

U.S. NUCLEAR REGULATORY COMMISSION  
REGION I

Report No. 50-223/84-01  
70-738/84-01

Docket No. 50-223 R-125  
70-738 License Nos. SNM-714

Licensee: University of Lowell  
1 University Avenue  
Lowell, Massachusetts 01854

Facility Name: University of Lowell Nuclear Center

Inspection At: Lowell, Massachusetts

Inspection Conducted: April 24-25, 1984

Inspectors: Arthur Della Ratta 5-30-84  
A. Della Ratta, Safeguards Auditor date

Approved by: R. R. Keimig 5-31-84  
R. R. Keimig, Chief, Safeguards Section date

Inspection Summary: Unannounced Inspection on April 24-25, 1984 (Combined Report Nos. 50-223/84-01, 70-738/84-01)

Areas Inspected: Facility Organization and Operation, Measurement and Controls, Shipping and Receiving, Storage and Internal Control, Physical Inventory, and Records and Reports. The inspection involved 8 inspector-hours onsite by one NRC inspector and was begun during regular hours.

Results: The licensee was in compliance with NRC requirements within the areas examined.

## Details

### 1. Persons Contacted

\*Dr. E. Alexander, Acting Chairman, Radiation Safety Committee  
T. Wallace, Reactor Supervisor  
\*G. Chabot, Radiation Safety Officer

\*present at exit interview

### 2. 30703 - Exit Interview

The inspector met with the licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on April 25, 1984. The inspector summarized the scope and findings of the inspection. At no time during the inspection was written material provided to the licensee by the inspector.

### 3. 92713 - Independent Inspection Effort

No violations were identified.

The inspection results were attained by direct observations, discussions with licensee personnel, and review of records.

Leak test records for eleven sealed sources were reviewed for completeness and timeliness. With the exception of an incorrect serial number for a plutonium-beryllium sealed source listed on the licensee's records, no discrepancies were noted.

### 4. 85102 - Material Control and Accounting

#### a. Organization and Operation

No violations were identified.

The licensee has established and documented an organizational structure responsible for special nuclear material (SNM) control and accounting. Custody of all SNM and the management of the nuclear material control and accountability program is the responsibility of the Radiation Safety Officer.

The Radiation Safety Officer is in the process of revising the SNM control and accounting procedures to reflect current practices.

#### b. Measurement and Controls

No violations were identified.

The inspector determined that the licensee uses a computer program to calculate burnup of U-235. The computer printout is given to the Radiation Safety Officer for his use in preparing the required semi-annual DOE/NRC Form-742.

c. Shipping and Receiving

No violations were identified.

The licensee had established and maintained procedures to assure that all SNM received or shipped was accurately accounted for.

The licensee had one receipt but no shipments of SNM during the period covered by this inspection.

d. Storage and Internal Control

No violations were identified.

The licensee had established a system of storage and internal control of SNM which provided for knowledge of the quantity, identity, and location of SNM within the facility.

The licensee maintains a computer printout that provides: (1) the serial number and location of the fuel elements in the reactor core and storage areas; (2) the uranium fission and transmutation calculations for each fuel element.

e. Physical Inventory

No violations were identified.

The inspection results were attained through an inventory verification performed by the inspector on April 25, 1984, which consisted of: (1) a piece count of the thirty-two fuel elements located in the storage areas and a cross-check of the fuel location to the fuel schematic; (2) removal of a fuel element from the reactor pool storage rack to verify the serial number; (3) identification and location of the eleven sealed sources and eight foils recorded by the licensee on the last physical inventory, performed October 3, 1983.

All the plutonium-beryllium sealed sources are stored in locked areas within the facility. Files are maintained for the sources and any authorized person requesting a source must sign for the source.

The licensee had taken physical inventories, as required by 10 CFR 70.51(d).

f. Records and Reports

No violations were identified.

The inspection results were attained through a review of the licensee's records and reports and source data. Material Status Reports (NRC Form-742), submitted for the material balance period April 1, 1979 - September 30, 1983, were reviewed for compliance with 10 CFR 70.53. No discrepancies were identified.

Exhibit I, attached to this report, summarizes the licensee's material activity for the period April 1, 1979 through September 30, 1983.



Exhibit I

University of Lowell

Docket No. 50-223 License No. R-125  
Docket No. 70-738 License No. SNM-714

Material Balance for Period: April 1, 1979 - September 30, 1983

Reporting Identification Symbol: ZLV Reporting Unit: Grams

	<u>Enriched Uranium</u>		<u>Plutonium</u>	
	<u>Element</u>	<u>Isotope</u>	<u>Element</u>	<u>Isotope</u>
Beginning Inventory: (April 1, 1979)	4445	4136	272	251
Receipts:	<u>8</u>	<u>7</u>	-0-	-0-
Material to Account For:	<u>4453</u>	<u>4143</u>	<u>272</u>	<u>251</u>
Removals:				
Shipments:	-0-	-0-	-0-	-0-
Degradation to Other Materials:	3	3	-0-	-0-
Fission & Transmutation:	74	74	-0-	-0-
Ending Inventory: (Sept. 30, 1983)	<u>4376</u>	<u>4066</u>	<u>272</u>	<u>251</u>
Material Accounted For:	<u>4453</u>	<u>4143</u>	<u>272</u>	<u>272</u>