0400818420OR

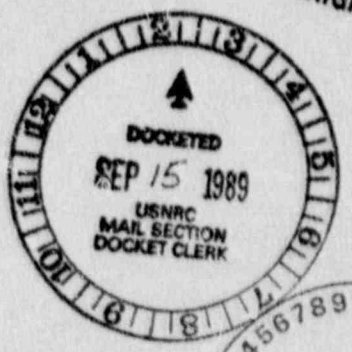
40-8084

RIO ALGOM MINING CORP.

La Sal Route
MOAB, UTAH 84532

Phone: (801) 686-2215

RETURN ORIGINAL TO PDR, HQ.



August 29, 1989

Mr. Ramon E. Hall, Director
U. S. Nuclear Regulatory Commission
Region IV
Uranium Recovery Field Office
P. O. Box 25325
Denver, Colorado 80225

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

Dear Mr. Hall:

Enclosed please find five (5) copies of the Semiannual Effluent Report for Rio Algom Mining Corp.'s Lisbon Mill. This data is the result of monitoring for the period 1 January 1989 through 30 June 1989.

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
Assistant Radiation Safety Officer
R.A.M.C- Lisbon Operations

OF02

89-0982

SEMIANNUAL ENVIRONMENTAL MONITORING REPORT

for

01/01/89 to 06/31/89

Prepared

By

RIO ALGOM MINING CORP. - Lisbon Operation

Source Materials License Number - SUA-1119

Docket Number - 40-8084

R. S. Pattison
Manager

31 Aug 89
Date

STACK YELLOWCAKE AND ORE:

RAMC- Lisbon Operation has no stack emmisions to report during this report period.

DATE COLLECTED	LOCATION OPERATING HRS. X	FLOW RATE (M^3/Sec.) y	RADIONUCLIDE	AVERAGE IN-STACK CONCENTRATION (uCi/ml) z	ERROR ESTIMATE (uCi/m')	(a) RELEASE (Curies)	ERROR ESTIMATE (Curies)	LLD uCi/ml)	(b) % MPC
	Yellowcake (c) Dust Filter		U-Nat Th-230 Ra-226 Pb-210						
	Yellowcake (c) Scrubber		U-Nat Th-230 Ra-226 Pb-210						
	Dryer (c) Center Column		U-Nat Th-230 Ra-226 Pb-210						
	Crusher (d) House		U-Nat Th-230 Ra-226 Pb-210						
	Transfer (d) House		U-Nat Th-230 Ra-226 Pb-210						
	Headframe (d) House		U-Nat Th-230 Ra-226 Pb-210						

a) Release calculation = X (hrs) x 3600 sec/hr x y (M^3/Sec) x Z (uCi/ml) x 10^6 ml/m^3 x 10^{-6} Ci/uCi

b) No atmospheric dispersion consideration or background adjustments were used in stack % MPCa calculations.

c) Yellowcake MPCa = Soluble (Restricted Areas). CRUSHER HOURS = 0.0

d) Ore Dust MPCa = Insoluble (Restricted Areas). DRYER HOURS = 0.0

Date COLLECTED	LOCATION	RADIONUCLIDE	GROSS CONCENTRATION (uCi/ml)	ERROR ESTIMATE (uCi/ml)	LLD (uCi/ml)	(e) % MPCa
		U-Nat	5.85 E-15	1.25 E-15	5.0 E-16	0.12
01/01/89	EM-1	Th-230	3.3 E-16	2.1 E-16	2.0 E-16	0.48
to	(S-1)	Ra-226	2.8 E-16	2.1 E-16	1.0 E-16	0.01
03/31/89		Pb-210	1.17 E-15	5.6 E-16	9.0 E-16	0.03
		Rn-222 (gas)	1.47 E-10	6.7 E-11	6.0 E-11	4.90
		U-Nat	1.16 E-15	1.16 E-15	5.0 E-16	0.02
04/01/89	EM-1	Th-230	1.9 E-16	1.9 E-16	3.0 E-16	0.24
to	(S-1)	Ra-226	4.3 E-16	1.1 E-16	1.0 E-16	0.02
06/30/89		Pb-210	1.25 E-15	5.4 E-16	9.0 E-16	0.03
		Rn-222 (gas)*				
		U-Nat	5.26 E-15	1.22 E-15	5.0 E-16	0.11
01/01/89	EM-2	Th-230	2.4 E-16	2.2 E-16	2.0 E-16	0.30
to	(S-2)	Ra-226	1.7 E-16	8.0 E-17	1.0 E-16	0.01
03/31/89		Pb-210	8.0 E-17	4.4 E-16	7.0 E-16	0.01
		Rn-222 (gas)	1.42 E-10	6.7 E-11	6.0 E-11	4.73
		U-Nat	1.27 E-15	1.27 E-15	5.0 E-16	0.03
04/01/89	EM-2	Th-230	3.0 E-16	2.9 E-16	3.0 E-16	0.38
to	(S-2)	Ra-226	3.6 E-16	9.0 E-17	1.0 E-16	0.02
06/30/89		Pb-210	9.2 E-16	8.0 E-17	7.0 E-16	0.02
		Rn-222 (gas)*				
		U-Nat	1.69 E-15	1.18 E-15	5.0 E-16	0.03
01/01/89	EM-4	Th-230	5.0 E-17	1.3 E-16	1.0 E-16	0.06
to	(S-4)	Ra-226	3.3 E-16	9.0 E-17	1.0 E-16	0.02
03/31/89		Pb-210	5.9 E-16	5.2 E-16	8.0 E-16	0.02
		Rn-222 (gas)	1.18 E-10	5.9 E-11	6.0 E-11	3.93
		U-Nat	1.24 E-15	1.24 E-15	5.0 E-16	0.03
04/01/89	EM-4	Th-230	3.4 E-16	3.2 E-16	3.0 E-16	0.43
to	(S-4)	Ra-226	2.2 E-16	9.0 E-17	1.0 E-16	0.01
06/30/89		Pb-210	6.2 E-16	3.5 E-16	8.0 E-16	0.02
		Rn-222 (gas)*				
		U-Nat	4.33 E-15	1.2 E-15	5.0 E-16	0.09
01/01/89	EM-6	Th-230	5.1 E-16	1.5 E-16	2.0 E-16	0.64
to	(S-6)	Ra-226	3.0 E-16	8.0 E-17	9.0 E-17	0.02
03/31/89	Bckgrd.	Pb-210	0.0	6.2 E-16	1.0 E-15	0.00
		Rn-222 (gas)	3.49 E-10	1.58 E-10	6.0 E-11	1'.63
		U-Nat	1.27 E-15	1.27 E-15	5.0 E-16	0.03
04/01/89	EM-6	Th-230	5.8 E-16	2.9 E-16	4.0 E-16	0.73
to	(S-6)	Ra-226	3.8 E-16	1.0 E-16	1.0 E-16	0.02
06/30/89	Bckgrd.	Pb-210	0.0	7.1 E-16	1.0 E-16	0.00
		Rn-222 (gas)*				

