

Safety Evaluation Report  
for Renewal of  
Source Material License No. SUA-1371

Plateau Resources Limited  
Shootaring Canyon Uranium Mill  
Garfield County, Utah

**SAFETY EVALUATION REPORT  
FOR RENEWAL OF  
SOURCE MATERIAL LICENSE NO. SUA-1371**

**PLATEAU RESOURCES LIMITED  
SHOOTARING CANYON URANIUM MILL  
GARFIELD COUNTY, UTAH**

**MAY 1997**

**DOCKET NO. 40-8698**

**U.S. Nuclear Regulatory Commission  
Office of Nuclear Material Safety  
and Safeguards  
Division of Waste Management**

## TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION . . . . .	1
1.1 Description of Proposed Action . . . . .	2
1.2 Background Information . . . . .	2
1.3 Review Scope . . . . .	3
2.0 AUTHORIZED ACTIVITIES . . . . .	3
2.1 Facility Description . . . . .	3
2.2 Operations . . . . .	3
3.0 FACILITY ORGANIZATION AND ADMINISTRATIVE PROCEDURES . . . . .	6
3.1 Organization . . . . .	6
3.2 Radiation Safety Staff and Responsibilities . . . . .	6
3.3 Minimum Technical Qualifications for the Radiation Safety Staff . . . . .	8
3.3.1 Environmental and Radiological Health Supervisor . . . . .	8
3.3.2 Radiation Safety Staff . . . . .	8
3.4 Administrative and Operating Procedures . . . . .	8
3.5 Inspections and Audits . . . . .	10
3.5.1 Inspections . . . . .	10
3.5.2 ALARA Audit . . . . .	10
3.6 Radiation Safety Training . . . . .	11
4.0 RADIATION SAFETY CONTROLS AND MONITORING . . . . .	12
4.1 Ventilation and Effluent Control . . . . .	12
4.2 In-Plant Monitoring Data . . . . .	13
4.3 Personnel Monitoring Data . . . . .	13
4.4 External Radiation Control Program . . . . .	13
4.4.1 Occupational Exposure . . . . .	13
4.4.2 External Radiation Surveys . . . . .	14
4.5 Internal Radiation Control Program . . . . .	14
4.5.1 Airborne Radioactivity Surveys . . . . .	14
4.5.2 Internal Exposure to Radioactivity . . . . .	15
4.5.3 Respiratory Protection Program . . . . .	15
4.6 Bioassay . . . . .	16
4.7 Contamination Control . . . . .	17
4.7.1 Personnel Contamination . . . . .	17
4.7.2 Surface Contamination . . . . .	17
4.7.3 Disposal of Contaminated Equipment . . . . .	17
4.8 Quality Assurance and Calibration . . . . .	18
5.0 RESTRICTED AREA MARKINGS AND ACCESS CONTROL . . . . .	18

TABLE OF CONTENTS  
(continued)

	<u>Page</u>
6.0 EMERGENCY PROCEDURES AND PREVENTATIVE MEASURES .....	19
7.0 GROUNDWATER PROTECTION .....	19
8.0 MILL SITE DECOMMISSIONING AND RECLAMATION .....	20
9.0 SURETY REQUIREMENTS .....	20
10.0 INSPECTION HISTORY .....	21
11.0 CONCLUSION INCLUDING SAFETY LICENSE CONDITIONS .....	23
REFERENCES .....	26

**LIST OF TABLES**

	Page
TABLE 10.1 Summary of NRC Inspections at Plateau Resources Limited's Shootaring Canyon Uranium Mill .....	21

**LIST OF FIGURES**

Figure 2.1 Location of the Shootaring Canyon Uranium Mill .....	4
Figure 2.2 Shootaring Canyon Uranium Mill, Generalized Process Flow Sheet .....	5
Figure 3.1 Shootaring Canyon Uranium Mill, Organizational Chart .....	7

## 1.0 INTRODUCTION

By application dated March 1, 1996, and supplements and revisions transmitted by letters dated September 16 and November 15, 1996, and April 17, 1997, Plateau Resources Limited (PRL) requested renewal of U.S. Nuclear Regulatory Commission Source Material License SUA-1371, for the resumption of milling activities at the Shootaring Canyon Uranium Project, which is located in Garfield County, Utah.

With this license renewal, NRC will be authorizing the resumption of mill operations under the Performance-Based License Condition (PBLC) format. Under Performance-Based Licensing, the licensee has the burden of ensuring the proper implementation of the PBLC. The licensee may:

- Make changes in the facility or process, as presented in the application,
- Make changes in the procedures presented in the application, or
- Conduct tests or experiments not presented in the application, without prior NRC approval, if the licensee ensures that the following conditions are met:
  - (1) The change, test, or experiment does not conflict with any requirement specifically stated in the license (excluding material referenced in the Performance-Based License Condition), or impair the licensee's ability to meet all applicable NRC regulations.
  - (2) There is no degradation in the essential safety or environmental commitments in the license application, or provided by the approved reclamation plan.
  - (3) The change, test, or experiment is consistent with NRC's conclusions regarding actions analyzed and selected in the Environmental Assessment (EA).

Otherwise, the licensee is required to submit an application for a license amendment from NRC. The licensee's determinations whether the above conditions are satisfied will be made by a Safety and Environmental Review Panel (SERP).

The SERP will consist of a minimum of three individuals. One member of the SERP will have expertise in management and will be responsible for managerial and financial approval changes; one member will have expertise in operations and/or construction and will have expertise in implementation of any changes; and one member will be the corporate radiation safety officer or equivalent. Additional members may be included in the SERP as appropriate, to address technical aspects in several areas, such as health physics, surface water hydrology, specific earth sciences, and others. Temporary members, or permanent members other than the three identified above, may be consultants.

The licensee will maintain records until license termination of any changes made pursuant to the PBLC. These records will include written safety and environmental evaluations, made by the SERP, that provide the basis for determining that the change complies with the requirements referred to in the above conditions. The licensee will furnish an annual report to NRC that describes such changes, tests, or experiments, including a summary of the safety and environmental evaluation of each. In addition, the licensee will annually submit any pages of its license application that have been revised to reflect changes made under this condition.

PRL has not yet submitted its standard operating procedures (SOPs) for operation of the SERP. Therefore, NRC will require, by license condition, that PRL submit the SOPs for NRC review within 60 days of the date the renewal license is issued, and until such time as NRC approves the SOPs, PRL will not be authorized to implement the PBLC. PRL agreed to this license condition by telephone on March 31, 1997.

NRC's inspection function remains unchanged with the administration of Performance-Based Licensing. Operational changes, regulatory commitments, and recordkeeping requirements implemented by PRL through the PBLC are subject to NRC inspection and possible enforcement actions.

#### 1.1 Description of Proposed Action

The proposed action is to issue a renewal of the subject license for operation of the Shootaring Canyon facility at a maximum production rate of 455,407 kilograms (1,004,000 pounds) of yellowcake per calendar year. Additionally, PRL will be authorized, by license condition, to possess byproduct material in the form of uranium waste tailings and other uranium byproduct waste generated by its milling operations authorized by the renewal license.

#### 1.2 Background Information

Source Material License No. SUA-1371 was issued to PRL on September 21, 1979. This license authorized PRL to produce, possess, and transfer uranium at its Shootaring Canyon mill located in Garfield County, Utah. The mill was constructed between 1978 and 1981, and operated for approximately three months in 1982, before PRL suspended operations in August 1982 due to the continued decline in the market price for yellowcake. SUA-1371 was renewed on February 3, 1986, for "possession only" status; the NRC staff prepared a supplemental EA and Safety Evaluation Report (SER) at that time to document its review.

SUA-1371 was due to expire on December 31, 1993. By letter and attachments dated November 29, 1993, PRL applied for renewal of SUA-1371 for continuation of a "possession only" status, and was notified in return by the NRC staff that the license was in timely renewal by letter dated January 11, 1994.

