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THE COAL FIELDS OF VANCOUVER ISLAND

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Page 34

APPENDIX

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Suquash

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Notes on the Suquash Coal Area

Upper Cretaceous sediments of the Nanaimo group outcrop on the northeast coast of Vancouver Island between Thomas Point at the south end of Beaver Harbour to Port McNeill, a distance of about 20 miles. Coal seams occur in these sediments and a small amount of coal has been mined, principally at Suquash. The following notes contain much of the available information on this area.

TOPOGRAPHY

The coastal area of northeast Vancouver Island between Port Hardy and Port McNeill is of generally low relief, marshy in places, and thickly forested with cedar, fir, hemlock, and second growth spruce for a distance of 2 to 2½ miles inland. The coastal plain is drained by the Keogh and Cluxewe Rivers. The climate is mild but wet, the average annual precipitation being about 95 inches. The principal settlements, at the north and south ends of the area respectively are the communities of Port Hardy and Port McNeill. These are connected by a gravel road. The Port Hardy airport is situated 1½ miles south of Beaver Harbour, and this is also connected with Port Hardy by road. The only other roads in the area are logging roads.

HISTORY

The history of the Suquash coalfield has already been mentioned in previous sections of this report. Indians of the Beaver Harbour area brought specimens of coal to Dr. W. F. Tolmie at Fort McLoughlin (Bella Bella) in the year 1835. In 1847 the Hudson's Bay Company decided to open up a mine in this area to supply steamships with bunker fuel. A party of miners arrived from England in 1849, and mining was carried out on a limited scale until 1852. It is believed that the workings were in outcrops at Suquash, and that about 10,000 tons of coal was mined. The workings were abandoned after the discovery of richer deposits at Nanaimo.

In 1908, Pacific Coast Coal Mines Ltd. became interested in the area. Their operations were at the mouth of Suquash Creek immediately southwest of Single Tree Point, 12 air miles from Port McNeill. Drill holes were put down, cutting No. 2 seam at a depth of 173 feet. This seam was 5 feet 5½ inches thick, but heavily interbedded with shale and inferior coal. A shaft was sunk 200 feet from the shore-line to No. 2 seam. This shaft was a twin-compartment shaft 6 by 10 feet in the clear. Between 1909 and 1914 about 12,000 feet of development driftage was done in the seam. The workings extended 1,350 feet south of the shaft. Two pairs of dip headings were driven east northeast, one for 1,200 feet (1,080 feet beyond the shore line), and the other for 500 feet. A longwall face 800 feet long was opened up to the south of the shaft on the landward side but was only worked on very limited scale. A start was made on the sinking of a large new shaft 1,500 feet southeast of the original one. All work was suspended on the outbreak of World War 1 and was not resumed again until 1920. The original shaft was then unwatered and a considerable amount of location work was done on the surface with a view to handling a large production. However, in 1922 all operations ceased. According to reports, 12,000 to 16,000 tons of coal was mined in the period from 1909 to 1914 by Pacific Coast Coal Mines Ltd.

Nothing further was done until 1952, when a British Columbia company called Suquash Collieries Ltd. was formed. The old shaft was pumped out and access was gained to parts of the old workings which had stood remarkably well due to the strong sandstone roof. Some coal samples were taken and the operations were then terminated. The leases have since reverted to the Crown and no further work has been done.

GENERAL GEOLOGY

Upper Cretaceous sediments of the Nanaimo Group outcrop on the northeast coast of Vancouver Island from Port McNeill to Thomas Point

on the south end of Beaver Harbour, a distance of about 20 miles, and extend for some 2 to $2\frac{1}{2}$ miles inland where they are in contact with Triassic Karmutsen and Bonanza volcanics and sediments. The coastal plain is largely drift-covered. According to Muller,⁽¹⁾ only the basal Cretaceous formation is exposed to any extent. This consists mainly of sandstone members with minor conglomerate and shale and includes the Suquash coal seams. This is believed to correspond in age to the coal-bearing Comox Formation of the Comox area. The total thickness of sediments is not known. The general structure appears to be that of a broad basin dipping gently east northeast at 10 degrees or less. Muller describes the structure as "tilted blocks separated by two or three sets of normal faults trending northwest, north, and northeast". A recent aeromagnetic survey seen by the writer indicates that the sedimentary basin may extend at least 6 miles from shore-line beneath Queen Charlotte Strait, and beyond the east end of Malcolm Island, 10 miles easterly from Port McNeill. The magnetic contours suggest that a pluton may intrude the sediments to within 500 feet of the sea bed north of the west end of Malcolm Island.

