STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
P. O. Box 2088
SANTA FE, NEW MEXICO
87501

ADMINISTRATIVE ORDER
NFL 14

INFILL DRILLING FINDINGS AND WELL-SPACING WAIVER
MADE PURSUANT TO SECTION 271.305(b) OF THE
FEDERAL ENERGY REGULATORY COMMISSION REGULATIONS,
NATURAL GAS POLICY ACT OF 1978 AND OIL CONSERVATION DIVISION
ORDER NO. R-6013

I.

Operator Conoco Inc. Well Name and No. Meyer B-28 "A" AC/1 Well #

Location: Unit C Sec. 28 Twp. 20S Rng. 37E Cty. Lea

II.

THE DIVISION FINDS:

(1) That Section 271.305(b) of the Federal Energy Regulatory Commission Interim Regulations promulgated pursuant to the Natural Gas Policy Act of 1978 provides that, in order for an infill well to qualify as a new onshore production well under Section 103 of said Act, the Division must find, prior to the commencement of drilling, that the well is necessary to effectively and efficiently drain a portion of the reservoir covered by the proration unit which cannot be so drained by any existing well within that unit, ~~and must grant a waiver of existing well spacing requirements~~.

(2) That by Order No. R-6013, dated June 7, 1979, the Division established an administrative procedure whereby the Division Director and the Division Examiners are empowered to act for the Division and find that an infill well is necessary.

(3) That the well for which a finding is sought is to be completed in the Eumont Gas Pool, and the standard spacing unit in said pool is 640 acres.

(4) That a 240 -acre proration unit comprising the E/2 NW/4 and NE/4 of Sec. 28, Twp. 20S, Rng. 37E, is currently dedicated to the Meyer B-28 "A" AC/1 Well No. 1 located in Unit G of said section.

(5) That this proration unit is ( ) standard (X) nonstandard; if nonstandard, said unit was previously approved by Order No. R-915.

(6) That said proration unit is not being effectively and efficiently drained by the existing well(s) on the unit.

(7) That the drilling and completion of the well for which a finding is sought should result in the production of an additional 261 MCF of gas from the proration unit which would not otherwise be recovered.

(8) That all the requirements of Order No. R-6013 have been complied with, and that the well for which a finding is sought is necessary to effectively and efficiently drain a portion of the reservoir covered by said proration unit which cannot be so drained by any existing well within the unit.

(9) That in order to permit effective and efficient drainage of said proration unit, the subject application should be approved ~~as an exception to the standard well spacing requirements for the pool~~.

IT IS THEREFORE ORDERED:

(1) That the applicant is hereby authorized to drill the well described in Section I above as an infill well on the existing proration unit described in Section II(4) above. The authorization for infill drilling granted by this order ~~is an exception to applicable well spacing requirements and~~ is necessary to permit the drainage of a portion of the reservoir covered by said proration unit which cannot be effectively and efficiently drained by any existing well thereon.

(2) That jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on this 19th day of February, 1980.

DIVISION DIRECTOR X EXAMINER ___

2-19-80

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
P. O. Box 2088
SANTA FE, NEW MEXICO
87501

ADMINISTRATIVE ORDER
NFL 14

INFILL DRILLING FINDINGS AND WELL-SPACING WAIVER
MADE PURSUANT TO SECTION 271.305(b) OF THE
FEDERAL ENERGY REGULATORY COMMISSION REGULATIONS,
NATURAL GAS POLICY ACT OF 1978 AND OIL CONSERVATION DIVISION
ORDER NO. R-6013

I.

Operator Conoco Inc. Well Name and No. Meyer B-28 "A" ~~AC~~ AC/1 well No 4

Location: Unit C Sec. 28 Twp. 20S Rng. 37E Cty. Lea

II.

THE DIVISION FINDS:

(1) That Section 271.305(b) of the Federal Energy Regulatory Commission Interim Regulations promulgated pursuant to the Natural Gas Policy Act of 1978 provides that, in order for an infill well to qualify as a new onshore production well under Section 103 of said Act, the Division must find, prior to the commencement of drilling, that the well is necessary to effectively and efficiently drain a portion of the reservoir covered by the proration unit which cannot be so drained by any existing well within that unit, ~~and must grant a waiver of existing well spacing requirements.~~

(2) That by Order No. R-6013, dated June 7, 1979, the Division established an administrative procedure whereby the Division Director and the Division Examiners are empowered to act for the Division and find that an infill well is necessary.

(3) That the well for which a finding is sought is to be completed in the Eumont Gas Pool, and the standard spacing unit in said pool is 640 acres.

(4) That a 240 -acre proration unit comprising the E/2 NW/4 and NE/4 of Sec. 28, Twp. 20 S, Rng. 37 E, is currently dedicated to the Meyer B-28 "A" AC/1 Well No 1 located in Unit G of said section.

(5) That this proration unit is ( ) standard (X) nonstandard; if nonstandard, said unit was previously approved by Order No. ~~R-6013~~ R-915.

(6) That said proration unit is not being effectively and efficiently drained by the existing well(s) on the unit.

