

NEW MEXICO OIL CONSERVATION COMMISSION
MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS

Form C-122
Revised 9-1-65

c151
File

NOV 13 '87

Type Test ☒ Initial ☐ Annual ☐ Special					Test Date 9-24-87		O. C. D. ARTESIA, OFFICE	
Company Phillips Petroleum Company			Connection El Paso Natural Gas Company					
Pool Nash <i>Morrow</i>			Formation Morrow			Unit Sandy Unit		
Completion Date 9-18-87		Total Depth 14,857'		Plug Back TD 14,445'		Elevation 3290' RKB		Farm or Lease Name Sandy Unit
Prod. Size 5 1/2"	Wt. 20#	d 4.778'	Set At 14,856'	Perforations: From 14,392' To 14,412'			Well No. 1	
Tubg. Size 2-7/8"	Wt. 6.5#	d 2.441	Set At 14,262'	Perforations: open ended From To			Unit Sec. Twp. Rge. E 24 23-S 30-E	
Type Well - Single - Bradenhead - G.G. or G.O. Multiple Single					Packer Set At 14,202'		County Lea <i>EDDY</i>	
Producing Thru Tubing		Reservoir Temp. °F 248 @ 14,392'		Mean Annual Temp. °F 60		Baro. Press. - P _a 13.2		State New Mexico
L 14,392'	H 14,392'	G _g 0.592	% CO ₂ 1.25	% N ₂ 2.01	% H ₂ S 0.0	Prover	Meter Run 4"	Taps Flange

FLOW DATA						TUBING DATA		CASING 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							2890.0	80	pkc		72
1.	4 x 2.00			54.0	5.0	28	2710.0	82			1
2.	4 x 2.00			151.0	4.0	47	2370.0	83			1
3.	4 x 2.00			175.0	6.0	49	1822.0	84			1
4.	4 x 2.00			94.0	11.4	55	898.0	81			1
5.											

RATE OF FLOW CALCULATIONS							
NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor F _t	Gravity Factor F _g	Super Compress. Factor, F _{pv}	Rate of Flow Q, Mcfd
1	19.81	18.33	67.2	1.032	1.300	1.008	491
2	19.81	25.63	164.2	1.013	1.300	1.014	678
3	19.81	33.60	188.2	1.011	1.300	1.017	889
4	19.81	34.96	107.2	1.005	1.300	1.009	913
5							

NO.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio <u>dry</u> Mcf/bbl.
1	0.10	488	1.41	0.985	A.P.I. Gravity of Liquid Hydrocarbons _____ Deg.
2	0.24	507	1.46	0.973	Specific Gravity Separator Gas <u>0.592</u> XXXXXXXXXX
3	0.28	509	1.47	0.967	Specific Gravity Flowing Fluid <u>XXXXXX</u>
4	0.16	515	1.48	0.983	Critical Pressure <u>673</u> P.S.I.A. _____ P.S.I.A.
5					Critical Temperature <u>347</u> R _____ R