e) %MPCa is based upon gross nuclide concentrations divided by the appropriate unrestricted area MPCa from Table I on Page 14. No subtraction of EM-6 concentrations (area background) have been performed.

* Data not available as of report date.

LIQUID SAMPLES- Dissolved Radionuclides in Groundwaters

DATE: 1st. Half 1989

LOCATION	RADIONUCLIDE	GROSS CONCENTRATION (pCi/l)	ERROR ESTIMATE (pCi/l)	LLD (pCi/l)
MW-5	U-NAT	9.9	6.6	1.5
	Ra-226	0.758	0.244	0.30
	Ra-228	1.58	2.94	4.0
	Th-230	0.28	0.227	0.30
	Gross Alpha	7.78	1.02	6.0
MW-6a	U-NAT	6,340	495	1.0
	Ra-226	0.245	0.278	0.40
	Ra-228	1.17	2.18	4.0
	Th-230	0.829	0.335	0.10
	Gross Alpha	1,560	140	40.0
MW-13	U-NAT	20.0	6.6	1.5
	Ra-226	0.606	0.293	0.40
	Ra-228	1.39	2.52	4.0
	Th-230	0.102	0.167	0.30
	Gross Alpha	339	20.3	6.0
H-56	U-Nat	27,220	1,980	1.0
	Ra-226	1.17	0.31	0.30
	Ra-228	6.19	3.25	4.0
	Th-230	1.81	0.575	0.20
	Gross Alpha	10,100	887	100
OWUT-9	U-Nat	33,570	1650	1.0
	Ra-226	0.293	0.317	0.50
	Ra-228	7.04	3.45	4.0
	Th-230	4.57	0.761	0.10
	Gross Alpha	9,875	939	200

GROUNDWATER DISSOLVED CHEMISTRIES-(Gross Concentrations)

Date Collected	Location	Sulfate mg/l	Chloride mg/l	pH SU	Conductivity (umho/cm^2)	Water Level(ft.)
06/07/89	MW-1	505 0	427.4	7.72	2,853	59.51
06/08/89	MW-4	425.6	494.0	7 53	2,680	134.03
05/30/89	MW-5	142.4	38.0	7.49	455	150.89
06/06/89	MW-7	7,997.4	1,019.9	7.02	18,133	146.64
05/31/89	MW-13	143.6	57.0	7.52	499	90.12
06/05/89	H-56	4.708.2	573.1	8.53	10,377	90.88
06/05/89	OWUT-9	5,376.6	1,602.7	9.32	19.000	NA
06/12/89	RW-1	7,893.7	1,049.0	9.68	25,467	163.65

LIQUID SAMPLES- Dissolved Cations in Groundwaters

DATE: 1st. Half 1989

LOCATION	CATION	GROSS CONCENTRATION (mg/l)	LLD (mg/l)
MW-5	As	<0.010	0.01
	Ba	0.100	0.10
	Be	<0.010	0.01
	Cd	<0.005	0.005
	Cr	<0.010	0.01
	Pb	<0.005	0.01
	Mo	0.041	0.01
	Ni	0.040	0.01
	Se	<0.005	0.005
	Ag	<0.010	0.01
MW-6a	As	0.054	0.01
	Ba	0.060	0.10
	Be	<0.010	0.01
	Cd	0.139	0.005
	Cr	0.010	0.01
	Pb	0.024	0.01
	Mo	8.710	0.01
	Ni	0.090	0.01
	Se	<0.040	0.005
	Ag	<0.010	0.01
MW-13	As	0.015	0.01
	Ba	0.120	0.10
	Be	<0.010	0.01
	Cd	<0.005	0.005
	Cr	<0.010	0.01
	Pb	<0.005	0.01
	Mo	0.068	0.01
	Ni	<0.010	0.01
	Se	<0.005	0.005
	Ag	<0.010	0.01

LIQUID SAMPLES- Dissolved Cations in Groundwaters (Cont.)

