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GEOLOGICAL SURVEY

LITHOLOGIC AND GEOPHYSICAL LOGS OF 10 COAL TEST HOLES
DRILLED IN 1979 IN THE CARBON BASIN, CARBON COUNTY, WYOMING

By

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This report has not been edited for conformity
with U.S. Geological Survey editorial standards
or stratigraphic nomenclature.

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1 foot = 0.3048 meter
1 mile = 1.609 kilometers

LITHOLOGIC AND GEOPHYSICAL LOGS OF 10 COAL TEST HOLES
DRILLED IN 1979 IN THE CARBON BASIN, CARBON COUNTY, WYOMING

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INTRODUCTION

Ten coal test holes were drilled during July-September 1979 in Tp. 21 N., Rs. 79 and 80 W., Carbon County, Wyo. The purpose of the drilling was to evaluate the thickness and lateral extent of coal of the Tertiary Hanna Formation on public lands in the Carbon Basin coal field.

Drilling and logging were done by U.S. Geological Survey personnel, who also chose the drill-hole locations (fig. 1). Drilling was done by a truck-mounted rotary rig and all geophysical logs were produced by means of a single sonde. Logs run were natural gamma, spontaneous potential, resistivity, gamma-gamma density, neutron, and caliper.

Lithologic interpretations were made by a field examination of drill-hole cuttings at 5-ft intervals and were not corrected for correlation with the geophysical logs. Very general lithologic descriptions are given and should be considered as merely interpretations.

Owing to cave-in problems in the holes, an attempt was made to log drill-holes CB-25-HH and CB-29-HH through the drill pipe. These logs are not definitive enough to distinguish the coal beds; therefore, only the driller's lithologic logs are presented in this report.

