

CEB File 288

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Docket: 70-36
Project: S-8

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JAN 4 1962

UNITED NUCLEAR (HEMATITE), DOCKET 70-36, NOVEMBER 17, 1961

We have reviewed the proposed shipping container for low enriched uranium compounds of up to 3% enrichment.

This container has been used for several years. It consists of a 15-gallon steel drum (16" dia x 18" high) within a 3'7" x 3'7" x 3'8" birdcage constructed of 1.5" x 1.5" x 3/16" angle iron and covered with expanded metal sheathing. The cage is well braced at top, bottom, sides and center. We suggest you refer the application to Mr. Christian Ieck for his comments on structural integrity. We believe the container is equivalent in integrity to the widely used "5-gallon drum within a 55-gallon drum".

United Nuclear proposes to ship the containers in two rows and stacked two containers high. In justification of this arrangement, United Nuclear has erroneously applied the solid angle concept by considering one container above another container as a column instead of individual containers. We request that a solid angle calculation be performed by adding up all of the solid angles subtended by drums surrounding the center drum.

The applicant proposes to insure against commingling through appropriate instructions on the Bill of Lading. This procedure is not sufficient safeguard against commingling. We would accept certification by the carrier provided shipment is made by a single carrier, and provided a single vehicle picks up the material from the shipper and delivers to the consignee, with no transshipment or reloading in between.

We note that the inner 15-gallon drum is to be loaded with uranium compounds of enrichment 3% or below, with the quantity dictated by the permissible U-235 mass at optimum moderation (safety factor of 2.3). It is obvious that such mass of 3% enrichment would fill a 15-gallon drum to only about 1/3 of capacity. In such cases, we believe that the inner container should be at least 80% filled with special nuclear material. This would require an adapter within the birdcage to accommodate an inner drum of mass capacity.

(Continued)

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Finally, we note that the applicant is willing to tolerate an error in individual drum weighing corresponding to 20% of the proper mass. We request the loading procedures be revised so that the loading error will be reduced to not over 2%.

Attachment:

Application dtd 11/17/61

CC: Mr. Christian Beck, DL&R

DL&R:FL:CEB DL&R:FL:CEB

C.D. Luke

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