

**POGO PRODUCING COMPANY****OVERNIGHT MAIL**

May 11, 1993

200 5/12/93

New Mexico Oil Conservation Division
310 Old Santa Fe Trail
Santa Fe, New Mexico 87504
Attention: Mr. David R. Catanach

Re: N.E. Loving Prospect NM-531
Eddy County, New Mexico
Application for Administrative
Approval to Inject Saltwater
into the NEL No. 4 Well,
located 1980' FNL & 720' FEL
Section 9, T-23-S, R-28-E, N.M.P.M.

Gentlemen:

Pogo hereby respectfully submits two (2) original Applications for Authorization to Inject (Form C-108) pertaining to the captioned well and requests that same be given Administrative Approval.

Pursuant thereto, please find enclosed the following:

- (1) Copy of Notification Letter sent to all Offset Leasehold Operators within a one-half (1/2) mile radius of the proposed injection well and to the surface owner upon which such well is located, along with copies of proof of mailing; and
- (2) Proof of Legal Publication.

If you should have any questions regarding the subject Application, please contact the undersigned.

Very truly yours,

POGO PRODUCING COMPANY

Terry Gant
Consulting Landman

TG:lf/c:SWD20

Enclosures

cc w/encl.: New Mexico Oil Conservation Division
District I Office
P. O. Box 1157
Hobbs, New Mexico 88240



POGO PRODUCING COMPANY

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

April 30, 1993

To: Offset Leasehold Operators and
Surface Owner
(See Attached List)

Re: N.E. Loving NM-531
Eddy County, New Mexico
Application for Administrative
Approval to Inject Saltwater
into the NEL No. 4 Well,
located 1980' FNL & 720' FEL
Section 9, T-23-S, R-28-E

Gentlemen:

Pogo Producing Company has applied to the New Mexico Oil Conservation Division for Administrative Approval to inject saltwater into the captioned well.

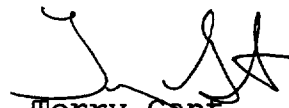
A copy of the Form C-108 submitted by Pogo to the Division is enclosed.

If you object to and/or request that a hearing be held pertaining to this Application, you must notify the Division within fifteen (15) days from the date of Pogo's Application.

If you have any questions, please contact the undersigned or Mr. Richard L. Wright.

Very truly yours,

POGO PRODUCING COMPANY


Terry Gant
Consulting Landman

TG:lf/c:SWD19

Enclosure

✓ cc: New Mexico Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87504-2088
Attention: Mr. David R. Catanach

Attached to Notification Letter dated April 30, 1993
regarding Pogo's Application for Administrative Approval
to Inject Saltwater into the NEL No. 4 Well

Bureau of Land Management
P. O. Box 1449
Santa Fe, New Mexico 87504

Graham Royalty, Ltd.
P. O. Box 3134
Covington, Louisiana 70434-3134
Attention: Mr. William F. Aspinwall

Amoco Production Company
P. O. Box 3092
Houston, Texas 77253
Attention: Mr. Jerry West

Is your RETURN ADDRESS completed on the reverse side?

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

- ☐ Addressee's Address
- ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Bureau of Land Mgmt.
P.O. Box 1449
Santa Fe, N.M. 87504

4a. Article Number

P 085 629 224

4b. Service Type

- | | |
|---|---|
| <input type="checkbox"/> Registered | <input type="checkbox"/> Insured |
| <input checked="" type="checkbox"/> Certified | <input type="checkbox"/> COD |
| <input type="checkbox"/> Express Mail | <input type="checkbox"/> Return Receipt for Merchandise |

7. Date of Delivery

MAY 4 1993

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

[Signature] 908

PS Form 3811, December 1991 ☆ U.S.G.P.O. : 1992-307-530

DOMESTIC RETURN RECEIPT

Thank you for using Return Receipt Service.

Is your RETURN ADDRESS completed on the reverse side?

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
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- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

- ☐ Addressee's Address
- ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Graham Royalty, Ltd.
P.O. Box 3134
Corvinton, LA 70434-3134
Attn: William F. Aspinwall

4a. Article Number

P 085 629 225

4b. Service Type

- | | |
|---|---|
| <input type="checkbox"/> Registered | <input type="checkbox"/> Insured |
| <input checked="" type="checkbox"/> Certified | <input type="checkbox"/> COD |
| <input type="checkbox"/> Express Mail | <input type="checkbox"/> Return Receipt for Merchandise |

7. Date of Delivery

5-5-93

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

[Signature]

PS Form 3811, December 1991 ☆ U.S.G.P.O. : 1992-307-530

DOMESTIC RETURN RECEIPT

Thank you for using Return Receipt Service.

Is your RETURN ADDRESS completed on the reverse side?

