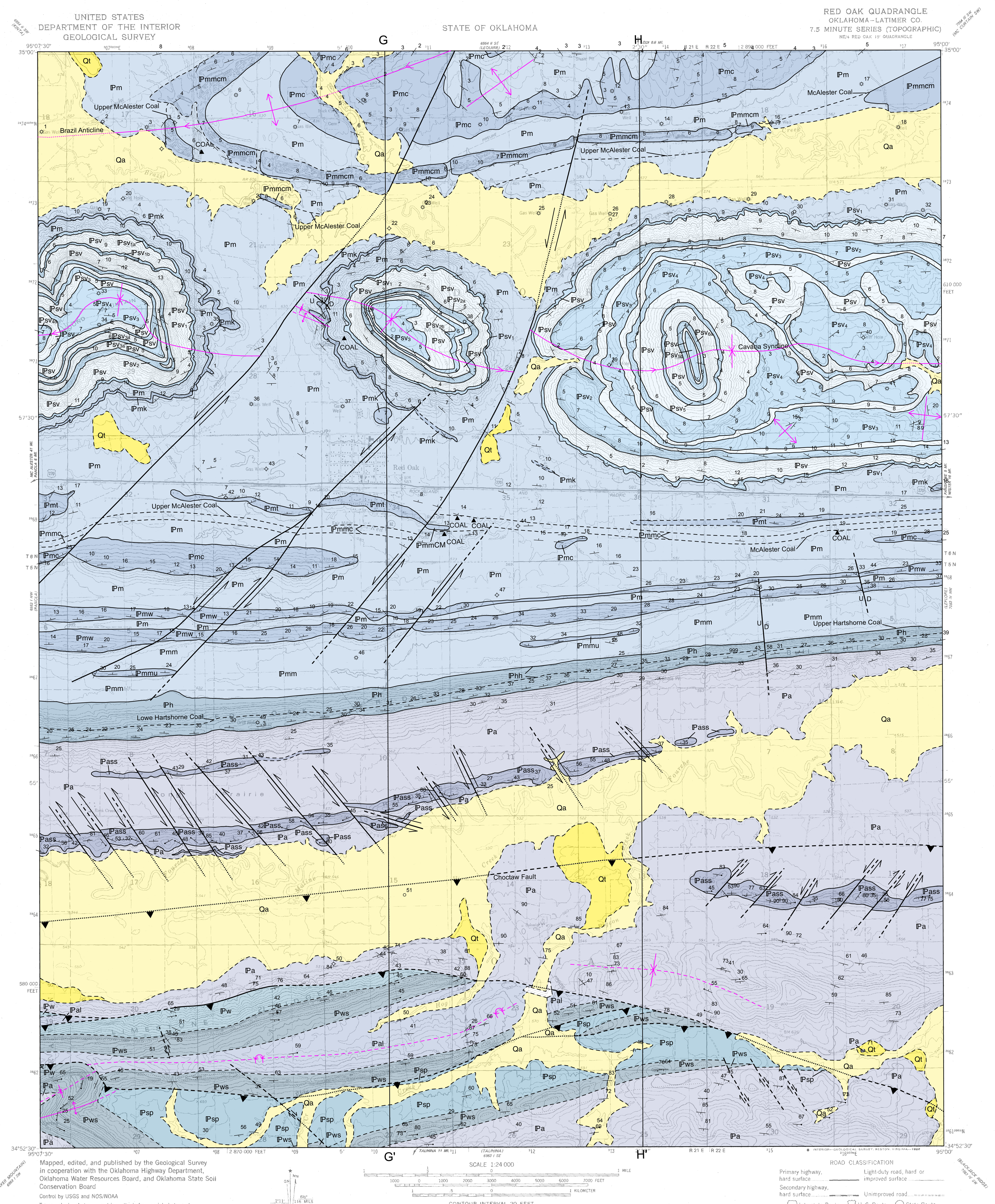


Mapped, edited, and published by the Geological Survey in cooperation with the Oklahoma Highway Department, Oklahoma Water Resources Board, and Oklahoma State Soil Conservation Board