(7) That the drilling and completion of the well for which a finding is sought should result in the production of an additional 261 MCF of gas from the proration unit which would not otherwise be recovered.

(8) That all the requirements of Order No. R-6013 have been complied with, and that the well for which a finding is sought is necessary to effectively and efficiently drain a portion of the reservoir covered by said proration unit which cannot be so drained by any existing well within the unit.

(9) That in order to permit effective and efficient drainage of said proration unit, the subject application should be approved ~~as an exception to the standard well spacing requirements for the pool~~.

IT IS THEREFORE ORDERED:

(1) That the applicant is hereby authorized to drill the well described in Section I above as an infill well on the existing proration unit described in Section II(4) above. The authorization for infill drilling granted by this order ~~is an exception to applicable well spacing requirements, and~~ is necessary to permit the drainage of a portion of the reservoir covered by said proration unit which cannot be effectively and efficiently drained by any existing well thereon.

(2) That jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on this _____ day of _____, 19_____.

DIVISION DIRECTOR ___ EXAMINER ___

L. P. Thompson
Division Manager

John R. Kemp
Assistant Division Manager

Production Department
Hobbs Division
North American Production

Conoco Inc.
P. O. Box 460
1001 North Turner
Hobbs, NM 88240
(505) 393-4141

January 25, 1980

Oil Conservation Division of
The New Mexico Department of Energy and Minerals
P.O. Box 2088
Santa Fe, New Mexico 87501

Gentlemen:

Application for Administrative Approval - Natural Gas Policy Act
Infill Finding - Meyer B-28 "A" AC/1 No. 4 - Eumont Gas Pool -
560' FNL & 1980' FWL, Sec. 28, T-20S, R-37E, Lea County, New Mexico

Conoco Inc. respectfully requests certification of the need for a second well on the previously approved 240-acre proration unit to effectively and efficiently drain Eumont Pool gas reserves that will not be drained by the existing well in this unit. In accordance with special rules and regulations set forth under Order No. R-6013, the following information is submitted in support of our proposal:

1. Copies of Forms 9-331a (C-101) and C-102 for all Eumont gas wells in the established proration unit are attached.

2. The Meyer B-28 "A" AC/1 No. 4 will be completed in the Eumont Gas Pool which has a standard proration unit of 640 acres.

3. The 240-acre proration unit on which the Meyer B-28 "A" AC/1 No. 4 will be located was established under Order No. NSP R-915 dated 9-11-56.

4. The Meyer B-28 "A" AC/1 No. 4 has not been spudded.

5. One well, the Meyer B-28 "A" AC/1 No. 1, located 1980' FNL & 1980' FEL of Sec. 28, T-20S, R-37E, has been drilled in the proration unit. This well was spudded on 8-9-56 and completed 8-21-56 in the Eumont Gas Pool. The well produced at a rate of 490 MCFGPD during October, 1979.

6. A structure map on the top of the Penrose member of the Queen formation is attached, showing the proposed location.

7. The Meyer B-28 "A" AC/1 lease is located on the eastern flank of the Eumont Gas Pool. The Eumont pay zones thin toward the edge of the pool and become increasingly anhydritic with corresponding decreases in porosity and permeability. Conoco's SEMU Eumont Nos. 91, 93, and 98 and Phillips Hooper No. 2 have been drilled and completed on the eastern flank of the Eumont Gas Pool within the past five years. Logs of these four recently drilled wells show a number of low permeability sand stringers that are correlative between the wells and extend throughout this portion of the pool. Copies of these log sections are attached as Exhibits Nos. 1-4.

   These low permeability pay intervals are shown on the dual laterologs of these four wells by high resistivities and by stacking of the curves. They are indicated by the arrows on Exhibits Nos. 1-4. The Phillips Hooper No. 2, located 6500' east of the proposed Meyer B-28 "A" AC/1 No. 4, encountered 20 feet of these tight sands. The proposed No. 4 location is structurally similar to the Phillips Hooper No. 2 and is expected to encounter the same amount of tight pay.

   The more permeable sand intervals are being adequately drained with the current well spacing on the Meyer B-28 "A" AC/1 lease. However, the effective drainage radius of the low permeability intervals is considerably smaller and the efficient drainage of this portion of the pay zone will require a denser well spacing to recover existing reserves from these tight sands.

   The contrast in the drainage efficiency of the tight and more permeable intervals is controlled primarily by the following parameters:

TIGHT SANDS	MORE PERMEABLE SANDS
k = .00003 darcies	k = .029 darcies
Ø = 11%	Ø = 14%
h = 20 feet	h = 54 feet

(k and Ø values were obtained from core analysis on our SEMU Eumont No. 68)

   It is anticipated that an infill well in this part of the Eumont Pool will have an 11 year life and that the maximum drainage radius attained in the tight pay will be 1324 feet at the end of this time, representing an areal extent of 126 acres.

