El Paso Natural Gas Company

El Paso, Texas

February 19, 1958

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

RECEIVED
FEB 21 1958
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 South Blanco Pictured Cliffs Pool Extension and in the Blanco Mesa Verde Pool. The El Paso Natural Gas Company Florance No. 4-C (PM) is located 1600 feet from the South line and 2161 feet from the West line of Section 29, Township 28 North, Range 8 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 174 feet with 150 sacks of cement circulated to the surface.
2. 7 5/8" intermediate casing set at 2424 feet with 250 sacks of cement. Top of the cement is at 1075 feet which is above the top of the Pictured Cliffs at 2272 feet.
3. 5 1/2" liner set from 2379 feet to 4786 feet with 300 sacks of cement.
4. The casing and liner were tested for leaks before perforating.
5. The Point Lookout section was 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 2416 feet with the tubing perforations set opposite the Point Lookout perforations. 1 1/4" EUE tubing was run, with the tubing perforations set opposite the Pictured Cliffs perforations, as a siphon string. The Point Lookout gas will be produced through the 2" tubing and the Pictured Cliffs gas through the casing.
8. 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.

COPY

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.

Since El Paso Natural Gas Company holds all leases immediately adjacent to the acreage dedicated to this well, approval has not been sought from any other operator to dually complete this well. 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.

It is intended to dedicate the W/2 of Section 29, Township 28 North, Range 8 West to the Mesa Verde formation and the SW/4 of Sectinn 29, Township 28 North, Range 8 West to the Pictured Cliffs formation.

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

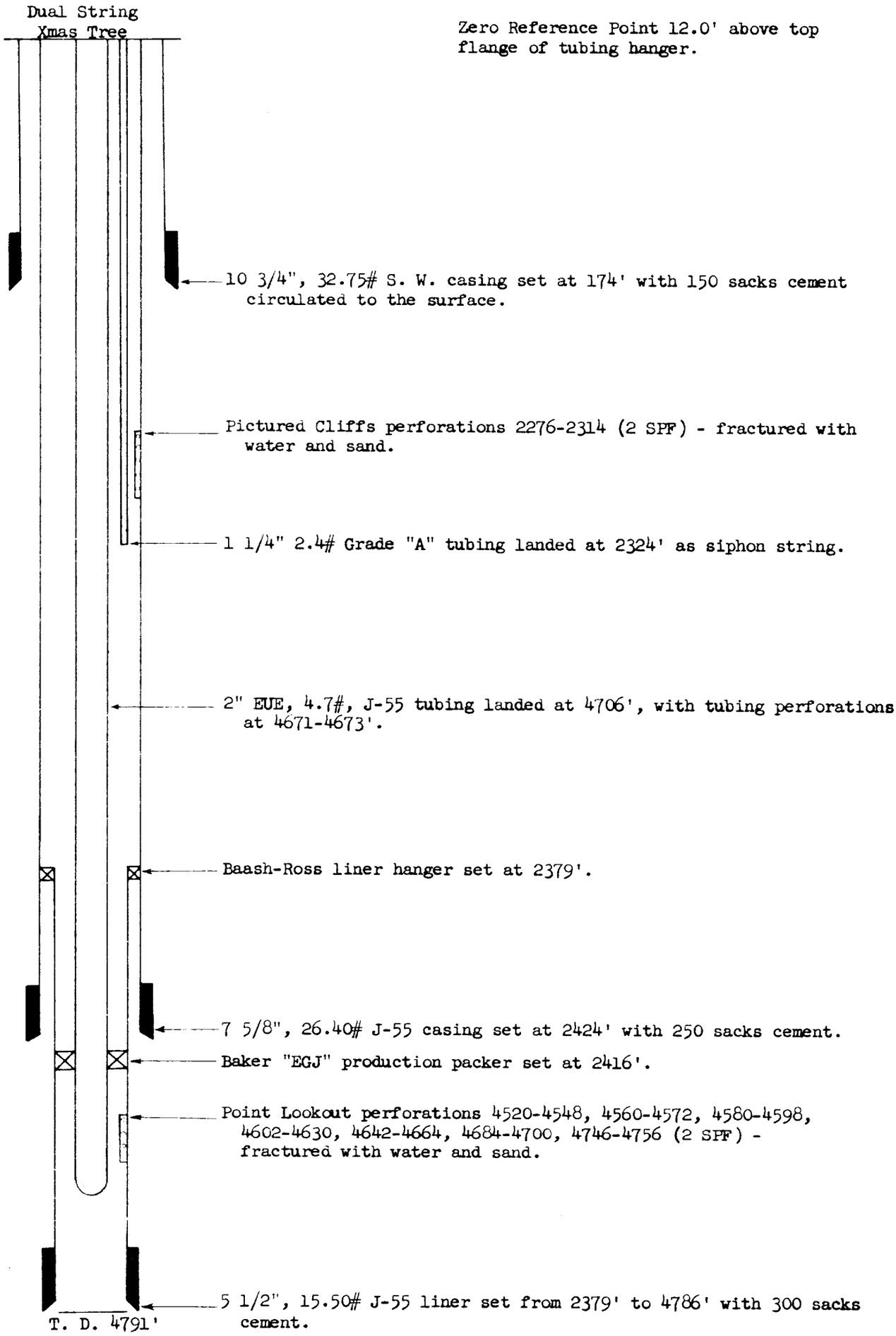
Yours very truly,

ORIGINAL SIGNED E. S. OBERLY

E. S. Oberly,
Division Petroleum Engineer

ESO;dgb
Encl.
cc: NMOCC (Emery Arnold)
Sam Smith
USGS (Phil McGrath)

SCHEMATIC DIAGRAM OF DUAL COMPLETION
El Paso Natural Gas Co. Florance No. 4-C (PM)
SW/4 Section 29, T-28-N, R-8-W



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 December 24, 1957, I was called to the location of the El Paso Natural Gas Company Florance No. 4-C (PM) Well located in the NESW/4 of Section 29, 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 "KLJ" Production Packer was set in this well at 2416 feet in accordance with the usual practices and customs of the industry.

Mack M. Mahaffey

Subscribed and swrn to before me, a Notary Public in and for San Juan County, New Mexico, the 20 day of FEB, 1958.

Notary Public in and for San Juan County, New Mexico

My commission expires February 24, 1960.

STATE OF NEW MEXICO)
)
COUNTY OF BERNALILLO)

I, [illegible], being first duly sworn on oath, do hereby declare
and say as follows:

I am an employee of Kaiser-Hill Company, LLC, and have in performance
of my duties, I have relied on the guidance of the DOE Order entitled "Occupational
Safety and Health Programs for Contractors Employed at Department of Energy Sites"
(DOE Order) to develop, implement, and revise as necessary, a comprehensive safety
and health program to comply with the requirements of 29 CFR 1910.119 and
1926.64, Process Safety Management of Highly Hazardous Chemicals, and to
incorporate the requirements of the DOE Order into the Kaiser-Hill Company, LLC
Environmental Management System. In my professional opinion, Kaiser-Hill
Company, LLC has met its duty of care to ensure a safe workplace for
the health, safety and welfare of the industry.