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
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- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

- ☐ Addressee's Address
- ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Amoco Prod. Co.
P.O. Box 3092
Houston, TX 77253
Attn: Jerry West

4a. Article Number

P 085 629 173

4b. Service Type

- | | |
|---|---|
| <input type="checkbox"/> Registered | <input type="checkbox"/> Insured |
| <input checked="" type="checkbox"/> Certified | <input type="checkbox"/> COD |
| <input type="checkbox"/> Express Mail | <input type="checkbox"/> Return Receipt for Merchandise |

7. Date of Delivery

MAY 4 1993

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

[Signature]

PS Form 3811, December 1991 ☆ U.S.G.P.O. : 1992-307-530

DOMESTIC RETURN RECEIPT

Thank you for using Return Receipt Service.

Affidavit of Publication

State of New Mexico,
County of Eddy, ss.

E. C. Cantwell, being first duly sworn,
on oath says:

That he is publisher of the Carlsbad Current-Argus, a newspaper published daily at the City of Carlsbad, in said county of Eddy, state of New Mexico and of general paid circulation in said county; that the same is a duly qualified newspaper under the laws of the state wherein legal notices and advertisements may be published; that the printed notice attached hereto was published in the regular and entire edition of said newspaper and not in supplement thereof on the date as follows, to wit:

MAY 7, 19 93
_____, 19 ____
_____, 19 ____
_____, 19 ____
_____, 19 ____
24.50

that the cost of publication is \$ _____,
and that payment thereof has been made
and will be assessed as court costs.

E C Cantwell

Subscribed and sworn to before me this

7 day of MAY, 19 93

Linda J. Martu

My commission expires 7/22/96

Notary Public

May 7, 1993

PUBLIC NOTICE

APPLICATION FOR
AUTHORIZATION TO
INJECT SALTWATER

Pogo Producing Company,
P.O. Box 10340, Midland,
Texas 79702-7340 (Contact -
Richard L. Wright at 915/682-
6822) has applied to the New
Mexico Oil Conservation Divi-
sion for Administrative Ap-
proval for Authorization to in-
ject saltwater into its NEL No.
4 Well, located 1980' FNL and
720' FEL of Section 9, T-
23-S, R-28-E, N.M.P.M., Eddy
County, New Mexico. The pur-
pose of such well will be to
dispose of saltwater produced
from Pogo's nearby wells. The
injection interval will be in the
Bell Canyon and Upper
Cherry Canyon formations be-
tween 2,652'-3,576' beneath
the surface, with an expected
maximum injection rate of ap-
proximately 3,000 BOWPD
with an expected maximum in-
jection pressure of approxi-
mately 530 psi. Any interested
parties must file objections or
requests for a hearing with the
New Mexico Oil Conservation
Division, P.O. Box 2088,
Santa Fe, New Mexico
87504-2088 within fifteen (15)
days from the date of Pogo's
Application.

APPLICATION FOR AUTHORIZATION TO INJECT

I. Purpose: ☐ Secondary Recovery ☐ Pressure Maintenance ☒ Disposal ☐ Storage
Application qualifies for administrative approval? ☒ yes ☐ no

II. Operator: POGO PRODUCING COMPANY
Address: P. O. Box 10340, Midland, Texas 79702
Contact party: Richard L. Wright Phone: 915/682-6822

III. Well data: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.

IV. Is this an expansion of an existing project? ☐ yes ☒ no
If yes, give the Division order number authorizing the project _____.

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.

VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

VIII. Attach appropriate geological data on the injection zone including appropriate lithologic detail, geological name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such source known to be immediately underlying the injection interval.

IX. Describe the proposed stimulation program, if any.

X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division they need not be resubmitted.)

XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

XIV. Certification

I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

Name: Bill F. Halepeska Title: Agent (P. E.)
Signature: Bill Halepeska Date: 4/30/93

AOR = 9 & 2

If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be duplicated and resubmitted. Please show the date and circumstance of the earlier submittal.

III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

- (1) Lease name; Well No.; location by Section, Township, and Range; and footage location within the section.
- (2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.
- (3) A description of the tubing to be used including its size, lining material, and setting depth.
- (4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

- (1) The name of the injection formation and, if applicable, the field or pool name.
- (2) The injection interval and whether it is perforated or open-hole.
- (3) State if the well was drilled for injection or, if not, the original purpose of the well.
- (4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.
- (5) Give the depth to and name of the next higher and next lower oil or gas zone in the area of the well, if any.

IV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

- (1) The name, address, phone number, and contact party for the applicant;
- (2) the intended purpose of the injection well; with the exact location of single wells or the section, township, and range location of multiple wells;
- (3) the formation name and depth with expected maximum injection rates and pressures; and
- (4) a notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, P. O. Box 2088, Santa Fe, New Mexico 87501 within 15 days.

