ee Rule 401 & Rule 1122

OIL CONSERVATION DIVISION

P.O. Box 2088

Santa Fe, New Mexico 87504-2088

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Operator: HARVARD PETROLEUM CORPORATION						Lease or Unit Name: WILLIAMS			
Test Type: ☒ Initial ☐ Annual ☐ Special						Test Date: 8/25/99		Well No.: 1	
Completion Date: 7/9/99		Total Depth: 4584		Plug Back TD: 4584		Elevation: 4058		Unit Ltr - Sec - TWP - Rge.: SEC5 TOWN8S RNG37E	
Csg. Size: 4.500	Wt.: 10.500	d: 4.052	Set At: 4600	Perforation: From 4356	To 4412			County: ROOSEVELT	
Tbg. Size: 2.375	Wt.: 4.700	d: 1.995	Set At: 4349	Perforation: From	To			Pool: SAN ANDRES BLUITT	
Type Well-Single-Bradenhead-G.G. or G.O. Multiple: NEW WELL						Packer Set At: NONE		Formation:	
Producing Thru: tubing		Reservoir Temp.F		Mean Annual Temp.F: 87		Baro. Pressure: 13.20		Connection: PIPE LINE CONN	
L: 4584	H: 4584	Gg: .806	% CO_2: 6.98	% N_2: 6.16	% H_2S: 0	Prover: x		Meter Run: 3.068	Taps: flange

	Flow Data				Tubing Data		Casing Data		SIP/Flow
No.	(Prover) Line Size x Orifice Size	Press. PSIG	Diff. h_w	Temp. F	Press. PSIG	Temp. F	Press. PSIG	Temp. F	Duration (HRS.)
Shut-in Pressure					745	87	730		24
1.	3.07 x .75	54.00	6.70	82	701	87	703		1
2.	3.07 x .75	65.00	21.00	81	644	85	651		1
3.	3.07 x .75	81.00	27.00	81	560	85	602		1
4.	3.07 x .75	52.00	23.00	81	364	85	411		1

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.	2.670	21.219	67.2	.9795	1.1139	1.0068	62.2
2.	2.670	40.524	78.2	.9804	1.1139	1.0080	119.1
3.	2.670	50.432	94.2	.9804	1.1139	1.0097	148.5
4.	2.670	38.725	65.2	.9804	1.1139	1.0066	113.7

No	P_r	TEMP	T_r	Z
1.	.099	542	1.350	.9866
2.	.115	541	1.348	.9842
3.	.139	541	1.348	.9809
4.	.096	541	1.348	.9869

Gas-Liquid Hydrocarbon Ratio			Mcf/bbl
API Gravity of Liquid Hydrocarbons			Deg.
Specific Gravity Separator Gas	.806		
Specific Gravity Flowing Fluid		.806	
Critical Pressure	678 PSIA	678	PSIA
Critical Temperature	401 R	401	R

P_C = 743.2 P_C^2 = 552.3

No	Pw	Pw^2	$Pc^2 - Pw^2$
1.	716.2	512	39.404
2.	664.2	441	111.185
3.	615.2	378	173.875
4.	424.2	179	372.401

(1) $\frac{P_C^2}{P_C^2 - P_W^2}$ = 1.483 (2) $\left[\frac{P_C^2}{P_C^2 - P_W^2}\right]^n$ = 1.231

AOF = Q $\left[\frac{P_C^2}{P_C^2 - P_W^2}\right]^n$ = 139

Absolute Open Flow	139	Mcfd @ 15.025	Angle of Slope -	62.2	Slope, n .527

Remarks

Approved By Division:	Conducted By:	Calculated By:	Checked By:
	LARRY RACKLEY	BPT System/Guardian	LARRY RACKLEY

GAS WELL BACK PRESSURE CURVE

WELL TESTER: LARRY RACKLEY

TEST DATE: 8/25/99