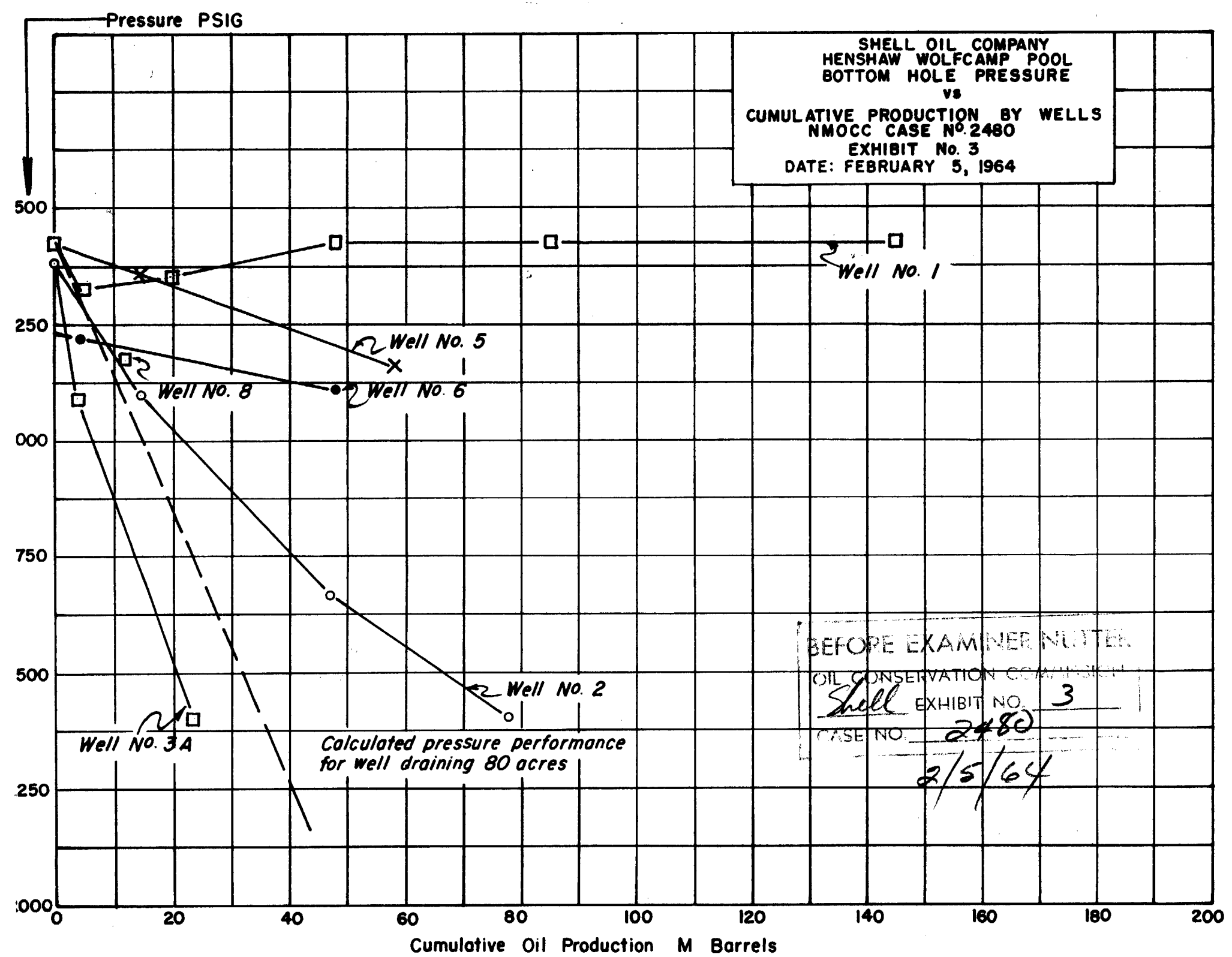
SHELL OIL COMPANY
HENSHAW WOLFCAMP POOL
COMPLETION DATA WELL NOS. 6 AND 8
NMOCC CASE NO. 2480
EXHIBIT NO. 2
DATE: FEBRUARY 5, 1964

	Well No. 6	Well No. 8
Formation	Wolfcamp Limestone	Wolfcamp Limestone
Total Depth	9500 feet	9036 feet
Top Wolfcamp	7683 feet	7702 feet
Completion Date	2-22-63	8-2-63
Completion Interval	8697-8714 feet	8733-8743 feet
Treatment	1000 gallons acid	400 gallons acid
Initial Potential		
Potential BOPD	261	380
Choke Size	13/64"	14/64"
GOR	2235	1661
Tubing Pressure	1380	1200
Casing Pressure	Packer	Packer
Oil Gravity	44.2°	42.5°

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Shell EXHIBIT NO. 2
CASE NO. 2480
2/5/64


Pressure PSIG
SHELL OIL COMPANY
HENSHAW WOLFCAMP POOL
BOTTOM HOLE PRESSURE
VS
CUMULATIVE PRODUCTION BY WELLS
NMOCC CASE NO. 2480
EXHIBIT No. 3
DATE: FEBRUARY 5, 1964
Well No. 1
Well No. 5
Well No. 8
Well No. 6
Well No. 2
Well No. 3A
Calculated pressure performance for well draining 80 acres
BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Shell EXHIBIT NO. 3
CASE NO. 2480
2/5/64
500
250
000
750
500
250
000
0
20
40
60
80
100
120
140
160
180
200
Cumulative Oil Production M Barrels

SHELL OIL COMPANY
HENSHAW WOLFCAMP POOL
RESERVOIR DATA
NMOCC CASE NO. 2480
EXHIBIT NO. 4

Therefore these two wells are the only ones which are completed in a common casing string

	Well Number					
	1	2	3A	5	6	8
Porosity (Core) - %	-	-	12.5	9	-	-
Porosity (Log) - %	6	12.5	11.5	9	9.5	8.5
Permeability (Core) - md.	-	-	2	68	-	-
Permeability (Calc) - md.	18	10	2.8	41	45	350
Feet of Pay	10	14	7	10	14	24
Water Saturation - %	35	25	20	31	44	40
Original Reservoir Pressure - psig	3410	3390	3390	3410	3220	3170
Gravity of Oil - ° API	36	41	41	41	44.2	42.5
H_2S Content of Gas - gr/100 cu.ft.	810	15	5	50	1100	500

current production

155 BPD >TP 20-25 BPD >TA >TA >TA

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Shell EXHIBIT NO. 4
CASE NO. 2480

2/5/64

SHELL OIL COMPANY
HENSHAW WOLFCAMP POOL
CALCULATION OF ABANDONMENT PRESSURE
40- AND 80-ACRE SPACING
NMOCC CASE NO. 2480
EXHIBIT NO. 5
DATE: FEBRUARY 5, 1964

