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REPORT

ON

PINE PASS COAL CO. LTD.,

FOR

KOPOROK MINES LTD.

Richmond, B.C.
21 July, 1968.

D.W. Pringle, P. Eng.

GEOLOGICAL BRANCH
ASSESSMENT REPORT

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DONALD W. PRINGLE, P. ENG.
MINING CONSULTANT

20 July, 1968.

Koporok Mines Ltd.,
2 - 515 Granville Street,
Vancouver, B.C.

Dear Sir:

As requested the writer has examined a portion of the property and the general area of the Pine Pass Coal Company's holdings in the Hasler Creek-Pine River area of B.C. The visit was made to the property on the 9th. July, 1968. In addition, the writer has carefully reviewed the B.C. Department of Mines Bulletin No. 36, the initial and revised Pine Pass Coal reports and the writer's review report on the Pine Pass proposal dated 1 Dec. 1968.

Summary and Conclusions

This report covers the general proposal for mining sub-bituminous coal in the Pine Pass area of British Columbia for shipment to tidewater.

All the data presented indicates this proposal is feasible and profitable. At a production rate of 1,000,000 long tons per year shipped an operating profit of \$2,050,000.00 is indicated, and the return on capital investment is reasonable.

Location and Access.

The coal deposits of Hasler Creek-Pine River area are situated about 640 rail miles from Vancouver, B.C. They lie on both sides of the Pacific Great Eastern Railroad

in the Peace River District, about 150 road miles on the John Hart Highway, northeast of Prince George, B.C. They are about 100 miles west of Dawson Creek and only 22 miles from Chetwynd, a small local town.

The coalfield extends from about one mile north of the Pine River to some 18 miles southeastward, a little beyond Hasler Creek.

History.

Coal has been known to exist in this area for many years. Some production from the Hasler mine was recorded in the years 1944 and 1945.

With the proposed extension of the Pacific Great Eastern Railroad into the Peace River District, it was decided to explore the tonnage of mineable coal available.

Under the supervision of the Coal Division of the Department of Lands and Forests, a well planned and executed field exploration program was carried out from 1946 to 1951 inclusive.

Trenching was handled by two bulldozers and diamond drills cut 48,653 feet of NX core. Most of this work was carried out in three areas, (1) Hasler mine, (2) Willow Creek, (3) Noman Creek.

Topography

The topography is that of the Foothills belt of the Rocky Mountains. The north-easterly trending, mile wide Pine River valley, at 20000 feet elevation, cuts across northwest-southeast trending ridges which rise to 4,700 feet above sea level and are capped by hard sandstones and

conglomerates.

The region is well timbered with popular and birch at lower elevations and lodgepole pine, spruce and fir at higher elevations. All but the large mine timbers could be obtained locally.

Overburden consists of glacial till with depths from around 10 to 20 feet and up to 75 feet in places. Muskeg areas are common and must be considered in the moving of heavy equipment.

The topography lends itself to a very excellent plant setting.

Geology.

The consolidated rocks are conformable Lower Cretaceous sediments. The Dunlevy marine sandstones and shales are west of the area, the Gething continental shales and sandstones and the marine shale and sandstone formations of the Fort St. John group in the area, and the Upper Cretaceous Dunvegan sandstones are east of the area.

The Gething formation contains the coal formations in the upper 1,000 ft. and lower 400 ft. of its 3,000 ft. thickness of shales, siltstones, sandstones and coal seams. No marker horizon has been recognized within the Gething. However, the basal conglomerate of the overlying Moosebar formation has been used as a marker bed to define the top of the Gething formation.

Coal Deposits.

The tonnage of mineable coal in the three deposits is based on the field work done by the Government geologists and is as recorded in Bulletin #36 by N.D. McKechnie.

The Pine Pass Coal Company holds 15 sections on Noman and Willow Creek. Each section contain 640 acres, for a total of 9,600 acres.