Reservoir pressure at the proposed infill location should be 400 psi in the more permeable pay and is conservatively estimated at 800 psi in the tight pay intervals. Volumetric calculations, utilizing a 126 acre drainage area, 20 feet of tight pay, and a 360 psi abandonment pressure in the tight pay, show that 261 MMCF of additional gas reserves will be recovered from these low permeability sands that will not be effectively drained by the existing wells on the wider spacing. These calculations are included as Exhibit No. 5.

A copy of this application has been sent by certified mail to the following offset operators:

Gulf Oil Corporation
P.O. Box 670
Hobbs, New Mexico 88240

Amoco
Production Department
P.O. Box 3092
Houston, Texas 77001

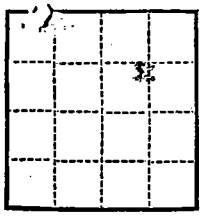
Arco
P.O. Box 1710
Hobbs, New Mexico 88240

Yours very truly,

John R. Kemp

JWH/dlb
cc: Chevron U.S.A. Inc.
Petro-Lewis Corp.
Fred M. Allison, Jr.
Morris Antweil and Wife
Dalport Oil Co.
W.C. Wilmeth Personal Rep.

Form 9-331a
(Feb. 1951)



(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Budget Bureau 42-R358.3.
Approval expires 12-31-55.

Land Office Las Cruces
Lease No. LC 031696 (b)
Unit N. M. F. U.

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL		SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL		SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE		SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL			

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

Meyer B-23 "A" No. 1 Hobbs, New Mexico July 30, 1956

Well No. 1 is located 1980 ft. from {N/S} line and 1980 ft. from {E/W} line of sec. 23

NE/4 Section 23 (¼ Sec. and Sec. No.) | 20S (Twp.) | 37E (Range) | N. M. P. M. (Meridian)

Fowler Unit (Field) | Lea (County or Subdivision) | New Mexico (State or Territory)

The elevation of the derrick floor above sea level is ..... ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

It is our intention to drill a well at the above location to a total depth of approximately 3700' with rotary tools in order to develop the high pressure Queen gas reserves and to meet demands of the U. S. G. S. for Fowler Pool gas development and to prevent drainage by existing and anticipated offset wells. All casing points will be cemented in accordance with approved methods of the U. S. Geological Survey and any other special requirements will be complied with.

It is planned to use the following casing pattern: 8 5/8" to be set at 1225' and cemented with approximately 500 sacks, cement to be circulated. 5 1/2" to be set at 3700' and cemented with approximately 1200 sacks, and to be perforated opposite the pay zone.

Approval to produce this well upon completion is also requested.

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company Continental Oil Company

Address Box 427
Hobbs, New Mexico

By [signature]

Title District Superintendent

U. S. GOVERNMENT PRINTING OFFICE 16—8437-5

HOBBS OFFICE OCC

1956 SEP 11 AM 9:17

NEW MEXICO
OIL CONSERVATION COMMISSION

Form C-128

Well Location and/or Gas Proration Plat

Date Sept. 7th, 1956

Operator Continental Oil Company Lease Meyer B-28 "A"

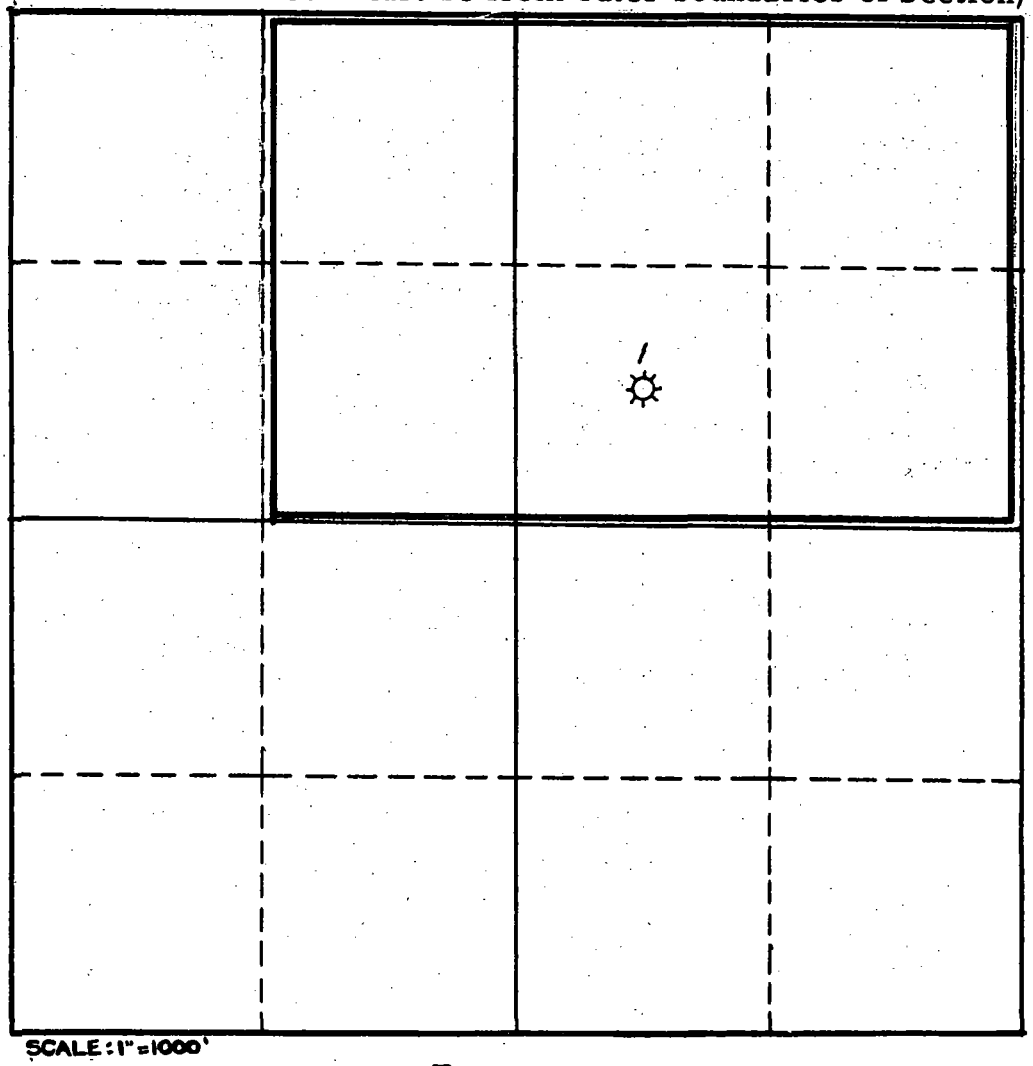
Well No. 1 Section 28 Township 20 Range 37 NMPM

