

✓
El Paso Natural Gas Company

El Paso, Texas

November 5, 1957

DIRECT REPLY TO:
P. O. BOX 897
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 in the South Blanco Pictured Cliffs Pool Extension. The El Paso Natural Gas Company Florence No. 6-C (FM) is located 1750 feet from the South line and 990 feet from the West line of Section 30, 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 2307 feet with 250 sacks of cement. Top of the cement is at 920 feet, which is above the top of the Pictured Cliffs formation at 2126 feet.
3. 5 1/2" liner set from 2240 feet to 4605 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 section was perforated in eight 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 2313 feet with the tubing perforations set opposite the Point Lookout perforations. 1 1/4" Grade "B" line pipe 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" EUE tubing and the Pictured Cliffs gas through the casing.

C O P Y



THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

CHICAGO, ILLINOIS 60637

TO THE EDITOR OF THE JOURNAL OF THE
ACADEMY OF NATURAL SCIENCES

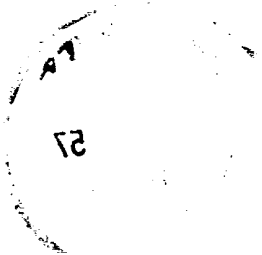
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8. A Garrett circulating sleeve was installed in the 2" EUE tubing string just below the Pictured Cliffs perforations. This will enable the bottom hole pressure tests to be taken at a future date if so required.
9. Initial potential tests have been run and commercial production has been found in both zones. A packer leakage test has been run and witnessed by a member of the Axtec office of the Oil Conservation Commission. The 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 W/2 of Section 30, Township 28 North, Range 8 West to the Mesa Verde formation and the SW/4 of Section 30, 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: Emery Arnold
Sam Smith
Phil McGrath



THE
UNITED STATES
DEPARTMENT OF
THE ARMY
OFFICE OF THE
CHIEF OF STAFF
WASHINGTON, D. C.
20315

MEMORANDUM FOR THE RECORD

SUBJECT: [Illegible]

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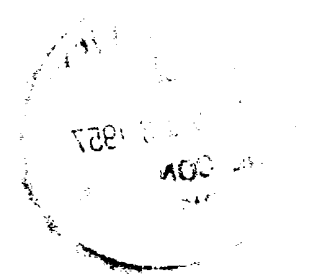
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07-241 2000 1-1-50



PAN AMERICAN PETROLEUM CORPORATION

Roswell, New Mexico
February 27, 1957

File: E-51-986.510

Subject: Waiver of Objection
Dual Completion Permit
Pictured Cliffs and
Mesaverde Formations
W/2 Section 30, 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 Florence "C" Well No. 6 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 W/2 of Section 30, T-28-N, R-8-W, San Juan County, New Mexico.

