

El Paso Natural Gas Company

El Paso, Texas

February 17, 1958

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 Pool and in the Aztec Pictured Cliffs Pool Extension. The El Paso Natural Gas Company Riddle No. 4-F (PM) is located 1000 feet from the North line and 1550 feet from the East 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 173 feet with 150 sacks cement circulated to the surface.
2. 7 5/8" intermediate casing set at 2388 feet with 250 sacks of cement. Top of the cement is at 980 feet which is above the top of the Pictured Cliffs at 2157 feet.
3. 5 1/2" liner set from 2329 feet to 4634 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 six intervals and fractured with water and sand.
6. The Pictured Cliffs formation was perforated in four intervals, the lower three of which were fractured with water and sand and the top interval squeezed off with 100 sacks of cement.
7. All perforations were cleaned after treatment and completion was accomplished by setting a Baker Model "EGJ" production packer on 2" EUE tubing at 2379 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.

C O P Y

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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.

El Paso Natural Gas Company holds all leases immediately adjacent to the acreage dedicated to this well, therefore, the 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 E/2 of Section 29, Township 28 North, Range 8 West to the Mesa Verde formation and the NE/4 of Section 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

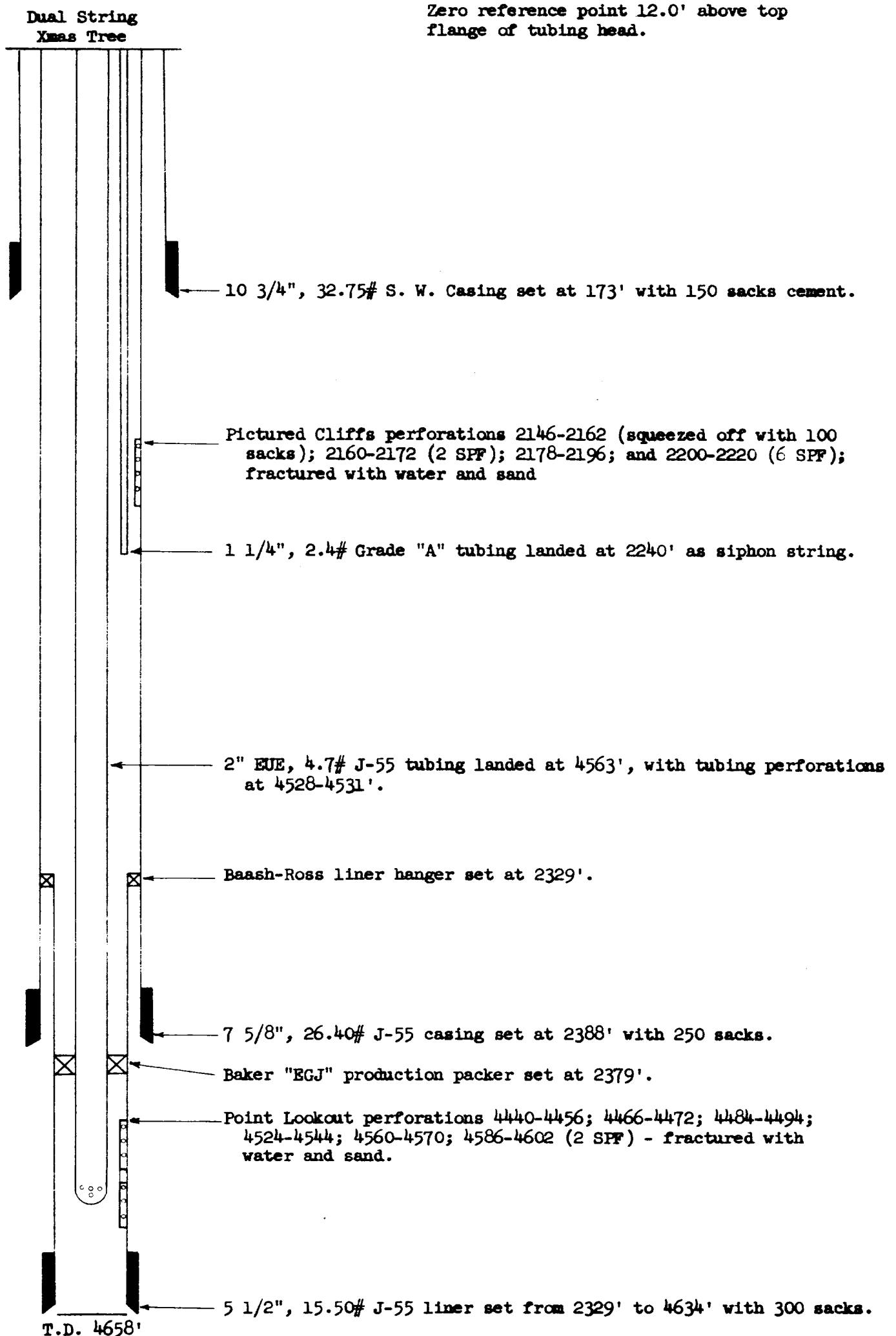
E. S. Oberly
Division Petroleum Engineer

ESO:dgb

Encl.

cc: NMOCC (Emery Arnold)
Sam Smith
USGS (Phil McGrath)

SCHEMATIC DIAGRAM OF DUAL COMPLETION
El Paso Natural Gas Co. Riddle No. 4-F (PM)



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 January 13, 1958, I was called to the location of the El Paso Natural Gas Company Riddle No. 4-F (FM) Well located in the NWNE/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 "EGJ" Production Packer was set in this well at 2379 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 13 day of FEB, 1958.