ECONOMIC GEOLOGY

The only known occurrence of mineable coal seams is at Suquash. Here two such seams are known to occur and a third is reported. No. 1 seam is from 1 foot to 2 feet 6 inches thick and outcrops at the shore-line and near the mouth of Suquash Creek. This may have been the seam mined in the early days although there are no present signs of old workings. This seam appears to be clean coal of good quality, but has hitherto been considered as being too thin for profitable mining under present conditions. The writer has not seen any analyses of this coal.

The second seam, known as No. 2 seam, was cut at a depth of 173 feet in the Suquash shaft. This seam near the shaft was 5 feet $5\frac{1}{2}$ inches thick, but contained only 3 feet $3\frac{1}{2}$ inches of actual clean coal as the following section will show:-

Coal.....	6"
Bony coal.....	1"
Coal.....	7"
Shale.....	5"
Coal.....	3"
Sandstone.....	1"
Coal.....	4"
Bony coal.....	1"
Coal.....	5"
Shale.....	3"
Coal.....	3½"
Shale.....	15"
Coal.....	11"
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Total	5' 5½"

It will seem that this section includes 40 per cent of rock and inferior coal, and only 60 per cent clean coal.

The best seam section was at the south end of the longwall at the southern extremity of the underground workings:-

Coal.....	17"
Fireclay.....	5½"
Coal.....	5"
Sandstone.....	1"
Coal.....	11"
Bony coal.....	1"
Coal.....	7"
Bony coal.....	1"
Coal.....	6½"
Bony coal.....	1"
Coal.....	5½"
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Total	5' 1½"

This section includes only 15.4 per cent of rock and inferior coal and

84.6 per cent clean coal. In the centre of the longwall the seam is 5 feet 2 inches thick with 80.5 per cent clean coal, at the north end 6 feet 11½ inches with 73.1 per cent clean coal. At the end of the first pair of dip headings the seam is 5 feet 5½ inches thick with only 65.6 per cent clean coal and as many as seven bands of rock and inferior coal. The roof of the seam consists generally of a strong sandstone.

Within the narrow limits of the underground workings the seam tends to deteriorate to the north and east and improve to the south and west. Nothing is known of the seam conditions outside this area; several drill holes were put down by Pacific Coast Coal Mines Ltd. at intervals along the coast up to one mile southeast and 1/3 mile northwest of the shaft, but records of the drill logs of these are no longer available. The seam sections within the mine area are certainly not encouraging from an economic point of view. The coal itself is clean and apparently of fair quality. Very few analyses are available, but one which was taken for Suquash Collieries Ltd. in 1952 at a point 75 feet south of the shaft (seam 5 feet 6 inches thick) was reported to be as follows:-

Moisture	5.7%	
Volatile combustible matter.....	36.2%	✓
Fixed carbon.....	47.1%	
Ash	11.0%	✓
	<u>100.0%</u>	
Sulphur.....	0.98%	✓
Calorific value	11,580 B.Th.U.	

This coal resembles analytically some of the Nanaimo seams rather than the Comox coals. The ash content is rather high, which of course brings down the calorific value. The sulphur content is rather too high for a good metallurgical coking coal, and in any case nothing is known of its coking qualities.

It will be seen that nothing very useful can be said about reserves

in the Suquash coalfield at the present time. The No. 2 seam appears to deteriorate to the dip and beyond the shore-line. The dip is very gentle in this area (2 to 4 degrees) and there could be an extensive landward extension of the seam to the southeast of the old mine. Whether the seam would be regular enough and clean enough to mine would have to be tested by drilling.

Another possible line of investigation is a third seam, called No. 3 seam, which is reported to have been cut by drill hole at the shaft site at a depth of 445 feet and to be 4 feet thick.

There is also the possibility that careful prospecting may find other coal seams along the coast. Dowling⁽²⁾ reports that thin seams have been found near the mouth of the Keogh River and south of the mouth of the Cluxewe River. The likelihood of finding seams by drilling on Malcolm Island should perhaps not be entirely ruled out since the island is underlain by rocks of the Nanaimo Group. However, one drill hole was apparently put down many years ago with evidently discouraging results.

REFERENCES

- (1) Muller, J. E., Port McNeill and Nanaimo Basin:
Geol. Surv. Can., Paper 67 - 1
 - (2) Dowling, D. B., Coalfields of British Columbia;
Geol. Surv. Can., Mem 69, 1915.
- Minister of Mines Annual Reports 1908 - 1914, 1952.