MISCELLANEOUS FIELD STUDIES MAP MF-893 RAINBOW QUAD., UTAH

ECONOMIC GEOLOGY

Gilsonite, natural gas, bituminous sandsone and limestone, and oil shale occur in the Rainbow quadrangle; at the time of mapping only gilsonite and gas were being produced. Gilsonite, a dark-brown, shiny asphaltite, was being mined from the Rainbow vein at the site of Rainbow. The characteristics of the gilsonite veins are discussed by Cashion (1967, p. 30-36). Gas was being produced from the Wasatch Formation in the Oil Springs field. Porous oil-impregnated sandstones and oolitic limestones occur in the Douglas Creek Member of the Green River Formation (Peterson, 1975) but these have not been exploited. The oil-shale unit with the greatest economic potential is the Mahogany zone, which occurs in the Parachute Creek Member of the Green River Formation. In the northeastern part of the quadrangle (core hole no. 1), there is a sequence of 54.9 feet (16.7 m) which has an average yield of 29.1 gallons per ton (121.4 L/tonne). The sequence is slightly thinner in the west-central portion of the quadrangle (core hole no. 6), where a sequence of 42.4 feet (12.9 m) has an average yield of 25.06 gallons per ton (104.6 L/tonne). There has been no indication of economic quantities of either saline or zeolite minerals.

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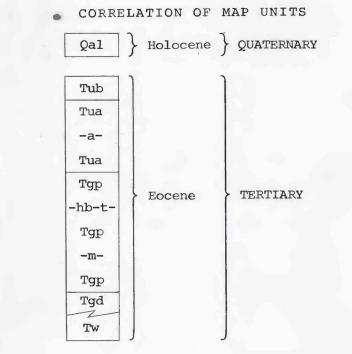
Research Center, Laramie, Wyo., Illustration No. SBR-4799 P, 15 p.

List of core holes and exploratory wells drilled in Rainbow quadrangle,

Uintah County, Utah

[Queried where unknown]

Number	Drilling Company or Agency	Hole name and number	Total depth	
			feet	meters
1	Skyline Oil Co	Watson 2	456	139
2	General Petroleum Corp	18-29	361	110
3	D. J. Stone	Oil Springs 6	3,378	1,029.6
4	National Farmers Union	Corehole 5	270	82.3
5	D. J. Stone	Oil Springs 4	3,322	1,012.6
6	U.S. Geol. Survey	Corehole CRU-1	498	151.8
7	Alamo Corp	Oil Springs 2	5,734	1,747.7
8	Do	Oil Springs 3	3,228	983.9
9	Utah Geol. and Mineralog. Survey/U.S. Bur. Mines.	PR-3D	416	126.8
10	Do	PR-3C	317	96.6
11	Do	PR-3B	158	48.2
12	Do	PR-3A	95	29
13	Continental Oil Co	Oil Springs 4	3,498	1,066.2
14	Alamo Corp	Oil Springs 5	4,869	1,484.1
15	Continental Oil Co	Oil Springs 2A	4,170	1,271
16	Ski Hi Oil Co	Oil Springs 1	5,270	1,606.3
17	Continental Oil Co	do	4,350	1,325.9
18	Skyline Oil Co	Government 2	?	3
19	D. J. Stone	State 1	3,303	1,006.8
20	General Petroleum Corp	42-29	62	18.9



DESCRIPTION OF MAP UNITS

Qal ALLUVIUM (HOLOCENE) -- Unconsolidated silt, sand, and gravel UINTA FORMATION (EOCENE)

Unit B--Yellowish-gray massive very fine grained to medium-grained sandstone, and greenish-gray siltstone (Cashion, 1974). Upon weathering, the unit forms yellowish-brown cliffs and ledges and greenish-gray slopes. The base of the unit is placed at the base of a yellowish-orange weathering bench-forming tuffaceous bed 2-6 feet (0.6-1.8 m) thick. Lower 150 feet (45.7 m) is exposed in the north-west-central part of the quadrangle

Unit A--Gray to yellowish-gray very fine grained to finegrained sandstone, yellowish-gray siltstone, and gray marlstone. Sandstone is medium to massively bedded. The unit weathers to brown to yellowish-brown and orange cliffs and ledges and gray slopes. The contact with the underlying Green River Formation is conformable although it is commonly grossly undulatory. The undulatory contact is due to foundering of the basal tuffaceous sand into the underlying finegrained sediments. Unit A is approximately 630 feet (192 m)

Tuffaceous bed--Massive, weathers to yellow-brown platy fragments; about 5 feet (1.5 m) thick; occurs about 180 feet (54.9 m) below top of unit A; tends to form benches and resistant caps. Upper contact is shown on map but not on cross section

GREEN RIVER FORMATION (EOCENE) Parachute Creek Member--Light-gray to yellowish-brown weathering marlstone of variable resistance; dark-gray to bluishgray and dark-brown oil shale; some oil shale forms resistant ledges; some yellowish-brown weathering, slope-forming siltstone; numerous thin beds of yellowish-brown weathering tuff. Most strata are thin bedded to laminar; oil shales are generally varved. A sequence of rich oil shale, the Mahogany zone (Mahogany ledge on outcrop), about 75 feet (22.9 m) thick occurs approximately 470 feet (143.3 m) below the top of the unit. The upper part of the unit includes all the strata formerly assigned to the Evacuation Creek Member of the Green River Formation (Cashion and Donnell, 1974). The unit is about 480-580 feet (146.3-176.8 m) thick; much of the variation is due to the undulatory contact with the overlying Uinta Formation

Yellowish-brown weathering tuffaceous unit--Interbedded marlstone and thin tuffaceous beds; much marlstone contains variable amounts of carbonate which has replaced saline minerals. Unit is as much as 50 feet (15.2 m) thick; the top ranges from 350 feet (106.7 m) in the northeastern portion of the quadrangle to 270 feet (82.3 m) in the central and western portion of the quadrangle above the Mahogany oil-shale bed. The "t" sequence (Cashion, 1974) seems stratigraphically equivalent to the Horse Bench Sandstone Bed of the Green River Formation (Cashion, 1967, p. 17). Base is shown on

map and section
Mahogany oil-shale bed--The richest unit in the Mahogany
zone; approximately 10 feet (3 m) thick; lies about 28 feet
(8.5 m) below the top of the Mahogany zone; commonly forms
a prominent ledge; commonly weathers blue gray

Douglas Creek Member--Gray and brown fine-grained sandstone and siltstone; yellowish-brown and gray algal and oolitic limestone; sandstone and limestone in upper part are commonly bituminous; a few thin beds of oil shale
WASATCH FORMATION (EOCENE)--Variegated gray and red claystone and siltstone, and gray sandstone (Cashion, 1967, p. 5-6). Inter-

tongues with the Green River Formation. Shown on cross section only
CONTACT--Boundaries of Quaternary alluvium (Qal) approximately located

CORE HOLE--Drilled to evaluate oil-shale beds or bituminous sandstone. Oil-shale assay results reported by Stanfield and others (1964) and U.S. ERDA/LERC (1976); bituminous sandstones described by Peterson (1975). Number keyed to list of

core holes and exploratory wells

DRY HOLE--Oil and gas test. Number keyed to list of core holes and exploratory wells

tory wells

SHUT-IN GAS WELL--Number keyed to list of core holes and exploratory wells
PRODUCING GAS WELL--Number keyed to list of core holes and explora-

NOTE: Quaternary deposits not shown on cross section

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1977