

EXHIBITS FOR CASE NO. 2554 (REOPENED)

CASE NO. 2554 REOPENED PURSUANT TO PROVISIONS
OF ORDER NO. R-2553, WHICH ORDER
ESTABLISHED TEMPORARY 80-ACRE PRORATION
UNITS FOR PERIOD OF ONE YEAR.

SOUTH LANE PENNSYLVANIAN POOL
LEA COUNTY, NEW MEXICO

JUNE 5, 1963

BEFORE EXAMINER UTZ	
OIL COMPANY	EXHIBIT NO. 1
CASE NO.	2554

FIELD HISTORY
SOUTH LANE PENNSYLVANIAN POOL
LEA COUNTY, NEW MEXICO

LOCATION: Sec. 23, 26, 27, 34 and 35, T10S, R 33E
Sec. 6, T 11 S, R 34 E.
Lea County, New Mexico

PRODUCING FORMATION: Bough "C" Zone of Pennsylvanian Formation

DEPTH: Approximately 9700 Feet

DATE OF DISCOVERY: March 21, 1962

PRODUCTION DATA: Cumulative oil production is 233,796 barrels
on May 1, 1963. Monthly rate of oil
production for April 1963 was 32,244 barrels.

RESERVOIR PRESSURE: Original= 3473 $\#/in^2$
Present= 2873 $\#/in^2$

PRODUCING MECHANISM: Solution gas drive with possible partial
water drive.

WELL COMPLETION DATA

SOUTH LANE PENNSYLVANIAN POOL

LEA COUNTY, NEW MEXICO

OPERATOR	LEASE	WELL NO.	DATE OF COMPLETION	PERFORATIONS	TREATMENT	INITIAL POTENTIAL	
						P/F	OIL BBLs. WATER BBLs.
Apache Corporation	Midwest-State	1	9-27-62	9771-77	500 Gals.	F	176 22
Tom Brown Drilling Co.	Champlin-State	1	9-9-62	9805-13	2350 Gals.	F	178 178
Cabot Corporation	State of New Mexico "N"	1	12-14-62	9774-78	500 Gals.	P	61 299
T. F. Hodge	Anderson-State	1	6-7-62	9745-47	500 Gals.	F	61 317
T. F. Hodge	Humble-State	1	3-21-62	9667-71	500 Gals.	F	468 ---
T. F. Hodge	"	2	9-15-62	9726-40	250 Gals.	F	56 320
T. F. Hodge	"	3	2-11-63	9751-53	250 Gals.	P	210 187
Humble Oil & Refining	State "BQ"	1	9-30-62	9728-34	500 Gals.	F	279 365
Tenneco Corporation	State	1	5-12-62	9663-67	500 Gals.	F	232 ---
Tenneco Corporation	State	2	8-9-62	9701-04	500 Gals.	F	180 180
Tenneco Corporation	State "E"	1	12-2-62	Open Hole	500 Gals.	P	33 700
Tenneco Corporation	"	2	4-13-63	9760-63	500 Gals.	P	141 277
Texaco, Inc.	New Mexico "CQ"	1	2-15-63	9747-49	500 Gals.	P	95 396

OIL PRODUCTION DATA

SOUTH LANE PENNSYLVANIAN POOL.