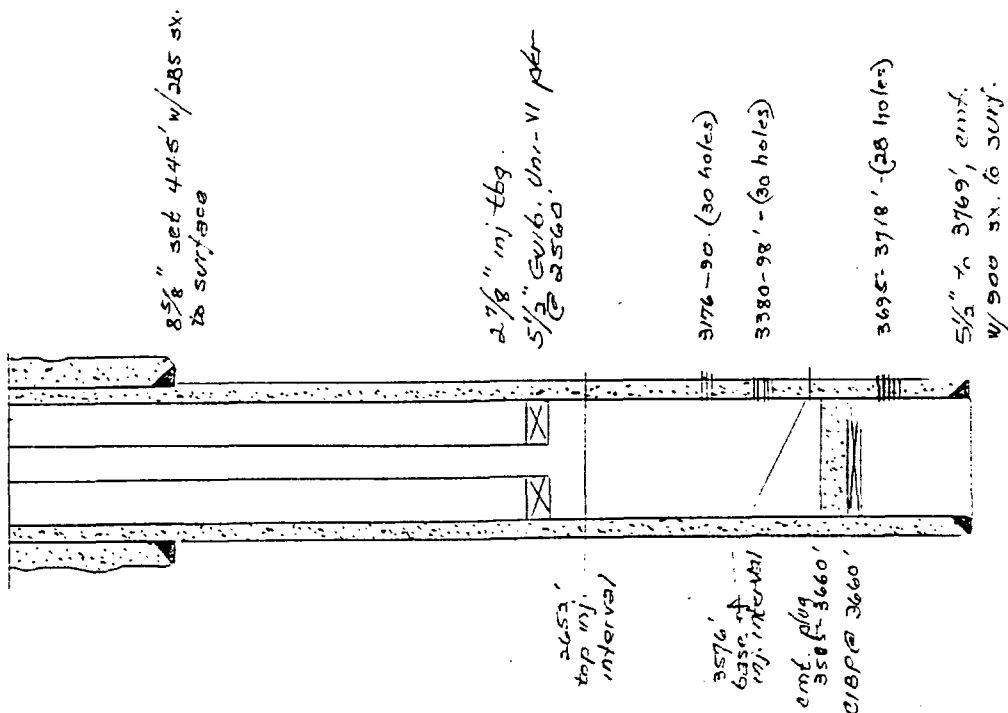
NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

FORM C-103
ITEM 111-A

INJECTION WELL DATA SHEET

SCHEMATIC



TABULAR DATA

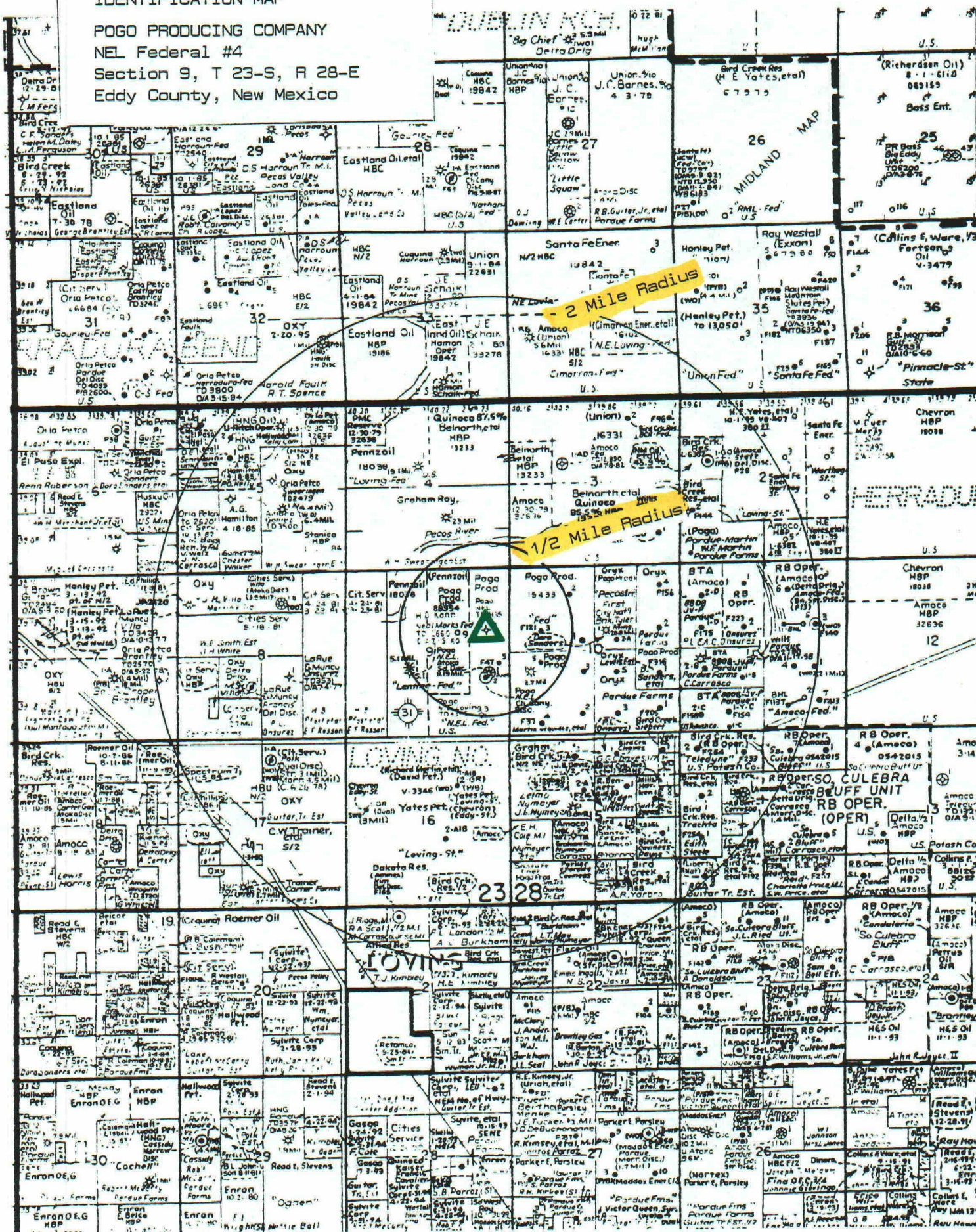
- (1). LEASE: NEL Federal WELL # 4
 LOCATION: Sec. 9 TWP 23-S Range 28-E
 County Eddy
 Footage 1980 FNL, 720 FEL
- (2). CASING STRINGS:
 Surface Casing
 Size 8 5/8 Depth 445' Cemented w/ 285 sx.
 TOC surf. Determined by circulation
 Hole size 12 1/4"
- Intermediate Casing
 Size NA Depth _____ Cemented w/ _____ sx.
 TOC _____ Determined by _____
 Hole size _____
- Long String
 Size 5 1/2" Depth 3769' Cemented w/ 900 sx.
 TOC surf. Determined by circulation
 Hole size 7 7/8"
 Injection interval, from 2652 to 3576 ft.
- (3). INJECTION TUBING STRING:
 Size 2 7/8 in., coated/lined with PVC
 Setting depth 2560 ft.
- (4) INJECTION PACKER:
 Size 5 1/2" in.; Make/Model Guiberson Uni-VI
 Setting depth 2560 ft.

