

Docket file

JUL 18 1973

L. C. Rouse, Chief
Fuel Fabrication and Reprocessing
Branch
THRU: R. B. Chitwood, Chief
Technical Support Branch

NUCLEAR CRITICALITY SAFETY REVIEW OF UNION CARBIDE CORPORATION
APPLICATION DATED FEBRUARY 8, AND SUPPLEMENTS DATED JUNE 13, 1973
AND JUNE 29, 1973, SNM-639, DOCKET 70-687

The subject application and supplements have been reviewed for nuclear criticality safety. This memorandum documents final conclusions concerning the nuclear safety of operations to be conducted by Union Carbide. The following items were considered in the review:

1. Because of the R&D nature of most operations, very little process description was provided by the applicant. Administrative control will be used to control the amount of SNM in each plant area. Double batching does not result in a minimum critical mass in the hot laboratory or storage area. Double batching the mass limit in a hot cell would exceed the quantity required for a minimum critical mass. The quantity of uranium stored in a single vessel (glass vial) in a hot cell will be in the order of several grams. Since the vials are borosilicate glass representing >24 volume percent of the solution storage array, ANSI N16.4-1971 is applicable for secondary control. On these bases, administrative control in all plant areas is considered adequate for the quantities of SNM possessed by the applicant.
2. It is understood that the applicant will be granted an exemption from 10 CFR 70, Section 70.24 for the hot cells only. This exemption is justified by the presence of other instrumentation which would indicate a nuclear excursion and the efficient shielding afforded by the thick concrete walls of the cells.

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3. It is understood from a telephone discussion on June 27, 1973 with Mr. J. McGovern of Union Carbide that the instruction in the "Hot Laboratory Evacuation Procedure" pertaining to closing all access doors and windows in event of evacuation does not apply to the processing area nor to an evacuation due to a criticality incident. This understanding resolves Item 2 of my memorandum of July 2 dealing with the subject.

The applicant has demonstrated that adequate nuclear criticality safety precautions are incorporated into plant procedures and monitoring systems. It is concluded that with a possession limit of 2600 grams ²³⁵U, Union Carbide may conduct operations as described in the application in a manner consistent with accepted nuclear criticality safety criteria.

R. W. Szempruch
Technical Support Branch

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