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NEW MEXICO OIL CONSERVATION COMMISSION
REQUEST FOR ALLOWABLE
AND
AUTHORIZATION TO TRANSPORT OIL AND NATURAL GAS

Form C-104
Supersedes Old C-104 and C-110
Effective 1-1-65

I. Operator
El Paso Natural Gas Company

Address
Box 990, Farmington, New Mexico

Reason(s) for filing (Check proper box) Other (Please explain)

New Well ☒ Change in Transporter of:
Recompletion ☐ Oil ☐ Dry Gas ☐
Change in Ownership ☐ Casinghead Gas ☐ Condensate ☐

If change of ownership give name
and address of previous owner

II. DESCRIPTION OF WELL AND LEASE

Lease Name Hardie E	Well No. 5	Pool Name, Including Formation So. Blanco Pictured Cliff	Kind of Lease State, <u>Federal</u> or Fee	Lease No.
Location Unit Letter E ; 1780 Feet From The North Line and 990 Feet From The West Line of Section 16 Township 28-N Range 8-W , NMPM, San Juan County				

III. DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil <input type="checkbox"/> or Condensate <input checked="" type="checkbox"/> El Paso Natural Gas Company	Address (Give address to which approved copy of this form is to be sent) Box 990, Farmington, New Mexico	
Name of Authorized Transporter of Casinghead Gas <input type="checkbox"/> or Dry Gas <input checked="" type="checkbox"/> El Paso Natural Gas Company v	Address (Give address to which approved copy of this form is to be sent) Box 990, Farmington, New Mexico	
If well produces oil or liquids, give location of tanks.	Unit E	Sec. 16
	Twp. 28N	Rge. 8W
Is gas actually connected?		When

If this production is commingled with that from any other lease or pool, give commingling order number:

IV. COMPLETION DATA

Designate Type of Completion - (X)	Oil Well	Gas Well	New Well	Workover	Deepen	Plug Back	Same Res'v.	Diff. Res'v.
		X	X					
Date Spudded 6-13-66	Date Compl. Ready to Prod. 7-19-66		Total Depth 2519		F.B.T.D.			
Elevations (DF, RKB, RT, GR, etc.) 5954' GL	Name of Producing Formation Pictured Cliff		Top of Gas Pay 2380		Tubing Depth Tubingless completion			
Perforations 2380-94, 2412-26					Depth Casing Shoe			
TUBING, CASING, AND CEMENTING RECORD								
HOLE SIZE	CASING & TUBING SIZE		DEPTH SET		SACKS CEMENT			
12 1/4"	8 5/8"		135'		105 sks.			
6 1/4"	2 7/8"		2519		300 sks.			

V. TEST DATA AND REQUEST FOR ALLOWABLE OIL WELL (Test must be after recovery of total volume of load oil and must be equal to or exceed top allowable for this depth or be for full 24 hours)

Date First New Oil Run To Tanks	Date of Test	Producing Method (Flow, pump, gas lift, etc.)	
Length of Test	Tubing Pressure	Casing Pressure	Choke Size
Actual Prod. During Test	Oil - Bbls.	Water - Bbls.	Gas - MCF

GAS WELL

Actual Prod. Test-MCF/D 489 MCF/D	Length of Test 3 hrs.	Bbls. Condensate/MMCF	Gravity of Condensate
Testing Method (pitot, back pr.) Calculated A.O.F.	Tubing Pressure (Shut-in)	Casing Pressure (Shut-in) SI 832	Choke Size 3/4"

VI. CERTIFICATE OF COMPLIANCE

I hereby certify that the rules and regulations of the Oil Conservation Commission have been complied with and that the information given above is true and complete to the best of my knowledge and belief.