The indicated recoverable tonnage of coals from the Pine Pass area is 40.8 million tons with 9 million at Noman Creek, 23.8 million at Willow Creek and 8 million at Hasler Creek. This coal is contained in nine mineable seams in an 18 square mile area. There is every indication that more tonnage could be developed once a mine was operating in the district. These reserves are based on coal seams 4 ft. and thicker and only 50% of the coal in place is recoverable.

A large number of tests have been run by the Department and by Pine Pass engineers on coal samples and, there is no doubt, that a good grade of coking coal acceptable to the Japanese market could be obtained. The coal is of low to medium volatile rank; low in ash, averaging about 6%; high in heat values, 13,000 to 15,000 B.t.u. per pound; and contains about 0.5% sulphur. It is friable and non-weathering. The coking characteristics are fair to good.

Market Survey.

Some coal export contracts have been negotiated with various Japanese companies and others are under discussion.

Once a suitable sample was obtained, tested and accepted by the Japanese steel mills, it would appear a long term contract for one million long tons per year could be signed at the going prices.

Since the chemical analysis of this coal is very

good, I feel we could assume our price would be \$13.00 Can. per long ton of coal FOB ship Vancouver. This price is in the range of existing contracts.

Mining Proposal.

Initial mining is proposed at the Noman Creek area. Three mining methods are proposed and these vary depending upon the pitch of the seam. The latest equipment is proposed in order to have a high output per manshift and low operating costs.

Mining of the Willow Creek area would be phased into the production schedule as Noman Creek reaches an optimum production rate.

After a complete review of all proposed costs the following figures presents a fair estimate based on a production rate of 1,000,000 long tons of clean coal per year.

Gross per long ton(Can)		\$13.00
Costs - Plant		
Mining	\$2.97	
Milling	.95	
Services	.52	
Overhead	.31	
Royalty	.25	
	<u>5.00</u>	
-Transportation		
Loading	.15	
Freight	4.00	
Car write		
off & Insur.	.90	
Boat Loading	.90	
	<u>5.95</u>	
Total estimated costs		<u>\$10.95</u>
Estimated profit per long ton coal		\$ 2.05

A substantial profit increase could be expected if the production rate was doubled to 2,000,000 long tons per year since a large part of the present crew and plant would handle the increased tonnage.


Therefore, the operating profit at the mine before taxes, depletion and depreciation would be \$2,050,000.00 per year. This projected profit is reasonable for an estimated capital investment of between \$5,000,000.00 - \$7,000,000.00. Since detailed plant designs have not been completed the above figures represent a reasonable estimate - it is most unlikely that the projected cost figures will be exceeded.

Certificate.

I, Donald W. Pringle, of Richmond, B.C., do hereby certify that:

- (1) I am a consulting mining engineer.
- (2) I am a graduate of the University of Toronto in Mining Engineering 1944.
- (3) I am a registered Professional Engineer of the Province of B.C.
- (4) I have practised my profession as a mining engineer since 1944.
- (5) I personally have examined the property as described in this report.
- (6) I have not received, nor do I expect to receive, any interest directly or indirectly in Koporok Mines Ltd.

21 July, 1968.


D.W. Pringle, B.A. Sc., P. Eng.

PROPOSED MINING and INDUSTRIAL OPERATIONS

KOPOROK MINES LTD.

Cap: 5,000,000 shares @ 50¢
Darke Lake property

Silver Dollar Group)
100,000,000 Tons = 9.6% Fe)
9.7% S)
0.2% Cu)

60% interest
re financing

PINE PASS COAL CO.

Private Company

40,000,000 Tons coking coal

200,000 T/annum
starting 1969

200,000 T/annum (approx)

40,000 Tons
Test shipment
to Japan
Dec. 1, 1968

1,000,000 T.p.a.
to Japan
Commence July, 1969

At Clearwater, B.C.
Sulphurok Mines Ltd.
75% Koporok Mines
25% "Y" Interests

Production

2,000 T.p.d.	Elemental Sulphur) Mar- ket.
	Sulphuric Acid	
	Flowers of Sulphur	
40 T.p.d.	Copper Cement)
2,000 T.p.d.	Iron Sulphate (powder pellett)	

W. L. SHERWOOD
STEEL MILL
(1000 T.p.d.)

At Clearwater, BC

Market

KOPOROK MINES LTD.