Located 1980 Feet From North Line, 1980 Feet From East Line,

Lea County, New Mexico. G. L. Elevation 3494'

Name of Producing Formation Queen Pool Eumont Dedicated Acreage 240

(Note: All distances must be from outer boundaries of Section)



SCALE: 1" = 1000'

1. Is this Well a Dual Comp. ? Yes ___ No X .

2. If the answer to Question 1 is yes, are there any other dually completed wells within the dedicated acreage? Yes _____ No _____.

Name O. G. Kellerman

Position Senior Production Foreman

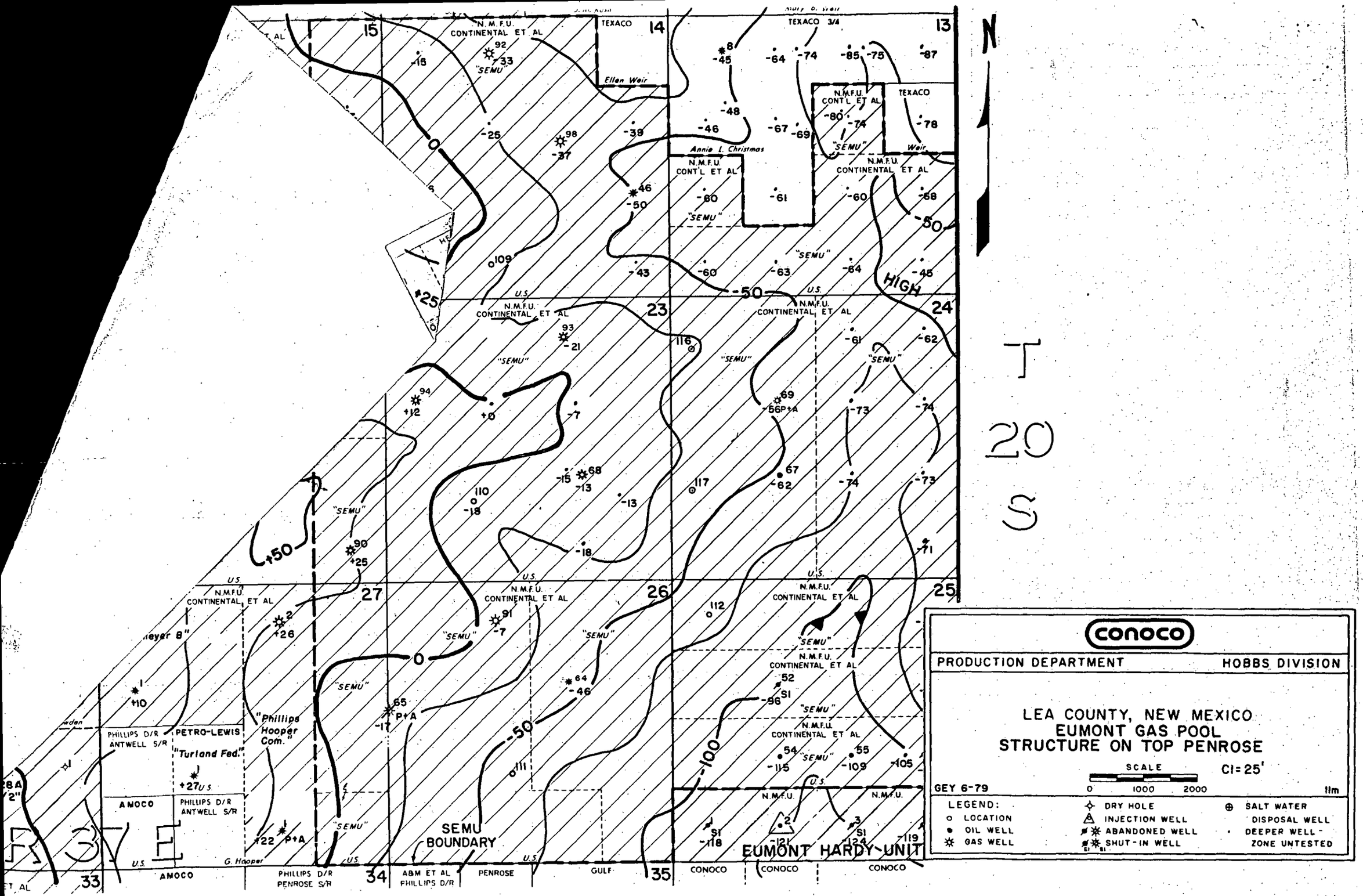
Representing Continental Oil Company

Address Box 427 Hobbs, N. M.

This is to certify that the above plat was prepared from field notes of actual surveys made by me or under my supervision and that the same are true and correct to the best of my knowledge and belief.

Date Surveyed _____

Registered Professional Engineer and/or Land Surveyor


N
T 20 S
R 37 E
CONOCO
PRODUCTION DEPARTMENT
HOBBS DIVISION
LEA COUNTY, NEW MEXICO
EUMONT GAS POOL
STRUCTURE ON TOP PENROSE
SCALE
0 1000 2000
CI = 25'
GEY 6-79
llm
LEGEND:
LOCATION
OIL WELL
GAS WELL
DRY HOLE
INJECTION WELL
ABANDONED WELL
SHUT-IN WELL
SALT WATER DISPOSAL WELL
DEEPER WELL - ZONE UNTESTED
SEMU BOUNDARY
EUMONT HARDY UNIT
HIGH
Ellen Weir
Annie L. Christmas
Weir
"Turland Fed."
"Phillips Hooper Com."
TEXACO
N.M.F.U. CONTINENTAL ET AL
N.M.F.U. CONT'L ET AL
PHILLIPS D/R ANTWELL S/R
PETRO-LEWIS
AMOCO
PHILLIPS D/R PENROSE S/R
ABM ET AL PHILLIPS D/R
PENROSE
GULF
CONOCO
13
14
15
23
24
25
26
27
33
34
35

