

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 9/22/86			
Company North American Royalties				Connection					
Pool Wildcat				Formation Atoka				Unit	
Completion Date		Total Depth 11976		Plug Back To 11866		Elevation 3883		Farm or Lease Name Hudgens	
Cas. Size 5.5	Wt. d	Set At 11976	Perforations: From 11774 To 11799		Well No. 1				
Thq. Size 2.375	Wt. 4.60	d 1.995	Set At 11500	Perforations: From To		Unit Sec. Twp. Rge. 11-16-36			
Type Well - Single - Bradenhead - G.C. or G.O. Multiple Single						Packer Set At 11499		County Lea	
Producing Thru Tubing		Reservoir Temp. °F 177 @ 11500		Mean Annual Temp. °F 60		Baro. Press. - P _a 13.2		State New Mexico	
L 11500	H 11500	G _g 0.791	% CO ₂ 0.5	% N ₂ 2.5	% H ₂ S 0.0	Prover	Meter Run 3.068	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	3.068		1.25				2644	80			SI 43 hrs
1.	3.068		1.25	70	99	66	1180	81			3.25
2.	3.068		1.25	58	79	62	1422	84			1.5
3.	3.068		1.25	42	52	53	1811	81			1.5
4.	3.068		1.25	20	15	45	2290	78			1.75
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	7.577	90.76	83.2	0.9943	1.1244	1.0112	777.44
2	7.577	75.00	71.2	0.9981	1.1244	1.0096	643.88
3	7.577	53.58	55.2	1.0068	1.1244	1.0061	462.39
4	7.577	22.32	33.2	1.0147	1.1244	1.0045	193.82
5							

NO.	P _t	Temp. °R	T _t	Z	Gas Liquid Hydrocarbon Ratio 4713.82 Mcf/bbl.
1	0.13	541	1.31	0.982	A.P.I. Gravity of Liquid Hydrocarbons 74.1 Deg.
2	0.11	544	1.32	0.984	Specific Gravity Separator Gas 0.791 XXXXXXXXXX
3	0.08	541	1.31	0.991	Specific Gravity Flowing Fluid XXXXX 1.2147
4	0.05	538	1.30	0.999	Critical Pressure 664 P.S.I.A. P.S.I.A.
5					Critical Temperature 413 °R °R

P _t 2373	P _w 5631.1	(1) $\frac{P_c^2}{P_t^2 - P_w^2} = 1.3255$	(2) $\left[\frac{P_c^2}{P_t^2 - P_w^2} \right]^n = 1.3255$
NO	P _t ²	P _w ²	P _c ² - P _w ²
1	1392.4	1176	1382.98
2	2022.1	1370	1876.90
3	3279.7	1697	2879.81
4	5244.1	2088	4359.74
5			

Absolute Open Flow 1030.5 Mcfd @ 15.025		Angle of Slope @ 45°	Slope, n 1.000
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Remarks: The original slope of the data points was 41.5°. To determine the AOF, a line with a slope of 45° was drawn through the highest rate of flow.

Approved By/Commissioner	Conducted By	Calculated By	Checked By
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NEW MEXICO OIL CONSERVATION COMMISSION MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

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Revised 9-1-63

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Company North American Royalties					Connection						
Pool Wildcat					Formation Atoka					Unit	
Completion Date			Total Depth 11976		Plug Bars L. 11866		Elevation 3883		Farm or Lease Name Hudgens		
Casing Size 5.5		Wt. 4.60		Set At 11976		Perforations: From 11774 To 11799			Well No. 1		
Tubing Size 2.375		Wt. 4.60		Set At 11500		Perforations: From To			Unit Sec. Twp. Rge.		
Type Well - Single - Bradenhead - G.G. or G.O. Multiple Single							Packer Set At 11499		County Lea		
Producing Thru Tubing		Reservoir Temp. °F 177 @ 11500		Mean Annual Temp. °F 60		Base. Press. - P _g 13.2		State New Mexico			
L 11500		H 11500		G _g 0.791		% CO ₂ 0.5		% N ₂ 2.5		% H ₂ S 0.0	
								Prover		Meter Run 3.068	
										Taps Flange	

FLOW DATA							TUBING DATA		CASING DATA		Duration of Flow
NO.	Prover Line Size	X	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	3.068		1.25				2644	80			SI 43 hrs
1.	3.068		1.25	70	99	66	1180	81			3.25
2.	3.068		1.25	58	79	62	1422	84			1.5
3.	3.068		1.25	42	52	53	1811	81			1.5
4.	3.068		1.25	20	15	45	2290	78			1.75
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	7.577	90.76	83.2	0.9943	1.1244	1.0112	777.44
2	7.577	75.00	71.2	0.9981	1.1244	1.0096	643.88
3	7.577	53.58	55.2	1.0068	1.1244	1.0061	462.39
4	7.577	22.32	33.2	1.0147	1.1244	1.0045	193.82
5							

