

STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

POST OFFICE BOX 2098  
STATE LAND OFFICE BUILDING  
SANTA FE, NEW MEXICO 87501

BEFORE EXAMINER CATANACH

Revised 7-1-81

OIL CONSERVATION DIVISION

APPLICATION FOR AUTHORIZATION TO INJECT

TEXACO EXHIBIT NO. 1  
 Secondary Recovery     Pressure Maintenance     Disposal     Storage  
Application qualifies for administrative approval?  
CASE NO: 1040

- II. Operator: TEXACO EXPLORATION AND PRODUCTION INC.
- Address: 205 East Bender Blvd. Hobbs, New Mexico 88240
- Contact party: Michael L. Pierce Phone: 505-392-1915
- 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: Michael L. Pierce Title Consultant

Signature: [Signature] Date: 9-24-91

\* 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 precise 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.

## XIV. PROOF OF NOTICE

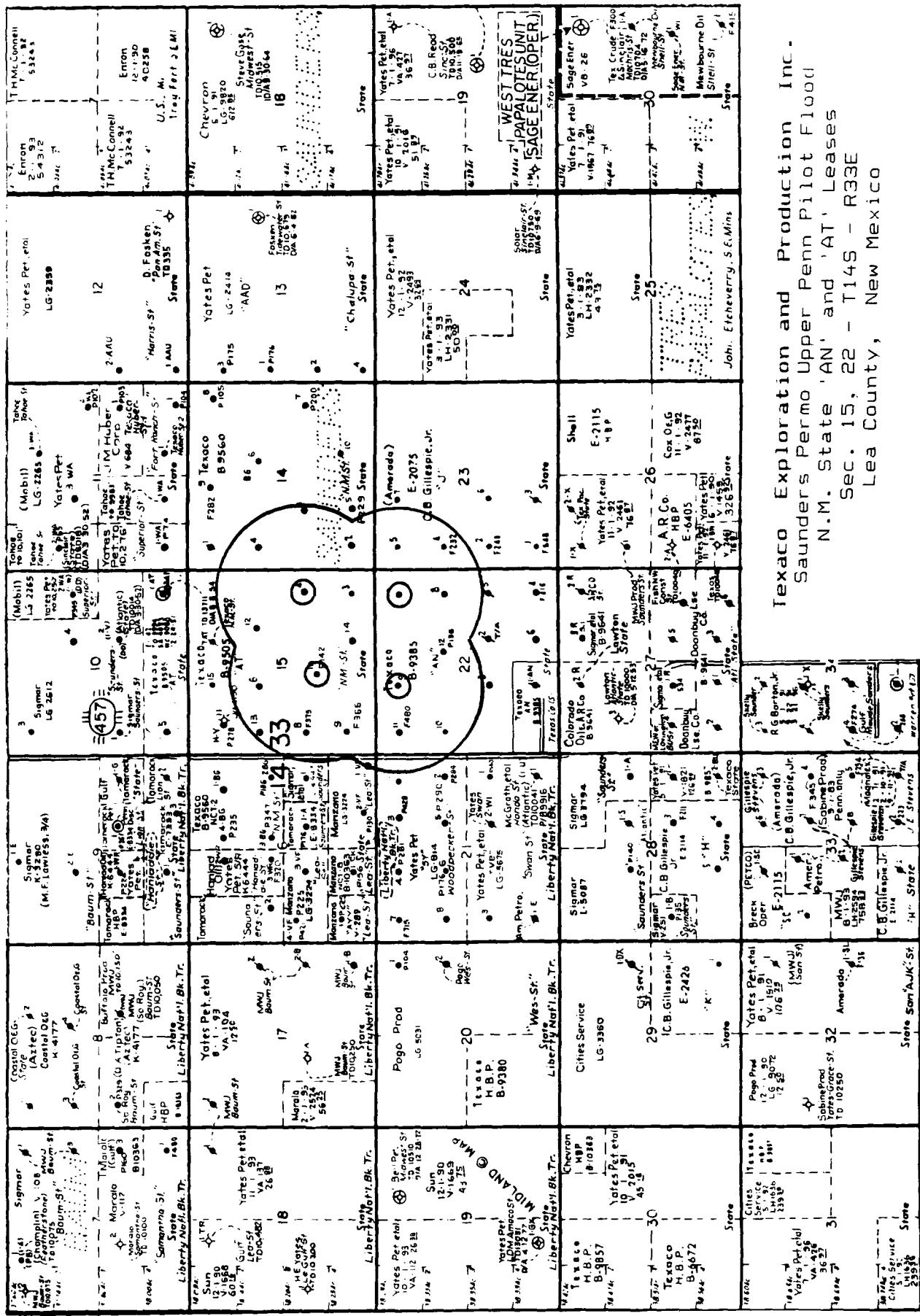
All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

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, within 15 days.

