UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

LITHOLOGIC AND GEOPHYSICAL LOGS OF HOLES DRILLED IN THE HIGH POINT, SEAVERSON RESERVOIR, AND FILLMORE RANCH QUADRANGLES, CARBON COUNTY, WYOMING

By

Gary M. Edson

and

Gary S. Curtiss

Open-file report 76-272

1976

Contents

Illustrations

Lithologic and geophysical logs of holes drilled in the High Point, Seaverson Reservoir, and Fillmore Ranch quadrangles, Carbon County, Wyoming

By Gary M. Edson and Gary S. Curtiss

Introduction

Thirteen holes were drilled in those parts of Tps. 18 and 19 N., Rs. 91 and 92 W., which are in the High Point, Seaverson Reservoir, and Fillmore Ranch quadrangles, Carbon County, Wyo. (figs. 1 and 2), by the U.S. Geological Survey in July and August 1975. This drilling was done to obtain information on the thickness and extent of coal in the Paleocene Fort Union Formation and on the lithology of the enclosing rocks. The overall goal of the project is evaluation and classification of federally owned coal resources and lands in the Little Snake River coal field and adjacent areas.

The holes were drilled using a truck-mounted rotary drilling rig, belonging to the U.S. Geological Survey. The drilling mediums used were air, air-water, or air-water-biodegradeable foam. Cuttings representative of each rock unit encountered were sampled, logged, and saved for later examination.

Each drill hole, except SR-D2, was logged by geophysical methods. Logs that were run included caliper, spontaneous potential, long- and short-normal resistivity, natural gamma, gamma-gamma, and neutron. Many of the holes tended to close soon after drilling and in these it was necessary to log through the drill pipe and therefore to use only the nuclear probes. Hole SR-D2 caved and became completely blocked before any geophysical logs could be run.

Lithologic descriptions in this report are based on logs made by the sampler, subsequent examination of drill cuttings, and to a lesser extent on the geophysical logs. The color terms used are from the Rock-Color Chart of the Geological Society of America (1970) and refer to dry samples. In this paper, salt-and-pepper sandstone will be used for sandstone that is composed almost entirely of subangular to subrounded grains of quartz (greater than 90 percent) and chert with traces of other rock and/or mineral fragments. Some sandstone samples are feldspathic. Most of the formations that were drilled are poorly indurated and offer little resistance to the drill bit. However, some thin, very hard calcite-cemented beds were penetrated, and these are described as resistant in the lithologic logs. Shale refers to fissile rock compositionally dominated by the clay-sized fraction. Silty shale means a fissile rock in which clay and silt are in subequal proportions. Rock composed mostly of the silt-sized fraction is called siltstone because fissility could not be seen in the drill cuttings. In reporting carbonaceous shale, no attempt was made to distinguish particle size, composition, or proportions. In general, minor means less than 10 percent, and trace means less than 3 percent, referring to relative abundances among rock and mineral constituents.

Acknowledgments

Operation of the drill rig was done by a U.S. Geological Survey crew consisting of D. A. Noblett and J. D. Cathcart (drillers); A. C. Clark and S. B. Roberts; and supervised by J. D. Tucker. L. A. Shoaff and S. C. Zimmermann assisted in the collection of samples and preparation of lithologic logs. Geophysical logging was done by R. A. McCullough, U. S. Geological Survey.

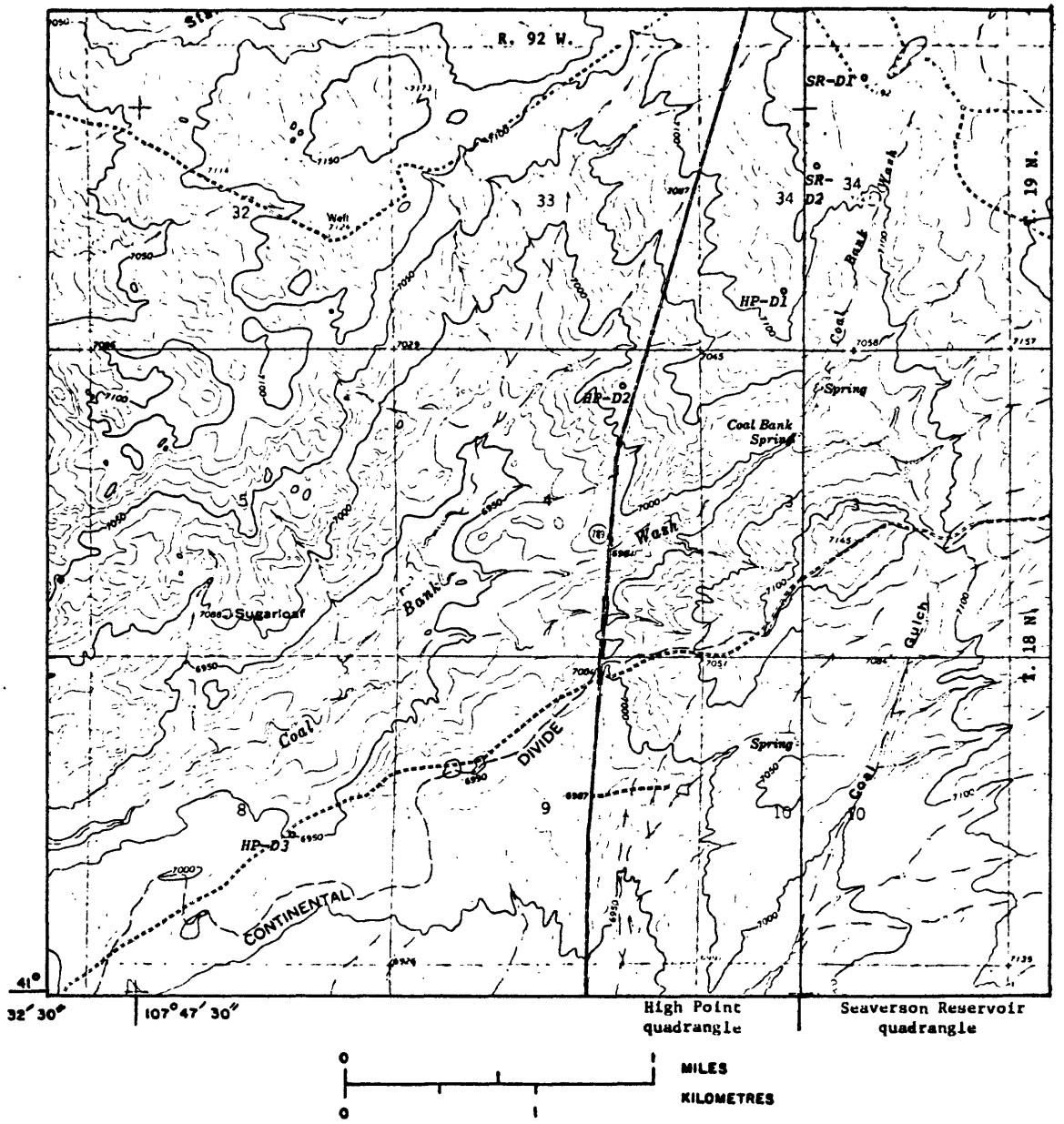


Figure 1.--Map showing the locations of holes drilled for coal in the upper part of the Fort Union Formation, Carbon County, Wyo., by the U.S. Geological Survey in 1975.

