

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Type Test ☒ Initial ☐ Annual ☐ Special		Test Date 9 1 89	
Company ORYX ENERGY COMPANY		Connection AIR	
Pool ANTELOPE RIDGE <i>Atoka Gas</i>		Formation ATOKA	
Completion Date 8 18 89		Total Depth 12696	Plug Back TD 12696
Elevation 3407.8'		Farm or Lease Name SUN FEDERAL <i>Conv</i>	
Coq. Size 5.000	Wt. 18.0	d 4.276	Set At 12696
Perforations: From 12096 To 12296		Well No. 1	
Thq. Size 2.875	Wt. 6.5	d 2.441	Set At 12196
Perforations: From To		Unit Sec. Twp. Rye. 0, 27, 22-S, 34-E	
Type Well - Single - Bradenhead - G.G. or G.O. Multiple SINGLE GAS		Packer Set At 12029	County LEA
Producing Thru TUBING	Reservoir Temp. °F 190	Mean Annual Temp. °F 12196	Baro. Press. - P _a 60.0 13.2
State NM			
L 12196	H 12196	G _g .646	% CO ₂ .12
% N ₂ .73		% H ₂ S	Prover Meter Run 4.0
Taps FLANGE			

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	Duration of Flow
SI							3410	60	4756	190	136.0
1.	4.03X1.250			390	1.2	64	3220	60	4484	190	1.0
2.	4.03X1.250			400	5.0	60	3102	60	4247	190	1.0
3.	4.03X1.250			420	21.0	56	2878	60	3825	190	1.0
4.	4.03X1.250			425	31.0	63	2630	60	3496	190	1.0
5.											

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 _{sp}	Rate of Flow Q, Mcfd
1	7.47	22.00	403.2	.9962	1.2442	1.0394	212
2	7.47	34.34	413.2	1.0000	1.2442	1.0416	440
3	7.47	95.38	433.2	1.0039	1.2442	1.0450	930
4	7.47	116.55	438.2	.9971	1.2442	1.0434	1127
5							

NO.	P _i	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio	A.P.I. Gravity of Liquid Hydrocarbon	Specific Gravity Separator Gas	Specific Gravity Flowing Fluid	Critical Pressure	Critical Temperature
1	.60	524	1.41	.926	14.0	59.2	.646	X X X X X	669	371
2	.62	520	1.40	.922				X X X X X		
3	.65	516	1.39	.916						
4	.65	523	1.41	.919						
5										

NO.	P _i	P _w	P _w ²	P _i ² - P _w ²
1	20224	2980	8878	1399
2	18146	2786	7763	2515
3	14729	2454	6021	4257
4	12314	2208	4874	5404
5				