Original Signed **F. H. WOOD**
Petroleum Engineer

(Title)

July 28, 1966

(Date)

OIL CONSERVATION COMMISSION

APPROVED **AUG - 1 1966**
BY **Original Signed by Emery C. Arnold**
TITLE **SUPERVISOR DIST. #3**

This form is to be filed in compliance with RULE 1104.
If this is a request for allowable for a newly drilled or deepened well, this form must be accompanied by a tabulation of the deviation tests taken on the well in accordance with RULE 111.
All sections of this form must be filled out completely for allowable on new and recompleted wells.
Fill out only Sections I, II, III, and VI for changes of owner, well name or number, or transporter, or other such change of condition.
Separate Forms C-104 must be filed for each pool in multiply completed wells.

EL PASO NATURAL GAS COMPANY
OPEN FLOW TEST DATADATE July 19, 1966

Operator El Paso Natural Gas Company		Lease Hardie "E" No. 5	
Location 1780'N, 990'W, Section 16, T-28-N, R-8-W		County San Juan	State New Mexico
Formation Pictured Cliffs		Pool South Blanco	
Casing: Diameter 2.875	Set At: Feet 2518	Tubing: Diameter No Tubing	Set At: Feet -
Pay Zone: From 2380	To 2426	Total Depth: 2525	Shut In 7-11-66
Stimulation Method Sand Water Frac		Flow Through Casing X	Flow Through Tubing

Choke Size, Inches .750		Choke Constant: C 12.365		Tubingless Completion	
Shut-In Pressure, Casing, PSIG 820	+ 12 = PSIA 832	Days Shut-In 8	Shut-In Pressure, Tubing PSIG No Tubing	+ 12 = PSIA -	
Flowing Pressure: P PSIG 29	+ 12 = PSIA 41		Working Pressure: P _w PSIG Calc.	+ 12 = PSIA 50	
Temperature: T = 62 °F	F _t = .9981	n = .85	F _{pv} (From Tables) 1.004	Gravity .650	F _g = .9608

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

$$Q = (12.365) (41) (.9981) (.9608) (1.004) = \underline{488} \text{ MCF/D}$$

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

$$Aof = \left(\frac{692,224}{689,724} \right)^n = (488) (1.0036)^{.85} = (488) (1.0030)$$

NOTE: Well blew dry gas throughout the test.

$$Aof = \underline{489} \text{ MCF/D}$$

TESTED BY Hermon E. McAnallyWITNESSED BY Tom B. Grant

H. L. Kendrick
H. L. Kendrick

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN TRIPLICATE*
(Other instructions on re-
verse side)

Form approved.
Budget Bureau No. 42-R1424.

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals.)

1. OIL WELL <input type="checkbox"/> GAS WELL <input checked="" type="checkbox"/> OTHER <input type="checkbox"/>		5. LEASE DESIGNATION AND SERIAL NO. SP 078499	
2. NAME OF OPERATOR El Paso Natural Gas Company		6. IF INDIAN, ALLOTTEE OR TRIBE NAME	
3. ADDRESS OF OPERATOR Box 990, Farmington, New Mexico		7. UNIT AGREEMENT NAME	
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface 1780'N, 990'W		8. FARM OR LEASE NAME Hardie E	
14. PERMIT NO.		9. WELL NO. 5	
15. ELEVATIONS (Show whether DF, RT, GR, etc.) 5954' GL		10. FIELD AND POOL, OR WILDCAT For Blanco P. C.	
		11. SEC., T., R. M., OR R.L.K. AND SURVEY OR AREA Sec. 16, T-28-N, R-8-W	
		12. COUNTY OR PARISH San Juan	
		13. STATE New Mexico	

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF <input type="checkbox"/>	PULL OR ALTER CASING <input type="checkbox"/>
FRACTURE TREAT <input type="checkbox"/>	MULTIPLE COMPLETE <input type="checkbox"/>
SHOOT OR ACIDIZE <input type="checkbox"/>	ABANDON* <input type="checkbox"/>
REPAIR WELL <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>
(Other) <input type="checkbox"/>	