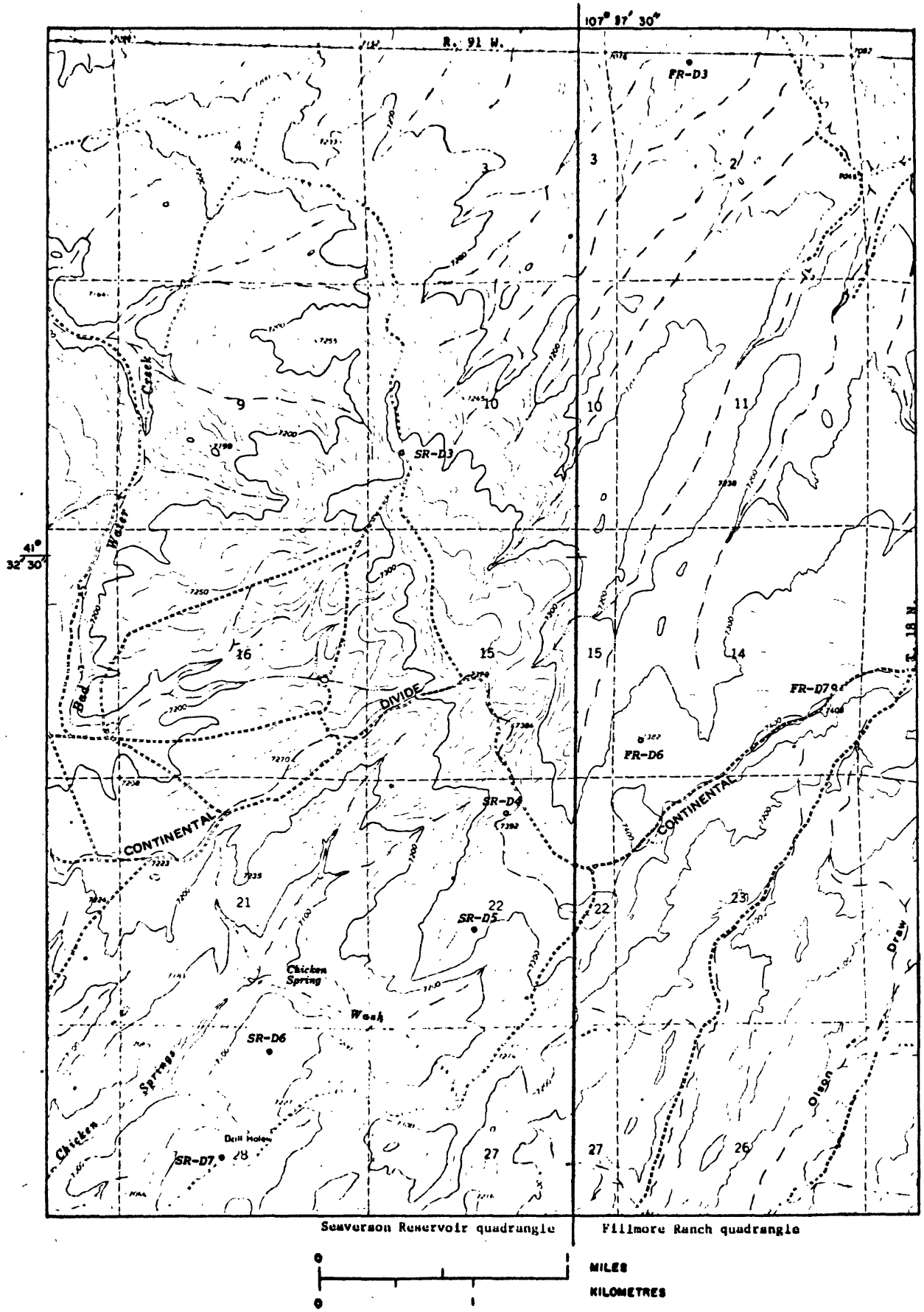
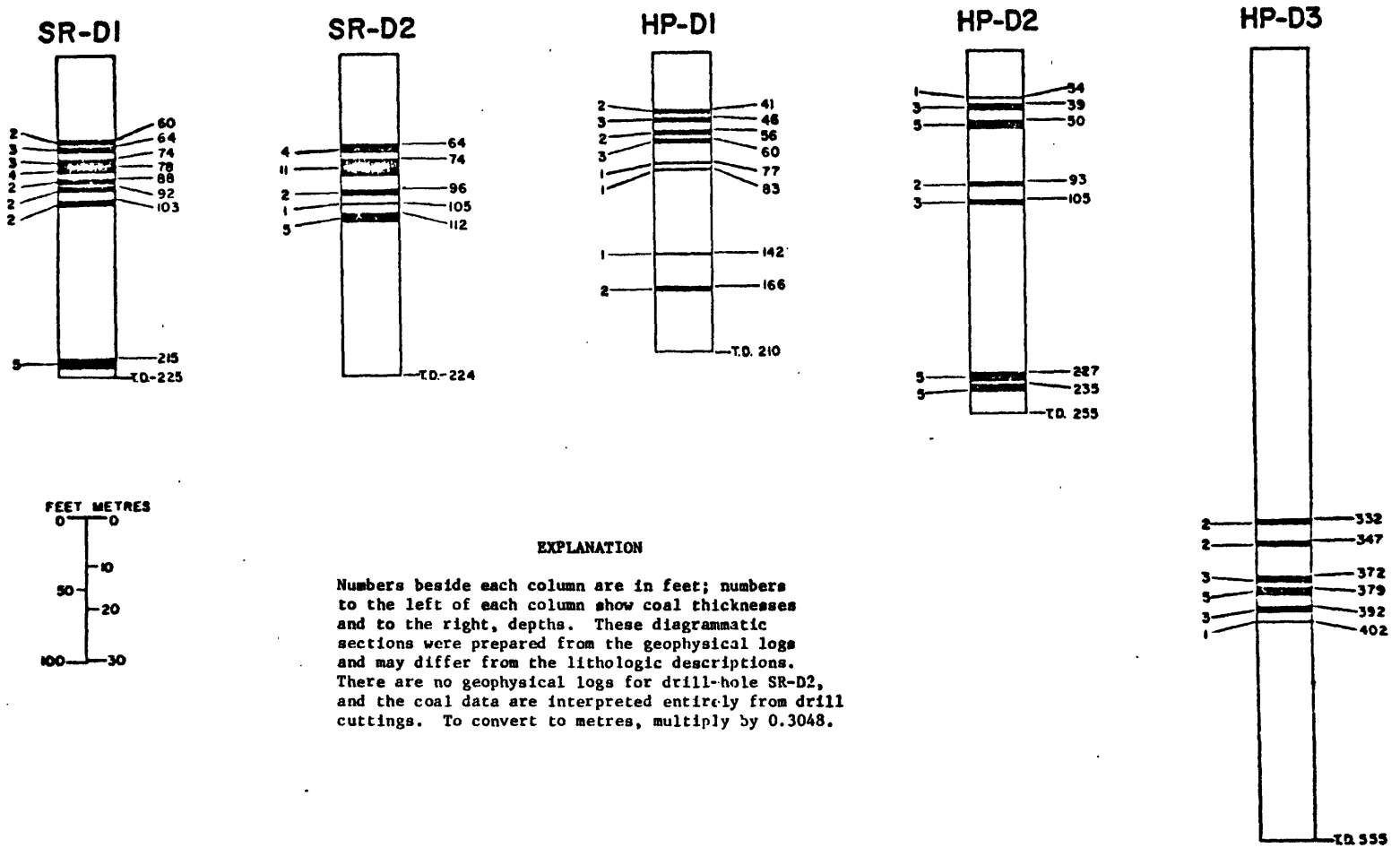


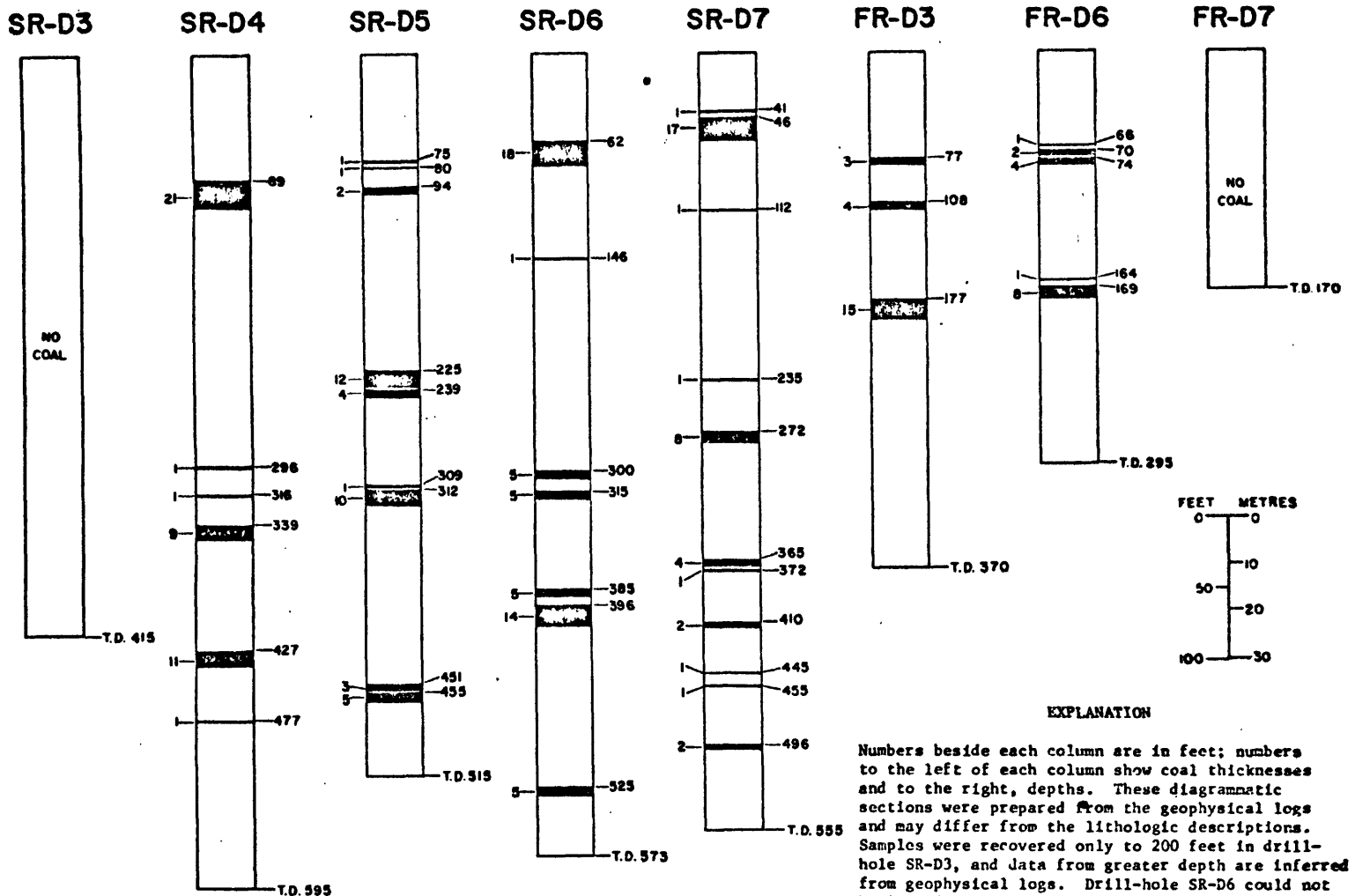
Figure 2.--Map showing the locations of holes drilled for coal in the lower part of the Fort Union Formation, Carbon County, Wyo., by the U.S. Geological Survey in 1975.



EXPLANATION

Numbers beside each column are in feet; numbers to the left of each column show coal thicknesses and to the right, depths. These diagrammatic sections were prepared from the geophysical logs and may differ from the lithologic descriptions. There are no geophysical logs for drill-hole SR-D2, and the coal data are interpreted entirely from drill cuttings. To convert to metres, multiply by 0.3048.