(1) $\frac{P_i^2}{P_i^2 - P_w^2} = 1.9019$

AOR = 0 $\left[\frac{P_i^2}{P_i^2 - P_w^2} \right]^n = 12143$

(2) $\left[\frac{P_i^2}{P_i^2 - P_w^2} \right]^n = 1.9019$

Absolute Open Flow	2143	Mcf @ 15.025	Angle of Slope	45.0	Slope, n	1.000
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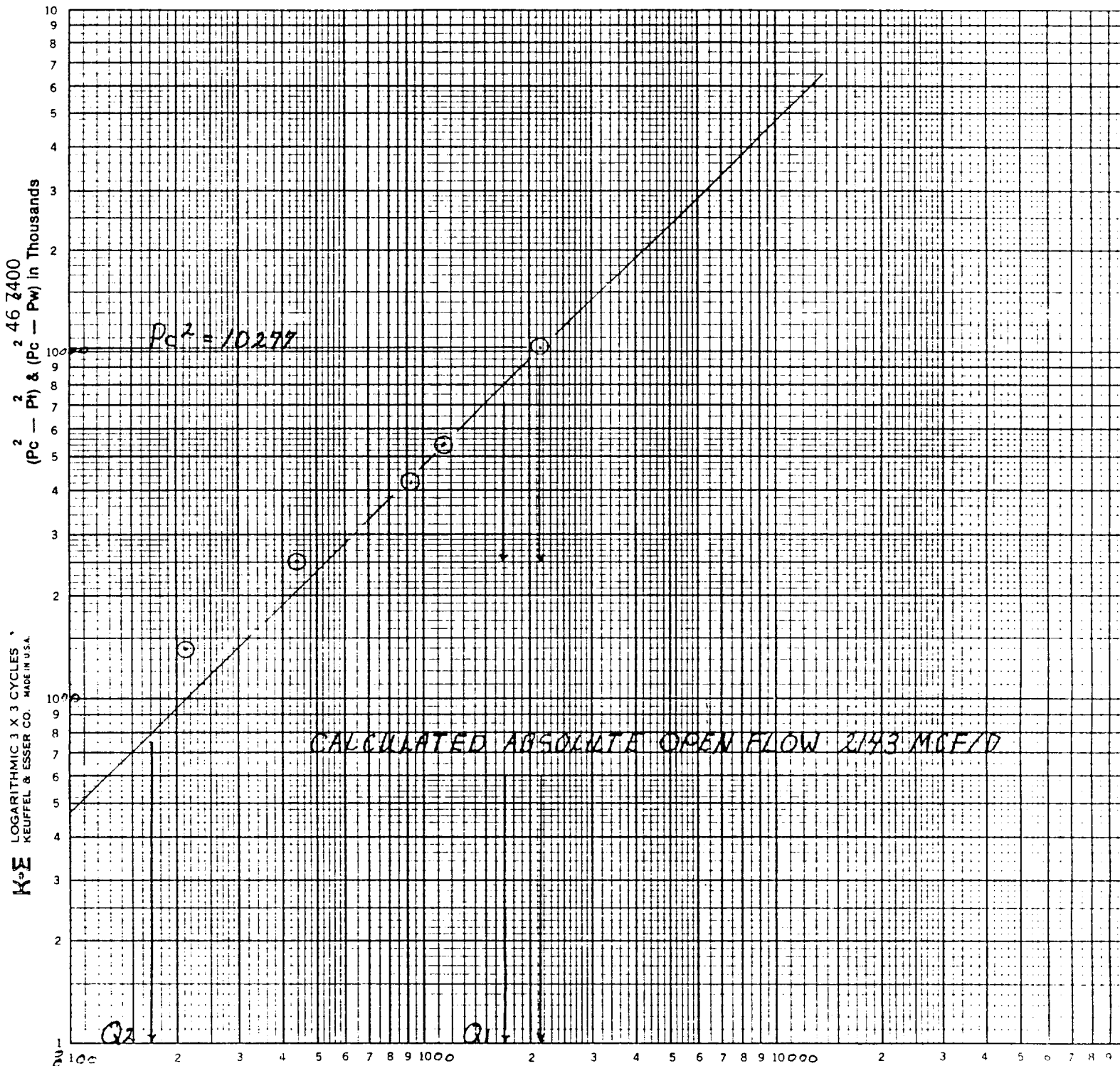
Remarks: CHOKE SIZE 1ST RATE 5/64 2ND RATE 7/64 3RD RATE 9/64 4TH RATE 10 1/4/64

SEP 15 1989

Approved By Division JERRY SEXTON DISTRICT I SUPERVISOR	Conducted By BENNETT-CATHEY	Calculated By MATT LEE	Checked By
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BENNETT & CATHEY PRODUCTION TESTING BACK PRESSURE CURV