NO.	P _r	Temp. °R	T _g	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	0.13	541	1.31	0.982	4713.82	74.1	0.791	XXXXXX	664	413
2	0.11	544	1.32	0.984				XXXXXX		
3	0.08	541	1.31	0.991						
4	0.05	538	1.30	0.999						
5										

NO.	P _r ²	P _w ²	P _r ² - P _w ²
1	1392.4	1176	1382.98
2	2022.1	1370	1876.90
3	3279.7	1697	2879.81
4	5244.1	2088	4359.74
5			

(1) $\frac{P_c^2}{P_r^2 - P_w^2} = 1.3255$

AOF = Q $\left[\frac{P_r^2}{P_r^2 - P_w^2} \right]^n = 1030.5$

(2) $\left[\frac{P_r^2}{P_r^2 - P_w^2} \right]^n = 1.3255$

Absolute Open Flow	1030.5	Mcfd @ 13.025	Angle of Slope	45°	Slope, n	1.000
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Remarks: The original slope of the data points was 41.5°. To determine the AOF, a line with a slope of 45° was drawn through the highest rate of flow.

Approved By Commission:	Conducted By: Arc Pressure Data, Inc.	Calculated By: <i>Rod Rodman</i>	Checked By:
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Type Test ☒ Initial ☐ Annual ☐ Special						Test Date 9/22/86			
Company North American Royalties				Connection					
Pool Wildcat				Formation Atoka				Unit	
Completion Date		Total Depth 11976		Plug Back To 11866		Elevation 3883		Farm or Lease Name Hudgens	
Case Size 5.5	Wt. d	Set At 11976		Perforations: From 11774 To 11799		Well No. 1			
Thq. Size 2.375	Wt. 4.60	d 1.995	Set At 11500		Perforations: From To		Unit Sec. Twp. Rge.		
Type Well - Single - Fenderhead - G.G. or G.O. Multiple Single						Packer Set At 11499		County Lea	
Producing Thru Tubing		Reservoir Temp. °F 177 @ 11500		Mean Annual Temp. °F 60		Baro. Press. - P _a 13.2		State New Mexico	
L 11500	H 11500	Cg 0.791	% CO ₂ 0.5	% N ₂ 2.5	% H ₂ S 0.0	Prover	Water Run 3.068	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	3.068		1.25				2644	80			SI 43 hrs
1.	3.068		1.25	70	99	66	1180	81			3.25
2.	3.068		1.25	58	79	62	1422	84			1.5
3.	3.068		1.25	42	52	53	1811	81			1.5
4.	3.068		1.25	20	15	45	2290	78			1.75
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	7.577	90.76	83.2	0.9943	1.1244	1.0112	777.44
2	7.577	75.00	71.2	0.9981	1.1244	1.0096	643.88
3	7.577	53.58	55.2	1.0068	1.1244	1.0061	462.39
4	7.577	22.32	33.2	1.0147	1.1244	1.0045	193.82
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
					4713.82 Mcf/bbl.	74.1 Deg.	0.791	XXXXXXX	664 P.S.I.A.	413 °R
1	0.13	541	1.31	0.982				XXXXXXX		
2	0.11	544	1.32	0.984						
3	0.08	541	1.31	0.991						
4	0.05	538	1.30	0.999						
5										

NO.	P _t ²	P _w ²	P _r ²	P _t ² - P _w ²
1	1392.4	1176	1382.98	4248.2
2	2022.1	1370	1876.90	3754.2
3	3279.7	1697	2879.81	2751.3
4	5244.1	2088	4359.74	1271.4
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(1) $\frac{P_c^2}{P_t^2 - P_w^2} = 1.3255$

AOF = Q $\left[\frac{P_t^2}{P_t^2 - P_w^2} \right]^n = 1030.5$

(2) $\left[\frac{P_t^2}{P_t^2 - P_w^2} \right]^n = 1.3255$

Absolute Open Flow	1030.5 Mcfd @ 15.025	Angle of Slope	45°	Slope, n	1.000
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Type Well - Single - Packerhead - G.G. or G.O. Multiple Single						Packer Set At 11499		County Lea	
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L 11500	H 11500	G _g 0.791	% CO ₂ 0.5	% N ₂ 2.5	% H ₂ S 0.0	Prover	Meter Run 3.068	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
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4	0.05	538	1.30	0.999	Critical Pressure 664 P.S.I.A.
5					Critical Temperature 413 °R

NO.	P ₁ ²	P _w ²	P _r ²	P _r ² - P _w ²	$(1) \frac{P_r^2}{P_r^2 - P_w^2} = 1.3255$ $(2) \left[\frac{P_r^2}{P_r^2 - P_w^2} \right]^n = 1.3255$ $AOF = Q \left[\frac{P_r^2}{P_r^2 - P_w^2} \right]^n = 1030.5$
1	1392.4	1176	1382.98	4248.2	
2	2022.1	1370	1876.90	3754.2	
3	3279.7	1697	2879.81	2751.3	
4	5244.1	2088	4359.74	1271.4	
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Absolute Open Flow	1030.5	Mcfd @ 15.025	Angle of Slope	45°	Slope, n	1.000
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