(Flow Sheet April 15, 1968)

K O P O R O K M I N E S L T D .

Capital equipment cost to Pine Pass Co. production
of 1,400,000 tons per year

Estimated @ \$ 11,500,000.00

Capital equipment cost to Sulphurok Mines Ltd.
production of 600,000 tons sulphur and iron
respectively, and 12,000 tons of copper
cement oer annum

Estimated @ 6,500,000.00

SUB TOTAL \$ 17,500,000.00

Revenue to Koporok Mines Ltd.
(after equipment amortization)
Profit schedule to operations:

Coal:

To Japan: 1,000,000 tons @ \$2.00/ton \$ 1,200,000.00
To Clearwater: 400,000 tons @ \$3.00/ton \$ 720,000.00
(60% of revenue only to Koporok Mines Ltd.)
(25% of revenue only to Pine Pass Coal Co.)

Sulphur:

600,000 tons @ \$10.00 per ton \$ 4,500,000.00
(75% of revenue only to Koporok Mines Ltd.)
(25% of revenue only to Sulphurock Mines Ltd.)

Iron:

600,000 tons @ \$1.50 per ton \$ 675,000.00
(75% of revenue only to Koporok Mines Ltd.)
(25% of revenue only to Sulphurok Mines Ltd.)

Copper:

12,000 tons @ \$500.00 per ton \$ 225,000.00
(75% of revenue only to Koporok Mines Ltd.)
(25% of revenue only to Sulphurock Mines Ltd.)

TOTAL \$ 7,320,000.00

K O P O R O K M I N E S L T D.

July 22, 1968.

Credit to proposed operations:

1,000,000 issued for 60% interest in Pine Pass Coal Co.		
746,000 issued for mining properties		
261,290 issued for cash	\$ 27,659.00	
300,000 issued for cash	150,000.00	
400,000 issued for cash	<u>800,000.00</u>	
	\$ 977,659.00	
Paid out to exploration	<u>\$ 86,406.00</u>	
Total cash to come		\$891,253.00
Cash in bank	\$ 91,253.00	
Shares to be sold -		
400,000 @ \$2.00	<u>\$ 800,000.00</u>	
Revenue from contract of		
40,000 tons of coal to		
Japan:		
40,000 tons @ \$12.35 U.S.Funds		
\$13.35 Canadian Funds		<u>\$584,000.00</u>
. . Total credit to proposed operations		<u>\$1,475,253.00</u>

K O P O R O K M I N E S L T D .

Debit to proposed operations:

Pine Pass Coal Co., 60% interest
(7,000 ft. drifting for excavation of 40,000 long tons)

Timber	\$ 67,525.00	
Mining	125,600.00	
Plant Operation	25,200.00	
Truck Haulage	32,000.00	
Rail Haulage	240,000.00	
F.O.B. Ship	30,000.00	
Royalty	10,000.00	
Taxes, Duty, 15%	115,485.00	
10% Overhead	<u>88,540.00</u>	\$734,350.00

Sulphurok Lines Ltd., 75% interest
(Silver Dollar Group)
(100,000 ton pilot mill study)

Mill Equipment	50,000.00	
Excavation	150,000.00	
Steel Mill Study	100,000.00	
Drilling, Road	31,000.00	
10% Overhead	<u>23,000.00</u>	\$354,100.00

Darke Lake Property

Drilling Sampling, Etc.	<u>90,000.00</u>	<u>\$ 90,000.00</u>
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TOTAL DEBIT TO PROPOSED OPERATIONS \$ 1,178,450.00