STANDARD FORM NO. 64

# Office Memorandum • UNITED STATES GOVERNMENT

TO : Lyall Johnson

DATE: MAY 22 1957

FROM : Clifford K. Beck

SUBJECT: CRITICALITY REVIEW OF SYLVANIA-CORNING SNM LICENSE APPLICATION

We note from the material submitted in support of this application:

(a) That Sylvania-Corning desires a license which would permit them to have an unlimited amount of special nuclear material, ranging up to full isotopic enrichment, in the form of metal, oxide, solution, liquid slurry, or other compounds.

(b) That the company will employ a Safety Engineer, who will establish the "criticality limits" (presumably allowable limits, at which hazards of criticality from misoperations will be acceptable) at each step in the various processes though, until this man is found, dependence will be placed on "experts in the AEC New York Operations Office" for this information.

(c) That dependence for avoidance of criticality will be placed on supervisory and accountability control of the movement of material from one step in a process to another to insure that predetermined, and posted, accumulations of material are not exceeded.

(d) That, for presently envisaged processing in the manufacture of MTR type elements, a batch limit of 2000 g of U-235 will be permitted.

From the approach to this problem indicated by these observations, it is not possible to determine whether or not:

(a) The Sylvania-Corning staff is aware of the hazards involved in the processes or are competent to deal with them.

(b) Whether the batch limits at various steps in the process have acceptable margins of safety under the conditions likely to exist at those places, or

(c) The procedures and controls to be exercised afford reasonable freedom from the possibility of hazardous misoperations.

For safety evaluation of the activities proposed in this application to be made, it is suggested that the applicant submit further information, as follows:

1. A statement of the amount of material, its chemical and physical form and enrichment, to be possessed for processing through operations now visualized by the applicant.

2. An outline and description of steps in any processing now planned by the applicant, including an indication of the requisite amount, physical, and chemical conditions, of material involved in each step.

3. A floor plan of the manufacturing area, with an indication of material flow, and demarcation of separate areas where material inventories would be necessary in the manufacturing process.

4. A tabulation of

   (a) The permissible accumulations of materials specified for each inventory point.

   (b) The "margin of safety" or difference between the permissible amount of material at each point and that amount which would result in accidental criticality for the material, under the conditions appertaining.

5. An outline of calculations, or appropriately referenced sources of information on which the numbers in 4 above are based.

6. An outline of procedures, checks, or safeguards, by which adherence to the specified limits in the various process inventories are maintained.

7. An analysis by the applicant of the points in the process where probability of hazards are the greatest and an appraisal of the adequacy of the safeguards provided.

As requested, the subject application is returned herewith.