



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-8064**

May 18, 2000

Tom Hardgrove, Manager
Environmental and Regulatory Services
COGEMA Mining, Inc.
935 Pendell Boulevard
P. O. Box 730
Mills, Wyoming 82644-0730

SUBJECT: NRC INSPECTION REPORT 40-8502/00-01

Dear Mr. Hardgrove:

This refers to the inspection conducted on April 25-26, 2000, at the Irigaray and Christensen Ranch facilities. The inspection consisted of a routine review of site operations, with an emphasis on your radiation protection and environmental monitoring programs. A final exit briefing was held with members of your staff at the conclusion of the inspection on April 26, 2000. The enclosed report presents the results of that inspection. Overall, the inspection determined that you have continued to operate the uranium production facility in a safe and effective manner.

Based on the results of this inspection, no violations or deviations were identified; therefore, no response to this letter is required.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, and your response, if any, will be placed in the NRC Public Document Room (PDR).

Should you have any questions concerning this inspection, please contact me at (817) 860-8191 or Louis C. Carson II at (817) 860-8221.

Sincerely,

/RA/

D. Blair Spitzberg, Ph.D., Chief
Fuel Cycle and Decommissioning Branch

Docket No.: 40-8502
License No.: SUA-1341

Enclosure:
NRC Inspection Report
040-08502/00-01

NMED No. 990700
NMED No. 990801

cc w/enclosure:

Mr. David Finley

Wyoming Department of Environmental Quality

Solid and Hazardous Waste Division

122 West 25th Street

Cheyenne, Wyoming 82002

Bob Giurgevich, District III Supervisor

Wyoming Department of Environmental Quality

Land Quality Division

1043 Coffeen Ave., Suite D

Sheridan, Wyoming 82801

Mr. Pat Mackin, Assistant Director

Systems Engineering & Integration

Center for Nuclear Waste Regulatory Analyses

6220 Culebra Road

San Antonio, Texas 78238-5166

Wyoming Radiation Control Program Director

bcc dist. by RIV:

EWMerschoff
 THEssig, NMSS/DWM/URB (T 7 J8)
 HELefevre, NMSS/DWM/URB (T 7 J8)
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ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket No. 40-8502

License No. SUA-1341

Report No. 40-8502/00-01

Licensee: COGEMA Mining Corporation

Facilities: Irigaray/Christensen Ranch In-Situ Leach Facilities

Location: Johnson and Campbell Counties, Wyoming

Dates: April 25-26, 2000

Inspector: Louis C. Carson II, Health Physicist
Fuel Cycle and Decommissioning Branch
Division of Nuclear Materials Safety

Approved By: D. Blair Spitzberg, Ph.D., Chief
Fuel Cycle and Decommissioning Branch
Division of Nuclear Materials Safety

Attachment: Supplementary Information

EXECUTIVE SUMMARY

Irigaray and Christensen Ranch In-Situ Leach Facilities NRC Inspection Report 40-8502/00-01

This inspection included a review of site status, management organization and controls, in-situ operations, radioactive waste management, radiation protection and environmental protection programs. Overall, the licensee was operating the facility in a safe and effective manner.

Management Organization and Controls

- The licensee's organizational structure was in agreement with the license requirements, and adequate oversight had been provided for site activities (Section 2).
- A review of the licensee's implementation of the performance-based license showed the licensee had correctly utilized a performance-based license (Section 2).
- Standard operating procedures had been revised to implement the performance-based license. All reviewed operations were performed in accordance with site procedures (Section 2).

In-Situ Operations and Radioactive Waste Management

- Operational activities were being conducted safely and in accordance with the conditions of the license as well as NRC regulations. Flow, pressure, and production levels were within licensed limits. No significant health or safety concern was identified during the site tours (Section 3).

Radiation Protection

- The radiation protection program areas reviewed were found to be acceptable including audit program review, decommissioning recordkeeping, bioassay, respiratory protection activities and other areas (Section 4).

Environmental Protection

- The groundwater monitoring program was determined to be in compliance with the requirements of the license (Section 5).

