El Paso Natural Gas Company

El Paso, Texas

November 5, 1957

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

RECEIVED
NOV 13 1957
OIL CON. COM.
DIST. 3

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 Pool Extension. The El Paso Natural Gas Company Florance No. 3-C (PM) is located 1450 feet from the South Line and 1750 feet from the West line of Section 19, Township 28 North, Range 8 West, N.M.P.M., San Juan County, New Mexico.

This well has been completed in the Point Lookout and Lower Menefee sections 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 174 feet with 200 sacks of cement circulated to the surface.
2. 7 5/8" intermediate casing set at 2290 feet with 250 sacks of cement. Top of the cement is at 1235 feet, which is above the top of the Pictured Cliffs formation at 2103 feet.
3. 5 1/2" liner set from 2211 feet to 4600 feet 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 and Lower Menefee sections were perforated in seven 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 after treatment and completion was accomplished by setting a Baker Model "EGJ" production packer on 2" EUE tubing at 2410 feet with the tubing perforations set opposite the Point Lookout perforations. 1 1/4" Grade "B" line pipe was with the tubing perforations set opposite the Pictured Cliffs perforations, as a siphon string. The Point Lookout gas wi produced through the 2" EUE tubing and the Pictured Cliff through the casing.

COPY

8. A Garrett circulating sleeve was installed in the 2" EUE tubing string just below the Pictured Cliffs perforations. This will enable the bottom hole pressure tests to be taken at a future date if so required.
9. Initial potential tests have been run and commercial production has been found in both zones. A packer leakage test has been run and witnessed by a member of 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 the dual completion to allow production from both known producing formations, eliminating the high initial cost of drilling two separate wells.

The offset operator to the drilling block has been notified of intentions to dually complete by registered letter and has returned a letter of approval of said intentions. Enclosed is a copy of the offset operator's letter of approval. Also enclosed are:

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

It is intended to dedicate the S/2 of Section 19, Township 28 North, Range 8 West, to the Mesa Verde formation and the SW/4 of Section 19, Township 28 North, Range 8 West to the Pictured Cliffs formations.

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

Yours very truly,

ORIGINAL SIGNED E. S. OBERLY

E. S. Oberly
Division Petroleum Engineer

ESO/dgb
Encl.
cc: Emery Arnold
Sam Smith
Phil McGrath

FORM 52 2-57

PAN AMERICAN PETROLEUM CORPORATION

Roswell, New Mexico
February 27, 1957

File: D-52-986.510

Subject: Waiver of Objection
Dual Completion Permit
Pictured Cliffs and
Mesaverde Formations
S/2 Section 19, T-28-N, R-8-W,
San Juan County, New Mexico

New Mexico Oil Conservation Commission
Box 871
Santa Fe, New Mexico

Gentlemen:

The undersigned, being an authorized representative of the offset operator, has been duly informed by El Paso Natural Gas Company of their intention to dually complete their Florance "C" Well No. 3 in the Pictured Cliffs and Mesaverde Formations. Pan American Petroleum Corporation hereby waives all objections to the granting of a permit for this purpose.

This well is to be located in the S/2 of Section 19, T-28-N, R-8-W, San Juan County, New Mexico.

