

RIO ALGOM CORPORATION

Lisbon Mine

LaSai Route
MOAB, UTAH 84532

Phone: (801) 259-5904

August 4, 1980

U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 1000
Arlington, Texas 76012

Attention: Charles L. Cain, Radiation Specialist

Gentlemen:

We have completed detailed calculations of the weekly exposure of mill workers to airborne uranium for all weekly periods during the period August 1977 through December 1979. There are no instances of exposure in excess of the limits of 10 CFR 20.103 (a) (2).

A new time sheet has been designed and put into use at each work station in the mill. Each employee accounts for the time and activity in each area, crushing or washing down, or to account for the difference in changing barrels or washing down under the dryer. Several weeks of experience with the new time sheet shows that we are within 25% of MPC of airborne exposure in all areas and less than 5 to 10% in most areas.

During this period, we followed our Standard Practice and sent an employee to Battelle Memorial Pacific Northwest Laboratories for in vivo lung and whole body count and other biological testing. The man was found to have only lower limit of detection quantities of uranium in all respects except for an area of external contamination on his back. This contamination was so small that it could not have been detected by our RM-14 alpha monitor in our higher background circumstances.

Our urinalysis bioassay program is a fully acceptable and documented record of exposure to airborne radiation per paragraph 20.103 (a) (3). For the period, August 1977 to December 1979, there were no urine analyses that indicated action was necessary to seek further engineering process or respirator control. The Inspection and Enforcement presentation on inspection criteria at the

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U. S. Nuclear Regulatory Commission
Region IV
August 4, 1980
Page 2

NRC's February 22, 1978 seminar pertaining to regulatory requirements of airborne exposures in uranium mills emphasized this very point.

Sincerely,

J. T. Burnett
Radiation Safety Officer

JTB:jem
Enclosures

cc: File

DATE NAME	JOB DESCRIPTION	TOTAL EXPOSURE FOR MONTH	AVERAGE WEEKLY EXPOSURE	REMARKS
<u>AUGUST 1977</u>				
Hansen, S.	Dryer Operator	151.0	36.29	
Ing, W.	Dryer Operator	115.7	27.81	
Simmons, M.	Dryer Operator	134.7	32.38	
Valdez, M.R.	Dryer Operator	88.9	21.37	
Lawley, J.	Crusher Operator	27.4	6.59	
Lawley, D.	Crusher Helper	27.5	6.61	
Rice	Crusher Operator	27.9	6.71	
Barks	Crusher Helper	13.2	3.18	
Meadows	Crusher Operator	34.7	8.34	
Smith, M.	Crusher Helper	48.6	11.68	
Melo	Crusher Operator	21.0	5.05	
Gonzales	Crusher Helper	23.9	5.75	
<u>SEPTEMBER 1977</u>				
Parks	Dryer Operator	188.0	45.19	
Dravage, B.	Dryer Operator	168.0	40.38	
Simmons, M.	Dryer Operator	184.0	44.23	
Valdez, M.R.	Dryer Operator	170.0	40.87	
Lawley, J.	Crusher Operator	28.9	6.95	
Lawley, D.	Crusher Helper	72.0	17.31	
Rice	Crusher Operator	46.0	11.06	
Daniels, E.	Crusher Helper	32.5	7.81	
Meadows	Crusher Operator	32.0	7.69	
Smith, M.	Crusher Helper	44.3	10.65	
Gonzales	Crusher Operator	48.0	11.54	
Carlile	Crusher Helper	38.9	9.35	
<u>OCTOBER 1977</u>				
Parks	Dryer Operator	41.3	9.93	
Dravage, B.	Dryer Operator	30.0	7.21	
Simmons, M.	Dryer Operator	46.0	11.06	
Valdez, M.R.	Dryer Operator	48.0	11.54	
Lawley, J.	Crusher Operator	5.7	1.37	
Lawley, D.	Crusher Helper	11.0	2.64	