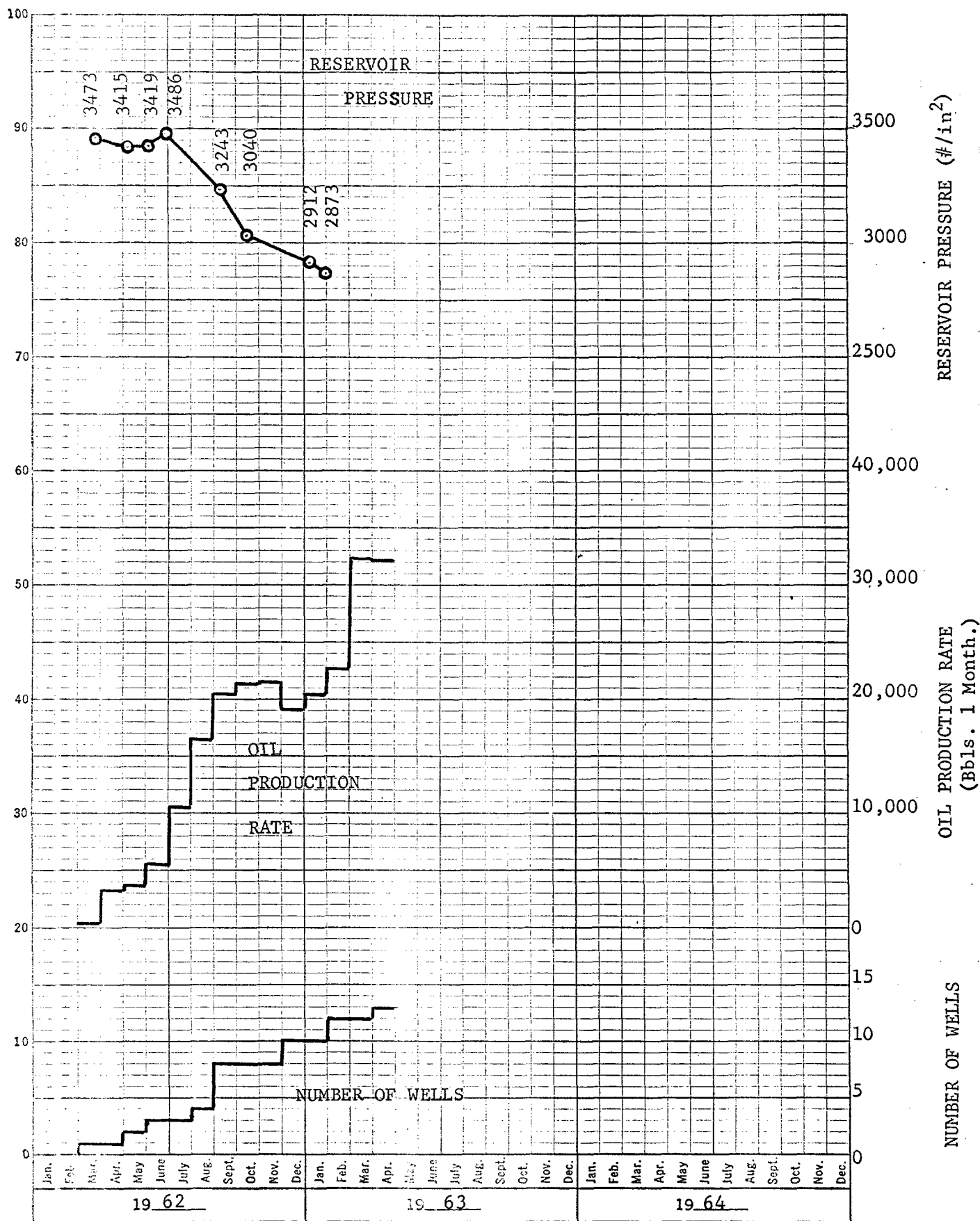
LEA COUNTY, NEW MEXICO

	APACHE Mid-West- State	BROWN Champion- State	CABOT ST. OF New Mex. "N"	HODGE ANDERSON- State	HODGE Humble- State	HUMBLE State "BQ"	TENNECO State	TENNECO State "E"	TEXACO	FIELD TOTAL	CUM.
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MONTH YEAR

March	1962			555						555	555
April	1962			3,529						3,529	4,084
May	1962			3,843						3,843	7,927
June	1962			4,861			755			5,616	13,543
July	1962			5,346			5,370			10,716	24,255
Aug.	1962			3,357			5,177			8,455	16,989
Sept.	1962			5,204			4,952			519	10,217
Oct.	1962			5,332			4,705			750	11,048
Nov.	1962			5,415			6,620			1,495	8,404
Dec.	1962			5,059			8,138			2,000	4,267
Jan.	1963			866			2,657			7,123	1,563
Feb.	1963			1,265			3,213			5,678	1,617
March	1963			1,597			4,968			10,452	2,283
April	1963			716			4,868			13,387	1,516

3 YEARS BY MONTHS 359-160
X 100 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.



PRODUCTION HISTORY
SOUTH LANE PENNSYLVANIAN POOL
LEA COUNTY, NEW MEXICO

GAS & WATER PRODUCTION
SOUTH LANE PENNSYLVANIAN POOL
LEA COUNTY, NEW MEXICO

MONTH	YEAR	MONTHLY GAS PRODUCTION (MCF)	CUMULATIVE GAS PRODUCTION (MCF)	MONTHLY WATER PRODUCTION (BBLs.)	CUMULATIVE WATER PRODUCTION (BBLs.)
March	1962	771	771		
April	1962	4,905	5,676		
May	1962	5,342	11,018		
June	1962	7,806	18,824		
July	1962	14,895	33,719		
Aug.	1962	23,615	57,334	5,405	5,405
Sept.	1962	29,040	86,374	9,299	14,704
Oct.	1962	30,351	116,725	10,199	24,903
Nov.	1962	30,488	147,213	16,068	40,971
Dec.	1962	27,055	174,268	16,756	57,727
Jan.	1963	28,952	203,220	41,556	99,283
Feb.	1963	31,785	235,005	32,429	131,712
Mar.	1963	45,151	280,156	52,000	183,712
Apr.	1963	44,819	324,975	53,690	237,402

