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File

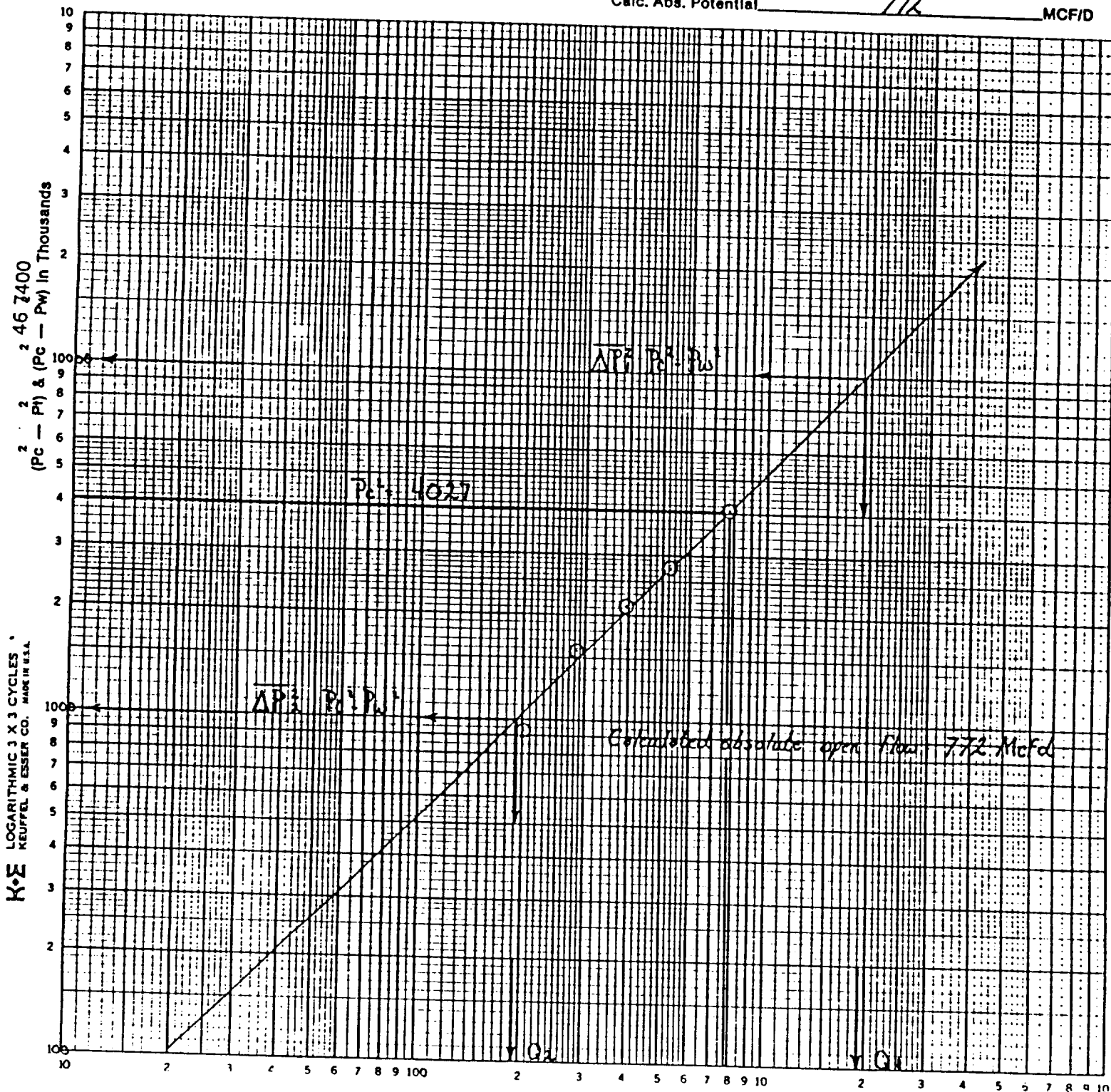
MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Type Test ☒ Initial ☐ Annual ☐ Special		Test Date 7-16-88 RECEIVED		1980 FSL																																																																																										
Company READ & STEVENS		Connection TO AIR		990 FEL																																																																																										
Pool Buffalo Valley Run		Formation Run		JUN 15 '89																																																																																										
Completion Date 7-11-88		Total Depth 8800		Elevation O. C. D.																																																																																										
Coq. Size 4.500		Set At 11.6		Perforation From 8454 To 8492																																																																																										
Thg. Size 2.375		Set At 4.7		Perforation From 0 To 0																																																																																										
Type Well - Single - Brdenhead - G.C. or G.O. Multiple SINGLE		Packer Set At 8344		County CHAVES																																																																																										
Producing Thru TUBING		Reservoir Temp. °F 120 # 8473		Mean Annual Temp. °F 60																																																																																										
L 8473		H 8473		G _g 0.630																																																																																										
C _g 0.29		% CO ₂ 0.34		% N ₂ 0																																																																																										
Prover 0		Meter Run 3.068		Taps FLNG.																																																																																										
<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="6">FLOW DATA</th> <th colspan="2">TUBING DATA</th> <th colspan="2">BHP DATA</th> <th rowspan="2">Duration of Flow</th> </tr> <tr> <th>NO.</th> <th>Prover Line Size</th> <th>X</th> <th>Orifice Size</th> <th>Press. p.s.i.g.</th> <th>Diff. h_w</th> <th>Temp. °F</th> <th>Press. p.s.i.g.</th> <th>Temp. °F</th> <th>Press. p.s.i.g.</th> <th>Temp. °F</th> </tr> <tr> <td>SI</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1987</td> <td>92</td> <td>2947.6</td> <td>120</td> <td>117</td> </tr> <tr> <td>1.</td> <td>3.068</td> <td>1.000</td> <td>545</td> <td>2.0</td> <td>104</td> <td>1675</td> <td>95</td> <td>2611.7</td> <td>120</td> <td>60</td> </tr> <tr> <td>2.</td> <td>3.068</td> <td>1.000</td> <td>545</td> <td>4.0</td> <td>104</td> <td>1405</td> <td>95</td> <td>2330.2</td> <td>120</td> <td>60</td> </tr> <tr> <td>3.</td> <td>3.068</td> <td>1.000</td> <td>545</td> <td>8.0</td> <td>114</td> <td>1295</td> <td>97</td> <td>2033.4</td> <td>120</td> <td>60</td> </tr> <tr> <td>4.</td> <td>3.068</td> <td>1.000</td> <td>545</td> <td>14.0</td> <td>117</td> <td>1070</td> <td>97</td> <td>1639.3</td> <td>120</td> <td>60</td> </tr> <tr> <td>5.</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>						FLOW DATA						TUBING DATA		BHP DATA		Duration of Flow	NO.	Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. h _w	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	SI							1987	92	2947.6	120	117	1.	3.068	1.000	545	2.0	104	1675	95	2611.7	120	60	2.	3.068	1.000	545	4.0	104	1405	95	2330.2	120	60	3.	3.068	1.000	545	8.0	114	1295	97	2033.4	120	60	4.	3.068	1.000	545	14.0	117	1070	97	1639.3	120	60	5.										