<u>DATE</u> <u>NAME</u>	<u>JOB</u> <u>DESCRIPTION</u>	<u>TOTAL EXPOSURE</u> <u>FOR MONTH</u>	<u>AVERAGE WEEKLY</u> <u>EXPOSURE</u>	<u>REMARKS</u>
<u>OCTOBER 1977 (Cont'd.)</u>				
Rice	Crusher Operator	11.5	2.76	
Daniels, E.	Crusher Helper	10.0	2.40	
Meadows	Crusher Operator	11.5	2.76	
Gonzales	Crusher Operator	12.0	2.88	
Carlile	Crusher Helper	12.0	2.88	
<u>NOVEMBER 1977</u>				
Parks	Dryer Operator	155.5	37.38	
Dravage, B.	Dryer Operator	176.2	42.26	
Meadows, J.	Dryer Operator	122.4	29.42	
Valdez, M.R.	Dryer Operator	189.2	45.48	
Lawley, J.	Crusher Operator	37.2	8.94	
Lawley, D.	Crusher Helper	64.0	15.38	
Rice	Crusher Operator	34.3	8.25	
Daniels, E.	Crusher Helper	46.0	11.06	
Carlile	Crusher Operator	50.0	12.02	
Austin	Crusher Helper	50.0	12.02	
Gonzales	Crusher Operator	44.4	10.67	
Erickson	Crusher Helper	20.0	4.80	
<u>DECEMBER 1977</u>				
Parks	Dryer Operator	176.68	42.47	
Dravage	Dryer Operator	198.40	46.69	
Meadows	Dryer Operator	149.42	35.92	
Valdez	Dryer Operator	196.60	47.26	
Lawley, J.	Crusher Operator	25.50	6.13	
Lawley, D.	Crusher Helper	42.0	10.10	
Rice	Crusher Operator	16.5	3.97	
Daniels, E.	Crusher Helper	12.0	5.76	
Carlile	Crusher Operator	29.0	6.97	
Austin	Crusher Helper	22.0	5.29	
Gonzales	Crusher Operator	24.5	5.89	
Erickson	Crusher Helper	21.47	5.16	
<u>JANUARY 1978</u>				
Parks	Dryer Operator	139.10	33.44	
Dravage	Dryer Operator	143.0	34.38	

DATE NAME	JOB DESCRIPTION	TOTAL EXPOSURE FOR MONTH	AVERAGE WEEKLY EXPOSURE	REMARKS
<u>JANUARY 1978 (Cont'd.)</u>				
Meadows	Dryer Operator	123.7	29.74	
Valdez	Dryer Operator	158.3	38.05	
Lawley, J.	Crusher Operator	26.0	6.25	
Lawley, D.	Crusher Helper	39.95	9.36	
Rice	Crusher Operator	31.30	7.52	
Reece	Crusher Helper	19.5	4.69	
Carlile	Crusher Operator	19.0	4.57	
Austin	Crusher Helper	20.5	4.93	
Gonzales	Crusher Operator	23.0	5.53	
Erickson	Crusher Helper	22.0	5.29	
<u>FEBRUARY 1978</u>				
Parks	Dryer Operator	137.5	33.05	
Nelson	Dryer Operator	154.0	37.02	
Meadows	Dryer Operator	89.4	21.49	
Valdez	Dryer Operator	128.1	30.79	
Lawley, J.	Crusher Operator	20.0	4.80	
Lawley, D.	Crusher Helper	19.0	4.57	
Rice	Crusher Operator	21.0	5.05	
Reece	Crusher Helper	18.0	4.33	
Carlile	Crusher Operator	20.0	4.80	
Austin	Crusher Helper	22.0	5.29	
Gonzales	Crusher Operator	21.0	5.05	
Erickson	Crusher Helper	19.0	4.57	
<u>MARCH 1978</u>				
Parks	Dryer Operator	45.70	10.99	
Nelson	Dryer Operator	136.15	32.73	
Meadows	Dryer Operator	156.20	37.55	
Valdez	Dryer Operator	172.30	41.42	
Lawley, J.	Crusher Operator	32.0	7.69	
Lawley, D.	Crusher Helper	Dryer 29.70 C.H. 21.00	.97	Limit ≤ 1 by ratio method Part 20
Rice	Crusher Operator	34.5	8.29	
Reece	Crusher Helper	48.0	11.54	
Carlile	Crusher Operator	30.3	7.30	
Austin	Crusher Helper	36.0	8.65	

