



**DESCRIPTION OF UNITS**

**Qa** ALLUVIUM (Quaternary) – Gravel, sand, silt, and clay on flood plains of present-day streams

**Qt** TERRACE DEPOSITS (QUATERNARY) – Subangular to subrounded cobbles, gravel, sand, and silt, forming a veneer, generally about 4-10 ft thick, on the surfaces of terraces that stand about 40-50 ft above the beds of present-day streams

**UNITS PRESENT NORTH OF CHOCTAW FAULT**

**Pb** BOGGY FORMATION (PENNSYLVANIAN) – Predominantly grayish-green, fine- to medium-grained, noncalcareous, scarp-forming sandstone that weathers yellowish-brown and reddish-brown. Present only in the Cavanal Syncline in the northeastern part of the area. At the base is the Bluejacket Sandstone Member (Ptbj) 200-250 ft thick. Ptbj consists of massive to ripple-marked and cross-bedded sandstone, shaly sandstone, siltstone, sandy shale, and shale, not mapped separately. Overlying the Bluejacket Sandstone is a poorly exposed unit of dark-gray shale (Pb), overlain by a thin, fine-grained, resistant, brown sandstone (Pb), present only in the extreme northeastern part of the area, east of Cedar Creek. Top of formation eroded. Thickness of remaining units 225-280 ft

**Psv** SAVANNA FORMATION (PENNSYLVANIAN) – Predominantly brown to olive-gray to dark-gray shales (Psv) with several mappable, brown, fine-grained, noncalcareous sandstone units (Psv., Psv., Psv., Psv., Psv., Psv., Psv., Psv.). The sandstones are massive to thin-bedded and shaly. They commonly are cross-bedded and ripple-marked and in places contain abundant soft-sediment-deformation features. Sole marks (trace fossils; brush and prod marks; flute, groove, and load casts) at the base of some sandstone beds are locally common. Psv. marks the base of the formation on the northwest flank of the Cavanal Syncline. On the south flank of the syncline Psv. is not mappable, and the contact with the underlying McAlester Formation is only approximately located. Psv., Psv., are all mapped as single units, but may locally contain shale beds. A thin, unmappable, impure, fossiliferous limestone (outcrop shown by X on map) occurs within Psv. in sec. 21, T. 6N., R. 22E. The Cavanal coal bed (Psv.) occurs in the shale just below Psv. in sec. 28, T. 6N., R. 23E. Psv. is split into two units (Psv., Psv.) separated by shale throughout most of the area. Psv. is also split into two units (Psv., Psv.) separated by shale over most of the area. A thin, unnamed coal bed and a thin, unmappable, impure, fossiliferous limestone (outcrop shown by X on map) occur at different locations in the shale between Psv. and Psv. in sec. 29, T. 6N., R. 23E. Most shales also include thin, unmappable sandstone units. Thickness: 1,500-2,000 ft

**Pm** McALESTER FORMATION (PENNSYLVANIAN) – Predominantly dark-gray to black, blocky shales containing abundant ironstone concretions. McCurtain Shale Member (Pmm) at the base, is 650-700 ft thick. A discontinuous, brown, shaly, thin, unnamed sandstone unit (Pmmu) lies near the middle of the McCurtain Shale Member. The Warner Sandstone Member (Pmw) overlies the McCurtain Shale Member. It is a resistant, brown, fine-grained, ridge-forming sandstone of variable thickness, and is split into upper and lower sandstones separated by shale. Two named, brown, fine-grained, thin-bedded sandstone units occur in the shale (Pm) above the Warner Sandstone Member: Cameron Sandstone Member (Pmc) and Keota Sandstone Member (Pmk). Poorly exposed McAlester and Upper McAlester beds (Pmmc) occur in the shale interval above the Cameron Sandstone Member. A thin, non-economic coal bed (Keota [?] coal) crops out in Coal Creek about 0.75 mi northeast of Fanshawe. Surface-mined areas designated Pmmcl (stippled). Thickness: 2,000-2,400 ft

**Ph** HARTSHORNE FORMATION (PENNSYLVANIAN) – Brown to very light-gray, very fine-grained, ripple-marked, bioturbated, thin-bedded to massive sandstone interbedded with silty gray shale (Ph). Contains the Lower and Upper Hartshorne coal beds (Phh). Thickness about 300-400 ft

**Pa** ATOKA FORMATION (PENNSYLVANIAN) – Predominantly silty, brown to gray to grayish-black, noncalcareous shale (Pa) with discontinuous, ridge-forming, brown, fine-grained sandstones (Pass). Approximately 1,200 ft of upper part exposed north of the Choctaw fault

**UNITS PRESENT SOUTH OF CHOCTAW FAULT**

**Pa** ATOKA FORMATION (PENNSYLVANIAN) – Predominantly poorly exposed grayish-black to olive-gray to grayish-olive, slightly silty, noncalcareous, poorly laminated shale and mudstone. Contains thin beds of laminated siltstone and thicker beds of sandstone. Sandstone is light-olive-gray and grayish-orange where fresh, and yellowish-brown where weathered. Mostly very fine-grained, rarely fine-grained, poorly to moderately sorted, noncalcareous, and composed of about 95% quartz, 3% feldspar and lith fragments, and conspicuous white mica parallel to laminations. Individual beds vary from several inches to several feet thick and average about 2 ft. Amalgamated beds common. Thicker beds are generally massive (corresponding to Ta of Bouma turbidite sequence) to parallel laminated (Td); thinner beds commonly are ripple cross-laminated (To). Sole marks (flute, groove, load casts, and trace fossils) at base of sandstone beds locally common. Dish-and-pillar structures and ripple marks typical of some beds. Contains local concentrations of plant debris and organic matter on bedding planes. Maximum thickness of lower part approximately 3,800 ft south of Choctaw fault

