

UNITED STATES GOVERNMENT

*Memorandum**DeLaney*
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TO : Lyall Johnson, Chief
Licensing Branch

FROM : Clifford K. Beck, Chief *CKB*
Hazards Evaluation Branch *2*

SUBJECT: MARTIN CO.

DATE: March 25, 1960

We have reviewed the Martin application dated March 23, 1960, describing a process for the fabrication of uranium-aluminum fuel elements.

The proposed operations include receiving and storage of raw materials, melting and casting of the uranium-aluminum alloy, hot rolling, cropping and punching, final rolling and trimming of the fuel plates and assembly into fuel elements. Rejected fuel plates will be etched in caustic to remove most of the aluminum cladding, after which the material will be recycled to the melting operation. Shipping of the scrap and finished fuel elements will be covered in a subsequent amendment.

Martin proposes to insure safety from criticality by limiting the mass of U-235 in each individual work area and, in the case of solutions by limiting U-235 concentration to 2 g/liter. A maximum of 500 g U-235 will be charged to each casting operation. During subsequent processing steps the maximum U-235 handled in any operation (work area) will be limited to 700 or 800 g U-235 in the uranium-aluminum alloy. Uranium aqueous solutions will be limited to a maximum of 350 g U-235 in any batch and also the concentration will be limited to 2 g U-235/liter. During the etching process the U-235 in the caustic solution will be limited so that if all 24 plates being etched in one batch were to be completely dissolved in the caustic solution the maximum U-235 concentration would be less than 2 g/liter. Batches of dry scrap will contain a maximum of 500 g U-235.

Vault storage procedures have been previously approved in connection with the basic application. However, we have again reviewed vault dimensions and storage arrays and believe that there is no undue risk of criticality in the storage vaults.

We believe that the mass limits and concentration controls proposed by Martin are conservative. Consequently, we recommend approval of the application amendment.

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