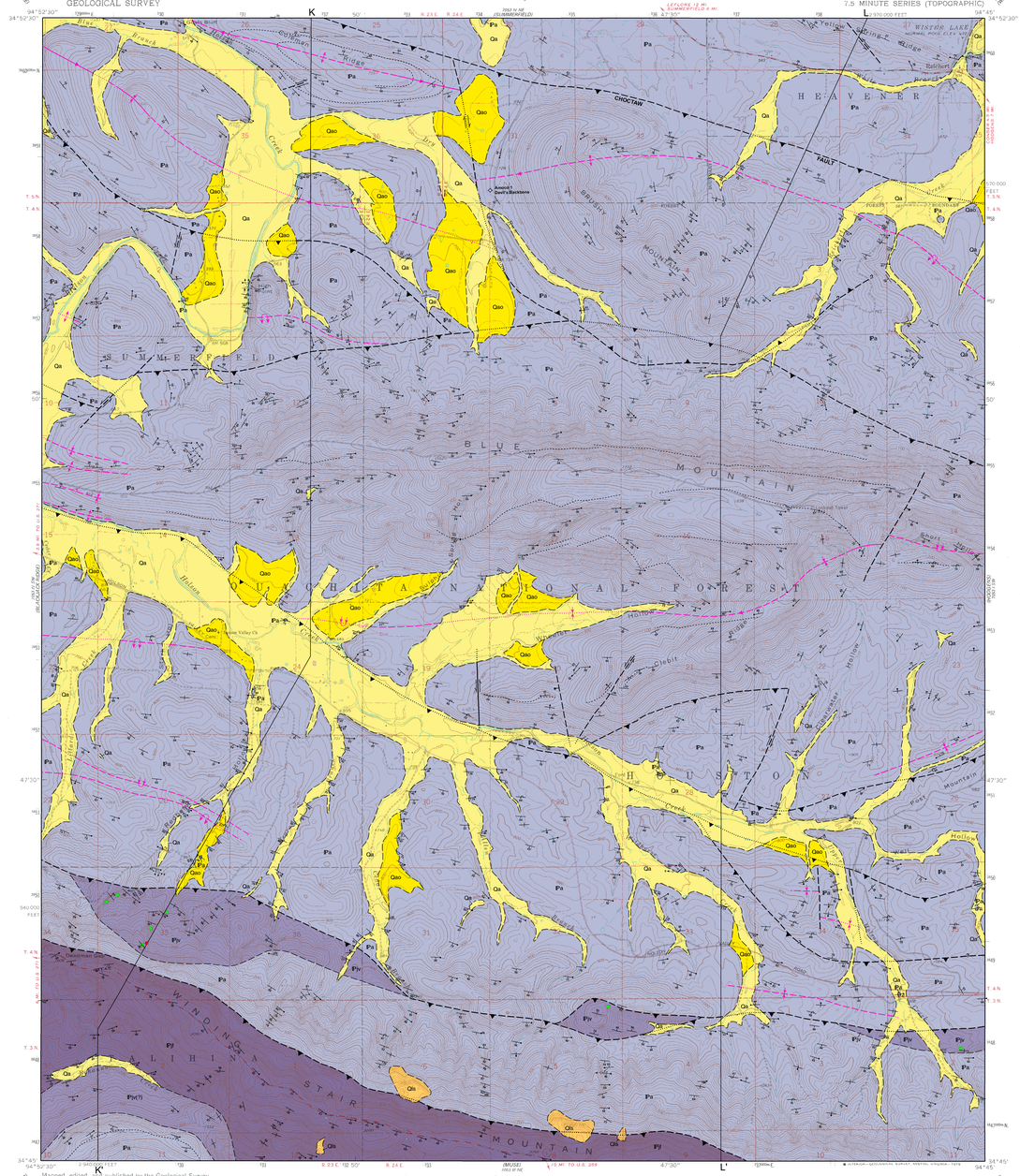
UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Prepared in cooperation with the U.S. Geological Survey
and the Arkansas Geological Commission

LEFLORE SE QUADRANGLE
OKLAHOMA—LE FLORE CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)



Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1964. Field checked 1966

Polyconic projection. 1927 North American datum
10,000 foot grid based on Oklahoma coordinate system, south zone
1,000-meter Universal Transverse Mercator grid ticks, zone 15, shown in blue

Area covered by dashed light-blue pattern is subject to controlled inundation

Fine red dashed lines indicate selected fence and field lines where generally visible on aerial photographs. This information is unchecked

