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COAL RESERVES OF THE HEALY CREEK AND LIGNITE CREEK COAL BASINS,
NENANA COAL FIELD, ALASKA

By

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This report is preliminary
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The accompanying maps and charts of the Nenana Coal Field are intended to give those interested in the coal deposits a preliminary evaluation of the coal reserves of Healy Creek and Lignite Creek Coal Basins, the two major basins of the coal field. The field work on which they are based was done mainly between 1944 and 1952, with minor revisions in 1957, 1958, and 1963. Mined areas are shown as they existed in 1958.

Geology of the Healy Creek Coal Basin east of Suntrana was mapped by plane table and alidade; geology of the Lignite Creek drainage basin was mapped on 1:31,680 topographic maps on township plats prepared by the General Land Office (now Bureau of Land Management) in 1915, and on trimetrogon aerial photographs flown by the U. S. Air Force in 1941 and 1946. Geology of the remainder of the area was plotted on trimetrogon aerial photographs and on vertical photographs taken in 1949, and transferred to topographic multiplex manuscript maps of Healy D-3, D-4, D-5, and Fairbanks A-3, A-4, and A-5 quadrangles, at a scale of 1:40,000. The base for Figure 1 is a compilation of parts of the six quadrangle sheets.

All exposures of coal and most partial or complete exposures of the Coal-bearing Group were measured by tape and compass traverse. The longer traverses were controlled by plane table and telescopic alidade surveys at a scale of 400 feet to the inch. The measured sections are located on Figure 1 and are plotted on Figures 4 through 11 at a vertical scale of 100 feet to the inch.

On the basis of the geologic mapping, measured stratigraphic sections, and structural information, the structure contours on the top of the No. 6

Coal Bed (Fig. 2) and the vertical structural cross-sections (Fig. 3) were prepared.

Using the information from the correlated stratigraphic sections (Figs. 4 through 11) and other stratigraphic information not included, available for the area to the north and east, a series of isopach maps showing the thickness of coal in each coal bed and the thickness of the barren intervals between the coal beds were prepared for the six minable coal beds in the Suntrana Formation (Coal Beds Nos. 1 through 6) and the F bed at the top of the Healy Creek Formation (Figs. 12 through 19). Other coal beds were too thin or lenticular to justify constructing isopach maps.

The structure contour map on Coal Bed No. 6 was corrected for each of the other coal beds by use of summation isopach maps to prepare a structure contour map for each of these. These structure contour maps were then compared with the topographic maps to prepare maps showing various thicknesses of overburden for the coal beds, and various depths below minimum haulage level. These maps were combined with the isopach maps to produce the coal reserve maps (Figs. 20 through 28), showing average thickness of coal in reserve reporting units, ranges in depth of overburden, and classification of coal into measured, indicated, and inferred classes in accordance with the principles laid down in P. W. Averitt (1961, p. 19-22).

REFERENCE

Averitt, P. W., 1961, Coal Reserves of the U.S.--A progress report Jan. 1, 1960: U.S. Geol. Survey Bull. 1136, 116 p.

- Fig. 1. Geologic map of the Healy Creek and Lignite Creek Coal Basins, showing outcrops and other indications of coal and locations of measured sections. Scale 1:40,000, c. i. 100 ft., ca.
- Fig. 2. Map showing structure contours on the top of the No. 6 Coal Bed, Healy Creek and Lignite Creek Coal Basins and locations of structure cross-sections. Structure contour interval 500 ft.
- Fig. 3. Structure cross-sections A through G, Healy Creek and Lignite Creek Coal Basins, Alaska.
- Fig. 4. Measured sections in outcrops of the Coal-bearing Group, T. 10 S., R. 5 W. and R. 6 W., F. B. M. (Lower Marguerite Creek-McAdam Creek area) (Sections 1 through 29).
- Fig. 5. Measured sections in outcrops on north side of Lignite Creek Syncline, T. 11 S., R. 5 W. and R. 6 W., F. B. M. (Sections 30 through 62).
- Fig. 6. Measured sections in outcrops of the Lignite Creek and Suntrana Formations in the valley of Lignite Creek (Sections 63 through 84).
- Fig. 7. Measured sections in outcrops of the Healy Creek and Sanctuary Formations in the valley of Lignite Creek, T. 11 S., R. 6 W. and R. 7 W.; T. 12 S., R. 7 W. (Sections 85 through 95).
- Fig. 8. Measured sections in outcrops in the Healy Creek Formation in the headwater basin of Totatlanika Creek, T. 11 S., R. 4 W. and R. 5 W. (Sections 96 through 115).
- Fig. 9. Sections in T. 11 S. and T. 12 S., R. 8 W., west of the Nenana River (Sections 116 through 123).
- Fig. 10. Stratigraphic coal sections in the Coal-bearing Group in the valley of Healy Creek, Alaska (Sections 124 through 139).

