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RELEASED

KCC

JAN 28 1991

KCC

DEC 13 1991

FROM: CONFIDENTIAL

DEC 13 1991

ROBERTS AND MURPHY INCORPORATED

LEASE : BOX RANCH

WELL NO. : 3-3

TEST NO. : 1

15-033-20755

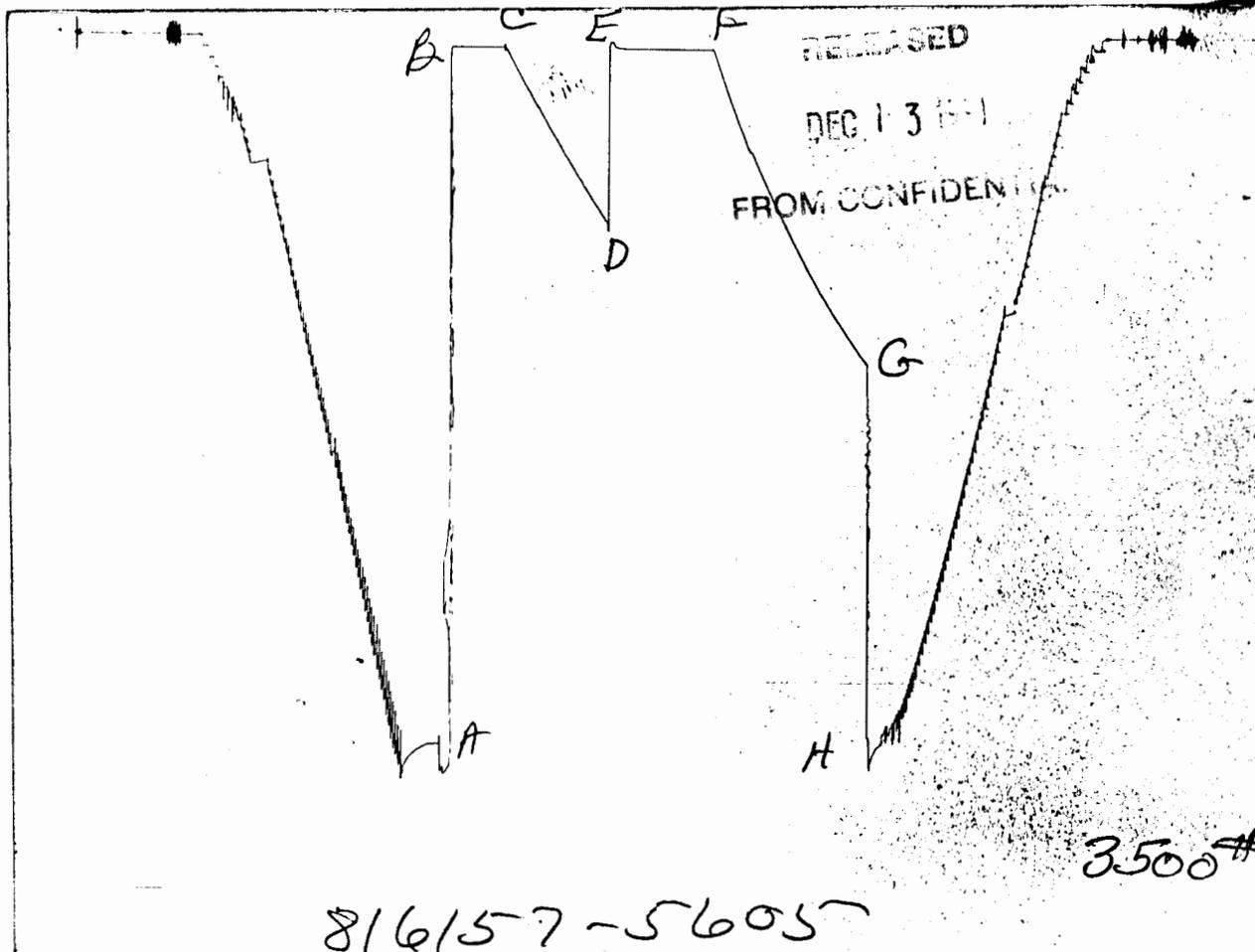
TICKET NO. 81615700

07-SEP-89

PRATT

LEGAL LOCATION	3-3	1	6187.0 - 6207.0	ROBERTS AND MURPHY INCORPORATED
SEC. - TWP. - RANG.	3-35-20 (A)		TESTED INTERVAL	LEASE OWNER/COMPANY NAME
LEASE NAME		FIELD AREA	COUNTY	COMANCHE
			STATE	KANSAS
				DR