Control by USGS and NOS/NOAA

Topography by photogrammetric methods from aerial photographs taken 1976. Field checked 1977. Map edited 1979

Projection and 10,000-foot grid ticks: Oklahoma coordinate system, south zone (Lambert conformal conic)
1000-meter Universal Transverse Mercator grid, zone 15
1927 North American datum
To place on the predicted North American Datum 1983 move the projection lines 6 meters south and 21 meters east as shown by dashed corner ticks

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

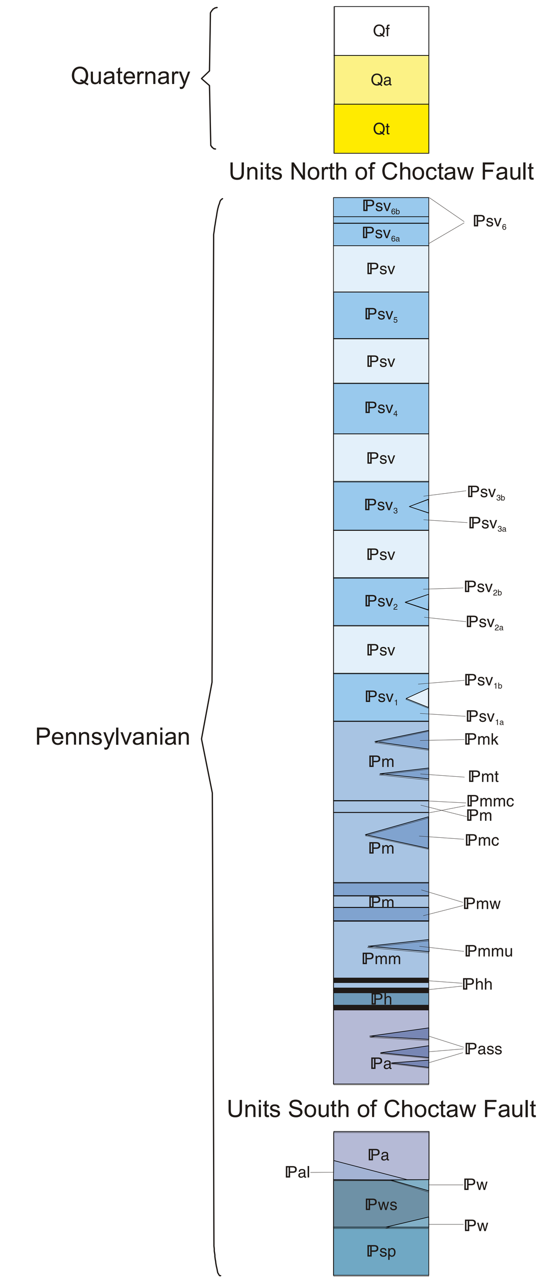
Digitization supported by the USGS, National Cooperative Geologic Mapping Program, under GS14AC00329.

