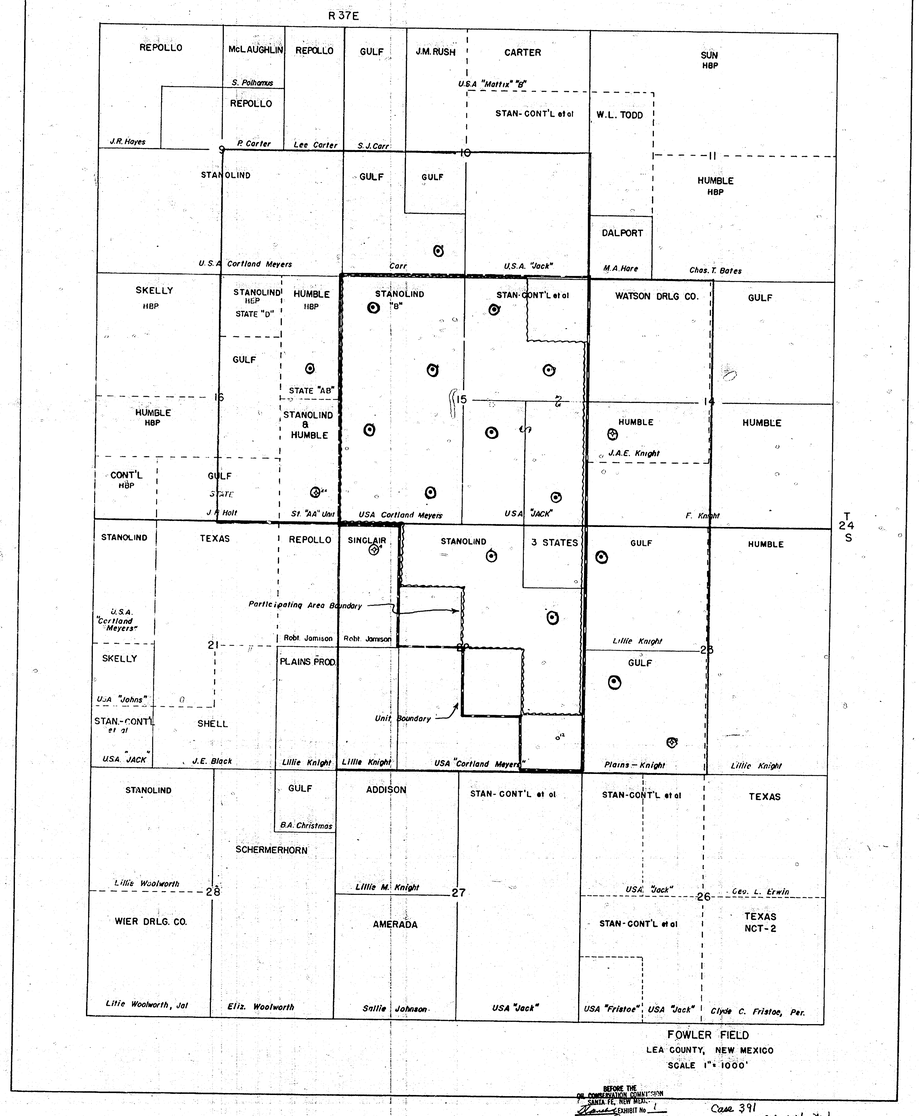
Case No.

391

Large Exhibits

127

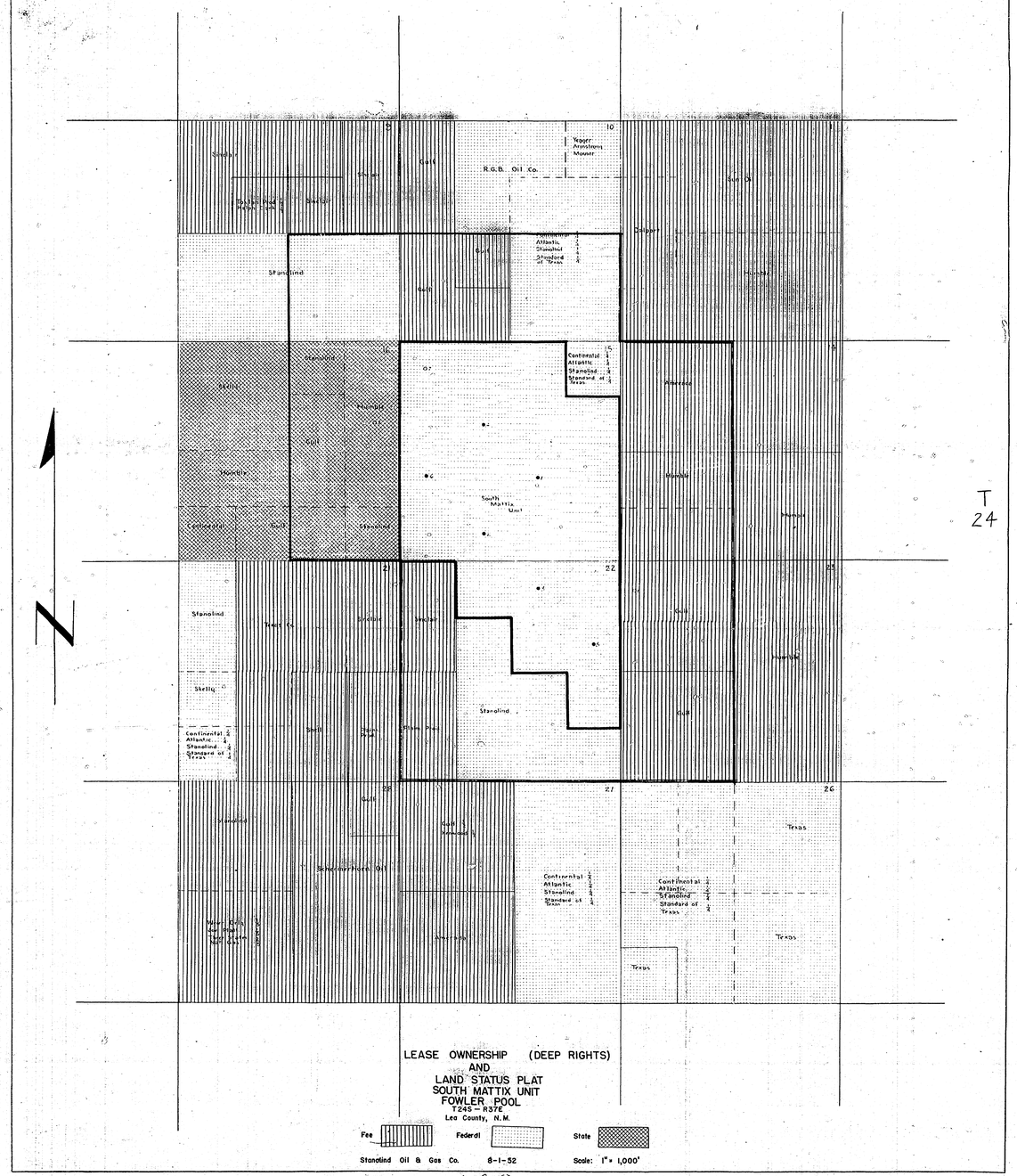



FOWLER FIELD
LEA COUNTY, NEW MEXICO
SCALE 1" = 1000'

BEFORE THE OIL CONSERVATION COMMISSION
SANTA FE, NEW MEX.
Stanolind EXHIBIT No. 1
CASE 391

Case 391
Stanolind Exhibit No. 1
8-18-54

R-37




T 24

LEASE OWNERSHIP (DEEP RIGHTS)
AND
LAND STATUS PLAT
SOUTH MATTIX UNIT
FOWLER POOL
T24S – R37E
Lea County, N.M.

Fee | Federal | State

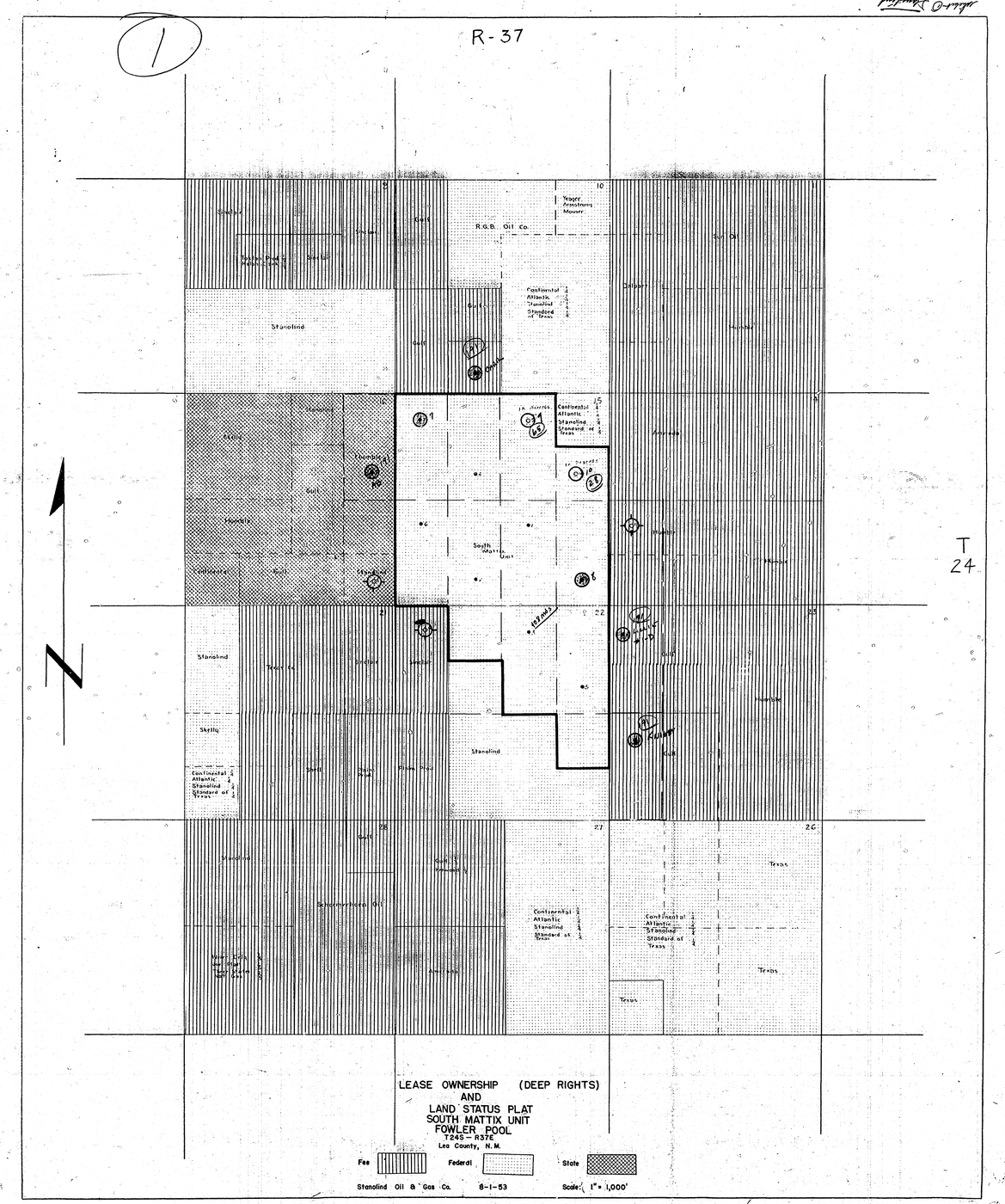
128

Coa 391 Stanolind Ex ① Case 391 R.W. 8-19-52

1

R-37

129


R.G.B. Oil Co.
Yeager Armstrong Mauser
Continental Atlantic Stanolind Standard of Texas
Stanolind
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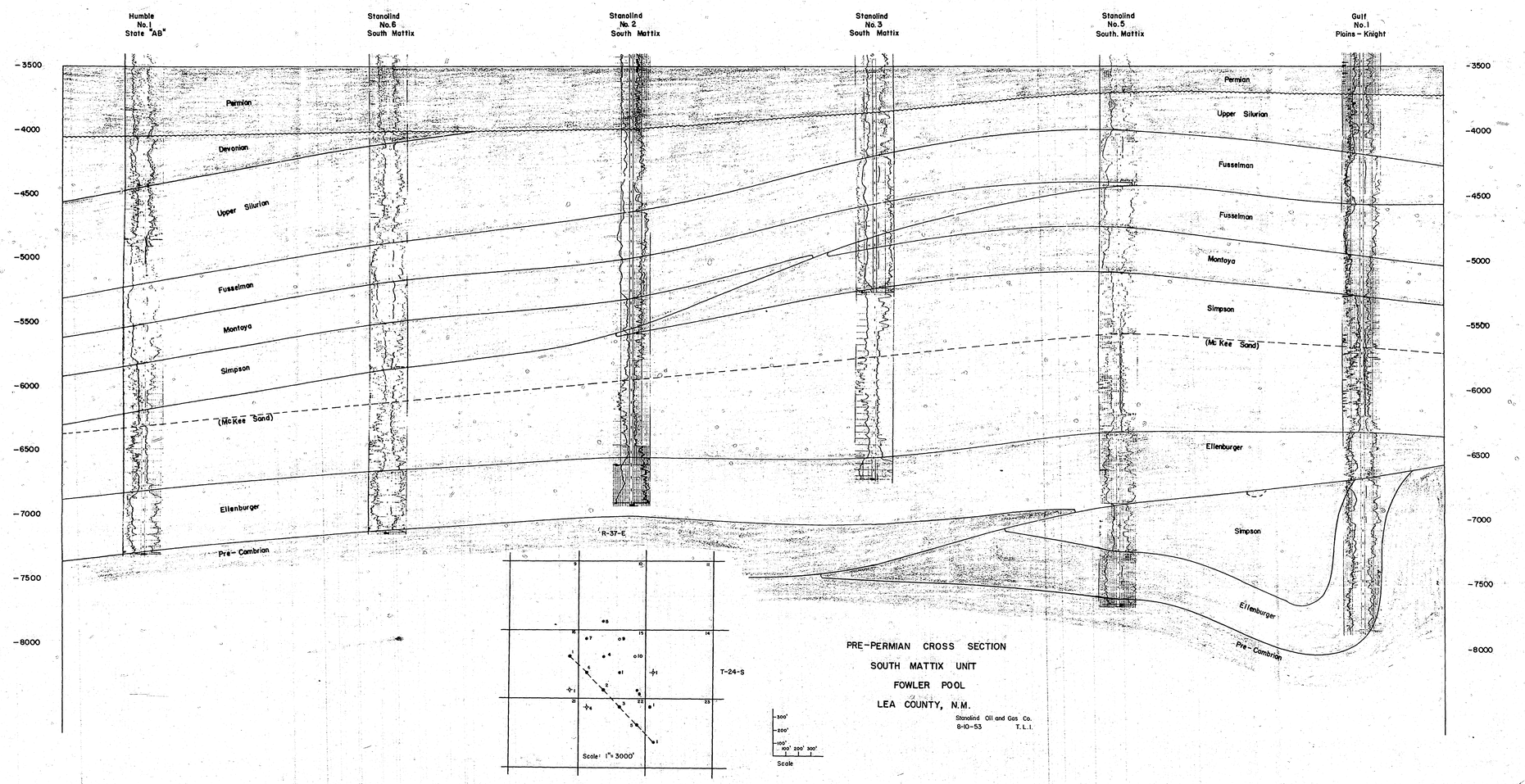
Skelly
South Mattix Unit
Schermerhorn Unit
Humble
Sinclair
Cities
Amerada
Monsanto
Pan Am
Kewanee
Tidewater
Sun Oil
Magnolia
Continental
Atlantic
Standard of Texas
T 24
N
LEASE OWNERSHIP (DEEP RIGHTS)
AND
LAND STATUS PLAT
SOUTH MATTIX UNIT
FOWLER POOL
T24S — R37E
Lea County, N. M.
Fee
Federal
State
Stanolind Oil & Gas Co.
8-1-53
Scale: 1" = 1,000'




