

GEOLOGY OF THE WISTER QUADRANGLE, LE FLORE COUNTY, OKLAHOMA

By
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1993

CORRELATION OF MAP UNITS

Al	QUATERNARY
Qa	
Qao	
Pbbj	
Pbv	
Pbv1	
Pbv2	
Pbv3	
Pbv4	
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PENNSYLVANIAN

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SYMBOLS

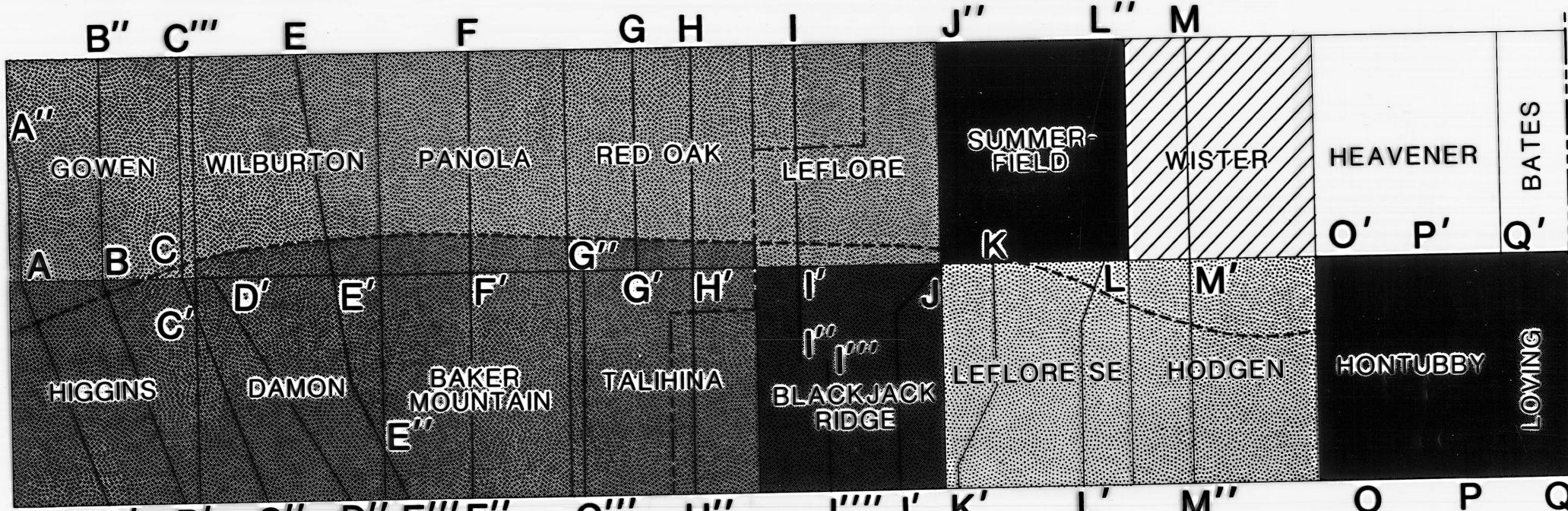
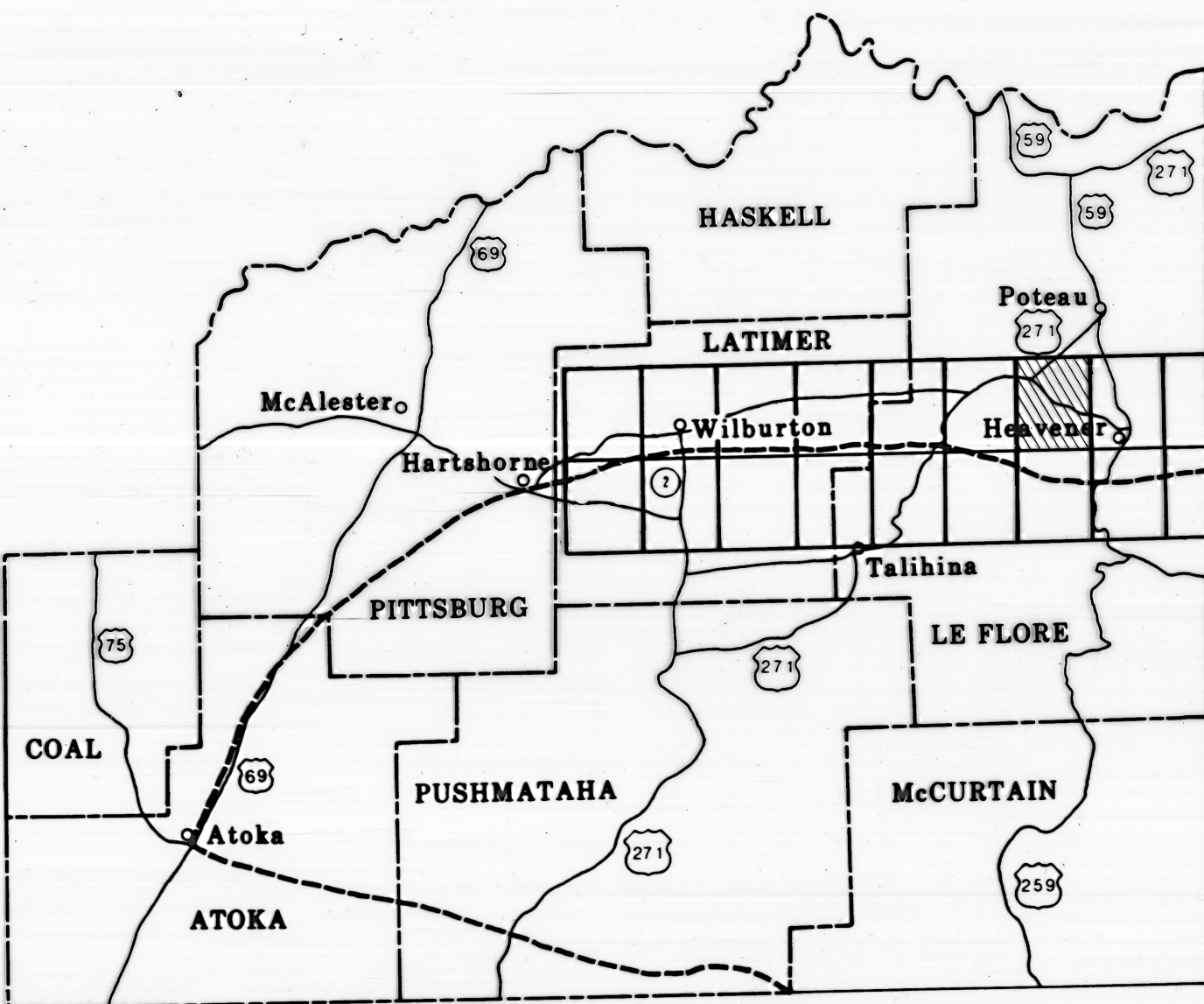
CONTACT	Dashed where approximately located; ticks show terrace slopes
MARKER BED	
COAL BOUNDARY	Approximate outcrop boundary of coal bed (named on map); triangle indicates exposure of coal; queried where probable
THRUST FAULT	Sawtooth on upper plate; dashed where approximately located
FAULT	Arrows show relative horizontal movement; dashed where approximately located; dotted where concealed; queried where probable
FAULT	Inferred; dashed where approximately located; dotted where concealed; U, upthrown side; D, downthrown side
ANTICLINE	Showing troughline; arrow shows direction of plunge, if determined; dotted where concealed
SYNCLINE	Showing troughline; arrow shows direction of plunge, if determined; dotted where concealed
MINOR ANTICLINE	Showing direction and amount of plunges, if determined
Outcrop, Spaniard(?) Limestone	
Abandoned small coal mine, stone quarry, or open shale pit	
Inaccessible tunnel, adit, or slope	
Abandoned shaft	
Abandoned open coal pit	
STRIKE AND DIP OF BEDS	
Leader to location of measurement	
Strike and dip of beds	
Strike and dip of beds, upright facing confirmed	
Strike and dip of beds, overturned	
Undulatory beds and average dip	
OIL AND GAS WELLS	
Dry hole, abandoned	
Gas well	
Number on map corresponds to list of wells	

