El Paso Natural Gas Company

14-28-9

El Paso, Texas

September 4, 1957

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

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 and the Aztec Pictured Cliffs Extension Pools. The El Paso Natural Gas Company Warren No. 4 (MM) is located 1700 feet from the North line and 1090 feet from the East line of Section 14, Township 28 North, Range 9 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' with 150 sacks of cement circulated to the surface.
2. 7 5/8" intermediate casing set at 2618 feet with 250 sacks of cement. Top of the cement is at 1400', which is above the top of the Pictured Cliffs formation at 2428'.
3. 5 1/2" liner set from 2574' to 4922' with 300 sacks of cement. Top of the liner was squeezed with 100 sacks.
4. The casing and liner were tested for leaks before perforating.
5. Point Lookout and Lower Menefee sections of the Mesa Verde were perforated in five 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 EG production packer on 2" EUE tubing at 2623' with the tubing perforations set opposite the Point Lookout perforations and 1-1/4" grade "B" line pipe was run as a siphon string with the tubing perforations set opposite the Pictured Cliffs perforations. The Point Lookout gas will be produced through the 2" tubing and the Pictured Cliffs gas through the casing.

COPY

c. 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 if it is required at a future date.

d. 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 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 eleminating the high initial cost of drilling two separate wells.

Since El Paso Natural Gas Company holds all leases immediately adjacent to the drilling block the approval of any other operators to dually complete this well has not been requested. Enclosed are the following:

(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 tests showing commercial production from the two formations.

It is intended to dedicate the E/2 of Section 14, Township 28 North, Range 9 West to the Mesa Verde formation, and the NE/4 of Section 14, 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 this matter.

