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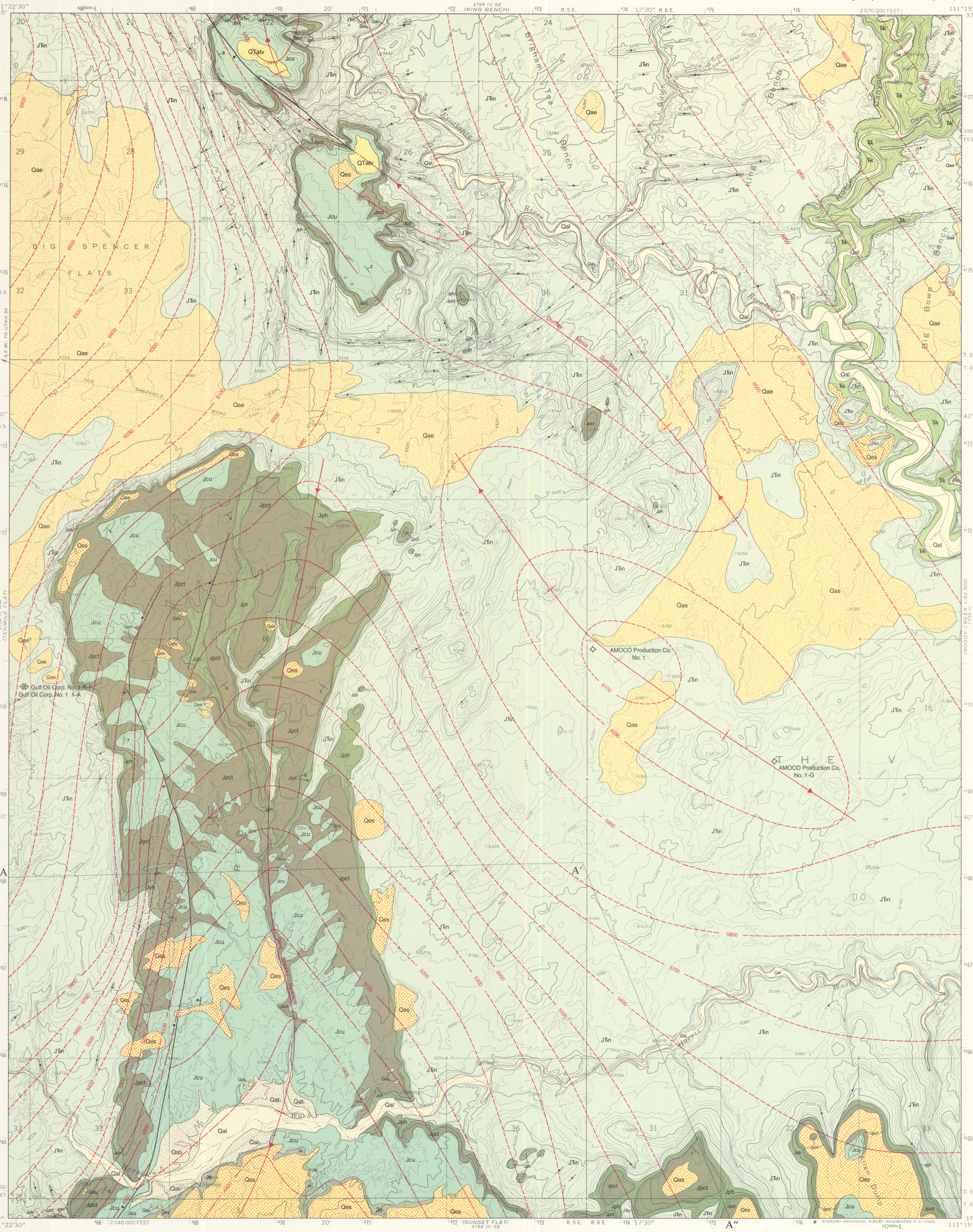


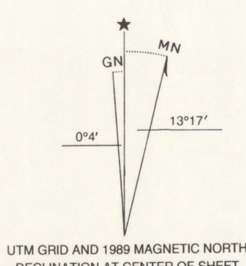
Base map from U.S. Geological Survey, Red Breaks Quadrangle 1964

Field mapping by authors in 1979-80 and 1986
Kent D. Brown, Patricia H. Speranza, Cartographers

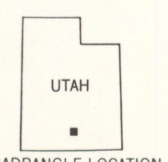
SCALE 1:24 000

1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 KILOMETER

CONTOUR INTERVAL 40 FEET
DOTTED LINES REPRESENT 20-FOOT CONTOURS
DATUM IS MEAN SEA LEVEL



UTM GRID AND 1989 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET



QUADRANGLE LOCATION

GEOLOGIC MAP OF THE RED BREAKS QUADRANGLE, GARFIELD COUNTY, UTAH

by
Gordon W. Weir and L. Sue Beard
U.S. Geological Survey

1990

UTAH GEOLOGICAL AND MINERAL SURVEY
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MAP SYMBOLS

CONTACT — Boundaries of surficial deposits approximately located.

