

FACSIMILE TRANSMITTAL

TO:

LARRY CONNELL
KIRKLAND

Fax # 206-822-3552

DATE:

Jan. 29/96

Number of Pages

Including Cover Page

7

FROM:

Erik Madsen
Superintendent Environmental Services
NWT Division
Royal Oak Mines Inc.
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RE:

Larry;

Dispersion Modelling - Stack

- 1.) Here are some results from some model runs. It appears that stack height is the major factor that must be changed. It also appears that a height of between 275 and 300 would work.
- 2.) Grist is still pursuing Regulations. Now that new Grist has settled, expect more in depth work on this.
- 3.) Will be preparing an AFE, for Continuous Stack Monitor for SO₂. Looks like around 875 K.
- 4.) I am heading up to Colomac 31st → 2nd to test out Keyle-X technology. Then off to MAWI Feb. 3rd. Back on 16th.

Call me when you have a chance -

Eh



COVER SHEET - FACSIMILE TRANSMISSION

NUMBER OF PAGES ~~5~~ PLUS COVER

DATE: 22 January 1996

TO: **Eric Madsen**
Royal Oak
873-2914

Phil MacIntyre

920-2627
As we discussed.

6 pages

Ch

FROM: **Jim Sparling**
Air Quality Specialist
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Department of Renewable Resources
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MESSAGE:

Some more model predictions as discussed.

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NUMBER OF HOURLY SO₂ EXCEEDENCES AT YELLOWKNIFE CITY HALL (no. exceedences/year)				
Stack Height (ft.)	Exit Gas Temperature (°F.)			
	280	330	380	430
180	84	78	67	63
200	64	54	39	31
300	3	1	1	1
400	1	1	1	1

SO₂ MAXIMUM CONCENTRATION AT YELLOWKNIFE CITY HALL (ug/m ³)				
Stack Height (ft.)	Exit Gas Temperature (°F.)			
	280	330	380	430
180	1496.	870.	860.	857.
200	1481.	838.	833.	835.
300	581.	560.	541.	525.
400	523.	503.	485.	470.

Notes:

1. Runs 17 thru 32
2. Inner Stack Diameter 2.0 m.
3. Sulfur Dioxide mass omission rate of 41.4 ton/d.
4. Total number of hours of simulation 8783 hrs.
5. January thru December 1993 meteorological data.

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NUMBER OF HOURLY SO₂ EXCEEDENCES AT YELLOWKNIFE CITY HALL (no. exceedences/year)				
Stack Height (ft.)	Exit Gas Temperature (°F.)			
	280	330	380	430
180	79	68	63	56
200	57	44	32	28
300	3	1	1	1
400	1	1	1	1

SO₂ MAXIMUM CONCENTRATION AT YELLOWKNIFE CITY HALL (ug/m3)				
Stack Height (ft.)	Exit Gas Temperature (°F.)			
	280	330	380	430
180	1496.	870.	860.	857.
200	1481.	838.	833.	836.
300	581.	560.	541.	525.
400	523.	503.	485.	470.

Notes:

1. Runs 33 thru 48
2. Inner Stack Diameter 1.0 m.
3. Sulfur Dioxide mass emission rate of 41.4 ton/d.
4. Total number of hours of simulation 8783 hrs.
5. January thru December 1993 meteorological data.

Table 1

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PREDICTED HOURLY SO₂ EXCEEDENCES AT YELLOWKNIFE CITY HALL		
Stack Height (ft.)	HOURLY SO₂ EXCEEDENCES (no. exceedences/year)	SO₂ MAX CONC. (ug/m³)
200	64	1481.7
225	35	1464.4
250	23	1449.2
275	9	1435.5
300	6	741.3

2. Inner Stack Diameter 1.0 m.
3. Sulfur Dioxide mass emission rate of 41.4 ton/d.
4. Total number of hours of simulation 8783 hrs.
5. January thru December 1993 meteorological data.

Table 2

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HOURLY SO ₂ EXCEEDENCES AT YELLOWKNIFE CITY HALL (no. exceedences/year)					
MAX CONC RANGE (ug/m ³)	Stack Height (ft.)				
	200	225	250	275	300
450 - 600	46	25	17	5	4
601 - 800	13	7	5	3	2
801 - 1000	4	2	0	0	0
>1000	June 26 107.50	1	1	1	0

Notes:

1. Auxiliary Runs 1 thru 5
2. Inner Stack Diameter 1.0 m.
3. Sulfur Dioxide mass emission rate of 41.4 ton/d.
4. Total number of hours of simulation 8783 hrs.
5. January thru December 1993 meteorological data.

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NUMBER OF HOURLY SO₂ EXCEEDENCES AT YELLOWKNIFE CITY HALL (no. exceedences/year)				
Stack Height (ft.)	Exit Gas Temperature (°F.)			
	280	330	380	430
180	80	68	66	58
200	57	45	32	29
300	3	1	1	1
400	1	1	1	1

SO₂ MAXIMUM CONCENTRATION AT YELLOWKNIFE CITY HALL (ug/m ³)				
Stack Height (ft.)	Exit Gas Temperature (°F.)			
	280	330	380	430
180	1496.	870.	860.	857.
200	1481.	838.	833.	836.
300	581.	560.	541.	525.
400	523.	503.	485.	470.

Notes:

1. Runs 1 thru 16
2. Inner Stack Diameter 1.5 m.
3. Sulfur Dioxide mass emission rate of 41.4 ton/d.
4. Total number of hours of simulation 8783 hrs.
5. January thru December 1993 meteorological data.