<u>DATE</u> <u>NAME</u>	<u>JOB</u> <u>DESCRIPTION</u>	<u>TOTAL EXPOSURE</u> <u>FOR MONTH</u>	<u>AVERAGE WEEKLY</u> <u>EXPOSURE</u>	<u>REMARKS</u>
<u>MARCH 1978 (Cont'd.)</u>				
Gonzales	Crusher Operator	24.7	5.93	
Erickson	Crusher Helper	36.0	8.65	
<u>APRIL 1978</u>				
Forres	Dryer Operator	105.74	25.42	
Nelson	Dryer Operator	99.7	23.9	
Meadows	Dryer Operator	75.5	18.16	
Valdez	Dryer Operator	68.49	16.46	
Lawley, J.	Crusher Operator	20.63	4.96	
Lawley, D.	Crusher Helper	23.93	5.75	
Rice	Crusher Operator	15.33	3.68	
Reece	Crusher Helper	23.00	5.53	
Carlile	Crusher Operator	20.09	4.83	
Austin	Crusher Helper	24.00	5.77	
Gonzales	Crusher Operator	22.00	5.29	
Erickson	Crusher Helper	19.00	4.57	
<u>MAY 1978</u>				
Forres	Dryer Operator	126.48	30.40	
Nelson	Dryer Operator	53.52	12.86	
Meadows	Dryer Operator	61.04	23.20	
Valdez	Dryer Operator	151.44	36.40	
Lawley, J.	Crusher Operator	9.20	2.21	
Lawley, D.	Crusher Helper	28.38	6.81	
Rice	Crusher Operator	7.50	1.80	
Reece	Crusher Helper	12.00	2.88	
Carlile	Crusher Operator	9.51	2.29	
Austin	Crusher Helper	11.50	2.76	
Gonzales	Crusher Operator	11.50	2.76	
Erickson	Crusher Helper	11.60	2.79	
<u>JUNE 1978</u>				
Forres	Dryer Operator	107.6	25.88	
Nelson	Dryer Operator	108.8	26.15	
Meadows	Dryer Operator	83.5	20.08	
Valdez	Dryer Operator	84.1	20.21	

<u>DATE</u> <u>NAME</u>	<u>JOB</u> <u>DESCRIPTION</u>	<u>TOTAL EXPOSURE</u> <u>FCR MONTH</u>	<u>AVERAGE WEEKLY</u> <u>EXPOSURE</u>	<u>REMARKS</u>
<u>JUNE 1978 (Cont'd.)</u>				
Lawley, J.	Crusher Operator	22.50	5.41	
Lawley, D.	Crusher Helper	21.20	5.10	
Austin	Crusher Operator	25.20	6.06	
Reece	Crusher Helper	22.40	5.38	
Carlile	Crusher Operator	26.90	6.47	
Garcia	Crusher Helper	22.00	5.29	
Gonzales	Crusher Operator	19.10	4.59	
Erickson	Crusher Helper	32.5	7.81	
<u>AUGUST 1978</u>				
Torres	Dryer Operator	161.05	38.71	
Nelson	Dryer Operator	166.75	40.08	
Meadows	Dryer Operator	98.50	23.68	
Valdez	Dryer Operator	186.92	44.94	
Reece	Crusher Operator	17.10	4.11	
Beeson	Crusher Helper	19.22	4.62	
Austin	Crusher Operator	21.97	5.28	
Allen	Crusher Helper	8.00	7.69	
Carlile	Crusher Operator	23.00	5.53	
Garcia	Crusher Helper	21.30	5.12	
Gonzales	Crusher Operator	22.00	5.29	
Erickson	Crusher Helper	22.00	5.29	
<u>SEPTEMBER 1978</u>				
Torres	Dryer Operator	35.63	8.56	
Nelson	Dryer Operator	34.00	8.17	
Meadows	Dryer Operator	33.75	8.11	
Valdez	Dryer Operator	28.15	6.77	
Reece	Crusher Operator	-----	----	Terminated 9-8-78
Beeson	Crusher Helper	29.25	7.03	
Austin	Crusher Operator	9.38	2.26	
Quintana	Crusher Helper	18.00	4.33	
Carlile	Crusher Operator	17.40	4.18	
Garcia	Crusher Helper	11.70	2.87	
Gonzales	Crusher Operator	20.0	4.81	
Erickson	Crusher Helper	21.15	5.08	