Flow Equation:

$$P-P_f = \frac{q\,\mu\,B_o}{2\pi\,kh}\ \ln\frac{r}{r_w} \qquad \text{(Metric Units)}$$

where:
- P = pressure at drainage radius r
- P_f = well bore pressure = 50 psig at economic limit
- q = production rate = 5 BOPD at economic limit
- μ = viscosity = 0.7 cp.
- B_o = formation volume factor = 1.1 @ 500 psi
- k = permeability = 23 md.
- h = pay thickness = 12 feet
- r = drainage radius = 743 feet for 40 acres, 1052 feet for 80 acres
- r_w = well bore radius = 0.333 feet

Estimated total liquid saturation at abandonment = 56.5%
Relative permeability to oil at total liquid saturation of 56.5% = 0.034

Converting flow equation to oil field units:

$$P-P_f = \frac{14.65 \times 1.84 \times 2.303}{2 \times 3.14 \times .001 \times 30.48}\ \frac{q\mu\,B_o}{kh}\log\frac{r}{r_w} = \frac{325\ q\mu\,B_o}{kh}\log\frac{r}{r_w}$$

Abandonment Pressure - 40-acre spacing:

$$P-50 = \frac{325 \times 5 \times 0.7 \times 1.1}{12 \times 23 \times .034}\ \log\frac{743}{0.333}$$

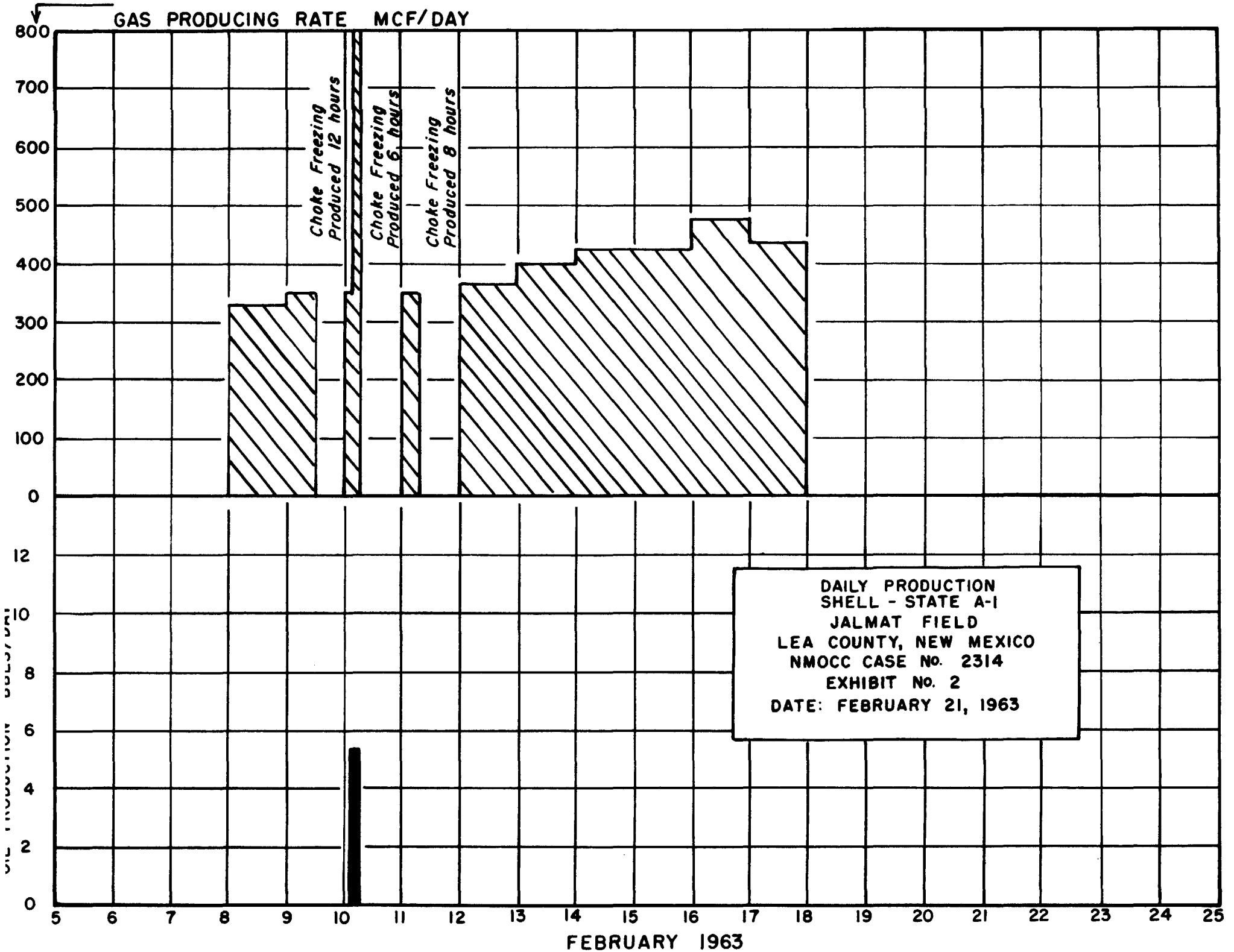
$$P-50 = 134 \times 3.35 = 450$$
$$P = 500 \text{ psig}$$