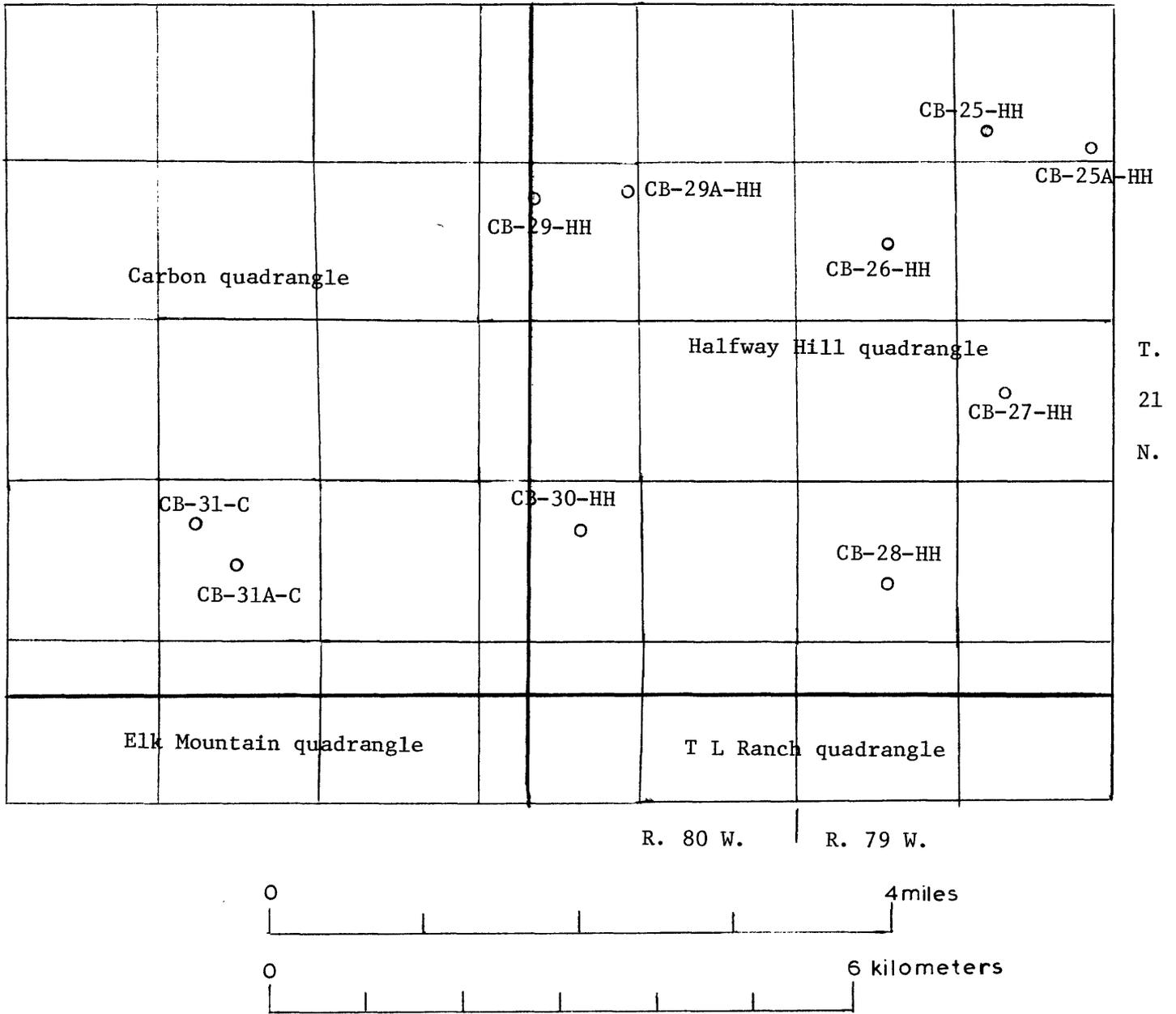


Figure 1.--Location map of 10 drill holes drilled in 1979 in the Carbon Basin coal field, Carbon County, Wyo.

Table 1.--Locations, drilled depths, and logged depths for 10 drill holes in the Carbon Basin coal field, Carbon County, Wyo.

Drill-hole No.	Location	Drilled depth (feet)	Logged depth (feet)
T. 21 N., R. 79 W.			
CB-25-HH ¹	SW $\frac{1}{4}$ sec. 8	715	690
CB-25A-HH	SE $\frac{1}{4}$ sec. 8	555	550
CB-26-HH	Center sec. 18	1,265	1,088
CB-27-HH	NW $\frac{1}{4}$ sec. 20	736	733
CB-28-HH	SE $\frac{1}{4}$ sec. 30	915	820
T. 21 N., R. 80 W.			
CB-29-HH ¹	NW $\frac{1}{4}$ sec. 14	1,035	1,028
CB-29A-HH	NE $\frac{1}{4}$ sec. 14	463	453
CB-30-HH	NE $\frac{1}{4}$ sec. 26	815	805
CB-31-C	NW $\frac{1}{4}$ sec. 28	495	482
CB-31A-C	Center sec. 28	495	487

¹Driller's lithologic log only for this hole; no geophysical log.

Driller's lithologic log for drill-hole CB-25-HH

Location: T. 21 N., R. 79 W., SW $\frac{1}{4}$ sec. 8, Halfway Hill quadrangle, Carbon County, Wyo.

Drilled depth: 715 ft Logged depth: 690 ft

Drilling started 9-5-79; resumed drilling 9-25-79, but no record of samples

Logged 9/28/79 Elevation: 7,210 ft

<u>Description</u>	<u>Depth (ft)</u>	
	<u>From</u>	<u>To</u>
Sandstone-----	0	15
Shale-----	15	35
Sandstone with interbedded carbonaceous material	35	40
Shale-----	40	45
Sandstone-----	45	58
Coal and carbonaceous shale-----	58	65
Shale-----	65	80
Sandstone-----	80	98
Coal-----	98	100
Shale-----	100	120
Coal and carbonaceous shale-----	120	135
Shale-----	135	145
Coal and carbonaceous shale-----	145	150
Shale-----	150	195
Sandstone-----	195	200
Shale-----	200	260
Sandstone-----	260	290
Shale-----	290	295
T.D. 715 ft		

Driller's lithologic log for drill-hole CB-25A-HH

Location: T. 21 N., R. 79 W., SE $\frac{1}{4}$ sec. 8, Halfway Hill quadrangle, Carbon County, Wyo.