Schlumberger

COMPENSATED NEUTRON FORMATION DENSITY

COMPANY CONTINENTAL OIL COMPANY

WELL SEMU #91

FIELD EUMONT GAS

COUNTY LEA STATE NEW MEXICO

Location: 660' FNL & 1980' FWL,

Sec. 26 Twp. 20-S Rge. 37-E

Other Services: DLL

COUNTY LEA
FIELD or LOCATION EUMONT GAS
WELL SEMU #91
COMPANY CONTINENTAL OIL

Schlumberger

DUAL LATEROL

COMPANY CONTINENTAL OIL COMPANY

WELL SEMU #91

FIELD EUMONT GAS

COUNTY LEA STATE NEW M

LOCATION: 660' FNL & 1980' FWL,

Sec. 26 Twp. 20-S Rge. 37-E

Other CNL

COUNTY LEA
FIELD or LOCATION EUMONT GAS
WELL SEMU #91
COMPANY CONTINENTAL OIL

CALIPER DIAM. IN INCHES
6 16

GAMMA RAY API UNITS
0 100
100 200

POROSITY INDEX (%) LIME MATRIX

COMPENSATED FORMATION DENSITY POROSITY
30 20 10 0 -10

COMPENSATED NEUTRON POROSITY
30 20 10 0 -10

RESISTIVITY OHMS M²/M

SHALLOW LATEROLOG - LLs
0.2 1.0 10 100

DEEP LATEROLOG - LLd
0.2 1.0 10 100

DEPTH

3600

3700

Caliper

GR

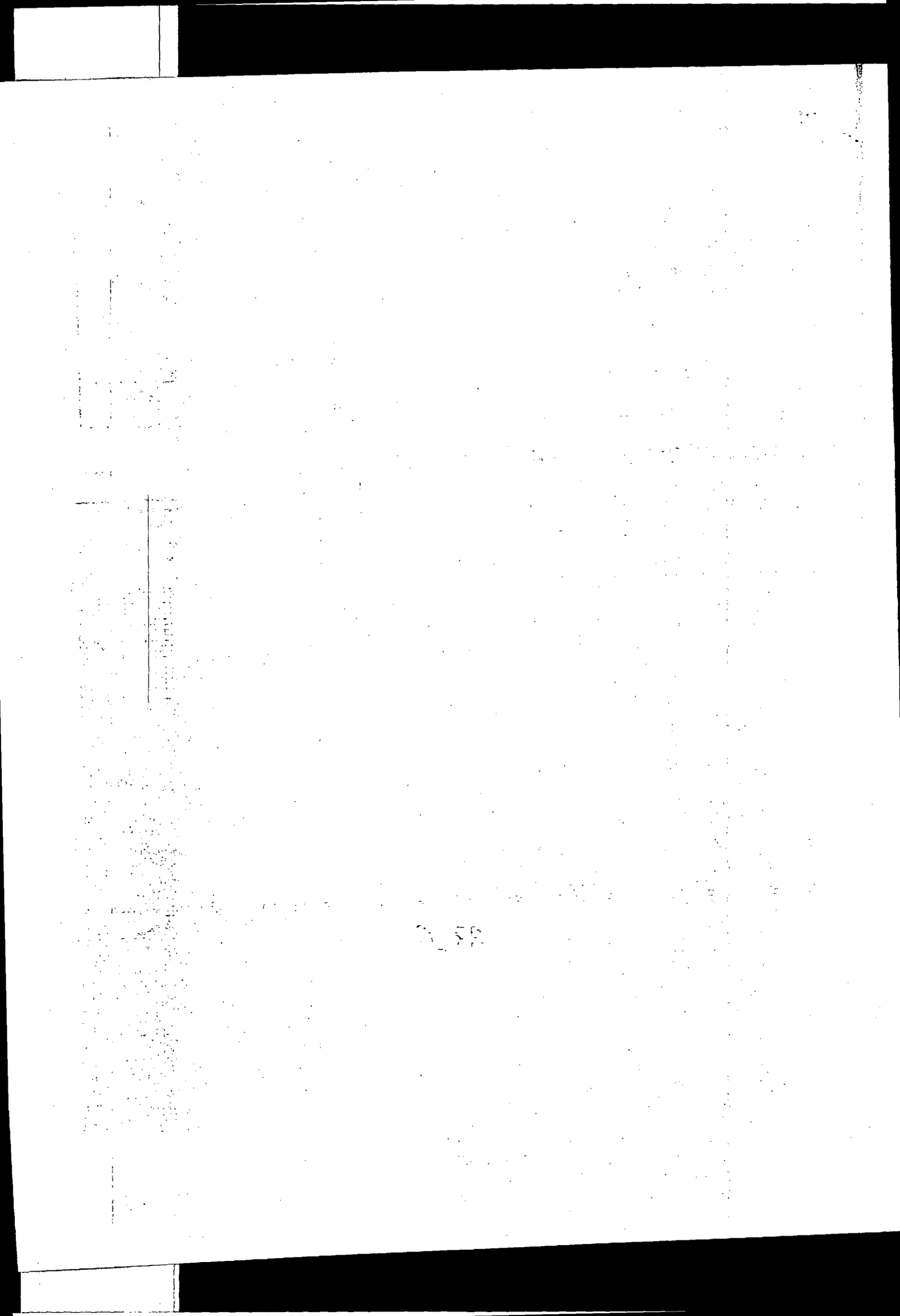
FDC

CALI

3600

3700

EXHIBIT NO.



Schlumberger

COMPENSATED NEUTRON-FORMATION DENSITY

COUNTY LEA