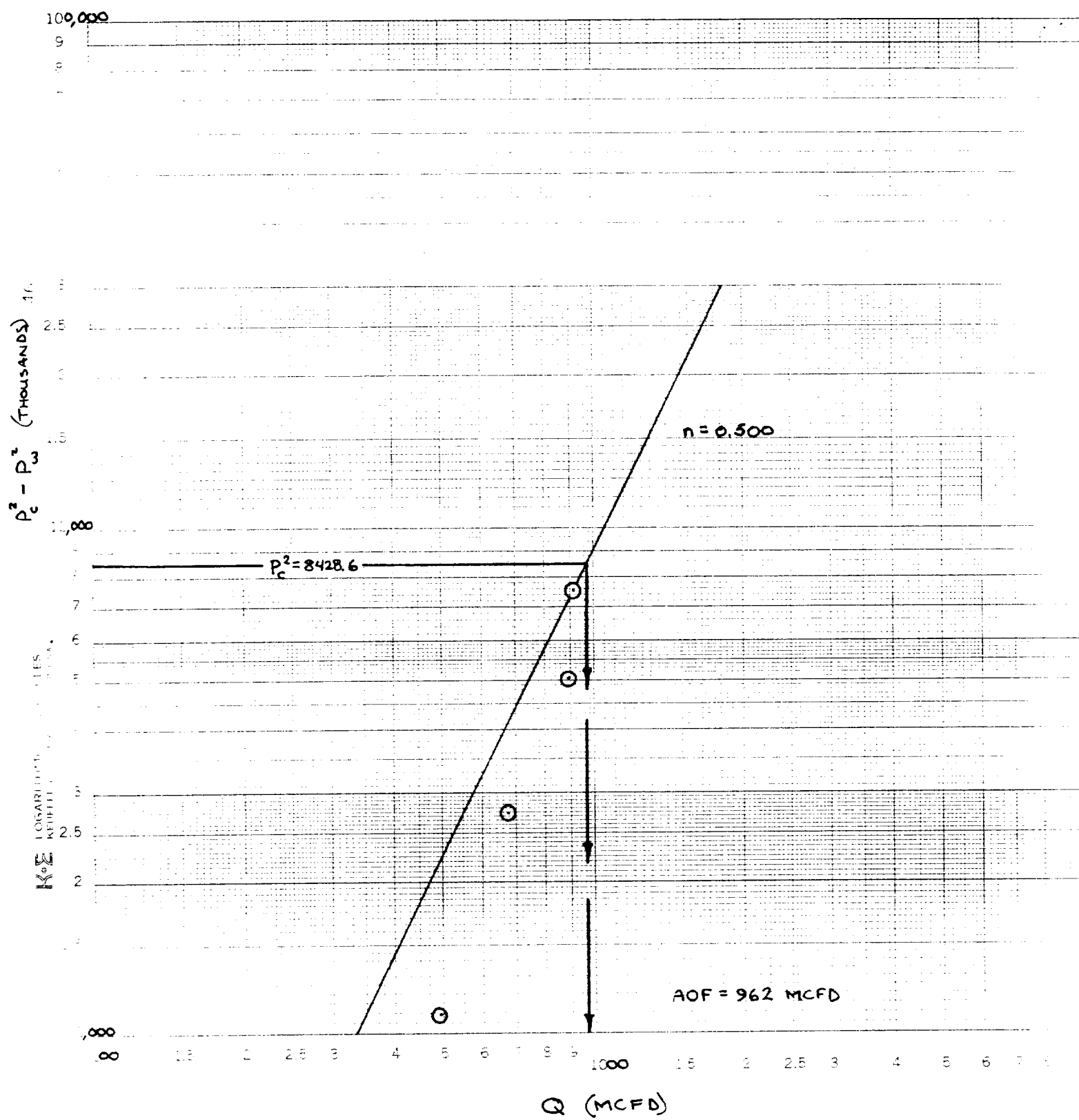
NO.	P _c	P _w	P _c ²	P _w ²	P _c ² - P _w ²	$(1) \frac{P_c^2}{P_c^2 - P_w^2} = 1.111$ $(2) \left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 1.054$ $AOF = Q \left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 962.4$
1						
2						
3						
4						
5						

Absolute Open Flow <u>962</u> Mcfd @ 15.025	Angle of Slope @ <u>63.4</u>	Slope, n <u>0.500</u>
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Remarks: <u>Due to misalignment of points, slope of n=0.500 was used.</u>		
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Approved By Commission:	Conducted By: "Well Testing", Monahans, Tx	Calculated By: John C. Currie	Checked By: N. Porter
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Company Phillips Petroleum
 Well Sandy Unit No. 1
 Location E, 24-23S-30E
 County Lea
 Date 9-24-87



