

RIO ALGOM CORPORATION

Lisbon Mine

LaSal Route
MOAB, UTAH 84532

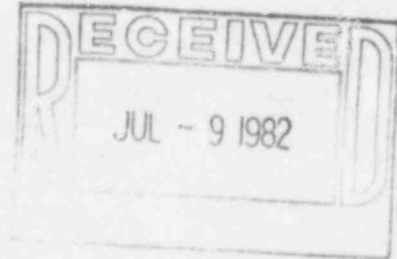
Phone: (801) 259-5904

July 6, 1982

US NRC
Region IV
611 Ryan Plaza Drive
Suite 1000
Arlington, Texas 76012

Re: SUA-1119

Gentlemen:



Our license requires that copies of our semianual environmental monitoring reports be submitted to the Enforcement and Inspection Board. To this end, I have enclosed our quarterly environmental reports for the periods of:

July-Sept. 1981

Oct.-Dec. 1981

Jan.-Mar. 1982

April-July 1982 (to follow)

Here after our submittal will cover the preceding six month interval.

Sincerely,

B.L. Hardy

B.L. Hardy

BLH/tl

IE-17

QUARTERLY ENVIRONMENTAL MONITORING PROGRAM REPORT

FOR

7/1/81 - 9/30/81

Prepared By

RIO ALGOM CORPORATION

USNRC Source Materials License Number: SUA-1119

Docket Number: 40-8084



M. D. Sawton
Manager

11-23-81

Date

8112020320

In compliance with our Source Materials License Condition Numbers 36 and 37, I submit our first quarterly environmental monitoring report. These data were collected during the third quarter of 1981 in compliance with the schedule required by License Condition No. 36. Therefore, as the various requirements become due, additional data will be provided in subsequent quarterly reports.

Some updated supplementary information should be included as it becomes available and as deemed necessary.

Dose evaluations based upon our currently available data have also been included in this report as per License Condition No. 37.

Note that on September 29, 1981, I submitted a list of proposed alternative LLD's to the Uranium Recovery and Licensing Branch. I have not received a reply as of this reporting period.

1) STACKS - YELLOWCAKE AND ORE

DATE COLLECTED	LOCATION	FLOW RATE (m ³ /Sec.)	RADIONUCLIDE	IN-STACK CONCENTRATION (uCi/ml)	ERROR ESTIMATE (uCi/ml)	RELEASE RATE (Ci/qtr.)	ERROR ESTIMATE (Ci/qtr.)	LLD (uCi/ml)	% MPC (RESTRICTED AREA)
7/81	Y/C Dust Filter 1,469. hrs./qtr.	0.35	U-Nat	0.21E-10	---	3.89E-5	---	*	21.0
			Th-230	0.001E-9	0.0008E-9	1.85E-6	1.48E-6		50.0
			Ra-226	0.0002E-9	0.0001E-9	3.70E-7	1.85E-7		.67
			Pb-210	0.0026E-9	0.0022E-9	4.81E-6	4.07E-6		2.60
7/81	Y/C Scrubber 1,469. hrs./qtr.	0.37	U-Nat	27.30E-10	---	5.34E-3	---		2730.0
			Th-230	0.0017E-9	0.0008E-9	3.33E-6	1.57E-6		85.0
			Ra-226	0.0004E-9	0.0002E-9	7.83E-7	3.91E-7		1.33
			Pb-210	0.0099E-9	0.0026E-9	1.94E-5	5.09E-6		9.90
7/81	Crusher House 899. hrs./qtr.	3.19	U-Nat	0.25E-10	---	2.58E-4	---		50.0
			Th-230	0.0059E-9	0.0013E-9	6.09E-5	1.34E-5		295.0
			Ra-226	0.0005E-9	0.0002E-9	5.16E-6	2.06E-6		1.67
			Pb-210	0.027E-9	0.002E-9	2.79E-4	2.06E-5		27.00
7/81	Transfer House 899. hrs./qtr.	0.98	U-Nat	0.705E-10	---	2.24E-4	---		141.00
			Th-230	0.0004E-9	0.0003E-9	1.27E-6	9.52E-7		20.00
			Ra-226	0.0002E-9	0.0001E-9	6.34E-7	3.17E-7		.67
			Pb-210	0.0007E-9	0.0012E-9	2.22E-6	3.81E-6		.70
7/81	Headframe House 906. hrs./qtr.	3.82	U-Nat	0.012E-10	---	1.50E-5	---		2.40
			Th-230	0.0012E-9	0.0005E-9	1.50E-5	0.62E-5		60.00
			Ra-226	0.0002E-9	0.0001E-9	2.49E-6	1.24E-6		.67
			Pb-210	0.0007E-9	0.0015E-9	0.87E-6	1.87E-6		.70