ITEM 111-B

INJECTION WELL DATA

- (1). Injection formation: Bell Canyon and Up. Cherry Canyon (Delaware)
Field/Pool: N. E. Loving
- (2). Injection interval; from 2652 ft. to 3576 ft.
Perforated XX Open Hole
- (3). Original purpose well drilled -- as Cherry Canyon test
also tested Bell Canyon before PSA
- (4). Other perforated intervals; XX Yes No
Squeezed with NA sx., or isolated by NA, will be used for
injection purposes ; CIBP @ 3660' w/10 sx. cement plug
- (5). Oil or gas productive zone(s):
Next higher: None
Next lower: Cherry Canyon @ 3650'

Section 9, T 23-S, R 28-E
Eddy County, New Mexico



ITEM V1

WELL DATA - AREA OF REVIEW

- (1). Location: Sec 10, T 23-S, R 28-E; 2310 FSL, 990 FWL, Eddy Co.
Operator: Pogo Producing Co. Lease: Urquidez Well # 5
Well type: Oil XX Gas OSA Total depth 6280 ft.
Date drilled: Spud 6/13/91 ; Compl. 9/20/91
Completion Data: 8 5/8" @ 558' w/385 sx., circ.; 5 1/2" @ 6275' w/
650 sx. 1st stg., 775 sx. 2nd stg., circ.; DV tool @3189'; perf.
Brushy Canyon 6053 - 77/ 49 holes; A/1000 g 15% HCl; F/ 135 bbl
pre-pad, 12,500 g XLGW + 33,220# 20/40 sd.; IPF 100 80 + 131 BW
Plugged NA Date: (Schematic attached)
- (2). Location: Sec. 10, T 23-S, R 28-E; 1980 FSL, 660 FWL, Eddy Co.
Operator: Pogo Producing Co. Lease: Urquidez Well # 1
Well Type: Oil Gas XX OSA Total Depth: 12,843 Ft.
Date Drilled: Spud 8/9/81; Compl. 12/22/81
Completion Data: 13 3/8" @ 425' w/450 sx., 10 3/4" @ 2580' w/1900
sx., circ., 7 5/8" @ 9639' w/2500 sx., TOC 2600', 5" liner @
9223 -12,800' w/380 sx.; perf. Atoka 11,593 - 634'; A/300g
IPCAOF 1,381 MCF
Plugged NA Date (Schematic attached)
- (3). Location: Sec. 9, T 23-S, R 28-E.; 660 FEL, 1980 FSL; Eddy Co.
Operator: Pogo Producing Co. Lease: NEL COM Well # 1
Well Type ; Oil Gas XX OSA Total Depth: 12,852Ft.
Date Drilled: Spud 11/12/80; Comp. 3/21/81
Completion Data: 16" @ 442' w/510 sx., 10 3/4" @ 2700' w/1700 sx.,
7 5/8" @ 10,220' w/2220 sx., 5" liner @ 9927-12,852' w/400 sx.;
Perf Atoka 11,585-592, 11,595-605'; IPCAOF 8.19MMCF; recompl. and
comm. w/Morrow perfs 12,654-717' and 12,314-323'; A/1000 7 1/2% HCl;
test 1,153 MMCF no 7/64"
Plugged NA Date (Schematic attached)

ITEM VI, cont.