Figure 3.--Coal sections, upper part of the Fort Union Formation.



EXPLANATION

Numbers beside each column are in feet; numbers to the left of each column show coal thicknesses and to the right, depths. These diagrammatic sections were prepared from the geophysical logs and may differ from the lithologic descriptions. Samples were recovered only to 200 feet in drill-hole SR-D3, and data from greater depth are inferred from geophysical logs. Drill-hole SR-D6 could not be logged completely by geophysical means, and coal data from below 155 feet are interpreted from drill cuttings. To convert to metres, multiply by 0.3048.

Figure 4.--Coal sections, lower part of the Fort Union Formation.

Drill-hole HP-D1

[NW¼SE¼SW¼, sec. 34, T. 19 N., R. 92 W., 6th Principal Meridian, High Point quadrangle, Carbon County, Wyoming; collar elevation 7,160 feet; begun July 19, 1975; completed July 21, 1975; sampled by G. S. Curtiss; logged by G. M. Edson and G. S. Curtiss]

Lithologic description	Feet[1/] From	To
Gravel	0	1
Sand, fine, light-olive-gray; minor light-olive-gray very coarse sand; minor grayish-orange medium-grained sandstone	1	11
Sand, very coarse, light-olive-gray	11	14
Sandstone, medium-grained, very pale orange	14	18
Do.; minor moderate-brown carbonaceous shale	18	20
Shale, carbonaceous, moderate-brown; minor medium-light-gray silty shale	20	23
Carbonaceous shale and gray shale in subequal proportions	23	25
Siltstone, medium-light-gray; minor gypsum	25	28
Do.; medium-light-gray silty shale; trace pyrite	28	31
Shale, silty, medium-light-gray; trace gypsum	31	39
Shale, carbonaceous, medium-dark-gray	39	40
Do.; coal	40	41
Coal	41	43
Shale, carbonaceous, dark-gray	43	45
Coal, minor dark-gray carbonaceous shale	45	47
Shale, carbonaceous, medium-dark gray	47	48
Coal; minor dark-gray carbonaceous shale	48	50
Shale, carbonaceous, medium-dark-gray	50	53

1/ To convert to metres, multiply by 0.3048.

Drill-hole HP-D1--Continued

Lithologic description--Continued	Feet From	Feet To
Coal	53	54
Do.; dark-gray carbonaceous shale	54	57
Shale, carbonaceous, brownish-gray	57	58
Coal	58	62
Shale, light-gray	62	65
Shale, silty, light-gray	65	67
Shale, carbonaceous, medium-dark-gray; coal	67	69
Shale, carbonaceous, medium-dark-gray	69	70
Shale, silty, light-gray	70	72
Shale, medium-gray	72	75
Shale, carbonaceous, medium-dark-gray; coal	75	77
Shale, carbonaceous, dark-gray	77	83
Do.; coal	83	84
Shale, carbonaceous, medium-dark-gray	84	86
Shale, medium-gray, minor medium-dark-gray carbonaceous shale	86	93
Shale, carbonaceous, medium-dark-gray	93	94
Do.; coal	94	95
Shale, carbonaceous, medium-dark-gray; trace coal	95	96
Shale, silty, medium-light-gray	96	104
Siltstone and silty shale, medium-light-gray	104	106
Siltstone, medium-light-gray	106	110
Sandstone, fine-grained, resistant, salt-and-pepper, medium-light-gray	110	126
Sandstone, fine-grained, friable, salt-and-pepper, medium-light-gray	126	136

Drill-hole HP-D1--Continued

Lithologic description--Continued	Feet From	Feet To
Sandstone, fine-grained, friable, salt-and-pepper, medium-light-gray	136	141
Do.; medium-dark-gray carbonaceous shale	141	142
Coal; minor medium-dark-gray carbonaceous shale	142	143
Shale, silty, medium-light-gray; medium-dark-gray carbonaceous shale	143	145
Shale, silty, medium-light-gray	145	148
Do.; minor medium-dark-gray carbonaceous shale	148	150
No recovery	150	155
Shale, silty, medium-light-gray	155	158
Shale, silty, medium-gray	158	163
Shale, brownish-gray	163	166
No recovery; coal (166-168 feet)?	166	179
Shale, silty, medium-light-gray	179	181
Do.; medium-dark-gray carbonaceous shale	181	183
Shale, carbonaceous, medium-dark-gray	183	187
Do.; medium-gray shale	187	189
Shale, silty, medium-light-gray; medium-dark-gray carbonaceous shale	189	190
No recovery	190	200
Shale, silty, medium-light-gray; medium-dark-gray carbonaceous shale; trace coal	200	205
Shale, silty, medium-gray	205	210
Total depth	210 feet	

Drill-hole HP-D2

[NE¼NW¼NE¼, sec. 4, T. 18 N., R. 92 W., 6th Principal Meridian, High Point quadrangle, Carbon County, Wyoming; collar elevation 7,025 feet; begun July 22, 1975; completed July 23, 1975; sampled by G. S. Curtiss; logged by G. M. Edson and G. S. Curtiss]

Lithologic description	Feet[1/] From	To
Sand, medium to very coarse, yellowish-gray	0	2
Sand, fine, yellowish-gray; yellowish-gray silt....	2	4
Sand, very coarse, pale-yellowish-brown; gravel ...	4	6
Sand, fine, grayish-orange	6	7
Shale, pale-yellowish-brown	7	8
Shale, carbonaceous, moderate-brown	8	11
Shale, pale-yellowish-brown; medium-light-gray silty shale; moderate-brown carbonaceous shale; minor gypsum	11	15
Shale, silty shale, and siltstone, pale-yellowish-brown; minor gypsum	15	20
Siltstone, pale-yellowish-brown; minor medium-light-gray silty shale	20	23
Shale, silty, medium-light-gray	23	31
Do.; minor pale-yellowish-brown shale	31	32
Shale, carbonaceous, medium-dark-gray	32	34
Do.; coal	34	37
Shale, carbonaceous, medium-dark-gray	37	38
Do.; medium-light-gray shale	38	39
Coal	39	42
Shale, carbonaceous, medium-dark-gray; minor gypsum	42	44

1/ To convert to metres, multiply by 0.3048.

Drill-hole HP-D2--Continued

Lithologic description--Continued	Feet From	Feet To
Shale, medium-light-gray	44	49
Do.; minor medium-dark-gray carbonaceous shale	49	50
Coal	50	55
Shale, carbonaceous, medium-dark-gray; coal	55	57
Shale, carbonaceous, medium-dark-gray	57	58
Siltstone, light-gray	58	67
Do.; minor pale-yellowish-brown shale	67	74
No recovery; sandstone?	74	89
Sandstone, fine-grained, friable, medium-light-gray	89	94
Coal	94	96
Shale, silty, light-medium-gray	96	106
Coal	106	109
Shale, carbonaceous, medium-dark-gray	109	113
Do.; medium-light-gray silty shale; coal; medium-light-gray, friable, coarse- to very coarse-grained sandstone	113	115
Sandstone, coarse- to very coarse-grained, friable, medium-light-gray; minor medium-light-gray silty shale	115	122
Shale, silty, medium-light-gray; minor medium-light-gray, coarse- to very coarse-grained, friable sandstone	122	123
Sandstone, coarse- to very coarse-grained, friable, medium-light-gray; minor medium-gray shale	123	124
Shale, silty, medium-light-gray; pale-yellowish-brown shale	124	128

Drill-hole HP-D2--Continued

Lithologic description--Continued	Feet From	Feet To
Sandstone, coarse- to very coarse-grained, friable, medium-light-gray; medium-light-gray shale; coal; trace gypsum.....	128	131
Sandstone, coarse- to very coarse-grained, friable, medium-light-gray; minor medium-light-gray silty shale	131	148
Do.; gravel	148	152
Sandstone, fine-grained, friable, salt-and-pepper, medium-gray; minor medium-light-gray silty shale and medium-dark-gray carbonaceous shale	152	155
Sandstone, fine-grained, medium-gray	155	156
Shale, silty, medium-light-gray; minor medium-gray salt-and-pepper friable fine-grained sandstone	156	165
Sandstone, fine-grained, friable, salt-and-pepper, medium-gray; medium-dark-gray carbonaceous shale; medium-light-gray silty shale	165	175
Sandstone, fine-grained, friable, salt-and-pepper, medium-gray; minor medium-gray, friable, coarse-grained sandstone	175	186
Sandstone, medium-grained, greenish-gray; medium-light-gray silty shale	186	187
Shale, carbonaceous, medium-dark-gray; coal	187	190
No sample recovery.....	190	195
Shale, medium-light-gray; medium-dark-gray carbonaceous shale	195	210
No sample recovery.....	210	215
Shale, medium-light-gray; medium-dark-gray carbonaceous shale	215	227
Coal	227	232

Drill-hole HP-D2--Continued

Lithologic description--Continued	Feet From	Feet To
Shale, medium-gray	232	234
Shale, carbonaceous, medium-dark-gray	234	235
Coal; minor medium-dark-gray carbonaceous shale; trace pyrite	235	240
Shale, medium-light-gray; medium-dark-gray carbonaceous shale; coal; minor gypsum	240	245
Shale, carbonaceous, medium-dark-gray; coal	245	247
No sample recovery	247	255
Total depth 255 feet		

Drill-hole HP-D3

[NE¼NW¼SE¼, sec. 8, T. 18 N., R. 92 W., 6th Principal Meridian, High Point quadrangle, Carbon County, Wyoming; collar elevation 6,950 feet, begun July 24, 1975; completed July 26, 1975;
sampled by G. S. Curtiss and L. A. Shoaff; logged by G. S. Curtiss and G. M. Edson]

Lithologic description	Feet[1/] From	To
Soil; light-olive-gray silty shale	0	3.5
Sandstone, fine- to medium-grained, friable, light-olive-gray	3.5	10
Shale, moderate yellowish-brown	10	15
Sandstone, fine-grained, grayish-orange	15	19
Sandstone, medium-grained, salt-and-pepper, yellowish-gray	19	23
Do.; trace medium-light-gray silty shale	23	30
Sandstone, medium-grained, salt-and-pepper, grayish-orange	30	35
Sandstone, medium-grained, salt-and-pepper, yellowish-gray	35	43
Sandstone, medium-grained, salt-and-pepper, dusky-yellow	43	44
Shale, light-olive-gray; minor gypsum	44	46
Do.; minor grayish-black carbonaceous shale	46	50
Shale and silty shale, light-gray and light-olive-gray	50	55
Shale, light-gray	55	57
Do.; grayish-black carbonaceous shale	57	61
Siltstone and silty shale, light-medium-gray	61	62
Shale, medium-gray; minor medium-light-gray silty shale	62	65

1/ To convert to metres, multiply by 0.3048.