Report Details

1 Site Status

The Irigaray project started commercial mining operations during November 1978. The central processing facility is located at the Irigaray site, while the Christensen Ranch site is a satellite facility for the Irigaray plant. At the time of this inspection, yellowcake material was being produced on an intermittent basis in the Irigaray plant, while in-situ leach mining operations were in progress at the Christensen Ranch site.

All mining operations have ceased at the Irigaray site. Irigaray Mine Units 1-3 have been fully restored, while Irigaray Mine Units 4-9 still required groundwater restoration. Mine Units 4-5 were in the stabilization period (post-Phase III cleanup operations). Groundwater sweep (Phase I) operations have been completed in Mine Units 6-7. Mine Units 7-9 are in reverse osmosis (RO) (Phase II) cleanup operations.

At Christensen Ranch's Mine, three modules in Mine Unit 6 were the only wellfield solutions being mined during the inspection. The licensee was planning to submit a decommissioning plan for NRC approval in May 2000 and cease ISL operations in June 2000.

2 Management Organization and Controls (88005)

2.1 Inspection Scope

The organizational structure was reviewed to ensure that the licensee had established an effective organization with defined responsibilities and functions. Appropriate controls were in place to ensure compliance with NRC requirements. Also, the utilization and implementation of the licensee's performance-based license was reviewed.

2.2 Findings and Observations

a. Management Organization

Staffing requirements are provided in License Condition 9.3. This license condition refers to the license renewal application which included an organization chart dated October 30, 1995. At the time of this inspection, the licensee had an onsite staff of 33 employees. The licensee's onsite radiation protection and environmental monitoring staff positions remained filled with qualified individuals, and the onsite organizational structure agreed with the conditions of the license.

b. Performance-Based License Review

License Condition 9.4 states that the licensee may, under certain conditions and without prior NRC approval, make changes in the facility or processes, make changes to procedures, or conduct tests and experiments not presented in the license application. The licensee's implementation of the performance-based license provisions was reviewed to ensure that any changes made by the licensee did not negatively impact the licensing basis of the site.

The licensee's determinations under License Condition 9.4 are required to be made by a Safety and Environmental Review Panel (SERP). Since the previous inspection, the licensee had held two SERP meetings, both in March 2000. A SERP meeting was held on March 6, 2000, to review and approve changes to the reverse osmosis (RO) filtration system. The inspector reviewed the licensee's SERP process and facility changes and determined that they met requirements. Additionally, the SERP met on March 30, 2000, to approve a new procedure SOP S-27 "Computer Security." The licensee had correctly implemented the performance-based license condition.

c. Site Procedures

In accordance with License Condition 9.6, standard operating procedures (SOPs) are required to be established and followed for all operational process activities involving radioactive materials that are handled, processed, or stored. Additionally, all written procedures will be approved in writing and reviewed annually by the radiation safety officer (RSO).

The inspector verified that all procedures had been revised and reviewed to incorporate the provisions of the performance-based licensee. All activities observed were in compliance with established procedures.

2.3 Conclusions

The licensee had established an organizational structure that agreed with the requirements of the license. Also, the licensee had correctly implemented the performance-based conditions of the license. All procedures had been appropriately updated and reviewed.

3 Operations Review (88020); In-Situ Leach Facilities (89001); Radioactive Waste Management (88035)

3.1 Inspection Scope

A site tour was performed to verify that site activities were being conducted in accordance with applicable regulations, conditions of the license, and to ensure that operational controls were adequate to protect the health and safety of the workers and members of the general public.