WELL DATA - AREA OF REVIEW

(4). Location: Sec 9, T 23-S, R 28-E, 1880 FSL, 760 FEL; Eddy Co.
Operator: Pogo Producing Co. Lease: NEL Fed. Well # 2
Well type: Oil XX Gas DSA Total depth 4300 Ft.
Date drilled: Spud 5/11/81; Compl. 8/1/81
Completion Data: 8 5/8" @ 440' w/350 sx., 5 1/2" @ 4030' w/925 sx.,
Perf. Cherry Canyon 3648-60, 3662-70' W/44 holes; A/2000g 7 1/2%
Sphd. Acid; IPF 74 BO + 29 MCFG

Plugged NA Date: (Schematic attached)

(5). Location: Sec. 10, T 23-S, R 28-E; 1980 FSL, 2310 FWL, Eddy Co.
Operator: Pogo Producing Co. Lease: Urquidez Fed. Well # 3
Well Type: Oil XX Gas DSA Total Depth: 6250 Ft.
Date Drilled: Spud 2/12/91; Compl. 3/12/91
Completion Data: 8 5/8" @ 565' w/552 sx. to surf., 5 1/2" @ 6250' w/
610 sx. 1st stg., 1065 sx. 2nd stg., circ., Stg. tool @ 3685';
Perf Brushy Canyon 6087-6108' w/40; A/1000g 7 1/2%, F/10,000 LGW
+ 5000g LGW w/14,684 # sd.; IPF 162 BO + 106 BW; GOR 1370:1
Plugged NA Date (Schematic attached)

(6). Location: Sec 9, T 23-S, R 28-E, 2310 FSL, 330 FEL, Eddy Co.
Operator: Pogo Producing Co. Lease: NEL Fed. Well # 5
Well Type ; Oil XX Gas DSA Total Depth: 6310 Ft.
Date Drilled: Spud 2/10/92, Compl. 3/20/92
Completion Data: 8 5/8" @ 568' w/410 sx., circ.; 5 1/2" @ 6310' w/
910 sx. 1st stg., 1650 sx 2nd stg., stg. tool @ 3085'; Perf.
Brushy Canyon 6064-6088' w/2SPF; IPF 47 BO + 168 BW and 83 MCF

Plugged NA Date (Schematic attached)

ITEM VI , contd.