Drill-hole HP-D3--Continued

Lithologic description--Continued	Feet From	Feet To
Siltstone, white	65	70
Shale, silty, greenish-gray; light-gray friable, medium-grained sandstone	70	76
Sandstone, medium-grained, friable, light-gray	76	80
Do.; light-gray sandy shale	80	81
Shale, silty, light-gray; light-gray sandy shale	81	85
Shale, silty, brownish-gray, greenish-gray, and light-gray	85	90
Shale, silty, light-gray; minor brownish-gray silty shale	90	95
No	95	100
Shale, silty, light-olive-gray, brownish-gray, and light-gray	100	105
Shale, silty, brownish-gray	105	110
Shale, silty, light-gray	110	130
Siltstone, very light gray	130	135
Sandstone, fine-grained, light-gray	135	137
Sandstone, very fine grained, resistant, light-gray; trace pyrite	137	142
Do.; light-gray silty shale; light-gray very fine grained sandstone; trace pyrite	142	144
Shale, silty, light-gray	144	150
Do.; light-gray clayey fine-grained sandstone	150	155
Sandstone, fine-grained, clayey, light-gray	155	160
Sandstone, medium-grained, silty, very light gray	160	165
Do.; minor light-gray silty shale	165	183

Drill-hole HP-D3--Continued

Lithologic description--Continued	Feet From	Feet To
Shale, light-gray; very light gray, silty, fine-grained sandstone; minor grayish-black carbonaceous shale	183	184
Sandstone, fine-grained, very light gray	184	185
Do.; medium-light-gray shale	185	190
Shale, light-olive-gray; grayish-black carbonaceous shale	190	197
No sample recovery	197	207
Sandstone, very fine grained, light-olive-gray; light-gray shale	207	209
Siltstone, resistant, olive-gray	209	211
Shale, light-gray	211	215
Do.; olive-black carbonaceous shale	215	216
Do.; trace coal	216	219
Shale, light-gray and olive-gray	219	225
Shale, light-gray; light-gray, very fine grained sandstone; trace pyrite	225	230
Shale, light-gray; minor light-gray, very fine grained sandstone; trace brownish-black carbonaceous shale and coal	230	235
Shale, light-olive-gray and light-gray; trace grayish-black carbonaceous shale	235	250
Do.; carbonaceous shale increasing	250	257
Shale, light-gray; coal	257	260
Shale, light-gray; trace grayish-black carbonaceous shale and coal	260	269
Shale, light-gray; minor light-gray, very fine grained sandstone; trace grayish-black carbonaceous shale and coal	269	275

Drill-hole HP-D3--Continued

Lithologic description--Continued	Feet From	Feet To
Shale, light-gray; minor grayish-black carbonaceous shale and coal	275	281
Shale, light-gray; minor light-gray, very fine grained sandstone; brownish-black carbonaceous shale and coal; trace pyrite	281	295
Shale, light-gray; minor grayish-black carbonaceous shale; trace pyrite	295	300
Shale, light-gray; minor grayish-black carbonaceous shale	300	310
Do.; trace pyrite	310	334
Shale, light-gray; coal	334	336
Shale, light-gray; minor coal	336	344
Do.; minor brownish-black carbonaceous shale	344	351
Do.; coal increasing	351	355
Shale, light-gray; minor coal	355	360
Do.; minor grayish-black carbonaceous shale	360	380
Shale, light-gray; coal	380	395
Do.; brownish-black carbonaceous shale	395	397
Shale, light-gray; trace brownish-black carbonaceous shale and coal	397	404
Do.; carbonaceous shale and coal increasing	404	418
Shale, light-gray; coal; trace gypsum	418	430
Do.; brownish-black carbonaceous shale	430	445
Shale, light-gray; minor dark-gray carbonaceous shale	445	453
Do.; minor coal	453	460
Do.; carbonaceous shale and coal increasing	460	485

Drill-hole HP-D3--Continued

Lithologic description--Continued	Feet From	Feet To
Do.; trace gypsum	485	497
Shale, light-gray; brownish-black carbonaceous shale; coal	497	555
Total depth ..... 555 feet		

Drill-hole SR-D1

[NW¼NW¼NE¼, sec. 34, T. 19 N., R. 92 W., 6th Principal Meridian, Seaverson Reservoir quadrangle, Carbon County, Wyoming; collar elevation 7,190 feet; begun July 9, 1975; completed July 12, 1975; sampled by L. A. Shoaff and G. S. Curtiss; logged by G. S. Curtiss and G. M. Edson]

Lithologic description	Feet[1/] From	To
Soil; gravel with caliche	0	0.5
Shale and silty shale, pale-yellowish-brown	0.5	20
Shale, pale-brown; minor brownish-black carbonaceous shale	20	31
Sandstone, very fine grained, dark-yellowish-orange	31	34
Shale, carbonaceous, brownish-gray; trace gypsum	34	35
Shale, silty, light-olive-gray; trace gypsum	35	41
Do.; minor brownish-black carbonaceous shale	41	44
Shale, light-gray; trace brownish-gray carbonaceous shale; trace gypsum	44	50
Shale, medium-light-gray; minor brownish-black carbonaceous shale	50	53
Shale, light- and medium-gray; grayish-black carbonaceous shale; minor coal	53	55
Shale, carbonaceous, grayish-black; minor light-gray shale	55	57
Shale, carbonaceous, dark-gray; coal	57	59
Shale, light-gray	59	62
Shale, carbonaceous, medium-dark-gray; coal; trace gypsum	62	64
Coal; minor dark-gray carbonaceous shale	64	69
Shale, light-gray	69	70

1/ To convert to metres, multiply by 0.3048.

Drill-hole SR-D1--Continued

Lithologic description--Continued	Feet From	Feet To
Coal	70	73
Shale, carbonaceous, medium-dark-gray	73	75
Coal; minor grayish-black carbonaceous shale	75	77
Coal	77	82
Shale, light-gray; minor medium-dark-gray carbonaceous shale	82	88
Shale, light-gray; grayish-black carbonaceous shale; trace coal	88	91
Shale, light-gray	91	92
Coal	92	94
Siltstone, friable, light-gray	94	100
Do.; grayish-black carbonaceous shale	100	102
Coal	102	105
Siltstone and silty shale, light-gray	105	120
Shale, light-gray; medium-light-gray, friable, fine-grained sandstone; brownish-black carbonaceous shale	120	124
Sandstone, fine-grained, resistant, salt-and-pepper, light-gray	124	130
Sandstone, fine-grained, friable, salt-and-pepper, light-gray	130	145
Sandstone, fine-grained, resistant, salt-and-pepper, light-gray	145	146
Shale, light-gray	146	150
Sandstone, fine-grained, light-gray	150	153
Shale, carbonaceous, grayish-black	153	158
Shale and siltstone, light-olive-gray	158	167

Drill-hole SR-D1--Continued

Lithologic description--Continued	Feet From	Feet To
Sandstone, very fine grained, light-olive-gray; light-olive-gray sandy shale	167	169
Siltstone and silty shale, light-gray; minor brownish-black carbonaceous shale	169	170
Do.; light-gray, salt-and-pepper, resistant, fine-grained sandstone	170	175
Shale, medium-gray	175	176
Do.; brownish-black carbonaceous shale	176	199
Shale, carbonaceous, brownish-black; trace coal	199	203
Shale, medium-light-gray	203	207
Do.; medium-light-gray silty shale	207	209
Shale, carbonaceous, medium-dark-gray; coal	209	215
Coal	215	220
Siltstone, light-gray	220	225
Total depth ..... 225 feet		

Drill-hole SR-D2

[SE¼SE¼NW¼, sec. 34, T. 19 N., R. 92 W., 6th Principal Meridian, Seaverson Reservoir quadrangle, Carbon County, Wyoming; collar elevation 7,160 feet; begun July 14, 1975; completed July 15, 1975; sampled by G. S. Curtiss; logged by G. S. Curtiss and G. M. Edson]

Lithologic description	Feet[1/] From	To
Soil; gravel	0	2.5
Sand, very fine to coarse, grayish-orange	2.5	4
Do.; minor light-gray shale	4	8
Shale and sandy shale, light-gray	8	11
Do.; grayish-orange, friable, fine- to coarse-grained sandstone	11	22
Sandstone, fine-grained, friable, yellowish-gray	22	31
Do.; minor light-gray shale	31	35
Sandstone, very fine grained, friable, dark-yellowish-orange	35	40
Do.; light-gray shale	40	41
Do.; trace coal	41	42
Do.; light-gray shale increasing	42	43
Shale, light-gray; minor grayish-black carbonaceous shale	43	45
Shale, silty, light-gray	45	46
Do.; minor grayish-black carbonaceous shale	46	48
Do.; carbonaceous shale increasing; minor coal	48	51
Shale, medium-light-gray; medium-dark-gray carbonaceous shale; coal	51	63
Shale, carbonaceous, medium-dark-gray; coal	63	64
Coal	64	68

1/ To convert to metres, multiply by 0.3048.