No dispersion considerations ~~for~~ unrestricted boundary distances have been observed.

$$(3600)(\text{hrs.})(\text{flow rate})[\text{Nuclide conc}] = \text{Ci/qtr.}$$

*Proposed LLD's under study by N.R.C.

3a) LIQUID SAMPLES - Ground Water

DATE COLLECTED	LOCATION	TYPE	RADIONUCLIDE	AVERAGE NET CONCENTRATION (uCi/ml)	ERROR ESTIMATE (uCi/ml)	LLD (uCi/ml)
7/81-9/81	MW-1	Ground Water	U-Nat d	22.78E-7	---	*
			Th-230 d	2.50E-9	1.70E-9	
			Ra-226 d	0.65E-9	0.36E-9	
			Pb-210 d	1.13E-9	2.03E-9	
			Po-210 d	1.78E-9	0.40E-9	
7/81-9/81	MW-2	Ground Water	U-Nat d	9.18E-7	---	
			Th-230 d	9.63E-9	2.20E-9	
			Ra-226 d	0.43E-9	0.33E-9	
			Pb-210 d	1.87E-9	2.00E-9	
			Po-210 d	0.07E-9	0.41E-9	
7/81-9/81	MW-3	Ground Water	U-Nat d	641.20E-7	----	
			Th-230 d	24.63E-9	3.07E-9	
			Ra-226 d	7.21E-9	0.77E-9	
			Pb-210 d	361.00E-9	20.00E-9	
			Po-210 d	220.60E-9	21.33E-9	
7/81-9/81	MW-4	Ground Water	U-Nat d	27.98E-7	----	
			Th-230 d	1.63E-9	1.53E-9	
			Ra-226 d	0.14E-9	0.30E-9	
			Pb-210 d	5.30E-9	4.47E-9	
			Po-210 d	1.44E-9	0.43E-9	
7/81-9/81	H-48	Ground Water	U-Nat d	196.37E-7	----	
			Th-230 d	10.93E-9	2.30E-9	
			Ra-226 d	0.13E-9	0.29E-9	
			Pb-210 d	74.03E-9	5.00E-9	
			Po-210 d	19.53E-9	2.77E-9	
7/81-9/81	H-54	Ground Water	U-Nat d	588.46E-7	----	
			Th-230 d	25.13E-9	2.63E-9	
			Ra-226 d	0.30E-9	0.31E-9	
			Pb-210 d	285.67E-9	11.33E-9	
			Po-210 d	203.93E-9	17.67E-9	
7/81-9/81	H-56	Ground Water	U-Nat d	615.85E-7	----	
			Th-230 d	37.67E-9	4.10E-9	
			Ra-226 d	0.38E-9	0.32E-9	
			Pb-210 d	209.67E-9	10.00E-9	
			Po-210 d	107.93E-9	11.33E-9	
7/81-9/81	H-71	Ground Water	U-Nat d	0.34E-7	----	
			Th-230 d	0.00E-9	1.58E-9	
			Ra-226 d	0.17E-9	0.30E-9	
			Pb-210 d	0.83E-9	1.83E-9	
			Po-210 d	0.71E-9	0.47E-9	
7/81-9/81	DM80-1	Ground Water	U-Nat d	8.23E-7	----	
			Th-230 d	9.20E-9	3.05E-9	
			Ra-226 d	0.31E-9	0.32E-9	
			Pb-210 d	1.30E-9	1.83E-9	
			Po-210 d	0.38E-9	0.40E-9	
7/81-9/81	MW-5 (Bckgrd.)	Ground Water	U-Nat d	0.29E-7	----	
			Th-230 d	2.50E-9	1.32E-9	
			Ra-226 d	0.80E-9	0.27E-9	
			Pb-210 d	5.63E-9	1.83E-9	
			Po-210 d	0.76E-9	0.36E-9	

*Proposed LLD's have been submitted to the U.S. Nuclear Regulatory Commission for approval.

