Case No
3351

Large Exhibits

A

ODESSA NAT.
Dooley-Federal #1
Elev. 3325'

PAN AM.
Emperor Oil Co.-Federal #1
Elev. 3359'

PAN AM.
Big Eddy Unit #3
Elev. 3463'

A'

3.4 Miles

5.7 Miles

GETTY (MORROW) GAS POOL

DOS HERMANOS (MORROW) GAS POOL

DST NO.1

DST NO.2

DST NO.3

DST NO.4

DST NO.1

DST NO.2

DST NO.3

Top of Strawn

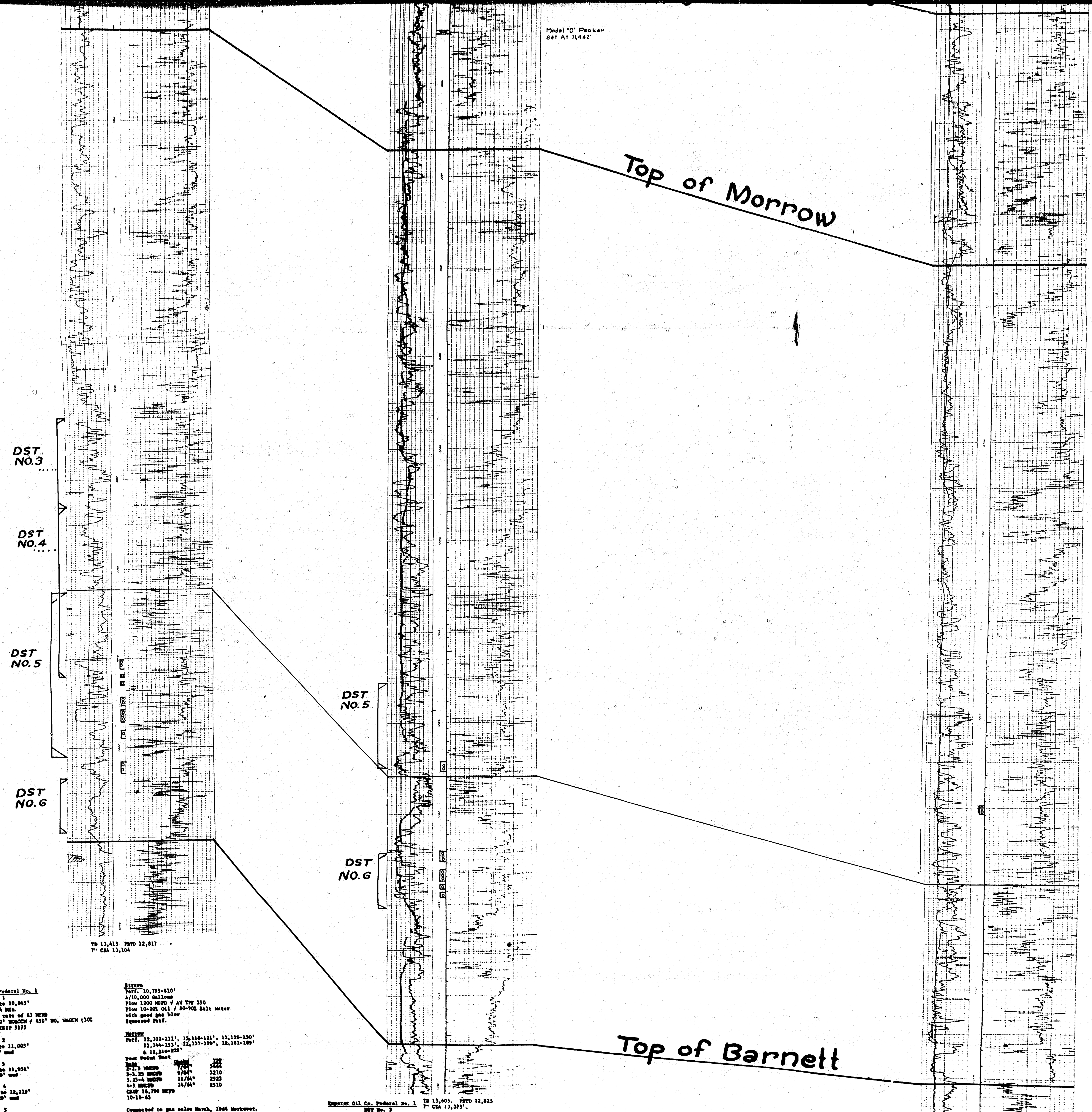
Top of Atoka

Top of Morrow

-8000

-8000

Model "D" Packer
Set At 11,442'



TD 13,415 PBTD 12,817
7" CSA 13,104

Dooley Federal No. 1
DST No. 1
10,744 to 10,843'
GTS in 4 Min.
Flow at rate of 63 MCFD
Rec. 400' HO&GCM ✓ 450' HO, W&GCM (30% Wtr.) ISIP 5175

DST No. 2
10,922 to 11,005'
Rec. 30' mud

DST No. 3
11,832 to 11,931'
Rec. 130' mud

DST No. 4
11,928 to 12,119'
Rec. 120' mud

DST No. 5
12,025 to 12,210'
Gas flow rates as follows:
1st Hr. Flow 18,700 MCFD 1" Choke TP 300
2nd Hr. Flow 9,362 MCFD 1/2" Choke TP 1600
3rd Hr. Flow 3533 MCFD 1/4" Choke TP 2600
ISIP 4000 psi

DST No. 6
12,[illegible] to 12,[illegible]'
Flow [illegible]
ISIP 5[illegible] psi

Strawn
Perf. 10,795-810'
A/10,000 Gallons
Flow 1200 MCFD ✓ AW TPF 350
Flow 10-20% Oil ✓ 80-90% Salt Water with good gas blow
Squeezed Perf.