Yours very truly,

PAN AMERICAN PETROLEUM CORPORATION

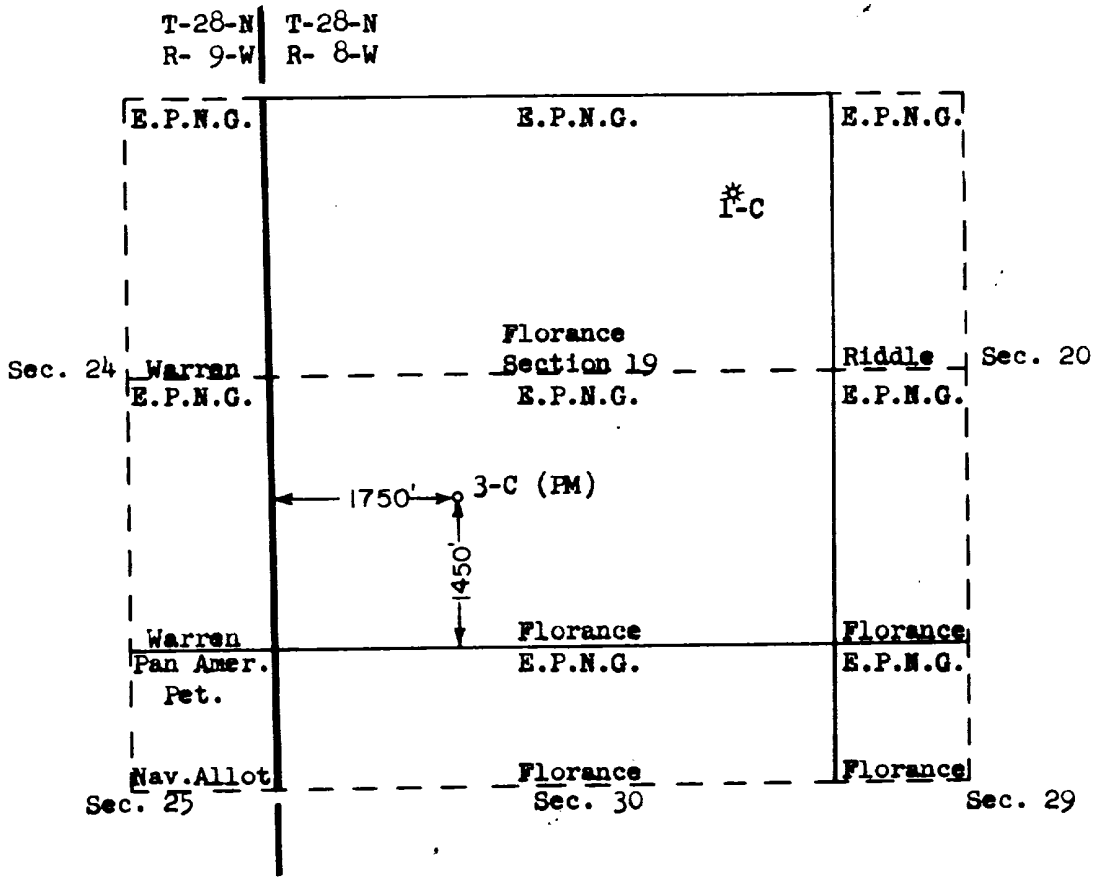
C. L. Kelley
District Superintendent

ALL/ms

cc: El Paso Natural Gas Company
P. O. Box 997
Farmington, New Mexico

COPY

PLAT SHOWING LOCATION OF DUALLY COMPLETED
EL PASO NATURAL GAS COMPANY FLORANCE NO. 3-C (PM)
AND OFFSET ACREAGE

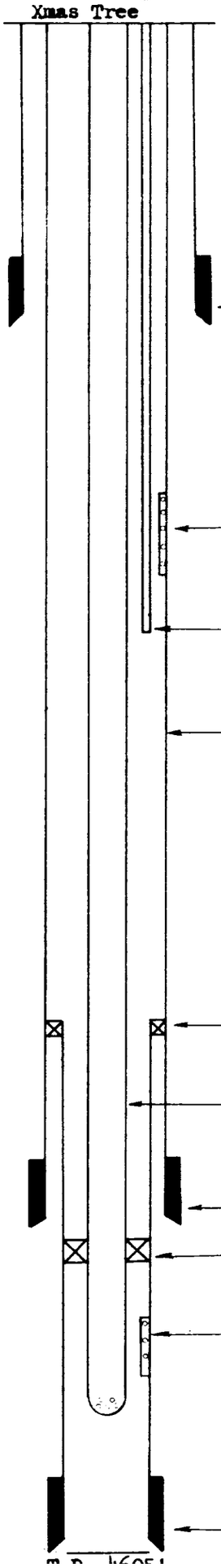


EL PASO NATURAL GAS COMPANY
EL PASO, TEXAS

SCALE	DATE	No.
DRAWN BY	CHECKED BY	

FORM 7-132 (10-56)

SCHEMATIC DIAGRAM OF DUAL COMPLETION
El Paso Natural Gas Florance No. 3-C (PM)
(SW Section 19, T-28-N, R-8-W)



Zero reference Point 11.0' above top flange of tubing hanger.

10 3/4", 32.75# S. W. casing set at 174' with 200 sacks.

Pictured Cliffs perforations 2106'-2154' (2 SPF) fractured with water and sand.

1 1/4", 2.3# Grade "B" line pipe landed at 2326' as siphon.

Garrett circulating sleeve at 2160' (for BHP tests.)

Burns liner hanger at 2211', top of liner squeezed with 100 sacks cement.

2" EUE, 4.7# tubing landed at 4461' with tubing perforations at 4427' to 4430'.

7 5/8", 26.40# J-55 casing set at 2290' with 250 sacks.

Baker "EGJ" Production packer set at 2410'.

Lower Menefee and Point Lookout perforations 4116'-4144'; 4182'-4203' 4316'-4326'; 4378'-4411'; 4430'-4448'; 4462'-4484'; 4528'-4552' (2 SPF) fractured with water and sand.

5 1/2", 15.50# J-55 liner set from 2211' to 4600' with 300 sacks.

T.D. 4605'

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 October 7, 1957, I was called to the location of the El Paso Natural Gas Company Florence No. 3-C (PM) Well located in the NE/4 SW/4 of Section 19, Township 28 North, Range 8 West, N.M.P.M., for advisory service in connection with installation of a production packer. In my presence, a Baker Model "EGJ" Production Packer was set in this well at 2410 feet in accordance with the usual practices and customs of the industry.

Mack M. Mahaffey

Subscribed and sworn to before me, a Notary Public in and for San Juan County, New Mexico, the 8 day of Nov, 1957.

Van A. Nachsatch
Notary Public in and for San Juan County,
New Mexico

My commission expires February 24, 1960.

STATE OF NEW MEXICO

COUNTY OF SAN JUAN

I, Mack R. Hamilton, being first duly sworn upon my oath deposes and says as follows:

I am an employee of Baker Oil Tools, Inc., and was on October 1, 1971, I was called to the location of the El Paso Natural Gas Company Florance No. 94-4 (PC) well located in the NE/4 sec. 4 of Section 19, Township 29 North, Range 9 West, N.M.P.M., for advisory service in connection with installation of a production packer. In my presence, a Baker Model "AC" production packer was set in said well on this date in accordance with the usual procedures and customs of the industry.

Subscribed and sworn to before me, a Notary Public in and for San Juan County, New Mexico, this 1 day of October, 1971.

Notary Public in and for San Juan County,
New Mexico

My commission expires February 24, 1972.

EL PASO NATURAL GAS COMPANY

Box 997
Farmington, N.M.

October 30, 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, Florance No. 3-C, 1450'S, 1750'W, Sec. 19-28-8, San Juan County, N.M.

Dear Mr. Arnold:

The subject well was dually completed in the Pictured Cliffs and Mesa Verde zones and a packer was set at 2410 feet. The Pictured Cliffs zone was tested through a 3/4" choke for three hours October 16, 1957 with the following data obtained:

Pictured Cliffs SIPC 805 psig; shut-in 9 days
Pictured Cliffs SIPT 805 psig

Mesa Verde SIPT 1052 psig; shut-in 9 days

Time Minutes	PC Flowing Pressure Casing Psig	MV SIPT Psig	PC Working Pressure, Psig	Temp ° F
0	Open	1052		
15	492	1052		61
30	423	1052		61
45	359	1052		62
60	323	1052		62
180	210	1052	214 tbg.	64

The choke volume for the Pictured Cliffs was 2693 MCF/D with an A.O.F. of 2882 MCF/D.

