Base from U.S. Geological Survey, 1975

Maps compiled in 1978; data current as of Dec. 31, 1977

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1 Black Draw--1971
2 Dead Horse Lake--1971
3 Corral Creek--1971
4 Dead Horse Butte--1971
5 Rocky Butte--1972
6 Nipple Butte--1972
7 Millen Butte--1972
8 Rockpoint--1972
9 Rocky Point--1972
10 Reservoir Creek--1971
11 Homestead Draw SW--1971
12 White Tail Butte--1971
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26 Truman Draw--1971
27 Wildcat--1971
28 Calf Creek--1971
29 Weston SW--1972
30 Lone Tree Creek--1972
31 Adon--1972
32 Flag Butte--1972

GN
MN
16°
0°24'
7 MILS
249 MILS

UTM GRID AND 1972 MAGNETIC NORTH
DECLINATION AT CENTER OF MAP

SCALE 1:100 000

1 0 1 2 3 4 5 6 7 8 9 10
KILOMETERS
1 0 1 2 3 4 5
MILES
5000 0 5000 10000 15000 20000 25000
FEET

CONTOUR INTERVAL 100 FEET
NATIONAL GEODETIC VERTICAL DATUM 1929

CONTOUR VALUES
CONVERSION TABLE

Feet	Meters
4600	1402
4500	1372
4400	1341
4300	1311
4200	1280
4100	1250
4000	1219
3900	1189
3800	1158
3700	1128
3600	1097
3500	1067
3400	1036

Meters equal feet times 0.3048

WYOMING

QUADRANGLE LOCATION

ISOPACH MAP OF CANYON COAL BED

ISOPACH MAPS

Geologic setting

The Canyon and closely associated coal beds, as identified on the accompanying maps, are in the upper part of the Tongue River Member of the Fort Union Formation of Paleocene age. They crop out on the east flank of the Powder River Basin in Montana and Wyoming along the northern and eastern margins of the area shown on these maps. The coal dips generally westward or southwestward toward the basin axis, which lies several tens of miles (kilometers) west of the Recluse 1½°-degree quadrangle.

The Canyon coal bed or coal sequence is one of the thickest and most extensive of the Tertiary coal beds or sequences in northeastern Wyoming; it locally has good potential for surface mining.

Special features

As shown by the isopach map of the Canyon coal bed, coal in the Canyon and locally associated coal beds ranges in aggregate thickness from less than 20 to more than 70 feet (6 to 21 m). For much of the mapped area the aggregate coal thickness exceeds 30 feet (10 m).

The coal thicknesses do not appear to show systematic patterns of variation. Differences in coal thickness probably reflect irregularities on the surface of deposition of the coal, or the effects of differential compaction of underlying sediments during deposition of the coal-forming materials.

As shown on the isopach map of the overburden, the overburden above the Canyon and locally associated coal beds ranges from less than 200 feet (61 m) to more than 1,400 feet (420 m). In the northern, eastern, and southeastern parts of the mapped area the coal is under shallow cover and large resources are potentially available for surface mining. Overburden is thickest in the southwestern corner.

Stratigraphic relations of the coal beds

The Canyon coal bed, as mapped, forms a single thick continuous coal at many places. At other places the coal contains rock partings that locally become rock intervals several tens of feet (meters) thick; the partings and intervals separate the coal into distinct beds. In a few local areas the Canyon bed merges or nearly merges with the underlying Cook coal bed and (or) with the overlying Anderson and Swartz coal beds. In these areas, the Canyon and closely associated Cook, Anderson, and Swartz coals have been combined.

Generally speaking, coal beds above or below the Canyon have been combined with the Canyon if the rock intervals between coals are thinner than the coals.

It should be especially noted that the isopach map of the Canyon coal bed shows the thickness of the coal, excluding all rock partings or intervals. At many places the total thickness of the coal sequence would be appreciably thicker than shown by the isopachs if rock interval had been included. Point-localities (drill holes) where the Canyon coal bed contains rock partings are indicated by solid dots.

Subareas A thru E are identified separately on the isopach maps; beds that have been combined for the purposes of mapping in each of the subareas are shown on figure 1.

Discussion of the subareas

Subareas A, A', A'', and A''' are outlined on the isopach map of the Canyon coal bed. Within these subareas, single beds of Canyon coal are widely separated by rock intervals that are thicker than the coal beds (fig. 1). This type of occurrence of Canyon coal is best described as a Canyon coal zone.

Data on the thickness of coal and rock intervals in the Canyon coal zone at point-localities (drill holes) within subareas A, A', A'', and A''' are summarized in table 1.

Subareas B and B'

Subareas B and B' are outlined on the isopach map of the Canyon coal bed. Within these subareas the Canyon coal bed nearly merges with the underlying Cook coal bed (fig. 1). Isopachs are not shown in these subareas. Data on the thickness of Canyon coal, Cook coal, and the rock interval between the coal beds at point-localities within subareas B and B' are summarized in table 2.

