

Return to URFD 467-55

40-8768
PDR



KERR-McGEE CORPORATION

KERR-McGEE CENTER • OKLAHOMA CITY, OKLAHOMA 73125

040087681615

ENVIRONMENT AND HEALTH MANAGEMENT DIVISION

October 1, 1982



U.S. Nuclear Regulatory Commission
Uranium Recovery Licensing Branch
Washington, D.C. 20555

Re: License No. SUA - 1387
Docket No. 40 - 8768

Gentlemen:

Enclosed is the ALARA audit report covering activities conducted at the Kerr-McGee In Situ operations at the Bill Smith Mine site. This is the second semiannual audit performed in compliance with license condition No. 27.

Please contact the undersigned if you have any questions concerning this report.

Very truly yours,

G. J. Sinke
Radiation Safety Officer

dc
Enc.

cc: U.S. Nuclear Regulatory Commission
Arlington, TX

OFFICIAL DOCKET COPY

8211040540 821001
PDR ADOCK 04008768
C PDR

Fee Exempt
20768
info only

KERR-McGEE CORPORATION

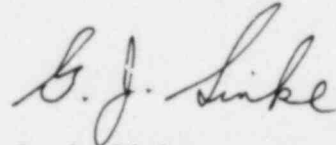
INTERNAL CORRESPONDENCE

TO Marvin D. Freeman
Project Manager
FROM Gerald J. Sinke

DATE October 1, 1982
SUBJECT Second Semiannual Radiation
Safety ALARA Audit, In Situ
Uranium - Bill Smith Mine

The writer conducted an audit of the Health Physics activities at the Bill Smith Mine site on September 1, 1982. Additionally, a review of the Health Physics Manual and operating procedures was done to determine where revisions are necessary. A follow-up on previous recommendations for the ALARA program was made. A trend analysis of exposure data is presented in the report.

This audit report is attached as Appendix A.



G. J. Sinke
Staff Health Physicist

dc
Att.
cc: K. Holman
W. Shelley
E. Still

OFFICIAL DOCKET COPY



APPENDIX

I. Summary

The second semi-annual ALARA review of the uranium in-situ operations conducted at the Bill Smith Mine was conducted by the Radiation Safety Officer on September 1, 1982. This report includes a description of action taken regarding recommendations made in the report of the 1st ALARA audit, dated April 7, 1982. It can again be concluded that with a minor addition, the ALARA goal is being attained.

II. Follow-on to 1st Audit Recommendations

1. Smears taken on used respirators, inside and out, before and after cleaning confirm proper use and cleaning.
2. Because of low count rates on the air samples, the background and sample time is done for six or ten minutes duration to yield good statistics.
3. The RST has conducted some end-of-shift "walk through" inspection in addition to the work time inspections to observe plant conditions and to assure that personnel dosimeters are properly stowed in the badge rack.

III. New Recommendation

1. The health physics manual should be revised to include a record form for radon daughter working levels in the ion exchange area. (Section 12.5.7).

IV. Details (License Condition No. 27)

27.1 Bioassay Results

On the average, eleven persons per month submitted 70 urine samples between March 1 and August 31, 1982.

<u>No. of Samples</u>	<u>Micrograms U per Liter</u>
50	< 5
3	5
7	6
3	7
4	8
1	11
1	19
1	20
0	> 20

Investigations and follow-up assays are conducted for the higher results. Investigations could find no cause for the higher results. It was concluded that assay results may be in error. Q.A. (spiked) sample variations show that the probability for a higher than real result exists.

The bioassay laboratory service has been changed to the Technology Laboratory, Inc. of Casper, Wyoming. This was done to reduce the turn-around time which was exceedingly long for the previous vendor. The K-M technical center continues to participate in the Q.A. program.

27.2 Exposure Records of External and Internal Time-weighted Calculations

- a) Twenty employees were assigned to routinely use dosimeters during the 1st half of 1982. The statistics follow:

<u>No. of Persons</u>	<u>mrem Whole Body</u>
15	0
1	10
2	20
1	50
1	130
0	>130

- b) The April thru August 1982 Statistics for Airborne Uranium Radioactivity follows:

<u>Job Classification</u>	<u>Typical Monthly MPC - hrs.</u>	<u>Highest Monthly MPC - hrs.</u>
Operators	1.8	2.9
Hoistman	0.2	0.5

A protection factor for respirator use has not been applied to the MPC-hr. calculations. There were 124 air samples taken.

- c) Radon daughters in the I.X areas of the building had an average value of 0.05 W.L. during the period April through August, 1982. The highest value was 0.53 W.L.

27.3 Safety Meetings & Training

No new employees have been added to the staff during this report period. Safety meeting/training records indicate radiation safety topics are covered at least once each two weeks.

The RST has completed eleven out of 15 chapters in the Rockwell Radiation Protection Technology home study course. This is in addition to the Oklahoma State University course previously attended.

27.4 Daily Inspection Log Entries and Summary Reports of the Monthly Reviews

- a) A daily log of "walk through" inspections is maintained by the RST. With very minor exceptions, the log indicates that personnel are following proper radiation protection procedures.
- b) The RST's monthly summary report is properly prepared to reflect the health physics program activities and monitoring results.

27.5 In-plant Radiological Survey and Monitoring Data. Environmental Radiological Effluent and Monitoring Data

- a) Contamination control is effectively maintained by administrative procedures and engineered design. This is verified by surveys performed using a calibrated alpha survey instrument and the RD-13 drawer alpha counter. Both fixed and removable contamination surveys are performed either weekly or monthly. Lunch rooms and change rooms are surveyed weekly. The laboratory, office areas and process areas are surveyed either weekly or monthly. The yellowcake shipping container/vehicle surveys are performed as needed.

Personnel sign a log indicating that they have "frisked" themselves prior to leaving the restricted area. Additionally, unannounced personnel contamination surveys are performed periodically by the RST. The survey data is recorded and indicates that no significant contamination is transferred to uncontrolled areas.

- b) As indicated in the 1st ALARA audit report dated April 7, 1982, the only location indicating gamma levels of any appreciable amount is close to the ion exchange columns which have an exposure rate up to 0.5 mR/hr. at 1 meter.
- c) In-plant air monitoring data from April through August, 1982, follows:

	<u>Average Value</u>	<u>Highest Value</u>
Yellowcake filter press area for uranium particulates	0.05 MPC	0.50 MPC
General areas of the operating plant for radon daughters	0.04 W.L.	0.53 W.L.

There were 136 air samples taken for uranium during press loading, unloading and yellowcake packaging operations. Radon daughter samples are taken weekly.

- d) Environmental air sampling data for radon using passive devices at three locations surrounding the site ranged from 0 to 1.4 pCi/l.

Environmental water sampling data is reported to the NRC in a quarterly report in accordance with license condition No. 58.

27.6 Surveys required by Radiation Work Permits

Eight radiation work permits were issued during this report period. These permits specified protective procedures and equipment to be used, as well as special monitoring and survey needs. The permits were followed appropriately according to the records.

27.7 Reports on Overexposures

No overexposure reports were necessary.

27.8 Procedures Review

A change in the yellowcake packaging procedure has been made which will benefit the ALARA effort. Instead of packaging the damp yellowcake in lined 55 gal. drums, the yellowcake is now reslurried and pumped into a cargo tank. The cargo tank is authorized for use by the NRC certificate of compliance No. 9100.

The uranalysis program procedure now includes a Casper, Wyoming based laboratory (Technology Laboratory, Inc.) for bioassay.

A review of the KM Health Physics manual indicates that a standard record form for radon daughter working levels should be included in section 12.5.7.