By submittal dated March 1, 1996, PRL amended its November 1993 renewal application to request a resumption of milling operations at the Shootaring Canyon site.

### 1.3 Review Scope

The safety review of PRL's request for license renewal included evaluations of (1) the amended renewal application dated March 1, 1996; (2) supplementary information submitted by letters dated September 16, and November 15, 1996, and April 17, 1997; (3) the compliance history for the Shootaring Canyon mill since February 1986; and (4) the monitoring data required under SUA-1371.

PRL's proposed programs were evaluated also against NRC regulations, as specified in 10 CFR Parts 20 and 40, and appropriate NRC staff guidance.

## 2.0 **AUTHORIZED ACTIVITIES**

Currently, PRL is authorized for possession-only of byproduct material in the form of uranium waste tailings and other byproduct wastes generated by PRL's uranium recovery operations in 1982, as previously authorized under SUA-1371. In addition, PRL is not authorized to produce uranium concentrates without NRC approval.

### 2.1 Facility Description

The Shootaring Canyon mill site is located in Garfield County, Utah, approximately 22 kilometers (km) (14 miles) north of Bullfrog Basin Marina and about 80 km (48 miles) south of Hanksville, Utah (see Figure 2.1). Major mill features include the main mill building, the tailings impoundment, an ore stockpile area, and a small laboratory building. Most of the uranium ore processing occurs in the main mill building, which contains a semi-autogenous grinding (SAG) mill, an acid leach circuit, the solvent extraction circuit, and the yellowcake precipitation circuit and packaging enclosure. A counter current decantation (CCD) circuit is located immediately outside the mill building. A reproduction of the generalized flow chart of the uranium milling process at the site is included as Figure 2.2.

The mill buildings and the tailings impoundment together occupy approximately 40 hectares (ha) (100 acres), with the 28-ha (70-acre) impoundment located in a natural depression to the southwest of the mill. A 18-meter (60-foot) high dam is located at the downstream edge of the impoundment and a 9-m (30-ft) high cross-valley berm was constructed approximately 610 m (2000 ft) upstream of the dam. Currently, only that portion of the impoundment upstream of the cross-valley berm is lined, with a 0.6 m (2 ft) thick clay layer.

### 2.2 Operations

Operations at the Shootaring Canyon mill begin with the weighing, sampling and stockpiling of ore received from various mines. Mine ore, as well as stockpiled and crushed ore, is then fed to the SAG mill. The ground ore is stored as a wet slurry in two mechanically-agitated storage tanks. The subsequent processing involves two-stage acid leaching, followed by the recovery of uranium-bearing pregnant solution in the CCD system. Tailings are slurried by pipeline to the impoundment.



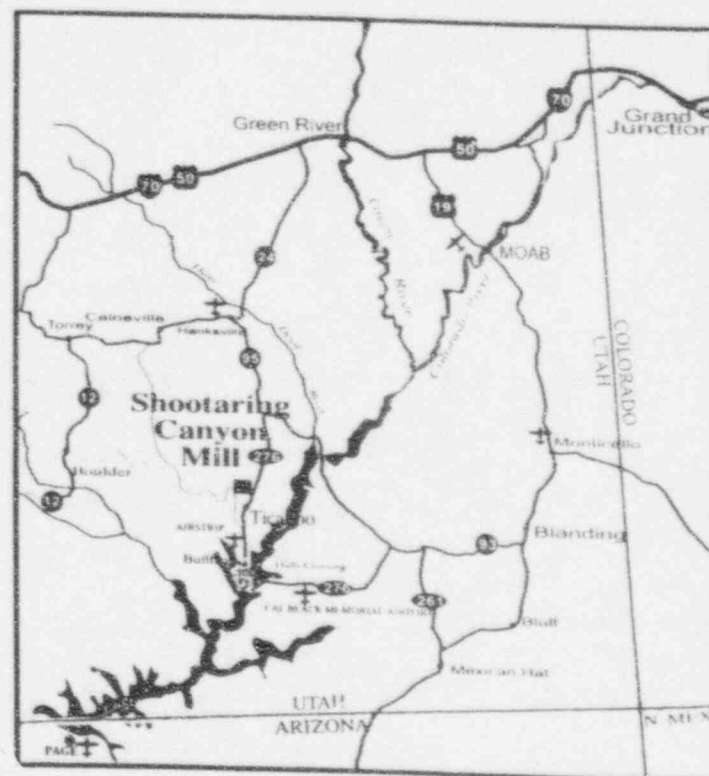


Figure 2.1 Location of the Shootaring Canyon Uranium Mill (PRL, 1997)



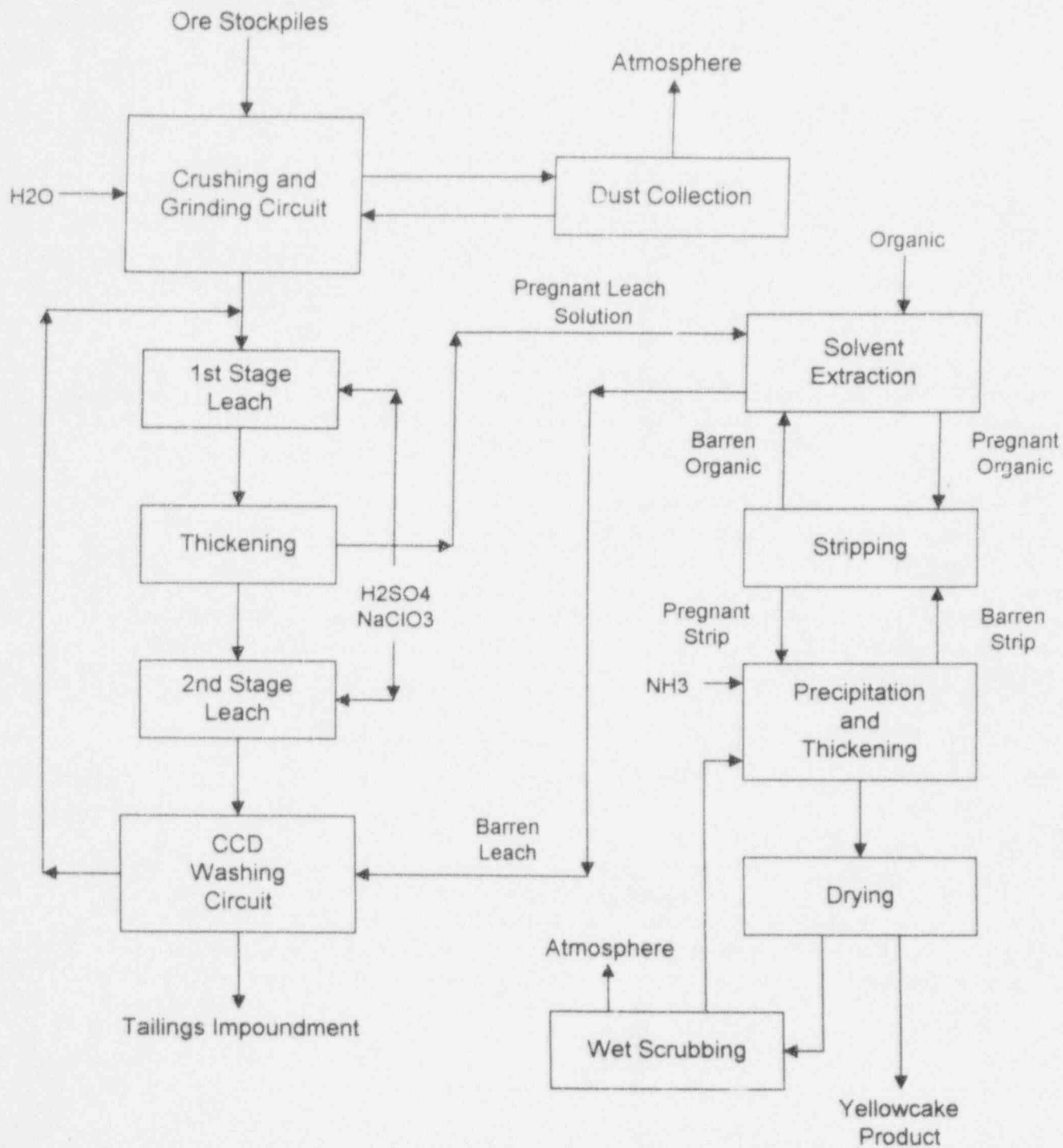


Figure 2.2 Shootaring Canyon Uranium Mill, Generalized Process Flow Diagram

Then, the uranium is recovered from the pregnant solution through a conventional solvent extraction system. Following precipitation, washing, dewatering, and drying, the yellowcake product is packaged in 55-gallon drums for eventual shipment to a conversion facility.

