

7-24-56

Office Memorandum • UNITED STATES GOVERNMENT

TO : Lyall Johnson, Chief, Licensing Branch
Division of Civilian Application

DATE: 7-24-56

FROM : Clifford K. Beck, Acting Deputy Director
Reactor Hazards Evaluation Staff, DCA

SUBJECT: COMMENTS ON MALLINCKRODT CHEMICAL WORKS APPLICATION FOR SNM LICENSE

SYMBOL: CA:RHES:CKB

Comments on Material Presented in Appendix I

1. After hydrolysis of the UF₆ in a 5" diameter x 4' cylinder, the subsequent processing will be done "in 'always safe' sized batches of 0.7 pounds of uranium." How is the batch separated into 0.7 pound quantities?
2. The hood in which hydrolysis is carried out is "curbed for depth of 4" and the curbed area will have sufficient capacity to hold the entire contents of the hydrolysis system." For top enrichment this is not geometrically safe. Is it made safe by batch control? If so, how?
3. A 4" deep x 12" diameter filter is very close to a geometry which can be made critical at top enrichment. Is some limits on batches planned here? If so, what?
4. "Moist filter cakes will be removed from the filter in batches containing 0.7 pounds ..." How are batches limited to this size?

Comments on Appendix

Proposed discharge of hydrolyzed material, and of the precipitate slurry, into "always safe" geometry slab tanks 4" x 4' x 5' is a questionable procedure. This is not an "always safe" geometry for highly enriched material.

However, in the case in which a single batch containing not more than 1 kg of contained U-235 is to be processed in this tank, the available data indicate that concentrations necessary to produce criticality even by nonuniform distribution, in a tank of this depth would not be possible. Therefore, on the basis that this is a "one shot" procedure involving uranium definitely known to contain uranium of not more than 1 kg U-235, it appears safe to proceed as requested.

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J. R. Huntington DATE *7/16/56*

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General Comments:

1. There seems to be some misunderstanding of the term "always safe", and where the concept it implies may be safely invoked. Where certain supervision, bookkeeping, procedural controls or other limitations are necessary to insure safety at any point, "always safe" has no meaning.
2. In these processes, where safety dependence is placed on control of batch size, the system of checks and balances intended to insure the necessary care should be further described.

Attachments:

Mallinckrodt Chemical Works Applications
of May 15 and June 18, 1956, for
SNM License

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