DATE: 1st. Half 1989

LOCATION	CATION	GROSS CONCENTRATION (mg/l)	LLD (mg/l)
H-56	As	0.024	0.01
	Ba	0.040	0.10
	Be	<0.010	0.01
	Cd	1.250	0.005
	Cr	0.020	0.01
	Pb	0.065	0.01
	Mo	12.800	0.01
	Ni	0.100	0.01
	Se	0.012	0.005
	Ag	<0.010	0.01
CWUT-9	As	0.550	0.01
	Ba	0.040	0.10
	Be	<0.010	0.01
	Cd	1.710	0.005
	Cr	0.030	0.01
	Pb	0.139	0.01
	Mo	13.300	0.01
	Ni	0.340	0.01
	Se*	<0.040	0.04
	Ag	<0.010	0.01

* Matrix Interference Noted By Vendor Lab

WATER LEVEL DATA-Ground Surface to Water

Date	Well Location	Depth (ft.)
06/26/89	MW-9	204.73
06/26/89	MW-10	178.60
06/26/89	MW-8	DRY
06/26/89	H-38	105.82
06/26/89	H-48	146.84
06/26/89	H-55	120.41
06/26/89	H-71	56.60
06/26/89	H-73	137.36
06/26/89	H-77	190.60
06/26/89	H-78	179.78
06/26/89	LT-5	73.27
06/26/89	LT-6	64.90
06/26/89	LT-7	57.30
06/26/89	LT-10	68.20
06/26/89	LT-12	41.14
06/26/89	GW-17	149.97
06/26/89	GW-19	156.[illegible]
06/26/89	GW-20	190.71
06/26/89	UT-7	126.35
06/26/89	UT-9	DRY
06/26/89	D-3	55.30
06/26/89	D-10	64.78
06/26/89	DM80-2	78.94
06/26/89	DM80-3	66.50
06/26/89	DM80-4	66.90

OFFSITE SURFACE WATER

Date COLLECTED	LOCATION	RADIONUCLIDE		CONCENTRATION (uCi/ml)	ERROR ESTIMATE (uCi/ml)	LLD (uCi/ml)	% MPCw
		U-Nat	d	5.0 E-9	2.0 E-9	9.0E-9	0.02
			s	5.0 E-9	1.0 E-9	9.0E-9	0.02
02/24/89	SS-1						
		Ra-226	d	1.6 E-10	1.3 E-10	1.0E-9	0.53
			s	0.0	7.2 E-10	1.0E-9	0.00

d= dissolved
s= suspended

%MPCw's are based upon the limits set in 10 CFR [illegible], Appendix B.

SOIL -- Annual requirement ONLY. This data will be reported on second half, 1989 40.65 report.

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

SEDIMENT -- Annual requirement ONLY. This data will be reported on the second half, 1989 40.65 report.

DATE COLLECTED	LOCATION	TYPE/PORTION ANALYZED	RADIONUCLIDE	(a) GROSS CONCENTRATION (pCi/g)	ERROR ESTIMATE (pCi/g)	LLD (pCi/g)
	SS-1	Grab/Surface	U-Nat Ra-226 Pb-210			
	SS-2	Grab/Surface	U-Nat Ra-226 Pb-210			
	SS-7	Grab/Surface	U-Nat Ra-226 Pb-210			

VEGETATION Annual reguirment, will be reported second half 1989 40.65 report.

MONTHS COLLECTED	LOCATION	TYPE/PORTION ANALYZED	RADIONUCLIDE	CONCENTRATION (uCi/Kg)	ERROR ESTIMATE (uCi/Kg)	LLD (uCi/Kg
	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			

Vegetation sampled annually, three times during grazing season.

DOSE ASSESSMENT UPON ACTUAL ENVIRONMENTAL
MONITORING DATA AT THE NEAREST RESIDENCE - SITE NO. 4

Reporting Period: January 1989 to June 30, 1989

Internal Radiation Exposure:

The most probably pathway is inhalation of airborne particulates.

50 year dose commitment (mrem)

1st Qtr. 1989

RADIONUCLIDE	WHOLE BODY(f)	BONE(f)	LUNG(f)
U-Nat	-1.2 E-2*	-2.1 E-1*	-4.21 *
Th-230	-7.64 E-2*	-2.74 E-1*	-1.47*
Ra-226	9.27 E-4	9.27 E-3	1.98 E-1

*Calculations resulted in negative radionuclide concentration

2nd Qtr. 1989

RADIONUCLIDE	WHOLE BODY(f)	BONE(f)	LUNG(f)
U-Nat	-1.39 E-4*	-2.38 E-3*	-3.01 E-3*
Th-230	-2.66 E-2*	-9.52 E-1*	-5.15 E-1*
Ra-226	-7.42 E-3*	-7.42 E-2*	-1.59*

*Calculations resulted in negative radionuclide concentration

External Radiation Exposure:

1st Qtr 1989
EM Site #4- EM Site #6 = Net Exposure
16 mrem/qtr.-16 mrem/qtr. = 0.0 mrem/qtr.

2nd Qtr. 1989
EM Site #4-EM Site #6 = Net Exposure
15 mrem/qtr-14 mrem/qtr = 1.0 mrem/qtr.

(f) based upon nuclide concentrations.

