

# CORRELATION OF MAP UNITS Unconformity Unconformity Kmvc Kmv1 and slump deposits Kmb Buck Tongue of Mancos Shale (Upper Cretaceous)—Light-bluish-gray, poorly laminated shale with a few thin beds of light-yellowish-gray siltstone. Entirely offshore marine in origin. Upper part exposed in eastcentral part of quadrangle. Base not exposed. Thickness from drill-hole

#### structure contours on upthrown side of fault); TD, total depth; 1 ft = 0.305 m] TERTIARY **CRETACEOUS DESCRIPTION OF MAP UNITS** Alluvium (Holocene)—Active stream-channel deposits along Douglas Creek and mouth of Little Indian Draw consisting of unconsolidated clay, silt, sand, and gravel Alluvial and colluvial deposits, undivided (Holocene)—Unconsolidated clay, silt, sand, and gravel in alluvial, slope-wash, terrace, fan, and minor eolian deposits Qcs Colluvial and slump deposits, undivided (Holocene and Pleistocene (?))—Unconsolidated silt, sand, and boulders at base of steep slopes in slope-wash, avalanche, slump, and block-glide deposits. Present mostly in southwest part of quadrangle around base of Texas Mountain Landslide deposits (Holocene and Pleistocene (?))—Angular blocks and rock fragments, gravel, sand, silt, and clay in avalanche, block-glide, **Green River Formation (Eocene)** Douglas Creek Member—Mainly medium-gray to olive-gray, slightly calcareous siltstone and medium- to dark-gray, papery clay shale. Unit also includes several thin, buff ostracodal and algal limestone beds and at least one 2.5-ft-thick bituminous sandstone bed exposed in northeast part of sec. 8, T. 3 S., R. 102 W. Lower contact of Douglas Creek Member is base of the Long Point Bed (Johnson, 1984), an ostracodal limestone bed, 2-3 ft thick, containing Goniobasis and Vivaparus gastropods. Top of member eroded. Maximum remaining thickness about 550 ft at Texas Mountain Wasatch Formation (Eocene and Paleocene)—Mostly maroon, purple, and light-grayish-green, massive mudstone with a few medium-grained, light-gray to brown sandstone beds. Unit present only in secs. 5 and 8, T. 3 S., R. 102 W. Formation pinches out and is not present in vicinity of Texas Mountain. Paleocene age is assigned to lower part of Wasatch on basis of U.S. Geological Survey paleobotany locality D5237-C, which is about 2 mi west of Texas Mountain quadrangle in NW1/4 sec. 13, T. 3 S., R. 103 W. This locality yielded a palynomorph assemblage including Momipites, Carya, and Pistillipollenites mcgregorii indicating late Paleocene age (D.J. Nichols, written commun., 1987). Maximum thickness exposed in quadrangle about 240 ft Mesaverde Group (Upper Cretaceous)—Unconformably overlain by Tertiary rocks. Upper, coal, and lower units are nonmarine in origin; Sego Sandstone is probably entirely marine in origin Kmvu Upper unit of Mesaverde Group—Thick beds of light-yellow to white, crossbedded sandstone interbedded with light- to dark-gray carbonaceous shale, light-gray siltstone, and a few thin coal beds. Sandstone beds are generally lenticular and not laterally continuous. Unit is differentiated from underlying coal unit by presence of thick sandstone beds and absence of significant coal. Lower contact is gradational and does not represent a specific stratigraphic horizon. Thickness variable but averages about 650 ft Coal unit of Mesaverde Group—Dark-brown to black carbonaceous shale with light-gray mudstone, thin beds of yellowish-gray, finegrained to very fine grained sandstone, gray to brown siltstone, and coal. Thickest and most laterally persistent coal beds are found in lower third of unit. Throughout much of quadrangle, outcrops of coal beds are burned, resulting in clinkering and brick-red discoloration of overlying rocks. Coal unit is about 450 ft thick. A zone containing one or two beds of white, flat-bedded, well-sorted, ripple-marked sandstone that contains abundant carbonaceous fragments is laterally continuous and is mapped here as base of coal unit. Two marker sandstone beds are present in places in the northwestern part of quadrangle. These marker beds are probably equivalent to similar sandstone beds directly underlying the "cm zone" within the Mesaverde coal unit as mapped to the north in the Cactus Reservoir quadrangle (Barnum and Garrigues, 1980). Thickness of marker bed zone ranges from about 2 to 5 ft Lower unit of Mesaverde Group—Light-yellow to light-brown, massive, lenticular sandstone, light-gray mudstone, and dark-brown carbonaceous shale. Coal exists in places in upper part of unit. Average thickness is about 580 ft Sego Sandstone of Mesaverde Group—Consists of three to five beds of thick, resistant, very light yellow to light-brown crossbedded sandstone separated by intervals of light-gray to light-yellowish-gray shale. Upper contact is placed on top of highest prominent sandstone bed, which commonly underlies the lowest coaly carbonaceous shale beds of the overlying lower unit of the Mesaverde Group. About 290 ft thick