GEOLOGIC MAP OF THE RED OAK 7.5' QUADRANGLE LATIMER COUNTY, OKLAHOMA

By
LeRoy A. Hemish, Neil H. Suneson, and Charles A. Ferguson

Digitized by Jacob Hernandez, 2014

Correlation of Map Units



DESCRIPTION OF UNITS

af ARTIFICIAL FILL (QUATERNARY)—Artificial fill mapped only in large dams

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

Psv SAVANNA FORMATION (PENNSYLVANIAN)—Predominantly brown to olive-gray to dark-gray shales (Psv) with several mappable, brown, fine-grained, noncalcareous sandstone units (Psv1, Psv2, Psv3, Psv4, Psv5, Psv6). 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. Stigmaria are particularly abundant in Psv4 at the top of Second Mountain. Psv1, in the northern flank of Second Mountain, is split into two units (Psvla, Psvlb) separated by shale. In the remainder of the outcrop belt of the Savanna Formation, Psv1 is not mappable as more than one unit. On Red Oak Mountain Psv2 is split into two units (Psv2a, Psv2b) separated by shale. Psv3, in the south flank of Second Mountain, is also split into two units (Psv3a, Psv3b) separated by shale. Psv4 is a single unit throughout the outcrop area of the Savanna Formation. Psv5 is also a single unit that occurs only at the crest of Second Mountain and as an encircling band around Red Oak Peak. Psv6 is split into two units (PsvGa, PsvGb) separated by shale. The two units form the resistant cap of Red Oak Peak. Most shales include thin, unmappable sandstone beds. A thin, unmappable, impure, fossiliferous limestone bed crops out sporadically in gullies on the flanks of Second Mountain and Red Oak Mountain in the shale interval between Psv1 and Psv2. A thin, noncommercial coal bed crops out in a gully on the south flank of the Cavanal Syncline near the base of the Savanna Formation. Top of formation eroded. Maximum thickness of remaining units about 1,400 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. Three named, brown, fine-grained, thin-bedded sandstone units occur in the shale (Pm) above the Warner Sandstone Member: Cameron Sandstone Member (Pmc), Tamaha Sandstone Member (Pmt), and Keota Sandstone Member (Pmk). Poorly exposed McAlester and Upper McAlester coal beds (Pmmc) occur in the shale interval between the Cameron Sandstone Member and the Tamaha Sandstone Member. Surface mined areas designated PmmcM. 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 300^00 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 olive-gray (5Y4/1) to grayish-olive (10Y4/2), slightly silty, noncalcareous, poorly laminated to fissile shale and mudstone. Locally shows slight pencil structure. Contains thin beds of laminated siltstone and thicker beds of sandstone. Lower shale (Pal) locally mapped separately. Sandstone is light-olive-gray (5Y5/2) and grayish-orange (5Y7/2) where fresh, and grayish-orange (10YR7/4) where weathered. Mostly fine-grained, rarely medium-grained, poorly to moderately sorted, noncalcareous, and composed of about 95% quartz, 3% feldspar and lithic fragments, and conspicuous white mica parallel to laminations. Individual beds vary from several centimeters to several meters thick and average about 60 cm. Amalgamated beds common. Thicker beds are generally unstratified (corresponding to Ta of Bouma turbidite sequence) to parallel laminated (Tb); thinner beds commonly are ripple cross-laminated (Tc). Sole marks (flute and groove casts, and trace fossils) at base of sandstone beds locally common. Dish-and-pillar structures typical of some beds. Tops of beds locally undulatory. Contains concentrations of plant debris and organic matter on some bedding planes. Maximum exposed thickness in quadrangle approximately 6,000 ft (1,800 m) south of Choctaw fault; top not exposed

Pal LOWER ATOKA SHALE (PENNSYLVANIAN)—Poorly exposed, olive-gray (5Y3/2) to grayish-olive (10Y4/2), noncalcareous, poorly laminated shale and mudstone with thin siltstone and rare sandstone beds. Sandstone beds similar to those in Atoka Formation (Pa). Locally mapped separately from Atoka Formation (Pa). Maximum thickness approximately 1,350 ft (400 m) south of Choctaw fault, becomes more sandstone-rich southward where mapped as Atoka Formation (Pa)