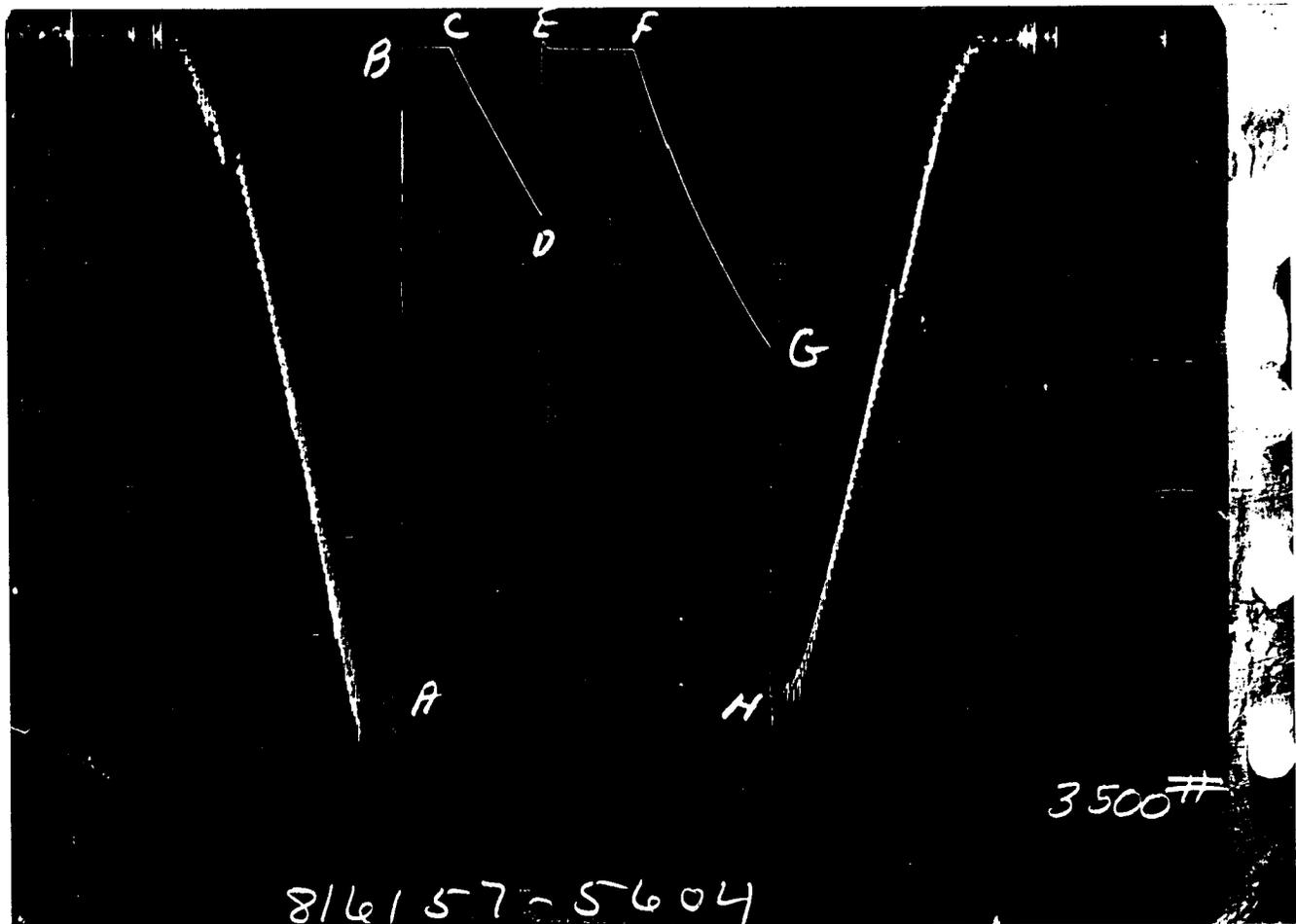
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816157-5605

GAUGE NO: 5605 DEPTH: 6166.0 BLANKED OFF: NO HOUR OF CLOCK:

ID	DESCRIPTION	PRESSURE		TIME	
		REPORTED	CALCULATED	REPORTED	CALCULATED
A	INITIAL HYDROSTATIC		2960.4		
B	INITIAL FIRST FLOW		48.8	30.0	30.9
C	FINAL FIRST FLOW		48.8		
C	INITIAL FIRST CLOSED-IN		48.8	60.0	59.8
D	FINAL FIRST CLOSED-IN		784.0		
E	INITIAL SECOND FLOW		29.6	60.0	60.1
F	FINAL SECOND FLOW		57.9		
F	INITIAL SECOND CLOSED-IN		57.9	90.0	89.1
G	FINAL SECOND CLOSED-IN		1365.6		
H	FINAL HYDROSTATIC		2952.9		



GAUGE NO: 5604 DEPTH: 6204.0 BLANKED OFF: YES HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	2967	2970.9			
B	INITIAL FIRST FLOW	41	53.1	30.0	30.9	F
C	FINAL FIRST FLOW	41	53.1			
C	INITIAL FIRST CLOSED-IN	41	53.1	60.0	59.8	C
D	FINAL FIRST CLOSED-IN	800	787.9			
E	INITIAL SECOND FLOW	31	27.9	60.0	60.1	F
F	FINAL SECOND FLOW	41	61.3			
F	INITIAL SECOND CLOSED-IN	41	61.3	90.0	89.1	C
G	FINAL SECOND CLOSED-IN	1364	1369.5			
H	FINAL HYDROSTATIC	2946	2960.7			

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DEC 13 1991
FROM CONFIDENTIAL

