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NEUTRON PRODUCTS inc

Dickerson, Maryland 20753 U. S. A.

301/349-5001 Cable: NUSWASH

November 26, 1968

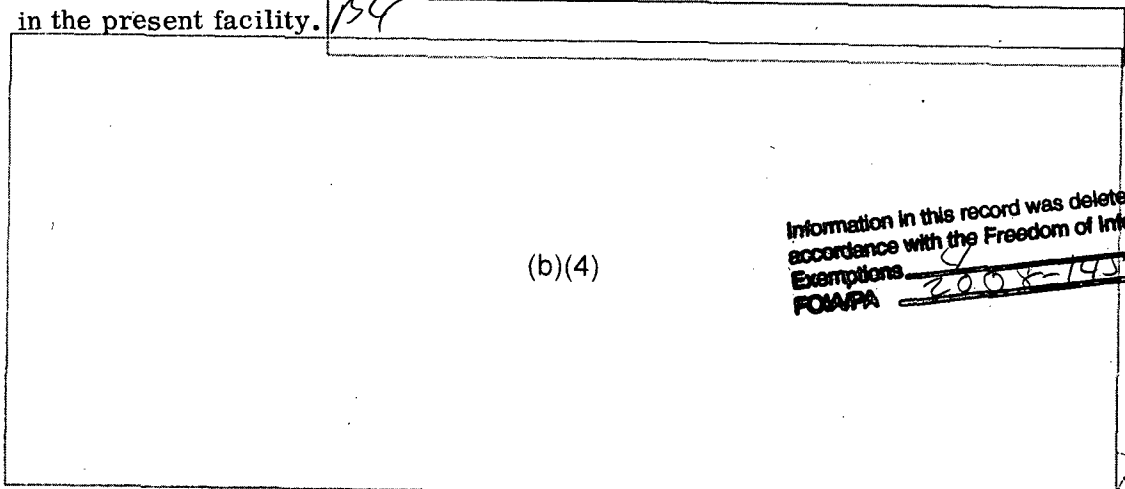
U.S. Atomic Energy Commission
Division of Materials Licensing
Washington, D.C. 20545

Reference: By-Product License No. 19-12667-01
Request for Amendment No. 04

Gentlemen:

Pursuant to the Code of Federal Regulations, Title 10, Part 30, "Rules of General Applicability of License of By-Product Material", Neutron Products, Inc. requests an amendment to our current by-product license No. 19-12667-01 to fuel and operate a prototype packaged goods irradiator. Reference is made to Section I-D (page 4-5) of the by-product material safety evaluation, dated December, 1967, which accompanied the original application for license. With regard to operations in the South Cell, it states in part, "when . . . anticipated operations become more clearly defined, this application will be supplemented with the necessary descriptive information . . ."

In the South Cell, Neutron Products is constructing a prototype irradiator of a new design which will have the capability of processing packaged materials. Reference is made to Figure 1 which describes the location of the irradiator in the present facility.