DOSE CONVERSION CALCULATION FOR INHALATION OF AIRBORNE PARTICULATES
AT ENVIRONMENTAL MONITORING SITE NO. 4 (NEAREST RESIDENCE MONITOR)

(Gross Concentration) - (Background Concentration) = (Net Concentration) in uCi/ml

since: E12 uCi/ml = pCi/M^3

Net Concentration (uCi/ml) x E12 = Net Concentration (pCi/M^3), then:

Net Concentration (pCi/M^3) x Dose Conversion Factor ($mrem/pCi/M^3$) = Dose (mrem)

EM-4 NUCLIDE	GROSS	-	EM-6 BACKGROUND	=	EM-4 NET	x E12	x	ORGAN DOSE CONVERSION FACTOR
U-Nat	1.69 E-15	-	4.33 E-15	=	-2.64 E-15			(pCi/M^3) x fi_1
Th-230	5.0 E-17	-	5.1 E-16	=	-4.6 E-16			(pCi/M^3) x fi_2
Ra-226	3.3 E-16	-	3.0 E-16	=	3.0 E-17			(pCi/M^3) x fi_3

Organ Dose Conversion Factors (Fi)

From Table A-1 of "Compliance Determination Procedures for Environmental Radiation Protection Standards for Uranium Recovery Facilities, 40 CFR 190, November 1980".

	Whole Body	Bone	Lung
U-Nat	4.62	79.4	169.
Th-230	166.	5950.	3220.
Ra-226	30.9	309.	6610.

1st Qtr. 1989

U-Nat

Whole Body	(-2.64 E-15)	(1 E12)	(4.62)	= -1.2 E-2 < 0 mrem/yr
Bone	(-2.64 E-15)	(1 E12)	(79.4)	= -2.10 E-1 <0 mren/yr
Lung	(-2.64 E-15)	(1 E12)	(1590)	= -4.2 < 0 mrem/yr

Th230

Whole Body	(-4.6 E-16)	(1 E12)	(166)	= -7 64 E-2 mrem/yr
Bone	(-4.6 E-16)	(1 E12)	(5950)	= -2.74 mrem/yr
Lung	(-4.6 E-16)	(1 E12)	(3200)	= -1.47 mrem/yr

Ra226

Whole Body	(3.0 E-17)	(1 E12)	(30.9)	= 9.27 E-4 mrem/yr
Bone	(3.0 E-17)	(1 E12)	(309)	= 9.27 E-3 mrem/yr
Lung	(3.0 E-17)	(1 E12)	(6610)	= 1.98 E-1 mrem/yr

DOSE CONVERSION CALCULATION FOR INHALATION OF AIRBORNE PARTICULATES
AT ENVIRONMENTAL MONITORING SITE NO. 4 (NEAREST RESIDENCE MONITOR)

(Gross Concentration) - (Background Concentration) = (Net Concentration) in uCi/ml

since: E12 x uCi/ml = pCi/M^3

Net Concentration (uCi/ml) x E12 = Net Concentration (pCi/M^3), then:

Net Concentration (pCi/M^3) x Dose Conversion Factor (mrem/pCi/M^3) = Dose (mrem)

NUCLIDE	EM-4 GROSS	-	EM-6 BACKGROUND	=	EM-4 NET	x E12	x	ORGAN DOSE CONVERSION FACTOR
U-Nat	1.24 E-15	-	1.27 E-15	=	-3.0 E-17			(pCi/M^3) x fi_1
Th-230	3.4 E-16	-	5.8 E-16	=	-2.4 E-16			(pCi/M3) x fi_2
Ra-226	2.2 E-16	-	3.8 E-16	=	-1.6 E-16			(pCi/M3) x fi_3

Organ Dose Conversion Factors (Fi)

From Table A-1 of "Compliance Determination Procedures for Environmental Radiation Protection Standards for Uranium Recovery Facilities, 40 CFR 190, November 1980".

	Whole Body	Bone	Lung
U-Nat	4.62	79.4	169.
Th-230	166.	5950.	3220.
Ra-226	30.9	309.	6610.

2nd Qtr, 1989

U-Nat

Whole Body	(-3.0 E-17)	(E12)	(4.62)	=	-1.39 E-4 < 0 mrem/yr
Bone	(-3.0 E-17)	(E12)	(79.4)	=	-2.38 E-3 < 0 mrem/yr
Lung	(-3.0E-17)	(E12)	(169)	=	-5.01 E-3 < 0 mrem/yr

Ra226

Whole Body	(-2.4 E-16)	(E12)	(30.9)	=	- 7.42 E-3 < 0 mrem/yr
Bone	(-2.4 E-16)	(E12)	(309)	=	-7.42 E-2 < 0 mrem/yr
Lung	(-2.4 E-16)	(E12)	(6610)	=	-1.59 <0 mrem/yr

Th230

Whole Body	(-1.6 E-16)	(E12)	(166)	=	-2.66 E-2 <0 mrem/yr
Bone	(-1.6 E-16)	(E12)	(5950)	=	-9.52 E-1 <0 mrem/yr
Lung	(-1.6 E-16)	(E12)	(3220)	=	-5.15 E-1 <0 mrem/yr

