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PRELIMINARY REPORT ON THE KALLARICHUK RIVER AREA COAL OCCURRENCES

By

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Geological and Geophysical Surveys

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by Jim Clough¹, Gil Eakins¹, and Mike Menge²

Location: Baird Mountains A-2 Quadrangle, T20N, R6W, sections 5, 7, 8, Kateel River Meridian (see map). These coal occurrences are within and near the western edge of the new Kobuk Valley National Park.

Introduction: In an effort to select potential reconnaissance drilling sites for evaluation of coal resources in northwest Alaska as mandated by Alaska Senate Bill 26, Sec. 43, a field investigation of nine areas was made from June 10 to June 18, 1982. The Kallarichuk River area coal occurrences were examined on June 11, 1982 under a Special Use Permit (No. CX-9850-2-0001) granted by the National Park Service. The coal deposit was reexamined on August 31, 1982 in order to show a representative of NANA Regional Corp. the nature of the coal deposit. Participants in this investigation were Gil Eakins, DGGGS Chief Mining Geologist, Jim Clough, DGGGS Geologist, and Mike Menge, MMS Geologist. Ron Barr, Sr. and Paul Brown, Sr. from Noorvik assisted in locating the coal and providing much additional useful information on local use of the coal in the past. Transportation into the area was by helicopter.

Investigation: A considerable amount of blocky, relatively unweathered coal is contained in a northwest facing cutbank along an unnamed tributary to the Kallarichuk River (fig. 1), location 82GE1, and in a small creek which flows into this tributary (figs. 2 and 3). Coal is also exposed in a cutbank on the west side of the Kallarichuk River (fig. 4), location 82GE2.

Although there was no observable coal bed located at the first site (82GE1), our guides reported an outcrop of good coal in the creek bed. Due to high water at this time of the year we were unable to observe this bed. The cutbank where the guides reported having originally observed the coal was freshly caved and the bed(s), if present, was completely covered. The quantity of highly weathered coal that is present all along the bank supports the guides' observations. The lack of block fragments suggests that, (a) there was an intensive weathering zone penetrating into the exposed coal face, (b) the observed fragments were from a dirty or impure zone at the top of the bed, or, (c) there were a series of beds (two or more) with the upper bed being extremely weathered or containing a considerable amount of ash. Because of the consistently topographically lower position of the blocky coal fragments, the guides' report of thick bed in the stream, and the extremely weathered condition of the coal float located high on the cutbank rubble pile, we are probably dealing with case "c". In particular, case "c", with a weathered bed (or beds) located 20 to 30 feet higher in the section than the lower, cleaner bed. A note of caution should be interjected here; these stratigraphic position discussions are based on the assumption that the beds are in a normal sequence, dipping back into the cutbank.

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The second location investigated (82GE2, fig. 4) contains two beds, 1' to 2' thick of boney coal within poorly consolidated gray shale and sandstone beds with a strike and dip of N45°E 45°W.

Analyses: The proximate and ultimate analyses of weathered sample 82GE1 and proximate analysis of weathered sample 82GE2 are given in table 1. Sample 82GE1 has an apparent rank of high-volatile c bituminous coal. However, due to the 13% ash content, vitrinite reflectance will be necessary to determine the ASTM coal classification. Sample 82GE2 contains a higher percentage of ash which reflects the poorer quality of this coal bed. These samples are now being analyzed using the float-and-sink technique to separate the coal from the ash. This process is used commercially by the coal industry to remove as much as 85% of the ash content thus enhancing the coal quality.

Recommendations: This location, by virtue of the presence of hard, blocky coal fragments, appears to have a better than even chance for containing, at least on a small scale, enough coal of sufficient quality to warrant further testing.

Any further coal investigations in this area would require construction of a geologic map of sufficient complexity to determine strike, dip, and general rock type. This information would then provide the framework upon which a small scale drilling project could be constructed. A preliminary series of eight to ten test holes would have to be drilled and geophysically logged before any definitive statement concerning geometry, quality, and quantity of coal in this area could be made. Because of terrain and vegetation, the location would most probably have to be tested using breakdown equipment that could be transported via helicopter. However, because this area is within a national park, no drilling can be performed at present.