EQUIPMENT & HOLE DATA

FORMATION TESTED: VIOLA

NET PAY (ft): _____

GROSS TESTED FOOTAGE: 20.0

ALL DEPTHS MEASURED FROM: KELLY BUSHING

CASING PERFS. (ft): _____

HOLE OR CASING SIZE (in): 7.875

ELEVATION (ft): 1726.0

TOTAL DEPTH (ft): 6207.0

PACKER DEPTH(S) (ft): 6181. 6187

FINAL SURFACE CHOKE (in): _____

BOTTOM HOLE CHOKE (in): 0.750

MUD WEIGHT (lb/gal): 9.20

MUD VISCOSITY (sec): 48

ESTIMATED HOLE TEMP. (°F): _____

ACTUAL HOLE TEMP. (°F): 125 @ 6202.0 ft

TICKET NUMBER: 81615700

DATE: 8-30-89 TEST NO: 1

TYPE DST: OPEN HOLE

FIELD CAMP: PRATT

TESTER: L.R. PARKER

WITNESS: L. JENKINS

DRILLING CONTRACTOR: RINE DRILLING COMPANY

TYPE	TIME
8-30-89	0915
	1245
	1405
	1445
	1455
	1711
	1715
	1745
	1845
	1945
	2115
	2330

FLUID PROPERTIES FOR RECOVERED MUD & WATER

SOURCE	RESISTIVITY	CHLORIDES
_____	_____ @ _____ °F	_____ ppm
_____	_____ @ _____ °F	_____ ppm
_____	_____ @ _____ °F	_____ ppm
_____	_____ @ _____ °F	_____ ppm
_____	_____ @ _____ °F	_____ ppm
_____	_____ @ _____ °F	_____ ppm

SAMPLER DATA

P_{sig} AT SURFACE: _____

cu.ft. OF GAS: _____

cc OF OIL: _____

cc OF WATER: _____

cc OF MUD: _____

TOTAL LIQUID cc: _____

HYDROCARBON PROPERTIES

OIL GRAVITY (°API): _____ @ _____ °F

GAS/OIL RATIO (cu.ft. per bbl): _____

GAS GRAVITY: _____

CUSHION DATA

TYPE	AMOUNT	WEIGHT
_____	_____	_____
_____	_____	_____

RECOVERED :

2650' OF GAS IN PIPE

100' OF SLIGHTLY GAS CUT MUD

RELEASED

DEC 13 1991

FROM CONFIDENTIAL

MEASURED FROM TESTER VALVE

REMARKS :

-----TIGHT HOLE-----

TICKET NO: 81615700
 CLOCK NO: 26740 HOUR: 12

GAUGE NO: 5605
 DEPTH: 6166.0

REF	MINUTES	PRESSURE	AP	$\frac{t \times \Delta t}{t + \Delta t}$	$\log \frac{t + \Delta t}{\Delta t}$
FIRST FLOW					
B 1	0.0	48.8			
C 2	30.9	48.8	0.0		
FIRST CLOSED-IN					
C 1	0.0	48.8			
2	4.0	96.8	48.0	3.6	0.937
3	8.0	152.4	103.7	6.4	0.686
4	12.0	205.1	156.4	8.6	0.554
5	16.0	259.2	210.4	10.5	0.467
6	20.0	305.6	256.8	12.1	0.406
7	24.0	360.7	311.9	13.5	0.360
8	28.0	413.2	364.4	14.7	0.323
9	32.0	464.6	415.9	15.7	0.293
10	36.0	514.5	465.7	16.6	0.269
11	40.0	563.9	515.1	17.4	0.249
12	44.0	608.1	559.3	18.2	0.231
13	48.0	657.4	608.6	18.8	0.216
14	52.0	705.5	656.7	19.4	0.203
15	56.0	750.3	701.5	19.9	0.191
D 16	59.8	784.0	735.2	20.4	0.181
SECOND FLOW					
E 1	0.0	29.6			
2	10.0	57.3	27.7		
3	20.0	57.3	0.0		
4	30.0	57.3	0.0		
5	40.0	57.3	0.0		
6	50.0	58.3	0.9		
F 7	60.1	57.9	-0.3		
SECOND CLOSED-IN					
F 1	0.0	57.9			
2	6.0	191.1	133.2	5.6	1.207
3	12.0	313.4	255.4	10.6	0.933
4	18.0	426.7	368.8	15.0	0.783
5	24.0	519.0	461.0	19.0	0.680
6	30.0	617.1	559.2	22.6	0.606
7	36.0	708.9	651.0	25.8	0.548
8	42.0	797.9	739.9	28.7	0.501
9	48.0	885.9	827.9	31.4	0.462
10	54.0	968.0	910.1	33.9	0.429
11	60.0	1046.2	988.2	36.2	0.401
12	66.0	1118.7	1060.8	38.2	0.377
13	72.0	1190.2	1132.2	40.2	0.355
14	78.0	1254.4	1196.4	42.0	0.336
15	84.0	1321.2	1263.3	43.7	0.319

REF	MINUTES	PRESSURE	AP	$\frac{t \times \Delta t}{t + \Delta t}$
SECOND CLOSED-IN - CONTINUED				
G 16	89.1	1365.6	1307.7	45.0
RELEASED DEC 13 1961 FROM CONFIDENTIAL				

REMARKS:

