

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

Region I

Report No. 70-820/80-25

Docket No. 70-820

License No. SNM-777 Priority 1 Category JR

Licensee: UNC

Fuel Recovery Operations

Wood River Junction, Rhode Island

Facility Name: UNC Fuel Recovery Operation

Inspection at: Wood River Junction, Rhode Island

Inspection conducted: December 17-19, 1980

Inspectors: P. Clemons  
P. Clemons, Radiation Specialist

1/13/81  
date signed

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Approved by: P. J. Knapp  
P. J. Knapp, Chief, Radiation  
Support Section, FF&MS Branch

5 Feb 81  
date signed

Inspection Summary:

Inspection on December 17-19, 1980 (Report No. 70-820/80-25)

Areas Inspected: Routine, unannounced inspection by a regional based inspector of the Radiation Protection Program including an unresolved item, bioassay, dosimetry, inspections, air samples, special work permits, smears, ventilation, air flow direction, stack samples, standard operating procedures, environmental monitoring, termination reports, gamma alarm calibration, receipt of radioactive material and whole body counting. Shortly after arrival, areas where work was being performed were examined to review radiation control procedures and practices. The inspection involved 19 hours on site by one NRC regional based inspector.

Results: Of the 16 areas inspected, no items of noncompliance were identified in 10 areas. Five items of noncompliance were identified in five areas, as follows: 1) failure to perform safety analysis prior to first use of a not-safe, by geometry, vacuum cleaner (paragraph 3); 2) failure to maintain air flows from areas of lower to areas of higher contamination (paragraph 4); 3) failure to perform periodic fixed contamination surveys (paragraph); 4) failure to document quarterly review of weekly safety inspections (paragraph 6); and 5) failure to submit a termination report for one employee (paragraph 8)

Region I Form 12  
(Rev. April 77)

## DETAILS

### 1. Persons Contacted

#### Principal Licensee Employees

Mr. R. Gregg, Plant Manager

Mr. K. Helgeson, Manager, Nuclear and Industrial Safety

The inspector also interviewed other employees during the course of the inspection. They included health physics personnel and operating personnel.

### 2. Unresolved Item

In response to Item A of a Notice of Violation issued to the licensee in a letter dated September 8, 1980, the licensee made the following statement (licensee response CEB 80-121, letter dated October 1, 1980).

"Review of the Audit Report and supporting notes discloses that the audit conducted during December, 1979, pursuant to Section 207(3) of SNM-777 did in fact include analysis of the radiation exposure for each work station, as required by the cited license section.

The text of the audit report identified this area of review as "exposure... and additional records". Review of the auditor's notes made during the audit, moreover, discloses that "semi-weekly" Beta-Gamma reports were reviewed, as were evaluations of extremity exposure potential, and that surveys were made to quantify radiation levels at or near the sources of fuel. Altogether, these reviews provided the basis for stating that the facility appears to be adhering to the ALARA principal. No problems were noted which would require more specific item discussion."

In our response dated October 28, 1980 to your letter of October 1, 1980 we made the following statement:

"With reference to Item A in the attachment to your letter, we note that you have provided information which is different from, and in addition to, that provided by your auditor at the time of the inspection. Accordingly, this matter will be considered an unresolved item and will be reviewed again at a subsequent inspection."

During this inspection the inspector reviewed the auditor's audit report dated December 19, 1979 again, and he also reviewed the auditor's supporting notes.

The audit report and the notes do not support the contention that they represent an analysis of the radiation exposure for each work station as required by Section 207.2 of your license application, therefore the item of noncompliance stands.

### 3. Special Work Permits

On December 17, 1980 the inspector observed a vacuum cleaner located in the Shipping and Receiving area of the Uranium Processing Facility. Later, on the same day, as the inspector reviewed special work permits (SWP) he noted that an SWP had been issued permitting the use of this vacuum cleaner in the Uranium Processing area of that facility. Special Work Permit No. 430 was issued on October 22, 1980, and the work description was "Use vacuum cleaner in Process Area". The inspector had observed that the vacuum cleaner was of unsafe geometry design, therefore he asked a licensee representative if a safety analysis had been made and suitable administrative controls instituted prior to the first use of this vacuum cleaner in the Process Area. The inspector was informed that a formal, documented evaluation had not been made.

Condition No. 9 of Special Nuclear Materials License No. SNM-777 states,

"For use in accordance with the specifications in Sections 100, 200, 300, 400 and 800 (excluding Figure 800-I) of the licensee's applications and supplements, as compiled in the list of effective pages specified in the licensee's letters dated December 30, 1974, January 17, 1975 and June 16, 1975."

