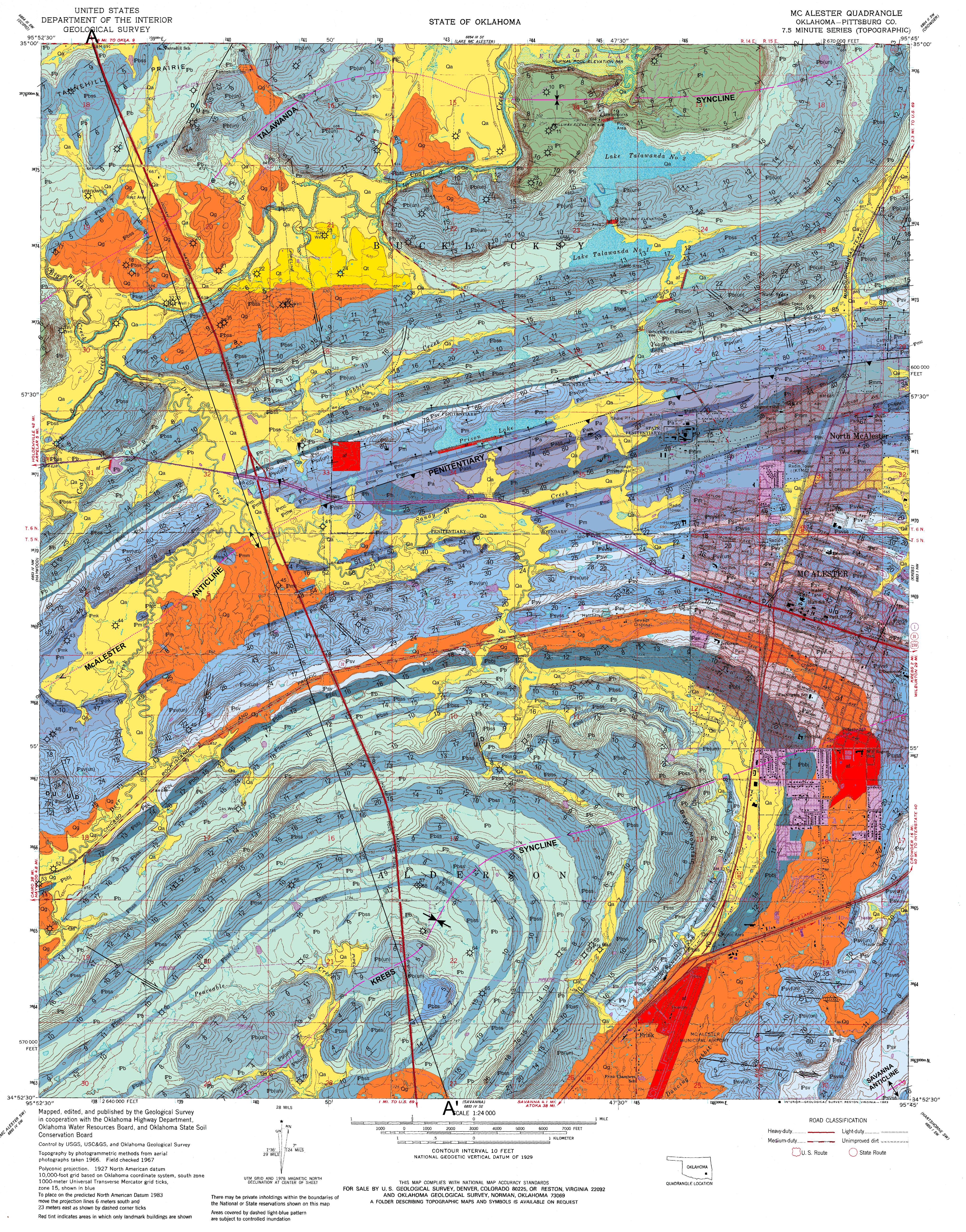
OKLAHOMA GEOLOGICAL SURVEY
Charles J. Mankin, *Director*