### 3.0 FACILITY ORGANIZATION AND ADMINISTRATIVE PROCEDURES

#### 3.1 Organization

PRL, the operator of the Shootaring Canyon mill, has its corporate headquarters located in Riverton, Wyoming. The corporate office supplies any necessary support to the mill staff. Milling operations are managed from an office located at the site. PRL's organizational chart is provided as Figure 3.1.

The Vice President of Milling, who is located at the corporate offices, has the responsibility for the overall policy and management of the mill. The Director of Regulatory Affairs is responsible for all licensing and permitting of the mill and for the submission of surety bonds and license amendment applications to NRC.

The Mill Superintendent, as the on-site authority, is responsible for enforcing the corporate policies and for mill management. All departments within the facility report to the Mill Superintendent.

The Environmental and Radiological Health Supervisor (ERHS) serves as the Radiation Safety Officer (RSO) for the mill site. As such, this individual is responsible for implementing all radiological and environmental monitoring procedures and for compliance with the NRC's regulation and requirements, as well as those of the Mine Safety and Health Administration (MSHA).

The NRC staff finds this organizational structure acceptable.

#### 3.2 Radiation Safety Staff and Responsibilities

As stated above, the ERHS is responsible for implementing all radiological and environmental monitoring procedures and for compliance with NRC's and MSHA's regulations and requirements. Therefore, the ERHS's responsibilities encompass radiation safety, industrial safety, occupational monitoring, quality assurance, and environmental monitoring programs. This individual also prepares and modifies mill procedures and assists the Director of Regulatory Affairs in licensing activities. The ERHS has the authority to partially or fully suspend mill operations that could be hazardous to workers, and is authorized to escalate concerns to the Vice President of Milling.

The Radiation Technician (RT) is responsible for performing radiation monitoring measurement throughout the mill area. This individual provides all necessary recordkeeping, survey data accumulation and analysis, instrument performance calibrations, and quality control requirements. Although the RT reports directly to the ERHS, this individual has the authority to escalate concerns directly to the Vice President of Milling.

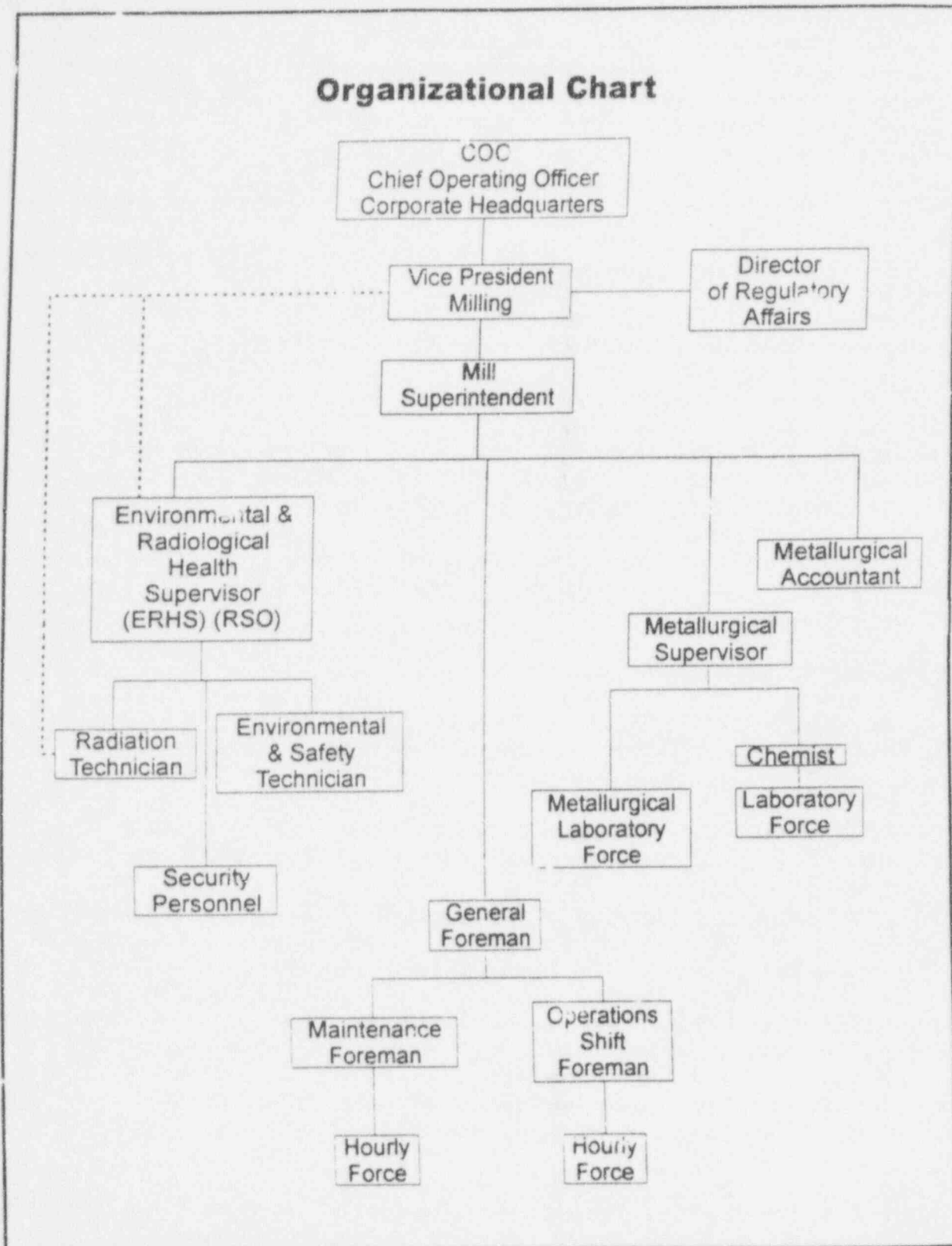


Figure 3.1 Shootaring Canyon Uranium Mill, Organizational Chart (PRL, 1996)

The Environmental and Safety Technician (EST) conducts the sampling and inspections required under the environmental monitoring program. This individual's responsibilities include mill emission sources, solid and liquid waste disposal systems, and off-site environmental concerns. In addition, the EST is responsible for providing respirators and protective clothing to the mill workers.

The NRC staff finds the organization of the radiation safety staff to be acceptable.

### 3.3 Minimum Technical Qualifications for the Radiation Safety Staff

PRL will require the following minimum qualifications of radiation protection personnel associated with uranium processing at the Shooting Canyon mill:

#### 3.3.1 **Environmental and Radiological Health Supervisor**

PRL states that the ERHS will meet certain minimum qualifications. The qualifications identified by the licensee are those recommended for an RSO by NRC in Regulatory Guide 8.31. RSO qualifications in Regulatory Guide 8.31 include: (1) a bachelor's degree in the physical sciences, industrial hygiene, or engineering, or an equivalent combination of training and relevant experience in uranium mill radiation protection; (2) appropriate health physics experience; (3) specialized classroom and biannual refresher training; and (4) appropriate specialized knowledge.

