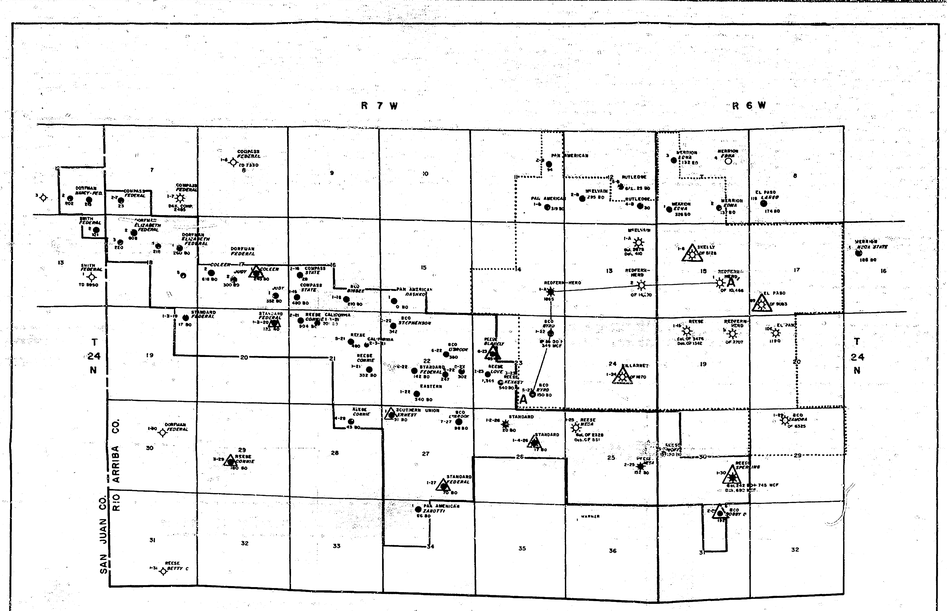
Case No.

2049

Large Exhibits

U.S.N.C.F. MICROGRAPHICS

BEST AVAILABLE COPY



DEVILS FORK—GALLUP GAS POOL

AREA MAP

RIO ARRIBA CO., NEW MEXICO

LIMITS OF ESCRITO—GALLUP POOL

LIMITS OF DEVILS FORK—GALLUP POOL

A ——— A' LINE OF CROSS SECTION

△ CORED WELL
INITIAL POTENTIAL IS SHOWN BELOW EACH WELL

SCALE: 2"=1 MILE

SEPTEMBER, 1962

VAL R. REESE AND ASSOCIATES INC.

CASE 2049
(REOPENED)
REESE EXHIBIT NO. /

U.N.M.C.F. MICROGRAPHICS
BEST AVAILABLE COPY

SCO, INC.
5-23 BYRD
SEC. 23, T-24 N — R 7 W
RIO ARRIBA CO., NEW MEXICO

1

← 3600 FEET →

SCO, INC.
1-23 BYRD
SEC. 23, T 24 N — R 7 W
RIO ARRIBA CO., NEW MEXICO

2

← 2300 FEET →

REDFERN & HERD
1-A LARGO SPUR
SEC. 14, T 24 N — R 7 W
RIO ARRIBA CO., NEW MEXICO

3

← 5150 FEET →

REDFERN & HERD
2 LARGO SPUR
SEC. 13, T 24 N — R 7 W
RIO ARRIBA CO., NEW MEXICO

4

← 4500 FEET →

REDFERN & HERD
1 LARGO SPUR
SEC. 18, T 24 N — R 6 W
RIO ARRIBA CO., NEW MEXICO

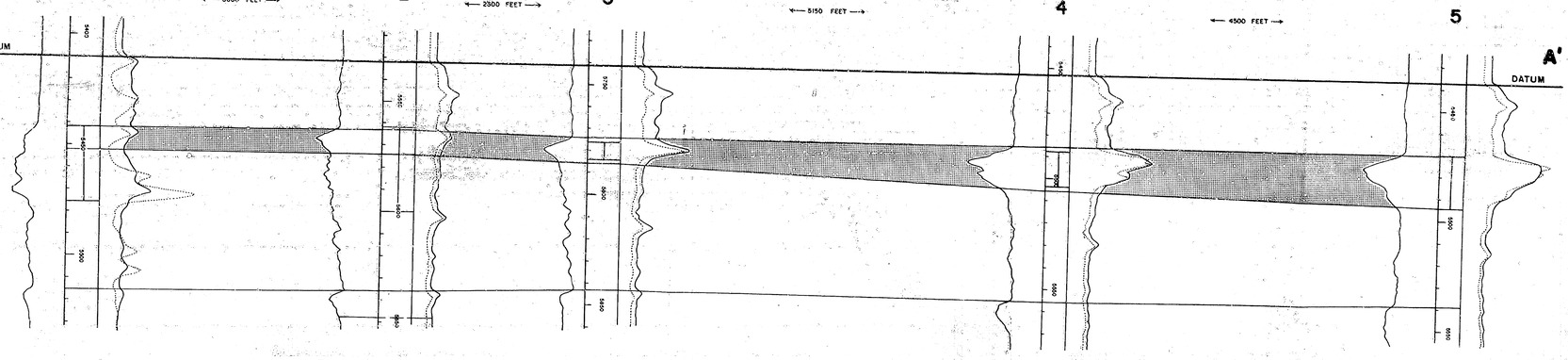
5

A

DATUM

A'

DATUM



PERFORATIONS

DEVILS FORK SAND

HORIZONTAL SCALE : 1"=500'

CROSS SECTION A—A'
DEVILS FORK—GALLUP GAS POOL
RIO ARRIBA CO., NEW MEXICO

SEPT, 1962
VAL R. REESE AND ASSOCIATES INC.

DATUM IS MARKER BED WITHIN GALLUP FORMATION
CROSS SECTION DOES NOT SHOW STRUCTURAL POSITION OF WELLS

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
CASE NO. 2049
EXHIBIT NO. 2

CASE 2049
(REOPENED)
REESE EXHIBIT NO. 2

U.N.M.C.F. MICROGRAPHICS
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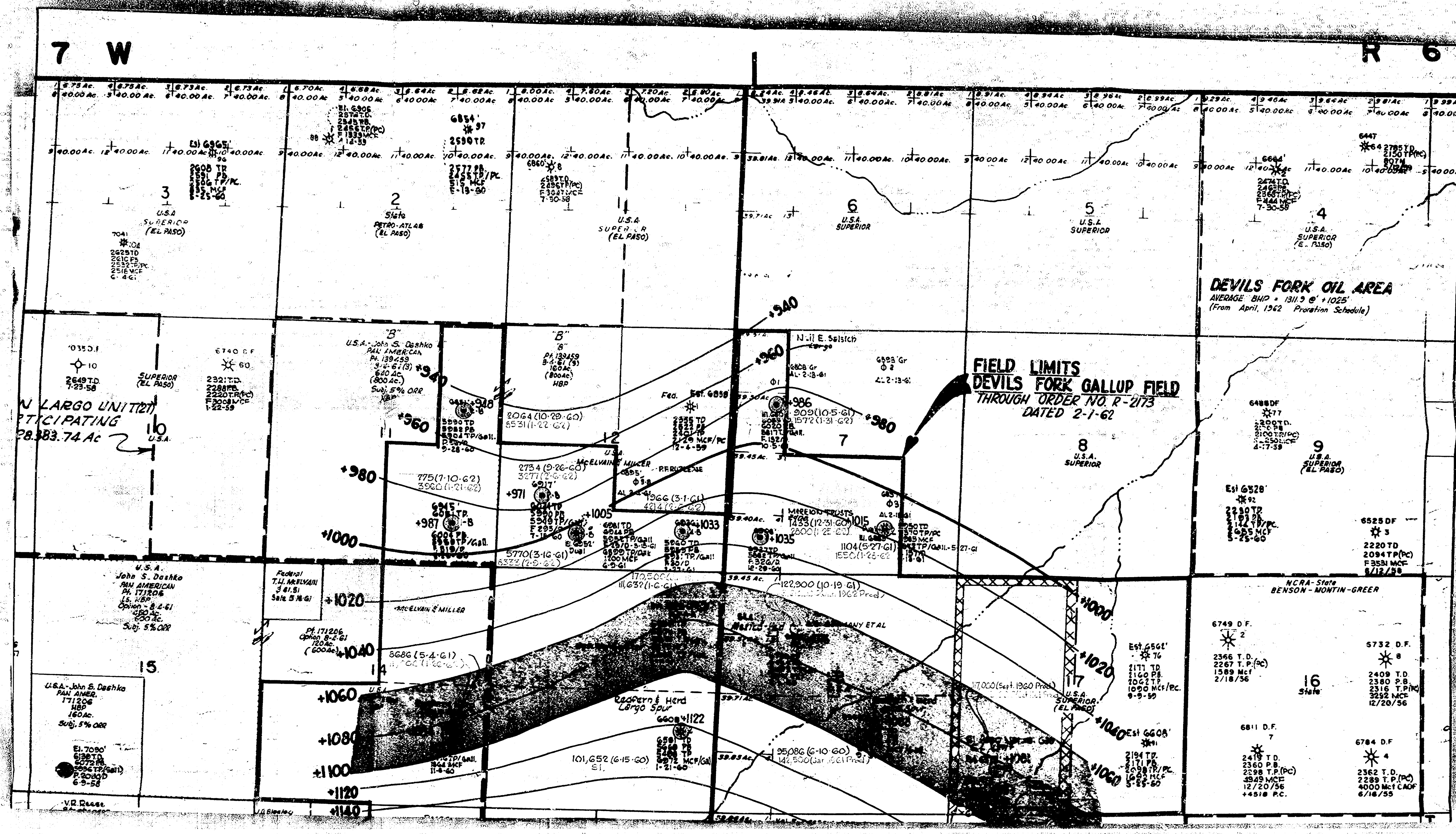

