

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Type Test ☒ Initial ☐ Annual ☐ Special					Test Date 9-24-90				
Company HAVENOR OPERATING				Connection FLARE				OCT 1 '90	
Pool BUFFALO VALLEY PENN.				Formation ATOKA-MORROW				Unit O. C. D.	
Completion Date 9-17-90		Total Depth 8536.		Plug Back TD 8296.		Elevation 3531 GL		Form or Lease Name BTA STATE	
Coq. Size 4.500	Wt. 11.6	d 4.000	Set At 8426.	Perforations: From 8067. To 8256.		Well No. 1			
Thq. Size 2.375	Wt. 4.7	d 1.995	Set At 8033.	Perforations: From 0. To 0.		Unit Sec. Twp. Rge. E S31-T14S-R28E			
Type Well - Single - Bradenhead - G.G. or G.O. Multiple SINGLE (GAS)				Packer Set At 8033.		County CHAVES			
Producing Thru TBG (GAS)		Reservoir Temp. °F 168.° 8161.		Mean Annual Temp. °F 60.0		Baro. Press. - P _a 13.2		State NM	
L 8161	H 8161	G _g .737	% CO ₂ 8.96	% N ₂ 1.96	% H ₂ S .00	Prover .0	Meter Run 3.0	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
SI									2490.	168.	72.0
1.	3.00 X 1.000			150.	7.0	80.	0.	0.	2117.	168.	3.0
2.	3.00 X 1.000			150.	10.0	80.	0.	0.	1698.	168.	3.0
3.	3.00 X 1.000			150.	14.0	80.	0.	0.	1107.	168.	3.0
4.	3.00 X 1.000			150.	7.0	80.	0.	0.	612.	168.	3.0
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 _{pv}	Rate of Flow Q, Mcf/d
1	4.79	33.80	163.2	.9813	1.1648	1.0146	188.
2	4.79	40.40	163.2	.9813	1.1648	1.0146	225.
3	4.79	47.80	163.2	.9813	1.1648	1.0146	266.
4	4.79	33.80	163.2	.9813	1.1648	1.0146	188.
5							

NO.	P _t	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio	A.P.I. Gravity of Liquid Hydrocarbons	Specific Gravity Separator Gas	Specific Gravity Flowing Fluid	Critical Pressure	Critical Temperature	Mcf/bbl. Deg.
1	.23	540.	1.42	.971	0	0	.737	XXXXXX	702	381	737
2	.23	540.	1.42	.971				XXXXX			
3	.23	540.	1.42	.971							
4	.23	540.	1.42	.971							
5											

NO.	P _t	P _w	P _w ²	P _t ² - P _w ²	(1) $\frac{P_t^2}{P_t^2 - P_w^2} =$	(2) $\left[\frac{P_t^2}{P_t^2 - P_w^2} \right]^n =$
1	4538.	1655.	2740.	1011.	1.2690	1.1265
2	2928.	1341.	1799.	1953.		
3	1255.	892.	795.	2956.		
4	391.	505.	255.	3496.		
5						

