PE-135-1

State of Alaska
Department of Natural Resources
DIVISION OF MINES AND GEOLOGY
P. O. Box 5-300
College, Alaska 99701

PRELIMINARY INVESTIGATION

OF

COAL OCCURRENCES

SITKINAK ISLAND

TRINITY ISLANDS QUAIRANGLE

LODIAK PRECINCT, ALASKA

by

M. W. Jasper
Territorial Mining Engineer

and

Wiley D. Robinson
Territorial Coal Mine Inspector

January 1959

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TRINITY ISLANDS, ALASKA, QUADRANGLE

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LOCATION AND ACCESSIBILITY

Sitkinak is the "high island" of the Trinity Islands, and lies ten miles south of southern most tip of Kodiak Island. It is actually two islands separated by a shallow lagoon, which at low tide has a narrow channel suitable for small fishing boat anchorage only.* Maps do not show any deep water along the island shoreland that would be protected from the frequent storms of the North Pacific and provide a natural harbor for deep sea vessels. It may be found that reefs at east entrance to Kitkinak Lagoon could be removed and the channel dredged into the lagoon, should future developments on the island justify it.*

The land area of Sitkinak Island is given at 91 square miles and is doubtless designated the "high island" due to its mountain mass rising to 1640 feet elevation on Sitkinak Dome. Tugidak Island, one mile to the west, is low lying and has an area of 71 square miles.**

The island is accessible by seaplane. A good airstrip was completed on the mountain near Sitkinak Dome for the Air Force in 1956, but has been abandoned. Private or charter planes are permitted to use it.

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The central ¼ mile section is a conglomerate bluff 75 to 100 feet high, which is being eroded and undermined by the prevailing heavy surf.

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Midway in the bluff section a thin bedded coal formation outcrops. Its width is 75 to 100 feet, its strike Northeast and the dip nearly vertical (on the average, dipping a few degrees to Northwest).

The mountain ridge extending across the island northeasterly-southwesterly terminates on south shoreline 1½ to 2 miles westerly of the traversed beach area. It was not examined because of the weather and advice that the coal beds had not been traced wouthwesterly to that area to date.*

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On January 7, 1959, Attorney Robinson advised that additional nine Coal Prospecting Permit Applications had been filed by other members of the Kodiak group. Since then Mr. Cornelius reports additional applications had been filed, bringing total to around 20.

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That reference suggests that the sandstone, shale, and conglomerate present "indiscontinous areas" along sougheast side of Kodiak Island are of fresh water origin and of "Eocene (?) age", and are probably" present on Sitkinak and Tugidak Islands.*

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The conglomerate is highly oxidized, and is largely composed of small, well rounded pebbles. The largest pebble noted was 8 inches in diameter.

The 75 to 100 foot wide cropping of the thin bedded coal measure is composed of numerous coal seams varying in width from 1 inch to a maximum of 8 inches. These thin beds are separated by shale and sandstone and some clay "partings", which vary in thickness from 1 inch to 15 inch.

The coal appears to be of same quality as that submitted for analysis. No samples were taken of this coal cropping, as it is not considered to be of economic importance. With the coal formation being softer and more susceptible to erosion than the surrounding conglomerate, this wide exposure forms a marked indention of the shoreline.

Approximately 75 yards east of wide coal measure outcropping, a narrow cleft in the conglomerate bluff has a "shiny" coal exposure at the top estimated 10 feet in length and 5 or 6 feet in heigth. This appears to be an exposed face of the most southerly "thin bed" of the wide caol formation.

Between the sand dunes and the conglomerate bluff along the traversed shorelien and base of the mountain, there is a shallow depression about one quarter mile wide extending northeasterly-southwesterly across the island. This swampy depression is probably the axis of a strong fault.

The deeply incised gulches on the southeast slopis of the mountain ridge are doubtless cut down along fault planes. Spaced at ¼ to 1 mile intervals, appreciable displacement of coal measures at right

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angles to thwir northeast-southwest strike can be expected.