W.H.M.C.F. MICROGRAPHICS

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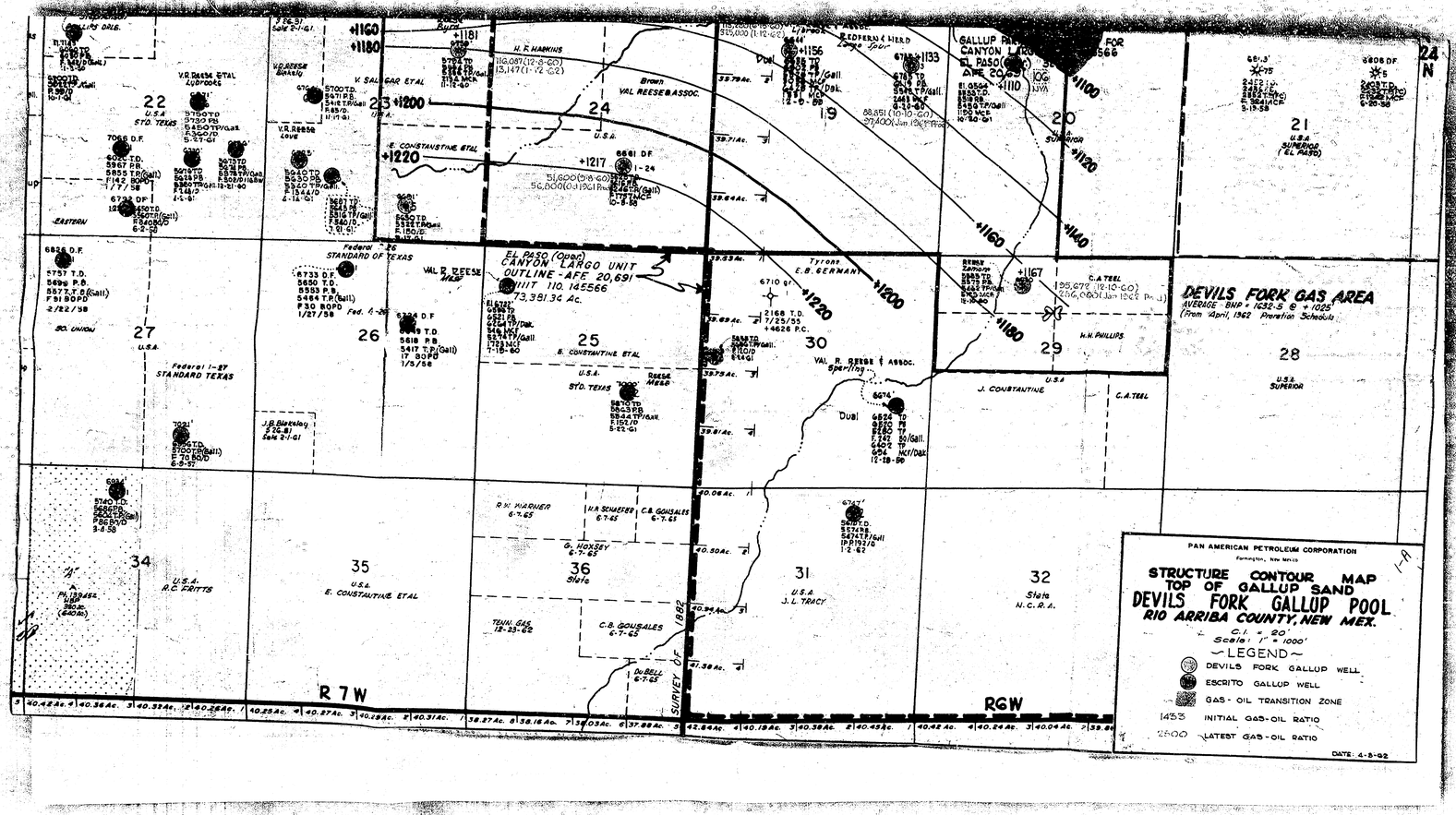

U.N.M.C.F. MICROGRAPHICS
BEST AVAILABLE COPY

7 W

R 6

T 24 N

R 7 W

R6W

DEVILS FORK OIL AREA
AVERAGE BHP = 1311.9 @ +1025'
(From April, 1962 Proration Schedule)

FIELD LIMITS
DEVILS FORK GALLUP FIELD
THROUGH ORDER NO. R-2173
DATED 2-1-62

DEVILS FORK GAS AREA
AVERAGE BHP = 1432.5 @ +1025'
(From April, 1962 Proration Schedule

EL PASO (Opar)
CANYON LARGO UNIT
OUTLINE - AFE 20,691
IIIIT 110. 145566
73,381.34 Ac.

N LARGO UNIT (17271
PTICIPATING
28,383.74 Ac

PAN AMERICAN PETROLEUM CORPORATION
Farmington, New Mex.

STRUCTURE CONTOUR MAP
TOP OF GALLUP SAND
DEVILS FORK GALLUP POOL
RIO ARRIBA COUNTY, NEW MEX.

