

UNITED STATES GOVERNMENT

Memorandum

TO : Donald A. Nussbaumer, Chief, Source and
Special Nuclear Materials Branch, DML

DATE: October 14, 1966

FROM : Charles D. Luke, Chief
Criticality Branch, DML

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SUBJECT: MARTIN COMPANY, DOCKET NO. 70-58, APPLICATION DATED SEPTEMBER 26, 1966,
AS SUPPLEMENTED OCTOBER 3, 1966

DML:CB:TGM

The subject application, as supplemented, requests authorization to fabricate uranium oxide-metal hydride fuel assemblies. With the exception of the hydriding of the non-radioactive matrix, the preparation and fabrication steps are similar to those previously approved.

The nuclear safety of all of the preparation and fabrication steps for hydride disks is assured by limiting the ^{235}U mass at each step of the procedure to 350 g. Twenty-four of the disks (1.6 kg U-235) are then stacked to form an assembly 3.4" in diameter by 24" high. Each completed assembly is separated from all other SNM by 12 feet. The individual assembly is safe by geometry.

We have no problem with these sections of the application; however, the existing storage arrangements are based upon criteria which do not apply to the storage of the hydrided material.

The vault storage of disks is restricted to 200 g ^{235}U units within the applicant's birdcage container or steel cans. The vault limit is based on assuring that the sum of the fractions (actual number of containers of type i ÷ allowable number of containers of type i) does not exceed one. The allowable number of containers of the birdcage and the steel can types has been based upon the spacing provided and the use of an allowance factor for fractional size of the mass of units. This allowance factor has been based on units with an H/X ratio of two or less. In the subject request, the disks have an H/X ratio greater than twenty, and therefore the allowance factor, must be based upon the fractional size of the volume of the unit. We, therefore, request that the applicant determine new allowable numbers for storage containers used for the storage of the hydrided disks.

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