SUBSEQUENT REPORT OF:

WATER SHUT-OFF <input type="checkbox"/>	REPAIRING WELL <input type="checkbox"/>
FRACTURE TREATMENT <input checked="" type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
SHOOTING OR ACIDIZING <input type="checkbox"/>	ABANDONMENT* <input type="checkbox"/>
(Other) <input type="checkbox"/>	

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

On 6-27-66 perf. Pictured Cliffs 2380-94, 2412-26 w/2 SHF, frac w/28,000# 10/20 sand, 26,628 gal. water w/4# FR-2/1000 gal. Max. pr. 4000#, BFP 1600#, tr. pr. 2100-2200-2500#, dropped 1 set of 30 balls and 1 set of 20 balls. I.R. 28 BPM, flushed w/630 gal. water. ISIP 600#, 5 Min. SIP 600#.

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JUL 1 1966

U. S. GEOLOGICAL SURVEY
FARMINGTON, N. M.

RECEIVED

JUL 5 1966

OIL CON. COM.
DIST. 3

18. I hereby certify that the foregoing is true and correct

SIGNED Original signed by Carl E. Matthews TITLE Petroleum Engineer DATE 7-1-66
(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____
CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEYSUBMIT IN TRIPPLICATE*
(Other instructions on re-
verse side)Form approved.
Budget Bureau No. 42-R1424.

5. LEASE DESIGNATION AND SERIAL NO.

SF 078499

6. IF INDIAN, ALLOTTEE OR ARISE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME

Hardie E

9. WELL NO.

5

10. FIELD AND POOL, OR WILDCAT

So. Blanco P. C.

11. SEC. T., R., M., OR BLK. AND
SURVEY OR AREA

Sec. 16, T-28-N, R-8-W

N.M.P.M.

12. COUNTY OR PARISH

San Juan

13. STATE

New Mexico

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals.)

1.

OIL WELL ☐ GAS WELL ☒ OTHER

2. NAME OF OPERATOR

El Paso Natural Gas Company

3. ADDRESS OF OPERATOR

Box 990, Farmington, New Mexico

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.*
See also space 17 below.)

At surface

1780' N, 990' W

14. PERMIT NO.

15. ELEVATIONS (Show whether DF, RT, GR, etc.)

5954' GL

16.

Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:

TEST WATER SHUT-OFF

FRACTURE TREAT

SHOOT OR ACIDIZE

REPAIR WELL

(Other)

PULL OR ALTER CASING

MULTIPLE COMPLETE

ABANDON*

CHANGE PLANS

SUBSEQUENT REPORT OF:

WATER SHUT-OFF

FRACTURE TREATMENT

SHOOTING OR ACIDIZING

(Other)

REPAIRING WELL

ALTERING CASING

ABANDONMENT*

(NOTE: Report results of multiple completion on Well
Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

On 6-21-66: Total depth 2519'. Ran 81 joints 2 7/8", 6.4#, N-80 casing,
2507.87' set at 2518.87' w/300 sacks 50/50 pozmix and class "C" cement,
2 1/2 gal.

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JUN 29 1966

U. S. GEOLOGICAL SURVEY
FARMINGTON, N. M.

RECEIVED

JUN 30 1966

OIL CON. COM.
DIST. 3

18. I hereby certify that the foregoing is true and correct

SIGNED

Certified signed by.