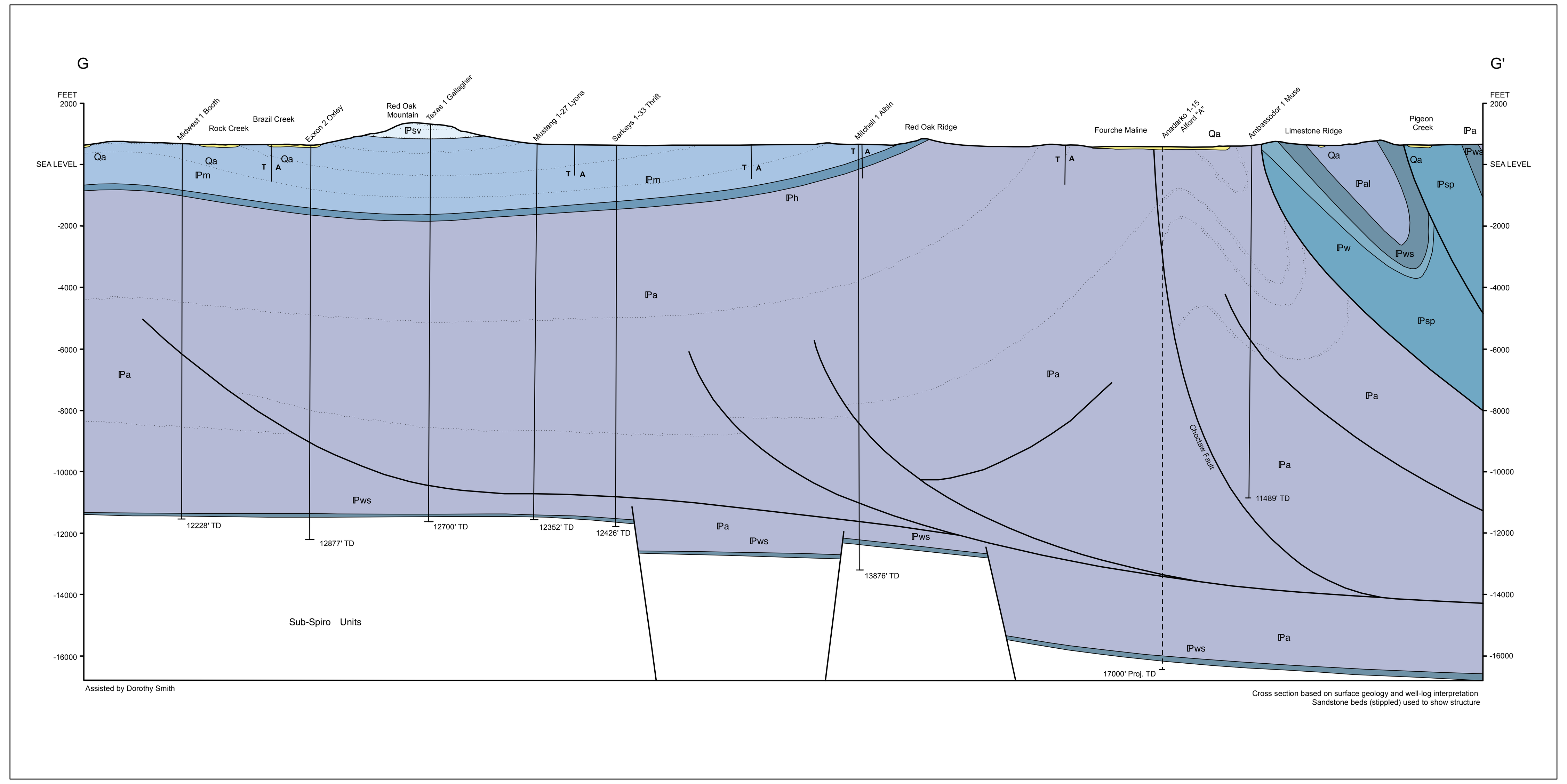
Pws SPIRO SANDSTONE MEMBER (INFORMAL) OF WAPANUCKA FORMATION (PENNSYLVANIAN)—Well-exposed, pinkish-gray (5YR8/1) to very pale-orange (10YR8/2) or pale-yellowish-orange (10YR8/6), mostly well-sorted, porous, medium-grained, stratified quartz arenite. Quartzose, mostly noncalcareous, locally with trace fossils and fragments and molds of crinoids. Beds typically 2 cm to 1 m thick, amalgamated, and mostly parallel-stratified, but locally planar-tabular cross-stratified. Ripples present on tops of some beds. Shale clasts rare. Weathers to very vuggy appearance. Locally includes thin beds composed entirely of fossil fragments and poorly exposed gray micrite similar to the Wapanucka Formation (Pw). Forms ridge and dip slope throughout area. Mostly overlies but locally interfingers with Wapanucka Formation (Pw). Maximum thickness approximately 900 ft (275 m) south of Choctaw fault; pinches out eastward in southeastern part of quadrangle