Operator ORYX ENERGY COMPANY Lease SUN FEDERAL Well No. 1
 County LEA Field ANTELOPE RIDGE Location _____
 Date of Test 9-1-89 Slope "n" 1.000 Angle of Slope 45°
 Calc. Abs. Potential 2143 MCF/D



$$\overline{\Delta P}_1^2 \quad P_c^2 - P_w^2 = 8000$$

$$\overline{\Delta P}_2^2 \quad P_c^2 - P_w^2 = 800$$

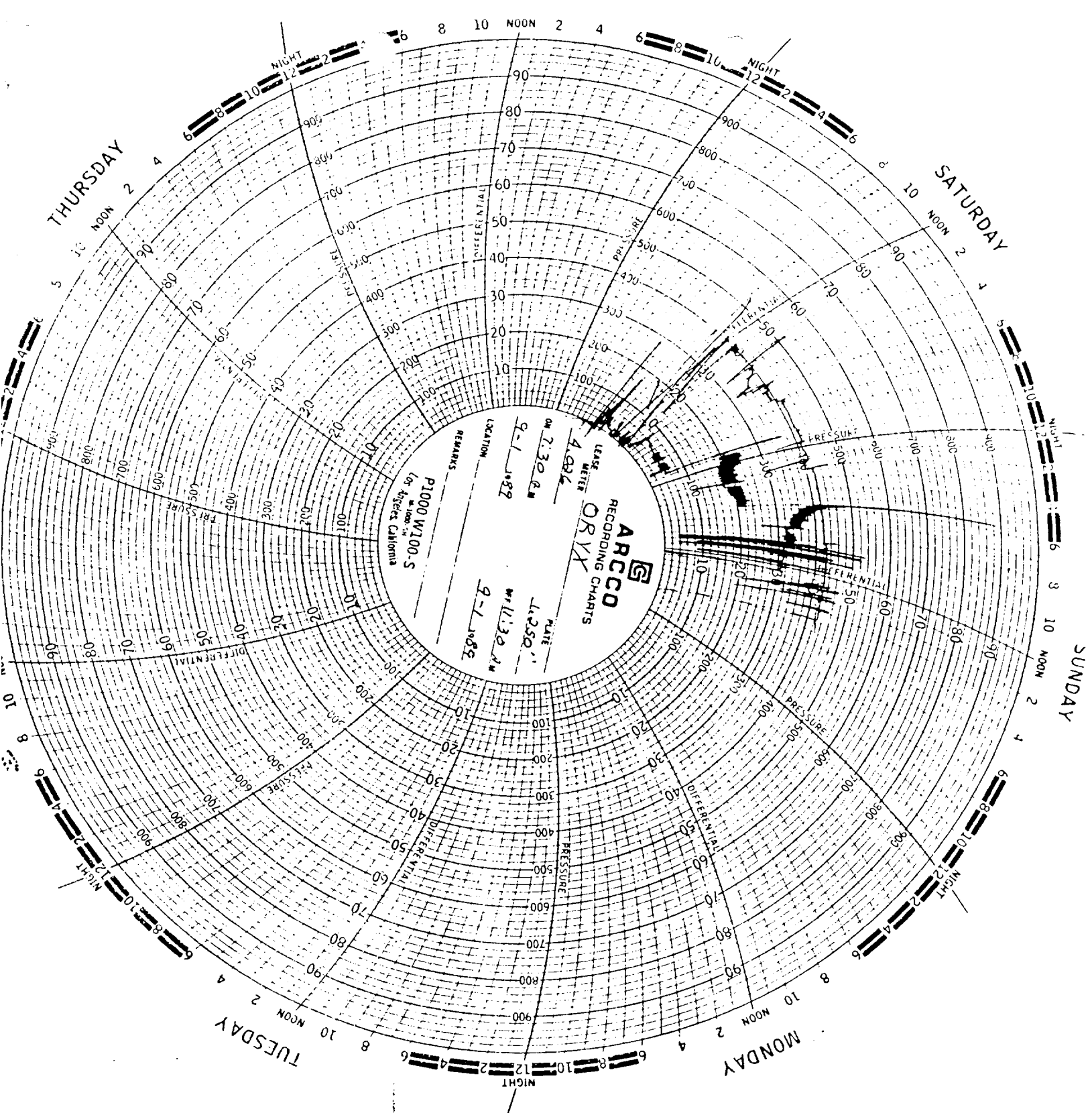
$$Q_1 = 1700$$

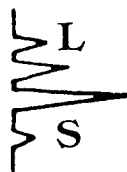
$$Q_2 = 170$$

$$\text{LOG } Q_1 = 3.230$$

$$\text{LOG } Q_2 = 2.230$$

$$n = 1.000$$





LABORATORY SERVICES

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Hobbs, New Mexico 88240

Telephone: (505) 397-3713

FOR: Bennett & Cathey
Attention: Mr. Keith Norvell
P. O. Box 787
Artesia, New Mexico 88210