Subarea C

Subarea C is outlined on the isopach map of the Canyon coal bed. Within this subarea, the Canyon coal bed merges with the underlying Cook coal bed (fig. 1). Isopachs within subarea C show the thickness of the combined Canyon–Cook coal bed.

Subarea D

Subarea D is outlined on both isopach maps. Within this subarea, the Canyon coal bed nearly merges with the overlying Anderson and Swartz coal beds (fig. 1). Data on the depths to the top of the coal sequence and thicknesses of coals and rock intervals between coal beds at point-localities within subarea D are summarized in table 3.

Subarea E

Subarea E is outlined on both isopach maps. Within this subarea, the Canyon coal bed nearly merges with (a) the underlying Cook coal bed and (b) the overlying Anderson and Swartz coal beds (fig. 1). Data on the depths to the top of the coal sequence and thicknesses of coals and rock intervals between coal beds at point-localities within subarea E are summarized in table 4.

EXPLANATION

20— ISOPACHS OF CANYON COAL BED--Showing thickness, in feet, of the Canyon and locally associated coal beds. Contour interval 5 feet (1.5 m)

200— ISOPACHS OF OVERBURDEN--Showing thickness, in feet, of overburden on the Canyon and locally associated coal beds. Contour interval 200 feet (61 m)

BOUNDARY OF SUBAREA--Showing outline of subarea in which the Canyon coal bed is split (shaded), or is combined with overlying and (or) underlying coal beds (brown). Letter identifies subarea

FAULT--Dashed where approximately located. D, downthrown side; U, upthrown side

DRILL HOLE--Hole having log used for determining thicknesses of Canyon and locally associated coal beds

DRILL HOLE--Hole having log indicating presence of rock partings within the Canyon coal bed.(Total thickness of coal greater than total thickness of partings)

FIGURE 1.--*Diagrammatic sketch showing relationships of Canyon coal bed and rock intervals (R) and the sequence of coal beds that have been combined and mapped as the Canyon coal bed*

Areas in which the Canyon coal bed is mapped by itself			Areas in which the Canyon coal bed is combined with other coal beds			
Unlabeled subarea	Subareas A–A'''		Subareas B, B'	Subarea C	Subareas D	Subarea E
					R	R
					Swartz R	Swartz R
R	R	R	R	R	Anderson R	Anderson R
Canyon	Canyon R	Canyon	Canyon	Canyon–Cook, combined	Canyon R	Canyon R
R	Canyon R	R	R		Cook R	Cook R
	Canyon R	Canyon R	Cook R	R	R	R
			Subareas B and B'			

Table 1.--*Thicknesses of coal and rock intervals in the Canyon coal zone at point-localities within subareas A, A', A'', and A'''*

[Cy, Canyon coal; R, rock interval. Thicknesses in feet]

Drill Holes in Subarea A												Drill Holes in Subareas A', A'', A'''			
A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A'1	A''2	A'''1	A'''1
Cy 10	9	4	9	11	7	5	5	3	5	3	5	4	16	18	8	18
R 40	10	78	76	38	15	36	203	4	117	41	30	30	27	30	18	30
Cy 8	4	7	7	5	3	2	4	6	10	12	4	4	10	10	5	4
R —	71	—	—	—	—	—	—	110	—	—	1	—	—	—	30	4
Cy —	5	—	—	—	—	—	—	6	—	—	—	—	—	—	10	8

Table 2.--*Thicknesses of Canyon coal, Cook coal, and rock interval between coal beds at point-localities within subareas B and B'*

[Cy, Canyon coal; R, rock interval (or parting); Co, Cook coal. Thicknesses in feet]

Drill Holes in Subarea B								Drill Holes in Subarea B'	
B1	B2	B3	B4	B5	B6	B7	B8	B'1	B'2	B'3
Cy 37	37	40	33	33	35	35	30	42	42[1]	44[1]
R 11	14	8	7	5	10	6	20	18	14	5
Co 21	22	22	22	25	24	24	20	4	8	8

[1]Thickness includes rock partings. Sections of the Canyon coal bed at localities B'2 and B'3 are as follows:
B'2: Cy1/R3/Cy21 (42)
B'3: Cy3/R2/Cy14/R4/Cy21 (44)

ISOPACH MAP OF OVERBURDEN

Table 3.--*Depths to top of coal sequence, and thicknesses of coal and intervals between coal beds, subarea D*

[GE, ground elevation of drill hole; DT, depth to top of coal sequence; Sw, Swartz coal; R, rock interval; An, Anderson coal; Cy, Canyon coal. Elevations and thicknesses in feet]

Drill Holes in Subarea D			
D1 (GE,4139; DT,64)	D2 (GE,4118; DT,78)	D3 (GE,4255; DT,116)	D4 (GE,4090; DT,40)
Sw 18	Sw 20	Sw 16	Sw 28
R 15	R 16	R 9	R 6
An 9	An 12	An 3	An 22
R 4	R 10	R 4	R 5
An 1	Cy 17	An 1	Cy 1
R 4	R 9	R 6	R 2
Cy 15	Cy 8	Cy 2	Cy 6
R 5		R 6	
Cy 2		Cy 8	
R 2			
Cy 7			