#### 3.3.2 **Radiation Safety Staff**

PRL states that both the EST and the RT will be qualified based on specific levels of education, training, and relevant experience. The education, training, and experience identified by PRL is that specified in Regulatory Guide 8.31.

The NRC staff finds the above qualifications for radiation safety personnel to be in accordance with its recommendations in Regulatory Guide 8.31, and therefore, acceptable.

### 3.4 Administrative and Operating Procedures

#### a. **Operational versus Standby Radiation Safety Programs**

PRL proposes to define two modes of activity at the mill: (1) "operational" and (2) "interim" or "standby." The operational mode is defined as any time the mill is in the normal commercial production of yellowcake, as contrasted with the interim mode which occurs when no yellowcake is produced for a period of 30 days or more. PRL proposes to implement a reduced in-plant radiation safety program during periods of standby.

With the current volatility in the market for yellowcake at present, it is possible that the mill could be operated intermittently over the next several years. However, the NRC staff does not consider a 30-day period of non-production to be significant enough to involve a major modification to a licensee's radiation safety program. Therefore, the NRC staff does not find PRL's proposed interim program acceptable,

and will instead require, by license condition, that PRL continue to conduct its operational radiation safety program during standby periods. Should a standby period become extended, PRL will have the opportunity to request a license amendment to modify its operational program. PRL agreed to this license condition by telephone call on April 25, 1997.

In the following discussion, only PRL's operational radiation program will be addressed. Prior to the commencement of ore processing, PRL will be required, by license condition, to conduct the interim radiation safety and environmental monitoring programs outlined in Tables 5.5-3 and 5.5-8, respectively, of the license renewal application. PRL agreed to this condition by telephone on May 1, 1997.

b. **Standard Operating Procedures**

Written operating procedures have been established for routine production activities involving the handling and processing of radioactive material and include routine radiation safety practices. Non-routine operations posing a radiological health risk to workers will require review of the procedures by the ERHS or the radiation safety staff, and the issuance of radiation work permits establishing the radiological health protection measures for the operations.

The Mill Superintendent and the ERHS review and approve all written procedures for operational and non-operational activities prior to their implementation and whenever a change in procedure is proposed, to ensure that proper radiation protection principles will be applied. The ERHS will perform a documented review of all existing operational procedures on an annual basis. PRL has committed to keeping up-to-date copies of the operational and radiation safety procedures available in each area of the mill to which they apply.

The licensee has stated that Radiation Work Permits (RWPs) will be issued to cover any non-routine activity which poses a radiological risk to employees and for which no standard written procedure already exists. The RWP will address:

1. The scope of the work to be performed;
2. Any precautions necessary to reduce exposure to uranium and its daughters; and
3. The supplemental radiological monitoring and sampling necessary prior to, during, and following completion of the work.

The RWP will be signed by the ERHS or their designee.

PRL states that results of audits and other reviews of the radiation protection program and the results of surveys and calibrations will be maintained for three (3) years after the record is made. NRC currently requires uranium recovery licensees to retain such documentation for a period of at least five (5) years, and therefore, PRL will be required, by license condition, to retain these results for this longer

period of time. PRL commits to retaining other records (e.g., records to determine dose from external sources, measurements and calculations of releases or radioactive effluents to the environment) until SUA-1371 is terminated. PRL agreed to this license condition by telephone on April 28, 1997.

The NRC staff concludes that the proposed program is in accordance with the recommendations contained in Regulatory Guide 8.31, and therefore, is acceptable.

### 3.5 Inspections and Audits

#### 3.5.1 **Inspections**

PRL proposes that the ERHS or their designee perform (1) a daily visual walk-through inspection of the mill and ore stockpiles and (2) a similar documented inspection of the same areas on a weekly basis. The purpose of these inspections is to observe work practices and working conditions in the mill so as to minimize the spread of contamination and to maintain exposures to levels that are "as low as is reasonably achievable" (ALARA). The ERHS will provide the Mill Superintendent and the Vice President for Milling with a monthly written summary of the visual inspections and of the mill and environmental monitoring data.

The NRC staff has reviewed PRL's proposed inspection program against the staff's recommendations in Regulatory Guide 8.31. Based on this review, the NRC staff will require, by license condition, that PRL conduct its proposed program with the following modifications:

- The licensee shall document problems observed during the daily visual walk-through inspections in writing; and
- The ERHS and the mill foreman, or qualified designees, shall perform weekly inspections to observe general radiation control practices and to review required changes in procedures and equipment.

PRL agreed to this license condition by telephone on April 28, 1997.

#### 3.5.2 **ALARA Audit**

PRL proposes to conduct semiannual audits of operating procedures, exposure records, monthly inspection reports, and training programs to evaluate the overall effectiveness of the radiation safety program and adherence to the company's ALARA philosophy. These audits are to be performed by the ERHS, with results documented and provided to the Vice President for Milling, the Mill Superintendent, and NRC.

PRL's proposed ALARA audit program is not consistent with the recommendations contained in Regulatory Guide 8.31. In this guidance document, NRC recommends, in part, that:



- ALARA audits be conducted annually by a team of individuals with knowledge of the radiation protection program at the mill;
- The RSO accompany the audit team but not be a member of that team;
- The audit report summarize, in addition to the items identified by PRL, the radiation safety meeting reports, bioassay results, and radiological survey and sampling data; and
- The audit report specifically discuss: (a) trends in personnel exposure for identifiable categories of workers and types of operational activities; (b) whether equipment for exposure control is being properly used, maintained, and inspected; and (c) recommendations on ways to further reduce personnel exposures from uranium and its daughters.

Therefore, the NRC staff will require that PRL conduct its annual ALARA audits as outlined in Regulatory Guide 8.31. PRL agreed to this license condition by telephone on April 25, 1997.

The NRC staff concludes that PRL's ALARA audit program, as modified by the staff, is acceptable.

### 3.6 Radiation Safety Training

PRL's radiological protection training program encompasses basic radiation protection training for new employees and contractors, on-the-job training, and annual refresher training for all permanent employees. Training received will be documented and records of training will be maintained onsite.

All new employees will be instructed in the inherent risks of exposure to radiation and the fundamentals of protection against exposure before beginning their jobs. A written exam on the principles of radiation protection in uranium milling will be given to all new employees; those receiving a failing grade on the exam will be retrained and retested. Exam results will be maintained on file.

All new employees, including supervisors, will also receive individualized on-the-job training on the health and radiation aspects of the specific jobs they will perform. This instruction will be given by a qualified supervisor or other person experienced in the assigned tasks. Supervisors will receive additional specialized training on their supervisory responsibilities in the area of worker radiation protection.

As noted above, all permanent employees, including supervisors, will receive refresher radiation safety training annually. This training will include a review of the radiation protection topics applicable to uranium milling, changes in regulations and license conditions, exposure trends, and other current topics in radiation protection. Exams will be given at the end of the refresher training course.



PRL stated that safety meetings will be held at least once every two months to discuss matters of concern that arise during mill operations and to encourage worker participation in the identification of ways to reduce occupational radiation exposures.

Prior to performing their work assignments without escort, contractors will be given radiation protection training applicable to their work and the radiological conditions they may encounter in the mill. Contractors working on heavily contaminated equipment will be given the same training as that normally given to permanent workers.

The NRC staff has determined that the radiation safety training program proposed by the PRL is in accordance with the staff guidance specified in Regulatory Guide 8.31, and therefore, is acceptable.

#### **4.0 RADIATION SAFETY CONTROLS AND MONITORING**

##### **4.1 Ventilation and Effluent Control**

###### **a. Mill**

Dust generated in the ore dump pocket is controlled by an automatic dust-suppression spray system. As ore is transferred from the ore hopper to the conveyor belt, dust is collected and discharged to a wet dust collector. Exhaust from the collector is released through a stack about 30 m (100 ft) above plant grade. Slurry from the dust collector will be pumped into the process circuit at the SAG mill.