Drill-hole SR-D2--Continued

Lithologic description--Continued	Feet From	Feet To
Shale, medium-light-gray; coal	68	74
Coal; minor grayish-orange fine-grained sandstone; medium-gray shale	74	80
Coal	80	85
Do.; light- to dark-gray shale; grayish-black carbonaceous shale	85	87
Shale, carbonaceous, grayish-black; coal	87	93
Do.; light-gray shale	93	96
Coal	96	98
Shale, light-gray; grayish-black carbonaceous shale; coal	98	100
Shale and resistant siltstone, light-gray; grayish-black carbonaceous shale; coal	100	105
Do.; mostly coal	105	106
Siltstone, resistant, light-gray; minor light-gray shale; minor grayish-black carbonaceous shale; minor coal	106	110
Siltstone and shale, light-gray; brownish-black carbonaceous shale; coal	110	112
Do.; coal increasing	112	117
Shale, light-gray; coal	117	118
Do.; grayish-black carbonaceous shale	118	119
Shale, carbonaceous, grayish-black; coal	119	126
Shale, carbonaceous, grayish-black	126	129
Shale, light-gray; brownish-gray carbonaceous shale; coal	129	130
Shale, carbonaceous, brownish-black; coal	130	131
Do.; light-gray shale	131	143

Drill-hole SR-D2--Continued

Lithologic description--Continued	Feet From	Feet To
Sandstone, fine-grained, resistant, light-gray	143	149
No sample recovery	149	171
Poor sample recovery; carbonaceous shale?	171	200
Shale, carbonaceous, grayish-black	200	205
Do.; coal	205	210
Siltstone, light-gray; dark-gray carbonaceous shale; coal	210	224
Total depth ..... 224 feet		

Drill-hole SR-D3

[SW¼NW¼SW¼, sec. 10, T. 18 N., R. 91 W., 6th Principal Meridian, Seaverson Reservoir quadrangle, Carbon County, Wyoming; collar elevation 7,305 feet; begun August 16, 1975; completed August 19, 1975; sampled by L. A. Shoaff; logged by G. S. Curtiss and G. M. Edson]

Lithologic description	Feet[1/] From	To
Soil	0	0.5
Sand, very fine to medium, dark-yellowish-brown	0.5	4
Gravel	4	6
Do.; yellowish-gray, salt-and-pepper, medium- to coarse-grained, resistant sandstone	6	16
Shale, yellowish-gray; gravel	16	21
Do.; yellowish-gray, salt-and-pepper, fine-grained sandstone	21	23
Sandstone, fine-grained, salt-and-pepper, yellowish-gray; gravel	23	26
Sandstone, fine-grained, salt-and-pepper, yellowish-gray; minor grayish-orange siltstone	26	30
Sandstone, fine-grained, salt-and-pepper, yellowish-gray; minor light-olive-gray shale	30	42
Do.; yellowish-gray siltstone	42	45
Sandstone, fine- to coarse-grained, friable, salt-and-pepper, yellowish-gray	45	50
Sandstone, fine- to medium-grained, friable, salt-and-pepper, yellowish-gray	50	55
Sandstone, fine- to medium-grained, salt-and-pepper, dusky-yellow	55	60
Sandstone, fine- to coarse-grained, friable, salt-and pepper, yellowish-gray	60	70
Sandstone, fine-grained, friable, salt-and-pepper, dusky-yellow	70	75

1/ To convert to metres, multiply by 0.3048.

Drill-hole SR-D3--Continued

Lithologic description	Feet From	Feet To
Siltstone, dusky-yellow	75	85
Sandstone, medium-grained, friable, salt-and-pepper, yellowish-gray	85	100
Sandstone, medium- to very coarse grained, friable, dusky-yellow; minor dusky-yellow friable siltstone and silty shale	100	108
Sandstone, medium- to coarse-grained, friable, salt-and-pepper, yellowish-gray; minor dusky-yellow silty shale	108	115
Do.; minor dusky-yellow shale and sandy shale	115	120
Sandstone, fine- to coarse-grained, friable, yellowish-gray; minor yellowish-gray sandy siltstone	120	128
Sandstone, medium-grained, friable, salt-and-pepper, yellowish-gray; minor yellowish-gray sandy siltstone	128	136
Do., sandy siltstone increasing	136	145
Sandstone, fine-grained, friable, salt-and-pepper, yellowish-gray; minor yellowish-gray sandy siltstone	145	156
Sandstone, fine-grained, friable, salt-and-pepper, yellowish-gray; light-gray shale and sandy shale	156	172
Sandstone, medium-grained, salt-and-pepper, dusky-yellow; minor light-gray shale	172	175
Sandstone, fine-grained, friable, salt-and-pepper, light-olive-gray	175	185
Sandstone, coarse-grained, friable, dark-yellowish-brown	185	197
Shale, sandy, medium-light-gray	197	200
No sample recovery	200	415
Total depth ..... 415 feet		

Drill-hole SR-D3--Continued

Lithology interpreted from geophysical logs	Feet From	Feet To
Shale, sandy	197	199
Sandstone, shaly	199	203
Shale, sandy	203	210
Sandstone, shaly	210	217
Shale, sandy	217	225
Sandstone, shaly	225	264
Shale	264	274
Sandstone, shaly	274	280
Shale	280	284
Shale, sandy	284	294
Sandstone, shaly	294	300
Shale	300	308
Sandstone, shaly	308	312
Shale	312	314
Sandstone, shaly	314	318
Shale, sandy	318	322
Sandstone, shaly	322	326
Sandstone	326	339
Shale, sandy	339	343
Sandstone, shaly	343	356
Sandstone	356	369
Shale, sandy	369	374
Sandstone	374	380
Sandstone, shaly	380	383
Sandstone	383	386
Depth logged	386 feet	

Drill-hole SR-D4

[SE¼NW¼NE¼, sec. 22, T. 18 N., R. 91 W., 6th Principal Meridian, Seaverson Reservoir quadrangle, Carbon County, Wyoming; collar elevation 7,360 feet; begun August 12, 1975; completed August 15, 1975; sampled by L. A. Shoaff; logged by G. M. Edson and G. S. Curtiss]

Lithologic description	Feet[1/] From	To
Soil	0	0.5
Sand, very fine to medium, moderate-yellowish-brown; moderate-yellowish-brown silt	0.5	4
Sandstone, fine-grained, moderate-yellowish-brown	4	7
Sandstone, medium-grained, friable, salt-and-pepper, pale-yellowish-brown	7	13
Do.; brownish-gray shale	13	17
Shale, silty, grayish-orange	17	20
Shale, silty, pale-brownish-yellow; minor dark-yellowish-orange very fine grained sandstone	20	22
Sandstone, very fine grained, grayish-orange	22	29
Shale, silty, grayish-orange	29	36
Siltstone, grayish-orange; grades to pale-yellowish-brown very fine grained sandstone	36	52
Sandstone, very fine grained, moderate-yellowish-brown	52	58
Sandstone, fine-grained, friable, pale-yellowish-brown	58	66
Siltstone, pale-yellowish-brown	66	70
Shale, silty, brownish-gray	70	74
Siltstone, medium-light-gray	74	86
Shale, carbonaceous, medium-dark-gray	86	88
Shale, carbonaceous, dark-gray; coal	88	89

1/ To convert to metres, multiply by 0.3048.

Drill-hole SR-D4--Continued

Lithologic description--Continued	Feet From	Feet To
Coal	89	110
Shale, carbonaceous, grayish-black; trace coal	110	117
Shale, silty, light-gray	117	119
Siltstone, light-gray	119	145
Sandstone, fine-grained, friable, salt-and-pepper, light-gray	145	195
Do.; trace coal	195	206
Shale, silty, medium-light-gray; minor coal	206	210
Siltstone, medium-light-gray	210	265
Shale, silty, medium-light-gray	265	295
Shale, carbonaceous, dark-gray; coal; trace pyrite.	295	298
Shale, silty, medium-gray	298	302
Shale, silty, medium-light-gray	302	310
Shale, carbonaceous, dark-gray; coal; trace medium-gray shale	310	321
Sandstone, very fine grained, resistant, medium-light-gray; medium-light-gray silty shale	321	326
Shale, silty, medium-light-gray	326	333
Shale, carbonaceous, dark-gray	333	339
Coal	339	348
Shale, carbonaceous, dark-gray; medium-light-gray silty shale	348	350
Shale, silty, medium-light-gray	350	356
Siltstone, resistant, medium-gray	356	359
Shale, silty, medium-gray	359	361

