Moqui SE

(200)
T67mm

TRACE ELEMENTS MEMORANDUM REPORT 1102

EXPLANATION

Qal

Alluvium

Qt

Talus

Ql / Qlp

Landslide deposits. Suffix "p" indicates landslide deposits composed mainly of boulders derived from the Point Lookout formation of the Mesaverde group.

Qb

Block rubble

Consisting mostly of porphyry blocks lying on unevenly eroded surfaces. Forms hummocky topography.

Qs

Eolian sand and silt

Qtg

Stream terrace gravel

Qfg / Qfgy

Fanglomerate composed mainly of porphyry cobbles and boulders. Suffix "y" indicates younger fanglomerate.

Qpg

Pediment deposits

Composed predominantly of igneous pebbles, cobbles, and boulders lying on erosion surfaces that extend radially away from the mountain area.

Pleistocene and Recent — QUATERNARY

UNCONFORMITY

TKmp

Biotite quartz monzonite porphyry

Light gray; phenocrysts of biotite, andesine, and quartz; orthoclase in groundmass; occurs in discordant masses; stock is shown by fragmentary line pattern.

TKgp

Granodiorite porphyry

Light to medium gray; phenocrysts of hornblende, andesine, biotite, and quartz; orthoclase in groundmass. Occurs as a stock and dikes; stock is shown by fragmentary line pattern.

TKdp

Diorite porphyry

Medium gray; phenocrysts of hornblende and andesine. Forms laccoliths, sills, and Ute Peak bysmalith; the Ute Peak mass is shown by fragmentary line pattern.

TKap

Andesite porphyry

Medium to dark greenish gray; phenocrysts are hornblende and andesine of smaller grain size than in the diorite porphyry. Occurs as sills, dikes, and a stock of small diameter; the stock is shown by fragmentary line pattern.

Upper Cretaceous or Tertiary — CRETACEOUS OR TERTIARY

TKmg

Microgabbro

Dark gray to nearly black; hornblende and augite phenocrysts occur locally, but the rock is not conspicuously porphyritic in most places; contains labradorite; occurs as sills.

TKsp

Spessartite lamprophyre

Dark greenish gray; contains augite, biotite, hornblende, zeolites, andesine, and interstitial potash feldspar; occurs as sills.

Kpl

Point Lookout sandstone

Tan fine- to medium-grained thin- to medium-bedded sandstone, interbedded with gray mudstone of Mancos shale. Where mapped the sandstone is silicified and the interbedded mudstone is baked.

Km
Kms
Km

Mancos shale

Predominantly gray to black shaly mudstone. A medium- to coarse-grained glauconitic sandstone and sandy fossiliferous limestone, Kms, 3 to 50 feet thick, is about 475 feet above base. It is mapped separately except in places in the mountains where the outcrop could not be traced. This unit may be equivalent in part to the "Juana Lopez sandstone member of the Mancos" of Rankin (1944). Total thickness of the Mancos shale is about 1,900 feet.

Upper Cretaceous — CRETACEOUS

Kd

Dakota sandstone

Yellowish sandstone and conglomerate lenses with interbedded carbonaceous shale and impure coal; average thickness is about 125 feet.

UNCONFORMITY

Kbc / Kbck

Burro Canyon formation

Sandstone and conglomerate with interbedded green and red shale; ranges from 30 to 200 feet in thickness. A conglomerate unit, Kbck, comprises channel-fills at the base and contains uranium at the Karla Kay mine in the northwestern part of the quadrangle. Both Kbc and Kbck intertongue with mudstone of the Brushy Basin member of the Morrison formation.

Lower Cretaceous

Jmb
Jmw
Jmr
Jms

Morrison formation

Brushy Basin member, Jmb, 150 to 300 feet thick, consists of varicolored bentonitic mudstone with a few conglomeratic sandstone lenses. Westwater Canyon member, Jmw, 75 to 120 feet thick, consists of pale yellow-brown fine- to medium-grained sandstone interbedded with green bentonitic mudstone. Recapture member, Jmr, 0 to 80 feet thick, consists of tan and reddish-gray fine- to medium-grained sandstone interbedded with red mudstone. Salt Wash member, Jms, 100 to 200 feet thick, consists of pale-brown and tan to gray fine- to medium-grained sandstone interbedded with predominantly red-brown mudstone. The Salt Wash member is uranium bearing in many areas on the Colorado Plateau but no deposits are known in this quadrangle.

