

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

Region I

Report No. 79-01

Docket No. 40-7983

License No. JB-972 Priority E Category IV

Licensee: NL Industries

Foot of West Street

Wilmington, Delaware

Facility Name: Same

Inspection at: Foot of West Street, Wilmington, Delaware

Inspection conducted: March 2 and 15, 1979

Inspectors: *Robert O. McClintock*
For F. Costello, Radiation Specialist

5/7/79
date signed

J. Kinneman
J. Kinneman, Radiation Specialist

5/8/79
date signed

T. Jackson
T. Jackson, Radiation Specialist

5/8/79
date signed

M. Merc
M. Merc, Radiation Specialist

5/8/79
date signed

Approved by: *Robert O. McClintock*
R. McClintock, Chief, Materials Radiological
Protection Section

5/7/79
date signed

Inspection Summary:

Special, announced inspection conducted March 2 and 15, 1979 (Report No. 40-7983/79-01)

Areas Covered: Decontamination of Facility, Independent Measurements.

Results: No items of noncompliance were identified.

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DETAILS

1. Persons Contacted

David Leigh, NL Industries, Corporate RSO
George Dixon, NL Industries, Quality Assurance Manager and RSO
Wilmington Site
E. C. Holman, Chem-Nuclear, Incorporated
Daniel Milewski, Chem-Nuclear, Incorporated
Kevin Millewski, Chem-Nuclear, Incorporated

Also present during portions of the inspection were 13 representatives of the city of Wilmington and the State of Delaware.

2. Background

For a number of years shipping casks for irradiated fuel have been constructed at this facility. Most of these casks employed depleted uranium for radiation shielding. Shaping, welding and grinding of the depleted uranium caused uranium contamination of various areas within the plant. Casks which had been in service were also repaired and serviced there. The interiors of such casks were contaminated with fission and/or activation products. The licensee has decided to terminate the manufacture and servicing of casks at this facility and prepare it for release for unrestricted use.

3. Decontamination of Facility

The licensee has employed Chem-Nuclear, Incorporated to assist in the decontamination of the facility. The decontamination effort has consisted of sweeping the inside of the licensee's facility to remove uranium dust, removing fixed contamination by removing the surface of the concrete floor at several locations, packaging the waste thus generated into 55 gallon drums and wooden cases and shipping the waste to Barnwell, South Carolina. Air samples were taken during this operation and the highest concentration detected was 2×10^{-11} uCi/cc gross alpha activity.

In the course of this decontamination effort, it was determined that the drain line from the floor drain in a concrete pad, was contaminated. This concrete pad had been used for decontamination of shipping casks returned for service and/or repairs. The drain line lead outside the building and further investigation revealed several locations of contaminated soil on the licensee's premises. Chem-Nuclear has been removing the contaminated pipe and soil and treating it as radioactive waste.

As of the date of the inspection, the decontamination effort inside the building had been completed and efforts to decontaminate the premises surrounding it were proceeding.

4. Independent Measurements

The inspectors made independent measurements of radiation levels and concentrations of radionuclides in soil and water on the licensee's premises around the facility. These surveys were in substantial agreement with the results of surveys previously performed by Chem-Nuclear.

Radiation levels varied from normal background to about 3 millirems per hour. One small area near where the drain line exited the building read 20 millirems per hour. The radiation levels above background were generally associated with the path of the drain pipe from the decontamination pad. Concentrations of radionuclides in soil and sediment taken from areas showing radiation levels above background ranged from 1-200 picocuries per gram of cobalt-60 and cesium-137. Depleted uranium contamination was identified in one area not associated with the pipe run. No activity above background was detected in water taken from the Christiana River. All areas where contamination was detected are on the licensee's property.

5. Exit Interview

During the exit interview, licensee and contractor representatives described their plans for decontaminating the remainder of the site. The inspector emphasized the need for the licensee to submit proposed release criteria to the USNRC's License Management Branch. The inspector indicated that this inspection was only a preliminary survey and site evaluation. A final close-out survey will be required prior to release of the facility for unrestricted use. The need to ensure that all possibly contaminated drains and pipes are identified and properly surveyed was also emphasized by the inspector.

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