FIELD OR LOCATION EUMONT GAS
WELL SEMU EUMONT #93
COMPANY CONTINENTAL OIL

COMPANY CONTINENTAL OIL COMPANY
WELL SEMU EUMONT #93
FIELD EUMONT GAS
COUNTY LEA STATE NEW MEXICO
Location: 660' FNL & 1980' FEL
Sec. 23 Twp. 20-S Rge. 37-E
Other Services: DLL

Schlumberger

DUAL LATEROLOG

COUNTY LEA
FIELD OR LOCATION EUMONT GAS
WELL SEMU EUMONT #93
COMPANY CONTINENTAL OIL

COMPANY CONTINENTAL OIL COMPANY
WELL SEMU EUMONT #93
FIELD EUMONT GAS
COUNTY LEA STATE NEW MEXICO
LOCATION: 660' FNL & 1980' FEL
Sec. 23 Twp. 20-S Rge. 37-E
Other Services: FDC-CNL-GR

CALIPER DIAM. IN INCHES
6 16

GAMMA RAY API UNITS
0 100
100 200

POROSITY INDEX (%) LIME MATRIX
COMPENSATED FORMATION DENSITY POROSITY
30 20 10 0 -10
COMPENSATED NEUTRON POROSITY
30 20 10 0 -10

RESISTIVITY OHMS M²/M
SHALLOW LATEROLOG - LLs
0.2 1.0 10 100 1000 2000
DEEP LATEROLOG - LLd
0.2 1.0 10 100 1000 2000

DEPTH
3600
3700

EXHIBIT NO. 2

Schlumberger

SIMULTANEOUS COMPENSATED NEUTRON FORMATION DENSITY

COUNTY LEA
FIELD EUMONT GAS
LOCATION WELL SEMU EUMONT NO. 98
COMPANY CONTINENTAL OIL CO.