RELEASED

DEC 13 1951

TICKET NO: 81615700

GAUGE NO: 5604

CLOCK NO: 14285 HOUR: 12

DEPTH: 6204.0

FROM CONFIDENTIAL

REF	MINUTES	PRESSURE	AP	$\frac{t \times \Delta t}{t + \Delta t}$	$\log \frac{t + \Delta t}{\Delta t}$
FIRST FLOW					
B 1	0.0	53.1			
C 2	30.9	53.1	0.0		
FIRST CLOSED-IN					
C 1	0.0	53.1			
2	4.1	105.6	52.5	3.6	0.935
3	8.0	150.0	106.9	6.3	0.688
4	12.0	211.2	158.1	8.6	0.553
5	16.0	263.9	210.8	10.5	0.467
6	20.0	309.0	255.9	12.1	0.406
7	24.0	361.1	308.0	13.5	0.359
8	28.0	411.8	358.7	14.7	0.323
9	32.0	461.7	408.6	15.7	0.294
10	36.0	511.0	458.0	16.6	0.269
11	40.0	558.1	505.0	17.4	0.249
12	44.0	607.1	554.0	18.2	0.231
13	48.0	656.1	603.0	18.8	0.216
14	52.0	705.1	652.0	19.4	0.203
15	56.0	749.1	696.0	19.9	0.191
D 16	59.8	787.9	734.8	20.4	0.181
SECOND FLOW					
E 1	0.0	27.9			
2	10.0	59.7	31.8		
3	20.0	60.2	0.5		
4	30.0	61.0	0.8		
5	40.0	61.0	0.0		
6	50.0	61.8	0.8		
F 7	60.1	61.3	-0.5		
SECOND CLOSED-IN					
F 1	0.0	61.3			
2	6.0	186.9	125.6	5.6	1.208
3	12.0	306.3	245.0	10.6	0.934
4	18.0	420.4	359.1	15.1	0.781
5	24.0	507.7	446.4	19.0	0.680
6	30.0	610.2	548.9	22.6	0.606
7	36.0	705.2	643.9	25.8	0.548
8	42.0	795.1	733.8	28.7	0.501
9	48.0	877.9	816.6	31.4	0.462
10	54.0	958.7	897.4	33.9	0.429
11	60.0	1038.1	976.8	36.2	0.401
12	66.0	1113.8	1052.5	38.2	0.377
13	72.0	1188.5	1127.2	40.2	0.355
14	78.0	1254.7	1193.4	42.0	0.336
15	84.0	1321.9	1260.6	43.7	0.319

REF	MINUTES	PRESSURE	AP	$\frac{t \times \Delta t}{t + \Delta t}$	$\log \frac{t + \Delta t}{\Delta t}$
SECOND CLOSED-IN - CONTINUED					
G 16	89.1	1369.5	1308.2	45.0	0.306

REMARKS:

RELEASED

TICKET NO. 816

DEC 13 1959.

I.D.

LENGTH

DEPTH

FROM CONFIDENTIAL

1		DRILL PIPE.....	4.500	3.826	5534.0	
3		DRILL COLLARS.....	6.000	2.250	527.0	
50		IMPACT REVERSING SUB.....	6.000	2.750	1.0	6061.5
3		DRILL COLLARS.....	6.000	2.250	91.0	
5		CROSSOVER.....	6.000	2.250	1.0	
12		DUAL CIP VALVE.....	5.000	0.870	6.0	
60		HYDROSPRING TESTER.....	5.000	0.750	5.0	6164.0
80		AP RUNNING CASE.....	5.000	2.250	4.0	6166.0
15		JAR.....	5.000	1.750	5.0	
16		VR SAFETY JOINT.....	5.000	1.000	3.0	
70		OPEN HOLE PACKER.....	6.750	1.530	6.0	6181.0
70		OPEN HOLE PACKER.....	6.750	1.530	6.0	6187.0
20		FLUSH JOINT ANCHOR.....	5.000	2.370	12.0	
83		HT-500 TEMPERATURE CASE.....	5.000	2.650	2.0	6202.0
81		BLANKED-OFF RUNNING CASE.....	5.000		4.0	6204.0
TOTAL DEPTH						6207.0

EQUIPMENT DATA

TEMPERATURE RECORDER CHART



10° each circle

Indicated Flow Capacity

$$kh = \frac{.001637 Q_o T}{m}$$

RELEASED

md-ft

Average Effective Permeability

$$k = \frac{kh}{h}$$

DEC 13 1951

FROM CONFIDENTIAL

md

Skin Factor

$$S = 1.151 \left[\frac{m(P^*) - m(P_i)}{m} - \text{LOG} \left(\frac{k (t/60)}{\phi \mu c_f r_w^2} \right) + 3.23 \right]$$

Damage Ratio

$$DR = \frac{m(P^*) - m(P_i)}{m(P^*) - m(P_i) - 0.87 m S}$$

Indicated Flow Rate (Maximum)

$$AOF_1 = \frac{Q_o m(P^*)}{m(P^*) - m(P_i)}$$

MCFD

Indicated Flow Rate (Minimum)

$$AOF_2 = Q_o \sqrt{\frac{m(P^*)}{m(P^*) - m(P_i)}}$$

MCFD

Approx. Radius of Investigation

$$r = 0.032 \sqrt{\frac{k (t/60)}{\phi \mu c_f}}$$

ft

Because of the uncertainty of variable well conditions and the necessity of relying on facts and supporting services furnished by others, HRS is unable to guarantee the accuracy of any chart interpretation, research analysis, job recommendation or other data furnished by HRS. HRS personnel will use their best efforts in gathering such information and their best judgment in interpreting it but customer agrees that HRS shall not be responsible for any damages arising from the use of such information except where due to HRS gross negligence or willful misconduct in the preparation of furnishing of information.