Ken A. MacLachlan
Notary Public in and for San Juan County,
New Mexico

My commission expires February 24, 1960.

1944-1945

1946-1947

1948-1949

1950-1951

1952-1953

1954-1955

1956-1957

1958-1959

1960-1961

1962-1963

1964-1965

1966-1967

1968-1969

1970-1971

1972-1973

1974-1975

1976-1977

1978-1979

1980-1981

EL PASO NATURAL GAS COMPANY

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

February 10, 1958

Mr. E. C. Arnold
Oil Conservation Commission
1000 Rio Brazos Road
Aztec, New Mexico

Re: Packer Leakage Test on the El Paso Natural
Gas Company Well, Riddle No. 4-F (M), 1000'N,
1550'E, 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 2379 feet. The Pictured Cliffs zone was tested through a 3/4" choke for three hours January 31, 1958 with the following data obtained:

Pictured Cliffs SIPC 858 psig; shut-in 17 days
Pictured Cliffs SIPT 858 psig

Mesa Verde SIPT 1055 psig; shut-in 17 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	-	1055		-
15	475	1065		56
30	407	1065		56
45	362	1065		56
60	300	1066		56
180	149	1066	156	56

The choke volume for the Pictured Cliffs was 1955 MCF/D with an A.O.F. of 2019 MCF/D.

The Mesa Verde zone was tested February 7, 1958 with a 3/4" choke for three hours with the following data obtained:

Pictured Cliffs SIPC 853 psig; shut-in 7 days
Pictured Cliffs SIPT 853 psig


Mesa Verde SIPT 1072 psig; shut-in 24 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>
0	-	853		-
15	485	855		63
30	463	855		65
45	430	855		65
60	417	855		65
180	362	856	Calculated 698	64

The choke volume for the Mesa Verde test was 4419 MCF/D with an A.O.F. of 6728 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 TESTTo: **Mr. Ed E. Alsup**Date: **February 7, 1958**

From: Gas Engineering Department

Place: Farmington, New Mexico

DUAL COMPLETIONSubject: **Test data on the El Paso Natural Gas Company Well,
RIDDLE NO. 4-F (M), San Juan County, New Mexico.**Tested By: **S. V. Roberts and Tony King**Location Sec. **29** T. **28N** R. **8W** **.1000'N, 1550'E**

Shut-In Pressure **P.C. SIPC 853** psig ; (Shut-in **7** days)
 **P.C. SIPT 853** psig
 **M.V. SIPT 1072** psig; shut-in **24** days

0.750" Choke Volume **4419** 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 **6728** MCF/DWorking Pressure On **Calculated** = **698** PsigProducing Formation **Mesa Verde**Stimulation Method **Sand Water Frac.**Total Depth **4658 - c/o 4615**Field **Blanco**H₂S **Sweet** to lead acetate.Final SIPC (PC) - **856** psig. 1-1/4" at 2228. Packer at 2379

cc: D. H. Tucker

+-----+

+-----+

+-----+

W. M. Rodgers

Wayne Cheek

Drilling Department

B. D. Adams

+-----+

Jack Purvis

+-----+

C. C. Kennedy

E. J. Coel, Jr.

A. J. Dudenhoeffer

File

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

Lewis D. Galloway
L. D. Galloway

EL PASO NATURAL GAS COMPANY
OPEN FLOW TEST DATADUAL COMPLETIONDATE **February 7, 1958**

Operator El Paso Natural Gas Company		Lease Riddle No. 4-F (M)	
Location 1000'N, 1550'E, Sec. 29-28-8		County San Juan	State New Mexico
Formation Mesa Verde		Pool Blanco	
Casing: Diameter 7-5/8	Set At: Feet 2374	Tubing: Diameter 2"	Set At: Feet 4551
Pay Zone: From 4534	To 4824	Total Depth: 4658 - e/o 4615	
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. 2339 - 4634	
Shut-In Pressure, Casing, PSIG PC 853	- 12 = PSIA 865	Days Shut-In 24	Shut-In Pressure, Tubing PSIG MV 1072
Flowing Pressure: P PSIG 362	- 12 = PSIA 374	Working Pressure: P _w PSIG Calculated	- 12 = PSIA 710
Temperature: T °F 64	n = 0.75	F _{pv} (From Tables) 1.047	Gravity 0.717

Initial SIPC (PC) - 853 psig; final - 856 psig. 1-1/4" at 2228. Packer at 2379.CHOKE VOLUME = Q = C x P_i x F_i x F_g x F_{pv}

$$Q = 12.365 \times 374 \times .9962 \times .9161 \times 1.047 = 4419 \text{ MCF/D}$$

