DR 71-9136

GENERAL CO ELECTRIC

NUCLEAR ENERGY

ENGINEERING

DIVISION

GENERAL ELECTRIC COMPANY, P.O. BOX 460, PLEASANTON, CALIFORNIA 94566

December 14, 1979

Mr. Charles E MacDonald, Chief Transportation Branch U.S. Nuclear Regulatory Commission Washington, D.C. 20555

Dear Mr. MacDonald,

As discussed with you and Mr. Odegaarden recently in your offices, General Electric is conducting an orderly deactivation of its Fuels Laboratory at the Vallecitos Nuclear Center under SNM-960. The deactivation involves the transportation of glove boxes and hoods which are being decontaminated and boxed for disposal.

POOR ORIGINAL

General Electric hereby requests an exemption pursuant to 10 CFR 71, Section 71.6, from the requirements of Section 71.7(a) and concurrence to apply, in lieu thereof, the provisions of the August 17, 1979 proposed Section 71.8(b) for the packaging and transporting of approximately 30 glove boxes in accordance with the procedures described herein and with the applicable requirements of the Department of Transportation proposed January 8, 1979.

This request is filed at this time because of the uncertainty of the future date at which the proposed Part 71 amendments will become effective and because of our urgent need to apply the new standards for the glove box shipments before the February 29, 1980 anticipated commercial waste burial restrictions become effective.

The technical basis for granting this exemption is, in summary, the assignment of individualized Type A quantities for each radionuclide and the addition of a new classification of radioactive material, "low level solid" (LLS) in the proposed amendment of Part 71.

Individualized Type A quantities for each radionuclide will properly remove the present unnecessarily restrictive grouping of all radionuclides such that allowable curies are based on the most toxic member of the group. The new LLS classification is similar to the present "low specific activity" (LSA) material, except that the LLS concept permits more radioactive material in the contents of a package while imposing greater restrictions on the dispersibility and on the permissible method of shipment. 1843 052

As stated in introducing the August 17, 1979 Part 71 proposed revisions, "although substantive changes are proposed in order to provide a more uniform degree of safety for various types of shipments, the Commission's basic standards for radioactive packaging would remain unchanged."

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Upon receipt of the exemption requested herein, General Electric will:

- Apply the LLS standard defined in proposed new ("n") 71.4(g)(2) and decontaminate all surfaces of each glove box and hood (item) such that the radioactive material is in a non-readily dispersible form and the level of contamination averaged over 1 m² (or the area of the surface if it is less than 1 m²) does not exceed 2 µCi/cm². Note: See Attachment A for a summary of the preparation of the decontaminated items.
- 2. Apply the provisions of "n" 71.8(b) which exempts packages or shipments of LLS from all the "n" Part 71 requirements except "n" 71.5. The fissile standards of "n" 71.9 are met, i.e., not more than 15 grams of fissile radionuclides in the fully loaded vehicle. Actually, not more than 0.5 grams fissile will be present in any load. "N" 71.5 requires compliance with the applicable requirements of the Department of Transportation (DOT) in "n" 49CFR Parts 127 and 170-189.
- 3. Apply DOT "n" 127.213. Transport Requirements for LLS, as follows:
 - (a) LLS must be packaged in accordance with:
 - "n" 127.101 General: handling and securing during transport, safe mechanical handling, lifting attachment (none), minimum water retention and package additions (none).
 - "n" 127.105(a) smallest dimension 4 inches.
 - (e) withstand acceleration, vibration without opening.
 - (q) packaging materials compatible.
 - (m) meet tests of "n" 127.611 without loss or dispersal of radioactive contents nor radiation level increase.

Note: The results of testing a prototype package to the requirements of "n" 127.611 are given in Attachment B.

Meet any other special procedures required.

Your affirmative response to this request by mid-January 1980 will enable retention of the current operating staff averaging over five years of experience in the laboratory. To attempt the decontamination work at some future time with a new, inexperienced crew would not be in the best interests of public health and safety.

Please let us know if additional information is needed.