3.2 Findings and Observations

a. Site Tour

During the plant tour, site buildings, equipment, fences, and gates were observed. Site perimeter postings, required by License Condition 9.11, were in place at all entrances to the site. No significant health or safety concern was identified during the tour.

b. Process Plant Operations

License Condition 10.5 limits the process flow rate to 4000 gallons per minute (gpm). The recovery and injection flow rates were well below the licensed process flow rate limit. License Condition 10.5 states that the annual plant throughput shall not exceed 2.5 million pounds of yellowcake. In 1999, the average production flowrate was 2,355 gpm. The actual throughput was well below the licensed limit. Production flowrate during this inspection was approximately 300 gpm. No equipment misalignments or unusual leakage sources were identified at either the Irigaray or Christensen Ranch sites.

c. Well Field Operations

The inspector toured the Christensen Ranch's three module unit buildings in Well Field 6. The module unit buildings were properly posted and all operational parameters were within the prescribed limits as established by SOPs. License Condition 11.1 provides limits on process fluid injection pressures. This condition limits the Irigaray wellfield injection pressures to 120 pounds per square inch (psi) and the Christensen Ranch injection pressures to 140 psi. Pressure limitations help minimize above-ground lixiviant spills and below-ground lixiviant excursions. All wells observed were being operated below the license limit of 140 psi.

d. Plant Maintenance and Transfer of Reverse Osmosis Filters

The inspector reviewed the performance of maintenance on RO units at the Irigaray and Christensen Ranch facilities. All maintenance was done in accordance with procedures and all safety precautions. The inspector observed the transfer of uranium contaminated RO filters from the Christensen Ranch facility to the Irigaray facility. The contaminated filters were transported by truck for reuse by the Irigaray site groundwater restoration program. Water was drained from the filters and the filter package, the transfer vehicle was then surveyed by the RSO in accordance with the licensee's procedure. The transfer of radioactive material from the Irigaray/Christensen Ranch facilities is on private roads that the public has access to. Therefore, the licensee followed Department of Transportation (DOT) requirements.

3.3 Conclusions

Site activities appeared to have been conducted in accordance with applicable license and regulatory requirements. No flow, pressure, or production level was observed to be above the respective licensed limits. No significant health or safety concern was identified during the tours of the Irigaray and Christensen Ranch sites.

4 **Radiation Protection (83822)**

4.1 Inspection Scope

The purpose of this portion of the inspection effort was to determine if the licensee's radiation protection program was in compliance with requirements established in the license and 10 CFR Part 20 regulations.

4.2 Findings and Observations

a. Audit Program Review

In accordance with License Condition 12.6, an annual as low as is reasonably achievable (ALARA) audit of the radiation safety program is required to be performed in accordance with Regulatory Guide 8.31. The most current audit dated April 17, 2000, was found to be thorough and comprehensive.

b. Decommissioning Recordkeeping

In accordance with 10 CFR Part 40.36(f)(1), records are required to be permanently maintained, including a description of the restricted area, spills, and any unusual events. The licensee was noted to be maintaining these records in onsite files.

The licensee was operating in compliance with the recordkeeping requirements of 10 CFR Part 40.36.

c. Personal and Equipment Contamination Monitoring

License Condition 10.11 states, in part, that employees shall monitor themselves with an alpha survey instrument prior to exiting the site restricted areas. The inspector observed that workers routinely conducted personnel contamination surveys before leaving the process areas. The inspector observed workers functionally checking the contamination survey instruments prior to each use.

License Condition 9.8 stipulates that the release of equipment or packages from the restricted area shall be in accordance with the attachment to the license entitled, "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct or Source Materials." The licensee's equipment release records were reviewed during the inspection. The

licensee maintained extensive records of equipment that had been released from the site. No item was identified that had been inappropriately released from the site.

The inspector observed a radiation safety technician (RST) select a count rate meter with an alpha probe and a beta-gamma survey meter with a Geiger-Mueller (GM) energy compensated survey probe to perform the surveys on the packages of contaminated reverse osmosis filters. The RST performed the required instrument operational checks and logged the information on the appropriate log sheets. The RST surveyed the area around the filter package and truck before the material was transferred to the Irigaray facility, and all readings were found to be acceptable. All information was recorded on the appropriate survey form in accordance with the standard health physics procedures.

d. Bioassay Program Review

The bioassay program requirements are listed in License Condition 10.12 which states that the licensee shall implement the bioassay program discussed in Regulatory Guide 8.22, Bioassay at Uranium Mills, and in Section 5.7.5, "Bioassay Program," of the approved license application. The licensee's program consisted of urine sampling for uranium content via baseline sampling of all site workers and monthly sampling of process workers assigned to areas where the possibility of yellowcake inhalation existed. In addition, urine samples were obtained as stipulated by the conditions listed in radiation work permits. The licensee also obtained blank and spiked samples for quality control purposes. The samples were analyzed by an offsite, third-party laboratory.