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DEC 13 1991

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DEC 13 1991

FROM CONFIDENTIAL

ROBERTS AND MURPHY INCORPORATED

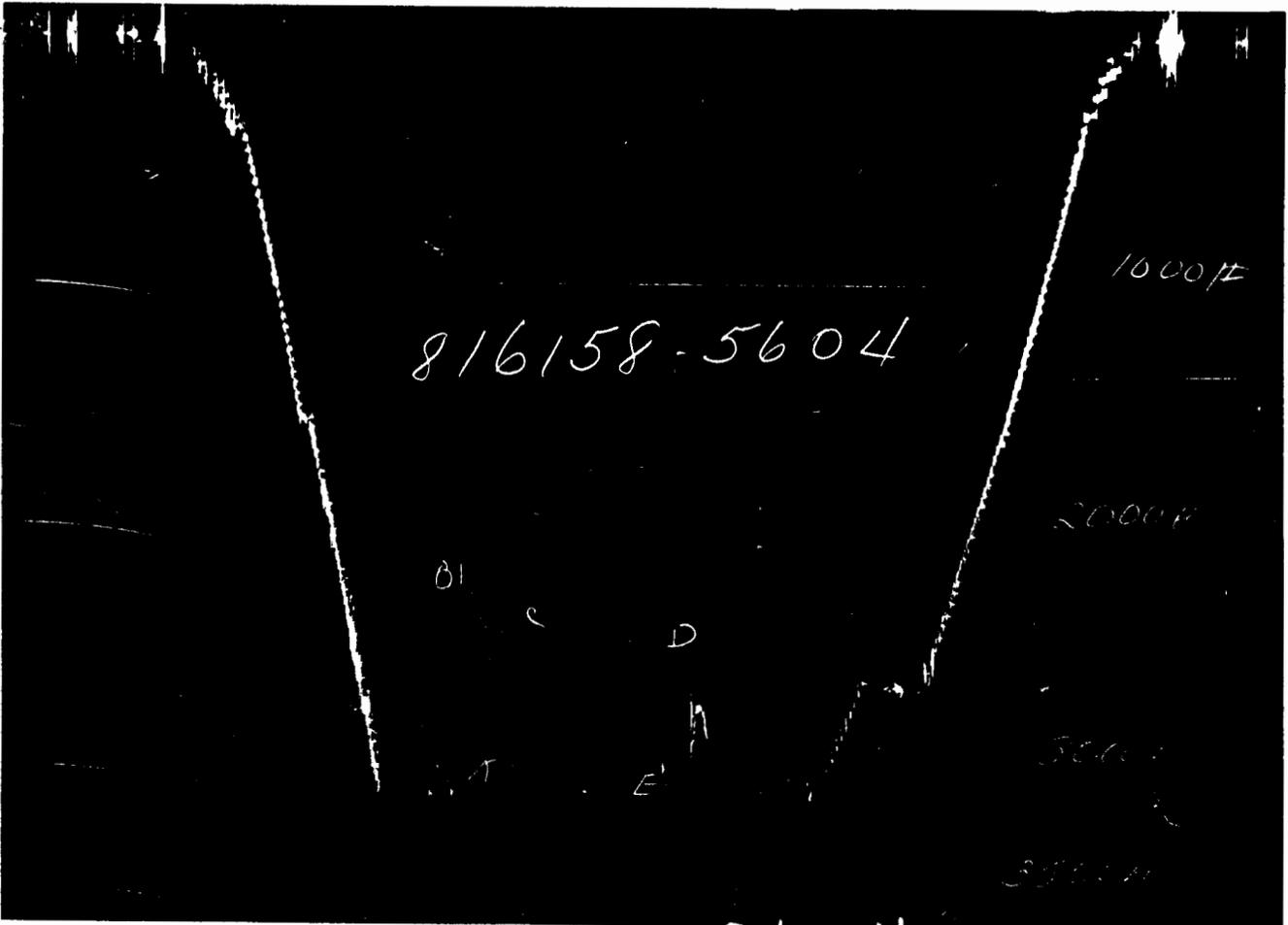
LEASE : BOX RANCH

WELL NO. : 3-3

TEST NO. : 2

TICKET NO. 81615800
11-SEP-89
PRATT

LEGAL LOCATION SEC. - TWP. - RANG.	3-35-20 W	WELL NO.	3-3	TEST NO.	2	TESTED INTERVAL	5212.0 - 5257.0	LEASE OWNER/COMPANY NAME	ROBERTS AND MURPHY INCORPORATED
FIELD AREA		COUNTY	COMANCHE	STATE	KANSAS				SM



