El Paso Natural Gas Company

El Paso, Texas

July 2, 1957

DIRECT REPLY TO:
P. O. BOX 997
FARMINGTON, NEW MEXICO

RECEIVED
JUL 5 1957
OIL CON
DIST

Mr. A. L. Porter
Secretary and Director
Oil Conservation Commission
Box 871
Santa Fe, New Mexico

Dear Sir:

This is a request for administrative approval for a well dually completed in the Blanco Mesa Verde Pool and the South Blanco Pictured Cliffs Extension Pool. The El Paso Natural Gas Company Warren No. 5 (PM) is located 1850 feet from the North line and 1750 feet from the East line of Section 24, Township 28 North, Range 9 West, N.M.P.M., San Juan County, New Mexico.

This well has been completed in the Point Lookout section of the Mesa Verde formation and in the Pictured Cliffs formation. Completion has been accomplished in the following manner:

1. 10-3/4" surface casing set at 171' with 150 sacks of cement circulated to the surface.
2. 7-5/8" intermediate casing set at 2329' and cemented with 250 sacks of cement. Top of cement by temperature survey was 810' which is above the top of the Pictured Cliffs at 2203'.
3. 5-1/2" liner set from 2349' to 4707' with 300 sacks of cement. The top of the liner was squeezed with 100 sacks of cement.
4. The casing and liner were tested for leaks before perforating.
5. The Point Lookout section was perforated in four intervals and fractured with water and sand.
6. The Pictured Cliffs formation was perforated in one interval and fractured with water and sand.
7. All perforations were cleaned out after treatment and completion was accomplished by setting a Baker Model EGJ production packer on 2" EUE tubing at 2437' with the tubing perforations set opposite the Point Lookout perforation. 1-1/4" Grade "B" line pipe was landed, with the tubing perforations set opposite the Pictured Cliffs perforations, as a siphon string. The Mesa Verde gas will be produced through the 2" tubing and the Pictured Cliffs gas through the casing.

COPY

8. A Garrett circulating sleeve was installed in the 2" tubing string just below the Pictured Cliffs perforations. This will enable bottom hole pressure tests to be taken in the future if it be so required.
9. Initial potential tests have been run and commercial production has been found in both formations. A packer leakage test has been run and witnessed by the Aztec office of the Oil Conservation Commission. This test shows no communication in the well bore between the two producing formations.

Administrative approval is requested for this dual completion to allow production from both known producing formations, thus eliminating the high initial cost of drilling two separate wells.

The offset operator to this well has been notified by registered mail regarding intentions to dual complete this well. Enclosed is a letter of approval from the offset operator. Also enclosed are:

(a) Two copies of plats showing the location of this well and the offset operator.
(b) Two copies of the schematic diagram of the mechanical installations.
(c) Two copies of the affidavit from the packer setting company stating that the packer used was set at the depth shown.
(d) Two copies of the packer leakage test as observed by a member of the Oil Conservation Commission.
(e) Two copies of the initial potential test showing commercial production from the two formations.

It is intended to dedicate the E/2 of Section 24, Township 28 North, Range 9 West to the Mesa Verde formation and the NE/4 of Section 24, Township 28 North, Range 9 West to the Pictured Cliffs formation.

Any further information required will be furnished upon your request. Thank you for your consideration of the matter.

