

MAY 23 1980

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MEMORANDUM FOR: R. G. Page, Chief
Uranium Fuel Licensing Branch

FROM: L. C. Rouse, Chief
Advanced Fuel and Spent Fuel Licensing Branch

SUBJECT: COMPLETION OF CRITICALITY REVIEW OF UNION CARBIDE
(TUXEDO, NEW YORK) APPLICATION DATED APRIL 2, 1980
(Docket No. 70-687)

The subject application from Union Carbide was a totally revised submission prepared to take into account questions related to criticality safety raised by J. C. Delaney and N. Ketzlach of your staff on the initial application dated December 28, 1979. I am requesting their review of the revised application to determine that the previously identified deficiencies have been resolved and preparation of a summary of their evaluation that will be incorporated in our safety evaluation report covering the proposed process modifications.

We have identified the need for additional information as indicated by the enclosed letter to Union Carbide dated May 22, 1980. During my meeting with Union Carbide representatives on May 15, 1980, I committed to a prompt review of the April 2, 1980 application from the criticality safety standpoint to determine if there are any remaining questions in this area and, if so, I would provide the questions by telephone as soon as possible. Accordingly, if Delaney and Ketzlach have further questions, I would like them no later than Thursday, May 29. Preparation of the summary evaluation (dependent upon the need for any additional information) should be completed by June 13, 1980. If these dates cannot be met because of previously scheduled work, please let me know.

I have provided a copy of the application to Jc Delaney. All work on this application should be charged to PPSAS No. 11112 and Case No. 07000687A01S.

Original Signed by
Leland C. Rouse

L. C. Rouse, Chief
Advanced Fuel and Spent Fuel
Licensing Branch
Division of Fuel Cycle and
Material Safety

OFFICE	FCAF				
SURNAME	LCRouse:flb				
DATE	5/ /80				

Enclosure: Ltr to Union Carbide dtd 5/22/80



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

MAY 22 1980

FCAF: LR
Docket No. 70-687

Union Carbide Corporation
ATTN: Mr. Marcus H. Voth, Manager
Nuclear Operations
P. O. Box 324
Tuxedo, New York 10987

Gentlemen:

This refers to your application of April 2, 1980 requesting amendment of Special Nuclear Material License No. SNM-639 to authorize modifications to the existing waste handling process. On May 15, 1980 Messrs. J. J. McGovern, F. J. Morse and M. H. Voth of Union Carbide met with Dr. A. T. Clark, Mr. R. L. Fonner and myself of the NRC to discuss this application. Prior to the meeting we questioned whether the additional processing steps would place your hot cell irradiated fuel activities outside the scope of the exception defined by Section 50.2(a)(3)(iii) of 10 CFR Part 50. The description and clarification provided by your representatives at the meeting on the proposed processing steps for conversion of the present sulfate waste stream to an oxide form resolved this question, and we have concluded that your operations will continue to meet the provisions of Section 50.2(a)(3)(iii).

As further discussed during the meeting, our review has revealed the need for additional information to support your application. Accordingly, please provide responses to the following items as a supplement to your application:

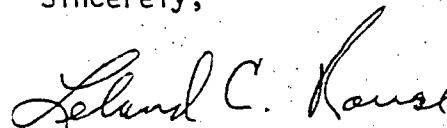
1. Provide a more detailed description of the waste form conversion process and process equipment. Include a description of any off-gas treatment from the drying and calcining steps and a description of the ventilation-exhaust system which serves the process cells and their operating areas. Describe the radiological monitoring and the control instrumentation for the system including alarms and their locations.
2. Provide an evaluation of the airborne effluents that may be released as a result of the additional processing steps including projected concentrations and quantities of individual radionuclides and the basis for your determination that these releases are as low as reasonably achievable (ALARA). This evaluation should provide a sufficient description of the effluents resulting from present operations to establish any incremental increases attributable to the proposed additional processing steps. The evaluation should provide particular focus on volatile and semi-volatile fission products present in the waste stream, e.g., iodine, ruthenium and cesium.

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3. Provide an evaluation of potential offsite radiation exposures including the dose to the nearest (critical) resident. Again the evaluation should provide a sufficient description of the present situation to permit assessment of the incremental impact of adding the proposed processing steps. Include a description of the dose assessment methodologies used in your evaluation in sufficient detail to permit confirmation of your calculations.
4. Provide your analysis of the credible accidents which could occur with the waste form conversion process, discussing mitigating factors, such as engineered safety equipment, which may alleviate the consequences. The analysis should present estimates for both onsite and offsite radiological exposures which may result from the event(s).
5. Assess the incremental occupational exposure that may accrue from the added processing steps, if any, and the basis for your determination that such exposures are ALARA.
6. Describe a detailed start-up plan that provides a basis for assessing the performance of the process and equipment and to verify the safety of the operation.

If you have any questions regarding this matter, please let me know (301-427-4205).

Sincerely,



Leland C. Rouse, Chief
Advanced Fuel and Spent Fuel
Licensing Branch
Division of Fuel Cycle and
Material Safety