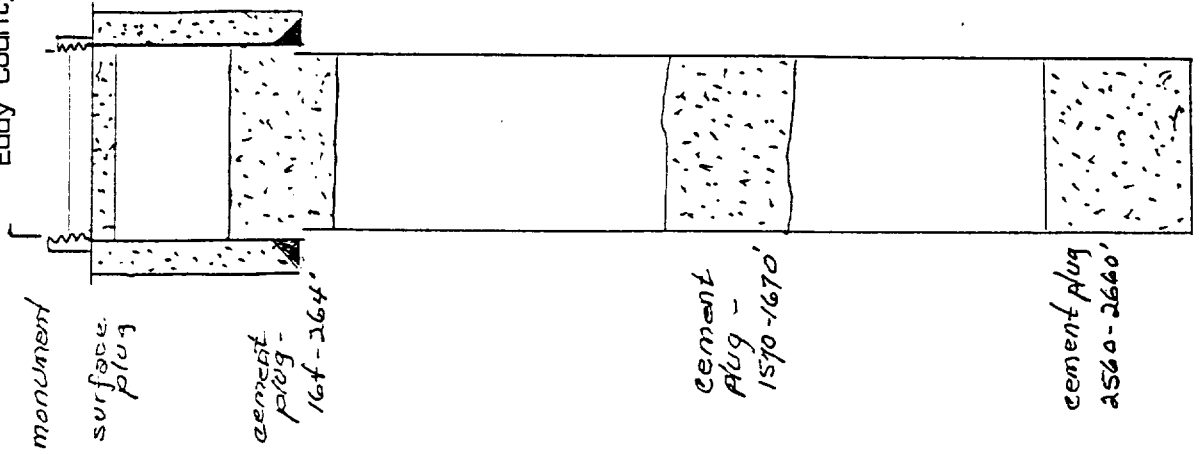
WELL DATA - AREA OF REVIEW

- (7). Location: Sec. 9, T 23-S, R 28-E, 660 FSL, 890 FEL, Eddy Co.
Operator: Pogo Producing Co. Lease: NEL Fed. Well # 3
Well type: Oil _____ Gas _____ DSA XXX Total depth 4399 Ft.
Date drilled: 4/08/83
Completion Data: 8 5/8" @ 453' w/285 sx.; 5 1/2" @ 4010' w/1240 sx.;
Perf Cherry canyon 3925-51', A/2500g; PF.3586-3658', A/4000g,
F/20,000g GW +22,000# sd N₂; PF. Cherry Canyon 3448-68',
A/2500g; PF. Bell Canyon 3225-3279', A/3000g.. SWF/20,000g+
20,000#; PF. 3155-3169', A/2500g, PSA
Plugged XX Date: 4/9/83 (Schematic attached)
- (8). Location: Sec. 9, T 23-S, R 28-E, 2010 FSL, 1980 FWL, Eddy Co.
Operator: Gulf Oil Lease: Lentini Fed. Well # 1
Well Type: Oil _____ Gas XX DSA _____ Total Depth: 10,505 Ft.
Date Drilled: Spud 4/2/81, Compl. 6/19/81
Completion Data: 16" @ 410' w/600 sx., 10 3/4" @ 2694' w/1350 sx.,
7 5/8" @ 10,500' w/500 sx., 5" lnr. @ 9856-12699' w/400 sx;
Perf Morrow 12,276-313'; Natural IPCAOF 5194 MCF
Plugged NA Date _____ (Schematic attached)
- (9). Location: Sec. 9, T 23-S, R 28-E; 1980 FSL, 1980 FWL, Eddy Co.
Operator: H. D. Kahn Lease: Neal Marks Fed. Well # 5
Well Type ; Oil _____ Gas _____ DSA XX Total Depth: 2660 Ft.
Date Drilled: Spud 6/28/60, Compl. 7/5/60
Completion Data: 8 5/8" @ 228' w/125 sx.; Crd 2560-2660'
DSA

Plugged XX Date 7/05/60 (Schematic attached)

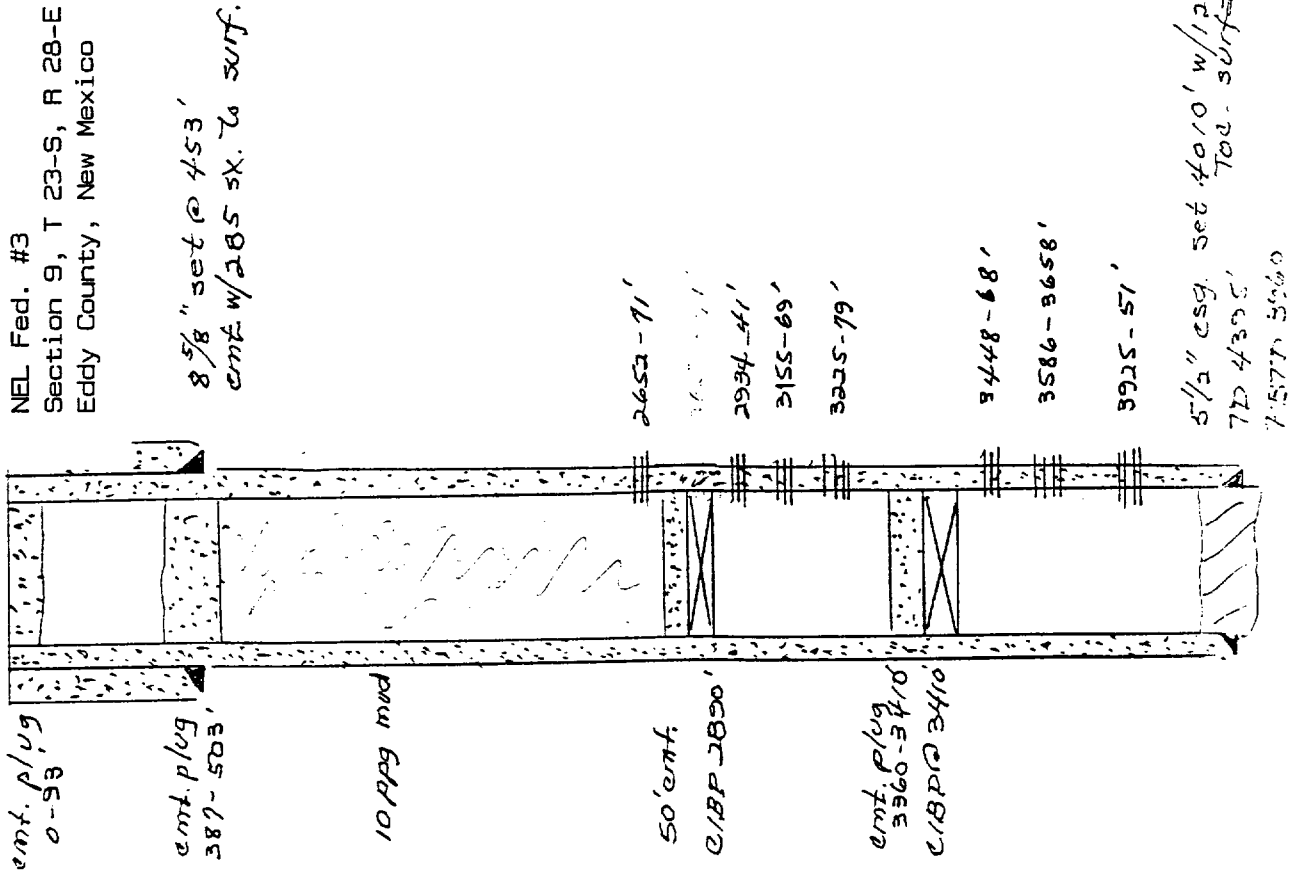
FORM C-108, ITEM VI #9
SCHEMATIC DIAGRAM - PSA

H. D. KAHN
Neal Marks Fed. #5
Section 9, T 23-S, R 28-E
Eddy County, New Mexico



TD: 2660'

FORM C-108, ITEM VI #7
SCHEMATIC DIAGRAM - PSA
POGO PRODUCING COMPANY
NEL Fed. #3
Section 9, T 23-S, R 28-E
Eddy County, New Mexico



5 1/2" csg. set 4010' w/1240 sk.
TD 4395'
7:57 PM 3960

ITEM VII

OPERATIONAL DATA

(1). Average expected injection rate: 750 BWPD; maximum anticipated rate: 3000 BWPD

(2). Closed system

(3). Estimated average injection pressure: 400 psi.

