

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

NRC Inspection Report: 40-8829/89-01  
Docket: 40-8829

License: SUA-1441

Licensee: Ferret Exploration Company of Nebraska, Inc.  
1800 Glenarm Place, Suite 300  
Denver, Colorado 80202

Facility: Crow Butte ISL

Inspection At: Crawford, Nebraska

Inspection Conducted: September 11 and 12, 1989

Inspector: *Gary R. Konwinski* 9.20.89  
Gary R. Konwinski, Project Manager Date  
Team Leader

Approved: *Edward F. Hawkins* 9/29/89  
Edward F. Hawkins, Branch Chief Date

Inspection Summary

Inspection Conducted on September 11 and 12, 1989 (Report 40-8829/89-01)

Areas Inspected: Unannounced radiation safety inspection of uranium in-situ operations and radiation safety program including: Management Organization and Controls/Operations Review; Operator Training and Retraining; Radiation Protection; Radioactive Waste Management; Environmental Protection; and Emergency Preparedness.

The inspection involved a total of 7 inspector hours onsite by one inspector.

Results: Within the six areas inspected, no violations, deviations or open items were identified.

DETAILS1. Persons Contacted

- \*Charles Miller, Plant Superintendent
- \*Ronda Gratham, Radiation Safety Technician
- \*Ralph Knode, Project Supervisor

\*Denotes those present at the exit interview.

2. Licensee Action on Previous Inspection Findings

There were no violations, deviations or open items identified during the previous inspection; therefore, there are no findings on these issues to discuss.

3. Management Organization and Controls/Operations Review

At the time of the inspection, uranium recovery operations were not being conducted. All uranium recovery had been curtailed as of August 13, 1989. In conjunction with this, the plant had undergone limited washing and partial decontamination, thereby reducing the potential for inplant exposures to radon, its daughters and particulates. Considerable effort had been directed toward refurbishing equipment purchased for the pending commercial operations. The project is directed by the plant superintendent, which is the ranking person onsite. Reporting directly to him is the radiation safety technician, as well as all other site employees.

All licensing activities are conducted through the corporate headquarters in Denver, Colorado. Amendment requests are initiated from the corporate headquarters and coordinated with the site personnel. The inspectors noted that corporate office amendment requests were being coordinated with site personnel and implemented in a timely fashion.

A site tour indicated that the facility is secured by a wire fence with a single access gate. All visitors to the site must pass through the office and are required to register at the office. The inspector noted that the fence was well maintained and appropriately posted with signs bearing the radiation caution symbol and the words, "CAUTION - RADIOACTIVE MATERIALS." Similarly, the process building was well maintained and washed down in conjunction with the lack of uranium recovery activities.

No violations, deviations or open items were noted by the inspector.

4. Operator Training and Retraining

The IIRC inspector reviewed records of employee training in the areas of radiation health and safety. The records indicated that all employees had received basic training and were tested as to their understanding of the materials. A comprehensive test, administered by the radiation safety

staff, indicated that all participants had passed the exam. As stated in the licensee's application, the tests were maintained in their personnel files.

Additionally, training in fire safety, industrial hazards and working with heavy equipment was conducted. As with the radiation safety training, minutes of these training sessions and an attendance ledger were maintained in the licensee's files.

No violations, deviations or open items were noted by the inspector.

5. Radiation Protection

a. In-plant Air Sampling

Airborne radioactivity sampling had been performed in the process building. The surveys indicated that the air contained less than 1 percent of MPC for restricted areas. This level of particulates was expected due to the processing of wet cake as well as the reduced level of activities. Radon is also monitored in the plant. Typically, concentrations of radon are less than 1 percent of MPC. However, on one occasion, an exhaust vent fan failed and radon levels rapidly increased. This condition was noted and the exhaust fan repaired. In response to this, the licensee installed a physical testing device that determines if the exhaust fan is operating. All air sampling was conducted in accordance with License Condition No. 36, had appropriate quality control and was analyzed in a timely fashion.

b. Exposure Determination

Baseline exposure determinations indicated that working levels within the process building were less than 10 percent of the action limits discussed in License Condition No. 36. The procedure utilized by the licensee in determining working levels was identical to the procedure outlined in their application.

The inspector reviewed the licensee's records for radiation work permits and noted that complete documentation had been entered on the permits. The inspector also noted that work tasks that were non-routine were being covered under radiation work permits, while those work tasks that were routine had appropriate standard operating procedures.

c. Respiratory Protection

The inspector observed that the process building contains a wet system. Due to this, there is no need to have a respiratory protection program. Respirators are available and utilized during certain operations; however, no protection factors are utilized during exposure determination.



d. Bioassay

Urinalysis samples were taken monthly on all employees. It was noted that a contract laboratory does the analyses. All sample results were less than appropriate action limits and returned to the licensee within 20 days.

e. External Exposure

External exposure determinations had been made at the required locations. The sampling sites are representative of potential radiation areas in the process building. The inspector noted that the gamma survey sites were consistent with locations committed to in License Condition No. 31. Due to the decrease in plant activities, gamma radiation levels within the process building have been lowered.

f. Contamination Control

The licensee's contamination control program includes facility surveys on daily, weekly and monthly frequencies as well as employee surveying. Employee survey records indicate that surveys are conducted upon leaving the site.

The licensee has a survey procedure for releasing equipment from the site. It consists of surveying for fixed and removable alpha contamination. Prior to release of equipment from the restricted area, the limits specified in Attachment No. 1 to SUA-1441 must be met. Attachment No. 1 states that alpha surveying must be completed. Furthermore, dependent upon the decay chain, gamma surveys are to be performed to verify release criteria. Although the licensee does not have material that has a decay chain which would warrant sole use of gamma surveys, the radium concentrations in the facility indicate that gamma surveys should be performed on equipment where alpha surveys are difficult or impossible.

No violations, deviations or open items were identified by the inspector.

6. Radioactive Waste Management

The inspector observed the solution evaporation ponds. Although four ponds are planned to be constructed, only two have been completed. Additional ponds will be constructed if more evaporative capacity is required. The licensee had performed daily measurements of the pond freeboard as well as inspections of the leak detection system, liners and discharge pipes as required by License Condition No. 23. The records indicate that all freeboard limits had been observed.

No violations, deviations or open items were identified by the inspector.

7. Environmental Protection

The inspector independently visited one of the four environmental monitoring stations. The station is equipped with a continuous air sampler, radon collection device as well as external radiation monitoring equipment. All equipment was installed and operating as required by the license.

No violations, deviations or open items were identified by the inspector.

8. Emergency Preparedness

The facility fire protection systems were noted to be installed and operable. Additionally, portable fire extinguishers were located throughout the building. Recently, a notification system had been installed at the site. The system automatically pages several site employees in the event an operator on the night shift fails to report.

No violations, deviations or open items were noted by the inspector.

9. Exit Interview

The inspector met with the licensee representatives at the conclusion of the inspection of September 12, 1989. The inspector summarized the purpose, scope and findings of the inspection. The licensee representatives stated that they will continue to operate the facility in a manner consistent with that as noted during the inspection.

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