logs ranges from 200 ft at western edge of quadrangle to about 280 ft at Castlegate Sandstone (Upper Cretaceous)—Not exposed in quadrangle; shown on cross section only. Sandstone of offshore or marginal marine origin. Thickness from drill-hole logs is about 70 ft Mancos Shale (Upper Cretaceous)—Not exposed in quadrangle; shown in cross section only. Mostly marine shale; thickness probably exceeds Contact—Long dashed where approximately located; short dashed where

inferred; dotted where concealed Fault—Ball and bar on downthrown side. Arrow shows direction of dip and indicates that fault plane differs from near vertical. Long dashed where approximately located; short dashed where inferred; dotted where concealed; queried where existence of fault is uncertain — 5000 — Structure contour—Drawn on top of the Castlegate Sandstone, showing elevation in feet above mean sea level. Hachures point toward lower elevation. Contour interval 100 ft

> Strike and dip of beds—Queried where measurement is uncertain Horizontal beds

O 51 Drill hole—Number keyed to table 1. Location uncertain Coal bed—Dashed where approximately located; dotted where concealed. Thickness of bed, in feet, measured at triangle Clinkered rocks—Dotted line shows approximate lateral limit of clinkering. See comments for coal unit of Mesaverde Group in Description of Map

### **ECONOMIC GEOLOGY**

Manuscript approved for publication July 23, 1996

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COLORADO

QUADRANGLE LOCATION

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The Texas Mountain quadrangle contains parts of several highly productive gas fields: Dragon Trail, Douglas Creek, Texas Mountain, Douglas Creek South, and Missouri Creek. The total cumulative gas production from these fields through 1990 (Colorado Oil and Gas Commission, 1991), including areas outside the Texas Creek quadrangle, is about 204 BCF (billions of cubic feet). The Late Cretaceous Mancos B Formation of Kellogg (1977) yielded about 88 percent of this amount. The Dakota Sandstone of Early Cretaceous age yielded about 8 percent; small amounts have been produced from other stratigraphic units. The Mancos B Formation (Kellogg, 1977, p.167) consists of interbedded marine claystone, siltstone, and fine-grained sandstone of low porosity and permeability. The unit is about 500 ft thick.

Oil production in the fields named above has been relatively small. Total cumulative oil production through 1990 (Colorado Oil and Gas Commission, 1991) was about 89,000 barrels, almost all of which was produced from fractured or sandy reservoirs of the Mancos Shale.

Although coal is present, mainly in the coal unit of the Mesaverde Group, apparently no commercial mining has taken place in the Texas Mountain quadrangle. Two samples collected from a coal bed in Big Bull Draw, SW1/4 sec. 14, T. 2 S., R. 102 W., were analyzed and determined to be subbituminous C rank, similar to other Cretaceous coals in the Douglas Creek area, as determined on the basis of vitrinite reflectance values (V.F. Nuccio, oral commun., 1987).

## REFERENCES CITED

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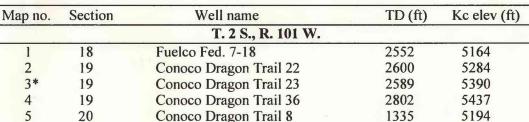


 Table 1. Drill holes in the Texas Mountain quadrangle

[Holes that may have been drilled subsequent to the completion of field work in 1986 are not shown; ----, data not available or unreliable; \*, drill hole interpreted to intersect fault plane (because of normal-fault geometry, elevation of top of Castlegate Sandstone (Kc elev) fits