Estimated maximum pressure: 530 psi.

(4). Source of injection water: Produced water from nearby Pogo

Producing Co. operated wells

Analysis of waters attached.

(5). Analysis of injection zone water attached.

Data source: Herradura Bend Delaware, T 22-23-S, R 27-28 E

Eddy Co.; Roswell Geological Soc. Symposium, 1988

FORM C-108, ITEM VII #5

ANALYSIS - INJECTION ZONE WATER

POGO PRODUCING COMPANY

NEL FED. #4

Section 9, T 23-S, R 28-E

Eddy County, New Mexico

U. S. SOCIETY SYMPOSIUM - 1988

1

Author: David S. Harle

Field Name: Herradura Bend Delaware (Oil)

Affiliation: Hondo Oil and Gas Company

Location: T.22-23S., R.27-28E.

Date: March 1988

County & State: Eddy County, New Mexico

Discovery Well: Orla Petco, Inc., No. 1 Pardue. 660' FNL, 1,900' FEL, Sec. 6, T.23S., R.28E. Compl. 8/23/77. T.D. 4,099'.

Exploration Method Leading to Discovery: Subsurface mapping.

Pay Zone: 2,466'-2,474': IPP 38 BOPD + 50 BW.

Formation Name: Delaware (Bell Canyon). Depth & Datum Discovery Well: 2,449' (+597').

Lithology Description: Sandstone.

Approximate average pay: 10 gross 10 net Productive Area 1,120 acres

Type Trap: Structural-stratigraphic. Production is from a porous sandstone that pinches out updip. There is some structural rollover on top of the pay zone that is probably caused by the deposition of the pay sand.

Reservoir Data:

23 % Porosity Md Permeability % Sw % So

oil: Grav. 41.5, GOR 100-1.

Gas:

Water: 60 Na+K 6,400 Ca 970 Mg 14000 Cl TR SO₄ - CO₂ or HCO₃ Fe (PPM)

Specific Gravity 1.074 Resistivity .076 ohms @ 74 °F

Initial Field Pressure: psi @ datum Reservoir Temp. °F

Type of Drive : Solution gas.

Normal Completion Practices: Open hole completion. Acidize with 1,500 to 3,000 gals. acid.

Type completion: Pumping.

Normal Well Spacing 40 Acres

Deepest Horizon Penetrated & Depth: Bone Spring 5,600' (-2,554'). Exxon Corp. No. 1 New Mexico "DU" State, 1,673' FNL, 1,309' FWL, Sec. 36, T.22S., R.27E. T.D. 5,890'. Other Producing Formations in Field: Cherry Canyon.

Production Data: Field designated 12/77. Production shown only through December 1986.

YEAR	TYPE	No. of wells # yr. and		PRODUCTION OIL IN BARRELS GAS IN MMCF		YEAR	TYPE	No. of wells # yr. and		PRODUCTION OIL IN BARRELS GAS IN MMCF	
		Prod.	S.I. of Abd.	ANNUAL	CUMULATIVE			Prod.	S.I. of Abd.	ANNUAL	CUMULATIVE
79	OIL	19		80,023	171,732	83	OIL	20	6	63,625	476,501
	GAS			4,529	5,904		GAS			3.3	21,777
80	OIL	20	1	72,098	243,830	84	OIL	27	6	54,511	531,012
	GAS			5,536	11,440		GAS			4,667	25,844
81	OIL	25	1	82,194	326,024	85	OIL	22	7	40,549	571,561
	GAS			3,137	14,577		GAS			3,727	29,58
82	OIL	21	5	86,352	412,376	86	OIL	21	9	49,736	621,297
	GAS			3.3	17,877		GAS			3,975	33,556

ITEM V111

GEOLOGICAL DATA

INJECTION ZONE

Lithological description: ss. f-vfg. lt tan-lt gray, unconsol./
unconsol. friable

Geological name: Bell Canyon and Up. Cherry Canyon (Delaware)

Zone thickness: 950 ft.; Depth: 3576 ft. to base of zone

FRESH WATER SOURCES

Geological name: shallow alluvium (Recent)

Depth to bottom of zone: 195 ft.

ITEM 1X

STIMULATION PROGRAM (Proposed)

ACIDIZE:

Volume: 3000 gal. Type acid: 15% HCl w/Pentol 100

Rate: 5 BPM; Misc. Use packer to isolate for breakdown

FRACTURE:

Fluid volume: 20,000 gal.; Type: Gelled Water

Prop type: 20/40 sd. Volume (#): 12,000

Rate: 15 BPM; Conductor: 2 7/8 in.

