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URFO:CCJ
 Docket No. 40-8681
 04008681690E

MEMORANDUM FOR: Docket File No. 40-8681

FROM: Candice C. Jierree, Project Manager
 Licensing Branch 2
 Uranium Recovery Field Office, RIV

SUBJECT: REVIEW OF THE SEMIANNUAL ALARA AUDIT REPORT FOR
 UMETCO MINERALS CORPORATION WHITE MESA MILL FOR
 THE FIRST HALF OF 1985

By letter dated November 1, 1985, Umetco Minerals Corporation (Umetco) transmitted their semiannual ALARA audit report for the first half of 1985 in accordance with Condition No. 35 of Source Material License SUA-1358. The audit was conducted on September 9 and 10 by the Audit Committee which consisted of the Plant Superintendent, Radiation Safety Officer, Environmental Coordinator and Industrial Hygiene Coordinator. The Audit Committee evaluated the effectiveness of Umetco's ALARA program at the White Mesa mill. The mill was not operating during the period of time under review by the committee.

Personnel Exposure to Radioactive Materials

A. Airborne Uranium

Quarterly time weighted exposures did not exceed 0.26% of the Maximum Permissible Exposure (MPE) for natural uranium during the first half of 1985. This level is reasonably consistent with previously reported results during mill shutdown.

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B. Radon Progeny

Quarterly time weighted exposures did not exceed 0.031 working levels (9.4% of the MPE) during the first half of 1985. This was a slight drop from the fourth quarter of 1984.

C. External Exposure

Quarterly exposure to penetrating radiation was measured using TLDs. The highest exposure was 44 mrem (3.5% of the MPE) which was measured during the second quarter of 1985. Although both quarters exhibited an increase in personnel exposure over the previous two quarters, the reported levels as shown above are well below MPE. The licensee attributed these increases to the arrival of ore at the mill site in preparation for startup.

D. Urinalyses

The licensee performed 104 urinalyses during the first half of 1985. Of these, 17 were split samples and 27 were duplicates. Twenty split samples were sent to a vendor laboratory for independent verification. Only one sample exceeded the action level of 15 ug/l for uranium. (The actual concentration measured was 28 ug/l.) A followup sample collected one week from the initial sample measured less than 5 ug/l for uranium. The licensee included in their ALARA audit report documentation of their followup investigation and actions. The staff finds that the licensee's followup is in accordance with the guidance presented in Regulatory Guide 8.22, "Bioassay at Uranium Mills."

Inspections

Daily and weekly inspections of the mill, ore storage areas and tailings impoundments were conducted by the radiation safety staff during the first half of 1985. No problems of significance were identified.

Training

The Radiation Safety Officer (RSO) attended a five day course on respiratory protection and a second 5 day refresher course in radiation protection during 1985. Monthly safety meetings were conducted by the

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RSO from January through June of 1985. Topics related to radiation protection at the mill site were discussed.

Radiation Surveys

A. Airborne Uranium

Air sampling for uranium was conducted monthly at 19 locations on the mill site. Weekly samples were collected at five locations in the yellowcake process area. Results decreased from January to June of 1985. The highest measurement occurred in the solvent extraction (SX) control room, but was only 0.2% of the MPC.

B. Radon Progeny

Air sampling for radon progeny was conducted monthly at 17 locations utilizing the modified Kusnetz method. The SX building was posted as an airborne radioactivity area and surveys were increased to weekly through March of 1985. When four consecutive radon progeny measurements dropped below 25% of the MPC, the frequency returned to monthly and the posting was removed. The highest measurement recorded for the SX building was 0.19 working levels.

C. Alpha Contamination Surveys

Surveys for fixed and removable alpha activity were conducted biweekly at designated areas. No unusual results were reported. Four items were released from the site for unrestricted use. No item exceeded the limits for fixed or removable alpha activity. Five lots of yellowcake product were shipped from the mill. Surveys were conducted to assure that contamination and gamma exposure measurements were within permissible levels.

Log sheets were generated for self-monitoring of personnel leaving the restricted area. No employee exceeded the contamination limit of 1000 dpm/100 cm² during the first half of 1985.

D. Beta-Gamma Surveys

These surveys were conducted monthly at specified mill areas. TLDs were also placed in 17 mill locations to verify results. Beta measurements around the yellowcake areas were as high as 3.2 mR/hr

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at the yellowcake screw feeder and holding tank. The Audit Committee recommended that these areas be washed down prior to mill startup. Other yellowcake areas measuring up to 55 mR/week were washed down and exposure rates were reduced to 7.6 mR/wk.

Conclusion

Umetco submitted a completed semiannual ALARA report in accordance with Condition No. 35 of Source Material License SUA-1358. No significant trends or exposures were identified either by the ALARA Audit Committee or by the NRC staff review.

CS
Candice C. Jierree, Project Manager
Licensing Branch 2
Uranium Recovery Field Office, RIV

Approved by:

CS

Harry J. Pettengill, Chief
Licensing Branch 2
Uranium Recovery Field Office, RIV

Case Closed: C^008681690E

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