FAULT — Dashed where inferred; dotted where concealed; bar and ball on downthrown side. Arrows on cross section indicate direction of relative movement.

ANTICLINE — Showing trace of axial plane and plunge of axis; dashed where approximately located.

SYNCLINE — Showing trace of axial plane and plunge of axis; dashed where approximately located.

STRIKE AND DIP OF BEDS

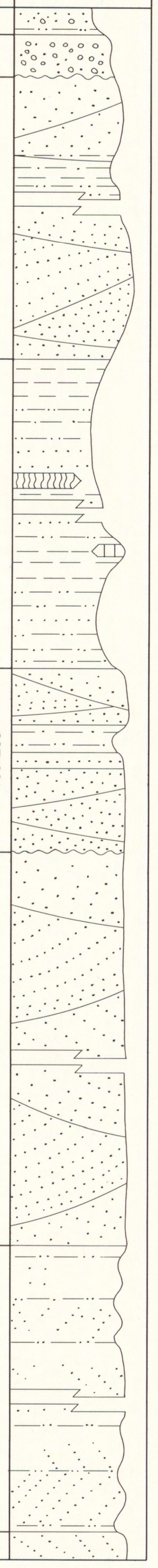
18 Inclined

STRIKE OF VERTICAL AND NEAR-VERTICAL JOINTS

OIL WELL — Dry hole, showing name of well.

STRUCTURE CONTOURS — Drawn on top of Navajo Sandstone. Long dashed where control less accurate. Short dashed where datum above land surface. Contour interval 100 ft.

FORMATION		SYMBOL		THICKNESS (Feet)			LITHOLOGY
Alluvium and eolium		Q		0-20			
High-gravel terrace alluvium		QTatv		0-30			
Entrada Sandstone		Je		200+			
Carmel Formation	Upper member	Jcu		220-250			
Page Sandstone	Thousand Pockets Tongue	Jpct	Jpcth (cross section only)	30-80	40-90	100-200	
Carmel Fm	Judd Hollow Tongue			6-30			
Page Sandstone	Harris Wash Tongue	Jph		50-120			
Navajo Sandstone		JTrn		1300-1500			
Kayenta Formation		Trk		350+			
Wingate Sandstone		Trw		20+			



DESCRIPTION OF MAP UNITS

Qal Floodplain alluvium — *Fine sand and silt with local admixtures of gravel on floodplains and in channels.*

Qae Sheetwash alluvium and eolium — *Silt, sand and small pebbles and rock fragments in broad, thin sheets masking bedrock.*

Qes Wind-blown sand — *Fine grains of quartz and minor silt in thin sheets and small dunes masking bedrock.*

Qat₁ Fine-grained terrace alluvium — *Silt, fine sand and sparse pebbles on benches 5-15 feet above stream level.*

Qat₂ Low gravel terrace alluvium — *Gravel, consisting of pebbles to cobbles of quartzite, fine-grained metamorphic rocks, and lesser amounts of basaltic andesite, resting on benches 30-80 feet above stream level.*

Qat₃ Intermediate gravel terrace alluvium — *Gravel consisting of pebbles to cobbles of quartzite, fine-grained metamorphic rocks, and lesser amounts of basaltic andesite, resting on a bench about 200 feet above stream level.*

QTatv High gravel terrace alluvium — *Gravel, consisting of pebbles to boulders of quartzite, fine-grained metamorphic rocks, and lesser amounts of basaltic andesite, weakly cemented by caliche, on benches about 850 feet above the Escalante River.*

UNCONFORMITY

Je Entrada Sandstone — *Reddish-brown, fine-grained silty sandstone, and minor siltstone and mudstone, in part crossbedded.*

Jcu Upper member of the Carmel Formation — *Reddish-brown shale, yellowish-brown fine-grained sandstone, micrograined limestone, and gypsum.*

