APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
URANIUM RECOVERY FIELD OFFICE
REGION IV

Inspection Report: 40-8907/92-01

License: SUA-1475

Licensee: UNC Mining and Milling
Division of United Nuclear Corporation
P.O. Box 3077
Gallup, New Mexico 87305-3077

Facility Name: Church Rock Mill

Inspection At: McKinley County, New Mexico

Inspection Conducted: November 16, 1992

Inspectors: Paul W. Michaud, Project Manager
Dana C. Ward, Project Manager

Approved: _____ 12/4/92
Ramon E. Hall, Director Date
Uranium Recovery Field Office
Region IV

Inspection Summary

Areas Inspected: Routine, announced inspection of the uranium mill decommissioning operations and radiation safety program including: Management Organization and Controls/Operations Review; Operator Training/Retraining; Radiation Protection; Radioactive Waste Management; Transportation of Radioactive Materials; Emergency Preparedness, and Environmental Protection.

Results:

The inspectors noted that UNC Mining and Milling had an adequate radiation protection program appropriate for the level of activity at the facility. The inspectors also noted that decommissioning of the mill structures was complete except for a final radiological verification survey of the former foundation areas. The licensee also continues to work on the final reclamation of the tailings areas.

Summary of Inspection Findings:

Violation 40-8907/9102-01 was closed (paragraph 4 of Section 5).

Attachments:

Attachment 1 - Personnel Contacted and Exit Meeting

DETAILS

1 PLANT STATUS

During this inspection period UNC Mining and Milling (UNC) completed mill decommissioning except for final radiological surveys over the former mill site. The licensee was actively engaged in earth moving activities around the mill grounds to final contours. Some burial of mill foundations and other reclamation work had been done in the tailings area since the last inspection. Decontamination and backfill work was nearly complete on two catchment basins just east of the mill The inspectors noted that the ground-water corrective action program, specifically the spray evaporation system, was functioning during the site tour.

2 MANAGEMENT ORGANIZATION AND CONTROLS/OPERATIONS REVIEW (88005, 88020)

The licensee had not made any changes to the organizational structure since the last inspection. The operations and controls at the site continued to function in much the same manner as they have in the past. The General Manager (GM) was the highest ranking corporate official onsite. During the inspection the corporate President was also onsite. This official normally works in Albuquerque, New Mexico but may spend several days per month onsite. The GM also served as the site Radiation Safety Officer (RSO), and reports directly to the President. There was one Radiation Safety Technician (RST) onsite who reports directly to the GM/RSO. The licensee has a total of 10 employees onsite and used contractor personnel for large tasks such as decommissioning and reclamation work.

Decommissioning activities performed since the last inspection include the removal and disposal of all concrete foundations. This includes the solvent extraction circuit which was predominately constructed of concrete and was located external to the main mill structure. Also removed and disposed were many of the foundation abutments contained within the mill facility. The concrete floor of the counter current decantation structure was cored and tested for contamination. The licensee reportedly found contamination levels below release limits for the concrete floor and the soils that laid under the structure.

The inspectors reviewed records of inspections conducted during decommissioning work. These inspections were conducted daily by radiation protection staff. Records of the inspections were kept in a daily log and reports were made available to the President of UNC. The reports were reviewed and found to show an appropriate level of attention to radiation safety.

Written procedures maintained by the licensee were reviewed by the inspectors. The content of the procedures appeared to be appropriate for the status of the facility. The GM/RSO was noted to have reviewed each procedure annually as required by License Condition No. 20. Since the mill structure is gone, the licensee maintains only two sets of procedures. One set was kept by the GM/RSO and the remaining set was maintained by the Radiation Safety

Technician. The procedures were made available to all workers on an as-need basis. The inspectors feel this to be an appropriate level of availability since the mill structure is down.

The licensee issued six radiation work permits during 1992. The content of the permits appeared to be sufficient to perform the work. Radiation monitoring conducted prior to, during and after the job was noted to be appropriate. The inspectors found that the licensee did not have a system to terminate a radiation work permit when the job was completed. The licensee stated that they would improve their permit system to include a place on the form to terminate the job. The GM/RSO issued all radiation work permits.