Drill-hole SR-D4--Continued

Lithologic description--Continued	Feet From	Feet To
Shale, carbonaceous, dark-gray; minor coal	361	366
Shale, carbonaceous, dark-gray; coal	366	370
Shale, silty, medium-light-gray	370	375
Shale, silty, medium-gray; trace coal	375	380
Shale, silty, medium-light-gray; medium-light-gray, fine-grained sandstone	380	384
Do.; medium-light-gray resistant siltstone	384	388
Shale, silty, medium-light-gray; dark-gray carbonaceous shale; trace coal	388	392
Shale, silty, medium-gray	392	402
Shale, silty, medium-light-gray; dark-gray carbonaceous shale; coal	402	411
Shale, silty, medium-light-gray	411	414
Siltstone, resistant, medium-light-gray	414	415
Siltstone, medium-light-gray	415	422
Shale, silty, medium-light-gray	422	426
Shale, carbonaceous, dark-gray; coal	426	427
Coal	427	438
Shale, silty, medium-gray; dark-gray carbonaceous shale; coal	438	450
Shale, silty, medium-light-gray	450	461
Do.; dark-gray carbonaceous shale; minor coal	461	475
Shale, carbonaceous, dark-gray; minor medium-gray silty shale	475	490
Shale, silty, medium-light-gray; minor medium-dark-gray carbonaceous shale	490	496

Drill-hole SR-D4--Continued

Lithologic description--Continued	Feet From	Feet To
Shale, silty, medium-light-gray; dark-gray carbonaceous shale	496	517
Do.; coal; trace medium-light-gray, resistant, very-fine grained sandstone and pyrite	517	552
Shale, carbonaceous, medium-dark-gray; minor medium-light-gray silty shale; minor coal; trace medium-light-gray, resistant, very fine grained sandstone	552	562
Siltstone, resistant, medium-light-gray; medium-light-gray silty shale; dark-gray carbonaceous shale; trace coal	562	566
Siltstone, friable, medium-light-gray; coal increasing	566	591
Do.; trace pyrite	591	595
Total depth ..... 595 feet		

Drill-hole SR-D5

[NE¼NE¼SW¼, sec. 22, T. 18 N., R. 91 W., 6th Principal Meridian, Seaverson Reservoir quadrangle, Carbon County, Wyoming; collar elevation 7,345 feet; begun August 7, 1975; completed August 8, 1975; sampled by L. A. Shoaff; logged by G. S. Curtiss and G. M. Edson]

Lithologic description	Feet[1/] From	To
Soil	0	0.5
Siltstone, yellowish-gray	0.5	17
Shale, carbonaceous, brownish-black	17	21
Siltstone, light-gray; minor brownish-black carbonaceous shale and medium-light-gray shale	21	23
Siltstone, grayish-orange-pink to yellowish-gray	23	25
Shale, silty, yellowish-gray	25	41
Sandstone, very fine grained, resistant, light-gray	41	51
Shale, silty, medium-light-gray and light-olive-gray; trace medium-light-gray, resistant, fine-grained sandstone and dark-gray carbonaceous shale	51	53
Shale, light-gray	53	56
Do.; medium-light-gray silty shale; minor medium-light-gray, resistant, fine-grained sandstone	56	58
Shale, medium-light-gray	58	61
Do.; trace resistant sandstone	61	70
Shale, medium-gray; dark-gray carbonaceous shale	70	75
Shale, silty, medium-gray; dark-gray carbonaceous shale; coal	75	81
Shale, carbonaceous, dark-gray; coal	81	83
Shale, light-gray; trace resistant sandstone	83	85

1/ To convert to metres, multiply by 0.3048.

Drill-hole SR-D5--Continued

Lithologic description--Continued	Feet From	Feet To
Shale, carbonaceous, grayish-black; minor coal	85	93
Shale, silty, light-gray; dark-gray carbonaceous shale	93	96
Shale, carbonaceous, grayish-black; coal	96	97
Siltstone, light-gray	97	102
Do.; light-gray,friable, fine-grained sandstone	102	111
Shale, silty, light-gray; light-gray, very fine grained sandstone	111	113
Sandstone, fine-grained, friable, salt-and-pepper, light-gray	113	155
Do.; trace grayish-orange sandy shale	155	162
Sandstone, fine-grained, friable, salt-and-pepper, light-gray; trace coal	162	176
Do.; minor light-gray shale	176	182
Sandstone, medium- to coarse-grained, friable, salt-and-pepper, light-gray	182	186
Do.; minor light-gray silty shale	186	189
Do.; trace coal	189	195
Sandstone, fine-grained, resistant, light-gray; coal; minor light-gray silty shale; trace pyrite	195	200
Siltstone, grayish-orange; light-gray silty shale .	200	205
Shale, silty, medium-gray	205	210
Shale, silty, light-gray; olive-black carbonaceous shale; coal	210	217
Shale, silty, light-gray; minor coal	217	225
Shale, silty, medium-gray; brownish-black carbonaceous shale	225	230

Drill-hole SR-D5--Continued

Lithologic description--Continued	Feet From	Feet To
Shale, carbonaceous, brownish-black; coal	230	235
Coal	235	243
Siltstone, light-gray	243	251
Siltstone, medium-light-gray	251	255
Shale, silty, light-gray	255	272
Siltstone, resistant, light-gray	272	274
Shale, silty, medium-gray	274	290
Shale, silty, medium-light-gray	290	293
Do.; light-gray, resistant siltstone	293	297
Shale, silty, light-gray	297	307
Do.; minor grayish-black carbonaceous shale and coal	307	308
Do.; coal and carbonaceous shale increasing	308	311
Shale, carbonaceous, grayish-black; coal; minor light-gray silty shale	311	318
Coal; grayish-black carbonaceous shale	318	321
Coal	321	326
Shale, medium-light-gray	326	330
Shale, silty, light-gray	330	347
Siltstone, resistant, light-gray	347	375
Siltstone, light-gray; light-gray silty shale; coal	375	395
Sandstone, very fine grained, light-gray; minor light-gray silty shale and coal	395	455
Coal; minor grayish-black carbonaceous shale	455	460

Drill-hole SR-D5--Continued

Lithologic description--Continued	Feet From	Feet To
Do.; carbonaceous shale increasing; light-gray siltstone	460	465
Coal; light-gray silty shale	465	475
Siltstone, light-gray; trace coal	475	481
Shale, silty, light-gray; trace grayish-black carbonaceous shale and coal	481	492
Shale, silty, light-gray; minor grayish-black carbonaceous shale and coal; trace light-gray siltstone	492	497
Shale, silty, light-gray; coal; trace light-gray fine-grained sandstone	497	502
Shale, silty, light-gray; minor grayish-black carbonaceous shale and coal	502	515
Total depth ..... 515 feet		

Drill-hole SR-D6

[NW¼NW¼NE¼, sec. 28, T. 18 N., R. 91 W., 6th Principal Meridian, Seaverson Reservoir quadrangle, Carbon County, Wyoming; collar elevation 7,160 feet; begun August 4, 1975; completed August 6, 1975; sampled by L. A. Shoaff and G. S. Curtiss; logged by G. S. Curtiss and G. M. Edson]

Lithologic description	Feet[1/] From	To
Soil	0	1
Shale, silty, dark-yellowish-orange; yellowish-gray siltstone	1	4
Shale, resistant, light-gray	4	6
Siltstone, yellowish-gray; minor medium-gray shale and grayish-orange ferruginous concretions	6	10
Siltstone, yellowish-gray; yellowish-gray silty shale; minor ferruginous concretions	10	14
Shale, silty, light-olive-gray; minor ferruginous concretions	14	25
Shale, light-olive-gray	25	30
Shale, yellowish-gray to light-olive-gray; minor dark-gray carbonaceous shale	30	35
Shale, silty, yellowish- to grayish-orange	35	40
Shale, silty, dusky-yellow, yellowish-gray, and medium-gray	40	55
Siltstone, light-gray	55	60
Do.; light-gray silty shale	60	62
Coal; minor dark-gray carbonaceous shale	62	63
Coal; minor light-gray shale and grayish-black carbonaceous shale	63	70
Coal	70	80
Shale, light-gray; brownish-black carbonaceous shale; medium-gray siltstone	80	90

1/ To convert to metres, multiply by 0.3048.

Drill-hole SR-D6--Continued

Lithologic description--Continued	Feet From	Feet To
Siltstone, light-gray	90	93
Sandstone, very fine grained, light-gray	93	98
Do.; light-gray silty shale	98	100
Sandstone, very fine to fine-grained, friable, light-gray	100	120
Do.; medium-gray shale	120	133
Sandstone, fine-grained, resistant, salt-and-pepper, light-gray	133	137
Shale, light-gray	137	147
Shale, carbonaceous, medium-dark-gray	147	150
Do.; coal; medium-gray silty shale	150	152
Shale, medium-gray; medium-dark-gray carbonaceous shale	152	155
Shale, silty, light-gray; light-gray friable siltstone	155	165
Shale, silty, medium-light-gray; medium-gray friable siltstone	165	167
Shale, carbonaceous, brownish-black	167	169
Siltstone, light-gray	169	178
Siltstone, light-olive-gray; very fine grained, light-gray sandstone	178	187
Sandstone, fine-grained, resistant, salt-and-pepper, light-gray	187	216
Do.; minor light-olive-gray shale	216	237
Shale, silty, light-gray	237	241
Shale, light-gray	241	246
Shale, silty, light-gray; minor brownish-black carbonaceous shale; coal	246	251