RESERVOIR ROCK AND FLUID PROPERTIES
SOUTH LANE PENNSYLVANIAN POOL
LEA COUNTY, NEW MEXICO

Gross Pay, (feet)	30
Net Pay, (feet)	13.5
Porosity, (Persent) (Average - Three Wells)	7.95
Water Saturation, (Percent)	25
Permeability, (md.) (Hodge-Humble State #1)	1069
Original Reservoir Pressure(Pounds Per Square Inch)	3473
Saturation Pressure (Pounds Per Square Inch)	2950
Reservoir Temperature (°F)	143
Gas In Solution	1390
Formation Volume Factor	1.76
Oil Gravity (°API)	47.5

BOTTOM HOLE PRESSURE DATA
SOUTH LANE PENNSYLVANIAN POOL
LEA COUNTY, NEW MEXICO

<u>OPERATOR</u>	<u>LEASE</u>	<u>WELL NO.</u>	<u>DATE</u>	<u>HOURS SHUT-IN</u>	<u>BOTTOM HOLE PRESSURE (#/in.²)</u>	<u>REMARKS</u>
Hodge	Humble-State	1	3-29-62	48	3,473	Initial Pressure
Hodge	" "	1	5-3-62	Flowing	3,358	
Hodge	" "	1	5-3-62	21	3,415	Completely built-up @ end of 6 hrs.
Hodge	" "	1	6-1-62	27	3,419	
Tenneco	State	1	6-30-62	48	3,486	
Hodge	Humble-State	1	9-6-62	30	3,239	Average = 3,243 #/in. ²
Tenneco	State	1	9-6-62	48	3,263	
Tenneco	State	2	9-6-62	48	3,227	
Humble	State "BQ"	1	10-18-62	48	3,040	
Hodge	Humble-State	1	1-5-63	120	2,912	
Tenneco	State	1	1-30-63	48	2,873	

PRODUCTIVITY INDEX
SOUTH LANE PENNSYLVANIAN POOL
LEA COUNTY, NEW MEXICO

Date of Test: 5/2/62
Operator: T. F. Hodge
Lease and Well: Humble State, Well No. 1

Stabalized 24-Hour Producing Rate, (Bbls./Day)	184.2
Shut-In Reservoir Pressure, (#/in.2)	3415.0
Flowing Bottom Hole Pressure, (#/in.2)	3385.0

$$\begin{aligned} P. I. &= \frac{\text{Bbls. / Day}}{\text{\#/in.2 Drawdown}} \\ &= \frac{184.2 \text{ Bbls. / Day}}{(3415 \text{ \#/in.2} - 3358 \text{ \#/in.2})} \\ &= \frac{3.232 \text{ Bb.s/Day}}{\text{\#/in.2}} \end{aligned}$$



