



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
101 MARIETTA STREET, N.W.  
ATLANTA, GEORGIA 30323

JUL 29 1985

Report Nos.: 70-824/85-05, 50-013/85-01

Licensee: Babcock and Wilcox Company  
Lynchburg Research Center  
Lynchburg, VA 24505

Docket Nos.: 70-824 and 50-013

License No.: SNM-778 and  
CX-10

Facility Name: Lynchburg Research Center

Inspection Conducted: June 10-14, 1985

Inspector: cm H. Albright  
R. H. Albright

7/18/85  
Date Signed

Approved by: C. M. Hosey  
C. M. Hosey, Section Chief  
Division of Radiation Safety and Safeguards

7/18/85  
Date Signed

SUMMARY

Scope: This routine, unannounced inspection entailed 17 inspector-hours on site in the area of transportation of radioactive material.

Results: Three violations - Failure to package low specific activity (LSA) radioactive material in a strong tight package; failure to ensure that the closure device on a package of Fissile Class II material was free of defects prior to shipment and failure to ship Fissile Class II material in a tested, approved package; failure to label packages of radioactive material as required by the burial facility license.

## REPORT DETAILS

## 1. Persons Contacted

## Licensee Employees

- \*A. E. Wehrmeister, Manager, System Development Laboratory
- \*J. P. Doran, Manager, Accounting and Administrative Services
- \*G. Hoovler, Manager, Building A Decommissioning Project
- \*J. W. Cure, Supervisor, Health and Safety
- \*A. Olsen, Senior License Administrator
- D. Harris, Health Physics Technician

\*Attended Exit Interview.

## 2. Exit Meeting

The inspection scope and findings were summarized on June 14, 1985, with those persons indicated in paragraph 1 above. The apparent violation of 10 CFR 71.87 for shipment of a package with a crack under a closure bracket, violation of 10 CFR 70.42 for transferring special nuclear material to a land disposal facility without the labels required by receiver's license and violation of 10 CFR 71.5 for the shipment of a package of LSA radioactive material which failed to meet the strong tight container requirement were discussed in detail. Licensee management acknowledged the violations.

The licensee was notified during a telephone conversation on June 19, 1985, between J. B. Kahle of this office and A. Olsen of the licensee's staff that failure to choose a package that was proper for the contents was another example of a violation of 10 CFR 71.87.

The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspector during this inspection.

## 3. Licensee Action of Previous Enforcement Matters

This subject was not addressed in the inspection.

## 4. Transportation of Radioactive Material (86740)

On May 29, 1985, NRC Region II received a copy of a letter dated May 20, 1985, from the State of Washington to the B&W Lynchburg Research Center. The letter described two violations in shipment No. LRC-23. The first violation concerned a hole in a drum of LSA radioactive material in violation of the strong tight package requirement of 49 CFR 173.425. The second violation concerned the failure to meet requirements of the U.S. Ecology land disposal facility license by affixing the correct number of labels to each package.

On May 1, 1985, the licensee made shipment No. LRC-23 to the U.S. Ecology land disposal facility at Richland Washington. While unloading the shipment of drums on May 6, 1985, disposal site personnel observed a hole in the side of drum number 4740. The waste manifest described the contents of the drum as uranium oxides on lab trash and equipment. The radionuclide content measured was Uranium-234 at 0.03 millicuries, Uranium-235 at 0.002 millicuries, Uranium-236 at 0.0004 millicuries, and Uranium-238 at 0.01 millicuries. The drum was listed as Fissile Exempt and labeled Radioactive LSA. The licensee's investigation determined that shifting of a 32 pound metal object inside the container caused the hole. The inspector discussed, with the U.S. Ecology health physics (HP) technician who identified the hole in the drum, the details of the U.S. Ecology receipt of shipment No. LRC-23. The HP technician stated that the drum with the hole had not been moved from its shipment position in the trailer before the hole was observed. The hole was observed after drums in front of this drum were removed while unloading the shipment. The metal object inside the drum which apparently shifted during transportation and caused the hole was protruding from the hole when observed by the HP technician. It was determined that the hole had been punched through the wall of the Department of Transportation (DOT) Specification 17 H drum during transport. Surveys outside the hole did not indicate leakage of radioactive material from the can. The amount of radioactive material inside the can would not have caused a significant public health and safety problem if it had been released.

10 CFR 71.5(a) requires that licensees who transport licensed material outside the confines of its place of use or delivers such material to a carrier for transport comply with the requirements of DOT regulations contained in 49 CFR Parts 170 through 189. 49 CFR 173.425 requires that LSA materials be shipped in a DOT specification 7A Type A package or a strong tight package such that there will be no leakage of the package contents during normal conditions of transport. In discussions with licensee representatives and reviews of shipping papers it was determined that three licensee personnel observed the drum to be in good condition prior to transport. No other drums were damaged. Failure to ship LSA radioactive material in a DOT Specification 7A Type A package or a strong tight package was identified as an apparent violation of 10 CFR 71.5(a). (70-824/85-05-01).