2) AIR SAMPLES - (Air Particulate Monitors)

DATE COLLECTED	LOCATION	RADIONUCLIDE	+NET CONCENTRATION (uCi/ml)	ERROR ESTIMATE (uCi/ml)	LLD (uCi/ml)	% MPC
7/1-9/30/81	S-1	U-Nat	0.06E-15	----	*	.0012
7/1-9/30/81		Th-230	0.34E-15	0.15E-15		.43
7/1-9/30/81		Ra-226	10.61E-15	0.84E-15		.35
7/1-9/30/81		Pb-210	5.0E-15	2.0E-15		.13
7/8-10/13/81		Rn-222	0.00E-9	----		0.0
7/1-9/30/81		S-2	U-Nat	0.16E-15	----	
7/1-9/30/81	Th-230		0.28E-15	0.15E-15		.35
7/1-9/30/81	Ra-226		60.50E-15	1.93E-15		2.02
7/1-9/30/81	Pb-210		42.0E-15	3.0E-15		1.05
7/8-10/13/81	Rn-222		0.05E-9	----		1.67
7/1-9/30/81	S-3		U-Nat	Less than Bckgrd.	----	
7/1-9/30/81		Th-230	0.05E-15	0.12E-15		.06
7/1-9/30/81		Ra-226	30.40E-15	1.43E-15		1.01
7/1-9/30/81		Pb-210	22.0E-15	3.0E-15		.55
7/8-10/13/81		Rn-222	0.00E-9	----		0.0
7/1-9/30/81		S-4	U-Nat	Less than Bckgrd.	----	
7/1-9/30/81	Th-230		0.39E-15	0.19E-15		.49
7/1-9/30/81	Ra-226		0.00E-15	0.29E-15		0.0
7/1-9/30/81	Pb-210		0.00E-15	2.0E-15		0.0
7/8-10/13/81	Rn-222		0.00E-9	----		0.0
7/1-9/30/81	S-5		U-Nat	Less than Bckgrd.	----	
7/1-9/30/81		Th-230	0.06E-15	0.13E-15		.08
7/1-9/30/81		Ra-226	20.44E-15	1.17E-15		.68
7/1-9/30/81		Pb-210	10.0E-15	3.0E-15		.25
7/8-10/13/81		Rn-222	0.00E-9	----		0.0
7/1-9/30/81		+S-6	U-Nat	1.79E-15	----	
7/1-9/30/81	Th-230		0.15E-15	0.11E-15		.19
7/1-9/30/81	Ra-226		1.36E-15	0.27E-15		.05
7/1-9/30/81	Pb-210		13.0E-15	2.0E-15		.33
7/8-10/13/81	Rn-222		0.24E-9	----		8.00

*Proposed LLD's have been submitted to the U.S. Nuclear Regulatory Commission for approval.

+Net analyses = Site 1 through 5 values minus Site 6 (Background) values.

3b) LIQUID SAMPLES - Surface Water

DATE COLLECTED	LOCATION	TYPE	RADIONUCLIDE	CONCENTRATION (uCi/ml)	ERROR ESTIMATE (uCi/ml)	LLD (uCi/ml)
7/81	SS-1	Surface Water Grab	U-Nat d	0.00E-7	---	*
			s	0.12E-7	---	
			Th-230 d	1.26E-9	1.55E-9	
			s	0.00E-9	1.55E-9	
			Ra-226 d	0.70E-9	0.26E-9	
			s	0.00E-9	0.26E-9	
			Pb-210 d	0.00E-9	1.70E-9	
			s	0.00E-9	1.70E-9	
7/81	SS-2	Surface Water Grab	U-Nat d	0.07E-7	---	
			s	0.00E-7	---	
			Th-230 d	0.00E-9	0.26E-9	
			s	12.30E-9	2.90E-9	
			Ra-226 d	0.55E-9	0.23E-9	
			s	0.00E-9	0.23E-9	
			Pb-210 d	0.30E-9	2.10E-9	
			s	0.00E-9	2.30E-9	
7/81	SS-3 *	Surface Water Grab	U-Nat d	3.10E-7	---	
			s	0.43E-7	---	
			Th-230 d	1.50E-9	1.50E-9	
			s	0.00E-9	1.50E-9	
			Ra-226 d	1.38E-9	0.36E-9	
			s	0.26E-9	0.36E-9	
			Pb-210 d	0.80E-9	2.20E-9	
			s	0.00E-9	2.20E-9	
7/81	SS-7	Surface Water Grab	U-Nat d	0.16E-7	---	
			s	0.00E-7	---	
			Th-230 d	2.50E-9	1.60E-9	
			s	0.30E-9	1.60E-9	
			Ra-226 d	1.03E-9	0.32E-9	
			s	0.00E-9	0.36E-9	
			Pb-210 d	0.00E-9	1.50E-9	
			s	0.00E-9	1.70E-9	
7/81	1000 ft. south of lower tailings pond	Surface Water Grab	U-Nat d	3.78E-7	---	
			s	0.00E-7	---	
			Th-230 d	1.80E-9	0.90E-9	
			s	3.00E-9	1.30E-9	
			Ra-226 d	10.87E-9	0.94E-9	
			s	0.90E-9	1.29E-9	
			Pb-210 d	2.00E-9	1.90E-9	
			s	5.20E-9	3.80E-9	
7/81	1000 ft. south of lower tailings pond	Surface Water Grab	Po-210 d	5.96E-9	1.02E-9	
			s	0.00E-9	1.02E-9	

*Proposed LLD's have been submitted to the U.S. Nuclear Regulatory Commission for approval.

4a) VEGETATION

DATE COLLECTED	LOCATION	TYPE/PORION ANALYZED	RADIONUCLIDE	CONCENTRATION (uCi/Kg)	ERROR ESTIMATE (uCi/Kg)	LLD (uCi/Kg)
	S-1	Grab	Ra-226			
			Pb-210			
	S-3	Grab	Ra-226			
			Pb-210			
	S-4	Grab	Ra-226			
			Pb-210			
	S-6	Grab	Ra-226			
			Pb-210			

Vegetation samples are scheduled for analysis during the first quarter of 1982.

4b) FOOD - (Vegetables)

DATE COLLECTED	LOCATION	TYPE/PORTION ANALYZED	RADIONUCLIDE	CONCENTRATION (uCi/Kg)	ERROR ESTIMATE (uCi/Kg)	LLD (uCi/Kg)
	<u>Nearest Residents:</u>					
	Kent Hansen - 3 km north of the plant	Grab	U-Nat			
			Th-230			
			Ra-226			
			Pb-210			
			Po-210			
	Bell Tattan - 3 km NNE of the plant	Grab	U-Nat			
			Th-230			
			Ra-226			
			Pb-210			
			Po-210			

4c) FOOD - (Livestock)

DATE COLLECTED	LOCATION	TYPE/PORTION ANALYZED	RADIONUCLIDE	CONCENTRATION (uCi/Kg)	ERROR ESTIMATE (uCi/Kg)	LLD (uCi/Kg)
	Raised within 3 km of the plant	Grab/Ground Beef	U-Nat			
			Th-230			
			Ra-226			
			Pb-210			
			Po-210			

Data will be available by the first quarter of 1982.

5a) SOIL

DATE COLLECTED	LOCATION	TYPE/PORTION ANALYZED	RADIONUCLIDE	+ NET CONCENTRATION (uCi/g)	ERROR ESTIMATE (uCi/g)	LLD (uCi/g)
1/81	S1	Grab/177. gm.	U-Nat	0.89E-6	---	*
			Ra-226	0.95 E-6	0.40E-6	
			Pb-210	1.00 E-6	0.20E-6	
1/81	S2	Grab/122. gm.	U-Nat	1.76E-6	---	
			Ra-226	1.60E-6	0.60E-6	
			Pb-210	0.70E-6	0.20E-6	
1/81	S3	Grab/157. gm.	U-Nat	0.61E-6	---	
			Ra-226	0.43E-6	0.23E-6	
			Pb-210	0.50E-6	0.20E-6	
1/81	S4	Grab/93. gm.	U-Nat	0.21E-6	---	
			Ra-226	0.16E-6	0.15E-6	
			Pb-210	0.00E-6	0.20E-6	
1/81	S5	Grab/92. gm.	U-Nat	0.14E-6	---	
			Ra-226	0.32E-6	0.20E-6	
			Pb-210	0.00E-6	0.20E-6	
1/81	S6 (Bckgrd)	Grab/144. gm.	U-Nat	0.75E-6	---	
			Ra-226	0.35E-6	0.10E-6	
			Pb-210	1.30E-6	0.20E-6	

+ Net concentrations equal site values minus Site 6 (Background) values.

*Proposed LLD's have been submitted to the U.S. Nuclear Regulatory Commission for approval.

5b) SEDIMENT

DATE COLLECTED	LOCATION	TYPE/PORTION ANALYZED	RADIONUCLIDE	CONCENTRATION (uCi/g)	ERROR ESTIMATE (uCi/g)	LLD (uCi/g)
1/81	SS-1	Grab/146. gm	U-Nat	10.83E-6	---	*
			Th-230	2.70E-6	0.30E-6	
			Ra-226	2.00E-6	0.60E-6	
			Pb-210	4.00E-6	0.30E-6	
1/81	SS-2	Grab/114. gm	U-Nat	2.84E-6	---	
			Th-230	3.50E-6	0.30E-6	
			Ra-226	1.50E-6	0.40E-6	
			Pb-210	3.10E-6	0.30E-6	
1/81	SS-3	Grab/148. gm	U-Nat	10.16E-6	---	
			Th-230	1.10E-6	0.10E-6	
			Ra-226	4.80E-6	1.40E-6	
			Pb-210	3.00E-6	0.30E-6	
1/81	SS-7	Grab/140. gm	U-Nat	1.69E-6	---	
			Th-230	0.86E-6	0.16E-6	
			Ra-226	0.60E-6	1.18E-6	
			Pb-210	1.10E-6	0.20E-6	
1/8i	1000 ft. south of lower tls. pond	Grab/80. gm	U-Nat	33.85E-6	---	
			Th-230	33.00E-6	1.00E-6	
			Ra-226	38.00E-6	11.00E-6	
			Pb-210	44.00E-6	1.00E-6	

*Proposed LLD's have been submitted to the U.S. Nuclear Regulatory Commission for approval.

6) DIRECT RADIATION MEASUREMENTS

DATES MONITORED	LOCATION	EXPOSURE RATE (mr/qtr.)	ERROR ESTIMATE (mr/qtr.)
7/8-10/13/81	S1	24.4	2.7
7/8-10/13/81	S2	45.2	5.1
7/8-10/13/81	S3	25.5	2.9
7/8-10/13/81	S4	29.7	3.3
7/8-10/13/81	S5	30.8	3.5
7/8-10/13/81	S6	21.7	2.4

DOSE ASSESSMENT BASED ON ACTUAL ENVIRONMENTAL
MONITORING DATA AT NEAREST RESIDENT (Site #4)

Reporting Period: 7/1/81 - 9/30/81

Internal Radiation Exposure - (Inhalation of Airborne Particulates) - Units for whole body, bone and lung are mrem/first quarter.

RADIONUCLIDES	WHOLE BODY	BONE	LUNG
U-238	0.0	0.0	0.0
U-234	0.0	0.0	0.0
Th-230	.065	2.321	1.256
Ra-226	0.0	0.0	0.0
*Pb-210	---	---	---
*Po-210	---	---	---
TOTAL for Inhalation of Airborne Particulates	.065	2.321	1.256

*Pb-210 and Po-210 are radon daughter products which are excluded from 40 CFR 190.

Note: Dose contribution of other ingestion pathways have not yet been assessed or are not applicable to our program.

External Radiation Exposure - (Direct Radiation Exposure)

Gamma exposure for the period of 7/8/81 to 10/13/81 = *8.0 mrem/quarter.

Summing internal and external radiation exposure - Total dose to members of the public are as follows:

	<u>Whole Body</u>	<u>Bone</u>	<u>Lung</u>
Internal Exposure (mrem/first quarter)	.065	2.321	1.256
* External Exposure (mrem/first quarter)	<u>8.0</u>	<u>8.0</u>	<u>8.0</u>
TOTAL Exposure (mrem/first quarter)	<u>8.065</u>	<u>10.321</u>	<u>9.256</u>

Assuming 100% occupancy at sampling location, Site #4.

*External gamma exposures are based upon first quarter TLD dosimeter readings. Due to an anomalous exposure of our September dosimeters caused by an unknown source during transit, the projected external gamma exposure (above background) may be excessive.