

IOWA STATE
UNIVERSITY

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Docket No. 50-116

Ref: 10 CFR 50.64

August 26, 1988

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555

SUBJECT: HIGH TO LOW-ENRICHMENT CONVERSION APPLICATION

Dear Sir:

This is a request to alter the schedule for submission of our application for conversion from high to low-enrichment uranium to November 30, 1988.

Although we have made significant progress toward finishing the application, we have been advised by Jim Matos (RERTR Program at Argonne National Laboratory) to ask for an extension so that a new round of calculations based on a revised model of the UTR-10 can be completed. Attached to this letter is a memorandum to me from Dr. A. F. Kochach, the leader of the conversion program computation team at Iowa State, in which he develops the rationale for the extended deadline.

We would rather submit an application based on analyses of the revised model and avoid having to provide corrected results at a later date.

Sincerely,

Richard A. Hendrickson

Richard A. Hendrickson
Reactor Manager

C: L. E. Burkhart
R. A. Danofsky
W. R. Madden
E. E. Sobottka
B. I. Spinrad
NRC Region III

Attachment: As cited

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Interoffice Communication

IOWA STATE UNIVERSITY
of Science and Technology

DATE August 25, 1988

TO R. A. Hendricksen
Nuclear Engineering

FROM *A. F. Rohach*
A. F. Rohach
Nuclear Engineering

Subject: UTR-10 HEU to LEU conversion project

As you know we are doing the neutronics and thermal-hydraulics calculations in support of the Safety Analysis Report amendment for the conversion of the UTR-10 fuel from high enrichment to low enrichment. As a part of the computations, support has been provided by Jim Matos at the Argonne National Laboratory through RERTR program. This support is primarily as a means of bench-marking the codes used at Iowa State.

Most calculations are done in two dimensions with the use of extrapolation distances calculated at Argonne with the DIF3D code. These supporting calculations are done over the week-ends for economy reasons. A reference core for LEU was decided as a 25 plate model and supporting calculations were completed. These have been serving as the basis for the SAR amendment which was to be submitted by August 31, 1988. However, recent calculations have shown that a 25 plate assembly will result in a too reactive core and a 24 plate assembly is a more appropriate design. Therefore, additional calculations for reactivity, rod worths, and transient analysis will need to be redone for the new reference design. This will result in a need for an extension of the filing deadline for the SAR amendment.

As you know the calculations for UTR-10 are very difficult because of the large amount of neutron leakage. Full three dimensional calculations are required without any planes of symmetry. There has been a particular problem with the void spaces in the control rod guide regions since the lower part of the guides are filled with graphite. The appropriate models for these regions affect the extrapolation lengths for the two models. A flaw for these regions was in the earlier models which resulted in the initial decision for the 25 plate assembly. Currently we feel that the models are correct, but we need additional time to produce the appropriate results for the SAR amendment.

We would like a three month extension on the filing deadline for the Safety Analysis Report Amendment and Technical Specifications. We feel that the supporting calculations, which are done only on the weekends at Argonne, will provide the extrapolation distances for the Iowa State two dimensional programs. All of these calculations could be completed during the next month. Also the framework documentation for the reports has been essentially completed and all that is needed is the updated numbers for the altered reference core. However, because of changes in graduate student personnel on the project for the fall semester, additional time will be needed for orientation with project codes and models. A three month extension should be entirely adequate for completion and submission of all documentation.