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RATE OF FLOW CALCULATIONS																																																																																														
NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor Ft.	Gravity Factor F _g	Super. Compress. Factor, F _{pv}	Rate of Flow Q, Mhd																																																																																							
1	4.79	33.41	558.2	0.9602	1.2599	1.0397	201																																																																																							
2	4.79	47.25	558.2	0.9602	1.2599	1.0397	285																																																																																							
3	4.79	66.83	558.2	0.9518	1.2599	1.0369	398																																																																																							
4	4.79	88.40	558.2	0.9493	1.2599	1.0361	525																																																																																							
5																																																																																														
NO.	P ₁	Temp. °R	T ₁	Z	Gas Liquid Hydrocarbon Ratio 35366 Mcf/bbl.																																																																																									
1	0.83	564	1.54	0.925	A.P.I. Gravity of Liquid Hydrocarbons 55.0 Deg.																																																																																									
2	0.83	564	1.54	0.925	Specific Gravity Separator Gas 0.630 XXXXXXXXXX																																																																																									
3	0.83	574	1.57	0.930	Specific Gravity Flowing Fluid XXXXX 0.837																																																																																									
4	0.83	577	1.57	0.932	Critical Pressure 672 P.S.I.A. 661 P.S.I.A.																																																																																									
5					Critical Temperature 366 R 431 R																																																																																									
$P_c = 2006.8 P_1^2 = 4027$																																																																																														
NO.	P ₁	P _w	P ₂	P ₁ ² - P _w ²	$(1) \frac{P_c^2}{P_1^2 - P_w^2} = 1.4701$ $(2) \left[\frac{P_c^2}{P_1^2 - P_w^2} \right]^n = 1.4701$ $AOI = Q \left[\frac{P_c^2}{P_1^2 - P_w^2} \right]^n = 771.8$																																																																																									
1		1758	3091	936																																																																																										
2		1563	2442	1585																																																																																										
3		1383	1913	2114																																																																																										
4		1135	1288	2739																																																																																										
5																																																																																														
Absolute Open Flow 772 Mhd @ 15.025					Angle of Slope α 45°			Slope, n 1.000																																																																																						
Remarks: BOTTOM HOLE PRESSURES W/AMERADA BOMBS																																																																																														
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BENNETT & CATHEY PRODUCTION TESTING BACK PRESSURE CURVE