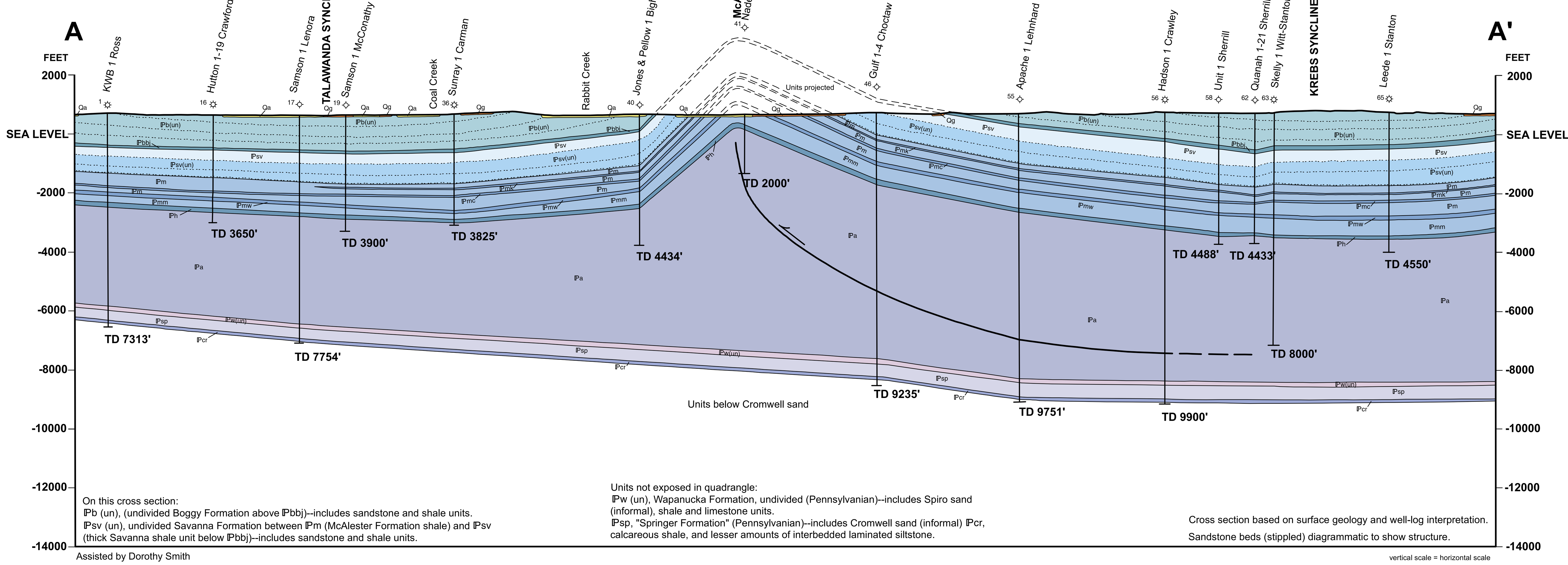
Oklahoma Geologic Quadrangle **OGQ-21**
Geologic Map of the McAlester 7.5′ Quadrangle
(previously Open-File Report OF5-97)



