Reservoir and Fluid Characteristics of Selected Oil Fields in Oklahoma

Compiled by William E. Harrison
and Darcia L. Routh
Reservoir and Fluid Characteristics
Of Selected Oil Fields in Oklahoma

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Each publication is numbered according to the year in which it was published and the order of its publication within that year. Gaps in the series occur when a publication has gone out of print or when no applicable publications were issued in that year.
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Reservoir and Fluid Characteristics
Of Selected Oil Fields in Oklahoma

Oklahoma fields will still contain more than 25 billion barrels of oil at the end of conventional petroleum production. Only two states (Texas and California) presently have larger quantities of unrecoverable oil. Thus Oklahoma is one of the oil-producing states that will probably experience considerable enhanced-oil-recovery (EOR) activity. Reservoir and fluid characteristics are important in planning and implementing EOR programs, and it is toward this end that the present reservoir compilation was directed.

A questionnaire was designed and circulated to operators of waterflood units in the 23 "giant" fields in Oklahoma. "Giant" fields are those having an ultimate recovery potential of more than 100 million barrels.

The operators varied in size from major oil companies to family-owned and -operated waterfloods. Response to the questionnaire was also variable; some major companies promptly furnished all of the requested information, whereas others refused to cooperate in the project at all. At the time of this printing, responses are still being returned to the Oklahoma Geological Survey at a rate of about one every month. As response has remained level for the past year, the decision was made to collate the solicited information and make it available to the public.

Information is reproduced exactly as it was received from the waterflood operators, except for the most obvious location and spelling errors, which were corrected by workers at the Oklahoma Geological Survey. Slight variations exist between average depth values and the "type" logs that indicate productive intervals. In some cases, it was not possible to obtain copies of mechanical
logs in the exact area of specific waterflood units. Such cases are noted on the maps showing locations of waterflood units. Some of the logs used to show typical mechanical-log response are very old and do not have characteristics that might suggest productive intervals. We have, however, used the formation tops reported in completion reports or by operators and have shown actual productive intervals where possible.

Because of the manner in which operators responded to the questionnaire, no attempt was made to standardize terminology. This is especially noticeable on questions concerning type of drive mechanism and fluid content. Operators typically have used interchangeably such terms as depletion drive, gas expansion, solution gas, and volumetric solution gas drive. In such cases, we used the term or terms originally reported. Some operators provided salinity and chloride data in ppm (parts per million), whereas other operators used mg/l (milligrams per liter); and a few operators failed to identify specific units. Some operators provided qualitative sulfur data (sweet or sour crude), while others did not respond to this question. Thus, insofar as possible, the data presented in this compilation are as reported to the Oklahoma Geological Survey.

This compilation contains information on nearly 10 million acre-feet of reservoirs in Oklahoma. It is expected to prove useful in EOR-screening programs and reservoir-management programs. In addition, it represents a cross section of reservoirs in Oklahoma and should provide a general guide to reservoir characteristics for geologists, engineers, and planners who may not be familiar with the geology of the State.
ALLEN FIELD

(including East Allen)
Unit       Allen-Cromwell
Operator    Cities Service
Size        481 acres
County      Pontotoc
Location    sec. 17,19,20, T 5N, R 8E
Discovery date

RESERVOIR DATA
Producing formation  Cromwell
Age          Pennsylvanian
Lithology    Sandstone
Type trap
Average depth   2600 feet
Average thickness 87 feet
Average porosity 18%
Average horizontal permeability 180m Range
Average vertical permeability
Oil saturation @ beginning of secondary recovery 25%

Type drive
Original
Present

Pressure
Original
Present

FLUID DATA
API Gravity  35
Salinity of formation water  68,000
Chloride content of formation water  59000
Sulfur content of oil
Allen Field

Unit: Allen-Cromwell WF
Operator: Cities Service Oil Co
Size: Approx 640
County: Pontotoc
Location: T 5N, R 8E
Discovery Date: 1920

Reservoir Data
Producing Formation: First, Second, & Third Cromwell
Age: Pennsylvanian (Morrowan)
Lithology: Sandstone
Type Trap: Struct. & Strat.
Average Depth: 2600 feet
Average Thickness: 71 feet
Average Porosity: 18%
Average Horizontal Permeability: 180 m Range: 154-174
Average Vertical Permeability
Oil Saturation @ Beginning of Secondary Recovery: 53%
Type Drive
Original: Waterdrive 30%
Present: Waterflood 10%
Pressure
Original: NA
Present: 450

Fluid Data
API Gravity: 32°
Salinity of Formation Water: 68,000 ppm
Chloride Content of Formation Water: 59,000 ppm
Sulfur Content of Oil: None
Unit Chiles
Operator Burk Royalty
Size 290 acres
County Hughes
Location 20, T5N, R9E
Discovery date 1954

RESERVOIR DATA
Producing formation Booch
Age Pennsylvanian
Lithology Sandstone
Type trap
Average depth 2800 feet
Average thickness 12 feet
Average porosity 17% (est)
Average horizontal permeability Range
Average vertical permeability
Oil saturation @ beginning of secondary recovery 50% (est)

Type drive
Original
Present

Pressure
Original
Present

FLUID DATA
API Gravity 31
Salinity of formation water
Chloride content of formation water 54,500
Sulfur content of oil
Unit Allen-Gilcrease WF
Operator Cities Service
Size 730 acres
County Pontotoc
Location T 5N, R 8E
Discovery date 1920

RESERVOIR DATA
Producing formation Gilcrease
Age Pennsylvanian (Morrowan)
Lithology Sandstone
Type trap Struct. and strat.
Average depth 2400 feet
Average thickness 82 feet
Average porosity 18%
Average horizontal permeability 66m Range 5-104
Average vertical permeability
Oil saturation @ beginning of secondary recovery 40%
Type drive
Original Gas cap 28%
Present Waterflood 34%
Pressure
Original NA
Present

FLUID DATA
API Gravity $32^\circ$
Salinity of formation water 57,000 ppm
Chloride content of formation water 50,000 ppm
Sulfur content of oil None
Unit  Lewis Booch
Operator  American Petrofina of Texas
Size  717 acres
County  Pontotoc
Location  sec. 15,16,17,20,21, T 5N, R 8E
Discovery date

RESERVOIR DATA
Producing formation  2nd Booch Sand
Age  Pennsylvanian
Lithology  Sandstone
Type trap
Average depth  2200 feet
Average thickness  10 feet
Average porosity  18%
Average horizontal permeability 10m Range 1-42m
Average vertical permeability
Oil saturation @ beginning of secondary recovery 58%

Type drive
Original
Present

Pressure
Original
Present

FLUID DATA
API Gravity  40
Salinity of formation water
Chloride content of formation water
Sulfur content of oil
Unit  Allen
Operator Cities Service Oil Company
Size  280 acres
County  Pontotoc
Location  sec. 17 & 20, T5N, R8E
Discovery date  NA

RESERVOIR DATA
Producing formation  Gilcrease
Age  Pennsylvanian
Lithology  Sandstone
Type trap  NA
Average depth  2400 feet
Average thickness  80 feet
Average porosity  18%
Average horizontal permeability  66 md
Average vertical permeability
Oil saturation @ beginning of secondary recovery  25%

Type drive
Original  NA
Present  NA

Pressure
Original  NA
Present  NA

FLUID DATA
API Gravity  33.5°
Salinity of formation water  57,000 ppm
Chloride content of formation water  50,000 ppm
Sulfur content of oil  NA
AVANT FIELD
**Unit** Avant Unit

**Operator** Gulf

**Size** 640 acres

**County** Osage

**Location** T 23N, R 11E

**Discovery date** 11/14/07

**RESERVOIR DATA**

**Producing formation** Bartlesville

**Age** Pennsylvanian (Desmoinesian)

**Lithology** Sandstone

**Type trap** Stratigraphic

**Average depth** 1517 feet

**Average thickness** NA

**Average porosity** 12%

**Average horizontal permeability** 5m

**Range** .4–12.0

**Average vertical permeability** NA

**Oil saturation @ beginning of secondary recovery** 12%

**Type drive**

- Original Solution gas drive
- Present Waterflood

**Pressure**

- Original NA
- Present NA

**FLUID DATA**

**API Gravity** 36

**Salinity of formation water** Based on Cl Rw=.1 and Cl=50,000ppm

**Chloride content of formation water** 68,000 mg/l

**Sulfur content of oil** NA
BOWLEGS FIELD
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</table>
Unit Burden-A-Wise Lease
Operator Cities Service Oil Co
Size 480 acres
County Seminole
Location T 8N, R 6E
Discovery date 1927

RESERVOIR DATA
Producing formation 2nd Wilcox Sand
Age Ordovician
Lithology Sandstone
Type trap Structural
Average depth 4100 feet
Average thickness 50 feet
Average porosity 18%
Average horizontal permeability 300m Range
Average vertical permeability NA
Oil saturation @ beginning of secondary recovery Unknown

Type drive
Original Solution Gas
Present Injected Water

Pressure
Original
Present

FLUID DATA
API Gravity 40°
Salinity of formation water
Chloride content of formation water 137,500 ppm
Sulfur content of oil None
BURBANK FIELD

(North and South)
Unit     S. Burbank Unit/zone: Burbank
Operator  Phillips Petroleum
Size      2720 Acres
County    Osage
Location  T 25N, 26N, R 6E
Discovery date  Jan., 1934

RESERVOIR DATA

Producing formation  Burbank Sand
Age            Pennsylvanian (Desmoinean)
Lithology      Sandstone
Type trap     Stratigraphic
Average depth  2850 feet
Average thickness  53.3 feet
Average porosity  16.8%
Average horizontal permeability 50m Range 1md to 2.0darcies
Average vertical permeability
Oil saturation @ beginning of secondary recovery  43% (start water injection)

Type drive
Original   Solution Gas Depletion
Present    Water Injection

Pressure  
Original  1095 psi, April, 1934
Present   1087, July, 1959

FLUID DATA

API Gravity   39°-40°
Salinity of formation water  178,000 ppm TDS
Chloride content of formation water  110,000 ppm TDS
Sulfur content of oil  None
Unit: North Burbank
Operator: Phillips
Size: 23,900 acres
County: Osage
Location: T 26-27N, R5-6E
Discovery date: 1920

RESERVOIR DATA
Producing formation: Burbank
Age: Pennsylvanian
Lithology: Sandstone
Type trap: Stratigraphic
Average depth: 2850 feet
Average thickness: 47.2 feet
Average porosity: 16.8%
Average horizontal permeability: 50md
Range: 1-1000 md
Average vertical permeability: 16-30 md
Oil saturation @ beginning of secondary recovery: 46.8%

Type drive
Original: Solution gas
Present: Waterflood

Pressure
Original: 1200 psi
Present: 1150 psi

FLUID DATA
API Gravity: 39°
Salinity of formation water: 178,000 ppm
Chloride content of formation water: 110,000 ppm
Sulfur content of oil: None
Unit  Barnum, Clubb, Gaston, & Pappan
Operator  Phillips Petroleum
Size  640 Acres
County  Kay
Location  T 27N, R 5E
Discovery date  May, 1920

RESERVOIR DATA
Producing formation  Burbank Sand
Age  Pennsylvanian (Desmoinesian)
Lithology  Sandstone
Type trap  Stratigraphic
Average depth  2900 feet
Average thickness
Average porosity  17% (est.)
Average horizontal permeability  Range
Average vertical permeability
Oil saturation @ beginning of secondary recovery
Type drive
Original  Solution Gas Drive
Present  Water Injection
Pressure
Original
Present  675 psc Aug. 1964

FLUID DATA
API Gravity  39°
Salinity of formation water  178,000 ppm
Chloride content of formation water  110,000 ppm
Sulfur content of oil  None
CEMENT FIELD

(including East & West Cement)
**Unit**  
E Cement-Thomas Lse.

**Operator**  
Phillips Petroleum

**Size**  
80 acres

**County**  
Grady

**Location**  
T 5N, R 8W

**Discovery date**  
12/47

**RESERVOIR DATA**

**Producing formation**  
Fortuna snd.

**Age**  
Permian (Wolfcampian)

**Lithology**  
Sandstone

**Type trap**  
Anticline-lenticular Snds.

**Average depth**  
2020 feet

**Average thickness**  
25 feet

**Average porosity**

**Average horizontal permeability**  
Range

**Average vertical permeability**

**Oil saturation @ beginning of secondary recovery**

**Type drive**

Original  
Solution Gas - Good

Present  
Waterflood - Fair

**Pressure**

Original  
NA

Present  
NA

**FLUID DATA**

**API Gravity**  
35°

**Salinity of formation water**

**Chloride content of formation water**

**Sulfur content of oil**
CEMENT FIELD

WEST CEMENT UNIT
CADDOP COUNTY

Typical well in this unit

Top producing formation (Rowe)
**Unit**  W Cement  
**Operator**  Mobil  
**Size**  1120 acres  
**County**  Caddo  
**Location**  T 5,6N, R 9,10W  
**Discovery date**  1917  

**RESERVOIR DATA**  
**Producing formation**  Permian-Hoxbar (Fortuna, Noble Olson, Basal Permian, Upper Rowe, Niles)  
**Age**  Permian  
**Lithology**  Sandstone  
**Type trap**  Anticline  
**Average depth**  2400 feet  
**Average thickness**  59 feet  
**Average porosity**  17.1%  
**Average horizontal permeability**  24m  
**Average vertical permeability**  NA  
**Oil saturation @ beginning of secondary recovery**  50%  

**Type drive**  
Original: Solution gas and water drive  
Present: Secondary Recovery by water injection  

**Pressure**  
Original: 1210 psig (est)  
Present: NA  

**FLUID DATA**  
**API Gravity**  35° (Oil)  
**Salinity of formation water**  NaCl 131,910 mg/l  
**Chloride content of formation water**  99,714 mg/l  
**Sulfur content of oil**  NA
West Cement Unit
Caddo County
(additional electric logs)

Typical well in this unit

Top producing formation
(Fortuna)

Typical well in this unit

Top producing formations
(Noble Olsen)
(Basal Permian)
(Niles)
**Unit**  
W Cement Noble

**Operator**  
Phillips

**Size**  
200 acres

**County**  
Caddo

**Location**  
T 6N, R 10W

**Discovery date**  
1939

**RESERVOIR DATA**

**Producing formation**  
Noble Olson Sand

**Age**  
Permian (Leonardian)

**Lithology**  
Sandstone

**Type trap**  
Monocline-Lenticular Sands

**Average depth**  
3400 feet

**Average thickness**  
16 feet

**Average porosity**  
20.2%

**Average horizontal permeability**  
107m Range

**Average vertical permeability**

**Oil saturation @ beginning of secondary recovery**  
57%

**Type drive**

**Original**  
Solution gas

**Present**  
Unit Terminated Sept. 1, 1970

**Pressure**

**Original**  
1000 psi

**Present**  
N/R-Unit Termination

**FLUID DATA**

**API Gravity**  
34.5°

**Salinity of formation water**

**Chloride content of formation water**

**Sulfur content of oil**
Unit        Lucas
Operator     Bolin Oil Company
Size         1280
County       Caddo
Location     T 5 and 6N, R 9W
Discovery date 1946

