APPENDIX C

U. S. NUCLEAR REGULATORY COMMISSION

REGION IV

URANIUM RECOVERY FIELD OFFICE

NRC Inspection Report: 40-8698/86-001 License: SUA-1371

Docket: 40-8698

Licensee: Plateau Resources Limited
Shootaring Canyon Uranium Processing Facility
P.O. Box 511
Ticaboo, UT 84732

Facility: Shootaring Canyon Uranium Processing Facility

Inspection Conducted: January 22-23, 1986

Inspectors: /s/ 3-3-86
C. C. Jierree, Project Manager-Team Leader Date

/s/ 3-3-86
N. M. Shopenn, Project Manager Date

Approved: /s/ 3-6-86
Harry J. Pettengill, Chief Date
Licensing Branch 2
Uranium Recovery Field Office, Region IV

Inspection Summary

Inspection Conducted on January 22-23, 1986 (Report No. 40-8698/86-001)

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

The inspection involved a total of 16 inspector hours on site by two NRC inspectors.

Results: Within the eight areas inspected, one violation and one deviation were identified in one area as follows:

1. Failure to conduct monthly safety meetings for two months in 1985.

2. Failure to conduct annual refresher training in radiation safety for all permanent workers.

DETAILS

1. Persons Contacted

*J. K. Thamm, General Manager
*S. J. Morrison, Mill Superintendent
*V. W. Morrill, Assistent Safety and Health Technician
*M. Pennington, Safety and Environmental Health Technician
*W. Collins, Project Maintenance Manager
*S. Pentico, Land and Licensing Clerk

*Denotes those present at the exit interview.

2. Licensee Action on Previous Inspection Findings

(Closed) Violation (40-8698/84-001): Failure to provide a semiannual or annual report by the ERHS reviewing monitoring data, exposure data, noncompliance items resulting from internal audits, and compliance with the concept of ALARA. The inspectors reviewed both semiannual and annual ALARA reports which included the prescribed data. Trend analyses presented in graphical form was reviewed by the inspectors and was found to be adequate.

(Closed) Violation (40-8698/84-001): Failure to determine general airborne radioactive particulate concentrations during three months in 1984. The inspectors reviewed and found complete records for general airborne radioactive particulate concentrations for each month in 1985.

(Closed) Violation (40-8698/84-001): Failure to calibrate lapel air samplers on an appropriate frequency. The inspectors observed calibration records which indicated that lapel air samplers had been calibrated quarterly during 1985.

(Closed) Violation (40-8698/84-001): Failure to provide follow-up action for individuals whose routine urinalysis exceeded 15 ug/l. The inspectors reviewed follow-up action on the two employees whose routine bioassay results exceeded 15 ug/l during 1985.

(Closed) Violation (40-8698/84-001): Failure to document weekly inspections of the yellowcake storage and calcining area. The inspectors reviewed the forms utilized by the licensee which documented their weekly inspections of the yellowcake storage and calcining areas for 1985.

(Closed) Violation (40-8698/84-001): Failure to document safety meetings during two months in 1984. The inspectors observed that monthly safety meetings had been conducted and documented during 1985, except for the months of August and October. Therefore, a new violation was issued in this report.

(Closed) Violation (40-8698/84-001): Failure to conduct quarterly beta-gamma surveys in the calcining and yellowcake storage areas. The inspectors reviewed the documented results of quarterly beta-gamma surveys conducted in the calcining and yellowcake storage areas during 1985. The records were found to be adequate.

(Closed) Violation (40-8698/84-001): Failure to conduct and document daily inspections of the tailings impoundment system. The inspectors reviewed the forms on which the licensee documented daily inspections of the tailings impoundment system during 1985. This inspection was conducted seven days per week and included the dam and cross valley berm.

(Closed) Deviation (40-8698/84-001): Failure to complete radiation work permits (RWP). The inspectors reviewed the RWPs issued during 1985, and found them to be complete and in accordance with Regulatory Guide 8.31.

(Closed) Violation (40-8698/82-002): Four individuals had received exposures to airborne soluble uranium above the permissible limits. The licensee had implemented many of the proposed corrective actions described in the letter dated March 24, 1983; however, some of the incompleted hardware modifications need only be completed prior to mill restart. Since the renewed license does not authorize mill operation, this violation is considered to be closed.