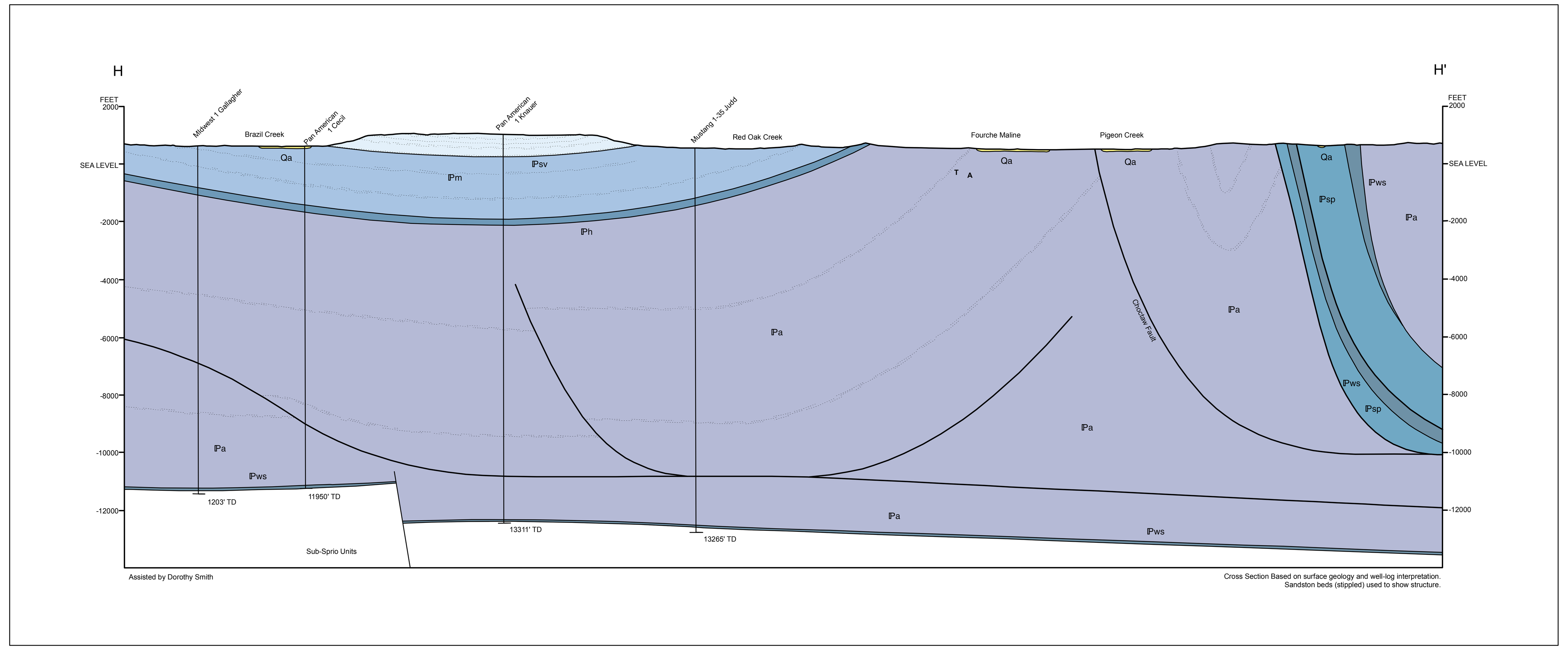
Pw WAPANUCKA FORMATION (PENNSYLVANIAN)—Poorly exposed, medium-gray (N5) to medium-dark-gray (N4), wavy-bedded, sparsely fossiliferous (crinoids, brachiopods, gastropods, corals) micrite and parallel- to rarely cross-stratified packstone and bbclastic limestone. Locally includes poorly indurated sandstone and shale. Micrite locally nodular, slightly petroliferous odor; packstone locally sandy. Limestone mostly underlies but locally interfingers with Spiro sandstone member (Pws) (informal). Limestone-to-sandstone ratio in Spiro-Wapanucka appears to decrease southward. Maximum thickness of Wapanucka approximately 850 ft (250 m) south of Choctaw fault