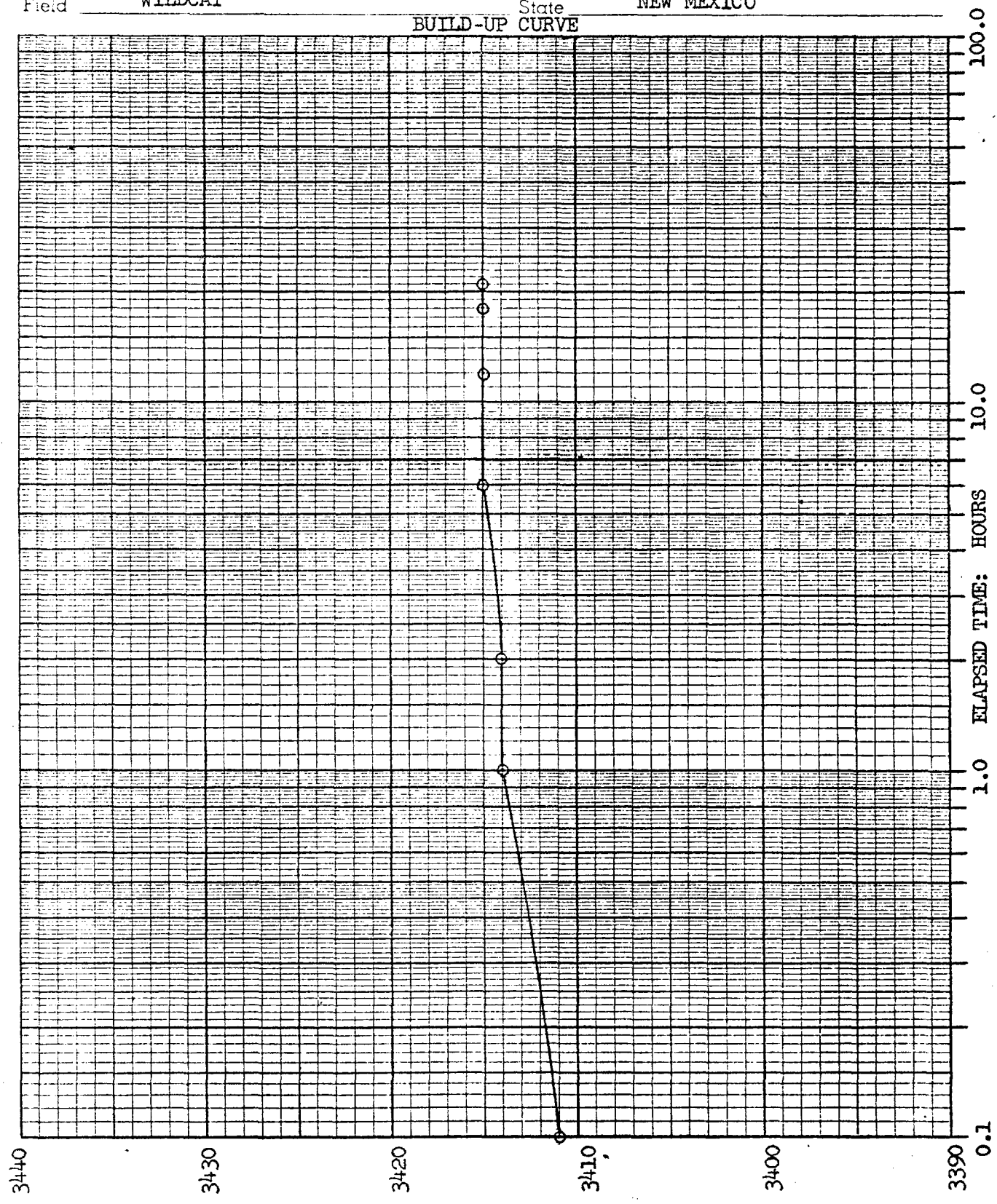
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File 3-106 PI

DALLAS, TEXAS

Company T. F. HODGE Formation BOUGH-C
Well HUMBLE STATE NO. 1 County LEA
Field WILDCAT State NEW MEXICO

BUILD-UP CURVE



BOTTOM HOLE PRESSURE AT 9669 FEET : PSIG

CORE LABORATORIES, INC.



Petroleum Reservoir Engineering

COMPANY T. F. HODGE FILE NO. WP-3-1981
 WELL HUMBLE STATE NO. 2 DATE 9-11-62 ENGRS. BOONE
 FIELD SOUTH LANE FORMATION ROUGH ELEV. 4203' KB
 COUNTY LEA STATE NEW MEXICO DRLG. FLD. WATER BASE MUD CORES DIAMOND 4 3/8"
 LOCATION 1980 FN & EL SEC 25-TLOS-R33E REMARKS SAMPLED AS DIRECTED BY CLIENT

COMPLETION COREGRAPH

These analyses, opinions or interpretations are based on observations and material supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories, Inc. (all errors and omissions excepted), but Core Laboratories, Inc. and its officers and employees, assume no responsibility and make no warranty or representations as to the productivity, proper operation, or profitability of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.