Morrow
Perf. 12,102-111', 12,118-121', 12,126-130'
12,144-153', 12,157-170', 12,181-189'
& 12,216-229'
Four Point Test

Rate	Choke	TPF
2-2.5 MMCFD	7/64"	3444
3-3.25 MMCFD	9/64"	3210
3.25-4 MMCFD	11/64"	2923
4-5 MMCFD	14/64"	2510

CAOF 16,700 MCFD
10-18-63

Connected to gas sales March, 1964 Workover, 1964.
Reperf. & acidized with 20,000 Gallons
Reported Test 1965
500 to 700 MCFD, ✓ 2 BOPD ✓ 25 to 35 BWPD
TPF 400-450
Cum. Prod. 10-1-65: 353,211 MCF & 1242 BC

Emperor Oil Co. Federal No. 1
TD 13,605. PBTD 12,825
7" CSA 13,375'.

DST No. 3
10,967 to 11,080'
GTS 1 Hr. 30 Min. TSTM
Rec. 4700 GCM
ISIP 5046

DST No. 4
10,978 to 11,093'
Flow 350 to 360 MCFD
Rec. 270' [illegible] ✓ 350' SW
ISIP 5393'

DST No. 5
12,155 to 12,348'
Stabilized at 3000 MCFD TPF 3450
Rec. 5' Cond. ✓ 10' Wtr.
ISIP 5063

DST No. 6
12,342 to 12,402'
Flow 392 MCFD TPF 25
Rec. 200' Gas & Wtr. cut mud
ISIP 5046

Strawn
Perf. 11,070-90', & 11,098-113'
A/1000 Gallons
Last Test flowed 167 BO ✓ 194 BW
In 24 Hrs. GOR 11,630 Gr. 37.4° API
Squeezed
Perf. 11,070-90'
A/2500
Last Test Flow 23 BO ✓ 62 BW in 24 Hr.
GOR 30,000
Squeezed
Set Model D Pkr @ 11,442'

Morrow
Perf. 12,262-52', 12,340-51', 12,362-73'
12,376-81' & 12,385-91' differentially
CAOF 13,600 MCFPD ✓ 8 Bbls. Cond. Per MMCF
5-1-65
Connected to Sales 6-7-65
Cum. Prod. 11-1-65: 240,861 MCF & 3826 BC

Big Eddy Unit No. 3
TD 13,091 PBTD 12,475'
5-1/2" CSA 12,530

DST No. 1
11,145 to 11,267'
Recovered 10' mud

DST No. 2
11,270 to 11,362'
Recovered 1500' oil ✓ 140' mud
ISIBHP 5494 psi

DST No. 3
11,359 to 11,464'
Recovered 200' OCM

Morrow
Perf. 12,385-485'
A/1300 gallons
Flow 180 MCFD thru 2" open line
Bridge plug set at 11,530'

Strawn
Perf. 11,336-34'
IPF 115 BO ✓ 25 BWPD
GOR 2500 Gr. 45° API
5-11-64
Workover June 29, 1964
Perf. 11,316-23'
A/20,000 Gallons
[illegible] Flow 39 BOPD ✓ 7 BWPD
[illegible] Flow 47 BOPD ✓ 8 BWPD
Test 3-26-65
Pump 9 BOPD ✓ 2 BWPD
Cum. Prod. 8573 BO
[illegible] 9-21-65

PAN AMERICAN PETROLEUM CORP.
LUBBOCK DISTRICT
CROSS SECTION FOR
DOS HERMANOS (MORROW) GAS POOL AREA
EDDY CO., NEW MEXICO
Vertical Scale ~ 1" = 40'
Horizontal Scale ~ 1" = 2000'

Attachment III

ATTACHMENT IV
RESERVOIR AND PRODUCTION DATA
PAN AMERICAN'S EMPEROR OIL COMPANY FEDERAL WELL NO. 1
DOS HERMANOS (MORROW) GAS POOL
EDDY COUNTY, NEW MEXICO

RESERVOIR DATA

Net Pay, Feet	40
Est. Effective Net Pay, Feet	14
Average Porosity, %	7.3
Est. Water Saturation, %	25
Producing Mechanism	Pressure Depletion
Lithology	Medium to coarse grain angular quartz sandstone
Gas-Water Contact	Not Defined
Reservoir Temperature, °F	176
Initial Pressure, psi and Datum, Feet	5104 @ -8889
Abandonment Pressure, psi and Datum, Feet	1000 @ -8889
Recoverable Gas, MCF/Ac. Ft.	523

PRODUCTION DATA

Date	Bbls. Condensate	MCF Gas
5-65	391	136
6-65	146	17,580
7-65	94	19,360
8-65	492	36,321
9-65	787	90,264
10-65	914, est.	105,000, est.
Cum. 11-1-65	2,824	268,861

Produced Gas-Liquid Hydrocarbon Ratio: 95.2 MCF/Bbl.

N.M.O.C.C. MICROGRAPHICS
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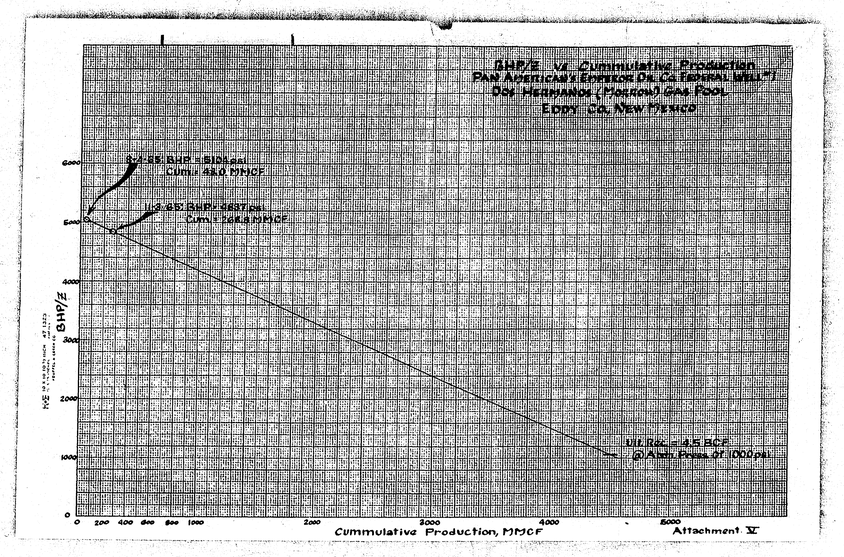


