

Strictly Confidential

4465 Dolores Place,
 Victoria, B.C.
 February 2, 1970.

To the President and Directors of Northern Coal Mines Ltd.

Dear Sirs:

At the request of your Managing Director I respectfully submit a resume of my interest and opinions regarding your property situated in the Bowron River Coal Field.

My first visit to the Bowron River Coal Field was in 1949 when the area near the Old Adit was being prospected by Mr. F. Wells of Prince George, however, since the acquisition of the coal licenses by Mr. A. J. Garroway I have visited the property several times and have been in close touch with all phases of the development to date due to the periodic visits of Mr. A. J. Garroway to my office at the Parliament Buildings.

COAL RESERVES

The area of the Bowron River coal basin is estimated at 10 square miles (Geological Survey of Canada, 1946) and is underlain by three coal seams of 10 feet, 11 feet, and 8 feet in thickness as indicated in D.D. hole No. 1A. These figures give possible reserves of coal of about 339,000,000 short tons of high volatile 'C' bituminous coal.

At your property the western outcrop of the field has been thoroughly drilled for approximately 12,000 feet and, with one D.D. hole No. 1A some 1,600 to 2,000 feet east of the outcrop it is my opinion that about 30,000,000 tons have been proven. The 12,000 feet of definitely proven outcrop is too strong an indication for the coal not to continue eastward for some considerable distance.

It is the recommendation of the writer that at least four drill holes be put down eastward of the western outcrop. No. 1 about 1,600 feet due east of D.D. No. 1A, and, if the coal seams are intersected as anticipated, then No. 2 should be drilled due east of No. 1 about 2,000 feet distant. Two further holes should be drilled, one 2,000 feet due south of No. 1 and the other 2,000 feet due south of No. 2. If these holes proved successful the estimation of tonnage proved would, in my estimation, be increased further 50,000,000 tons.

**GEOLOGICAL BRANCH
 ASSESSMENT REPORT**

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SEAM GEOLOGY

The seams at the outcrop dip sharply eastward, varying from 40 to 45 degrees.

It was the opinion of the writer, after studying the topography of the basin and noting the somewhat broken nature of the immediate roof underground where the main slope of the present workings first intersected the seams that the structure had been turned up sharply below the outcrop and that the seams would flatten out as the workings proceeded eastward. This trend has been indicated by D.D. hole No. 1A. Further drill holes to the east, as recommended under "Coal Reserves," should, in the writer's opinion, prove the existence of a large flat area underlying the basin. This condition is a necessity if large scale economical mining is to be considered.

To date, only one fault has been indicated by the drill holes and the workings. This fault was intersected in the rock slope of older workings to the south and the trend of the fault was north-east. The drilling of the four holes, recommended in the paragraph "Coal Reserves" should indicate whether this fault continues north-east or turns eastward.

COAL

It is stated in the "Coal Reserves of Canada, 1946" that the Bowron Coal Basin is underlaid by three coal seams. This fact is also indicated by the results of D.D. hole No. 1A which intersected three coal seams of 10 feet, 11 feet, and 8 feet thickness.

In the present mine only the middle and lower seams have been contacted and worked. These two seams have been assayed with the following results:

Middle Seam, 11 feet thick

	<u>Top of Slope</u>	<u>400 Feet Down Slope (Face)</u>
Inherent M.	5.5	4.92
Ash	2.8	2.77
V.M.	39.7	36.5
F.C.	52.0	55.8
S.	1.2	0.85
S. Index	1	2.5
B.T.U.	not given	12,550

Lower Seam, 8 feet thick (at point of contact of rock slope and seam)

Moisture	14.1
Ash	2.6
V.M.	28.6
F.C.	54.7
S.	1.5
B.T.U.	12,470
S. Index	2.5

The coal in place is extremely hard and weathers exceedingly well. The ash content in both seams is remarkably low and the sulphur content appears to be decreasing as the workings penetrate into virgin coal below the oxidized zone.

The B.T.U. content indicates that the seams are on the border-line between high volatile 'B' and high volatile 'C' bituminous coals.

I do not have the assay of the top seam (10 feet) which was intersected by drill hole No. 1A.

RECOMMENDATIONS

In addition to the four drill holes recommended under "Coal Reserves" I would further advise that the present workings be kept pumped out so that interested persons may inspect the workings especially the coal faces where dry samples could be taken.

If the mine is allowed to fill with water the workings would deteriorate to a larger extent. To pump out the water and repair the roadways would take considerable time not to mention expense thus delaying any inspection of the workings that an interested company would insist on.

As it appears that the coke button indices are improving as the workings advance into virgin coal below the oxidized zone I would recommend, if it is at all possible, that the face of the slope be advanced further into virgin coal where a coke button index more representative of the field could be obtained.

Respectively submitted,



Robert B. Bonar, P. Eng.