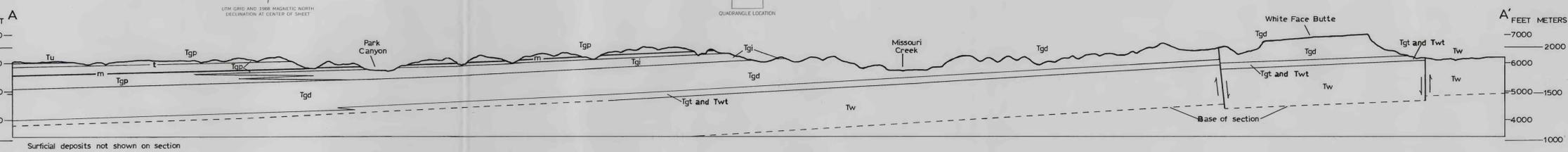




Base from U.S. Geological Survey, 1968

SCALE 1:24 000

Geology mapped in 1982-1983



Surficial deposits not shown on section

PRELIMINARY GEOLOGIC MAP OF THE DRAGON QUADRANGLE, UTAH COUNTY, UTAH, AND RIO BLANCO COUNTY, COLORADO

By  
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1985

**CORRELATION OF MAP UNITS**

Qal	Qls	Holocene	QUATERNARY
		Pleistocene	
Tu			TERTIARY
Tgp			
Tgp			
Tgt			
Tgd			
Twt			
Tw			

**DESCRIPTION OF MAP UNITS**

Qal ALLUVIUM AND COLLUVIUM (HOLOCENE AND PLEISTOCENE)—Includes unconsolidated clay, silt, sand, and gravel in sloopwash, fan, alluvial, and colluvial deposits

Qls LANDSLIDE DEPOSIT (HOLOCENE AND PLEISTOCENE)

Tu UTAH FORMATION (PART) (EOCENE)—Reddish-brown fine to very fine grained sandstones and siltstones that contain abundant gray marlstone. Sandstone units commonly channel form which thicken and thin along outcrop. Contorted bedding common. Equivalent to lower part of Uinta A of Osborn (1929). Contact with underlying Green River Formation gradational. Only lower part of Uinta Formation exposed in Dragon quadrangle

Tgp GREEN RIVER FORMATION (EOCENE) Parachute Creek Member—Consists of dark-brown to black oil shale, gray to yellowish-brown marlstones and siltstones, and buff to light-brown altered tuff beds. Oil-shale units commonly form resistant ledges and weather light gray to dark brown. Marlstone and siltstone units usually weather to light-brown to light-gray slopes and benches. Member contains richest oil-shale deposits in Green River Formation within Mahogany zone. Parachute Creek Member approximately 500-600 ft (160-250 m) thick. Base of a contorted orange-yellow tuffaceous sequence intercalated with yellowish-brown marlstone as mapped by Cashion (1977). Tuff beds extensively altered and now consist primarily of analcime. Unit equivalent to m-h horizon as mapped by Keighin (1977a and 1977b). Unit ranges in thickness from 10 to 50 ft (3 to 15 m)

Tgt Base of Mahogany oil-shale bed—Weathers light bluish gray; prominent ledge former. Richest oil-shale bed in Parachute Creek Member; lies about 395 ft (120 m) below top of member and 30 ft (9 m) below top of Mahogany zone. Mahogany zone contains most of the rich, and generally commercial, oil-shale resources and is at least 70 ft (21 m) thick. Mahogany bed ranges from about 5 to 7 ft (1.5 to 2 m) thick in quadrangle

Tgd Intertonguing unit—Consists of distinctive reddish-brown, fine-grained sandstone, gray to yellowish-brown marlstone, and bluish-gray to dark-brown oil shale; forms steep slopes and benches. Composed of intertonguing open lacustrine and marginal lacustrine beds; in northeastern part of quadrangle, Tgd contains significant amount of marlstone and is included in Parachute Creek Member; in southeastern part of quadrangle, unit contains greater amount of sandstone and is mapped as part of Douglas Creek Member. Unit is approximately equivalent to upper half of Tongue A of Douglas Creek Member (Cashion, 1967) and upper part of Douglas Creek Member in Rainbow quadrangle (Keighin, 1977a). Ranges in thickness from 280 to 315 ft (85 to 95 m)