DIRECT RADIATION

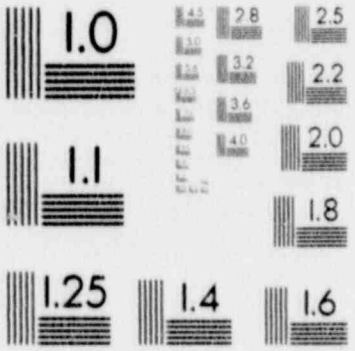
DATES MONITORED	LOCATION	AVERAGE EXPOSURE RATE (mr/qtr.)	ERROR ESTIMATE (mr/qtr.)
01/01/89 to 03/31/89	EM-1	16	4.9
04/01/89 to 06/30/89	EM-1	16	5.1
01/01/89 to 03/31/89	EM-2	20	5.1
04/01/89 to 06/30/89	EM-2	21	5.3
01/01/89 to 03/31/89	EM-4	16	4.9
04/01/89 to 06/30/89	EM-4	15	5.0
01/01/89 to 03/31/89	EM-6 (Background)	16	4.9
04/01/89 to 06/30/89	EM-6 (Background)	14	5.0

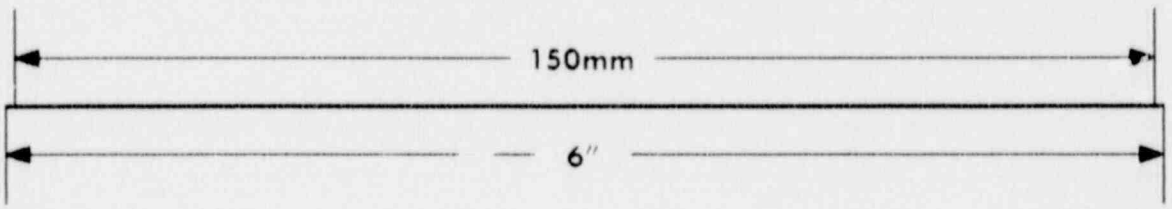
Bio Assay results for the reporting period January 1, 1989 to July 30, 1989:

No urine sample exceeded the 15 ug/l action level, during the period of time covered by this report.

2

IMAGE EVALUATION TEST TARGET (MT-3)

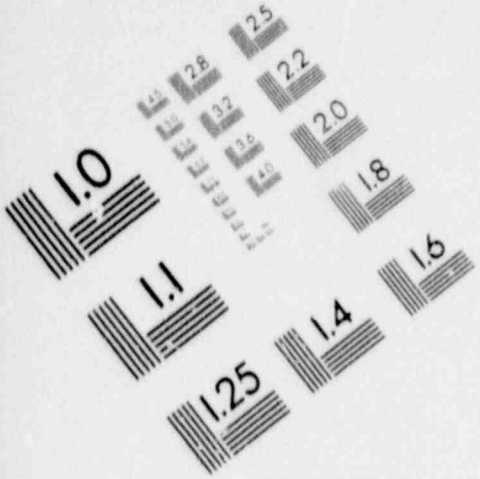


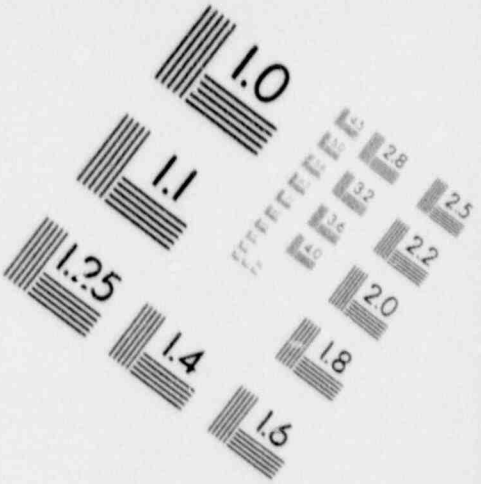


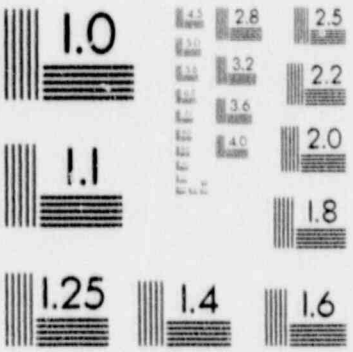
PHOTOGRAPHIC SCIENCES CORPORATION
770 BASKET ROAD
P.O. BOX 338
WEBSTER, NEW YORK 14580
(716) 265-1600

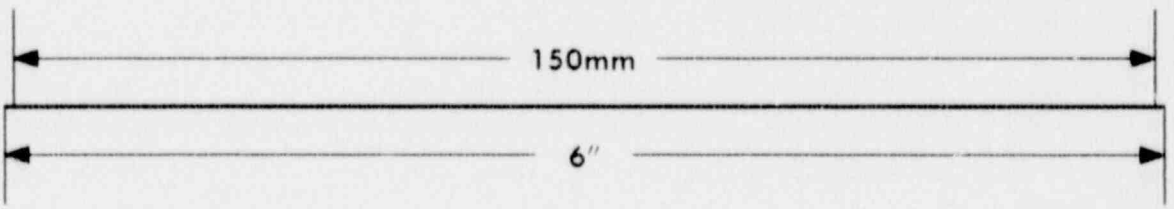
2

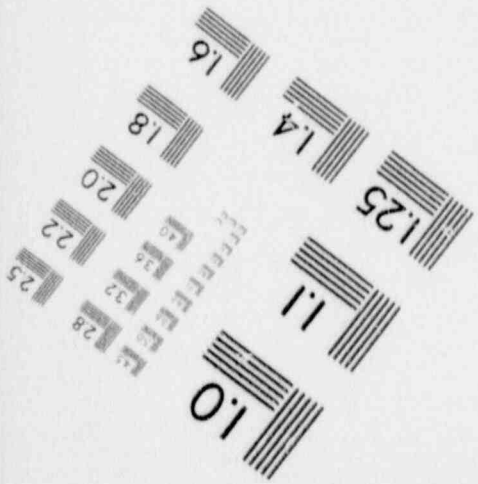
IMAGE EVALUATION TEST TARGET (MT-3)











