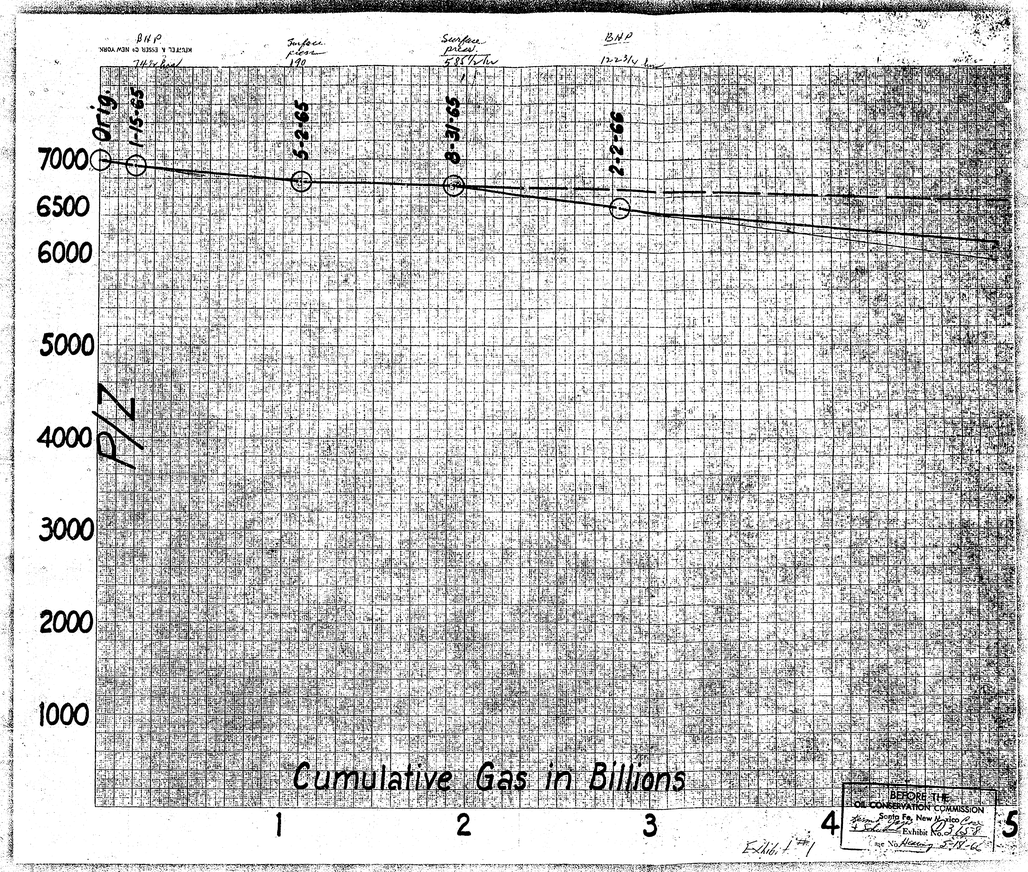
Case No:

3158

Large Exhibits

W.N.M.C.F. MICROGRAPHICS

BEST AVAILABLE COPY



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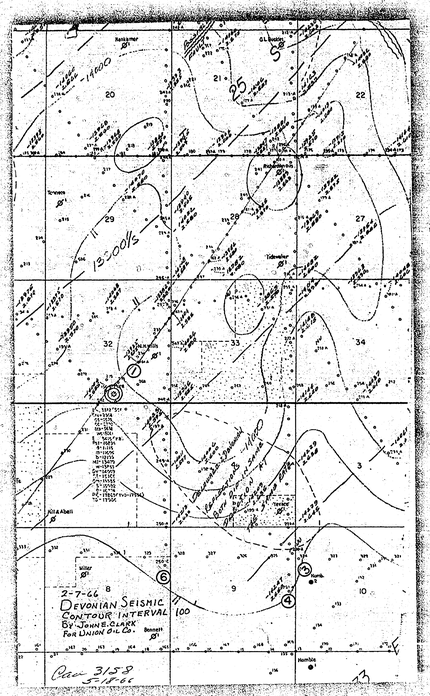


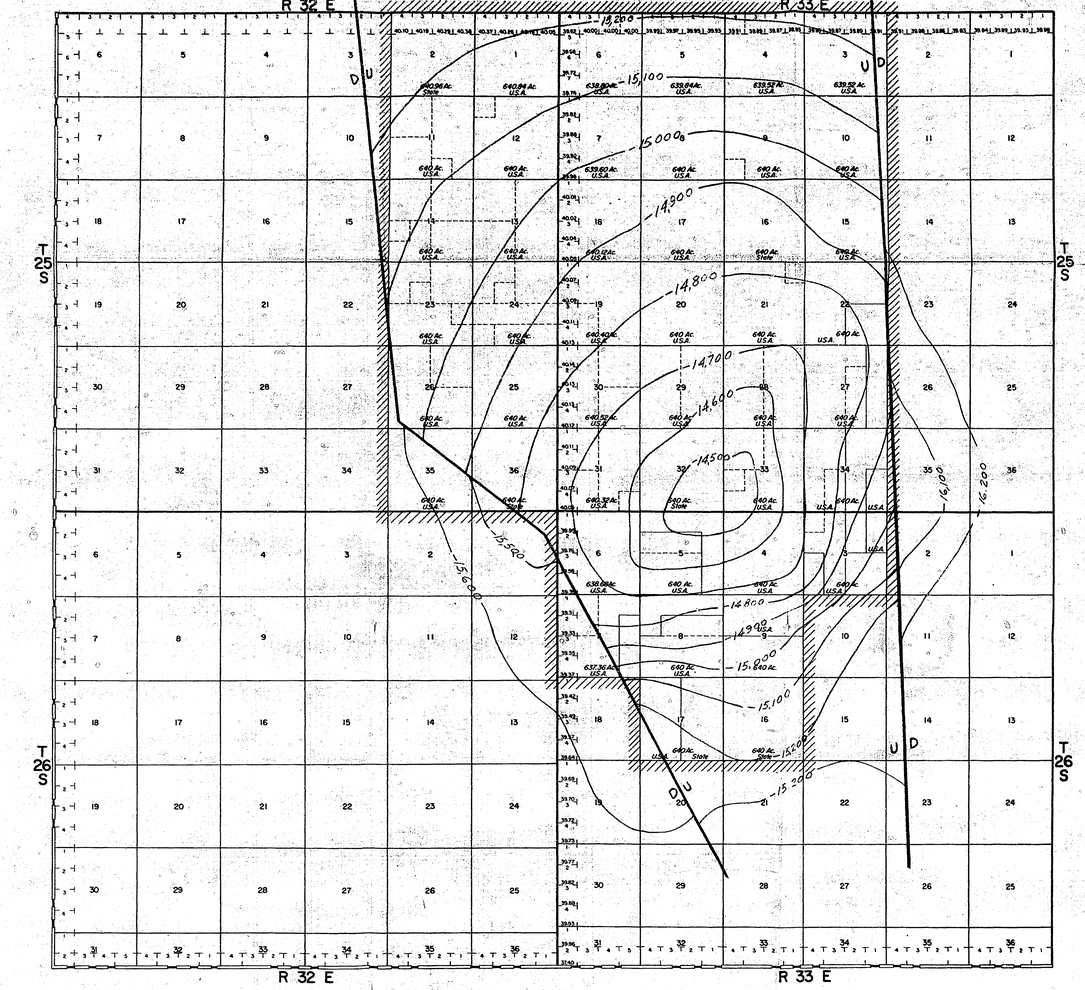
V.P.M.C.F. MICROGRAPHICS
BEST AVAILABLE COPY