3. Management Organization and Controls/Operations Review

The Shootaring Canyon Uranium Processing Facility has been shutdown since August of 1982. A total of 12 workers are employed at the

mill during a 4 day, 10 hour per day workweek. The Environmental and Radiological Health Supervisor (ERHS) is a contracted individual who is not stationed at the facility. The Environmental and Radiological Health Technician (ERHT) is stationed full time at the mill. The ERHS reports to the General Manager who in turn reports to the PRL Vice President, the managing officer of PRL.

PRL underwent a substantial staff reduction during the last year as a result of deciding not to operate the mill during the upcoming license renewal period. After the staff reduction, PRL personnel from the Tony M Mine were brought to the mill extending their maintenance activities from the mine to both the mine and the mill. The Mill Superintendent is the only former mill operations employee who remains from the 1984 staff.

The inspectors examined the licensee's written operating procedures for the radiation safety and environmental monitoring programs and determined that they had been reviewed by the ERHS during 1985, and were available to all facility personnel in accordance with License Condition No. 19.

The licensee had issued six RWPs during 1985, the majority of which were for entries into the yellowcake calciner area to conduct exposure measurements required by License Condition No. 26. The new ERHS had designed a better RWP form which enabled the ERHT to provide the required information. The procedure for issuance and completion of an RWP had also been revised by the ERHS. The inspectors verified that the internal exposures recorded on the RWP were transferred onto exposure record forms which were maintained separately for each employee. These activities were in accordance with the requirements of License Condition Nos. 19, 24, and 32.

The inspectors reviewed the documentation of the results of the required daily tailings system inspections and the weekly inspections of the ore piles, tailings beaches (although none exist at the present time), and yellowcake storage areas. New forms were being utilized for these inspections which clearly indicated the date of the inspection, what was observed, and the signature of the individual performing the inspection. The inspectors concluded that the licensee conducted these activities in accordance with License Condition Nos. 17, 18, and 20.

The inspectors reviewed the semiannual reports written by the ERHT on the results of in-plant and environmental monitoring in accordance with License Condition Nos. 20, 21, and 34. The data was being graphed for easier trend identification. The past three years of data had been graphed and was available for review.

The inspectors also reviewed the annual ALARA audit and internal program audit conducted by the ERHS. Problem areas identified in the latter audit had been appropriately corrected by licensee personnel. The inspectors found that the reports, audits, RWPs, and procedures described above were acceptable and in accordance with license conditions.

No violations or deviations were identified by the NRC inspectors.

4. Operator Training and Retraining

The mine employees participated in the monthly safety meetings required by License Condition No. 11; however, the required annual radiation safety refresher training was not conducted during 1985. This was identified by the inspectors as a deviation of Regulatory Guide 8.31, Section 2.5. Monthly safety meetings were conducted and documented during 1985, except for the months of August and October. This was a violation identified during the previous inspection conducted December 11-12, 1984. The staff notes that Source Material License SUA-1371, which was renewed and issued subsequent to this inspection, does not require monthly safety meetings. However, because the violation occurred during two consecutive years, a Notice of Violation is being issued as a result of this inspection.

One violation and one deviation from NRC requirements were identified by the inspectors.

5. Maintenance

Access to the mill property and restricted area is controlled by a chain link fence topped with barbed wire. This fence encloses the recently covered ore stockpile, mill buildings, and earthmoving equipment from the mine. The inspectors noted that much of the fence was new and that it was appropriately posted in accordance with License Condition No. 13. The entrance gates in the fence were also posted in accordance with license requirements.

Since the mill is not authorized for operation, only minimal maintenance activities are necessary. All access points to the yellowcake drying and packaging enclosure had been welded shut to assure that no one enters this area during the mill's shutdown period.

No violations or deviations were identified by the NRC inspectors.

6. Radiation Protection

a. In Plant Air Sampling

In accordance with License Condition No. 24, the licensee collects monthly air samples at five locations of highest activity within the mill area which are analyzed fluorometrically for U-nat. Grab air samples are collected using high volume samplers (22-32 lpm) which are calibrated quarterly with a wet test meter. Results for 1985 were all less than 25% of the MPC for restricted areas.

