

JUN 27 1980

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Docket No. 70-687  
License No. SNM-639, Amendment No. 4

Union Carbide Corporation  
ATTN: Mr. Marcus Voth, Manager  
Nuclear Operations  
P. O. Box 234  
Tuxedo, New York 10987

Gentlemen:

Pursuant to Title 10, Code of Federal Regulations, Part 70, Special Nuclear Material License No. SNM-639 is hereby amended to authorize addition of a uranium waste form processing operation in accordance with statements, representations and conditions specified in your application dated June 2, 1980, as supplemented by the license conditions described below. Accordingly, Item 9 of License No. SNM-639 is modified and License Conditions Nos. 18, 19 and 20 are added to read as follows:

"9. The special nuclear material is for use in accordance with the statements, representations and conditions specified in the licensee's applications dated April 28 and May 21, 1969; November 5, 1970; February 8, June 13, June 29, and August 13, 1973; May 28, 1974; February 11, 1975; August 12, 1976; May 3, October 13, and November 17, 1978; and June 2, 1980.

"18. During startup and evaluation of the uranium waste form process, as described on pages E-3 and E-4 of the licensee's application dated June 2, 1980, at least three samples of the off-gas from the waste calcining step shall be collected, at approximately equal time intervals for each startup run (one-fourth scale through full scale runs). These samples shall be analyzed for gross beta-gamma, iodine-131, cesium-134, cesium-137, ruthenium-103 and ruthenium-106. Using these sample results and the licensee's measured values for the removal efficiencies of the charcoal absorbers and HEPA filters in the facility exhaust system, the licensee shall calculate projected annual radioactive releases from the calcining step and compare with the present annual rate of airborne effluent releases for combined radioactive particulates and iodine that result from normal operations previously approved for the licensee's facilities. If this evaluation reveals that the annual airborne effluent contribution of the uranium waste form processing operation will likely exceed five percent of the total airborne effluent (excluding noble gases) from the facilities, the licensee shall install off-gas trapping equipment (page E-4 of referenced application) and/or modify methods of operation to achieve this objective.

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- "19. Documentation of the startup and evaluation program for the uranium waste form processing operation shall include confirmation that test runs included processing of wastes with minimum and typical decay times since discharge of the material from the reactor. The basis for expected annual throughput, as used to calculate projected annual airborne effluents from the waste processing steps, shall be described.
- "20. Within sixty (60) days of the completion of the final full scale test run, the licensee shall submit six copies of a report on the startup and evaluation program for the waste form processing operation to the Director of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555. A copy of the report shall also be sent to Region I, USNRC, Office of Inspection and Enforcement, 631 Park Avenue, King of Prussia, PA 19406. The report shall include the method, location, frequency and results of the sampling conducted and the evaluations made in accordance with Conditions 18 and 19 above."

All other conditions of this license shall remain the same.

This amendment provides NRC authorization for you to initiate and conduct the waste form processing operation described in your application of June 2, 1980. License conditions nos. 18, 19 and 20 were discussed and agreed upon in a telephone conversation on June 27, 1980 between your Mr. Marcus Voth and myself. Based upon our review of your application, we have concluded that there should be no significant increase in airborne radioactive effluents from the additional process nor a significant increase in occupational exposure. Nevertheless, the requirements of these conditions are considered prudent to demonstrate, using irradiated material, that the off-gases from the calcining step should not increase significantly public exposure from radioactive particulates and iodine over that resulting from your present operations. If the test program should indicate that releases are substantially higher than predicted, the additional steps of Condition No. 18 must be taken to assure that releases are as low as reasonably achievable. We have considered these aspects under your special nuclear material license pursuant to paragraphs 20.1(b) and 20.1(c) of 10 CFR Part 20. You have indicated that no amendment of your New York State license is necessary to introduce this processing step. However, we suggest that a copy of the report required by Condition No. 20 be sent to State licensing authorities and to the New York State Department of Environmental Conservation.

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Based upon our review of your application, we have concluded that the criticality safety aspects for handling and storing the irradiated material provide adequate safety margins and are acceptable. Mr. Voth was advised by Messrs. Delaney and Ketzlach of the NRC staff of a possible nonconservative use of criticality data which could be important in any possible expansion of batch sizes. In justifying the safety of the process line, your analysis used a method from TID-7016, Rev. 2, but with parameters from TID-7028 rather than TID-7016, Rev. 2. Since the latter data incorporate a safety factor and the TID-7028 data do not, this could lead to nonconservative results. Because the process lines are now limited to a total of only 400 grams of U-235, the safety of the system is evident.

Page 2 of your application contained a section on clarification of existing license conditions. We agree that multi-layered drum storage is permissible under the limitations of not more than 350 grams U-235 per drum nor more than 2000 grams U-235 in each waste storage cell. We also note the section titled specific additional license conditions on page 3 of the application. Please note that Item 9 of this amendment incorporates the statements, representations and conditions of your June 2, 1980 application in its entirety.

Based upon our review of your application, including your safety analysis of accident consequences, we have concluded that the proposed activities can be performed without undue risk to the health and safety of the public and that the application fulfills the requirements of 10 CFR 70.23(a). We have also concluded that the issuance of this amendment is not a major Federal action significantly affecting the quality of the human environment and that, pursuant to 10 CFR 51.5(d)(4), no environmental impact statement, negative declaration or environmental appraisal need be prepared.

If you have any questions regarding these matters, please let me know.

FOR THE NUCLEAR REGULATORY COMMISSION

Original Signed by  
*Leland C. Rouse*

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

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