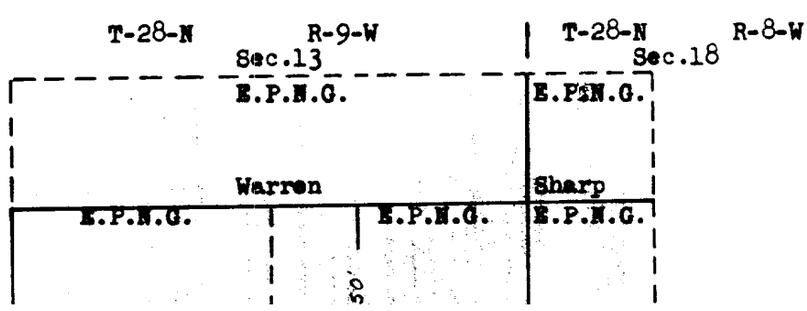
Yours truly,

ORIGINAL SIGNED E. J. COEL

E. J. Coel
Senior Petroleum Engineer

EJC/gks
Encl.
cc: Emery Arnold
R. L. Hamblin
Phil McGrath

PLAT SHOWING LOCATION OF DUAL COMPLETED
EL PASO NATURAL GAS WARREN NO. 5 (PM)
AND OFFSET ACREAGE



PLAT SHOWING LOCATION OF DUAL COMPLETED
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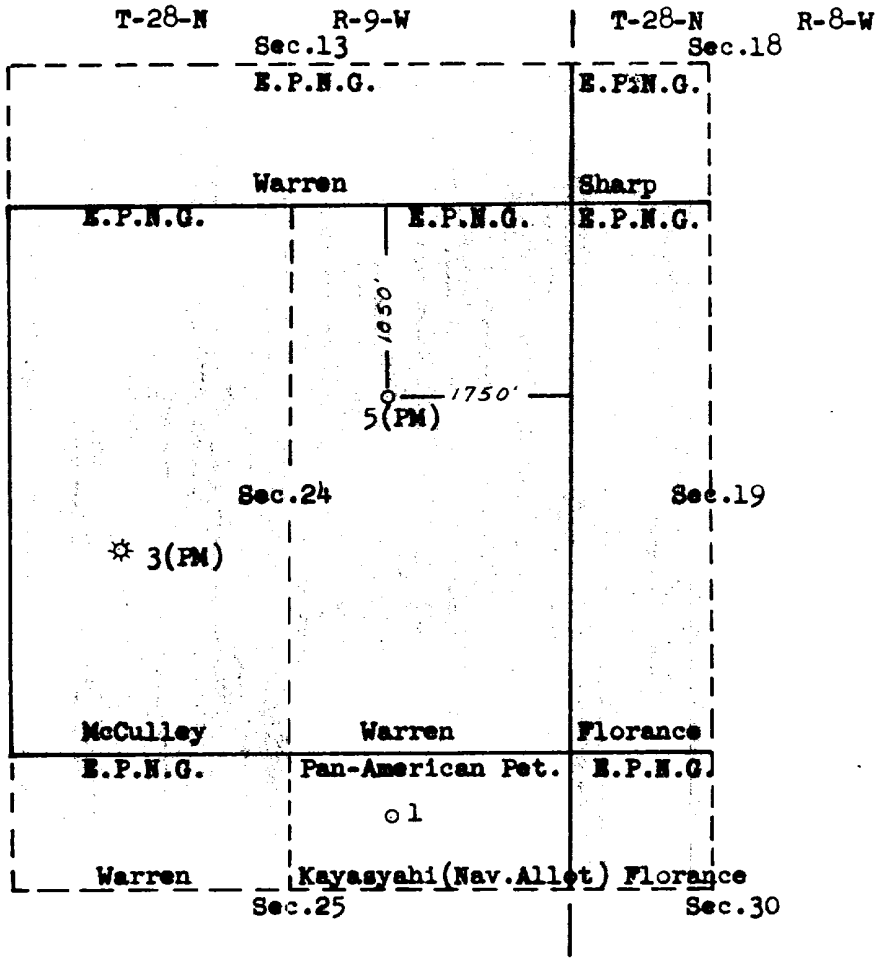

EL PASO NATURAL GAS COMPANY
EL PASO, TEXAS

SCALE	DATE	No.
DRAWN BY	CHECKED BY	

FORM 7-132 (10-56)

Form 214-4 [illegible]

EL PASO NATURAL GAS COMPANY
GAS WELL TEST

To: Mr. E. E. Alsup

From: Gas Engineering Department

Date: April 17, 1957

Place: Farmington, New Mexico

DUAL COMPLETION

Subject: Test data on the El Paso Natural Gas Company Well, WARREN # 5, San Juan County, New Mexico.