[illegible]

Subscribed and sworn to before me by [illegible] this
[illegible] day of [illegible], 20[illegible]

[illegible]
Notary Public, [illegible]
County, New Mexico

My commission expires [illegible]

EL PASO NATURAL GAS COMPANY

P. O. Box 997
Farmington, N.M.

February 4, 1958

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. 4-C (M), 1600'S, 2161'W, Sec. 29-28-8, 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 2416 feet. The Pictured Cliffs zone was tested through a 3/4" choke for three hours January 14, 1958 with the following data obtained:

Pictured Cliffs	SIPC	836 psig; shut-in 20 days
Pictured Cliffs	SIPT	838 psig
Mesa Verde	SIPT	1062 psig; shut-in 20 days

Time Minutes	PC Flowing Pressure Casing Psig	MV SIPT Psig	PC Working Pressure, Psig	Temp ^{o} F
0		1062		
15	210	1063		51
30	176	1063		53
45	163	1063		55
60	154	1063		56
180	123	1064	128	57

The choke volume for the Pictured Cliffs was 1,647 MCF/D with an A.O.F. of 1,686 MCF/D.

The Mesa Verde zone was tested January 29, 1958 with a 3/4" choke for three hours with the following data obtained:

Pictured Cliffs	SIPC	843 psig; shut-in 15 days
Pictured Cliffs	SIPT	843 psig
Mesa Verde	SIPT	1074 psig; shut-in 35 days

Packer Leakage Test - Florance No. 4-C (M) - Page Two

Time Minutes	MV Flowing Pressure Tubing Psig	PC SIPC Psig	MV Working Pressure, Psig	Temp ^{o} F
0		843		
15	494	846		63
30	461	846		64
45	428	846		65
60	397	846		65
180	372	846	Calculated 722	66

The choke volume for the Mesa Verde test was 4,528 MCF/D with an A.O.F. of 7,159 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 23-24 (Rev. 5-56)

EL PASO NATURAL GAS COMPANY
GAS WELL TEST

To: Mr. Ed E. Alsup

Date: January 29, 1958

From: Gas Engineering Department

Place: Farmington, New Mexico

DUAL COMPLETION

Subject: Test data on the El Paso Natural Gas Company Well, FLORANCE NO. 4-C (M), San Juan County, New Mexico.

Tested By: S. V. Roberts

Location ..... Sec. 29 T. 28N R. 8W 1600'S, 2161'W

Shut-In Pressure ..... P.C. SIPC 843 psig; P.C. SIPT 843 psig; (Shut-in 15 days)
M.V. SIPT 1074 psig; shut-in 35 days

0.750" Choke Volume ..... 4528 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 ..... 7159 MCF/D

Working Pressure On Calculated ..... = 722 Psig

Producing Formation ..... Mesa Verde

Stimulation Method ..... Sand Water Frac.

Total Depth ..... 4791 - c/o 4766

Field ..... Blanco

H_2S ..... Sweet to lead acetate.

Final SIPC (PC) - 846 psig

Lewis D. Galloway
L. D. Galloway

cc: D. H. Tucker
~~R. M. [illegible]~~
~~W. H. [illegible]~~
~~C. G. [illegible]~~
W. M. Rodgers
Wayne Cheek
Drilling Department
B. D. Adams
~~[illegible]~~
Jack Purvis
~~W. V. [illegible]~~
C. C. Kennedy
E. J. Coel, Jr.
A. J. Dudenhoeffer
File

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

FORM 23-78 (5-58)

EL PASO NATURAL GAS COMPANY

DUAL COMPLETION

OPEN FLOW TEST DATA

DATE January 29, 1958

Operator: El Paso Natural Gas Company	Lease: Florance No. 4-C (M)
Location: 1600'S 2161'W, Sec. 29-28-8	County: San Juan; State: New Mexico
Formation: Mesa Verde	Pool: Blanco
Casing: Diameter 7-5/8; Set At: Feet 2424	Tubing: Diameter 2"; Set At: Feet 4706
Pay Zone: From 4520; To 4756	Total Depth: 4791 - c/o 4766
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. 2379 - 4786
Shut-In Pressure, Casing, PSIG: 843 PC; + 12 = PSIA: 855; Days Shut-In: 35 MV	Shut-In Pressure, Tubing, PSIG: 1074 MV; + 12 = PSIA: 1086
Flowing Pressure: P, PSIG: 372; + 12 = PSIA: 384	Working Pressure: Pw, PSIG: Calculated; + 12 = PSIA: 734
Temperature: T: 66; F: 0.75; n	Fpv (From Tables): 1.047; Gravity: .717

