

**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 3/31/99			
Company SANTA FE ENERGY RESOURCES, INC.				Connection LG&E					
Pool <u>Antelope Ridge</u> <u>North Bell Lake (Morrow)</u>				Formation MORROW				Unit	
Completion Date 2/26/99		Total Depth 13,380'		Plug Back TD 13,373'		Elevation 3404' GR		Farm or Lease Name RIO BLANCO 4 FEDERAL	
Casing Size	Wt.	d	Set At	Perforations: From 12916 To 12945				Well No. 1	
Tubg. Size	Wt.	d	Set At	Perforations: From To				Unit Sec. Twp. Rje. F 4 23S 34E	
Type Well - Single - Bradenhead - G.G. or G.O. Multiple SINGLE						Packer Set At 12663		County LEA	
Producing Thru TUBING		Reservoir Temp. °F 187 #12643		Mean Annual Temp. °F 60		Baro. Press. - P _a 13.2		State NM	
L 12916	H ₂ 12916	G _g 0.619	% CO ₂ 0.41	% N ₂ 0.42	% H ₂ S	Prover	Meter Run 3.068	Tape 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							5510	80			24
1.	3.068		1.75	519.3	52.7	84	5290	82			1
2.	3.068		1.75	520.0	107.1	67	5110	80			1
3.	3.068		1.75	522.2	114.2	58	5100	81			1
4.	3.068		1.75	527.0	158.3	45	4900	80			1
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, Mcfd
1	15.61	167.52	532.5	0.9781	1.2710	1.0419	2994.9
2	15.61	238.97	532.5	0.9938	1.2710	1.0475	4296.7
3	15.61	247.27	535.4	1.0022	1.2710	1.0509	4452.9
4	15.61	292.43	540.2	1.0147	1.2710	1.0566	5280.5
5							

NO.	P _r	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
1	0.79	544	1.50	0.921	336735 Mcf/bbl.	52.9 Deg.	0.619	XXXXXX	673 P.S.I.A.	363 R
2	0.79	527	1.45	0.911				XXXXXX		
3	0.80	518	1.43	0.905						
4	0.80	505	1.39	0.896						
5										

NO.	P _c	P _w	P _w ²	P _c ² - P _w ²	(1) $\frac{P_c^2}{P_c^2 - P_w^2} =$	(2) $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n =$
1	5565.5	5413	29301	1674	8.4886	4.7105
2	5565.5	5319	28287	2687		
3	5565.5	5302	28107	2867		
4	5565.5	5227	27325	3649		
5						

Absolute Open Flow <u>25237</u> Mcfd @ 15.025				Angle of Slope ϕ <u>53.8</u>		Slope, n <u>0.7314</u>	
Remarks: <u>Bottomhole pressures were recorded with electronic pressure gauge #R-39.</u>							
Approved By Commission:		Conducted By: ARC Pressure Data, Inc.		Calculated By: <i>Kod Robinson</i>		Checked By:	