The licensee's records indicated no individual exceeded the first action level of 15 micrograms of uranium per liter of urine, indicating the licensee's respiratory protection and contamination control methods were generally effective in the prevention of worker ingestion of radioactive materials.

e. Respiratory Protection

License Condition 10.18 states that the respiratory protection program shall be implemented as described in Section 5.7.4.4, "Respiratory Protection Program," of the approved license application. Section 5.7.4.4 references two SOPs and Regulatory Guide 8.15, Acceptable Programs for Respiratory Protection.

Control and storage of respirators was proper. A records review showed that formal training, fit tests, physical evaluations and practical applications (donning and removing the respirators) had been performed in accordance with the SOPs. The licensee met the requirements of License Condition 10.18. However, the licensee had not reviewed its respiratory protection program against the current requirements of 10 CFR 20.1703, Subpart H which went into effect on February 3, 2000, per Federal Registry Notice 64 FR 54556. The licensee entered this issue into their corrective action system for review. The inspector did not have any further concerns in this matter.

f. Radiation Surveys

Radiation survey records and instrument calibration records were reviewed and were found to be acceptable. Licensee procedures requires that all radiation survey instruments shall be operationally checked before each use. The site radiation protection equipment in service at the plant sites were inspected for operability. All radiation detection equipment used for personnel scanning and frisking were found to be properly calibrated and appeared to be fully functional at that time. Each instrument responded accordingly when tested with a check source.

Routine ambient gamma exposure rate surveys are required by License Condition 10.1. Specifically, Section 5.7.2.1 of the Christensen Ranch license application specifies that the gamma surveys be performed semiannually or more frequently if an action level was exceeded. The licensee used an action level of 2 millirem per hour (mr/hr). At the time of this inspection, only one area was above the 2 mr/hr action level at the Christensen Ranch, and four areas were above the action level at the Irigaray site. All site gamma exposure rates measured by the licensee were less than 5 mr/hr at Christensen Ranch and at Irigaray. The inspector conducted radiation surveys at the Irigaray facility using an NRC sodium iodide microRoentgen (μ R) meter. NRC spot surveys had confirmed that the licensee did not have any radiation areas at either the Irigaray or Christensen Ranch sites.

4.3 Conclusions

The licensee had implemented a radiation program that met the requirements established in 10 CFR Part 20 and the conditions of the license. The licensee's control of contamination appeared effective. The licensee's recordkeeping program was noted to be thorough.

5 Environmental Protection (88045)

5.1 Inspection Scope

License Condition 11.3 requires the licensee to implement the effluent and environmental monitoring program specified in Section 5.8 of the license application. At the time of the inspection, the licensee's environmental monitoring program consisted of airborne particulate, radon, stack, surface water, soil, sediment, vegetation, ambient gamma exposure, and groundwater sampling. Portions of the environmental monitoring program were reviewed to assess the effectiveness of the licensee's program and to evaluate the effects, if any, of site activities on the local environment.