U.S.N.M.G.F. MICROGRAPHICS

ATTACHMENT VI
ECONOMIC COMPARISON FOR DEVELOPMENT WELLS
DOS HERMANOS (MORROW) GAS POOL
EDDY COUNTY, NEW MEXICO

	320 ACRES	640 ACRES
RESERVES		
Gas, MCF	2,250,000	4,500,000
Condensate, Bbls.	23,500	47,000
VALUE		
Gas, $/MCF	0.15	0.15
Condensate, $/bbl.	2.73	2.73
GROSS W.I. INCOME*		
Gas, $	278,000	556,000
Condensate, $	52,800	106,000
Total, $	330,800	662,000
INVESTMENT		
Well, $	200,000	200,000
Lease Equipment, $	15,000	15,000
Total, $	215,000	215,000
OPERATING EXPENSE, $**	37,525	70,150
PROFIT PER WELL, $	78,275	376,850
PAYOUT, MONTHS	35	35
PRODUCTION DURING PAYOUT		
MCFPD	1,500	1,500
BCPD	16	16
RETURN ON INVESTMENT	0.4	1.8

*Less 12.5% Royalty plus 5% ORI.

**Includes taxes of 6.3%, Operating Expense of $125/Month, Condensate Trucking Cost of $0.18 per barrel, and Workover Costs of $5,000.

W.N.M.C.P. MICROGRAPHICS
BEST AVAILABLE COPY

ATTACHMENT VII
SUGGESTED TEMPORARY RULES AND REGULATIONS
FOR THE
DOS HERMANOS (MORROW) GAS POOL
EDDY COUNTY, NEW MEXICO

RULE 1. Each well completed or recompleted in the Dos Hermanos Morrow Gas Pool or in the Morrow formation within one mile of the Dos Hermanos Morrow Gas Pool, and not nearer to or within the limits of another designated Morrow pool, shall be spaced, drilled, operated, and produced in accordance with the Rules and Regulations hereinafter set forth.

RULE 2. Each well completed or recompleted in the Dos Hermanos Morrow Gas Pool shall be located on a standard proration unit containing 640 acres, more or less, consisting of a single governmental section.

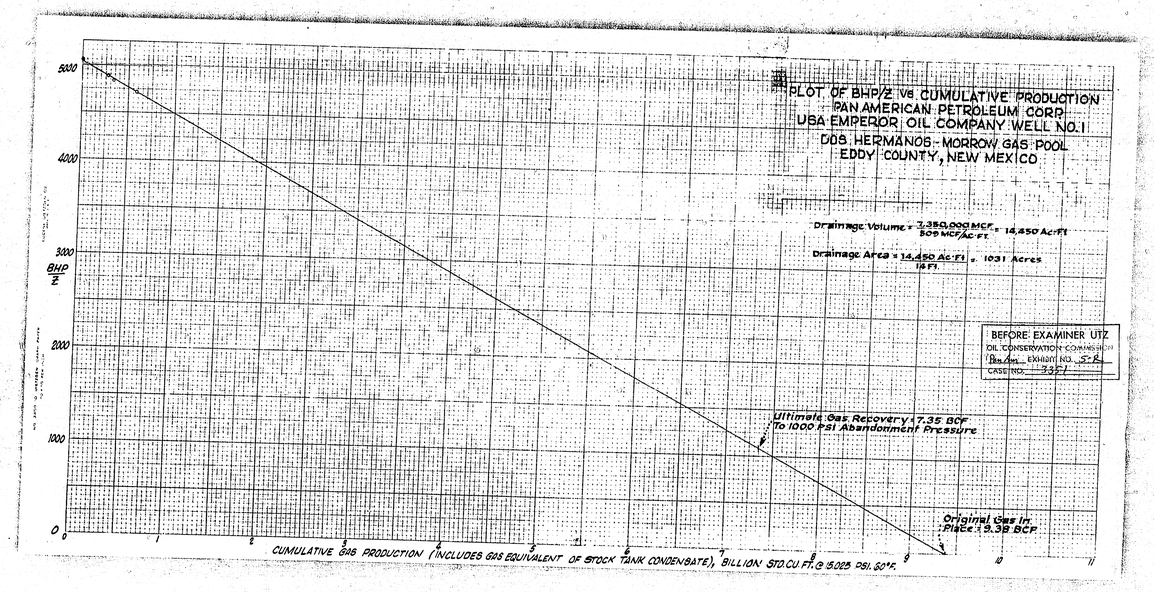
RULE 3. Each well completed or recompleted in the Dos Hermanos Morrow Gas Pool shall be located no nearer than 330 feet to any governmental quarter section line of the SW/4 NE/4, NW/4 SE/4, NE/4 SW/4, or SE/4 NW/4 of the section.

RULE 4. For good cause shown, the Secretary-Director of the Commission may grant an exception to the requirements of Rule 2 without notice and hearing when the application is for a non-standard unit comprising less than 640 acres. All operators offsetting the proposed non-standard unit shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Secretary-Director of the Commission 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.