The inspectors noted that the fence marking the restricted area was properly posted. The licensee had recently dismantled the old restricted area fence to allow construction equipment to remove tailings that were under or adjacent to it. During this cleanup activity UNC began construction of a new restricted area fence which was observed to be properly posted. The inspectors also noted that the appropriate postings as required by 10 CFR 19 were on all bulletin boards in the main office complex.

3 OPERATOR TRAINING AND RETRAINING (88010)

The inspectors reviewed records of radiation safety training provided to the employees and contractors. The inspectors noted that all UNC site personnel and contractor employees had been provided radiation safety training. The content of the course was as recommended in Regulatory Guide 8.31, although it was noted that some of the questions on the exam pertained to the mill which has been decommissioned. A written test was given to all workers and 70 percent correct score was needed to attain a passing grade. If any worker failed the test, they were retrained until they achieved a passing score on the written exam.

All restricted area female workers were given training in prenatal radiation exposure as recommended in Regulatory Guide 8.13. It was noted that one contract female worker was not trained in radiation protection. The licensee stated that this person never entered the restricted area, and remained in the office complex only. The inspectors felt that this arrangement may be flawed and that UNC may want to consider having all persons who frequent the office complex be trained in radiation protection for their own safety in case of a site emergency.

The RSO and RST received refresher radiation protection training from a contractor on May 6-8, 1992, in compliance with License Condition No. 19.

4 RADIATION PROTECTION (83822)

With decommissioning of the mill, the radiation protection program has not been as intensive as during previous inspections. This was not taken negatively, as that was functioning at a level appropriate for a decommissioning project at this stage of reclamation. From interviews with the staff and review of the records it appeared that all radiation safety requirements were being met or exceeded.

4.1 Internal Exposure Determination

The inspectors reviewed records of the internal exposure determination program implemented at the facility. Samples were collected continuously from six locations using Eberline RAS-II pumps calibrated to draw from 55 to 60 liters per minute (lpm). The samples were counted using an alpha scintillation counter, and the collection system was calibrated annually by the manufacturer.

Personal air samplers were used for jobs where the licensee wanted to determine the exposure for one person or small groups of people doing the same job. The samplers were calibrated to draw 2.3 lpm using a Teledyne Hastings-Raydist flow meter. Calibrations were done prior to each samplers use and the flow meter was calibrated annually. All filters were counted for gross alpha using an alpha scintillation counter and then if desired samples were sent to an outside laboratory for chemical analysis. The licensee, in determining a conservative concentration adds both the RAS II and the personal air sample results together.

Radon daughter samples were collected quarterly at seven locations. The samples were collected and analyzed using an instant working level meter. The working level meter was calibrated prior to each use.

A review of the data indicated that uranium levels were small percentages of the maximum permissible concentration (MPC). Exposures were therefore low with the highest quarterly exposure calculated at 1.17 MPC-hours. This value was assigned to a contract worker. A further review indicated that no other workers exceeded an exposure of 0.03 MPC-hours during any quarter of 1992. Radon daughter concentrations were noted to be low with the highest concentration reported at 0.02 working levels.

4.2 Bioassay and Respiratory Protection

The inspectors reviewed the bioassay program in effect at the facility during decommissioning and post decommissioning. All workers were tested for urinary uranium at least monthly, which included entrance and exit samples for all contract personnel. Samples were analyzed by a vendor laboratory which used a lower limit of detection of 5 ug/l. All sample shipments included a blank and a spiked sample for quality assurance. Sample bottles were given to each worker returning for work on Monday mornings for sample collection.

The licensee used an action level of 15 ug/l. A review of the bioassay data indicated that the results were generally less than 15 ug/l uranium. Several contract workers during 1992 had urine sample results in the hundreds of ug/l range. Resampling of these workers found results below the lower limit of detection of 5 ug/l. The licensee determined that these workers had contaminated their samples. One contract worker after voiding, was adding tap water to his sample to completely fill the specimen bottle. To determine if this was the source of uranium UNC had the tap water tested. One specimen of tap water was found with a level of 408 ug/l. Additional training on sample collection may be necessary for contract workers to prevent false high values from occurring.

The inspectors reviewed the respiratory protection program at the facility. The licensee maintains a program but has only issued one respirator during 1992. A review of the existing records for the last year show that issuance forms, fit tests, training and medical certification were properly conducted. A review was also conducted of the respiratory equipment contamination surveys. The data indicated that contamination surveys were being properly performed.