The Mesa Verde zone was tested October 28, 1957 with a 3/4" choke for three hours with the following data obtained:

Pictured Cliffs SIPC 847 psig; shut-in 9 days
Pictured Cliffs SIPT 847 psig

Mesa Verde SIPT 1077 psig; shut-in 21 days

Time Minutes	MV Flowing Pressure Tubing Psig	PC SIPC Psig	MV Working Pressure, Psig	Temp ° F
0	Open	847		
15	542	849		68
30	506	849		69
45	489	849		69
60	473	850		70
180	408	850	Calculated 774	72

The choke volume for the Mesa Verde test was 4934 MCF/D with an A.O.F. of 8565 MCF/D.

The results of the above tests indicate there is no packer leakage.

Very truly yours,

S. V. Roberts

S. V. Roberts
Gas Engineer

SVR/jla

cc: W. M. Rodgers
E. S. Oberly (6)
File

Form 33-24 Rev. 5-56

EL PASO NATURAL GAS COMPANY
GAS WELL TEST

To: Mr. E. E. Alsup

From: Gas Engineering Department

Date: October 28, 1957

Place: Farmington, New Mexico

DUAL COMPLETION

Subject: Test data on the El Paso Natural Gas Company Well, FLORANCE NO. 3-C, San Juan County, New Mexico.

Tested By: S. V. Roberts

Location ..... Sec. 19 T. 28N R. 8W 1450'S, 1750'W

Shut-in Pressure ..... P.C. SIPC 847 psig; P.C. SIPT 847 psig; (Shut-in 9 days)
M.V. SIPT 1077 psig: shut-in 21 days

0.750" Choke Volume ..... 4934 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 ..... 8565 MCF/D

Working Pressure On ..... Calculated ..... = 774 Psig

Producing Formation ..... Mesa Verde

Stimulation Method ..... Sand Water Frac.

Total Depth 4605

Field ..... Blanco

H_2S ..... Sweet to lead acetate.

Final SIPC (PC) - 850 psig; packer at 2410; 1-1/4 at 2315; sleeve at 2160 (upside down)

L. D. Galloway

L. D. Galloway

cc: D. H. Tucker
~~R. Williams~~
~~W. T. Mills~~
~~G. Orbell~~
W. M. Rodgers
Wayne Cheek
Drilling Department
B. D. Adams
~~Roland Hobbs~~
Jack Purvis
~~W. V. Hulett~~
C. C. Kennedy
E. J. Coel, Jr.
A. J. Dudenhoeffer
File

Bill Parrish
Dean Rittmann
E. S. Oberly (6)
Samuel Smith

FORM 3-75 5-57

EL PASO NATURAL GAS COMPANY

OPEN FLOW TEST DATA

DUAL COMPLETION

DATE October 28, 1957

Operator: El Paso Natural Gas Company		Lease: Florance No. 3-C	
Location: 1450'S, 1750'W, Sec. 19-28-8		County: San Juan	State: New Mexico
Formation: Mesa Verde		Pool: Blanco	
Casing: Diameter: 7-5/8	Set At: Feet: 2292	Tubing: Diameter: 2"	Set At: Feet: 4450
Pay Zone: From: 4116	To: 4552	Total Depth: 4605 - c/o 4560	
Stimulation Method: Sand Water Frac.		Flow Through Casing:	Flow Through Tubing: X

Choke Size, Inches: 0.750	Choke Constant: C: 12.365	5-1/2" liner. 2211 - 4600	
Shut-In Pressure, Casing, PSIG: PC 847	+ 12 = PSIA: 859 / Days Shut-In: 21	Shut-In Pressure Tubing PSIG: MV 1077	+ 12 = PSIA: 1089
Flowing Pressure: P PSIG: 408	+ 12 = PSIA: 420	Working Pressure: Pw PSIG: Calculated	+ 12 = PSIA: 786
Temperature: T F: 72	n: 0.75	Fpv (From Tables): 1.049	Gravity: .715

Initial SIPC (PC) - 847 psig; final - 850 psig. 1-1/4" at 2315. Packer at 2410. Sleeve at 2160 (upside down)