COMPANY CONTINENTAL OIL COMPANY
WELL SEMU EUMONT NO. 98
FIELD EUMONT GAS
COUNTY LEA STATE NEW MEXICO
LOCATION 2310'FNL & 1980'FEL
API SERIAL NO
SEC. 14 TWP. 20-S RANGE 37-E
Other Services: DLL

Schlumberger

SIMULTANEOUS DUAL LATEROLOG

COUNTY LEA
FIELD EUMONT GAS
LOCATION WELL SEMU EUMONT NO. 98
COMPANY CONTINENTAL OIL CO.

COMPANY CONTINENTAL OIL COMPANY
WELL SEMU EUMONT NO. 98
FIELD EUMONT GAS
COUNTY LEA STATE NEW MEXICO
LOCATION 2310'FNL & 1980'FEL
API SERIAL NO
SEC. 14 TWP. 20-S RANGE 37-E
Other Services: CNL/FDC

CALIPER DIAM. IN INCHES
6 16

GAMMA RAY API UNITS
0 100
100 200

POROSITY INDEX (%) LIME MATRIX
COMPENSATED FORMATION DENSITY POROSITY
30 20 10 0 -10
COMPENSATED NEUTRON POROSITY
30 20 10 0 -10

RESISTIVITY OHMS M²/M
SHALLOW LATEROLOG - LL$_s$
0.2 1.0 10 100 1000 2000
DEEP LATEROLOG - LL$_d$
0.2 1.0 10 100 1000 2000

DEPTH
5600
5700
5800

10-12-72 0280 #3

EXHIBIT NO. 3

Schlumberger

SIMULTANEOUS
COMPENSATED NEUTRON FORMATION DENSITY

COMPANY CONTINENTAL OIL COMPANY
WELL PHILLIPS HOOPER #2
FIELD N.M.F.U.
COUNTY LEA STATE NEW MEXICO
LOCATION 660'FNL & 1980'FEL
Other Services: DLL, GRN, CALIPER
API SERIAL NO | SEC 27 | TWP 20-S | RANGE 37-E

COUNTY LEA
FIELD NMFU
LOCATION PHILLIPS HOOPER #2
COMPANY CONTINENTAL OIL CO.

Schlumberger

SIMULTANEOUS
DUAL LATEROLOG

COMPANY CONTINENTAL OIL COMPANY
WELL PHILLIPS HOOPER #2
FIELD N.M.F.U.
COUNTY LEA STATE NEW MEXICO
LOCATION 660'FNL & 1980'FEL
Other Services: GRN, CNL/FDC, CALIPER
API SERIAL NO | SEC 27 | TWP 20-S | RANGE 37-E

COUNTY LEA
FIELD NMFU
LOCATION PHILLIPS HOOPER #2
COMPANY CONTINENTAL OIL CO.

CALIPER DIAM. IN INCHES
6 — 16

GAMMA RAY API UNITS
0 — 100
100 — 200

POROSITY INDEX (%) LIME MATRIX
COMPENSATED FORMATION DENSITY POROSITY
30 20 10 0 -10
COMPENSATED NEUTRON POROSITY
30 20 10 0 -10