SAMPLE CHARACTERISTICS

F=Fractured L=Laminated FG; MG; CG=Type Grain Size S=Stylolitic V=Vuggy

PROBABLE PRODUCTION

O=Oil W=Water G=Gas T=Transitional

TOTAL WATER

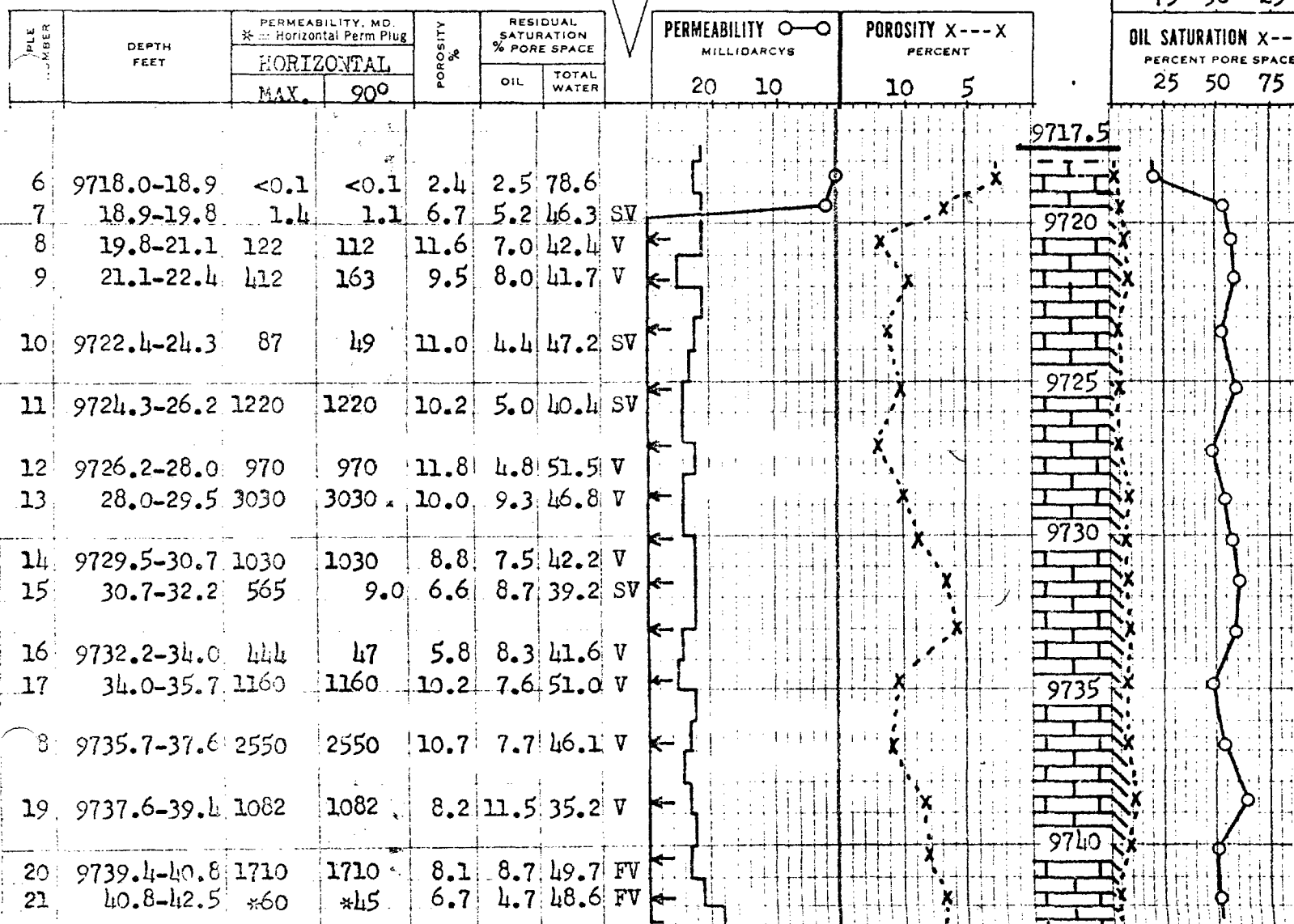
PERCENT PORE SPACE

75 50 25

OIL SATURATION

PERCENT PORE SPACE

25 50 75



COMPARISON OF ROCK AND FLUID PROPERTIES

ALLISON PENN. POOL VS. SOUTH LANE PENN. POOL

BOUGH "C" FORMATION

<u>Type Data</u>	Allison Penn. Pool	SO. LANE PENN T. F. Hodge Humble State Well No. 1
Depth of Producing Formation (Feet)	9,660	9,700
Gross Pay (Feet)	30-50	30
Net Pay (Feet)	8.94	13.5
Porosity (Percent)	5.15	7.95
Water Saturation (Percent)	25	25
Permeability (md.)	107.2	1,069
Productivity Index	5.01	3.23
Original Reservoir Pressure (Pounds Per Square Inch)	3,518	3,473
Saturation Pressure (Pounds Per Square Inch)	3,150	2,950
Original Gas in Solution (Cubic Feet Per Barrel)	1,517	1,390
Reservoir Temperature (Degrees F)	156	143
Formation Volume Factor	1,821	1.76
Oil Viscosity (cp.)	0.19	0.18
Oil Gravity (Degrees API)	48	47.5