4.3 External Exposure Control

All licensee and contractor employees working within the restricted area were provided thermoluminescent dosimeters which were exchanged quarterly. Dosimeters were also collected from contract personnel at the end of their work onsite. A review of the data indicated that exposures were very low, often less than the lower limit of detection. Instrument surveys for external radiation were also performed on a routine basis during decommissioning. Since the removal of the mill structure and concrete foundations these readings were also very low.

4.4 Contamination Control

Control of personnel contamination was achieved by requiring all workers to either shower or monitor themselves prior to leaving the restricted area. Monthly spot checks of personnel leaving the site were performed by the radiation safety department. A review of the documentation indicated no areas of concern. The highest reading observed was 152 dpm/100 cm^2 on a bench located within the Security Building change room.

The licensee performed monthly contamination surveys of the change room and eating room used by workers within the restricted area. The surveys were performed using survey meters to determine the level of removable and fixed contamination. The action level specified in the license is 1000 dpm/100 cm^2. A review of the data indicated no areas of concern.

The licensee, in the process of disposing of mill structural components, including soil and concrete, must leave the mill restricted area and cross a public road to enter the tailings disposal area. Surveys of the road were conducted during and after transport using a shielded gamma survey instrument. The results of these surveys indicated that the values obtained were at background levels. Release surveys were also conducted on all mobil equipment used by the contractor in transporting contaminated materials for disposal.

5 RADIOACTIVE WASTE MANAGEMENT (88035)

The inspectors toured the facility during the course of the inspection. The licensee continued to dispose of contaminated materials in Borrow Pit No. 2. This activity will soon come to an end since UNC has very little contaminated material to dispose. The licensee had removed all contaminated material from the two former catchment basins located east of the mill site and disposed of this material in Borrow Pit No. 2. Clean soil was placed in the catchment basins and grading to final contour levels was in progress.

The licensee had their spray evaporation system in operation during the site tour. The system appeared to be functioning adequately and the GM felt that they were making good progress. The inspectors did note that standing water was evident on the south tailings area. The Church Rock area had experienced a snow storm several days earlier and this was the result of melting snow. The GM stated that UNC was considering approaching the NRC with a new design, recontouring this area for drainage in conjunction with new tailings impoundment changes.

The GM/RSO conducted weekly inspections of the tailings area to evaluate the effectiveness of control measures for blowing tailings. With the cleanup of the catch basins and the ore storage pad in 1992, very few areas of exposed tailings remained, although future reclamation activities may expose some covered areas.

The inspectors reviewed the corrective actions taken since the last inspection concerning the burning of wooden slats. This activity was cited as a violation, of 10 CFR 20.305. The GM/RSO said that he had erroneously interpreted previous communications with the NRC concerning the disposal of byproduct material. He was under the impression that he could not dispose of organic materials in the tailings disposal area and, therefore, was incinerating the wooden slats to reduce the mass to its primary mineral constituents. The GM/RSO stated that he would not burn byproduct contaminated material again without prior approval by the NRC. The licensee had not burned any materials since the last inspection. This closes violation (40-8907/9102-01).

6 TRANSPORTATION OF RADIOACTIVE MATERIALS (86740)

The licensee had not transported any radioactive materials since the last inspection with the exception of routine haulage of byproduct contaminated soils and concrete across the public road for burial in Borrow Pit No. 2. This work is covered under paragraph 3 of Subsection 4.4.

7 EMERGENCY PREPAREDNESS (88050)

Since the mill structure has been decommissioned the licensee no longer maintains a formal emergency procedure. The inspectors did note on the employee bulletin board a set of telephone numbers to contact in case of fire or injury. This list had been revised several times by lining out the incorrect telephone number and writing in new ones. The licensee stated that they would be updating and replacing this list in the near future.

The licensee does not have an ambulance onsite for the transportation of injured personnel. They rely on facilities at Fort Wingate, 11 road miles to the east, or Gallup, 17 road miles to the southwest. First aid kits were maintained onsite by the licensee. All employees were trained in first aid response.

Fire extinquishers were present within the structures remaining onsite. The licensee also maintained a gravity fed fire hydrant system, with a

100,000 gallon reserve capacity. Yearly checks on all fire fighting equipment were performed by the licensee. UNC does not maintain an emergency power backup system.