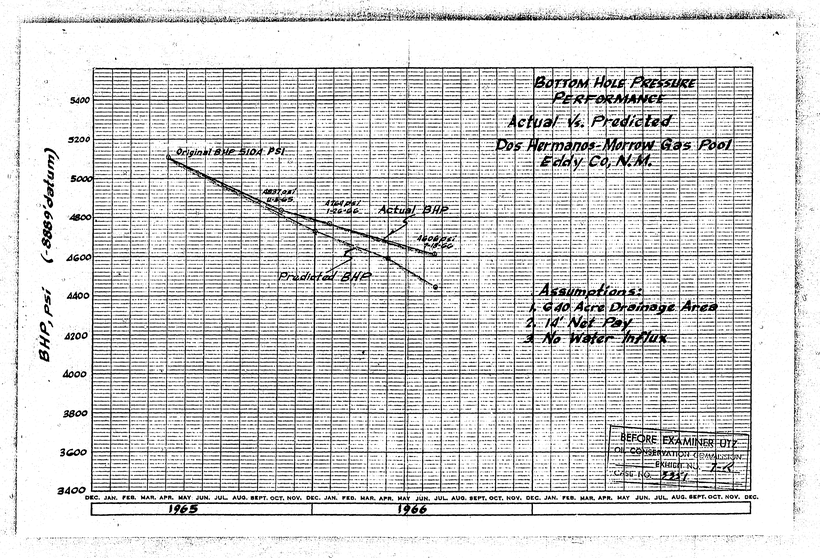
U.S.B.L.M. MICROGRAPHICS

RULE 5. The Secretary-Director may grant an exception to the footage requirements of Rule 4 without notice and hearing when an application has been filed for an unorthodox location necessitated by topographical conditions or the recompletion of a well previously drilled to another horizon, provided the well will be located no nearer than 330 feet to the outer boundary of the unit. All operators offsetting the proposed unorthodox location shall be notified of the application by registered or certified mail, and the application shall state that such notice has been furnished. The Secretary-Director may approve the application upon receipt of written waivers from all offset operators or if no offset operator has entered an objection to the unorthodox location within 20 days after the Secretary-Director has received the application.

V.R.R.C.F. MICROGRAPHICS



U.S.B.C.F. MICROGRAPHICS



V.R.R.C.F. MICROGRAPHICS
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A

ODESSA NAT.
Dooley-Federal #1
Elev. 3325'

PAN AM.
Emperor Oil Co.-Federal #1
Elev. 3359'

PAN AM.
Big Eddy Unit #3
Elev. 3463'

A'

GETTY-MORROW GAS POOL

3.4 Miles

5.7 Miles

DST NO.1

DST NO.2

DST NO.3

DST NO.4

DOS HERMANOS - MORROW GAS POOL

Top of Strawn

-8000

Top of Atoka

Model "D" Packer
Set At 11,442'

Top of Morrow

DST NO.1

DST NO.2

DST NO.3

-8000

Top of Morrow

DST NO.3

DST NO.4

DST NO.5

DST NO.6

DST NO.5

DST NO.6

Top of Barnett

TD 13,415 PBTD 12,617
7" CSA 13,104

Bailey Federal No. 1
DST No. 1
10,744 to 10,845'
ITE in 5 Min.
Flow at rate of 43 MCFD
Rec. 600' MSGCM (50% mud.) SIP 5175

DST No. 2
10,922 to 11,005'
Rec. 367' mud

DST No. 3
11,832 to 11,931'
Rec. 130' mud

DST No. 4
11,938 to 12,119'
Rec. 130' mud

DST No. 5
12,021 to 12,216'
Gas flow rates as follows:
1st Hr. Flow 11,700 MCFD 1" Choke TP 800
2nd Hr. Flow 9,261 MCFD 1/2" Choke TP 1600
3rd Hr. Flow 3535 MCFD 1/4" Choke TP 2640
SIP 4650 psi

DST No. 6
12,204 to 12,309'
Rec 5000 MSW
SIP 3625 psi

Morrow
Perf. 10,799-816'
A/10,000 Gallons
Flow 1200 MCFD / AU TTP 350
Flow 10-20% Oil / No-Pod Salt Water
with good gas blow
Squeezed Perf.

Morrow
Perf. 12,103-111', 12,118-121', 12,126-136'
12,144-153', 12,157-178', 12,181-189'
& 12,216-225'

Four Point Test

MCFD	Choke	TTP
3-31.25 MCFD	7/64"	3320
3.25-4 MCFD	9/64"	3310
4-5 MCFD	11/64"	3310
CAOF 16,700 MCFD	14/64"	3310
10-16-63		

Connected to gas sales March, 1964 Workover, 1964.
Report. & acidized with 20,000 Gallons
Reported Test 1965
200 to 700 MCFPD, / 2 MCFPD 25 to 35 BWPD
TTP 600-650
Cum. Prod. 10-1-66: 461,117 MCF, 1665 BC

Avg 9216 MCF/Mo. and 27 BC/Mo., first 9 months of 1966

TD 13,605 PBTD 12,625
7" CSA 13,375'.

Reserve Oil Co. Federal No. 1
DST No. 3
10,947 to 11,004'
GTS 1 Hr. 30 Min.
Rec. 1700 MW
SIP 3042

DST No. 4
10,979 to 11,095'
Flow 330 to 350 MCFD
Rec. 270' Water / 270' SW
SIP 3303

DST No. 5
11,157 to 11,264'
Stabilized at 2000 MCFD TTP 2600
Rec. 5' Mud / 10' SW.
SIP 3063

DST No. 6
11,342 to 11,407'
Flow 300 MCFD TTP 50
Rec. 2040' SW & 120' mud cut
SIP 3906

Morrow
Perf. 11,020-040', & 11,080-112'
A/5000 Gallons
Last Test Elected 107 BO / 104 BW
in 24 Hrs. GOR 11,030 Gr. 37.6° API
Squeezed
Perf. 11,070-90'
A/1500
Last Test Flow 23 BO / 62 BW in 24 Hr.
GOR 10,000
Squeezed
Set Model D Pkr @ 11,662'

Morrow
Perf. 12,343-52', 12,366-76', 12,382-73'
12,376-81' & 12,385-91' dilkmeasurably
CAOF 13,000 MCFPD / 0 Hole. Cond. Per MMCF
5-2-63
Connected to Sales 6-7-63
Cum. Prod. 11-1-66: 758,184 MCF, 6760 BC

TD 13,091 PBTD 13,473'
5-1/2" CSA 13,330

PAN AMERICAN PETROLEUM CORP
LUBBOCK DISTRICT
CROSS SECTION FOR
DOS HERMANOS-MORROW-GAS POOL AREA
EDDY CO, NEW MEXICO
Vertical Scale-1"=40'
Horizontal Scale-1"=2000'

