

MI-036-01

STATE OF ALASKA
DIVISION OF MINES AND MINERALS

REPORT ON THE PRELIMINARY EXAMINATION OF SELAWIK COAL,
SINGAURUK RIVER, SELAWIK QUAD, ALASKA

MI 36-5

by

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November, 1959

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ABSTRACT

The Selawik coal found in the Selawik quadrangle by the Singauruk River is subbituminous. It compares favorably with other Alaskan coal of the same class, except for the abnormally high ash content. This may not be true of the coal at depth unaffected by weathering. Several hundred tons could probably be mined before an underground operation would be necessary. Then, the thin beds, combined with the steeply plunging fold would probably make the mining costs prohibitive. A more intensive search in the area might disclose other deposits which would be more suitable for mining.

In the past the Eskimos stopped using this coal for it was thought to be responsible for burning out the stoves. Therefore, to determine the heating quality and possible stove damage, this coal should be burned in a stove designed for coal or for coal and wood.

INTRODUCTION

The State of Alaska Division of Mines and Minerals employs Assayers and Mining Engineers to assist prospectors and miners in solving problems pertaining to mining and mineral recovery. Therefore, when Mr. Donald Kennedy, teacher for the Bureau of Indian Affairs at Selawik, Alaska, wrote to Mr. Hugh J. Wade, Secretary of State, for information about a coal exposure which occurs near Selawik this division was asked to furnish the necessary information. Mr. Kennedy was interested in the coal as a possible source for fuel for the vicinity. No record of coal near Selawik could be found in the files, nor in any of the U.S.G.S. or U.S.B.M. publications. Therefore, the coal occurrence was visited in August of 1959. The result of that investigation is contained in the following report.

Acknowledgement is given to Mr. Kennedy for his hospitality and cooperation, and to Warren Ramoth who furnished the information about the location of the coal, and who acted as guide and field companion on the trek into the area.

LOCATION AND ACCESSIBILITY

The coal outcrops in the Hockley Hills at the southwestern edge of the Waring Mountains in a bluff on the right limit of the Singauruk River, in the Noatak-Kobuk precinct, at an approximate latitude of $66^{\circ}46'$, longitude of $160^{\circ}26'$, about 16 air miles north 34° west of Selawik village.

Supplies and mail for Selawik are brought in from Kotzebue, the nearest seaport and air terminal, approximately 80 miles to the northwest. Some supplies from there are flown in by bush aircraft equipped with wheels or floats in summer and with skis in winter. Freight is hauled to Selawik by

river barges from late June through September, depending on ice and water conditions in the river, Hotham Inlet and Selawik Lake. Freight rates are very high, and vary with the type of material being handled. Travel between the villages is accomplished by small river craft in summer and by dog team in winter.

To visit the coal deposit, one must make a boat trip from Selawik, down the Selawik River to the northeast corner of Selawik Lake, then into a small stream which heads in the Waring Mountains where the boat is abandoned, as the remainder of the trip must be on foot over tundra and into the hills, with field packs. In the winter when rivers, lakes and tundra are frozen solid the deposit is more easily accessible by dog sled or cat train.

PHYSICAL FEATURES AND CLIMATE

The hills in which the coal outcrops rise to heights of about 1000 feet, having rather steep slopes with many small box canyons formed by the tributaries to the Singauruk River. From the foot of the Hockley Hills the ground slopes gently southward toward the marshlands of Selawik Lake and the deltas of the Selawik and Nuleargowik rivers. The vegetation consists of many marsh grasses which grow abundantly along the lake edges and clog the channels of the small streams and rivers as they enter the lake. The marsh grasses are replaced by muskeg and arctic tundra as the ground rises gently toward the hills, the stream banks are lined with tangled growths of willow and alder with some spruce trees. The tundra cover consists mainly of mosses, lichens, "niggerheads", blueberry bushes, and Hudson's Bay tea as it extends up the slopes of many of the hills, mingling with poor stands of spruce, birch and a

few aspen. The lakes and marsh lands provide the nesting grounds for many types of water fowl, the homes of muskrat and mink, and in season yield grayling, whitefish, salmon and shee fish. The tundra and hills support a few moose, an occasional bear, arctic hares, snowshoe rabbits, ptarmigan and at times, many caribou. There are also some Eskimo-owned reindeer in the area.