<u>DATE</u> <u>NAME</u>	<u>JOB</u> <u>DESCRIPTION</u>	<u>TOTAL EXPOSURE</u> <u>FOR MONTH</u>	<u>AVERAGE WEEKLY</u> <u>EXPOSURE</u>	<u>REMARKS</u>
<u>OCTOBL 1978</u>				
Porres	Dryer Operator	117.80	28.32	
Nelson	Dryer Operator	39.10	9.40	
Meadows	Dryer Operator	112.30	27.00	
Gonzales	Dryer Operator	136.90	32.91	
Beeson	Crusher Operator	13.70	3.29	
Allen	Crusher Helper	13.80	3.32	
Austin	Crusher Operator	11.90	2.86	
Robinson	Crusher Helper	14.40	3.46	
Carlile	Crusher Operator	14.70	3.53	
Beauregard	Crusher Helper	15.00	3.61	
Erickson	Crusher Operator	14.40	3.46	
Dennis	Crusher Helper	8.40	2.02	
<u>NOVEMBER 1978</u>				
Porres	Dryer Operator	58.8	14.13	
Nelson	Dryer Operator	85.1	20.46	
Meadows	Dryer Operator	59.1	14.21	
Gonzales	Dryer Operator	56.3	13.53	
Beeson	Crusher Operator	30.6	7.36	
Allen	Crusher Helper	28.6	6.88	
Austin	Crusher Operator	34.6	8.32	
Robinson	Crusher Helper	39.1	9.40	
Carlile	Crusher Operator	39.05	9.39	
Beauregard	Crusher Helper	33.30	7.93	
Erickson	Crusher Operator	34.3	8.25	
<u>DECEMBER 1978</u>				
Porres	Dryer Operator	88.94	21.38	
Nelson	Dryer Operator	69.50	16.71	
Meadows	Dryer Operator	44.59	10.72	
Gonzales	Dryer Operator	92.40	22.21	
Rutherford	Crusher Operator	25.50	6.22	
Allen	Crusher Helper	22.80	5.48	
Austin	Crusher Operator	29.30	7.04	
Robinson	Crusher Helper	26.60	6.39	
Carlile	Crusher Operator	30.3	7.28	
Beauregard	Crusher Helper	34.9	8.39	

DATE NAME	JOB DESCRIPTION	TOTAL EXPOSURE FOR MONTH	AVERAGE WEEKLY EXPOSURE	REMARKS
<u>DECEMBER 1978 (Cont'd.)</u>				
Erickson	Crusher Operator	27.4	6.59	
Beeson	Crusher Helper	28.6	6.88	
<u>JANUARY 1979</u>				
[REDACTED]	Dryer Operator	61.20	14.71	
[REDACTED]	Dryer Operator	45.40	10.91	
[REDACTED]	Dryer Operator	44.29	10.65	
Gonzales	Dryer Operator	56.30	13.53	
Rutherford	Crusher Operator	8.80	2.12	
Stansberry	Crusher Helper	9.10	2.19	
Austin	Crusher Operator	11.20	2.69	
Robinson	Crusher Helper	5.20	1.25	
Carlile	Crusher Operator	11.80	2.84	
Beauregard	Crusher Helper	8.80	2.12	
Erickson	Crusher Operator	9.20	2.21	
Beeson	Crusher Helper	8.80	2.12	
<u>FEBRUARY 1979</u>				
Corres	Dryer Operator	97.50	23.44	
Nelson	Dryer Operator	44.00	21.15	For 11 days. Terminated.
Meadows	Dryer Operator	87.55	21.05	
Gonzales	Dryer Operator	84.70	20.36	
Rutherford	Crusher Operator	10.10	2.43	
Stansberry	Crusher Helper	10.30	2.48	
Austin	Crusher Operator	11.20	2.69	
Crowe	Crusher Helper	8.50	2.04	
Carlile	Crusher Operator	10.50	2.52	
Beauregard	Crusher Helper	10.50	2.52	
Erickson	Crusher Operator	10.00	2.40	
Hoskins	Crusher Helper	50.82	12.22	
<u>MARCH 1979</u>				
Corres	Dryer Operator	99.50	23.92	
Carlile	Dryer Operator	68.70	16.51	
Meadows	Dryer Operator	124.00	29.81	
Gonzales	Dryer Operator	104.20	25.05	