C.I. = 20'
Scale: 1" = 1000'

~LEGEND~

- DEVILS FORK GALLUP WELL
- ESCRITO GALLUP WELL
- GAS - OIL TRANSITION ZONE
- 1433 INITIAL GAS-OIL RATIO
- 2400 LATEST GAS-OIL RATIO

DATE: 4-5-62

1-A

V.R.N.C.F. MICROGRAPHICS
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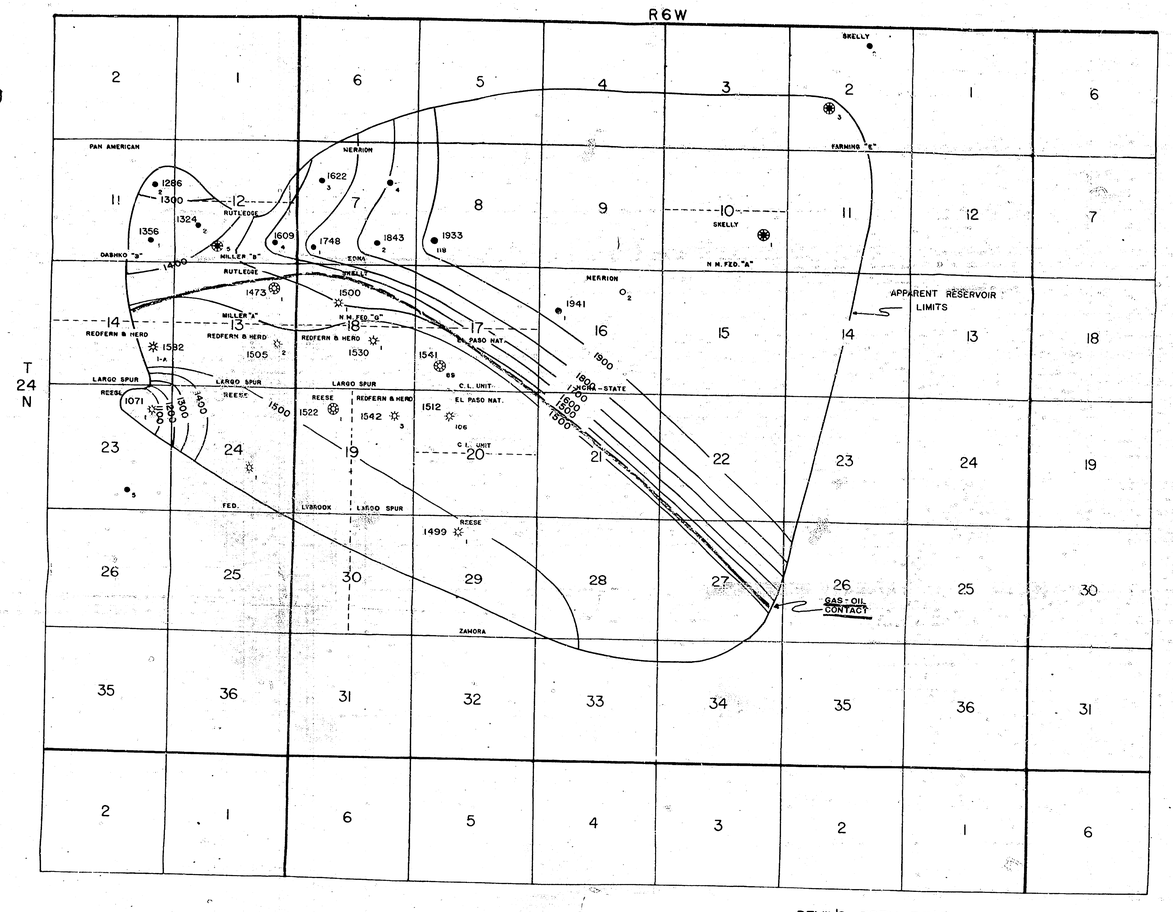


– LEGEND –

- DAKOTA GAS WELL
- GALLUP OIL WELL
- GALLUP GAS WELL
- DUAL – GALLUP GAS – DAKOTA GAS
- DUAL – GALLUP OIL – DAKOTA GAS
- 1550 AVG. PRESSURE WITHIN DRAINAGE RADIUS OF WELL

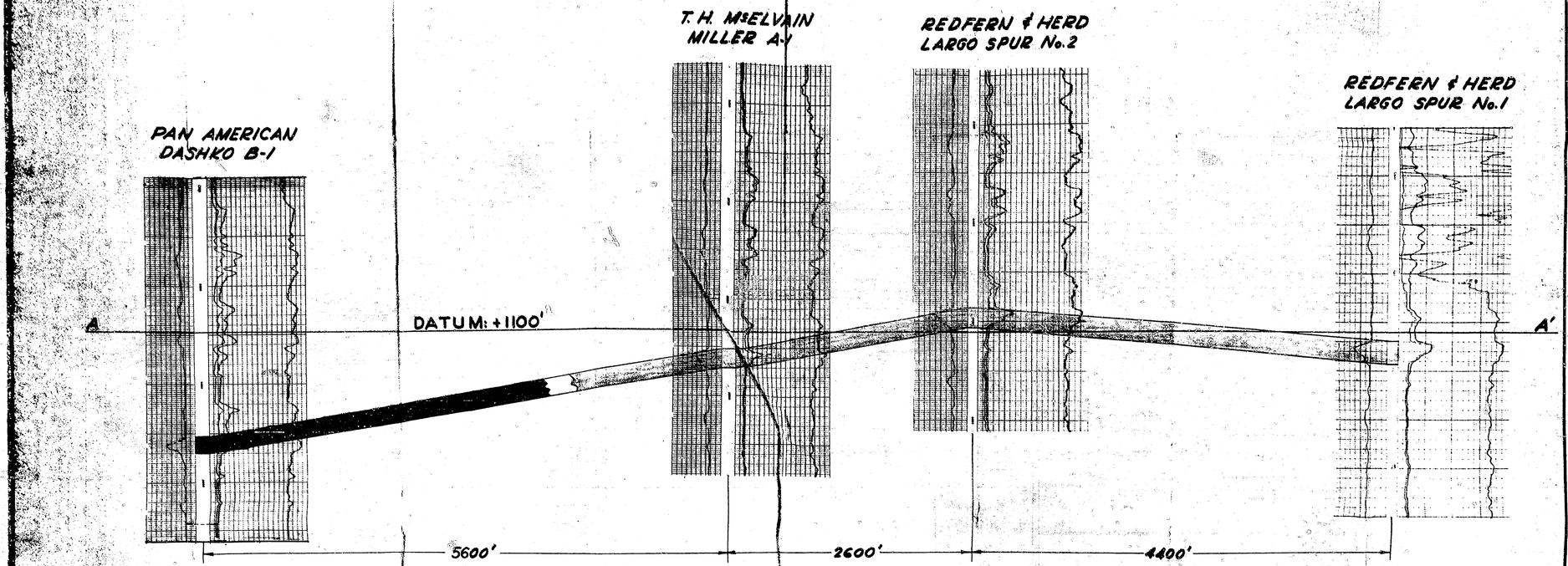
DEVIL'S FORK FIELD
RIO ARRIBA CO.
NEW MEXICO

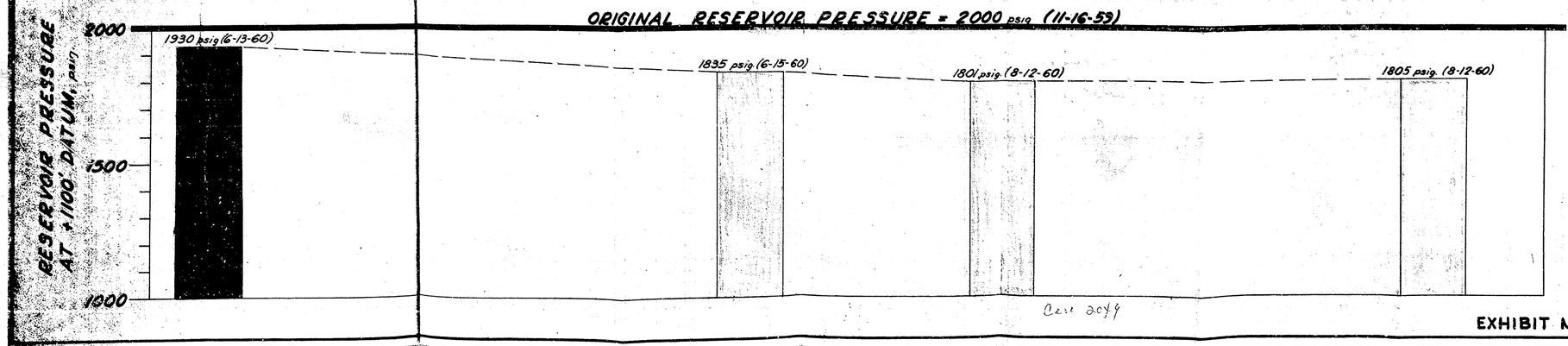
ISO-PIESTIC MAP
8-6-62
DRAWN BY J. GREGORY MERRION