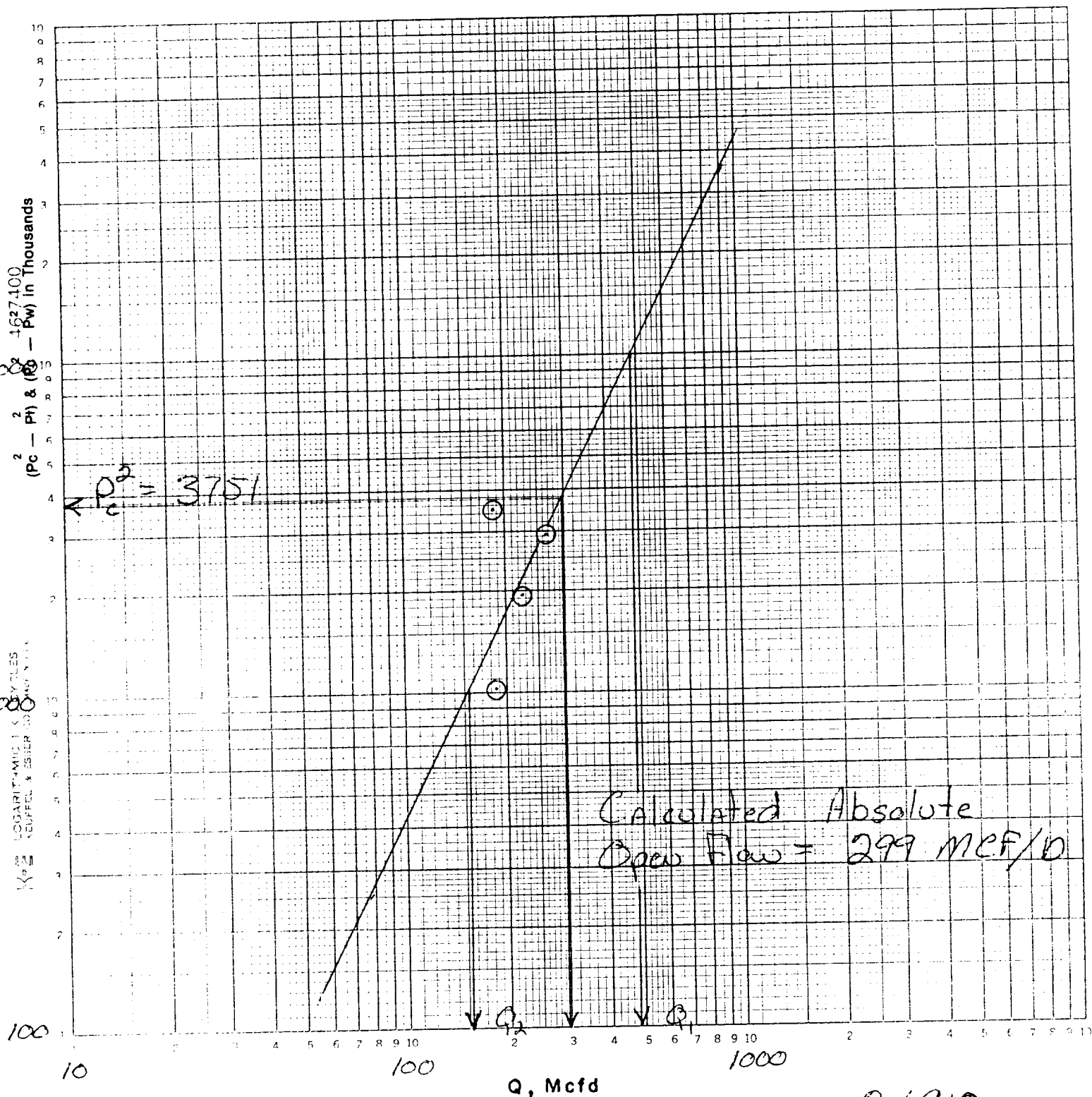
Absolute Open Flow 299. Mcfd @ 15.025				Angle of Slope @ 63.4		Slope, n .500	
Remarks: CHOKE SIZE: 1ST 1/64 2ND 3/64 3RD 5/64 4TH 10/64							
Approved By Division		Conducted By: BENNETT-CATHEY		Calculated By: JIM SMITH P.E.		Checked By: M. R. RANDOLPH	

Post ID-2
10-19-90
comp - by
R. entry

C & V WIRELINE, INC. d/b/a BENNETT-CATHY WELL TESTING BACK PRESSURE CURVE

Operator Havenor Operating Lease BTA State Well No. #1
 County Chaves Field Buffalo Valley Location S31-T14S-R28E
 Date of Test 9-24-90 Slope "n" 0.500 Angle of Slope 63.4

Calc. Abs. Potential 299 MCF/D



$$\overline{\Delta P}_1^2 \quad P_c^2 - P_w^2 = 10,000$$

$$\overline{\Delta P}_2^2 \quad P_c^2 - P_w^2 = 1000$$

$$Q_1 = 491$$

$$Q_2 = 155$$

$$\text{LOG } Q_1 = 2.6910$$

$$\text{LOG } Q_2 = 2.1903$$

$$n = 0.500$$

PRECISION SERVICE, INC.

P.O. BOX 3659 * CASPER, WYOMING 82602 * (307) 237-9327
P.O. BOX 2604 * ROSWELL, NEW MEXICO 88201 * (505) 622-9874

LET YOUR INTEREST IN MEASUREMENT BE OUR CONCERN

LABORATORY REPORT NUMBER 925-2 GAS ANALYSIS

COMPANY: BENNETT & CATHEY
PRODUCER: HAVENOR OPERATING
LEASE: B.T.A. STATE #1

DATE SAMPLED 9/24/90
DATE RUN 9/25/90
STATION

COMPONENT	MOLE %	14.696 PSIA	14.650 PSIA
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NITROGEN	1.963
CARBON DIOXIDE	8.958
METHANE	77.888
ETHANE	6.939
PROPANE	2.679
ISO-BUTANE	0.327
N-BUTANE	0.686
ISO-PENTANE	0.147
N-PENTANE	0.156
HEXANES PLUS	0.257
TOTAL %	100.000

GPM

ETHANE PLUS	11.191
PROPANE PLUS	4.252
BUTANES PLUS	1.573
PENTANES PLUS	0.560

1.852	1.846
0.736	0.734
0.107	0.107
0.216	0.215
0.054	0.053
0.056	0.056
0.111	0.111

TOTAL REAL BTU / CU. FT.	(DRY)
TOTAL REAL BTU / CU. FT.	(WET)

1038	1035
1020	1017

REAL SPECIFIC GRAVITY	0.737
IDEAL SPECIFIC GRAVITY	0.736

Z FACTOR	0.9972
MOLECULAR WEIGHT	21.2361

(ALL VALUES CALCULATED AT 60 DEG. F)

SAMPLED BY: MIKE AKINS
LOCATION:
COUNTY:
STATE: NEW MEXICO
PRES. PSIG: 150
TEMP(DEG F): 64
FIELD GRAVITY:
ZONE:
VOLUME MCF/D:

RUN BY ... DONALD NORMAN
APPROVED BY...J.A.PROPP

