Hamilton Mine

Average Grade - Surface - 2° 10" - Bearing S 52° 30' E.

Dip of Seam. 8° S E.

CX-Comax 48(1)A

Report on Coal at Hamilton Lake Cumberland (Comox)

Contents

- General Discription
- Coal Analysis
- Maps - Hamilton Lake Area.
  Hamilton Lake cutcop.

- Catal sample Analysis
- section of cliff of cretaceous Rocks at Hamilton Lake - (4 copies).

REPORT ON COAL AT HAMILTON LAKE - CUMBERLAND

After various disucessions with Mr. Quinn about future coal fields in this area he told me about a Cumberland man persistently telling him about some coal in the Trent River area. On June 15th we went to investigate this and were taken along the Van West's Logging Road to a bluff at Hamilton Lake where we saw the exposure as shown on the accompanying blue print. This exposure had been made a long time ago when the Cumberland Waterworks were excavating material for their No. 3 Dam at Hamilton Lake.

We took coal Samples A, B, C, D, sample A being on top of what we thought was an unexposed seam. We decided to look further into this, after receiving encouraging analysis from Mr. P. Grundy. On June 28th we took a workman with us to probe the lower seam while we looked for further exposure and traced the sandstone and shale along the hillside.

We found an exposure of coal at about the expected elevation in a small creek about 250 - 300 yds. beyond the big exposure. We found no more exposures but the sandstone and shale formations appeared to be lying very regularly and evenly over a considerable area.

None of the Geological reports mention this area but we have a tabulated record and analysis of this bluff as recorded by J.D. MacKenzie in 1923. These are noted for easy reference along with our own recent measurements and analysis.

On looking through our geological plans here we found an area of sedimentary rocks recorded by a Mr. H.A. Rose about 1930 and shown on the accompanying plan edge yellow. This area is approximately 740 acres.

There is a first class road up to within about 400 yards of the bluff and the sandstone rock can been seen lying regularly over a long length of this roadway.

Assuming that the whole area is underlain by 11 feet of coal there is a theoretical deposit of 9 to 10 million tons. This area is covered in

first class virgin timber which the Van West Logging Company are beginning to work.

This area has never been drilled perhaps due to its inaccessibility years ago. I would suggest that this area has possibilities and should be tested by drilling in the not very distant future. If the depth of overburden, which is 13 ft. 7 at the bluff, is found to be not excessive I have in mind the possibility of extracting this coal by stripping operations rather than by underground mining. It would not be a stripping operation comparable to the Alberta ones I have seen but would compare very favourably with some of the operations I have seen in the U.K.

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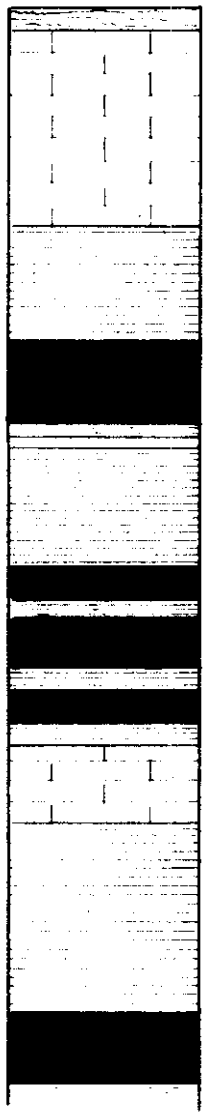
HAMILTON LAKE OUTCROP

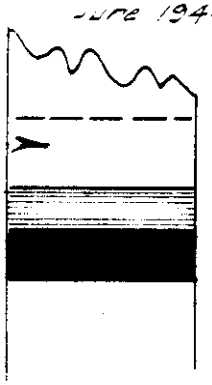
Section by J. D. MacKenzie.



Soil & Till	1' 0"
Sandstone	8 0
Shale	4' 7"
Coal	3' 6"
Shale	4"
Coal	4"
Shale	4' 11"
Coal	1' 4½"
Shale	7/2"
Coal	2' 1/2"
Shale	8/2"
Coal	1' 4"
Shale	9"
Sandstone	3' 1"
Shale	8' 0"
Coal	3' 0"

lying on Shale bottom not exposed.

Additional Exposures
by E. T. Simpson
& A. Quinn.
June 1948.



Shale	1' 8"
Coal	2' 0"

lying on rock not exposed.

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Hamilton Lake 10

Outcrop

C O P Y .

Canadian Collieries (Dunsmuir), Ltd.

CERTIFICATE OF ANALYSIS.

Union Bay, B.C. June 23rd, 1948

Laboratory Number 48-706-709

Sample of Coal Samples received June 15th, 1948.

Marked Prospect samples submitted by Mr. Jas. A Quinn, June 15th, 1948.

Analysis:	A	B	C	D
Moisture	1.08%	1.04%	1.12%	1.06%
Volatile	33.24	31.76	33.04	33.71
Fixed Carbon	58.94	59.55	54.91	55.87
Ash	6.74	7.65	10.93	9.36
Calorific Value	13,916 B.T.Us.	13,696 B.T.Us	13,205 B.T.Us	13,426 B.T.Us
Sulphur	1.66%	1.57%	1.82%	1.98%
Coke	good	good	good	good

Signed P.F. Grundy.

