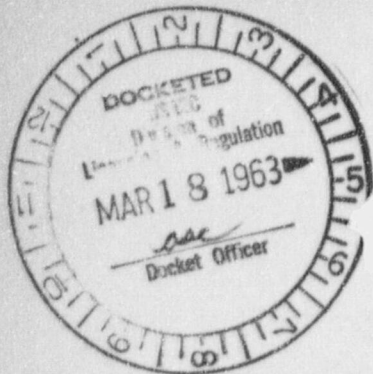


TEXAS-ZINC MINERALS CORPORATION  
MEXICAN HAT, UTAH

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RADIATION SURVEY REPORT

Fourth Quarter 1962

Airborne Radiation - Restricted Areas

Table I summarizes the results of airborne dust surveys conducted during the 4th quarter 1962.

Nine airborne dust samples were collected in Restricted Area B, Sample Plant. All of the samples showed airborne dust concentrations less than the maximum allowable concentration (MAC). The average calculated airborne dust concentration was  $.7 \times 10^{-11}$  microcuries per milliliter or .14 times MAC.

Seven airborne dust samples were also collected in Restricted Area F, Yellow Cake Section. All of these samples were also less than MAC. The average calculated airborne dust concentration was  $.2 \times 10^{-11}$  microcuries per milliliter or .03 times MAC.

Atmospheric Effluents

All mill stacks were sampled during the quarter. Results of the in-stack concentrations are shown in Table II. All ground concentrations are less than MAC for atmospheric effluent to unrestricted areas.

In the future, no further samples will be taken of leach tank

exhaust because the effluent being discharged is primarily steam vapor from the leaching operation.

Four air-samples of the surrounding environs, including one twenty-four hour sample, were taken and show that airborne dust concentrations of uranium are less than MAC for unrestricted areas. Table I summarizes these data.

#### Liquid Effluents

Results of analyses on quarterly samples of upstream and downstream river water, neutralized raffinate, and tailings pond seepage are shown in Table III. The upstream and downstream river continue to remain below MAC for liquid effluents to unrestricted areas.

Analyses for radium, thorium, and uranium on the composite sample of neutralized raffinate give the following radiation level:

$$\frac{\text{Radium 226}}{10 \times 10^{-9}} + \frac{\text{Thorium 230}}{200 \times 10^{-8}} + \frac{\text{Uranium}}{20 \times 10^{-6}} = 24.06$$

or 24 times MAC

The radium content of the neutralized raffinate and the tailings pond seepage appears to be in error. The assays are of the proper magnitude however, the assays appear to have been reversed. Correspondence with Radiation Detection Company who performed the assays, indicate no error is present in the analyses. The samples in

question are currently being re-assayed by Radiation Detection Company to insure that the results are correct.



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Table II

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In Stack Concentrations of Airborne Uranium and  
Maximum Ground Concentrations in Air Effluents

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Stack	$\bar{u}$	$h^2$	Microcuries of U/ml $\times 10^{-13}$		
			Q	X <sub>max</sub>	Times MAC
Sample Plant Rotoclone	2.25	95.1	15	0.02	0.003
Torit Bag Filter	2.25	9.3	45	0.51	0.06
1 - 4 Leach Tank Exhaust	1.10	121.0	927	1.54	0.2
S - 10 Leach Tank Exhaust	1.10	121.0	250	0.44	0.06
North Yellow Cake Rotoclone	1.08	114.5	287	0.54	0.07
South Yellow Cake Rotoclone	1.08	146.8	106	0.16	0.02
Packaging Zone Exhaust	1.08	84.6	206	0.53	0.06

$X_{\max} = \frac{2Q}{e\pi\bar{u}h^2} =$  maximum ground concentration which can occur from any given stack.

Q = in-stack concentrations of airborne radioactive dust.

$\bar{u}$  = mean wind velocity, meters per second.

h = stack height, meters.

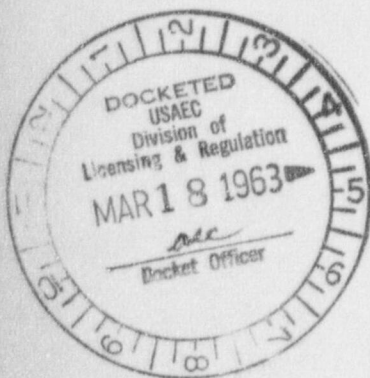
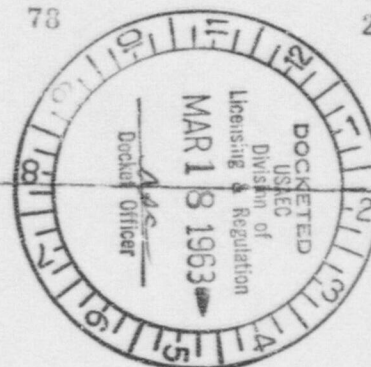
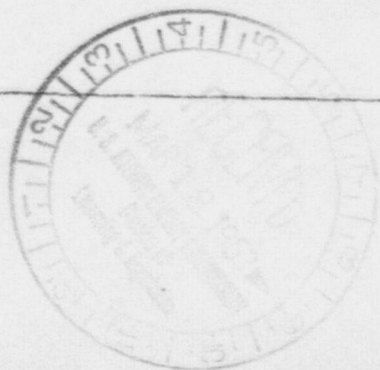


Table III  
Summary of Liquid Effluent Data

Date		Ra $226 \times 10^{-9}$	Th $230 \times 10^{-3}$	Uranium $\times 10^{-6}$
<u>Upstream River Water</u>	April 1962	0.5	0.04	Nil
	August 1962	1.2	0.05	0.3
	September 1962	0.1	0.2	0.3
	December 1962	0.06	0.05	Nil
<u>Downstream River Water</u>	December 1961	0.6	0.01	Nil
	April 1962	0.1	0.05	Nil
	August 1962	0.4	0.05	Nil
	September 1962	0.1	0.08	0.3
	December 1962	0.1	0.05	Nil
<u>Neutralized Raffinate</u>	December 1961	102	5800	1.1
	April 1962	160	2900	1.4
	August 1962	31	160	0.9
	September 1962	40	5800	1.9
	December 1962	0.1	4800	.4
<u>Tailings Pond Seepage</u>	December 1961	5.9	1.8	0.6
	April 1962	6.0	4.3	0.6
	August 1962	6.2	0.3	0.6
	September 1962	0.1	5.4	0.6
	December 1962	78	2.9	0.2



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