Red Hills Production

	Gas	Wolfcamp Total Cond.	Wolfcamp TOTAL	Gas	Penn Total Cond.	Penn TOTAL
27	4.4	4.4	1482	3.6	3.6	18.4
28	12.4	16.8	3426	14.0	17.6	32.4
29	11.8	28.6	4998	14.0	31.6	46.0
30	11.9	40.5	6034	14.0	45.6	60.0
31	11.3	51.8	7016	3.0	48.6	63.0
1	11.7	63.5	8286	11.0	59.6	78
2	10.9	74.4	9439	4.4	70.0	91.3
3	11.5	85.9	9443	16.1	96.1	111
4	10.7	96.6	9454	16.4	112.5	139
5	4.5	101.1	9459	5.9	118.4	160
6	2.7	103.8	9461	2.7	121.1	163
7	6.9	110.7	9470	12.8	133.9	247
8	9.9	120.6	9478	14.7	148.6	166
9	10.8	131.4	9486	15.7	164.3	7.8
10	9.6	140.9	4046	7.5		11.9
11	11.3	152.2	5193	10		21.6
12	11.3	163.5	6326	0		
13	11.4	174.9	7470	7.3	192.1	7.8
14	10.7	185.6	8118	0	Plugged off	
15	0.5	186.1	8118	0		
16	0	186.1	8118	Wolfcamp		
17	0	186.1	8118	0		1430
18	3.9	190.0	8209	0		1430
19	11.4	198.5	7144	19.9	4667	1472
20	11.9	210.0	9305			
21	11.5	221.5	9481			
22	11.4	232.9	9486			
23	7	239.6	2359			
24	5.5	245.1	2367			
25	7.0	252.1	4031			
26	4.0		4031			
27	11.3	263.4	4041			
28	11.4		5788			
29	11.6		5780			
30	11.3	100.9	5818	7	5814.7	
31	11.1		3865			
1	11.0		3501			
2	12.6		6840			
3	12.7	74.83	4620	15.2	44.7	
4	12.8	24.11	4640	15.7	7.7	
5	12.4		4820			
6	11.3		4640			
7	11.2	378.0	4714	12.7	57	
8	11.2		1153			
9	12.0		196			
10	11.8		4138			
11	11.8		416			

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Exhibit No. 16
Case No. 3515

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



RED HILLS UNIT
Townships 25 and 26 South
Ranges 32 and 33 East
Lea County, New Mexico

Proposed 18,000' Devonian Test
Devonian Horizon
C. I. – 100' September 10, 1962

EXHIBIT "C"

Unit Outline

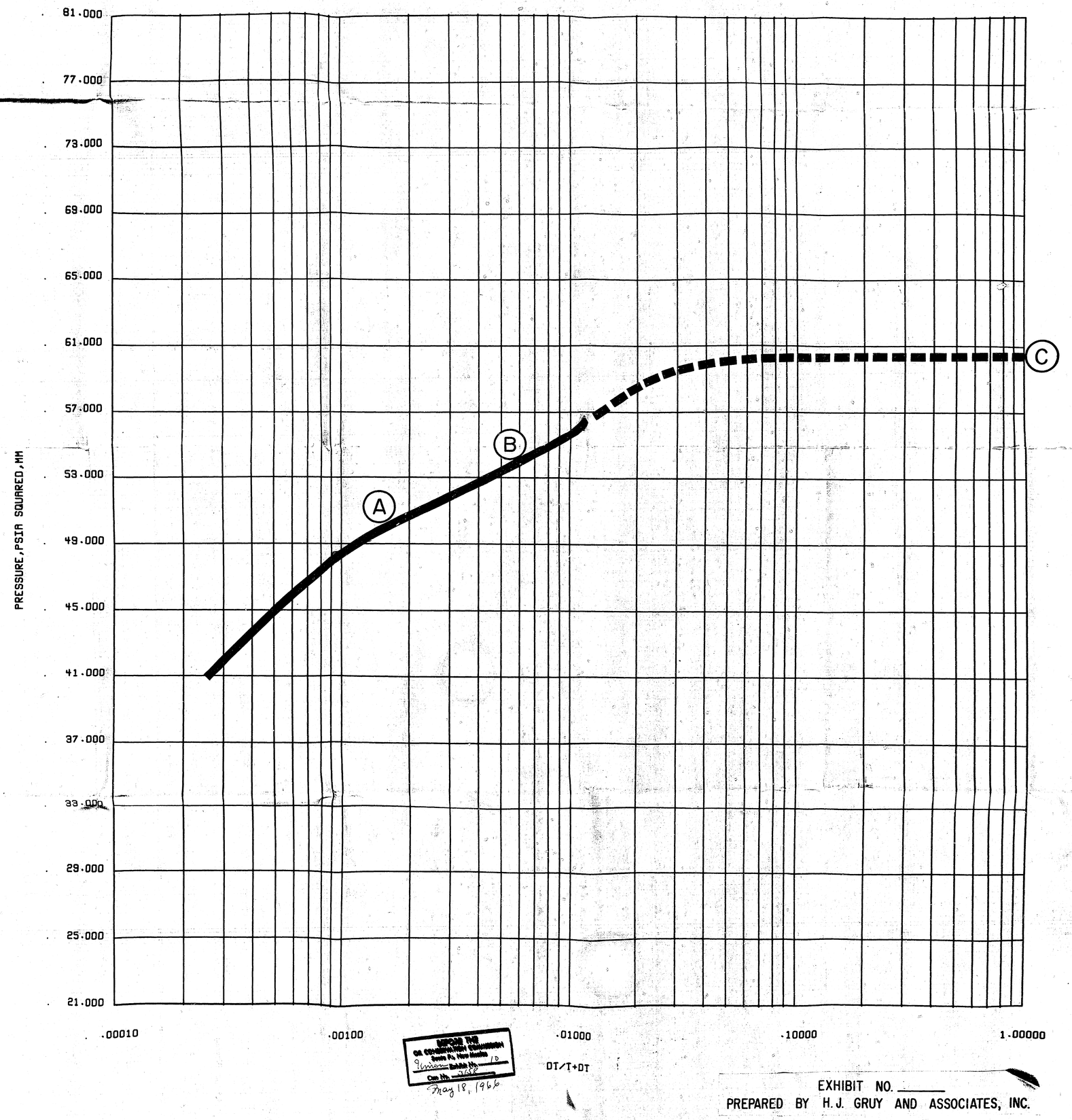
W.N.M.C.P. MICROGRAPHICS
BEST AVAILABLE COPY