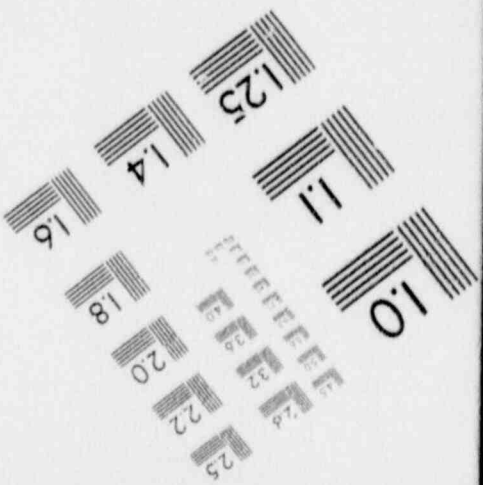


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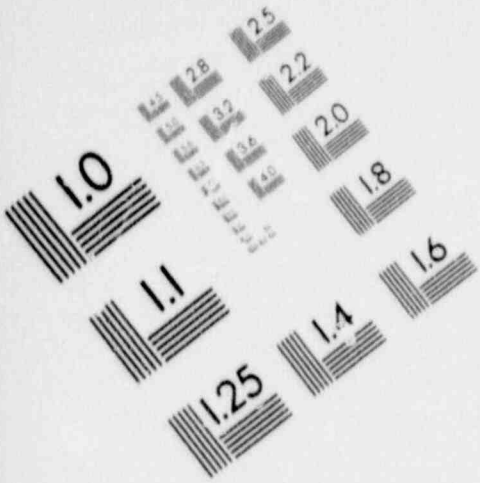
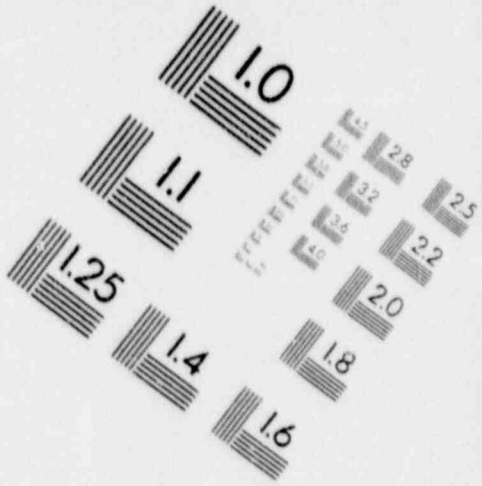
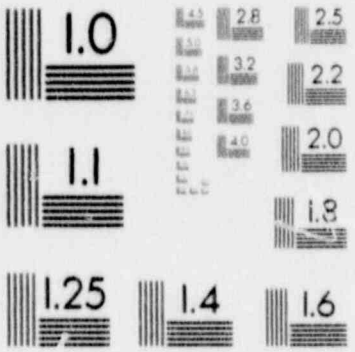
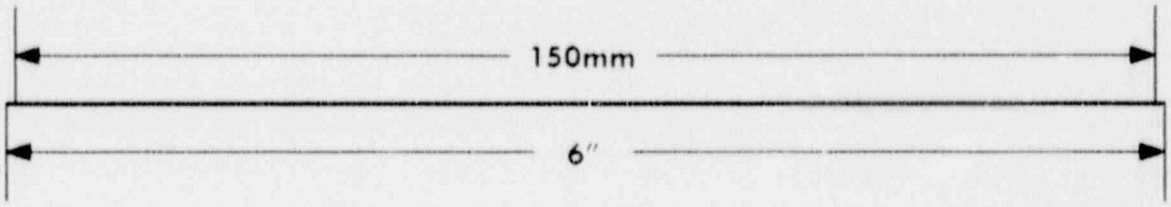
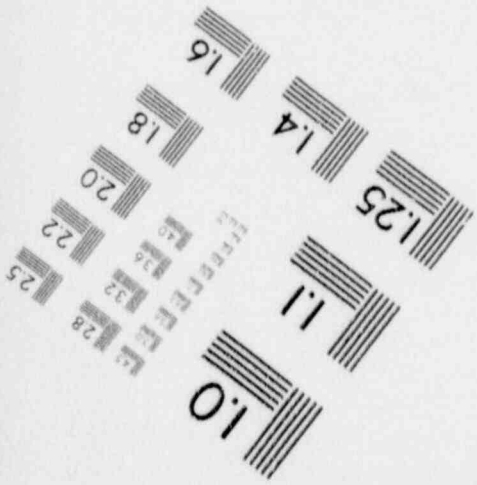
IMAGE EVALUATION TEST TARGET (MT-3)