Yellowcake particles from the hearth dryer and the enclosed packaging area pass through a wet dust collector before being discharged to the atmosphere at a rate of 0.007 kg (0.016 lbs) per hour.

In the mill, the processing buildings and equipment are provided with ventilation fans, hoods and ducting to control the concentration of gaseous effluents. A forced-air ventilation system in the solvent extraction building removes kerosene vapors and discharges them to the atmosphere through three roof ventilators.

PRL has committed to monitoring of effluent control equipment in the yellowcake drying and packaging area and immediately suspending drying and packaging operations if the effluent control equipment is not functioning as designed.

###### **b. Area Sources**

PRL will control dust generation at the ore stockpile area through water sprinkling or other dust-suppression techniques. Monthly documented inspections will be used to assess dusting conditions. Weekly air particulate sampling results from monitoring locations near the ore stockpile area will be documented and used by the ERHS or their staff to determine the appropriate method for minimizing dust generation. When the ore stockpile is being worked, either to add or remove ore,

the working face of the stockpile will be sprayed with water as needed to control the dust.

The NRC staff concludes that the mill ventilation and effluent control program is acceptable.

#### 4.2 In-Plant Monitoring Data

As discussed previously, PRL operated the Shootaring Canyon mill for only three months in 1982; therefore, operational monitoring data is extremely limited. Airborne uranium and radon daughter concentrations and gamma exposure levels during the three months of operation and all of 1983 were reviewed by the NRC staff in the SER prepared for the 1986 license renewal. The staff determined at that time that uranium and radon progeny concentrations were all below the applicable 10 CFR Part 20 maximum permissible concentrations (MPCs), and that average gamma levels were less than 0.25 mR/hr (NRC, 1986).

PRL will conduct routine monitoring for airborne uranium dust and radon progeny, and surveying for direct radiation (gamma) at 20 locations throughout the mill. The monitoring/surveying locations are identified in Table 5.5-2 of the renewal application and include: the ore hopper and SAG mill areas, the CCD and solvent extraction areas, various portions of the yellowcake precipitation, drying, and packaging circuit, and the lunch and change areas. PRL's proposed frequency for the monitoring and surveying is discussed in Sections 4.4.2 and 4.5.1.

#### 4.3 Personnel Monitoring Data

PRL will record time spent by employees in areas monitored for uranium dust and radon progeny. Details concerning the methods and frequencies used by PRL to monitor for airborne uranium and radon are discussed in Section 4.5.1. Using the monitored air concentrations and the employee time card information, exposure levels for employees will be calculated.

#### 4.4 External Radiation Control Program

##### 4.4.1 **Occupational Exposure**

The licensee has committed to using thermoluminescent dosimeter (TLD) badges to determine individual exposures. During full operations at the mill, each employee working at the facility will be issued badges and required to wear them at all times on-site. Badges will be analyzed on a quarterly basis. The cumulative occupational dose of the employee will be filed in accordance with the requirements of 10 CFR Part 20. If groups of employees receive exposures significantly above those received by other groups, the ERHS will investigate the cause and institute corrective actions, as appropriate.

The NRC staff concludes that the external exposure monitoring program is in accordance with Regulatory Guide 8.30, and is, therefore, acceptable.

#### 4.4.2 External Radiation Surveys

PRL proposes to conduct gamma radiation surveys on a semiannual basis at a minimum of 20 areas in the mill. Surveys will be conducted in locations where both routine and non-routine work is performed so that whole-body radiation exposures can be estimated. Measurements will be taken at about waist height and approximately 30.5 cm (12 inches) from surfaces. Survey results will be used to determine if a particular area should be posted as a "radiation area" and to identify sources of elevated gamma levels. The radiological health monitoring procedures in Appendix F to the renewal application provides details on the monitoring techniques to be utilized at the Shootaring Canyon mill site.

The NRC staff finds that the external radiation monitoring program is in accordance with Regulatory Guide 8.30, and is, therefore, acceptable.

#### 4.5 Internal Radiation Control Program

##### 4.5.1 Airborne Radioactivity Surveys

###### a. Uranium

PRL will use area monitoring and breathing zone air sampling for airborne radionuclides to determine personnel exposures to uranium-bearing dust. The sampling frequency will depend on the concentration of radionuclides measured in air, as compared to the appropriate Derived Air Concentration (DAC):

Sampling Frequency	Concentration in Air
Daily	Greater than 1.0 DAC
Weekly	Between 0.3 and 1.0 DAC; In occupied yellowcake precipitation area
Quarterly	Between 0.01 and 0.3 DAC
None	Below 0.01 DAC

During routine mill operations, breathing zone air samples will be gathered if concentrations are above 0.1 DAC, while area air samples may be used in areas where the particulate concentrations are between 0.01 and 0.1 DAC. The ERHS will decide on the more appropriate type of air sampler to use based on the criteria above.

b. Radon progeny

As with airborne uranium dust monitoring, PRL proposes determining the frequency of radon progeny sampling depending on the working level (WL) concentration observed:

Sampling Frequency	Concentration
Weekly	Greater than 0.08 WL
Monthly	Between 0.03 and 0.08 WL
Quarterly	Below 0.03 WL

The modified Kusnetz sampling and analysis procedure will be utilized to determine radon concentrations. The samples collected will be representative of worker exposure.

The NRC staff finds that the proposed program for airborne particulate monitoring is in accordance with Regulatory Guide 8.30, and is, therefore, acceptable.

#### 4.5.2 Internal Exposure to Radioactivity

Personnel time spent in the monitored areas will be recorded on a daily time card by the employee. Using this information, and the respective area airborne concentrations, employee exposure records will be developed.

As monitoring data become available, PRL will conduct comparisons and trend analyses of the measured airborne radionuclide concentrations. Based on the results of these evaluations, the ERHS can take appropriate actions to ensure that employee exposures remain ALARA.

Radiation work permits (RWPs) will be issued for non-routine work and maintenance. The ERHS or their designee will specify on the RWP any precautions necessary to reduce exposure to uranium and its daughters and any supplemental radiological monitoring and sampling that is necessary. In addition, the time spent by employees in accomplishing the work are recorded on the RWPs.

The NRC staff concludes that the proposed program for measurement of internal exposure to airborne radioactivity is in accordance with Regulatory Guide 8.30, and is, therefore, acceptable.

#### 4.5.3 Respiratory Protection Program

PRL's proposed respiratory protection program includes a management policy statement and written operating procedures which address (a) engineering controls used to meet ALARA goals, (b) decontamination of equipment, (c) routine, non-routine, and emergency

use of respirators, (d) circumstances during which relief from respirator use is authorized, (e) training requirements, (f) fit testing requirements, (g) physical examination requirements, and (h) a maintenance, cleaning and storage policy for respirators.

The ERHS is responsible for the implementation and direct control of the respiratory protection program. This individual is aided in the accomplishment of these responsibilities by the other members of the radiation safety staff.

All employees will be given detailed respiratory use training as part of the initial radiological safety training. Respiratory use training addresses the following topics: (1) the need for respirators, (2) respiratory hazards, (3) engineering controls, (4) respirator selection, (5) fit testing, donning, and wearing of respirators, (6) use and maintenance requirements, (7) emergency respirator use, (8) hazard recognition and emergency management, and (9) additional training as deemed necessary by the radiation safety staff.

The NRC staff finds that the proposed respiratory protection program, as presented in Appendix G of the renewal application, is in accordance with staff guidance as specified in Regulatory Guide 8.15 and is, therefore, acceptable.

