U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-54/82-04
70-687/82-08

Docket No. 50-54 70-687 Licence No. R-81 SNM-639 Safeguards Group 1

Licensee: Union Carbide Corporation

P. O. Box 324

Tuxedo, New York

Facility Name: Sterling Forest Research Center

Inspection At: Tuxedo, New York

Inspection Conducted: November 30 - December 3, 1982

Date of Last Material Control and Accounting Inspection: September 10, 1982

Type of Inspection: Unannounced Material Control & Accounting

Inspectors: E. Woltner 12/22/82
E. Woltner, Auditor date

for E. Woltner 12/23/82
A. Della Ratta, Auditor date

for E. Woltner 12/23/82
H. Zibulsky, Chemist date

Approved by: A. T. Gody 12/23/82
A. T. Gody, Chief, Safeguards and Fuel Facilities Section, Nuclear Materials and Safeguards Branch date

Inspection Summary: Inspection on November 30 - December 3, 1982 (Combined Reports Nos. 50-54/82-04; 70-687/82-08)

Areas Inspected: Facility Organization and Operation, Measurement and Controls, Storage and Internal Control, Management, and Reactor Material Control and Accounting. The inspection involved 66 inspector-hours onsite by three NRC inspectors and was begun during the regular hours.

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

Details

1. Persons Contacted

*J. McGovern, Manager, Radiochemical Production
C. Konnerth, Manager, Health, Safety, and Environmental Affairs
*F. Morse, Manager, Radiochemical Process Engineering
*M. Voth, Manager, Nuclear Operation
*P. O'Callaghan, Supervisor, Quality Control
*W. Ruzicka, Reactor Supervisor

The inspectors also interviewed other licensee employees associated with measurements, radiochemical production and nuclear material control.

*present at exit interview

2. 30703 - Exit Interview

The inspectors met with the licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on December 3, 1982. The inspectors summarized the scope and findings of the inspection.

3. 92713 - Independent Inspection Effort

No violations were identified.

The inspection results were attained through the inspector's observation of the licensee's adherence to their health and safety procedures within the material access area and the reactor area.

4. 85202 & 85204 - Organization and Operation

No violations were identified.

The licensee had established and documented an organizational structure responsible for SNM control and accounting. Authorized possession and use of special nuclear material was as specified in the facility license.

5. 85206 - Measurement and Statistical Controls

No violations were identified.

The licensee analyzed the uranium content of standards that were prepared with normal uranium and certified by the New Brunswick Laboratory. One anaylst, using the Gravimetric Davies and Gray titration procedure, performed the analyses. The concentration of the standards were within the licensee's normal operational range.

The relative bias for the three uranyl nitrate standard solutions was significant at the two - sigma confidence level, +0.29% ± 0.10%. The

control charts for November reflected this positive bias. The cause of the bias was dependent on the lab temperature which this evaluation affirmed. On inspection, 70-687/82-06, the lab temperature at which the licensee's standard solutions were made and certified was eight degrees warmer than the laboratory temperature where the analyses of the solutions were used for the control charts. The difference in lab temperatures resulted in a negative bias. At this evaluation, the licensee's standard solutions were made and certified at a temperature four degrees colder than the laboratory temperature where the analyses of the solutions were used for the control charts. The difference in lab temperatures resulted in a postive bias Inspector Follow-Up Item (82-08-01).

The licensee was completing temperature controlled containers for the two laboratories. Another evaluation will be performed after the temperature controlled containers have been tested by the licensee.

6. 85210 - Internal Control

No violations were identified.

The inspectors reviewed the licensee's system of storage and internal controls that were established, maintained, and followed to provide current knowledge of the identity, quantity, and location of all SNM contained in discrete items within the licensee's plant.

7. 85218 - Management of Material Control System

No violations were identified.

A twelve - month management audit of the nuclear material control and accounting system was conducted during September 1982. Corrective action on improvement items was initiated by the licensee.

8 85102B - Material Control and Accounting

a. Measurement Controls

No violations were identified.

The licensee utilizes a power meter, which integrates the power levels, to determine the total power output for the reactor. This information is their input into a computer program which updates the element and isotopic composition of each fuel element.

The inspector determined that the licensee's reported figure of the uranium-235 depletion as shown on the Form NRC-742 submitted for the period April 1, 1982 - September 30, 1982 agrees with the amount shown in their computer tabulation.

b. Inventory

No violations were identified.

The inspection results were attained through (1) a piece count of fuel elements in the spent fuel pool and vault storage area, and of the fission counters, and (2) a cross-check of the fuel location history sheets to the reactor core and storage area schematics.

The licensee had conducted inventories as required by 10 CFR 70.51(d).

c. Records and Reports

No violation were identified.

The inspections results were attained through a review of the Material Status Report (Form NRC-742) submitted for the period April 1, 1982 - September 30, 1982. The form was reviewed for accuracy, appropriate signature, and timely dispatch. No discrepancies were noted.