DESCRIPTION OF UNITS

- Al ARTIFICIAL FILL mapped only in large dams and dikes.
- Qa ALLUVIUM (QUATERNARY)—Gravel, sand, silt, and clay on flood plains of present-day streams.
- Qao OLDER ALLUVIUM (QUATERNARY)—Subangular to subrounded cobbles, gravel, sand, and silt, forming a veneer about 1-10 ft thick, on the surface of terraces that stand about 40-50 ft above the beds of present-day streams.
- Pbbj BOGGY FORMATION (BLUEJACKET SANDSTONE MEMBER) (PENNSYLVANIAN)—Mostly pale-yellowish-brown (10YR5/2), to moderate-yellowish-brown (10YR5/4) to dark-yellowish-brown (10YR4/2), very fine to line-grained, noncalcareous sandstone with abundant sedimentary structures such as ripples, cross-stratification, and sole marks; thin- to medium-bedded; flaggy to massive; scarp-forming west of Mountain Creek, but poorly exposed and probably shaly east of creek. Top of member eroded. Remaining thickness approximately 150 ft.
- Psv SAVANNA FORMATION (PENNSYLVANIAN)—Predominantly pale-yellowish-brown (10YR6/2) to olive-gray (5Y3/2) to medium-dark-gray (N4) shales (Psv) with several mappable moderate brown (5Y4/4) to grayish-orange (10YR7/4) to moderate-reddish-brown (10R4/6), very fine to line-grained, noncalcareous sandstone units (Psv1, Psv2, Psv3, Psv4, Psv5, Psv6, Psv7). 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. A thin (0.1-0.4 ft), medium-gray (N5) to light-brown (5YR5/6), impure, shaly, brachiopod-rich marine limestone is exposed in a shale interval below Psv1 in the escarpment northwest of Caston Creek and the Poteau River. It occupies approximately the same position stratigraphically as the Spaniard Limestone Member of the shelf area of northeastern Oklahoma. The base of the Spaniard Limestone marks the base of the Savanna Formation in the shelf area. The marine limestone that crops out in the Wister Quadrangle and the adjacent Summerfield Quadrangle to the west is tentatively correlated with the Spaniard Limestone of the shelf area. Its outcrops, which are shown by X's on the map, and labeled svsp(?) in the stratigraphic column, mark the base of the Savanna Formation. Psv1 is mapped as a single unit only west of Mountain Creek. In the escarpment northwest of Caston Creek and the Poteau River, Psv1 occurs in a shale unit between Psvsp(?) and Psv2, but is thin and shaly and not mappable as a separate unit. It is mapped along with Psv2, which is the thick, resistant unit at the top of the escarpment. Psv3 is divided into two low-ridge-forming units (Psv3a, Psv3b) mappable only northeast of Rock Creek. Psv4 occurs as two thin, shaly sandstone units (Psv4a, Psv4b), also mappable only northeast of Rock Creek. The minable Cavalal coal (approximately 2 ft thick) occurs in the shale interval between Psv4 and Psv5. Psv6 is divided into two mappable units (Psv6a, Psv6b) in the north-central part of the map area. All Psv sandstone units locally contain shale beds. Most shales include thin, unmappable sandstone units. Thickness: approximately 1700 ft.
- Pm McALESTER FORMATION (PENNSYLVANIAN)—Predominantly dark-gray (N3) to black (N1), blocky shales containing abundant ironstone concretions. McCurtain Shale Member (Pmm) at the base is approximately 650-700 ft thick. A reddish-brown (10R4/6), noncalcareous, very fine grained, ripple-marked sandstone (1-10 ft or more in thickness) occurs about midway in the McCurtain Shale interval. It thins and appears to pinch out in the vicinity of Lake Wister, but thickens eastward and is well-developed in the vicinity of Howe, where it forms a prominent ridge. The Warner Sandstone Member (Pmw) overlies the McCurtain Shale Member. It is a resistant, moderate-reddish-brown (10R4/6) to grayish-orange (10YR7/4) to moderate-yellowish-brown (10YR5/4) fine-grained, cross-bedded sandstone of variable thickness (250-290 ft). It includes upper and lower, ridge-forming units separated by shale. Three, named, moderate-brown (5YR3/4) to brownish-gray (5YR4/1) to moderate-yellowish-brown (10YR5/4), fine-grained, thin-bedded sandstones occur in the shale interval above the Warner Sandstone Member: Cameron Sandstone Member (Pmc), 10-40 ft thick; Yamahsa Sandstone Member (Pmt) about 3-30 ft thick; and Keota Sandstone Member (Pmk), which generally consists of 3 or more sandstone beds (not mapped separately) separated by shale and siltstone intervals of varying thicknesses. A thin (1-4 ft) flaggy, wavy bedded sandstone, Pmt(?) which is probably correlatable with the Lequire Sandstone member, occurs in the stratigraphic interval below the Cameron Sandstone in the northeastern part of the map. A 2-inch-thick coal bed was observed in the shale interval between Pmt(?) and Pmc east of Morris Creek. Contains poorly exposed McAlester coal (about 2 ft thick) in the shale interval just above the Cameron Sandstone Member. Total thickness: 2,000-2,200 ft.
- Ph HARTSHORNE FORMATION (PENNSYLVANIAN)—Grayish-orange (10YR7/4) to moderate-reddish-orange (10YR6/6) to very light-gray (N6), very fine grained, ripple-marked, bioturbated, thin-bedded to massive sandstone interbedded with silt, medium-gray (N5) shale. Contains the Lower (2-4 ft) and Upper (2-2.5 ft) Hartshorne coal beds. Thickness: approximately 250 ft.
- Pa ATOKA FORMATION (PENNSYLVANIAN)—Predominantly silty, medium-dark-gray (10Y4) to olive-gray (5Y2) noncalcareous silty shale (Pa) with thin, brownish-gray (5YR3/4) siltstone beds. Shale typically fissile, weathers to flaky appearance. Siltstones typically very well stratified to laminated and/or fissile. Locally wavy-bedded and burrowed. Spherical weathering and pencil-structure rare. Includes numerous, continuous to discontinuous, moderate-yellowish-brown (10YR5/4) to dark-yellowish-orange (10YR6/6), very fine to line-grained, silty, micaceous sandstones. Most sandstone beds occur within three ridge-forming units, informally named as follows (oldest to youngest): sandstone of Glendale (Pasp); sandstone of Potts Mountain (Pasp); and sandstone of Horseshoe Ridge (Pash). Each unit may be composed of 10-30% sandstone, the remainder being siltstone and shale, which are generally unexposed. Pasp consists of as many as five mappable sandstone-dominated units that are separated by shale (Pa). Outcrops of individual sandstone beds as thick as 15 ft, but base and top typically covered by float. Slabby to flaggy weathering, more rarely blocky, and locally erodes to distinctive "tomestone topography". Typically cross-stratified and wavy-bedded with asymmetric or interference ripples on tops of beds. Large-scale crossbeds and evidence for channeling rare. Total mapped maximum thickness of Pasp including intervening shales (Pa) approximately 3650 ft, thins to north. Pasp consists of one, and more rarely two, mappable sandstone-dominated units. Outcrops of individual sandstone beds as thick as 10 ft, locally, beds separated by thin intervals of cover (probably shale) are as thick as 25 ft. Weathers to blocky, slabby, or flaggy appearance, more rarely platy to fissile. Swaly bedding common. Typically cross-stratified, locally on a relatively large scale (2 ft). Mud rip-up clasts, carbonized plant debris, and trace fossils rare. Total mapped maximum thickness of Pash approximately 450 ft, thins to north. Pash consists of one, almost continuous, mappable sandstone-dominated unit. Outcrops vary from 1 to 20 ft thick. Blocky, slabby, to flaggy weathering. Unstratified, parallel-stratified to cross-stratified; locally swaly bedded and/or with undulatory tops and bases of individual beds. Total mapped maximum thickness of Pash approximately 250 ft, thins to north. Approximately 8,100 ft of upper part of Atoka Formation exposed in mapped area.