Psp "SPRINGER" FORMATION (PENNSYLVANIAN)—Poorly exposed, olive-black (5Y2/1) to light-olive-brown (5Y5/6), fissile, locally slightly silty, calcareous and noncalcareous shale with very minor interbedded laminated siltstone. Locally contains 5-cm to 25-cm, ellipsoidal, limonitized siderite (?) concretions with long axes parallel to bedding. Typically shows slight pencil structure. Approximately 2,100 ft (650 m) maximum exposed in quadrangle south of Choctaw fault; base not Exposed

LIST OF WELLS SPUDDED BEFORE JANUARY 1, 1990

1. Midwest Oil Corp. 1 White, Spud 10/11/61, TD 12,279'
2. Amoco Production Co. 2 Sentry Royalty Unit, Spud 2/12/87, TD 12,675'
3. Midwest Oil Corp. 1 Sentry Royalty, Spud 7/24/62, TD 12,600'
4. Harry T. Zucker 1 Old Mack Coal Co., Spud 3/20/50, TD 6,512'
5. Le Flore County G & E Co. 1 Cutler, Spud 12/2/28, TD 2,673'
6. Amoco Production Co. 2 Brewer, Spud 11/20/86, TD 12,636'
7. Midwest Oil Corp. 1 Brewer Unit, Spud 4/11/62, TD 12,333'
8. Amoco Production Co. 2 Booth Unit, Spud 8/1/86, TD 12,457'
9. Midwest Oil Corp. 1 Booth, Spud 11/26/62, TD 12,228'
10. Sun Exploration & Production Co. 2 Wm. Gallagher Unit, Spud 5/21/85, TD 12,775'
11. Frankfort Oil Co. 1 Wm. Gallagher, Spud 6/26/62, TD 12,077'
12. D-PEX Operating Co. 1 Coy, Spud 8/14/89, TD 2,000'
13. Midwest Oil Corp. 1 Gallagher, Spud 7/14/61, TD 12,038'
14. Amoco Production Co. 2 Gallagher Unit, Spud 2/4/86, TD 12,157'
15. Sun Exploration & Production Co. 2 Hulsey Unit, Spud 4/16/85, TD 12,530*
16. Frankfort Oil Co. 1 Hulsey Unit, Spud 8/8/60, TD 12,453'
17. Amoco Production Co. 2 Rider Unit, Spud 10/2/86, TD 11,852'
18. Midwest Oil Corp. 1 Rider, Spud 9/18/60, TD 12,130'
19. Mustang Production Co. 1-20 Gillespie, Spud 12/12/72, TD 8,927'
20. Unknown
21. Midwest Oil Corp. 1 Noah, Spud 7/28/63, TD 12,495'
22. Exxon Corp. 2 John C. Oxley Unit, Spud 10/26/85, TD 12,877'
23. Humble Oil & Refining Co. 1 J. C. Oxley, Spud 2/22/65, TD 7,913'
24. JMC Exploration Inc. 3 Oxley, Spud 7/5/88, TD 12,306'
25. Humble Oil & Refining Co. 1 Erwin Unit, Spud 8/5/64, TD 12,100'
26. Pan American Petroleum Corp. 1 Cecil Unit, Spud 4/3/65, TD 11,950'
27. Amoco Production Co. 3 Cecil, Spud 12/15/89, Drilling
28. Arco Oil & Gas Co. 2 Cecil Unit, Spud 9/10/82, TD 7,500'
29. Pan American Petroleum Corp. 1 Kent Unit, Spud 1/15/62, TD 12,160'
Amoco Production Co. (Work over) 1 Kent Unit, Reentered 12/31/85, TD 12,160'
30. Amoco Production Co. 2 Kent Unit, Spud 9/28/87, TD 12,508'
31. Pan American Petroleum Corp. 1 Martin Unit, Spud 7/21/61, TD 12,500'
32. Amoco Production Co. 2 Martin Unit C, Spud 6/27/85, TD 2,600'
33. Mustang Production Co. 1-20 Strother, Spud 11/25/84, TD 13,450'
34. Whitmar Exploration Co. 1-29 Mary B. Corcoran, Spud 8/8/83, TD 14,000'
35. Mustang Fuel 1-28 Noah, Spud 1/14/89, TD 13,000'
36. Mustang Production Co. 1-28 Smallwood, Spud 4/25/76, TD 12,946'
37. Mustang Production Co. 1-27 Lyons, Spud 8/13/76, TD 12,352'
38. Texas Oil & Gas Corp. 1 Gallagher, Spud 4/16/79, TD 12,700'
39. Pan American Petroleum Corp. 1 Knauer Unit, Spud 2/10/66, TD 13,311'
40. Dyco Petroleum Corp. 1 Steele, Spud 9/8/74, TD 12,786'
41. Amoco Production Co. 1 O. P. Brewer Unit, Spud 1/5/86, TD 12,600'
Chaparral Energy Inc. (Work over) 1-29 Brewer, Spud 1/16/89, TD 12,600'
42. Cleary Petroleum Corp. 1-33 Cannon, Spud 9/16/71, TD 13,131'
43. Sarkeys, Inc. 1-33 Thrift, Spud 10/22/76, TD 12,426'
44. Mustang Production Co. 1-35 Judd, Spud 4/1/80, TD 13,265'
45. Mustang Production Co. 1-31 Fields, Spud 12/27/76, TD 13,353'
46. Mitchell Energy Corp. 1 Russel Albin, Spud 3/10/84, TD 13,876'
47. Southland Royalty Co. 1-2 Garner, Spud 3/17/81, TD 12,964'
48. Amoco Production Co. 1 Thomas, Spud 11/16/88, TD 13,130'
49. Pan American Petroleum Corp. 1 J. A. Johnson Estate, Spud 7/1/67, TD 9,686'
50. Ambassador Oil Corp. 1 Muse, Spud 4/23/64, TD 11,489'
51. Anadarko Petroleum 1-15 Alford "A", Spud 8/7/89, Drilling





