

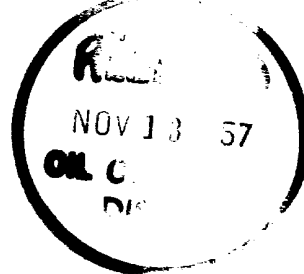
El Paso Natural Gas Company

El Paso, Texas

November 5, 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 South Blanco Pictured Cliffs and the Blanco Mesa Verde Pools. The El Paso Natural Gas Company Schwerdtfeger No. 9-A (PM) is located 1190 feet from the North line and 654 feet from the East line of Section 31, 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 and in the Pictured Cliffs formation. Completion has been accomplished in the following manner:

1. 10 3/4" surface casing set at 173 feet with 150 sacks of cement circulated to the surface.
2. 7 5/8" intermediate casing set at 5118 feet and cemented with a two stage cementing procedure, 150 sacks at the base of the casing and 150 sacks across the Pictured Cliffs formation.
3. 5 1/2" liner set from 5068 feet to 5465 feet with 110 sacks of cement. The top of the liner was squeezed with 50 sacks of cement.
4. The casing and liner were tested for leaks before perforating.
5. The Point Lookout section was 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 "EGJ" production packer on 2" EUE tubing at 5155 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" tubing and the Pictured Cliffs gas through the casing.



COPY

UNITED STATES DEPARTMENT OF AGRICULTURE

WASHINGTON, D. C.

OFFICE OF THE SECRETARY



TO THE SECRETARY, U. S. DEPARTMENT OF AGRICULTURE
WASHINGTON, D. C.

FROM THE SECRETARY, U. S. DEPARTMENT OF AGRICULTURE
WASHINGTON, D. C.

SUBJECT: [Illegible text]

[Illegible text]



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.

Since El Paso Natural Gas Company holds all leases immediately adjacent to the drilling block, the approval to dually complete has not been sought from any other operator. 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 E/2 of Section 31, Township 20 North, Range 8 West to the Mesa Verde formation and the NE/4 of Section 31, Township 20 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

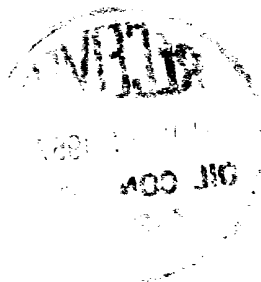
ESO/dgb

Encl.