Sampling

Mr. Cornelius reported a sample taken from the 25 foot bed a year ago showed a 14,000 plus B. T. U. rating. This Certificate of Analysis had been misplaced and was not available for study. At time that sample was taken Mr. von Scheele knocked off a large piece from the cropping. Rolling down the steep slope it was somewhat shattered; however, a 60 pound piece remained which he packed down to the beach. The "speciman" remained there until last November, accomulated a few "barnacles", and was then taken to Kodiak; given to the Territorial Department of Mines, it was brought back to the Anchorage office December 20th.

The 60 pound speciman is 30 to 40 per cent "bone", which appears to be largely carbonaceous and probable would burn. It breaks along irregular "slickensided" surfaces, indicating it to be in or near a (probably minor) fault zone. The speciman is also evidence that this coal occurrence is not uniform in character across the croppings full width, which has been the prospectors impression.

The 25 pound sample taken by Messrs von Scheele and Neseth was not taken across the full width of the reported 25 foot outcrop. They report it was limited to the lower 10 feet of the bed as the balance was inaccessible on the steep slope. The sample submitted was uniform in quality (a "shiny" jet black) and contained no "bone". Although the meager references mention the Sitkinak coal occurrences as being lignite, that seem does not "slack", crumble, or have other physical aspects generally associalted with that classification. "Float" lying on the beach, seen in the several gulches, or exposed in the 75 to 100 feet wide thin bedded beach cropping, have the same fresh, "shiny" jet black appearance.

Results of the samples analysis are as follows:-

	As Rec'd	Dry	M. & A. F.
Moisture	11.3%	----	-------
Volatiles	34.9%	39.4%	40.7%
Fixed Carbon	50.9%	57.3%	59.3%
Ash	2.9%	3.3%	-------
Sulfur	0.4%	0.5%	0.5%
B.T. U.	11,190	12,610	13,040

M. & A. F.:- Moisture and ash free.
B. T. U.:- British thermal units.

The Kodiak Islands group are in an area of relatively mild climate and heavy rainfall. It is believed that the moisture content shown in the above sample will be considerably lower below the surface at 100 to 200 foot depth.

From its physical appearance and analysis results the coal is tentatively classed as sub-bituminous. Further work will have to be done to definitely classify the coal.

CONCLUSION

While our preliminary reconnaissance investigation of the Sitkinak coal occurrences was brief and limited to "fringe" area section along and near the south and east shoreline, it is considered to be a field that warrants a thorough examination and study.

A total of twenty two Coal Prospecting Permit Applications have been filed at Anchorage office of the U. S. Bureau of Land Management by Messrs Thomas von Scheele, Henry Neseth, George Cornelius, and other associates. These applications are said to completely cover the island west of Sitkinak Lagoon.

The wide (75 to 100 feet) thin bedded coal measure, exposed in the conglomerate bluff, is not of economic importance. The individual beds, however, for the most part resemble the coal of the sample analyzed.

Mr. von Scheele and Mr. Neseth report that a "number" of coal beds have been traced by occassional outcrops and fairly abundent "float" across the island. Their strike is northeasterly (along the axis of the main mountain mass) and dip is said to be steeply to the northwest. This suggests the beds to be far mour continous than the old brief references indicate, and conforms to our observations of the wide thin-bedded coal outcroppings at intervals a distance of at least 1½ miles. Neseth and von Scheele also report that all coal they have seen on the island is of same quality as sampled section (in their opinion).

The coal bed reported to be 25 feet wide, from which the 10 foot sample was taken, has a tonnage potential of the required magnitude. Should this field be found to have coal suitable for "blending" with the best of coking coals, its only (and logical) market would be the expanding Japanese iron-steel industry. Ideally situated on the "Great Circle Route" shipping lane, Sitkinak is approximately 500 miles closer to Japan than the Bering River coal field.

Assuming that tonnage is available and the grade of coal satifactory, the greatest problem facing this fields exploitation will be the finding of suitable location for and contrruction of harbor facilities. There are no protected deep water harbor sites.