DATE NAME	JOB DESCRIPTION	TOTAL EXPOSURE FOR MONTH	AVERAGE WEEKLY EXPOSURE	REMARKS
<u>MARCH 1979 (Cont'd.)</u>				
Rutherford	Crusher Operator	38.70	9.30	
Stansberry	Crusher Helper	41.80	10.05	
Austin	Crusher Operator	38.90	9.35	
Crowe	Crusher Helper	15.20	14.62	For 8 days.
Howard	Crusher Operator	39.90	9.59	Terminated.
Dorsett	Crusher Helper	39.00	9.38	
Brickson	Crusher Operator	41.80	10.05	
Moskins	Crusher Helper	34.20	8.22	
<u>APRIL 1979</u>				
Corres	Dryer Operator	122.11	29.35	
Carlile	Dryer Operator	100.14	24.07	
Meadows	Dryer Operator	119.33	28.69	
Gonzales	Dryer Operator	51.12	12.29	
Rutherford	Crusher Operator	19.00	4.57	
Shaffer	Crusher Helper	18.80	4.52	
Austin	Crusher Operator	18.10	4.35	
Golden	Crusher Helper	18.40	4.42	
Stansberry	Crusher Operator	22.23	5.34	
Dorsett	Crusher Helper	8.80	4.23	For 14 days.
Brickson	Crusher Operator	22.40	5.38	Terminated.
Moskins	Crusher Helper	18.40	4.42	
<u>MAY 1979</u>				
Corres	Dryer Operator	44.89	10.79	
Carlile	Dryer Operator	36.27	8.72	
Meadows	Dryer Operator	47.72	11.47	
Gonzales	Dryer Operator	44.31	10.65	
Rutherford	Crusher Operator	27.50	6.61	
Shaffer	Crusher Helper	26.40	6.35	
Moskins	Crusher Operator	2.20 (2 days)	9.87	
		38.85 (21 days)		
Golden	Crusher Helper	25.30	6.08	
Stansberry	Crusher Operator	11.00	5.29	
Charles	Crusher Helper	22.00	5.29	
Brickson	Crusher Operator	28.20	6.78	
Kenny	Crusher Helper	29.05	6.98	

<u>DATE</u> <u>NAME</u>	<u>JOB</u> <u>DESCRIPTION</u>	<u>TOTAL EXPOSURE</u> <u>FOR MONTH</u>	<u>AVERAGE WEEKLY</u> <u>EXPOSURE</u>	<u>REMARKS</u>
<u>JUNE 1979</u>				
Torres	Dryer Operator	111.1	26.72	
Erickson	Dryer Operator	77.30	18.58	
Meadows	Dryer Operator	32.0	19.72	
Gonzales	Dryer Operator	196.5	47.24	
Ruthford	Crusher Operator	15.30	3.68	
Benton	Crusher Helper	15.80	3.80	
Austin	Crusher Operator	14.90	3.58	
Fox	Crusher Helper	16.10	3.87	
Holden	Crusher Operator	16.10	3.87	
Moen	Crusher Helper	34.80	8.37	
Shaffer	Crusher Operator	14.70	3.53	
Kenny	Crusher Helper	15.40	3.70	
<u>JULY 1979</u>				
Torres	Dryer Operator	69.25	16.65	
Erickson	Dryer Operator	84.50	20.31	
Meadows	Dryer Operator	96.00	23.08	
Gonzales	Dryer Operator	67.45	16.21	
Ruthford	Crusher Operator	7.70	1.85	
Benton	Crusher Helper	14.70	3.37	
Austin	Crusher Operator	13.60	3.27	
Fox	Crusher Helper	16.80	4.04	
Holden	Crusher Operator	15.87	3.81	
Moen	Crusher Helper	15.40	3.70	
Shaffer	Crusher Operator	18.90	4.54	
Getter	Crusher Helper	12.85	3.09	
<u>AUGUST 1979</u>				
Torres	Dryer Operator	101.8	24.47	
Erickson	Dryer Operator	127.16	30.57	
Meadows	Dryer Operator	133.6	32.12	
Gonzales	Dryer Operator	115.8	27.85	
Benton	Crusher Operator	60.85	14.63	
Matlock	Crusher Helper	67.85	16.31	
Austin	Crusher Operator	55.10	13.25	
Bent	Crusher Helper	62.10	14.93	