Jpct Thousand Pockets Tongue of the Page Sandstone and Judd Hollow Tongue of the Carmel Formation — *Gray, fine- to medium-grained sandstone above, and reddish-brown siltstone below, commonly contorted.*

Jpcth (cross section only)

Jph Harris Wash Tongue of the Page Sandstone — *Light-grayish-orange, crossbedded, fine-grained sandstone; chert granules and small pebbles of chert at base. Shown by line where too thin to show thickness.*

UNCONFORMITY

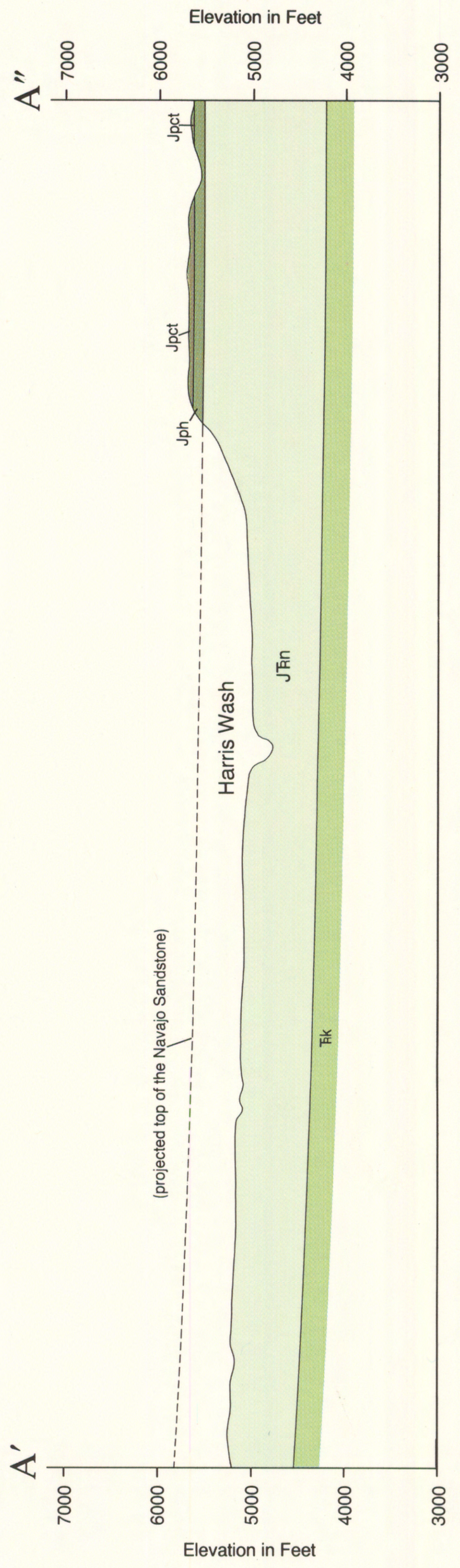
JTrn Navajo Sandstone — *Light grayish-orange, crossbedded, fine-grained sandstone.*

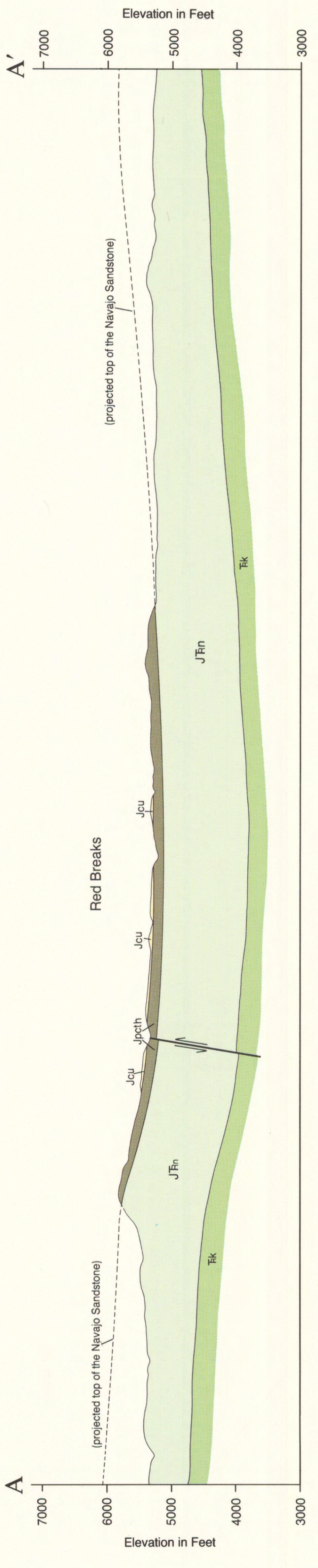
Trk Kayenta Formation — *Grayish-red to dusky-red, crossbedded, fine-grained sandstone interstratified with tabular bedded siltstone.*

