

APPENDIX B

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

NRC Inspection Report: 40-8903/90-03 License: SUA-1471

Docket: 40-8903

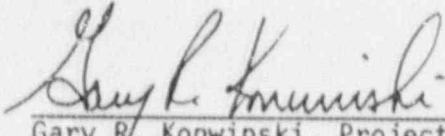
Licensee: Homestake Mining Company  
P.O. Box 98  
Grants, New Mexico 87020

Facility Name: Milan Mill

Inspection At: Cibola County, New Mexico

Inspection Conducted: December 18, 1990

Inspector:

  
\_\_\_\_\_  
Gary R. Konwinski, Project Manager

1-14-91

Date

Approved:

  
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Ramon E. Hall, Director

1-14-91

Date

Inspection Summary

Inspection Conducted December 18, 1990 (Report 40-8903/90-03)

Areas Inspected: Special announced inspection of uranium milling operations, evaporation pond construction and operation as well as the radiation safety program including: Management Organization and Controls/Operations Review; Radioactive Waste Management; and followup on previous inspection findings.

The inspection involved a total of 6-inspector hours onsite by one inspector.

Results: Within the two areas inspected, no violations, one deviation and no open items were identified.

DETAILS1. Persons Contacted

- \*F. Craft, Resident Manger
- \*M. Hiles, Radiation Protection Administrator
- \*M. Douglas, Safety Director

\*Denotes those present at the exit interview.

2. Licensee Action on Previous Inspection Findings

(Open) Violation (40-8903/8901-02). Failure to implement controls in the ore crusher building to keep airborne concentrations below 25 percent of MPC. Ore crushing operations at the site were terminated January 29, 1990. This item will, therefore, remain open pending a future review of operational data.

(Closed) Open Item (40-8903/9001-02). The need to incorporate the brine evaporation pond into the compliance monitoring program. Homestake submitted a license amendment request that established two point of compliance wells for the brine evaporation pond and incorporated the pond into their routine compliance monitoring program.

(Closed) Violation (40-8903/9002-01). Discharge of sanitary waste effluents to the tailings pond. The inspector noted that a leach field had been constructed to the State of New Mexico Standards. The leach field receives these wastes.

(Closed) Open Item (40-8903/9002-02). The need to clean up uranium bearing materials found to occur near the precipitation building and the scavenger ditch. The inspector noted that these soil materials had been removed to the extent possible and placed at the toe of the tailings impoundment.

(Closed) Open Item (40-8903/9002-03). The need to cap environmental monitoring wells. The inspector noted that all ground-water monitoring wells that were visited were capped.

3. Management, Organization and Controls/Operations Review

Full-scale operations at the Milan Mill were terminated during the period of late January to early February 1990. Specifically, ore crushing ended on January 29, the grinding section of the mill ceased operation of February 2, and the discharge of tailings slurry to the impoundment ceased on February 8.

On April 20, 1990 the Radiation Protection Administrator left the site for other employment. The reclamation engineer took over the position of Radiation Protection Administrator, after completing the 40-hour Radiation

Safety Specialist Training Program at Oklahoma State University. In addition to this training, the Radiation Protection Administrator successfully completed a 40-hour radiation safety refresher training course given by Radiant Energy Management. The current Radiation Protection Administrator conducts the majority of the tasks that were formerly performed by two individuals.

No uranium recovery activities are currently taking place at the mill. Site activities consist of ground-water injection and recovery associated with the corrective action program and required environmental monitoring. Roughly 175 gallons per minute (gpm) is recovered from the collection wells adjacent to the tailings impoundment with an additional 75 gpm from the "Murry" collection wells and a variable amount of water being recovered from toe seepage. Portions of the seepage collection and Murry collection waters go to west brine evaporation pond where some precipitation of calcium salts takes place. From this pond, discharge to the new evaporation pond takes place at an average rate of 190 gpm. This rate has been maintained since pond filling first began on November 19, 1990.

The pond was designed to accommodate a seepage collection rate of 248 gpm. Actual use of the facility and monitoring of the evaporation rate will determine if this predicted rate is achievable while maintaining sufficient freeboard. The licensee has an annual review of the corrective action program that will be completed in January 1991, by this time more operational data will be available to determine the most practical inflow-rate. The evaporation pond is designed with a water budget that allows for the maximum inflow rate while allowing the seepage recovery system to function to its fullest extent.

The inspector toured the grounds and noted that the crystallized solid material, which was near a pregnant solution surge tank and in the mill scavenger ditch, had been cleaned up. These materials had been scraped up and moved to the toe of the tailings impoundment. This action closed a previous open item (40-8903/9002-02).