Territorial Department of Mines
Anchorage, Alaska
January 22, 1959

Martin W. Jasper
Mining Engineer

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DEPARTMENT OF MINES
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Anchorage, Alaska
January 22, 1959

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Kodiak Exploration Co. Inc.

Box 448
Kodiak, Alaska

May 18, 1959

A I R M A I L

Mr. Martin Jasper
State Department of Mines
Assay Office
Anchorage, Alaska

Dear Martin,

Enclosed herewith please find three (3) pictures and a report of our amateur investigations of the coal on Sitkinak Island. Kulberg, Hall, Von Scheeles (Tom and Robert) and Scotty Braunton arrived at Sitkinak on the 30th of April and started doing the preliminary work and Tom and Robert arrived hom at about 9:00 A.M. this morning. From all indications the coal found there seems to be the same as that which you took to Anchorage with you. I believe that from what I saw when I was there for the day proves my point that you and Wiley should come over as soon as possible and I do not believe that the state's money would be wasted after your seeing what I saw.

Three rolls of Poloroid film were taken. However I am sending only 3 pictures for you to see. Picture #1 - shows the vertical coal seams where we have dug out trenches in the coal. However it seems that in this area the overburden would hinder an open pit working in this area. Coal from the outcropping was quite well broken up and weathered. Picture #2 shows where we have trenched into another outcropping which appears to be about 90 feet in width and looks as though this is dip and strike or such that, in all probablities, runs the length of the island. However, from my amateur viewpoint we cannot tell and it will be necessary for you and Wiley to determine this. Picture #3 shows Harry Kulberg holding a piece of coal weighing about 30 pounds. The coal chunk was dug out of the pit that was made by Willy Hall while Tom and the others were looking at another excavation higher on the slopes.

In order to be sure about the quantity that is here I believe that it would be necessary to coredrill the various places on the island. After flying over the whole area on my way home I am more confident than ever that there is enough coal here to supply the Japanese market providing that the depth is there.

Please let me know what time you will be here as Tom and Robert would like to get the boats prepared for fishing as soon as possible but in order to save time I believe it will be necessary for one of them to accompany you on the trip.

Do you wish that they go ahead and stay there until your arrival or should Tom accompany you on the plane at time of your arrival here? My recommendation for a plane here is that you use Bill Harvey's plane (Harvey Flying Service) The plane is a four seat amphibian and can either land on the airstrip or on the water wherever he were directed.

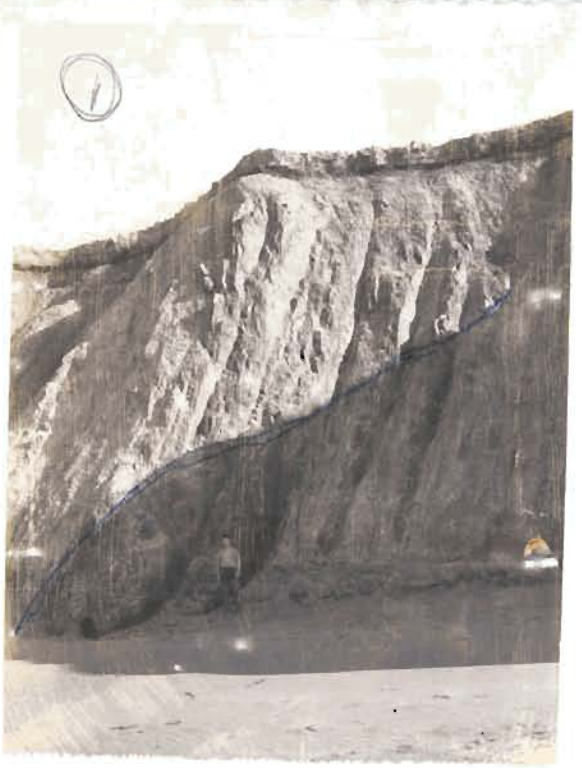
I hope you realize that our report is only an amateur report and is to be considered nothing official. It is a compilation of notes taken by Kulberg during his brief stay there.