SAMPLE
IDENTIFICATION: Sun Fed. Comm #1
COMPANY: Oryx
LEASE:
PLANT:

SAMPLE DATA: DATE SAMPLED: 9/01/89 10:30 AM GAS (X) LIQUID ()
ANALYSIS DATE: 9/01/89 SAMPLED BY: Keith Norvell
PRESSURE — PSIG 400 ANALYSIS BY: Rolland Perry
TEMPERATURE — °F:
Atmos. Temp. 90

REMARKS:

COMPONENT ANALYSIS

COMPONENT	MOL PERCENT	GPM	LIQ. VOL. PERCENT
Hydrogen Sulfide (H2S)	-0-		
Nitrogen (N2)	0.73		
Carbon Dioxide (CO2)	0.12		
Methane (C1)	87.91		
Ethane (C2)	7.16	1.827	
Propane (C3)	2.34	0.645	
I-Butane (IC4)	0.40	0.131	
N-Butane (NC4)	0.62	0.195	
I-Pentane (IC5)	0.19	0.070	
N-Pentane (NC5)	0.17	0.062	
Hexane (C6)	0.16	0.074	
Heptanes Plus (C7 +)	0.20	0.112	
	<u>100.00</u>	<u>3.116</u>	

BTU/CU. FT.—DRY 1186
AT 14.650 WET 1162

SPECIFIC GRAVITY—CALCULATED 0.646
MEASURED

VAPOR PRESSURE (ABSOLUTE)—CALCULATED

26# GASOLINE— 0.386

CU. FT./GAL. —



PRECISION SERVICE INC.

Flow Measurement Engineers

Analysis Results Summary

Casper, WY 82601

Run No. 831-1

Date Run 08/31/89

Date Sampled 08/26/89

Analysis For: BENNETT & CATHEY WRLN.

Lease: SUN FEDERAL COM. #1

Producer ORYX

Location _____

County _____

State NEW MEXICO

Purpose WELL TEST

Sampled By B & C WRLN.

Sampling Temp. 60 °F

Atmos Temp. _____ °F

Volume/day _____

Formation _____

Pressure on Bomb 400

PSIG: Line Pressure 413.2 PSIA PSIG

Gas Component

Analysis

Press. Base: 14.73

Mol. %

Liq. %

GPM
Per MCF

Carbon Dioxide CO₂

.290

Oxygen O₂

Nitrogen N₂

1.475

Hydrogen Sulfide H₂S

BTU Dry

1182

BTU Wet

1161

Calc. Specific Gravity

.682

Methane C1

84.111

Ethane C2

8.259

14.256

Propane C3

3.376

2.209

Iso-Butane IC4

.565

.930

Nor-Butane NC4

.950

.185

.300

@ Std. Press. 14.696

BTU Dry

1179

BTU Wet

1159

Calc. Vap. Press. #/Sq.In.

Reid Vap. Press. #/Sq.In.

Iso-Pentane IC5

.277

.102

Nor-Pentane NC5

.256

.093

Hexanes plus

.440

.203

Hexanes C6

Heptanes

Heptanes Plus C7+

Z Factor

.9970

N Value

1.2876

Ave Mol Wt

19.7136

Ave Cu Ft/Gal

Run by JEFFREY A. PROPP

Calculated By JEFFREY A. PROPP

Total

100.000

18.277

Pentane + G.P.M.

.397

Propane + GPM

1.812

Ethane + GPM

4.021

26-lb Gasoline

.611

Remarks:

Distribution: