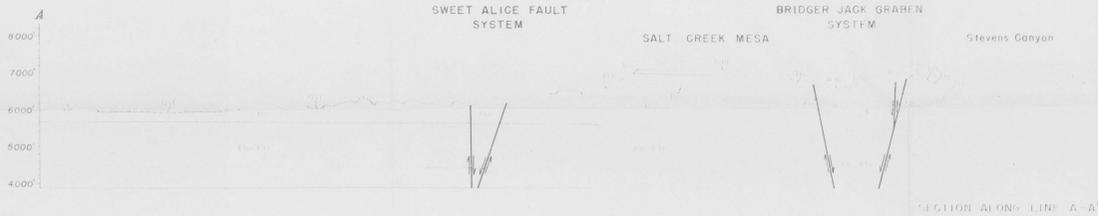




Geology by R. Q. Lewis, Sr., R. H. Campbell, and R. E. Thaden, 1954-56

CONTOUR INTERVAL 50 FEET
DATUM IS MEAN SEA LEVEL



PRELIMINARY GEOLOGIC MAP OF THE ELK RIDGE 1N4W QUADRANGLE, SAN JUAN COUNTY, UTAH

BY
RICHARD Q. LEWIS, SR., AND RUSSELL H. CAMPBELL

EXPLANATION

- Valley fill
Predominantly wind-deposited sand and silt, but including minor amounts of water-deposited sediments.
- Alluvium
Chiefly stream-deposited silt, with minor amounts of sand and gravel. Locally the unit may contain small amounts of wind-deposited material.

UNCONFORMITY

- Navajo sandstone
Predominantly gray to white, locally weathering tan or buff, massive with sweeping large-scale cross lamination, fine-grained quartz sandstone; forms steep rounded cliffs where cut by deep canyons, but irregularly rounded domes and spires on mesa tops. The Navajo appears to intertongue with the underlying Kayenta formation. Where thick sections are exposed the upper part of the map unit may include rocks equivalent to the Carmel formation. Locally, the Navajo is as much as 450 feet thick.

Kayenta formation

Gray to white, purple, red, and buff, thick- and thin-bedded, lenticular interbedded sandstone and siltstone with some limestone; generally forms a succession of benches between the underlying Wingate sandstone and the overlying Navajo sandstone. The Kayenta intertongues with, and locally may be gradational into the underlying Wingate; the contact is commonly well expressed topographically. The Kayenta ranges in thickness from about 250 feet to 300 feet.

Wingate sandstone

Red and buff, massive- to thick-bedded, cross-laminated medium- to fine-grained quartzose sandstones; generally weathers to steep cliff, but where parallel bedding planes are more abundant and/or where higher strata have been removed it weathers to a series of ledges. Locally the Wingate intertongues with the underlying Chinle formation. The Wingate is generally about 270 feet thick.

Chinle formation

Upper Chinle, *Rcu*, red, gray, and brown, generally thin-bedded, evenly bedded, locally shaly, fine- to very fine grained sandstones, siltstones, and claystones; generally forms a steep slope below the Wingate cliff, except for a prominent zone of maroon thick-bedded sandstones at the top which crop out as blocky ledges. The upper Chinle appears to be conformably above and may intertongue with the Moss Back member. The upper Chinle ranges from about 500 feet to about 600 feet in thickness generally thinning (with some local variation) from south to north. Moss Back member, *Rcm*, gray to brown, thick- and thin-bedded lenticular fine- to coarse-grained sandstones and conglomeratic sandstones; forms the continuous blocky ledge capping a prominent hogback ridge west of Cottonwood Wash. Its contact with the underlying lower Chinle appears, at least in part, gradational and/or intertonguing, but is locally marked by shallow scours; although generally not well exposed it is commonly well expressed by a topographic slope break. The Moss Back is generally from 80 to 100 feet thick with some local variation. Contains some small uranium deposits. Lower Chinle, *Rcl*, chiefly blue, gray, and red, massive, lenticular, sandstone with variable amounts of disseminated medium and fine sand grains, interbedded with and grading into some thin lenses of brown thin-bedded flaggy sandstone and lenses of sandstone and conglomeratic sandstone lithologically very similar to those of the Moss Back member; generally expressed as a slope or bench below the overlying Moss Back. The contact with the underlying Moenkopi formation is a slightly irregular erosion surface. The lower Chinle is generally from 100 to 120 feet thick in the southwestern part of its area and thins to the northeast to a pinchout on the west side of Bridger Jack Mesa.

UNCONFORMITY

Moenkopi formation

Red, brown, and buff thin- and thick-bedded, evenly bedded, discontinuous, interbedded, very fine to medium-grained sandstone and sandy siltstone, commonly shaly to flaggy, with thick-bedded discontinuous sandstones more common in the middle third of the formation than in the upper and lower thirds; generally forms a steep slope with discontinuous ledges between the overlying lower Chinle and the underlying Hoskinnini tongue of the Cutler formation. The contact with the underlying Hoskinnini tongue of the Cutler formation appears conformable. The Moenkopi is generally from 150 feet to 250 feet thick and may be somewhat thinner locally.

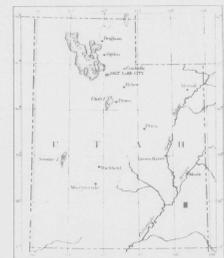
Cutler formation

Hoskinnini tongue, *Pph*, red to buff, locally bleached white to gray, massive and thick-bedded, cross-laminated medium- to fine-grained silty sandstone containing generally sparsely disseminated coarse well-rounded frosted sand grains; commonly forms blocky or rounded ledge between slopes of the overlying Moenkopi and underlying Organ Rock tongue. The contact with the underlying Organ Rock appears generally conformable. The Hoskinnini is commonly about 85 feet thick. Organ Rock tongue, *Poo*, predominantly red even-bedded very fine grained sandstone and/or sandy siltstone with some gray cross-laminated fine- to medium-grained sandstone lenses interbedded near the base; generally forms a uniform slope below the ledge formed by the Hoskinnini. The contact with the underlying Cedar Mesa sandstone is intertonguing and gradational. The Organ Rock is generally about 200 feet thick, but may vary as much as 50 feet locally. Cedar Mesa sandstone member, *Pcs*, light-gray to tan thick-bedded to massive cross-laminated fine- to medium-grained sandstone beds separated by thin partings of red to gray siltstone and silty siltstone; the partly eroded top controls the form of the near dip slope east of Chimney Park; in deep canyons the sandstone forms massive and ledgy vertical cliffs.

Hermosa-Rico formations; undifferentiated
(Shown on cross section only)

- Contact
(Dashed where approximately located)
- Fault
(Dashed where approximately located; short dashes where inferred; dotted where concealed; U, upthrown side, D, downthrown side; field estimate of displacement in feet; queried where doubtful)
- Anticline
(Showing trace of axial plane and direction of plunge of axis. Dashed where approximately located; dotted where concealed)
- Syncline
(Showing trace of axial plane and direction of plunge of axis. Dashed where approximately located)
- Anticlinal bend
(Showing trace of axial plane and direction of plunge of axis. Arrow barbed on side of steeper dip)
- Strike and dip of beds
- Structure contours
Drawn on base of the Moss Back member of the Chinle formation and the base of the Kayenta formation; dashed where approximately located; short dashes indicate projection above surface. Contour interval 100 feet. Datum is mean sea level.

Uranium mine or prospect



INDEX MAP OF UTAH SHOWING AREA OF THIS REPORT

QUATERNARY
JURASSIC AND JURASSIC(?)
TRIASSIC
PERMIAN