8 ENVIRONMENTAL PROTECTION (88045)

The licensee maintained four environmental monitoring stations. Continuous air particulate monitors, radon samplers and environmental thermoluminescent dosimeters were located at each monitoring site. Radon sampling was done by using an alpha track system with cup exchanges quarterly. Environmental thermoluminescent dosimeters were exchanged twice annually. Vegetation and soil samples were collected annually. The licensee also monitored numerous ground-water wells within the vicinity of the tailings impoundment. The inspectors visited one environmental station during the site tour, and observed that all required monitoring devices were in place and operating.

Environmental monitoring data were submitted to the NRC in accordance with 10 CFR 40.65 and the license. A review of the data for air particulates, radon daughters and direct gamma indicated that the values obtained from each monitoring station were small fractions of the allowable maximum permissible concentration. Soil and vegetation sample results were also reviewed and no concerns were noted.

ATTACHMENT 1

1 PERSONS CONTACTED

1.1 Licensee Personnel

J. Velasquez, President
E. Morales, General Manager/Radiation Safety Officer
M. Chischilly, Radiation Technician

1.2 NRC Personnel

P. Michaud, Project Manager
D. Ward, Project Manager

The personnel listed above attended the exit meeting.

2 EXIT MEETING

An exit meeting was conducted on November 16, 1992. During this meeting, the inspectors reviewed the scope and findings of the inspection. The licensee did not identify as proprietary, any information provided to, or reviewed by the inspectors.

NRC FORM xxx (9-91) U.S. NUCLEAR REGULATORY COMMISSION

IFS Data Entry Form

Reviewed By: _____

Date: 12/9/93

SPECIFY CATEGORY (Check One) Page 1 of 1

_____ Reactor/Vendor Inspection (IFS Option 1) _____ Docket Related/P21 Items (IFS Option 4)

Items Opened (Y/N): _____ Enter Log Number: _____

X Material Inspection (IFS Option 2) _____ LER Items (IFS Option 5)

SQI (Y/N): N Enter LER Number: _____

Letter (Y/N): Y

Clear (Y/N): Y _____ Non-Docket Related Items (IFS Option 6)

Site/Name: UNC Mining & Milling / Churchrock Mill

Report Transmittal Date: 12/04/93

Lead Inspector: FIW Responsible Org. Code: 4302 Report End Date: __/__/__ Region: 4

	Report NBR	Docket NBR	Materials Only License NBR	*Docket Name
A	92-01	40-8907	SUA-1475	
B				
C				

Update? (Y/N): N Opened IR/LER/P21 LOG/IFS Number: _____

***Sequence NBR: 01 Item Type: _____ **Severity: _____ **Supplement: _____, _____

	Status	*UPD I/R	*Proj. Closeout	*Actual Closeout	Materials Only 10 CFR	License Cond.	Tie Down
A			__/__/__	__/__/__			
B			__/__/__	__/__/__			
C			__/__/__	__/__/__			

Title: _____ (55 character width)

*Closeout Org: _____ *Closeout EMP: _____ *Contact EMP: _____ *Procedure: _____ *Functl Area: _____, _____

*Cause CD: ___, ___ **EA Number: _____ **NOV/NNC Issue Date: __/__/__

Text: _____

Update? (Y/N): _____ Opened IR/LER/P21 LOG/IFS Number: _____

***Sequence NBR: 02 Item Type: _____ **Severity: _____ **Supplement: _____, _____

	Status	*UPD I/R	*Proj. Closeout	*Actual Closeout	Materials Only 10 CFR	License Cond.	Tie Down
A			__/__/__	__/__/__			
B			__/__/__	__/__/__			
C			__/__/__	__/__/__			

Title: _____ (55 character width)

*Closeout Org: _____ *Closeout EMP: _____ *Contact EMP: _____ *Procedure: _____ *Functl Area: _____, _____

*Cause CD: ___, ___ **EA Number: _____ **NOV/NNC Issue Date: __/__/__

Text: _____

* Optional Fields.

** Severity, Supplement, and NOV/NCC only applicable for Violations; EA Number only applicable for Apparent Violations.

*** Sequence NBR is not applicable for docket related/P21, LER, or non-docket related items.

ITEMS CONTINUED? (Y/N): N