Let me know what you think. Hoping to see you soon.

Sincerely,

George H. CORNELIUS

GHC/bac
Encls. (4)

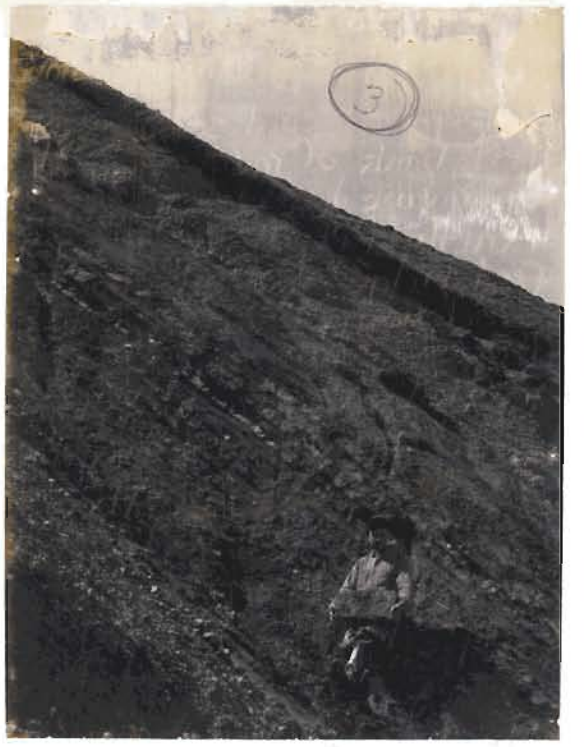


May 2, 1959
Sitkinak Island

Outcropping of vertical coal seams in conglomerate (sandstone) cliff along beach, northern part of island, near rocky entrance to lagoon. (The Marmot entered at other end of lagoon, is anchored near rocky entrance.)

May 2, 1959
Sitkinak Island

Weathered outcropping of coal seams, about 90' in overall width, about a 60° slope, with a strike into face of about 75° with horizontal. (Coal seam nearly vertical.) Excavation in lower edge of face 1½' deep, 12' long, with picks, lumps of coal from excavation in foreground. Outcropping is on second ridge behind first ridge overlooking flats & lagoon.



12 First seen by Tom Van Scheele et al Nov 1958

May 2, 1959
Sitkinak Island

Exposed coal seams on left bank of ravine (looking up ravine) nearest the dome & farthest from beach, in first ridge of high ground overlooking marshes and lagoon. Seam appears about 15' wide, about a 60° slope and tipped into earth at about a 95° angle. About 60' or more of vertical coal seam exposure with some pretty good sized coal chunks exposed. The coal chunk being held weighs about 30 pounds

Kodiak Exploration Co. Inc.

Box 448
Kodiak, Alaska

June 1, 1959

A I R M A I L

Mr. Martin Jasper
State Department of Mines
Box 2139
Anchorage, Alaska

Dear Martin:

Thank you very much for making the trip on the Sitkinak Coal situation. The next morning after you left all of us received notification about our coal prospecting permits to the effect that more information would be required before our permits could be valid. At the present time there are three (3) attorneys and myself getting information together relative to making the applications valid in order to get the permits.

MARTIN, WHEN YOU ARE MAKING YOUR REPORT PLEASE DO NOT USE THE NAME SITKANAK ISLAND COAL SYNDICATE DUE TO THE FACT THAT, AT PRESENT, OR UNTIL THE TIME OF APPROVAL OF APPLICATIONS, WE ARE INDIVIDUALS AND THE WORDING SHOULD BE TO THE EFFECT THAT WE HAVE 23 APPLICATIONS FOR COAL PROSPECTS ON FILE. A COPY OF THE INSTRUMENT GIVEN YOU IN MY OFFICE WAS TO GIVE YOU A LIST OF THE PEOPLE THAT HAVE FILED APPLICATIONS FOR COAL PROSPECT PERMITS.