#### 4.6 Bioassay

Bioassays will be performed for all mill department personnel where reason exists that an exposure could exceed 30 percent of a DAC in a year. This will include all workers routinely exposed to airborne yellowcake and airborne uranium ore dust, or directly involved in maintenance tasks in which yellowcake dust may be produced. Specifically, urine samples will be collected every two weeks from those employees whose work assignments daily expose them to airborne yellowcake dust. In addition, any employee assigned to work in the yellowcake area will be required to submit a urine sample following the most recent occupancy of that area. Baseline urinalysis will be performed on employees who will be working in such conditions and areas.

Procedures for collection, preparation and analysis of urine samples was submitted under Section 7, "Bioassay Program," to Appendix F of the renewal application. PRL will perform the analyses in-house using a lower limit of detection of 5  $\mu\text{g/l}$ . Bioassay laboratory surfaces will be decontaminated prior to sample analysis, and quality control (QC) samples (spikes and blanks) will accompany the samples. The analysis will be performed by using fluorometric techniques. PRL committed to following the action levels presented in Regulatory Guide 8.22.

Annual in-vivo body counting for lung burden of natural uranium or U-235 will be conducted for those employees exposed to uranium ore dust as part of their routine work assignments. Additional monitoring by an in-vivo body counter will be performed if warranted by bioassay results. The results of monitoring will be reviewed by the ERHS and his staff, and appropriate actions will be taken in accordance with the action levels specified in Regulatory Guide 8.22.

The NRC staff concludes that the bioassay program proposed by EFN is in accordance with Regulatory Guide 8.22, and is, therefore, acceptable.



## 4.7 Contamination Control

### 4.7.1 Personnel Contamination

Personnel working within the mill area will be provided with change room, shower and laundry facilities. Employees working in areas containing soluble uranium, as well as other areas designated by the ERHS, will be issued protective clothing, such as coveralls, rubber boots, and gloves. Soiled coveralls will be laundered usually at the end of each shift, and monitored monthly for fixed alpha.

Employees will also be required to monitor themselves with an alpha survey meter prior to leaving the mill site. Alpha contamination on skin or clothes measured at greater than 1000 dpm/100 cm<sup>2</sup> shall be cause for decontamination (e.g., washing hands and skin, hair). To ensure the effectiveness of the employee contamination surveys, spot checks will also be performed and documented. Coveralls and contaminated clothing will be laundered on site, and the laundry wastewater will be discharged to the tailings impoundment.

The NRC staff considers the proposed program for personnel contamination control to be acceptable.

### 4.7.2 Surface Contamination

PRL proposes that removable alpha radiation survey measurements be obtained every other week from all lunch rooms, change rooms, and control rooms within the mill. If contamination levels exceed 1000 dpm/100 cm<sup>2</sup>, the area in question will be restricted from use until it is cleaned to below this limit. The survey frequency will be increased to weekly in those areas in which observed contamination levels exceed 500 dpm/100 cm<sup>2</sup> until observed levels are below 500 dpm/100 cm<sup>2</sup> for three weeks in a row. Administrative offices, which are located in a separate building, will be monitored quarterly for removable alpha radiation.

In addition, as discussed in Section 3.5.1, the ERHS or their designee will be required to conduct a daily visual walk-through inspection of the mill. This inspection will include a survey for visual contamination.

Finally, following work in a respirator-use area, workers will deposit used respirators in a designated receptacle; workers will be required to use a new respirator if subsequent work in the same or different area is required. The radiation safety staff will decontaminate used respirators on a daily basis.

The NRC staff finds PRL's surface contamination program to be acceptable.

### 4.7.3 Disposal of Contaminated Equipment

PRL will survey potentially contaminated equipment or material before it is released for unrestricted use. Material registering contamination levels higher than specified limits will be decontaminated and resurveyed until contamination levels are below the limits. The

release limits proposed by PRL are consistent with those provided in NRC's guidance document, "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of License for Byproduct, Source, or Special Nuclear Material," dated May 1987.

Prior to being surveyed for unrestricted release, contaminated equipment and materials will be stored temporarily in a designated area within the restricted area. The ERHS or a member of the radiation staff will monitor this area for external gamma radiation and possible posting as a radiation/contamination area.

Material not meeting the release limits and considered to be nonsalvageable will be disposed of in the tailings impoundment. PRL will minimize voids in such material prior to its placement in the impoundment.

The NRC staff finds the proposed program acceptable.

#### 4.8 Quality Assurance and Calibration

PRL's proposed radiation protection and environmental monitoring procedures are provided in Appendix F of the renewal application. These procedures are used by the licensee to provide uniform guidance and consistency to the monitoring activities, and they cover the sampling and calibration procedures which are an integral part of the quality assurance program at the mill. Each procedure discusses quality control actions of which the technician taking the sample must be aware, the techniques for sample collection, preservation, and measurement, and the type of equipment needed to carry out the monitoring. The types of instrumentation to be used in radiation monitoring and their sensitivity/efficiency and measurement range are provided in Table 5.5-4 of the renewal application.

The quality assurance (QA) program for PRL's analytical laboratory, which is presented in Appendix I of the renewal application, is based on NRC staff guidance provided in Regulatory Guides 4.15 and 8.22. The ERHS will review the QA programs for outside commercial laboratories contracted to perform sample analyses.

PRL will calibrate all radiation monitoring equipment semiannually or at the manufacturer's suggested interval, whichever is sooner. All air sampling equipment will be calibrated quarterly. Calibration procedures are presented in Section 8 to Appendix F of the renewal application.

The NRC staff concludes that the quality assurance program proposed by PRL is in accordance with staff recommendations specified in Regulatory Guides 4.15 and 8.31, and is, therefore, acceptable.

#### 5.0 **RESTRICTED AREA MARKINGS AND ACCESS CONTROL**

The mill and tailings area is fenced and posted with "Restricted Area" signs in accordance with 10 CFR 20.1902 except on the west side of the impoundment where cliffs form a natural barrier. The mill normally will run seven days a week, twenty-four hours a day,



and security will be provided throughout the day and night. PRL will conduct and document monthly inspections of fences and access gates during mill operations.

All visitors will be required to register at the office and will not be permitted inside the plant restricted area without proper authorization and escort. Prior to performing their work assignments without escort, contractors will be given radiation protection training applicable to their work and the radiological conditions they may encounter in the mill.

The NRC staff concludes that the above markings and access control procedures are adequate. A license condition will be issued which exempts the licensee from the requirements of Section 20.1902(e) of 10 CFR Part 20 for areas within the mill, provided that all entrances to the mill are conspicuously posted in accordance with Section 20.1902(e) and with the words, "ANY AREA WITHIN THE MILL MAY CONTAIN RADIOACTIVE MATERIAL."

The proposed program for restricted area markings and access control is acceptable.

## **6.0 EMERGENCY PROCEDURES AND PREVENTATIVE MEASURES**

PRL provided a "Radiological Emergency Action Plan" as Appendix A to the renewal application. In this plan, PRL identifies the actions to be carried out by the site radiological response team (i.e., the ERHS, RT, and other support personnel as needed) in the event of mill site accidents and transportation accidents involving yellowcake shipments.

PRL also evaluated a variety of potential site accidents in the renewal application. Potential environmental impacts associated with these accidents are assessed in the EA prepared by the NRC staff in conjunction with this license renewal.

## **7.0 GROUNDWATER PROTECTION**

PRL has proposed updating its liner design in advance of resuming operations. The proposed design consists, from top to bottom, of a flexible membrane synthetic liner, a leak collection/detection system, another flexible membrane liner, and a prepared and compacted clay base. A tailings leachate collection system would be installed on top of the upper synthetic liner and would drain to a sump from which the liquid will be used for tailings dust abatement or recycled back to the mill. The NRC and State of Utah Department of Environmental Quality (DEQ) staffs have agreed to having the State take the lead in the review of PRL's proposed liner design. This means that the NRC staff would defer to the State on a determination relative to the liner design, as long as the NRC staff is confident that the State's review is protective of public health and safety, including radiological hazards. The State of Utah DEQ staff is conducting its review as part of its process for granting a groundwater discharge permit for the Shootaring Canyon mill site. Until such time as an updated liner design is approved by the State and NRC and the liner subsequently installed, PRL will not be authorized to commence milling operations. PRL agreed to this license condition by telephone on April 3, 1997.