PRESSURE BUILD-UP TEST FROM 2-2-66 TO 2-7-66

UNION OIL COMPANY OF CALIFORNIA WELL NO. 1 RED HILLS UNIT

RED HILLS (WOLFCAMP) FIELD-LEA COUNTY, NEW MEXICO

10



RECEIVED
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
May 18, 1966

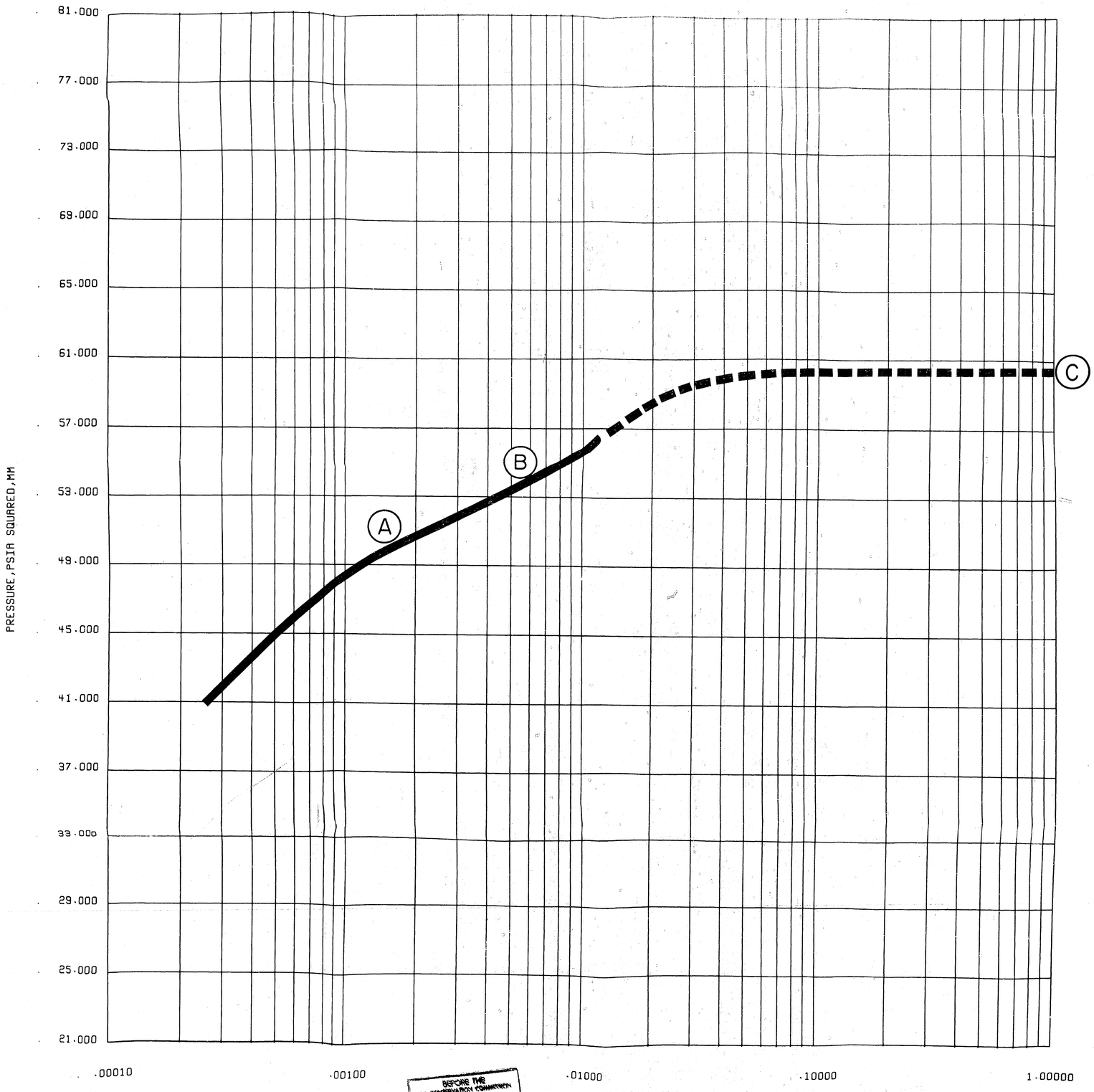
EXHIBIT NO. _____

PREPARED BY H. J. GRUY AND ASSOCIATES, INC.

PRESSURE BUILD-UP TEST FROM 2-2-66 TO 2-7-66

UNION OIL COMPANY OF CALIFORNIA WELL NO. 1 RED HILLS UNIT

RED HILLS (WOLFCAMP) FIELD-LEA COUNTY, NEW MEXICO



BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Exhibit No. 1
Case No. 3726

EXHIBIT NO. _____

PREPARED BY H. J. GRUY AND ASSOCIATES, INC.

KEUFFEL & ESSER CO.
MADE IN U.S.A.

PRESSURE BUILD-UP TEST FROM 1-15-65 TO 1-18-65

UNION OIL COMPANY OF CALIFORNIA WELL NO. 1 RED HILLS UNIT

RED HILLS (WOLFCAMP) FIELD-LEA COUNTY, NEW MEXICO

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Union Exhibit No. 9
Case No. 3158
May 18, 1966

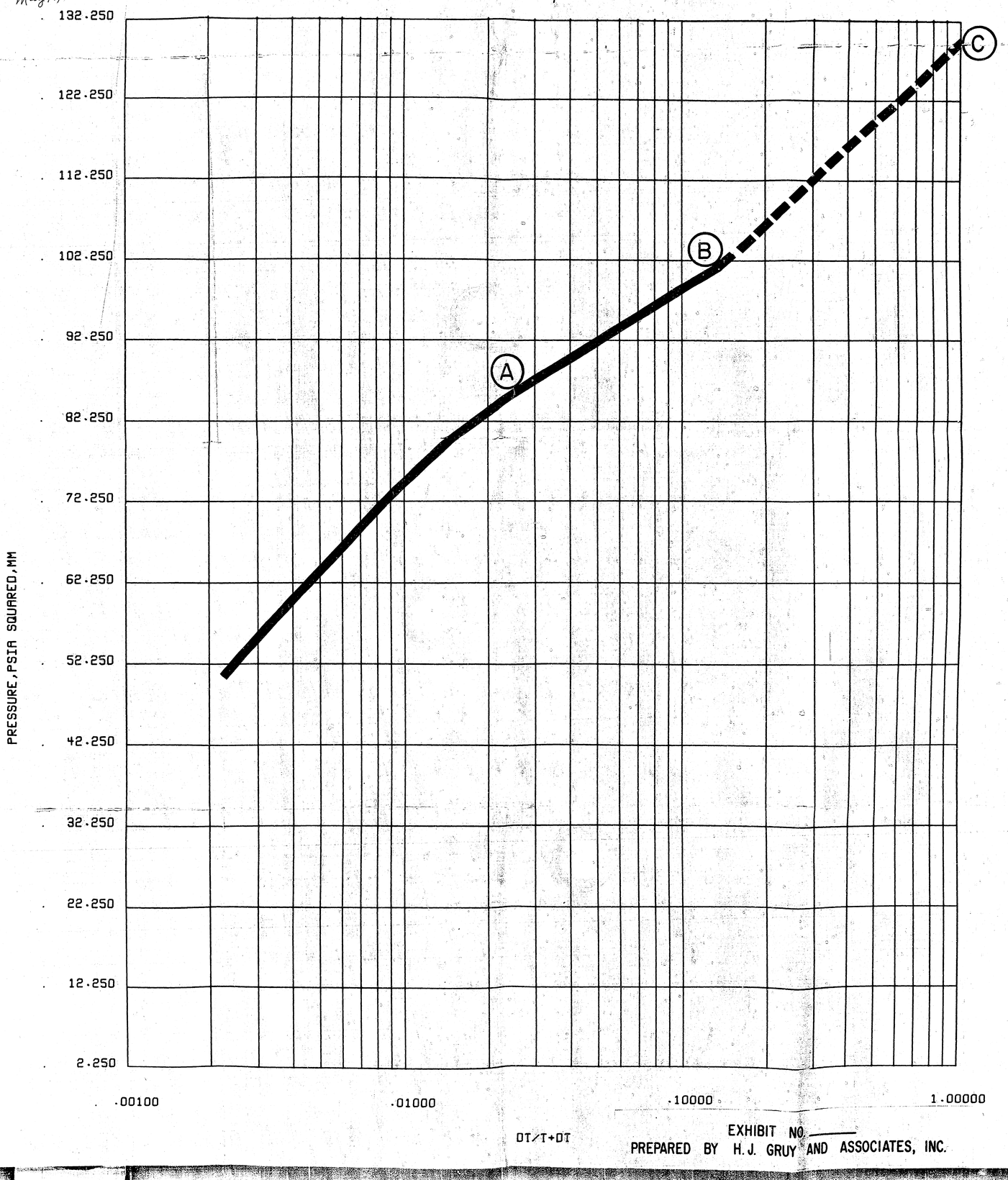


EXHIBIT NO. ____

PREPARED BY H. J. GRUY AND ASSOCIATES, INC.