RESERVOIR DATA
Producing formation        Fortuna
Age                      Permian (Wolfcampian)
Lithology                 Sandstone
Type trap                Stratigraphic
Average depth             2450 feet
Average thickness         12 feet
Average porosity          10%
Average horizontal permeability Unknown
Average vertical permeability Unknown
Oil saturation @ beginning of secondary recovery 60%

Type drive
          Original  Gas Expansion 10%
          Present     Wtr. 3

Pressure
          Original  900-1000 est
          Present    400-600

FLUID DATA
API Gravity           30
Salinity of formation water    4.6%
Chloride content of formation water        4300
Sulfur content of oil        Low
Unit  Kidd-Manning Unit
Operator  Shawnee Oil & Gas Company
Size  160 acres
County  Caddo
Location  T 6N, R 9W
Discovery date  1955

RESERVOIR DATA
Producing formation  Fortuna
Age  Permian (Wolfcampion)
Lithology  Sandstone
Type trap  Stratigraphic
Average depth  2200 feet
Average thickness  12 feet
Average porosity  22%
Average horizontal permeability  Range
Average vertical permeability
Oil saturation @ beginning of secondary recovery  20% of Pore Space
Type drive
Original  Gas in solution
Present  None. Plugged

Pressure
Original  950# 1-1-56
Present  Plugged & Abandoned

FLUID DATA
API Gravity  39
Salinity of formation water  Unknown
Chloride content of formation water  Unknown
Sulfur content of oil  Unknown
**Unit** E Cement Unit  
**Operator** Mobil  
**Size** 1510 Acres  
**County** Caddo  
**Location** T 5N, R 9W  
**Discovery date** 1918  

**RESERVOIR DATA**  
**Producing formation** Fortuna, Noble Olson  
**Age** Permian  
**Lithology** Sandstone  
**Type trap** Anticline  
**Average depth** 2035 feet  
**Average thickness** 35 feet  
**Average porosity** 19.2%  
**Average horizontal permeability** 18m  
**Average vertical permeability** NA  
**Oil saturation @ beginning of secondary recovery** 51%  

**Type drive**  
Original Solution gas drive  
Present Secondary recovery by water injection  

**Pressure**  
Original 1210 psig  
Present NA  

**FLUID DATA**  
**API Gravity** 35° (Oil)  
**Salinity of formation water** NaCl 152,810 mg/l  
**Chloride content of formation water** 115,661 mg/l  
**Sulfur content of oil** NA
Unit  Cement I
Operator  Operator
Size  1229.77 acres
County  Caddo
Location  T 5N, R 9,10W
Discovery date  1920

RESERVOIR DATA
Producing formation  Fortuna, Noble, Olson
Age  Permian and Pennsylvanian
Lithology  Sandstone
Type trap  South Flank of a large slightly asymmetrical anticline
Average depth  2000 feet
Average thickness  31 feet
Average porosity  19.2%
Average horizontal permeability  NA
Average vertical permeability  NA
Oil saturation @ beginning of secondary recovery  51%
Type drive
   Original  Solution Gas drive
   Present  Secondary recovery by water injection
Pressure
   Original  1200 psig (est)
   Present  100 psig 1976

FLUID DATA
API Gravity  34°
Salinity of formation water  145,152 mg/l
Chloride content of formation water  109,703 mg/l
Sulfur content of oil  NA


**Unit**  W Cement Medrano  
**Operator**  Phillips  
**Size**  3700 acres  
**County**  Caddo  
**Location**  T 5& 6N, R 9 & 10W  
**Discovery date**  October 1936  

**RESERVOIR DATA**  
**Producing formation**  Medrano Sand  
**Age**  Pennsylvania (Missourian)  
**Lithology**  Sandstone  
**Type trap**  Stratigraphic  
**Average depth**  5825 (oil zone)  
**Average thickness**  66 feet 1980 acres  
**Average porosity**  16.5%  
**Average horizontal permeability**  300m Range NA  
**Average vertical permeability**  NA  
**Oil saturation @ beginning of secondary recovery**  75% (Oil zone)  

**Type drive**  
**Original**  Gas cap expansion & Gravity drainage  
**Present**  Gas cap expansion & Gravity drainage  

**Pressure**  
**Original**  2000 psi October 1936  
**Present**  400 psi 1-1-77 (est)  

**FLUID DATA**  
**API Gravity**  $36^\circ$  
**Salinity of formation water**  101,200 ppm total solids  
**Chloride content of formation water**  61,500 ppm  
**Sulfur content of oil**  Negligible
**Unit**  
Bedlund

**Operator**  
Bolin Oil Company

**Size**  
40

**County**  
Caddo

**Location**  
T 5N, R 9W

**Discovery date**  
1941

**RESERVOIR DATA**

*Producing formation*  
Wade Sand

*Age*  
Pennsylvanian (Missourian)

*Lithology*  
Sandstone

*Type trap*  
Anticlinal Fault

*Average depth*  
3850 feet

*Average thickness*  
50 feet

*Average porosity*  
.10%

*Average horizontal permeability*  
Range

*Average vertical permeability*  
Range

*Oil saturation @ beginning of secondary recovery*  
60%

**Type drive**

*Original*  
Gas Expansion

*Present*  
Defueled

**Pressure**

*Original*  
1600

*Present*  
900

**FLUID DATA**

*API Gravity*  
35°

*Salinity of formation water*  
4.7

*Chloride content of formation water*  
4.9

*Sulfur content of oil*  
Nil
CUSHING FIELD
Unit Cushing Co-op
Operator Arco
Size 1360 acres
County Creek
Location T 17N & 18N, R 7E
Discovery date 1912

RESERVOIR DATA
Producing formation Bartlesville
Age Pennsylvanian (Desmoinesian)
Lithology Sandstone
Type trap Structure
Average depth 2750 feet
Average thickness 120 feet
Average porosity 22%
Average horizontal permeability 200m Range 0 to 900
Average vertical permeability ?
Oil saturation @ beginning of secondary recovery ?

Type drive
Original Solution Gas
Present Water Flood

Pressure
Original ?
Present ?

FLUID DATA
API Gravity 40
Salinity of formation water 120,000
Chloride content of formation water 120,000
Sulfur content of oil NILL
Unit Lashley-Wiley
Operator Mobil
Size 120 acres
County Creek
Location T 17N, R 7E
Discovery date 1914

RESERVOIR DATA
Producing formation Bartlesville, Prue & Red Fork Sands
Age Pennsylvanian (Desmoinesian)
Lithology Sandstone
Type trap Structural
Average depth 2700 feet
Average thickness NA
Average porosity 19%
Average horizontal permeability 290m Range NA
Average vertical permeability NA
Oil saturation @ beginning of secondary recovery 41%

Type drive
Original Solution Gas-Effective
Present Waterflood

Pressure
Original NA
Present NA

FLUID DATA
API Gravity 39°
Salinity of formation water NA
Chloride content of formation water NA
Sulfur content of oil NA
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**CUSHING FIELD**

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**TOM LONG LEASE CREEK COUNTY**

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*Typical well in this unit*

*Top producing formations*

2000

2100

2200

2300

2400

2500

2600
**Unit**  T Long Lse.

**Operator**  Mobil

**Size**  80 acres

**County**  Creek

**Location**  T 17N, R 7E

**Discovery date**  1914

---

**RESERVOIR DATA**

**Producing formation**  Oswego lime & Bartlesville sand

**Age**  Pennsylvanian (Desmoinesian)

**Lithology**  Limestone and Sandstone

**Type trap**  Structural

**Average depth**  2400 feet

**Average thickness**  NA

**Average porosity**  19%

**Average horizontal permeability**  290m Range  NA

**Average vertical permeability**  NA

**Oil saturation @ beginning of secondary recovery**  NA

---

**Type drive**

Original  Solution Gas & Gravity drainage.

Present  Waterflood

---

**Pressure**

Original  NA

Present  NA

---

**FLUID DATA**

**API Gravity**  25°

**Salinity of formation water**  149,000 ppm

**Chloride content of formation water**  100,000 ppm

**Sulfur content of oil**  0

---

61
Unit  Cushing-Yarhola Fld zone: Bartlesville
Operator  Getty Oil Co
Size  80 acres
County  Creek
Location  T 17N, R 7E
Discovery date  1912

RESERVOIR DATA
Producing formation  Bartlesville SS
Age  Pennsylvanian (Desmoinesian)
Lithology  Sandstone
Type trap
Average depth  2590 feet
Average thickness
Average porosity  19%
Average horizontal permeability  138m Range .3-4100 md
Average vertical permeability
Oil saturation @ beginning of secondary recovery  17
Type drive
Original  Solution gas
Present  Water flood
Pressure
Original
Present  400 psi

FLUID DATA
API Gravity  41°
Salinity of formation water
Chloride content of formation water
Sulfur content of oil
**Unit**  E Shamrock, Bartlesville zone

**Operator**  Arco

**Size**  1600

**County**  Creek

**Location**  T 16N 17N, R 7E :1

**Discovery date**  1912

**RESERVOIR DATA**

**Producing formation**  Bartlesville

**Age**  Pennsylvanian (Desmoinesian)

**Lithology**  Sandstone

**Type trap**  Structure

**Average depth**  2750 feet

**Average thickness**  71 feet

**Average porosity**  20%

**Average horizontal permeability** 223m  **Range**  0–800

**Average vertical permeability**  223m

**Oil saturation @ beginning of secondary recovery**  ?

**Type drive**

Original  Solution Gas

Present  Water Flood

**Pressure**

Original  1300

Present  ?

**FLUID DATA**

**API Gravity**  40

**Salinity of formation water**  120,000

**Chloride content of formation water**  120,000

**Sulfur content of oil**  Nil
Unit: Yarhola
Operator: Mapco Production Company
Size: 160 acres
County: Creek
Location: T 17N, R 7E
Discovery date: March, 1912

RESERVOIR DATA
Producing formation: Bartlesville
Age: Pennsylvanian (Desmoinesian)
Lithology: Sandstone
Type trap: Anticline
Average depth: 2700 feet
Average thickness: 80 feet
Average porosity: 19%
Average horizontal permeability: 200m
Range: 70-1900 md.
Average vertical permeability
Oil saturation @ beginning of secondary recovery: 22%

Type drive:
Original
Present

Pressure:
Original
Present

FLUID DATA
API Gravity: 37°
Salinity of formation water: 125,000 mg/l
Chloride content of formation water: 88,500 mg/l
Sulfur content of oil: Nil
Unit  Fee #209 2nd wx
Operator  Arco
Size  80
County  Creek
Location  T 17N, R 7E
Discovery date  1962

RESERVOIR DATA
Producing formation  2nd Wilcox
Age  Ordovician
Lithology  Sandstone
Type trap  Structure
Average depth  3550 feet
Average thickness  21 feet
Average porosity  
Average horizontal permeability  
Range
Average vertical permeability  
Oil saturation @ beginning of secondary recovery  
Type drive
  Original  Solution Gas
  Present  Waterflood
Pressure
  Original  
  Present  

FLUID DATA
API Gravity  38
Salinity of formation water  
Chloride content of formation water  
Sulfur content of oil  Nil
Unit Cushing Flood
Operator Arco
Size 800 acres
County Creek
Location T 17N, R 7E
Discovery date 1912

RESERVOIR DATA
Producing formation Prue
Age Pennsylvanian (Desmoinesian)
Lithology Sandstone
Type trap Structure
Average depth 2250 feet
Average thickness 20 feet
Average porosity 19%
Average horizontal permeability 19m Range 0 to 200
Average vertical permeability ?
Oil saturation @ beginning of secondary recovery ?

Type drive
Original Solution Gas
Present Water Flood

Pressure
Original ?
Present ?

FLUID DATA
API Gravity 40
Salinity of formation water 120,000
Chloride content of formation water 120,000
Sulfur content of oil NIL
**Unit**  E Shamrock, Prue zone  
**Operator**  Arco  
**Size**  1600  
**County**  Creek  
**Location**  T 16N 17N, R 7E  
**Discovery date**  1912

**RESERVOIR DATA**

**Producing formation**  Prue  
**Age**  Pennsylvanian (Desmoinesian)  
**Lithology**  Sandstone  
**Type trap**  Structure  
**Average depth**  2450 feet  
**Average thickness**  15 feet  
**Average porosity**  18%  
**Average horizontal permeability**  15m  
**Range**  0 to 150  
**Average vertical permeability**  ?  
**Oil saturation @ beginning of secondary recovery**  ?

**Type drive**

Original  Solution Gas  
Present  Waterflood

**Pressure**

Original  ?  
Present  ?

**FLUID DATA**

**API Gravity**  40  
**Salinity of formation water**  120,000  
**Chloride content of formation water**  120,000  
**Sulfur content of oil**  NIL
Unit  Jemima
Operator  Gulf
Size  160 acres
County  Creek
Location  T 17N, R 7E
Discovery date  5/14

RESERVOIR DATA
Producing formation  Bartlesville
Age  Pennsylvanian (Desmoinesian)
Lithology
Type trap  Stratigraphic
Average depth  2500 feet
Average thickness  NA
Average porosity  NA
Average horizontal permeability  NA  Range  NA
Average vertical permeability  NA
Oil saturation @ beginning of secondary recovery  NA
Type drive
Original  Solution gas drive
Present  Waterflood
Pressure
Original  NA
Present  NA

FLUID DATA
API Gravity  41
Salinity of formation water  314,000 ppm
Chloride content of formation water  157,000 mg/l
Sulfur content of oil  NA
**Unit**  Cushing-Keys Fld, zone: Bartlesville

**Operator**  Getty Oil Co

**Size**  320 Acres

**County**  Creek

**Location**  T 17N, R 7E

**Discovery date**  1912

**RESERVOIR DATA**

**Producing formation**  Bartlesville SS

**Age**  Pennsylvanian (Desmoinesian)

**Lithology**  Sandstone

**Type trap**

**Average depth**  2800 feet

**Average thickness**

**Average porosity**  20%

**Average horizontal permeability**  94m

**Average vertical permeability**

**Oil saturation at beginning of secondary recovery**  17

**Type drive**

**Original**  Solution gas

**Present**  waterflood

**Pressure**

**Original**  Unknown

**Present**  400 psi

**FLUID DATA**

**API Gravity**  38-40°

**Salinity of formation water**

**Chloride content of formation water**

**Sulfur content of oil**
Unit E Shamrock, Skinner zone
Operator Arco
Size
County Creek
Location T 16N 17N, R 7E
Discovery date 1912

RESERVOIR DATA
Producing formation Skinner
Age Pennsylvanian (Desmoinesian)
Lithology Sandstone
Type trap Structure
Average depth 2600 feet
Average thickness 10 feet
Average porosity 17%
Average horizontal permeability 25m Range 0-100
Average vertical permeability ?
Oil saturation @ beginning of secondary recovery ?
Type drive
Original Solution Gas
Present Water flood

Pressure
Original ?
Present ?