Section 206.2 states,

"NIS approval on equipment and operating procedures is identified by signature on the operating procedures or separate written approval. This approval shall only be granted when:

Nuclear Criticality Safety and Health Physics evaluation have been performed by NIS, based on the criteria and standards approved for this license and including verification of each of the following:

- a) Validity of basic assumptions
- b) Correctness of application of criteria
- c) Completeness and accuracy of the evaluation
- d) Specific applicability to installation"

The inspector noted that failure to make the required evaluation represents noncompliance with a license condition (70-820/80-25-01).

### 4. Air Flow

Condition No. 9 of Special Nuclear Materials License No. SNM-777 states,

"For use in accordance with the specifications in Sections 100, 200, 300, 400 and 800 (excluding Figure 800-I) of the licensee's applications and supplements, as compiled in the list of effective pages specified in the licensee's letters dated December 30, 1974, January 17, 1975 and June 16, 1975."

Section 404.2 states, "Air flow shall be from areas of lower to areas of higher contamination."

On December 18, 1980, the inspector requested that measurements be made to determine the air flow direction. Using Velometer, a licensee representative made measurements at three points. The points were in the health physics office, at the doorway on the potentially contaminated side of the change room, and at the doorway leading into the Uranium Processing Area. In each instance, the air flow was in the wrong direction, that is, the direction of flow was from areas of higher contamination potential to areas of lower contamination. Again on December 19, 1980, the inspector repeated the measurements at the same locations, and the results were the same.

The inspector noted that having the air flow in the wrong direction represents noncompliance with a license condition (70-820/80-25-02).

#### 5. Surveys

Condition No. 9 of Special Nuclear Materials License No. SNM-777 states,

"For use in accordance with the specifications in Sections 100, 200, 300, 400 and 800 (excluding Figure 800-I) of the licensee's applications and supplements, as compiled in the list of effective pages specified in the licensee's letters dated December 30, 1974, January 17, 1975 and June 16, 1975."

Section 206.1 states,

"...Operating supervision shall assure that nuclear criticality safety and health physics control procedures are followed as defined by approved operating procedures or separate written approval."

Standard Operating Procedure No. I-Z, Revision 1 dated November 30, 1980, Section 4.4.1, developed pursuant to the above, requires fixed contamination surveys be performed periodically.

The inspector asked a licensee representative to verify that fixed contamination surveys had been performed during 1980. The inspector was told that such surveys had not been performed.

The inspector noted that failure to perform fixed contamination surveys periodically as required during 1980 represents noncompliance with a license condition (70-820/80-25-03).



## 6. Quarterly Reviews

The licensee is required to perform quarterly reviews to assure that the safety program is not being degraded.

Condition No. 9 of Special Nuclear Materials License No. SNM-777 states,

"For use in accordance with the specifications in Sections 100, 200, 300, 400 and 800 (excluding Figure 800-I) of the licensee's applications and supplements, as compiled in the list of effective pages specified in the licensee's letters dated December 30, 1974, January 17, 1975 and June 16, 1975."

Section 207.2 states, "A quarterly documented review and appraisal of the weekly inspections shall be performed by the Nuclear and Industrial Safety Manager...The purpose of this review is to detect any trend toward reduction in safety or noncompliance with controls."

The inspector asked a licensee representative to verify that the quarterly review had been conducted and documented during 1980 as required. The inspector was told that the quarterly review and appraisal had only been documented for the first quarter of 1980.

The inspector noted that failure to document the quarterly review and appraisal represents noncompliance with a license condition (70-820/80-25-04).

## 7. Processing Cooling Water

The licensee is required to collect and analyze samples from the Process Cooling Water System.

Condition No. 9 of Special Nuclear Material License No. SNM-777 states,

"For use in accordance with the specifications in Sections 100, 200, 300, 400 and 800 (excluding Figure 800-I) of the licensee's applications and supplements, as compiled in the list of effective pages specified in the licensee's letters dated December 30, 1974, January 17, 1975 and June 16, 1975."

Section 402.2.1 states,

"Process cooling water is isolated from the process and discharged directly into the Pawcatuck River through the storm sewer..."

A grab sample is taken weekly either at the point of discharge, or at the pipe exit where it discharges into the river. Contributing streams (for example, vacuum pump cooling water) are sampled as determined by current assessment. Table 407.2-III shows the current sampling program.

Table 407.2-III

## Process Cooling Water System

<u>Sample Points</u>	<u>Frequency</u>	<u>Analysis</u>
Plant Well (supply)	Monthly	Gross alpha
Manwell A (or discharge at river when river samples are scheduled)	Weekly	Specific conductivity temperature, pH /1/
Vacuum pump (water trap) (as needed)	Each shift /1/ (may be composed weekly)	Gross alpha pH

/1/ An increase in specific conductivity, or a change in pH above action limits required further analysis for nitrates and fluorides."