During a previous inspection it was noted that overflow from the septic tank was routinely discharged to the tailings impoundment. In response to this violation of License Condition No. 27 of Source Material License SUA-1471, the licensee installed a holding tank and leach field that was designed to meet the State of New Mexico Health Department Standards. These pieces of equipment are designed to take the septic system overflow. Due to this, sanitary waste is no longer discharged to the tailings impoundment. This closed a previous violation (40-8903/9002-01).

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

#### 4. Radioactive Waste Management

The tailings management system at the Milan Mill consists of a ring embankment system constructed of hydraulically deposited tailings. The tailings impoundment is divided into two cells. These cells receive toe seepage which varies in amount as well as about 90 gpm of seepage collection water. Prior to construction of the evaporation pond, in excess of 300 gpm of toe seepage and seepage collection waters went to the tailings impoundment.

The seepage collection system consists of a series of wells located at down gradient locations. These wells were generally noted to be in good repair, and were noted to be capped. This closed a previous open item (40-8903/9002-03). Other point of compliance and general ground-water monitoring wells were observed and were also found to be in good repair.

The licensee has recently modified the seepage collection program to deliver roughly 190 gpm to the new evaporation pond. The evaporation pond was constructed as a component of the licensee's corrective action program and was considered necessary to begin the tailings dewatering process. Two contractors were involved in the impoundment construction. One contractor performed the soil grading and compaction details while the other contractor was responsible for laying the liner material. License Condition No. 35 specified compaction criteria that was to be achieved for the earthwork. A review of the licensee's records indicated that 95 percent of Modified Proctor had been achieved through the use of a sheeps-foot roller and rubber tired vehicles. The compaction curves indicated that the 95 percent criteria was consistently met.

Quality control for the liner specified that one liner sample would be taken for every 10,000 sq. ft. of liner laid or 117 samples for the entire project. The licensee stated that 20 to 40 samples were taken and sent to the laboratory for analysis. Additionally, an undetermined but numerous number of vent hole samples were taken over the entire liner. These samples indicated that the liner was consistently 135 mils in thickness as compared to the 90 mil contract specification and license requirement. By the licensee's best estimate, 60 to 90 actual quality control observations were made of the liner material. This is less than the 117 required in the license, but due to the consistently observed thickness being approximately 30 percent over specifications, it appears that a quality product was constructed.

The failure to collect liner quality control samples at the contract-specified frequency was noted as a deviation of normal quality control testing procedures (40-8903/9003-01).

The evaporation pond, as built, has 382 acre ft. of storage, which is about 30 percent larger than the proposed design. The pond was constructed with 16 feet of storage, which includes a 2-foot freeboard. Three sprinkler-type evaporation systems are designed and will be

constructed during the summer months. These systems will utilize floatable pipes that will atomize seepage collection water into the atmosphere to enhance evaporation.

License Condition No. 35 specified certain health physics principles to be applied during construction of the evaporation pond. In response to this Homestake administered radiation protection training to all people assigned to work on the evaporation pond. A review of the licensee's records indicated that appropriate radiation safety training was given to all employees. Additionally, contract employees wore TLD badges, had baseline urine samples run and wore air pumps to determine the radionuclide environment that existed. The air environment was characterized by utilizing personal air samplers. Seventy-seven air samples were taken during the August 2 to November 19 construction period. The air pumps were generally run for several hours with the results being applied to employees having similar work tasks. The samples indicated that the air environment never exceeded 25 percent of maximum permissible concentrations (MPC). Generally, values were in the range of 4 to 6 percent of MPC. These low values were a result of wetting the working surface of the tailings to achieve compaction criteria.

Urine samples confirmed these low values, with results being consistently below 5 $\mu$ g/lU. A single sample had a measured value of 8 $\mu$ g/lU; however, upon retesting the concentration was confirmed to be below the laboratory's lower limit of detection of 3 $\mu$ g/lU.

Radiation safety training for the contract employees consisted of training that would be given to mill employees. The training followed established training that has been outlined in the mills standard training guide with additions for site-specific needs. All training was administered by the Radiation Protection Administrator and conformed to the requirements of License Condition No. 35 (D)(3).

No violations, one deviation, and no open items were identified by the inspector.

#### 5. Exit Interview

The inspector conducted an exit briefing with licensee personnel to discuss the inspection findings. The inspector summarized the findings and discussed the point of compliance amendment that is currently under review.