FLUID DATA
API Gravity 40
Salinity of formation water 120,000
Chloride content of formation water 120,000
Sulfur content of oil Nil
Unit Cushing-Keys Fld zone: Skinner
Operator Getty Oil
Size
County Creek
Location T 17N, R 7E
Discovery date 1912

RESERVOIR DATA
Producing formation Skinner
Age
Lithology
Type trap
Average depth 2750 feet
Average thickness
Average porosity
Average horizontal permeability Range
Average vertical permeability
Oil saturation @ beginning of secondary recovery

Type drive
Original
Present

Pressure
Original
Present

FLUID DATA
API Gravity
Salinity of formation water
Chloride content of formation water
Sulfur content of oil

81
**Unit**  Cushing-Tiger Flood

**Operator**  Getty Oil Co

**County**  Creek

**Location**  T 17N, R 7E

**Discovery date**

**RESERVOIR DATA**

**Producing formation**  Bartlesville

**Age**

**Lithology**

**Type trap**

**Average depth**  2740 feet

**Average thickness**

**Average porosity**

**Average horizontal permeability**  Range

**Average vertical permeability**

**Oil saturation @ beginning of secondary recovery**

**Type drive**

- Original
- Present

**Pressure**

- Original
- Present

**FLUID DATA**

**API Gravity**

**Salinity of formation water**

**Chloride content of formation water**

**Sulfur content of oil**
Unit  Sam Richards
Operator  Getty Oil
Size
County  Creek
Location  T 17N, R 7E
Discovery date  1914

RESERVOIR DATA
Producing formation  Wheeler & Bartlesville
Age
Lithology
Type trap
Average depth  2500 feet
Average thickness
Average porosity
Average horizontal permeability
Range Average vertical permeability
Oil saturation @ beginning of
secondary recovery
Type drive
Original
Present
Pressure
Original
Present

FLUID DATA
API Gravity
Salinity of formation water
Chloride content of formation water
Sulfur content of oil
Unit Lena Fife
Operator Getty Oil Co
Size
County Creek
Location T 17N, R 7E
Discovery date 1914

RESERVOIR DATA
Producing formation Bartlesville
Age
Lithology
Type trap
Average depth 2700 feet
Average thickness
Average porosity
Average horizontal permeability Range
Average vertical permeability
Oil saturation @ beginning of secondary recovery

Type drive
Original
Present

Pressure
Original
Present

FLUID DATA
API Gravity
Salinity of formation water
Chloride content of formation water
Sulfur content of oil
Unit  Cushing-Yarhola Fld zone: Red Fork
Operator  Getty Oil Co
Size
County  Creek
Location  T 17N, R 7E
Discovery date  1915

RESERVOIR DATA
Producing formation  Bartlesville
Age
Lithology
Type trap
Average depth  2600 feet
Average thickness
Average porosity
Average horizontal permeability  Range
Average vertical permeability
Oil saturation @ beginning of secondary recovery
Type drive
  Original
  Present
Pressure
  Original
  Present

FLUID DATA
API Gravity
Salinity of formation water
Chloride content of formation water
Sulfur content of oil
Unit  L. Brown
Operator  Getty Oil
Size  120 acres
County  Creek
Location  T 17N, R 7E
Discovery date  1914

RESERVOIR DATA
Producing formation  Wheeler & Bartlesville
Age
Lithology
Type trap
Average depth  2200 feet
Average thickness
Average porosity
Average horizontal permeability  Range
Average vertical permeability
Oil saturation @ beginning of secondary recovery
Type drive
  Original
  Present
Pressure
  Original
  Present

FLUID DATA
API Gravity
Salinity of formation water
Chloride content of formation water
Sulfur content of oil
Unit  QV Jackson
Operator  Getty Oil Co
Size
County  Creek
Location  T 17N, R 7E
Discovery date  1914

RESERVOIR DATA
Producing formation  Layton, Wheeler, & Bartlesville
Age
Lithology
Type trap
Average depth  2000 feet
Average thickness
Average porosity
Average horizontal permeability  Range
Average vertical permeability
Oil saturation @ beginning of secondary recovery

Type drive
Original
Present
Pressure
Original
Present

FLUID DATA
API Gravity
Salinity of formation water
Chloride content of formation water
Sulfur content of oil
**Unit**  Peter Brown  
**Operator**  Gulf  
**Size**  40 acres  
**County**  Creek  
**Location**  T 17N, R 7E  
**Discovery date**  4/16

**RESERVOIR DATA**

**Producing formation**  Bartlesville  
**Age**  Pennsylvanian (Desmoinesian)  
**Lithology**  Sandstone  
**Type trap**  Stratigraphic  
**Average depth**  2800 feet  
**Average thickness**  NA  
**Average porosity**  17%  
**Average horizontal permeability**  100 m  
**Average vertical permeability**  NA  
**Oil saturation @ beginning of secondary recovery**  16%  

**Type drive**
- Original  Solution gas drive  
- Present  Waterflood  

**Pressure**
- Original  NA  
- Present  NA  

**FLUID DATA**

**API Gravity**  43  
**Salinity of formation water**  $R_w = .04$  
**Chloride content of formation water**  90,000 ppm at Form T  
**Sulfur content of oil**  NA

95
EOLA-ROBBERSON FIELD
Unit: Robberson-Newberry WFP
Operator: Mobil
Size: 1030 acres
County: Garvin
Location: T 1N, R 3W
Discovery date: 1920

RESERVOIR DATA
Producing formation: Robberson, Newberry & Skaggs sands
Age: Pennsylvanian (?)
Lithology: Sandstone
Type trap: Structural
Average depth: 1500 feet
Average thickness: 21 feet
Average porosity: 23%
Average horizontal permeability: 32m
Range: NA
Average vertical permeability: NA
Oil saturation @ beginning of secondary recovery: 37%

Type drive:
Original: Solution Gas
Present: Waterflood

Pressure:
Original: NA
Present: NA

FLUID DATA
API Gravity: 24°
Salinity of formation water: NA
Chloride content of formation water: NA
Sulfur content of oil: NA
Robberson-Newberry Waterflood
Garvin County
(additional electric logs)

Typical well in this unit

Top producing formation (Newberry)

Typical well in this unit

Top producing formation (Skaggs)
Unit  Eola-N Flt Blk-Bromide
Operator  Sohio Petroleum
Size  1440
County  Garvin
Location  T 1N, R 2W & 3W
Discovery date  3-1-51

RESERVOIR DATA
Producing formation  Bromide
Age  Ordovician
Lithology  Sandstone (?)
Type trap  Faulted Anticline
Average depth  7000-9800 feet
Average thickness  98 feet
Average porosity  9.8%
Average horizontal permeability  80m
Average vertical permeability
Oil saturation @ beginning of secondary recovery  59.9%

Type drive
Original  Gravity & Solution Gas
Present  Gas & Water

Pressure
Original  3500# (3-51)
Present  1300# (5-77)

FLUID DATA
API Gravity  38°
Salinity of formation water  205,000
Chloride content of formation water  125,000
Sulfur content of oil  NIL
Unit Eola-N Flt Blk-Oil Creek
Operator Sohio Petroleum
Size 1200 Ac
County Garvin
Location T 1N, R 2W & 3W
Discovery date 3-20-53

RESERVOIR DATA
Producing formation Oil Creek
Age Ordovician
Lithology Sandstone
Type trap Faulted Anticline
Average depth 8800 to 10,200 feet
Average thickness 148 feet
Average porosity 15%
Average horizontal permeability 596 m Range
Average vertical permeability
Oil saturation @ beginning of secondary recovery 78.6%
Type drive
Original Solution Gas, Water & Gravity
Present Water, Gas & Gravity
Pressure
Original 4600 (3-53)
Present 1700 (5-77)

FLUID DATA
API Gravity 39°
Salinity of formation water 205,000
Chloride content of formation water 125,000
Sulfur content of oil NIL
EOLA-ROBBERSON FIELD

ROBBERSON-SKAGGS SAND UNIT
GARVIN COUNTY

Typical well in this unit
Top producing formation

R3W

N

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Unit: Robberson-Skaggs Sand
Operator: Keith F. Walker
Size: 325 acres
County: Garvin
Location: T 1N, R 3W
Discovery date: 1923

RESERVOIR DATA
Producing formation: Skaggs Sand
Age: Pennsylvanian (?)
Lithology: Sandstone
Type trap: Pinchout
Average depth: 1900 feet
Average thickness: 43 feet
Average porosity: 21%
Average horizontal permeability: Range: 10-2000
Average vertical permeability
Oil saturation @ beginning of secondary recovery

Type drive
Original: Solution Gas
Present: Waterflood

Pressure
Original
Present

FLUID DATA
API Gravity: 20
Salinity of formation water
Chloride content of formation water
Sulfur content of oil
Unit  Eola-N Flt Blk-McLish
Operator  Sohio Petroleum
Size  1760
County  Garvin
Location  T 1N, R 2W & 3W
Discovery date  3-1-51

RESERVOIR DATA
Producing formation  McLish
Age  Ordovician
Lithology  Sandstone
Type trap  Faulted Anticline
Average depth  7400 to 10,050 feet
Average thickness  45 feet
Average porosity  13.2%
Average horizontal permeability  58m Range
Average vertical permeability
Oil saturation @ beginning of secondary recovery  57.8

Type drive
Original  Solution Gas & Gravity
Present  Gas & Water Injection & Gravity

Pressure
Original  3680 (3-51)
Present  1300 (5-77)

FLUID DATA
API Gravity  37°
Salinity of formation water  205,000
Chloride content of formation water  125,000
Sulfur content of oil  NIL
Unit  S Eola-Bromide
Operator  Sohio Petroleum
Size  700
County  Garvin
Location  T 1N, R 2W
Discovery date  1-23-47

RESERVOIR DATA
Producing formation  Bromide
Age  Ordovician
Lithology  Sandstone (?)
Type trap  Faulted Anticline
Average depth  8400-10,300 feet
Average thickness  89 feet
Average porosity  13.4%
Average horizontal permeability  121m Range
Average vertical permeability
Oil saturation @ beginning of secondary recovery  53.8%

Type drive
Original  Gravity & Solution Gas
Present  Gas Injection & Solution Gas

Pressure
Original  3652# (1-47)
Present  1100# (5-77)

FLUID DATA
API Gravity  38°
Salinity of formation water  205,000
Chloride content of formation water  125,000
Sulfur content of oil  NIL
Unit  Eola NW Blk-McLish
Operator  Amoco Production Company
Size  560 acres
County  Garvin
Location  T 1N, R 3W
Discovery date  11,153

RESERVOIR DATA
Producing formation  McLish (Simpson Sand)
Age  Ordovician
Lithology  Sandstone
Type trap  Thrust Fault
Average depth  10,800 feet
Average thickness  82 feet
Average porosity  17.65%
Average horizontal permeability  15m
Average vertical permeability
Oil saturation @ beginning of secondary recovery  64%

Type drive
Original  Volumetric solution gas drive
Present  Downdip water injection

Pressure
Original  5020 (11/53)
Present  1050 (10/75)

FLUID DATA
API Gravity  37°
Salinity of formation water  150,000 ppm
Chloride content of formation water  95,000 ppm
Sulfur content of oil  Not available
Unit  PW Richardson
Operator  Texas Pacific Oil Co
Size  80 AC
County  Garvin
Location  T 1N, R 3W
Discovery date  1920

RESERVOIR DATA
Producing formation  Skaggs Harris & Bailey sands (Newberry?)
Age  Pennsylvanian
Lithology  Sandstone
Type trap  Stratigraphic-sands pinchout updip
Average depth  1650 feet
Average thickness  40 feet
Average porosity  24%
Average horizontal permeability  53m Range 25-112 MD
Average vertical permeability  Unknown
Oil saturation @ beginning of secondary recovery  42%

Type drive
Original  Solution gas with a small gas cap
Present  Waterflood

Pressure
Original  1920 est. 750 PSI @ 1700 feet
Present  No recent bomb pressures-est. 150-200 PSI

FLUID DATA
API Gravity  26°
Salinity of formation water  approx. 91,000 PPM
Chloride content of formation water  57,000 ppm
Sulfur content of oil  Unknown
EOLA–ROBBERSON FIELD

Typical well in this unit

Top producing formation

JANE ROYALTY CORP. UNIT
GARVIN COUNTY
**Unit**  Jane Royalty Corporation  
**Operator**  Getty Oil Co  
**Size**  160 Ac  
**County**  Garvin  
**Location**  T 1N, R 2W  
**Discovery date**  1949  

**RESERVOIR DATA**  
**Producing formation**  Simpson sand  
**Age**  Ordovician  
**Lithology**  Sandstone  
**Type trap**  
**Average depth**  750 feet  
**Average thickness**  
**Average porosity**  
**Average horizontal permeability**  Range  
**Average vertical permeability**  
**Oil saturation @ beginning of secondary recovery**  
**Type drive**  
Original  Depletion  
Present  Waterflood  

**Pressure**  
Original  
Present  

**FLUID DATA**  
**API Gravity**  31  
**Salinity of formation water**  
**Chloride content of formation water**  
**Sulfur content of oil**
FITTS FIELD

(including West Fitts)
**Unit**  
Fitts WF

**Operator**  
Arco

**Size**  
320 acres

**County**  
Pontotoc

**Location**  
T 2N, R 7E

**Discovery date**  
May 1936

**RESERVOIR DATA**

**Producing formation**  
Mc Alester Sandstone

**Age**

**Lithology**

**Type trap**  
Structural w/ gas cap and water table

**Average depth**  
1400 feet

**Average thickness**  
20 feet

**Average porosity**  
23.4%

**Average horizontal permeability**  
962m

**Average vertical permeability**

**Oil saturation @ beginning of secondary recovery**  
65%

**Type drive**

- Original  
Gas cap

- Present

**Pressure**

- Original  
650 psig (est)

- Present  
5 (est)

**FLUID DATA**

**API Gravity**  
30

**Salinity of formation water**

**Chloride content of formation water**

**Sulfur content of oil**  
0.4%
**Unit**  
West Pitts-Cromwell

**Operator**  
Pontotoc Operations

**Size**  
290 acres

**County**  
Pontotoc

**Location**  
sec. 20, 21, 28, 29, T2N, R 6E

**Discovery date**  
NA

**RESERVOIR DATA**

**Producing formation**  
Cromwell

**Age**  
Pennsylvanian

**Lithology**  
Sandstone

**Type trap**  
NA

**Average depth**  
3100 feet

**Average thickness**  
30 feet (two 15-foot zones)

**Average porosity**  
18%

**Average horizontal permeability**  
NA

**Average vertical permeability**  
NA

**Oil saturation @ beginning of secondary recovery**  
39.6%

**Type drive**

Original  
NA

Present  
NA

**Pressure**

Original  
NA

Present  
NA

**FLUID DATA**

**API Gravity**  
39

**Salinity of formation water**  
NA

**Chloride content of formation water**  
65,000 (ppm ?)

**Sulfur content of oil**  
None

123
Unit  E. Fitts
Operator  Mobil Oil Corporation
Size  1527 acres
County  Pontotoc
Location  sec. 21, 22, 23, 26, 27, 28, T 2N, R 7E
Discovery date

RESERVOIR DATA
Producing formation  Viola (major producing zone)
Age  Ordovician
Lithology  Limestone
Type trap
Average depth  4000 feet
Average thickness  100 feet
Average porosity  12
Average horizontal permeability  4m  Range
Average vertical permeability
Oil saturation @ beginning of
secondary recovery  47%