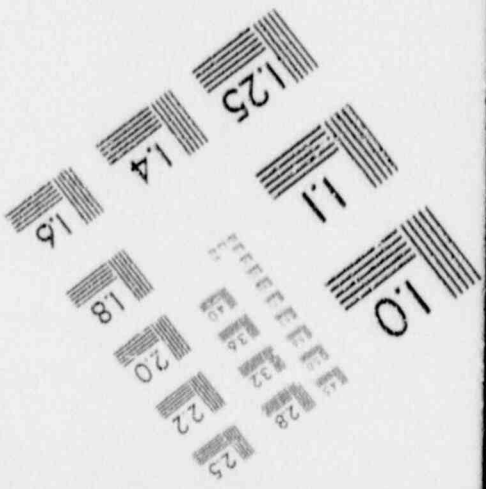












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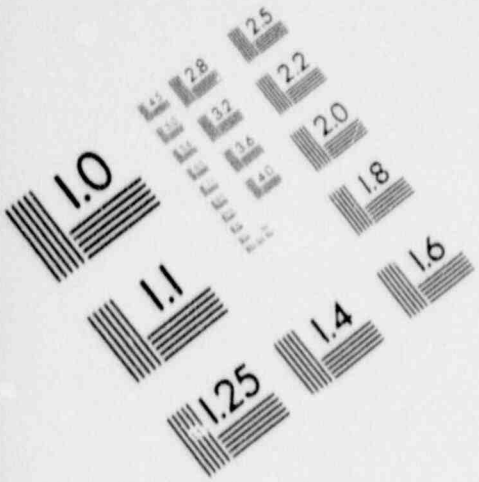

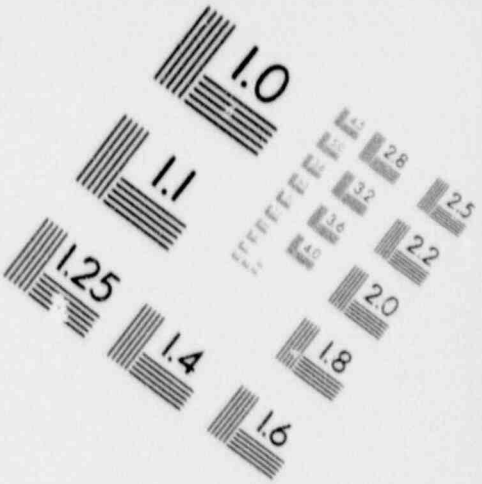

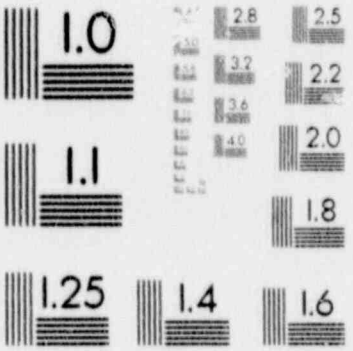

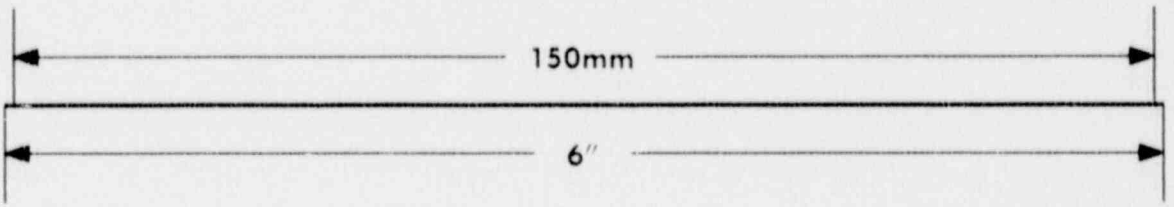

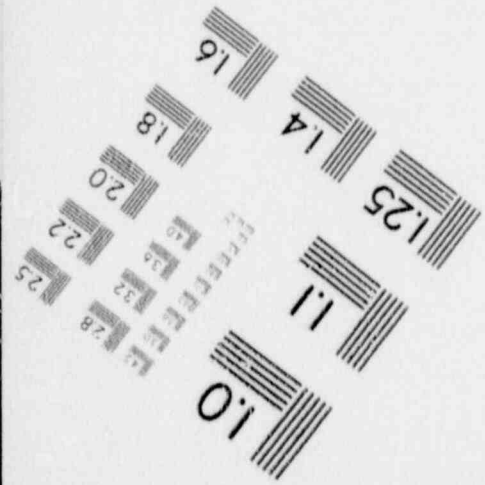

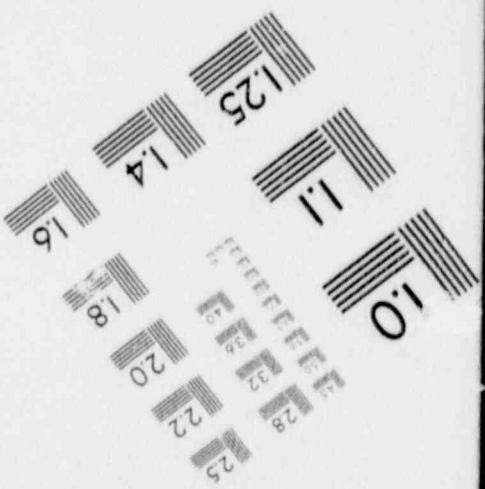

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SUPPLEMENTARY INFORMATION

Surface Water and Sediment Sampling Site (See Attached Map)

SITE	DIRECTION FROM MILL	LOCATION
SS-1	NW	West Coyote Wash

Environmental Monitoring Sites (See Attached Map)

SITE	DIRECTION FROM MILL	LOCATION
S1 (EM-1)	SE	South property boundary
S2 (EM-2)	SW	West property boundary
S4 (EM-4)	N	Nearest resident, approximately ½ mile north of property boundary
S6 (EM-6)	NW	10.5 miles northwest of the mill