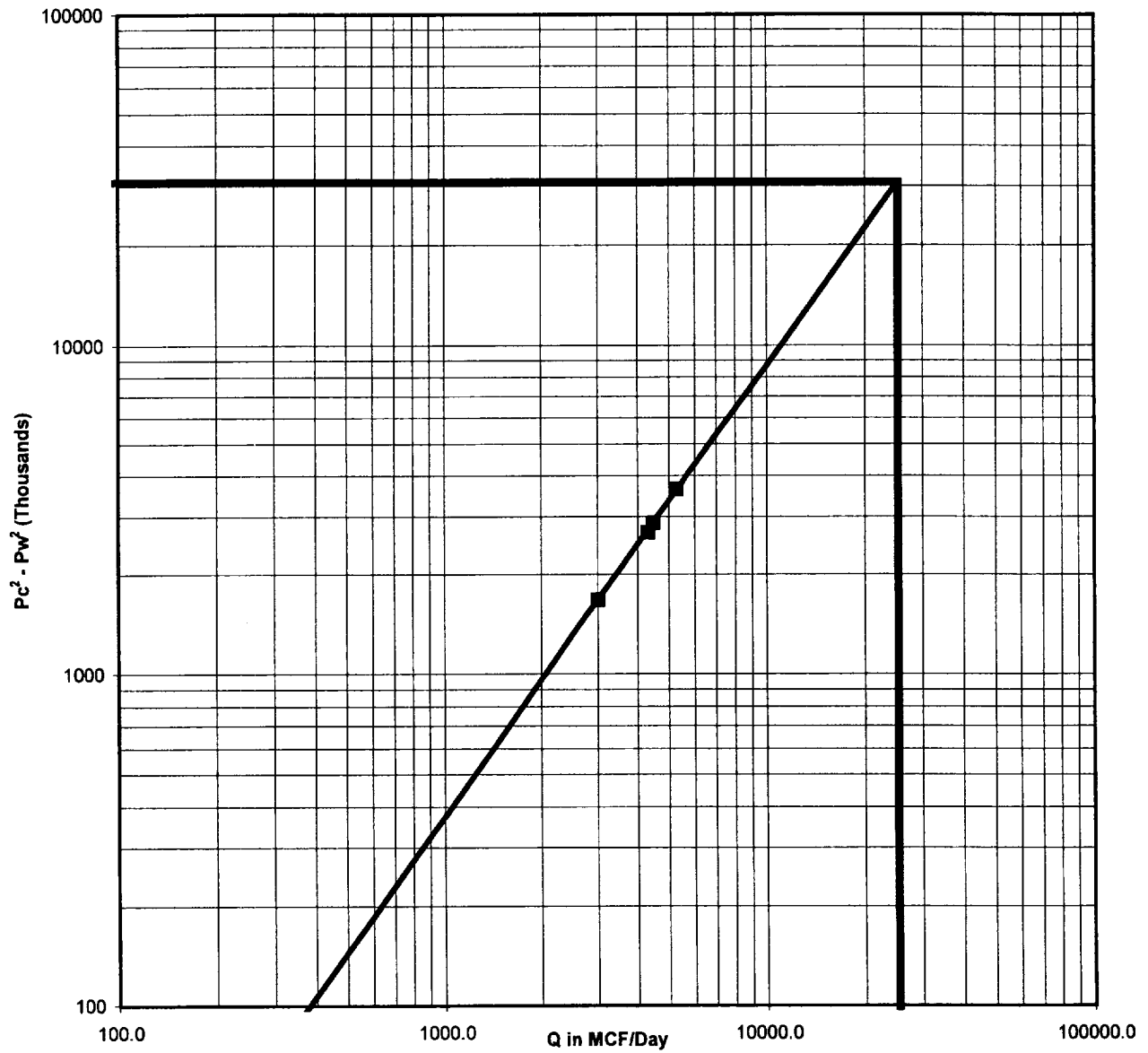
GAS WELL BACK-PRESSURE CURVE

SANTA FE ENERGY RESOURCES, INC.
RIO BLANCO 4 FEDERAL #1
LEA COUNTY, NM
3/31/99

$n = 0.7314$

$\theta = 53.8^\circ$

AOF = 25237



Deviation surveys taken on Santa Fe Energy Resources, Inc.'s Rio Blanco "4"
Fed #1 well in Lea County, New Mexico:

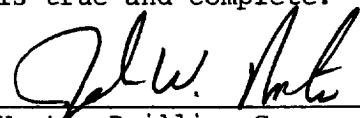
Unit F

4-235-34e

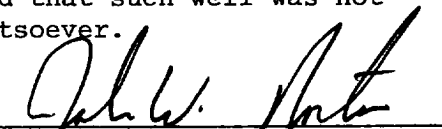
1980/N & 1980/W
30-025-34515

<u>Depth</u>	<u>Degree</u>
230	.25
540	2.00
718	1.00
1259	1.50
1601	1.00
2201	2.50
2487	2.50
2743	2.75
3298	1.75
3525	1.00
3735	1.00
4191	1.50
4640	2.00
5120	1.25
5232	1.00
5635	1.25
6035	1.50
6550	1.75
7037	1.75
7542	1.50
8044	1.50
9109	1.75
9609	2.00
9859	2.00
10,225	1.50
10,680	1.25
11,165	1.75
11,650	1.00
12,372	1.00
13,249	2.75

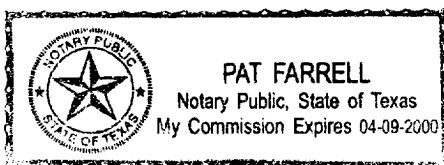
I hereby certify that I have personal knowledge of the facts placed on this sheet and that such information given above is true and complete.

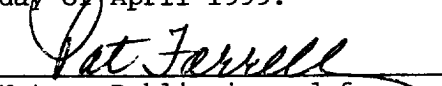

Norton Drilling Company

Before me, the undersigned authority, on this day personally appeared John W. Norton, known to me to be the person whose name is subscribed hereto, who, after being duly sworn, on oath states that he is the drilling contractor of the well identified in this instrument and that such well was not intentionally deviated from the vertical whatsoever.


John W. Norton

SWORN AND SUBSCRIBED TO before me this 22nd day of April 1999.




Notary Public in and for
Lubbock County, Texas.