Drill-hole SR-D6--Continued

Lithologic description--Continued	Feet From	Feet To
Siltstone, light-gray; trace brownish-black carbonaceous shale	251	253
Shale, light-gray; trace pyrite	253	260
Siltstone and silty shale, light-gray; minor light-gray, salt-and-pepper, resistant, very fine grained sandstone	260	270
Sandstone, very fine to fine-grained, friable, light-gray	270	285
Shale, silty, light-gray	285	295
Shale, carbonaceous, dark-gray; coal	295	300
Coal; medium-dark-gray carbonaceous shale	300	305
Shale, carbonaceous, grayish-black; minor coal	305	310
Shale, carbonaceous, grayish-black; coal; minor light-gray shale	310	315
Coal; minor grayish-black carbonaceous shale and light-gray shale	315	320
Shale, silty, very light gray; coal	320	325
Siltstone, very light gray; minor light-gray shale.	325	330
Siltstone, resistant, light-gray	330	333
Siltstone, very light gray	333	335
Shale, light-gray	335	340
Shale, carbonaceous, grayish-black; medium-gray shale	340	346
Shale, medium-light-gray; minor grayish-black carbonaceous shale	346	350
Siltstone, light-gray; light-gray shale; minor grayish-black carbonaceous shale	350	352
Sandstone, fine-grained, resistant, light-gray	352	355

Drill-hole SR-D6--Continued

Lithologic description--Continued	Feet From	Feet To
Shale, silty, light-gray	355	360
Shale, silty, light- to medium-gray	360	372
Shale, medium-gray; minor grayish-black carbonaceous shale	372	375
Shale, light-gray; grayish-black carbonaceous shale	375	380
Shale, silty, light-gray; minor grayish-black carbonaceous shale	380	385
Coal; minor grayish-black carbonaceous shale	385	390
Shale, carbonaceous, grayish-black; minor coal	390	396
Coal; minor light-gray shale and grayish-black carbonaceous shale	396	410
Shale, silty, light-gray; coal	410	415
Do., silty shale increasing	415	420
Do., coal increasing	420	425
Do.; minor grayish-black carbonaceous shale	425	437
Shale, silty, light-gray; trace coal and grayish-black carbonaceous shale	437	440
Shale, light-gray	440	445
Shale, carbonaceous, grayish-black; coal; minor light-gray shale	445	453
Shale, silty, light-gray	453	460
Do.; coal; grayish-black carbonaceous shale	460	475
Sandstone, resistant, salt-and-pepper, light-gray; coal	475	525
Coal; minor grayish-black carbonaceous shale	525	530
Do.; trace light-gray, salt-and-pepper, resistant, fine-grained sandstone and light-gray shale	530	557

Drill-hole SR-D6--Continued

Lithologic description--Continued	Feet From	Feet To
Shale, silty, medium-gray	557	573
Total depth ..... 573 feet		

Drill-hole SR-D7

[NE¼NE¼SW¼, sec. 28, T. 18 N., R. 91 W., 6th Principal Meridian, Seaverson Reservoir quadrangle, Carbon County, Wyoming; collar elevation 7,150 feet; begun July 31, 1975; completed August 2, 1975; sampled by G. S. Curtiss; logged by G. M. Edson and G. S. Curtiss]

Lithologic description	Feet[1/] From	To
Soil	0	1
Shale, silty, yellowish-gray	1	5
Do.; minor medium-gray shale	5	10
Shale, silty, yellowish-gray	10	15
Shale, resistant, light-olive-gray	15	16
Shale, silty, yellowish-gray; trace brownish-gray carbonaceous shale	16	28
Siltstone and silty shale, yellowish-gray; pale-yellowish-brown silty shale	28	31
Sandstone, fine-grained, salt-and-pepper, medium-light-gray	31	32
Shale, silty, yellowish-gray	32	33
Sandstone, fine-grained, resistant, dark-yellowish-brown	33	34
Shale, silty, grayish-orange	34	35
Shale, silty, medium-light-gray	35	43
Shale, carbonaceous, dark-gray	43	44
Shale, silty, medium-light-gray	44	45
Siltstone, light-gray	45	46
Coal	46	49
Shale, carbonaceous, dark-gray	49	50

1/ To convert to metres, multiply by 0.3048.

Drill-hole SR-D7--Continued

Lithologic description--Continued	Feet From	Feet To
Coal	50	63
Shale, carbonaceous, dark-gray	63	71
Shale, medium-light-gray	71	72
Shale, carbonaceous, dark-gray; minor coal	72	75
Shale, medium-light-gray	75	78
Do.; medium-dark-gray carbonaceous shale; coal	78	79
Shale, silty, light-gray	79	85
Shale, carbonaceous, dark-gray	85	87
Do.; medium-light-gray shale	87	89
Shale, carbonaceous, dark-gray	89	94
Shale, light-gray; trace dark-gray carbonaceous shale	94	96
Shale, light-gray	96	101
Shale, silty, medium-gray	101	104
Shale, silty, medium-light-gray	104	110
Shale, resistant, medium-light-gray	110	111
Shale, medium-gray	111	114
Shale, silty, medium-light-gray	114	116
Shale, carbonaceous, dark-gray	116	117
Coal	117	118
Shale, medium-light-gray	118	130
Siltstone, resistant, medium-light-gray	130	131
Shale, silty, medium-light-gray	131	134
Shale, medium-gray	134	137

Drill-hole SR-D7--Continued

Lithologic description--Continued	Feet From	Feet To
Shale, carbonaceous, grayish-black	137	140
Shale, silty, medium-light-gray	140	157
Sandstone, fine-grained, resistant, salt-and-pepper, medium-light-gray	157	159
Siltstone and silty shale, medium-light-gray	159	167
Shale, resistant, medium-gray	167	175
No sample recovery	175	195
Shale, silty, medium-light-gray	195	210
Shale, silty, resistant, medium-light-gray	210	215
Sandstone, fine-grained, resistant, light-gray; medium-light-gray silty shale; dark-gray carbonaceous shale	215	235
Shale, silty, medium-light-gray; coal	235	240
Shale, silty, medium-light-gray; dark-gray carbonaceous shale; trace coal and pyrite	240	245
Sandstone, medium- to coarse-grained, medium-gray; medium-light-gray silty shale; trace pyrite	245	250
Do.; minor coal	250	255
Shale, medium-light-gray; minor pyrite	255	260
Pyrite; minor medium-light-gray shale	260	266
Shale, medium-light-gray; dark-gray carbonaceous shale; coal	266	270
Shale, medium-gray	270	275
Coal	275	280
Shale, light-gray	280	285
Sandstone, very fine grained, clayey, light-gray	285	290

Drill-hole SR-D7--Continued

Lithologic description--Continued	Feet From	Feet To
Shale, silty, medium-light-gray	290	305
Shale, medium-gray; minor coal	305	315
Sandstone, very fine grained, resistant, brownish-gray	315	316
Shale, silty, medium-light-gray	316	319
Siltstone, resistant, medium-light-gray	319	320
Shale, silty, medium-light-gray	320	332
Sandstone, fine-grained, resistant, medium-gray	332	334
Shale, silty, resistant, medium-gray	334	335
Shale, silty, medium-light-gray	335	340
Do.; minor coal	340	355
Shale, silty, medium-light-gray	355	357
Shale, medium-gray	357	359
Shale, carbonaceous, dark-gray; coal	359	360
Shale, medium-dark-gray; minor coal	360	370
Coal	370	374
Siltstone, light-gray	374	383
Siltstone, medium-light-gray; dark-gray carbonaceous shale; coal	383	395
Sandstone, fine-grained, resistant, medium-light-gray	395	405
Shale, silty, medium-light-gray	405	410
Coal	410	412
Do.; medium-dark-gray shale	412	415
Shale and silty shale, medium-light-gray; trace pyrite	415	419

Drill-hole SR-D7--Continued

Lithologic description--Continued	Feet From	Feet To
Shale, carbonaceous, dark-gray; coal	419	424
Shale, silty, medium-light-gray	424	426
Siltstone, medium-light-gray	426	435
Sandstone, fine- to medium-grained, medium-light-gray	435	445
Sandstone, fine-grained, medium-light-gray; coal...	445	450
Shale, medium-light-gray; dark-gray carbonaceous shale; coal	450	455
Sandstone, fine- to medium-grained, medium-light-gray; minor dark-gray carbonaceous shale and coal	455	475
Shale and silty shale, medium-light-gray; dark-gray carbonaceous shale; coal	475	495
Coal	495	500
Shale, silty, medium-light-gray	500	515
Do.; minor medium-dark-gray shale	515	519
Shale, silty, medium-light-gray	519	520
Sandstone, very fine grained, medium-light-gray ...	520	525
Do.; medium-light-gray silty shale	525	535
Shale and silty shale, medium-light-gray; medium-dark-gray shale	535	543
Sandstone, fine-grained, resistant, medium-gray; minor medium-dark-gray shale; trace pyrite ...	543	545
Do.; trace coal	545	555
Total depth ..... 555 feet		

Drill-hole FR-D3

[NW¼NE¼NW¼, sec. 2, T. 18 N., R. 91 W., 6th Principal Meridian, Fillmore Ranch quadrangle, Carbon County, Wyoming; collar elevation 7,090 feet; begun August 26, 1975; completed August 27, 1975; sampled by S. C. Zimmermann; logged by G. S. Curtiss and G. M. Edson]

Lithologic description	Feet[1/] From	To
Gravel; yellowish-gray fine to very fine sand	0	5
Sandstone, very fine grained, friable, yellowish-gray	5	20
Sandstone, medium-grained, friable, salt-and-pepper, light-olive-gray	20	40
Sandstone, medium-grained, friable, grayish-orange.	40	46
Shale, silty, medium-gray; trace gypsum	46	49
Shale, moderate-yellowish-brown	49	50
Shale, dark-gray	50	51
Shale, silty, light-gray	51	55
Shale, carbonaceous, brownish-black	55	56
Shale, dark-gray	56	59
Siltstone, friable, light-gray	59	60
Shale, carbonaceous, dark-gray; minor light-gray friable siltstone	60	61
Shale, light-gray; minor light-gray friable siltstone	61	64
Shale, light-gray	64	65
Do.; light-gray friable siltstone	65	68
Shale, silty, light-gray	68	70
Shale, medium-gray	70	74
Do.; brownish-black carbonaceous shale	74	75

1/ To convert to metres, multiply by 0.3048.

