NEW MEXICO OIL CONSERVATION COMMISSION

Form C-122
Revised 12-1-55

MULTI-POINT BACK PRESSURE TEST FOR GAS WELLS

Pool **Undesignated Dakota** Formation **Dakota** County **San Juan**

Initial **X** Annual _____ Special _____ Date of Test **8-23-60**

Company **Pan American Petroleum Corp.** Lease **Gallegos Canyon Unit** Well No. **85**

Unit **A** Sec. **19** Twp. **28N** Rge. **12W** Purchaser **Not tied in**

Casing **7"** Wt. **20 & 23** I.D. **6.456** Set at **6230** Perf. **6092-6098 and 6130-6134** To _____

Tubing **2-3/8"** Wt. **4.7** I.D. **1.995** Set at **5950** Perf. **open ended - no perforations** To _____

Gas Pay: From **6092** To **6134** L **5950** xG **0.70 (Est.)** EL **4165** Bar.Press. **12**

Producing Thru: Casing _____ Tubing **X** Type Well **Single**
Single-Bradenhead-G. G. or G.O. Dual

Date of Completion: **8-14-60** Packer **5942** Reservoir Temp. **138°**

OBSERVED DATA

Tested Through ~~(Prover)~~ (Choke) ~~(Meter)~~ Type Taps _____

No.	Flow Data ~~(Prover)~~ (Line) Size	(Choke) ~~(Orifice)~~ Size	Press. psig	Diff. h_w	Temp. °F.	Tubing Data Press. psig	Tubing Data Temp. °F.	Casing Data Press. psig	Casing Data Temp. °F.	Duration of Flow Hr.
SI	**Shut in 9 days**					**2168**				
1.	**2"**	**3/4"**	**363**		**60 (est)**	**550**	**(PACKER)**			**3 hr.**
2.										
3.										
4.										
5.										

FLOW CALCULATIONS

No.	Coefficient (24-Hour)	$\sqrt{h_w p_f}$	Pressure psia	Flow Temp. Factor F_t	Gravity Factor F_g	Compress. Factor F_{pv}	Rate of Flow Q-MCFPD @ 15.025 psia
1.	**12.365**		**375**	**1.000**	**0.9258**	**1.046**	**4490**
2.							
3.							
4.							
5.							

PRESSURE CALCULATIONS

Gas Liquid Hydrocarbon Ratio _____ cf/bbl.
Gravity of Liquid Hydrocarbons _____ deg.
F_c **9.402** $(1-e^{-s})$ **0.261**

Specific Gravity Separator Gas _____
Specific Gravity Flowing Fluid _____
P_c **2180** P_c^2 **4,752,400**

No.	P_w P_t (psia)	P_t^2	F_cQ	$(F_cQ)^2$	$(F_cQ)^2$ $(1-e^{-s})$	P_w^2	$P_c^2-P_w^2$	Cal. P_w	$\frac{P_w}{P_c}$
1.	**562**	**315,844**	**42.215**	**1782.106**	**465,130**	**780,976**	**3,971,424**	**884**	
2.									
3.									
4.									
5.									

Absolute Potential: **5137** MCFPD; n **0.75**
COMPANY **Pan American Petroleum Corporation**
ADDRESS **Box 480, Farmington, New Mexico**
AGENT and TITLE **R. H. Reese, Jr., Area Engineer** R. H. Reese, Jr. by [illegible]
WITNESSED _____
COMPANY _____

REMARKS

INSTRUCTIONS

This form is to be used for reporting multi-point back pressure tests on gas wells in the State, except those on which special orders are applicable. Three copies of this form and the back pressure curve shall be filed with the Commission at Box 871, Santa Fe.

The log log paper used for plotting the back pressure curve shall be of at least three inch cycles.

NOMENCLATURE

Q = Actual rate of flow at end of flow period at W. H. working pressure (P_w). MCF/da. @ 15.025 psia and 60° F.

P_c = 72 hour wellhead shut-in casing (or tubing) pressure whichever is greater. psia

P_w = Static wellhead working pressure as determined at the end of flow period. (Casing if flowing thru tubing, tubing if flowing thru casing.) psia

P_t = Flowing wellhead pressure (tubing if flowing through tubing, casing if flowing through casing.) psia

P_f = Meter pressure, psia.

h_w = Differential meter pressure, inches water.