<u>DATE</u> <u>NAME</u>	<u>JOB</u> <u>DESCRIPTION</u>	<u>TOTAL EXPOSURE</u> <u>FOR MONTH</u>	<u>AVERAGE WEEKLY</u> <u>EXPOSURE</u>	<u>REMARKS</u>
<u>AUGUST 1979 (Cont'd.)</u>				
Holden	Crusher Operator	48.60	11.68	
Moen	Crusher Helper	59.40	14.28	
Shaffer	Crusher Operator	61.20	14.71	
Getter	Crusher Helper	60.20	14.47	
<u>SEPTEMBER 1979</u>				
Corres	Dryer Operator	50.60	12.16	
Erickson	Dryer Operator	62.65	15.06	
Meadows	Dryer Operator	53.95	12.97	
Gonzales	Dryer Operator	60.90	14.64	
Benton	Crusher Operator	20.80	5.00	
Matlock	Crusher Helper	20.50	4.93	
Austin	Crusher Operator	13.60	3.27	
Dent	Crusher Helper	21.20	5.10	
Holden	Crusher Operator	17.55	4.22	
Moen	Crusher Helper	18.40	4.42	
Shaffer	Crusher Operator	17.66	4.25	
Getter	Crusher Helper	17.60	4.23	
<u>OCTOBER 1979</u>				
Corres	Dryer Operator	60.63	14.57	
Erickson	Dryer Operator	51.30	12.33	
Meadows	Dryer Operator	75.69	18.19	
Gonzales	Dryer Operator	74.04	17.80	
Benton	Crusher Operator	18.00	4.33	
Matlock	Crusher Helper	22.70	5.46	
Austin	Crusher Operator	26.40	6.35	
Dent	Crusher Helper	26.80	6.44	
Holden	Crusher Operator	28.80	6.92	
Moen	Crusher Helper	27.60	6.63	
Shaffer	Crusher Operator	26.40	6.35	
Getter	Crusher Helper	24.40	5.87	
<u>NOVEMBER 1979</u>				
Corres	Dryer Operator	134.2	32.35	
Erickson	Dryer Operator	112.9	27.14	

DATE NAME	JOB DESCRIPTION	TOTAL EXPOSURE FOR MONTH	AVERAGE WEEKLY EXPOSURE	REMARKS
<u>NOVEMBER 1979 (Cont'd.)</u>				
Leadows	Dryer Operator	109.8	26.40	
Gonzales	Dryer Operator	109.1	26.24	
Getter	Crusher Operator	30.80	7.40	
Matlock	Crusher Helper	30.00	7.21	
Dent	Crusher Operator	28.90	6.95	
Linberg	Crusher Helper	32.20	7.74	
Golden	Crusher Operator	27.80	6.68	
Kendrick	Crusher Helper	70.58	16.97	
Shaffer	Crusher Operator	27.84	6.69	
Roedel	Crusher Helper	34.40	8.27	
<u>DECEMBER 1979</u>				
Corres	Dryer Operator	157.37	37.83	
Crickson	Dryer Operator	164.83	39.62	
Leadows	Dryer Operator	100.53	24.17	
Gonzales	Dryer Operator	130.78	31.44	
Getter	Crusher Operator	12.19	2.93	
Logue	Crusher Helper	51.06	12.27	
Dent	Crusher Operator	11.90	2.86	
Linberg	Crusher Helper	13.80	3.32	
Golden	Crusher Operator	6.00	2.88	
Kendrick	Crusher Helper	24.24	5.83	For 10 days. Terminated.
Shaffer	Crusher Operator	13.20	3.17	
Smith, M.	Crusher Helper	54.75	13.16	