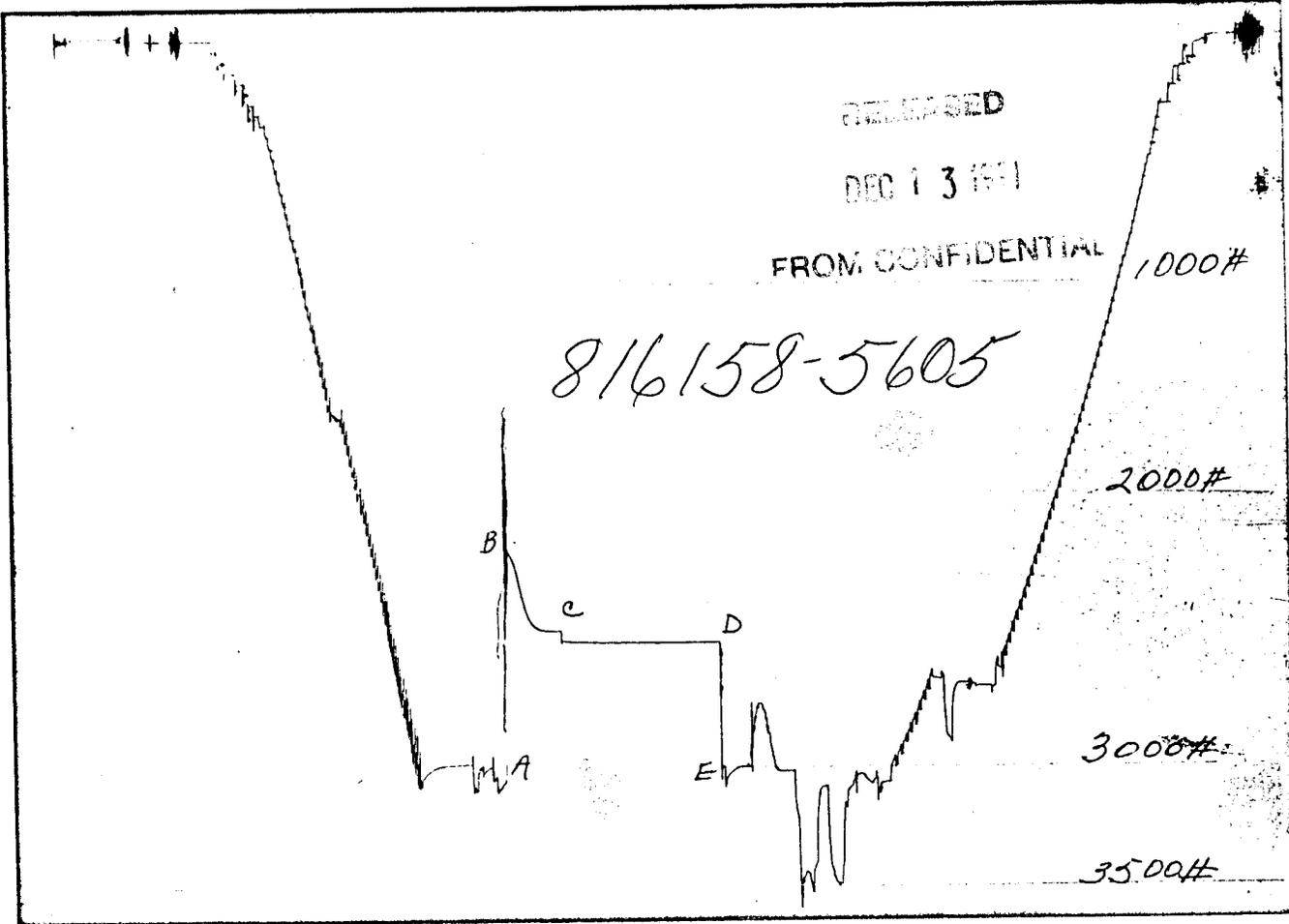
GAUGE NO: 5604 DEPTH: 6254.0 BLANKED OFF: YES HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	2998	3020.6			
B	INITIAL FIRST FLOW	2158	2224.1			
C	FINAL FIRST FLOW	2448	2454.2	30.0	31.6	F
C	INITIAL FIRST CLOSED-IN	2448	2454.2			
D	FINAL FIRST CLOSED-IN	2469	2487.2	90.0	88.4	C
E	FINAL HYDROSTATIC	2998	3020.6			

RELEASED

DEC 13 1991

FROM CONFIDENTIAL



GAUGE NO: 5605 DEPTH: 6191.0 BLANKED OFF: NO HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC		3000.9			
B	INITIAL FIRST FLOW		2075.0			
C	FINAL FIRST FLOW		2423.0	30.0	31.6	F
C	INITIAL FIRST CLOSED-IN		2423.0			
D	FINAL FIRST CLOSED-IN		2471.2	90.0	88.4	C
E	FINAL HYDROSTATIC		3000.9			

EQUIPMENT & HOLE DATA

FORMATION TESTED: VIOLA DEC 13 1989
 NET PAY (ft): _____
 GROSS TESTED FOOTAGE: 45.0 FROM CONFIDENTIAL
 ALL DEPTHS MEASURED FROM: KELLY BUSHING
 CASING PERFS. (ft): _____
 HOLE OR CASING SIZE (in): 7.875
 ELEVATION (ft): 1726.0
 TOTAL DEPTH (ft): 6257.0
 PACKER DEPTH(S) (ft): 6206, 6212
 FINAL SURFACE CHOKE (in): 0.50000
 BOTTOM HOLE CHOKE (in): 0.750
 MUD WEIGHT (lb/gal): 9.10
 MUD VISCOSITY (sec): 62
 ESTIMATED HOLE TEMP. (°F): _____
 ACTUAL HOLE TEMP. (°F): 122 @ 6252.0 ft

TICKET NUMBER: 81615800

DATE: 8-31-89 TEST NO: 2

TYPE DST: OPEN HOLE

FIELD CAMP: PRATT

TESTER: L.R. PARKER

WITNESS: L. JENKINS

DRILLING CONTRACTOR: RINE DRILLING COMPANY

FLUID PROPERTIES FOR RECOVERED MUD & WATER

SOURCE	RESISTIVITY	CHLORIDES
_____	_____ @ _____ °F	_____ ppm
_____	_____ @ _____ °F	_____ ppm
_____	_____ @ _____ °F	_____ ppm
_____	_____ @ _____ °F	_____ ppm
_____	_____ @ _____ °F	_____ ppm
_____	_____ @ _____ °F	_____ ppm

SAMPLER DATA

P_{sig} AT SURFACE: _____
 cu.ft. OF GAS: _____
 cc OF OIL: _____
 cc OF WATER: _____
 cc OF MUD: _____
 TOTAL LIQUID cc: _____

HYDROCARBON PROPERTIES

OIL GRAVITY (°API): _____ @ _____ °F
 GAS/OIL RATIO (cu.ft. per bbl): _____
 GAS GRAVITY: _____

CUSHION DATA

TYPE AMOUNT WEIGHT

_____ _____ _____

_____ _____ _____

RECOVERED :

FLOWED 55 BBLs. OF OIL & GAS IN 25 MINUTES.....