Tw Douglas Creek Member—Consists of gray shales, yellowish-brown sandstones and siltstones, buff to light-yellow oolitic and algal limestones, and many thin beds of light-gray to dark-brown oil shale. Weathers to slopes and ledges with some thicker sandstone beds forming cliffs, especially in lower part of unit. Top of unit is of Renegade Tongue of Wasatch Formation (Cashion, 1967) lies approximately 160 ft (48 m) below top of member. Lowermost 122 ft (40 m) equivalent to lower part of main body of Douglas Creek Member as mapped by Cashion (1977). Bottom contact of member is a 1.5-ft (0.5-m) oolitic limestone bed, which is probably laterally equivalent to Long Point bed as described in Piceance Creek basin by Johnson (1984). Thickness of member ranges from about 900 ft to about 1,100 ft (275 to 335 m)

**CONTACTS**

CONTACT—Dashed where approximately located

FAULT—Dashed where approximately located; dotted where concealed; queried where doubtful. Ball and bar on downthrown side

GILSONITE VEIN—Identified by name on map

STRUCTURE CONTOURS—Drawn on top of the Mahogany oil-shale bed. Dashed where Mahogany bed eroded and omitted where accuracy probably not within 100 ft (30.5 m). Contour interval 100 ft (30.5 m). Datum is mean sea level

1 CORE HOLE—Drilled to evaluate oil-shale beds. Map number keyed to list of drill holes

2 DRY HOLE—Map number keyed to list of drill holes

3 GAS WELL—Includes shut-in, producing, and abandoned wells at time of mapping (1982-83). Map number keyed to list of drill holes

**ECONOMIC GEOLOGY**

Gilsonite, natural gas, bituminous sandstones, and oil shale all occur within the Dragon quadrangle. At the time mapping was done (1982-1983), natural gas was the only commodity being commercially exploited. The gas production within the quadrangle is from the Dakota Sandstone, the Cedar Mountain, Wasatch, and Green River Formations, and from the Mesaverde Group. Bituminous sandstones occur along the extreme western edge of the quadrangle in Threemile Canyon in the upper part of the unit mapped here as an intertonguing unit (Tgt). Gilsonite occurs primarily as a filling of vertical fractures; characteristics of gilsonite veins are discussed by Cashion (1967, p. 30-36).

The richest and thickest oil-shale sequence, the Mahogany zone, lies within the Parachute Creek Member of the Green River Formation and is at least 70 ft (21.3 m) thick where it occurs in the northern half of the quadrangle. The Mahogany zone contains a sequence 57 ft (17.4 m) thick that averages greater than 25 gallons of oil per ton (104 liters per tonne) in drill hole no. 1. An oil yield bar graph for drill hole no. 1 (USGS no. U-34) is shown in Stanfield and others (1964, p. 212).

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**LIST OF DRILL HOLES IN THE DRAGON QUADRANGLE, UTAH COUNTY, UTAH, AND RIO BLANCO COUNTY, COLORADO**

Map number	Drilling company	Hole name and number	Total depth Feet	(Meters)
1.....	Skyline Oil Co.....	Watson #1 (USGS # U-34)...	425.8	(129.8)
2.....	Continental-Humble.....	Skyline-Watson #1-22.....	5,107	(1,557)
3.....	Pacific Natural Gas.....	Evacuation Ck. #23-2-1.....	8,308	(2,530)
4.....	Coors Energy.....	USA #2-19.....	4,168	(1,252)
5.....	Coseka Resources.....	Federal #7-25-3-104.....	7,245	(2,208)
6.....	Coseka Resources.....	Taiga-Federal #12-25.....	7,071	(2,155)
7.....	Coseka Resources.....	Taiga-Federal #19-6-13.....	4,304	(1,312)
8.....	Coseka Resources.....	Federal #11-14-3-104.....	7,631	(2,326)
9.....	Coseka Resources.....	Federal #4-1-3-104.....	7,509	(2,289)
10.....	Coseka Resources.....	Federal #1-23-3-104.....	7,248	(2,209)
11.....	TXO Production Corp.....	Evacuation Ck. State #1.....	8,494	(2,590)