

Joseph Delaney, Chief  
Nuclear Materials Branch

Charles D. Luke, Chief  
Criticality Evaluation Branch

JAN 5 1961 ✓

MALLINCKRODT NUCLEAR DIVISION

We have reviewed the Mallinckrodt application dated December 15, 1960 requesting approval of revised shipping procedures.

Mallinckrodt has for some time been authorized to use a birdcage 2' - 6" square and 3' - 2" high (Dwg. 3226-5; see also TID-7019, p. 48). In the past the inner container has been 5 1/2" I.D., constructed of 11 gauge steel. Mallinckrodt now proposes to package uranium compounds of any enrichment in 5" dia. cans or plastic bottles which in turn will be placed in the original inner container. As you will recall, we have been making it a practice to request that such inner containers be equivalent to flanged and gasketed Schedule 40 pipe where maintenance of geometry or moderation control is mandatory. We request that Mallinckrodt heavy up the inner containers accordingly.

A maximum of 10 containers will be shipped in a single layer, with the words "Do Not Stack" stenciled on each birdcage. We agree that a planar array of these containers would be safe from criticality due to interaction. However, it is noted that the application proposes shipment by ILL, ICL, Railway Express, or air freight. While the Mallinckrodt shipment is perfectly safe when isolated from other SM, we request that such transport by common carrier not be authorized unless arrangements are made with the carrier to assure that the Mallinckrodt shipment will not be commingled with other special nuclear material, either on the same vehicle or at points of transshipment or delivery.

CEB:DI&R

CDLuke:bh

1/5/61

*B-77*