

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report Nos. 40-672/85-01  
40-8866/85-01  
30-19394/85-01

Docket Nos. 40-672  
40-8866  
30-19394

License Nos. SMB-179  
SUB-1452  
20-02217-05

Priority 1, 3, 7

Category B, E, K

Licensee: Nuclear Metals, Inc.  
2229 Main Street  
Concord, Massachusetts 01742

Facility Name: Nuclear Metals, Inc.

Inspection At: Concord, Massachusetts

Inspection Conducted: June 10-14, 1985

Inspectors: J. Costello  
C. Rowe, Health Physicist

8/23/85  
date

J. Costello  
E. Wurtz, Ph.D., Health Physicist

8/23/85  
date

Approved by: J. Costello  
J. D. Kinneman, Chief  
Nuclear Materials Safety Section A

8/23/85  
date

Inspection Summary: Routine, unannounced inspection of the radiation safety program on June 10-14, 1985, (Report Nos. 40-00672/85-01, 40-08866/85-01, and 30-19394/85-01)

Areas Inspected: Scope of operations; tour of facility; exposure control-external, exposure control-internal, radioactive effluents, training, and radioactive waste handling.

Results: No violations were identified.

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## DETAILS

### 1. Persons Contacted

- \*W. Tuffin, President
- \*A. Gilman, Vice President, Safety and Quality Control
- \*F. Vumbaco, Manager, Health and Radiation Safety
- K. Fogarty, Health Physicist
- M. Davis, Compliance Supervisor
- D. Barbour, Hazardous Waste Manager

The inspectors also interviewed numerous other licensee employees during the inspection. They included supervisors, production personnel, and transportation compliance personnel.

\*Denotes those present at exit interview.

### 2. Scope of Operations

Depleted uranium derbies are received from the licensee's facility in South Carolina and are processed into kinetic energy penetrators to fill purchase orders which relate to Defense Department contracts. The process requires melting and pouring of the uranium derbies in the foundry, and the extrusion, turning, cutting, drilling, and grinding of depleted uranium shapes. The licensee also manufactures aircraft counterweights and shielding for radiography exposure devices and teletherapy units from depleted uranium.

### 3. Tour Of Facility

The inspectors toured the facility and observed work in progress during various stages of productions on June 11, 1985, and June 14, 1985. Independent radiation level measurements made by the inspectors were in agreement with licensee measurements. The inspectors noted that personnel exiting contamination controlled areas monitored themselves for contamination. All personnel were observed to use hand and foot monitors prior to exiting the facility.

No violations were identified.

### 4. Exposure Control-External

The licensee maintains personnel dosimetry records equivalent to NRC Form 5. An inspector reviewed these records for the period June 1, 1984, through April 1985. All whole body, skin, and extremity doses were within limits specified in 10 CFR 20.101.

No violations were identified.

5. Exposure Control-Internal

The licensee maintains a bioassay program which consists of urinalysis at a weekly/monthly frequency, dependent upon work area. Grinding operations require weekly sampling. Action levels for urinalysis results are 50 micrograms of uranium/liter and 100 micrograms of uranium/liter, corresponding to investigation and restriction actions, respectively. The inspectors reviewed urinalysis records for the period since the previous inspection and noted that no employee had exceeded the action levels in reported results of sample analyses.

Helgeson Nuclear Services performed whole body counting on selected employees during July 1984. The inspectors reviewed reports for employees that had been whole body counted and noted there were no significant reported results.

No violations were identified.

6. Radioactive Effluents

The licensee maintains a network of wells surrounding the lagoon acid waste area. Continuous air sampling stations are located off-site and at the site perimeter fence. The licensee collects water samples from wells surrounding the plant and lagoon. Water samples are also collected from ponds and the river offsite. The inspectors discussed the current environmental monitoring program with license representatives and reviewed records of air sampling results and the vendor report of annual and semiannual water sample results.

No violations were identified.

7. Training

The inspectors reviewed the licensee training program and discussed the program with the Training Officer. The inspectors reviewed training records and verified that employee's had received annual retraining. Additionally, the licensee had provided general training for several hundred visitors during the past calendar year.

No violations were identified.

8. Radioactive Waste Handling

Liquid waste is generated by treatment of metallic uranium with acid to remove copper cladding. An in-plant plumbing system directs all liquid waste to a two tank system in the detached acid house. The waste is treated with sufficient hydrated lime to neutralize it prior to release to a lagoon located in the rear of the acid house. The licensee is currently installing a clean up and evaporation system that should be completed and enable the licensee to cease discharges to the lagoon by January 1986.

The inspectors toured the radioactive waste storage and packaging areas with licensee representatives. Records of waste shipments made during 1984 and 1985 were selectively reviewed. A truck that had been loaded and prepared for shipment was observed.

No violations were identified.

9. Exit Interview

The inspectors met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on June 14, 1985. The inspectors summarized the purpose and scope of the inspection and findings.