OIL RECOVERY CALCULATIONS
SOUTH LANE PENNSYLVANIAN POOL
LEA COUNTY, NEW MEXICO

FLUID AND FORMATION DATA

Porosity = 7.95%
Water Saturation = 25%
Net Pay = 13.5 ft.
Recovery Factor = 35% Oil in Place
FVF = 1.76

OIL IN PLACE (Bbls./Ac. Ft.)

$$\frac{(7758 \frac{\text{Bbls.}}{\text{Ac.Ft.}}) (0.0795) (0.75)}{1.76} = 263 \frac{\text{Bbls.}}{\text{Ac.Ft.}}$$

RECOVERABLE OIL (Bbls./Ac. Ft.)

$$(263 \frac{\text{Bbls.}}{\text{Ac.Ft.}}) (0.35) = 92.1 \frac{\text{Bbls.}}{\text{Ac.Ft.}}$$

OIL IN PLACE (Bbls./Ac.)

$$(263 \frac{\text{Bbls.}}{\text{Ac.Ft.}}) (13.5 \text{ ft.}) = 3550 \frac{\text{Bbls.}}{\text{Ac.}}$$

RECOVERABLE OIL (Bbls./Ac.)

$$(3550 \text{ Bbls./Ac.}) (0.35) = 1243 \frac{\text{Bbls.}}{\text{Ac.}}$$

	<u>40 Ac.</u>	<u>80 Ac.</u>
OIL IN PLACE (Bbls.)	142,000	284,000
RECOVERABLE OIL (Bbls.)	49,720	99,440

ECONOMICS OF DRILLING ONE WELL
PER 40 ACRES OR 80 ACRES
SOUTH LANE PENNSYLVANIAN POOL
LEA COUNTY, NEW MEXICO

<u>INCOME</u>	<u>40 ACRES</u>	<u>80 ACRES</u>
1. Recoverable Oil Bbls.	49,720	99,480
2. Operators Net Recoverable Oil, Bbls. (7/8 x 1)	43,505	87,010
3. Operators Gross Income (\$2.82* x 2)	\$122,684	\$245,368
 <u>COST</u>		
1. Drilling and Completing Cost		\$130,000.00
2. Flow Lines		800.00
3. Tank Battery		<u>6,500.00</u>
		\$137,300.00

*Crude Price = \$2.95 + 0.06 gas = \$3.01
\$3.01 - taxes = \$2.82

EXHIBITS FOR CASE NO. 2554

T. F. HODGE'S APPLICATION
FOR ORDER CREATING NEW
POOL AND 80- ACRE SPACING

T. F. HODGE
HUMBLE-STATE WELL NO. 1

BEFORE EXAMINER NUTTER

OIL CONSERVATION COMMISSION

Hodge EXHIBIT NO. 3

CASE NO. 2554

WELL HISTORY
BOUGH "C" FORMATION
T. F. HODGE
WELL NO. 1

LOCATION: 1980' FWL and 660' FSL of Section 26, T-10-S, R-33-E,
Lea County, New Mexico

TOTAL DEPTH: 9846'

PRODUCTION STRING: 4½" casing set at 9844'

DRILL STEM TEST: Bough "C" Formation tested from 9645' to 9692'.
Results as follows:
* Initial shut-in pressure= 3679 #/in 2
Initial flow pressure= 1675 #/in 2
Final flow pressure= 3071 #/in 2
* Final shut-in pressure= 3528 #/in 2
(* 30 minute shut-in period)

Strong blow, gas to surface in 32 minutes, water blanket
in 35 minutes and oil in 45 minutes, estimated flow rate
was 10 to 20 barrels per hour. Recovered 1300' oil and
100' drilling fluid.

PERFORATIONS: 9667' to 9671'

FORMATION TREATMENT: 500 gallons of mud acid.

POTENTIAL TEST: On March 26, 1962, the well flowed 468 barrels
of 47 degrees API oil through a 12/64" surface
choke with a gas oil ratio of 1550 to 1. Tubing
pressure was 1250 #/in 2 and casing pressure was
1500#/ in 2.

INITIAL RESERVOIR PRESSURE: 3473#/in 2 at 9669'.

PRODUCTIVITY INDEX
AND
PERMEABILITY CALCULATIONS
BOUGH "C" FORMATION
T. F. HODGE
HUMBLE-STATE LEASE, WELL NO. 1

PRODUCTIVITY INDEX

Date of Test	
Stabalized 24- Hour Producing Rate, (Bbls/Day)	184.2
Shut-In Reservoir Pressure, (#/ in.2)	3415.0
Flowing Bottom Hole Pressure, (#/in.2)	3358.0

$$P. I. = \frac{\text{Bbls. /Day}}{\text{\#/in. 2 Drawdown}} = \frac{184.2}{3415 \text{ \#/in.2} - 3358 \text{ \#/in. 2}}$$

$$= \frac{3.232 \text{ Bbls./Day}}{\text{\#/in. 2}}$$

PERMEABILITY CALCULATION

$$K_o = \frac{(P.I.) (K_o) (Lay \frac{Re}{Ru})}{0.00307 (h)}$$

$$= \frac{3.23 (0.18 \text{ cp.}) (1.88) (Lay \frac{5280}{0.328})}{0.00307 (16 \text{ ft.})}$$

$$= \underline{94.0 \text{ Md.}}$$

RESERVOIR ROCK AND FLUID PROPERTIES
BOUGH "C" FORMATION
T. F. HODGE
HUMBLE-STATE LEASE, WELL NO. 1

Depth of Formation, (Feet)	9687
Gross Pay, (Feet)	30
Net Pay, (Feet)	16
Porosity, (Percent)	7.2
Water Saturation (Percent)	15
Permeability, (md.)	100 94
Original Reservoir Pressure, (Pounds Per Square Inch)	3473
Saturation Pressure, (Pounds Per Square Inch)	3270
Reservoir Temperature, (°F)	143
Gas in Solution	1550
Formation Volume Factor	1.88
Oil Viscosity (cp.)	0.18
Oil Gravity, (°API)	47

OIL RECOVERY CALCULATIONS
BOUGH "C" FORMATION
T. F. HODGE
HUMBLE-STATE LEASE, WELL NO. 1

*- 25% more accurate
- would decrease
recoverable oil.
optimistic?*

RESERVOIR VOLUME CALCULATIONS

Assume Porosity = 7.2%
Water Saturation = 15.0%
Net Pay = 16 ft.
Recovery Factor = 25% Oil in Place

OIL IN PLACE (Bbls./Ac. Ft.)

$$\frac{(7758 \frac{\text{Bbls.}}{\text{Ac.Ft.}}) (0.072) (0.85)}{1.88} = 252 \frac{\text{Bbls.}}{\text{Ac.Ft.}}$$

RECOVERABLE OIL (Bbls./Ac. Ft.)

$$(252 \frac{\text{Bbls.}}{\text{Ac.Ft.}}) (0.25) = 63.2 \frac{\text{Bbls.}}{\text{Ac.Ft.}}$$

OIL IN PLACE (Bbls./Ac.)

$$(252 \frac{\text{Bbls.}}{\text{Ac.Ft.}}) (16 \text{ ft.}) = 4030 \frac{\text{Bbls.}}{\text{Ac.}}$$

RECOVERABLE OIL (Bbls./Ac.)

$$(4030 \text{ Bbls/Ac}) (0.25) = 1010 \text{ Bbls/Ac.}$$

	<u>40 Ac.</u>	<u>80 Ac.</u>
OIL IN PLACE (Bbls.)	161,000	322,000
RECOVERABLE OIL (Bbls.)	40,400	80,800

COMPARISON OF ROCK AND FLUID PROPERTIES

ALLISON PENN. POOL VS. HUMBLE-STATE LEASE, WELL NO. 1

BOUGH "C" FORMATION

<u>Type Data</u>	<u>Allison Penn. Pool</u>	<u>T. F. Hodge Humble-State Well No. 1</u>
Depth of Producing Formation (Feet)	9,660	9,607
Gross Pay (Feet)	30-50	30
Net Pay (Feet)	8.94	16
Porosity (Percent)	5.15	7.2
Water Saturation (Percent)	25	15
Permeability (md.)	107.2	300 94
Productivity Index	5.01	3.23
Original Reservoir Pressure (Pounds Per Square Inch)	3,518	3,473
Saturation Pressure (Pounds Per Square Inch)	3,150	3,270
Original Gas in Solution (Cubic Feet Per Barrel)	1,517	1,550
Reservoir Temperature (Degrees F)	156	143
Formation Volume Factor	1.821	1.88
Oil Viscosity (cp.)	0.19	0.18
Oil Gravity (Degrees API)	48	47

