ATTACHMENT

To Letter Dated July 6, 1979
C. J. Michel to C. E. MacDonald

SAFETY ANALYSIS REPORT FOR PLUTONIUM PACKAGING

I. INTRODUCTION

Nuclear Fuel Services proposes to utilize the Super Tiger packaging presently licensed by the Nuclear Regulatory Commission as Certificate of Compliance USA/6400/B()F to transport contaminated waste generated in the decommissioning of its plutonium facility (see NFS Plan for Decommissioning of Plutonium and Uranium-233 Facilities, dated October 9, 1978). Although the Plan specifies decontamination of equipment prior to packaging, it is anticipated that some packaged objects will contain residual quantities of plutonium in excess of 20 curies. Since the Super Tiger was not licensed to transport more than 20 curies of plutonium in oxide form, NFS requested, in a letter dated December 22, 1978, an amendment to the Certificate to permit the Commission to specifically authorize shipments in excess of 20 curies of plutonium. In response to that request for amendment, the NRC requested additional information in letters dated February 26, 1979 and May 30, 1979. This report consolidates all information required for our amendment request relative to the transport of pieces of large equipment containing in excess of 20 curies of plutonium.

II. SCOPE

This report is written to demonstrate that the form of the plutonium to be sealed and packaged in plywood containers within the Super Tiger package is nondispersable and therefore nonrespirable.

III. WASTE DESCRIPTION AND PREPARATION

In the course of decommissioning the NFS plutonium facility, large pieces of equipment such as glove boxes, furnaces, blowers, ductwork, etc., which will not fit into a 55-gallon drum, will be prepared for disposal. All such equipment will be decontaminated of any gross quantities of plutonium prior to packaging.

NFS will immobilize any residual contamination and provide the first containment barrier by applying a strippable coating on all exposed contaminated surfaces of equipment and metal scrap. This coating has elastic properties which minimize cracking and chipping during impact. It will easily withstand the 150° F temperatures that were experienced within the Super Tiger during the fire test. It can be applied by brushing, dipping, or spraying, It also has the property of retaining contamination if the coating is removed from the surface.

All sharp or potentially dangerous objects that protrude from equipment will be removed or blunted to eliminate the possibility of these objects piercing their containment.

In order to effect economies in packaging/shipping and in total land commitment at the burial site, NFS may elect to place smaller metallic scrap, piping, etc., that will not fit into a 55-gallon drum, inside of the larger glovebox and equipment items being packaged for transport. In this case these smaller objects will be subject to the strippable coating requirements outlined above. In addition, such objects shall be firmly supported inside the larger pieces by filling the surrounding void spaces inside the larger pieces with packing materials such as foam or vermiculite. The intent of this procedure is to minimize the chance for penetration of the containment barriers under accident conditions.

Combustibles, cleanup materials, and similar items will not be included or shipped in this packaging system. In no case will objects small enough to fit into a 55-gallon drum be packaged in wooden boxes.

IV. PLYWOOD CONTAINER DESCRIPTION

Plywood boxes will be sized specifically for the gloveboxes and large pieces of equipment to provide for a tight fit, thus minimizing internal movement during transport. All boxes will be rectangular and constructed with 3/4" exterior grade plywood. Packing materials such as foam or vermiculite will be placed between the contained glovebox and the plywood box for additional protection and support. Also, if the plywood boxes contain large equipment items other than gloveboxes, packaging materials such as foam or vermiculite will be used to fill the void spaces between the equipment and the box.

The plywood containers will be shored with wood within the Super Tiger to minimize movement. Where space permits, dunnage bags will be utilized.

Plutonium content of each box will be limited to 60 grams. The volume of each box will be greater than that of a 55-gallon drum.