

U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-333/93-29

Docket Nos. 50-333

License Nos. DPR-59

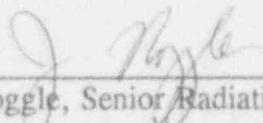
Licensee: New York Power Authority
Post Office Box 41
Lycoming, New York 13093

Facility Name: James A. FitzPatrick Nuclear Power Plant

Inspection At: King of Prussia, Pennsylvania

Inspection Conducted: December 13 - 20, 1993

Inspector:




J. Noggle, Senior Radiation Specialist

1/11/94

date

Approved by:



R. Bares, Chief
Facilities Radiation Protection Section

1/11/94

date

Area Reviewed: New York Power Authority was the originator of a radioactive waste shipment, which was inspected by the State of South Carolina at the Barnwell Disposal Site at Barnwell, South Carolina. NRC Region I then performed an in-office inspection of the shipment by interviewing, by phone, individuals involved with the shipment and reviewing documentation associated with the shipment.

Result: One apparent violation was identified involving excessive non-fixed contamination on the exterior surface of the shipping container.

DETAILS

1.0 Individuals Contacted

Joseph Sipp, Radiological and Environmental Services Manager, New York Power Authority (NYPA)

John Solini, Radiological Engineering General Supervisor, NYPA

Virgil Autrey, South Carolina Department of Health and Environmental Control

Jim Still, Chem-Nuclear Systems Inc. (CNSI), Barnwell, South Carolina

Mark Whitaker, CNSI, Corporate Health Physicist

All of the above individuals were contacted by telephone.

2.0 Purpose

The purpose of this in-office inspection was to review the circumstances associated with the transfer, from the New York Power Authority's FitzPatrick Nuclear Power Plant, to the Barnwell (S.C.) Disposal Site operated by Chem-Nuclear Systems Incorporated, of a cask of radioactive waste that arrived at the Barnwell site with external non-fixed radioactive contamination in excess of the limits specified in 10 CFR 71.

3.0 Synopsis of Incident

On December 8, 1993, the licensee shipped by highway as an exclusive use shipment a TN-RAM cask containing approximately 9,710 Curies of licensed material. The cask external surfaces, upon receipt at the Barnwell Disposal Site in Barnwell, South Carolina on December 10, 1993, were determined to have non-fixed contamination levels in excess of 6,000 dpm/cm². The efficiency of the Barnwell Disposal Site contamination sampling methodology was determined to be 41%. Using this correction factor resulted in an adjusted non-fixed contamination level of approximately 1,500 dpm/cm².

10 CFR 71.87 lists the maximum permissible non-fixed contamination limit for beta-gamma emitting radionuclides as 22 disintegrations per minute per centimeter squared (22 dpm/cm²). For exclusive use shipments, this limit may be increased by a factor of ten at the destination to 220 dpm/cm². This limit was exceeded and is an apparent violation of 10 CFR 71.87(i)(2).

3.1 Arrival of the Cask at FitzPatrick

On December 3, 1993, an empty TN-RAM shipping cask arrived at FitzPatrick Station from the Barnwell Disposal Facility. Non-fixed contamination on the external surfaces was determined to be 32 mrad/hr/100 cm² or approximately 5,000 dpm/cm². The non-fixed contamination limit was 220 dpm/cm². NRC Region I was promptly notified by the licensee and, in turn, NRC Headquarters, NRC Region II, and the State of South Carolina. Since this radioactive shipment originated in the Agreement State of South Carolina, the appropriate state officials

investigated and evaluated this incident. Chem-Nuclear Systems Incorporated (CNSI), the operator of the Barnwell Disposal Facility, requested FitzPatrick Station to decontaminate the cask and use it.

3.2 Decontamination Effects

After two cycles of decontamination at the FitzPatrick Station, the non-fixed contamination on the external surfaces of the cask was below 50 dpm/cm², was wrapped with plastic, and it was transported to the refueling floor to be loaded with irradiated reactor hardware waste material. Following the loading evolution, the cask was decontaminated three times using a foam-type cleaner, Scotch Brite, cotton towels, and pipe cleaners. Results indicated most areas were below 10 dpm/cm² with a few areas exceeding this level with a maximum of 57 dpm/cm². A fourth decontamination cycle resulted in all smear samples below 10 dpm/cm². The licensee decided to keep the cask for one additional day to measure the contamination migration out of the pores of the cask surface. On December 8, 1993, the final survey indicated a few areas of elevated contamination, with a maximum of 72 dpm/cm². A final decontamination, using the same decontamination technique as before, resulted in all smear samples below 10 dpm/cm², and the shipment was released from the FitzPatrick Station at 1430 hours.

3.3 Arrival of the Cask at Barnwell

Upon receipt of the TN-RAM shipment at the Barnwell Disposal Facility on December 10, 1993, the CNSI receipt inspection survey of the cask external surfaces indicated non-fixed contamination of between 130 and 6,170 dpm/cm². The licensee was notified at 1550 hours and the NRC Senior Resident Inspector at FitzPatrick Station was notified at 1630 hours the same day. The State of South Carolina also was notified by CNSI. A representative of the South Carolina Department of Health, directed that the cask be unloaded and decontaminated by CNSI. The cask was then sent to Trans Nucleaire (the cask owner) in Aiken, South Carolina for a thorough decontamination and servicing before further commercial use of the cask.

The South Carolina representative indicated to the NRC Region I inspector that the State of South Carolina had reviewed the decontamination and survey actions of both licensees (the state-licensed Barnwell Disposal Facility and the NRC-licensed FitzPatrick facility) involved in the shipment. He determined that the TN-RAM shipping cask had been properly decontaminated and surveyed prior to both portions of the shipment and that the cask surface pores had apparently become loaded with contamination, which had migrated out during transport. The State of South Carolina decided, under the circumstances, not to take any

enforcement action against CNSI and was not recommending any Barnwell Disposal Facility burial restrictions against the New York Power Authority.

3.4 Conclusion

As the regulatory agency of jurisdiction for the FitzPatrick shipment, the NRC has determined that an apparent violation of NRC requirements occurred as the result of the licensee's shipping activities. On December 21, 1993, the Radiation Protection Manager (RPM) for the FitzPatrick Station, was informed of this apparent violation of NRC requirements in a telephone conversation with Mr. J. Noggle of the Region I Office. The RPM acknowledged the finding. However, due to the circumstances associated with the apparent violation, the NRC is reviewing the generic issue of migration of radioactive contamination from the surface of transportation casks. Pending completion of this review, this matter is considered unresolved (UNR 50-333/93-29-01).