June 28, 2000

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

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION - FRAMATOME TOPICAL REPORT BAW-10133P, REVISION 1, ADDENDA 1 AND 2, "MARC-C FUEL ASSEMBLY LOSS-OF-COOLANT ACCIDENT SEISMIC ANALYSIS" (TAC NOS. M99906 AND MA5902)

Dear Mr. Coleman:

By letters dated September 30, 1997, and May 17, 1999, Framatome Cogema Fuels requested a review of the subject addenda to Topical Report BAW-10133P, Revision 1. The NRC staff has reviewed the addenda and determined that additional information is needed in order to complete the its review. The request for additional information (RAI) is enclosed.

These questions were discussed with Mr. F. McPhatter of your staff. As was agreed, please provide a response to these questions within 30 days. If you have any additional questions concerning the request for additional information, please contact me at (301) 415-1321.

Sincerely,

/***RA/***

Stewart Bailey, Project Manager, Section 2
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Project No. 693

Enclosures: 1. Addendum 1 RAI
2. Addendum 2 RAI

cc w/encls: See next page

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Framatome Cogema Fuels
3315 Old Forest Road
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cc:
Mr. F. McPhatter, Manager
Framatome Cogema Fuels
3315 Old Forest Road
P.O. Box 10935
Lynchburg, VA 24506-0935

Mr. Michael Schoppman
Licensing Manager
Framatome Technologies, Inc.
1700 Rockville Pike, Suite 525
Rockville, MD 20852-1631

REQUEST FOR ADDITIONAL INFORMATION

TOPICAL REPORT BAW-10133P, REVISION 1, ADDENDUM 1

"MARK-C FUEL ASSEMBLY LOSS-OF-COOLANT ACCIDENT (LOCA)

SEISMIC ANALYSES"

The March 17, 2000, response to Question 6 of the NRC's request for additional information dated January 4, 2000, mentions that "recent (November 1999) resonance tests performed at CEA in water under axial flow conditions ……" demonstrate that the damping value for higher modes used in Addendum 2 is justified. Please provide this data in order for the staff to verify that the damping used is valid.

REQUEST FOR ADDITIONAL INFORMATION

TOPICAL REPORT BAW-10133P, REVISION 1, ADDENDUM 2

"MARK-C FUEL ASSEMBLY LOSS-OF-COOLANT ACCIDENT (LOCA)

SEISMIC ANALYSES"

1. Regarding simulated seismic and LOCA events, how much of the impact force is attributable to the response of higher modes compared to that of the first mode?

2. Were the boundary conditions for the prototype assemblies tested similar to those typical of most reactor seismic and LOCA events? Please discuss any differences and the impact of these differences on seismic and LOCA analyses. Also discuss any differences in boundary conditions between beginning-of-life assemblies and end-of-life assemblies and their impact on seismic and LOCA analyses.

3. How would the energy dissipation of assembly internals differ between irradiated fuel assemblies and the unirradiated assemblies that you tested? For example, would cracked fuel pellets and the elimination of the fuel-cladding gap influence damping? Please discuss the possible differences in damping and response between the assemblies tested and end-of-life irradiated fuel assembles for seismic and LOCA events.

4. The testing performed did not allow for any assembly-to-assembly interaction. What influence would assembly-to-assembly interaction have on damping? During seismic and LOCA events what percentage of damping is due to mechanical fuel rod and assembly interactions and what percentage is due to coolant flow?

5. The loading of the assemblies in the testing done at the Hermes-T Test Loop Facility consisted of releasing a prescribed displacement at approximately mid-span. This type of loading will produce a response which is dominated by the odd modes of vibration (first, third, etc.). Were loading tests performed to study damping effects of even modes in water? If not, please discuss the impact of possible differences in damping between odd and even modes on assembly response during seismic and LOCA events.

6. For limiting seismic and LOCA events, how does anticipated assembly damage compare when using the previous damping values relative to the new proposed higher damping values?

7. The loading tests performed on the assembly models of this study are much less severe (less displacement and stress response) than those expected to be encountered in typical seismic or LOCA events. Justify that damping values arrived at from the "low load" testing are relevant for response levels expected in limiting seismic and LOCA conditions.