Trw Wingate Sandstone — *Grayish-red to grayish-orange, crossbedded, fine-grained sandstone*

CORRELATION OF MAP UNITS

Qal, Qae, Qes, Qat₁, Qat₂	Holocene	QUATERNARY
Qat₃	Pleistocene	QUATERNARY
QTatv	Pleistocene and Pliocene (?)	QUATERNARY AND TERTIARY (?)
UNCONFORMITY		
Je, Jcu, Jpct, Jph	Middle Jurassic	JURASSIC
UNCONFORMITY		
JTrn	Lower Jurassic and Upper Triassic (?)	JURASSIC AND TRIASSIC (?)
Trk	Upper Triassic (?)	TRIASSIC (?)
Trw	Upper Triassic	TRIASSIC





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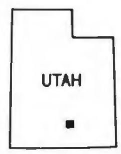

UTAH GEOLOGICAL AND MINERAL SURVEY

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GEOLOGIC MAP OF THE RED BREAKS QUADRANGLE, GARFIELD COUNTY, UTAH

By

Gordon W. Weir[1] *and L. Sue Beard*[1]

INTRODUCTION

The Red Breaks quadrangle, south-central Garfield County, lies in the Circle Cliffs-Teasdale section of the Colorado Plateau physiographic province (Stokes, 1977). A chief feature of the quadrangle is a large dissected mesa, Red Breaks, in the southwestern part of the quadrangle. Most of the area is an irregular, knob-studded tableland that near the Escalante River is intricately cut into small canyons and mesas. Total relief in the quadrangle is more than 1100 feet (335 m), but local relief is commonly only a few hundred feet.

The quadrangle is visited occasionally by cattlemen and tourists but has no permanent dwellings. Escalante (1980 population, 652) the nearest town, lies about 15 miles (24 km) west of the northwest corner of the quadrangle. Access to the northwestern part of the Red Breaks area is by the paved Escalante-Boulder highway and the Old Sheffield Road, an unimproved dirt road that dwindles to a sandy jeep trail in this quadrangle. The most-used approach is by way of dirt roads that branch off the road from Escalante to Hole-in-the-Rock and lead to a spring and Harris Wash in the southwestern part of the quadrangle. An unmapped dirt road, now in poor condition, connects the Harris Wash road with the sites of oil wells in The V. Most of the quadrangle is inaccessible by car and much is difficult to traverse on foot.

Mesa tops are commonly covered by a sparse juniper, sagebrush, and cactus desert vegetation, but the rock tableland is mostly bare except for hardy grasses on stable patches of sand. The principal streams in the area, the Escalante River and Harris Wash, have large ranges in seasonal and annual flow. The major periods of flow are in early spring in response to melting of highland snow, and in midsummer as a result of sporadic torrential downpours.

The area was included in smaller scale geologic maps by Hackman and Wyant (1973), Doelling (1974), Sargent and Hansen (1982), and Williams (1985). Hackman (1955) compiled a photogeologic map of the quadrangle at the 1:24,000 scale. The present geologic map is based in part on field work in 1979-80 assessing the mineral resources of the Escalante Canyon wilderness area (Weir and Beard, 1981).

STRATIGRAPHY

Bedrock formations exposed in the Red Breaks quadrangle range in age from Triassic to Middle Jurassic and total about 2300 feet (700 m) in thickness. Thin Quaternary surficial deposits cover much of the area.

TRIASSIC SYSTEM

Upper Triassic Series

Wingate Sandstone (Ꞧw) — The Wingate is grayish-red to grayish-orange sandstone composed of well-sorted, very fine to fine, subrounded grains of quartz that are well cemented by iron oxide and calcite. The sandstone is in large planar and trough sets of crossbeds separated by thin sets of tabular beds. The formation crops out only in Death Hollow near the northeast corner of the quadrangle; exposure is about 20 feet (6 m). The Wingate ranges in thickness from about 230 to 250 feet (70-76 m) in adjacent areas to the east (Davidson, 1967, p. 35; Weir and Beard, 1981).