ANALYSIS OF COAL AT HAMILTON LAKE

AS ANALYSED BY P. GRUNDY, JUNE/JULY, 1948

1.

	A3	A2	A1	A	B	C	D
Moisture	1.04	1.08	1.06	1.08	1.04	1.12	1.06
Volatile	28.03	30.98	29.52	33.24	31.76	33.04	33.71
Fixed Carbon	51.05	56.63	54.64	58.94	59.55	54.91	55.87
Ash	19.88	11.31	14.78	6.74	7.65	10.93	9.36
Calorific Value B.T.U's	11.540	12.765	12.324	13.916	13.696	13.205	13.426
Sulphur	2.62	2.18	2.16	1.66	1.57	1.82	1.98
Coke	Fair	Good	Fairly Good	Good	Good	Good	Good

Note:- Sample A3 was taken by using a pick in a water filled hole, some rock and shale was reported in this sample.

2. AS ANALYSED BY J.D. MacKENZIE 1923, DRIED AT 105°C.

Moisture				
Volatile	31.7	31.6	31.6	32.2
Fixed Carbon	59.9	61.1	52.9	50.00
Ash	8.40	7.30	15.5	17.7
Calorific Value B.T.U's	13.930	13.940	12.670	12.370
Sulphur	.9	.8	2.2	2.7
Coke	Good	Good	Good	No Remark

3. ANALYSIS OF TSABLE COAL TAKEN AT OUTCROP IN 1946

(For Comparative Purposes)

	Top Bench	Middle	Bottom
Moisture	1.06	1.07	1.30
Volatile	33.41	32.60	32.18
Fixed Carbon	55.15	51.98	41.01
Ash	10.38	14.35	25.51
Calorific Value	13.195	12.685	10.333
Sulphur	.98	3.07	3.74

Water Supply for City of Cumberland

Dam No 1. El. 925'

Dam No 2. El. 1500'

Coal Creek

BLK. 409

SEC. 3

Hamilton Lake El. 1829'

Dam

Outcrop

8°

L. 35

Allen Lake

Prospect Tunnel. El. 769

BLK. 523

BLK. 410

LOT 25

740 Ac

BLK. 333

BLK. 144

Approximate Contact

Van. West Logging Co. Road

Sandstones Volcanics

BLK 545

BLK 703

Trent River

BLK. 334

CX- Comox - 48 (2) A.

CANADIAN COLLIERIES (DUNSMUIR) LTD.

CUMBERLAND, B.C.

PLAN SHOWING HAMILTON LAKE OUTCROP AND PROPOSED METHOD OF DRILLING AREA.

Scale:- 1" = ¼ Mile

Approx. Location of Bore Holes shown. ●

True Locations will be determined from results obtained as drilling proceeds.

Engineering Dept. Cumberland, B.C.

Nov. 1st 1948

CX- Comox 48(2)A. 52

DR. 7 #25

SECTION OF CLIFF OF CRETACEOUS ROCKS AT HAMILTON LAKE

CUMBERLAND, B.C.

Soil and till	1' 0"	1' 0"
Massive fine whitish sandstone even grained and faintly laminated, Typ. Comox	6' 0"	7' 0"
Plately jointed sandstone, the lower foot showing many stems and plant markings and coaly lenticles to ¼"	2' 0"	9' 0"
Tough fine laminated brownish grey clay shale, a solid band	4' 7"	13' 7"
Coal clean and hard of excellent quality	5"	14' 0"
Coal, very soft	3"	14' 3"
Coal, excellent	1' 1½"	15' 4½"
	3'6"	
Coal, dirty and soft	0½"	15' 5"
Coal, excellent	1' 8"	17' 1"

Specimen No.1244 represents the above.

Section continued.

Hard black bony shale	4"	17' 5"
Coal, hard	4"	17' 9"
Grey hard tough laminated clay shale with steaks of lenticular coal to 4"	5'7" 4'11"	22' 8"
Coal, clean and hard	1' 4½"	24' 0½"
Brownish grey clay shale	7½"	24' 8"
Coal, clean and hard, a fine bench The lower 3" soft and weathered	2' 1½"	26 9½"
Specimen No.1245 represents the above		4' 10" coal 1' 4" shale
Section continued.		
Grey lean shale	8½"	27' 6"
Coal, clean and hard	1' 4"	28'10"

Specimen No.1246 represents the above.

Section continued.

Grey shale	9"	29' 7"
Massive, fine laminated brownish grey sandstone full of plant stems, some of them forming ¼" coal	3' 1"	32' 8"
Grey very hard clay shale with concretionary bands and nodules	8' 0"	40' 8"
Coal, a splendid solid bench with a parting 1'4" from top	3' 0"	43' 8"

Lying on grey shale bottom not exposed .

Specimen No.1247 represents above.

Attitude of these measures is N. 30-35°E 8°S.E. They are very regular, for the 40 yards of cliff exposed.