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 3A
CASE NO. 3351

U.S.N.C.F. MICROGRAPHICS
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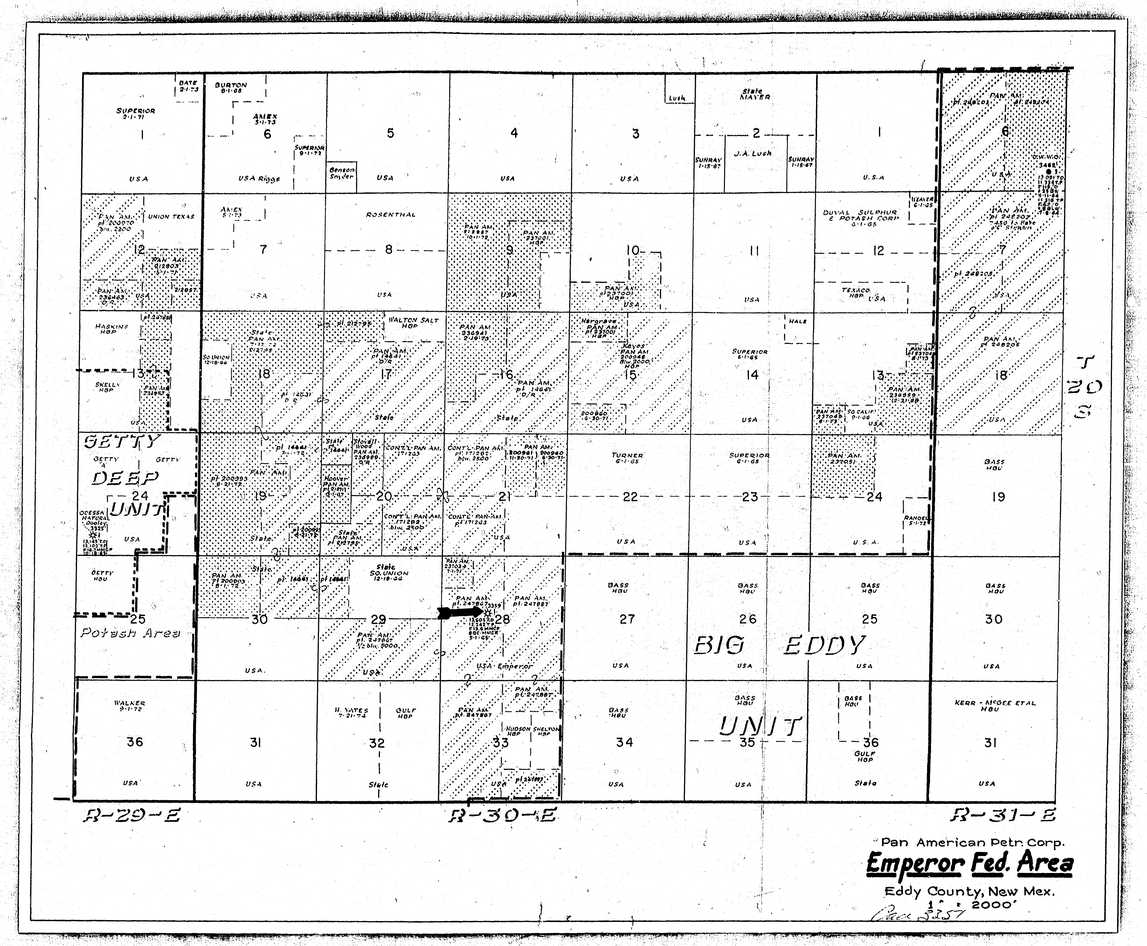

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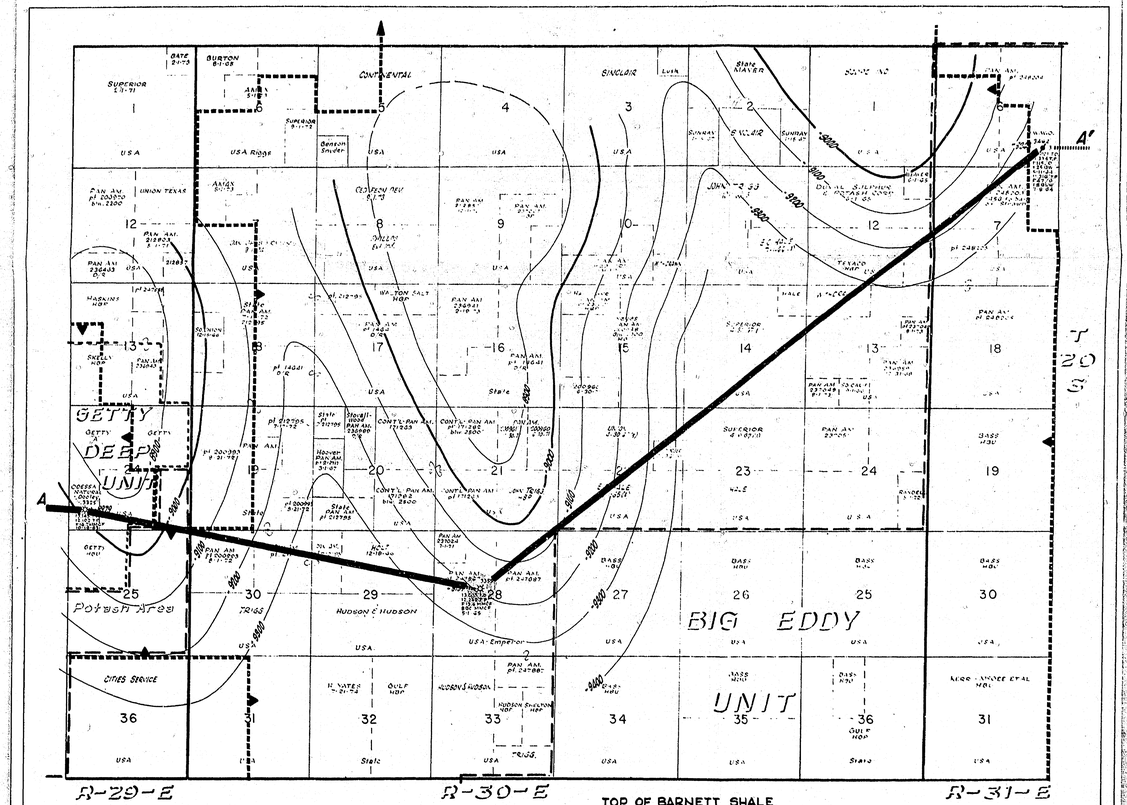