**NEW MEXICO OIL CONSERVATION COMMISSION
DELIVERABILITY TEST REPORT**

RECEIVED

Form C-122-C
Revised 9-1-65

NOV 13 '87

Type Test ☒ Initial ☐ Annual ☐ Special						Test Date 9-25-87				
Company Phillips Petroleum Company				Connection El Paso Natural Gas Company				ARTESIA, OFFICE		
Pool Nash <i>MORROW</i>				Formation Morrow				Unit Sandy Unit		
Completion 9-18-87		Total Depth 14,857'		Plug Back TD 14,392'		Elevation 3290' RKB		Farm or Lease Name Sandy Unit		
Csq. Size 5 1/2"	Wt. 20#	d 4.778	Set At 14,857'	Perforations: From 14,392' To 14,412'			Well No. 1			
Tbg. Size 2-7/8"	Wt. 6.5#	d 2.441	Set At 14,262'	Perforations: open ended From To			Unit Sec. Twp. Rge. E 24 23S 30E			
Type Well - Single - Bradenhead - G.G. or G.O. Multiple Single						Packer Set At 14,202'		County <i>Lee EDDY</i>		
Producing Thru Tubing		Reservoir Temp. °F 248 @ 14,392'		Mean Annual Temp. °F 60°		Baro. Press. - P _a 13.2		State New Mexico		
L 14,392	H 14,392	Gg. 0.592	% CO ₂ 1.25	% N ₂ 2.01	% H ₂ S 0.0	Prover		Meter Run 4"	Taps Flange	
FLOW DATA					TUBING DATA		CASING DATA		Duration of Flow	
NO.	Prover Line Size	X Stroke Orifice Size	Press. p.s.i.g.	Diff. hw	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.		Temp. °F
SI						2890.0	80			72
1.	4"	0.375	640	9	60	640.0	80	Pkr		24
NO.	Coefficient (24-Hour)		$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor F _t	Gravity Factor F _g	Super Compress. Factor F _{pv}	Rate of Flow Q, Mcfd		
1.	0.6670		76.67	653.2	1.000	1.300	1.052	70		
NO.	P _r	Temp. R.	T _r	Z	Gas Liquid Hydrocarbon Ratio <u>dry</u> Mcf/bbl.					
	0.97	520	1.49	0.903	A.P.I. Gravity of Liquid Hydrocarbons <u>dry</u> Deg.					
					Specific Gravity Separator Gas <u>0.592</u> XXXXXXXXXXXX					
					Specific Gravity Flowing Fluid <u>XXXXX</u>					
	P _d <u>653.2</u>				Critical Pressure <u>673</u> p.s.i.a. p.s.i.a.					
	P _d <u>426.7</u>				Critical Temperature <u>34.7</u> R R					
	P _c <u>2903.2</u>	P _c <u>8428.6</u>			P _f P _f ²					
NO.	P _t	P _t ²	P _c ² - P _t ²	P _w	P _w ²	P _c ² - P _w ²	P _s	P _s ²	P _t ² - P _s ²	
				653.3	426.8	8001.8				

$$\left[\frac{P_c^2 - P_d^2}{P_c^2 - P_w^2} \right] = \left[\frac{8001.9}{8001.8} \right] = 1.000$$

$$\text{Log} \left[\frac{P_c^2 - P_d^2}{P_c^2 - P_w^2} \right] = 0$$

$$\left[\frac{P_c^2 - P_d^2}{P_c^2 - P_w^2} \right]^n = 1.000$$

$$n \text{ Log} \left[\frac{P_c^2 - P_d^2}{P_c^2 - P_w^2} \right] = 0$$

$$\text{Deliv.} = Q \left[\frac{P_c^2 - P_d^2}{P_c^2 - P_w^2} \right]^n = 70$$

Deliv. 70 Mcfd
n 0.500

Initial Back Pressure Test
(Source of n)

Commission

Company

Others

[Signature]
Phillips Petroleum Company

'#2U2.OUT4137.DATA'

NONUM

-----10-----20-----30-----40-----50-----60-----70-----+-----35
(PB) SEPC +

LEASE WELL NO.	POINT NO.	DATE	P PSIA	GMIX	P CALC PSIA	PSQ THOUSANDS
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SANDY UNIT #1	1	10/29/87	653.2	0.592	857.7	735.6
	2	10/29/87	857.7	0.592	653.3	426.7

LISTING OF INPUT DATA FOR PROGRAM NO. 4137

FORM 1 OF 2

LEASE WELL NO.	PT. NO.	DATE	PRESSURE (PSIA)	TIME (HRS.)	FLOW RATE (MCFD)	GRAVITY OF DRY GAS	GRAVIT OF GAS MIXTUR
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SANDY UNIT #1	1	10/29/87	653.2	1	70.	0.592	0.000
	2	10/29/87	0.0		0.	0.592	0.000

LISTING OF INPUT DATA FOR PROGRAM NO. 4137

FORM 2 OF 2

H	TEMPERATURE	AT	AT	ID	ID	PRES	CALC.
VERT.	DEPTH	PIPE	INPUT	CALC	TUBING	CASING	PER F*P
** MOLE %	** H2S	(FT.)	PRESS	(IN.)	(IN.)	(IN.)	SHEET

1.25	2.01	0.00	14392.	82.	248.	2.441	0.000	5	1	
1.25	2.01	0.00	-14392.	0.	248.	82.	2.441	0.000	5	1

