

(previously Open-File Report OF3-90)

CONTACT--Dashed where approximately located

indicates exposure of coal

located; dotted where concealed

Leader to location of measurement

Strike and dip of beds, upright

Drilling as of January 1, 1990

Dry hole, abandoned

Strike and dip of beds, overturned

Vertical beds, facing direction unknown

Vertical beds, ball indicates top of beds

Number on map corresponds to list of wells

Midwest Oil Corp. 1 White, Spud 10/11/61, TD 12,279'
 Amoco Production Co. 2 Sentry Royalty Unit, Spud 2/12/87, TD 12,675'

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'

Midwest Oil Corp. 1 Sentry Royalty, Spud 7/24/62, TD 12,600'
 Harry T. Zucker 1 Old Mack Coal Co., Spud 3/20/50, TD 6,512'
 Le Flore County G & E Co. 1 Cutler, Spud 12/2/28, TD 2,673'
 Amoco Production Co. 2 Brewer, Spud 11/20/86, TD 12,636'

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'

Frankfort Oil Co. 1 Hulsey Unit, Spud 8/8/60, TD 12,453

21. Midwest Oil Corp. 1 Noah, Spud 7/28/63, TD 12,495'

27. Amoco Production Co. 3 Cecil, Spud 12/15/89, Drilling28. Arco Oil & Gas Co. 2 Cecil Unit, Spud 9/10/82, TD 7,500'

30. Amoco Production Co. 2 Kent Unit, Spud 9/28/87, TD 12,508'

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

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'

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'

29. Pan American Petroleum Corp. 1 Kent Unit, Spud 1/15/62, TD 12,160

31. Pan American Petroleum Corp. 1 Martin Unit, Spud 7/21/61, TD 12,500

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'

Pan American Petroleum Corp. 1 Knauer Unit, Spud 2/10/66, TD 13,311

Chaparral Energy Inc. (Work over) 1-29 Brewer, Spud 1/16/89, TD 12.600'

49. Pan American Petroleum Corp. 1 J. A. Johnson Estate, Spud 7/1/67, TD 9,686'

41. Amoco Production Co. 1 O. P. Brewer Unit, Spud 1/5/86, TD 12,600'

42. Cleary Petroleum Corp. 1-33 Cannon, Spud 9/16/71, TD 13,131'

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

Southland Royalty Co. 1-2 Garner, Spud 3/17/81, TD 12,964'
 Amoco Production Co. 1 Thomas, Spud 11/16/88, TD 13,130'

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

 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'

Dyco Petroleum Corp. 1 Steele, Spud 9/8/74, TD 12,786

43. Sarkeys, Inc. 1-33 Thrift, Spud 10/22/76, TD 12,426

Amoco Production Co. (Work over) 1 Kent Unit, Reentered 12/31/85, TD 12,160'

STRIKE AND DIP OF BEDS

OIL AND GAS WELLS

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

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

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

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

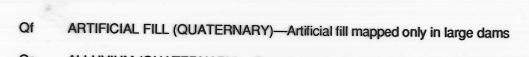
ANTICLINE--Showing crestline; arrow shows direction of plunge; dashed where approximately

SYNCLINE--Showing troughline; arrow shows direction of plunge; dashed where approximately

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

LIST OF WELLS SPUDDED BEFORE JANUARY 1, 1990

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



**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

CORRELATION OF MAP UNITS

Units North of Choctaw Fault

——IPsv1a

**──**IPmt

₽m → IPmw

— Pw

Units South of Choctaw Fault

IPmm IPmmu

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. Th commonly are cross-bedded and ripple-marked and in places contain abundant soft-sedimen 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 (Psv1a, Psv1b) 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 (Psv6a, Psv6b) 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

### 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

- ripple-marked, bioturbated, thin-bedded to massive sandstone interbedded with silty gray shale
- 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

weathered. Mostly fine-grained, rarely medium-grained, poorly to moderately sorted, 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 grayisholive (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

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

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 bioclastic limestone. Locally includes poorly indurated sandstone and shale. Micrite locally nodular, slightly petroliferous odor;

Ph HARTSHORNE FORMATION (PENNSYLVANIAN)—Brown to very light-gray, very fine-grained, Ph). Contains the Lower and Upper Hartshorne coal beds (Phh). Thickness 300-400 ft

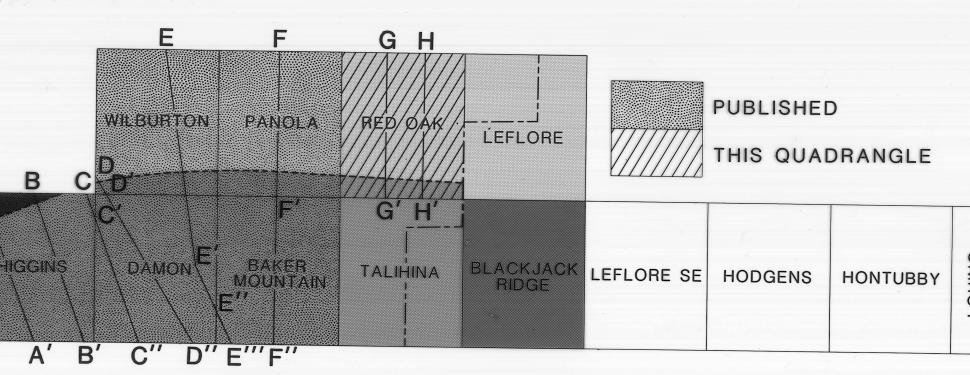
### UNITS PRESENT SOUTH OF CHOCTAW FAULT

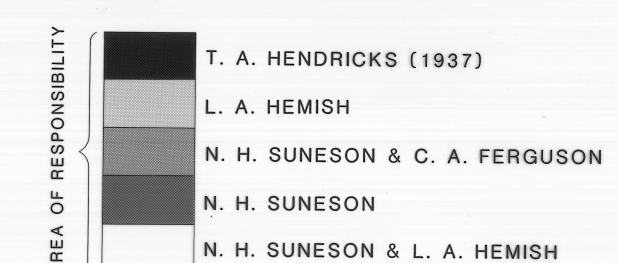
ATOKA FORMATION (PENNSYLVANIAN)—Predominantly poorly exposed olive-gray (5Y4/1) to grayish-olive (10Y4/2), slightly silty, noncalcareous, poorly laminated to fissile shale and mudstone. Locally shows slight pencil structure. Contains thin beds of laminated siltstone and thicker beds of sandstone. Lower shale (Pal) locally mapped separately. Sandstone is light-olivegray (5Y5/2) and grayish-orange (5Y7/2) where fresh, and grayish-orange (10YR7/4) where 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

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

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

"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





INDEX TO QUADRANGLES, CROSS SECTIONS, AND AREA OF RESPONSIBILITY