[1]*Geologist, U.S. Geological Survey, Flagstaff, Arizona*

Upper Triassic(?) Series

Kayenta Formation (TRk) — The Kayenta consists of sandstone and minor siltstone. The grayish-red to dusky-red sandstone is composed chiefly of fine grains of quartz, feldspar, and mica cemented by calcite. It is mostly in small to medium-scale sets of horizontal beds and planar and trough sets of crossbeds. Dusky-red siltstone is in thin sets of tabular beds irregularly interstratified with sandstone. The Kayenta forms steep, ledgy slopes and irregular benches along Horse Canyon and the Escalante River in the northeastern part of the quadrangle. Upper and lower contacts are commonly obscure and locally arbitrary in a zone 10 to 50 feet (3-15 m) thick of transitional lithology characterized by alternating units of crossbedded sandstone and planar beds of siltstone and sandstone. The formation is about 350 feet (107 m) thick where fully exposed near Death Hollow.

TRIASSIC(?) AND JURASSIC SYSTEMS

Upper Triassic(?) and Lower Jurassic Series

Navajo Sandstone (JTRn) — The formation is composed almost wholly of well-sorted, subrounded, frosted, very fine to medium grains of clear quartz and very small amounts of white chert and feldspar. The sandstone is mostly very light grayish orange, but locally reddish-gray to yellowish-orange rock is conspicuous. Reddish-orange to black iron staining occurs sporadically. The rock is poorly to well cemented by calcite and weathers to yield loose sand. The sandstone is characterized by large-scale trough sets, commonly 6 to 18 feet (1.8-5.4 m) thick, of high-angle crossbeds. Contorted beds are locally common; tabular beds are rare. Grayish-red siltstone is irregularly interstratified in sparse thin lenses. In the northeastern part of the quadrangle, the Navajo contains abundant spheroidal limonitic concretions, mostly less than an inch in diameter. The formation erodes to form towering cliffs, fin-like ridges, irregularly rounded knobs, and hummocky mesa tops which are commonly mantled with a thin layer of locally derived sand. The total thickness of Navajo is about 1300 to 1500 feet (400-460 m) as indicated by logs of exploratory wells in the area (Heylmun and others, 1965, p. 68-71, and unpublished records in the files of the U.S. Bureau of Land Management).

JURASSIC SYSTEM

Middle Jurassic Series

Harris Wash Tongue of the Page Sandstone (Jph) — The lower tongue is light- to moderate-grayish-orange, fine-grained quartz sandstone in large-scale trough sets, commonly 3 to 18 feet (1-5.4 m) thick. The Harris Wash is lithologically similar to the underlying Navajo Sandstone and was included in the Navajo by most previous workers. It is separated from that formation by an obscure unconformity marked by sparse granules and very small pebbles of chert (Peterson and Pipiringos, 1979, p. 20-29). It is separated from the Thousand Pockets Tongue of the Page Sandstone by the Judd Hollow Tongue of the Carmel Formation. The Harris Wash forms a ledge that caps cliffs and mesas carved in the Navajo Sandstone. The tongue ranges in thickness from about 50 to 120 feet (15-36 m).

Thousand Pockets Tongue of the Page Sandstone (Jpct) — The upper tongue is mostly yellowish-gray to very light gray, fine- to medium-grained quartz sandstone. A conspicuous layer, as much as 10 feet (3 m) thick, of reddish-brown calcitic siltstone lies near the middle of the tongue. Trough and planar sets of crossbeds are dominant in the sandstone, but tabular beds occur. Much of the bedding is wavy and locally the whole unit is contorted. The tongue forms a ledge that caps the rims of Allen Dump, Red Breaks, and mesas in the northeastern part of the quadrangle. The Thousand Pockets ranges irregularly in thickness from about 30 to 80 feet (9-24 m). It is combined with the underlying thin Judd Hollow Tongue of the Carmel Formation as map unit Jpct.

Judd Hollow Tongue of the Carmel Formation (Jpct) - This tongue, interstratified between tongues of the Page Sandstone, consists of thin beds of moderate-reddish-brown siltstone, light-gray to reddish-brown fine-grained sandstone, and yellowish-gray to pale-orange very fine-grained limestone. The base of this tongue is commonly a thin set, several inches to a few feet thick, of iron-stained tabular beds of sandstone. All but the basal beds are commonly wavy and in places markedly contorted along with beds in the overlying Thousand PocketsTongue of the Page Sandstone. The Judd Hollow is a poorly exposed, slope-forming unit of irregular thickness ranging from about 6 to 30 feet (2-9 m). The tongue is too thin to map separately; it forms the lower part of the unit labelled Jpct on the map.