Type drive
Original
Present

Pressure
Original
Present

FLUID DATA
API Gravity  38
Salinity of formation water
Chloride content of formation water  45,700
Sulfur content of oil
**Unit** West Fitts-Cromwell Unit II  
**Operator** Pontotoc Operations, Inc.  
**Size** 300 acres  
**County** Pontotoc  
**Location** Sec. 28, T 2N, R 6E  
**Discovery date**

**RESERVOIR DATA**

*Producing formation* Cromwell  
**Age** Pennsylvanian  
**Lithology** Sandstone  
**Type trap**  
**Average depth** 3400  
**Average thickness** 30 (two zones)  
**Average porosity** 18%  
**Average horizontal permeability** Range  
**Average vertical permeability**  
**Oil saturation @ beginning of secondary recovery**

**Type drive**
- Original  
- Present

**Pressure**
- Original  
- Present

**FLUID DATA**

**API Gravity** 39  
**Salinity of formation water**  
**Chloride content of formation water** 65,000 +  
**Sulfur content of oil**
GLEN Field

(including Glennpool and North Glenn)
Unit  Dora Hawkins
Operator  Gulf
Size  40 acres
County  Creek
Location  T 18N, R 12E
Discovery date  7/58

RESERVOIR DATA
Producing formation  Glenn
Age  Pennsylvanian (Desmoinesian)
Lithology  Sandstone
Type trap  Stratigraphic
Average depth  1480 feet
Average thickness  NA
Average porosity  NA
Average horizontal permeability  NA  Range
Average vertical permeability  NA
Oil saturation @ beginning of secondary recovery  NA

Type drive
Original  Solution gas drive
Present  Waterflood

Pressure
Original  NA
Present  NA

FLUID DATA
API Gravity  40
Salinity of formation water  NA
Chloride content of formation water  NA
Sulfur content of oil  NA
**Unit** Redmouth

**Operator** Fair Oil Company

**Size** 80 acres

**County** Tulsa

**Location** T 17N, R 12E

**Discovery date** 1909

**RESERVOIR DATA**

**Producing formation** Glenn Sand

**Age** Pennsylvanian (Desmoinesian)

**Lithology** Sandstone

**Type trap** Stratigraphic

**Average depth** 1450 feet

**Average thickness** 30 feet

**Average porosity** 17%

**Average horizontal permeability** 25m

**Average vertical permeability** 5m

**Oil saturation @ beginning of secondary recovery** 45%

**Type drive**

Original Gas cap & dissolved gas drive

Present Water Flood

**Pressure**

Original 650#

Present 850#

**FLUID DATA**

**API Gravity** 39°

**Salinity of formation water**

**Chloride content of formation water** 90,000 ppm

**Sulfur content of oil**
Unit  Harjo-Ralston
Operator  Getty Oil Co
Size  300
County  Creek & Tulsa
Location  T 17N, R 12E
Discovery date  1906

RESERVOIR DATA
Producing formation  Bartlesville SS
Age  Pennsylvanian (Desmoinesian)
Lithology  Sandstone
Type trap
Average depth  1507 feet
Average thickness
Average porosity  16.2%
Average horizontal permeability  8.8 m
Average vertical permeability
Oil saturation @ beginning of secondary recovery  18%
Type drive
Original  Solution gas
Present  Water flood

Pressure
Original  Unknown
Present  720 psi

FLUID DATA
API Gravity  40°
Salinity of formation water
Chloride content of formation water
Sulfur content of oil
**Unit**  S Glenn

**Operator**  Getty Oil Co

**Size**  650 Ac

**County**  Creek

**Location**  T 17N, R 12E

**Discovery date**  1906

**RESERVOIR DATA**

**Producing formation**  Bartlesville SS

**Age**  Pennsylvanian (Desmoinesian)

**Lithology**  Sandstone

**Type trap**  NA

**Average depth**  1487 feet

**Average thickness**

**Average porosity**  18.6%

**Average horizontal permeability**  112m

**Average vertical permeability**  NA

**Oil saturation @ beginning of secondary recovery**  19

**Type drive**

Original  Solution gas

Present  Water flood

**Pressure**

Original  NA

Present  NA

**FLUID DATA**

**API Gravity**  37°

**Salinity of formation water**

**Chloride content of formation water**

**Sulfur content of oil**

137
GLENNPOOL FIELD
TULSA COUNTY
CREEK CO.

R12E

6  5  4  3  2  1

7  8  9

18 17 16 14 13

I. LEWIS UNIT
TULSA COUNTY

Typical well in this unit

Top producing formation

1400

1500

1600

30 29 28 26 25

31 32 33 34 35 36


Unit I Lewis
Operator Gulf
Size 80 acres
County Tulsa
Location T 17N, R 12E
Discovery date no record

RESERVOIR DATA
Producing formation Glenn
Age Pennsylvanian (Desmoinesian)
Lithology Sandstone
Type trap Stratigraphic
Average depth 1450 feet
Average thickness NA
Average porosity 17%
Average horizontal permeability 270m
Average vertical permeability NA
Oil saturation @ beginning of secondary recovery 24%

Type drive
Original Solution gas drive
Present Water flood

Pressure
Original NA
Present NA

FLUID DATA
API Gravity 39
Salinity of formation water .05 at Form T 120,000 ppm
Chloride content of formation water 120,000 at F.T.
Sulfur content of oil NA
**Unit** Faught

**Operator** R I Pierce (from Fair Oil)

**Size** 80 acres

**County** Tulsa

**Location** T 18N, R 12E

**Discovery date** 1908

**RESERVOIR DATA**

**Producing formation** Bartlesville (Glenn)

**Age** Pennsylvanian (Desmoinesian)

**Lithology** Sandstone

**Type trap** Strat trap-pinchoout

**Average depth** 1450 feet

**Average thickness** 35 feet

**Average porosity** .18%

**Average horizontal permeability** 20m

**Range** 100 to 1

**Average vertical permeability** 5m

**Oil saturation @ beginning of secondary recovery** 60% volumetric

**Type drive**

- Original: Gas Expansion
- Present: Gravity & water injection

**Pressure**

- Original
- Present: 1000psi - July 1 - water injected

**FLUID DATA**

**API Gravity** 42

**Salinity of formation water**

**Chloride content of formation water**

**Sulfur content of oil** none
Unit: Glenn-Glen Sand #1-Hayden
Operator: Fair Oil Company
Size: 740
County: Creek
Location: Sec. 20, 21, 28, T 17N, R 12E
Discovery date: 1909

RESERVOIR DATA
Producing formation: Glenn Sand
Age: Pennsylvanian (Desmoinesian)
Lithology: Sandstone
Type trap: Stratigraphic
Average depth: 1,450 feet
Average thickness: 60 feet
Average porosity: 17.5%
Average horizontal permeability: 25m
Range: 0–200
Average vertical permeability: 5m
Oil saturation @ beginning of secondary recovery: 47.5%
Type drive:
Original: gas cap, dissolved gas drive
Present: water flood

Pressure:
Original: 650#
Present: 850#

FLUID DATA
API Gravity: 39° API
Salinity of formation water
Chloride content of formation water: 90,000 ppm
Sulfur content of oil
**Unit**  Wm Berryhill

**Operator**  Gulf

**Size**  160 acres

**County**  Creek

**Location**  T 17N, R 12E

**Discovery date**  2/43

**RESERVOIR DATA**

**Producing formation**  Glenn

**Age**  Pennsylvanian (Desmoinesian)

**Lithology**  Sandstone

**Type trap**  Stratigraphic

**Average depth**  1533 feet

**Average thickness**  NA

**Average porosity**  .20%

**Average horizontal permeability**  110m

**Range**  50-250

**Average vertical permeability**  NA

**Oil saturation @ beginning of secondary recovery**  24%

**Type drive**

- Original  Solution gas drive
- Present  water flood

**Pressure**

- Original  NA
- Present  NA

**FLUID DATA**

**API Gravity**  37

**Salinity of formation water**  NA

**Chloride content of formation water**  NA

**Sulfur content of oil**  NA
**Unit** Berryhill (Glenn)

**Operator** Arco

**Size** 1840 acres

**County** Tulsa & Creek

**Location** T 17N, R 12E

**Discovery date** 1905

**RESERVOIR DATA**

**Producing formation** Glenn Sand

**Age** Pennsylvanian (Desmoinesian)

**Lithology** Sandstone

**Type trap** Structure

**Average depth** 1500 feet

**Average thickness** 71 feet

**Average porosity** 20%

**Average horizontal permeability** 270m

**Range** 0-900

**Average vertical permeability** 270m

**Oil saturation @ beginning of secondary recovery** ?

**Type drive**

Original Solution Gas Drive

Present Waterflood

**Pressure**

Original 664 psi

Present

**FLUID DATA**

**API Gravity** 38

**Salinity of formation water** 110,000

**Chloride content of formation water** 110,000

**Sulfur content of oil** NIL
**Unit**  E Glenn Pool  
**Operator**  Arco  
**Size**  320  
**County**  Creek  
**Location**  T 17N, R 12E  
**Discovery date**

**RESERVOIR DATA**

- **Producing formation**  Glenn Sand  
- **Age**  Pennsylvanian (Desmoinesian)  
- **Lithology**  Sandstone  
- **Type trap**  Structure  
- **Average depth**  1550 feet  
- **Average thickness**  70 feet  
- **Average porosity**  20%  
- **Average horizontal permeability**  270m Range  
- **Average vertical permeability**  
- **Oil saturation @ beginning of**  secondary recovery  

**Type drive**

- Original  Solution gas  
- Present  waterflood  

**Pressure**

- Original  
- Present  

**FLUID DATA**

- **API Gravity**  38  
- **Salinity of formation water**  110,000  
- **Chloride content of formation water**  110,000  
- **Sulfur content of oil**  NIL
GLENPOOL FIELD

TULSA COUNTY

CREEK CO.

18

T 17 N

R 11E

R 12E

R 13E

6  5  4  3

7  8  9

18  17  16  15  14  13

19  20  21

30  29  28  27  26  25

31  32  33  34  35  36

THOMAS GILCREASE UNIT
TULSA COUNTY

Typical well in this unit

Top producing formation

1400

1500
**Unit**  Thomas Gilcrease

**Operator**  Gulf

**Size**  160 acres

**County**  Tulsa

**Location**  T 17N, R 12E

**Discovery date**  5/20

**RESERVOIR DATA**

**Producing formation**  Glenn

**Age**  Pennsylvanian (Desmoinesian)

**Lithology**  Sandstone

**Type trap**  Stratigraphic

**Average depth**  1500 feet

**Average thickness**  NA

**Average porosity**  20%

**Average horizontal permeability**  310m **Range**  100-410

**Average vertical permeability**  NA

**Oil saturation @ beginning of secondary recovery**  22%

**Type drive**

Original  Solution gas drive

Present  Waterflood

**Pressure**

Original  NA

Present  NA

**FLUID DATA**

**API Gravity**  37

**Salinity of formation water**  .06 at form Temp.  120,000 ppm No.11

**Chloride content of formation water**  130,000 mg/l

**Sulfur content of oil**  NA

151
Unit: Spocogee
Operator: Gulf
Size: 640 acres
County: Creek
Location: T 18N, R 12E
Discovery date: 9/59

RESERVOIR DATA
Producing formation: Glenn
Age: Pennsylvanian (Desmoinesian)
Lithology: Sandstone
Type trap: Stratigraphic
Average depth: 1430 feet
Average thickness: NA
Average porosity: 17%
Average horizontal permeability: 30m
Range: 5-50
Average vertical permeability: NA
Oil saturation @ beginning of secondary recovery: 16%

Type drive
Original: Solution gas drive
Present: Water flood

Pressure
Original: NA
Present: NA

FLUID DATA
API Gravity: 39
Salinity of formation water: .06 at form Temp 120,000 ppm Cl
Chloride content of formation water: 120,000 ppm bared or Rw
Sulfur content of oil: NA
Unit M Aubrey
Operator Gulf
Size 160 acres
County Creek
Location T 18N, R 11E
Discovery date 12/61

RESERVOIR DATA
Producing formation Glenn
Age Pennsylvanian (Desmoinesian)
Lithology Sandstone
Type trap Stratigraphic
Average depth 1430 feet
Average thickness NA
Average porosity 18%
Average horizontal permeability 23m Range 5.6-79
Average vertical permeability NA
Oil saturation @ beginning of secondary recovery 17%

Type drive
Original Solution gas drive
Present Waterflood

Pressure
Original NA
Present NA

FLUID DATA
API Gravity 38
Salinity of formation water Rw=.06 at Form Temp. 120,000 ppm Cl
Chloride content of formation water 120,000 ppm based on Rw
Sulfur content of oil NA
Unit  Kiefer
Operator  Gulf
Size  2060 acres
County  Creek
Location  T 17N, R 12E
Discovery date  11/65

RESERVOIR DATA
Producing formation  Glenn
Age  Pennsylvanian (Desmoinesian)
Lithology  Sandstone
Type trap  Stratigraphic
Average depth  1500 feet
Average thickness  NA
Average porosity  20%
Average horizontal permeability  90m Range  28-142
Average vertical permeability  NA
Oil saturation @ beginning of secondary recovery  27%

Type drive
Original  Solution gas drive
Present  Water flood

Pressure
Original  NA
Present  NA

FLUID DATA
API Gravity  37
Salinity of formation water  96,277 ppm NaCl
Chloride content of formation water  30,000 mg/l
Sulfur content of oil  NA
Unit Elijah Corbray
Operator Getty Oil Co
Size 160 acres
County Tulsa & Creek
Location T 17N, R 12E
Discovery date

RESERVOIR DATA
Producing formation Bartlesville SS
Age Pennsylvanian (Desmoinesian)
Lithology Sandstone
Type trap
Average depth 1430 feet
Average thickness
Average porosity 20%
Average horizontal permeability 100m Range 2-500 m
Average vertical permeability
Oil saturation @ beginning of secondary recovery 21%
Type drive
Original Solution gas
Present Gas injection & waterflood
Pressure
Original NA
Present 560 psi

FLUID DATA
API Gravity 38°
Salinity of formation water
Chloride content of formation water
Sulfur content of oil
Unit  Burkhart & McNulty-Brown
Operator  Fair Oil Co
Size  approx. 220 Ac
County  Creek
Location  T 18N, R12E
Discovery date  1909

RESERVOIR DATA
Producing formation  Glenn Sand
Age  Pennsylvanian (Desmoinesian)
Lithology  Sandstone
Type trap  Stratigraphic
Average depth  1450 feet
Average thickness  25 feet
Average porosity  17%
Average horizontal permeability  25m Range  0-150
Average vertical permeability  5m
Oil saturation @ beginning of secondary recovery  45%

Type drive
   Original  Gas cap, dissolved gas
   Present  Water flood

Pressure
   Original  650#
   Present  850#

FLUID DATA
API Gravity  39°
Salinity of formation water
Chloride content of formation water  90,000 ppm
Sulfur content of oil
**Unit**  N Glenn-Glen #3  
**Operator**  Fair Oil Co  
**Size**  360 acres  
**County**  Creek & Tulsa  
**Location**  T 18N, R12E  
**Discovery date**  1909  