In addition, the licensee is required under Appendix A to 10 CFR Part 40 to conduct a groundwater detection monitoring program. PRL's program will involve semiannual

sampling of three point of compliance wells completed in the uppermost aquifer, with each groundwater sample analyzed for five indicator parameters (natural uranium, arsenic, selenium, chloride, and pH). Sampling results will be compared with NRC-approved threshold limits contained in the license, and if these limits are exceeded, PRL will be required to propose, within a set period of time, an expanded monitoring program to NRC for approval.

Detailed discussion of PRL's monitoring programs for the tailings impoundment and the groundwater system are provided in the EA prepared by the NRC staff for this proposed licensing action.

## **8.0 MILL SITE DECOMMISSIONING AND RECLAMATION**

The mill decommissioning plan generally involves separating reusable materials which can be released to the public or are releasable to another licensed facility from those materials which require special disposal. Equipment and materials to be disposed of are proposed to be buried within the tailings retention impoundment. Items released to the general public will meet the appropriate release guidelines.

The NRC staff will require that a detailed decommissioning plan be submitted for NRC review and approval at least twelve months prior to a planned final shutdown.

Currently, the NRC staff is reviewing PRL's detailed site reclamation plan in accordance with the requirements of 10 CFR Part 40, Appendix A, and applicable staff guidance documents. PRL will be required to perform reclamation of the site in accordance with an NRC-approved final reclamation plan.

## **9.0 SURETY REQUIREMENTS**

10 CFR 40, Appendix A, Criterion 9, requires the licensee to establish a financial surety arrangement to assure that sufficient funds will be available to carry out the decontamination and decommissioning of the facility. The surety is based on an estimate which must account for the total costs that would be incurred if an independent contractor were contracted to perform the work. The surety estimate must be approved by NRC and be based on an NRC-approved decommissioning and reclamation plan. The licensee must also provide the surety arrangement through a financial instrument acceptable to NRC. The licensee's surety mechanism will be reviewed by NRC annually to assure that sufficient funds are available to complete the reclamation. Additionally, the amount of the surety should be adjusted to recognize any increases or decreases in liability resulting from inflation, changes in engineering plans, or other conditions affecting cost.

PRL submitted a revised detailed site decommissioning and reclamation plan by letter dated January 10, 1997. In addition to providing in the plan a detailed description of activities necessary to complete decommissioning and reclamation at the site, PRL also estimated the total cost that an independent contractor hired to perform these activities would incur to complete the work. PRL estimated this cost to be \$6,784,159.

By letter dated February 26, 1997, the NRC staff found this cost estimate to be adequate for the purposes of resuming mill operations. PRL supplied documentation, by letter dated March 14, 1997, that its surety amount for the Shootaring Canyon site was in excess of \$6,784,159. The NRC staff has reviewed the documentation and finds the revised surety amount to be acceptable.

## 10.0 INSPECTION HISTORY

NRC has conducted routine announced, routine unannounced, and reactive inspections of PRL's Shootaring Canyon uranium mill since the renewal of SUA-1371 on February 3, 1986. 10 inspections have been conducted since that date, in which a total of two violations were cited, the highest of which was of Severity Level IV. A discussion of inspection and enforcement actions, including severity of violations is provided in NUREG-1600 (NRC, July 1995). Minor violations are cited at Severity Level IV and major violations are cited at Severity Level I. Typically, Severity Level IV violations are cited for not performing required surveys or incomplete documentation. All cited violations have been acceptably addressed and corrective measures enacted by the licensee. A summary of the inspection history for the facility since February 1986 is provided in Table 10.1.

TABLE 10.1 SUMMARY OF NRC INSPECTIONS AT PLATEAU RESOURCES LIMITED'S SHOOTARING CANYON URANIUM MILL				
DATE	TYPE*	# OF VIOLA- TIONS	SEVERITY LEVEL	COMMENTS/RESULTS
3/24-25/97	A	0	--	
6/18/96	A	0	--	
7/10-11/95	A	0	--	
6/29/94	A	1	IV	Failure to maintain fire detection and suppression systems in operating order per license condition. Violation Closed.
1/10/92	R	0	--	Inspection prompted by telephone allegation that unauthorized mill operations had occurred. Inspector unable to substantiate basis of allegation through direct observations, measurements, and interviews.
10/24/91	A	0	--	
8/15/90	A	0	--	
6/29/89	U	0	--	
5/25/88	U	0	--	

TABLE 10.1  
SUMMARY OF NRC INSPECTIONS AT  
PLATEAU RESOURCES LIMITED'S  
SHOOTARING CANYON URANIUM MILL

DATE	TYPE*	# OF VIOLA- TIONS	SEVERITY LEVEL	COMMENTS/RESULTS
2/24-26/87	U	1	IV	Failure to calibrate instruments in accordance with procedures referenced by license condition. Violation Closed.
* A = Routine Announced; R = Reactive; U = Routine Unannounced				

On July 2, 1996, the Commission approved increasing the license term for qualified uranium recovery licensees from the current five-year period to a ten-year period. As discussed in SECY-96-112 (issued on May 21, 1996), the criteria to be used in determining whether a licensee is "qualified" are as follows:

- (1) the licensee must have performed well;
- (2) the licensee must have a successful inspection record, with no violations more serious than Severity Level IV;
- (3) the licensee must have had no serious operational problems or reports during the previous two years; and
- (4) the license in question must currently have a specific term of renewal (uranium mills currently undergoing reclamation would not meet this criteria).

The NRC staff addressed the issue of granting ten-year licenses to new uranium recovery licensees in a July 9, 1997, letter transmitting SECY-96-112 and the Commission's approval to current and potential licensees. In that letter, the NRC staff stated that, since new licensees are likely to have only limited, if any, operating experience which could be used by NRC to evaluate the licensee's performance, the NRC staff will continue to issue five-year licenses to this group of licensees. After two years of operation, if a "new" licensee desires to extend the term of its license to ten years, the licensee can submit an amendment application to NRC which addresses the criteria above.

As discussed previously, the Shootaring Canyon mill was operated for three months in 1982, and has been on interim shutdown (i.e., standby) status since that time. Also, in preparing for a resumption of mill operations, PRL will need to hire and train a new set of employees, who may or may not have prior experience working in a uranium mill. For these reasons, the NRC staff considers PRL to be a "new" licensee, and therefore, will renew SUA-1371 for a five-year period.

## 11.0 CONCLUSION INCLUDING SAFETY LICENSE CONDITIONS

Upon completion of the safety review of PRL's renewal application for a source material license, the NRC staff concludes that the resumption of operations at the Shootaring Canyon uranium mill, in accordance with the following license conditions, is protective of health and safety and fulfills the requirements of 10 CFR Parts 20 and 40. The NRC staff, therefore, recommends renewal of PRL's Source Material License SUA-1371, subject to the following conditions:

1. A. The licensee may, without prior NRC approval, and subject to the conditions specified in Part B of this condition:
  - (1) Make changes in the facility or process, as presented in the application.
  - (2) Make changes in the procedures presented in the application.
  - (3) Conduct tests or experiments not presented in the application.
- B. The licensee shall file an application for an amendment to the license, unless the following conditions are satisfied.
  - (1) The change, test, or experiment does not conflict with any requirement specifically stated in this license, or impair the licensee's ability to meet all applicable NRC regulations.
  - (2) There is no degradation in the essential safety or environmental commitments in the license application, or provided by the approved reclamation plan.
  - (3) The change, test, or experiment are consistent with the conclusions of actions analyzed and selected in the EA for this action.
- C. The licensee's determinations concerning Part B of this condition, shall be made by a "Safety and Environmental Review Panel (SERP)." The SERP shall consist of a minimum of three individuals. One member of the SERP shall have expertise in management and shall be responsible for managerial and financial approval changes; one member shall have expertise in operations and/or construction and shall have responsibility for implementing any operational changes; and, one member shall be the corporate radiation safety officer (CRSO) or equivalent, with the responsibility of assuring changes conform to radiation safety and environmental requirements. Additional members may be included in the SERP as appropriate, to address technical aspects such as health physics, groundwater hydrology, surface-water hydrology, specific earth sciences, and other technical disciplines. Temporary members or permanent members, other than the three above-specified individuals, may be consultants.