PRESSURE BUILD-UP TEST FROM 1-15-65 TO 1-18-65

UNION OIL COMPANY OF CALIFORNIA WELL NO. 1 RED HILLS UNIT

RED HILLS (WOLFCAMP) FIELD-LEA COUNTY, NEW MEXICO

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Exhibit No. 7
Case No. 1975

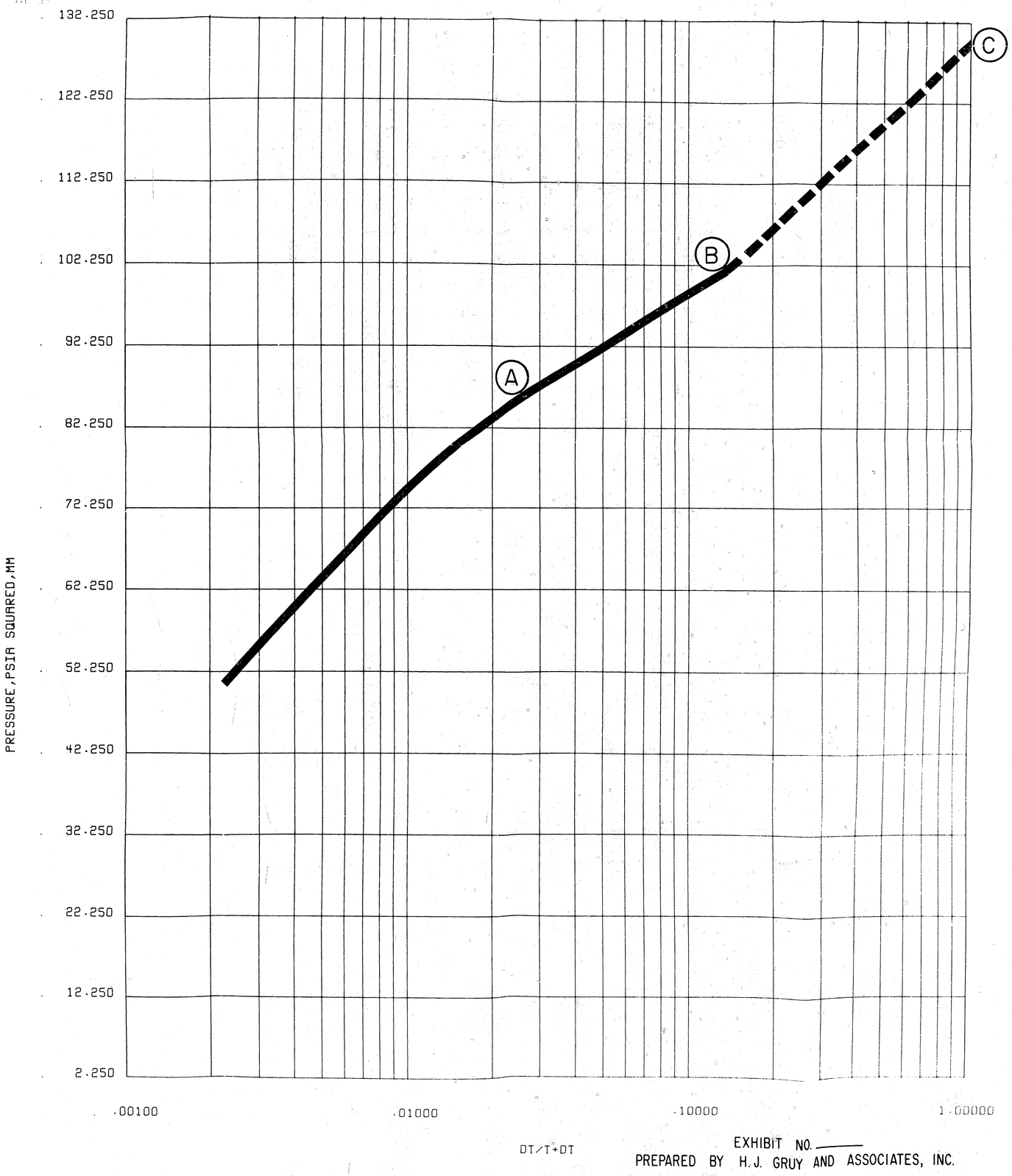


EXHIBIT NO. ——

PREPARED BY H. J. GRUY AND ASSOCIATES, INC.

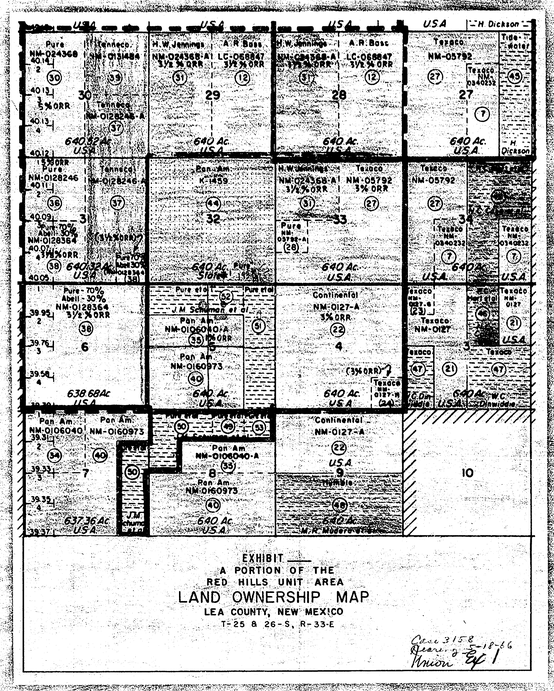
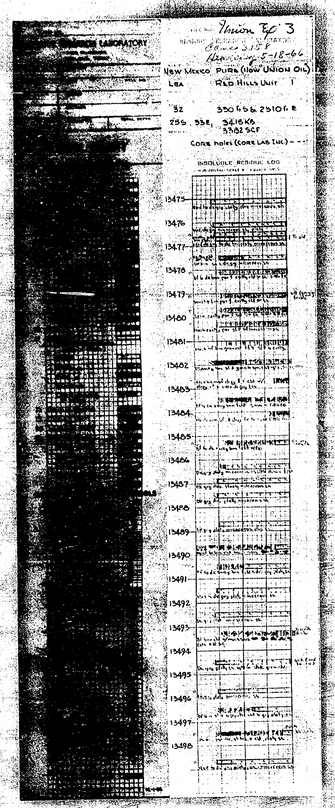