PRE-PERMIAN CROSS SECTION

SOUTH MATTIX UNIT

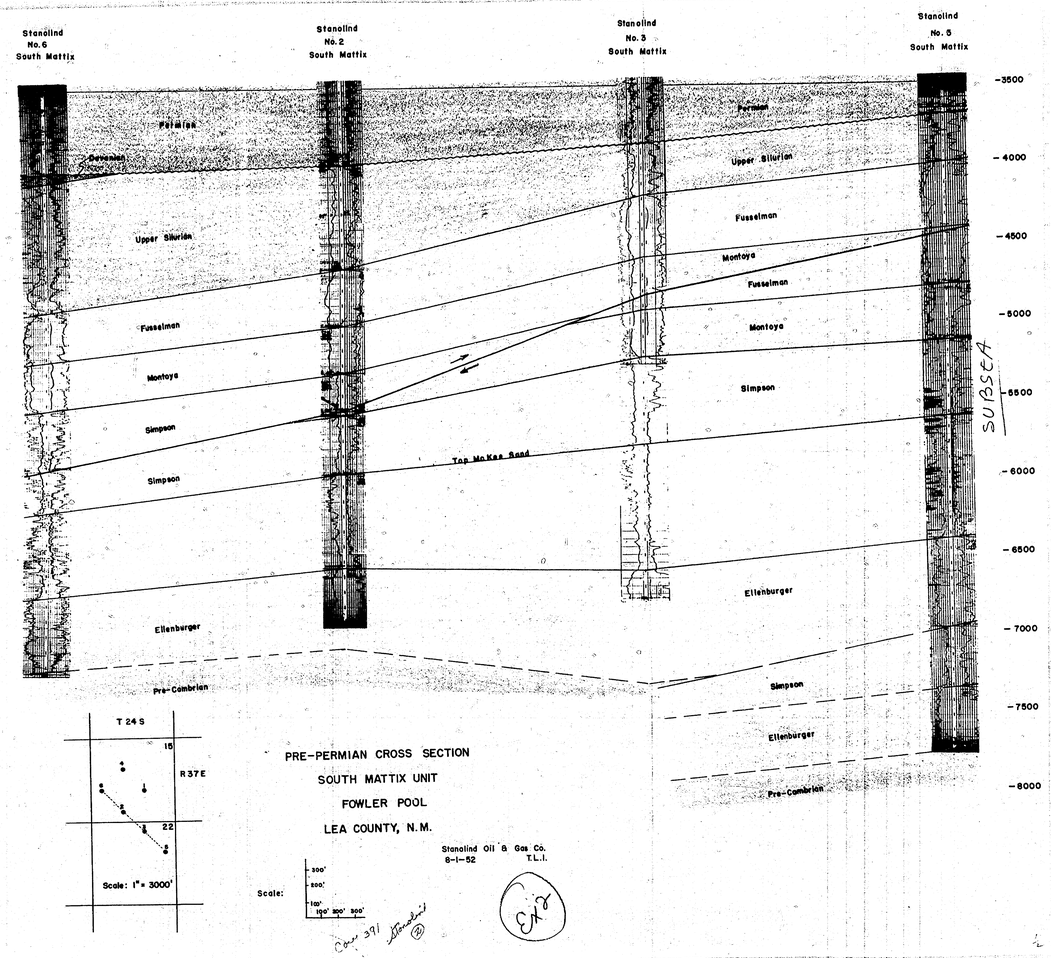
FOWLER POOL

LEA COUNTY, N.M.

Stanolind Oil and Gas Co.
8-10-53 T. L. I.

130

131







PRE-PERMIAN CROSS SECTION

SOUTH MATTIX UNIT

FOWLER POOL

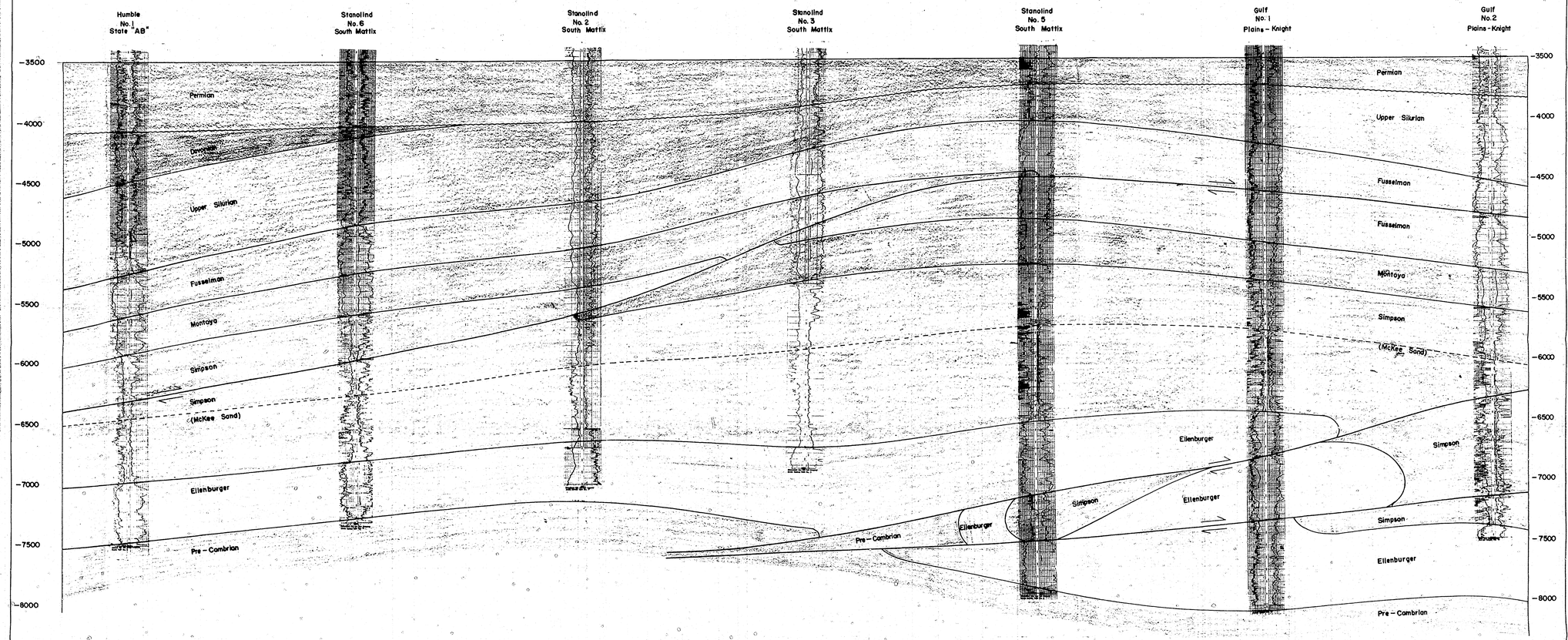
LEA COUNTY, N.M.

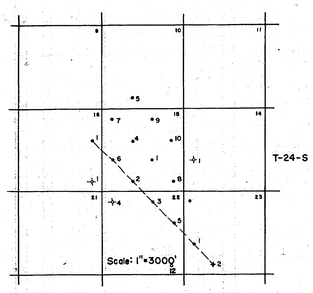
Stanolind Oil & Gas Co.
8-1-52
T.L.I.

Scale: 100' 200' 300' 400'

Case 391 Stanolind (2)

CR




PRE-PERMIAN CROSS SECTION

SOUTH MATTIX UNIT

FOWLER POOL

LEA COUNTY, N.M

Stanolind Oil and Gas Co.
8-1-54 T.L.I.

Scale

Case 391
Stanolind Exhibit No. 2
8-12-54

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
Stanolind EXHIBIT No. 2
CASE 391

132

**Memo** From WILLIAM B. MACEY, Chief Engineer

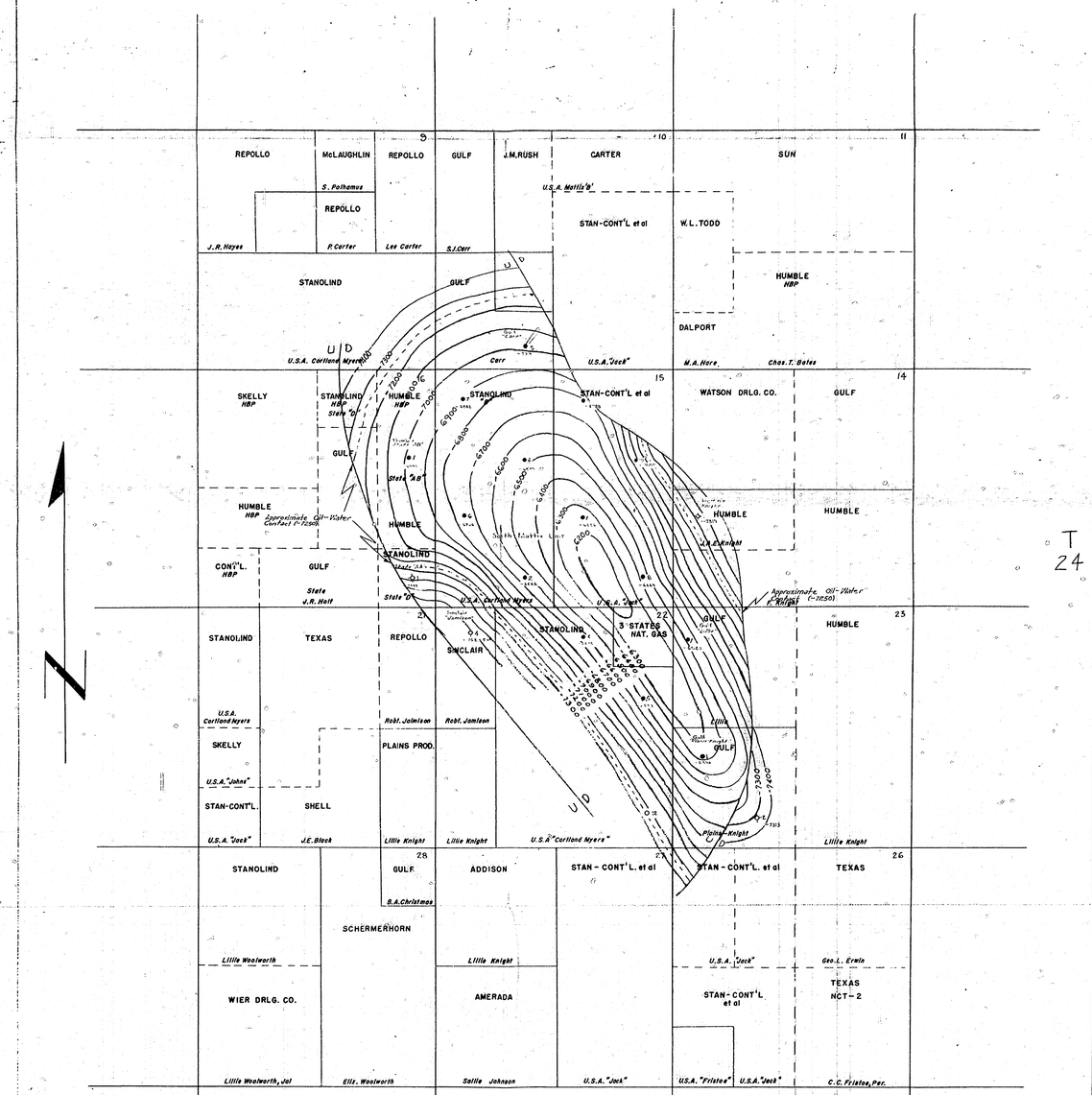
To Completion Dates

#1. - 5-6-49
2 - 4-12-50
3 - 12-13-50
4 - 4-20-51
5 - 12-6-51
6 - 4-27-52

R-37

T 24

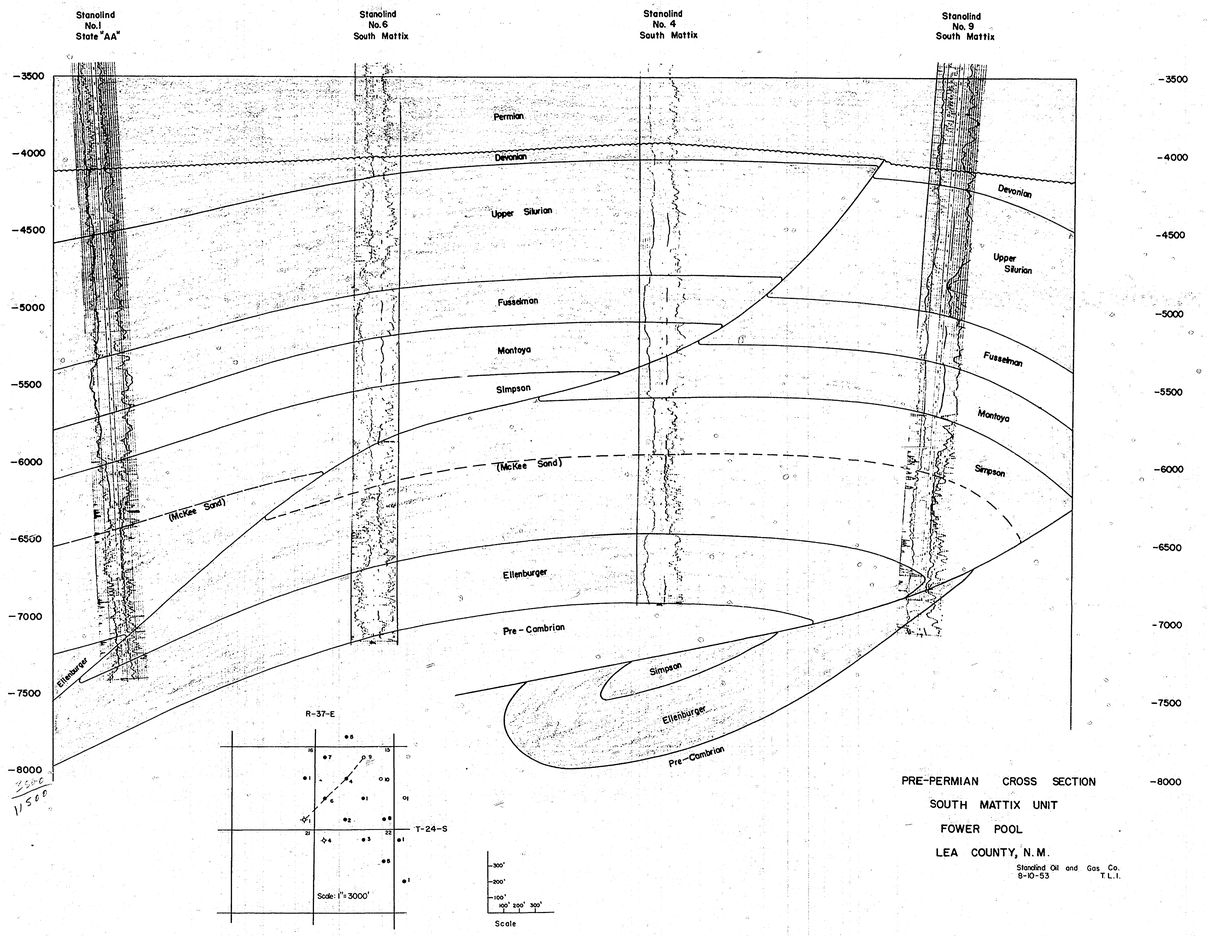
133




SUBSURFACE STRUCTURE MAP
CONTOURED ON TOP OF PRODUCING ELLENBURGER
SOUTH MATTIX UNIT
FOWLER POOL
T-24-S R-37-E
Lea County, N. M.
Contour Interval: 100'
Scale: 1" = 1,000'
8-10-54
T. L. I.
Stanolind Oil and Gas Co.