EXHIBIT NO. ___

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

CROSS SECTION AND PRESSURE PROFILE
DEVILS FORK GALLUP POOL





Case 2049

EXHIBIT NO. 2

C.F. MICROGRAPHICS
BEST AVAILABLE COPY

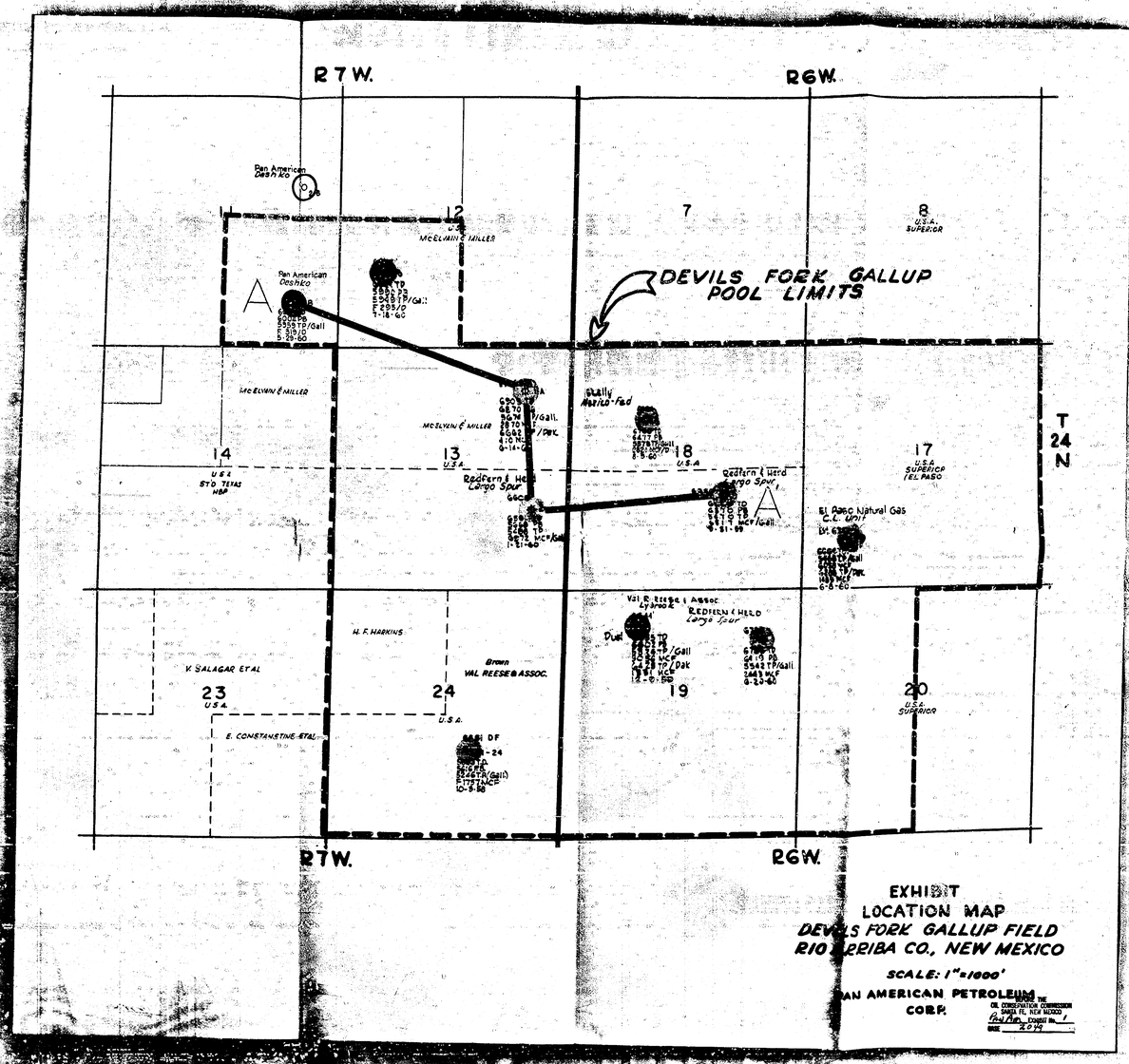


EXHIBIT
LOCATION MAP
DEVILS FORK GALLUP FIELD
RIO ARRIBA CO., NEW MEXICO

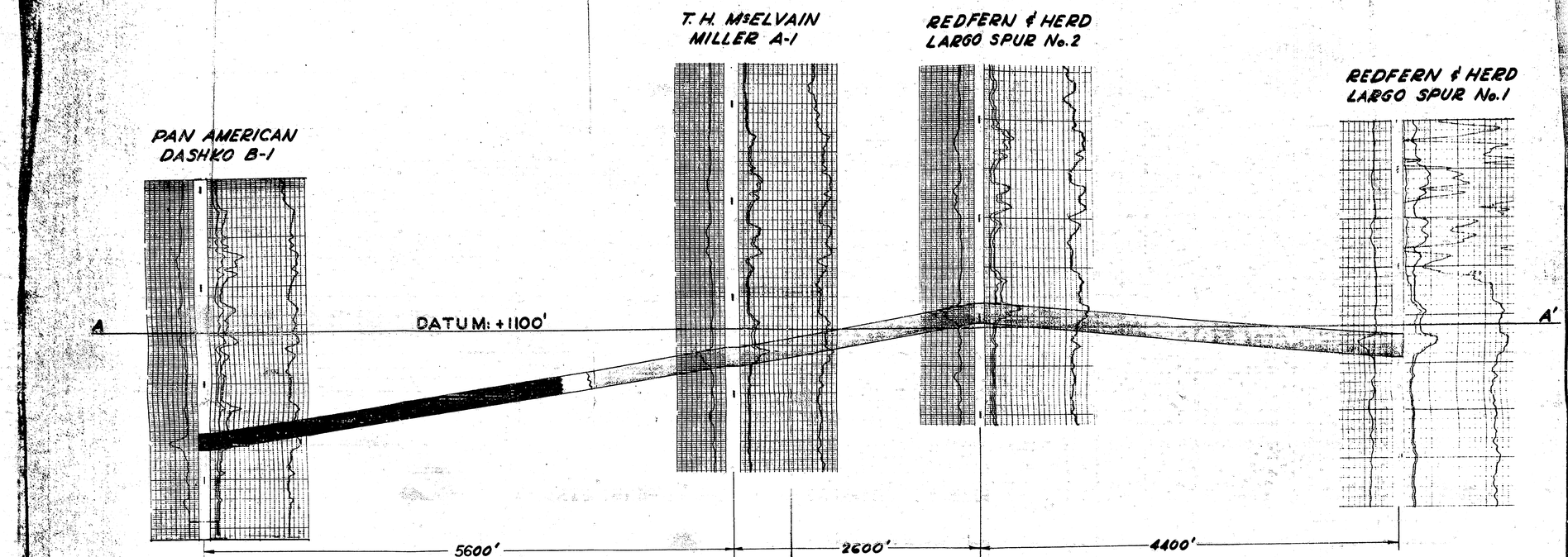
SCALE: 1"=1000'

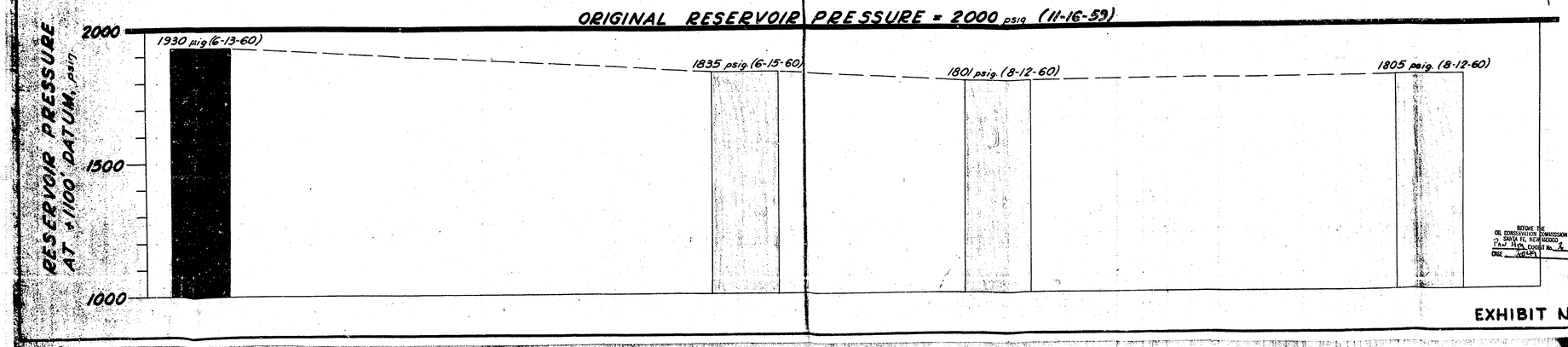
AMERICAN PETROLEUM CORP.

