



KERR-McGEE CORPORATION

KERR-McGEE CENTER • OKLAHOMA CITY, OKLAHOMA 73126

40-8768
PDR

ENVIRONMENT AND HEALTH MANAGEMENT DIVISION

November 28, 1983

'83 DEC -2 A11:00

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

Re: Docket No. 40-8768

Gentlemen:

In accordance with the requirements of condition No. 27 of license No. SUA-1387, a semi-annual ALARA audit has been conducted. This audit was performed on November 15 and 16, 1983. The attached report covers the period of May, 1983 through October, 1983.

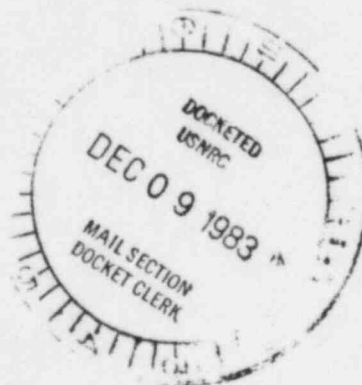
Please contact me if you have any questions concerning this report.

Very truly yours,

Gerald J. Sinke
Radiation Safety Officer

GJS/lh

cc: U. S. Nuclear Regulatory Commission
Region IV
Arlington, Texas 76011



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KERR-McGEE CORPORATION

INTERNAL CORRESPONDENCE

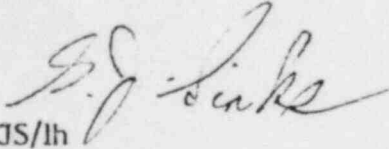
TO Marvin D. Freeman
Project Manager

DATE November 28, 1983

FROM Gerald J. Sinke

SUBJECT Fourth ALARA Audit of the
In-Situ Operations

As required by condition No. 12 of license No. SUA-1387, the writer conducts semi-annual audits of the in-situ operations at the Bill Smith Mine site. The audit consists of an evaluation of the radiological health program regarding the maintenance of radiation exposures to persons and the environment as low as reasonably achievable (ALARA). This report covers my audit conducted on November 15 and 16, 1983.


GJS/lh

attachment

cc: K. Holman
E. R. Goltra, M.D.
W. J. Shelley
E. T. Still



CORPORATE

Attachment

I. Summary

On November 15 and 16, 1983, the fourth semi-annual ALARA audit was conducted at the in-situ operations site in accordance with the condition No. 14 of license SUA-1387. This report includes follow-up information on previous recommendations, an exposure trend analysis based on health physics data and a performance review of exposure control equipment. As a matter of interest, the health physics monitoring activities and results obtained are well in accord with the guidelines as published in the NRC Regulatory Guide 8.30 "Health Physics Surveys in Uranium Mills. As a result, our ALARA goals are being met for this operation.

II. Follow-up on 3rd ALARA Review Recommendations

It was recommended that a monthly sampling frequency be established for environmental radon instead of sampling on a quarterly basis. This recommendation has been followed effective July, 1983.

As recommended, a placard holder was replaced on the yellowcake slurry cargo tank and it's DoT identification numbers were refurbished.

III. New Recommendation

No new recommendations are made at this time.

IV. Details (License Condition No. 27)

27.1 Bioassay Results

There were 49 urine samples required during this report period; as follows:

<u>No. of Samples</u>	<u>Micrograms U per liter</u>
40	5
2	6
3	7
3	8
1	10

During the second ALARA review, two urine samples exceeded the action level of 15 $\mu\text{g U/l}$ with values of 19 & 20 $\mu\text{g U/l}$. No sample exceeded the action level during the 3rd review (highest was 11 $\mu\text{g U/l}$). The highest value during the fourth review is 10 $\mu\text{g U/l}$. A favorable trend exists with respect to internal exposures as determined by bioassay sampling.

27.2 External and Internal Exposure Data

a) External

<u>2nd Qtr. 1983</u>		<u>3rd Qtr. 1983</u>	
<u>Person</u>	<u>mrem</u>	<u>Person</u>	<u>mrem</u>
6	0	14	0
1	7	1	10
1	9	1	12
1	11	1	13
1	18	2	15
1	20		
1	31		
1	34		
1	36		
1	40		
1	44		
1	55		
1	67		
1	109		

(Trend Analysis)

From previous reports, on a quarterly basis, the 1982 dosimeter data shows 4 man-mrem, the first quarter 1983 showed 5 man-mrem, and the above data for the second and third quarters 1983 shows 25 man-mrem and 3 man-mrem respectively. The higher results found during the second quarter 1983 are unexplained because a review of work activity time, locations and gamma surveys do not indicate any significant change from one calendar quarter to the next.

b) Internal (MPC-hrs.)