EXHIBIT —
A PORTION OF THE
RED HILLS UNIT AREA
LAND OWNERSHIP MAP
LEA COUNTY, NEW MEXICO
T-25 & 26-S, R-33-E

Case 3158
Exhibit 5-10-66
Union Exh 1

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



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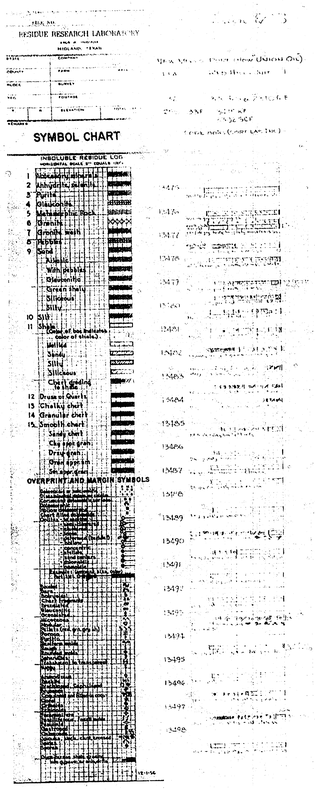
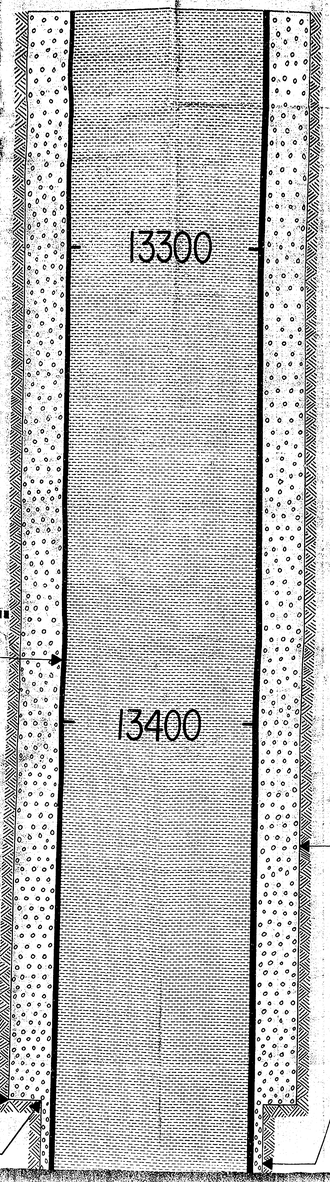


U.S.M.C.F. MICROGRAPHICS

BEST AVAILABLE COPY

4

DEPTH REFERENCE
SURFACE CASING FLANGE



CASING SIZE 8 5/8"

BIT SIZE
12 1/4"
9 1/2"

13475'
(LOG DEPTH 13480')

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Exhibit No. 4
Case No. 3158
May 18, 1966

W.N.M.C.F. MICROGRAPHICS
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BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Exhibit No. 4
Case No. 3158
May 19, 1966

13400

BIT SIZE
12 1/4"
9 1/2"

13475'
(LOG DEPTH 13480')

13500

13600

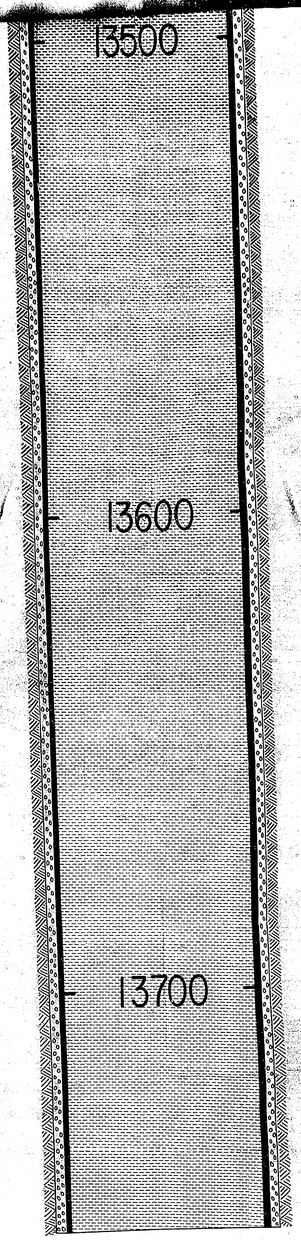
13700

LEGEND

EXHIBIT NO. 4

DIAGRAM SHOWING
BOREHOLE ENVIRONMENT
FROM 13250' TO 13750'

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



LEGEND

- 16.7 POUND MUD
- CEMENT
- WALL OF BOREHOLE AT BIT GAGE

EXHIBIT NO. 4

DIAGRAM SHOWING
BOREHOLE ENVIRONMENT
FROM 13250' TO 13750'

PURE OIL COMPANY
RED HILLS UNIT NO. 1
LEA COUNTY, NEW MEXICO

AS OF OCTOBER 22, 1963

PREPARED BY H.J. GRUY AND ASSOCIATES, INC.

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

EXHIBIT NO. 5

CORE LABORATORIES, INC. *Petroleum Reservoir Engineering*

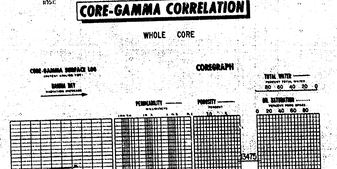
COMPANY THE HUNT OIL COMPANY FIELD WILDCAT FILE RP-1-10609

WELL RED HILLS UNIT NO. 1 COUNTY LEA DATE 8-1-79

LOCATION 330 FS & 1980 FWL SEC. 31-T26S-R33E STATE NEW MEXICO ELEV. 3819' GR 3840' DF

CORE-GAMMA CORRELATION

WHOLE CORE



Ojo Chiso Sand
Abo Formation

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

EXHIBIT NO. UNION Ex 5

CORE LABORATORIES, INC. CORE LAB *Petroleum Reservoir Engineering*

WP-3-2174

COMPANY THE PURE OIL COMPANY FIELD WILDCAT FILE WP-1-6082

WELL RED HILLS UNIT NO. 1 COUNTY LEA DATE 8-22-63

LOCATION 530 FS & 2310 FEL SEC. 32-T. 19S. R35E. STATE NEW MEXICO ELEV. 2819' GR 2849' RT

CORE-GAMMA CORRELATION

WHOLE CORE

BEFORE THE OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Union Exhibit No. 5
Case No. 3158
May 18, 1966

CORE-GAMMA SURFACE LOG
(PATENT APPLIED FOR)

GAMMA RAY
RADIATION INCREASE →

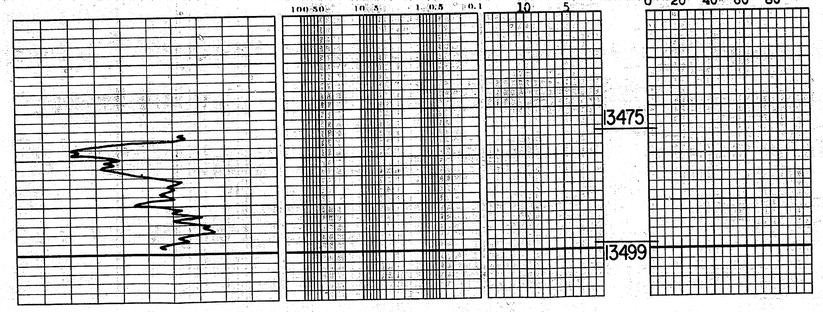
COREGRAPH

TOTAL WATER
PERCENT TOTAL WATER
80 60 40 20 0

PERMEABILITY
MILLIDARCYS
100 50 10 5 1 0.5 0.1

POROSITY
PERCENT
10 5

OIL SATURATION
PERCENT PORE SPACE
0 20 40 60 80



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

EXHIBIT NO. 6

CORE LABORATORIES, INC. *Petroleum Reservoir Engineering*

COMPANY THE PLRE OIL COMPANY FIELD WILDCAT FILE WP-1-6309

WELL RED HILLS UNIT NO. 1 COUNTY LEA DATE 5-5-66

LOCATION 530' FSL 2310' FEL SEC. 32 STATE NEW MEXICO ELEV. 2819' GR 2849' RT
T-25-S R-35-E

CORE-GAMMA CORRELATION

SLABBED CORE

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Exhibit No. 6
Case No. 3158
May 18, 1966

CORE-GAMMA SURFACE LOG
(PATENT APPLIED FOR)