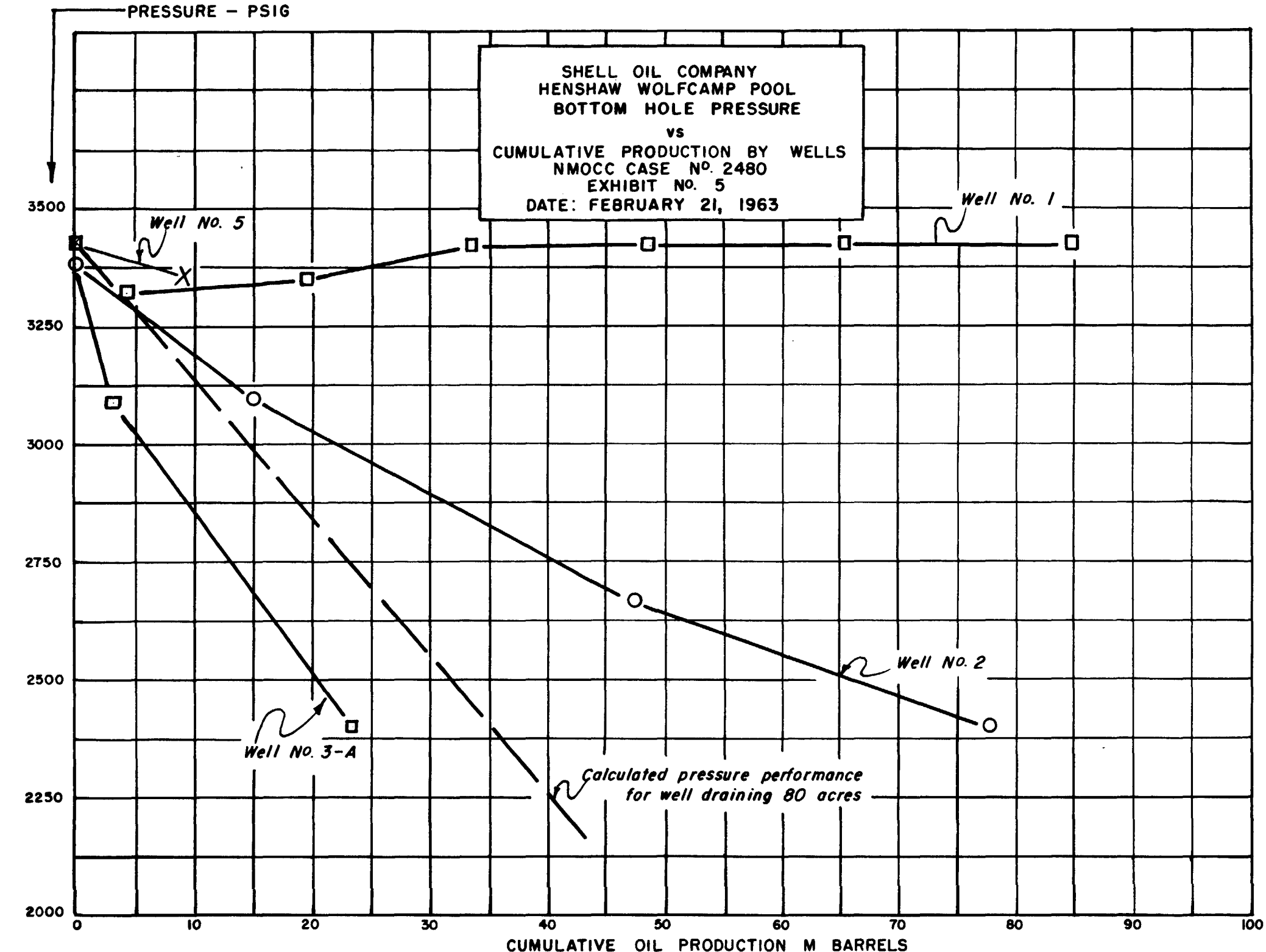
Abandonment Pressure - 80-acre spacing:

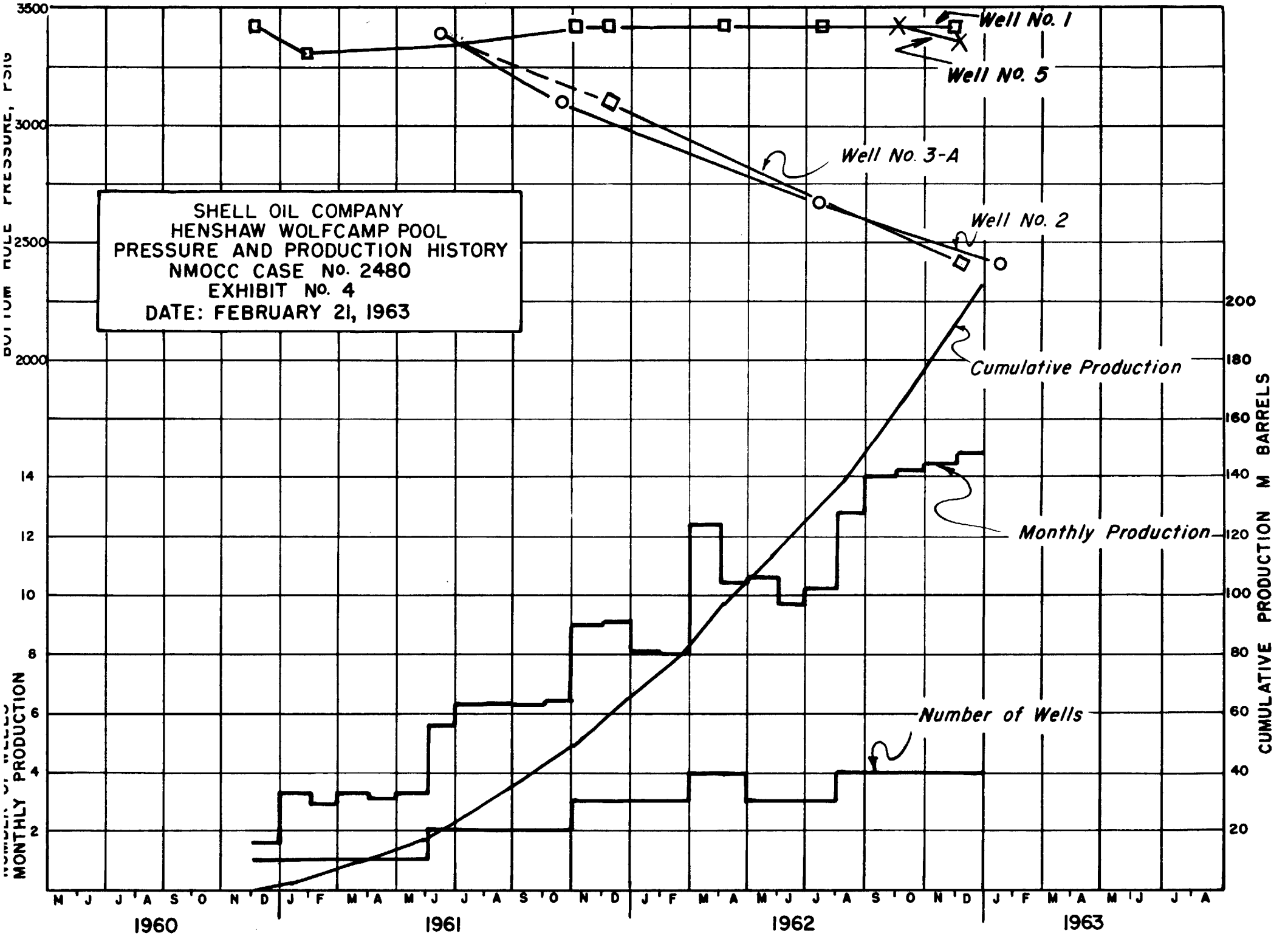
$$P-50 = \frac{325 \times 5 \times 0.7 \times 1.1}{12 \times 23 \times .034}\ \log\frac{1052}{0.333}$$

$$P-50 = 134 \times 3.497 = 470$$
$$P = 520 \text{ psig}$$

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Shell EXHIBIT NO. 5
CASE NO. 2480
2/5/64


GAS PRODUCING RATE MCF/DAY
800
700
600
500
400
300
200
100
0
Choke Freezing Produced 12 hours
Choke Freezing Produced 6 hours
Choke Freezing Produced 8 hours
12
10
8
6
4
2
0
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
FEBRUARY 1963
DAILY PRODUCTION
SHELL - STATE A-1
JALMAT FIELD
LEA COUNTY, NEW MEXICO
NMOCC CASE No. 2314
EXHIBIT No. 2
DATE: FEBRUARY 21, 1963


