

**ROYAL OAK MINES INC.
NWT DIVISION - GIANT MINE**

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FAX TRANSMISSION

DATE: Oct 22 '96

DESTINATION: Royal Oak Mines Inc.

ATTENTION: Larry Corbett

FAX NO.: _____

SENT BY: And Norton

NO. OF PAGES: 3-4
(Including Cover Sheet)

COMMENTS:

Larry -

Here's the info re. Hickson
Corp. - If I find anything
else of interest, I'll be in
touch.

Regards
And

MEMORANDUM

TO: S. McAlpine
CC: K. Blower
FROM: K. Morton
DATE: May 22, 1990
SUBJECT: VISIT TO HICKSON CORP. MAY 18, 1990

The Giant group, consisting of A. Fleming, K. Blower, F. van de Water, and K. Morton, was picked up at the hotel by D. Marion, and arrived at the plantsite at Conley at about 9:00 AM. After a short meeting with the Hickson group consisting of F. Klasnik, VP Operations, Bob Gruber, Plant Manager, D. Marion, Manager-Materials and Transportation Services, and Avis Williams, Lab Supervisor, everyone took part in a plant tour conducted by Bob Gruber and Avis Williams.

In contrast to earlier impressions, the plant is now very up to date and seems to be well managed. The process is simple and is mostly a matter of proper blending of the components, arsenious acid, copper oxide, and chromate. Conversion of arsenic trioxide to arsenious acid by nitric acid oxidation is also done at the plant. The plant is set up to receive either bulk rail shipments or drum shipments of arsenic trioxide. Drum handling is fully automated and there is very little chance of workplace contamination from this source.

Following the plant tour, a discussion of possible purchase agreements between Hickson and Giant took place. Hickson was made aware of the current change of ownership and the resulting delay in making a major production decision. Giant's process, production capability, and product specification was outlined in the discussions. Hickson's annual demand, future requirements, source of supply, approximate price paid, etc., were also featured in the discussions.

Other senior Hickson people who attended the discussions briefly included W. Baldwin, VP Tech and Env Services, R. Sturgis, VP Marketing and Sales, and Dr J. Christie, Chairman and CEO.

Some items of interest that came out of the discussions were as follows:

Hickson, CSI, and Osmose are the only CCA makers of any consequence in the US.

A 3% to 5% growth rate in the use of wood preservatives is the current North American projection

Foreign manufacturers of high purity product have the following production capabilities

Salsigne	10 - 12,000 tpy
Boliden	4 - 6,000 tpy
Outokumpu	4 - 5,000 tpy
Met H.O. (Belgium)	3 - 4,000 tpy
Pennaroya	2 - 3,000 tpy
Chinese	5 - 10,000 tpy
Lepanto (95%)	5 - 6,000 tpy
El Indio (95%)	8,000 tpy
IMM (95 - 99%)	4 - 5,000 tpy

Annual US consumption is 25,000 tons of As₂O₃. Hickson uses close to 10,000 tpy and would be easily capable of receiving up to 7,000 tpy from Giant. The first year's production rate of 3,000 tons would not be felt in the marketplace.

The US market for CCA is 150,000,000 lbs/yr. Hickson's total plant capacity (4 plants) is 300,000,000 lbs/yr.

New products that may compete with CCA are CCB (using boron instead of arsenic), ACB (ammoniacal copper borate), and copper naphthanate. To date, these formulations are more expensive and less effective than CCA.

Apparently prices currently paid for + 95% As₂O₃ by Hickson range from US \$0.18 to \$0.225/lb (CAN \$0.21 to \$0.265).

Hickson claims to be offering Giant a 3 to 5 cent premium price for the advantage of receiving an assured supply of high quality product via bulk rail deliveries.

They do not want to become involved in bulk trailer deliveries, since they have dismantled the unloading facility and would have serious problems with OSHA in having it reactivated. They are very keen to have Giant ship by bulk rail ASAP.

They claim to have a procedure for recycling metals contained in residues and therefore waste disposal is not a major concern. They also think they have almost solved their diatomaceous earth disposal problem (30% of their total waste is filter aid).

A sample of our product should be sent to Avis Williams for testing in Hickson's process.

The impressions I gained from the discussions were that Hickson's would like to be able to receive Giant's product as an assured source of supply, but that they would be much less interested if the transfer facility is delayed. The most attractive feature to Hickson seems to be bulk rail deliveries. They would also like to be able to return residues in bulk, but this could be a major handling problem at this end.