TOP OF BARNETT SHALE
C.I. = 100'

POTASH AREA

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 1-A
CASE NO. 5117

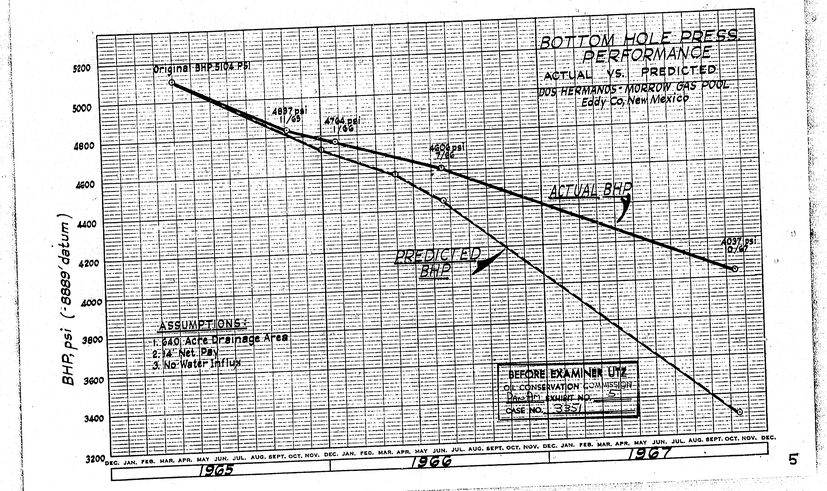
Pan American Petr. Corp.

DOS HERMANOS - MORROW-GAS POOL AREA

Eddy County, New Mex.

1" = 2000'

V.E.N.C.P. MICROGRAPHICS



5

U.S.B.C.P. MICROGRAPHICS
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DRAINAGE AREA AND ECONOMIC CALCULATIONS
DOS HERMANOS ESTRADA GAS POOL
EDDY COUNTY, NEW MEXICO

DRAINAGE AREA CALCULATIONS

Reserves from BHP/z vs. Cum. Prod. Curve = 9.5 BCF

Gas Recovery per Acre Foot = 550 MCF

Net Effective Pay = 16 feet

Drainage Area of Emperor Oil Co. Fed. Gas Com. No. 1 =

$$\frac{8,500,000 \text{ MCF}}{550 \text{ MCF/Ac-Ft} \times 16 \text{ Ft}} = 1,234 \text{ acres}$$

640 Acre Reserves = $\frac{640 \text{ Acres}}{1234 \text{ Acres}} \times 9.5 \text{ BCF} = 4.9 \text{ BCF}$

320 Acre Reserves = $\frac{320 \text{ Acres}}{1,234 \text{ Acres}} \times 9.5 \text{ BCF} = 2.5 \text{ BCF}$

ECONOMIC CALCULATIONS

Return on Investment for 640 acre well = 2.00
(from chart)

Return on Investment for 320 acre well = 0.33
(from chart)

Payout = 35 months at 1.5 MMCFD

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
Pan Am EXHIBIT NO. 6
CASE NO. 3351

6

U.S.D.C.P. MICROGRAPHICS
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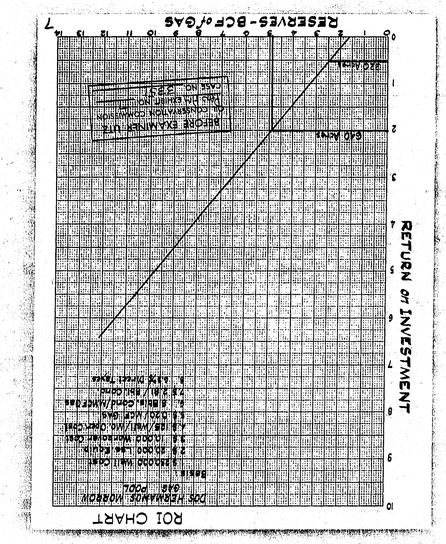
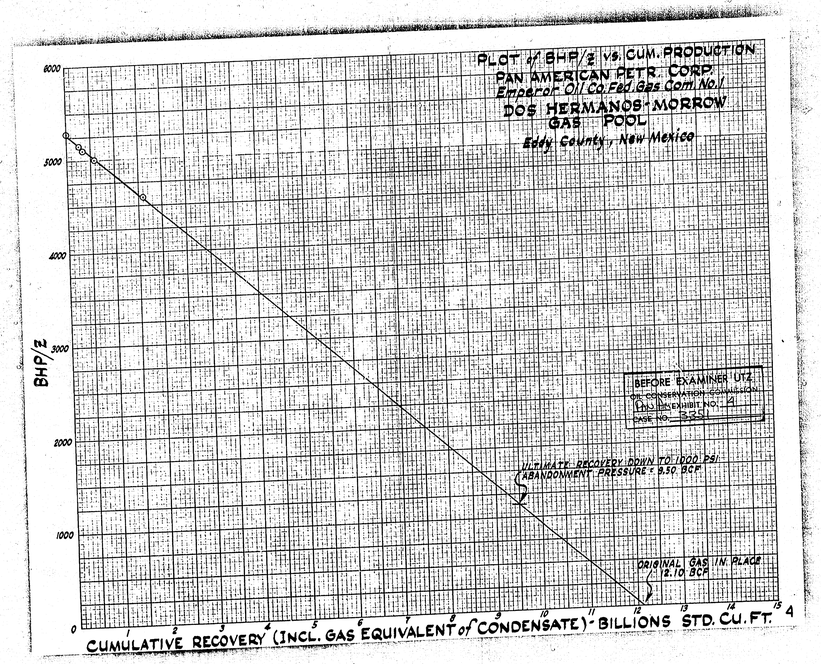

RESERVES - BCF of GAS
RETURN on INVESTMENT
ROI CHART
DOE HERMOSO MORROW
OIL POOL
BEFORE EXAMINER UTT
OIL CONSERVATION COMMISSION
EXH. NO.
CASE NO. 2331
320 Acres
640 Acres