Case 391
Stanolind Exhibit No. 3
9-10-54

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
EXHIBIT NO. 3
CASE 391




PRE-PERMIAN CROSS SECTION

SOUTH MATTIX UNIT

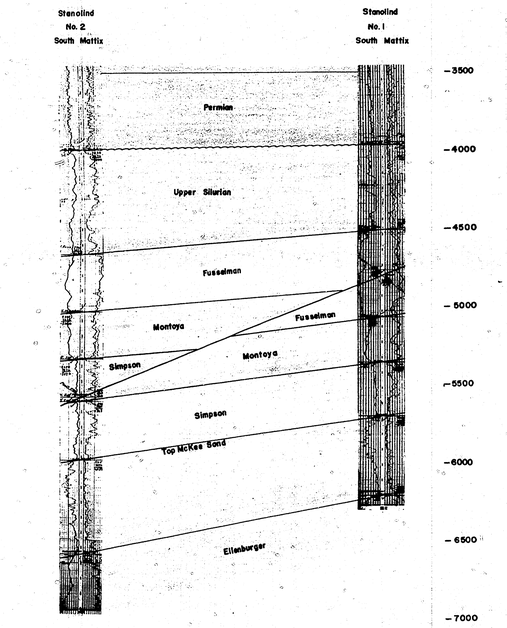
FOWER POOL

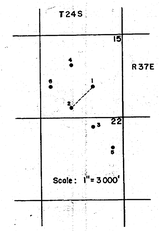
LEA COUNTY, N. M.

Standard Oil and Gas Co.
8-10-53
T. L. I.

134

135




PRE-PERMIAN CROSS SECTION
SOUTH MATTIX UNIT
FOWLER POOL
LEA COUNTY, N.M.

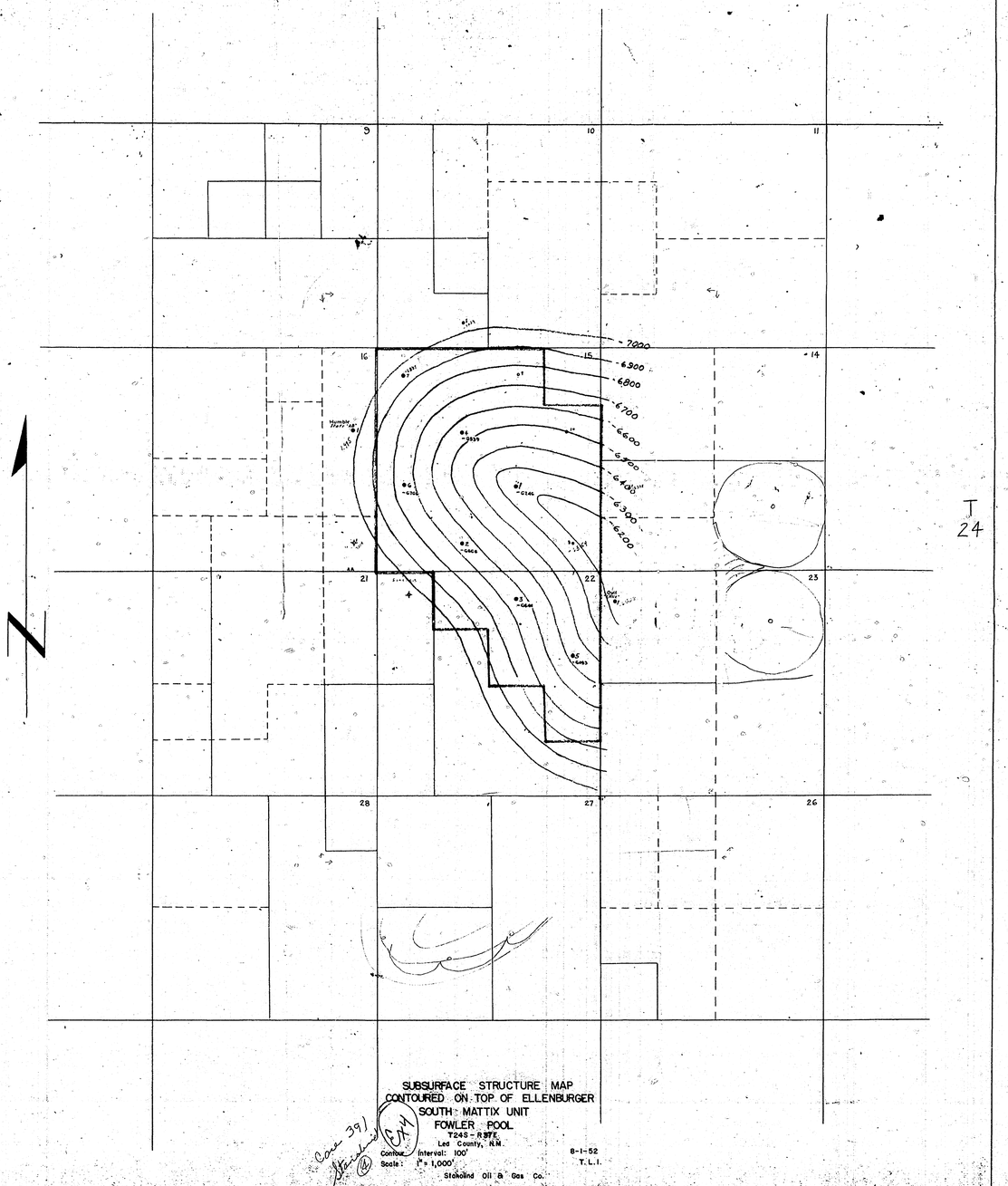
Stanolind Oil & Gas Co.
8-1-52
T. L. I.

Scale:
100
200
300
100 200 300

Case 391
Exhibit B

Cx 3

R-37

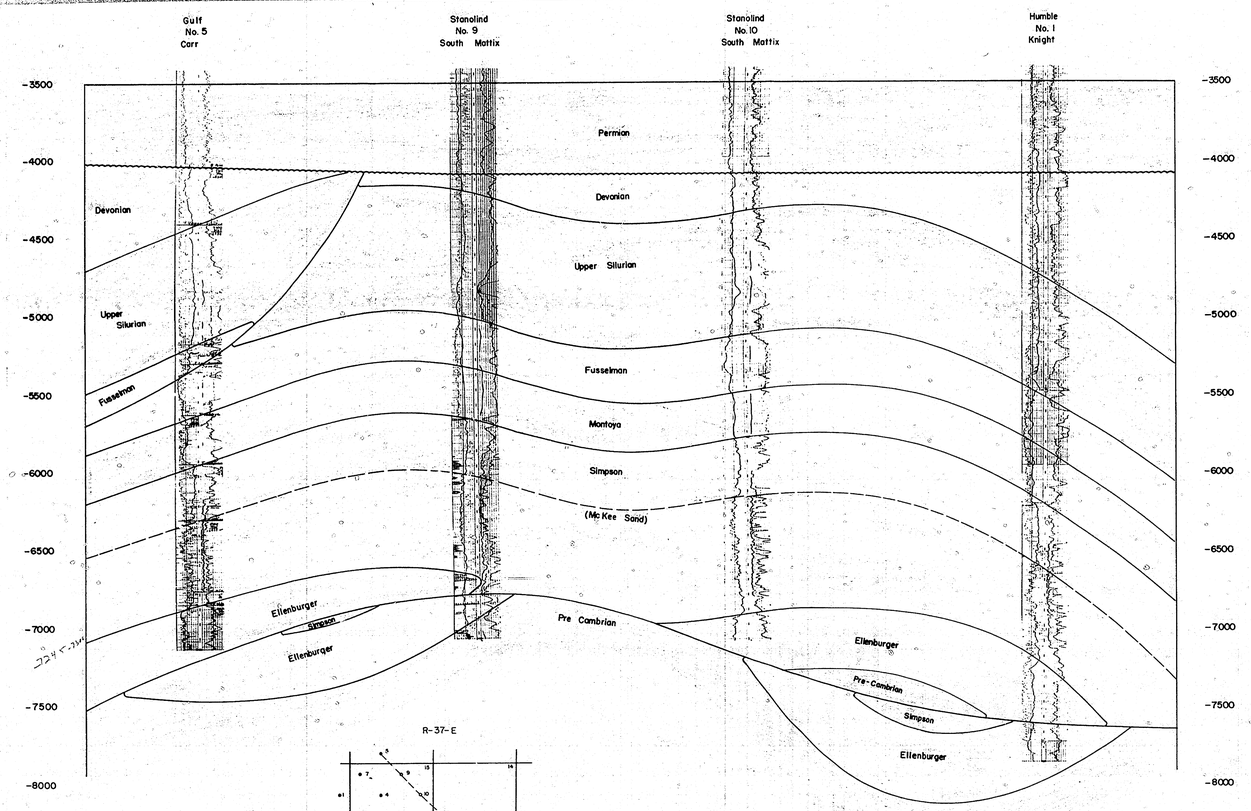



J
24

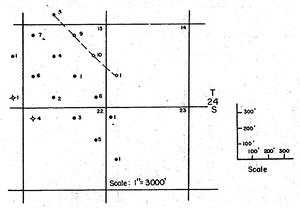
136

SUBSURFACE STRUCTURE MAP
CONTOURED ON TOP OF ELLENBURGER
SOUTH MATTIX UNIT
FOWLER POOL
T24S - R37E.
Lea County, N.M.
Contour Interval: 100'
Scale: 1" = 1,000'
8-1-52
T. L. I.
Stanolind Oil & Gas Co.

Case 391
Exhibit (EX-4)




R-37-E




PRE-PERMIAN CROSS SECTION

SOUTH MATTIX UNIT

FOWLER POOL

LEA COUNTY, N.M.

Stanolind Oil and Gas Co.
8-10-53
T.L.I.

137

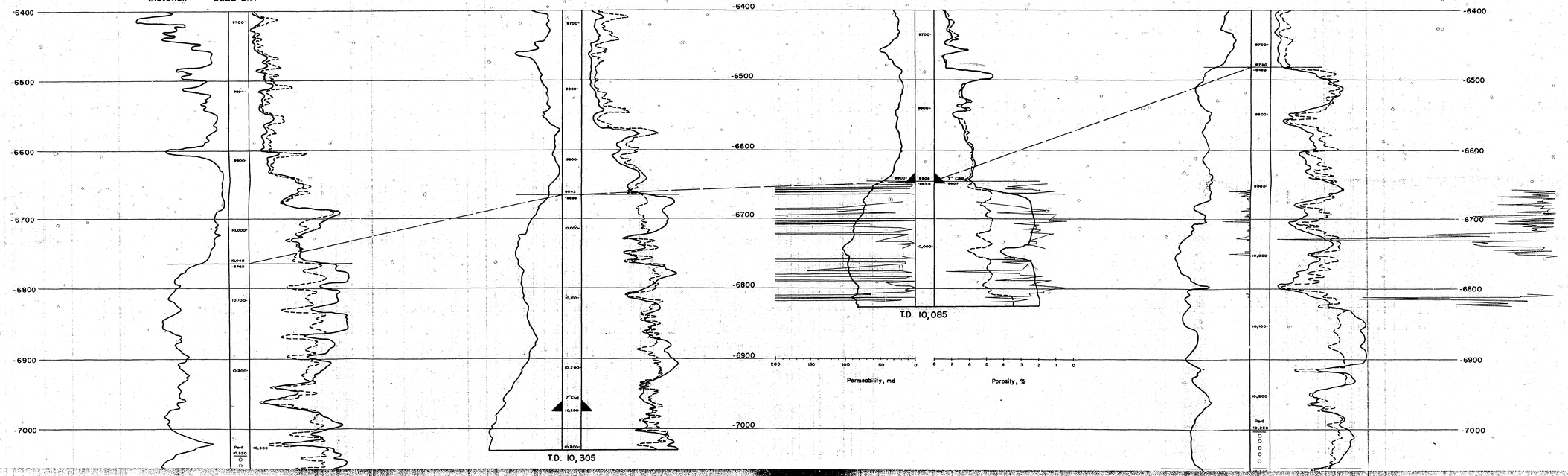
Exhibit 5 — Case 391
Stone

# CROSS SECTION A-A'

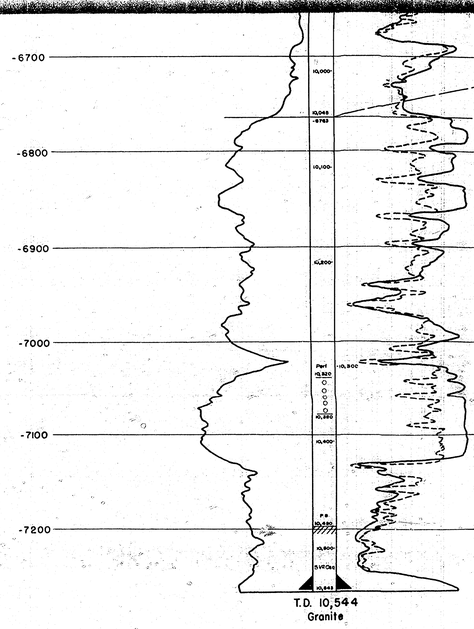
## FOWLER FIELD, LEA COUNTY NEW MEXICO

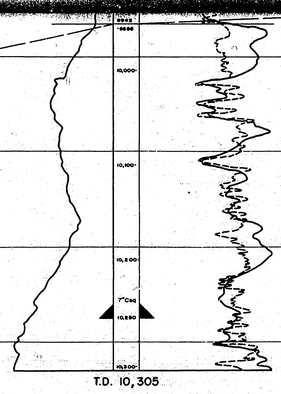
T-24-S; R-37-E

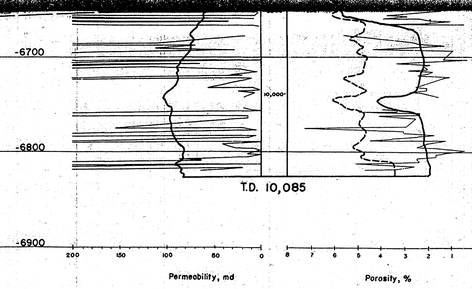
VERTICAL SCALE 2" = 100'  HORIZONTAL SCALE 1" = 100'

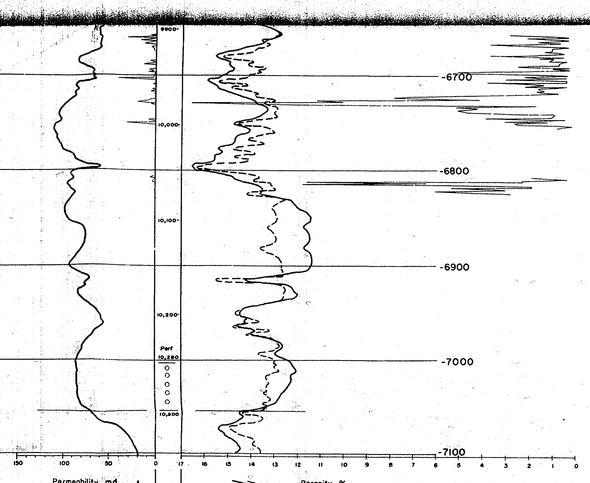


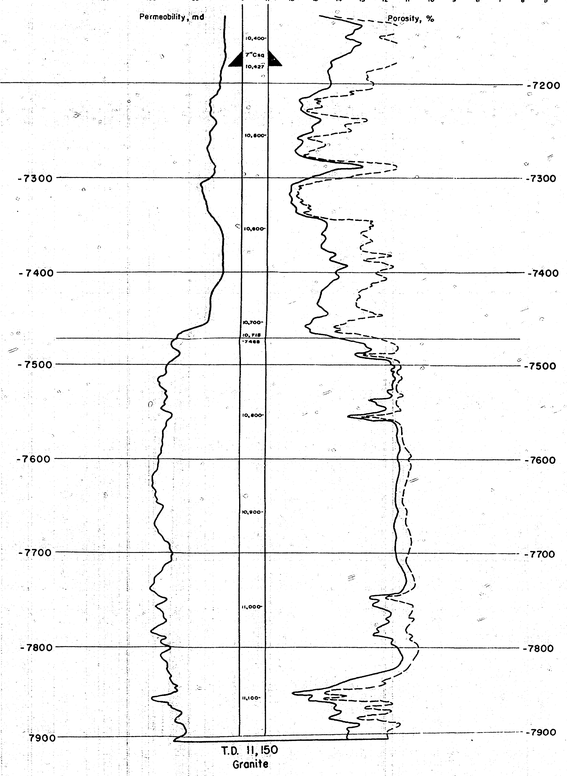

138

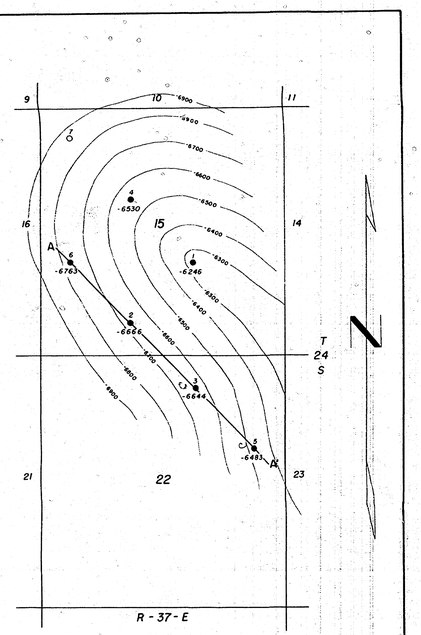



Coutoured On Top Of Ellenburger
Coutour Interval = 100'