Revisions shown in purple compiled from aerial photographs taken 1976. This information not field checked

SCALE 1:24 000

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

CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

UTM GRID AND 1976 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
AND BY THE OKLAHOMA GEOLOGICAL SURVEY, NORMAN, OKLAHOMA 73069
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

ROAD CLASSIFICATION
Heavy-duty — Light-duty
Medium-duty — Unimproved dirt
State Route

LEFLORE SE, OKLA.
N3445—W9445/7.5
1966
PHOTOREVISED 1976
AMS 7053 IV SE—SERIES V883

Geology by L. A. Hemish and N. H. Suneson, 1989-1990
Digitized by G. R. Standridge, 2020

GEOLOGIC MAP OF THE LEFLORE SE 7.5′ QUADRANGLE, LE FLORE COUNTY, OKLAHOMA

By
LeRoy A. Hemish and Neil H. Suneson
1991

CORRELATION OF MAP UNITS

QUATERNARY: Qa, Qls, Qao

UNCONFORMITY

PENNSYLVANIAN: Pa, Pjv, Pjf

DESCRIPTION OF UNITS

Qa ALLUVIUM (QUATERNARY) – Unconsolidated silt, sand, and gravel of present stream channels

Qao OLDER ALLUVIUM (QUATERNARY) – Unconsolidated silt, sand, and gravel above flood plains of present stream channels

Qls LANDSLIDES AND ROCKFALL DEBRIS (QUATERNARY)

Pa ATOKA FORMATION (PENNSYLVANIAN) – South of Choctaw Fault, predominantly poorly exposed, olive-gray (5Y3/2) to olive-black (5Y2/1), slightly silty, noncalcareous, poorly laminated shale and mudstone. Stratification in some beds contorted. Some beds have sheared appearance and shale fragments have well-developed "sheen". Locally fissile, weathers to "flaky" appearance. Contains rare sandstone, silicified siltstone, and siderite pods or concretions elongate parallel to bedding. Some beds exhibit "pencil" structure. In lower part of formation in southern part of quadrangle, also consists of hard, splintery shale. Typically concentrically weathered. Contains many thin beds of laminated siltstone and very fine-grained sandstone. Beds rarely pinch-and-swell.

Also contains less common, better-exposed sandstone beds as much as about 20 m thick. Sandstone typically is light-olive-gray (5Y5/2), yellowish-gray (5Y7/2), or medium-gray (N5) to light-gray (N7). Mostly very fine-grained to moderately fine-grained and silty. Mostly noncalcareous. Immediately north of Winding Stair Mountain, the basal 1800 m (6000 ft) appears to be locally normally graded or bimodal with medium-sized grains supported in a fine-grained matrix. Based on hand-specimen examination, sandstone generally composed of about 95% quartz, 2-5% feldspar and rock fragments, and conspicuous white mica parallel to laminations; quartz rarely less than 75% or greater than 98%. Individual beds mostly vary from several centimeters to several meters thick and average about 60 cm. Amalgamated beds common, forming resistant ridges and dip slopes easily identifiable on aerial photographs and mapped as marker beds. Thicker beds are generally unstratified (corresponding to Ta of Bouma sequence) grading upwards to parallel-laminated (Tb) and cross-laminted (Tc) strata. Some beds exhibit moderate- to low-angle, moderate- to long-wavelength, wavy or undulatory stratification interpreted as incipient dish-and-pillar or soft-sediment slump structures. Thinner beds commonly are ripple cross-laminated (Tc). Dish-and-pillar structures common. Sole marks (flute, grove, and load casts, trace fossils) at base of sandstone beds locally common. Some beds have planar bases. Tops of sandstone beds typically grade upwards to siltstone. Less common irregular or "wavy" tops symmetrical to asymmetrical to overturned with amplitudes as much as 0.3 m and wavelengths as long as 1 m. Porosity typically is very low except where medium-grained and/or moderately sorted. Thicker sandstone beds typically well-jointed. Base of sandstone beds typically weather to massive appearance; tops weather to platy appearance.

In Brushy Mountain area, contains single, fine-grained, ripple cross-laminted, calcareous sandstone bed.

North of Choctaw Fault, predominantly shale similar to that south of fault. On Yellow Spring Ridge, consists of pale-yellowish-brown (10YR6/2), fine- to medium-grained, slightly porous, micaceous quartz sandstone. Typically unstratified to ripple cross-laminated and locally with large-scale tabular and trough cross-sets. Individual sandstone beds typically amalgamated and show clear pinch-and-swell and channeling. Sandstone typically platy weathering.