As soon as you have finished the report I would appreciate a copy of it in order that we may tell the three(3) people that will be working on the project what area to prospect in first.

Again, thank you very much for making the trip and I hope by next year at this time we will be able to dig coal from some of the showings on the island.

If you know of any company that would be interested in looking at the overall picture and co-operate on doing the research work, please let me know.

Sincerely,

George H. Cornelius

George H. Cornelius

GHC/bac

SYNDICATE AGREEMENT TO PROSPECT FOR COAL

THIS AGREEMENT entered into as of the day and year last below written,

Now this Agreement, WITNESSETH:

That a Syndicate is hereby formed for the purpose of the undersigned members of the Syndicate to act in concert concerning applications pending for coal prospecting permits on Sitkinak Island.

The Syndicate shall be known as the SITKINAK ISLAND COAL SYNDICATE.

The managers of the Syndicate shall be such person or persons as the members shall hereafter by majority vote elect, and George Cornelius shall be the Secretary until such time as a Secretary is elected by the members.

The undersigned agree to abide by any decisions concurred in by a simple majority of the undersigned individuals forming the syndicate concerning the coal prospecting permit applications now on file with the Bureau of Land Management Office, Anchorage, Alaska, and it is further specifically agreed by the undersigned, each and severally, that no individual member of the Syndicate shall sell any part or all of their existing permit or claims without first offering same to the Syndicate or the individual members thereof.

WITNESS our hands and seals this ____ day of April, 1959.

GEORGE H. CORNELIUS	MARY CORNELIUS
[illegible]	[illegible]
CECIL BROWN	ELIZABETH BROWN
ROBERT VON SCHEELE	MARGARET VON SCHEELE
TOM VON SCHEELE	LETA VON SCHEELE
WILLARD HALL	ELIZABETH HALL
Carl Rodli CARL RODLI	JUNE RODLI
ARCHIBALD BRUNTON	MARIE BRUNTON
JAMES DAVIS	STAN [illegible]
KENNETH McCASKEY	ANN [illegible]

PAUL F. ROBISON
KENNETH McCASKEY
ATTORNEYS AT LAW
FIRST NATIONAL BANK BLDG.
ANCHORAGE, ALASKA
TELEPHONE 50565

Paul F. Robison

PAUL ROBISON

ROBERT REINHOLDT

BEN OLIVER

CHARLIE ABBOTT

ENOS ABBOTT

HENRY WATERFIELD

NEVILLE WATERFIELD

PAUL F. ROBISON
KENNETH McCASKEY
ATTORNEYS AT LAW
FIRST NATIONAL BANK BLDG.
ANCHORAGE, ALASKA
TELEPHONE 50555

SITKINAK ISLAND
PROSPECTING NOTES
HARRY O. KULBERG

Friday May 1, 1959

A clear, cool day with a little wind. Examined an exposed coal seam about 4' wide on cliff about 150' above beach. Cliff is about ½ mile to right of entrance to lagoon that separates Sitkinak into two islands. (This is not the entrance where we came in, but the rocky entrance that could perhaps be used at high tide.) Coal is weathered, mixed with gray clay. Seam lies practically vertical and strikes into cliff at a 45° to 60° angle. Cliff looks like a weathered conglomerate in many places, with rounded aggregates held loosely in a cementing matrix. This coal seam considered by the party to be not as impressive as many others seen later.

2. Farther up the beach in the same direction another exposed cliff face with weathered coal showing. One seam about 16' wide, (possibly 21' wide if total width is counted, including small, vertical, washed-out area filled with silt.) Seam is practically vertical, bounded by coarse conglomerate on each side, rises about 70' vertically from the beach with about a 3' earth overlay. Can't tell about strike, but believe that there is a fairly shallow overburden above seam.

3. Continuing farther up the beach to the right of the rocky lagoon entrance mentioned earlier and just about to the point where the beach becomes strewn with large conglomerate boulders, a few shallow coal seams can be seen along the low cliff face. They rise from the beach at about a 20° angle and strike back into the island at about a 30° slope. About 4 or 5 veins can be seen on the beach at low tide, about 1' to 3' wide, which are continuations of the cliff veins. Not as spectacular from appearance of exposed surfaces as the coal seams described in the previous paragraph.