Tested By: R. A. Ullrich

Location ..... Sec. 24 T. 28 R. 9 , 1850'N, 1750'E

Shut-In Pressure ..... Pictured Cliffs SIPC 834 psig; (Shut-in 9 days)
Mesa Verde SIPT 1033 psig

0.750" Choke Volume ..... 3952 MCF/D @ 14.7 psia and 60° F. for 0.6 gravity gas. Flow through tubing for 3 hours.

Calculated 3 Hour Absolute Open Flow ..... 5436 MCF/D

Working Pressure On ..... Calculated ..... 603 Psig

Producing Formation ..... Mesa Verde

Stimulation Method ..... Sand Water Frac

Total Depth ..... 4710 - c/o - 4660. Packer at 2437

Field ..... Blanco

H_2S ..... Sweet to lead acetate.

Final SIPC (Pictured Cliffs) - 832 psig

Lewis D. Galloway
L. D. Galloway

cc: D. H. Tucker
~~[illegible]~~
W. T. Hollis
~~[illegible]~~
W. M. Rodgers
~~[illegible]~~
Drilling Department
B. D. Adams
Roland Hamblin
Jack Purvis
W. V. Holik
C. C. Kennedy
E. J. Coel, Jr. (6)
A. J. Dudenhoeffer
File

H. H. Lines
Bill Parrish
Dean Rittmann

Form 3-94 Rev. 7-57

EL PASO NATURAL GAS COMPANY
GAS WELL TEST

To: Mr. E. E. Alsup

From: Gas Engineering Department

Date: April 8, 1957

Place: Farmington, New Mexico

DUAL COMPLETION

Subject: Test data on the El Paso Natural Gas Company Well, WARREN #5, San Juan County, New Mexico.

Tested By: K. C. McBride

Location ..... Sec. 24 T. 28 R. 9 1850'N, 1750'E

Shut-In Pressure ..... Pictured Cliffs SIPC 780 psig ; (Shut-in 7 days)
Pictured Cliffs SIPT 781 psig
Mesa Verde SIPT 991 psig

0.750" Choke Volume ..... 2809 MCF/D @ 14.7 psia and 60° F. for 0.6 gravity gas. Flow through casing for 3 hours.

Calculated 3 Hour Absolute Open Flow ..... 2984 MCF/D

Working Pressure On tubing ..... = 196 Psig

Producing Formation ..... Pictured Cliffs

Stimulation Method ..... Sand Water Frac

Total Depth ..... 4710 - c/o - 4660'

Field ..... Undesignated

H_2S ..... Sweet to lead acetate.

Lewis D. Galloway
L. D. Galloway

cc: D. H. Tucker
~~H. H. Lines~~
W. T. Hollis
~~Bill Parrish~~
W. M. Rodgers
~~Dean Rittmann~~
Drilling Department
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H. H. Lines
Bill Parrish
Dean Rittmann

EL PASO NATURAL GAS COMPANY

Box 997
Farmington, N.M.

April 18, 1957

Mr. E. C. Arnold
Oil Conservation Commission
120 East Chaco
Aztec, New Mexico

Re: Packer Leakage Test on The El Paso Natural Gas Company Well, Warren # 5, NE 24-28-9, San Juan County, New Mexico.

Dear Mr. Arnold:

This well was dually completed in the Pictured Cliffs and Mesa Verde formations. A production packer was set at 2437 feet. The Pictured Cliffs zone was tested April 8, 1957 with the following results:

Pictured Cliffs - SIPC - 780 psig; shut-in 7 days.
Pictured Cliffs - SIPT - 781 psig
Mesa Verde - SIPT - 991 psig.

The casing was opened at 11:25 A.M. and flowed three hours through a 3/4" choke.

Time	Casing Choke Pressure, Psig	Temp. °F	Tubing Pressure, Psig
11:25	Opened casing		991
11:40	433		992
11:55	341		993
12:10	297		993
12:25	271		993
1:50	204		994
2:25	189	62	994

The calculated choke volume was 2809 MCF/Day. After the well was shut-in for 9 days, the Mesa Verde zone was tested with the following results:

Pictured Cliffs - SIPC - 834 psig
Mesa Verde - SIPT - 1033 psig; shut-in 9 days.