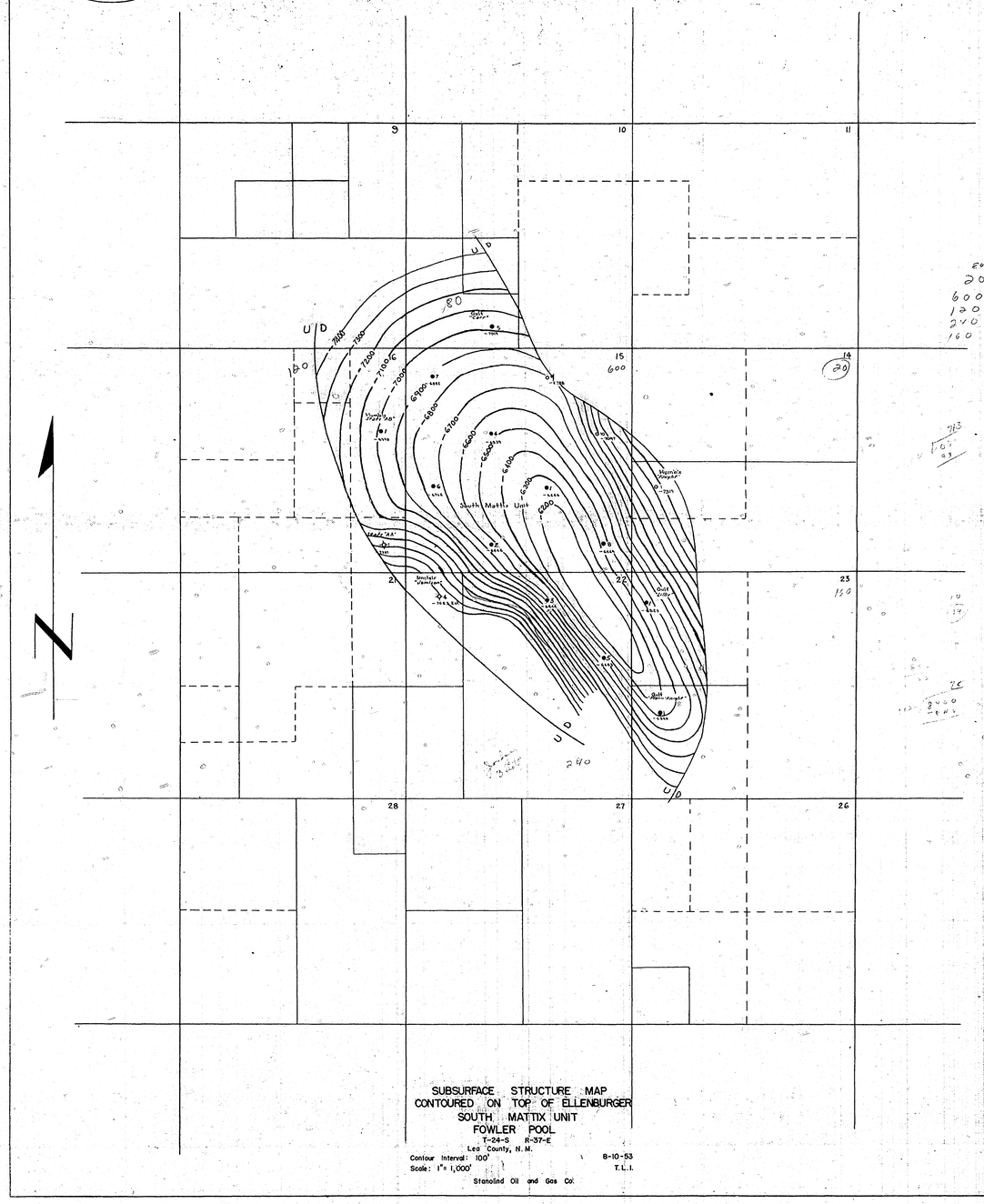
ELLENBURGER STRUCTURE MAP
FOWLER FIELD, LEA COUNTY, NEW MEXICO

Stanolind
Case 391
Ex 5

139

5

R-37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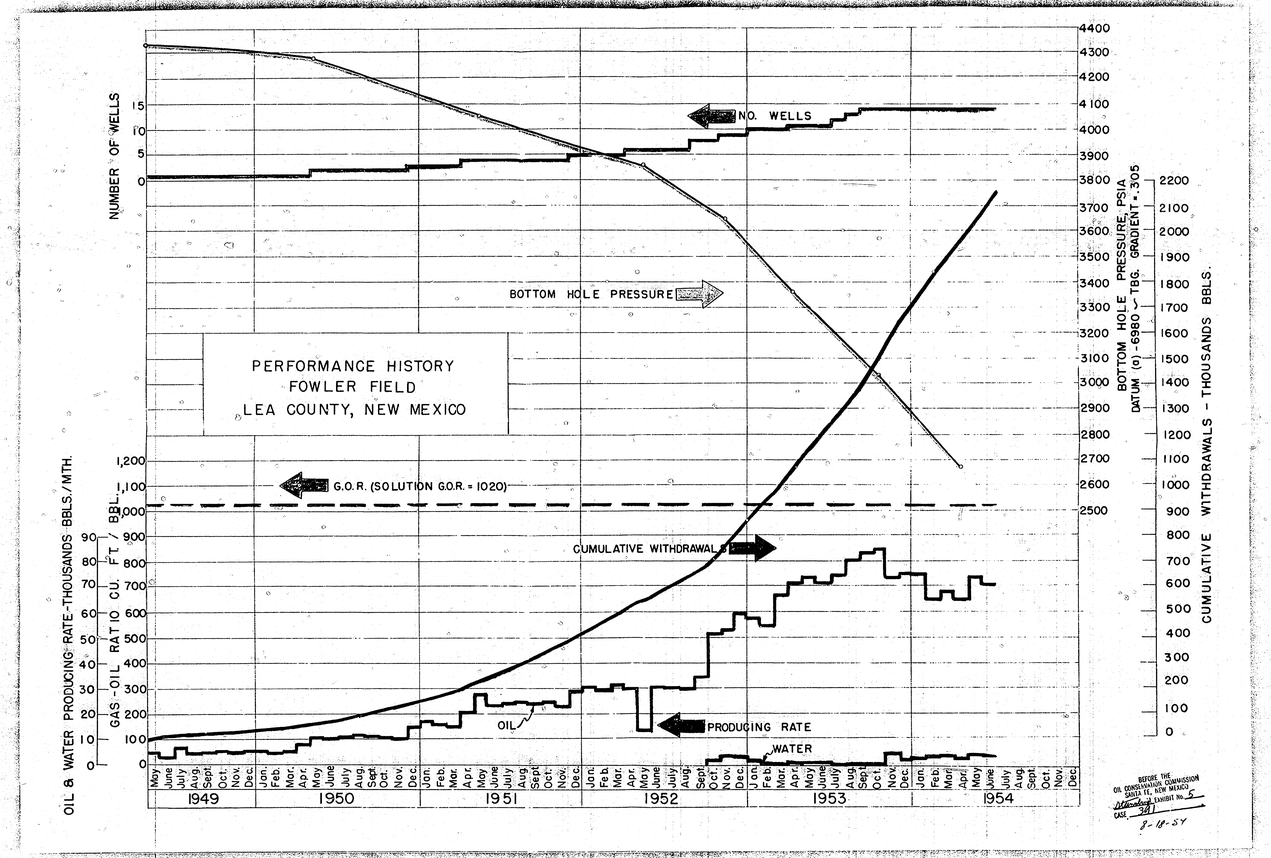

PERFORMANCE HISTORY
FOWLER FIELD
LEA COUNTY, NEW MEXICO
NUMBER OF WELLS
NO. WELLS
BOTTOM HOLE PRESSURE
BOTTOM HOLE PRESSURE, PSIA
DATUM (0) -6980' - TBG. GRADIENT = .305
G.O.R. (SOLUTION G.O.R. = 1020)
GAS - OIL RATIO CU. FT. / BBL.
CUMULATIVE WITHDRAWAL
OIL
PRODUCING RATE
WATER
OIL & WATER PRODUCING RATE-THOUSANDS BBLS./MTH.
CUMULATIVE WITHDRAWALS - THOUSANDS BBLS.
1949
1950
1951
1952
1953
1954
BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO
EXHIBIT NO. 5
CASE 141
2-10-54

141

Ex 6
Case 391
Atoms

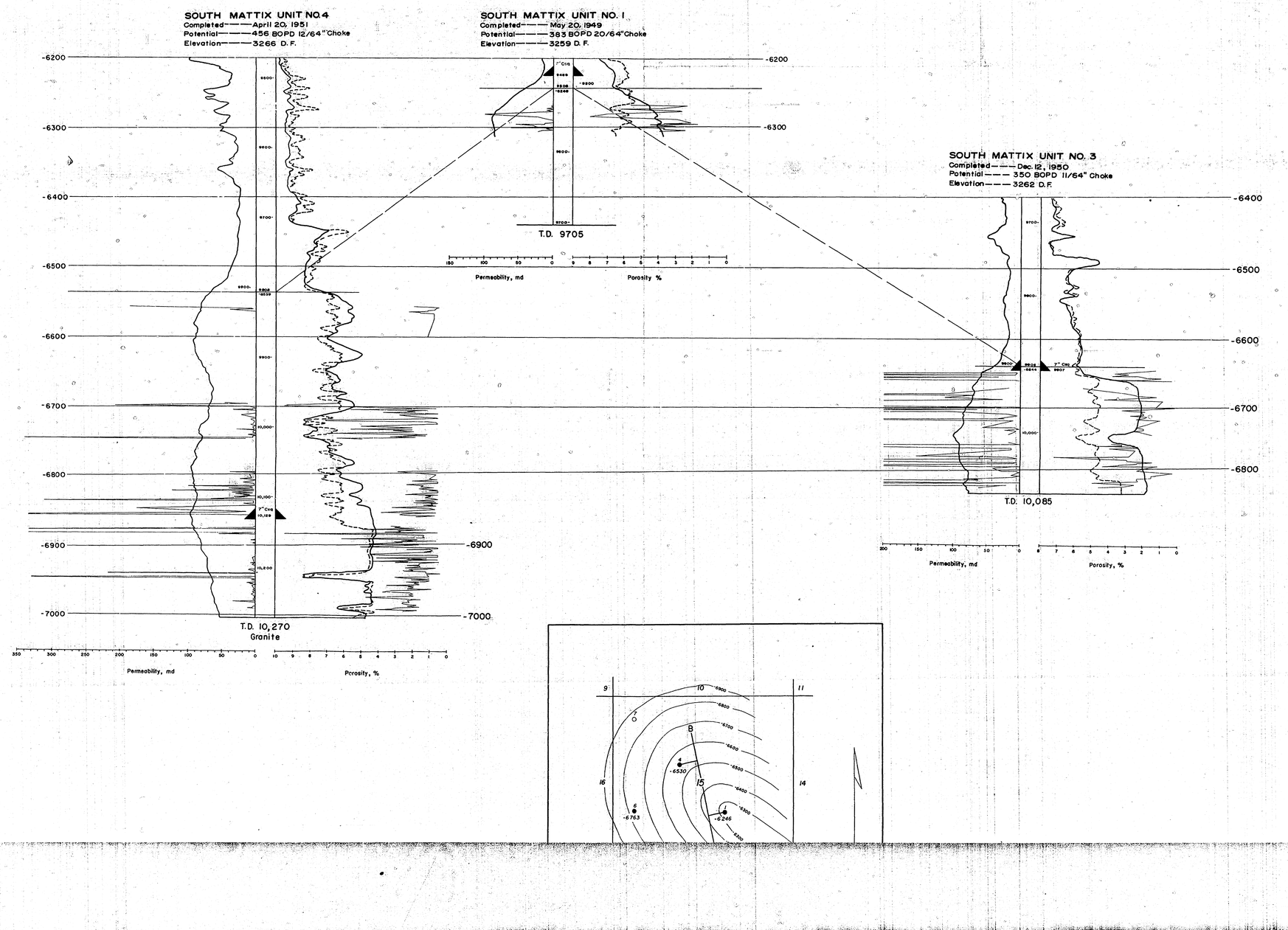
# CROSS SECTION B-B'

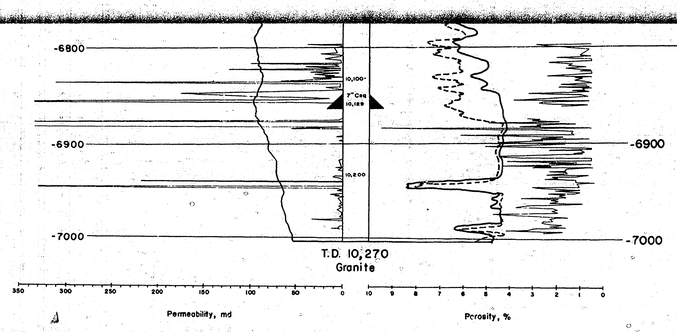
## FOWLER FIELD, LEA COUNTY NEW MEXICO

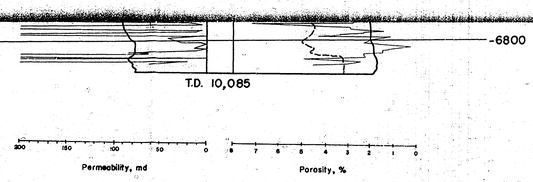
T-24-S; R-37-E

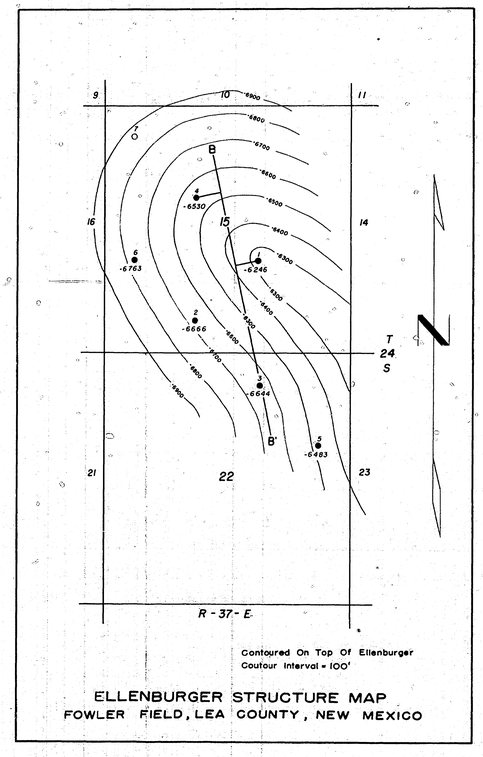
VERTICAL SCALE 2"= 100'  HORIZONTAL SCALE 1"= 100'