4. Walked up a narrow ravine in the hills, in the bottom of which a small stream flowed into the sea. This was at a point just just a little beyond the coal seams described in the paragraph above. The ravine began at the point where the comparatively smooth beach becomes heavily strewn with conglomerate boulders. Walked up the stream quite a distance, finding small lumps of coal in the stream and along the stream bed all the way. Then climbed the steep ravine bank on the far (right) side, perhaps 200 feet above the beach, saw coal float and small crushed coal particles on the surface wherever water had washed the vegetation away. At one such point, dug into the bank with a pick and found moderate sized pieces of coal mixed with muck. The vein, though well hidden, seemed to run off into the hills from the beach at a diagonal angle and back toward the direction from which we had come, perhaps paralleling the shallow veins previously described and found along the beach.

5. Walked about two miles diagonally away from the beach inland along a range of high hills, finding evidence of coal in the form of pieces, small to large, in every small stream that we crossed, and there were about 4 or 5 of them.

6, Met Will Hall, (I had been with Tom Van Scheele up to this time), and the three of us started up a fairly wide ravine with a stream at the bottom, about parallel to the beach. We climbed this steep ravine for quite a distance, came to an exposed gully face on our left after having taken a left hand stream fork part way up. There was a show of coal on the gully face which went up at about a 50° angle. Seam was about 17' wide, about 40' of vertical coal face showing, but could not be sure of angle at which the seam entered the ground (strike). Coal was somewhat weathered, appeared of reasonable quality, was somewhat mixed with rock and clay debris.

7, Kept on up the steep gully, finally reached the very top of the ridge overlooking the marshy flats nearer the lagoon. From this ridge we could see easily another coal outcropping on a ridge beyond the first, away from the lagoon. The vein was measured 90' across and made an angle with the vertical of about 15° (75° with the horizontal). In other words, a nearly vertical seam. Quite weathered and mixed with rock debris at the surface. All kinds of large pieces of coal in the stream in the adjacent ravine that runs ultimately to the beach and the sea.

Polaroid photographs were taken of the 3' wide, nearly horizontal coal seam along the beach, described earlier, of the 17' wide coal face part way up the ravine toward the top of the first ridge (described at the top of this Page), and of the 90' wide coal face on the second ridge, a little beyond the top of the first ridge and away from the marshy flats and the lagoon. This 90' wide coal face was first seen by Will Hall earlier in the day before Tom Van Scheele and I joined him. The appropriate descriptive notations were written in pen on the back of each Polaroid photograph, so as to identify them positively.

Saturday May 2, 1959

6. A beautiful, warm, clear day with a little wind. Took a Polaroid photograph of the 16-21' vertical coal seam in the conglomerate cliff near the beach (described in yesterday's notes), identified it appropriately with a description on the back. The photograph came out very well.

6 & 7 Tom Von Scheele and I climbed a ravine in the first ridge coming up from the lagoon and the marsh flats. This ravine lies between the one we were in yesterday where we found the 17' and 90' wide coal seams, and another ravine to which we are to go later where Tom had spotted a seam last November. As we climbed the ravine of this morning, plenty of good sized pieces of coal were found in the stream bed, there was a weathered coal outcropping about 4' wide on the ravine face on our right, and another exposed vein near the top of the ridge on our left but considerably above us, and which appeared to be 20 or more feet wide. Looking in almost any direction to weathered slopes, coal veins and outcrops can be seen which are continuations of others which can be seen. In general, most veins are markedly tipped, and appear more nearly vertical than horizontal.

