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Docket File No. 40-8768  
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OCT 25 1982

URFO:RTW  
Docket No. 40-8768  
04008768050E

MEMORANDUM FOR: Docket File No. 40-8768  
  
FROM: Roger T. Woolsey, Project Manager  
Licensing Section II  
Uranium Recovery Field Office  
  
SUBJECT: REVIEW OF ALARA REPORT FOR KERR-MCGEE CORPORATION

By letter dated April 7, 1982, Kerr-McGee Corporation (KMC) submitted their first semiannual ALARA audit report covering radiation safety activities at their in situ uranium recovery plant in Converse County, Wyoming. The audit report covered the period from the time of the first yellowcake production in October 1981 through March 1982.

Evaluation of the KMC's ALARA Audit Program

Bioassay

The ALARA report stated that 21 persons participated in the baseline determinations on August 31, 1981. Urinalysis results for 19 persons were less than 5 micrograms of uranium per liter (5µg/l). One person had 6µg/l, and one person had 8µg/l. The Eberline Company is the vendor laboratory of the urinalysis analytical determinations.

Urine samples were routinely submitted on a monthly basis during operations from October 1981 through February 1982. Of the 45 samples taken, 43 were less than 5µg/l, one sample indicated 6µg/l, and the highest was 10µg/l. License Condition No. 26 requires no actions by the licensee if urine uranium concentrations remain under 15µg/l.

KMC sent blank and spiked samples to the vendor for analysis. KMC reported that blanks and spikes up to 15µg/l showed good agreement whereas six QA samples spiked at 30µg/l resulted in half failing the test in that low values in the range 30 to 50% from the known concentrations were reported. KMC did not feel that special repeat sampling was required since none of the employee urine samples were above 10µg/l.

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Exposure Records of External and Internal Time-Weighted Calculations

External exposure records for 25 persons wearing dosimeters during the year 1981 indicated that all were less than the 312 mrem/quarter limit specified in Section 20.202 of Part 10, requiring the wearing of personnel dosimeters. The highest result reported was 244 mrem/quarter.

The licensee provided a tabulation of weekly Time-Weighted Exposures (TWEs) not adjusted for use of respiratory equipment. I considered this all exposure to airborne yellowcake for this type of uranium recovery plant. The licensee is permitted by License Condition No. 21 to perform surveys on a monthly basis provided that any restricted area does not meet the requirements of an "airborne radioactivity area." The monthly statistics ranged from 0 to 16 monthly MPC-hours whereas the applicable limit is 40 weekly MPC-hours.

For the average month personnel exposures to radon were less than 0.08 WLM whereas the applicable limit is 0.333 WLM.

Training

The report indicated that the licensee was meeting the training requirements required by License Condition No. 20.

Internal Audits

The report indicated that the KMC was in apparent compliance with the daily "walk through" inspection and monthly summary report requirements of License Condition No. 35.

In-Plant Radiological Survey and Monitoring Data

The licensee stated that contamination surveys were performed weekly in the lunch and office areas and change rooms. They are also conducted weekly or monthly in the laboratory process (IX) and yellowcake areas. Data for fixed alpha and removable (smearable) alpha activity showed that all nonproduction areas were well below the recommended limits as specified in draft Regulatory Guide OH-710-4, "Health Physics Surveys in Uranium Mills.

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Gamma surveys were taken using a micro-R type survey instrument (MESA-1). The only location indicating a significant gamma reading was close to the ion exchange columns where a rate of about 0.5 mR/hr was measured at one meter from the columns.

There were 107 air samples taken from the time of the first yellowcake production in October 1981 through March 1982. Values ranged from 0.01 MPC to a maximum of 0.22 MPC for uranium. Radon values averaged 0.08 WL, with a maximum of 0.35 WL. No explanation was included relative to the maximum value, slightly in excess of the applicable limit of 0.333 WL.

#### Radiation Work Permits

Since the beginning of operations, 14 special work permits specifying radiation protection procedures and monitoring requirements were issued for non-routine work with the potential for release of airborne radioactivity.

#### Reports on Overexposures Submitted to NRC, MSHA or the State

KMC stated that no reports were necessary.

#### Environmental Radiological Effluent Monitoring Data

Environmental radon air sampling is performed at three monitoring stations surrounding the site using passive radon monitoring devices. The monthly radon concentration ranged from 0 to 1.3 pCi/l versus the applicable unrestricted area limit of 3 pCi/l.

#### Reviews of Operating and Monitoring Procedures Completed During This Period

Fifteen Operating and Monitoring Procedures were reviewed during this period and were apparently complete as to necessary coverage of all operational activities involving radioactive materials. Relative to the health physics and environmental monitoring, sampling, analysis and instrument calibration included in License Condition No. 19,

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KMC stated that a Health Physics manual was prepared, reviewed and approved by the RSO.

Summary

The ALARA Program report as submitted by the license fulfills the requirements as detailed in License Condition No. 27. No further action is therefore necessary.

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Roger T. Woolsey, Project Manager  
Licensing Section II  
Uranium Recovery Field Office

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Approved by:

Harry J. Pettengill, Section Chief  
Licensing Section II  
Uranium Recovery Field Office

Case Closed: 04008768050E

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