The inspector reviewed the vacuum pump records to determine that the samples had been collected and analyzed as required. He noted that for the period May 1980 through July 1980 the results of the pH analysis varied from 5.3 to 9.8. The inspector asked a licensee representative at what point did he analyze the vacuum pump water for nitrates and fluorides. The inspector was told that the vacuum pump water was not analyzed for nitrates and fluorides because action limits had not been specified.

The licensee representative stated that the vacuum pump would not be used in the future therefore action limits would not be established.

#### 8. Termination Reports

During 1980 the licensee hired temporary employees to work in the Lagoon areas. These individuals were provided personnel monitors. During the summer months certain of these employees were terminated by the licensee.

10 CFR 20.408 requires a licensee to submit a report of an individual's exposure to radiation and radioactive material incurred during the period of employment to the Director of Management and Program Analysis when the individual terminates employment with the licensee. The report must be submitted within 30 days after the exposure of the individual has determined by the licensee or 90 days after the date of termination of employment or work assignment, whichever is earlier. 10 CFR 20.409 requires the licensee to also notify the individual if the licensee is complying with 10 CFR 408.

The inspector was given a list of names of employees who terminated employment with the licensee during 1980.

The inspector asked a licensee representative to verify that the required reports had been submitted on several terminated employees selected by the inspector from the list. Copies which verified report submittal were available with one exception. Regarding one employee who terminated on August 30, 1980. The inspector was told that apparently the required reports were not submitted inasmuch as the licensee did not have copies of these reports.

The inspector stated that failure to submit the termination reports represents noncompliance with 10 CFR 20.408 (70-820/80-25-05).

9. Receipt of Radioactive Material

10 CFR 20.205(b)(1) requires that each licensee upon receipt of a package of radioactive material must monitor the external surfaces of the package for contamination. The inspector reviewed the incoming shipment records for approximately ten shipments received during 1980. The records indicated that all packages had been monitored as required.

No items of noncompliance were identified.

10. Whole Body Count

Subsection 402.3 of the licensee's application requires that whole body counts be performed bi-annually (twice a year) on certain employees. The inspector reviewed whole body count data to determine that the requirement was satisfied. The documentation indicated that whole body counts were performed in November 1979 and June 1980.

No items of noncompliance were identified.

11. Dosimetry

The inspector reviewed dosimetry data for the period January-April 1980 to determine if the licensee was in compliance with the regulations. The inspector noted that 15-20 operators are monitored, the individuals most closely associated with operations involving licensed material. Maximum exposure recorded was 610 millirem for one employee for the first three quarters of 1980.

No items of noncompliance were identified.

12. Bioassay

Subsection 402.2 of Section 400 of the licensee's application states that the minimum bioassay frequency for individuals working with soluble uranium is monthly. The inspector selected the names of seven operators who may work with the soluble form to determine if the individuals were being sampled and analyzed at the stated frequency. The inspector reviewed data for 1980, and the data indicated there were no problems with exposure controls, and the individuals were sampled at the required frequency.

No items of noncompliance were identified.

13. Air Samples

The inspector reviewed air sample data for samples collected in the Process Area for the period March-December 1980 to determine if the licensee was in compliance with regulatory requirements. The inspector observed that the number of air samples collected have been decreasing. This is because of the decommissioning operations in progress.

No items of noncompliance were identified.

14. Stack Samples

The licensee's stack sampling program is also being decreased because of the decommissioning operations. At the time of this inspection, only three stacks were being sampled.

The inspector reviewed stack sample data for effluents from the Process Area for the period July-November 1980 to determine if the licensee was in compliance with regulatory requirements.

No items of noncompliance were identified.

15. Well Water Samples

On December 17, 1980 the inspector asked if well water samples had been collected and analyzed at the required frequency. He was told that well water samples had been collected and analyzed for gross-alpha and beta radioactivity and the samples were also analyzed for nitrates, fluoride and pH.

Condition No. 22 of Special Nuclear Materials License No. SNM-777 states, "The licensee shall collect water samples on a monthly basis at locations and monitoring wells as identified in Figure 407.2-III and Table 407.2-II (except for well No. W-8 which is dry) of the submittal dated May 10, 1978. The collected water samples shall be analyzed for:



- (a) Gross-alpha and beta radioactivity. If the gross-alpha and beta concentrations exceed 16 pC/l and 50 pC/l respectively, identification of major nuclides and determination of their concentrations shall be conducted by the licensee.
- (b) pH, nitrate, and fluoride. If the concentration of nitrate (measured as N) exceeds 10 ppm, analysis of trace element concentrations, i.e., Cd, Hg, Pb, Mo, Zn, and Ni in the water sample shall be performed."

The inspector reviewed data for the period June-November 1980. The data indicated that the samples were collected and analyzed as required.

No items of noncompliance were identified.

16. Exit Interview

The inspector met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on December 19, 1980. The inspector summarized the purpose and scope of the inspection, and the findings as presented in this report.