PRESSURE – PSIG
SHELL OIL COMPANY
HENSHAW WOLFCAMP POOL
BOTTOM HOLE PRESSURE
vs
CUMULATIVE PRODUCTION BY WELLS
NMOCC CASE No. 2480
EXHIBIT No. 5
DATE: FEBRUARY 21, 1963
Well No. 5
Well No. 1
Well No. 2
Well No. 3-A
Calculated pressure performance
for well draining 80 acres
3500
3250
3000
2750
2500
2250
2000
0
10
20
30
40
50
60
70
80
90
100
CUMULATIVE OIL PRODUCTION M BARRELS


SHELL OIL COMPANY
HENSHAW WOLFCAMP POOL
PRESSURE AND PRODUCTION HISTORY
NMOCC CASE No. 2480
EXHIBIT No. 4
DATE: FEBRUARY 21, 1963
Well No. 1
Well No. 5
Well No. 3-A
Well No. 2
Cumulative Production
Monthly Production
Number of Wells
MONTHLY PRODUCTION
CUMULATIVE PRODUCTION M BARRELS
3500
3000
2500
2000
14
12
10
8
6
4
2
200
180
160
140
120
100
80
60
40
20
M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A
1960
1961
1962
1963

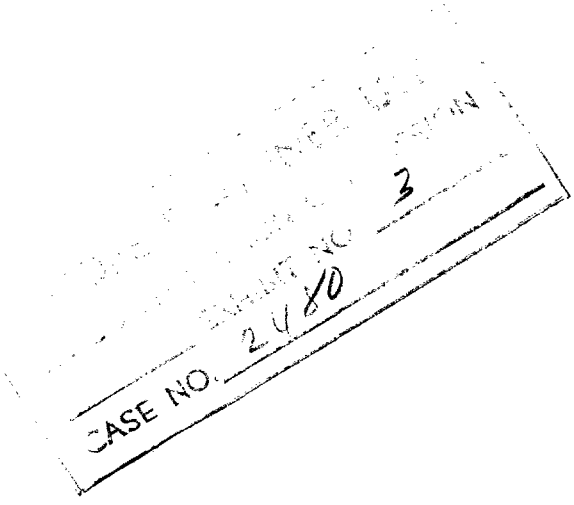
SHELL OIL COMPANY
HENSHAW WOLFCAMP POOL
COMPLETION AND RESERVOIR DATA - WELL NO. 5

Completion Data

Formation	Wolfcamp Limestone
Total Depth	12,100
Top Wolfcamp	7727
Completion Date	8-26-62
Completion Interval	8785-8801
Treatment	450 Gallons Acid
Initial Potential	
Potential BOPD	305
Choke Size	16/64
GOR	1650
Tubing Pressure	800
Casing Pressure	Packer
Oil Gravity	40.8°

Reservoir Characteristics

Porosity	9%
Permeability	68 md.
Water Saturation	31%
Net Pay	10 feet
Reservoir Temperature	126° F
Original Reservoir Pressure	3420 psig
Probable Reservoir Drive	Solution Gas



NMOCC Case No. 2480
Exhibit No. 3
Date: February 21, 1963

SHELL OIL COMPANY
HENSHAW WOLFCAMP FIELD
ECONOMICS FOR 40, 80 AND 160-ACRE
WELL SPACING

1. Cost and Income Data

Operating Net Income Per Gross Barrel		
Price of Oil (36° API)		$ 2.830
Gas Oil Ratio Over Life MCF/bbl		3.0
Gas Income $/bbl		$ 0.30
Gross Income Per Barrel		$ 3.130
Royalty and ORRI/bbl	$ 0.548	
Production and Property Taxes/bbl	0.193	
Overhead/bbl	0.184	
Operating Cost/bbl	0.205	
Subtotal		$ 1.130
Operating Net Income Per Gross Barrel		$ 2.000
Well Cost		$15[illegible],000

2. 40-Acre Spacing

Reserves	52,000 bbls.
WI Net Income	$104,000
Loss Per Well	$ 53,000
Per Cent Profit	0

3. 80-Acre Spacing

Reserves	104,000 bbls.
WI Net Income	$208,000
Profit	$ 51,000
Per Cent Profit	32

4. 160-Acre Spacing

Reserves	208,000 bbls.
WI Net Income	$416,000
Profit	$259,000
Per Cent Profit	165