Monthly air samples are collected in five locations of highest radon activity and other areas where work activities will be carried out. This activity was performed in accordance with License Condition No. 25. These samples are used to calculate radon daughter working levels using the modified Kusnetz method. All measurements were well below 0.01 WL during 1985. The inspectors determined that the air sampling equipment had been calibrated quarterly in accordance with License Condition No. 28.

b. Exposure Determination

Internal exposures were recorded on individual exposure records on which the weekly, monthly, quarterly, and annual totals appear. Daily time card data and area airborne measurements were utilized for daily exposure determinations. Lapel samplers were used for work prescribed under RWPs. These exposures were added to the weekly totals for the appropriate individuals. No internal exposure exceeded the weekly limit for soluble uranium and no quarterly exposure exceeded 25% of the permissible limit. Internal exposure measurements and recordkeeping were conducted in accordance with License Condition No. 24.

The inspectors noted that employees who are currently employed at PRL performed decontamination work at the PRL Ore Buying Station (OBS) near Blanding, Utah (SUA-1326). Although individual internal exposures received at the OBS were calculated, they were not added to the individual records maintained at the PRL mill. The importance of including exposures from all sources of licensed material for each individual under the licensee's employ was discussed with the ERHT and later, via telephone conversation with the ERHS. It should be noted, however, that addition of these calculated internal exposures would not have resulted in any overexposure of personnel.

External exposures were measured with TLDs which were exchanged quarterly. The highest exposure recorded in 1985, was 19 mrem in one quarter which is less than 1% of the quarterly MPE. External

exposure measurement and recordkeeping activities were conducted in accordance with License Condition No. 31.

c. Respiratory Protection

The licensee maintains an approved respiratory protection program; however, due to the shutdown status of the mill, it was necessary for only two employees to be fit tested, trained, and medically evaluated for wearing respiratory protection. The inspectors reviewed and found that the documentation of these activities was in accordance with License Condition No. 32. For those who needed to wear respiratory protection, an accompanying lapel air sampler was worn. Where the U-nat concentrations measured below the monthly plant average, no protection factors were applied for the assessed internal dose.

d. Bioassay Program

Since the staff reductions, routine biweekly urinalysis had been conducted for only two employees who occasionally entered the mill areas containing minor quantities of product in the circuit. Prior to the staff reductions, two employees exhibited bioassay results just over 15 ug/l. These employees provided additional samples for which the total uranium concentrations were each less than 5 ug/l. These samples and the original samples were analyzed a second time, for verification, by both in house and vendor laboratories. Vendor laboratories were used routinely for bioassay analyses.

The licensee prepared blank and spiked samples which were sent with the biweekly shipments. Occasionally, samples were split and analyzed in the PRL laboratory resulting in reasonable agreement.

Routine in vivo measurements were suspended for nonoperational periods when Amendment No. 11 was issued by the NRC on August 27, 1984. However, in vivo measurements were conducted as part of the followup performed for those employees whose routine urinalyses exceeded 15 ug/l. No positive internal uptakes were measured. The inspectors determined that the licensee conducted the bioassay program in accordance with License Condition No. 33.

e. Contamination Control

Quarterly beta gamma surveys were performed in the calcining and yellowcake storage areas during 1985, in accordance with the requirements of License Condition No. 26. These surveys were performed with instrumentation which had been calibrated at least semiannually. Exposure rates were consistently below levels which would require posting.

The licensee documented all required surveys for fixed and removable alpha contamination. These included surveys of lunchrooms, changerooms, control rooms, offices, and the analytical laboratory and surveys of equipment released from the site. Results were all below the limits specified in Regulatory Guide 8.30, Table 1. These surveys were conducted in accordance with License Condition No. 23.

Individuals, who accessed mill areas where product existed in the circuit, self-monitored in the change room prior to leaving the mill site. Records of these surveys were appropriately maintained. No incidents requiring personnel decontamination occurred during 1985; nevertheless, protective clothing is provided for the employees. These self-monitoring surveys were conducted in accordance with License Condition No. 11.