Operator Read & Stevens Lease Harris Federal Well No. 10
 County Chaves Field _____ Location I 22 155 27E
 Date of Test 7-16-88 Slope "n" 1.000 Angle of Slope 45°

Calc. Abs. Potential 772 MCF/D



$$\overline{\Delta P_1^2} \quad P_c^2 - P_w^2 = 10000$$

$$\overline{\Delta P_2^2} \quad P_c^2 - P_w^2 = 1000$$

$$Q_1 = 1920$$

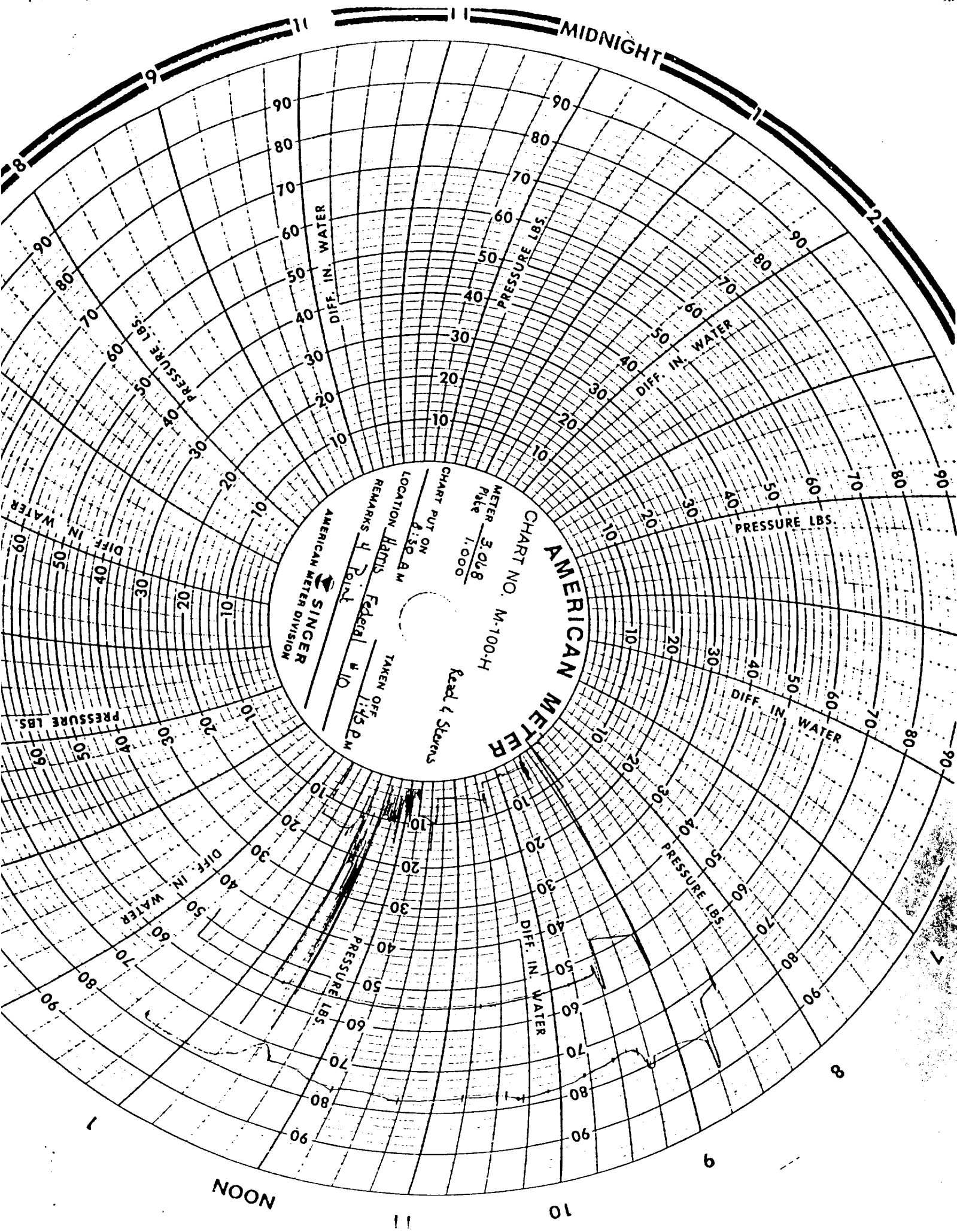
$$Q_2 = 192$$

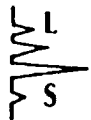
$Q, \text{ Mcfd}$

$$\text{LOG } Q_1 = 3.2833$$

$$\text{LOG } Q_2 = 2.2833$$

$$n = 1.0000$$





LABORATORY SERVICES

1331 Tasker Drive
Hobbs, New Mexico 88240

Telephone: 505-397-3713

FOR: Bennett & Cathey
Artesia, N. M.
Attn: Mr. Larry Mossbarger

SAMPLE IDENTIFICATION: Harris Fed. #10
COMPANY: Read & Stevens
LEASE:
PLANT:

SAMPLE DATA: DATE SAMPLED: 7/18/88
ANALYSIS DATE: 7/18/88
PRESSURE — PSIG: 545
TEMPERATURE — °F: 117

GAS (x) LIQUID ()
SAMPLED BY:
ANALYSIS BY: Rolland Perry

REMARKS: Volume 483 MCFD

COMPONENT ANALYSIS

COMPONENT		MOL PERCENT	GPM	LIQ. VOL. PERCENT
Hydrogen Sulfide	(H2S)	0		
Nitrogen	(N2)	0.34		
Carbon Dioxide	(CO2)	0.29		
Methane	(C1)	89.77		
Ethane	(C2)	6.45	1.645	
Propane	(C3)	1.99	0.548	
I-Butane	(IC4)	0.22	0.072	
N-Butane	(NC4)	0.36	0.114	
I-Pentane	(IC5)	0.09	0.033	
N-Pentane	(NC5)	0.07	0.025	
Hexane	(C6)	0.08	0.037	
Others Plus	(C7+)	0.34	0.190	
		100.00	2.664	

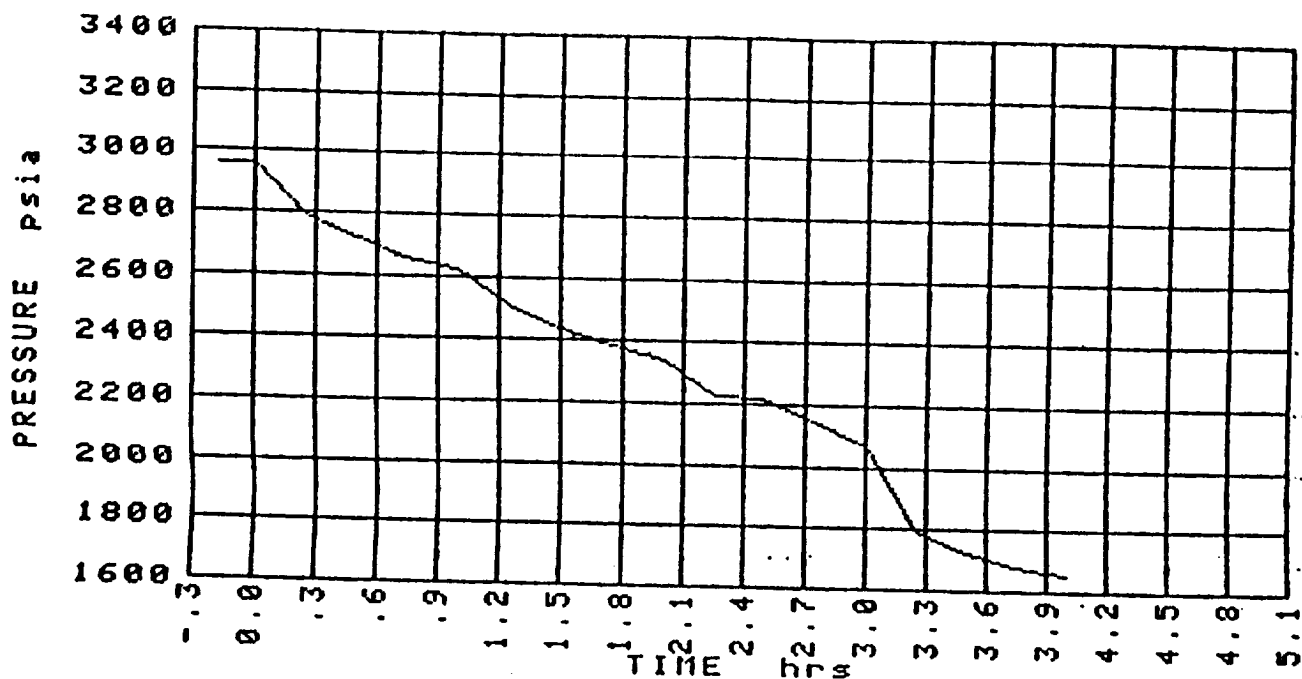
BTU/CU. FT. — DRY 1119
At 14.650 WET 1100

SPECIFIC GRAVITY — CALCULATED 0.630
MEASURED

VAPOR PRESSURE (ABSOLUTE) — CALCULATED

26# GASOLINE — 0.325

CU. FT./GAL. —



COMPANY: READ & STEVENS, INC.

LEASE: HARRIS FEDERAL

FIELD:

COUNTY: CHAVES

STATUS: FOUR POINT BACK PRESSURE TEST

PERFORATIONS FROM: 8454 ft

DEPTH: 8330 ft

ELEMENT#: RPG3#32352

CLOCK# 32463

ELEMENT# RPG3#43002

CLOCK# 21664

START CLOCK 07/16/88

SET ELEMENT 07/16/88

WELL SHUT IN 07/11/88

TEST ENDED 07/16/88

CONTACT: DAN LOUGH

WELL: 10

ZONE:

