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UNITED STATES GOVERNMENT

Memorandum

TO John A. Derry, Director
Division of Construction and Supply

FROM R. L. Kirk, Acting Director
Division of Licensing and Regulation

SUBJECT SHIPPING OF SPECIAL NUCLEAR MATERIAL

DATE:

At the request of Robert Kaye to Charles Luke, we have reviewed a correspondence file relative to Westinghouse Electric Company.

For six months or so we have followed the procedure that licensees must make arrangements for shipping their special nuclear material in such manner that the possibility of commingling with other shipments of such material would be minimized. The reason is obvious - a shipment from one manufacturer, perfectly safe in itself, may not be safe in proximity to other shipments of special nuclear material because of added neutron interaction.

We have accepted the following as alternative procedures which would minimize the possibility of accidental criticality during shipment:

- a. Ship exclusive use of vehicle directly to destination.
- b. Accompany each shipment with a courier who would make certain that his shipment would not come within a specified distance from other SNM shipments.
- c. Design the packages so as to be safe in proximity to any number of such packages, under conditions of moderation, flooding, wreckage or fire. To date, no containers submitted by licensees for AEC approval have been designed for such a universal contingency.
- d. Limit each shipment to the amount of SNM permitted by Part 71 (requiring no prior approval of the AEC).
- e. Delineate arrangements with the carrier and obtain his certification that the licensee's shipment will not be combined on the same vehicle with other special nuclear material, and will not be assembled with other special nuclear material at points of transshipment or delivery. A separation distance of at least 12 feet from other shipments is deemed to meet this isolation requirement.

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It is in connection with subparagraph "e" above that the correspondence of Westinghouse is concerned. For smaller shipments (LCL or LTL) alternatives "a" through "d" are frequently disadvantageous economically. The following discussion relates to the issues raised in the correspondence.

Westinghouse memo July 18, 1960. The Commission's request to Westinghouse was not made verbally by Dr. Luke of AEC to Mr. Hackler of WAFD. It was made in a letter from AEC, Licensing Branch, to Westinghouse, dated April 4, 1960.

Westinghouse letter (5/18/60) to Associated Transport and Associated Transport reply (6/22/60). The reply from Associated Transport seems concerned only with one vehicle passing another on the highway. Westinghouse must realize that the guides (TID-7016 and TID-7019) allow such proximity of twin shipments by a proper safety factor in limiting the size of a shipment. It is not clear whether Associated Transport would or would not be willing to certify that not more than one SNM shipment would be placed on a given truck.

Eazor Express, Inc. (6/28/60). Eazor Express said they would sign a certification (to avoid commingling) if Westinghouse would notify the originating terminal manager and show the handling instructions on the Bill of Lading and on the freight itself. Other licensees have made similar arrangements with trucking companies.

Railway Express Agency. Railway Express state that they cannot prevent commingling. They suggest packing specifications which would be safe in any configuration (see discussion under T. C. George below).

T. C. George, Bureau of Explosives (5/16/60). Mr. George opposes placing such obligation (to avoid commingling) on the carrier and suggests that the quantity of material and container design be such that no nuclear incident would be possible, even in the presence of other shipments. Recently Paul Hogroian and Charles Luke discussed this aspect of the problem with Mr. George and pointed out the fact that (1) not even the 100 gram quantities of U-235, as permitted by Part 71, were safe in infinite cubical array, (2) that no commercial containers in use in the industry now would be safe in fully loaded freight cars (3) a container designed for safety in unlimited array would be very expensive and (4) every licensee shipping LCL and LTL (unescorted) would have to use the same standards. In the Bureau of Explosives

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regulation 25-16-174 (10/30/59) it is required that the "container must be designed and maintained so as to provide against criticality in the presence of other shipping containers of fissionable materials during transportation." As indicated above (subpar. e) we would be willing to accept such a specification if "always safe" designs for containers were available. However, to date, such containers are not available and if they were, we believe industry would still probably choose alternative "a" or "b" above as being more economical.

I believe the above will enable you to reply to Westinghouse, noting that we would be willing to approve Westinghouse shipping procedures (otherwise acceptable) on the basis of the certification by Eazor Express. We suggest that you reaffirm the five alternatives available to them in connection with SNM shipments.

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I believe the above will enable you to reply to Westinghouse, noting that we would be willing to approve Westinghouse shipping procedures (otherwise acceptable) on the basis of the certification by Hazor Express. We suggest that you reaffirm the five alternatives available to them in connection with SIM shipments.

CC Lester R. Rogers, DL&R
Iyall E. Johnson, DL&R

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