142





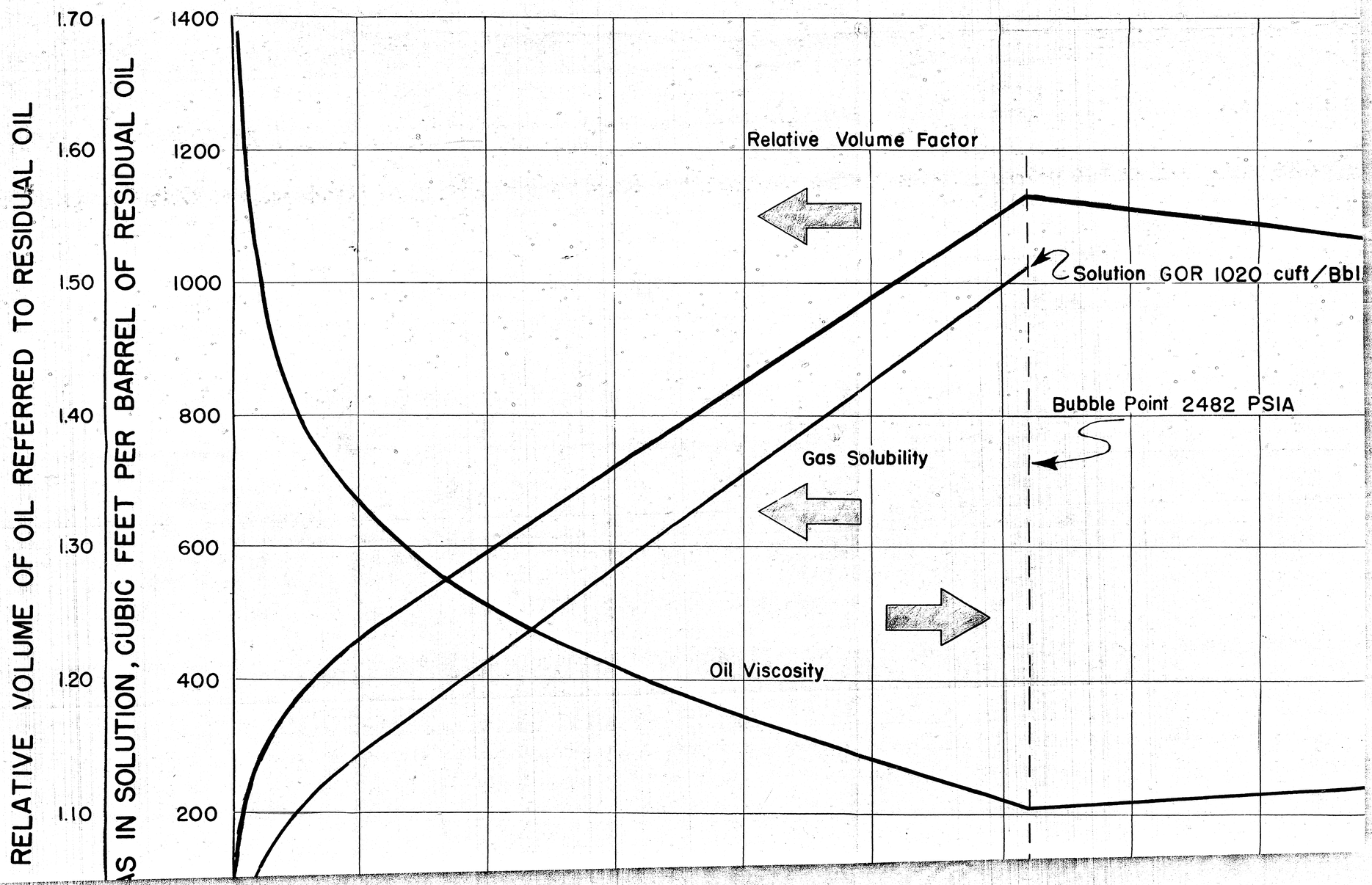




ELLENBURGER STRUCTURE MAP
FOWLER FIELD, LEA COUNTY, NEW MEXICO

143

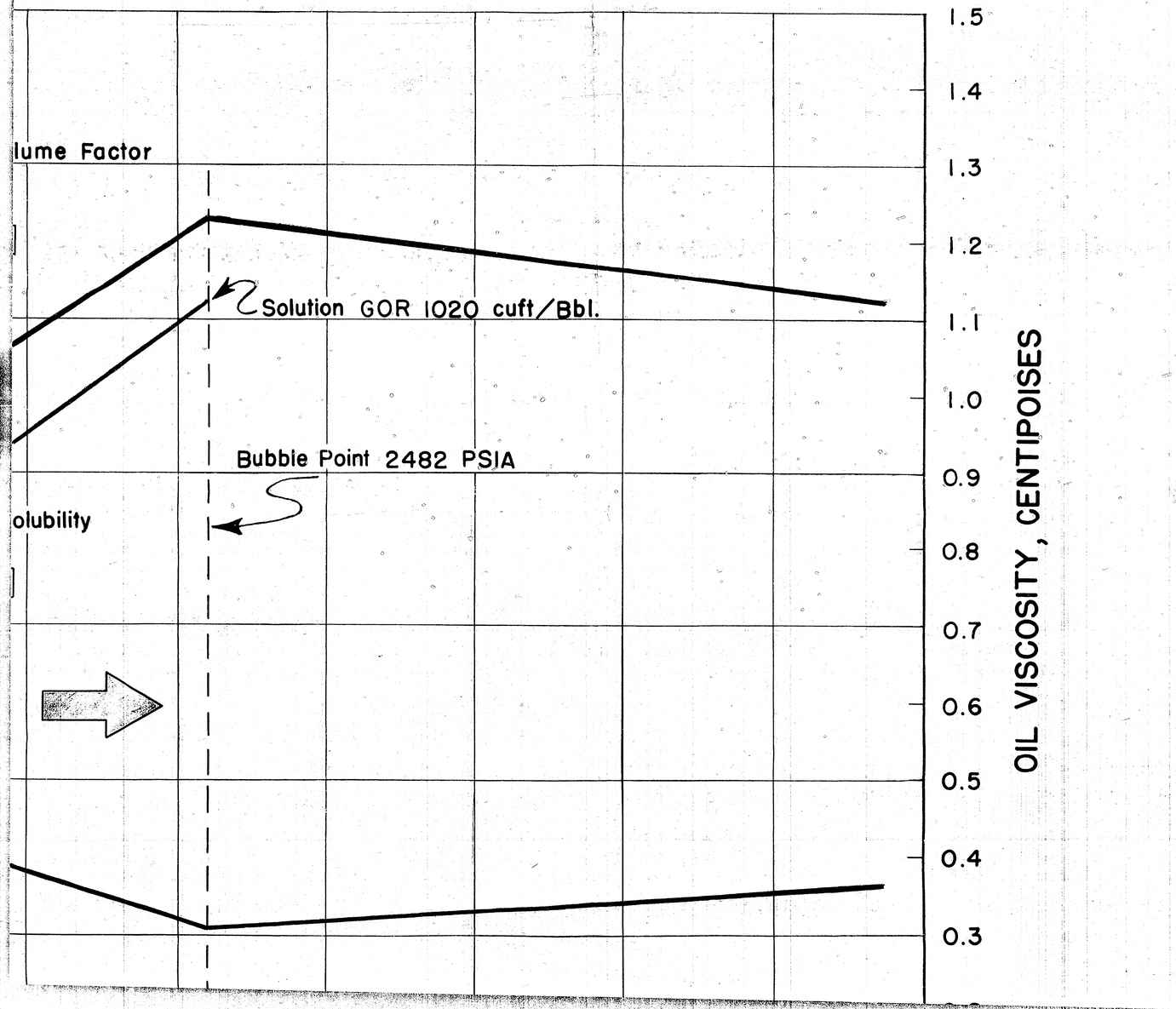
# RESERVOIR FLUID CHARACTERISTICS
# FOWLER FIELD
# LEA COUNTY, NEW MEXICO
# SOUTH MATTIX UNIT NO. 1