**RESERVOIR DATA**  
**Producing formation**  Glenn Sand  
**Age**  Pennsylvanian (Desmoinesian)  
**Lithology**  Sandstone  
**Type trap**  Stratigraphic  
**Average depth**  1450 feet  
**Average thickness**  30 feet  
**Average porosity**  17.5%  
**Average horizontal permeability**  20m  
**Average vertical permeability**  5m  
**Oil saturation @ beginning of secondary recovery**  47.6%  

**Type drive**  
Original  Gas cap & dissolved gas  
Present  Water flood  

**Pressure**  
Original  650#  
Present  850#  

**FLUID DATA**  
**API Gravity**  39°  
**Salinity of formation water**  
**Chloride content of formation water**  90,000 PPM  
**Sulfur content of oil**
GOLDEN TREND

(including New Hope)
**Unit** Panther Creek

**Operator** Phillips Petroleum

**Size** 6640 acres

**County** Garvin

**Location** T 2 & 3N, R 3W

**Discovery date** 1948

**RESERVOIR DATA**

**Producing formation** Hart

**Age** Pennsylvanian (Desmoinesian)

**Lithology** Sandstone

**Type trap** Stratigraphic

**Average depth** 7900 feet

**Average thickness** 35 (est) feet

**Average porosity** 14.37%

**Average horizontal permeability** 27.45 m

**Range**

**Average vertical permeability**

**Oil saturation @ beginning of secondary recovery** 42%

**Type drive**

- Original Solution gas 80% - gas cap 20%
- Present Secondary water drive 100%

**Pressure**

- Original 3250 in 1948
- Present

**FLUID DATA**

**API Gravity** 43.2°

**Salinity of formation water** NA

**Chloride content of formation water** NA

**Sulfur content of oil** Sweet
Unit  W Katie-3rd Deese
Operator  Exxon Corporation
Size  1840 acres (unit)
County  Garvin
Location  T 1&2N, R 2W
Discovery date  Oct. 1946

RESERVOIR DATA
Producing formation  3rd Deese Sand (Pennsylvanian)
Age  Pennsylvanian (Desmoinesian)
Lithology  Sandstone
Type trap  Stratigraphic
Average depth  6,500 feet
Average thickness  32 feet
Average porosity  17.5%
Average horizontal permeability  \text{na}
Average vertical permeability  \text{na}
Oil saturation @ beginning of secondary recovery  \text{na}

Type drive
Original  Solution-gas drive
Present  Pressure depletion (water inj. Terminated July 1973)

Pressure
Original  2936 psi @ 5600' (Subsea)
Present  \text{na}

FLUID DATA
API Gravity  43.6
Salinity of formation water  \text{na}
Chloride content of formation water  \text{na}
Sulfur content of oil  Crude-Sweet
Unit  SE New Hope
Operator  Arco
Size  10,680 acres
County  Garvin
Location  T 4 and 5N, R 3W
Discovery date

RESERVOIR DATA
Producing formation  Gibson 1st & 2nd
Age  Pennsylvanian (Desmoinesian)
Lithology  Sandstone
Type trap  Stratigraphic
Average depth  7000 +
Average thickness
Average porosity  12.6%
Average horizontal permeability  Range
Average vertical permeability
Oil saturation @ beginning of secondary recovery
Type drive
Original  Solution gas
Present  Flooded out

Pressure
Original
Present

FLUID DATA
API Gravity  40-60
Salinity of formation water  Total Solids 254-000+
Chloride content of formation water  152,400
Sulfur content of oil  None
Unit: NE Elmore-3rd Deese
Operator: Exxon Corporation
Size: 5600 acres (2nd enlargement)
County: Garvin
Location: T 2N, R 2W
Discovery date: March, 1947

RESERVOIR DATA
Producing formation: 3rd Deese sand (Pennsylvanian)
Age: Pennsylvanian (Desmoinesian)
Lithology: Sandstone
Type trap: Stratigraphic
Average depth: 6525 feet
Average thickness: 18 feet
Average porosity: .15.7%
Average horizontal permeability: 87 m Range NA
Average vertical permeability: NA
Oil saturation @ beginning of secondary recovery: NA

Type drive
Original: Solution-gas drive
Present: Pressure depletion (water inj. ceased Sept. 1975)

Pressure
Original: 2900 psi - 1947
Present: NA

FLUID DATA
API Gravity: 42
Salinity of formation water: 153,800
Chloride content of formation water: 95,700
Sulfur content of oil: Crude-Sweet
HEALDTON-HEWITT FIELD

(including North Healdton)
**Unit**  Healdton-Ar buckle  
**Operator**  Arco  
**Size**  1302 acres  
**County**  Carter  
**Location**  T 4S, R 3W  
**Discovery date**  1960  

**RESERVOIR DATA**  
**Producing formation**  Arbuckle (lower West Spring Creek & Brown zone)  
**Age**  Ordovician  
**Lithology**  Limestone/dolomite  
**Type trap**  
**Average depth**  3500 feet  
**Average thickness**  
**Average porosity**  5.34%  
**Average horizontal permeability**  149m Range  
**Average vertical permeability**  149m  
**Oil saturation @ beginning of secondary recovery**  

**Type drive**  
**Original**  Solution gas  
**Present**  Water Drive  

**Pressure**  
**Original**  1670 psia  
**Present**  @-2887' -1051 psi 12-1-71  

**FLUID DATA**  
**API Gravity**  38°  
**Salinity of formation water**  
**Chloride content of formation water**  
**Sulfur content of oil**  1.6% H₂S
Unit  Third Healdton Sand Unit
Operator  Shell Oil Company
Size  360 acres
County  Jefferson
Location  T 3S, R 4W
Discovery date  1954

RESERVOIR DATA
Producing formation  Pennsylvania
Age  Pennsylvania (Missourian)
Lithology  Sandstone
Type trap  Faulted Anticline
Average depth  1300 feet
Average thickness  40 feet
Average porosity  15%
Average horizontal permeability  40m Range  2-200
Average vertical permeability  Not measured
Oil saturation @ beginning of secondary recovery  57%

Type drive
Original  Solution gas
Present  Waterflood

Pressure
Original  360/1955
Present  Not measured. Est. 250 psi range

FLUID DATA
API Gravity  39
Salinity of formation water
Chloride content of formation water  73,000
Sulfur content of oil  Sweet
**Unit**  Healdton Area III

**Operator**  Arco

**Size**  1500 acres

**County**  Carter

**Location**  T 4S, R 3W

**Discovery date**

**RESERVOIR DATA**

**Producing formation**  Healdton sand

**Age**  Pennsylvanian (Missourian)

**Lithology**  Sandstone

**Type trap**  Anticline

**Average depth**  700 feet

**Average thickness**  55 feet

**Average porosity**  21-26%

**Average horizontal permeability**

**Average vertical permeability**

**Oil saturation @ beginning of secondary recovery**

**Type drive**

- **Original**  Solution gas
- **Present**  Water injection

**Pressure**

- **Original**  270 psi
- **Present**

**FLUID DATA**

**API Gravity**  31

**Salinity of formation water**

**Chloride content of formation water**

**Sulfur content of oil**
Unit  Healdton I Unit
Operator  Mobil
Size  1180 acres
County  Carter & Jefferson
Location  Tps. 3 and 4 S, Rs. 3 and 4 W
Discovery date  1914

RESERVOIR DATA
Producing formation  Healdton Sands
Age  Pennsylvanian (Missourian)
Lithology  Sandstone
Type trap  Anticlinal structure
Average depth  700 feet
Average thickness  108 feet
Average porosity  24.2%
Average horizontal permeability  386m Range 0.1-2745.9
Average vertical permeability  207m
Oil saturation @ beginning of secondary recovery  44.3

Type drive
Original  Dissolved gas drive & gravity drainage (1st,2nd,4th Sand)
Present  Secondary recovery by water injection

Pressure
Original  NA
Present  Less than 50 psi 1974-1975

FLUID DATA
API Gravity  32°
Salinity of formation water  NaCl 81,953 mg/l
Chloride content of formation water  66,700 mg/l
Sulfur content of oil  NA
**Unit**  
Hewitt Unit

**Operator**  
Exxon Corporation

**Size**  
2638

**County**  
Carter

**Location**  
T 4S, R 2W

**Discovery date**  
1919

**RESERVOIR DATA**

**Producing formation**  
Deese & Hoxbar (19 Pennsylvanian Sand Reservoirs)

**Age**  
Pennsylvanian

**Lithology**  
Sandstone

**Type trap**  
Structural (Faulting and water-oil contacts)

**Average depth**  
1550 (Chubbee)

**Average thickness**  
90 feet

**Average porosity**  
21.0%

**Average horizontal permeability**  
184 m

**Range**  
1 to 1500

**Average vertical permeability**  
NA

**Oil saturation @ beginning of secondary recovery**  
Est 50%

**Type drive**

Original  
Solution gas augmented with gravity drainage

Present  
Water injection (5-spot pattern)

**Pressure**

Original  
Unknown

Present  
Unknown

**FLUID DATA**

**API Gravity**  
35

**Salinity of formation water**  
118,900

**Chloride content of formation water**  
73,150

**Sulfur content of oil**  
0.65%
Unit Healdton II
Operator Shell Oil Company
Size 1221 acres
County Carter
Location T 3S, R 3W
Discovery date 1913

RESERVOIR DATA
Producing formation Penn Sands
Age Pennsylvanian
Lithology Sandstone
Type trap Anticline-Faulted
Average depth 940 (600-1400) feet
Average thickness 257 feet
Average porosity 25.4%
Average horizontal permeability $998$ Range 1-10,000
Average vertical permeability not measured
Oil saturation @ beginning of secondary recovery 43

Type drive
Original Depletion
Present Waterflood

Pressure
Original 270
Present est 100/1977

FLUID DATA
API Gravity 32.4
Salinity of formation water NA
Chloride content of formation water 60,000 ppm
Sulfur content of oil Sweet
Unit  Dundee-Healdton
Operator  Arco
Size  640 acres
County  Carter
Location  T 4S, R 3W
Discovery date

RESERVOIR DATA
Producing formation  Healdton Sand
Age  Pennsylvanian (Missourian)
Lithology  Sandstone
Type trap  Anticline
Average depth  720 feet
Average thickness  104 feet
Average porosity  19-25%
Average horizontal permeability  Range 47-763
Average vertical permeability
Oil saturation @ beginning of secondary recovery
Type drive
  Original  Solution gas
  Present  Water injection
Pressure
  Original  270 psi
  Present

FLUID DATA
API Gravity  31
Salinity of formation water
Chloride content of formation water
Sulfur content of oil
OKLAHOMA CITY FIELD
**Unit**  Prue Sand WF  
**Operator**  Cities Service Oil Co.  
**Size**  16 Leases Approx. 2040 Acres  
**County**  Oklahoma  
**Location**  T 11N, R 2W & 3W  
**Discovery date**  1932  

**RESERVOIR DATA**  
**Producing formation**  Prue Sand  
**Age**  Pennsylvanian (Desmoinesian)  
**Lithology**  Sandstone  
**Type trap**  Structural  
**Average depth**  6359 feet  
**Average thickness**  56 feet  
**Average porosity**  13.56%  
**Average horizontal permeability**  11.5m  
**Average vertical permeability**  1.58m  
**Oil saturation @ beginning of secondary recovery**  54 to 60%  

**Type drive**  
- Original  Gas Cap  
- Present  Pattern Injection  

**Pressure**  
- Original  2900 psi 1932  
- Present  2350 psi 1977  

**FLUID DATA**  
**API Gravity**  37 degrees - 38 degrees  
**Salinity of formation water**  pH 5.8 1.160 spg  
**Chloride content of formation water**  137,498 ppm  
**Sulfur content of oil**  None
Unit: Okc-Wilcox Snd Unit
Operator: Cities Service Oil Co
Size: 2160
County: Oklahoma & Cleveland
Location: T 10 and 11N, R 2 and 3W
Discovery date: 1929

RESERVOIR DATA
Producing formation: Wilcox Sand
Age
Lithology
Type trap: Structural
Average depth: varies (5000-6500) feet
Average thickness: 100 feet
Average porosity: 18%
Average horizontal permeability: 90m
Range: NA
Average vertical permeability: NA
Oil saturation @ beginning of secondary recovery: Unknown

Type drive
Original: Solution Gas & Gravity Drainage
Present: Water Injection

Pressure
Original: 2686 psia @ 5425 subsea
Present: Est. 400 psia

FLUID DATA
API Gravity: 37
Salinity of formation water
Chloride content of formation water: 140,000 ppm
Sulfur content of oil: None
POSTLE-HOUGH FIELD

(including Northwest Hough, Hovey, and South Hovey)
**Unit**  Hough Morrow AU  
**Operator**  Mobil  
**Size**  3360  
**County**  Texas  
**Location**  T 5N, R 13, 14 ECM  
**Discovery date**  July 1959  

**RESERVOIR DATA**  
**Producing formation**  Morrow "A"  
**Age**  Pennsylvanian (Morrow)  
**Lithology**  Sandstone  
**Type trap**  Combination structural and stratigraphic trap  
**Average depth**  6100 feet  
**Average thickness**  
**Average porosity**  
**Average horizontal permeability**  59 m Range 1.5-309  
**Average vertical permeability**  54 m  
**Oil saturation @ beginning of secondary recovery**  NA  

**Type drive**  
Original  Solution gas & two small ineffective gas caps  
Present  Water drive—very effective  

**Pressure**  
Original  1655 psig-1959  
Present  Aug 1900 psig-1977  

**FLUID DATA**  
**API Gravity**  40  
**Salinity of formation water**  
**Chloride content of formation water**  
**Sulfur content of oil**
**Unit**
S Hovey-U/Cherokee

**Operator**
Mobil

**Size**
2996

**County**
Texas

**Location**
T 46 N, R 13 ECM

**Discovery date**
March 1959

**RESERVOIR DATA**

**Producing formation**
Upper Cherokee

**Age**
Pennsylvanian (Desmoinesian)

**Lithology**
Sandstone

**Type trap**
Stratigraphic trap

**Average depth**
5485 feet

**Average thickness**
NA

**Average porosity**
20%

**Average horizontal permeability**
84m

**Range**
0.1-720

**Average vertical permeability**
NA

**Oil saturation @ beginning of secondary recovery**
NA

**Type drive**

- Original: Solution gas drive supplemented by small gas cap
- Present: Water drive—very effective

**Pressure**

- Original: 1635 psig-1959
- Present: Aug. 1500 psig-1977

**FLUID DATA**

**API Gravity**
42

**Salinity of formation water**
NA

**Chloride content of formation water**
NA

**Sulfur content of oil**
NA
Unit  Postle Upper Morrow Unit
Operator  Mobil
Size  3944
County  Texas
Location  T 5&6N, R 13&14ECM
Discovery date  May 1959

RESERVOIR DATA
Producing formation  Upper Morrow
Age  Pennsylvanian (Morrow)
Lithology  Sandstone
Type trap  Stratigraphic trap
Average depth  6100 feet
Average thickness  23.1 feet
Average porosity  15.4%
Average horizontal permeability  4.4m Range 1.3-160
Average vertical permeability  7.3
Oil saturation @ beginning of secondary recovery NA