- Fig. 11. Correlated stratigraphic sections of outcrops in the Buzzard Creek-Tatalanika Creek area (Sections 140 through 155).
- Fig. 12. Isopachs on the Healy Creek Formation and thickness of the Sanctuary Formation, Nenana Coal Field, Alaska. Scale 1:125,000; c. i. 100 ft.
- Fig. 13. Isopachs on the "F" bed, top of the Healy Creek Formation, Nenana Coal Field. Scale 1:125,000; c. i. 10 ft.
- Fig. 14. Isopachs on the interval between the top of Coal Bed No. 1 and Coal Bed No. 6, Suntrana Formation, Nenana Coal Field, Alaska, and on the Suntrana Formation. Scale 1:125,000; c. i. 100 and 500 ft.
- Fig. 15. Isopachs on the interval between the top of Coal Bed No. 1 and Coal Bed No. 2, Nenana Coal Field, Alaska. Scale 1:125,000; c. i. 10 and 50 ft.
- Fig. 16. Isopachs on the thickness of coal in Coal Bed No. 2 and on the interval between Coal Bed No. 2 and Coal Bed No. 3, Nenana Coal Basin, Alaska. Scale 1:125,000; c. i. 10 and 50 ft.
- Fig. 17. Isopachs on the thickness of coal in Coal Bed No. 3 and thicknesses of the interval between Coal Bed No. 3 and Coal Bed No. 4, Nenana Coal Field, Alaska. Scale 1:125,000; c. i. 50 ft.
- Fig. 18. Isopachs on the thickness of coal in Coal Bed No. 4 and on the interval between Coal Bed No. 4 and Coal Bed No. 5. Scale 1:125,000; c. i. 10 and 50 ft.
- Fig. 19. Isopachs on the thicknesses of coal in Coal Beds No. 5 and No. 6 and on the interval between them. Scale 1:125,000; c. i. 5 and 50 ft.
- Fig. 20. Areas of coal reserves in the No. 6 bed in the Lignite Creek and Healy Creek Basins, Nenana Coal Field, Alaska. Scale 1:40,000.

- Fig. 21. Areas of coal reserves in the No. 5 bed in the Lignite Creek and Healy Creek Basins, Nenana Coal Field, Alaska. Scale 1:40,000.
- Fig. 22. Areas of coal reserves in the No. 4 bed in the Lignite Creek and Healy Creek Basins, Nenana Coal Field, Alaska.
- Fig. 23. Areas of coal reserves in the No. 3 bed in the Lignite Creek and Healy Creek Basins, Nenana Coal Field, Alaska.
- Fig. 24. Areas of coal reserves in the No. 2 bed in the Lignite Creek and Healy Creek Basins, Nenana Coal Field, Alaska. Scale 1:40,000.
- Fig. 25. Areas of coal reserves in the No. 1 bed in the Lignite Creek and Healy Creek Basins, Nenana Coal Field, Alaska. Scale 1:40,000.
- Fig. 26. Areas of coal reserves in beds in the Suntrana Formation below the No. 1 bed, Healy Creek and Lignite Creek Coal Basins, Nenana Coal Field, Alaska. Scale 1:40,000.
- Fig. 27. Areas of coal reserves in the F bed, in the Lignite Creek and Healy Creek Basins, Nenana Coal Field, Alaska. Scale 1:40,000.
- Fig. 28. Areas of coal reserves in beds in the Healy Creek Formation below the F bed, Lignite Creek and Healy Creek Coal Basins, Nenana Coal Field, Alaska. Scale 1:40,000.