LIST OF WELLS SPUDDED BEFORE JANUARY 1, 1993 (OPERATOR, NUMBER, FARM NAME, SPUD DATE, TOTAL DEPTH)

1. Sun Exploration and Production 1 Jean Shadwick, 1/9/86, 13,996 TD
2. Humble Oil and Refining 1 Robert S. Kerr, 9/19/63, 15,835 TD
3. Samedan Oil 1 Turnispeed (reworked), 5/1/68, 15,835 TD
4. Kaiser-Francis Oil 16-1 Gidersleeve, 1/3/78, 2847 TD
5. LeFlore County Gas and Electric 1 O.D. Fale, 3/17/48, 2200' TD
6. Oakland Oil 1-23 Blake, 6/25/92, 1849' TD
7. unknown
8. El Paso Natural Gas 1 Webb, 2/8/62, 12,916' TD
9. Kimon 1 C.A. Lucas, 6/10/20, 3500(?) TD
10. unknown
11. unknown, 3791' TD
12. unknown
13. unknown, 2750' TD
14. unknown, 1960' TD
15. Amoco Production 1 Short, 2/3/90, 14,950' TD
16. W.G. McBride 1 Stacy, 4/26/65, 8512' TD
17. Hunt Energy 1 Pecosworth, 12/28/80, 17,500' TD
18. LeFlore County Gas and Electric 1 A.J. Wilson, 6/4/51, 4397' TD



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