Yours very truly,

PAN AMERICAN PETROLEUM CORPORATION

Original Signed by
C. L. KELLEY

C. L. Kelley
District Superintendent

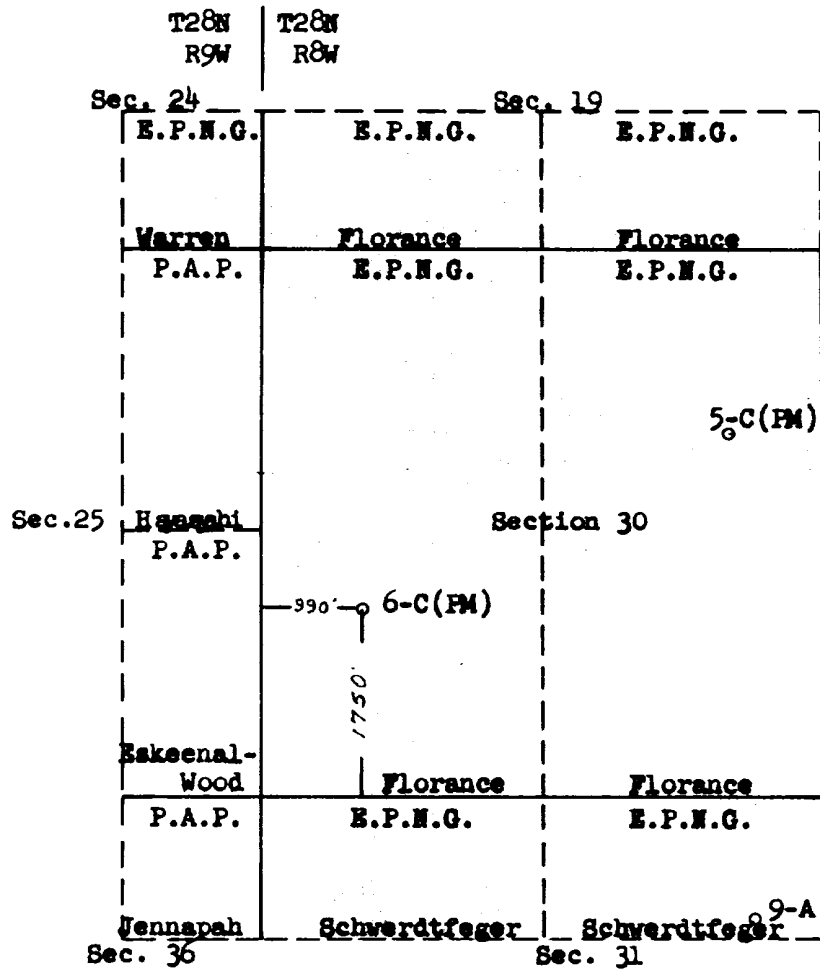
GTE/ms

cc: El Paso Natural Gas Company ✓
Box 997
Farmington, New Mexico

COPY



**PLAT SHOWING LOCATION OF DUALY COMPLETED
EL PASO NATURAL GAS COMPANY FLORENCE NO. 6-C (FM)
AND OFFSET ACREAGE**



EL PASO NATURAL GAS COMPANY
EL PASO, TEXAS

SCALE

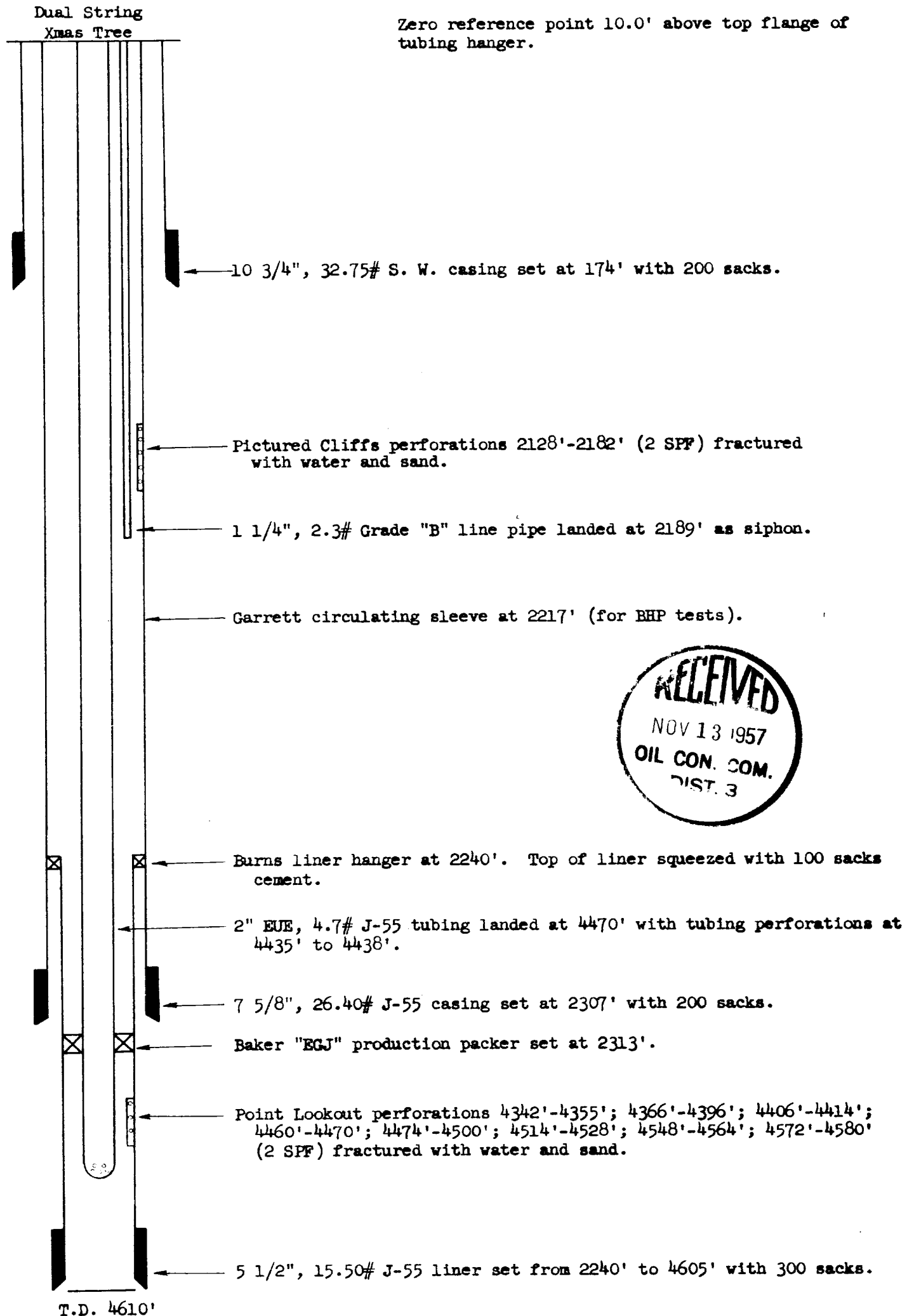
DATE

No.

