions shall incorporate this letter and the enclosed SE between the title page and the abstract and an -A (designating accepted) following the report identification symbol. The accepted versions shall also incorporate all communications between FCF and the NRC staff during this review.

Should our acceptance criteria or regulations change so that our conclusions as to the acceptability of the report are no longer valid, applicants referencing this topical report will be expected to revise and resubmit their respective documentation, or submit justification for the continued applicability of the topical report without revision of their respective documentation.

Sincerely,  
/RA/  
Stuart A. Richards, Director  
Project Directorate IV & Decommissioning  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Project No. 693

Enclosure: Safety Evaluation

cc w/encl: See next page

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