Maximum exposed thickness south of Choctaw Fault approximately 2700 m (9000 ft); top not exposed. Maximum exposed thickness north of Choctaw Fault approximately 1200 m (4000 ft); top not exposed

Pjv JOHNS VALLEY FORMATION (PENNSYLVANIAN) – Predominantly poorly exposed, olive-gray (5Y3/2), noncalcareous, poorly laminated, slightly silty shale and mudstone. Some beds fissile, weather to "flaky" appearance when dry and "gummy" consistency when wet. Other beds contorted, appear pervasively sheared. Contains thin beds of noncalcareous laminated siltstone and thin- to medium-bedded sandstone. Siderite concretions and phosphate nodules (as large as 3 cm in diameter) locally common.

Sandstones mostly light-olive-gray (5Y5/2) to yellowish-gray (5Y7/2), silty, very fine-grained to fine-grained to locally medium-grained. Sandstone beds unstratified (corresponding to Ta of Bouma sequence) to parallel-laminated (Tb) or, more rarely, ripple cross-laminated (Tc). Based on hand specimen examination, composed of about 3%, but locally as much as 10%, feldspar and rock fragments, conspicuous white mica parallel to laminations, and the remainder quartz. Calcite cement rare. Some sandstone beds contain fragments of crinoids(?). Sole marks, dish-and-pillar structures, and contorted or wavy bedding typical of some beds.

Shale locally contains angular to rounded pebbles, cobbles, and boulders (as large as 6 m in diameter) of chert, dolomite, and a wide variety of limestone rock types. Other rock types within the shale include masses as large as 15 m of platy to very fissile, hard, grayish-black (N2) shale with calcareous concretions and phosphatic(?) nodules. Limestone clasts have been correlated with lower and middle Paleozoic limestone units exposed to the north and west; chert clasts may be Woodford Formation (Devonian); and many black shale masses may be correlated with the Caney Formation (Mississippian).

Maximum exposed thickness approximately 900 m (2800 ft); varies widely due to structural thinning and thickening. Typically forms glide plane for thrust faults in area

Pjf JACKFORK GROUP (PENNSYLVANIAN) – Predominantly well-exposed, medium-light-gray (N6), mostly fine-grained, quartzose, noncalcareous sandstone. Less common shale and siltstone beds rarely exposed. Sandstone slightly porous. Locally consists of very hard, dark-colored, silicified sandstone. Based on hand-specimen examination, generally composed predominantly of quartz; feldspar and rock fragments rarely exceed 5% of rock. Mica mostly rare to absent; very small grains of dark minerals locally conspicuous. Beds typically amalgamated and unstratified (corresponding to Ta of Bouma sequence) grading upwards to parallel-stratified (Tb) and more rarely ripple cross-laminated (Tc). Ripple trough-stratification rare. Sandstone beds as thick as 10 m; generally 0.5-2 m. Base of sandstone beds locally contain sole marks (flute and groove casts). Tops of sandstone beds rarely ripple-marked. Locally contains traces of disseminated to relatively large organic debris parallel to bedding planes and molds (to 0.5 m) of plants. Weathers bouldery to blocky.

Shale and mudstone mostly light-olive-gray (5Y5/2), grayish-yellow (5Y8/4), to greenish-gray (5GY6/1), fissile to papery, silty, and interbedded with thin siltstone and very fine-grained sandstone beds. Inclusions in the shale include ellipsoidal siderite concretions. Weathering characteristics vary from hard and "chippy" to soft and "gummy".

Exposed only in the southern part of the quadrangle. Maximum exposed thickness approximately 900 m (3000 ft); base not exposed