8

Finally climbed to the top of the ridge on our right, which is the direction toward the dome, the landing strip and the entrance to the lagoon where we first entered yesterday morning. We only had to walk a short distance to our right to come to the next ravine which Tom had explored last November. The coal face we came to is on the left bank of this ravine, pretty well to the crest of the first ridge. (That is, the left bank as

you follow the ravine up the stream bed toward the crest.) This coal face is set into a steep, weathered conglomerate bank where we had real trouble keeping our footing. The seam appears to be about 15' wide, on about a 60° slope, and the bed was tipped into the earth at about a 45° angle. Possibly 60' or more was exposed vertically, with some good sized chunks of coal showing. A Polaroid picture was taken and appropriately documented on the back, showing me holding a large piece of coal with part of a coal seam as a background.

(7) 77. After this we made our way back to the top of the ridge and worked slowly back on high ground toward the sea and the 90' wide coal face that we saw yesterday.

As you stand on very high ground and look over the area, you can almost spot the coal seams even when no coal is showing. At the ridges the seams make a kind of dip or saddle which is a clue to the width of the seam. This saddle is probably caused by settling or weathering of the coal seam or by both factors working together. The coal is so much softer and less dense than the rock and earth layers found on either side. This saddle will frequently be noted on an adjacent ridge, with the seam following the rising and falling hill contour from ridge to ridge. The seam can often be seen below the ridge, where it will have a slightly sunken outline, with a slippage of soil at the edges and a break in the vegetation like a little slippage trench that follows the edge of the seam.

These saddles and seams will be found repeating themselves and running parallel to each other across hill and valley for considerable distances of several miles. As noted previously, the seams are for the most part greatly tipped toward the vertical, and every so often there is a weathered outcrop or a steep ravine face where the coal is clearly visible.

7. We descended from higher ground to the exposed face of the coal seams of about 90' width noted yesterday, and were joined by Will Hall. Tom and Will made a horizontal cut across the lower end of the seam face, about 1½' deep and 12' long. There seemed to be a great deal of heavy gray clay mixed with waterlogged and heavily weathered coal, and they were unable to get down to really bright, clean coal, using only a pick as a tool. A picture was taken of the cut, with a pick and a fairly good sized chunk of coal from the cut in the foreground. Appropriate notes were made in pen on the back of the photograph. There is some doubt as to whether the 90' wide seam face previously mentioned is continuous. This width is measured horizontally from the nearest to the farthest outcropping, but the rock and clay debris found on the surface obscures the seams somewhat so that it is difficult to tell whether the seams are continuous or discontinuous.

Will Hall had explored all morning in an area where Tom Von Scheele and I had not been, and reported seeing coal almost everywhere. He saw wide, vertical coal seams or combinations of seams in the conglomerate cliffs along the beach, and the usual saddles and exposed outcroppings further inland in the the rugged hills or low mountains rising from the sea. Altogether, he walked the beach as far North as the spit, (almost to the end of the island), along the fairly good sized stream that runs through a wide valley parallel to the lagoon, and like the lagoon traversing the width of the island

and over the ridges and high ground rising from the valley floor away the area of high ground that I have personnaly seen and with which I am familiar.

Late in the afternoon the three of us started down the ravine that runs all the way from the 90' wide coal seam outcropping to the sea. We ran a string line all the way from the coal face to a branched root at the mouth of the ravine where it meets the conglomerate boulder strewn beach. We figured we must have walked about two miles down this rugged ravine, and still there was about one quarter of the string left on the conical cardboard spool. We used a rather ingenious spool holder made out of a piece of soft steel rod, bent to hold the spool and with the string fed through a centrally positioned steel loop bent into the rod. No matter how fast you walked, the string would pay out without snagging or fouling by dropping off the end of the spool and getting caught in the spool holder.

About half way down the ravine on the left hand side facing the beach we came across a fairly large piece of conglomerate boulder in which two pieces of petrified log had become imbedded. Tom and Will broke off specimens of the petrified wood and took them back to the MARMOT. Will also had his Geiger Counter with him and was able to get a count and needle displacement with ionisation tube held near the petrified wood. The count and displacement of the needle were well above background, and as I recall, the needle swung to a point well beyond the middle of the scale. The boulder is believed to be about 3' across, and rather chunky in its proportions.