5.2 Observations and Finding

a. Groundwater Monitoring Program

License Condition 11.2 states, in part, that all perimeter and upper aquifer monitoring wells shall be sampled and tested no more than 14 days apart. Confirmed exceedances of the upper control limits in monitoring well samples shall be reported to the NRC by telephone within 24 hours and by letter within 7 days. A review of selected licensee monitoring well data since the previous inspection did not identify any wells in excursion status that had not been previously reported to the NRC. Therefore, the licensee's groundwater monitoring program was determined to be in compliance with the license requirements.

b. Evaporation Impoundment Tour

The physical condition of all lined impoundments at both the Irigaray and Christensen Ranch sites was evaluated. Evaporation Ponds 1, 2A, and 2B at the Irigaray site were being used for evaporation of process waste water from the Irigaray site process facilities. License Condition 10.6 provides upper limits for evaporation pond freeboard. The freeboard requirements ensure a sufficient capacity is available if a pond has to be drained because of liner leakage. All pond freeboard levels were within license condition limits, and no pond liners were leaking. All pond liners were in relatively good repair and gave no evidence of liner holes. Ponds 1, 2, 3, and 4 at the Christensen Ranch site were in good condition, with no visible tears or holes in the liner material.

c. Environmental Monitoring Program Review

License Condition 11.3 states, in part, that the licensee shall implement the effluent and environmental monitoring program specified in Section 5.8 of the license application. The semiannual effluent report for the second half of 1999 was reviewed. The report was submitted to the NRC on February 29, 2000. The 1999 sample results were compared to those from 1998 and no adverse trends existed.

5.3 Conclusions

The licensee's groundwater monitoring program was determined to be in compliance with license requirements. Both the Irigaray and Christensen Ranch ponds were in good condition during the inspection.

6 Followup (92701)

6.1 (Open) Event Notification No. 36272: Excursion status reporting of Monitor Well (MW) MW89, NMED No. 990700

This event involved the licensee's discovery of a monitoring well (Well No. MW89) in an excursion status. A routine water sample collected from this well on October 5, 1999, revealed the excursion parameters chloride and alkalinity had exceeded the upper

control limits. The well sampling frequency was increased to weekly. The licensee's decision to leave the well in the excursion status was the correct decision. This matter will remain open pending the licensee's issuance of the Excursion Removal and Quarterly Report on Monitor Wells on Excursion Status for MW89.

6.2 (Open) Event Notification No. 36365: Excursion status reporting of monitor well 6MW21, NMED No. 990801

This event involved the licensee's discovery of a monitoring well (Well No. 6MW21) in an excursion status. A routine water sample collected from this well on October 26, 1999 revealed the excursion parameters chloride, conductivity and alkalinity had exceeded the upper control limits. The well sampling frequency was increased to weekly.

During the site tours, this wellfield was observed and the well was located outside of Mine Unit 6 wellfield boundary. The licensee's decision to not remove the well from the excursion status was the correct decision. This matter will remain open pending the licensee's issuance of the Excursion Removal and Quarterly Report on Monitor Wells on Excursion Status for 6MW21.

7 Exit Meeting Summary

The inspector presented the preliminary inspection results to the representatives of the licensee at the conclusion of the inspection on April 26, 2000. Licensee representatives acknowledged the findings as presented. The licensee did not identify any information reviewed by the inspector as propriety information.

ATTACHMENT

PARTIAL LIST OF PERSONS CONTACTED

Licensee

T. Hardgrove, Manager, Environmental and Regulatory Services
W. Heili, Manager, Operations
C. Toal, Environmental Specialist
J. Vasein, Radiation Safety Officer
D. Wichers, General Manager, ISL & Reclamation Operations

INSPECTION PROCEDURES USED

83822	Radiation Protection
88005	Management Organization and Controls
88020	Operations Review
88035	Radioactive Waste Management
88045	Environmental Monitoring
89001	In-Situ Leach Facilities
92701	Followup

ITEMS OPENED, CLOSED AND DISCUSSED

Opened

Event Notification No. 36272 (NMED No. 990700)
Event Notification No. 36365 (NMED No. 990801)

Closed

None

Discussed

None

LIST OF ACRONYMS USED

CFR	Code of Federal Regulations
DOT	Department of Transportation
gpm	gallons per minute
mr/hr	millirem per hour
PDR	Public Document Room
RSO	Radiation Safety Officer
RST	Radiation Safety Technician
SERP	Safety and Environmental Review Panel
SOP	Standard Operating Procedure
TLD	thermoluminescent dosimeter