Exh. No. 7
Case 391
EW 8-9-57

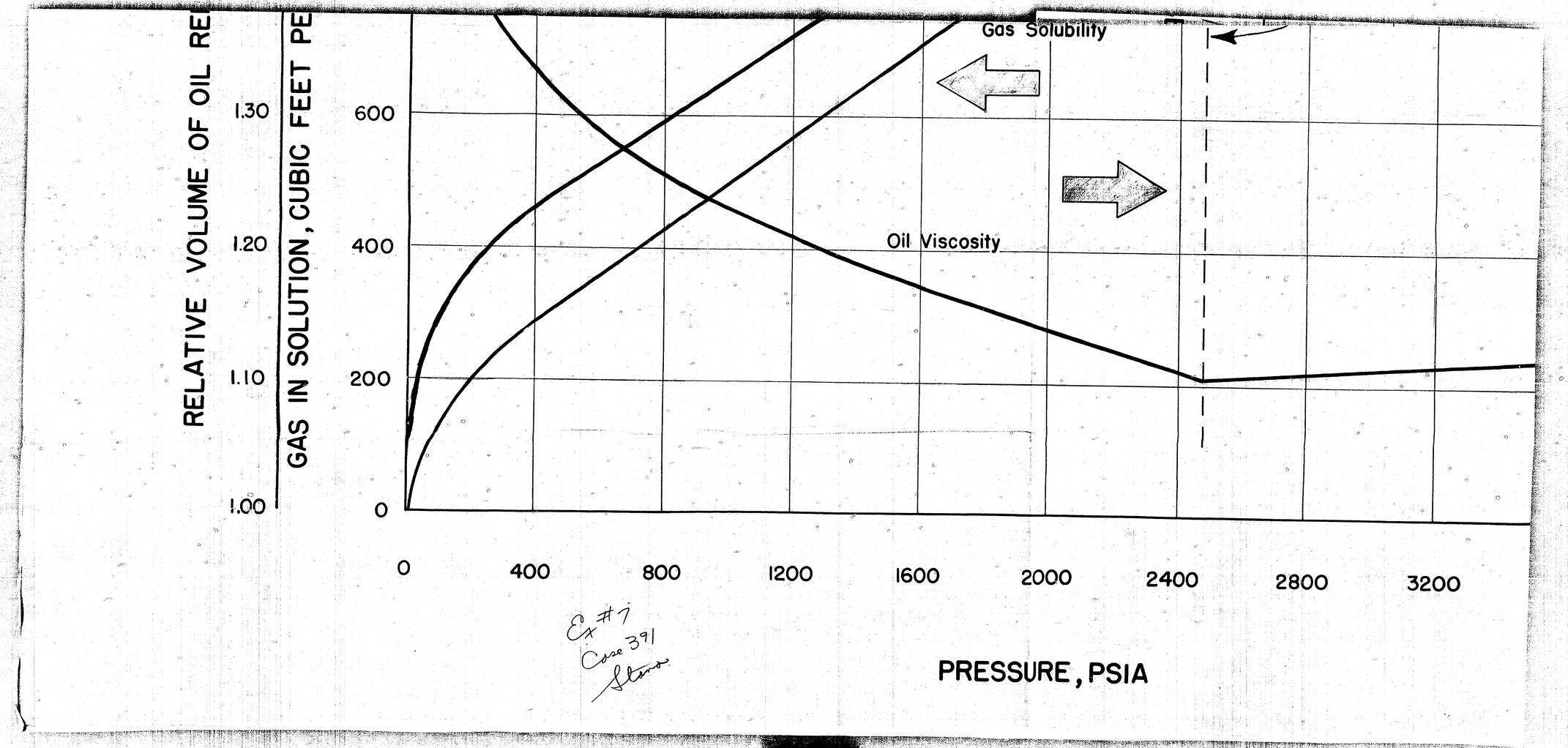


# LUID CHARACTERISTICS
# /LER FIELD
# NTY, NEW MEXICO
# ATTIX UNIT NO. 1

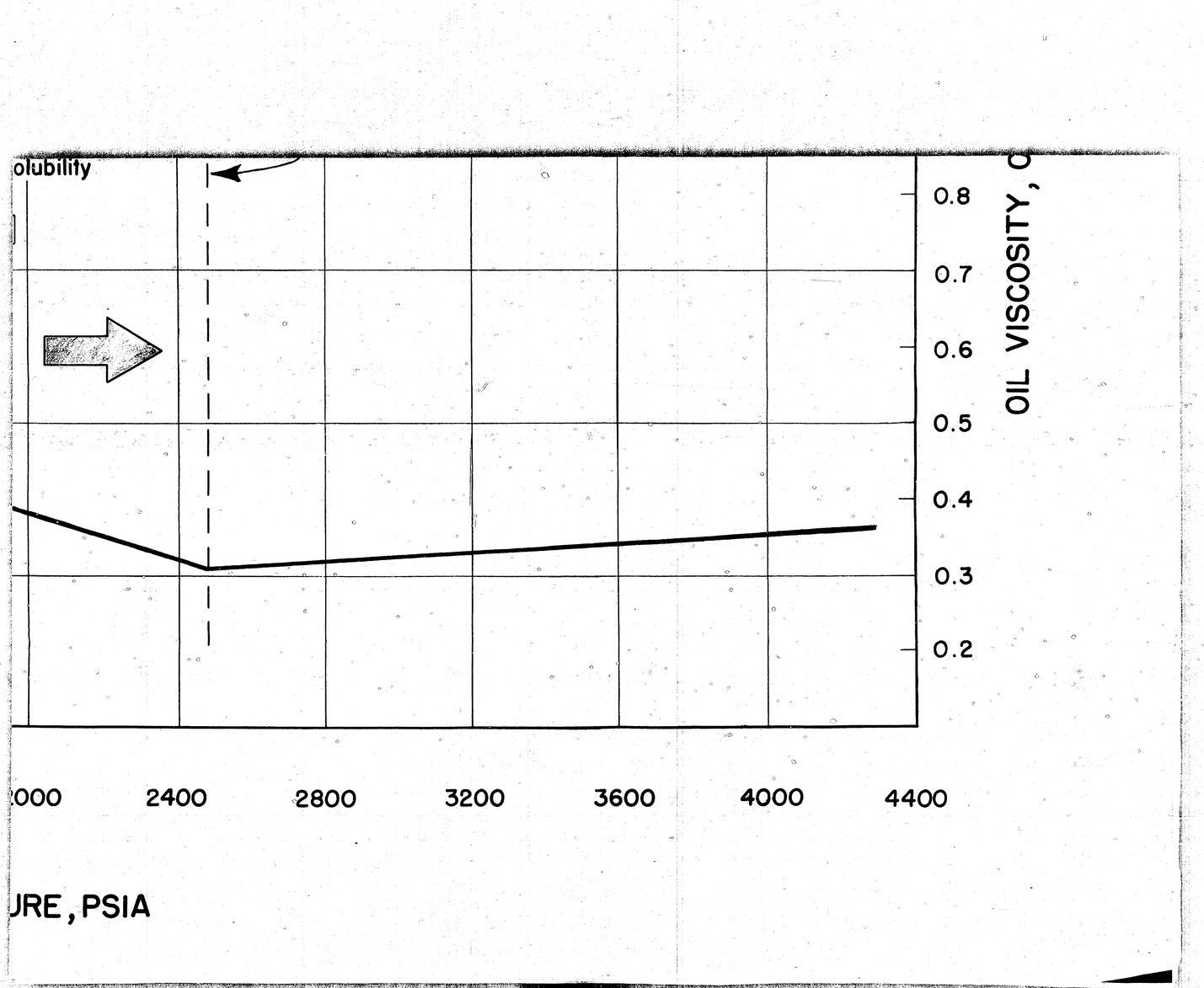
Exh. No. 7
Case 391
EW 8-9-57




145




Ex #7
Case 391
Stamps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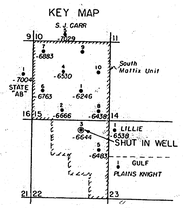
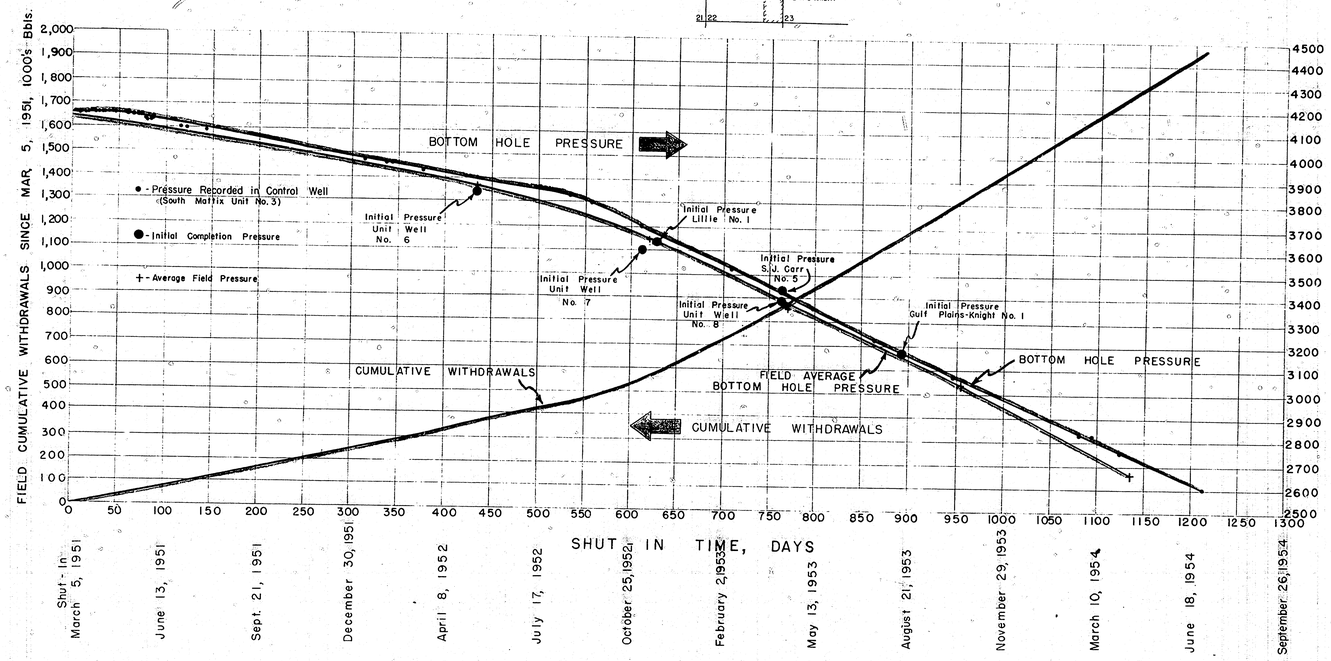
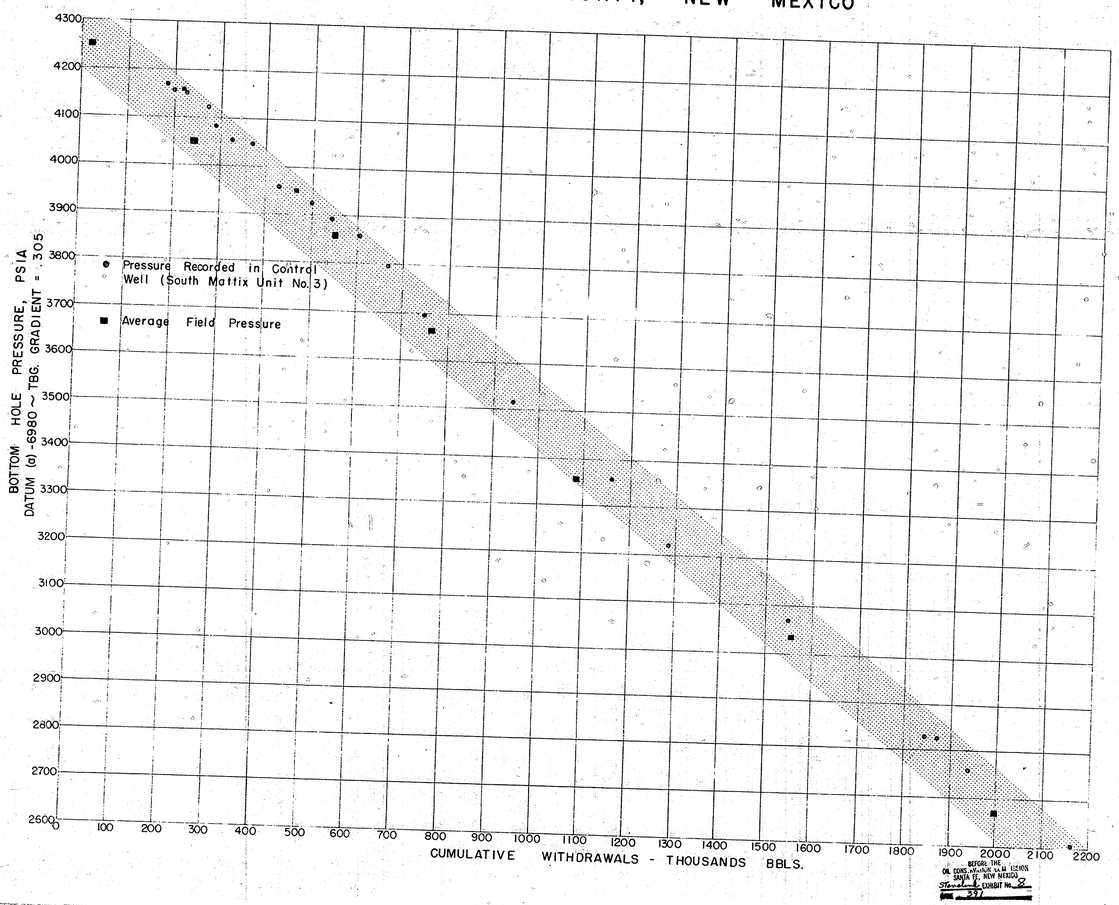
# INTERFERENCE TEST DATA
## FOWLER FIELD, LEA COUNTY, NEW MEXICO
## BOTTOM HOLE PRESSURE SOUTH MATTIX NO. 3 & CUMULATIVE WITHDRAWALS TOTAL FIELD VS. SHUT-IN TIME




BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO
Stanolind EXHIBIT No. 7
CASE 397

# BOTTOM HOLE PRESSURE VS. CUMULATIVE WITHDRAWALS - FOWLER FIELD, LEA COUNTY, NEW MEXICO



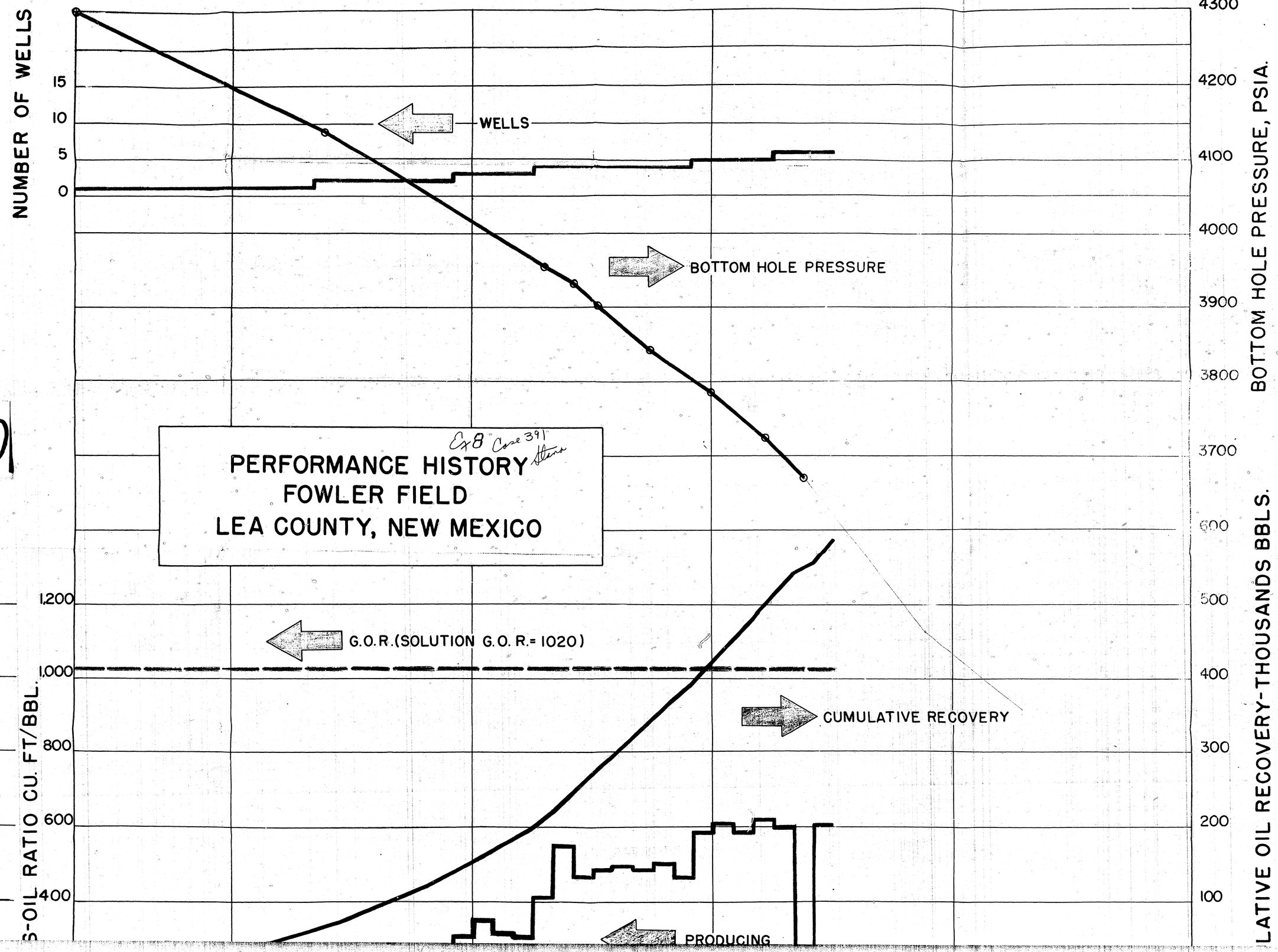

BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO
Stanolind EXHIBIT No. 2
Case 337

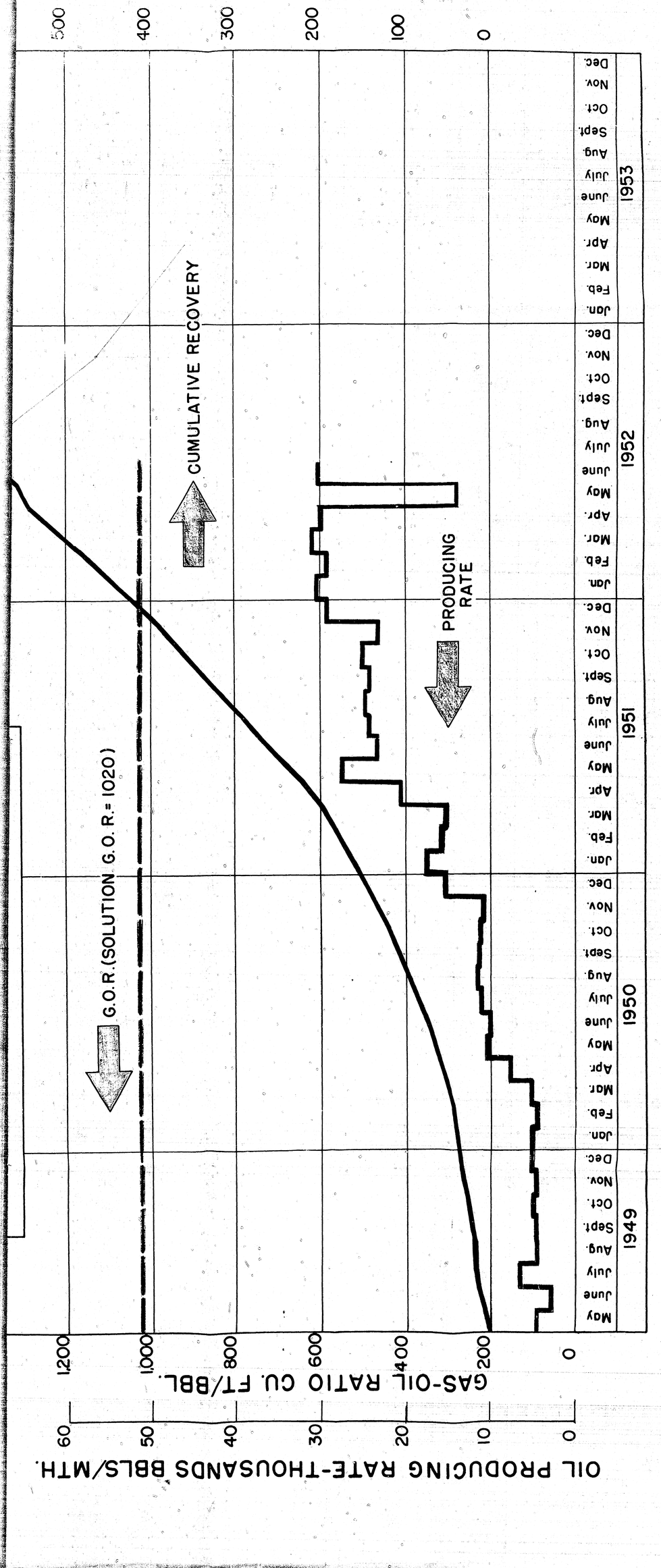
149

150

Ex 8 Case 391

# PERFORMANCE HISTORY
## FOWLER FIELD
## LEA COUNTY, NEW MEXICO




CUMULATIVE OIL RECOVERY-THOUSANDS
500
400
300
200
100
0
CUMULATIVE RECOVERY
PRODUCING RATE
G.O.R.(SOLUTION G.O.R.= 1020)
OIL PRODUCING RATE-THOUSANDS BBLS/MTH.
60
50
40
30
20
10
0
GAS-OIL RATIO CU. FT/BBL.
1200
1000
800
600
400
200
0
1949
1950
1951
1952
1953
May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan.

# SUMMARY OF PRODUC

FOWLER FIELD, LEA C

| WELL NO. | OIL STRING CASING | PRODUCING INTERVAL | LENGTH OF PROD. INT. | EST. FORMATION THICKNESS. | % PAY EXPOSED TO WELL BORE | MEASURED P.I. BBLS/DAY/PSI |
|---|---|---|---|---|---|---|
| 1 | 7" @9486 | OPEN HOLE 9505 - 9705 | 200' | 400' | 50 | 1.1 |
| 2 | 7" @10,250 | OPEN HOLE 10,250 - 10,305 | 55' | 400' | 14 | 0.5 |
| 3 | 7" @9907 | OPEN HOLE 9,907 - 10,085 | 178' | 400' | 45 | - - |
| 4 | 7" @10,129 | OPEN HOLE 10,129 - 10,270 | 141' | 470' | 30 | 10.0 |
| 5 | 7" @10,427 | CSG. PERF. 10,250 - 10,300 | 50' | 585' | 9 | 0.4 |
| 6 | 5 1/2" @10,543 | CSG. PERF. 10,320 - 10,360 | 40' | 453' | 9 | 2.7 |

* Qo/Q ( PRODUCING CAPACITY OF COMPLETELY PENETRATING WELL ) / ( PRODUCING CAPACITY OF PARTIALLY PENETRATING WELL )

* * ONLY NINE FEET OF CONVENTIONAL CORE RECOVERED AND ANALYSED OUT OF 200 FEET OF SECTION DRILLED.