SYMBOLS

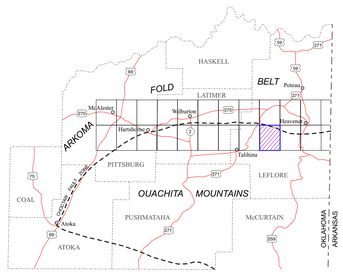
- CONTACT – Dashed where approximately located
- MARKER BED
- THRUST FAULT – Sawteeth on upper plate; dashed where approximately located; dotted where concealed; queried where questionable
- NORMAL FAULT – Bar and ball on downthrown side; dashed where approximately located; dotted where concealed
- FAULT – Arrows show relative horizontal movement; dashed where approximately located; dotted where concealed
- FAULT – Sense of offset unknown; dashed where approximately located
- ANTICLINE – Showing crestline, arrow shows direction of plunge; dashed where approximately located; dotted where concealed
- SYNCLINE – Showing troughline, arrow shows direction of plunge; dashed where approximately located; dotted where concealed
- OVERTURNED ANTICLINE – Showing crestline; dashed where approximately located; dotted where concealed
- OVERTURNED SYNCLINE – Showing troughline; dashed where approximately located; dotted where concealed
- MINOR ANTICLINE – Showing direction and amount of plunge, where determined, and dip of axial plane, where determined; ball indicates location
- MINOR SYNCLINE – Showing direction and amount of plunge; ball indicates location
- MINOR OVERTURNED ANTICLINE – Showing direction and amount of plunge; ball indicates location
- MINOR OVERTURNED SYNCLINE – Showing direction and amount of plunge; ball indicates location
- LIMESTONE OR DOLOMITE COBBLE OR BOULDER IN JOHNS VALLEY FORMATION
- CHERT OR SHALE COBBLE OR BOULDER IN JOHNS VALLEY FORMATION

STRIKE AND DIP OF BEDS

- Leader to location of measurement
- Strike and dip of beds, facing direction unknown
- Vertical beds, facing direction unknown
- Strike and dip of beds, upright
- Vertical beds, ball indicates top of beds
- Strike and dip of beds, overturned

GAS WELLS (Spudded before April 1, 1991)

- Dry hole

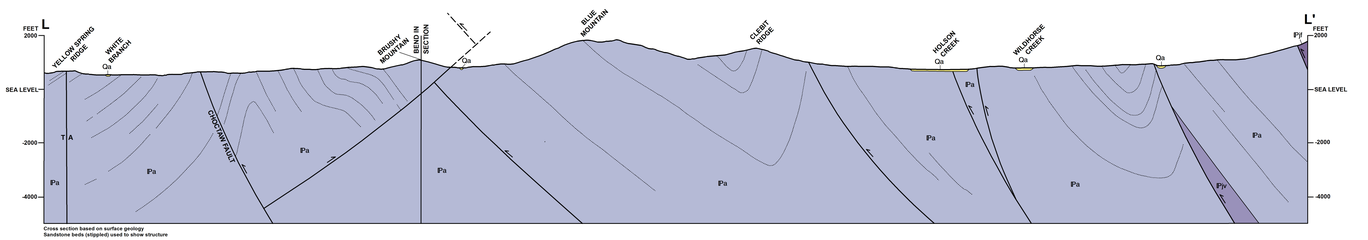


LOCATION OF QUADRANGLES

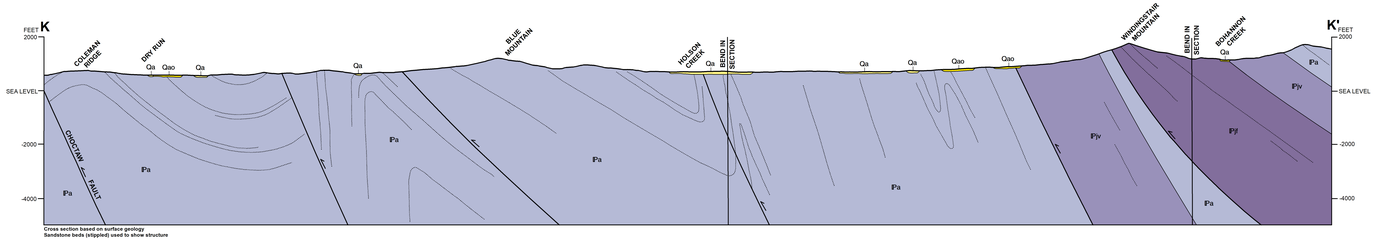
McALESTER	KREBS	ADAMSON	GOWEN	WILBURTON	PANOLA	RED OAK	LEFLORE	SUMMERFIELD	WISTER	HEAVENER	BATES
SAVANNA	HARTSHORNE SW	HARTSHORNE	HIGGINS	DAMON	BAKER MOUNTAIN	TALIHINA	BLACKJACK RIDGE	LEFLORE SE	HODGEN	HONTUBBY	LOVING

ARKANSAS

INDEX TO MAPPED QUADRANGLES



Cross section based on surface geology
Sandstone beds (stippled) used to show structure



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Sandstone beds (stippled) used to show structure