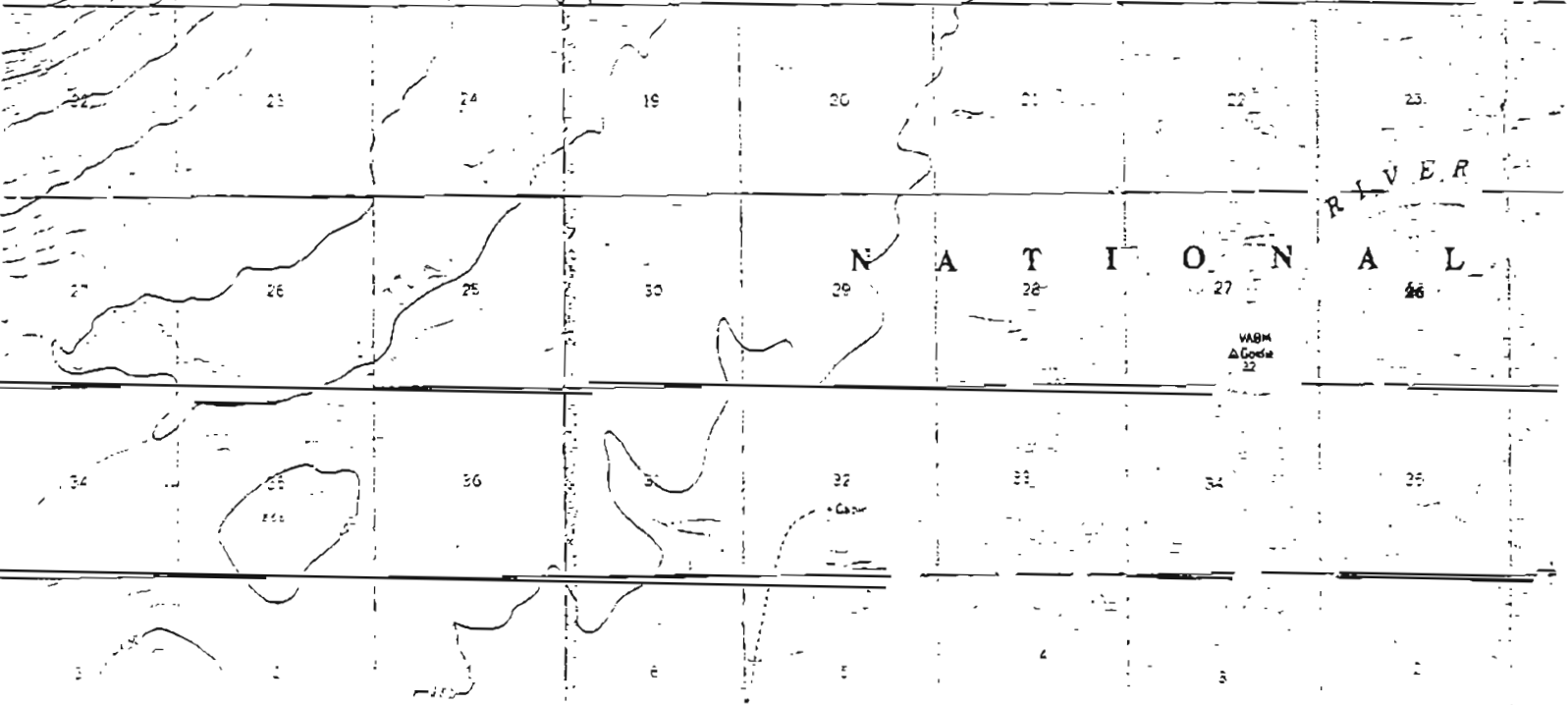
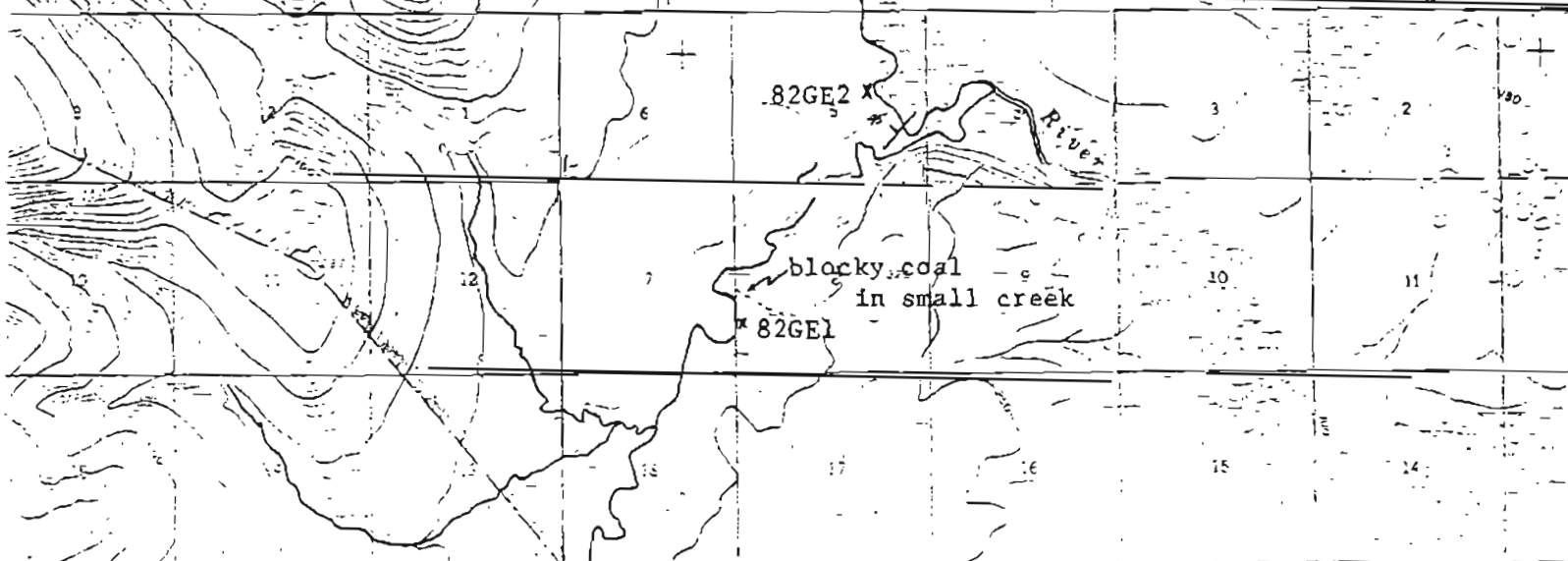