Adjacent members of the Morrison formation intertongue and intergrade so that in many places the contacts are arbitrary.

Jurassic

Jjc

Junction Creek sandstone

The Junction Creek sandstone is 250 to 300 feet thick in this quadrangle. It consists of three gradational units. The upper unit, 20 to 50 feet thick, is argillaceous fine-grained reddish sandstone. This unit has obscure flat stratification. The middle unit, about 150 feet thick, is fine- to coarse-grained poorly sorted sandstone, cross-stratified at high angle; weathers to a "slick rim." The lower unit is 30 to 50 feet thick; has the same general lithology as the middle unit but with low-angle cross-stratification and numerous horizontal truncations. Contact with the underlying Summerville is gradational. The Junction Creek sandstone correlates with the Bluff sandstone of Utah and Arizona.

San Rafael group

Js

Summerville formation

Flat- and thin-bedded argillaceous sandstone and siltstone, brick-red. A 20-foot fine-grained well-sorted sandstone at top is radioactive near faults in the north-central part of the quadrangle. The formation is 120 to 130 feet thick; forms a bench.

Je

Entrada sandstone

Consists of two units. Upper unit is sandstone, 70 to 80 feet thick, pale brown and light pink at top grading to white and finally to orange red in lower part. This unit weathers to a "slick rim." The lower unit, 25 to 35 feet thick, is argillaceous sandstone, very fine grained, brick-red.

Jn

Navajo sandstone

Orange fine-grained eolian sandstone containing numerous prominent horizontal truncations.

JURASSIC AND JURASSIC(?)

Contact

(Dashed where approximately located; dotted where concealed. Arrows indicate direction of dip; B and T indicate bottom and top of concordant igneous bodies)

Channel at base of Burro Canyon formation

(Location inferred from outcrop and sedimentary trends. Dot-dash pattern where channel edge has been eroded; dotted pattern indicates buried channel edge; queried where projection doubtful)

80 U D ? High angle fault, showing dip.

(Dashed where approximately located; dotted where concealed, queried where extension doubtful; U, upthrown side; D, downthrown side)

Anticline

(Showing trace of axial plane and direction of plunge. Dashed where inferred)

Syncline

(Showing trace of axial plane and direction of plunge. Dashed where inferred)

Strike and dip of beds

(The letter A beside the symbol indicates an attitude on beds above the contour horizon and does not necessarily reflect the attitude at the contour horizon)

Lineament or prominent joint

These features may be indicative of faulting at depth.

Shear zone

Closely spaced vertical joints or faults showing little displacement of contiguous rock masses.

75

Strike and dip of cleavage

30

Strike and dip of planar flow structure

20

Bearing and plunge of lineation

Horizontal lineation

Vertical lineation

? 6800

Structure contours

Drawn on base of Mancos shale; long dashes where approximately located; short dashes indicate projection above surface; and dots indicate contouring on a phantom horizon projected through a sill or laccolith; dash ? where control is poor.

Most of the laccoliths in this quadrangle were intruded at or near the contact of the Dakota and Mancos formations, and locally, portions of upper beds of the Dakota were domed upward by the intrusives. The structural datum is projected through the laccoliths in order to define the underlying structure. Lack of stratigraphic markers within the area enclosed by the 7,000-foot contour precludes further interpretation at the contour horizon. Contour interval 100 feet. Datum is mean sea level.

Prominent ridge

Pediment

Primary triangulation station

Roads, improved

Jeep and truck trails

Pack trails

Mine

Adit

Prospect

Commodity of mine, adit, or prospect indicated by (V) - copper and (U) - uranium.

BM
x 5261

Benchmark, elevation to nearest foot

Spring

Reservoir and dam

Well with show of oil

Gas well

Note: Land grid is dashed where approximately located.

LITERATURE CITED

Rankin, C. H., 1944, Stratigraphy of the Colorado group, Upper Cretaceous in northern New Mexico: N. Mex. School of Mines Bull. 20, 27 p.