

Westinghouse
Electric Corporation



70-1151

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JUN 11 1985
REE-EKR-85-057

Nuclear Fuel Division
Manufacturing Department

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June 17, 1985

PDR
Return
to 39655

U. S. Nuclear Regulatory Commission
ATTN: Mr. W. T. Crow, Section Leader
Uranium Fuel Licensing Branch
Office of Nuclear Material Safety and Safeguards
Division of Fuel Cycle and Material Safety
Washington, DC 20555

Subject: Molybdenum Decontamination and Surveillance Report, License
SNM-1107, Docket 70-1151

Gentlemen:

Westinghouse Electric Corporation hereby submits the attached Molybdenum Decontamination and Surveillance Report in accordance with the requirements of Subparagraph 4.1 of SNM-1107. The report describes the decontamination technique and surveillance of approximately 10,000 pounds of molybdenum scrap which was formerly used as boats to transfer low-enriched uranium pellets through our sintering furnaces.

The molybdenum scrap consists of approximately one half to two pound pieces of broken molybdenum boats which have been decontaminated and subject to 100% alpha and beta-gamma surveillance. The results of this surveillance are provided in the enclosure of this letter.

Survey results indicate that surface contamination levels are well below acceptable levels as defined in NRC document entitled "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Byproduct, Source, or Special Nuclear Material," July, 1982. Consequently, Westinghouse plans to release the molybdenum as scrap for unrestricted use on or after July 19, 1985.

If you have any questions regarding this matter, please write to me at the above address or telephone me on (803) 776-2610.

Very truly yours,

WESTINGHOUSE ELECTRIC CORPORATION

E. K. Reitler

E. K. Reitler, Manager
Radiological and Environmental Engineering

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FEE EXEMPT

cc: USNRC Office of Inspection and Enforcement, Region II
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ENCLOSURE TO TRANSMITTAL OF JUNE 17, 1985
SNM-1107, DOCKET 70-1151

MOLYBDENUM DECONTAMINATION AND SURVEILLANCE REPORT

IDENTIFICATION

The material consists of approximately 10,000 pounds of molybdenum metal, each piece weighing from approximately one half to two pounds. The molybdenum originally consisted of boats used to transport low-enriched uranium pellets through our reduction furnaces. During routine operations, boats become damaged or broken and must be scrapped. When this occurs, the boats are broken in smaller pieces to facilitate storage, decontamination and surveillance.

DECONTAMINATION TECHNIQUE

The uranium surface contamination was removed by subjecting the molybdenum to a vapor blasting operation in which a slurry of sand-water was impinged on the molybdenum pieces, followed by a thorough rinsing with water.

These operations result in the removal of a thin layer of molybdenum from the material together with the surface layer of uranium contamination.

SURVEILLANCE PROCEDURE

Each piece of molybdenum was thoroughly surveyed for total direct alpha and total direct beta-gamma on all surfaces, front, back and edges. Removable alpha contamination surveys were performed on a random sampling of each batch of molybdenum (\approx 25 pounds). Special precautions were taken to assure that all surfaces were accessible to the detector probes. This resulted in essentially flat pieces of molybdenum with minimal surface cracks or crevices. For total direct alpha surveys, an Eberline PAC 4G or RM-19 or equivalent with an AC-21 alpha probe was used. For total direct beta-gamma surveys, an Eberline E-120 with an HP-210 probe was used. Surveys were performed by slowly scanning all surfaces of the molybdenum at a scanning speed of approximately 1 cm/sec. When contamination was detected, the probe was held stationary until equilibrium was attained. This method provided a high degree of confidence that no contamination was undetected. Instruments were calibrated with appropriate alpha and beta check sources and checked periodically during the surveillance to assure operability.

Removable contamination surveys were performed by wiping the surface of the molybdenum with a Whatman 41 filter paper using moderate pressure and counting with approximately calibrated instruments.

ENCLOSURE TO TRANSMITTAL OF JUNE 17, 1985
SNM-1107, DOCKET 70-1151

MOLYBDENUM DECONTAMINATION AND SURVEILLANCE REPORT

SURVEILLANCE FINDINGS

Survey results are shown below:

Total Alpha (dpm/100 cm ²)		Total Beta-Gamma (dpm/100 cm ²)		Removable Alpha (dpm/100 cm ²)	
<u>Average</u>	<u>Maximum</u>	<u>Average</u>	<u>Maximum</u>	<u>Average</u>	<u>Maximum</u>
600	1,400	1,500	7,500	17	50

Records of survey data are available consisting of the survey results, date of survey, signature of the surveyor and a certification that the surveillance was performed in accordance with the above procedure. This information shall be retained indefinitely for your review.

For both alpha and beta-gamma, survey results are well below Subparagraph 4.1 acceptable levels. Consequently, we feel that the molybdenum decontamination meets the ALARA philosophy.

The off-site shipment of the molybdenum shall meet all acceptable federal and state regulations.