In brief conclusion, there is coal on Sitkinak Island, and indications suggest that there is quite a bit of it. Without drills and other exploratory equipment, only exposed seams and outcroppings could be examined. It was not possible to penetrate surface debris or overburden and get down to bright, clean coal. Much of the coal found in stream beds or on the surface, however, appeared to be of good quality. The opinions of qualified geologists, based upon actual on-site observations, would be most helpful.

Harry O. Kulberg

HARRY O. KULBERG
May 15, 1959

RECONNAISSANCE OBSERVATIONS OF THE GEOLOGY OF THE TRINITY ISLANDS, ALASKA

CONFIDENTIAL

C. E. Kirschner
Standard Oil Co. of California, Seattle, Wash.

The Trinity Islands, Tugidak on the west and Sitkinak on the east, form the southwesterly extent of the Kodiak Islands group. Each island is approximately 5 miles wide by 20 miles long. The surface of Tugidak Island is a series of low wave-cut terraces maximum elevation 200 feet. Sitkinak Island comprises a group of hills on the east and west, maximum elevation 1640 feet, separated by a valley enclosing Sitkinak tidal lagoon.

The bedrock of east Sitkinak Island is Cretaceous (?) marine epineritic bedded graywacke and siltstone complexly folded and faulted. West Sitkinak Island is Cretaceous (?) marine infraneritic thin-bedded siltstone and fine graywacke isoclinally folded and faulted. The thickness of these units is unknown; structural trends are northwest.

Sitkinak lagoon and valley lie in a northwest-trending graben in which about 4000 feet of Eocene (?) transitional-facies conglomerate, sand, silt, and coal crop out.

The bedrock of Tugidak Island consists of Plio-Pleistocene soft mudstone and thick-bedded gray sands, which strike N. 45° E. and dip 5° NW.

The Cretaceous sediments were deposited in a northwest-trending mobile, extra-continental, open marginal geosyncline and were probably derived from a linear orogenic land mass to the east. Late Cretaceous to early Tertiary diastrophism brought to a close the Cretaceous sedimentation cycle. The Tertiary sediments were deposited in a similar less well-developed geosyncline but had a westerly source. Intermittent organic uplift near the close of this cycle caused non-deposition or erosion of mid-Tertiary sediments. Late Tertiary deastrophism that closed the Tertiary cycle of sedimentation has continued to recent time and includes differential orogenic movements and uplift, in part along major northeast-trending faults.

TERRITORY OF ALASKA
DEPARTMENT OF MINES
329 SECOND AVENUE
BOX 2139
ANCHORAGE, ALASKA

February 2, 1959

LEGEND

Lagoon Channel

Shore traverse

Coal beds
(Approx. location)

NOTES:-

① "MARMOT" anchorage (40 ft fishing boat).

② Conglomerate bluff. Dip near vert. Strike NE.

③ Wide (75'-100') thin bedded coal outcrop in shoreline bluff. Dip near vert. Strike NE. Possible coal source for small boats mentioned in 1890 -1900 period reports.

④ Approx. location of 10 ft sample reported taken from 25 ft coal bed.

⑤ Contractors beach warehouse & camp (abandoned) approx location.

Martin W. Jasper
Mining Engineer

6-219 **LABORATORY RECORD**

Serial No. ..... Index No. A-100 Can No. .....

Air-dry	Moist. 105°	Total moist.	Volatile matter	Fixed carbon	Ash	Sulphur	B. T. U.	B. T. U. (M. & A. F.)

Date received 12-4-58 Date reported 12-9-58

Remarks: Outcrop Coal, Kodiak Is. 1"X0

U. S. GOVERNMENT PRINTING OFFICE 6—8407

Gross Wt. of sample = 8757 grams

	AS REC'D	DRY	M. & A.F.
Moisture	11.3	—	—
Volatiles	34.9	39.4	40.7
Fixed Carbon	50.9	57.3	59.3
Ash	2.9	3.3	—
Sulfur	.4	.5	.5
B.t.u.	11190	12610	13040