The May, 1983 through October, 1983 statistics for time weighted exposures to airborne uranium for the job classifications involved are as follows:

<u>Job Classification</u>	<u>Typical Monthly MPC-hrs.</u>	<u>Highest MPC-hrs.</u>
Operator	0.9	3.8
Maintenance	0.0	0.0

No protection factor for respirator use has been applied.

(Trend Analysis)

The second and third ALARA review reports indicated that 2-3 MPC-hours per month is typical for operator exposure. The above data shows less than one MPC-hour per month. A favorable ALARA trend is indicated.

c) Radon Daughters

During the period May, 1983 through October, 1983, the average employee accumulated an exposure of 0.01 W.L.M., the highest person accumulating 0.20 W.L.M.

27.3 Safety Meetings and Training

No new employees have joined the staff during this report period. Safety meeting reports show that radiation safety topics are covered at least bi-weekly. Topics covered were:

- The use of radiation work permits
- Yellowcake spill clean-up procedure
- LSA labeling for shipping drums
- Alpha wipe tests on respirator face pieces
- Yellowcake work clothing requirements
- Personal alpha survey when leaving change room
- Bioassay sampling procedure
- TLD use
- Respirator care
- Respirator use

27.4 Daily Inspection Log Entries and Summary Reports of Monthly Reviews

The daily log that the RST maintains showed two minor problems, one concerning industrial safety and one involving a ventilation fan failure. This log also indicates alpha contamination survey dates, times and locations as well as radon daughter samplings. Corrective action on problems noted is also recorded in the log. The RST's monthly report properly summarizes H.P. activities and monitoring results.

27.5 In-Plant Radiological Survey and Monitoring Data - Environmental Radiological Effluent and Monitoring Data

a) Contamination Surveys

Except during the yellowcake press cleaning and drumming operation, the restricted yellowcake area is maintained free of visible contamination. The colors within this area are contrasting to yellowcake.

Alpha survey instruments are used to detect contamination on surfaces by direct measurements or on smear samples. Survey data shows the change room, lunch room and offices consistently shows no contamination. Seldom does the laboratory show any alpha by either direct or smear survey. The I.X. area occasionally has a small area requiring cleaning, which is accomplished promptly according to follow-up survey data.

Equipment surveys include such items as fork trucks, resin drums, control boards, light fixtures, pumps, scale, yellowcake drums, respirator face pieces, etc.

Controlled areas are required to be surveyed monthly however, on the average, three times a month is typical. During this reporting period, there were 250 individual contamination survey readings taken in the controlled areas. "Clean" areas are surveyed weekly and equipment surveys are done on an "as needed" basis or as directed in writing on radiation work permits.

Personnel sign a log book indicating that they have surveyed themselves upon leaving the change room before entering the office area hallway. In addition, on a quarterly basis, the RST performs an unannounced personnel contamination survey. The RST's survey is recorded.

b) Gamma Monitoring

Gamma monitoring shows that the area close to the I.X. columns is the only location showing any appreciable photon radiation. At one meter from the columns the gamma exposure rate has been 0.8 mR/hr. during this report period. A gamma profile survey of the operating areas is performed quarterly.

c) Air Monitoring

The following air monitoring data is summarized for this report period:

	<u>Average Value</u>	<u>Highest Value</u>
Yellowcake press area for uranium	0.05 MPC	0.39 MPC
General areas of plant for radon daughters	0.06 WL	0.91 WL

There were 98 samples taken for airborne uranium. Radon daughter samples are collected weekly.

d) Environmental Radon

Three RDT-310 passive detection devices manufactured by EDA instruments are located around the plant site. During this report period, the environmental radon concentration ranged from 0.0-1.0 pCi/l. Specifically the data follows:

pCi/l				
<u>Station No.</u>	<u>2nd Qtr. 1983</u>	<u>July</u>	<u>August</u>	<u>September</u>
D-1	0.7	0.2	0.4	0.4
U-1	1.0	0.2	0.5	0.0
T-1	1.0	0.8	0.5	0.3

3. Performance of Exposure Control Equipment

Instruments used to measure sampling flow rates and radioactivity were found to be calibrated appropriately. The Chi square test is routinely used on the alpha counter. Procedures as outlined in the Health Physics manual are followed to assure proper calibration of health physics instruments and air samplers.

Processing equipment and personal protective equipment used for exposure control purposes is well maintained and tested appropriately.