The inspectors verified that radiation monitoring equipment had been calibrated at appropriate intervals. Calibrations were usually performed by the instrument manufacturer. Functional instrument checks using a radioactive source were performed prior to use of each survey instrument. The inspectors determined that radiation monitoring equipment had been calibrated in accordance with License Condition No. 28.

No violations or deviations of NRC requirements were identified.

7. Radioactive Waste Management

The inspectors toured the mill and tailings area as part of the inspection. The ore stockpile had been regraded and covered with a minimum of six inches of overburden. Beach areas of tailings cells 2 and 3 were covered with a minimum of 18 inches of overburden. Cell 1 contained tailings solution. Half of this solution area was no deeper than three feet. Enhanced evaporation was not in use during the inspection. All sources of solution which normally ran into these cells from the mill have been terminated. As a result, only natural precipitation could increase the volume of solution in these cells.

The licensee had conducted and documented daily and weekly inspections of the tailings system. Semiannual technical reviews had been performed for the tailings dam. Movement monitor data indicated little or no change over the past two years. The dam is considered to be stable although no tailings are behind it.

Piezometers in place beneath the tailings cells had their pressure readings recorded monthly. Seasonal variations were apparent but were consistent from season to season. The cross valley berm

contains neither movement monitors nor piezometers. It was originally constructed as a temporary berm in order to utilize small portions of the main impoundment which could be readily filled, dried and covered.

The inspectors reviewed records of weekly inspections of the ore pile and the tailings system for evidence of blowing material. Inspections had been performed and documented in accordance with license requirements. Continued inspections will assure that the interim covers described above are appropriately maintained. The inspectors determined that the tailings system and ore piles had been inspected and maintained in accordance with License Condition Nos. 17, 18, and 48.

No violations or deviations were identified by the inspectors.

8. Transportation of Radioactive Materials

The inspectors reviewed records of contamination surveys performed on product drums and equipment released from the site. Records indicated that the licensee made one shipment of all remaining yellowcake drums. No drums were released with contamination levels exceeding 1000 dpm/100 cm^2. The yellowcake was shipped in 17H drums inside of a sole use vehicle.

The NRC inspectors reviewed NRC Form 741 pertaining to the yellowcake transfer. Shipping records indicated that signed forms, verifying receipt of the shipment, had been received by the shipper. The annual inventory, NRC Form 742, for 1985 was examined and found to be adequate. These activities were found to be in accordance with License Condition Nos. 11 and 23.

No violations or deviations were identified by the NRC inspectors.

9. Environmental Protection

The inspectors reviewed the results of the environmental monitoring program in effect at the mill. Environmental air samplers were calibrated monthly in-house and the calibrator was checked by the EPA on an annual basis. All results have consistently been below the applicable MPCs for unrestricted areas. Area TLDs were located at each monitoring station. Downwind from the tailings impoundment exposures were the highest, but did not exceed 38 mrem/quarter. The environmental monitoring program was found to be conducted in accordance with License Condition No. 34.

No violations or deviations were identified by the NRC inspectors.

10. Emergency Preparedness

A review of the emergency procedures was conducted by the inspectors. Testing and inspection of fire detection and suppression equipment was performed in accordance with license requirements. A drill was conducted in which the fire truck from Ticaboo was operated by the volunteer fire department (consisting of mill employees) during a response exercise. The diesel generators providing backup power to the water pumps on the mill site were tested each month in 1985. Semi-annual tests of the sprinkler heads were also conducted and documented. Although the kerosene had been drained from the solvent extraction circuit, a foam suppression system was still maintained.

In the event of a fire at the mill, employees would attempt to fight the fire by using fire hoses connected to the 150,000 gallon water supply, or by using fire extinguishers. A visit by an invited representative of PRL's insurance company did not result in a report; therefore, none could be reviewed. The inspectors determined that emergency preparedness activities had been conducted in accordance with License Condition No. 11.

No violations or deviations were identified by the NRC inspectors.

11. Exit Interview

The NRC inspectors met with the licensee at the conclusion of the inspection on January 23, 1986. The inspectors reviewed the purpose, scope, and findings of the inspection. The potential violation and deviation were described and discussed.

The general discussion of the inspection findings with licensee personnel resulted in a verbal commitment by the licensee to implement corrective actions where possible.