Drill-hole FR-D3--Continued

Lithologic description--Continued	Feet From	Feet To
Shale, light-gray	75	77
Coal	77	80
Shale, light-gray	80	87
Do.; minor light-gray friable siltstone	87	90
Siltstone, friable, light-gray; light-gray silty shale	90	95
Shale, silty, resistant, light-gray	95	97
Shale, silty, light-gray	97	108
Coal	108	112
Shale, medium-light-gray	112	118
Shale, silty, medium-gray	118	123
Sandstone, very fine grained, light-gray; light-gray siltstone	123	133
Sandstone, medium-grained, resistant, salt-and-pepper, light-gray	133	180
Siltstone, light-gray; minor dark-gray silty shale	180	190
Coal; minor grayish-black carbonaceous shale	190	200
Shale, carbonaceous, medium-dark-gray; coal; minor light-gray shale	200	205
Siltstone, light-gray	205	217
Shale, silty, light-gray	217	224
Sandstone, fine-grained, light-gray	224	280
Shale, silty, resistant, medium-light-gray	280	286
Sandstone, very fine grained, resistant, light-gray	286	309

Drill-hole FR-D3--Continued

Lithologic description -- cont.	Feet From	Feet To
Shale, carbonaceous, brownish-black	309	311
Siltstone, light-gray; very light gray, resistant, medium-grained sandstone	311	333
Sandstone, medium-grained, resistant, very light gray	333	338
Sandstone, medium-grained, light-gray; light-gray siltstone	338	350
Shale, light-gray; brownish-black carbonaceous shale; coal	350	356
Sandstone, medium-grained, friable, salt-and-pepper, light-gray	356	370
Total depth ..... 370 feet		

Drill-hole FR-D6

[SW¼SW¼SW¼, sec. 14, T. 18 N., R. 91 W., 6th Principal Meridian, Fillmore Ranch quadrangle, Carbon County, Wyoming; collar elevation 7,380 feet; begun August 20, 1975; completed August 21, 1975; sampled by S. C. Zimmermann and G. S. Curtiss; logged by G. M. Edson and G. S. Curtiss]

Lithologic description	Feet[1/] From	To
Soil	0	0.5
Do.; gravel and caliche	0.5	2
Sandstone, fine-grained, friable, pale-yellowish-brown; gravel	2	15
Sandstone, fine-grained, friable, yellowish-gray; yellowish-gray siltstone	15	18
Do.; gravel; minor dark-yellowish-orange, friable, fine-grained sandstone	18	20
Gravel; yellowish-gray, friable, very fine grained sandstone	20	21
Sandstone, very fine grained, friable, yellowish-gray	21	27
Do.; minor medium-light-gray shale	27	28
Sandstone, very fine grained, friable, yellowish-gray	28	34
Do.; minor gravel and medium-light-gray shale	34	40
Sandstone, fine-grained, friable, grayish-orange; minor gravel	40	41
Shale, silty, resistant, medium-gray	41	43
Shale, silty, yellowish-gray	43	44
Do.; yellowish-gray siltstone	44	46
Sandstone, very fine grained, yellowish-gray	46	48
Do.; yellowish-gray silty shale	48	50

1/ To convert to metres, multiply by 0.3048.

Drill-hole FR-D6--Continued

Lithologic description--Continued	Feet From	Feet To
Shale, medium-gray	50	51
Shale, carbonaceous, medium-dark-gray	51	52
Shale, medium-gray; minor medium-dark-gray carbonaceous shale	52	54
Shale, medium-light-gray	54	55
Do.; minor medium-gray shale	55	56
Shale, medium-gray	56	59
Do.; medium-dark-gray carbonaceous shale	59	62
Siltstone, yellowish-gray	62	63
Shale and silty shale, yellowish-gray and medium-light-gray	63	65
Shale, carbonaceous, dark-gray	65	66
Do.; coal	66	67
Shale, medium-gray; minor medium-dark-gray carbonaceous shale; trace coal	67	68
Shale, medium-light-gray; medium-dark-gray carbonaceous shale; coal	68	69
Coal	69	72
Shale, carbonaceous, medium-dark-gray	72	74
Coal	74	78
Siltstone, medium-light-gray	78	84
Shale, silty, medium-gray and yellowish-gray	84	92
Shale, medium-gray; trace coal	92	94
Do.; medium-dark-gray carbonaceous shale	94	96
Shale, carbonaceous, dark-gray	96	97

Drill-hole FR-D6--Continued

Lithologic description--Continued	Feet From	Feet To
Shale, medium-gray; medium-dark-gray carbonaceous shale	97	100
Do.; minor coal	100	103
Shale, silty, medium-light-gray; coal	103	105
Shale, silty, medium-light-gray; minor dark-gray carbonaceous shale; trace coal	105	108
Shale, silty, medium-light-gray; medium-light-gray siltstone	108	112
Do.; trace pyrite	112	114
Shale, silty; medium-light-gray; medium-light-gray siltstone	114	116
Siltstone increasing	116	119
Shale, medium-gray; dark-gray carbonaceous shale	119	126
Shale, silty, medium-light-gray; minor dark-gray carbonaceous shale	126	128
Shale, silty, medium-light-gray; minor medium-light-gray siltstone; trace coal	128	133
Shale, medium-gray; minor coal	133	135
Shale, medium-gray	135	136
Shale, silty, medium-light-gray; medium-light-gray siltstone	136	137
Do.; minor medium-dark-gray carbonaceous shale and coal	137	139
Siltstone, medium-light-gray	139	140
Do.; medium-light-gray silty shale	140	141
Shale, resistant, medium-gray	141	143
Siltstone and silty shale, medium-light-gray	143	160

Drill-hole FR-D6--Continued

Lithologic description--Continued	Feet From	Feet To
Do.; dark-gray carbonaceous shale	160	162
Shale, carbonaceous, dark-gray	162	164
Do.; minor coal	164	165
Do., coal increasing	165	169
Coal	169	177
Siltstone, medium-light-gray	177	180
Shale, silty, medium-light-gray	180	182
Do.; medium-light-gray siltstone	182	185
Sandstone, very fine grained, friable, medium-light-gray	185	191
Do.; minor moderate-brown fine-grained sandstone	191	200
Shale, silty, medium-light-gray; coal	200	202
Shale, carbonaceous, dark-gray	202	203
Siltstone and silty shale, medium-light-gray	203	207
Sandstone, very fine grained, friable, medium-light-gray	207	209
Sandstone, fine-grained, resistant, salt-and-pepper, medium-light-gray	209	211
Sandstone, very fine grained, friable, medium-light-gray	211	223
Sandstone, medium-grained, resistant, salt-and-pepper, medium-light-gray	223	228
Shale, medium-gray	228	235
Do.; minor coal	235	240
Shale, carbonaceous, dark-gray	240	244
Shale, medium-gray	244	246

Drill-hole FR-D6--Continued

Lithologic description--Continued	Feet From	Feet To
Siltstone and silty shale, medium-light-gray	246	252
Siltstone, medium-gray; medium-gray very fine grained sandstone	252	270
Sandstone, very fine grained, friable, medium-gray; minor medium-light-gray silty shale	270	274
Sandstone, very fine grained, friable, medium-gray.	274	294
Do.; medium-light-gray, friable, very fine grained sandstone; yellowish-gray, very fine grained sandstone	294	295
Total depth .....295 feet		

Drill-hole FR-D7

[SE¼NE¼SE¼, sec. 14, T. 18 N., R. 91 W., 6th Principal Meridian, Fillmore Ranch quadrangle, Carbon County, Wyoming; collar elevation 7,395 feet; begun and completed August 22, 1975; sampled by G. S. Curtiss; logged by G. S. Curtiss and G. M. Edson]

Lithologic description	Feet[1/] From	To
Soil	0	1.5
Gravel	1.5	2
Do.; light-gray siltstone; caliche	2	5
Gravel	5	6
Sandstone, very fine grained, friable, light-brown	6	8
Sandstone, fine-grained, friable, salt-and-pepper, yellowish-gray	8	30
Sandstone, coarse-grained, friable, salt-and-pepper, yellowish-gray	30	34
Sandstone, medium-grained, friable, yellowish-gray; minor yellowish-gray shale	34	41
Sandstone, fine-grained, salt-and-pepper, grayish-orange	41	50
Sandstone, medium- to coarse-grained, friable, salt-and-pepper, yellowish-gray; trace light-gray shale	50	72
Do., shale increasing	72	83
Sandstone, medium- to coarse-grained, friable, salt-and-pepper, grayish-orange; light-gray shale	83	86
Sandstone, medium- to coarse-grained, friable, salt-and-pepper, yellowish-gray; light-gray shale	86	91
Sandstone, medium- to coarse-grained, friable, salt-and pepper, grayish-orange; minor light-gray shale	91	96
Shale, silty, light-gray	96	100

1/ To convert to metres, multiply by 0.3048.

Drill-hole FR-D7--Continued

Lithologic description--Continued	Feet From	Feet To
Sandstone, medium- to coarse-grained, friable, salt-and-pepper, yellowish-gray; light-gray silty shale	100	108
Poor sample recovery; light-gray silty shale and sandstone?	108	115
Sandstone, medium-grained, friable, salt-and-pepper, yellowish-gray.....	115	125
Poor sample recovery; light-olive-gray, friable, medium-grained sandstone; light-olive-gray siltstone; light-gray silty shale?.....	125	170
Total depth .....170 feet		