MEASURED FROM TESTER VALVE

REMARKS :

-----TIGHT HOLE INFORMATION-----

RELEASED

DEC 13 1954

TICKET NO: 81615800
CLOCK NO: 26740 HOUR: 12

GAUGE NO: 5605
DEPTH: 6191.0

FROM CONFIDENTIAL

REF	MINUTES	PRESSURE	AP	$\frac{t \times \Delta t}{t + \Delta t}$	$\log \frac{t + \Delta t}{\Delta t}$
FIRST FLOW					
B 1	0.0	2075.0			
2	1.0	2081.8	6.8		
3	2.0	2093.9	12.2		
4	3.0	2106.8	12.9		
5	4.0	2122.4	15.5		
6	5.0	2141.5	19.1		
7	6.0	2167.4	25.9		
8	7.0	2199.6	32.2		
9	8.0	2232.0	32.4		
10	9.0	2264.2	32.2		
11	10.0	2296.1	31.9		
12	11.0	2324.3	28.2		
13	12.0	2344.5	20.2		
14	13.0	2364.0	19.5		
15	14.0	2379.9	15.8		
16	15.0	2390.8	10.9		
17	16.0	2399.4	8.6		
18	17.0	2406.0	6.6		
19	18.0	2410.5	4.5		
20	19.0	2414.2	3.7		
21	20.0	2417.1	2.9		
22	21.0	2418.6	1.5		
23	22.0	2420.3	1.7		
24	23.0	2420.8	0.5		
25	24.0	2421.2	0.4		
26	25.0	2421.2	0.0		
27	26.0	2421.2	0.0		
28	27.0	2421.9	0.7		
29	28.0	2422.1	0.2		
30	29.0	2422.4	0.2		
31	30.0	2422.4	0.0		
32	31.0	2422.4	0.0		
C 33	31.6	2423.0	0.6		
FIRST CLOSED-IN					
C 1	0.0	2423.0			
2	1.0	2452.4	39.4	1.0	1.499
3	2.0	2463.1	40.1	1.9	1.223
4	3.0	2464.1	41.1	2.7	1.063
5	4.0	2464.9	42.0	3.5	0.951
6	5.0	2465.6	42.6	4.3	0.863
7	6.0	2465.7	42.7	5.0	0.798
8	7.0	2466.3	43.3	5.7	0.741
9	8.0	2466.4	43.4	6.4	0.695
10	9.0	2466.9	43.9	7.0	0.656
11	10.0	2467.0	44.1	7.6	0.619
12	12.0	2467.4	44.4	8.7	0.560
13	14.0	2467.7	44.7	9.7	0.512
14	16.0	2468.3	45.3	10.6	0.473
15	18.0	2468.7	45.7	11.5	0.440

REF	MINUTES	PRESSURE	AP	$\frac{t \times \Delta t}{t + \Delta t}$	$\log \frac{t + \Delta t}{\Delta t}$
FIRST CLOSED-IN - CONTINUED					
16	20.0	2468.7	45.7	12.2	0.4
17	22.0	2468.7	45.7	13.0	0.3
18	24.0	2468.9	45.9	13.6	0.3
19	26.0	2469.3	46.4	14.3	0.3
20	28.0	2469.9	46.9	14.9	0.3
21	30.0	2470.1	47.1	15.4	0.3
22	35.0	2470.1	47.1	16.6	0.2
23	40.0	2470.2	47.2	17.5	0.2
24	45.0	2470.2	47.2	18.6	0.2
25	50.0	2470.4	47.4	19.3	0.2
26	55.0	2470.4	47.4	20.1	0.1
27	60.0	2470.9	47.9	20.7	0.1
28	70.0	2470.9	47.9	21.8	0.1
29	80.0	2470.9	47.9	22.6	0.1
D 30	88.4	2471.2	48.2	23.3	0.1

REMARKS:

TICKET NO: 81615800

CLOCK NO: 14285 HOUR: 12

GAUGE NO: 5604

DEPTH: 6254.0

RELEASED

DEC 13 1954

log $\frac{t+\Delta t}{\Delta t}$	REF	MINUTES	PRESSURE	AP	$\frac{t+\Delta t}{\Delta t}$	log $\frac{t+\Delta t}{\Delta t}$	REF	MINUTES	PRESSURE	AP	$\frac{t+\Delta t}{\Delta t}$	log $\frac{t+\Delta t}{\Delta t}$	
	FIRST FLOW							FIRST CLOSED-IN - CONTINUED					
0.412							16	20.0	2486.1	31.9	12.2	0.412	
0.387							17	22.0	2486.2	32.0	13.0	0.386	
0.365	B	1	0.0	2224.1			18	24.0	2486.5	32.3	13.6	0.364	
0.345		2	1.0	2225.1	0.9		19	26.0	2486.5	32.3	14.3	0.345	
0.327		3	2.0	2230.0	5.0		20	28.0	2486.5	32.3	14.8	0.328	
0.312		4	3.0	2240.8	10.8		21	30.0	2486.5	32.3	15.4	0.312	
0.279		5	4.0	2252.2	11.4		22	35.0	2486.5	32.3	16.6	0.279	
0.253		6	5.0	2264.5	12.3		23	40.0	2486.5	32.3	17.6	0.253	
0.231		7	6.0	2284.3	19.8		24	45.0	2486.5	32.3	18.6	0.231	
0.213		8	7.0	2305.5	21.2		25	50.0	2486.5	32.3	19.4	0.212	
0.197		9	8.0	2327.7	22.3		26	55.0	2486.5	32.3	20.1	0.197	
0.184		10	9.0	2349.5	21.7		27	60.0	2486.5	32.3	20.7	0.184	
0.162		11	10.0	2369.6	20.1		28	70.0	2487.0	32.7	21.8	0.162	
0.144		12	11.0	2389.4	19.9		29	80.0	2487.0	32.7	22.6	0.144	
0.133		13	12.0	2404.6	15.1		D 30	88.4	2487.2	32.9	23.3	0.133	
		14	13.0	2418.4	13.9								
		15	14.0	2428.4	9.9								
		16	15.0	2435.6	7.2								
		17	16.0	2441.4	5.8								
		18	17.0	2445.4	4.0								
		19	18.0	2448.1	2.7								
		20	19.0	2450.5	2.4								
		21	20.0	2452.1	1.6								
		22	21.0	2452.8	0.7								
		23	22.0	2453.0	0.2								
		24	23.0	2453.6	0.6								
		25	24.0	2454.0	0.4								
		26	25.0	2454.2	0.2								
		27	26.0	2454.2	0.0								
		28	27.0	2454.2	0.0								
		29	28.0	2454.2	0.0								
		30	29.0	2454.2	0.0								
		31	30.0	2454.2	0.0								
		32	31.0	2454.2	0.0								
	C	33	31.6	2454.2	0.0								
	FIRST CLOSED-IN												
	C	1	0.0	2454.2									
		2	1.0	2482.2	28.0	1.0	1.499						
		3	2.0	2483.5	29.3	1.9	1.221						
		4	3.0	2484.5	30.2	2.7	1.062						
		5	4.0	2484.7	30.4	3.5	0.949						
		6	5.0	2484.7	30.4	4.3	0.862						
		7	6.0	2484.7	30.4	5.0	0.797						
		8	7.0	2485.0	30.7	5.7	0.743						
		9	8.0	2485.2	31.0	6.4	0.693						
		10	9.0	2485.3	31.1	7.0	0.655						
		11	10.0	2485.3	31.1	7.6	0.619						
		12	12.0	2485.4	31.2	8.7	0.560						
		13	14.0	2485.4	31.2	9.7	0.512						
		14	16.0	2485.4	31.2	10.6	0.473						
		15	18.0	2486.1	31.9	11.5	0.440						

REMARKS:

DEC 13 1951

O.D.

I.D.

LENGTH

DEPTH

FROM CONFIDENTIAL

		O.D.	I.D.	LENGTH	DEPTH
1		4.500	3.825	5559.0	
3		6.000	2.250	527.0	
50		6.000	2.750	1.0	6086.5
3		6.000	2.250	91.0	
5		6.000	2.250	1.0	
12		5.000	0.870	6.0	
60		5.000	0.750	5.0	6189.0
80		5.000	2.250	4.0	6191.0
15		5.000	1.750	5.0	
16		5.000	1.000	3.0	
70		6.750	1.530	6.0	6206.0
70		6.750	1.530	6.0	6212.0
20		5.000	2.370	37.0	
83		5.000	2.650	2.0	6252.0
81		5.000		4.0	6254.0
TOTAL DEPTH					6257.0

TEMPERATURE RECORDER CHART



10° each circle

Indicated Flow Capacity $kh = \frac{.001637 Q_o T}{m}$ md-ft

Average Effective Permeability $k = \frac{kh}{h}$ md

Skin Factor $S = 1.151 \left[\frac{m(P^*) - m(P_i)}{m} \cdot \text{LOG} \left(\frac{k (l/60)}{\phi \mu c r_w^2} \right) + 3.23 \right]$ FROM CONFIDENTIAL

Damage Ratio $DR = \frac{m(P^*) - m(P_i)}{m(P^*) - m(P_i) - 0.87 mS}$

Indicated Flow Rate (Maximum) $AOF_1 = \frac{Q_o m(P^*)}{m(P^*) - m(P_i)}$ MCFD

Indicated Flow Rate (Minimum) $AOF_2 = Q_o \sqrt{\frac{m(P^*)}{m(P^*) - m(P_i)}}$ MCFD

Approx. Radius of Investigation $r_i = 0.032 \sqrt{\frac{k (l/60)}{\phi \mu c}}$ ft

Because of the uncertainty of variable well conditions and the necessity of relying on facts and supporting services furnished by others, HRS is unable to guarantee the accuracy of any chart interpretation, research analysis, job recommendation or other data furnished by HRS. HRS personnel will use their best efforts in gathering such information and their best judgment in interpreting it but customer agrees that HRS shall not be responsible for any damages arising from the use of such information except where due to HRS gross negligence or willful misconduct in the preparation of furnishing of information.