152

SAMPLE CAL

$K = \frac{(PI)(u)(}{.(.C}$

# SUMMARY OF PRODUCTIVITY INDEX TESTS

## FOWLER FIELD, LEA COUNTY NEW MEXICO

| XPOSED L BORE | MEASURED P.I. BBLS/DAY/PSI | CORRECTION FACTOR $Q_o/Q$ * | CORRECTED P.I. (FULL SECTION EXPOSED) BBLS / DAY / PSI | AVERAGE PERMEABILITY, MD. FROM P.I. TEST. | FROM CORE ANALYSIS |
|---|---|---|---|---|---|
| 0 | 1.1 | 1.8 | 2.1 | 2.52 | 31.2 ** |
| 4 | 0.5 | 5.3 | 2.6 | 3.28 | - - |
| 5 | - - | - - | - - | - - | 408 |
| 0 | 10.0 | 3.1 | 31.0 | 32.50 | 37.6 |
| 9 | 0.4 | 10.0 | 4.0 | 3.47 | 4.1 |
| 9 | 2.7 | 10.0 | 27.0 | 29.3 | - - |

153

## SAMPLE CALCULATION

$$K = \frac{(PI)(u)(RVF)(\log re / rw)}{(.00307)(h)}$$

(Where) K = permeability, md.

PI = productivity index, bbls/day/psi.

RVF = reservoir volume factor bbl/bbl

re = half the distance between wells, ft.

rw = well bore radius, ft.

h = thickness of producing section, ft.

* Qo/Q ( PRODUCING CAPACITY OF COMPLETELY PENETRATING WELL ) / ( PRODUCING CAPACITY OF PARTIALLY PENETRATING WELL )

* * ONLY NINE FEET OF CONVENTIONAL CORE RECOVERED AND ANALYSED OUT OF 200 FEET OF SECTION DRILLED.

## SAMPLE CAL

$$K = \frac{(PI)(u)(}{(.C}$$

(Where) K = permeability

PI = productivity

RVF = reservoir vo

re = half the d

rw = well bore r

h = thickness of

$$K = \frac{(31.0)(0.3}{(0.0C}$$

K = 32.5 md.

154

EX. 9
case 391

## SAMPLE CALCULATION

$$K = \frac{(PI)(u)(RVF)(\log re / rw)}{(.00307)(h)}$$

K = permeability, md.

PI = productivity index, bbls / day / psi.

RVF = reservoir volume factor bbl / bbl

re = half the distance between wells, ft.

rw = well bore radius, ft.

h = thickness of producing section, ft.

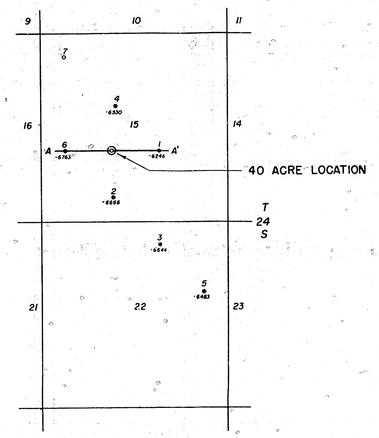
$$K = \frac{(31.0)(0.35)(1.5)(2.88)}{(0.00307)(470)}$$

K = 32.5 md.

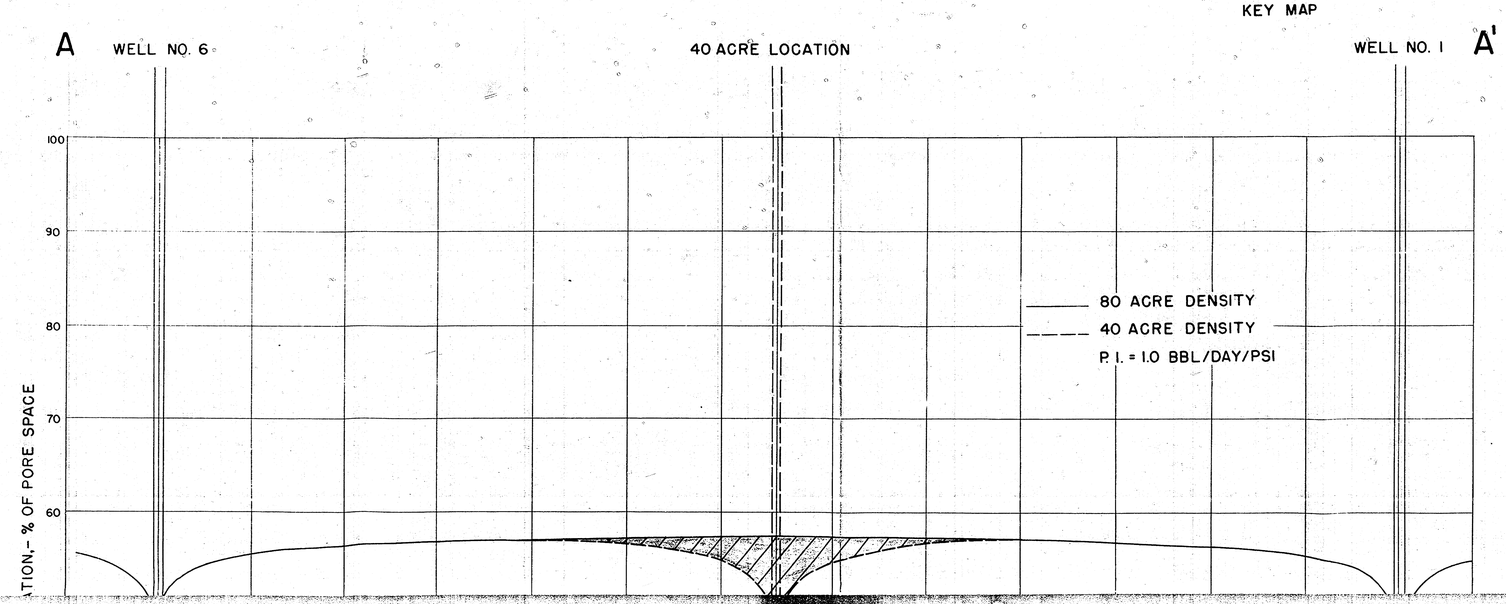
155

#10
Case 391
Stamps

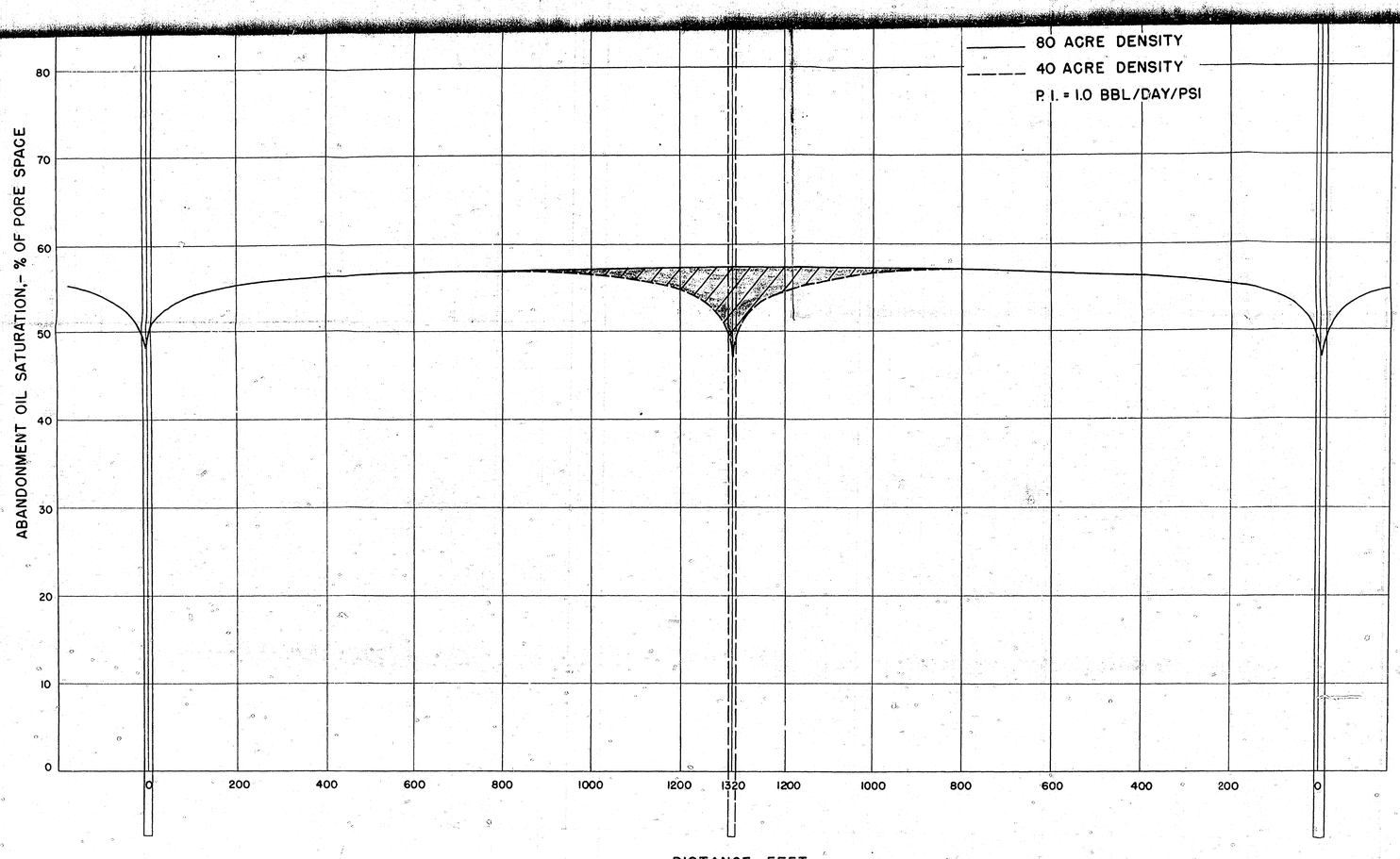
# OIL SATURATION DISTRIBUTION
# AT ABANDONMENT CONDITIONS
# FOWLER FIELD, LEA COUNTY, NEW MEXICO




KEY MAP




156



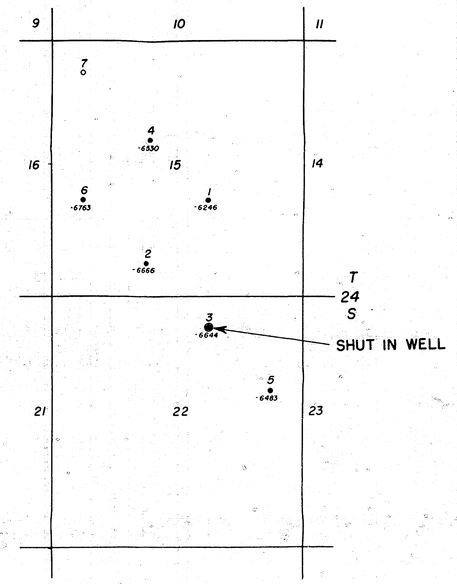

CALCULATED VARIATION IN RECOVERY EFFICIENCY WITH WELL DENSITY AND P.I.

| | RECOVERY, % OF ORIGINAL OIL IN PLACE | |
|---|---|---|
| WELL DENSITY | P.I. = 1.0 | P.I. = 10.0 |
| 40 ACRES | 31.82 | 35.42 |
| 80 ACRES | 31.18 | 35.34 |

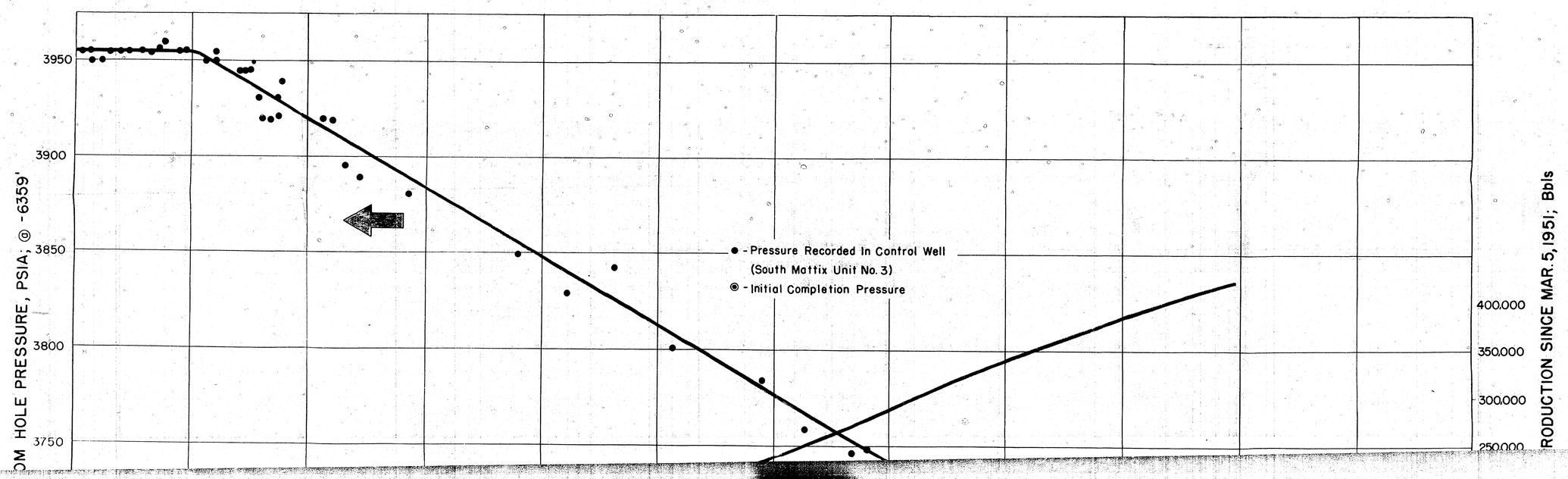
157

# 11
Case 391
Stamps

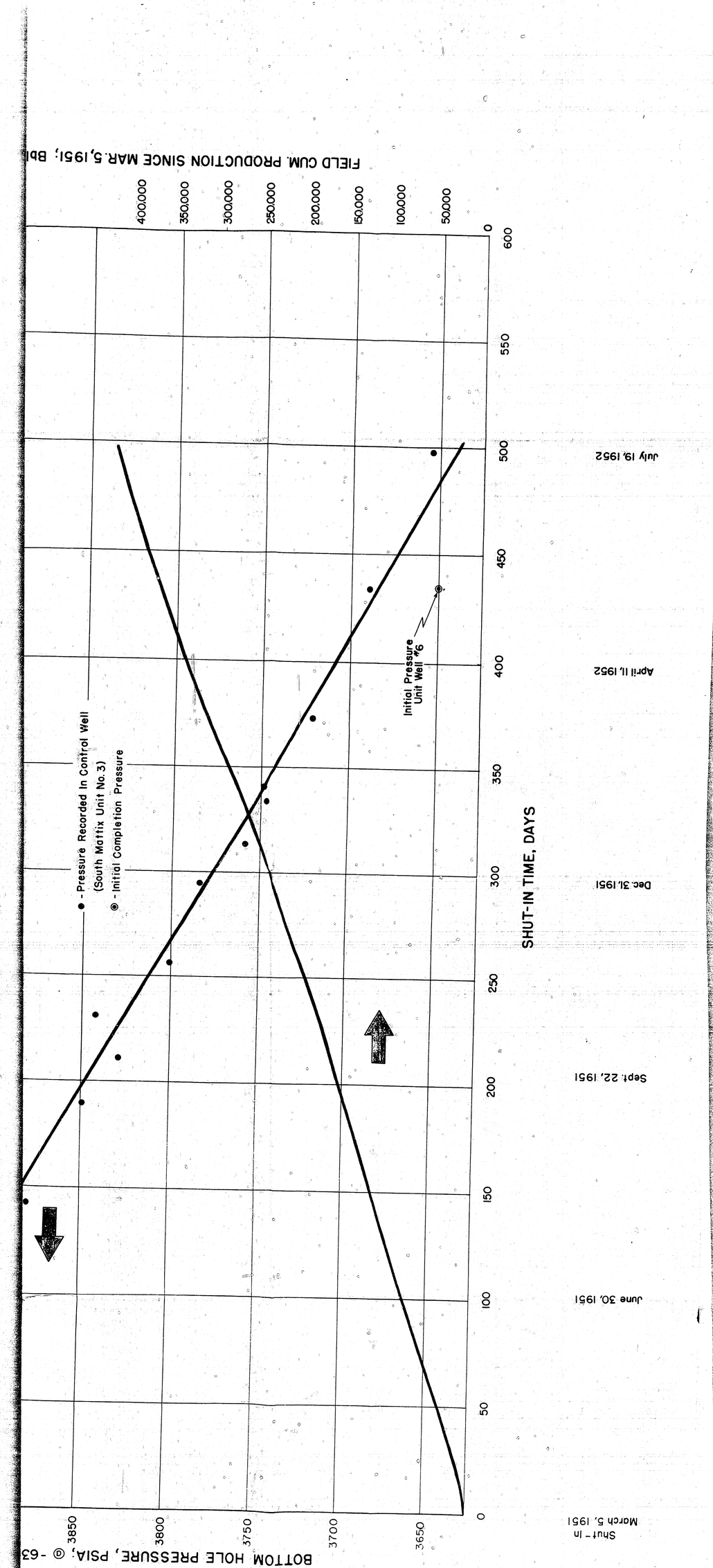
# INTERFERENCE TEST DATA
# FOWLER FIELD, LEA COUNTY, NEW MEXICO
# BOTTOM HOLE PRESSURE SOUTH MATTIX NO. 3
# & CUMULATIVE PRODUCTION TOTAL FIELD
# VS. SHUT-IN TIME