Drilled depth: 555 ft Logged depth: 550 ft

Drilling started 7-5-79; completed 7-6-79

Logged 7-6-79 Elevation: 7,060 ft

<u>Description</u>	<u>Depth (ft)</u>	
	<u>From</u>	<u>To</u>
Surface clay-----	0	5
Sand, unconsolidated, medium-grained-----	5	20
Sandstone, light-brown, fine-grained-----	20	40
Sandstone, light-brown, fine-grained; chocolate-brown shale-----	40	60
Siltstone with some gray shale-----	60	70
Sandstone, light-brown, fine-grained-----	70	100
Sandstone, fine- to coarse-grained-----	100	110
Sandstone, fine-grained-----	110	130
Shale, silty-----	130	135
Sandstone, coarse-grained-----	135	145
Sandstone, gray, very fine grained-----	145	150
Shale, dark-gray, carbonaceous-----	150	160
Sandstone, medium-grained-----	160	183
Shale, dark-gray-----	183	198
Sandstone, medium-grained-----	198	222
Coal-----	222	226
Shale, dark-gray-----	226	231
Sandstone, fine-grained; dark-gray shale-----	231	240
Sandstone, fine-grained-----	240	465
Shale, dark-gray, carbonaceous-----	465	478
Coal (poor samples)-----	478	480
Shale, coal, and sand streaks-----	480	490
Sandstone, fine-grained-----	490	500
Shale, dark-gray-----	500	510
Sandstone and shale-----	510	515
Shale, dark-gray-----	515	540
Sandstone, fine-grained; some shale-----	540	555
T.D.: 555 ft		

Driller's lithologic log for drill-hole CB-26-HH

Location: T. 21 N., R. 79 W., Center sec. 18, Halfway Hill quadrangle, Carbon County, Wyo.

Drilled depth: 1,265 ft Logged depth: 1,088

Drilling started 9-12-79; completed 9-15-79

Logged 9-17-79 Elevation: 7,320 ft

<u>Description</u>	<u>Depth (ft)</u>	
	<u>From</u>	<u>To</u>
Sandstone-----	0	40
Siltstone-----	40	45
Sandstone-----	45	70
Claystone-----	70	75
Sandstone-----	75	135
Mudstone-----	135	140
Sandstone-----	140	150
Mudstone, carbonaceous-----	150	170
Sandstone-----	170	200
Mudstone-----	200	210
Mudstone and thin coal-----	210	215
Mudstone-----	215	225
Sandstone-----	225	235
Shale, carbonaceous, with thin coal-----	235	240
Shale, carbonaceous-----	240	250
Mudstone-----	250	260
Sandstone-----	260	350
Sandstone with coal streaks-----	350	355
Mudstone-----	355	370
Mudstone with coal streaks-----	370	375
Mudstone, carbonaceous-----	375	385
Sandstone-----	385	405
Mudstone and sandstone, interbedded-----	405	420
Sandstone-----	420	515
Sandstone and mudstone, interbedded-----	515	630
Sandstone-----	630	650
Shale-----	650	700
Mudstone-----	700	740
Sandstone-----	740	990

Driller's lithologic log for drill-hole CB-26-HH--continued

<u>Description</u>	<u>Depth (ft)</u>	
	<u>From</u>	<u>To</u>
?-----	990	1,030
Shale and mudstone, interbedded-----	1,030	1,050
Thin coal beds?-----	1,050	1,070
Mudstone-----	1,070	1,095
Sandstone-----	1,095	1,110
Sandstone, with coal at 1,119 ft-----	1,110	1,120
Sandstone-----	1,120	1,130
No samples-----	1,130	1,175
Sandstone, hard-----	1,175	1,220
?-----	1,220	1,265
T.D. 1,265		

Note: 1,170 - 1,175 ft, 5 ft of coal

1,175 - 1,195, fast drilling; logged two times
and showed no coal. Third time
showed coal on natural gamma
log only.

Driller's lithologic log for drill-hole CB-27-HH

Location: T. 21 N., R. 79 W., NW¼ sec. 20, Halfway Hill quadrangle, Carbon County, Wyo.

Drilled depth: 736 ft Logged depth: 733 ft

Drilling started 9-11-79; completed 9-11-79

Logged 9-11-79 Elevation: 6,950 ft

<u>Description</u>	<u>Depth (ft)</u>	
	<u>From</u>	<u>To</u>
Sandstone-----	0	135
Coal-----	135	140
Shale-----	140	225
Coal and carbonaceous shale-----	225	235
Shale and carbonaceous shale-----	235	240
Siltstone with carbonaceous material-----	240	255
Shale and carbonaceous shale-----	255	260
Coal and carbonaceous shale-----	260	265
Shale with interbedded sandstone-----	265	285
Sandstone-----	285	355
Shale (poor samples 355-555 ft)-----	355	365
Sandstone-----	365	495
Shale-----	495	500
Sandstone-----	500	555
Sandstone with carbonaceous shale-----	555	560
Coal-----	560	565
Coal and sandstone-----	565	570
Sandstone-----	570	580
Shale, carbonaceous-----	580	585
Sandstone with small amount of carbonaceous material-----	585	615
Coal and some sand-----	615	620
Coal-----	620	640
Carbonaceous shale and coal-----	640	650
Sandstone-----	650	736
T. D. 736 ft		

Driller's lithologic log for drill-hole CB-28-HH

Location: T. 21 N., R. 79 W., SE $\frac{1}{4}$ sec. 30, Halfway Hill quadrangle, Carbon County, Wyo.