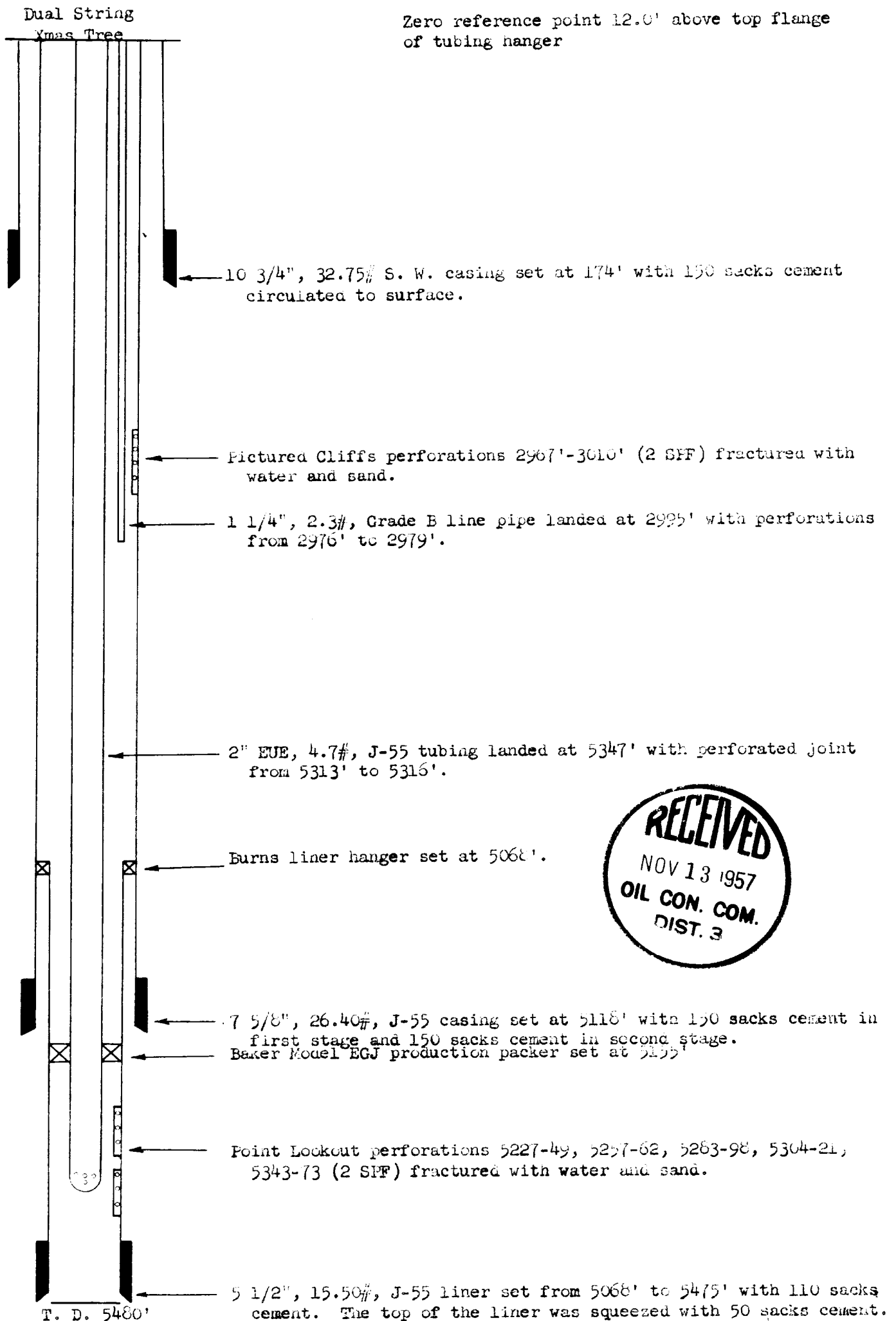
cc: Emery Arnold ✓
Sam Smith
Phil McGrath



W. G. R. L. G. R. L. G. R. L.



SCHEMATIC DIAGRAM OF DUAL COMPLETION
El Paso Natural Gas Schwerdtfeger No. 9-A (PM)
NE/4 of Section 31, T-32-N, R-7-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 October 9,
1957, I was called to the location of the El Paso Natural Gas Company
Schwerdtfeger 9-A (FM) Well located in the NE/4 of Section 31, 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 5155 feet in accordance with
the usual practices and customs of the industry.

Mack M. Mahaffey

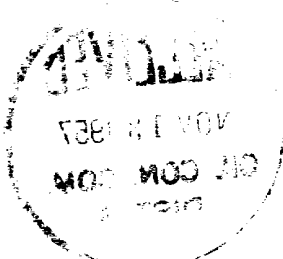
Subscribed and sworn to before me, a Notary Public in and for San
Juan County, New Mexico, the 1 day of Nov, 1957.

Raul Macias
Notary Public in and for San Juan County,
New Mexico

My commission expires February 24, 1960.



Journal of Management Education 30(6)p. 789-804

[illegible]

EL PASO NATURAL GAS COMPANY

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

October 29, 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, Schwerdtfeger No. 9-A (PM)
1190'N, 654'E, Sec. 31-28-8, 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 5155 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 - 768 psig; shut-in 7 days
Pictured Cliffs SIPT - 768 psig

Mesa Verde SIPT - 1013 psig; shut-in 7 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> |
|-------------------------------|--|---------------------|--|-----------------|
| 15 | 632 | 1014 | | 61 |
| 30 | 609 | 1015 | | 62 |
| 45 | 594 | 1015 | | 63 |
| 60 | 574 | 1015 | 587 | 65 |
| 120 | 512 | 1015 | 525 | 66 |
| 180 | 477 | 1016 | 492 | 68 |