Upper member of the Carmel Formation (Jcu) — This member constitutes the bulkof the formation and is composed of shale and sandstone interbedded with small amounts of limestone and gypsum. The silty to clayey shale is reddish brown, mottled with greenish gray and light grayish yellow. The sandstone is moderate reddish brown and yellowish gray, very fine to fine grained, commonly silty, and poorly to firmly cemented by calcite and locally by gypsum and iron oxides. The limestone is light gray and yellowish gray, micrograined, and in places silty and dolomitic. The limestone is in ledge-forming sets of laminae and thin beds, commonly crinkled, and weathers to yield abundant platy fragments. Marine shell fragments occur in a few beds. Gypsum is mostly light gray but locally is reddish brown and yellowish green. It commonly contains clay to fine sand. The gypsum occurs in lenses, as much as 10 feet (3 m) thick, composed of irregular thin beds which, along with the enclosing beds, are commonly contorted. The upper member is generally poorly exposed on an irregular slope interrupted by minor ledges. It is about 220 to 250 feet (67-76 m) thick in this quadrangle.

Entrada Sandstone (Je) — The Entrada exposed in this quadrangle is reddish-brown, very fine to fine-grained, in part silty, sandstone that contains sparse medium to coarse frosted grains of pink and gray quartz. It is in large-scale sets of high-angle crossbeds and in thin to medium sets of horizontal beds. Thin lenses of dusky-red mudstone are irregularly interstratified. The Entrada forms an irregular rounded ledge and moderate slopes. It crops out only near the southern edge of the quadrangle where much of it is covered by eolian sand (Qes). The part of the formation present is probably included in the Gunsight Butte Member of the Entrada of Thompson and Stokes (1970). The maximum thickness in the quadrangle is about 200 feet (60 m). The total thickness of the formation is about 1000 feet (300 m) in the adjoining Seep Flat quadrangle (Zeller and Stephens, 1973).

TERTIARY(?) AND QUATERNARY SYSTEMS

Pliocene(?) and Pleistocene Series

High gravel terrace alluvium (QTatv) — The high terrace alluvium is composed of well-rounded pebbles and boulders, as much as 15 inches (38 cm) across, of light-gray, reddish-gray, and brownish-gray quartzite and fine-grained metamorphic rock and lesser amounts of pebbles to boulders, as much as 3 feet (1 m) across, of dark-gray to dark-brownish gray basaltic andesite. The gravel is poorly to well cemented by abundant caliche. Caliche fragments are common on the surface, which is locally covered by a thin mantle of wind-blown sand. The deposits are about 30 feet (9 m) thick and rest on a pre-Escalante River canyon surface, about 850 feet (260 m) above the river, on two small mesas in the northwestern part of the quadrangle.

QUATERNARY SYSTEM

Pleistocene Series

Intermediate gravel terrace alluvium (Qat_3) — A small patch of loose gravel rests on a knoll on the south side of Harris Wash near the southwest corner of the quadrangle. It consists of brownish- and reddish-gray to black, well-rounded pebbles and cobbles of quartzite and fine-grained metamorphic rocks and lesser amounts of basaltic andesite. The deposit is about 10 feet (3 m) thick and lies about 200 feet (60 m) above stream level.

Holocene Series

Low gravel terrace alluvium (Qat_2) — The low gravel is lithologically similar to the intermediate gravel (Qat_3), and contains cobbles as much as 8 inches (20 cm) in diameter in a matrix of light-brown, fine to medium sand. The unconsolidated gravel is in small deposits on the north side of the Escalante River south and west of Brigham Tea Bench and along Harris Wash south of Red Breaks. The deposits are as much as 10 feet (3 m) thick, and their ill-defined bases rest on benches about 30 to 80 feet (9-24 m) above stream level.

Fine-grained terrace alluvium (Qat_1) — Low terrace deposits, 5 to 10 feet (1.5-3 m) above Harris Wash in the southwestern part of the quadrangle, consist of light-brown and grayish-brown sandy silt and sand containing sparse to common pebbles as much as 2 inches (5 cm) in diameter of quartz, quartzite, and chert. Beds are horizontal and in part graded. The deposits, as much as 20 feet (6 m) thick, are in part fan alluvium (Williams, 1985) shed from exposures of the Carmel Formation in the southwestern part of Red Breaks. A few similar deposits elsewhere along Harris Wash are too small to show at map scale.