Carl E. Matthews

TITLE

Petroleum Engineer

DATE

June 24, 1966

(This space for Federal or State office use)

APPROVED BY

TITLE

DATE

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

NEW MEXICO OIL CONSERVATION COMMISSION
GAS WELL TEST DATA SHEET - SAN JUAN BASIN

Pool AZTEC Formation PC County SJ
Well Name HARDIE E #5 75432
Unit E S 16 T 28R 8 Pay Zone 2380 To 2426 Flow String CASING
Casing O D 2.875 I D 2.441 Set at 2519 Tubing O D NONE I D L Top Perf.
Operator EL PASO NATURAL GAS CO Purchasing Pipeline EL PASO NATURAL GAS COMPANY

Pd: % Of P_c 80 Comm. Designated P_c, psia From 10-23-66 To 10-31-66 Period Of Test Flow SIP Measured 07-19-66
Deadweight Flowing Pressure, psia Flowing Pressure, psia
Casing (a) Tubing (b) Meter (c) Chart (d)
Deadweight Shut-In Pressures, psia Meter Error Friction Loss
Casing 856 (j) Tubing (k) 0008 (e) 0 (f)
7 Day-Avg. Flowing Pres., psia
Chart 497 (g) Corrected 497 (h) P_f 497 (i) Gravity .655
G. L. = 1559 1-e^{-s} = .107 F_c 5.551 (F_cQ)² .315
(1-e^{-s}) (F_cQ)² = R² = 34 P_f² = 247009 P_w² = USE PT2

$$Q = \frac{101}{(\text{integrated})} \times \left[\sqrt{\frac{(c)}{(d)}} = \frac{1.0000}{1.0000} \right] = 101$$

$$D=Q \times \frac{1.1}{\left[\frac{(P_c^2 - P_d^2)}{(P_c^2 - P_w^2)} \right]^n} = \left[\frac{263511}{485727} \right]^n = \frac{(.5425)^n}{.5946} = 60$$

REMARKS

New Well First Delivered 9-23-66.



SUMMARY

P_c = 856
Q = 101
P_w = 497
P_d = 685
D = 60

Company EL PASO NATURAL GAS CO
By H.L. Kendrick
Title AREA GAS WELL TEST ENGINEER
Witnessed By _____
Company _____

NEW MEXICO OIL CONSERVATION COMMISSION
GAS WELL TEST DATA SHEET - SAN JUAN BASIN

Pool Aztec Formation Pictured Cliff County SJ
Well Name Hardie E No. 5 75432
Unit E S 16 T 28 R 8 Pay Zone 2380 To 2426 Flow String CASING
Casing O D 2.875 I D 2.441 Set at 2519 Tubing O D NONE I D L Top Perf.
Operator EL PASO NATURAL GAS COMPANY Purchasing Pipeline EL PASO NATURAL GAS COMPANY

Pd: % Of P_c 80 Comm. Designated P_c, psia Period Of Test Flow From 10-23-66 To 10-31-66 SIP Measured 7-19-66

Deadweight Flowing Pressure, psia Flowing Pressure, psia
Casing (a) Tubing (b) Meter (c) Chart (d)

Deadweight Shut-In Pressures, psia Meter Error Friction Loss
Casing 832 (j) Tubing (k) 000+ (e) 0 (f)

7 Day-Avg. Flowing Pres., psia
Chart 497 (g) Corrected 497 (h) P₁ 497 (i) Gravity .655

G. L. = 1559 1-e^{-s} = .107 Fc 5.551 (FcQ)² .315

(1-e^{-s}) (FcQ)² = R² = 34 P_i² = 247009 P_w² = USE P_i²

Q = $\frac{101}{(\text{integrated})} \times \left[\sqrt{\frac{(c)}{(d)}} = \frac{1.0000}{1.0000} \right] = \frac{101}{1.0000}$

D=Q 101 x $\left[\frac{(P_i^2 - P_w^2)}{(P_i^2 - P_w^2)} \right]^n = \left[\frac{248668}{445215} \right]^n = \frac{(.5585)}{.6096}^n = \frac{62}{62}$

REMARKS

New Well First Delivered 9-23-66.
CORRECTED COPY

JK



SUMMARY

P_c = 832
Q = 101
P_w = 497
P_d = 666
D = 62

Company EL PASO NATURAL GAS COMPANY
By H. L. Kendrick
Title Regional Well Test Engineer
Witnessed By
Company