Table 4.--*Depths to top of coal sequence, and thicknesses of coal and rock intervals between coal beds, subarea E*

[GE, ground elevation of drill hole; DT, depth to top of coal sequence; Sw, Swartz coal; R, rock interval; An, Anderson coal; AnCy, Anderson and Canyon coal combined; Cy, Canyon coal; Co, Cook coal. Elevations and thicknesses in feet]

Drill Holes in Subarea E				
E1 (GE,4271; DT,115)	E2 (GE,4223; DT,70)	E3 (GE,4310; DT,218)	E4 (GE,4239; DT,136)	
Sw 16	Sw 13	Sw 10	Sw 24	
R 14	R 5	R 4	R 18	
An 38	An 14	An 14	AnCy 60	
R 17	R 4	R 22	R 1	
Cy 12	Cy 24	Cy 12	Co 13	
R 3	R 12	R 10		
Co 5	Cy 10	Cy 10		
	R 8	R 9		
	Co 12	Co 12		

ISOPACH MAPS OF THE CANYON AND ASSOCIATED COAL BEDS, WESTERN HALF OF THE RECLUSE 1° X ½° QUADRANGLE, CAMPBELL COUNTY, WYOMING

By

Bion H. Kent and Brian E. Munson

1978

Table 5.--*Sources of data in tables 1-4*

Locality	Well Name	Location sec., T., R.
A1	Kissinger Petr., Amoco 11-6 Fed.	NESW 6, 57 N., 73 W.
A2	Univ. Res. 3-12 Jenkins Fed.	NESW 12, 57 N., 74 W.
A3	Davis Oil, 12-Swanson Fed. Unit	NESW 10, 57 N., 74 W.
A4	Davis Oil, 7-Swanson Fed. Unit	SWSE 12, 57 N., 74 W.
A5	Davis Oil, 5-Swanson Fed. Unit	NESE 13, 57 N., 74 W.
A6	Davis Oil, 5-Bolles Fed. Unit	SWSW 19, 57 N., 73 W.
A7	Mobil Oil, 1-13 Bow & Arrow	SWNE 13, 57 N., 75 W.
A8	Mobil Oil, P22-24G Bow & Arrow	SESW 24, 57 N., 75 W.
A9	Davis Oil, Tompkins 3-Fed.	NESW 27, 57 N., 75 W.
A10	Davis Oil, 6-Gilmore-Fed.	SWNW 5, 56 N., 75 W.
A11	Davis Oil, 3-Gilmore-Fed.	NESW 3, 56 N., 75 W.
A12	Davis Oil, 3-Gilmore-Fed.	SESE 4, 56 N., 75 W.
A13	Davis Oil, Ojibe Fed. 1	SWSW 35, 57 N., 76 W.
A'1	Chandler Assoc., 1-Turtle Govt.	NESE 14, 53 N., 74 W.
A''2	True Oil, 44-22 Arco Fed.	NESE 22, 53 N., 74 W.
A'''1	Phillips, Fed. 17-8	NESE 17, 53 N., 73 W.
A'''1	Montana Bur. Mines & Geol. U.S. 77235	NESE 14, 53 N., 73 W.
B1	Mule Creek Oil, 1-4416 Govt. Meyer	NESE 16, 55 N., 73 W.
B2	Davis Oil, 3-Paul Fed.	NWNW 21, 55 N., 73 W.
B3	Texaco Oil, 43-21 Govt.	NESE 21, 55 N., 73 W.
B4	Anschutz Corp., 1-87 Govt.	SWSE 21, 55 N., 73 W.
B5	Anschutz Corp., 2-88 Fed.	NESW 21, 55 N., 73 W.
B6	Davis Oil, 1-Vincent	SWNE 28, 55 N., 73 W.
B7	Davis Oil, 1-Partridge Fed.	NESW 33, 55 N., 73 W.
B8	Exeter-Union Tex., 1-Carson Fed.	SWSW 4, 54 N., 73 W.
B'1	Montana Bur. Mines & Geol., US 7560	SWNW 1, 53 N., 73 W.
B'2	Montana Bur. Mines & Geol., US 77234	NESE 2, 53 N., 73 W.
B'3	Montana Bur. Mines & Geol., US 7430	NESE 10, 53 N., 73 W.
D1	Montana Bur. Mines & Geol., US 77237	NWNE 19, 53 N., 72 W.
D2	Montana Bur. Mines & Geol., US 77236	SESW 19, 53 N., 72 W.
D3	Montana Bur. Mines & Geol., US 77283	SESW 29, 53 N., 72 W.
D4	Montana Bur. Mines & Geol., US 7442	SESW 5, 52 N., 72 W.
E1	Davis Oil, 1-Monsanto-State	NESE 16, 53 N., 72 W.
E2	Montana Bur. Mines & Geol., US 77239	NWNE 21, 53 N., 72 W.
E3	Montana Bur. Mines & Geol., US 77238	NWNW 21, 53 N., 72 W.
E4	Montana Bur. Mines & Geol., US 7442	NESW 5, 52 N., 72 W.

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