DRAWN BY

CHECKED BY

SCHEMATIC DIAGRAM OF DUAL COMPLETION
El Paso Natural Gas Florance No. 6-C (FM)
(SW Section 30, 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 September 18,
1957, I was called to the location of the El Paso Natural Gas Company Florence
No. 6-C (FM) Well located in the NW/4 SW/4 of Section 30, 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 2313 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.

John MacLachlan
Notary Public in and for San Juan County,
New Mexico

My commission expires February 24, 1960.

EL PASO NATURAL GAS COMPANY

P. O. 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. 6-C, 1750'S, 990'W, Sec. 30-28-8,
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 2313 feet. The Pictured Cliffs zone was tested through a 3/4" choke for three hours September 27, 1957 with the following data obtained:

Pictured Cliffs SIPC 739 psig; shut-in 9 days
Pictured Cliffs SIPT 739 psig

Mesa Verde SIPT 1052 psig; shut-in 9 days

<u>Time</u> <u>Minutes</u>	<u>PC Flowing Pressure</u> <u>Casing Psig</u>	<u>MV SIPT Psig</u>	<u>PC Working</u> <u>Pressure, Psig</u>	<u>Temp ° F</u>
0	Open	1052		
15	579	1056		63
30	533	1057		63
45	499	1058		65
60	472	1058		66
180	351	1058	360 tbq.	68

The choke volume for the Pictured Cliffs was 4430 MCF/D with an A.O.F. of 5626 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 805 psig; shut-in 31 days
Pictured Cliffs SIPT 805 psig

Mesa Verde SIPT 1052 psig; shut-in 12 days

Mesa Verde test was attempted on October 4, 1957. Well was not properly cleaned out. Well was blown 3 hours on October 16, 1957 and re-shut in.

<u>Time</u> <u>Minutes</u>	<u>MV Flowing Pressure</u> <u>tubing psig</u>	<u>PC SIPC Psig</u>	<u>MV Working</u> <u>Pressure, Psig</u>	<u>Temp ° F</u>
0	Open	817		
15	541	818		68
30	517	818		68
45	501	818		69
60	491	818		70
180	437	818	Calculated 832	72

The choke volume for the Mesa Verde test was 5300 MCF/D with an A.O.F. of 10,441 MCF/D.

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

Very truly yours,



S. V. Roberts
Gas Engineer

SVR/jla

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

EL PASO NATURAL GAS COMPANY
GAS WELL TEST

To: Mr. E. E. Alsup

Date: October 28, 1957

From: Gas Engineering Department

Place: Farmington, New Mexico

DUAL COMPLETIONSubject: Test data on the El Paso Natural Gas Company Well,
FLORANCE NO. 6-C, San Juan County, New Mexico.

Tested By: S. V. Roberts

Location Sec. 30 T. 28N R. 8W 1750'S, 990'W

Shut-In Pressure P.C. SIPC 817 psig ; (Shut-in 31 days)
P.C. SIPT 817 psig
M.V. SIPT - 1082 psig; shut-in 12 days0.750" Choke Volume 5300 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 10,441 MCF/D

Working Pressure On Calculated = 652 Psig

Producing Formation Mesa Verde

Stimulation Method Sand Water Frac.

Total Depth 4610

Field Blanco

H₂S Sweet to lead acetate.

Final SIPC (PC) - 818 psig; packer at 2313; 1-1/4 at 2189; sleeve at 2217 (upside down)

cc: D. H. Tucker Bill Farrish
~~R. W. Mohr~~ Dean Rittmann
~~W. F. Mohr~~ E. S. Oberly (6)
~~C. G. Mohr~~ Samuel Smith
W. M. Rodgers
Wayne Cheek
Drilling Department
B. D. Adams
~~R. D. Mohr~~
Jack Purvis
~~W. F. Mohr~~
C. C. Kennedy
E. J. Coel, Jr.
A. J. Dudenhoefter
File*Lewis D. Galloway*
L. D. Galloway