Geology mapped in 1996-97

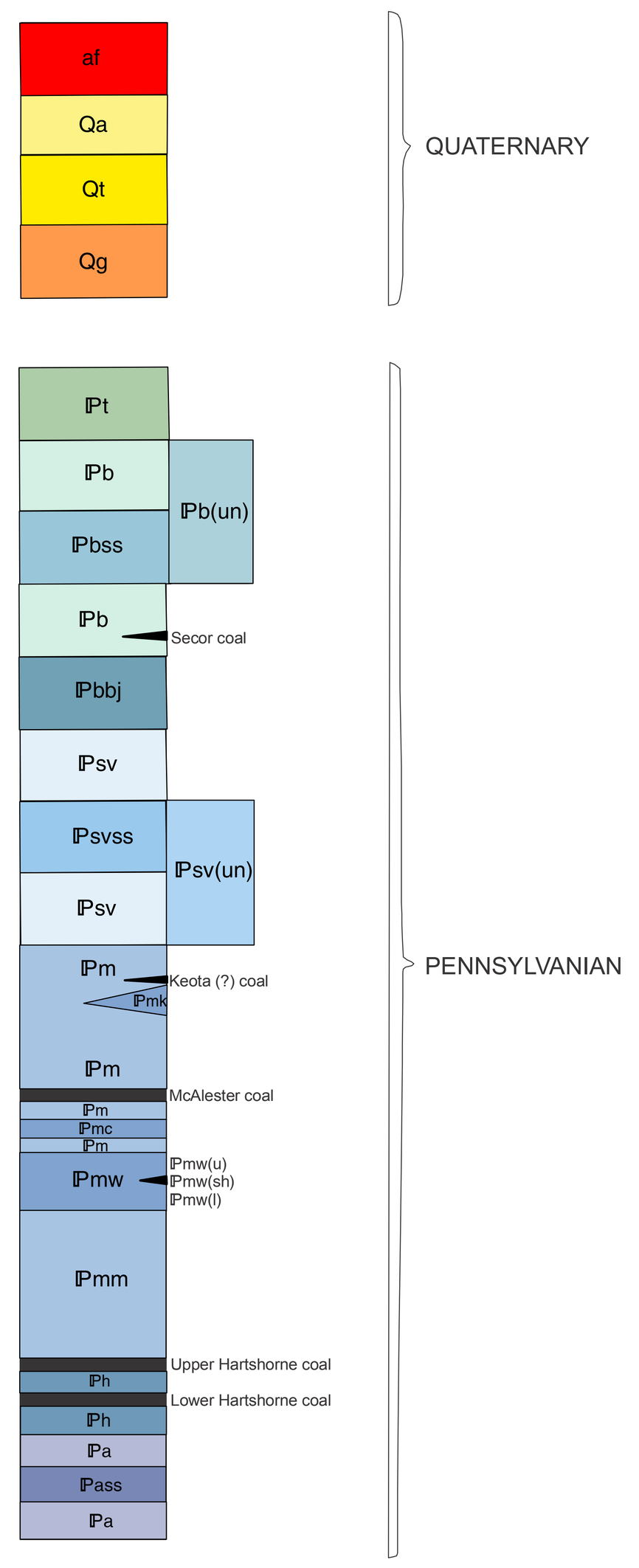
GEOLOGIC MAP OF THE McALESTER QUADRANGLE, PITTSBURG COUNTY, OKLAHOMA

By
LeRoy A. Hemish
1997



Assisted by Dorothy Smith

CORRELATION OF MAP UNITS



DESCRIPTION OF UNITS

af ARTIFICIAL FILL—Mapped in large dams, airports, and landfills.

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 15–50 ft above the beds of present-day streams.

Qg GERTY SAND (QUATERNARY)—Unconsolidated gravel, sand, silt, and clay in abandoned river channel found at elevations well above modern flood plains. Main constituents of the sand and gravel are quartz, quartzite, chert, flint, jasper, and silicified wood. Thickness varies from an estimated maximum of 50 ft to a thin veneer.

Pt THURMAN FORMATION (PENNSYLVANIAN)—Predominantly grayish orange (10YR7/4) to very pale orange (10YR8/2) to moderate brown (5YR3/4;4/4) very fine to fine-grained sandstone; mostly thick to medium bedded, with flat to irregular bedding, and in places, low-angle cross-bedding; soft-sediment deformation features common; included plant material locally abundant. Conglomeratic in places with abundant fragments of chert and quartz. Above the lower sandstone unit the beds consist of interbedded grayish orange (10YR7/4) shales and fine-grained sandstones. Upper part of formation eroded. Remaining thickness estimated at 100 to 150 ft.