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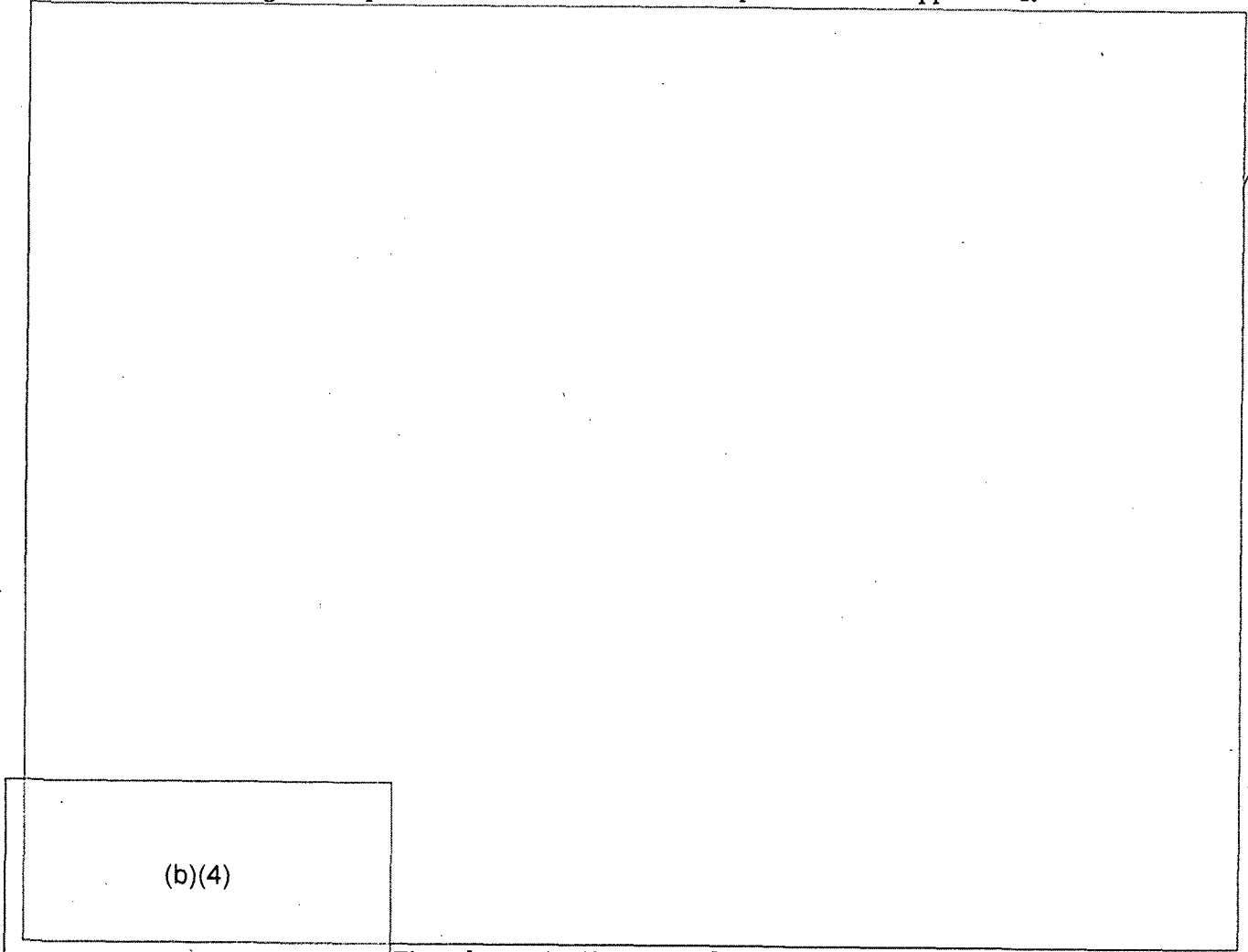
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U.S. Atomic Energy Commission
November 26, 1968
Page 2

Whether or not water would be added to restore the level of the pools prior to the repair of a leak, in any such unlikely event, would depend upon the extent to which failure to do so would represent a long-term hazard. Based upon the history of operations to date, it is anticipated that it would be preferable to relocate any sources which constituted a source of significant background radiation to a lower level in the pool.

Details of design and operation of the irradiator are presented in Appendix I.



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are as follows:  The administrative procedures for the deliberate entry

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- 1) A licensed user will first visually inspect to be certain that sources are entirely in the wet portion of the South Cell thereby giving positive indication that they are not in the irradiation zone.
- 2) In-cell monitor readings will be noted and entry will not be attempted in the event of an indication from the in-cell monitor that one or more sources are still in the irradiation zone.
- 3) Appropriate precautions shall be taken to assure that the sources cannot be inserted into the irradiation zone.
- 4) If entry is made through a labyrinth port, the person entering will carry a survey meter with him to be certain that the radiation level is tolerable in view of the operation to be performed and consistent with the position of the sources in the pool. If the entry is made through the west shield face, the face will be surveyed as blocks are removed.
- 5) Personnel entering the cell will read their pocket dosimeter before entering and record the reading on a chart posted at the west wall of the cell and they shall be instructed to read the pocket dosimeter after having been in the cell for five minutes and again after 30 minutes.