GAMMA RAY
RADIATION INCREASE →

COREGRAPH

TOTAL WATER ——
PERCENT TOTAL WATER
80 60 40 20 0

PERMEABILITY ——
MILLIDARCYS
100 50 10 5 1 0.5 0.1

POROSITY ——
PERCENT
10 5 0

OIL SATURATION ------
PERCENT PORE SPACE
0 20 40 60 80

13475

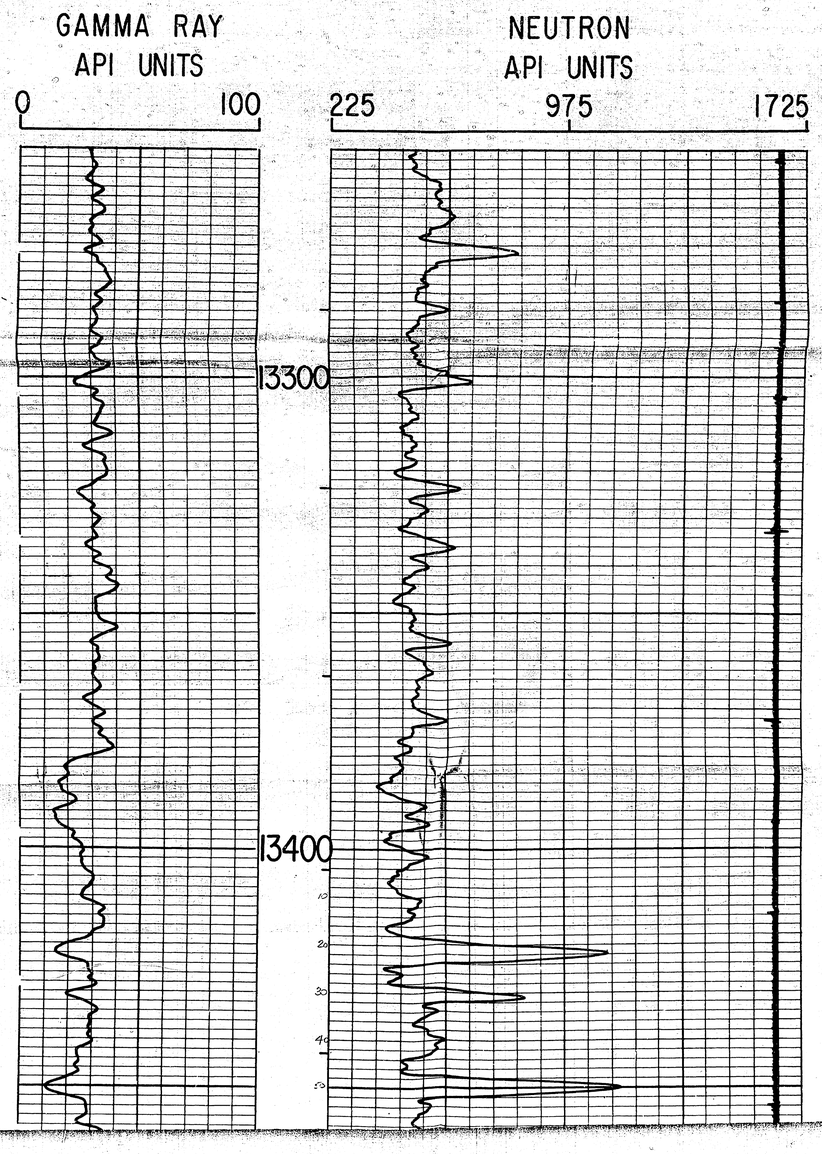
13499

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

EXHIBIT NO. 7

SCHLUMBERGER GAMMA RAY NEUTRON LOG
DEPTH REFERENCE - SURFACE CASING FLANGE

PURE OIL COMPANY
RED HILLS UNIT NO. 1
LEA COUNTY, NEW MEXICO
OCTOBER 22, 1963



BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Exhibit No. 7
Case No. 3812
May 18 1966