SYMBOLS

CONTACT-Dashed where approximately located MARKER BED

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

THRUST FAULT-Sawteeth on upper plate; dashed where approximately located; dotted where concealed

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

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

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

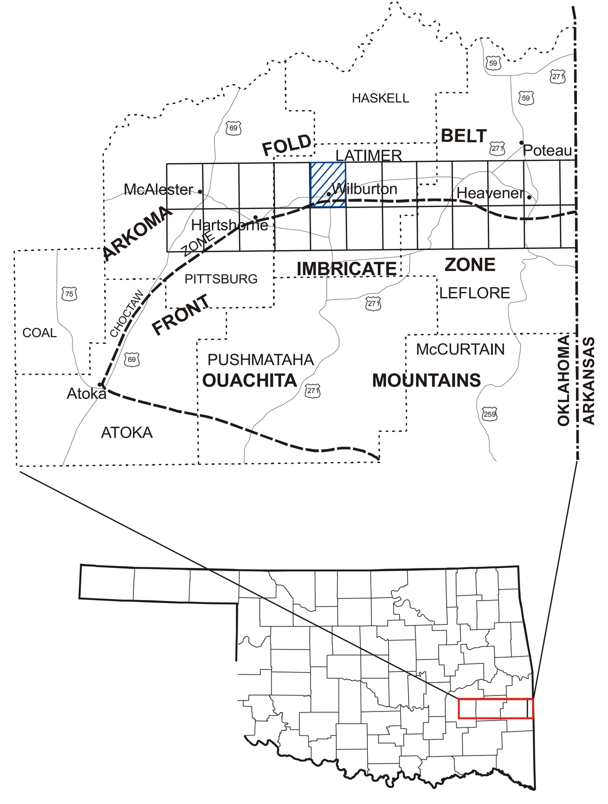
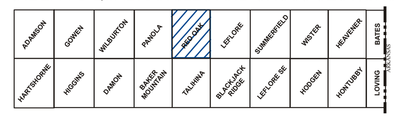
OVERTURNED SYNCLINE-Arrows show direction of dip of limbs; dashed where approximately located

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 indicates top of beds

OIL AND GAS WELLS

- Drilling as of January 1,1990
- Dry hole, abandoned
- Gas well
- Number on map corresponds to list of wells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