Sheetwash alluvium and eolium (Qae) — These deposits, formed chiefly by water flowing in sheets and shallow channels and modified by wind, consist mainly of yellowish-brown to dark-reddish-brown and grayish-orange-pink silt, sand, and small pebbles and rock fragments. The deposits are relatively smooth-surfaced. Most rest on the Navajo Sandstone. Only relatively large areas are shown and their contacts are generalized. Much of the Navajo Sandstone is covered by irregular small patches of sheetwash alluvium and eolium; contacts are generalized. The deposits on Big Spencer Flats probably attain a thickness of about 20 feet (6 m).

Wind-blown sand (Qes) — The eolian deposits are composed of light-grayish-orange to pale-red fine sand and minor silt. They are derived mainly from the Navajo or Entrada Sandstones on which most of the deposits rest. Bedding is generally obscure, but in part the sand is in small-scale trough and planar sets of low-angle crossbeds. The sand forms broad thin sheets, ramps along cliffs, and small dunes that are elongated northeasterly. Some sand has been stabilized by desert grasses, but most of the sheets, ramps, and dunes are probably altered during windstorms. The mapped wind-blown sand commonly intergrades with dominantly water-laid deposits (Qae). Only relatively large areas are shown; contacts are generalized. The eolian deposits probably reach a maximum thickness of about 20 feet (6 m) on the east side of cliffs of eastern Red Breaks.

Floodplain alluvium (Qal) — Alluvium on modern floodplains and in channels in this quadrangle consist mostly of yellowish-gray to grayish-orange-pink fine sand and silt, with local admixtures of gravel made up of pebbles to cobbles of sandstone, quartzite, and basaltic andesite. Ripple laminations, trough crossbedding, graded bedding and imbricated gravels occur locally. The mapped alluvium includes small areas of fine-grained terrace alluvium (Qat_1). The floodplain alluvium probably attains a thickness of about 20 feet (6 m) along the Escalante River.

STRUCTURAL GEOLOGY

The dominant structures of this quadrangle are the south-plunging Red Breaks syncline in the southwestern part of the quadrangle and the north-plunging Durffey Mesa syncline, which continues northward beyond the quadrangle for at least 9 miles (14.5 km). Both synclines have been included in a major structure, called the Harris Wash syncline (Hackman and Wyant, 1973, sheet 2; Weir and Beard, 1981). The synclines are on the east side of the broad Collett anticline, whose south-plunging axis lies just west of the quadrangle. An ill-defined northwest- and southwest-plunging anticline occupies the east-central part of the quadrangle.

The principal fault in the quadrangle is a high-angle normal fault on the west side of Red Breaks. The fault is more than 4 miles (6.4 km) long but has a maximum displacement of only about 50 feet (15 m) down to the west.

The Navajo Sandstone, which crops out over a large part of the quadrangle, is cut by many vertical and near-vertical joints. The joints are for the most part closely spaced and, although locally obscure, are generally conspicuous because they control many small topographic forms. Not all joints are shown on the map; the symbols indicate representative well-defined sets of joints. The joint pattern is in places complex, but rectilinear northeasterly and north-northeasterly trends are dominant in the southern two-thirds of the map area and arcuate east-west trends are most common in the northern part.

ECONOMIC GEOLOGY

The Red Breaks quadrangle has no mines or mineral prospects. Geochemical reconnaissance, which included all but the southeastern part of the quadrangle, did not indicate the presence of mineral terranes (Weir and Lane, 1981).

Small, low-grade uranium-copper deposits are in Triassic formations in the Circle Cliffs about 15 miles (24 km) northeast of this quadrangle (Davidson, 1967, p. 65-91; Doelling, 1975, p. 107-109, 131-135). The same Triassic formations underlie the quadrangle at depths of many hundreds to several thousands of feet. They perhaps contain similar small, low-grade, deposits, but they are unlikely to warrant exploration.

The oil and gas potential of the Red Breaks quadrangle has been tested by three wells in the quadrangle and two wells a few hundred feet west of the quadrangle (table 1). All of the wells were dry. Three of the wells were drilled on the Collett anticline and two were drilled on an anticline in the east-central part of the quadrangle. Oil is produced in the Upper Valley field (Peterson, 1973; Sharp, 1976), abouty 20 miles (32 km) west of the quadrangle, from Triassic and Permian strata from the west flanks of a fold similar to the Collett anticline. Several wells, about 15 miles (24 km) northwest of the quadrangle, on the Escalante anticline had flows of CO_2 gas. Two wells were completed for possible production of carbon dioxide (Brandt, 1987). By analogy with these productive folds, anticlines in the Red Breaks quadrangle may merit further testing.