The tubing was opened at 11:00 A.M. through a 3/4" positive choke and flowed for three hours.

Time	Tubing Choke Pressure, Psig	Temp. °F	Casing Pressure, Psig
11:00	Tubing opened		834
11:15	450		835
11:30	390		835
11:45	361		834
12:00	347		834
2:00	283	66	832

The calculated choke volume was 3952 MCF/D. These tests were witnessed by Mr. E. C. Arnold of the New Mexico Oil Conservation Commission.

Very truly yours,

K. C. McBride

K. C. McBride
Gas Engineer

KCMcB/jla

cc: W. T. Hollis
W. A. Rodgers
E. J. Coel, Jr.
File

FORM [illegible]

EL PASO NATURAL GAS COMPANY

DUAL COMPLETION

OPEN FLOW TEST DATA

DATE April 17, 1957

Operator: El Paso Natural Gas Company		Lease: Warren # 5	
Location: 1850'N, 1750'E, Sec. 24-28-9		County: San Juan	State: New Mexico
Formation: Mesa Verde		Pool: Blanco	
Casing: Diameter 7 5/8	Set At: Feet 2408	Tubing: Diameter 2"	Set At: Feet 4612
Pay Zone: From 4467	To 4652	Total Depth: 4710 - 4660.	Packer at 2437.
Stimulation Method: Sand Water Frac		Flow Through Casing:	Flow Through Tubing:

Choke Size, Inches: 0.75	Choke Constant: C 14.1605	5½" liner - 2349 to 4707	
Shut-in Pressure, Casing: P.C. 834 PSIG + 12 = PSIA	Days Shut-in 9	Shut-in Pressure, Tubing: 1033 PSIG + 12 = PSIA	1045
Flowing Pressure: P: 283 PSIG + 12 = PSIA	295	Working Pressure: P_w Calculated PSIG + 12 = PSIA	615
Temperature: T: 66 °F Ft	.75	Fpv (From Table) 1.035	Gravity .710

Final SIPC (Pictured Cliffs) - 832 psig

CHOKE VOLUME: Q = C x P_t x F_t x F_g x F_{pv}

Q = 14.1605 x 295 x .9943 x .9193 x 1.035 = 3952 MCF/D

OPEN FLOW: Aof = Q $\left(\frac{P_c^2}{P_c^2 - P_w^2}\right)^n$

Aof = $\left(\frac{1,092,025}{713,800}\right)^n$ $(1.5298)^{.75}$ x 3952 = 1.3755 x 3952

Aof = 5436 MCF/D

TESTED: R. A. Ullrich

WITNESSED:

cc: E. J. Coel, Jr. (6)

L. D. Galloway

L. D. Galloway

EL PASO NATURAL GAS COMPANY

DUAL COMPLETION

OPEN FLOW TEST DATA

DATE April 8, 1957

Operator: El Paso Natural Gas Company		Lease: Warren # 5	
Location: 1850'N, 1750'E, Sec. 24-28-9		County: San Juan	State: New Mexico
Formation: Pictured Cliffs		Pool: Undesignated	
Casing: 7 5/8	Set At: Feet 2408	Tubing: Diameter 1¼	Set At: Feet 2264
Pay Zone: From 2230	To 2270	Total Depth: 4710 - c/o - 4660	
Stimulation Method: Sand Water Frac		Flow Through Casing: X	Flow Through Tubing:

Choke Size, Inches: .750	Choke Constant: C 14.1605	5½" liner - 2349 to 4707. Packer at 2437	
Shut-in Pressure, Casing: 780 PSIG + 12 = PSIA 792	Days Shut-in 7	Shut-in Pressure, Tubing: 781 PSIG + 12 = PSIA 793	
Flowing Pressure: P 189 PSIG + 12 = PSIA 201		Working Pressure: Pw 196 PSIG + 12 = PSIA 208	
Temperature: T 62	F.f. .85	Fpv (From Tables) 1.017	Gravity .635

SIPT (M.V.) - 991. Ending SIPT (L.V.) - 994.

CHOKE VOLUME = C x P_t x F_t x F_g x F_{pv}

= 14.1605 x 201 x .9981 x .9721 x 1.017 = 2809 MCF/D

OPEN FLOW = Aof = Q $\left(\frac{P_c^2}{P_c^2 - P_w^2}\right)^n$

Aof = $\left(\frac{628,849}{585,585}\right)^n$ $(1.0738)^{.85}$ x 2809 = 1.0624 x 2809

Aof = 2984 MCF/D

TESTED: K. C. McBride

WITNESSED:

cc: L. J. Coel, Jr. (6)

L. D. Galloway

L. D. Galloway

STATE OF NEW MEXICO)
)
COUNTY OF SAN JUAN)

I, Mack M. Mahaffey, being first duly sworn upon my oath depose and say as follows:

I am an employee of Baker Oil Tools, Inc., and that on April 1, 1957, I was called to the location of the El Paso Natural Gas Company Warren No. 5 (PM) Well located in the SW/4 NE/4 of Section 24, Township 28 North, Range 9 West, N.M.P.M. for the purpose of installing a production packer. Under my direct supervision a Baker Model "EGJ" production packer was set at 2437 feet. The production packer was properly set in accordance with the usual practices and customs of the industry.

Mack M. Mahaffey

Mack M. Mahaffey

Subscribed and sworn to before me, a Notary Public in and for San Juan County, New Mexico, the 9 day of MAY, 1957.

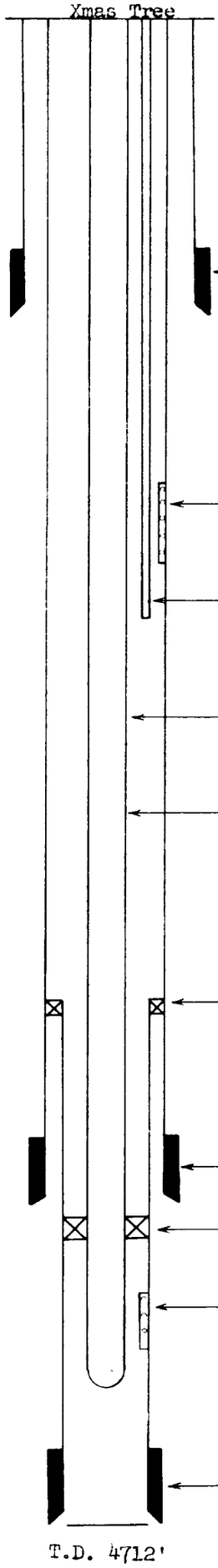
Notary Public in and for San Juan County, New Mexico

My commission expires:

2-24-60

SCHEMATIC DIAGRAM OF DUAL COMPLETION
EPNG WARREN NO. 5 (PM)
(NE Section 24-T28N-R5W)

Zero Measurements 8.9'
above tubing hanger.



161', 10-3/4", 32.75#, Armco S.W. casing set at 171' with 150 sacks cement circulated to surface.

Pictured Cliffs perf. 2230-2270', 2 SPF. Fractured with water and sand.

1-1/4", 2.3#, Grade"B" line pipe set at siphon string at 2273'.

2", 4.7#, J-55, EUE tubing set at 4621' with perforated nipple in string at 4586-4589'.

Garrett sleeve at 2310'.

Liner hanger at 2349'. Top of liner squeezed with 100 sacks cement.

Ran 2408', 7-5/8", 26.4#, J-55 casing set at 2420' with 250 sacks cement.

Baker "EGJ" packer set at 2437'.

Point Lookout perf. at 4467-4484', 4530-4550' and 4570-4586' with 2 SPF. Fractured same with water and sand.

5-1/2", 15.50#, J-55 liner set from 2349' to 4707', set with 300 sacks cement and 4% gel. Top of cement by temperature survey at 3900'.