RECEIVED BY THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO
Proj. Plan Exhibit No. 1
Date 2019

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

CROSS SECTION AND PRESSURE PROFILE
DEVILS FORK GALLUP POOL





BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
Case 1494, Exhibit No. 4
Case No. 1494

EXHIBIT NO.

G.F. MICROCHAPTICS
BEST AVAILABLE COPY

ECONOMICS OF 40-ACRE OIL DEVELOPMENT
DEVILS FORK GALLUP POOL
RIO ARRIBA CO., N. M.

Well Costs		$67,000
Lease Equipment, average per well		3,500
Artificial Lift		10,000
Operating Costs		5,400
Compressor investment and operating costs, average per well		7,750
Total investment and operating costs		$93,650
Oil reserves per 40 acres		25,000 Bbls.
After Royalty of 12½		22,000 Bbls.
Posted price of oil		$2.75/Bbl.
Less Hauling		.30/Bbl.
Net price		$2.45/Bbl.
Income from oil to working interest	$54,000	
Gas reserves per 40 acres		85,000 MCF
Less compressor fuel		7,660 MCF
Saleable gas		77,340 MCF
After royalty of 12½		67,600 MCF
Income from gas at 13¢/MCF	$ 8,800	
Gross income from gas and oil	$62,800	
Less production taxes at 8%	5,020	
	$57,780	
Less investment and operating costs	93,650	
Net loss per well	$35,870	

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
Tenneco Exhibit No. 3
CASE 2049

DATA FOR ECONOMIC ANALYSIS
DEVILS FORK GALLUP POOL
RIO ARRIBA CO., N. M.

Oil Reserves:

Porosity	= 10% (Core data - Canyon Largo Unit No. 89).
Thickness	= 10' (Est. average for Pan Am acreage).
Connate Water	= 30% (Core data - Canyon Largo Unit No. 89).
Reservoir Volume Factor	= 1.3 (Est. from correlation charts).
Recovery Factor	= 15% (Analogy with Bisti).
Area	= 40 acres.
Oil Reserves	= 25,000 bbls./40 acres.

Gas Reservoir:

Est. Solution GOR	= 600 cu. ft./bbl. (based on correlation charts.)
Solution Gas in Place	= 100,000 MCF.
Recovery Factor	= 85% (Est.)
Gas Reserves	= 85,000 MCF.

Compressor investment to handle 4 wells	$22,000
Operating costs for compressor	$219/mo.
Life	3 years
Total compressor investment and operating costs (4 wells)	$29,900
Average investment and operating costs per well	$7,750
Compressor fuel	28 MCFPD

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
Tenneco Exhibit No. 4
CASE 2049

N.M.O.C.C. MICROGRAPHICS
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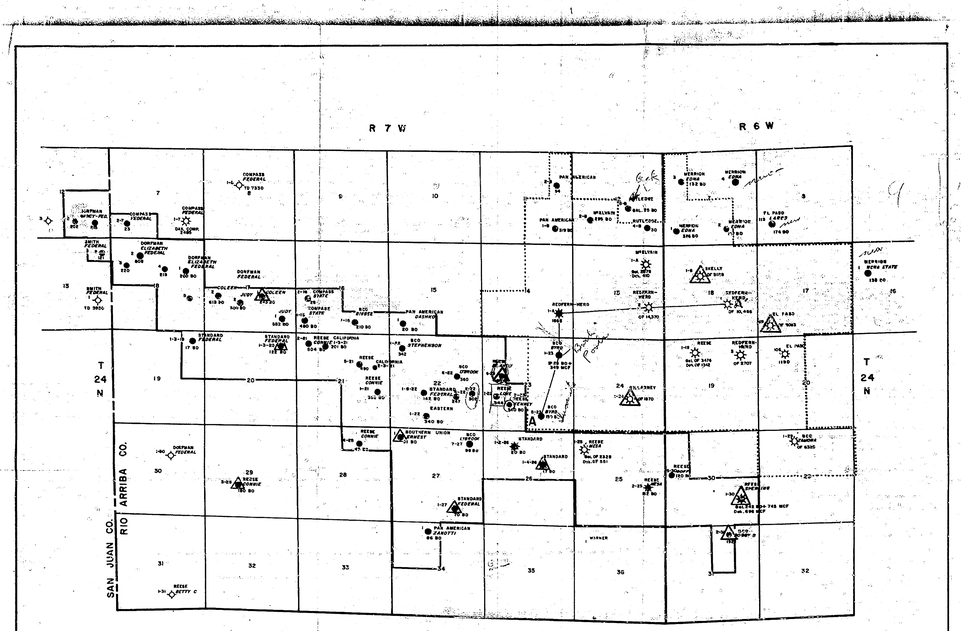


DEVILS FORK—GALLUP GAS POOL

AREA MAP

RIO ARRIBA CO., NEW MEXICO

LIMITS OF ESCRITO—GALLUP POOL

LIMITS OF DEVILS FORK—GALLUP POOL

A ——— A' LINE OF CROSS SECTION

△ CORED WELL

INITIAL POTENTIAL IS SHOWN BELOW EACH WELL

SCALE: 2"=1 MILE

SEPTEMBER, 1962

VAL R. REESE AND ASSOCIATES INC.

BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO EXHIBIT No. 11 CASE No. 330

CASE 2049 (REOPENED) REESE EXHIBIT NO. 1

V.V.N.C.P. MICROGRAPHICS

BEST AVAILABLE COPY

BCO, INC.
5-23 BYRD
SEC. 23, T 24 N — R 7 W
RIO ARRIBA CO., NEW MEXICO

1

← 3600 FEET →

BCO, INC.
1-23 BYRD
SEC. 23, T 24 N — R 7 W
RIO ARRIBA CO., NEW MEXICO

2

← 2300 FEET →

REDFERN & HERD
1-A LARGO SPUR
SEC. 14, T 24 N — R 7 W
RIO ARRIBA CO., NEW MEXICO

3

← 5150 FEET →

REDFERN & HERD
2 LARGO SPUR
SEC. 13, T 24 N — R 7 W
RIO ARRIBA CO., NEW MEXICO

4

← 4500 FEET →

REDFERN & HERD
1 LARGO SPUR
SEC. 18, T 24 N — R 6 W
RIO ARRIBA CO., NEW MEXICO

5

A

A'

DATUM

DATUM

5505

PERFORATIONS

DEVILS FORK SAND

HORIZONTAL SCALE : 1"=500'

164 — 80 Ac. Spacing
3328
4
1312.

