

January 11, 1988

Docket No. 50-186

Dr. Robert M. Brugger, Director
Research Reactor Facility
University of Missouri
Columbia, Missouri 65211

Dear Dr. Brugger:

SUBJECT: NRC REVIEW OF EXTENDED LIFE ALUMINIDE FUEL (ELAF) AMENDMENT
APPLICATION

We are continuing our review of your application to Facility License No. R-103 for permission to use ELAF in your reactor. The application was submitted by letter dated September 12, 1986, as supplemented. During our review of the information you had submitted, questions have arisen for which we require additional information and clarification. Please provide responses to the enclosed Request for Additional Information within 60 days of the date of this letter. Following receipt of the additional information we will continue our evaluation of your request. If you have any questions regarding this review, please contact me at (301) 492-8207.

The reporting and/or recordkeeping requirements contained in this letter affect fewer than ten respondents; therefore, OMB clearance is not required under P. L. 95-511.

Sincerely,

original signed by
Alexander Adams, Jr., Project Manager
Standardization and Non-Power
Reactor Project Directorate
Division of Reactor Projects III, IV,
V and Special Projects
Office of Nuclear Reactor Regulation

Enclosure:
As stated

cc: See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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Sincerely,

A handwritten signature in cursive script, appearing to read "Alexander Adams, Jr.".

Alexander Adams, Jr., Project Manager
Standardization and Non-Power
Reactor Project Directorate
Division of Reactor Projects III, IV,
V and Special Projects
Office of Nuclear Reactor Regulation

Enclosure:
As stated

cc: See next page

University of Missouri
at Columbia

Docket No. 50-186

cc: University of Missouri
Associate Director
Research Reactor Facility
Columbia, Missouri 65201

A-95 Coordinator
Division of Planning
Office of Administration
P. O. Box 809, State Capitol Bldg.
Jefferson City, Missouri 65101

UNIVERSITY OF MISSOURI - COLUMBIA
REQUEST FOR ADDITIONAL INFORMATION
DOCKET NO. 50-186

1. In your answer to question 6, dated September 11, 1987 and elsewhere, you refer to a change in the value of the "Shutdown Margin" in your Technical Specifications. However, no justification was provided for decreasing this margin below the current value in your technical specification. If you want to pursue this action at this time, please provide a specific request for changing specification 3.1e to a value below the one in your current Technical Specifications. Your request should include a technical justification (safety analysis) bearing in mind such other reactivity-related specifications as 3.1g, h, and k.
2. In your answer to questions 2 and 10, dated September 11, 1987, Tables 10.1 through 10.5 indicate that plate number 7 has the highest power density with the new fuel. However Table 10.6 indicates that plate number 4 is being compared for compliance with the safety limits. Please clarify this apparent inconsistency.
3. In your answer to question 7, dated September 11, 1987, Table 7.2 presents values for the highest plate temperatures in 1.27 kg elements if only fresh elements are in use. Please provide the computed maximum plate temperatures for various possible mixtures of some fresh and some nearly depleted 1.27 kg elements, and compare these temperatures with values in Table 7.2 and Table 10.5.
4. In your submittal dated September 12, 1986 and September 11, 1987 (questions 2 and 10, including Table F.2a) you have indicated that procurement of 1.27 kg elements will use essentially the same specifications currently used for 0.775 kg elements. However, you

have committed not to insert 1.27 kg fuel into the reactor until actual fabrication specifications have been analyzed (pages 18 and 19, September 11, 1987 submittal). Instead, please provide analyses for engineering hot-channel factors and flow-related factors, assuming a reasonably achievable set of procurement specifications that are comparable with actual fabrication specifications for 0.775 kg fuel.

5. You have also indicated that projected growth of the oxide layer on the 1.27 kg fuel plates can influence the flow-related factors more for the upgrade fuel than for your current fuel. Please include an analysis of this effect.
6. In your answer to question 5, dated September 11, 1987, it is reported that a reactivity transient was analyzed with PARET/ANL with increased oxide on the fuel plates. What critical heat flux correlation is used in PARET/ANL and has its applicability to MURR been ascertained?