Misc. _____

ITEM X

LOGGING PROGRAM

Logging program included: CN-LDL, DLL, EPI

Copy of CN-LDL log included in attachments

ITEM XI

FRESH WATER ANALYSIS

Fresh water well within 1 mile radius; XX Yes No

Chemical analysis from well(s) located: 23.28.9.240;

Date sampled: Dec. 1957

Chemical analysis from well(s) located: 23.28.10.333423

Date sampled: 7/16/53 - 8/23/85 , analyses attached

ITEM XII

HYDROLOGY

Engineering data and area well logs reveal no evidence that hydrologic connection might exist between the intended injection zone (Bell Canyon-Cherry Canyon) at 2652' and probable fresh water zone above 200 feet

ITEM XIII

COMMERCIAL INTENT

Initially, only water from Pogo operated wells will be disposed of in subject system. Eventually, Pogo could take water from other leases in the area operated by someone else, but in which Pogo has a working interest. It is intended that all water will be piped to the system.

FORM C-108, ITEM XI

ANALYSIS - FRESH WATER SUPPLY

POGO PRODUCING COMPANY

NEL FED. #4

Section 9, T 23-S, R 28-E

Eddy County, New Mexico



STATE OF NEW MEXICO

STATE ENGINEER OFFICE

ELUID MARTINEZ
STATE ENGINEER

ROSWELL

DISTRICT II
1900 West Second St.
Roswell, New Mexico 88201
(505) 622-6521

April 27, 1993

Bill Halepeska
P. O. Box 11117
Midland, Texas 79702

Dear Sir:

Please find enclosed information and logs requested from this office.
Below please find water quality data on wells which you requested:

<u>USE</u>	<u>LOCATION</u>	<u>CLORIDES</u>	<u>CONDUCTIVITY</u>	<u>DATE</u>
Irr.	23S.28.05.111444	731ppm	6400	04/09/53
Irr.	23S.28.08.13111	1001	5400	07/17/53
"	" " " "	1400	6821	05/14/81
Irr.	23S.28.10.333423	1001	5300	07/16/53
"	" " " "	1310	7017	05/14/81
"	" " " "	1570	7837	08/23/85
Irr.	23S.28.15.32111	2020	8960	05/27/81
Irr.	23S.28.15.32111A	1132	7000	04/19/53
Irr.	23S.28.15.433131	1079	5900	07/16/53
Irr.	23S.28.17.33333	89	1600	03/03/53
Stk.	23S.31.26.32230	122	3455	12/19/79
Stk.	23S.31.26.34411	150	240	12/11/70
"	" " " "	134	3503	10/20/76
"	" " " "	130	3383	02/06/85
"	" " " "	124	3520	07/16/87
"	" " " "	230	3690	04/01/92
Stk.	24S.31.04.433422	246	3690	07/15/87
"	" " " "	310	3780	04/01/92

If you have any further questions, feel free to call this office.

Very truly yours,

Ramon L. Torres
Ramon Torres
Water Resource Tech II

RT/lc
encs.

Schlumberger

COMPENSATED NEUTRON
LITHO DENSITY

COUNTY	EDDY, N.M.
FIELD	N.E. LOVING
LOCATION	N.E. LOVING 15
WELL	N.E. LOVING 15
COMPANY	POCO PRODUCING CO.

COMPANY				POCO PRODUCING COMPANY			
WELL				N.E. LOVING 15			
FIELD				N.E. LOVING			
COUNTY				EDDY			
STATE				NEW MEXICO			
LOCATION				1320' PML & 720' FEL.			
API SERIAL NO				9			
SEC				23-S			
TWP				28-E			
RANGE				28-E			
Permanent Datum				G.L.			
Log Measured From				K.B.			
Drilling Measured From				K.B.			
Elev.: 3056				Elev.: K.B. 3050			
D.F.				D.F.			
G.L. 3056				G.L. 3056			

Date	4-15-83				
Run No.	ONE				
Depth-Driller	4135				
Depth-Logger	4140				
Bit Log Interval	4137				
Top Log Interval	SURFACE				
Casing-Driller	8 2/8 @ 445	@	@	@	@
Casing-Logger	446				
Bit Size	7 7/8				
Type Fluid in Hole	BRINE				
Dens.	10.3	22			
Visc.	10.2	ml	ml	ml	ml
Source of Sample	MUDPI				
Run @ Mean Temp.	82.2 @ 68 F	@	F	@	F
Run @ Mean Temp.	82.2 @ 68 F	@	F	@	F
Run @ Mean Temp.	82.2 @ 68 F	@	F	@	F
Source Mud Run	H	@	F	@	F
Run @ 80 F	82.5 @ 99 F	@	F	@	F
Circulation Stopped	2318 4-15				
Logger on Bottom	4138 4-15				
Mean Run Temp.	82.5				
Equip. Location	1185 1186L				
Recorded by	HEDMAN/GRAHAM				
Witnessed by	BAUERHEIM				