CROSS SECTION A—A'
DEVILS FORK—GALLUP GAS POOL
RIO ARRIBA CO., NEW MEXICO

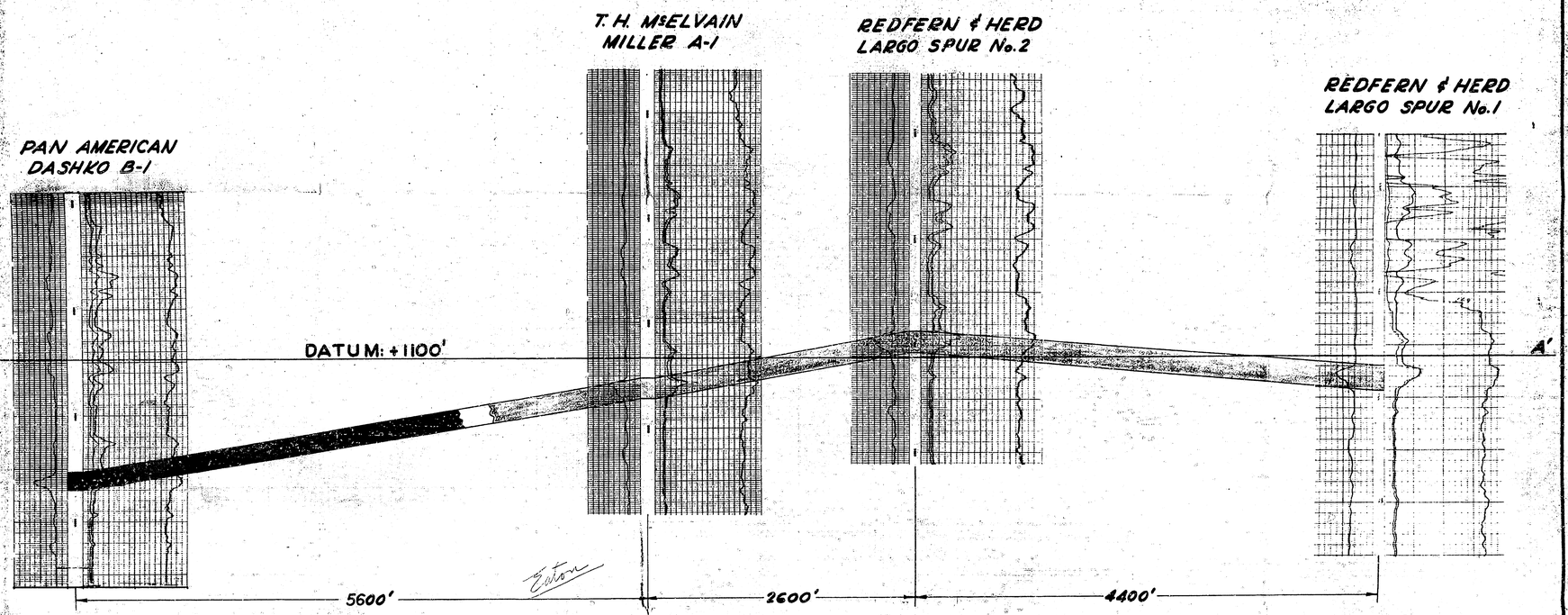
SEPT, 1962
VAL R. REESE AND ASSOCIATES INC.

DATUM IS MARKER BED WITHIN GALLUP FORMATION
CROSS SECTION DOES NOT SHOW STRUCTURAL POSITION OF WELLS

CASE 2049
(REOPENED)
REESE EXHIBIT NO. 2

N.M.O.C.C. MICROGRAPHICS
BEST AVAILABLE COPY

CROSS SECTION AND PRESSURE PROFILE
DEVILS FORK GALLUP POOL



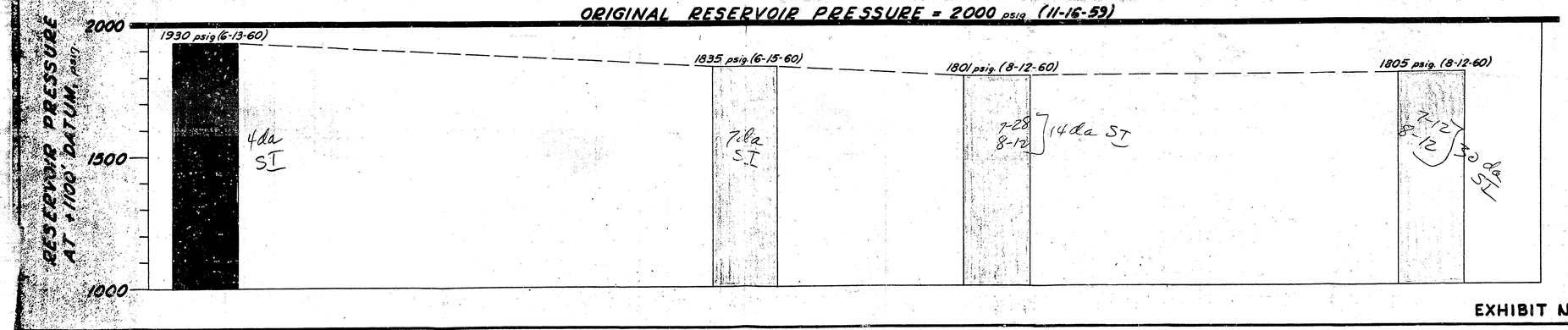


EXHIBIT NO.

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

R 6 W

DEVIL'S FORK FIELD
RIO ARRIBA COUNTY
NEW MEXICO
ISO-VOL MAP

LEGEND

- 1.51 - Total porosity feet of net effective Marye Poy Sand.
- New Wells since 6-15-62
- Proposed Locations
- Gas Oil Contact

Prepared By: J. Gregory Merrion

EXHIBIT NO ___

EL PASO (Oper.)
CANYON LARGO UNIT
OUTLINE - AFE 20,691
UNIT NO. 145566
73,391.30 Ac.

PAUL F. RUTLEDGE
J. GREGORY MERRION
MILLER "B"
EDNA
SKELLY
NEW MEXICO FED. "A"
MERRION TRUSTS
E.B. GERMANY (SKELLY OIL CO.)
FEE
FAMARISS - DAVIS
USA
KILLARNEY
EL PASO CANYON LARGO UNIT
McELVAIN E. ET AL
NCRA
8300 Ac.
4752 Ac.

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

$DF = 1 + \frac{n^2 + 5n}{18}$

0-5000 $n=0$ $DF = 1 + \frac{0^2+5\cdot0}{18} = 1+\frac{0}{18} = 1.00$ 1.00

5-6000 $n=1$ $1 + \frac{1^2+5\cdot1}{18} = \frac{1+1+5}{18} = 1\frac{5}{18} = 1.33$ 1.33

6-7000 $n=2$ $1 + \frac{2^2+5\cdot2}{18} = \frac{1+4+10}{18} = \frac{1+14}{18} = 1.78$ 1.78

7-8000 $n=3$ $1 + \frac{3^2+5\cdot3}{18} = \frac{1+9+15}{18} = \frac{1+24}{18} = 2.33$ 2.33

8-9000 $n=4$ $1 + \frac{4^2+5\cdot4}{18} = \frac{1+16+20}{18} = \frac{1+36}{18} = 3.00$ 3.00

9-10000 $n=5$ $1 + \frac{5^2+5\cdot5}{18} = 1 + \frac{25+25}{18} = \frac{1+50}{18} = 3.78$ 3.77

10-11000 $n=6$ $1 + \frac{6^2+5\cdot6}{18} = \frac{1+36+30}{18} = \frac{1+66}{18} = 4.67$ 4.67

11-12000 $n=7$ $1 + \frac{7^2+5\cdot7}{18} = \frac{1+49+35}{18} = \frac{1+84}{18} = 5.67$ 5.67

12-13000 $n=8$ $1 + \frac{8^2+5\cdot8}{18} = \frac{1+64+40}{18} = \frac{1+104}{18} = 6.78$ 6.75

13-14000 $n=9$ $1 + \frac{9^2+5\cdot9}{18} = \frac{1+81+45}{18} = \frac{1+126}{18} = 8.00$ 8.00

14-15000 $n=10$ $1 + \frac{10^2+5\cdot10}{18} = \frac{1+100+50}{18} = \frac{1+150}{18} = 9.33$ 9.33

15-16000 $n=11$ $1 + \frac{11^2+5\cdot11}{18} = \frac{1+121+55}{18} = \frac{1+176}{18} = 10.78$ 10.77

16-17000 $n=12$ $1 + \frac{12^2+5\cdot12}{18} = \frac{1+144+60}{18} = \frac{1+204}{18} = 12.33$ 12.33

17-18000 $n=13$ $1 + \frac{13^2+5\cdot13}{18} = \frac{1+169+65}{18} = \frac{1+234}{18} = 14.00$ 14.00

Assuming a normal unit allowable of 45 barrels per day, the following table shows the top unit allowables and increases of allowable for each depth interval.