2	19	Conoco Dragon Trail 22	2600	5284		
3*	19	Conoco Dragon Trail 23	2589	5390		
4	19	Conoco Dragon Trail 36	2802	5437		
5	20	Conoco Dragon Trail 8	1335	5194		
6	20	Fuelco Chancellor-Fed. 20-3	2737	5346		
7*	20	Fuelco Chancellor-Fed. 20-1	2479	5354		
8*	20	Conoco E. Dragon Trail 2		5354		
9	29	Wexpro Fed. 29-2	2380	5417		
10	29	Wexpro Fed. 29-1	2494	5533		
11	29	Cities Service Govt. B-1	2300	5457		
12	29	Fuelco Chancellor-Fed. 29-1	2610	5583		
13	30	Conoco Dragon Trail 24	2700	5371		
14*	30	Conoco Dragon Trail 25	2350	5597		
15	30	Conoco Dragon Trail 37	2450	5633		
16	31	Conoco Dragon Trail 28	2400	5711		
17	31	Conoco Douglas Creek 15	2115	5728		
18	31	Conoco Douglas Creek 5	4566	5685		
19	32	Conoco E. Dragon Trail 1	2092	5642		
20	32			an and 400 and		
21	32	Fuelco Horse Draw 1	1962	5671		
22	32	Chancellor-Ridgeway Fed. 32-1	2100	5616		
23	32	Conoco Douglas Creek 32-14	2220	5731		
T. 2 S., R. 102 W.						
24	13	J.H.Page Fed. 13-1		5197		
25	13	Fuelco Fed. 13-4		5217		
26	13	Fuelco Fed. 13-2		5262		
27	14	Chandler-Simpson Govt. 1		5204		
28	14	Chandler & Assoc. Fed. 9-14		5250		
29	15	Fuelco Fed. 15-2		5216		
30	16	Gulf Oil Dragon Trail 1	2925	5337		

22	32	Chancellor-Ridgeway Fed. 32-1	2100	5616
23	32	Conoco Douglas Creek 32-14  T. 2 S., R. 102 W.	2220	5731
24	13	J.H.Page Fed. 13-1		5197
25	13	Fuelco Fed. 13-4		5217
26 27	13	Fuelco Fed. 13-2		5262
28	14 14	Chandler-Simpson Govt. 1 Chandler & Assoc. Fed. 9-14		5204 5250
29	15	Fuelco Fed. 15-2		5216
30	16	Gulf Oil Dragon Trail 1	2925	5337
31	16		un may see to-	
32	17	Phillips Govt. 17-2		
33	20	Conoco Dragon Trail 26		5410
34 35	20 20			
33	20			
36	20	Conoco Dragon Trail 47	3099	5441
37	20	Conoco Dragon Trail 43	3200	5498
38	21	Conoco Dragon Trail 21-5	2809	5447
39 40	21 21	Conoco Dragon Trail 50 Conoco Dragon Trail 49	2870 2860	5317 5216
		Total Language Language	2000	3210
41	21	Conoco Dragon Trail 46	3084	5475
42 43	22 22	Conoco Dragon Trail 22-4 Conoco Dragon Trail 54	1936 3030	5237 5344
44	22	Conoco Dragon Trail 53	3286	5315
45	23	Conoco Dragon Trail 18	2900	5433
16	22	C	2000	***
46 47	23 23	Conoco Dragon Trail 33 Conoco Dragon Trail 19	2880 2900	5305
48	23	Conoco Dragon Trail 38	2950	5453
49	24	Conoco Dragon Trail 20	2650	5356
50	24	Conoco Dragon Trail 34	2650	5296
51	24	Conoco Dragon Trail 21		
52	24	Conoco Dragon Trail 39	2657	5432
53	25	Conoco Dragon Trail 26	3000	5534
54 55	25 25	Conoco Dragon Trail 40	2700	5498
33	23	Conoco Dragon Trail 35	2800	5439
56	25	Conoco Dragon Trail 11		5651
57	26	Conoco Dragon Trail 57	3055	5545
58 59	26 27	Conoco Dragon Trail 26-1 Conoco Dragon Trail 27-3	7370 3223	5693
60	27	Conoco Dragon Trail 55	3082	5485
61 62	28 28	Conoco Dragon Trail 12 Conoco Govt. 28-2	2861	5579
63	28	Conoco Dragon Trail 29	3503 3403	5350
64	28	Conoco Dragon Trail 14	3114	5483
65	28	Conoco Dragon Trail 41	35 <b>4</b> 5	5359
66	29	Conoco Dragon Trail 51	2901	5573
67	29	Pure Oil Govt. 2	2901	
68	29	Conoco Dragon Trail 29-7	3210	5571
69 70	29 29	Conoco Dragon Trail 48	3418	5109
70	49	Conoco Dragon Trail 58	3885	5197
71*	29	Conoco Dragon Trail 52	3292	5650
72 73	32	Beardmore Govt. 32-5	3107	5257
74	32 33	Conoco Dragon Trail 45 Conoco Dragon Trail 16	3607 3476	5340 5365
75	33	Conoco Dragon Trail 42	3077	5414
76	22	C	0.550	
76 77	33 33	Conoco Dragon Trail 17 Conoco Dragon Trail 30	3550 3984	5156 5002
78*	34	Conoco Dragon Trail 34-15	3110	5664
79*	34	Conoco Dragon Trail 32	2445	5801
80	34	Conoco Dragon Trail 13	2506	5531
81 82	34 35	Conoco Dragon Trail 31 Conoco Dragon Trail 35-9	2900 2430	5380 5472
83	35	Burr and Cooley Fed. 1	5952	3472
84	35	Conoco Douglas Creek 17	2293	5680
85	36.	Conoco Douglas Creek 36-8	250 <mark>0</mark>	5706
86	36	Conoco Douglas Creek 36-9	2050	5706
00	50	T.3 S., R. 101 W.	2030	3700
87	5	Conoco Douglas Creek 5-7	4437	5708
88	5	Conoco Douglas Creek Govt. 1		
89 90	6	Conoco Douglas Creek 16 Superior Douglas Creek 4	2290 4541	5765
,,		Superior Boughts Creek 1	13 11	
91	6	Conoco Douglas Creek 6-6	1873	5815
92*	6	Conoco Douglas Creek 18	2020	5867
93 94	7 7	Conoco Douglas Creek 7-13 Hegwer Fed. 1	3020 1400	4988 4962
95	7	Fuelco Fed. 7-1	2983	4816
0.4	1.7	F-1- F- 17 1		6060
96* 97	17 18	Fuelco Fe. 17-1 Conoco S. Douglas Creek 3	5761 3730	5088
98	18	Fuelco Fed. 18-1	3020	4846
99	19	Ponka Govt. 1	5227	5198
100	20	Fuelco Fed. 20-1		5160
101	20	Fuelco K-20	3448	5076
102	29	Fuelco J-29	3387	5297
103	29	Cities Service S. Douglas		
104	30	Creek 8 Fuelco Fed.A-30	3298	5120
104	50	Tucico Feu.A-30	3470	5138