Pb BOGGY FORMATION (PENNSYLVANIAN)—Predominantly sandy, silty grayish black (N2) to olive gray (5Y4/1) to dark yellowish brown (10YR4/2) shales and siltstones (Pb) with several mappable, scarp-forming, fine- to very fine grained sandstones (Pbbj, Pbss). In several areas the sandstones and shales are not mappable as separate units and are designated as Pb(un). At the base is the Bluejacket Sandstone Member (Pbbj), mostly moderate yellowish brown (10YR5/4), about 150–200 ft thick. The Bluejacket contains a lower, very fine grained, silty, shaly, thin-bedded, parallel-bedded, ripple-marked, bioturbated sandstone unit 25–50 ft thick; a middle silty shale unit (generally covered), about 50–100 ft thick; and an upper fine-grained, medium- to thick-bedded sandstone unit about 25–75 ft thick, containing large-scale trough cross-bedding, abundant soft-sediment-deformation features, and stacked-channel sequences. Pbss units are predominantly dark yellowish brown (10YR4/2) to grayish orange (10YR7/4) to light brown (5YR5/2), very fine grained, noncalcareous sandstones with abundant sedimentary structures such as ripples, cross-stratification, sole marks, and soft sediment deformation features. The Secor coal occurs in the shale interval above Pbbj. It was mined locally in the past in sec. 12, T.5N, R.14E. The Secor coal crops out in the NW1/4 sec 33, T.6N., R.14E., where it is only ~2 in. thick. Numerous abandoned flagstone quarries in sandstones of the Boggy are scattered throughout the map area. Thickness of the formation estimated at 2,600–2,850 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 (5YR4/4) to grayish orange (10YR7/4) to moderate reddish brown (10YR4/6), fine- to very fine grained, noncalcareous sandstone units (Psvss). 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. Most shales in the Savanna include thin, unmappable sandstone units. In many places within the McAlester quadrangle, particularly where beds dip steeply or crop out in structurally complex areas, the sandstones and shales of the Savanna formation cannot be differentiated, and are designated Psv(un). Thin, unnamed coal beds probably occur locally in the Savanna, but none were observed in outcrop. Thickness: 1,000–1,200 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 ~500–600 ft thick. The Warner Sandstone Member (Pmw) overlies the McCurtain Shale Member. It is a resistance, moderate reddish brown (10R4/6) to grayish orange (10YR7/4) to moderate yellowish brown (10YR5/4), fine-grained, cross-bedded sandstone of variable thickness. Where exposed in a small area north and west of Krebs, it is mapped as Pmw(l), a thick sandstone unit containing intervening shales, a middle shale unit, Pmw(sh), and an upper sandstone unit, Pmw(u). Two named moderate brown (5YR3/4), very fine grained, thin-bedded sandstone units occur in the shale (Pm) above the Warner Sandstone Member: Lequire Sandstone Member (Pm) above the Warner Sandstone Member; Cameron Sandstone Member (Pmc), and Keota Sandstone Member (Pmk). The McAlester coal, about 2.0–4.0 ft thick, occurs in the shale interval above the Cameron Sandstone Member. It has been extensively mined in the McAlester area. Thickness: 1,600–1,700 ft.

Ph HARTSHORNE FORMATION (PENNSYLVANIAN)—Grayish orange (10YR7/4) to moderate reddish orange (10R6/6) to very light gray (N8), very fine grained, ripple-marked, bioturbated, thin-bedded to massive sandstone interbedded with silty, medium-gray (N5) shale. Contains the Lower and Upper Hartshorne coal beds. The Lower Hartshorne coal ranges in thickness from 2.5 ft to 6.0 ft — average thickness is ~4.0 ft; the Upper Hartshorne coal ranges in thickness from 2.3 ft to 3.5 ft — average thickness is ~3 ft. Thickness: approximately 250–300 ft.

Pa ATOKA FORMATION (PENNSYLVANIAN)—Predominantly silty, medium dark gray (N4) to olive black (5Y2/1) noncalcareous shale (Pa) with one discontinuous sandstone unit (Pass) exposed just south of the Penitentiary fault. Only the upper part of the formation is exposed in the quadrangle. Thickness unknown. Subsurface thickness: 5,500–6,000 ft.