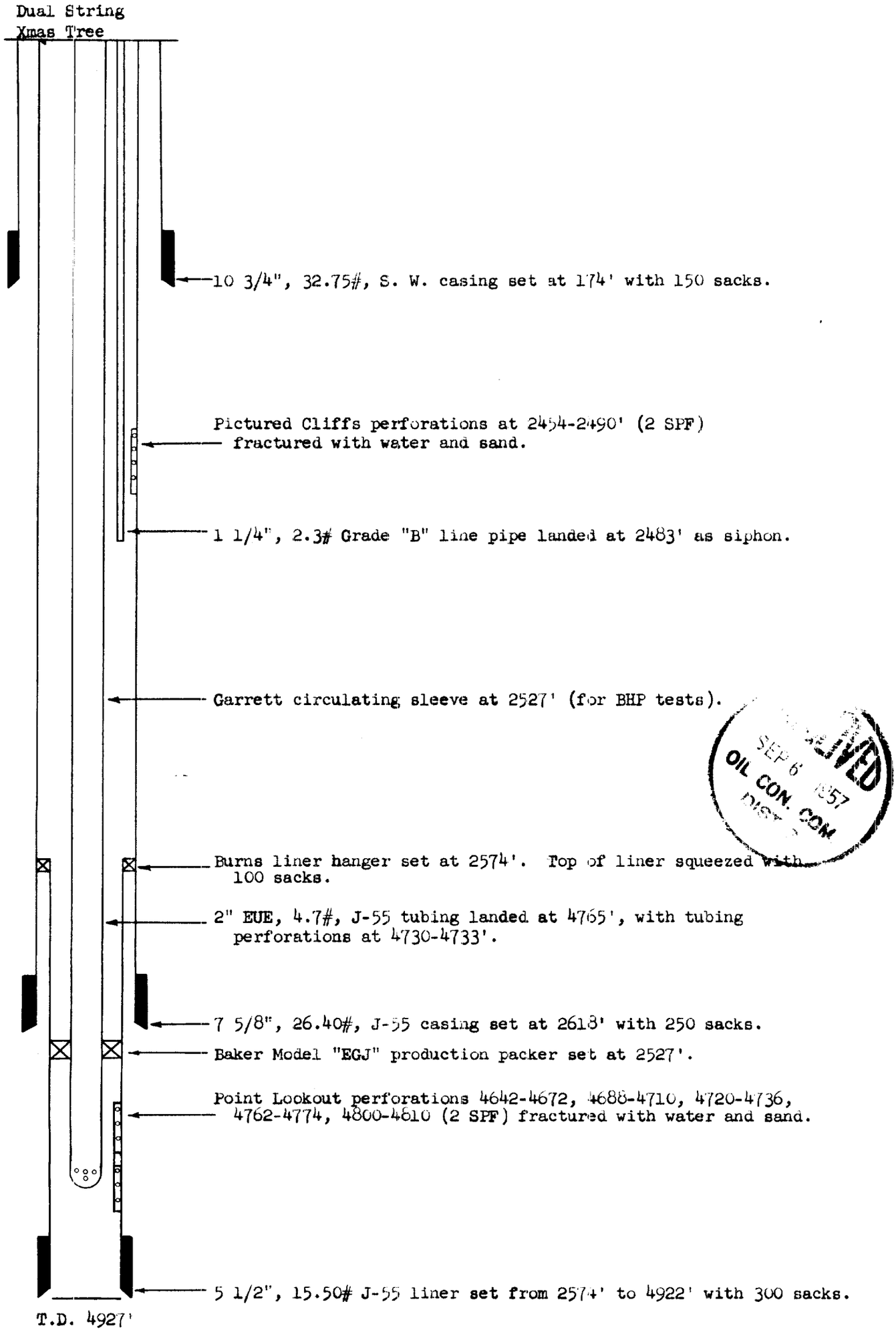
Yours truly,

ORIGINAL SIGNED E. J. COEL
E. J. Coel
Senior Petroleum Engineer

EJC/dgc
Encl.
cc: Emery Arnold
Sam Smith
Phil McGrath

SCHEMATIC DIAGRAM OF DUAL COMPLETION
El Paso Natural Gas Company Warren No. 4 (PM)
(NE/4 Section 14, T28N, R9W)

Zero reference point 10.0'
above top flange of tubing hanger.



STATE OF NEW MEXICO)
)
)
COUNTY OF SAN JUAN)

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

I am an employee of Baker Oil Tools, Inc., and that on July 17, 1957, I was called to the location of the El Paso Natural Gas Company Warren No. 4 (PM) Well located in the SENE/4 of Section 14, 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 2623 feet. The production packer was properly set 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 30 day of Aug, 1957.

Notary Public in and for San Juan County, New Mexico

My commission expires February 24, 1960.

EL PASO NATURAL GAS COMPANY

Box 997
Farmington, N.M.

August 23, 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 No. 4, NE 14-28-9, San Juan County, New Mexico.

Dear Mr. Arnold:

The subject well was dually completed in the Pictured Cliffs and Mesa Verde zones and a packer was set at 2623 feet. The Mesa Verde zone was tested through a 3/4" choke for three hours August 14, 1957 with the following data obtained:

Pictured Cliffs SIPC 806 psig; shut-in 28 days.
Mesa Verde SIPT 1060 psig

Time	MV Flowing Pressure	PC SIPC	Temp °F
0	1060	804	
15 min	500	804	62
30 min	438	805	68
45 min	411	805	68
1 hour	396	805	69
3 hours	327	804	74

The choke volume for the Mesa Verde test was 4109 MCF/D with an AOF of 5785 MCF/D. The well was shut-in for 7 days and the Pictured Cliff zone was tested August 21, 1957 with a 3/4" choke for 3 hours with the following data obtained:

Pictured Cliffs SIPT 816 psig
Pictured Cliffs SIPC 816 psig
Mesa Verde SIPT 1048 psig

Time	PC Flowing Pressure	MV SIPT	Temp °F
0	816	1048	
15 min.	547	1049	
30 min	469	1049	
45 min	417	1049	
1 hour	362	1049	
3 hours	233	1050	66

Working pressure on the tubing was 239 psig on the Pictured Cliff at the end of the test. The choke volume for the Pictured Cliff test was 2981 MCF/D with an A.O.F. of 3235 MCF/D.

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

Very truly yours,

Tom B. Grant, Jr.

Tom B. Grant, Jr.
Gas Engineer

TBG/jla

cc: W. T. Hollis
W. M. Rodgers
E. J. Coel, Jr. (6)
File

Form 23-24 (Rev. 5-56)

EL PASO NATURAL GAS COMPANY
GAS WELL TEST

To: Mr. E. E. Alsup

From: Gas Engineering Department

Date: August 14, 1957

Place: Farmington, New Mexico

DUAL COMPLETION CORRECTED COPY

Subject: Test data on El Paso Natural Gas Company well Warren No. 4, San Juan County, New Mexico.

Tested By: K. C. McBride
Witnessed by: Fred Cook (NMOCC)

Location ..... Sec. 14 T. 28 R. 9 , 1700N, 1090E

Shut-In Pressure ..... Pictured Cliff ..... SIPC 804 psig
Mesa Verde SIPT 1048 psig ; (Shut-in 28 days)

0.750" Choke Volume ..... 4109 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 ..... 5785 MCF/D

Working Pressure On Calculated ..... = 630 Psig

Producing Formation ..... Mesa Verde

Stimulation Method ..... Sand Water Frac

Total Depth ..... 4927 c/o 4820 Packer @2623

Field ..... Blanco

H_2S ..... Sweet to lead acetate.

Ending Pictured Cliff SIPC 804 psig.