Drilled depth: 915 ft Logged depth: 820 ft

Drilling started 8-6-79; completed 8-31-79

Logged 8-15-79 Elevation: 7,060 ft

<u>Description</u>	<u>Depth (ft)</u>	
	<u>From</u>	<u>To</u>
Clay-----	0	30
Sandstone, fine-grained, soft-----	30	75
Sandstone, medium-grained, hard-----	75	80
Sandstone, medium- to coarse-grained, soft-----	80	105
Sandstone, medium- to coarse-grained, hard -----	105	110
Sandstone, medium-grained-----	110	115
Sandstone, very fine grained, with interbedded carbonaceous material-----	115	190
Shale, silty-----	190	200
Siltstone, hard-----	200	210
Shale, carbonaceous-----	210	220
Shale, soft, with siltstone and carbonaceous shale in sample-----	220	230
Siltstone, hard-----	230	235
Sandstone with interbedded shale and siltstone--	235	290
Shale, carbonaceous-----	290	325
Siltstone and carbonaceous shale-----	325	330
Siltstone-----	330	340
Shale and carbonaceous shale-----	340	355
Siltstone-----	355	365
Shale-----	365	375
Coal and carbonaceous shale-----	375	385
Shale, silty, with carbonaceous material-----	385	400
Siltstone with carbonaceous material-----	400	415
Siltstone, grading into carbonaceous shale-----	415	420
Coal and carbonaceous shale-----	420	435
Siltstone and carbonaceous shale-----	435	440
Coal and carbonaceous shale-----	440	445
Shale, silty-----	445	450
Sandstone, fine-grained-----	450	485

Driller's lithologic log for drill-hole CB-28-HH--continued

<u>Description</u>	<u>Depth (ft)</u>	
	<u>From</u>	<u>To</u>
Coal with some carbonaceous shale-----	485	495
Shale, carbonaceous and silty-----	495	500
Sandstone, fine to very fine grained-----	500	595
Coal and carbonaceous shale-----	595	605
Sandstone, fine-grained-----	605	610
Siltstone with interbedded shale-----	610	620
Sandstone, fine-grained-----	620	635
Siltstone with interbedded shale-----	635	640
Coal-----	640	642
Sandstone, fine-grained-----	642	655
Siltstone with interbedded shale-----	655	660
Shale-----	660	670
Sandstone with interbedded carbonaceous material-----	670	695
Note: Drill rig down on 8-7-79; resumed drilling on 8-15-79.		
Shale, Carbonaceous-----	695	700
Shale, with sandstone in samples-----	700	715
Shale, carbonaceous-----	715	725
Sandstone, fine-grained-----	725	735
Shale, carbonaceous-----	735	750
Shale, carbonaceous shale, and sandstone--	750	755
Coal, carbonaceous shale, and shale-----	755	810
Shale and sandstone-----	810	830
Note: Drill rig down on 8-15-79; resumed drilling on 8-31-79		
Shale, carbonaceous shale, and sandstone; some coal at 855-865 ft-----	830	915

T. D. 915 ft

Driller's lithologic log for drill-hole CB-29-HH

Location: T. 21 N., R. 80 W., NW¼ sec. 14, Halfway Hill quadrangle, Carbon County, Wyo.