Gypsum in wavy layers and pod-like lenses, as much as 12 feet (3.6 m) thick, is irregularly interstratified with reddish-brown mudstone and siltstone and yellowish-gray sandstone and limestone in the upper member of the Carmel Formation. According to Doelling (1975, p. 149) some gypsum has been mined for local use from the Carmel near Escalante. The gypsum in the Red Breaks quadrangle, however, has little potential for commercial development. Much of it is clayey or silty and is irregularly distributed, generally in contorted layers less than 3 feet (1 m) thick.

Of interest to mineral collectors are small, spheroidal limonitic concretions in the Navajo Sandstone in the northeastern part of the quadrangle. The spheroids, known to collectors as "Moqui marbles" or "Navajo cherries" (Carter and Sargent,

***Table 1.** Record of exploratory wells drilled in and near the Red Breaks quadrangle, Utah.*
[Sources of data: unpublished records of the U.S. Bureau of Land Management, Salt Lake City, Utah]

Section	Operator	Well	Total depth (feet)	Year completed	Oldest formation penetrated	Remarks
			T. 36 S., R. 5 E.			
17	Gulf Oil Co.	1 R-F	736	1973	Navajo Sandstone (Triassic? and Jurassic)	Shallow well, abandoned and replaced by Gulf 1-A (Red Breaks quadrangle)
17	Gulf Oil Co.	1-A	2,628	1973	Timpoweap Member of Moenkopi Formation (Triassic)	Dry hole (Red Breaks quadrangle)
17	Gulf Oil Co.	1	3,182	1970	Cedar Mesa Sandstone Member of Cutler Formation (Permian)	Dry hole (Tenmile Flat quadrangle)
20	Champlin Petroleum Co. and Gulf Oil Co.	1	2,434	1973	Kaibab Limestone (Permian)	Dry hole (Tenmile Flat quadrangle)
			T. 36 S., R. 6 E.			
17	Amoco Production Co.	1-G	5,573	1971	Redwall Limestone (Mississippian)	Dry hole (Red Breaks quadrangle)
15	Amoco	1	3,011	1972	Cedar Mesa Sandstone Member of the Cutler Formation (Permian)	Dry Hole (Red Breaks quadrangle)

1983; Doelling 1975, p. 156), range from a fraction of an inch to about 4 inches (10 cm) in diameter. They consist of concentric layers of brownish-black iron oxides enclosing loosely cemented sand. They have weathered out of the Navajo in abundance on Big Spencer Flat.

Collectors also may search in the quadrangle for large crystals of gypsum that occur sporadically in the upper member of the Carmel Formation. Fragments of dinosaur bone from the Morrison Formation and petrified wood from Cretaceous strata in nearby quadrangles are sparsely and erratically distributed in alluvial deposits.

A major natural resource in the quadrangle is the canyon and rock-monument scenery created by the erosion of the Navajo Sandstone. Most hikers explore the desert south of the Big Spencer Flats or walk in the canyon of Harris Wash, which leads eastward to the Escalante River and the Glen Canyon National Recreation Area (U.S. Bureau of Land Management, 1979; Lambrechtse, 1985).

GEOLOGIC HAZARDS

Floods are the chief natural hazard in the Red Breaks quadrangle. Summertime cloudbursts in the northern part of the quadrangle or adjacent areas can result in flash floods suddenly coursing down narrow canyons. In addition, temporary dams formed by sliderock may give way to release an unexpected torrent far downstream. Hikers in the canyons should also beware of falling rocks and the possibility of quicksand along stream courses. Motorists traveling the Old Sheffield Road or unmapped trails should be prepared to deal with thick patches of loose sand.

Care should be taken for any construction on surficial deposits. Alluvial and eolian sand may be unstable even on moderate slopes. Mudstone and gypsum may slide when disturbed. Gypsiferous layers in the Carmel Formation may collapse because of solution of the gypsum.

Seismic risks appear small. Only two earthquakes of magnitude 4.0 or greater centered in eastern Garfield County have been recorded (Ward, 1979, fig. 1). Faults in the quadrangle and adjacent areas show no evidence of geologically recent movement. The Red Breaks quadrangle lies in the relatively inactive seismic zone U-1 (on a scale of 1 to 4) of the Utah Uniform Building Code (Ward, 1979, fig. 3). Earthquakes transmitted from tectonically more active regions, however, may result in rockfalls or sliding of slope deposits.

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