Samples of Coal from Hamilton Lake 3 miles west of Cumberland, Vancouver Island. Submitted by the Geological Survey per J.D. MacKenzie.

Sample mark	1244.		1245.	
Laboratory Sample No	1900		1901.	
Moisture condition of sample (see note)	R.	D.	R.	D.
Proximate analysis:				
Moisture.	1.5		1.4	
Ash.	17.5	17.7	15.2	15.5
Volatile matter.	31.8	32.3	31.2	31.6
Fixed Carbon (by difference)	49.2	50.0	52.2	52.9
Ultimate analysis.				
Carbon.	68.5	69.6	70.2	71.2
Hydrogen.	4.8	4.7	4.8	4.7
Ash.	17.5	17.7	15.2	15.5
Sulphur.	2.6	2.7	2.2	2.2
Nitrogen.	1.0	1.0	1.1	1.1
Oxygen (by difference)	5.6	4.3	6.5	5.3
Calorific Value.				
Determined, in calories per gram gross.	6770	6870	6940	7040
" " B.T.U. Lb gross.	12180	12370	12490	12670
Calculated from ultimate analysis calories gross.				
" " " " net.				
Fuel ratio, Fixed carbon/Volatile matter.	1.55	1.55	1.70	1.70
Carbon-Hydrogen Ratio.	14.2	14.7	14.5	15.0
Coking properties,	small lump coke upper seam.		good coke. middle seam upperbench	

Figures in column "R" refer to fuel as received, in column "D" to fuel dried at 105° C

Sample of Coal from Hamilton Lake 3 miles west of Cumberland, Vancouver Island. Submitted by the Geological Survey per J.D.MacKenzie.

Sample mark.	1246.		1247	
Laboratory sample number.	1902		1903	
Moisture condition of sample(see note)	R	D	R	D
Proximate analysis:				
Moisture.	2.0		1.7	
Ash.	7.2	7.3	8.2	8.4
Volatile matter.	31.0	31.6	31.2	31.7
Fixed carbon (by difference)	59.8	61.1	58.9	59.9
Ultimate analysis:				
Carbon,	77.6	79.3	77.3	78.6
Hydrogen,	5.1	4.9	5.0	4.9
Ash,	7.2	7.3	8.2	8.4
Sulphur,	0.8	0.8	0.9	0.9
Nitrogen,	1.2	1.2	1.3	1.3
Oxygen (by difference).	8.1	6.5	7.3	5.9
Calorific value:				
Determined in calories per grm gross.	7590	7750	7600	7740
" " B. T. U. Lb "	13660	13940	13690	13930
Fuel ratio, Fixed carbon/Volatile matter.	1.95	1.95	1.90	1.90
Carbon-Hydrogen ratio,	15.3	16.0	15.5	16.1
Coking properties.	good coke. middle seam lower benmh.		good coke lower seam	

Figures in column "R" refer to fuel as received, in column "D" to fuel dried at 105° C

Section of Coal Seam on Creek entering S.W. end of Allen Lake.

Cumberland B.C.

1. Coal, clean and hard		3"	5'	
2. Coal, Crushed		1½"	6½"	
3. Coal, clean and hard	1'	11"	2'	5½"
4 Brownish grey shale		6"	2'	11½"
5. Coaly shale		4"	3'	3½"
6. Coal		3"	3'	6½"
7. Coal crushed		2"	3'	8½"
8. Brownish grey shale		3½"	4'	0"
9. Coal	1'	0"	5'	0"
10. Coal crushed	1'	1"	5'	1"
11. Coal clean	1'	4"	6'	5"

Bony shale floor.

Like most of these coals, there is considerable pyrite in this seam.

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SECTION OF BLUFF AT HAMILTON LAKE - CUMBERLAND

	RECORDED BY J.D. MACKENZIE				MEASURED AND ESTIMATED BY R.O.T.S.G.S.A.Q.			
	Ft.	Ins.	Ft.	Ins.	Ft.	Ins.	Ft.	Ins.
Soil & Till	1							
White Sandstone	6							
Sandstone with Coal	2							
Clay	4	7			4	X		
Coal D.			3	6			2	0 X
Shale with thin coal band	5	7			6	X		
Coal			1	4½				8 X
Shale		7½				7		
Coal C.			2	1½			1	9
Shale		8½				10		
Coal B.			1	4			1	9
Shale	11	10			Noted as Several ft.			
Coal A, A_1			3				3	
Grey Shale					1	8		
Coal A_2, A_3							2	
							(Not exposed due to water but workman said he had hit rock with drill.)	
Note:- X Estimated thickness.								
Total Shale & Sandstone	32	4			13	1		
Total Coal			11	4			11	2

Coal near 3rd Dam. Cumberland Waterworks.

Shale	48" (Approx.)	
Coal	24".....	D
Shale	72"	
Coal	8"	
Shale	7"	
Coal	21".....	C
Shale	10"	
Coal	21".....	B
Shale	Several Feet	
Coal	Top only seen.....	A

Seen by J.A. Quinn

E.T. Simpson

June 15th, 1948.