Drilled depth: 1,035 ft Logged depth: 1,028 ft

Drilling started 9-25-79; completed 9-29-79

Logged 10-1-79 Elevation: 7,180 ft

<u>Description</u>	<u>Depth (ft)</u>	
	<u>From</u>	<u>To</u>
Sandstone-----	0	15
Siltstone-----	15	25
Shale-----	25	30
Sandstone-----	30	35
Siltstone-----	35	45
Shale-----	45	50
Coal and traces of carbonaceous shale-----	50	60
Sandstone-----	60	65
Siltstone-----	65	75
Sandstone-----	75	145
Shale-----	145	170
Sandstone-----	170	425
Shale; carbonaceous at 445-450 ft-----	425	450
Coal-----	450	455
Shale-----	455	465
Sandstone-----	465	475
Shale-----	475	530
Sandstone-----	530	535
Coal-----	535	550
Shale with coal stringers-----	550	585
Coal-----	585	600
Shale-----	600	640
Sandstone-----	640	780
No samples-----	780	800
Interbedded sandstone and shale-----	800	810
No samples-----	810	815
Shale, carbonaceous shale, and interbedded coal--	815	840
Sandstone-----	840	920
No samples-----	920	930
Coal and shale-----	930	940

Driller's lithologic log for drill-hole CB-29-HH--continued

<u>Description</u>	Depth (ft)	
	<u>From</u>	<u>To</u>
Sandstone-----	940	955
No samples-----	955	965
Coal and shale-----	965	975
No samples-----	975	995
Coal and shale-----	995	1,030
Shale with some coal-----	1,030	1,035
T. D. 1,035 ft		

Driller's lithologic log for drill-hole CB-29A-HH

Location: T. 21 N., R. 80 W., NE¼ sec. 14, Halfway Hill quadrangle, Carbon County, Wyo.

Drilled depth: 463 ft Logged depth: 453 ft

Drilling started 7-9-79; completed 7-11-79

Logged 7-11-79 Elevation: 7,160 ft

<u>Description</u>	<u>Depth (ft)</u>	
	<u>From</u>	<u>To</u>
Clay-----	0	5
Sandstone, medium- to coarse-grained-----	5	10
Sandstone, fine-grained-----	10	20
Same as above-----	20	30
Same as above-----	30	50
Shale; some gray carbonaceous material-----	50	60
Sandstone, very fine grained, interbedded with shale at 65-70 ft-----	60	70
Siltstone, gray, hard-----	70	75
Sandstone, very fine grained, with interbedded gray shale-----	75	80
Shale, carbonaceous and silty, with coal streaks-----	80	85
Shale, carbonaceous, with coal-----	85	95
Siltstone-----	95	110
Shale, carbonaceous, with silty sandstone-----	110	125
Sandstone, fine-grained, silty, with carbonaceous streaks-----	125	150
Shale, carbonaceous-----	150	160
Sandstone, fine- to coarse-grained-----	160	195
Sandstone with coal and carbonaceous shale----	195	200
Sandstone, gray, fine- to coarse-grained-----	200	205
Sandstone, gray, fine- to coarse-grained, with carbonaceous shale-----	205	210
Shale, carbonaceous-----	210	220
Sandstone, fine- to coarse-grained-----	220	225
Shale, carbonaceous, with silty sandstone-----	225	235
Sandstone, fine- to coarse-grained, with carbonaceous shale-----	235	245
Shale, carbonaceous-----	245	255
Sandstone, silty, with carbonaceous shale-----	255	280

Driller's lithologic log for drill-hole CB-29A-HH--continued

<u>Description</u>	Depth (ft)	
	<u>From</u>	<u>To</u>
Sandstone, fine-grained-----	280	367
Shale, silty-----	367	380
Sandstone, fine- to medium-grained-----	380	463
T. D. 463 ft		

Driller's lithologic log for drill-hole CB-30-HH

Location: T. 21 N., R. 80 W., NE¼ sec. 26, Halfway Hill quadrangle, Carbon County, Wyo.

Drilled depth: 815 ft Logged depth: 805 ft

Drilling started 8-4-79; completed 8-5-79

Logged 8-5-79 Elevation 7,250 ft

<u>Description</u>	<u>Depth (ft)</u>	
	<u>From</u>	<u>To</u>
Surface alluvium-----	0	8
Shale-----	8	40
Coal and shale-----	40	45
Shale, silty-----	45	50
Sandstone with carbonaceous material-----	50	60
Shale-----	60	65
Coal and shale-----	65	70
Sandstone-----	70	80
Shale, silty-----	80	90
Sandstone-----	90	100
Shale with some coal at 100-110 ft-----	100	115
Sandstone, very fine grained-----	115	125
Shale, silty, and sandstone, interbedded-----	125	135
Shale, carbonaceous-----	135	140
Shale, carbonaceous, and coal-----	140	155
Shale, carbonaceous shale, siltstone, and sandstone, interbedded-----	155	185
Shale, carbonaceous-----	185	205
Siltstone and sandstone interbedded with carbonaceous material-----	205	225
Sandstone, fine- to medium-grained-----	225	275
Shale-----	275	365
Sandstone with some interbedded shale-----	365	400
Shale, silty-----	400	425
Sandstone and shale, interbedded-----	425	470
Coal and carbonaceous shale-----	470	490
Shale, silty-----	490	500
Sandstone and shale, interbedded-----	500	520
Shale, carbonaceous-----	520	525
Sandstone and shale, interbedded-----	525	530