SYMBOLS

CONTACT—Approximately located

COAL BOUNDARY—Approximate outcrop boundary of coal bed (named on map); queried where probable; 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; queried where probable

FAULT—Dashed where inferred; dotted where concealed; queried where probable; U = upthrown side, D = downthrown side

ANTICLINE—Showing crestline; arrow along axis shows direction of plunge; dashed where approximately located; dotted where concealed

SYNCLINE—Showing troughline; arrow along axis shows direction of plunge; dashed where approximately located; dotted where concealed

ABANDONED STONE QUARRY OR OPEN SHALE PIT

INACCESSIBLE TUNNEL, ADIT, OR SLOPE

STRIKE AND DIP OF BEDS

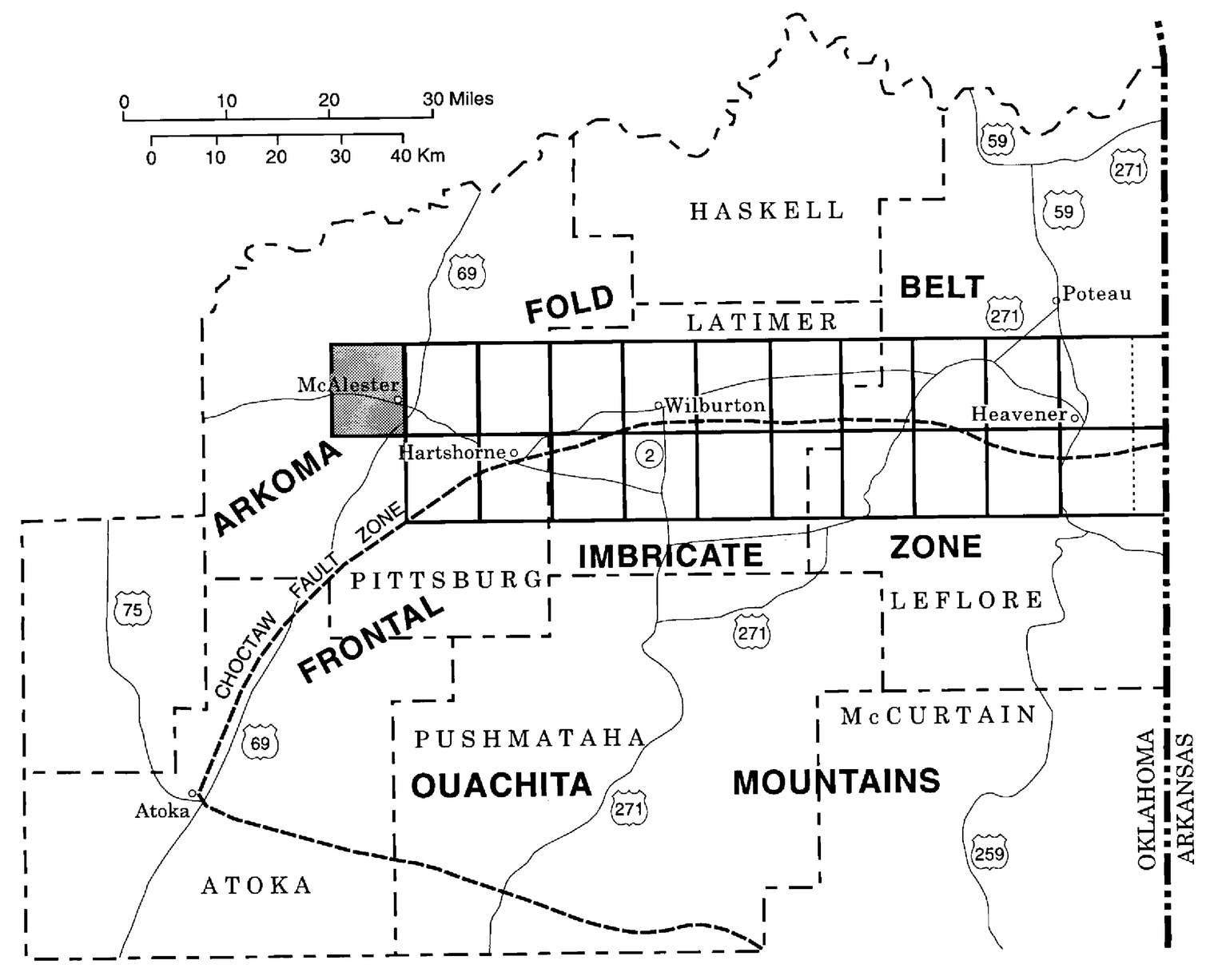
- Strike and dip of beds, upright
- Undulatory beds, average dip
- Vertical beds, ball indicates top of beds
- Horizontal beds
- Overturned beds