The choke volume for the Pictured Cliffs was 6065 MCF/D with an A.O.F. of 9601 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 - 804 psig; shut-in 12 days
Pictured Cliffs SIPT - 804 psig

Mesa Verde SIPT - 1044 psig; shut-in 19 days

| <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> |
|-------------------------------|--|---------------------|--|-----------------|
| 15 | 579 | 804 | | 59 |
| 30 | 504 | 804 | | 61 |
| 45 | 481 | 804 | | 61 |
| 60 | 477 | 805 | | 61 |
| 120 | 449 | 805 | | 62 |
| 180 | 432 | 805 | Calculated 880 | 64 |

The choke volume for the Mesa Verde test was 5301 MCF/D with an A.O.F. of 13,544 MCF/D.

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

Very truly yours,

R R Davis

R. R. Davis
Gas Engineer

RRD/jla

cc: ~~E. J. Goel, Jr.~~
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 COMPLETION

Subject: Test data on the Schwerdtfeger No. 9-A (M), San Juan County, New Mexico

Tested By: R. R. Davis

Location Sec. 31 T. 28N R. 8W, 1190'N, 654'E

Shut-In Pressure P.C. SIPC 804 psig ; (Shut-in 12 days)
 P.C. SIPT 804 psig
 M.V. SIPT 1044

0.750" Choke Volume 5301 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 13,544 MCF/D

Working Pressure On Calculated = 880 Psig

Producing Formation Mesa Verde

Stimulation Method Sand Water Frac.

Total Depth 5480 - c/o 5383

Field Blanco

H₂S Sweet to lead acetate.

Final SIPC (PC) - 805 psig. Packer at 5155'. Sleeve at 3009'

cc: D. H. Tucker

Bill Parrish

~~W. M. Rodgers~~

Dean Rittmann

~~W. M. Rodgers~~

E. S. Oberly (6)

~~W. M. Rodgers~~

Samuel Smith

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

Lewis D. Galloway
 L. D. Galloway

Medium fog of fresh water during entire test period.

EL PASO NATURAL GAS COMPANY
OPEN FLOW TEST DATA

DUAL COMPLETIONDATE October 28, 1957

| | | | |
|---|--|---|---------------------------------|
| Operator El Paso Natural Gas Company | | Lease Schwerdtfeger No. 9-A (M) | |
| Location 1190'N, 654'E, Sec. 31-28-8 | | County San Juan | State New Mexico |
| Formation Mesa Verde | | Pool Blanco | |
| Casing Diameter 7-5/8 5-1/2 liner | Set At: Feet 5108 5008 to 5475 | Tubing Diameter 2" | Set At: Feet 5337 |
| Pay Zone: From 5227 | To 5373 | Total Depth: 5480 - c/o 5383 | |
| Stimulation Method Sand Water Frac. | | Flow Through Casing | Flow Through Tubing X |

| | | | |
|---|---------------------------|---|---|
| Choke Size, Inches .750 | | Choke Constant: C 12.365 | |
| Shut-In Pressure, Casing, PSIG 804 PC | - 12 = PSIA 816 | Days Shut-In 12 | Shut-In Pressure, Tubing PSIG 1044 MV |
| Flowing Pressure: P PSIG 432 | - 12 = PSIA 444 | Working Pressure: Pw PSIG Calc. | - 12 = PSIA 892 |
| Temperature: T 64 | F n = .750 | Fpv (From Tables) 1.058 | Gravity .715 |

Final SIPC (PC) - 805 psig. Packer at 5155'. Sleeve at 3009'

CHOKE VOLUME : $Q = C \times P_1 \times F_1 \times F_g \times F_{pv}$

$$Q = 12.365 \times 444 \times .9962 \times .9161 \times 1.058 = 5301 \text{ MCF/D}$$

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

$$Aof = \left(\frac{1,115,136}{319,472} \right)^n = 3.4905^{.75} \times 5301 = 2.550 \times 5301$$

$$Aof = 13,544 \text{ MCF D}$$

TESTED BY R. R. Davis

Medium fog of fresh water during entire test period.