Kent Morton

GIANT YELLOWKNIFE MINES LIMITED
ARSENIC PURIFICATION PILOT PLANT
OPERATOR'S LOG

DATE: JUL 16, 1990

Unit 2 arsenic fillers. 30 psi bleedback

DATE: JULY 16, 1990

Time	Gas Flow (loaded) ACFM	Gas Flow (clean) ACFM	Face Vel Avg ACFM/sq ft	Filter Temp Deg F	Diff Press (loaded) "H2O	Diff Press (clean) "H2O	Diff Press Avg "H2O	Condenser Temp Deg C	Diff Press "H2O	Cold BH Diff Press "H2O	Time	Sample Number	Sample Period	Filter Au Rs Sb	CSH Au Fe As2O3 Sb	Sb Removal Efficiency
9:00 AM	90	114	15.05	527	24	21	22.5	56	0	0	9:00					
9:30	90	119	15.53	537	24	20	22	52	0	0	9:30					
10:00	83	116	15.38	547	27	23	25	42	0	0	10:00					
10:30	74	111	14.09	567	27	22	24.5	66	0	0	10:30					
11:00	78	104	13.77	591	27	22	24.5	70	0	0	11:00					
11:30	80	117	15.09	615	27	23	25	72	0	0	11:30	44	10:00-11:30	1.54 5.92 0.57	0.01 0.1 99.96 0.14	90.35
12:00	79	122	15.23	600	26	22	24	73	0.25	4.50	12:00					
2:00	85	120	15.41	583	27	23	25	71	0.5	1.0	2:00					
2:30	70	119	14.32	572	28	24	26	74	0.25	1.0	2:30					
3:00	91	121	16.04	555	27	22	24.5	76	0.25	0.50	3:00					
3:30	91	121	16.06	557	27	23	25	76	0.5	0.50	3:30					
4:00	79	114	15.00	612	27	23	25	77	0.5	0.50	4:00	45	2:30-4:00	1.74 2.62 0.52	0.015 0.25 100.5 0.15	88.86
4:30	81	121	15.30	628	26	21	22.5	78	0.5	0.0	4:30					
5:00	70	117	15.42	631	26	19	22.5	77	1.5	1.0	5:00					
5:30	79	127	16.44	638	24	22	23	78	4.5	1.0	5:30					
6:00	91	128	16.59	618	27	23	25	81	6.5	6.0	6:00	46	4:30-6:00	1.66 2.18 0.45	0.01 0.35 100.6 0.2	83.81
6:30	101	128	17.25	551	27	26	25.5	84	6.5	4.0	6:30					
7:00	92	124	16.76	552	26	26	24	86	6.5	2.0	7:00					
7:30	89	120	15.82	622	26	21	23.5	89	5.5	2.0	7:30					
8:00	86	115	14.77	613	26	22	24	90	6.5	1.0	8:00	47	6:30-8:00	1.6 2.04 0.46	0.01 0.13 99.87 0.11	90.58
Avg	85.9	119.2	15.2	600.9	26.3	22.1	24.2	74.1	6.6	4.0				1.66 3.20 0.50	0.01 0.21 100.23 0.15	88.46

JULY 17, 1990

Time	Gas Flow (loaded) ACFM	Gas Flow (clean) ACFM	Face Vel Avg ACFM/sq ft	Filter Temp Deg F	Diff Press (loaded) "H2O	Diff Press (clean) "H2O	Diff Press Avg "H2O	Condenser Temp Deg C	Diff Press "H2O	Cold BH Diff Press "H2O	Time	Sample Number	Sample Period	Filter Au Rs Sb	CSH Au Fe As2O3 Sb	Sb Removal Efficiency
9:00 AM	76	97	13.11	578	28	22	25	56	0.5	0	9:00					
9:30	76	97	13.11	582	26	22	24.5	57	0.5	0	9:30					
10:00	63	89	12.53	577	27	22	24.5	54	0.5	0	10:00					
10:30	49	103	13.73	591	26	23	24.5	70	0.5	0	10:30					
11:00	74	109	13.86	592	26	23	24.5	72	0.5	0	11:00					
11:30	57	107	13.18	619	26	21	22.5	75	0.5	1.0	11:30	48	9:30-11:00	1.54 5.11 0.52	0.01 0.16 99.54 0.06	93.22
12:00	64	105	14.39	616	26	21	23.5	76	0.5	0	12:00					
12:30	80	107	14.1	621	26	22	24	77	1	0	12:30					
1:00	70	122	16.06	624	26	22	24	81	1	0	1:00	49	11:30-1:00	1.56 2.06 0.42	0.01 0.24 100.72 0.15	86.56
1:30	81	108	14.22	630	25	21	23	81	1	1.5	1:30					
2:00	92	108	15.00	630	24	20	22	81	2	0	2:00	50	1:30-2:00	1.5 1.84 0.4	0.01 0.12 100.67 0.08	92.00
2:30				634	23	26	24.5	91	3.5	0	2:30					
3:00				629	26	21	23.5	80	1.5	0	3:00					
Avg	77.9	106.5	14.1	608.7	25.4	21.9	23.9	73.2	1.6	0.0				1.53 3.00 0.45	0.01 0.19 100.21 0.10	91.10

OCT-22-1996 14:12

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97%

P.04

10/22/96 TUE 15:02 FAX 403 873 2980

MANAGER GIANT

KIRKLAND

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