OIL AND GAS WELLS

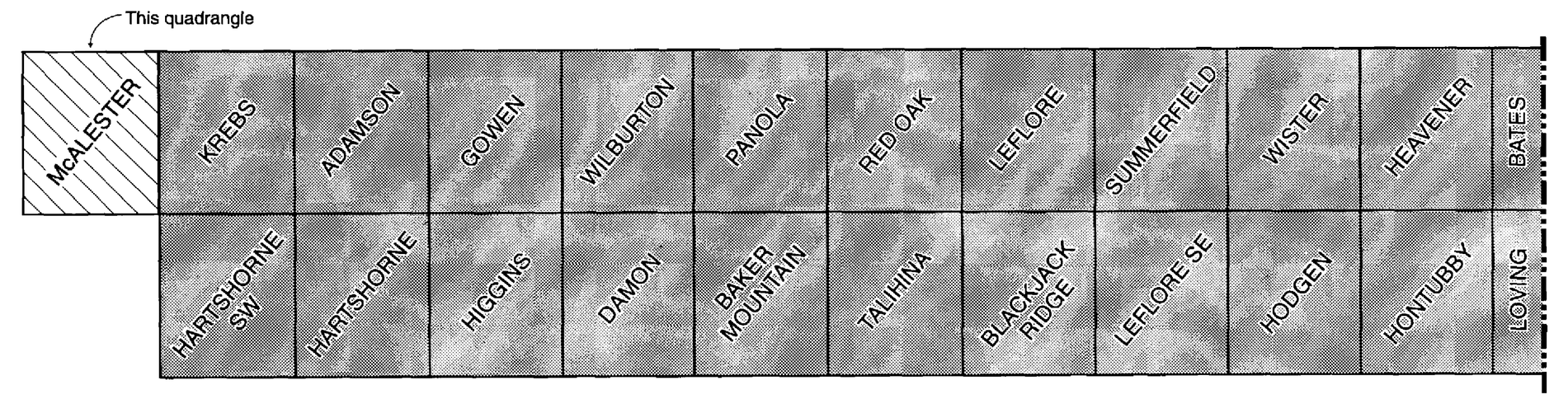
- Dry hole, abandoned
- Gas well
- 10 Number on map corresponds to list of wells