KEY MAP




158

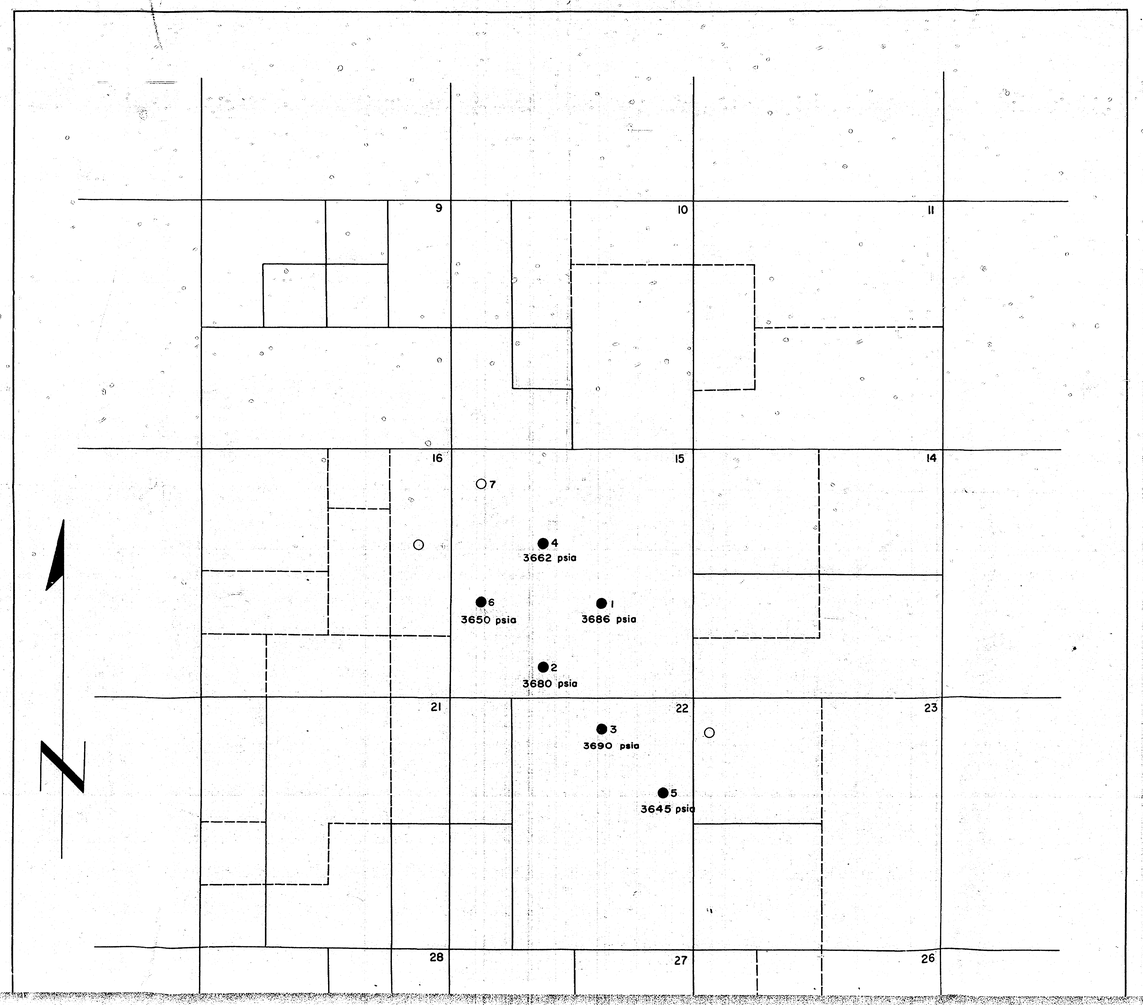

FIELD CUM. PRODUCTION SINCE MAR. 5, 1951, Bbl.
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
600
550
500
450
400
350
300
250
200
150
100
50
0
SHUT-IN TIME, DAYS
BOTTOM HOLE PRESSURE, PSIA, @ -63
3850
3800
3750
3700
3650
● - Pressure Recorded in Control Well (South Mattix Unit No. 3)
◉ - Initial Completion Pressure
Initial Pressure Unit Well #6
Dec. 31, 1951
April 11, 1952
July 19, 1952
Sept. 22, 1951
June 30, 1951
Shut - In March 5, 1951

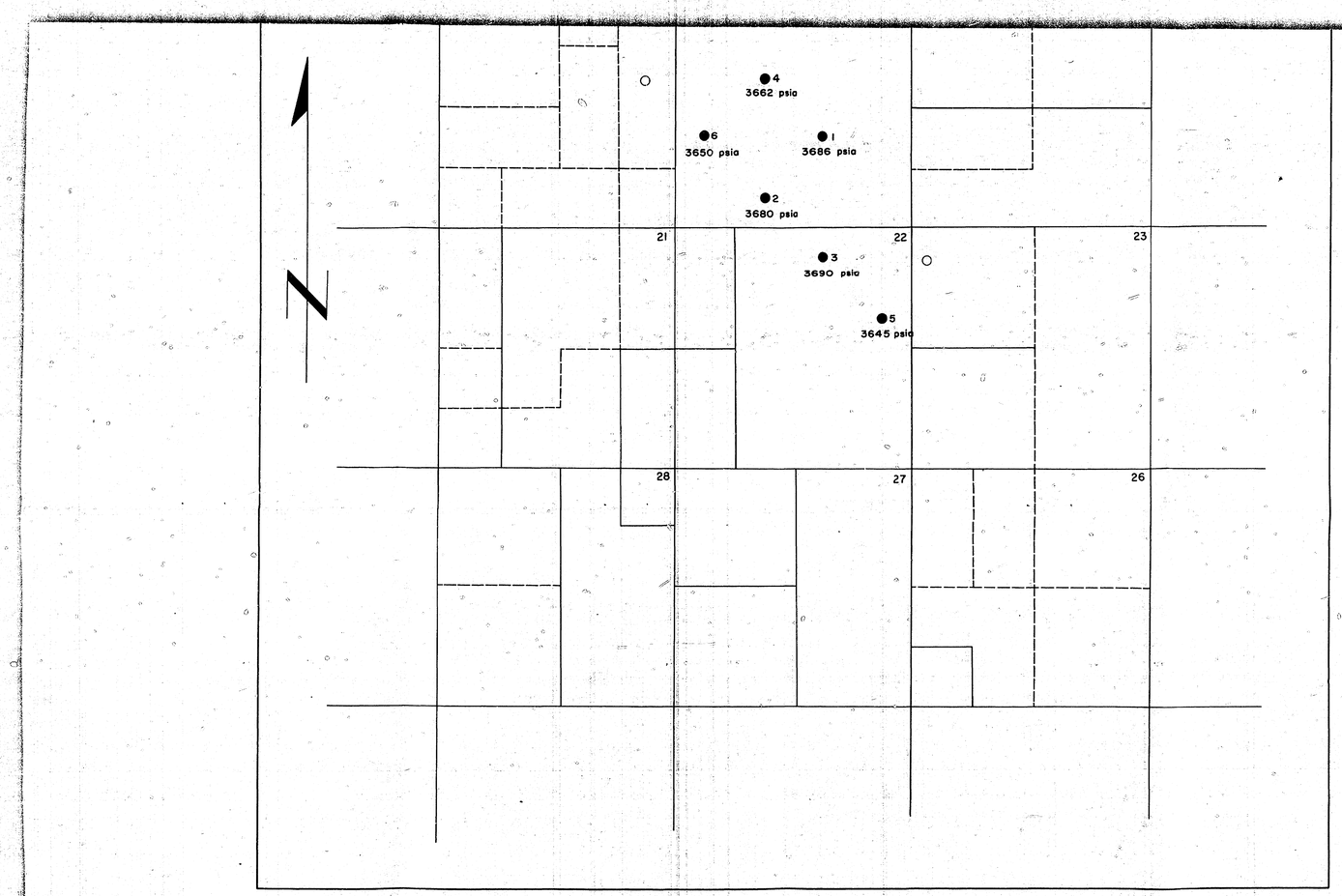
159

Cx 12
Case 391
Atlas

160

# FOWLER FIELD
# LEA COUNTY, NEW MEXICO
# BOTTOM HOLE PRESSURE SURVEY
# MAY 12-15, 1952
# DATUM @ -6359 FT.



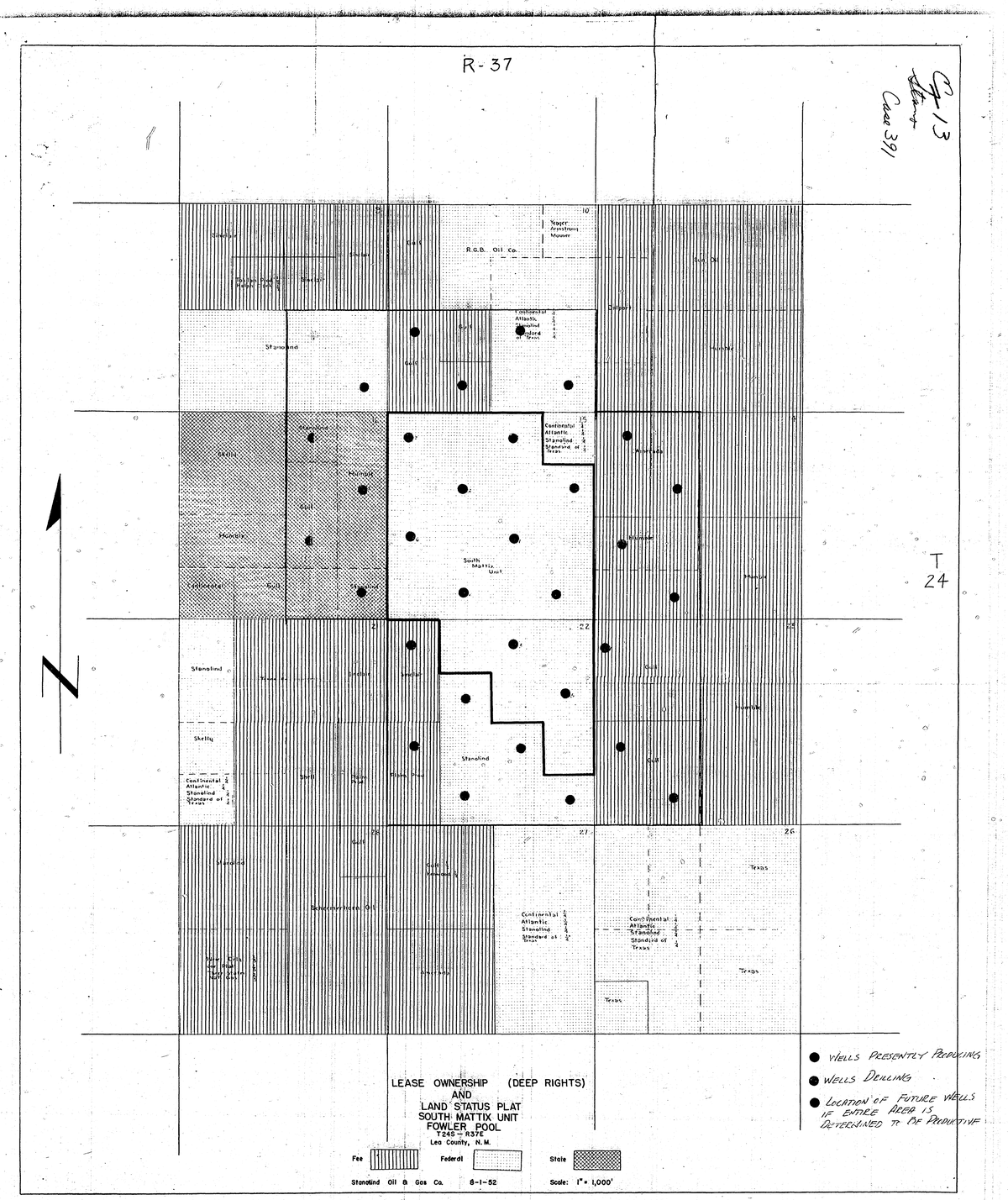

4
3662 psia
6
3650 psia
1
3686 psia
2
3680 psia
21
22
23
3
3690 psia
5
3645 psia
28
27
26

R-37

Exh. 13
Case 391

162

T 24


R.G.B. Oil Co.
Vaper Armstrong Mauser
Stanolind
Gulf
Continental Atlantic Stanolind Standard of Texas
Skelly
Humble
Mobil
Texas
South Mattix Unit
Amerada
Pan Am
Shell
Sohio Petroleum Co.
Hanley
Cities Service
Phillips
Sinclair
Roberts
Forest
Union
Pure
Ohio
Kewanee
Lion
Hudson
Tidewater
Superior
Ashland
Cabot
Aminoil
Mid-Continent
Mid-Kansas
Mid-Texas
Mid-West
Mid-Valley
Mid-Dixie
Mid-Plains
Mid-Atlantic
Mid-Gulf
Mid-Delaware
Mid-Eastern
Mid-Southern
Mid-Western
Mid-Northern
Mid-Central
Mid-Coastal
Mid-Inland
Mid-Outland
Mid-Farland
Mid-Nearland
Mid-Deepland
Mid-Shallowland
Mid-Highland
Mid-Lowland
Mid-Wetland
Mid-Dryland
Mid-Sandland
Mid-Claymland
Mid-Loamland
Mid-Siltland
Mid-Peatland
Mid-Muckland
Mid-Rockland
Mid-Gravelland
Mid-Pebbleland
Mid-Cobbleland
Mid-Boulderland
Mid-Stoneland
Mid-Bedrockland
Mid-Basementland
Mid-Crystalline
Mid-Sedimentary
Mid-Igneous
Mid-Metamorphic
Mid-Volcanic
Mid-Plutonic
Mid-Batholithic
Mid-Laccolithic
Mid-Stockic
Mid-Dikic
Mid-Sillic
Mid-Lopolithic
Mid-Phacolithic
Mid-Cupolithic
Mid-Apophysic
Mid-Xenolithic
Mid-Autolithic
Mid-Allochthonous
Mid-Autochthonous
Mid-Parautochthonous
Mid-Hypautochthonous
Mid-Epautochthonous
Mid-Orthautochthonous
Mid-Paraautochthonous
Mid-Hypoautochthonous
Mid-Epiautochthonous
Mid-Ortho