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

U.S.A.F.C.P. RECORDS/DOS
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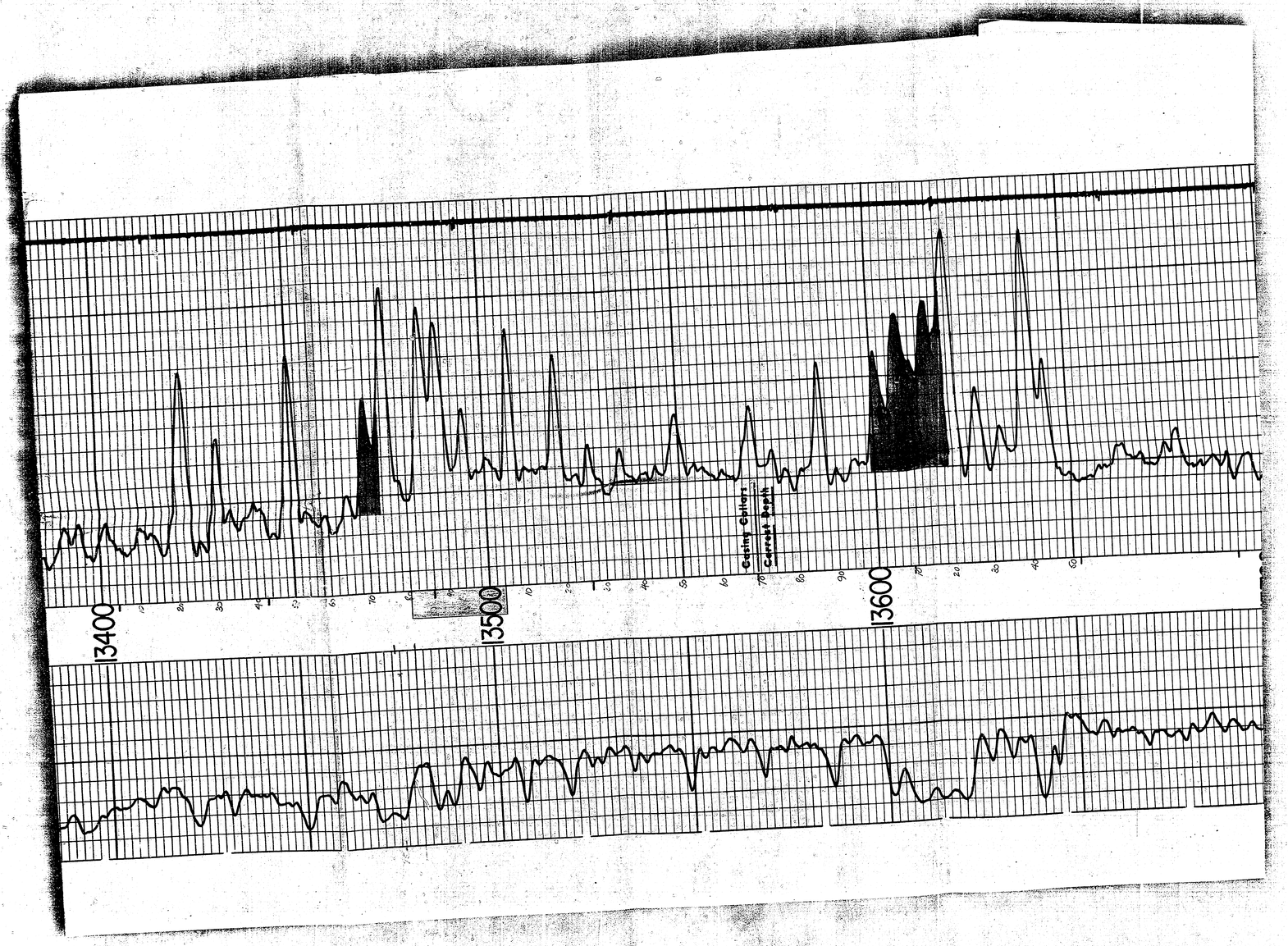
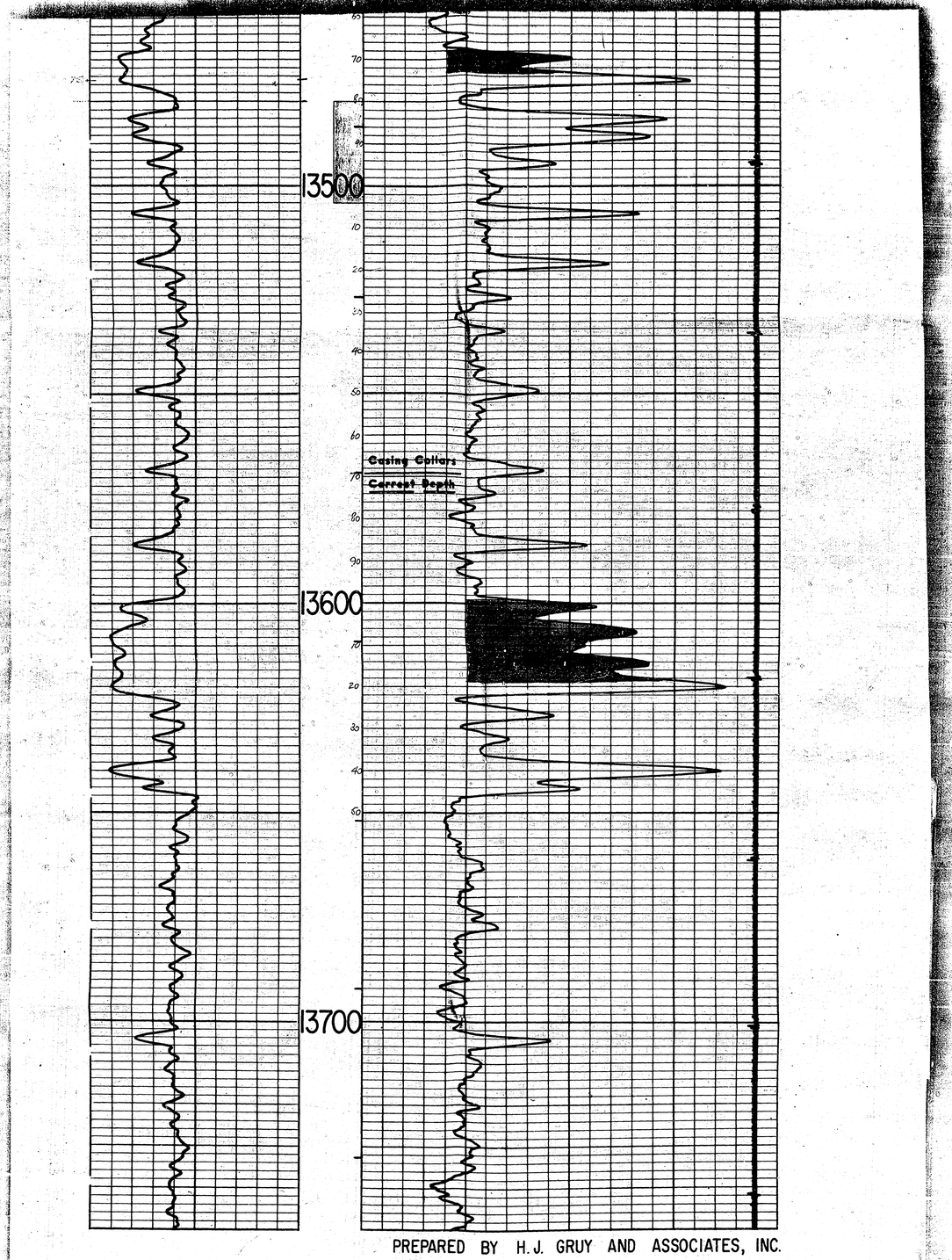




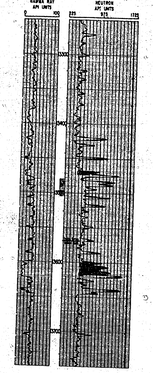
PREPARED BY H. J. GRUY AND ASSOCIATES, INC.

V.S.N.M.C.F. MICROGRAPHICS
BEST AVAILABLE COPY

H. J. GRUY AND ASSOCIATES, INC.

SCHLUMBERGER GAMMA RAY NEUTRON LOG
DEPTH REFERENCE - SURFACE CASING FLANGE

PURE OIL COMPANY
RED HILLS UNIT NO. 1
LEA COUNTY, NEW MEXICO
OCTOBER 22, 1963



Case 315
Hearing 5-10-66
EXHIBIT NO. Union 7
PREPARED BY H.J. GRUY AND ASSOCIATES, INC.

N.M.O.C.D. MICROGRAPHICS
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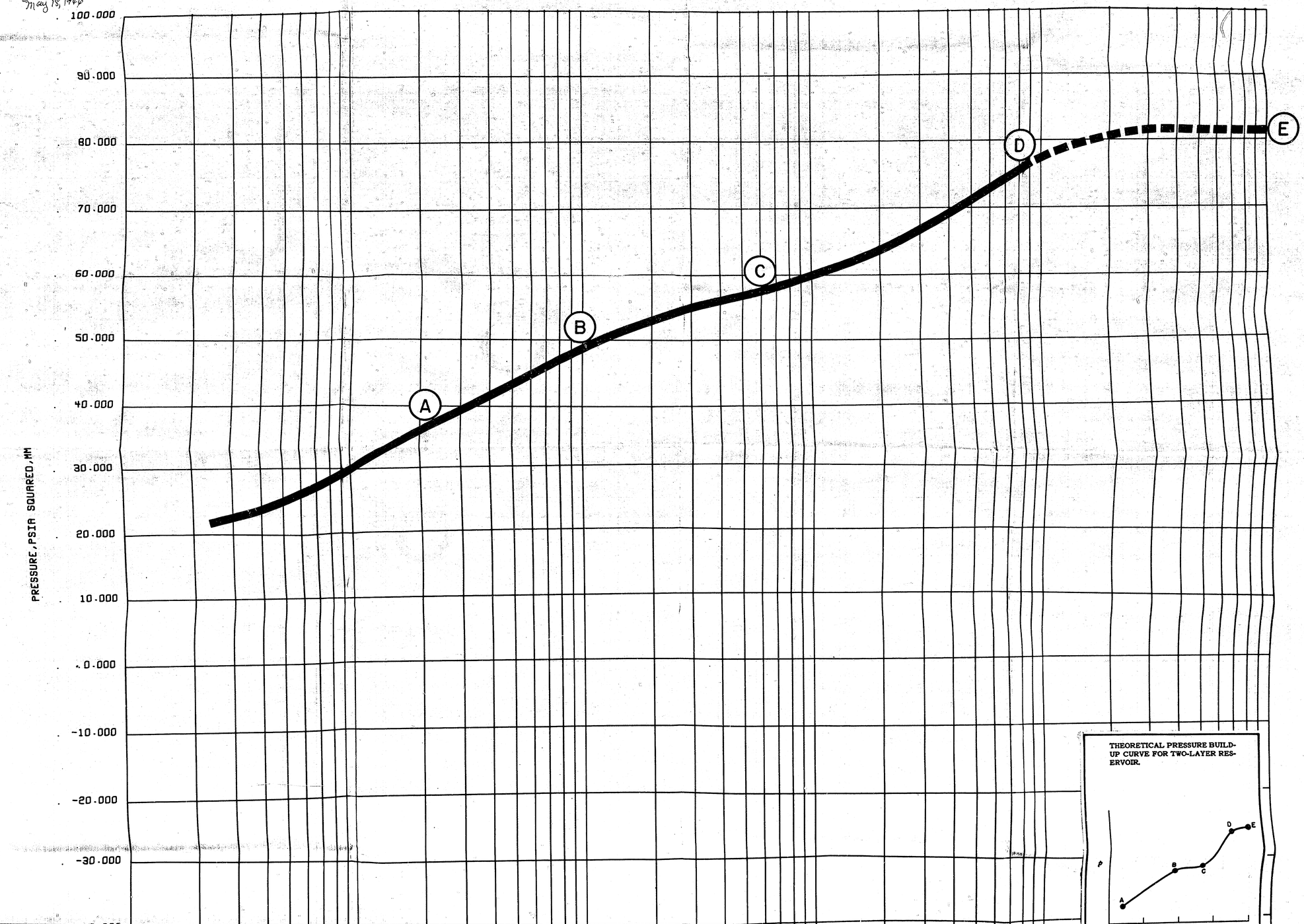
PRESSURE BUILD-UP TEST FROM 8-7-65 TO 8-31-65 (CONVERTED WHP)