Yours very truly,

Ramoretne for G. E. Cunhingham

Sr. Licensing Engineer

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Attachments

ATTACHMENT A

AFL GLOVE BOX/HOOD DECONTAMINATION PLAN

Introduction:

This plan summarizes the major steps to be accomplished to decontaminate AFL Glove Boxes and Hoods contaminated with radioactive materials. The objective of this effort is to prepare those glove boxes and hoods for shipment to approved burial sites in containers meeting regulatory requirements for radio-active contamination levels remaining in the glove boxes/hoods after decontamination.

Plan:

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- Remove all bulk SNM.
- Remove all process and support equipment.
- o Vacuum all interior glove box surfaces.
- o Wipe all interior surfaces with absorbent pads dampened with 0.6m HNO2.
- Thoroughly clean all interior window and glove port gaskets with dampened absorbent pads.
- Replace glove box outlet pre and absolute filters, box gloves and bags.
- o Bag out waste materials and let glove box interior surfaces dry.
- Perform a scan survey of all glove box interior surfaces using calibrated survey instrument.
- Note hot spots on plot map.
- RTV (silicon rubber mastic) all interior window and glove port gaskets; let mastic set per manufacturer's instructions.
- Decontaminate interior glove box surfaces per Process Operating Instruction Number 6.1.8.
- o Dry, survey and record survey results.
- Repeat as needed, including the use of abrasive wheels until hot spots are reduced to release level 2 µci/cm² averaged over not more than 1 m².
- Vacuum or damp wipe all interior glove pox surfaces, let dry and perform final survey.
- Submit survey results to Nuclear Safety Technology (NST) for evaluation and release for shipping.

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ATTACHMENT A (Continued)

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- When NST release is received, thoroughly spray all interior glove box surfaces with an acrylic or paint film heavy enough to assure complete coverage of all surfaces.
- Apply RTV beads to all exterior glove box paskets. Spray all exterior plove box gaskets, windows and penetration areas with an acrylic or paint film.
- Cover windows, glove and bag ports with 1/4" thick plywood covers. Secure covers by special AFL approved tape.

ATTACHMENT B

TEST REPORT FOR AFL GLOVE BOX PACKAGE

Introduction:

1. 3.

Department of Transportation regulation 49CFR 127.611 (proposed)* prescribes tests to be conducted for proposed packaging for transport of low level solids (LLS) radioactive materials. A prototype was prepared in accordance with 127.605 and tested. The packaging, see Attachment C, is constructed of 3/4" plywood on 2x4-inch fir framework with a 2"-thick base on 4x4-inch skids. Vertical corners, lower edges and joints are reinforced by 20-gage mild steel angles. All internal and external surfaces are painted. The lid, also of 3/4" plywood on 2x4-inch fir framing, is similarly painted; edges are covered with flexible acrylic latex rubber caulk and fastened to the body with washered lag screws.

Design, fabrication and testing were performed under specific written quality assurance plan QAP 1-0-1.

Testing (127.611)

(a) Water spray test

Although the packaging is constructed of painted wood and all seams and joints are caulked, the prototype box was subjected to the one hour water spray test as specified in 127.611(2). There was no distortion of edges or surfaces. At the completion of all subsequent tests of 127.611 the lid was removed and inner surfaces were dry.

(b) Penetration test

There was no puncture of the 3/4" plywood (the thinnest components of the packaging) after the 40-inch drop of the 13 pound, 1-1/4 inch diameter rod.

(c) Free drop test

The packaging specimen loaded to its maximum 2,500 pound capacity was dropped on a bottom corner in a manner evaluated to cause maximum damage to the safety feature being tested, i.e., the glove box or hood must remain within the plywood box in such a manner as to be retrievable for replacement on the vehicle to continue transport. (Since all contamination is in a non-readily dispersible form within the inner surfaces of the packaged item, a simple opening of a box joint - which did not occur - would not have jeopardized safety so long as the package remains transportable).

*All references are to numbers of proposed DOT regulations published January 8, 1979 (44 FR 1852 et. seq.)

(d) Compression test

The package consists of the packaging within which rests the stainless steel glove box or hood shored up with wood dunnage to present an essentially solid mass to an adjacent package or array of such packages. Thus, the only effect of a compressive load five times the weight of the package would be compressing of wood fibers in the packaging. General Electric will arrange the transport as full-load; the containers will not be stacked during transport and will be used only once.

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