EL PASO NATURAL GAS COMPANY
OPEN FLOW TEST DATADUAL COMPLETIONDATE October 28, 1957

Operator El Paso Natural Gas Company		Lease Florance No. 6-C	
Location 1750'S, 990'W, Sec. 30-28-8		County San Juan	State New Mexico
Formation Mesa Verde		Pool Blanco	
Casing: Diameter 7-5/8	Set At: Feet 2296	Tubing: Diameter 2"	Set At: Feet 4470
Pay Zone: From 4342	To 4580	Total Depth: 4610 - c/o 4590	
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, 2040 - 4605	
Shut-In Pressure: Casing PC 817	PSIG 829	PSIA 12	Days Shut-In 10	Shut-In Pressure: Tubing MV 1082	PSIG 1094
Flowing Pressure: P 437	PSIG 449	PSIA 12		Working Pressure: Pw Calculated	PSIG 844
Temperature: T 72	F	n 0.75		Fpv (From Tables) 1.054	Gravity .715

Initial SIPC (PC) 817 psig; final - 818 psig. 1-1/4 at 2189. Packer at 2313.
Sleeve at 2217 (upside down)

CHOKE VOLUME = $Q = C \times P_r \times F_r \times F_g \times F_{pv}$

$$Q = 12.365 \times 449 \times .9887 \times .9161 \times 1.054 = 5300 \text{ MCF/D}$$

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

$$Aof = \left(\frac{1,196,336}{494,500} \right)^n = 2.4702^{.75} \times 5300 = 1.970 \times 5300$$

$$Aof = 10,441 \text{ MCF/D}$$

TESTED BY S. V. Roberts

WITNESSED BY _____

cc: E. S. Oberly (6)

L. D. Galloway
L. D. Galloway

EL PASO NATURAL GAS COMPANY
GAS WELL TESTTo: Mr. E. E. Alsup
From: Gas Engineering Department

Date: September 27, 1957

Place: Farmington, New Mexico

DUAL COMPLETIONSubject: Test data on the El Paso Natural Gas Company Well,
FLORANCE NO. 6-C, San Juan County, New Mexico.

Tested By: S. V. Roberts

Location Sec. 30 T. 28N R. 8W 1750'S, 990'W

Shut-In Pressure P.C. SIPC 739 psig ; (Shut-in 9 days)
P.C. SIPT 739 psig
M.V. SIPT - 1052 psig0.750" Choke Volume 4430 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 5626 MCF/D

Working Pressure On tubing = 360 Psig

Producing Formation Pictured Cliffs

Stimulation Method Sand Water Frac.

Total Depth 4610

Field Undesignated

H₂S Sweet to lead acetate.

Final SIPT (MV) - 1058 psig

cc: D. H. Tucker

~~W. M. Rodgers~~~~W. M. Rodgers~~~~W. M. Rodgers~~

W. M. Rodgers

Wayne Cheek

Drilling Department

B. D. Adams

~~W. M. Rodgers~~

Jack Purvis

~~W. M. Rodgers~~

C. C. Kennedy

E. J. Coel, Jr.

A. J. Dudenhoeffer

File

Bill Parrish

Dean Rittmann

E. S. Oberly (6)

Samuel Smith

Kenneth Folk

Lewis D. Galloway
L. D. Galloway

EL PASO NATURAL GAS COMPANY
OPEN FLOW TEST DATADUAL COMPLETIONDATE September 27, 1957

Operator El Paso Natural Gas Company		Lease Florance No. 6-C	
Location 1750'S, 990'W, Sec. 30-28-8		County San Juan	State New Mexico
Formation Pictured Cliffs		Pool Undesignated	
Casing: Diameter 7-5/8	Set At: Feet 2296	Tubing: Diameter 1-1/4	Set At: Feet 2189
Pay Zone: From 2128	To 2182	Total Depth: 4610	
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. 2040 - 4605	
Shut-In Pressure, Casing, PSIG 739	- 12 = PSIA 751	Days Shut-In 9	Shut-In Pressure, Tubing PSIG 739
Flowing Pressure: P PSIG 351	- 12 = PSIA 363	Working Pressure: P _w PSIG 360	- 12 = PSIA 372
Temperature: T °F 68	n 0.85	F _{pv} (From Tables) 1.034	Gravity 0.646

Initial SIPT (MV) - 1052 psig; Final - 1058 psig; 2" at 4470

$$\text{CHOKE VOLUME} = Q \cdot C \cdot P_1 \cdot F_1 \cdot F_g \cdot F_{pv}$$

$$Q = 12.365 \times 363 \times .9924 \times .9645 \times 1.034 = 4430 \text{ MCF/D}$$

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

$$Aof = \left(\frac{564,001}{425,617} \right)^n = 1.325^{.85} \times 4430 = 1.270 \times 4430$$

$$Aof = 5626 \text{ MCF/D}$$

TESTED BY S. V. Roberts

WITNESSED BY _____

E. S. Oberly (6)

L. D. Galloway
L. D. Galloway