UNION OIL COMPANY OF CALIFORNIA WELL NO 1 RED HILLS UNIT

RED HILLS (WOLFCAMP) FIELD-LEA COUNTY, NEW MEXICO

8

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Exhibit No. 2
Case No. 2150
May 18, 1966



THEORETICAL PRESSURE BUILD-UP CURVE FOR TWO-LAYER RESERVOIR.

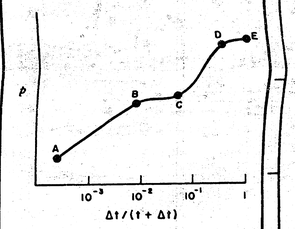
PRESSURE, PSIA SQUARED, MM

30.000
20.000
10.000
0.000
-10.000
-20.000
-30.000
-40.000
-50.000

.00001 .00010 .00100 .01000 .10000 1.00000

DT/T+DT

THEORETICAL PRESSURE BUILD-UP CURVE FOR TWO-LAYER RESERVOIR.



(Taken from Latkovitz, H. C., et al. "A Study of The Behavior of Bounded Reservoirs Composed of Stratified Layers", Trans., A.I.M.E. (1961) Vol. 222, 43.)

EXHIBIT NO. _____

PREPARED BY H.J. GRUY AND ASSOCIATES, INC.

W.R.M.C.F. MICROGRAPHICS

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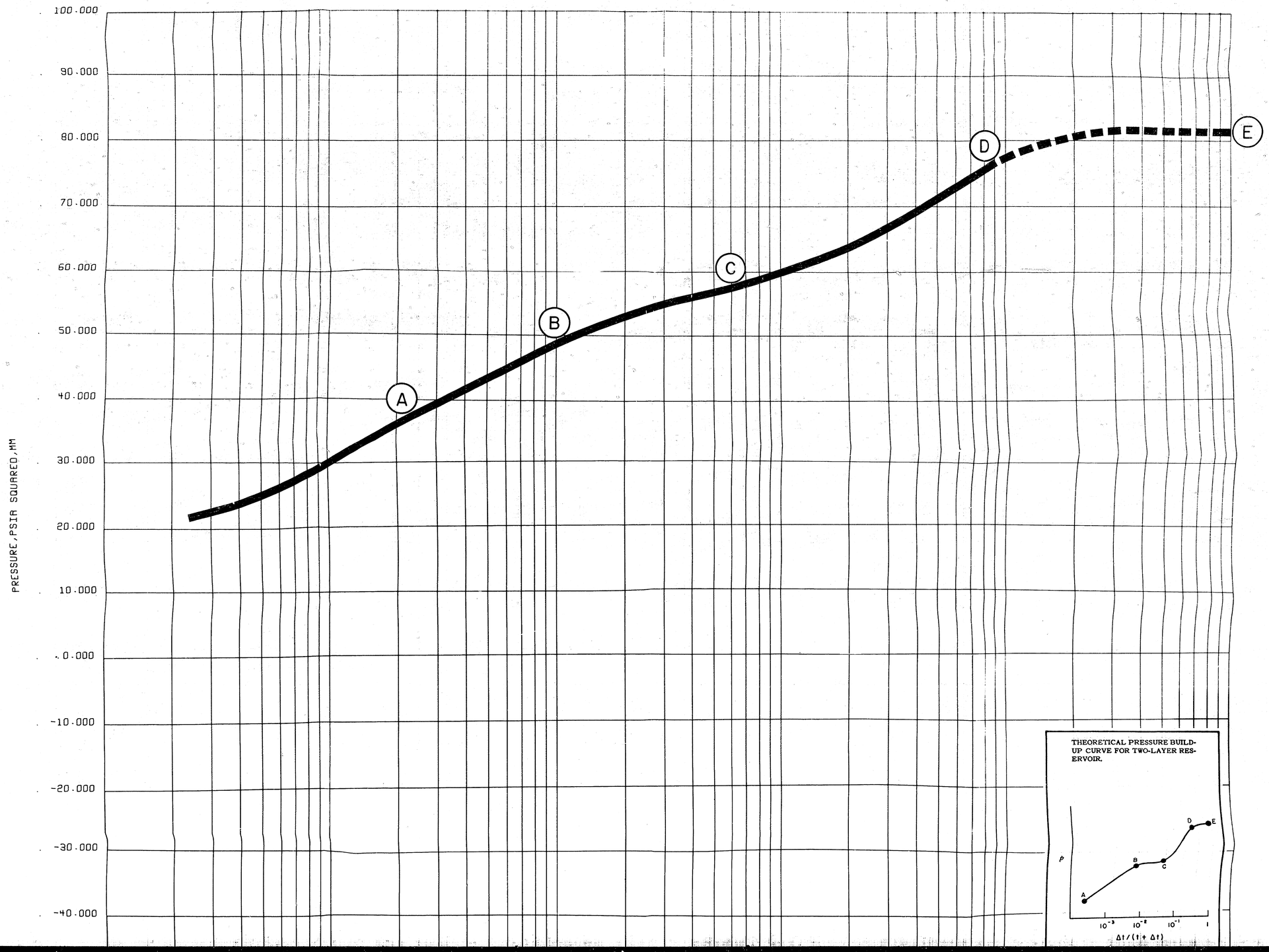
PRESSURE BUILD-UP TEST FROM 8-7-65 TO 8-31-65 (CONVERTED WHP)

UNION OIL COMPANY OF CALIFORNIA WELL NO 1 RED HILLS UNIT

RED HILLS (WOLFCAMP) FIELD-LEA COUNTY, NEW MEXICO

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Exhibit No.
Case No.



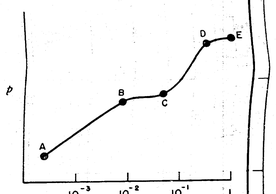
THEORETICAL PRESSURE BUILD-UP CURVE FOR TWO-LAYER RESERVOIR.

90.000
80.000
70.000
60.000
50.000
40.000
30.000
20.000
10.000
0.000
-10.000
-20.000
-30.000
-40.000
-50.000

PRESSURE, PSIA SQUARED, MM

A
B
C
D
E

THEORETICAL PRESSURE BUILD-UP CURVE FOR TWO-LAYER RESERVOIR.



(Taken from LeBourne, H. C., et al, "A Study of The Behavior of Bounded Reservoirs Composed of Stratified Layers", Trans., A.I.M.E. (1961) Vol. 222, 43.)

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ΔT/T+ΔT

EXHIBIT NO. _____

PREPARED BY H.J. GRUY AND ASSOCIATES, INC.

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