DOCKET NO. 70-139
For Div of Compliance

ENGELHARD INDUSTRIES, INC.

D. E. MAKEPEACE DIVISION
PINE & DUNHAM STREETS
ATTLEBORO, MASS.
ATTLEBORO 1-0090

September 13, 1960

United States Atomic Energy Commission
Division of Licensing and Regulation
Germantown, Maryland

Attn: Mr. J.C. Delaney
Chief, Nuclear Materials Section

Reference: Docket 70-139
NDM-185
Amendment Application DEM-9

Gentlemen:

With respect to our amendment application DEM-9 pertaining to the fabrication of research reactor fuel elements for the Air Force Nuclear Engineering Test Facility, we have received licensing branch approval of all manufacturing procedures with the exception of the shipment of finished elements. Since the actual shipping procedures are the responsibility of the buyer, it is our intention to request approval on a shipping container which will be safe under any conditions of transportation for any uranium-aluminum MTR-type fuel elements.

The criteria which were used to determine our container design were based on the article, "Safer Packages For Shipping Fuel", Lewis and Goin, Nucleonics, Volume 18, No. 7, July, 1960, pages 91 and 93, and IDO-16536, "Safe Packaging For Shipping and Storing Fissionable Material", Lewis and Goin. Drawings of the proposed container (#50084, 50085) are enclosed.

The container is designed to hold a subcritical configuration of fuel with a moderator and poison incorporated to assure no possibility of interaction between multiple units, since the neutron current will be absorbed by the poison before the outside of the container is reached. In effect, this design provides that each container will be an isolated subcritical unit and therefore gives assurance that no possibility for interaction exists under any method of transportation.

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Mr. J.C. Delaney

Air Force Nuclear Engineering Test Facility fuel elements will be packaged for shipment to the Wright Air Development Center in Dayton, Ohio. It is our intention to pack six elements per container, each element having a loading of 124 grams of U-235. The maximum loading per container would therefore be 744 grams of U-235. Standard Interstate Commerce Commission procedures will be employed with respect to labeling and monitoring the surface of each container. These will include the use of a Group III Radioactive Material label, a Class D Poison label, and sufficient monitoring to assure that a surface gamma reading of 10 mr per 24 hours is not exceeded. In addition, a Bureau of Explosives Permit will be obtained.

We request approval of this container design to allow the packing and shipment of Air Force Nuclear Engineering Test Facility elements subject to the above conditions. It is also requested that this design be granted approval as a universal container for similar type elements with adjustments in the inner details to allow for differences in size and shape of possible future shipments. The maximum loadings to be used in any shipment would be 200 grams U-235 per element and 1200 grams U-235 per container.

We would appreciate your prompt attention to this matter since shipment of these elements will be made shortly. Further information will be supplied upon request if necessary.

Very truly yours,

D. E. MAKEPEACE DIVISION

J.H. Durant
Business Manager

JHD/jet