Neutron Products has now had nine months experience in the operation of this facility and in view of this experience, some minor amendments to the license appear to be warranted and desirable and are hereby requested.

Reference is made in Figure 1 to a line drawn parallel to the edge of the proposed prototype irradiator which characterizes a painted line on the floor bi-secting the restricted area. It is proposed that the area east of this line be designated a control zone within which smoking, eating, and drinking are prohibited. West of this line, but still within the restricted area, it is proposed that eating be prohibited but that smoking and the consumption of water and soft drinks be permitted. This represents a modification to the provisions of Section 5.b (page 28) of the existing license. In justification, experience to date has shown that the level of activity in the pool water has been maintained several orders of magnitude below the MPC's for an uncontrolled area for each of the nuclides present. Furthermore, smears of the floor in the restricted area have remained within the contamination limits of an uncontrolled zone and accordingly, smoking and drinking restrictions in the entire restricted area are both unwarranted and counterproductive

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00707

U.S. Atomic Energy Commission
November 26, 1968
Page 4

to the maintenance of a radiation safety program which commands the respect of the employees. Nevertheless, although the levels of contamination, even with the control zone are generally within limits which would be tolerable in an unrestricted area, reasonable precautions dictate that inhalation and ingestion of anything but air be prohibited in the control zone.

Similarly, a waiver is requested on the provision that protective clothing be specified for work in all restricted areas (Section 6, page 29). Instead, protective clothing shall be specified for work functions where there is a possibility of the operator coming into contact with contaminated equipment or material. ←

With regard to personnel monitoring, (Section 4, page 26) the film badge and dosimeter rack has been located at the front door to facilitate issuance of dosimeters to visitors and to provide for better control by the person responsible for maintaining film badge and dosimeter records. ←

In general, there is expected that non-hazardous materials will be processed in the prototype irradiator, but in any event the non-radiological hazards associated with the proposed irradiation of any materials will be reviewed by a committee comprised of messrs Ransohoff, Hairston, and Woodard. Mr. Woodard is a chemist with a Masters Degree and approximately 15 years experience in the chemical industry.

Early action on this application would be greatly appreciated.

Sincerely yours,

NEUTRON PRODUCTS, INC.