Lewis D. Galloway

L. D. Galloway

cc: D. H. Tucker
~~R. W. Haines~~ Bill Parrish
W. T. Hollis
~~C. O. Walker~~ H. H. Lines
W. M. Rodgers
~~Wayne Cheek~~ Dean Rittmann
Drilling Department
B. D. Adams
Roland Hamblin
Jack Purvis
~~W. W. Weldon~~
C. C. Kennedy
E. J. Coel, Jr. (6)
A. J. Dudenhoeffer
File

FORM C-116 (REV.)

EL PASO NATURAL GAS COMPANY

OPEN FLOW TEST DATA

DUAL COMPLETION

DATE August 14, 1957

Operator: El Paso Natural Gas Company		Lease: Warren No. 4	
Location: 1700N, 1090E 14-28-9		County: San Juan	State: New Mexico
Formation: Mesa Verde		Pool: Blanco	
Casing Diameter: 7-5/8	Set At Feet: 2607	Tubing Diameter: 2"	Set At Feet: 4755
Pay Zone From: 4642	To: 4810	Total Depth: 4927 c/o 4820	Pkr. @2623
Stimulation Method: Sand Water Frac		Flow Through Casing:	Flow Through Tubing: X

Choke Size, Inches: .750	Choke Constant: C 12.365	5-1/2" liner 2574 to 4922	
Shut-in Pressure, Casing: 804 (PC) PSIG 816 PSIA	Days Shut-in 28	Shut-in Pressure, Tubing: 1048 (MV) PSIG 1060 PSIA	
Flowing Pressure: P 327 PSIG 339 PSIA		Working Pressure: Pw Calculated PSIG 642 PSIA	
Temperature: T 74	n .75	Fpv (From Tables) 1.030	Gravity .646

Ending Pictured Cliffs SIPC 804 psig.

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

Q = 12.365 x 339 x .9868 x .9645 x 1.030 = 4109 MCF D

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

Aof $\left(\frac{1,123,600}{711,436} \right)^n$ 1.5793 $^{.75}$ x 4109 = 1.4080 x 4109

Aof 5785 MCF D

TESTED BY K. C. McBride

WITNESSED BY Fred Cook (NMOCC)

cc: E. J. Coel, Jr. (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: August 2_, 1957

Place: Farmington, New Mexico

DUAL COMPLETION

Subject: Test data on the El Paso Natural Gas Company Well, WARREN NO. 4, San Juan County, New Mexico.

Tested By: Tom Grant

Location .... Sec. 14 T. 28 R. 9 1700'N, 1090'E

Shut-In Pressure .... PC SIPC 816 psig ; (Shut-in 7 days)
~~PC~~ SIPT 816 psig
MV SIPT 1048 psig

0.750" Choke Volume .... 2981 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 .... 3235 MCF/D

Working Pressure On tubing .... = 239 Psig

Producing Formation .... Pictured Cliff

Stimulation Method .... Sand Water Frac.

Total Depth .... Packer at 2623

Field .... Wildcat

H_2S .... Sweet to lead acetate.

Final SIPT (MV) - 1050 psig

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

Wayne Cheek
Bill Parrish
Dean Rittmann

L. D. Galloway

FORM [illegible]

EL PASO NATURAL GAS COMPANY

OPEN FLOW TEST DATA

DUAL COMPLETION

DATE August 21, 1957

Operator: El Paso Natural Gas		Lease: Warren No. 4	
Location: 1700'N, 1090'E, Sec. 14-28-9		County: San Juan	State: New Mexico
Formation: Pictured Cliff		Pool: Wildcat	
Casing: Diameter: 5-1/2	Set At: Feet: 4922	Tubing: Diameter: 1-1/4	Set At: Feet: 2473
Pay Zone: From: 2454	To: 2490	Total Depth: Packer at 2623	
Stimulation Method: Sand Water Frac.		Flow Through Casing: X	Flow Through Tubing:

Choke Size, Inches: 0.750	Choke Constant: C: 12.365		
Shut-in Pressure, Casing, PSIG: 816	+ 12 = PSIA: 828	Days Shut-in: 7	Shut-in Pressure, Tubing, PSIG: 816 + 12 = PSIA: 828
Flowing Pressure: P, PSIG: 233	+ 12 = PSIA: 245		Working Pressure: P_w, PSIG: 239 + 12 = PSIA: 251
Temperature: T: 66	Fn: .850		Fpv, From Tables: 1.022 Gravity: .640

Final SIPT (MV) - 1050 psig

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

Q = 12.365 x 245 x .9943 x .9682 x 1.022 = 2981 MCF D

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

Aof = $\left(\frac{685,584}{622,583}\right)^n$ $1.1011^{.85}$ x 2981 = 1.0853 x 2981

Aof = 3,235 MCF D

Witnessed by: T. B. Grant

Witnessed by:

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

L. D. Galloway

L. D. Galloway