W.M.N.C.P. MICROGRAPHICS
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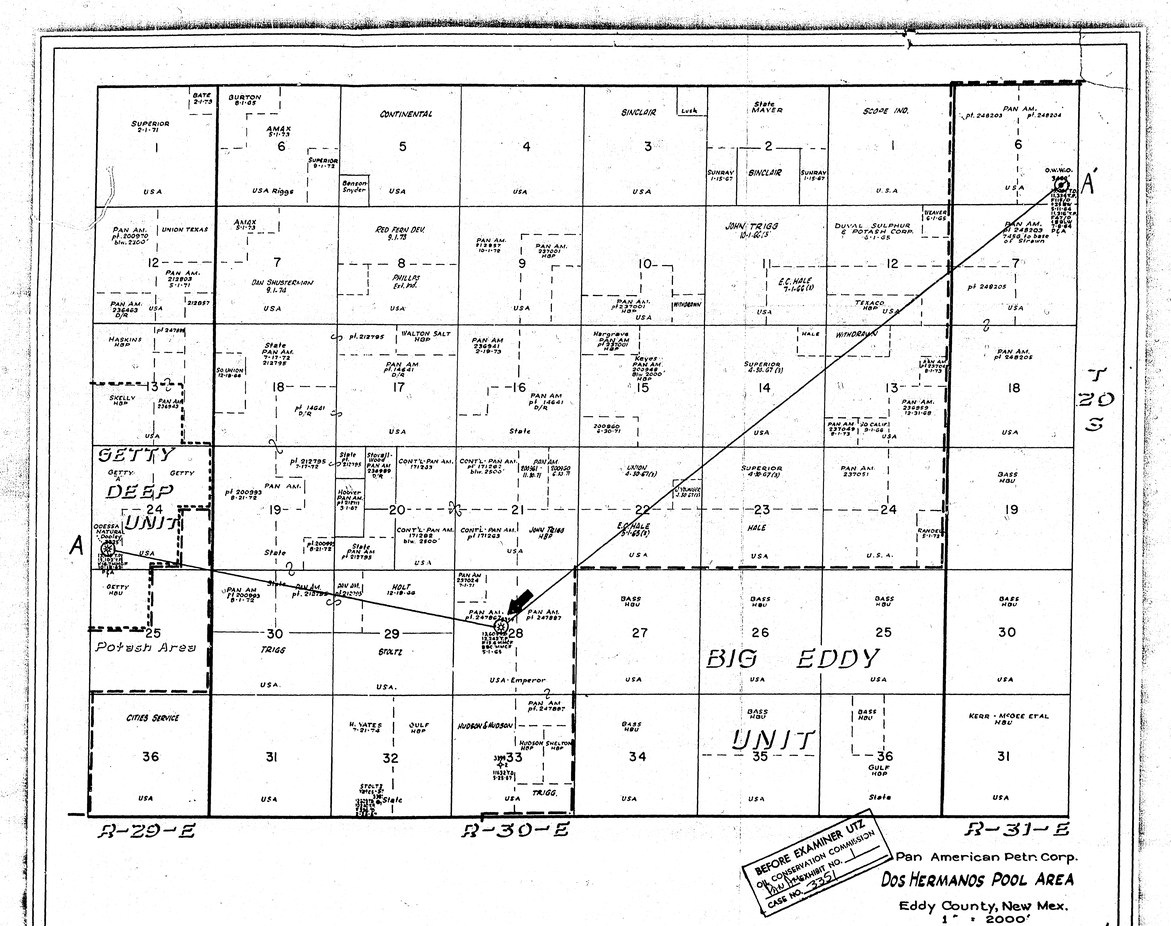


Pan American Petr. Corp.

DOS HERMANOS POOL AREA

Eddy County, New Mex.

1" = 2000'

U.S.N.C.P. MICROGRAPHICS
NOT AVAILABLE OUT

A

ODESSA NAT.
Dooley-Federal #1
Elev. 3325'

PAN AM.
Emperor Oil Co.-Federal #1
Elev. 3359'

PAN AM.
Big Eddy Unit #3
Elev. 3463'

A'