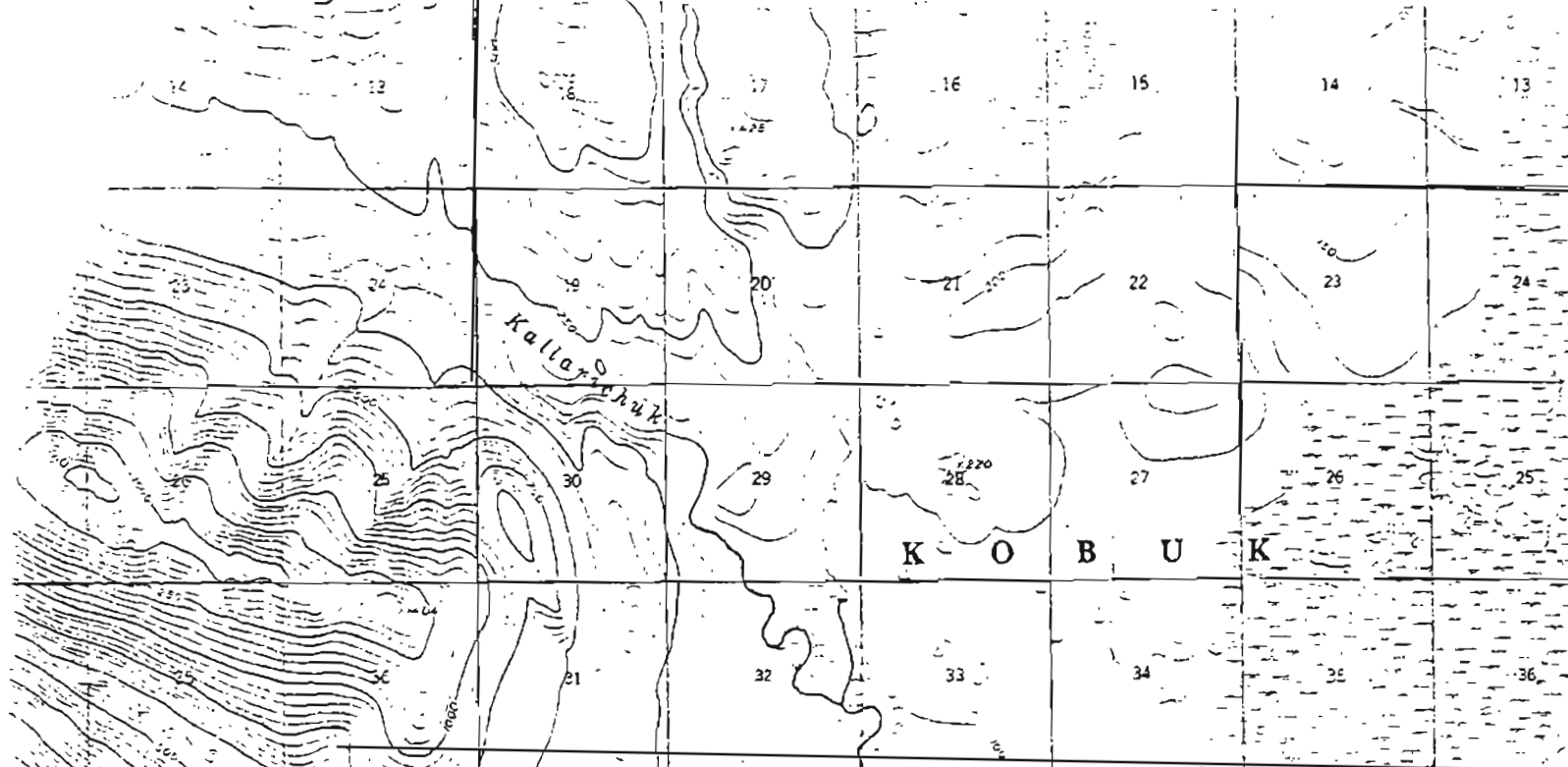