TABLE 1

MPC's Used in Calculation of % MPC

Reference 10 CFR 20, Appendix B

	Restricted Area (uCi/ml)			Unrestricted Area (uCi/ml)	
	Air		Water	Air	Water
	Ore	Yellowcake			
U-Natural	$.5 \times 10^{-10}$ uCi/ml	1.0×10^{-10} uCi/ml	1×10^{-3} S,I	5×10^{-12}	3×10^{-5} S,I
Th-230		2×10^{-12} S	5×10^{-5}	8×10^{-14} S	2×10^{-6} S, 3×10^{-5} I
Ra-226		3×10^{-11} S	4×10^{-7} S	2×10^{-12} I	3×10^{-8} S, 3×10^{-5} I
Pb-210		1×10^{-10} S	4×10^{-6} S	4×10^{-12} S	1×10^{-7} S, 2×10^{-4} I
Po-210		3×10^{-11} I	2×10^{-5} S	1×10^{-12} I	7×10^{-7} S, 3×10^{-5} I
Rn-222				3×10^{-9}	

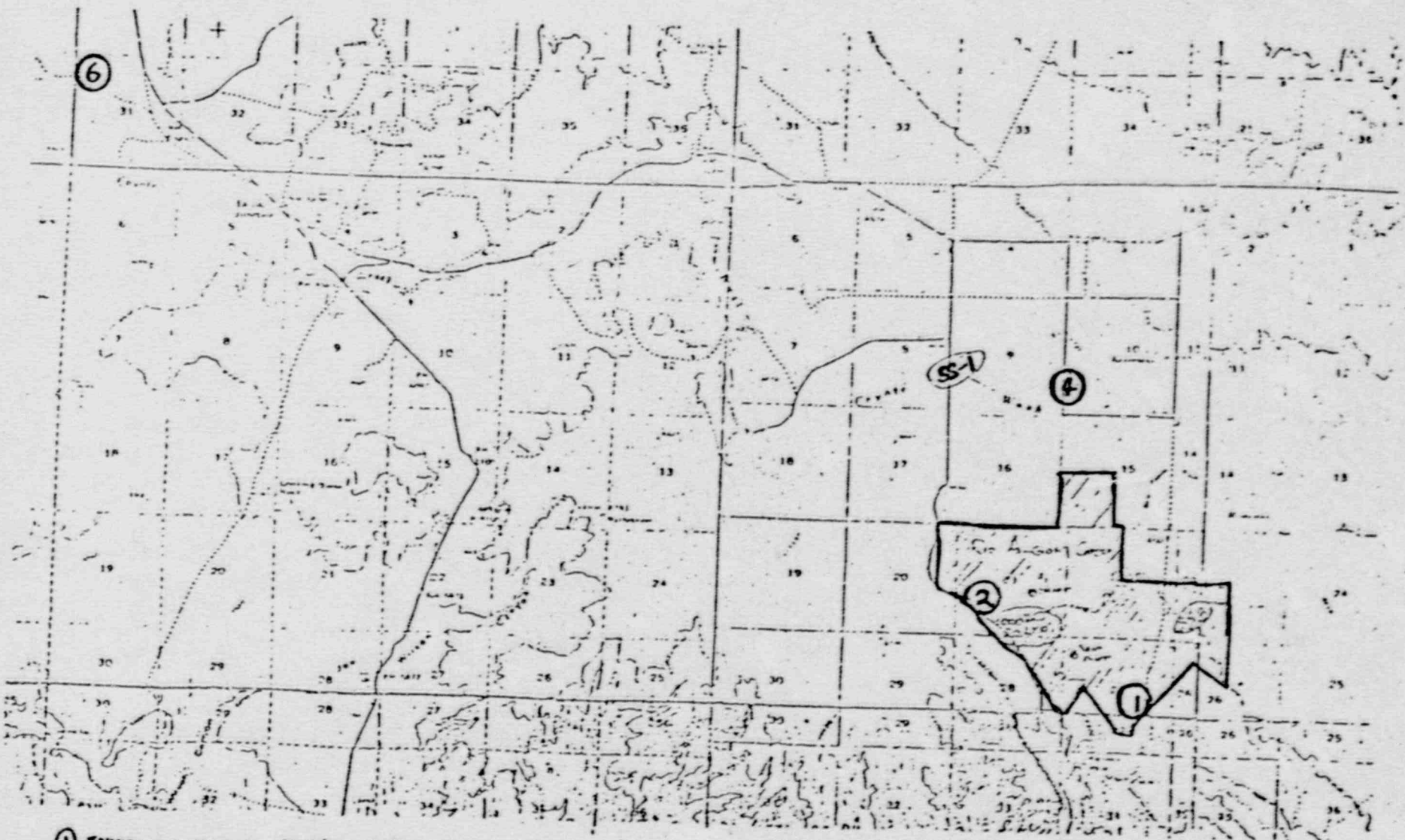
S = soluble = dissolved

I - insoluble = suspended

Calculation:

Nuclide concentration at the location = Ni
Maximum Permissible Concentration for the nuclide (above) = MPCi

$$\% \text{ MPCi} = \frac{Ni}{MPCi} \times 100$$



Sampling locations for air particulates, radon, soils, and direct radiation. Vegetation sampling near sites 1, 3, and 6.