6

Appl. 2480

NMOCC Case No. 2480
Exhibit No. 6
Date: February 21, 1963

SHELL OIL COMPANY
HENSHAW WOLFCAMP FIELD
WELL COMPLETION AND RESERVOIR DATA

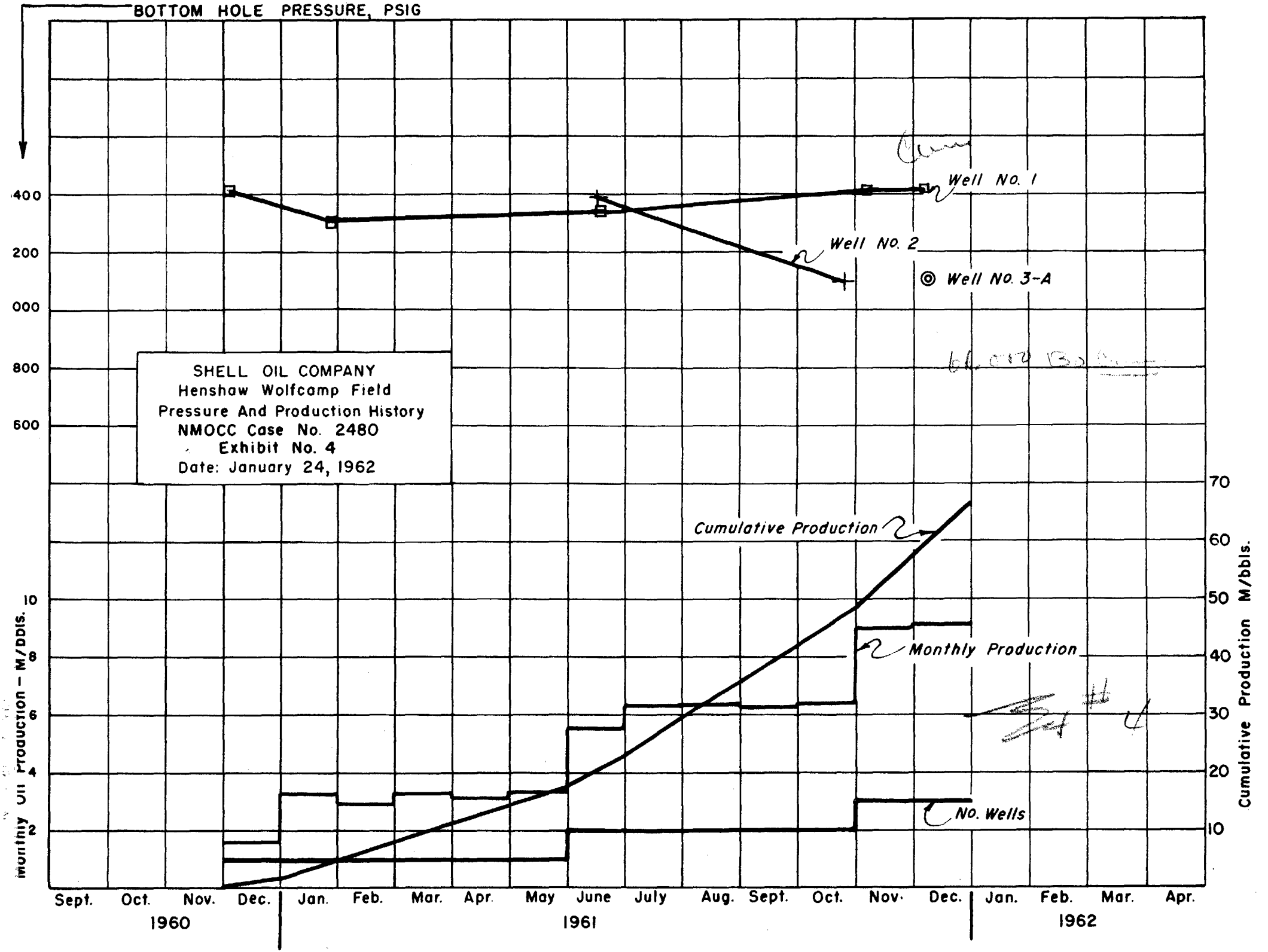
Completion Data

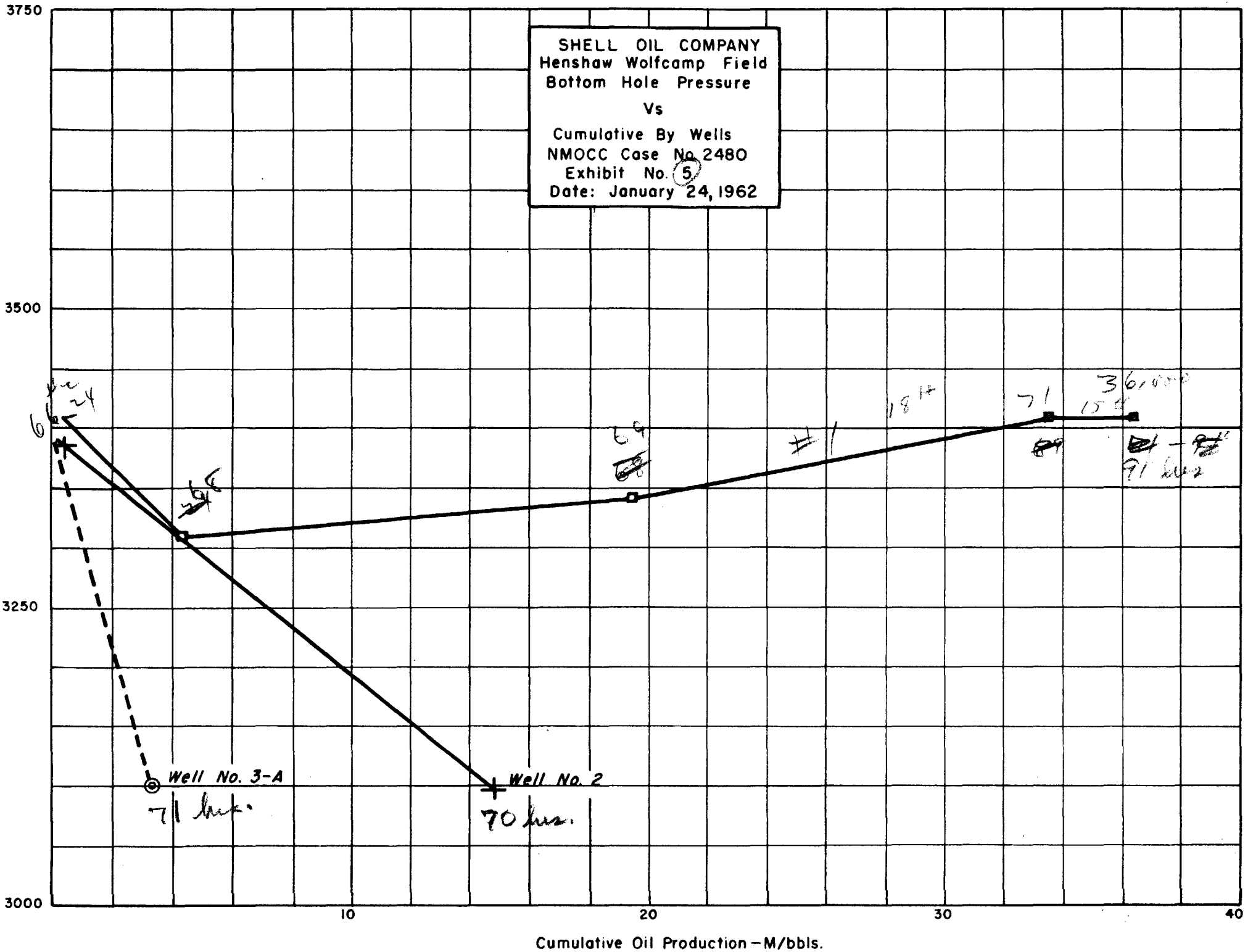
Formation	Permian Wolfcamp Limestone		
Well No.	1	2	3A
Total Depth	13,072	10,000	9,610
Top Wolfcamp	7795	7792	7807
Completion Date	12-2-60	6-21-61	11-4-61
Completion Interval	8822-8830	8753-8763	8711-8740
Treatment	250 Gal Acid	500 Gal Acid	3500 Gal Acid
Initial Potential			
Potential (BOPD)	171	127	136
Choke size	18/64	11/64	20/64
GOR	1377	1770	1501
Tubing Pressure	360	875	225
Casing Pressure	Packer	Packer	Packer
Oil Gravity (^{o}API)	36	41^{o}	41^{o}