Final SIPC (PC) - 846 psig. 1-1/4" at 2324. Packer at 2416

CHOKE VOLUME $Q = C \times P_t \times F_t \times F_g \times F_{pv}$

$Q = 12.365 \times 384 \times .9943 \times .9161 \times 1.047 = 4528$ MCF/D

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

$Aof = \left(\frac{1,179,396}{640,640} \right)^n = 1.8409^{.75} \times 4528 = 1.5810 \times 4528$

Aof 7159 MCF/D

TESTED 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. Ed E. Alsup**

Date: **January 14, 1958**

From: Gas Engineering Department

Place: Farmington, New Mexico

DUAL COMPLETION

Subject: **Test data on the El Paso Natural Gas Company Well, FLORANCE NO. 4-C (P), San Juan County, New Mexico.**

Tested By: **S. V. Roberts**

Location ..... Sec. 29 T. 28N R. 8W , 1600'S, 2161'W

Shut-In Pressure ..... P.C. SIPC 836 psig ; (Shut-in 20 days)
P.C. SIPT 836 psig
M.V. SIPT 1062 psig; shut-in 20 days

0.750" Choke Volume ..... 1647 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 ..... 1686 MCF/D

Working Pressure On **tubing** ..... = 128 Psig

Producing Formation ..... **Pictured Cliffs**

Stimulation Method ..... **Sand Water Frac.**

Total Depth ..... 4791 - c/o 4766

Field ..... **Undesignated**

H_2S ..... **Sweet** to lead acetate.

Final SIPT (MV) - 1064 psig

Lewis D. Galloway
L. D. Galloway

cc: D. H. Tucker
~~[illegible]~~
~~[illegible]~~
~~[illegible]~~
W. M. Rodgers
Wayne Cheek
Drilling Department
B. D. Adams
~~[illegible]~~
Jack Purvis
~~[illegible]~~
C. C. Kennedy
E. J. Coel, Jr.
A. J. Dudenhoeffer
File

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

FORM 23-75 4-58

EL PASO NATURAL GAS COMPANY

OPEN FLOW TEST DATA

DUAL COMPLETION

DATE January 14, 1958

Operator: El Paso Natural Gas		Lease: Florance No. 4-C (P)	
Location: 1600'S, 2161'W, Sec. 29-28-8		County: San Juan	State: New Mexico
Formation: Pictured Cliffs		Pool: Undesignated	
Casing: Diameter: 7-5/8	Set At: Feet: 2424	Tubing: Diameter: 1-1/4	Set At: Feet: 2324
Pay Zone: From: 2776	To: 2314	Total Depth: 4791 - c/o 4766	
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. 2379 - 4786	
Shut-In Pressure, Casing, PSIG: PC 836	+ 12 = PSIA: 848	Days Shut-In: 20	Shut-In Pressure, Tubing PSIG: PC 838	+ 12 = PSIA: 850
Flowing Pressure: P PSIG: PC 123	+ 12 = PSIA: 135		Working Pressure: Pw PSIG: 128	+ 12 = PSIA: 140
Temperature: T °F: 57	n = 0.85		Fpv (From Tables): 1.012	Gravity: 0.638

Initial SIPT (MV) - 1062 psig. Final SIPT (MV) 1064 psig. 2" at 4706. Packer at 2416

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

Q = 12.365 x 135 x 1.0029 x .9721 x 1.012 = 1647 MCF/D

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

Aof $\left(\frac{722,500}{702,900} \right)^n$ = $1.0278^{.85}$ x 1647 = 1.0236 x 1647

Aof 1686 MCF/D

TESTED BY S. V. Roberts

WITNESSED BY

cc: E. S. Oberly (6)

L. D. Galloway

L. D. Galloway