

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

Form C-122
Revised 9-1-65

Type Test ☒ Initial ☐ Annual ☐ Special						Test Date 2/9/99			
Company Santa Fe Energy Resources, Inc.				Connection					
Pool Brinninstool (Wolfcamp)				Formation Wolfcamp				Unit	
Completion Date 1/8/99		Total Depth 13,767'		Plug Back TD 13732		Elevation 3641		Farm or Lease Name Thistle Unit	
Cas. Size 4.5	Wt. 13.5	d 3.92	Set At 13767	Perforations: From 13,475' To 13,619'		Well No. 4			
Tub. Size 3.5	Wt.	d	Set At 12348	Perforations: From To		Unit Sec. Twp. Rge. N, 34, T-23-S, R-33-E			
Type Well - Single - Bradenhead - G.O. or G.O. Multiple Single						Packer Set At 12485		County Lea	
Producing Thru Tubing		Reservoir Temp. °F 176 @ 12520		Mean Annual Temp. °F 60		Baro. Press. - P _a 13.2		State New Mexico	
L 12520	H 12520	Cg 0.692	% CO ₂	% N ₂	% H ₂ S	Prover	Meter Run 4.026	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							3560	53	Pkr.		43
1.	4.026	X	1.375	879.8	2.3	97	3563	54			1
2.	4.026	X	1.375	889.3	6.4	101	3560	55			1
3.	4.026	X	1.375	908.4	64.0	90	3397	64			1
4.	4.026	X	2.000	957.0	82.4	91	2910	73			1
5.											

RATE OF FLOW CALCULATIONS							
NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor Ft.	Gravity Factor Fg	Super Compress. Factor, Fpv	Rate of Flow Q, Mcfd
1	9.071	44.82	893.0	0.9662	1.2021	1.0841	512
2	9.071	76.30	902.5	0.9628	1.2021	1.0826	867
3	9.071	242.86	921.6	0.9723	1.2021	1.0926	2813
4	19.810	283.45	970.2	0.9715	1.2021	1.0958	7185
5							

NO.	P _r	Temp. °F	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
					37.453	58.8	0.692	XXXXXXX	668	387
1	1.34	557	1.44	0.850					P.S.I.A. 664	R 409
2	1.35	561	1.45	0.852						
3	1.38	550	1.42	0.838						
4	1.45	551	1.42	0.831						
5										

NO.	P _i ²	P _w ²	P _w ²	P _c ² - P _w ²
1		3456	11943	103
2		3430	11765	282
3		3280	10756	1290
4		2867	8222	3824
5				

$$(1) \frac{P_c^2}{P_c^2 - P_w^2} = 3.1502 \quad (2) \left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 2.5228$$

$$AOF = Q \left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 18127$$

Absolute Open Flow	18127	Mcfd @ 15.025	Angle of Slope @	51	Slope, n	0.8111
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Remarks: Bottomhole pressures were recorded with electronic pressure gauge #T-67.

Approved By Commission:	Conducted By: ARC Pressure Data, Inc.	Calculated By: <i>Rod Kelson</i>	Checked By:
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GAS WELL BACK-PRESSURE CURVE

SANTA FE ENERGY RESOURCES, INC.
THISTLE UNIT #4
LEA COUNTY, NM
2/9/99

$n = 0.8111$

$\theta = 51^\circ$

AOF = 18127