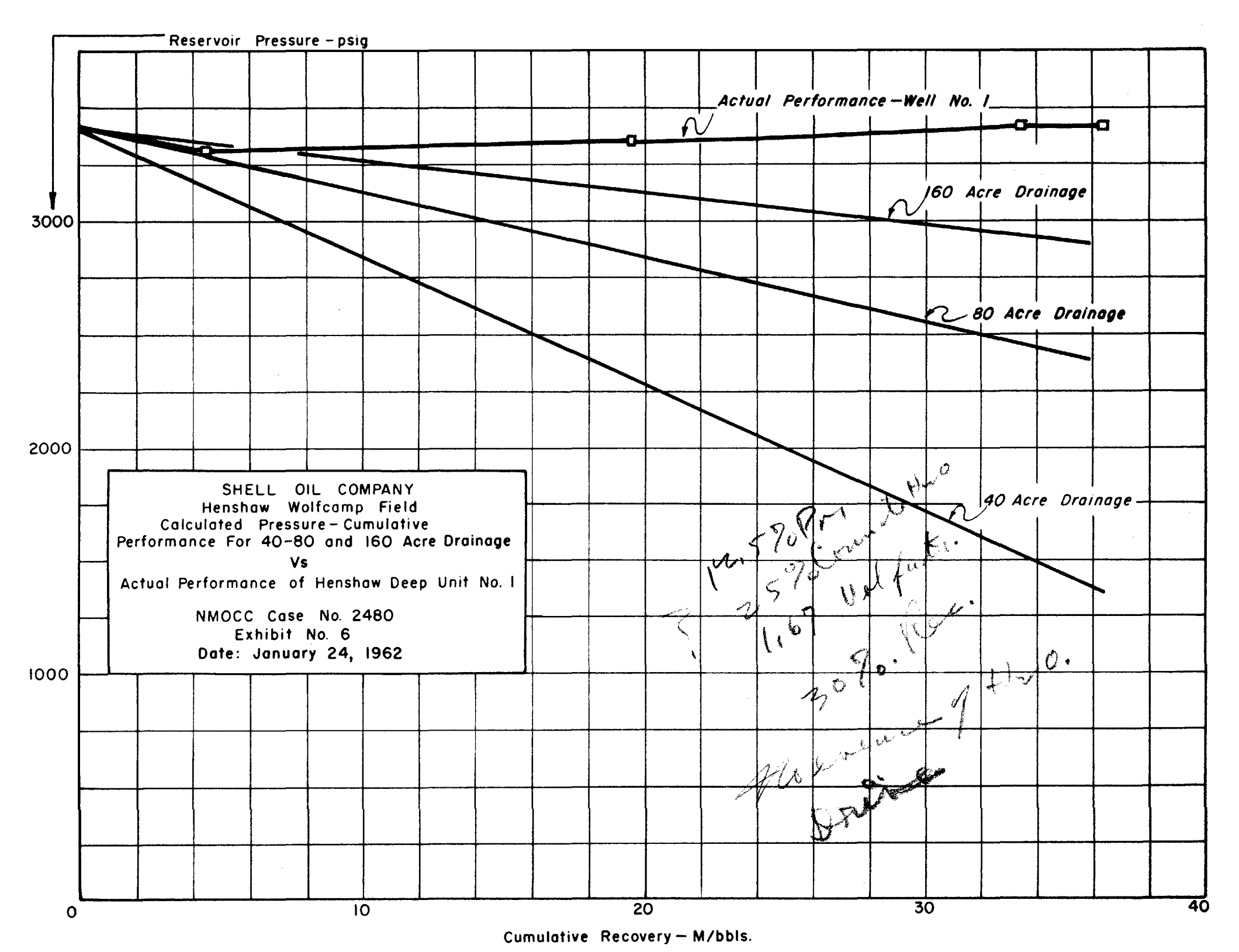
Reservoir Characteristics

Porosity	- - -	- - -	12 1/2
Permeability	- - -	- - -	2 md
Water Saturation	- - -	- - -	25
Net Pay	10	14	7
Reservoir Temperature	126^{o}	126^{o}	126^{o}
Original Reservoir Pressure	3410	3390	3390 est.
Probable Reservoir Mechanism	Solution Gas	Solution Gas	Solution Gas

NMOCC Case No. 2480
Exhibit No. 3
Date: January 24, 1962


BOTTOM HOLE PRESSURE, PSIG
400
200
000
800
600
SHELL OIL COMPANY
Henshaw Wolfcamp Field
Pressure And Production History
NMOCC Case No. 2480
Exhibit No. 4
Date: January 24, 1962
Well No. 1
Well No. 2
Well No. 3-A
Cumulative Production
Monthly Production
No. Wells
Monthly Oil Production - M/Bbls.
Cumulative Production M/bbls.
10
8
6
4
2
70
60
50
40
30
20
10
Sept.
Oct.
Nov.
Dec.
Jan.
Feb.
Mar.
Apr.
May
June
July
Aug.
Sept.
Oct.
Nov.
Dec.
Jan.
Feb.
Mar.
Apr.
1960
1961
1962


SHELL OIL COMPANY
Henshaw Wolfcamp Field
Bottom Hole Pressure
Vs
Cumulative By Wells
NMOCC Case No. 2480
Exhibit No. 5
Date: January 24, 1962
3750
3500
3250
3000
10
20
30
40
Cumulative Oil Production – M/bbls.
Well No. 3-A
71 hrs.
Well No. 2
70 hrs.


Reservoir Pressure – psig
Actual Performance – Well No. 1
160 Acre Drainage
80 Acre Drainage
40 Acre Drainage
3000
2000
1000
0
10
20
30
40
Cumulative Recovery – M/bbls.
SHELL OIL COMPANY
Henshaw Wolfcamp Field
Calculated Pressure – Cumulative
Performance For 40-80 and 160 Acre Drainage
Vs
Actual Performance of Henshaw Deep Unit No. 1
NMOCC Case No. 2480
Exhibit No. 6
Date: January 24, 1962

SHELL OIL COMPANY
HENSHAW WOLFCAMP FIELD
ECONOMICS FOR 40, 60 AND 80-ACRE
WELL SPACING

1. Cost and Income Data

Operating Net Income Per Gross Barrel		
Price of oil (36° API)		$ 2.830
Gas Oil Ratio over life MCF/bbl		3.0
Gas income $/bbl		$ 0.30
Gross income per bbl		$ 3.130
Royalty and ORRI /bbl	$ 0.548	
Production and Property Taxes/bbl	0.193	
Overhead/bbl	0.184	
Operating cost/bbl	0.205	
Subtotal		$ 1.130
Operating net income per gross barrel		$ 2.000
Well cost		$157,000

2. 40-Acre Spacing

Reserves	52,000 bbls
WI net income	$104,000
Loss per well	$ 53,000
Percent Profit	0

3. 80-Acre Spacing

Reserves	104,000 bbls
WI net income	$208,000
Profit	$ 51,000
Percent Profit	32

4. 160-Acre Spacing

Reserves	208,000 bbls
WI net income	$416,000
Profit	$259,000
Percent Profit	165

30% recovery efficiency

Recovery factor? % of oil in place?

In lieu recovery

operating cost/bbl

Should decrease as size of proration unit increases

NMOCC Case No. 2480
Exhibit No. 7
Date: January 24, 1962

Special Rules and Regulations
for the Henshaw Wolfcamp Pool

Rule 1. Each well completed or recompleted in the Henshaw Lower Wolfcamp Pool or in the Wolfcamp formation within one mile of said pool, and not nearer to nor within the limits of another designated Wolfcamp Pool, shall be spaced, drilled, operated, and prorated in accordance with the Special Rules and Regulations hereinafter set forth.

Rule 2. Each well completed or recompleted in the Henshaw Wolfcamp Pool shall be located in a unit containing 80 acres, more or less, which consists of the S/2, N/2, E/2 or W/2 of a single governmental quarter section; provided, however, that nothing contained herein shall be construed as prohibiting the drilling of a well on each of the quarter-quarter sections in the unit.