#### 108\* 109 110 111 112 113 Fuelco Fed. 3-3 114 115

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Conoco Douglas Creek 1-8 2250 Conoco Douglas Creek 12 2600 Conoco Dragon Trail 27 2900 Conoco Douglas Creek 2-10 2480 Conoco Douglas Creek 2-11 3255 Conoco Dragon Trail 3-10 3030 3050 Conoco Texas Mountain 6 2950 Chandler-Morrison Govt. 1 3330 Chandler & Assoc. Govt. 7 3200 3100 Conoco Texas Mountain 7 3626 Conoco Texas Mountain 8 4285 Chandler-Simpson Govt. 1 Fuelco Fed. 5-1 4180 Fuelco Fed. 8-1 4160 Fuelco Fed. 8-2 4214 3757

T. 3 S., R. 102 W.

5762

5029

5583

5633

4685

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5093

4733

4543

4709

4613

4833

5065

5006

4908

4906

5111

4932

4955

4895

4843

5148

4913

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5005

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5181

5080

5000

4679

4476

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2658

6660

3401

3222

3770

1401

2800

3812

2669

3293

119 120 121 122 123 Fuelco Fed.9-1 Conoco Texas Mountain 9-2 124 6149 125 Fuelco Fed. 10-1 3459 126 Fuelco Fed. 11-1 3208 127 2795 128 Conoco Texas Mountain 1-14 5840 129 National Petroleum Govt. 1 Austral Oil Fed. 16-1 130 3486 131 3218 Fuelco Texas Mountain 16-2 132 2822

Krey Texas Mountain 17-1 Fuelco Texas Mountain 17-2 Austral Oil Fed. 20-1 20 Austral Oil Fed. 20-2 Fuelco Texas Mountain 21-2 TXO Texas Mountain Fed. 3 Fuelco Fed. 21-1 Fuelco E-21

136 137 138 139 140 141 142 Fuelco Fed. 24-1 24 143 Premium Oil Govt 1 144 24 Stelbar Oil Govt. 24-21 145 Fuelco Fed. 24-2 146

7350 3545 6931 TXO Texas Mountain Fed. 6 5522 2154 Fuelco Fed. J-25 5255 27 Fuelco S. Douglas Creek 1 28 28

Conoco Texas Mountain Govt.

Conoco Missouri Creek 5

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## GEOLOGIC MAP OF THE TEXAS MOUNTAIN QUADRANGLE, RIO BLANCO COUNTY, COLORADO

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e e e e e e

VERTICAL DASHED LINES INDICATE DRILL HOLE DATA PROJECTED INTO LINE OF SECTION

NUMBERS REFER TO LIST OF DRILL HOLES

CONTOUR INTERVAL 40 FEET DATUM IS MEAN SEA LEVEL

Bruce E. Barnum, Richard W. Scott, Jr., and Michael P. Pantea

7000 -

6000 -

5000 -

4000 -

10,000-foot grid based on Colorado coordinate system, north zone.

UTM GRID AND 1964 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

Kmvl

Km

123 124

1,000-meter Universal Transverse Mercator grid ticks, zone 12.

QUATERNARY DEPOSITS ARE OMITTED