for R. E. Murrell
J.A. Ransohoff, President

JAR/cfm

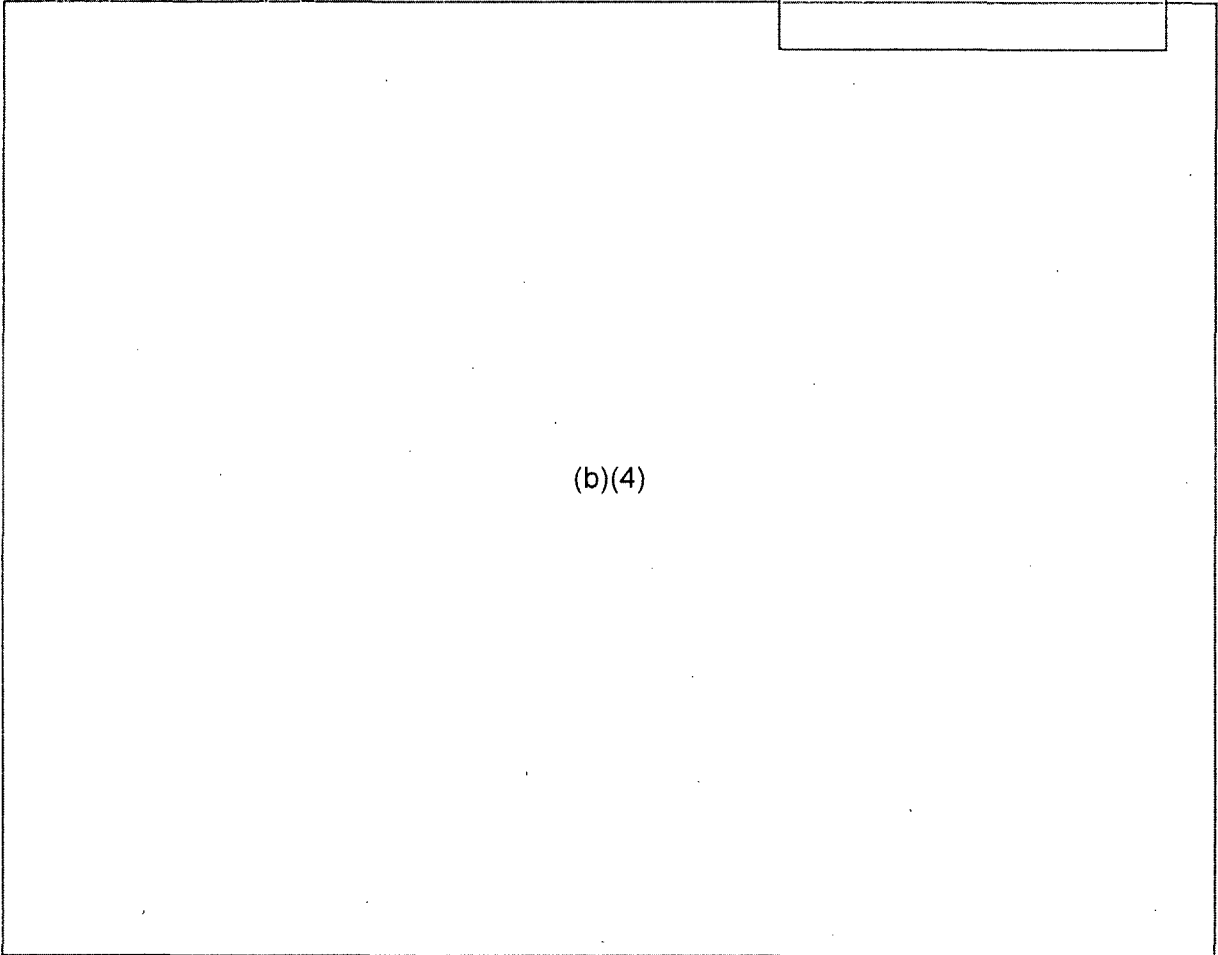
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APPENDIX I

Detailed Information Regarding the Design and Operation of the
NPI Prototype Package Irradiator

The prototype package irradiator is intended to provide experience with a new system of conveying materials through an irradiator.



Eventually, it is planned that this irradiator will be continuously fed. However, additional equipment will be required in this event and there are not firm plans to undertake continuous operation at this time. For all purposes, plans are to operate the irradiator on a batch basis under the following administrative procedures:

- 1) At least two persons must be present during loading or unloading and one of these must be one of the individual users listed in the license.

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301/349-5001

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- 2) During routine operation, it is planned that a continuous irradiation, initiated under the conditions identified in item 1) above, would continue unattended. The torque limiter would be arranged, however, so that in the event of its being disengaged, an alarm would sound to notify the company's live-in attendant who would note the time and notify the responsible individual user on duty in the event of emergency. Except in unusual and presently unforeseen circumstances, no action would be taken until the individual user arrived on the scene.

Normally, the system will be operated dry with no cooling other than that provided by the flow of air which will be circulated through the system at the rate to be determined by the particular program in progress but in any event, not to exceed 500 cubic feet per minute. Under some circumstances, the packages to be irradiated may be water cooled and in this event provision is made for circulation of water through the irradiator in a system which is otherwise closed.

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