F_g = Gravity correction factor.

F_t = Flowing temperature correction factor.

F_{pv} = Supercompressability factor.

n = Slope of back pressure curve.

Note: If P_w cannot be taken because of manner of completion or condition of well, then P_w must be calculated by adding the pressure drop due to friction within the flow string to P_t.

Form C-122-A
Revised April 20, 1955

Initial Deliverability Test

NEW MEXICO OIL CONSERVATION COMMISSION

GAS WELL TEST DATA SHEET - - SAN JUAN BASIN

(TO BE USED FOR FRUITLAND, PICTURED CLIFFS, MESAVERDE, & ALL DAKOTA EXCEPT BARKER DOME STORAGE AREA)

Pool Basin Dakota Formation Dakota County San Juan

Purchasing Pipeline El Paso Natural Gas Company Date Test Filed 4-7-64

Operator PAN AMERICAN PETROLEUM CORP. Lease Gallegos Canyon Unit Well No. 85

Unit A Sec. 19 Twp. 28N Rge. 12W Pay Zone: From 6092 To 6136

Casing: OD 7" WT. 20 & 23 Set At 6456 Tubing: OD 2-3/8 WT. 4.7 T. Perf. 5930

Produced Through: Casing ^ Tubing X Gas Gravity: Measured .630 Estimated

Date of Flow Test: From 3-2-64 To 3-10-64 * Date S.I.P. Measured 8-23-60

Meter Run Size 4" Orifice Size 1.500 Type Chart Sq. Rt. Type Taps Flange

OBSERVED DATA

Flowing casing pressure (Dwt)	psig + 12 =	psia	(a)
Flowing tubing pressure (Dwt)	psig + 12 =	psia	(b)
Flowing meter pressure (Dwt)	psig + 12 =	psia	(c)
Flowing meter pressure (meter reading when Dwt. measurement taken):			
Normal chart reading	psig + 12 =	psia	(d)
Square root chart reading ( ) ^{2} x spring constant	=	psia	(d)
Meter error (c) - (d) or (d) - (c) ±	=	psi	(e)
Friction loss, Flowing column to meter:			
(b) - (c) Flow through tubing: (a) - (c) Flow through casing	=	psi	(f)
Seven day average static meter pressure (from meter chart):			
Normal chart average reading	psig + 12 =	psia	(g)
Square root chart average reading (7.30) ^{2} x sp. const. 10	= 533	psia	(g)
Corrected seven day avge. meter press. (p_f) (g) + (e)	= 533	psia	(h)
P_t = (h) + (f)	= 533	psia	(i)
Wellhead casing shut-in pressure (Dwt)	psig + 12 =	psia	(j)
Wellhead tubing shut-in pressure (Dwt) 2168	psig + 12 = 2180	psia	(k)
P_c = (j) or (k) whichever well flowed through	= 2180	psia	(l)
Flowing Temp. (Meter Run) °F + 460	=	°Abs	(m)
P_d = ½ P_c = ½ (l)	= 1090	psia	(n)

FLOW RATE CALCULATION

Q = _____ (integrated) X $\left(\frac{\sqrt{(c)}}{\sqrt{(d)}} = \frac{\quad}{\quad} = \quad \right)^*$ = _____ MCF/da

DELIVERABILITY CALCULATION

$D = Q \left[\frac{P_c^2 - P_d^2}{P_c^2 - P_w^2} = \frac{3,364,300}{4,315,800} \right]^n$ 2670 .8663 = 2313 MCF/da.

SUMMARY

P_c =	2180	psia
Q =	2670	Mcf/day
P_w =	661	psia
P_d =	1090	psia
D =	2313	Mcf/day

Company PAN AMERICAN PETROLEUM CORPORATION
By P. L. Ribera
Title District Engineer
Witnessed by W. W. Neely
Company El Paso Natural Gas Company

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APR 9 1964
OIL CON. COM.
DIST. 3

• This is date of completion test.
• Meter error correction factor

REMARKS OR FRICTION CALCULATIONS

GL	$(1-e^{-s})$	$(F_cQ)^2$	$\frac{(FcQ)^2 (1-e^{-s})}{R^2}$	Pt^2 (Column i)	$P_t^2 + R^2$	P_w
3002	.242	630,178	152,503	284,089	436,592	661