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

Q = 12.365 x 420 x .9887 x .9161 x 1.049 = 4934 MCF/D

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

Aof $\left(\frac{1,185,921}{568,125} \right)^n$ = $2.0874^{.75}$ x 4934 = 1.736 x 4934

Aof = 8565 MCF/D

PREPARED BY: S. V. Roberts

WITNESSED BY:

cc: E. S. Oberly (6)

L. D. Galloway

L. D. Galloway

Form 23-24 (Rev. 5-56)

EL PASO NATURAL GAS COMPANY
GAS WELL TEST

To: Mr. E. E. Alsup

From: Gas Engineering Department

Date: October 16, 1957

Place: Farmington, New Mexico

DUAL COMPLETION

Subject: Test data on the El Paso Natural Gas Company Well, FLORANCE NO. 3-C, San Juan County, New Mexico.

Tested By: S. V. Roberts. Checked by: Bob Davis

Location ..... Sec. 19 T. 28N R. 8W 1450'S, 1750'W

Shut-In Pressure ..... P.C. SIPC 805 psig; P.C. SIPT 805 psig; (Shut-in 9 days)
M.V. SIPT 1052 psig

0.750" Choke Volume ..... 2693 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 ..... 2882 MCF/D

Working Pressure On tubing ..... = 214 Psig

Producing Formation ..... Pictured Cliffs

Stimulation Method ..... Sand Water Frac.

Total Depth 4605

Field ..... Undesignated

H_2S ..... Sweet to lead acetate.

Final SIPT (MV) - 1052 psig

L. D. Galloway
L. D. Galloway
by TBG

cc: D. H. Tucker
~~R. W. Merritt~~
~~W. T. Mallin~~
~~C. O. Walker~~
W. M. Rodgers
Wayne Cheek
Drilling Department
B. D. Adams
~~Roland Hamlin~~
Jack Purvis
~~W. V. Walker~~
C. C. Kennedy
E. J. Coel, Jr.
A. J. Dudenhoeffer
File

Bill Parrish
Dean Rittmann
E. S. Oberly (6)
Samuel Smith

FORM 23-75 6-56

EL PASO NATURAL GAS COMPANY **DUAL COMPLETION**

OPEN FLOW TEST DATA

DATE October 16, 1957

Operator: El Paso Natural Gas		Lease: Florance No. 3-C	
Location: 1450'S, 1750'W, Sec. 19-28-8		County: San Juan	State: New Mexico
Formation: Pictured Cliffs		Pool: Undesignated	
Casing: Diameter: 7-5/8	Set At: Feet: 2292	Tubing: Diameter: 1-1/4	Set At: Feet: 2315
Pay Zone: From: 2106	To: 2154	Total Depth: 4605	
Stimulation Method: Sand Water Frac.		Flow Through Casing: X	Flow Through Tubing:

Choke Size, Inches: 0.750	Choke Constant: C: 12.365		5-1/2" liner -- 2211 - 4600	
Shut-In Pressure, Casing, PSIG: 805	+ 12 = PSIA: 817	Days Shut-In: 9	Shut-In Pressure, Tubing PSIG: 805	+ 12 = PSIA: 817
Flowing Pressure: P PSIG: 210	+ 12 = PSIA: 222		Working Pressure: P_w PSIG: 214	+ 12 = PSIA: 226
Temperature: T °F: 64	n = 0.85		Fpv (From Tables): 1.021	Gravity: 0.646

Initial SIPT (MV) 1052; Final - 1052 psig. 2" at 4450. Packer at 2410 - sleeve at 2160

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

Q = 12.365 x 222 x .9962 x .9645 x 1.021 = 2693 MCF/D

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

Aof = $\left(\frac{667,489}{616,413} \right)^n$ = $1.0828^{.85}$ x 2693 = 1.070 x 2693

Aof = 2882 MCF/D

TESTED BY S. V. Roberts

WITNESSED BY

cc: E. S. Oberly (6)

L. D. Galloway

L. D. Galloway 4 T B G