Depth Interval	Depth Factor	Top Unit Allowable Bbl.	Allowable Increase Above 0 - 8000' Interval Bbl.	Allowable Increase Above Preceding 1000' Interval Bbl.
0 - 5,000'	1.00	45	0	0
5,000 - 6,000'	1.33	60	15	15
6,000 - 7,000'	1.77	80	35	20
7,000 - 8,000'	2.33	105	60	25
8,000 - 9,000'	3.00	135	90	30
9,000 - 10,000'	3.78	170	125	35
10,000 - 11,000'	4.67	210	165	40
11,000 - 12,000'	5.67	255	210	45
12,000 - 13,000'	6.75	305	260	50
13,000 - 14,000'	8.00	360	315	55
14,000 - 15,000'	9.33	420	375	60
15,000 - 16,000'	10.75	485	440	65
16,000 - 17,000'	12.33	555	510	70
17,000 - 18,000'	14.00	630	585	75

$$\text{Depth factor} = \frac{45 + 15n + 5[(n-1)+(n-2)+\ldots(b-n)]}{45}$$

Boiled down, this becomes: $D.F. = 1 + \frac{n^2+5n}{18}$

Where n = the number of 1000' increments in the 8000' to the known third, plus the depth fraction.

V.N.M.C.F. MICROGRAPHICS

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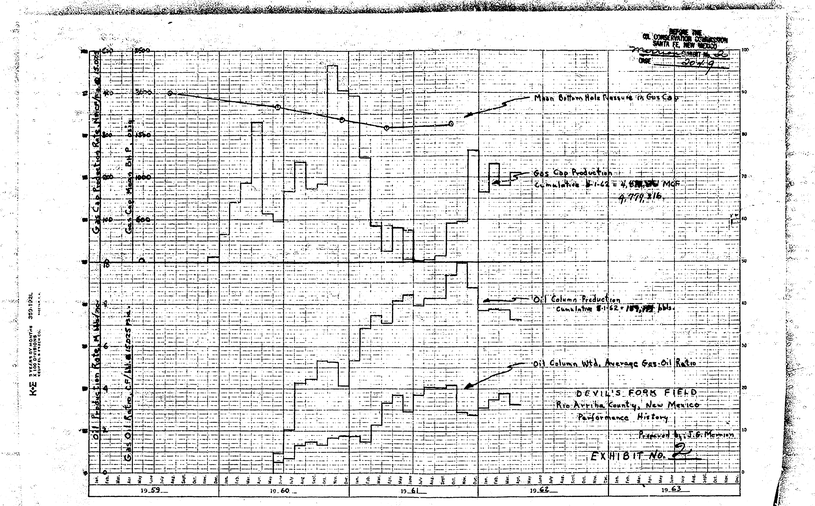

N.M.O.C.C. MICROGRAPHICS
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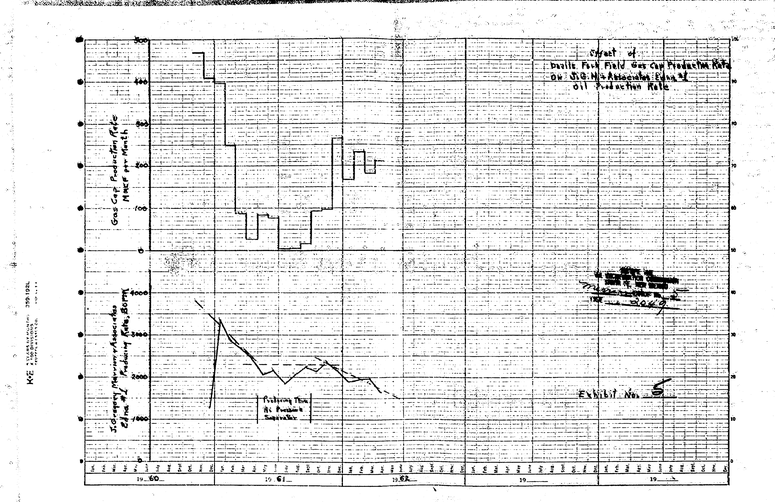

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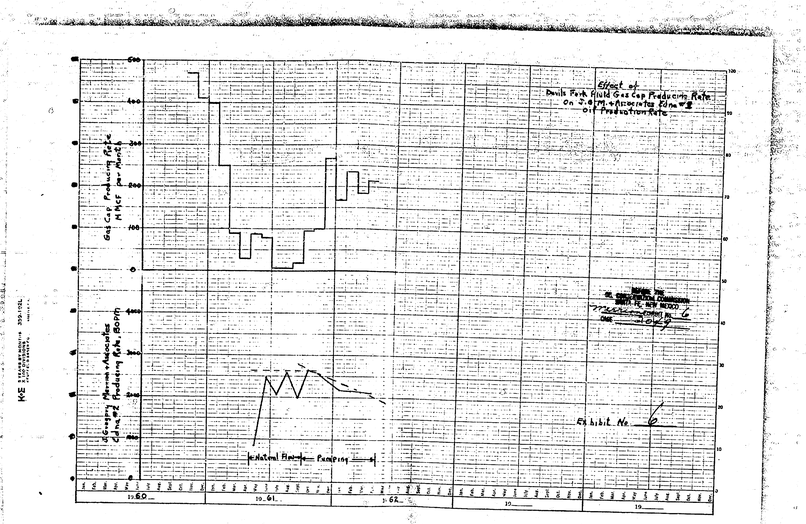
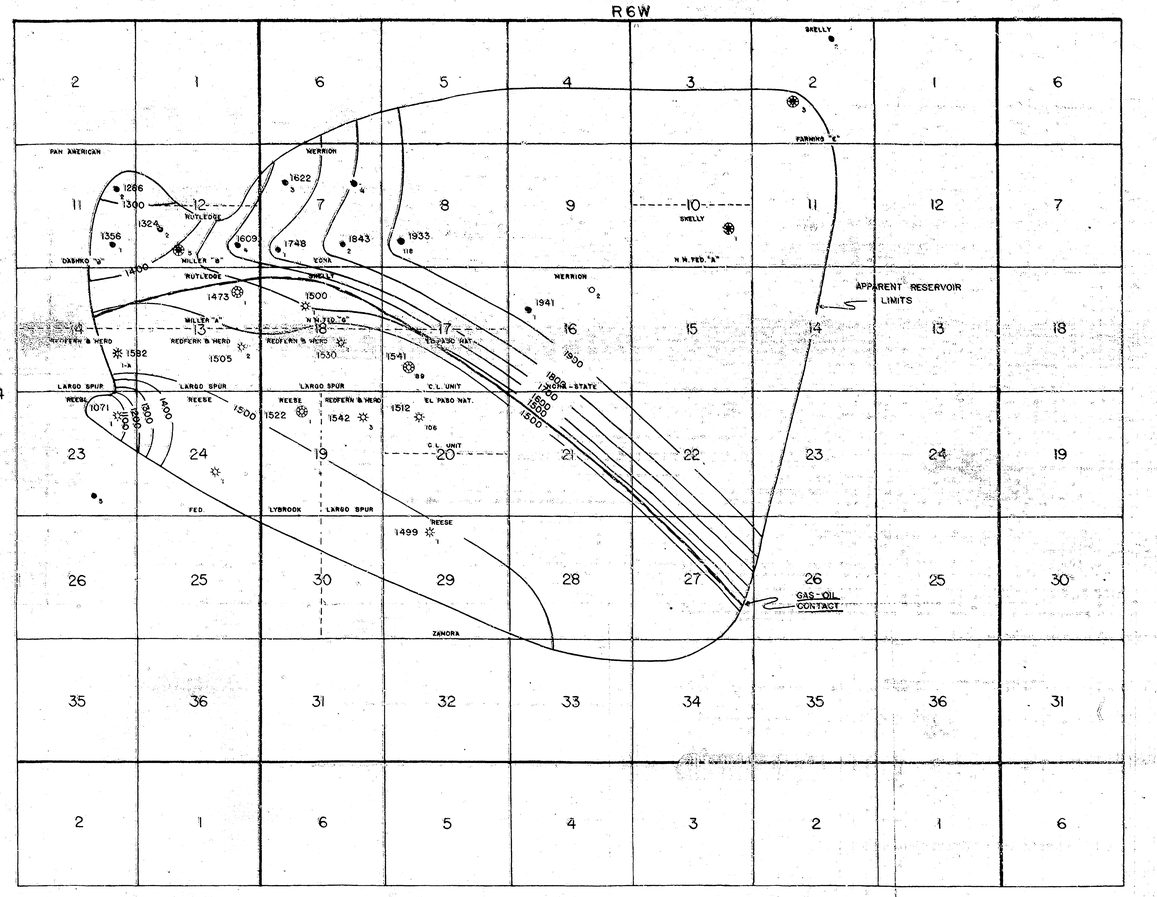