Type drive
Original  Solution gas drive
Present  Water drive—very effective

Pressure
Original  1655 psig-1959
Present  2100 psig-1977

FLUID DATA
API Gravity  40
Salinity of formation water NA
Chloride content of formation water NA
Sulfur content of oil NA
**Unit** McDaniel-Shields  
**Operator** Anadarko Production Co  
**Size** Approx 780 acres  
**County** Texas  
**Location** T 4 and 5N, R 14ECM  
**Discovery date** August, 1968  

**RESERVOIR DATA**  
**Producing formation** U/Morrow  
**Age** Pennsylvanian (Morrow)  
**Lithology** Sandstone  
**Type trap** Stratigraphic-structural  
**Average depth** 6150 feet  
**Average thickness** 9.5 feet  
**Average porosity** .16%  
**Average horizontal permeability** 112m Range 14-300  
**Average vertical permeability**  
**Oil saturation @ beginning of secondary recovery** 42%  
**Type drive**  
  *Original* Solution Gas (22%)  
  *Present* Water Injection (37.5%)  

**Pressure**  
  *Original* 1693 psia  
  *Present* 1909 psig (7-30-72)  

**FLUID DATA**  
**API Gravity** 39.8°  
**Salinity of formation water**  
**Chloride content of formation water** 150,000 ppm  
**Sulfur content of oil**
Unit  W Hough-Morrow
Operator  Mobil
Size  7601
County  Texas
Location  T 4 and 5N, R 13 and 14 ECM
Discovery date  Feb. 1960

RESERVOIR DATA
Producing formation  Morrow "a"; A-1; A-2 & Keyes
Age  Pennsylvanian (Morrow)
Lithology  Sandstone
Type trap  Structural trap
Average depth  6500 feet
Average thickness  NA
Average porosity  15.7%
Average horizontal permeability 64m
Range  NA
Average vertical permeability  NA
Oil saturation @ beginning of secondary recovery  NA
Type drive
Original  Solution gas drive & small gas cap
Present  Water drive—very effective
Pressure
Original  1678 psig-1960
Present  Aug. 1800 psig-1977

FLUID DATA
API Gravity  40
Salinity of formation water  62,000 ppm
Chloride content of formation water  139,000 ppm
Sulfur content of oil  NA
POSTLE FIELD

HOVEY MORROW UNIT
TEXAS COUNTY

Typical well in this unit

Top producing formation

R12ECM  R13ECM
Unit       Hovey Morrow
Operator   Mobil
Size       7881
County     Texas
Location   T 56N, R 13 E CM
Discovery date  July 1958

RESERVOIR DATA
Producing formation  Morrow "A"
Age        Pennsylvanian (Morrow)
Lithology  Sandstone
Type trap  Channel-type
Average depth  6100 feet
Average thickness  NA
Average porosity
Average horizontal permeability  44m Range  NA
Average vertical permeability   NA
Oil saturation @ beginning of secondary recovery  NA

Type drive
Original  Major producing mechanism is solution gas w/some gas cap drive
Present   Water drive not effective to date

Pressure
Original  NA
Present   Aug. 1000 psig-1977

FLUID DATA
API Gravity  40
Salinity of formation water  NA
Chloride content of formation water  NA
Sulfur content of oil  NA
SEMINOLE FIELD
**Unit** Booch Flood

**Operator** Beach Operating Co.

**Size** 160 acres

**County** Seminole

**Location** T 9N, R 7E

**Discovery date** 1958

---

**RESERVOIR DATA**

**Producing formation** Booch

**Age** Pennsylvanian (Desmoinesian)

**Lithology** Sandstone

**Type trap** Strat.

**Average depth** 3500 feet

**Average thickness** 35 feet

**Average porosity** 14%

**Average horizontal permeability** 1.1m

**Average vertical permeability** 1.1m

**Oil saturation @ beginning of secondary recovery** 12% (est)

**Type drive**

- Original: Gas solution
- Present: Secondary water flood

**Pressure**

- Original: 200 psi 1958 (est)
- Present: 0 1977

---

**FLUID DATA**

**API Gravity** 35°

**Salinity of formation water**

**Chloride content of formation water** 100,000 ppm

**Sulfur content of oil**
SHO-VEL-TUM FIELD

(including West Doyle, Doyle, Fox, Milroy, Velma
Unconformity, South Velma, East Velma, Velma,
Velma Shallow, Sholem Alechem, and Tatums)
Unit Fish-Neustadt-Snider
Operator Mobil
Size 260 acres
County Carter
Location T 1S, R 3W
Discovery date 1915

RESERVOIR DATA
Producing formation Deese-
Age Pennsylvanian (Desmoinesian)
Lithology Sandstone
Type trap Structural
Average depth 3400 feet
Average thickness 36 feet
Average porosity .20%
Average horizontal permeability 132m Range NA
Average vertical permeability NA
Oil saturation @ beginning of secondary recovery 50%

Type drive
Original Solution gas
Present Waterflood

Pressure
Original NA
Present NA

FLUID DATA
API Gravity $34^\circ$
Salinity of formation water NA
Chloride content of formation water NA
Sulfur content of oil NA
Unit: R A Hefner "E" lease
Operator: Amoco
Size: 100 acres
County: Stephens
Location: T 2S, R 4W
Discovery date: 1952

RESERVOIR DATA
Producing formation: Deese-Tussy sand
Age: Pennsylvanian
Lithology: Sandstone
Type trap: Faulted anticline
Average depth: 2000 feet
Average thickness: 45 feet
Average porosity: 15%
Average horizontal permeability: 14m Range: 10-18
Average vertical permeability: NA
Oil saturation at beginning of secondary recovery: NA

Type drive:
Original: Gravity drainage
Present: Gravity drainage

Pressure:
Original: 1940-1952
Present: None available

FLUID DATA
API Gravity: 31°
Salinity of formation water: 134,000 ppm
Chloride content of formation water: 82,700 ppm
Sulfur content of oil: Sweet
SVO-VEL-TUM FIELD

Typical well in this unit

Top producing formation

HT STIEFEL UNIT
STEPHENS COUNTY
**Unit**    HT Stiefel Unit

**Operator**    Skelly

**Size**

**County**    Stephens

**Location**    T 1S, R 5W

**Discovery date**

**RESERVOIR DATA**

**Producing formation**    Permian

**Age**    Permian

**Lithology**    Sandstone

**Type trap**    Structural

**Average depth**    500 feet

**Average thickness**    60-100 feet

**Average porosity**    24%

**Average horizontal permeability**    280m

**Range**

**Average vertical permeability**

**Oil saturation @ beginning of secondary recovery**

**Type drive**

- Original: Solution gas
- Present

**Pressure**

- Original: 400 psi
- Present: 100 psi

**FLUID DATA**

**API Gravity**

**Salinity of formation water**

**Chloride content of formation water**

**Sulfur content of oil**
Unit  Spears-Deese Unit
Operator  Mobil
Size  460 Productive acres
County  Carter
Location  T 1S, R 3W
Discovery date  1927

RESERVOIR DATA
Producing formation  Deese
Age  Pennsylvanian
Lithology  Sandstone
Type trap  Highly faulted anticline
Average depth  3500 feet
Average thickness  71 feet
Average porosity  17%
Average horizontal permeability  NA  Range
Average vertical permeability  NA
Oil saturation @ beginning of secondary recovery  51.6%

Type drive
Original  Solution gas drive
Present  Waterflood

Pressure
Original  NA
Present  approx. 1500 psig (1977)

FLUID DATA
API Gravity  30°
Salinity of formation water  NA
Chloride content of formation water  NA
Sulfur content of oil  Sweet Crude
**Unit**  
Doyle Unit  

**Operator**  
Phillips  

**Size**  
2062 acres  

**County**  
Stephens  

**Location**  
T 1N, R 4 and 5W  

**Discovery date**  
1940  

**RESERVOIR DATA**  

**Producing formation**  
Heffner  

**Age**  
Pennsylvanian (Desmoinesian)  

**Lithology**  
Sandstone  

**Type trap**  
Fault block-anticline  

**Average depth**  
6,700 feet  

**Average thickness**  
19 feet  

**Average porosity**  
14%  

**Average horizontal permeability**  
4m  

**Average vertical permeability**  

**Oil saturation @ beginning of secondary recovery**  
58.6%  

**Type drive**  
Original  
Solution gas-good  

Present  
Waterflood-good  

**Pressure**  
Original  
2215 psia  

Present  

**FLUID DATA**  

**API Gravity**  
38° api  

**Salinity of formation water**  

**Chloride content of formation water**  

**Sulfur content of oil**  

225
**Unit**  
Velma-Sims Snd Unit

**Operator**  
Skelly

**Size**  
3700 acres

**County**  
Stephens

**Location**  
T 1S, R 4 and 5W

**Discovery date**  
1949

**RESERVOIR DATA**

**Producing formation**  
Sims-Springer

**Age**  
Pennsylvanian (Springer)

**Lithology**  
Sandstone

**Type trap**  
Anticline

**Average depth**  
4000–7000 feet

**Average thickness**  
200 feet

**Average porosity**  
19.1%

**Average horizontal permeability**  
190 m Range

**Average vertical permeability**  
25 m

**Oil saturation @ beginning of secondary recovery**

**Type drive**

- Original: Solution gas drive
- Present: Gas injection and waterflood

**Pressure**

- Original: 1735 psi
- Present: 400–1000 psi

**FLUID DATA**

**API Gravity**  
28°

**Salinity of formation water**  
100,000 ppm

**Chloride content of formation water**  
62,835 ppm

**Sulfur content of oil**  
Low
**Unit** Ybles Unit

**Operator** Skelly

**Size** 160 Acres

**County** Stephens

**Location** T 1S, R 5W

**Discovery date**

**RESERVOIR DATA**

**Producing formation** Permian

**Age** Permian

**Lithology**

**Type trap** Structural

**Average depth** 3-500 feet

**Average thickness** 60-100 feet

**Average porosity** 24.5%

**Average horizontal permeability** 300m Range

**Average vertical permeability**

**Oil saturation @ beginning of secondary recovery**

**Type drive**

Original Solution gas

Present

**Pressure**

Original 400

Present 100

**FLUID DATA**

**API Gravity**

**Salinity of formation water**

**Chloride content of formation water**

**Sulfur content of oil**
Unit  Sholem Alechem Flattop
Operator  Mobil
Size  1285
County  Carter
Location
Discovery date  NA

RESERVOIR DATA
Producing formation  Sims
Age  Pennsylvanian (?)
Lithology  Sandstone
Type trap  Struct-Strat
Average depth  4500 feet
Average thickness  45 feet
Average porosity  17.8%
Average horizontal permeability  56.8 m
Range  NA
Average vertical permeability  NA
Oil saturation @ beginning of secondary recovery  58
Type drive
Original  Solution gas, Gas expansion
Present  Waterflood
Pressure
Original  NA
Present  NA

FLUID DATA
API Gravity  31°
Salinity of formation water  121,192
Chloride content of formation water  78,700
Sulfur content of oil  Sweet
**Unit** Tatums Unit

**Operator** Mobil

**Size** 2750 acres

**County** Carter

**Location** T 1S, R 2 and 3W

**Discovery date** Jan. 1927

---

**RESERVOIR DATA**

**Producing formation** Deese

**Age** Pennsylvanian

**Lithology** Sandstone

**Type trap** Anticline

**Average depth** 2600 feet

**Average thickness** 51 feet

**Average porosity** 22.3%

**Average horizontal permeability** 860m Range

**Average vertical permeability** 287m

**Oil saturation @ beginning of secondary recovery** 64.4%

**Type drive**

Original Solution gas

Present Waterflood

**Pressure**

Original Not available

Present approx. 1100 psig (1977)

---

**FLUID DATA**

**API Gravity** 26°

**Salinity of formation water** NA

**Chloride content of formation water** NA

**Sulfur content of oil** Sweet oil
Unit  Humphreys Unit
Operator  Skelly
Size  300 acres
County  Stephens
Location
Discovery date

RESERVOIR DATA
Producing formation  Humphreys sands
Age  Pennsylvanian
Lithology  Sandstone
Type trap
Average depth  4500-5700 feet
Average thickness  65 feet
Average porosity
Average horizontal permeability  33m Range .1 to 191
Average vertical permeability
Oil saturation @ beginning of secondary recovery
Type drive
Original
Present
Pressure
Original
Present

FLUID DATA
API Gravity  21°
Salinity of formation water
Chloride content of formation water
Sulfur content of oil

235
**Unit** Wildcat Jim

**Operator** Skelly

**Size** 1390 acres

**County** Carter

**Location** T 2S, R 2W

**Discovery date**

**RESERVOIR DATA**

**Producing formation** Hoxbar and Deese

**Age** Pennsylvanian

**Lithology** Sandstone

**Type trap**

**Average depth** 1300-3100 feet

**Average thickness** 0-150 feet

**Average porosity** .20.3%

**Average horizontal permeability** Range

**Average vertical permeability**

**Oil saturation @ beginning of secondary recovery**

**Type drive**

Original

Present

**Pressure**

Original

Present

**FLUID DATA**

**API Gravity** 25°

**Salinity of formation water**

**Chloride content of formation water**

**Sulfur content of oil**
Unit: Moore Lse
Operator: ME Davenport
Size: 60 ac
County: Stephens
Location: T 2S, R 4W
Discovery date: 1956

RESERVOIR DATA
Producing formation: Pontotoc
Age: Pennsylvanian-Permian
Lithology: Sandstone
Type trap: 
Average depth: approx 400 feet
Average thickness: 20 feet
Average porosity: 
Average horizontal permeability: Range
Average vertical permeability: 
Oil saturation @ beginning of secondary recovery: 

Type drive:
Original
Present: Waterflood

Pressure:
Original
Present:

FLUID DATA
API Gravity: 22
Salinity of formation water: Brackish
Chloride content of formation water: 
Sulfur content of oil: 

239
### Sho-vel-tum Field

#### East Velma-M/Block Humphreys Unit

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**Typical well in this unit:**

- 5800
- 5900
- 6000

**Top producing formation:**

- Stephens County
- Carter County

**County Boundaries:**

- Garvin County
- Jefferson County
- Stephens County
- Carter County
Unit: E Velma-M/Blk Humphreys
Operator: Amoco
Size: 286 acres
County: Carter & Stephens
Location: T 28, R 4W
Discovery date: 12/50

RESERVOIR DATA
Producing formation: Humphrey sand
Age: Pennsylvanian
Lithology: Sandstone
Type trap: Faulted, wedge-type
Average depth: 5150 feet
Average thickness: 90 feet
Average porosity: 21%
Average horizontal permeability: 53% Range: 15-80
Average vertical permeability: xxx
Oil saturation @ beginning of secondary recovery: .55

Type drive:
Original: Gravity Drainage
Present: Gravity drainage accelerated by updip gas injection

Pressure:
Original: 1300 psi 12/50
Present: 270 psi 2/77

FLUID DATA
API Gravity: 20°-26°
Salinity of formation water: 117,000 ppm
Chloride content of formation water: 70,900 ppm
Sulfur content of oil: NA
Unit N Alma Deese
Operator Mobil
Size 1991 acres
County Stephens
Location T 1N and 1S, R 4W
Discovery date NA

RESERVOIR DATA
Producing formation Deese
Age Pennsylvanian (Desmoinesian)
Lithology Sandstone
Type trap Struct-strat.
Average depth 4500 feet
Average thickness 47 feet
Average porosity 17.4%
Average horizontal permeability 44.8m
Range NA
Average vertical permeability NA
Oil saturation @ beginning of secondary recovery 57%
Type drive
Original Solution gas
Present Waterflood