AS1870001 End of data

'#2U2.OUT4137.DATA'

NONUM

35

10+-----20+-----30+-----40+-----50+-----60+-----70+-----8
(PB) SEPC +

LEASE WELL NO.	POINT NO.	DATE	P PSIA	GMIX	P CALC PSIA	PSQ THOUSANDS
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SANDY UNIT #1	1	10/29/87	2723.3	0.592	3635.5	13216.7
	2	10/29/87	3635.5	0.592	2723.9	7419.8

LISTING OF INPUT DATA FOR PROGRAM NO. 4137

FORM 1 OF 2

LEASE WELL NO.	PT. NO.	DATE	PRESSURE (PSIA)	TIME (HRS.)	FLOW RATE (MCFD)	GRAVITY OF DRY GAS	GRAVIT OF GAS MIXTUR
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SANDY UNIT #1	1	10/29/87	2723.3	1	491.	0.592	0.000
	2	10/29/87	0.0		0.	0.592	0.000

LISTING OF INPUT DATA FOR PROGRAM NO. 4137

FORM 2 OF 2

** MOLE % CO2 N2	H2S	VERT. DEPTH (FT.)	L LENG OF PIPE (FT.)	TEMPERATURE AT INPUT CALC PRESS PRES	AT ID TUBING (IN.)	OD ID TUBING (IN.)	PRES CALC. PER P*P SHEET
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1.25	2.01	0.00	14392.	82.	248.	2.441	0.000
1.25	2.01	0.00	-14392.	0.	248.	2.441	0.000

AS1870001 End of data

'#2U2.OUT4137.DATA'

NONUM

28

-----10-----20-----30-----40-----50-----60-----70-----+-----8
<PF>

* GENERAL GAS WELL FLOW CALCULATIONS *
* *
* PROGRAM 4137 *
* *
* VERSION 2.10 150987 *
* *

LEASE WELL NO.	POINT NO.	DATE	P PSIA	GMIX	P CALC PSIA	PSQ THOUSANDS
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SANDY UNIT #1	1	10/29/87	1835.2	0.592	2459.3	6048.4
	2	10/29/87	2459.3	0.592	1838.2	3379.1

LISTING OF INPUT DATA FOR PROGRAM NO. 4137
FORM 1 OF 2

LEASE WELL NO.	PT. NO.	DATE	PRESSURE (PSIA)	TIME (HRS.)	FLOW RATE (MCFD)	GRAVITY OF DRY GAS	GRAVIT OF GAS MIXTUR
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SANDY UNIT #1	1	10/29/87	1835.2	1	889.	0.592	0.000
	2	10/29/87	0.0		0.	0.592	0.000

LISTING OF INPUT DATA FOR PROGRAM NO. 4137
FORM 2 OF 2

** MOLE %	H VERT.	L LENG OF PIPE	TEMPERATURE AT	AT	ID	OD	ID	PRES CALC.
	DEPTH		INPUT CALC	TUBING	CASING	PER	P*P	

'#2U2.OUT4137.DATA'

NONUM

28

-----+-----10-----+-----20-----+-----30-----+-----40-----+-----50-----+-----60-----+-----70-----+-----8
(PF) SEFC +

* GENERAL GAS WELL FLOW CALCULATIONS *

PROGRAM 4137

VERSION 2.10 150987

LEASE WELL NO. POINT NO. DATE P PSIA GMIX P CALC PSIA THOUSANDS PSQ

SANDY UNIT #1 1 10/29/87 911.2 0.592 1212.4 1469.9
2 10/29/87 1212.4 0.592 918.0 842.8

LISTING OF INPUT DATA FOR PROGRAM NO. 4137

FORM 1 OF 2

LEASE WELL NO. PT. NO. DATE PRESSURE (PSIA) TIME (HRS.) FLOW (MCFD) GRAVITY OF DRY GAS GRAVITY OF GAS MIXTURE

SANDY UNIT #1 1 10/29/87 911.2 1 913. 0.592 0.000
2 10/29/87 0.0 0. 0. 0.592 0.000

LISTING OF INPUT DATA FOR PROGRAM NO. 4137

FORM 2 OF 2

H L TEMPERATURE ***** PIPE DATA *****
VERT. LENG OF AT ID OD ID PRES CALC.
PIPE INPUT CALC TUBING CASING PER P*P

** MOLE % **