

Rio Algom Mining Corp.

August 30, 1994

Certified Mail
Return Receipt Requested - P110 741 829

Mr. Joe Holonich, Branch Chief
U. S. Nuclear Regulatory Commission
Division of Low Level Waste Management and Decommissioning
Mail Stop T7J9
11555 Rockville Pike
Rockville, MD. 20850

Re: Docket No. 40-8084
Source Material License SUA-1119


Dear Mr. Holonich:

Enclosed please find the Semiannual Effluent Report for Rio Algom Mining Corp.'s Lisbon Mill. This data is the result of monitoring for the period January 1, 1994 through June 30, 1994.

This submittal satisfies License Condition 22 and 10 CFR 40.65.

If you or your staff have any questions concerning this submittal, please call (801) 686-2217.

Respectfully,



F. G. Fossey
Radiation Safety Officer
RAMC - Lisbon Operations

FGF:

xc: B. Ferdinand w/attachments
Director, Div. of Radiation Safety and Safeguards, Arlington
TX. Return Receipt Requested P110 740 830
File

9409090070 940630
PDR ADOCK 04008084
C PDR

Lisbon Mine Operations, Lasal Route, Moab, Utah 84532 • (801) 686-2216 • FAX (801) 686-2337

68-000

NLOS

SEMIANNUAL ENVIRONMENTAL MONITORING REPORT

for

January 1, 1994 through June 30, 1994

Prepared

By

RIO ALGOM MINING CORP. - Lisbon Operation

Source Materials License Number - SUA-1119

Docket Number - 40-8084



F. G. Fossey
Radiation Safety Officer



Date

STACK SAMPLING YELLOWCAKE AND URANIUM ORE

RAMC - Lisbon Operation has no stack emissions to report during the period of 01/01/94 through 06/30/94. The mill was on standby for the entire period.

OFFSITE AIR MONITORING STATIONS

DATE COLLECTED	LOCATION	RADIONUCLIDE	GROSS CONCENTRATION (uCi/ml)	ERROR ESTIMATE (uCi/ml)	LLD (uCi/ml)
12/28/93 to 03/28/94	EM-1	U-Nat	0.0	NA	2.7 E-17
		Th-230	*		
		Ra-226	0.0	1.4 E-15	3.0 E-17
		Pb-210	1.6 E-14	3.0 E-15	2.0 E-16
		Rn-222 (gas)	1.2 E-19	5.8 E-11	6.0 E-11
03/28/94 to 07/01/94	EM-1	U-Nat	1.2 E-16	NA	2.0 E-17
		Th-230	**		
		Ra-226	0.0	4.8 E-16	3.0 E-17
		Pb-210	1.6 E-14	3.0 E-15	2.0 E-16
		Rn-222 (gas)	Results not received at time of report		
12/28/93 to 03/28/94	EM-2	U-Nat	3.0 E-17	NA	2.0 E-17
		Th-230	*		
		Ra-226	0.0	1.3 E-15	3.0 E-17
		Pb-210	1.6 E-14	3.0 E-15	2.0 E-16
		Rn-222 (gas)	4.2 E-10	2.2 E-10	6.0 E-11
03/28/94 to 07/01/94	EM-2	U-Nat	0.0	NA	2.0 E-17
		Th-230	**		
		Ra-226	0.0	6.3 E-16	3.0 E-17
		Pb-210	9.6 E-15	1.5 E-15	2.0 E-16
		Rn-222 (gas)	Results not received at time of report		
12/28/93 to 03/28/94	EM-4	U-Nat	2.0 E-17	NA	2.0 E-17
		Th-230	*		
		Ra-226	0.0	3.0 E-15	3.0 E-17
		Pb-210	1.6 E-14	3.0 E-15	2.0 E-16
		Rn-222 (gas)	1.0 E-10	4.7 E-11	6.0 E-11
03/28/94 to 07/01/94	EM-4	U-Nat	3.0 E-17	NA	2.0 E-17
		Th-230	**		
		Ra-226	0.0	4.5 E-15	3.0 E-17
		Pb-210	1.0 E-14	1.4 E-15	2.0 E-16
		Rn-222 (gas)	Results not received as of time of report		
12/28/93 to 03/28/94	EM-6	U-Nat	0.0	NA	2.0 E-17
		Th-230	*		
		Ra-226	0.0	1.6 E-16	3.0 E-17
		Pb-210	1.9 E-14	2.0 E-15	2.0 E-16
	Background	Rn-222 (gas)	1.9 E-10	9.4 E-11	6.0 E-11
03/28/94 to 07/01/94	EM-6	U-Nat	8.0 E-16	NA	2.0 E-17
		Th-230	**		
		Ra-226	0.0	4.1 E-16	3.0 E-17
		Pb-210	1.1 E-14	1.6 E-15	2.0 E-16
	Background	Rn-222 (gas)	Results not received as of time of report		

* Th-230 results not performed by vendor lab.

** Th-230 results not completed by vendor as of report deadline, RAMC will submit this data when it is received.

LIQUID SAMPLES - Dissolved Radionuclides in Groundwater (North Aquifer)

U-Nat concentration expressed in mg/l.

<u>Date</u>	<u>LOCATION</u>	<u>U-Nat CONCENTRATION</u>	<u>ERROR ESTIMATE</u>	<u>LLD</u>
03/15/94	MW-5	0.01	0.01	0.002
06/07/94		0.02	0.01	0.002
03/22/94	OW-UT-9	64.45	1.0	0.02
06/09/94		61.79	1.0	0.02
03/16/94	H-56	56.17	1.0	0.02
06/09/94		54.13	1.0	0.02
03/22/94	EF-24	17.52	1.2	0.01
06/09/94		16.50	1.2	0.01
03/15/94	EF-23	0.26	0.03	0.002
06/07/94		0.25	0.03	0.002
03/18/94	EF-25	42.03	0.77	0.03
06/09/94		55.98	0.77	0.03
03/18/94	MW-7	45.88	2.1	0.03
06/09/94		43.88	2.1	0.03
03/16/94	MW-8A	54.07	1.6	0.03
06/09/94		53.35	1.6	0.03
03/15/94	MW-9	0.01	0.01	0.01
06/07/94		0.02	0.01	0.01
03/16/94	RW-1	70.32	2.8	0.03
06/09/94		67.31	2.8	0.03
03/16/94	RW-2	14.07	3.0	0.03
06/09/94		13.77	3.0	0.03

LIQUID SAMPLES - Dissolved Radionuclides in Groundwater (South Aquifer)

U-Nat concentration expressed in mg/l.

<u>DATE</u>	<u>LOCATION</u>	<u>GROSS CONCENTRATION</u>	<u>ERROR ESTIMATE</u>	<u>LLD</u>
03/17/94	MW-13	0.01	0.01	0.002
06/07/94		0.03	0.01	0.002
03/22/94	MW-11A	42.03	0.87	0.02
06/09/94		48.00	0.87	0.02
02/18/94 NO SAMPLE	EF-3	66.55	2.95	0.02
03/17/94	EF-4	0.01	0.02	0.002
06/08/94		0.01	0.02	0.002
03/18/94	EF-5	25.06	1.48	0.02
06/08/94		25.99	1.48	0.02
03/17/94	EF-6	2.29	0.06	0.004
06/08/94		2.17	0.06	0.004
03/17/94	MW-4	6.09	0.11	0.01
06/08/94		6.42	0.11	0.01

GROUNDWATER DISSOLVED CHEMISTRIES - (Gross Concentrations)

NORTH AQUIFER FIRST QUARTER 1994

<u>DATE COLLECTED</u>	<u>LOCATION</u>	<u>SULFATE mg/l</u>	<u>CHLORIDE mg/l</u>	<u>pH SU</u>	<u>CONDUCTIVITY (umho/cm)</u>	<u>WATER LEVEL(ft.)</u>
03/15/94	MW-5	389	29	7.06	1,138	150.63
03/22/94	OWUT-9	5,124	1,492	9.70	22,087	130.54
03/16/94	H-56	4,514	861	7.64	10,817	56.17
03/15/94	EF-23	1,420	354	6.96	3,647	162.65
03/22/94	EF-24	2,341	775	7.28	7,464	NA
03/18/94	EF-25	5,005	851	7.08	11,337	150.01
03/18/94	MW-7	4,646	784	7.70	11,865	147.52
03/16/91	MW-8A	4,919	1,119	7.15	12,914	176.28
03/15/94	MW-9	419	220	7.14	1,545	205.20
03/16/94	RW-1	6,618	1,157	9.55	20,053	168.31
03/16/94	RW-2	2,045	918	8.54	6,996	201.53

SOUTH AQUIFER- FIRST QUARTER 1994

03/17/94	MW-13	160	24	7.63	987	92.00
03/11/94	MW-11A	2,204	842	9.00	8,825	97.43
02/18/94	EF-3	3,579	1,184	9.11	11,730	84.49
03/17/94	EF-4	167	139	7.61	1,035	118.36
03/18/94	EF-5	2,880	1,014	7.34	9,248	94.48
03/17/94	EF-6	1,009	402	6.99	3,553	71.22
03/17/94	MW-4	817	512	7.53	3,762	136.29

GROUNDWATER DISSOLVED CHEMISTRIES - (Gross Concentrations)

NORTH AQUIFER SECOND QUARTER 1994

<u>DATE COLLECTED</u>	<u>LOCATION</u>	<u>SULFATE mg/l</u>	<u>CHLORIDE mg/l</u>	<u>pH SU</u>	<u>CONDUCTIVITY (umho/cm²)</u>	<u>WATER LEVEL(ft.)</u>
06/07/94	MW-5	387	25	7.09	1,178	150.27
06/09/94	OWUT-9	5,146	1,568	9.64	22,087	120.40
06/09/94	H-56	4,511	903	7.57	11,110	94.70
06/07/94	EF-23	1,403	338	6.98	3,408	162.81
06/09/94	EF-24	2,255	794	7.15	7,147	209.60
06/09/94	EF-25	5,044	883	6.96	11,429	150.01
06/09/94	MW-7	4,646	784	7.73	11,035	147.62
06/09/94	MW-8A	4,847	1132	7.48	13,637	179.50
06/07/94	MW-9	424	208	7.22	1,579	205.80
06/09/94	RW-1	6,601	1,157	9.61	20,825	168.31
06/09/94	RW-2	2,045	943	8.52	7,187	202.04

SOUTH AQUIFER-SECOND QUARTER 1994

06/07/94	MW-13	156	20	7.56	687	91.74
06/09/94	MW-11A	2,337	868	8.98	9,716	88.30
06/00/94	EF-3	NO SAMPLE				
06/08/94	EF-4	166	134	7.59	983	119.44
06/08/94	EF-5	2,856	1,022	7.22	9,140	96.10
06/08/94	EF-6	1,041	427	6.90	3,888	72.30
06/08/94	MW-4	809	615	7.48	4,146	136.32

LIQUID SAMPLES - Dissolved Cations in Groundwater (North Aquifer)
 DATE: First Half 1994

LOCATION	CATION	CONCENTRATION (mg/l)	LLD (mg/l)
MW-5	As	<0.005	0.005
	Mo	<0.005	0.005
	Se	0.039	0.001
OW-UT-9	As	0.897	0.005
	Mo	28.40	0.05
	Se	0.036	0.001
H-56	As	0.050	0.005
	Mo	9.28	0.05
	Se	0.001	0.001
EF-24	As	<0.005	0.005
	Mo	3.54	0.05
	Se	0.041	0.001
EF-23	As	<0.005	0.005
	Mo	<0.001	0.001
	Se	0.030	0.001
EF-25	As	<0.005	0.005
	Mo	8.49	0.05
	Se	0.109	0.001
MW-7	As	0.057	0.005
	Mo	17.00	0.05
	Se	0.068	0.001
MW-8a	As	0.005	0.005
	Mo	8.30	0.05
	Se	0.054	0.001
MW-9	As	<0.005	0.005
	Mo	<0.005	0.005
	Se	0.007	<0.001
RW-1	As	0.964	0.01
	Mo	29.00	0.05
	Se	0.070	0.001
RW-2	As	0.018	0.005
	Mo	1.54	0.05
	Se	0.011	0.001

LIQUID SAMPLES - Dissolved Cations in Groundwater (South Aquifer)

DATE: First half 1994

<u>LOCATION</u>	<u>CATION</u>	<u>CONCENTRATION</u> <u>(mg/l)</u>	<u>LLD</u> <u>(mg/l)</u>
MW-13	As	0.0230	0.005
	Mo	0.025	0.05
	Se	0.006	0.001
MW-11a	As	0.711	0.001
	Mo	7.45	0.05
	Se	0.093	0.001
EF-3	As	1.45	0.05
	Mo	15.80	0.05
	Se	0.206	0.001
EF-4	As	0.026	0.005
	Mo	0.032	0.001
	Se	0.005	0.001
EF-5	As	0.079	0.005
	Mo	2.02	0.05
	Se	0.028	0.001
EF-6	As	0.008	0.005
	Mo	<0.005	0.005
	Se	0.009	0.001
MW-4	As	0.007	0.005
	Mo	0.88	0.05
	Se	0.017	0.001