TABLE I
 PROXIMATE AND ULTIMATE ANALYSES OF RAW COALS FROM THE
 KALLARICHUK RIVER AREA OCCURRENCES

Sample Numbers	Basis*	Moisture %	Volatile Matter, %	Fixed Carbon, %	Ash %	Heating Value BTU/Lb.	C, %	H, %	N, %	O, %	Sulfur	
											Pyritic	Total
82GE1	1	13.20	32.15	41.68	12.97	9,292	52.68	5.34	0.82	27.13	0.41	1.05
	2		37.04	48.02	14.94	10,705	60.69	4.45	0.94	17.76	0.47	1.22
	3		43.54	56.46		12,585	71.36	5.23	1.11	70.87	0.55	1.43
82GE2	1	17.15	23.30	28.38	31.17	5,788						0.38
	2		28.13	34.25	37.62	6,986						
	3		45.00	54.91		11,199						

* 1 Equilibrium Moisture
 2 Moisture Free
 3 Moisture and Ash Free

Coal samples were analyzed by the Mineral Industry Research Laboratory in Fairbanks, Alaska under the direction of D;
 P.D. Rao.



Figure 1. Location 82GE1. View is towards the west. A shallow pit is being dug in an attempt to find a fresh exposure of coal bed(s).



Figure 2. Location 82GE1. Blocky coal in small creek immediately adjacent to and east of curbank shown in figure 1.



Figure 3. Location 82GE1. Closeup of blocky coal shown in figure 2 with freshly broken surface.



Figure 4. Location 82GE2. View is towards the southwest. Partially covered outcrop of sandstone, shale and coal.