

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No. 70-398/92-01

Docket No. 70-398

License No. SNM-398

Licensee: U.S. Department of Commerce  
National Institute of Standards and Technology  
Washington, DC 20234

Facility Name: National Institute of Standards and Technology

Inspection At: Gaithersburg, Maryland

Inspection Conducted: December 7 and 8, 1992

Type of Inspection: Announced Material Control and Accounting (MC&A), and Physical Security

Inspectors:

A. Della Ratta  
A. Della Ratta, Physical Security Inspector

12-22-92  
Date

G. C. Smith  
G. C. Smith, Senior Physical Security Inspector

12/22/92  
Date

Approved By:

Edward B. Keimig  
R. R. Keimig, Chief, Safeguards Section  
Facilities Radiological Safety and Safeguards Branch

12/22/92  
Date

Areas Inspected: Nuclear Material Control and Accounting, and Physical Security, including: Organization and Operation; Shipping and Receiving; Storage and Internal Controls; Inventory; Records and Reports; and Fixed Site Physical Protection Measures for Special Nuclear Material of Low Strategic Significance.

Results: The licensee's programs were directed toward the protection of public health and safety and were found to be in compliance with the NRC requirements in the areas inspected. No safety concerns or violations of regulatory requirements were identified.

## Details

### **1.0 Key Persons Contacted**

#### **1.1 Licensee Personnel**

- \* T. Hobbs, Chief, Health Physics (Accountability Officer)
- \* B. Biss, Special Nuclear Materials Accountability Assistant
- J. Shubiak, Health Physicist
- R. Lindstrom, Item Control Area (ICA)-2 Custodian
- P. Hodge, ICA-3 Custodian
- W. Rabbitt, Chief, Facilities Service Division/Security Officer
- T. Shackelford, Captain, Physical Security

#### **1.2 U.S. Nuclear Regulatory Commission (NRC) Personnel**

- \* D. M. Carlson, Security Specialist, Office of Nuclear Reactor Regulation
- \* denotes those present at the exit interview

### **2.0 Material Control and Accounting**

#### **2.1 Organization and Operation**

The inspection included discussions with licensee management and review of the licensee's "Control Measures for SNM-362 Licensed Special Nuclear Materials," AO Revision 1, dated February 5, 1986. This document contained instructions for the control and accounting of special nuclear material (SNM). Written statements of responsibility and authority were established for those positions with responsibility for SNM.

The licensee continued to maintain an appropriate separation of material handling and accountability functions to provide a system of checks and balances. The Chief, Health Physics was designated the Accountability Officer and was responsible to the Chief, Occupational Health and Safety Division. The ICA and Material Balance Area (MBA) custodians do not report to the Accountability Officer.

#### **2.2 Shipping and Receiving**

The inspectors determined through a review of records that the licensee maintained procedures to assure that all nuclear material shipped and received was accurately accounted for.

The inspectors reviewed all DOE/NRC Form-741's generated from April 1, 1987 through September 30, 1992 to assure that each was properly signed and dispatched in a timely manner, and that the data was accurate.

### 2.3 Storage and Internal Control

The inspectors determined through observations and review of records that the licensee was maintaining a system of storage and internal controls that indicated the quantity, identity, and current location of all SNM within the facility. Perpetual inventory records were maintained for all SNM.

Storage and accountability of SNM was being accomplished through item control. All SNM at the facility was stored in designated areas. The designated areas were:

MBA-2: the mass spectrometry laboratory (located in Building 221),

ICA-2: the reactor building (number 235), and

ICA-3: the radiation physics building (number 245).

### 2.4 Inventory

On December 8, 1992, the inspectors verified certain selected items in the licensee's inventory by piece count, and determined that the total SNM inventories listed on the MBA/ICA custodians ledgers agreed to the values shown on the control ledger maintained by the Chief, Health Physics and Accountability Officer. The inspectors found that although the inventory totals were correct, the values and piece counts on certain individual container labels in one ICA had been crossed out and adjusted and were confusing. The licensee took immediate corrective action to replace the container labels to show the correct SNM values clearly. The physical inventory verification performed by the inspectors confirmed the following quantities of material and inventory as of December 8, 1992.

Plutonium - 66 grams

Plutonium ( $\text{Pu}^{238}$ ) - 0.5 gram

Enriched Uranium -  $>20\%$   $\text{U}^{235}$  - 174 grams

Enriched Uranium -  $<20\%$   $\text{U}^{235}$  - 22 grams

Enriched Uranium -  $\text{U}^{233}$  - 0.1 gram

### 2.5 Records and Reports

The inspectors reviewed the licensee's records, reports, and source data. All Material Balance Reports (DOE/NRC Form-742) submitted by the licensee for the period April 1, 1987 to September 30, 1992 were reviewed for compliance

with 10 CFR 70.53. The licensee's authorized possession limits were compared with the actual holdings and were found to be in accordance with license conditions.

With the minor exception noted in paragraph 2.4, there were no deficiencies identified in the licensee's Material Control and Accounting Program.

### 3.0 Fixed Site Physical Protection Measures for Special Nuclear Material of Low Strategic Significance

The inspectors reviewed the licensee's physical security program and determined that the licensee was protecting special nuclear material in conformance with the general performance requirements and objectives of the governing regulations. No deficiencies were identified.

### 4.0 Exit Meeting

The inspectors met with the licensee representatives denoted in paragraph 1.0 at the conclusion of the inspection on December 8, 1992 and summarized the scope and findings of the inspection.