Pressure
Original NA
Present NA

FLUID DATA
API Gravity 30°
Salinity of formation water 149,716
Chloride content of formation water 98,024
Sulfur content of oil Sweet
Unit: Flt Blk "A"
Operator: Amoco Production Co
Size: 2440 acres
County: Stephens
Location: T 1N and 1S, R 4W
Discovery date: 8/47

RESERVOIR DATA
Producing formation: Springer Sims "C" sand
Age: Pennsylvanian
Lithology: Sandstone
Type trap: Faulted anticline/structural & stratigraphic pinchout
Average depth: 5000 feet
Average thickness: NA
Average porosity: 20% C-1; 18.2% C-2
Average horizontal permeability: 173 m Range 226-139 md
Average vertical permeability: NA
Oil saturation @ beginning of secondary recovery: .6

Type drive
Original: Solution gas drive
Present: Pressure Maintenance-Water Injection

Pressure
Original: 1204 psi 8/47
Present: 150 psi

FLUID DATA
API Gravity: 27.5
Salinity of formation water: Well 127 date 11/65 83.36
Chloride content of formation water: Well 134 81,000 mg/l
Sulfur content of oil: NA
**Unit**  Myrtle Dillard  
**Operator**  Mobil  
**Size**  160 Ac.  
**County**  Stephens  
**Location**  T 2S, R 5W  
**Discovery date**  1920

**RESERVOIR DATA**

**Producing formation**  Permian  
**Age**  Permian  
**Lithology**  Sandstone (?)  
**Type trap**  Structural-strat.  
**Average depth**  400 feet  
**Average thickness**  60 feet  
**Average porosity**  25.6%  
**Average horizontal permeability**  464m  
**Average vertical permeability**  169m  
**Oil saturation @ beginning of secondary recovery**  65.4%  

**Type drive**

Original  Solution Gas  
Present  Waterflood

**Pressure**

Original  NA  
Present  NA

**FLUID DATA**

**API Gravity**  29  
**Salinity of formation water**  55,421  
**Chloride content of formation water**  36,574  
**Sulfur content of oil**  Sweet
Unit: E Velma-Deese  
Operator: Amoco  
Size: 738 acres  
County: Carter & Stephens  
Location: T 28, R 4W  
Discovery date: 10/4/50

RESERVOIR DATA
Producing formation: Deese sand-Tussy & Eason  
Age: Pennsylvanian (Desmoinesian)  
Lithology: Sandstone  
Type trap: Faulted anticline  
Average depth: 4350 feet  
Average thickness: Eason 30'; Tussy 10'  
Average porosity: Eason 17.56%; Tussy 14.62%  
Average horizontal permeability: Eason 25m Range  
Average vertical permeability: 38.37  
Oil saturation @ beginning of secondary recovery: 0.6

Type drive:  
Original: Solution gas drive w/expanding gas cap  
Present: Waterflood  
Pressure:  
Original: 1490 Oct. 1950  
Present: None available

FLUID DATA
API Gravity: 30.7  
Salinity of formation water: 134,000 ppm  
Chloride content of formation water: 82,700 ppm  
Sulfur content of oil: Sweet crude
Unit N Tatum's Goodwin
Operator Tenneco Oil Company
Size 250 acres
County Carter
Location T 1S, R 3W
Discovery date 1951

RESERVOIR DATA
Producing formation First Goodwin Sand
Age Pennsylvania
Lithology Sandstone
Type trap Fault trap
Average depth 5000 feet
Average thickness 24 feet
Average porosity 19%
Average horizontal permeability 50m Range
Average vertical permeability
Oil saturation @ beginning of secondary recovery 42%

Type drive
Original Solution gas-27%
Present Water Flood-5%

Pressure
Original 2150 psi-1951
Present 125 psi-current

FLUID DATA
API Gravity $41^\circ$
Salinity of formation water
Chloride content of formation water
Sulfur content of oil
SHO-VEL-TUM FIELD

THOMASSON UNIT
STEPHENS COUNTY

Typical well in this unit

Top producing formation
Unit: Thomasson
Operator: Perkins Production Company
Size: 120 acres
County: Stephens
Location: T 1S, R 5W
Discovery date: October, 1964

RESERVOIR DATA
Producing formation: Hoxbar
Age: Pennsylvanian
Lithology: Sandstone
Type trap: Stratigraphic
Average depth: 1720 feet
Average thickness: 43 feet
Average porosity: 18%
Average horizontal permeability: 51m Range
Average vertical permeability
Oil saturation @ beginning of secondary recovery

Type drive:
Original: Solution Gas
Present: Water

Pressure:
Original: 580 psi 12/64
Present: 100 psi 2/72

FLUID DATA
API Gravity: 29
Salinity of formation water: 1711 mg/l
Chloride content of formation water: 77,000 mg/l
Sulfur content of oil
Unit  Ella Brown
Operator  Gulf
Size  70 acres
County  Stephens
Location  T 2S, R 5W
Discovery date  NA

RESERVOIR DATA
Producing formation  Permian
Age  Permian
Lithology  Sandstone (?)
Type trap  NA
Average depth  400 feet
Average thickness  NA
Average porosity  29%
Average horizontal permeability  1132m
Range  50–2000
Average vertical permeability  NA
Oil saturation @ beginning of
secondary recovery  20%

Type drive
Original  Unknown
Present  Waterflood

Pressure
Original  NA
Present  NA

FLUID DATA
API Gravity  26
Salinity of formation water  55032 ppm
Chloride content of formation water  37000 mg/l
Sulfur content of oil  NA
**Unit**   SW Velma Springer  
**Operator**  Mobil  
**Size**  450 acres  
**County**  Stephens  
**Location**  T 1 and 2S, R 5W  
**Discovery date**  1951

**RESERVOIR DATA**

**Producing formation**  Springer  
**Age**  Pennsylvanian (Springerian)  
**Lithology**  Sandstone  
**Type trap**  Faulted Trap  
**Average depth**  5100 feet  
**Average thickness**  116 feet  
**Average porosity**  13.3%  
**Average horizontal permeability**  2m  
**Average vertical permeability**

**Oil saturation @ beginning of secondary recovery**  49.7%

**Type drive**

Original  Solution gas drive  
Present  Waterflood

**Pressure**

Original  Not available  
Present  approx. 1800 psig (1977)

**FLUID DATA**

**API Gravity**  34°  
**Salinity of formation water**  Not Available  
**Chloride content of formation water**  Not Available  
**Sulfur content of oil**  Sweet Crude
**Unit**  
E Velma W/Blk Humphreys

**Operator**  
Arco

**Size**  
796

**County**  
Stephens

**Location**  
T 1S & 2S, R 4W

**Discovery date**  
May 1950

**RESERVOIR DATA**

**Producing formation**  
Springer Formation, Humphreys sand

**Age**  
Pennsylvania (Springerian)

**Lithology**  
Sandstone

**Type trap**  
Wedge type trap on Flank of Truncated Anticline

**Average depth**  
5400 feet

**Average thickness**  
60 feet

**Average porosity**  
20%

**Average horizontal permeability**  
65m Range

**Average vertical permeability**

**Oil saturation @ beginning of**  
secondary recovery  71%

**Type drive**

Original  
Gravity drainage

Present  
Gas & Water Injection

**Pressure**

Original  
1460

Present  
7500

**FLUID DATA**

**API Gravity**  
28°

**Salinity of formation water**  
37,000

**Chloride content of formation water**  
104,000

**Sulfur content of oil**  
1.66%
**Unit** E Velma-W/Blk Sims

**Operator** Arco

**Size** 964

**County** Stephens

**Location** T 1S & 2S, R 4W

**Discovery date** June, 1949

**RESERVOIR DATA**

**Producing formation** Springer Formation-Sims Sand

**Age** Pennsylvanian (Springerian)

**Lithology** Sandstone

**Type trap** Wedge Type Trap on Flank of Truncated Anticline

**Average depth** 5750 feet

**Average thickness** 200 feet

**Average porosity** 14–20%

**Average horizontal permeability** 60m Range

**Average vertical permeability**

**Oil saturation @ beginning of secondary recovery** 77%

**Type drive**

Original: Gravity drainage

Present: Water Injection

**Pressure**

Original: 1280 psi 1949

Present: 1200 4/77

**FLUID DATA**

**API Gravity** 27°

**Salinity of formation water** 104,000 mg/l

**Chloride content of formation water** 66,700 mg/l

**Sulfur content of oil** 1.66%
**Unit**  
E Velma-M/Blk Sims

**Operator**  
Amoco

**Size**  
930 acres

**County**  
Carter & Stephens

**Location**  
T 2S, R 3 and 4W

**Discovery date**  
12/50

### RESERVOIR DATA

**Producing formation**  
Sims sand

**Age**  
Pennsylvanian (Springerian)

**Lithology**  
Sandstone

**Type trap**  
Faulted, wedge-type trap on east flank of truncated anticline

**Average depth**  
5500 feet

**Average thickness**  
245 feet

**Average porosity**  
15.8%

**Average horizontal permeability**  
67m

**Range**  
1-200

**Average vertical permeability**  
xxx

**Oil saturation @ beginning of secondary recovery**  
.60

**Type drive**

- Original: Gravity drainage
- Present: Gravity drainage accelerated by updip gas injection

### Pressure

**Original**  
1468 psi 12/50

**Present**  
300 psi 2/77

### FLUID DATA

**API Gravity**  
100°- 33°

**Salinity of formation water**  
122,000 ppm

**Chloride content of formation water**  
75,400 ppm

**Sulfur content of oil**  
NA
SHO-VEL-TUM FIELD

BRITTAINE-DEESE UNIT
STEPHENS COUNTY

Typical well in this unit

Top producing formation
**Unit**  Brittain-Deese
**Operator**  Shell
**Size**  430 acres
**County**  Stephens
**Location**  T 1S, R 4W
**Discovery date**  1927

**RESERVOIR DATA**
**Producing formation**  Pennsylvanian Deese
**Age**  Pennsylvanian
**Lithology**  Sandstone
**Type trap**  Faulted Anticlinal Fold
**Average depth**  3400 feet
**Average thickness**  43 feet (Total 3 sands)
**Average porosity**  20%
**Average horizontal permeability**  50m
**Range**  5-500
**Average vertical permeability**  Not taken
**Oil saturation @ beginning of secondary recovery**  56%

**Type drive**
**Original**  Solution gas
**Present**  Water injection

**Pressure**
**Original**  1500 est 1927
**Present**  300 psi est 1977

**FLUID DATA**
**API Gravity**  28
**Salinity of formation water**  .08 OHM Meters @ 77°F
**Chloride content of formation water**  55,000 PPM CL
**Sulfur content of oil**  Sweet
Unit: Sycamore Unit
Operator: Gulf
Size: 1240 acres
County: Carter
Location: T 2S, R 3W & 4W
Discovery date: 9/50

RESERVOIR DATA
Producing formation: Sycamore
Age: Mississippian (Meramecian)
Lithology: Limestone (?)
Type trap: Stratigraphic
Average depth: 4379 feet
Average thickness: NA
Average porosity: NA
Average horizontal permeability: NA Range: NA
Average vertical permeability: NA
Oil saturation @ beginning of secondary recovery: NA

Type drive
Original: Solution gas drive
Present: Waterflood

Pressure
Original: NA
Present: NA

FLUID DATA
API Gravity: 35.6
Salinity of formation water: 94646 mg/l NaCl
Chloride content of formation water: 62180 mg/l
Sulfur content of oil: NA
Unit  Milroy
Operator  Gulf Oil
Size  Approx. 2100 acres
County  Stephens and Carter
Location  sec. 20, 21, 22, 27, 28, 34, 35, T2S, R3W
Discovery date  1951

RESERVOIR DATA
Producing formation  Deese
Age  Pennsylvanian
Lithology  Sandstone
Type trap  Stratigraphic
Average depth  3070 feet
Average thickness  30 feet
Average porosity  NA
Average horizontal permeability  NA Range
Average vertical permeability
Oil saturation @ beginning of secondary recovery  NA

Type drive
Original  Solution gas
Present  Waterflood

Pressure
Original  NA
Present  NA

FLUID DATA
API Gravity  33.7°
Salinity of formation water  80,000 mg/l
Chloride content of formation water  48,600 mg/l
Sulfur content of oil  NA
**Unit** Draf Unit
**Operator** Skelly
**Size** 160 acres
**County** Stephens
**Location** T 1S, R 5W
**Discovery date**

**RESERVOIR DATA**
**Producing formation** Permian
**Age** Permian
**Lithology**
**Type trap** Structural
**Average depth** 300-500 feet
**Average thickness** 60-100 feet
**Average porosity** 24.5%
**Average horizontal permeability** 300m
**Range**
**Average vertical permeability**
**Oil saturation @ beginning of secondary recovery**

**Type drive**
- Original: Solution gas
- Present

**Pressure**
- Original: 400
- Present: 100

**FLUID DATA**
**API Gravity**
**Salinity of formation water**
**Chloride content of formation water**
**Sulfur content of oil**
Unit: Graham Deese Unit
Operator: Mobil
Size: 1700 Acres
County: Carter
Location: T 2S, R 2, W
Discovery date: 1922

RESERVOIR DATA
Producing formation: Deese
Age
Lithology
Type trap: Anticline
Average depth: 2500 feet
Average thickness: 74 (est.) feet
Average porosity: 19.1%
Average horizontal permeability: 154m
Range: NA
Average vertical permeability: NA
Oil saturation @ beginning of secondary recovery: 52.0

Type drive
Original: Solution gas drive and Gravity drainage
Present: Secondary recovery by water injection

Pressure
Original: 1700 psig (Date NA)
Present: 50 psig, 12-31-75

FLUID DATA
API Gravity: 33° (Oil)
Salinity of formation water: NaCl, 101,138 mg/L
Chloride content of formation water: 77400 mg/L
Sulfur content of oil: NA
Unit  S Sholem Alechem Deese
Operator  Mobil
Size  780
County  Carter
Location  T 2S, R 3W
Discovery date  1926

RESERVOIR DATA
Producing formation  Deese Sands
Age  Pennsylvanian
Lithology  Sandstone
Type trap  Structural & Stratigraphic
Average depth  3600 feet
Average thickness  65 feet
Average porosity  19%
Average horizontal permeability  95m
Range  NA
Average vertical permeability  NA
Oil saturation @ beginning of secondary recovery  48%

Type drive
Original Solution gas
Present Water flood

Pressure
Original  1455 psi
Present  NA

FLUID DATA
API Gravity  30°
Salinity of formation water  NA
Chloride content of formation water  86,500 ppm
Sulfur content of oil  48%
Unit     H Hefner  
Operator  Shell Oil Company  
Size      120 acres  
County    Carter  
Location  T 2S, R 2W  
Discovery date  1921  

RESERVOIR DATA  
Producing formation  Pennsylvanian Sand  
Age      Pennsylvanian  
Lithology  Sandstone  
Type trap  Stratigraphic  
Average depth  150 to 2000 feet  
Average thickness  160/66 feet  
Average porosity  28%  
Average horizontal permeability  500m Range  100-2000  
Average vertical permeability  not measured  
Oil saturation @ beginning of secondary recovery  78  

Type drive  
Original  Depletion w/limited water drive  
Present  Limited Water Injection  

Pressure  
Original  625 est.  
Present  350 est.  