RESISTIVITY OHMS m²/m
SHALLOW LATEROLOG - LL_s
.2 1.0 10 100 1000 2000
DEEP LATEROLOG - LL_d
.2 1.0 10 100 1000 2000

DEPTH
3800
3900
3500
3600

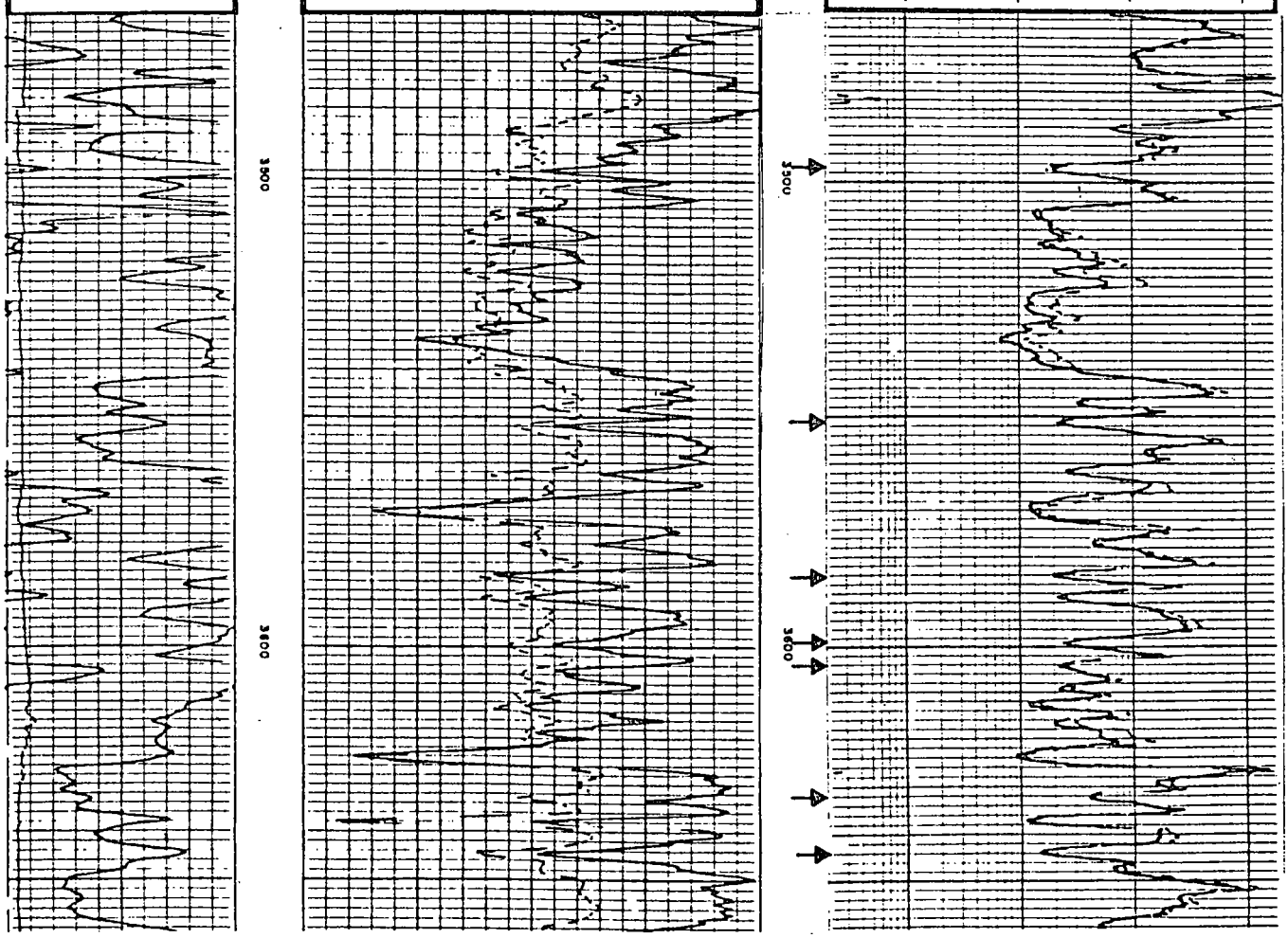


EXHIBIT NO. 4

EXHIBIT NO. 5

The Meyer B-28 "A" AC/1 No. 1 should have a 14 year life as determined by decline analysis. The proposed infill well, Meyer B-28 "A" AC/1 No. 4 is expected to have a life of 11 years.

Radius of Drainage in Tight Pay After 11 Years

Gas S.G. = .7	P = 800 psi	μ = .011 cp.
T = 555° R	Pc = 668 psi	$\emptyset$ = .11
Tc = 380° R	P_R = 1.2	k = .00003 darcies
T_R = 1.46	z = .885	t_r = 11 years (4015 days)

$dz/dp = 1.52 \times 10^{-4}$ (From Craft & Hawkins, Pg. 271, Fig. 6.9)

$$Cg = \frac{1}{P} - \frac{1}{z}\left[\frac{dz}{dp}\right]$$

$$Cg = \frac{1}{700} - \frac{1}{.885}\ (-1.52 \times 10^{-4})$$

$$Cg = 1.42 \times 10^{-3}$$

$$t_r = \frac{.04\,\mu\, Cg\, \emptyset\, r_e^2}{k}$$ (From Craft & Hawkins, Pg. 275

$$r_e = \left[\frac{t_r k}{.04\,\mu\, Cg\, \emptyset}\right] 1/2$$

$$r_e = \left[\frac{(4015 \text{ days})(.00003 \text{ darcies})}{.04(.011)(1.625 \times 10^{-3})(.11)}\right] 1/2$$

r_e = 1324 feet

Area = 126 acres

Additional Gas Reserves From Tight Sands

Pmpi = 400 psia	h = 20 feet	T = 555°R
Pti = 800 psia	Ø = .11	Tc = 380°R
Pta = 360 psia	Sw = .35	T_R = 1.46
Pc = 668 psi	A = 126 acres	

Z @ 800 psi	Z @ 360 psi
P_R = 1.2	P_R = .54
z = .885	z = .945

$$Bg = 35.35 \frac{P}{zT}$$

$$Bgti = 35.35 \frac{800}{(.89)(555°)} = 57.6 \text{ SCF/cu.ft.}$$

$$Bgta = 35.35 \frac{360}{(.945)(555°)} = 24.3 \text{ SCF/cu.ft.}$$

Gas Reserves = .04356 (Ø)(h)(A)(1-Sw)(Bgti-Bgta) MMCFG

Gas Reserves = .04356 (.11)(20')(126 acres)(1-.35)(57.6-24.3) MMCFG

Gas Reserves = 261 MMCFG

Nomenclature

t_r - readjustment time (time required to reach approximate steady-state conditions at r_e)
r_e - external boundary radius
C_g - gas compressibility
Pmpi - initial pressure in more permeable pay
Pti - Initial pressure in tight pay
Pta - abandonment pressure in tight pay
Bgti - initial gas formation volume factor in tight pay
Bgta - abandonment gas formation volume factor in tight pay