**CORRELATION OF MAP UNITS**

QUATERNARY

UNITS NORTH OF CHOCTAW FAULT

PENNSYLVANIAN

UNITS SOUTH OF CHOCTAW FAULT

PENNSYLVANIAN

**SYMBOLS**

--- CONTACT – Dashed where approximately located

--- MARKER BED

--- COAL BOUNDARY – Approximate outcrop of coal bed (named on map); triangle indicated exposure of coal

--- FAULT – Arrows show relative horizontal movement; dashed where approximately located; dotted where concealed; queried where probable

--- FAULT – Dashed where inferred; dotted where concealed; U, upthrown side; D, downthrown side

--- ANTICLINE – Showing crestline; dashed where approximately located; dotted where concealed

--- SYNCLINE – Showing troughline; dashed where approximately located; dotted where concealed; queried where questionable

--- MINOR ANTICLINE – Showing plunge

--- MINOR SYNCLINE – Showing plunge

--- OVERTURNED ANTICLINE – Arrows show direction of dip of limbs; dashed where approximately located; dotted where concealed

--- OVERTURNED SYNCLINE – Arrows show direction of dip of limbs; dashed where approximately located

--- STRIKE AND DIP OF BEDS

--- Strike and dip of beds, facing direction unknown south of Choctaw fault

--- Strike and dip of beds, upright

--- Strike and dip of beds, overturned

--- Vertical beds, facing direction unknown

--- Vertical beds, ball indicated top of beds

--- Horizontal beds

--- OIL AND GAS WELLS

--- Drilling as of January 1, 1990

--- Dry hole, abandoned

--- Gas well

--- Number on map corresponds to list of wells

**LIST OF WELLS SPUDDED BEFORE JANUARY 1, 1990**

- Amoco Production Co. 2 Coblenz Unit, Spud 7/31/86, TD 7,017'
- Midwest Oil Corp. 1 Coblenz, Spud 1/11/61, TD 12,148'
- Midwest Oil Corp. 1 Smallwood, Spud 10/20/62, TD 7,150'
- Midwest Oil Corp. 1 Ramer, Spud 10/28/63, TD 7,703'
- Midwest Oil Corp. 1 Mabry, Spud 5/20/64, TD 8,150'
- Amoco Production Co. 2 Mabry Unit, Spud 5/28/65, TD 8,492'
- Mobil Oil Co. 2 Gladys C. Pate Unit, Spud 5/16/68, TD 8,904'
- Mobil Oil Co. 1 Gladys Cella Pate Unit, Spud 4/30/65, TD 8,610'
- Covina Oil, Branscum, Spud 8/14/71, TD 9,456'
- Gose Petroleum 1 Woods, Spud 8/16/66, TD 10,192'
- Amoco Production Co. 2 Smallwood Unit A, Spud 2/28/72, TD 7,500'
- Amoco Production Co. 2 Ramer Unit, Spud 10/19/68, TD 12,002'
- Amoco Production Co. 3 Mabry Unit, Spud 6/19/67, TD 8,760'
- Hudson Petroleum Corp. 1-17 Claiborn, Spud 1/23/81, TD 9,340'
- Sun Oil Co. 1 Bell Heirs, Spud 3/18/65, TD 7,640'
- Midwest Oil Corp. 1 Myton Unit, Spud 7/10/65, TD 8,102'
- Mobil Oil Co. 1 Robert James Unit, Spud 12/12/65, TD 8,220'
- Amoco Production Co. 1 Reed Trust Unit, Spud 10/14/67, TD 8,755'
- Kirby Exploration Co. 1-24 Reed, Spud 11/21/75, TD 9,101'
- Daniel-Price Exploration 1 Lee, Spud 10/30/68, TD 9,152'
- Stephens Prod. 1 Bonne B. Gather, Spud 11/3/68, TD 9,924'
- Amoco Production Co. 2 Bell Heirs Unit, Spud 12/8/68, TD 8,103'
- Amoco Production Co. 2 Myton Unit, Spud 7/13/67, TD 12,200'
- Galaxy Oil (Imperial-American) 1 Fleener, Spud 3/22/69, TD 8,526'
- Kirby Exploration Co. 1-28 Fleener, Spud 7/7/80, TD 12,244'
- JMC Exploration 2 Fleener, Spud 7/23/87, TD 8,400'
- Pan American Petroleum Corp. 1 Parks Unit B, Spud 4/24/67, TD 8,900'
- Amoco Production Co. 2 Parks Unit B, Spud 10/13/65, TD 12,569'
- Samson Resources Co. (Leben Drilling, Inc.) 1-26 Major Royalty Co., Spud 12/29/68, TD 9,050'
- King Resources 1-25 Zephthar, Spud 9/20/69, TD 9,170'
- Snee & Eberly 1 Askew, Spud 6/1/69, TD 8,817'
- Amoco Production Co. 1 Ingle Unit, Spud 8/13/90, TD 14,500'

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

INDEX TO MAPPED QUADRANGLES

GEOLOGIC MAP OF THE LEFLORE 7.5' QUADRANGLE, LATIMER AND LE FLORE COUNTIES, OKLAHOMA

By  
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1991