FLUID DATA  
API Gravity  18-21  
Salinity of formation water  46000 ppm  
Chloride content of formation water  NA  
Sulfur content of oil  2.05% W  

277
Unit: Brittain-Sims
Operator: Shell Oil
Size: 400
County: Stephens & Carter
Location: T 1S, R 4W & 3W
Discovery date: 8-1947

RESERVOIR DATA
Producing formation: Springer
Age: Pennsylvanian (Springer)
Lithology: Sandstone
Type trap: Structural
Average depth: 4700 feet
Average thickness: 300 feet
Average porosity: 20%
Average horizontal permeability: 160m
Range: 42-185
Average vertical permeability
Oil saturation @ beginning of secondary recovery: 63.4

Type drive
Original: Solution Gas
Present: Waterflood

Pressure
Original: 1195
Present: 1200 est

FLUID DATA
API Gravity: 32.8
Salinity of formation water
Chloride content of formation water: 70,000 Mg/L
Sulfur content of oil: Sweet
Unit       Des Moines Unit (Tatums)
Operator    Shell Oil Company
Size        240 acres
County      Carter
Location    T 2S, R 2W
Discovery date 1941

RESERVOIR DATA
Producing formation Penn Sand
Age        Pennsylvanian
Lithology  Sandstone
Type trap  Stratigraphic
Average depth  1500 feet
Average thickness  82 feet
Average porosity 28%
Average horizontal permeability 500m Range 100-2000
Average vertical permeability Not measured
Oil saturation @ beginning of secondary recovery 78

Type drive
Original    Depletion w/limited water drive
Present     Gravity Drainage w/limited water drive

Pressure
Original    625 est.
Present     350 est.

FLUID DATA
API Gravity 14
Salinity of formation water 46000 ppm
Chloride content of formation water NA
Sulfur content of oil 2.05% W
Unit Alma Pickens Unit
Operator Mobil
Size 250 acres
County Stephens
Location T 1S, R 4W
Discovery date

RESERVOIR DATA
Producing formation Pickens Sand (Pennsylvanian)
Age Pennsylvanian (Desmoinesian)
Lithology Sandstone
Type trap NA
Average depth 4400 feet
Average thickness 19 feet
Average porosity 17.4%
Average horizontal permeability 22.4 m
Range NA
Average vertical permeability NA
Oil saturation @ beginning of secondary recovery 53%

Type drive
Original Solution Gas
Present Water flood

Pressure
Original 1600 PSIG
Present NA

FLUID DATA
API Gravity 33° Sour
Salinity of formation water NA
Chloride content of formation water NA
Sulfur content of oil NA
Unit Selby Lse
Operator Skelly
Size 160 acres
County Stephens
Location T 1S, R5W
Discovery date

RESERVOIR DATA
Producing formation Permian
Age Permian
Lithology
Type trap Structural
Average depth 300-500 feet
Average thickness 60-100 feet
Average porosity 24.5%
Average horizontal permeability 300m Range
Average vertical permeability
Oil saturation @ beginning of secondary recovery

Type drive
Original Solution gas
Present

Pressure
Original 400
Present 100

FLUID DATA
API Gravity
Salinity of formation water
Chloride content of formation water
Sulfur content of oil
Unit  W Doyle (Culberson)
Operator  Phillips
Size  80 acres
County  Stephens
Location  T 1N, R 5W
Discovery date  5/8/39

RESERVOIR DATA
Producing formation  Culberson Oil Sand
Age  Pennsylvanian (Desmoinesian)
Lithology  Sandstone
Type trap  Fault block-Anticline
Average depth  5596 feet
Average thickness  33 feet
Average porosity  13%
Average horizontal permeability  10m Range  2 to 60 mds.
Average vertical permeability  5m
Oil saturation @ beginning of secondary recovery
Type drive
Original  Solution Gas-Gravity drainage-Good
Present  Waterflood-Fair
Pressure
Original  23/6 psi @-4518 Ft.
Present

FLUID DATA
API Gravity  40° API
Salinity of formation water
Chloride content of formation water
Sulfur content of oil
Unit: Wildhorse unit
Operator: Mobil
Size: 1300 acres
County: Stephens
Location: T 1S, R 4W
Discovery date: 1928

RESERVOIR DATA
Producing formation: Deese and Springer sands
Age: Pennsylvanian
Lithology: Sandstone
Type trap: Anticline and fault
Average depth: 4100 feet
Average thickness: 74 feet
Average porosity: 18.8%
Average horizontal permeability: 88m
Range: 72-102
Average vertical permeability: Not Available
Oil saturation @ beginning of secondary recovery: 52.5

Type drive
Original: Solution gas drive
Present: Waterflood

Pressure
Original: Not available
Present: Approx. 1500 psig (1977)

FLUID DATA
API Gravity: 30° API
Salinity of formation water: Not Available
Chloride content of formation water: Not Available
Sulfur content of oil: Sweet Crude
Unit  Blakely-Cox
Operator  Petroleum Corporation of Texas
Size  60 ac.
County  Carter
Location  T 1S, R 2W
Discovery date  1946

RESERVOIR DATA
Producing formation  Hoxbar sands & County Line LS.
Age  Pennsylvanian-Permian
Lithology  Limestone and sandstone
Type trap  Stratigraphic
Average depth  1200 feet
Average thickness  10 feet
Average porosity  NA
Average horizontal permeability  NA
Average vertical permeability  NA
Oil saturation @ beginning of secondary recovery  NA

Type drive
Original  Solution gas
Present  Waterflood

Pressure
Original  NA
Present  NA

FLUID DATA
API Gravity  27°
Salinity of formation water  62900/mgl
Chloride content of formation water  10,000 mgl
Sulfur content of oil  none
**Unit**  Markham-Tussy Unit  
**Operator**  Arco  
**Size**  740 acres  
**County**  Stephens  
**Location**  T 1N, 1S R 4W,  
**Discovery date**  12/1923  

**RESERVOIR DATA**  
**Producing formation**  Deese  
**Age**  Pennsylvanian  
**Lithology**  Sandstone  
**Type trap**  Structure  
**Average depth**  
**Average thickness**  
**Average porosity**  .22.4%  
**Average horizontal permeability**  57m  
**Average vertical permeability**  
**Oil saturation @ beginning of secondary recovery**  
**Type drive**  
Original  Solution gas drive  
Present  WTR Flood  
**Pressure**  
Original  1300 psi  
Present  

**FLUID DATA**  
**API Gravity**  24  
**Salinity of formation water**  
**Chloride content of formation water**  
**Sulfur content of oil**  

293
SOONER TREND

(including West Edmond)
Unit: Hennessey Unit
Operator: Exxon Corporation
Size: 8080 Acres
County: Kingfisher
Location: T 18 & 19 N, R 7W
Discovery date: 12/1958

RESERVOIR DATA
Producing formation: Mississippi-Manning
Age: Mississippian (Chesterian)
Lithology: Limestone
Type trap: Stratigraphic
Average depth: -5850 (Subsea) feet
Average thickness: 9 feet
Average porosity: 9.6%
Average horizontal permeability: 33m
Average vertical permeability:
Oil saturation @ beginning of secondary recovery: 68%
Type drive
Original: Dissolved Gas-10.4% OOIP
Present: Some waterflooding, otherwise dissolved gas drive 6.1% OOIP
Pressure
Original: 2780: 1-1-1959
Present: NA

FLUID DATA
API Gravity: 40°
Salinity of formation water
Chloride content of formation water: 6000 ppm
Sulfur content of oil
Unit: W. Edmond-Hunton Lime Unit
Operator: Sohio Petroleum
Size: 30,000 Acres
County: Logan, Kingfisher, Canadian, Oklahoma
Location: Tps. 12, 13, 14, 15N, Rs. 4 and 5W
Discovery date: 1943

RESERVOIR DATA
Producing formation: Hunton Lime
Age: Devonian-Silurian
Lithology: Limestone
Type trap: Stratigraphic
Average depth: 6900 feet
Average thickness: 78 feet
Average porosity: 6%
Average horizontal permeability: 1m
Range: 0.1 to 1000
Average vertical permeability:
Oil saturation @ beginning of secondary recovery:

Type drive:
Original: Solution Gas Drive-Some water influx
Present: Water flood

Pressure:
Original: 3145 PSI April 1943
Present: 300 +

FLUID DATA
API Gravity: 40
Salinity of formation water:
Chloride content of formation water:
Sulfur content of oil: Low
Unit: Dover Unit
Operator: Exxon Corporation
Size: 7680 Acres
County: Kingfisher
Location: T 18N, R 6 and 7W
Discovery date: 12-1958

RESERVOIR DATA
Producing formation: Mississippi-Manning
Age: Mississippian (Chesterian)
Lithology: Limestone
Type trap: Stratigraphic
Average depth: -5850 (Subsea) 6800 (Subsurface) feet
Average thickness: 7 feet
Average porosity: 12.5 acres
Average horizontal permeability: 91m
Average vertical permeability
Oil saturation @ beginning of secondary recovery: 68%

Type drive
Original: Dissolved Gas Drive-10.5% OOIP
Present: Waterflood-10.8% OOIP

Pressure
Original: 2780 psia: 1-1-1959
Present: NA

FLUID DATA
API Gravity: 37
Salinity of formation water
Chloride content of formation water: 6000 ppm
Sulfur content of oil
ST. LOUIS FIELD
ST. LOUIS FIELD

RICHARDSON UNIT
POTAWATOMIE COUNTY

Typical well in this unit

- 3300
- 3400
- 3500
- 3600

Top producing formation
Unit Richardson
Operator Cleary Petroleum Corp
Size 80 acres
County Pottawatomie
Location T 7N, R 4E
Discovery date 1930

RESERVOIR DATA
Producing formation Earlsboro-upper & lower
Age Pennsylvanian (Desmoinesian)
Lithology Sandstone
Type trap Stratigraphic
Average depth upper Earls.-3550 Lower Earls.-3600
Average thickness 10 feet
Average porosity 17.1%
Average horizontal permeability 25.7m Range
Average vertical permeability
Oil saturation @ beginning of secondary recovery

Type drive
Original Solution Gas
Present Waterflood

Pressure
Original
Present

FLUID DATA
API Gravity 37°
Salinity of formation water 11 Spg
Chloride content of formation water 80,000 ppm
Sulfur content of oil 12%
Unit  Earlsboro Sd Unit
Operator  Marathon Oil Co
Size  760 acres
County  Pottawatomie
Location  T 7N, R 4E
Discovery date  1925

RESERVOIR DATA
Producing formation  Earlsboro
Age  Pennsylvanian (Desmoinesian)
Lithology  Sandstone
Type trap  Structural & Stratigraphic
Average depth  3545 feet
Average thickness
Average porosity  17%
Average horizontal permeability  39m Range
Average vertical permeability
Oil saturation @ beginning of secondary recovery
Type drive
Original  Gas expansion
Present  Water flood

Pressure
Original
Present

FLUID DATA
API Gravity  36
Salinity of formation water  120,000 ppm
Chloride content of formation water
Sulfur content of oil
ST. LOUIS FIELD

BURKE UNIT
POTAWATOMIE COUNTY

Typical well in this unit

Top producing formation
Unit  Burke
Operator  Marathon Oil Co.
Size  160 acres
County  Pottawatomie
Location  T 7N, R 4E
Discovery date  1925

RESERVOIR DATA
Producing formation  Earlsboro
Age  Pennsylvanian (Desmoinesian)
Lithology  Sandstone
Type trap  Structural & Stratigraphic
Average depth  3534 feet
Average thickness
Average porosity  17%
Average horizontal permeability  39m
Average vertical permeability
Oil saturation @ beginning of secondary recovery

Type drive
  Original  Gas Expansion
  Present  Water flood

Pressure
  Original
  Present

FLUID DATA
API Gravity  36
Salinity of formation water  120,000 ppm
Chloride content of formation water
Sulfur content of oil
Unit  Earlsboro
Operator  Cleary Petroleum Corp
Size  80 acres
County  Pottawatomie
Location  T 7N, R 4E
Discovery date  1930

RESERVOIR DATA
Producing formation  Earlsboro-upper & lower
Age  Pennsylvanian (Desmoinesian)
Lithology  Sandstone
Type trap  Stratigraphic
Average depth  U. Earls.-3550'  L. Earls.-3600'
Average thickness  10 feet
Average porosity  17.1%
Average horizontal permeability  25.7m
Average vertical permeability
Oil saturation @ beginning of secondary recovery  50%

Type drive
Original  Solution gas
Present  Water flood

Pressure
Original
Present

FLUID DATA
API Gravity  37°
Salinity of formation water  1.1 SpG
Chloride content of formation water  80,000 ppm
Sulfur content of oil  2%
ST. LOUIS FIELD

Typical well in this unit

Top producing formation

ST. LOUIS - SENORA UNIT
POTTAWATOMIE COUNTY
Unit  St Louis-Senora
Operator  Anadarko Production Company
Size  120
County  Pottawatomie
Location  T 7N, R 5E
Discovery date

RESERVOIR DATA
Producing formation  Senora
Age  Pennsylvanian (Desmoinesian)
Lithology  Limestone (?)
Type trap
Average depth
Average thickness
Average porosity
Average horizontal permeability  Range
Average vertical permeability
Oil saturation @ beginning of secondary recovery
Type drive
Original
Present
Pressure
Original
Present

FLUID DATA
API Gravity  38°
Salinity of formation water
Chloride content of formation water
Sulfur content of oil
Unit Richardson "A" & "B".
Operator Cleary Petroleum Corp.
Size 80 acres
County Pottawatomie
Location T 7N, R 4E
Discovery date 1930

RESERVOIR DATA
Producing formation Earlsboro-upper & lower
Age Pennsylvanian (Desmoinesian)
Lithology Sandstone
Type trap Stratigraphic
Average depth U. Earls.-3550 L. Earls.-3600
Average thickness 10 feet
Average porosity 17.1%
Average horizontal permeability 25.7mRange
Average vertical permeability
Oil saturation @ beginning of secondary recovery 50%

Type drive
Original Solution gas
Present Waterflood

Pressure
Original
Present

FLUID DATA
API Gravity 37°
Salinity of formation water 1.1 SpG
Chloride content of formation water 80,000 ppm
Sulfur content of oil 12%
Unit: Nuckells Well #2
Operator: Marathon Oil Co
Size: 40 acre
County: Pottawatomie
Location: T 7N, R 4E
Discovery date: 1925

RESERVOIR DATA
Producing formation: Earlsboro
Age: Pennsylvanian (Desmoinesian)
Lithology: Sandstone
Type trap: Structural & Stratigraphic
Average depth: 3545 feet
Average thickness:
Average porosity: 17%
Average horizontal permeability: 39m Range
Average vertical permeability
Oil saturation @ beginning of secondary recovery

Type drive
Original: Gas expansion
Present: Water flood

Pressure
Original
Present

FLUID DATA
API Gravity: 36
Salinity of formation water: 120,000 ppm
Chloride content of formation water
Sulfur content of oil