Rule 3. Each well completed or recompleted in the Henshaw Wolfcamp Pool shall not be drilled closer than 330 feet to any quarter-quarter section line.

Rule 4. For good cause shown, the Secretary-Director may grant exception to the requirements of Rule 2 without notice and hearing when the application is for a non-standard unit comprising a single quarter-quarter section or lot. All operators offsetting the proposed non-standard unit shall be notified of the application by registered mail and the application shall state that such notice has been furnished. The Secretary-Director may approve the application if, after a period of 30 days, no offset operator has entered an objection to the formation of such non-standard unit.

The allowable assigned to any such non-standard unit shall bear the same ratio to a standard allowable in the subject pool as the acreage in such non-standard unit bears to 80 acres.

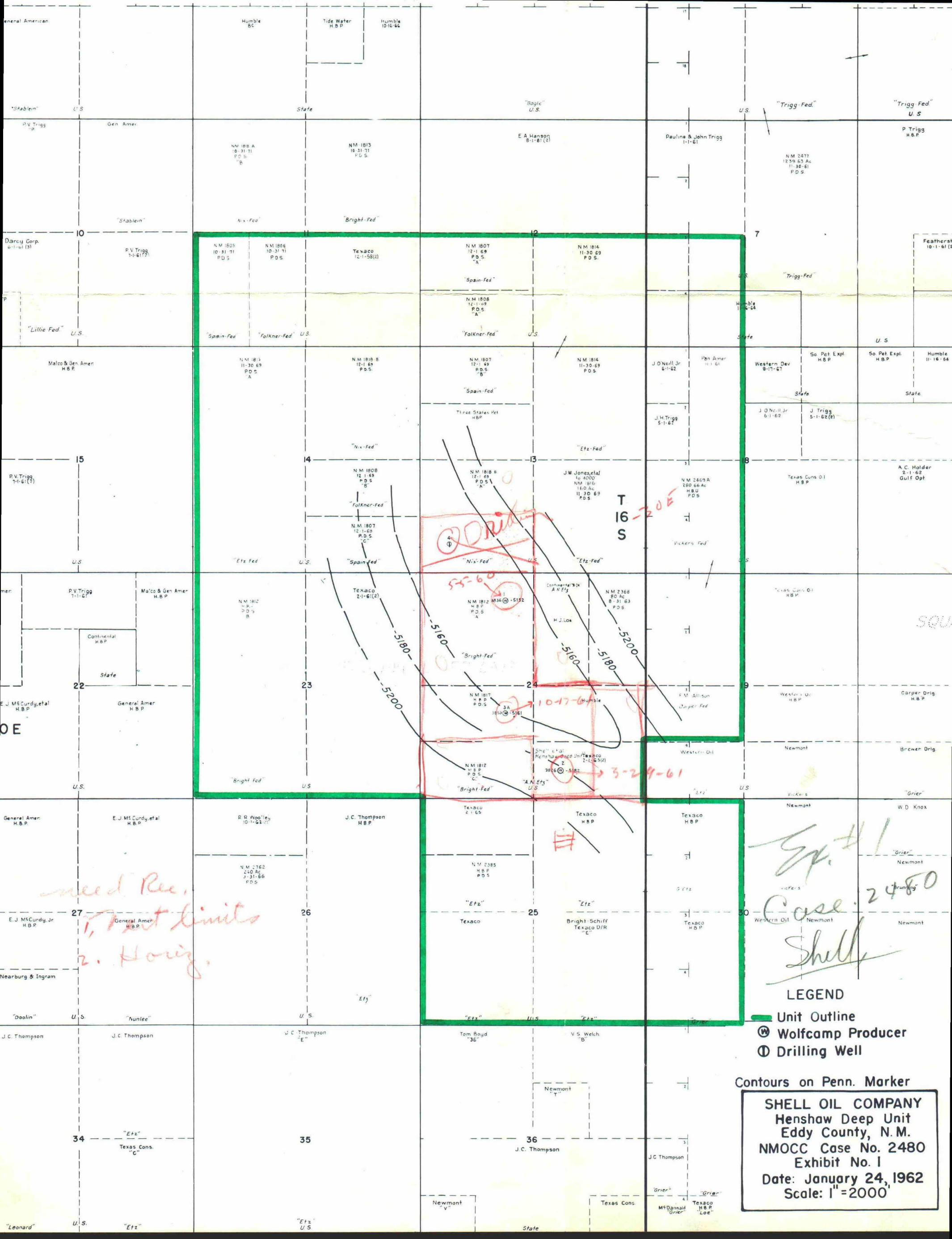
Rule 5. An 80-acre proration unit (79 through 81 acres) in the subject pool shall be assigned an 80-acre proportional factor of 4.00 for allowable purposes and in the event there is more than one well on an 80-acre proration unit, the operator may produce the allowable assigned to the unit in any proportion.