The climate is sub-arctic, having long cold winters; short, moderately warm summers with an annual precipitation of about 14 inches. Fairly high winds can be expected at any season. Since Selawik is above the Arctic Circle the summer days are long, and December sees practically no sun. Mosquitoes and gnats make life miserable for the summer traveler.

LABOR AND LIVING CONDITIONS

Selawik has a population of about 250 Eskimo people. Kiana, approximately 30 air miles northwest of Selawik, has a population of about 300 Eskimos. Very few jobs with financial remuneration are available in the area; therefore, hunting, fishing and trapping are the principal sources of livelihood. However, some of the men do leave the villages to work in larger towns in Alaska, and others fight forest fires when needed. Wages in the villages are low and a few families work on some type of handicraft which can be traded for supplies or sold to the Alaska Native Arts and Crafts Cooperative.

HISTORY AND PRODUCTION

There is no written record of this coal ever being used. However, the Eskimos in Selawik claim that they brought in some of the coal to the village and tried

to burn it in their stoves, but that it burned out the stoves. This occurred so long ago that they do not know which type of stove was in use at the time. There have been no other attempts to use the coal.

GENERAL GEOLOGY

The Selawik coal deposit occurs in a symmetrical fold which plunges approximately 40° to the northwest and is exposed, for about 300 ft., in a bluff on the right limit of the Singauruk River. The coal bed consists of a series of four seams of coal 2 to $3\frac{1}{2}$ feet thick separated by layers of shale or mudstone from three to five feet thick; the roof is composed of a coarse conglomerate and the floor of hard sandstone. Due to limited time the age of the deposit was not determined, however it probably belongs to either the Upper Cretaceous or Tertiary formation. Philip S. Smith, in the U.S.G.S. Bulletin 536, The Kobuk-Noatak Region-Alaska, describes these formations as occurring on both the north and the south sides of the Kobuk River. His description of both the Cretaceous and Tertiary members fit the Selawik coal-bearing formation. The age can be determined by further examination of the sandstone for fossils.

SAMPLING AND ANALYSIS

Starting with the uppermost coal as the number 1 seam and counting downward, samples were taken of only number 2 and number 4 seams. Number 2 seam was approximately $2\frac{1}{2}$ feet thick. Number 4 seam was $3\frac{1}{2}$ feet thick but the lower 10 inches consisted of alternating thin bands of coal and clay and was not included in the sample taken. Coal from both seams sampled was burned with difficulty in an open fire and both yielded a large amount of grey ash tinged with brown, which probably indicated that combustion was incomplete. The

samples were analyzed by Donald Stein, Assayer for the State of Alaska Division of Mines and Minerals, College, Alaska. The results are recorded as follows:

P r o x i m a t e A n a l y s i s

	Sample No. 1		Sample No. 2	
	As Received	Moisture Free	As Received	Moisture Free
	%	%	%	%
Moisture	19.27		13.57	
Volatile Matter	24.52	30.37	21.31	24.66
Fixed Carbon	37.09	45.94	32.90	38.06
Ash	19.12	23.69	32.22	37.28
Sulphur	.5	.5	.5	.5
B.T.U.*	7,848	9,172	6,662	7,708
B.T.U.* Moisture & Ash				
Free		11,918		11,372

*British Thermal Units

Comparing these samples with those reported in the U.S.B.M. Technical Paper 682, Analyses of Alaskan Coals, places them as subbituminous C. The next lower coal is lignite. The Selawik coal B.T.U. rating compares favorably with other coals of the same type, but the ash content is abnormally high. The number 2 seam appears to be the better, although this may not hold true if and when samples of the unweathered seams are obtained.

Scale: 1 Inch = 4 Miles
The Selawik Quadrangle
W. M. Burand Nov. 1954