- D. The licensee shall maintain records of any changes made pursuant to this condition until license termination. These records shall include written safety and environmental evaluations, made by the SERP, that provide the basis for determining changes are in compliance with the requirements referred to in Part B of this condition. The licensee shall furnish, in an annual report to NRC, a description of such changes, tests, or experiments, including a summary of the safety and environmental evaluation of each. In addition, the licensee shall annually submit to the NRC changed pages to the approved license application to reflect changes made under this condition.

The licensee shall submit to NRC within 60 days of the issuance date of the renewal license, for review, the standard operating procedures (SOPs) needed to implement this license condition. The licensee shall not implement any provision of this license condition until NRC has found the proposed SOPs acceptable.

2. SOPs shall be established and followed for all operational process activities involving radioactive materials that are handled, processed, or stored. SOPs for operational activities shall enumerate pertinent radiation safety practices to be followed. Additionally, written procedures shall be established for non-operational activities to include in-plant and environmental monitoring, bioassay analyses, and instrument calibrations. An up-to-date copy of each written procedure shall be kept in the mill area to which it applies.

All written procedures for both operational and non-operational activities shall be reviewed and approved in writing by the ERHS before implementation and whenever a change in procedure is proposed to ensure that proper radiation protection principles are being applied. In addition, the ERHS shall perform a documented review of all existing operating procedures at least annually.

3. The licensee is hereby exempted from the requirements of Section 20.1902(e) of 10 CFR 20 for areas within the facility, provided that all entrances to the facility are conspicuously posted in accordance with Section 20.1902(e) and with the words, "Any area within this facility may contain radioactive material."
4. The results of sampling, analyses, surveys and monitoring, the results of calibration of equipment, reports on audits and inspections, all meetings and training courses required by this license and any subsequent reviews, investigations, and corrective actions, shall be documented. Unless otherwise specified in the NRC regulations, all such documentation shall be maintained for a period of at least five (5) years.
5. The licensee shall perform an annual ALARA audit of the radiation safety program in accordance with Regulatory Guide 8.31.
6. The licensee shall conduct the in-plant radiological monitoring program described in Table 5.5-1 of the license renewal application, with the following modifications:
- A. The licensee shall document problems observed during the daily visual walk-through inspections in writing; and

- B. The ERHS and the mill foreman, or qualified designees, shall perform weekly inspections to observe general radiation control practices and to review required changes in procedures and equipment.

This license condition shall take effect with the commencement of ore processing through the mill.

7. The licensee shall maintain an NRC-approved financial surety arrangement, consistent with 10 CFR 40, Appendix A, Criteria 9 and 10, adequate to cover the estimated costs, if accomplished by a third party, for decommissioning and decontamination of the mill and mill site, for reclamation of any tailings or waste disposal areas, for ground-water restoration as warranted, and for the long-term surveillance fee. Within three months of NRC approval of a revised reclamation/decommissioning plan, the licensee shall submit, for NRC review and approval, a proposed revision to the financial surety arrangement if estimated costs in the newly approved plan exceed the amount covered in the existing financial surety. The revised surety shall then be in effect within 3 months of written NRC approval.

Annual updates to the surety amount, required by 10 CFR 40, Appendix A, Criteria 9 and 10, shall be submitted to NRC at least 3 months prior to the anniversary date which is designated as June 4 of each year. If NRC has not approved a proposed revision to the surety coverage 30 days prior to the expiration date of the existing surety arrangement, the licensee shall extend the existing surety arrangement for 1 year. Along with each proposed revision or annual update, the licensee shall submit supporting documentation showing a breakdown of the costs and the basis for the cost estimates with adjustments for inflation, maintenance of a minimum 15 percent contingency fee, changes in engineering plans, activities performed and any other conditions affecting estimated costs for site closure. The basis for the cost estimate is the NRC approved reclamation/decommissioning plan or NRC approved revisions to the plan. The previously provided guidance entitled "Recommended Outline for Site Specific Reclamation and Stabilization Cost Estimates" outlines the minimum considerations used by NRC in the review of site closure estimates. Reclamation/decommissioning plans and annual updates should follow this outline.

The currently approved financial surety arrangement, a Surety Trust Agreement between Plateau Resources Limited and First Interstate Bank of Commerce, shall be continuously maintained in an amount no less than \$6,784,159 for the purpose of complying with 10 CFR 40, Appendix A, Criteria 9 and 10, until a replacement is authorized by the NRC.

8. Prior to the commencement of ore processing, the licensee shall conduct the radiation safety and environmental monitoring programs in Tables 5.5-3 and 5.5-8 of the license renewal application.
9. The licensee shall submit a detailed decommissioning plan to NRC at least twelve (12) months prior to planned final shutdown of mining operations.



Please note that additional license conditions can be found in the Environmental Assessment, which accompanies this licensing action.

## REFERENCES

Plateau Resources Limited, 1997, "Shootaring Canyon Uranium Processing Facility, Decommissioning and Reclamation Plan," 1 vol. and 5 appendices, dated December 18, 1996, submitted by letter dated January 10, 1997.

U.S. Nuclear Regulatory Commission [NRC], May 21, 1996, "Ten-Year License Terms for Uranium Recovery Licensees," SECY-96-112.

Plateau Resources Limited, 1996, "Shootaring Canyon Processing Facility, Garfield County, Utah: Source Material License Renewal Application SUA-1371, DOCKET NO. 40-8698," 1 vol., March 1, 1996.

NRC, July 1995, "General Statement of Policy and Procedures for NRC Enforcement Actions (Enforcement Policy)," Office of Enforcement, NUREG-1600.

NRC, August 1988, "Bioassays at Uranium Mills," NRC Regulatory Guide 8.22, Rev. 1.

NRC, 1986, "Safety Evaluation Report for License Renewal SUA-1371, Docket No. 40-8698, Plateau Resources Limited Shootaring Canyon Processing Facility," issued February 3, 1986.

NRC, June 1983, "Health Physics Surveys in Uranium Mills," NRC Regulatory Guide 8.30.

NRC, May 1983, "Information Relevant to Ensuring That Occupational Radiation Exposures at Uranium Mill Will Be As Low As Is Reasonably Achievable," NRC Regulatory Guide 8.31.

NRC, October 1980, "Operational Inspection and Surveillance of Embankment Retention Systems for Uranium Mill Tailings," NRC Regulatory Guide 3.11.1.

NRC, July 1979, "Final Environmental Statement: Related to Operation of Shootaring Canyon Uranium Project, Plateau Resources, Ltd.," NUREG-0583, Office of Nuclear Material Safety and Safeguards.

NRC, February 1979, "Quality Assurance for Radiological Monitoring Programs (Normal Operations) - Effluent Streams and the Environment," NRC Regulatory Guide 4.15.

NRC, December 1977, "Design, Construction and Inspection of Embankment Retention Systems for Uranium Mills," NRC Regulatory Guide 3.11.

NRC, October 1976, "Acceptable Programs for Respiratory Protection," NRC Regulatory Guide 8.15.

Enclosure 4

NRC Source Material License No. SUA-1371