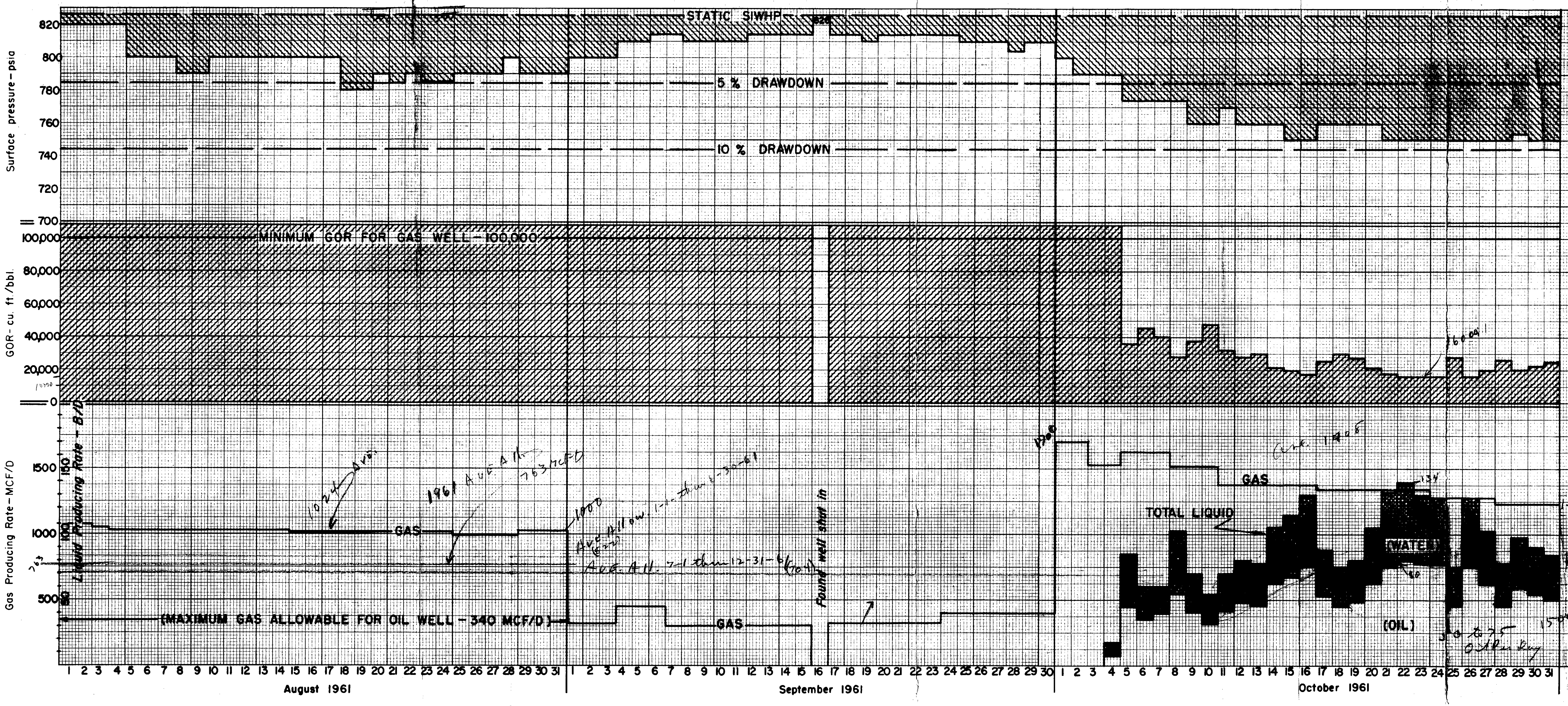
Texaco

① NE or SW/ FF

② 660 ft to FF acc. Lse

NMOCC Hearing No. 2480
Exhibit No. 8
Date: January 24, 1962


Humble BC
Tide Water H.B.P
Humble 10-16-66
"Stablein"
U.S.
State
"Bogle" U.S.
"Trigg-Fed."
U.S.
"Trigg-Fed" U.S
P.V. Trigg H.B.P
Gen. Amer.
NM 1818 A 10-31-71 P.D.S. "B"
NM 1813 10-31-71 P.D.S.
E.A. Hanson 8-1-61 (2)
Pauline & John Trigg 1-1-61
NM 2477 1239.63 Ac 11-30-61 P.D.S.
P Trigg H.B.P
"Stablein"
"Nix-Fed"
"Bright-Fed"
10
11
12
7
Darcy Corp. 6-1-61 (3)
P.V. Trigg 7-1-61 (?)
NM 1805 10-31-71 P.D.S.
NM 1806 10-31-71 P.D.S.
Texaco 12-1-58(2)
NM 1807 12-1-69 P.D.S. "A"
NM 1814 11-30-69 P.D.S.
"Spain-Fed"
"Trigg-Fed"
NM 1808 12-1-69 P.D.S. "A"
Humble 1-16-64
"Lillie Fed."
U.S.
"Spain-Fed"
"Folkner-Fed"
U.S.
State
U.S
Feathersto 10-1-61 (2)
Malco & Gen. Amer H.B.P.
NM 1815 11-30-69 P.D.S. A
NM 1818-B 12-1-69 P.D.S.
NM 1807 12-1-69 P.D.S. "B"
NM 1814 11-30-69 P.D.S.
J.O'Neill Jr 6-1-62
Pan Amer 11-1-61
Western Dev 8-17-67
So. Pet. Expl. H.B.P
So. Pet. Expl. H.B.P
Humble 11-16-64
"Spain-Fed"
State
State
Three States Pet H.B.P
J.O'Neill Jr 6-1-62
J. Trigg 5-1-62 (2)
J.H. Trigg 5-1-62
"Nix-Fed"
"Etz-Fed"
15
14
13
18
P.V. Trigg 7-1-61 (?)
NM 1808 12-1-69 P.D.S. "B"
NM 1818 B 12-1-69 P.D.S. "A"
J.W. Jones, et al 40 4000 NM 1816 160 Ac 11-30-69 P.D.S.
NM 2469 A 280.66 Ac H.B.U. P.D.S.
Texas Cons Oil H.B.P
A.C. Holder 2-1-62 Gulf Opt
"Folkner-Fed"
NM 1807 12-1-69 P.D.S. "C"
T 16 S
R 30 E
Vickers Fed
"Etz Fed"
U.S.
"Spain-Fed"
"Nix-Fed"
U.S.
"Etz-Fed"
U.S.
P.V. Trigg 7-1-61
Malco & Gen Amer H.B.P
Texaco 2-1-61(2)
NM 1812 H.B.P. P.D.S. B
NM 1812 H.B.P P.D.S. "A"
NM 2368 80 Ac 8-31-63 P.D.S
Continental H.B.P
State
H.J. Loe
Texas Cons Oil H.B.P
22
23
24
19
E.J. McCurdy, et al H.B.P
General Amer H.B.P
NM 1817 H.B.P P.D.S.
Humble
F.M. Allison
Carper Fed
Western Oil H.B.P
Carper Drlg. H.B.P
"Bright Fed"
U.S
"Bright-Fed"
U.S.
"A" Etz
U.S
"Etz"
U.S
Western Oil
Newmont
Brewer Drlg.
Texaco 2-1-65
Texaco H.B.P
Texaco H.B.P
Vickers
Newmont
"Grier"
W.D. Knox
General Amer H.B.P.
E.J. McCurdy, et al H.B.P.
R.R. Woolley 10-1-62 (2)
J.C. Thompson H.B.P.
NM 2762 240 Ac 3-31-66 P.D.S.
NM 2385 H.B.P P.D.S.
"Etz"
"Etz"
G Etz
"Brunning"
27
26
25
30
E.J. McCurdy Jr H.B.P.
General Amer H.B.P.
Texaco
Bright-Schiff Texaco D/R "E"
Texaco H.B.P
Western Oil
Newmont
Newmont
Nearburg & Ingram
"Etz"
"Doolin"
U.S.
"Nunlee"
U.S.
U.S.
"Etz"
U.S.
"Etz"
"Grier"
J.C. Thompson
J.C. Thompson
J.C. Thompson "E"
Tom Boyd "36"
V.S. Welch "B"
Newmont "T"
34
35
36
J.C. Thompson
"Etz"
Texas Cons. "C"
J.C. Thompson
"Grier"
Newmont "V"
Texas Cons.
McDannald "Grier"
Texaco H.B.P. "Loe"
"Leonard"
U.S.
"Etz"
"Etz" U.S
State
-5160
-5180
-5200
-5160
-5180
-5200
55-60
10-17-61
3-24-61
need Rec.
1. Pool limits
2. Horiz.
Exp. #1
Case 2480
Shell
LEGEND
Unit Outline
Wolfcamp Producer
Drilling Well
Contours on Penn. Marker
SHELL OIL COMPANY
Henshaw Deep Unit
Eddy County, N.M.
NMOCC Case No. 2480
Exhibit No. 1
Date: January 24, 1962
Scale: 1" = 2000'



PRODUCTION TESTS
Shell State A-1
Jalmat Field
Lea County, N. M.
1961