



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

JAN 19 1981

DCS  
JAN 27 1981  
RECEIVED  
COMMUNICATIONS UNIT

DOCKET NO: 70-1257  
APPLICANT: Exxon Nuclear Company (Exxon)  
FACILITY: Fuel Fabrication Plant  
Richland, Washington  
SUBJECT: REVIEW OF APPLICATION TO AUTHORIZE CALCINATION  
OF PLUTONIUM OXIDE, JANUARY 9, 1981

Background

Exxon's current license (SNM-1227) authorizes possession of 100 kg plutonium in a variety of chemical and physical forms and permits repackaging for maintenance of containment or for shipment. Recently Exxon has been able to dispose of most of the allowed plutonium inventory by shipment to the Department of Energy (DOE) Richland site. However, approximately 4 kilograms of plutonium oxide need to be calcined to meet DOE's requirements for volatile material content. Shipment of this last significant plutonium quantity would put Exxon in a position to dispose of the gloveboxes (and associated ductwork) where plutonium has been processed, thus eliminating all plutonium inventory. The subject application requests an authorizing amendment and describes the proposed control on the calcining operation.

Discussion

The proposed oxide calcining will be done within Station 3B glovebox, which was formerly used to load mixed oxide fuel rods. The calciner batches will be limited to 500 grams oxide each and the calciner will not be water cooled. In the absence of water, the 500 gram oxide batch represents less than one-tenth the critical mass and the batch is well below half the minimum critical mass for conditions of significant accidental moderation (up to 20 H/Pu atomic ratio). In the absence of water, the limited batch operation meets the double contingency principle of nuclear criticality safety.

The operations with the plutonium oxide will be carried out in a sealed glovebox that was successfully used in the recent fuel rod downloading and repackaging operations and hence no contamination or other health physics problems are anticipated. The entire calcining operation should be accomplished within a week. There should be no significant environmental or health physics effects as a consequence of the operation.

810 2050 274  
C

JAN 1 1981

The application was discussed in a telecon on January 12, 1981, with Mr. W. J. Cooley, principal inspector of the Exxon plant from Region V Office of Inspection and Enforcement. Mr. Cooley saw no objection to issuance of an authorizing license amendment.

### Conclusion

The proposed calcining operation will be conducted with controls and equipment that have been used successfully by Exxon in past operations. There should be no significant health or environmental effects. Thus, the issuance of this license amendment is not deemed to be a major federal action significantly affecting the quality of the human environment and pursuant to 10 CFR 51, Section 51.5 (d)(4), an environmental impact statement, negative declaration, or an environmental appraisal need not be prepared.

Approval of the amendment application is recommended.

Sincerely,

*Robert L. Stevenson*

Robert L. Stevenson  
Uranium Process Licensing Section  
Uranium Fuel Licensing Branch  
Division of Fuel Cycle and  
Material Safety

Approved by:

*W. T. Crow*  
W. T. Crow, Section Leader