W.N.M.C.F. MICROGRAPHICS
BEST AVAILABLE COPY

R6W

T 24 N



2	1	6	5	4	3	2	1	6
11	12	7	8	9	10	11	12	7
14	13	18	17	16	15	14	13	18
23	24	19	20	21	22	23	24	19
26	25	30	29	28	27	26	25	30
35	36	31	32	33	34	35	36	31
2	1	6	5	4	3	2	1	6

- LEGEND -

- DAKOTA GAS WELL
- GALLUP OIL WELL
- GALLUP GAS WELL
- DUAL - GALLUP GAS - DAKOTA GAS
- DUAL - GALLUP OIL - DAKOTA GAS

1530 AVG. PRESSURE WITHIN DRAINAGE RADIUS OF WELL

DEVIL'S FORK FIELD

RIO ARRIBA CO.
NEW MEXICO

BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO
CASE No. 3-A
ORDER No. R-2044

ISO-PIESTIC MAP

8-6-62
DRAWN BY J. GREGORY MERRION

EXHIBIT NO. ___

U.N.M.C.T. MICROGRAPHICS
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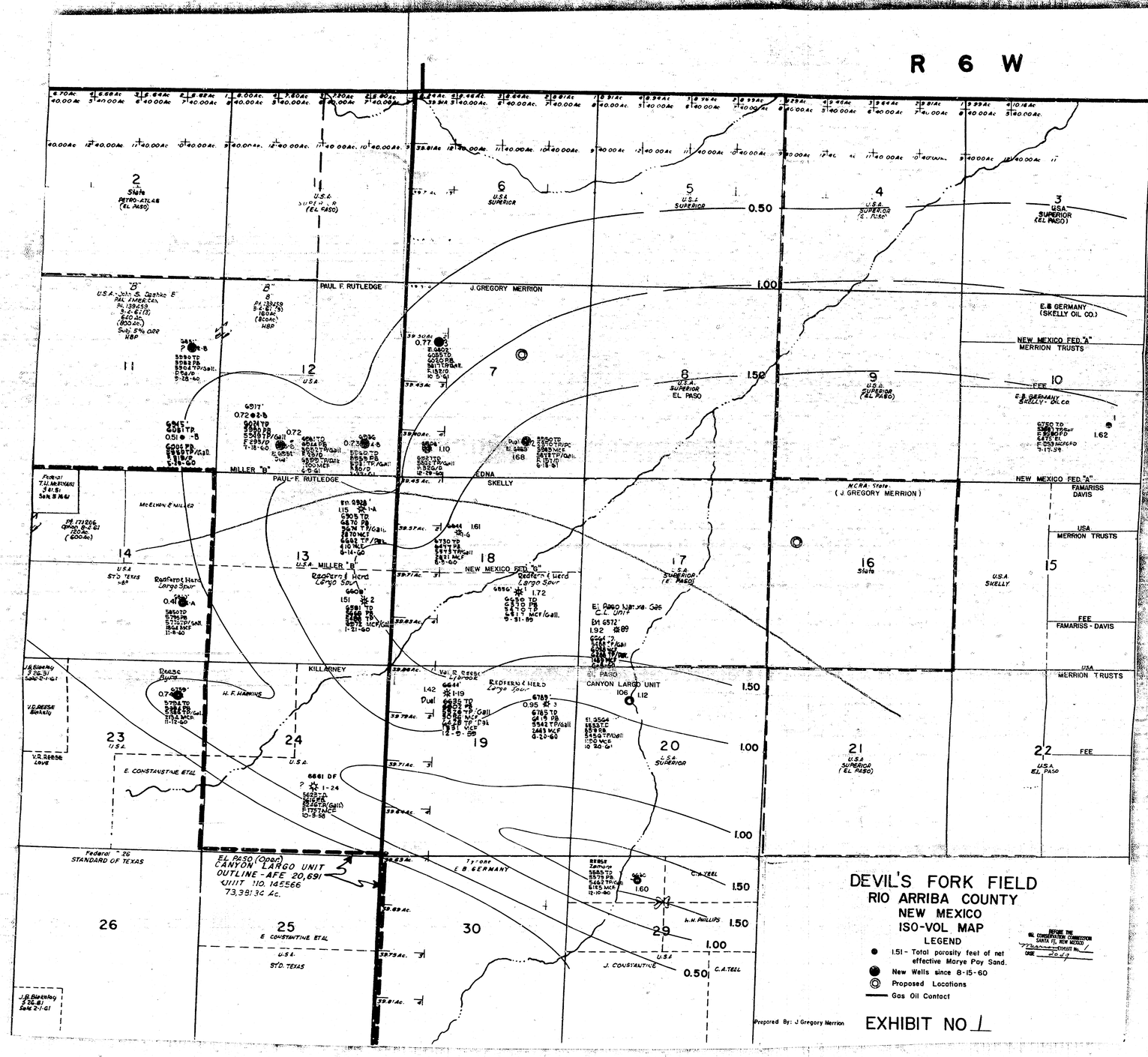

V.R.N.C.F. MICROGRAPHICS
BEST AVAILABLE COPY

R 6 W

DEVIL'S FORK FIELD
RIO ARRIBA COUNTY
NEW MEXICO
ISO-VOL MAP

LEGEND

- 1.51 - Total porosity feet of net effective Mesa Poy Sand.
- New Wells since 6-15-62
- Proposed Locations
- Gas Oil Contact

Prepared By: J. Gregory Merrion

EXHIBT NO 1-A

BEFORE THE OIL CONSERVATION COMMISSION SANTA FE, NEW MEXICO

EXHIBIT NO —

CASE NO. 2044

EL PASO (Oper.) CANYON LARGO UNIT OUTLINE - AFE 20,691 UNIT NO. 14-08-0001-8467 73,391.36 Ac.

PAUL F. RUTLEDGE

J. GREGORY MERRION

E.B. GERMANY (SKELLY OIL CO.)

NEW MEXICO FED. "A" MERRION TRUSTS

MILLER "B"

EDNA SKELLY

NEW MEXICO FED. "A"

FAMARISS DAVIS

USA MERRION TRUSTS

KILLARNEY

EL PASO CANYON LARGO UNIT 106

Federal - 26 STANDARD OF TEXAS

Federal 1-27 STANDARD TEXAS

Tyrone E.B. BERMANY

J. CONSTANTINE

C.A. TEEL

N.H. PHILLIPS

E. CONSTANTINE ET AL

V.R. REESE ET AL

V.N.M.C.P. MICROGRAPHICS

BEST AVAILABLE COPY