STANDARD FORM NO. 64

Office Memorandum • UNITED STATES GOVERNMENT

TO : Lyall Johnson, Chief
Licensing Branch

DATE: JUL 2 8 1959

FROM : Clifford K. Beck, Chief
Hazards Evaluation Branch

SUBJECT: CLEVITE CORPORATION

References: Clevite Application, November 14, 1958
AEC (DL&R) Letter, December 5, 1958
Clevite Letter, May 8, 1959

We have reviewed the above references requesting approval of shipping forty-one MTR-type fuel elements, each containing 133g U-235. The elements are to be packed six to a box and spaced 3" edge-to-edge.

Clevite has calculated k_{eff} for 42 elements, spaced 3" apart and flooded with water, to be 0.723 or 0.651, depending upon whether the system is assumed to be homogeneous or heterogeneous. We believe the calculations are reasonable and that they indicate that the boxed elements would be quite safe from criticality if flooded with water.

If the 42 elements are close-packed and flooded with water, k_{eff} was calculated to be 1.05. We agree that the elements would become critical in this situation, but we do not believe it credible that the elements would become separated from the containers and become close-packed and flooded during any conceivable incident. Clevite has proposed inserting cadmium sheets into the containers as an additional safety precaution. If the elements and boxes were crushed into close-packed configuration and flooded with water, with the cadmium present, k_{eff} would be 0.465.

In view of the applicant's analysis we believe the proposed plans for shipment are satisfactory.

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STANDARD FORM NO. 64

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TO : Lyall Johnson, Chief
Licensing Branch

DATE: JUL 15 1959

FROM : Clifford K. Beck, Chief
Hazards Evaluation Branch

SUBJECT: CLEVITE CORPORATION

We have reviewed the Clevite Corporation request of June 8, 1959, requesting approval of procedures for fabricating 10% enriched uranium metal into 3/16" cubes, and transporting them by air freight from Cleveland to Atomics International at Van Nuys, California.

One lot of 23 kg uranium (2.3 kg U-235) will be rolled, sheared and punched into 3/16" cubes. We believe the proposed procedures are satisfactory, because it would require an array of about 7 kg U-235 in this form to go critical if flooded.

The 3/16" cubes will be packaged in one-gallon cans, each containing not over 4 kg U-235. The cans will be packed and shored in wooden boxes with 20" center-to-center and 12" edge-to-edge spacing. We believe the unit mass limit and spacing of the material are proper. Similarly, unit mass limits and containers for the various scrap materials are acceptable. Finally, we see no reason for not approving shipment of this material by air freight.