Driller's lithologic log for drill-hole CB-30-HH--continued

<u>Description</u>	<u>Depth (ft)</u>	
	<u>From</u>	<u>To</u>
Coal and shale-----	530	535
Sandstone and shale, interbedded-----	535	555
Shale with carbonaceous shale-----	555	600
Coal with carbonaceous shale-----	600	610
Shale, silty-----	610	655
Shale, carbonaceous-----	655	670
Coal-----	670	680
Shale, carbonaceous-----	680	685
Sandstone, medium-grained-----	685	695
Sandstone and shale-----	695	705
Coal and carbonaceous shale-----	705	710
Coal-----	710	715
Coal and carbonaceous shale-----	715	720
Shale, carbonaceous-----	720	725
Coal and carbonaceous shale-----	725	730
Shale, carbonaceous-----	730	735
Shale, silty-----	735	740
Coal and carbonaceous shale-----	740	755
Shale-----	755	760
Coal and carbonaceous shale-----	760	765
Shale-----	765	780
Coal-----	780	805
Sandstone, fine-grained-----	805	815
T. D. 815 ft		

Driller's lithologic log for drill-hole CB-31-C

Location: T. 21 N., R. 80 W., NW¼ sec. 28, Carbon quadrangle, Carbon County, Wyo.

Drilled depth: 495 ft Logged depth: 482 ft

Drilling started 8-2-79; completed 8-2-79

Logged 8-2-79 Elevation: 7,420 ft

<u>Description</u>	<u>Depth (ft)</u>	
	<u>From</u>	<u>To</u>
Sand-----	0	5
Shale-----	5	10
Sandstone, fine-grained-----	10	30
Shale, silty, hard-----	30	60
Sandstone, very fine grained-----	60	65
Shale with interbedded sandstone-----	65	145
Shale, silty-----	145	180
Shale, carbonaceous; coal?-----	180	190
Shale-----	190	195
Shale, carbonaceous; coal?-----	195	210
Coal-----	210	230
Shale-----	230	240
Shale-----	240	245
Shale, carbonaceous-----	245	255
Siltstone-----	255	265
Shale, silty-----	265	275
Shale-----	275	290
Shale and carbonaceous shale-----	290	320
Sandstone, fine-grained-----	320	335
Shale, silty-----	335	340
Sandstone-----	340	370
Shale with some carbonaceous material-----	370	385
Coal and carbonaceous shale-----	385	410
Shale, carbonaceous-----	410	480
Sandstone, fine-grained-----	420	495

Note: Poor sample recovery after 420 ft
T. D. 495 ft

Driller's lithologic log for drill-hole CB-31A-C

Location: T. 21 N., R. 80 W., Center sec. 28, Carbon quadrangle, Carbon County, Wyo.

Drilled depth: 495 ft Logged depth: 487 ft

Drilling started 8-1-79; completed 8-1-79

Logged 8-1-79 Elevation: 7,480 ft

<u>Description</u>	<u>Depth (ft)</u>	
	<u>From</u>	<u>To</u>
Sandstone, fine-grained-----	0	20
Shale, carbonaceous-----	20	25
Sandstone, fine-grained-----	25	40
Siltstone-----	40	45
Shale-----	45	50
Shale, silty, with carbonaceous material and many thin, hard, sandstone beds----	50	240
Coal with carbonaceous shale-----	240	245
Shale-----	245	260
Shale, carbonaceous, with coal-----	260	270
Coal-----	270	285
Shale-----	285	305
Sandstone-----	305	310
Shale with some hard sandstone beds-----	310	355
Coal and carbonaceous shale-----	355	360
Shale, carbonaceous, with some coal-----	360	375
Sandstone, fine-grained-----	375	445
Sandstone, fine-grained, with coal streaks-	445	460
Coal-----	460	470
Sandstone, fine-grained, with shale-----	470	475
Shale, silty-----	475	480
Sandstone, fine-grained-----	480	495

T. D. 495 ft