ECONOMICS OF DRILLING ONE WELL PER 40 ACRES OR 80 ACRES
BOUGH "C" FORMATION
T. F. HODGE
HUMBLE-STATE LEASE
WELL NO. 1

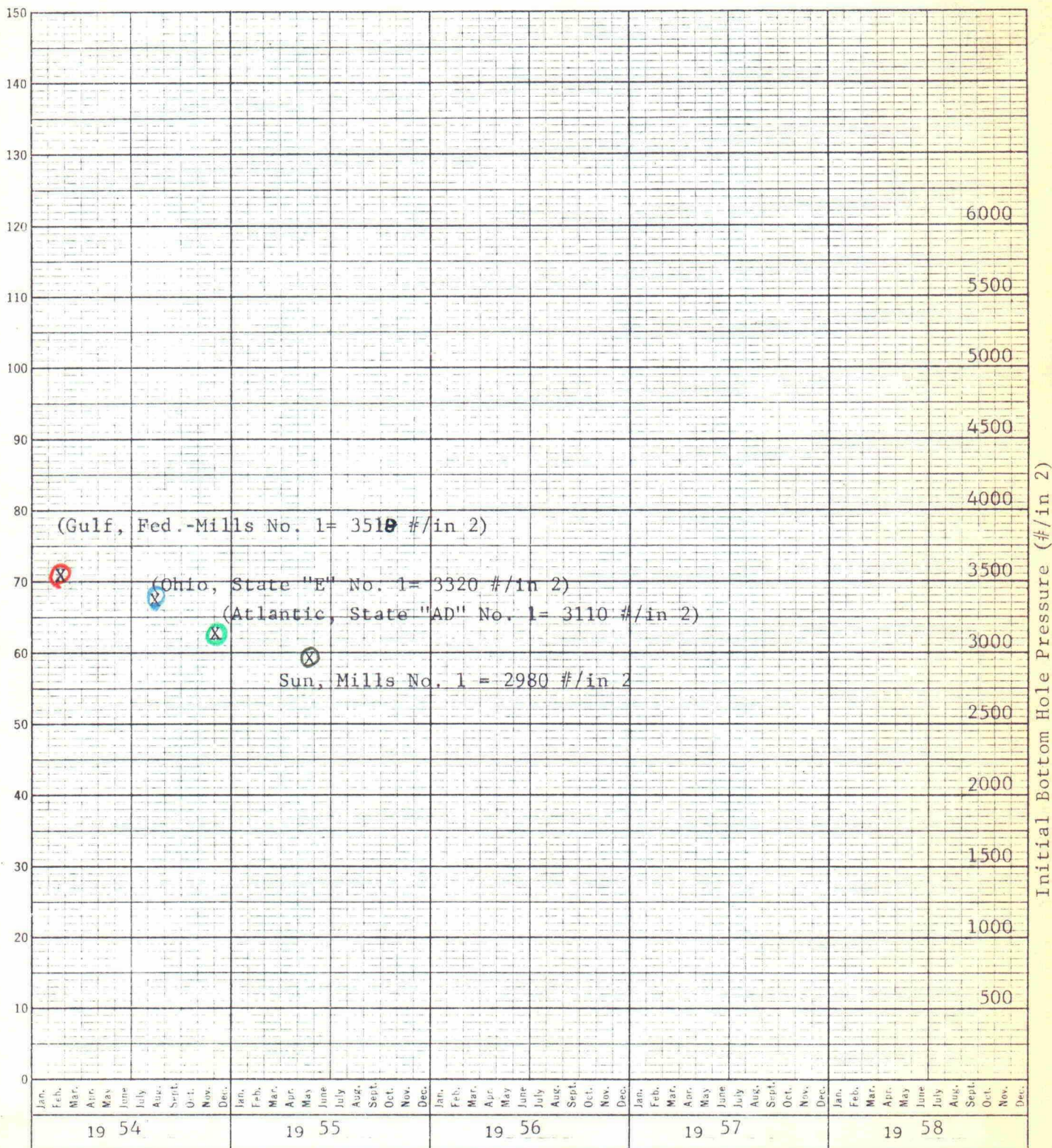
<u>INCOME</u>	<u>40 ACRES</u>	<u>80 ACRES</u>
1. Recoverable Oil, Bbls.	40,400	80,800
2. Operators Net Recoverable Oil, Bbls. (7/8 X 1.)	35,300	70,600
3. Operators Gross Income (\$2.68* X 2)	\$94,600	\$189,200

COST **

1. Drilling and Completing Humble-State No. 1	\$132,477.26
2. Flow Lines	800.70
3. Tank Battery	6,588.64
Total Cost **	<u>\$139,866.60</u>

* Crude Price= \$3.01-taxes-trucking
= \$3.01-\$0.18- \$0.15
= \$2.68

** Does not include operating costs.



PLOT OF INITIAL BOTTOM HOLE PRESSURE VS. TIME
 ALLISON POOL, LEA AND ROOSEVELT COUNTIES, NEW MEXICO

COUNTY