LIST OF WELLS SPUDDED BEFORE JANUARY 1, 1997

MAP NO.	OPERATOR	LEASE	SPUD DATE	TOTAL DEPTH (ft)
1	KWB Oil Property Management Inc.	1 Ross	05/07/80	7313
2	Joe D. Davis	1-18 Steele	09/13/87	3620
3	An-son	1 Lowe	11/26/63	3716
4	Joe D. Davis	2-17 Lowe	07/03/87	3750
5	Joe D. Davis	1-16 Buxbaum	12/01/87	3980
6	Astral Oil Co. Inc.	1-16 Rodd	05/02/67	4055
7	KWB Oil Property Management Inc.	2-16 Rodd	04/02/82	4050
8	Dyco Petroleum	1 Arnot Estate	06/26/75	4190
9	Jack Corman	2 Arnot Estate	03/01/89	4326
10	Dyco Petroleum	1 Lena Stubblefield	09/23/75	4423
11	Samedan Oil	1 Clemens Unit	11/21/67	4400
12	Natol Petroleum	1-A Clemens	07/07/68	4419
13	Jack Corman	2 Stubblefield	12/21/88	4362
14	Dyco Petroleum	1 Browning	05/23/76	4550
15	Montgomery Exploration	1 Brassfield	06/18/77	4435
16	Hutton Gas	1-19 Crawford	10/31/88	3650
17	Samson Resources Co.	1 Lenora	07/08/87	7754
18	Dyco Petroleum	1 McCullough (work over)	03/04/75	3618
19	Samson Resources Co.	1 McConathy	03/20/88	3900
20	Bell Oil & Gas Company	1 Camey Unit	10/03/64	3710
21	H. Huffman & Co.	1-A Carman	11/18/70	3670
22	Jack Corman	2 Carman	12/15/87	3819
23	Skelly Oil Co.	1 Compelube Unit	10/21/66	3820
24	Texaco Inc.	2 Compelube	10/31/90	3950
25	Snee & Eberly	1 Bane	04/22/67	3995
26	Eberly & Meade, Inc.	2-22 Bane	06/24/87	4128
27	C M Exploration	3-22 Bane	12/06/90	4220
28	Opco Oil & Gas	1 Tribal	12/03/70	4315
29	Apache Corporation	1 Departmental tract 9 unit	08/13/62	4140
30	Bell Oil & Gas Company	1 Patrick Unit	05/23/64	3778
31	Hutton Gas	2-30 Patrick	05/06/89	3801
32	Sunray DX Oil Co.	1 Carman Unit	05/15/66	3678
33	Sun Exploration & Production Co.	2 Carman Unit	04/16/83	0625 junked & abandoned
34	J & T Operating	1 Carman	04/10/91	2243
35	Sun Exploration & Production Co.	3 Carman Unit	04/24/83	3814
36	Sunray DX Oil Co.	1 George Carman Unit	11/25/66	3825
37	Kaiser-Francis Oil	2A George Carman	07/01/91	3763
38	Galaxy Oil	1 Arnote	03/04/69	3850
39	Bell Oil & Gas Co.	1 Sanders Unit	08/28/64	3670
40	Jones & Pellow	1 Bighouse	12/12/74	4434
41	Nadel & Gussman	1 H.D. Parsons	08/08/56	2000
42	?	?	?/?/36	1730
43	Sandra Corp.	1-6 Watkins	12/28/88	1850
44	Sandra Corp.	1 Willy	09/12/88	1421
45	British-American	1 O.F. Mitchell	?	0947
46	Gulf Oil Co.	1-4 Choctaw-State	10/22/81	9235
47	Sandra Corp.	1 Blake Watkins	12/31/87	2752
48	British-American	1 Ben Childers	?	7963
48	Wood Oil Co. (work over)	1 Childers	?	9350
49	Devon Corp.	1-8 Mitchell	06/20/80	9900
49	Sandro (work over)	1 Shelly	04/03/89	PBTD 3138
50	Oxley Petroleum Co.	1 Crawley	09/02/92	9691
51	Oxley Petroleum Co.	1 Adams	12/22/92	7100
52	American Land & Trading	1 Watson	10/15/80	2800
53	Apache Corp.	1 Watson Unit	04/16/66	2800
54	Ferguson Oil	1 Lehnhard	11/01/73	8743
55	Apache Corp.	1 Lehnhard	09/14/67	9751
56	Hadson Oil	1 Crawley	06/18/72	9900
56	Texas Oil & Gas (old well drilled deeper)	1 Sherrill "A"	08/17/76	9928
57	Midwest Energy	1 A Sherrill	01/25/91	7800
58	Unit Petroleum Co.	1 Sherrill	12/18/90	4488 junked & abandoned
59	Van-Dorf Exploration	1 Lehnhard	12/27/82	2969
60	Arkoma Basin Exploration	1-2 Peaceable	?	4072
61	?	?	?	1465
62	Quanah Petroleum	1-21 Sherrill Estate	03/08/82	4433
63	Skelly Oil Co.	1 Witt-Stanton	08/23/67	8000
64	Arkoma Basin Exploration	1-22 Stanton	01/05/85	4500
65	Leede Oil & Gas Inc.	1 Stanton	06/01/79	4550
65	Fugo Services (work over) (re-entry)	1-22-A Stanton	?	4560
66	Arkoma Basin Exploration	1-23 Harden	10/17/84	4500
66	Trafalgar House Oil & Gas	1-23 A Harden	12/10/85	4400
67	Steve Gose	1 Shuman	05/31/65	3130
68	Skelly Oil Co.	2 Shuman	07/23/65	4325
69	Monsanto	1 Shuman	06/17/72	9573
70	Oxley Petroleum Co.	1 Stanton	03/08/91	7900



Prepared in cooperation with the U.S. Geological Survey, National Geologic Mapping Program. Partial funding from USGS STATEMAP Program, Assistance Award No. G13AC00239.



GEOLOGIC MAPS PUBLISHED AS PART OF COGEOMAP & STATEMAP PROJECTS