STATE: New Mexico

OPERATOR: FAULKENBERRY

TD: 8492 ft

TEMPERATURE: 120°F

ELEMENT RANGE: 5975 psig

CLOCK RANGE: 12 hrs

ELEMENT RANGE: 6775 psig

CLOCK RANGE: 12 hrs

08:45:00 1990 psig

09:20:00 1990 psig

12:38:00 975 psig

13:30:00 1070 psig

GAIN= 1

FILE: 145-HAR:D701

BIAS= 44 psi

BAROMETRIC PRESSURE= 13.2 psia

BENNETT-CATHEY WIRE LINE SERVICE
 PHONE (505) 748-3354
 ARTESIA, NEW MEXICO, 88210

PRESSURE TRANSIENT TEST DATA

COMPANY: READ & STEVENS, INC.
 LEASE: HARRIS FEDERAL
 FIELD:
 COUNTY: CHAVES
 STATUS: FOUR POINT BACK PRESSURE TEST

CONTACT: DAN LOUGH
 WELL: 10
 ZONE:
 STATE: New Mexico
 OPERATOR: FAULKENBERRY

PERFORATIONS FROM: 8,454.0'
 DEPTH: 8,330.0'

TO: 8,492.0'
 TEMPERATURE: 120.0°F

ELEMENT: RPG3#32352
 CLOCK: 32463
 ELEMENT: RPG3#43002
 CLOCK: 21664

RANGE: 5975 psig
 RANGE: 12 hrs
 RANGE: 6775 psig
 RANGE: 12 hrs

SURFACE PRESSURE MEASUREMENTS

EVENT	DATE	TIME	DEAD WEIGHT PRESSURE
START CLOCK	07/16/88	08:45:00	
SET ELEMENT	07/16/88	09:20:00	1,990.0 psig
WELL SHUT IN	07/11/88	12:38:00	1,990.0 psig
TEST ENDED	07/16/88	13:30:00	975.0 psig
			1,070.0 psig

SUBSURFACE PRESSURE MEASUREMENTS

DATE	TIME	t hrs	GAUGE PRESSURE psig	ABSOLUTE PRESSURE psia	RESERVOIR PRESSURE psia
07/16/88	09:19:55	-.168	2,903.9	2,917.1	2,961.1
07/16/88	09:30:00	0.000	2,903.6	2,916.8	2,960.8
07/16/88	09:45:00	.250	2,735.6	2,748.8	2,792.8
07/16/88	10:00:00	.500	2,659.0	2,672.2	2,716.2
07/16/88	10:15:00	.750	2,603.0	2,616.2	2,660.2
07/16/88	10:30:00	1.000	2,567.7	2,580.9	2,624.9
07/16/88	10:45:00	1.250	2,450.7	2,463.9	2,507.9
07/16/88	11:00:00	1.500	2,378.1	2,391.3	2,435.3
07/16/88	11:15:00	1.750	2,324.5	2,337.7	2,381.7
07/16/88	11:30:00	2.000	2,286.2	2,299.4	2,343.4
07/16/88	11:45:01	2.250	2,165.8	2,179.0	2,223.0
07/16/88	12:00:00	2.500	2,159.0	2,172.2	2,216.2
07/16/88	12:15:00	2.750	2,093.5	2,106.7	2,150.7
07/16/88	12:30:00	3.000	2,009.4	2,022.6	2,066.6
07/16/88	12:45:01	3.250	1,733.3	1,746.5	1,790.5
07/16/88	13:00:01	3.500	1,663.8	1,677.0	1,721.0
07/16/88	13:15:00	3.750	1,600.1	1,613.3	1,657.5
07/16/88	13:30:00	4.000	1,595.3	1,608.5	1,652.5

TEST DATE: 07/16/88 TO 07/16/88
 TEST DEPTH: 8330 ft
 ELEMENT NO: RPG3#43002
 RANGE: 6775 psi
 CLOCK: 21664
 RANGE: 12 hrs
 OPERATOR: FAULKENBERRY

DAN LOUGH
READ & STEVENS, INC.
HARRIS FEDERAL 10
BENNETT-CATHEY WIRE LINE SERVICE
Box 787 Artesia, N.M. 88210 (505) 748-3354