10 CFR 20.301 prohibits the disposal of radioactive material except under specified conditions including transfer to an authorized recipient as provided in the regulations in Parts 30, 40, 60, 61, 70 or 72 of this chapter, whichever is applicable. 10 CFR 70.42 states requirements that must be met prior to transferring special nuclear material (SNM). One requirement is that SNM may be transferred to any person authorized to receive such SNM under terms of a specific license or a general license or their equivalents issued by the Commission or an Agreement State. U.S. Ecology license, from the State of Washington, WN-1019-2, license condition 27(k), requires that when waste is labeled with a DOT White I, Yellow II or Yellow III label a waste classification label should appear next to or in close proximity to each DOT label. The license condition further requires that when White I, Yellow II or Yellow III labels are required two of the

specific labels must be displayed on each drum. Land disposal site personnel observed that six drums in the LRC-23 shipment displayed two Yellow II labels. However, only one waste classification label was affixed to each of the six drums. Failure to comply with requirements of the receiver's license by not affixing the appropriate number of waste classification labels was identified as an apparent violation of 10 CFR 70.42. (70-824/85-05-03).

10 CFR 71.87 requires that prior to each shipment of licensed material that certain requirements be met. These include ensuring that the package is proper for the contents to be shipped, that the package is in unimpaired physical condition except for superficial defects such as marks or dents and that each closure device of the packaging is properly installed and secured and free of defects.

Six drums marked Fissile Class II in shipment LRC-23 were listed on the shipping papers as DOT specification 7A Type A packages. The quantity of SNM in the six drums ranged from 17.02 grams (3E-2 milli-curies U-235) to 25.92 grams (5E-2 milli-curies). The inspector reviewed the tests performed for the 55 gallon drum that was used to meet the DOT specification 7A Type A requirements. 49 CFR 173.465 specifies the tests that Type A packages must pass prior to use. Fissile Class II packaging, in addition to other Type A package tests, requires a free drop from a height of 0.3 meter (1 foot) on each corner. For cylindrical packagings, the 0.3 meter drop shall be onto each quarter of each rim. The test data review indicated that the corner drop test had not been performed. These drums were part of an exclusive use shipment in a closed transport vehicle. These packages were not damaged during the shipment and no leakage of radioactive material occurred. Failure to perform the required drop test resulted in use of an improper package to ship Fissile Class II material. Failure to ship the Fissile Class II material in a proper package was identified as an apparent violation of 10 CFR 71.87. (70-824/85-05-02).

As a part of the decommissioning of the CX-10 reactor at the Lynchburg Research Center (LRC) the licensee disposed of the reactor's fuel rods by transferring them to Department of Energy (DOE) facilities at Oak Ridge. The reactor had not been operated above one kilowatt. The fuel was approximately 2.5 percent enriched in U-235 and was considered unirradiated per the DOT definition in 49 CFR 173.403. LRC transferred the fuel in containers covered by NRC Certificate of Compliance No. 9069.

LRC refurbished the containers prior to use. The first shipment of CX-10 fuel arrived at the Oak Ridge National Laboratory (ORNL) on August 21, 1984. On arrival ORNL personnel discovered a crack in the outer skin of the outside container just beneath the horizontal weld on one of the lower ratchet binders. The crack did not affect package integrity. The ratchet binder is one of twelve primary closure devices. There are also twelve high strength latch pins which serve as secondary closure devices. After receiving notification of this crack from ORNL, the licensee reviewed photographs of the loaded packages taken prior to shipment and observed that the crack was evident prior to shipment. The licensee, as corrective

action, fixed the crack and began performing an extensive receipt inspection each time the containers arrived back on site and prior to each loading of fuel for shipment. Failure to ensure that the closure device on a package of special nuclear material was free of defects prior to shipment was identified as another example of an apparent violation of 10 CFR 71.87. (50-013/85-01-01).

5. Enforcement Conference

An enforcement conference was held on June 27, 1985, to discuss recent violations concerning the transportation of radioactive material. The following persons were in attendance:

(1) Babcock and Wilcox Lynchburg Research Center

T. C. Engelder, Laboratory Director  
C. E. Bell, Facility Manager  
A. F. Olsen, License Administrator  
J. W. Cure, III, Health and Safety Supervisor

(2) Nuclear Regulatory Commission

J. P. Stohr, Director, Division of Radiation Safety and Safeguards  
G. Jenkins, Director, Enforcement and Investigation Coordination  
D. Collins, Chief, Emergency Preparedness and Radiological  
Protection Branch  
C. Hosey, Chief, Facilities Radiation Protection Section  
E. McAlpine, Chief, Material Control and Accountability Section  
J. Kahle, Fuel Facilities Project Manager  
R. Albright, Radiation Specialist

During the meeting, licensee personnel presented discussions of their radioactive material transportation organization, discussions of each inspection finding and corrective actions.