3.4 Miles

5.7 Miles

GETTY-MORROW GAS POOL

DOS HERMANOS - MORROW GAS POOL

DST NO.1

DST NO.2

DST NO.3

DST NO.4

DST NO.1

DST NO.2

DST NO.3

Top of Strawn

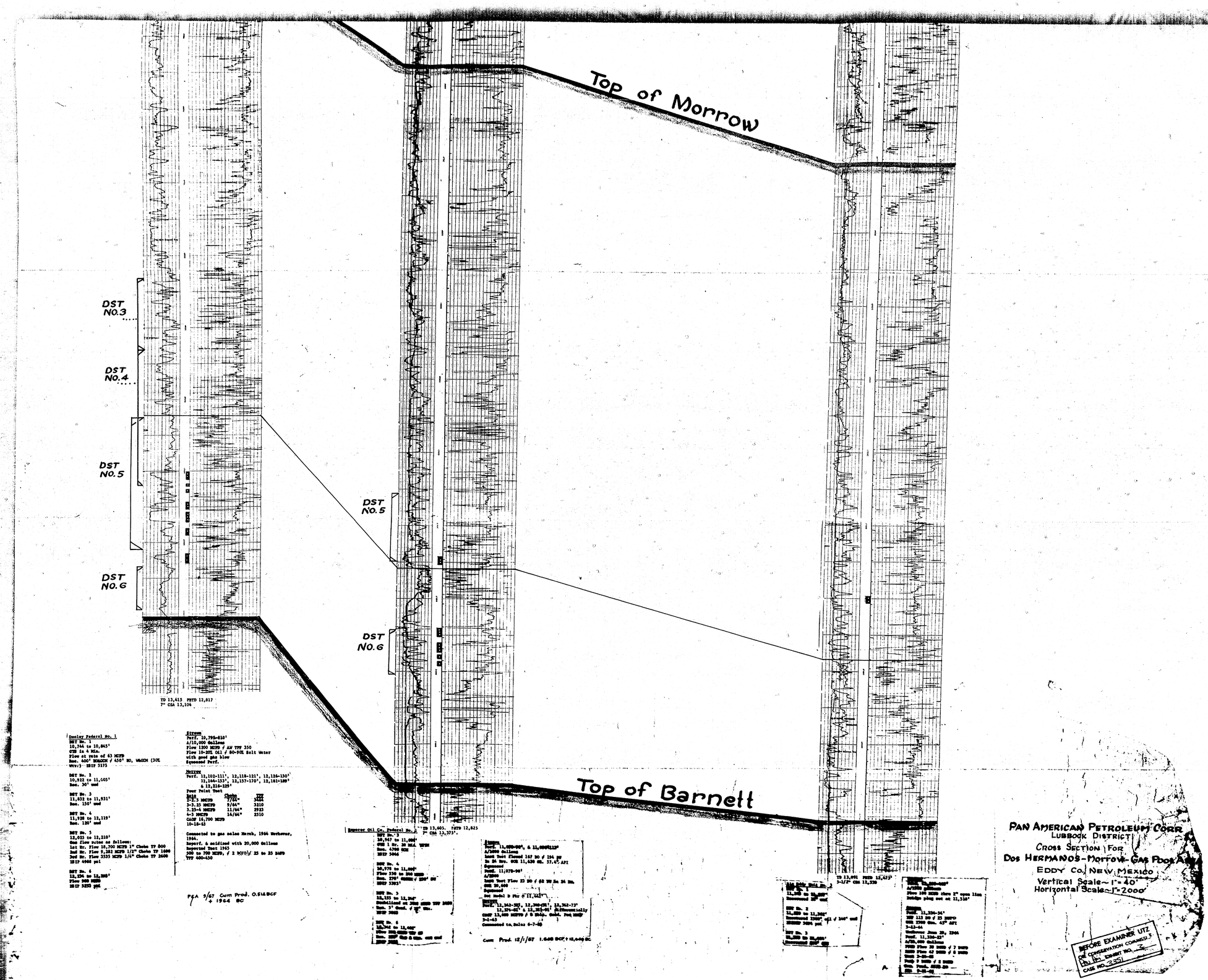
Top of Atoka

Top of Morrow

-8000

-8000

Model "D" Packer
Set At 11,442'


Top of Morrow
DST NO.3
DST NO.4
DST NO.5
DST NO.6
DST NO.5
DST NO.6
Top of Barnett
TD 13,415 PBTD 12,817
7" CSA 13,104
TD 13,491 PBTD 12,825
5-1/2" CSA 13,375'
TD 13,091 PBTD 12,675'
5-1/2" CSA 13,338
Dooley Federal No. 1
DST No. 1
10,744 to 10,845'
GTS in 4 Min.
Flow at rate of 63 MCFD
Rec. 400' HOCGCM / 450' HO, WGCCM (30% Wtr.) IHP 5173
DST No. 2
10,922 to 11,005'
Rec. 30' mud
DST No. 3
11,832 to 11,931'
Rec. 150' mud
DST No. 4
11,938 to 12,119'
Rec. 120' mud
DST No. 5
12,021 to 12,110'
Gas flow rated as follows:
1st Hr. Flow 10,700 MCFD 1" Choke TP 800
2nd Hr. Flow 9,181 MCFD 1/2" Choke TP 1600
3rd Hr. Flow 5535 MCFD 1/4" Choke TP 2600
IHP 4988 psi
DST No. 6
12,154 to 12,288'
Flow 200 MCFD
IHP 5255 psi
Strawn
Perf. 10,795-810'
A/10,000 Gallons
Flow 1300 MCFD / AM TTP 350
Flow 10-20% Oil / 80-90% Salt Water
with good gas blow
Squeezed Perf.
Morrow
Perf. 11,102-111', 12,118-121', 12,124-130'
12,144-153', 12,157-170', 12,181-189'
& 12,216-229'
Four Point Test
Rate Choke FTP
2.2 MCFD 7/64" 3325
3-3.25 MCFD 9/64" 3310
3.55-4 MCFD 11/64" 2935
4-5 MCFD 14/64" 2510
CAOF 16,700 MCFD
10-18-63
Connected to gas sales March, 1964 Workover, 1964.
Reperf. & acidized with 20,000 Gallons
Reported Test 1965
500 to 700 MCFD, F 2 MCFD/ 25 to 35 BWPD
TTP 400-450
PSA 9/67 Cum Prod. 0.5 BCF + 1964 BC
Hanover Oil Co. Federal No. 1
DST No. 1
10,957 to 11,000'
GTS 1 Hr. 20 MIN. WTSM
Rec. 4700 GCM
IHP 5064
DST No. 2
10,970 to 11,000'
Flow 350 to 360 MCFD
Rec. 2767' GCM&O / 250' HO
IHP 5393'
DST No. 3
12,135 to 12,240'
Stabilized at 3000 MCFD TTP 3600
Rec. 5' mud, 4' HO, 60' GCM
IHP 5000
DST No. 4
12,240 to 12,400'
Flow TSTM GTS in 40 min, not enough to meas.
IHP 5000
Strawn
Perf. 11,080-090', & 11,098-112'
A/500 Gallons
Load Test Flowed 167 BO / 194 BW
in 24 Hrs. 40# 11,538 MR. 37.45 API
Squeezed
Perf. 11,078-96'
A/2000
Load Test Flow 23 BO / 68 BW in 24 Hr.
GOR 10,000
Squeezed
Set Model D Pkr @ 11,325'
Morrow
Perf. 12,343-352', 12,368-78', 12,383-737'
12,376-82', & 12,392-96' Differentially
CAOF 13,000 MCFPD / 0 Bbls. Cond. Per MMCF
3-2-63
Connected to Sales 6-7-63
Cum Prod. 12/1/67 1.648 BCF + 12,649 BC
PAN AMERICAN PETROLEUM CORP.
LUBBOCK DISTRICT
CROSS SECTION FOR
DOS HERMANOS-MORROW GAS POOL
EDDY CO., NEW MEXICO
Vertical Scale ~ 1" = 40'
Horizontal Scale ~ 1" = 2000'
BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 3
CASE NO. 3351