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

$$Aof = \left(\frac{1,175,056}{670,956} \right)^{.75} \times 4419 = 1.5225 \times 4419$$

$$Aof = 6728 \text{ MCF/D}$$

TESTED BY **S. V. Roberts**

WITNESSED BY _____

cc: **E. S. Oberly (6)**

L. D. Galloway
L. D. Galloway

EL PASO NATURAL GAS COMPANY
OPEN FLOW TEST DATADUAL COMPLETIONDATE **February 7, 1958**

Operator El Paso Natural Gas Company		Lease Riddle No. 4-F (M)	
Location 1000'N, 1550'E, Sec. 29-28-8		County San Juan	State New Mexico
Formation Mesa Verde		Pool Blanco	
Casing: Diameter 7-5/8	Set At: Feet 2374	Tubing: Diameter 2"	Set At: Feet 4551
Pay Zone: From 4534	To 4824	Total Depth: 4658 - e/o 4615	
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. 2339 - 4634	
Shut-In Pressure, Casing, PC 853	PSIG - 12 = PSIA 865	Days Shut-In 24	Shut-In Pressure, Tubing MV 1072	PSIG - 12 = PSIA 1084	
Flowing Pressure: P 362	PSIG - 12 = PSIA 374		Working Pressure: P _w Calculated	PSIG - 12 = PSIA 710	
Temperature: T 64	F In 0.75		Fpv (From Tables) 1.047	Gravity 0.717	

Initial SIPC (PC) - 853 psig; final - 856 psig. 1-1/4" at 2228. Packer at 2379.

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

$$Q = 12.365 \times 374 \times .9962 \times .9161 \times 1.047 = 4419 \text{ MCF/D}$$

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

$$\text{Aof } \left(\frac{1,175,056}{670,956} \right)^n \quad 1.7513^{.75} \times 4419 = 1.5225 \times 4419$$

$$\text{Aof } 6728 \text{ MCF/D}$$

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 TEST

To: Mr. Ed E. Alsup

Date: January 31, 1958

From: Gas Engineering Department

Place: Farmington, New Mexico

DUAL COMPLETIONSubject: Test data on the El Paso Natural Gas Company Well,
RIDDLE NO. 4-F (P), San Juan County, New Mexico.

Tested By: S. V. Roberts

Location Sec. 29 T. 28N R. 8W 1000'N, 1550'E

Shut-In Pressure	P.C. SIPC	858	psig	(Shut-in 15 days)
	P.C. SIPT	858	psig	
	M.V. SIPT	1055	psig; shut-in 15 days	

0.750" Choke Volume 1955 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 2019 MCF/D

Working Pressure On tubing = 156 Psig

Producing Formation Pictured Cliffs

Stimulation Method Sand Water Frac.

Total Depth 4658 - c/o 4615

Field Undesignated

H2S Sweet to lead acetate.

Final SIPT (MV) - 1066 psig

cc: D. H. Tucker

~~R. W. Harris~~~~W. J. H. Harris~~~~W. J. H. Harris~~

W. M. Rodgers

Wayne Cheek

Drilling Department

B. D. Adams

~~W. J. H. Harris~~

Jack Purvis

~~W. J. H. Harris~~

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E. S. Oberly (6)

Samuel Smith

D. N. Canfield

Louis D. Galloway
L. D. Galloway

EL PASO NATURAL GAS COMPANY
OPEN FLOW TEST DATADUAL COMPLETIONDATE January 31, 1958

Operator El Paso Natural Gas Company		Lease Riddle No. 4-F (P)	
Location 1000'N, 1550'E, Sec. 29-28-8		County San Juan	State New Mexico
Formation Pictured Cliffs		Pool Undesignated	
Casing: Diameter 7-5/8	Set At: Feet 2374	Tubing: Diameter 1-1/4	Set At: Feet 2228
Pay Zone: From 2160	To 2220	Total Depth: 4658 - c/o 4615	
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. 2339 - 4634	
Shut-In Pressure, Casing, PC 858	PSIG 870	12 - PSIA 870	Days Shut-In 15	Shut-In Pressure, Tubing PC 858	PSIG 870
Flowing Pressure: P 149	PSIG 161	12 - PSIA 161		Working Pressure: Pw 156	PSIG 168
Temperature: T 56	F 0.85			Fpv (From Tables) 1.014	Gravity 0.646

Initial SIPT (MV) - 1055 psig; final - 1066 psig. 2" at 4551. Packer at 2379

CHOKE VOLUME = $Q = C \times P_c \times F_c \times F_g \times F_{pv}$

$$Q = 12.365 \times 161 \times 1.0039 \times .9645 \times 1.014 = 1955 \text{ MCF/D}$$

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

$$Aof = \left(\frac{756,900}{728,676} \right)^n 1.0387^{.85} \times 1955 = 1.0328 \times 1955$$

$$Aof = 2019 \text{ MCF/D}$$

TESTED BY S. V. Roberts

WITNESSED BY

cc: E. S. Oberly (6)

L. D. Galloway
L. D. Galloway