WATER LEVEL DATA - Ground Surface to Water

NORTH AQUIFER			SOUTH AQUIFER		
<u>DATE</u>	<u>WELL LOCATION</u>	<u>DEPTH (FT.)</u>	<u>DATE</u>	<u>WELL LOCATION</u>	<u>DEPTH (FT.)</u>
06/11/94	H-6	155.07	06/11/94	H-14	103.00
06/11/94	H-10	161.83	06/11/94	H-67	155.86
06/11/94	H-38	119.71	06/11/94	D-3	55.50
06/11/94	H-48	152.50	06/11/94	MW-1	81.83
06/11/94	H-55	123.58	06/11/94	MW-2	77.84
06/11/94	H-71	70.80	06/11/94	MW-6A	81.45
06/11/94	H-72	74.66	06/11/94	MW-11A	88.30
06/11/94	H-73	153.20	06/11/94	MW-12	103.76
06/11/94	H-77	193.22	06/11/94	DM80-2	80.43
06/11/94	H-78	180.47	06/11/94	DM80-3	72.09
06/11/94	MW-10	177.93	06/11/94	DM80-4	70.58
06/11/94	DM80-1	67.44	06/11/94	FT-1	83.00
06/11/94	EF-16	87.90	06/11/94	LT-10a	115.11
06/11/94	EF-17	98.82	06/11/94	LT-19	DELETED
06/11/94	EF-19	152.42	06/11/94	LT-20	DELETED
06/11/94	EF-20	129.71	06/11/94	EF-2	100.96
06/11/94	EF-22	143.38	06/11/94	EF-8	77.62
06/11/94	EF-26	127.91			
06/11/94	GW-19	151.49			
06/11/94	GW-20A	209.79			

OFFSITE SURFACE WATER

<u>DATE COLLECTED</u>	<u>LOCATION</u>	<u>RADIONUCLIDE</u>	<u>CONCENTRATION (uCi/ml)</u>	<u>ERROR ESTIMATE (uCi/ml)</u>	<u>LLD (uCi/ml)</u>
06/28/94	SS-1	U-Nat d	4.5 E-9	NA	3.0 E-11
		s	2.0 E-10	NA	3.0 E-11
		Ra-226 d	0.0	4.0 E-10	3.0 E-10
		s	1.0 E-10	2.0 E-10	3.0 E-10

d = dissolved
s = suspended

VEGETATION - Annual requirement Will be Completed 2nd. Half 1994

<u>MONTHS COLLECTED</u>	<u>LOCATION</u>	<u>TYPE/PORTION ANALYZED</u>	<u>RADIONUCLIDE</u>	<u>CONCENTRATION (uCi/Kg)</u>	<u>ERROR ESTIMATE (uCi/Kg)</u>	<u>LLD uCi/Kg</u>
	EM-1 (S-1)	Comp./Dry Vegetation	Ra-226 Pb-210			
	EM-4 (S-4)	Comp./Dry Vegetation	Ra-226 Pb-210			
	EM-6 (S-6)	Comp./Dry Vegetation	Ra-226 Pb-210			

SOIL - Annual requirement ONLY. Will be completed 2nd. half 1994.

<u>DATE COLLECTED</u>	<u>LOCATION</u>	<u>TYPE/PORTION ANALYZED</u>	<u>RADIONUCLIDE</u>	<u>GROSS CONCENTRATION (uCi/g)</u>	<u>ERROR ESTIMATE (uCi/g)</u>	<u>LLD (uCi/g)</u>
	EM-1	Grab/Surface	U-Nat Ra-226 Pb-210			
	E1-2	Grab/Surface	U-Nat Ra-226 Pb-210			
	EM-4	Grab/Surface	U-Nat Ra-226 Pb-210			
	EM-6	Grab/Surface	U-Nat Ra-226 Pb-210			
	Bckgrd.					

SEDIMENT - Annual requirement ONLY. Will be completed 2nd half 1994.

<u>DATE COLLECTED</u>	<u>LOCATION</u>	<u>TYPE/PORTION ANALYZED</u>	<u>RADIONUCLIDE</u>	<u>GROSS CONCENTRATION (uCi/g)</u>	<u>ERROR ESTIMATE (uCi/g)</u>	<u>LLD (uCi/g)</u>
	SS-1	Grab/Surface	U-Nat Ra-226 Pb-210			

DIRECT RADIATION

<u>DATES MONITORED</u>	<u>LOCATION</u>	<u>AVERAGE EXPOSURE RATE (mr/qtr.)</u>	<u>ERROR ESTIMATE (mr/qtr.)</u>
01/01/94 to 03/31/94	EM-1	13	4.9
03/31/94 to 06/30/94	EM-1	16	5.4
01/01/94 to 03/31/94	EM-2	17	5.3
03/31/94 to 06/30/94	EM-2	22	6.0
01/01/94 to 03/31/94	EM-4	14	5.0
03/31/94 to 06/30/94	EM-4	17	5.5
01/01/94 to 03/31/94	EM-6 (Background)	13.5	5.0
03/31/94 to 06/30/94	EM-6 (Background)	16	5.4