WITNESSED BY _____

cc: E. S. Oberly (6)

L. D. Galloway
L. D. Galloway

EL PASO NATURAL GAS COMPANY
GAS WELL TEST

To: Mr. E. E. Alsup

Date: October 16, 1957

From: Gas Engineering Department

Place: Farmington, New Mexico

DUAL COMPLETIONSubject: Test data on the El Paso Natural Gas Company Well,
SCHWERDTFEGER NO. 9-A, San Juan County, New Mexico.

Tested By: Robert R. Davis. Checked by: Tom Grant

Location Sec. 31 T. 28N R. 8W, 1190'N, 654'E

Shut-In Pressure P.C. SIPC 768 psig ; (Shut-in 7 days)
P.C. SIPT 768 psig

M.V. SIPT 1013 psig

0.750" Choke Volume 6065 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 9601 MCF/D

Working Pressure On tubing = 492 Psig

Producing Formation Pictured Cliffs

Stimulation Method Sand Water Frac.

Total Depth 5480 - c/o 5383

Field South Blanco

H2S Sweet to lead acetate.

Final SIPT (MV) - 1016 psig; packer at 5155; sleeve at 3009

cc: D. H. Tucker

Bill Parrish

~~R. W. Morris~~

Dean Rittmann

~~R. E. Miller~~

E. S. Oberly (6)

~~C. D. Walker~~

Samuel Smith

W. M. Rodgers

Wayne Cheek

Drilling Department

B. D. Adams

~~Roland Hembler~~

Jack Purvis

~~R. W. Morris~~

C. C. Kennedy

E. J. Coel, Jr.

A. J. Dudenhoeffer

File

L. D. Galloway
L. D. Galloway

by T B G

Light fog during test.

EL PASO NATURAL GAS COMPANY
OPEN FLOW TEST DATADUAL COMPLETIONDATE October 16, 1957

| | | | |
|--|---|---|-----------------------------|
| Operator El Paso Natural Gas Company | | Lease Schwerdtfeger No. 9-A (P) | |
| Location 1190'N, 654'E, Sec. 31-28-8 | | County San Juan | State New Mexico |
| Formation Pictured Cliffs | | Pool South Blanco | |
| Casing: Diameter 7-5/8 5-1/2 | Set At: Feet 5108 5008 - 5475 | Tubing: Diameter 1-1/4 | Set At: Feet 2996 |
| Pay Zone: From 2967 | To 3010 | Total Depth: 5480 - c/o 5383 | |
| Stimulation Method Sand Water Frac. | | Flow Through Casing X | Flow Through Tubing |

| | | | | | |
|--|---------------------------|------------------------------------|---|---------------------------|--|
| Choke Size, Inches .750 | | Choke Constant: C 12.365 | | | |
| Shut-In Pressure, Casing, PSIG 768 | - 12 = PSIA 780 | Days Shut-In 7 | Shut-In Pressure, Tubing PSIG 768 PC | - 12 = PSIA 780 | |
| Flowing Pressure: P PSIG 477 PC | - 12 = PSIA 489 | | Working Pressure: P _w PSIG 492 | - 12 = PSIA 504 | |
| Temperature: T °F 68 | .850 | | F _{pv} (From Tables) 1.044 | Gravity .638 | |

Initial SIPT (MV) - 1013 psig - Final - 1016 psig. Packer at 5155. Sleeve at 3009.

CHOKE VOLUME = Q = C x P_c x F_c x F_g x F_{pv}

$$Q = 12.365 \times 489 \times .9924 \times .9682 \times 1.044 = 6065 \text{ MCF/D}$$

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

$$Aof = \left(\frac{608,400}{354,384} \right)^n = 6065^{.85} \times 1.7167 = 1.5830 \times 6065$$

$$Aof = 9601 \text{ MCF/D}$$

TESTED BY Robert R. Davis

WITNESSED BY _____

Light fog during entire test.

cc: E. S. Oberly (6)


 L. D. Galloway by TEG