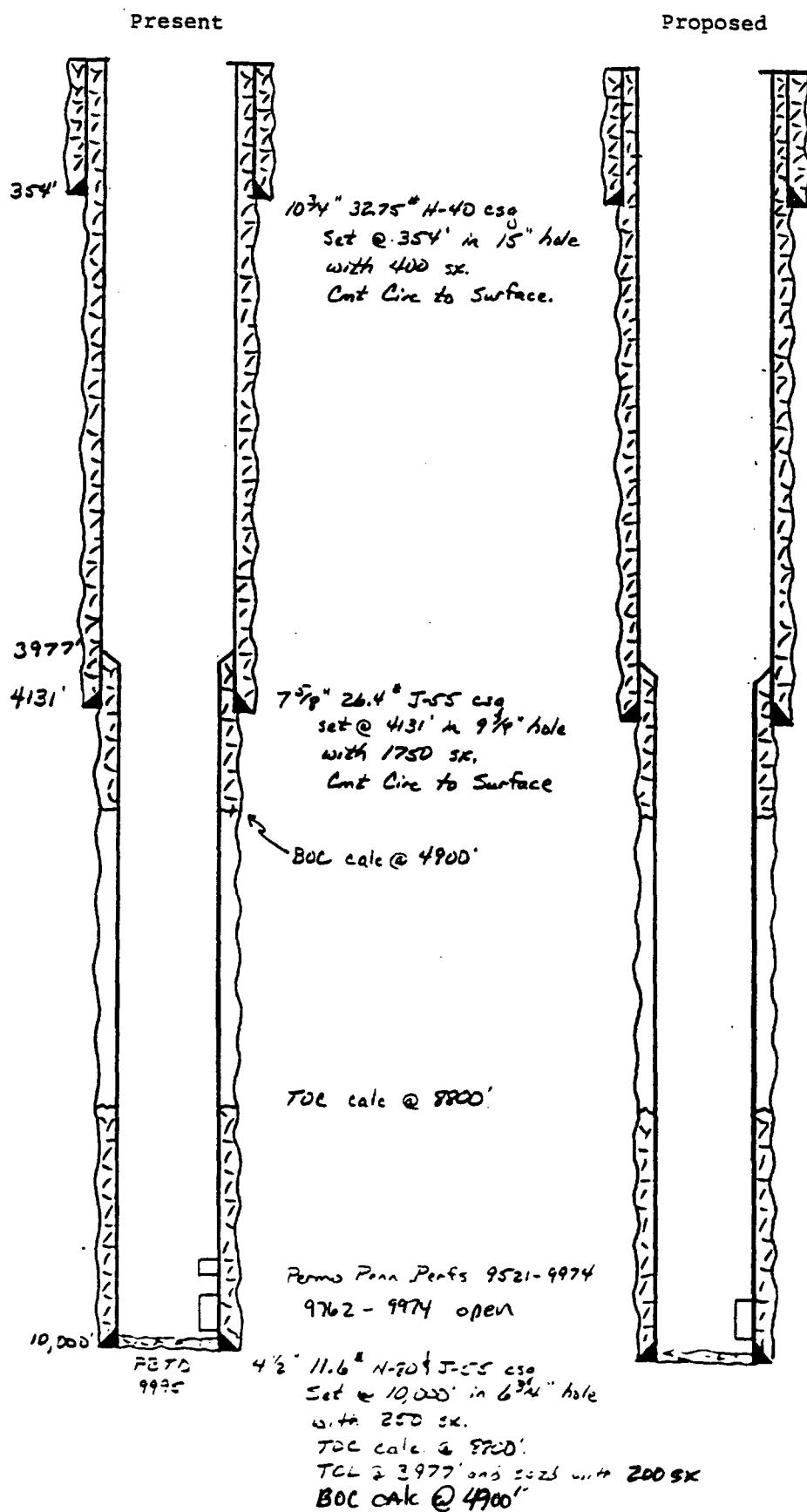
NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

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.

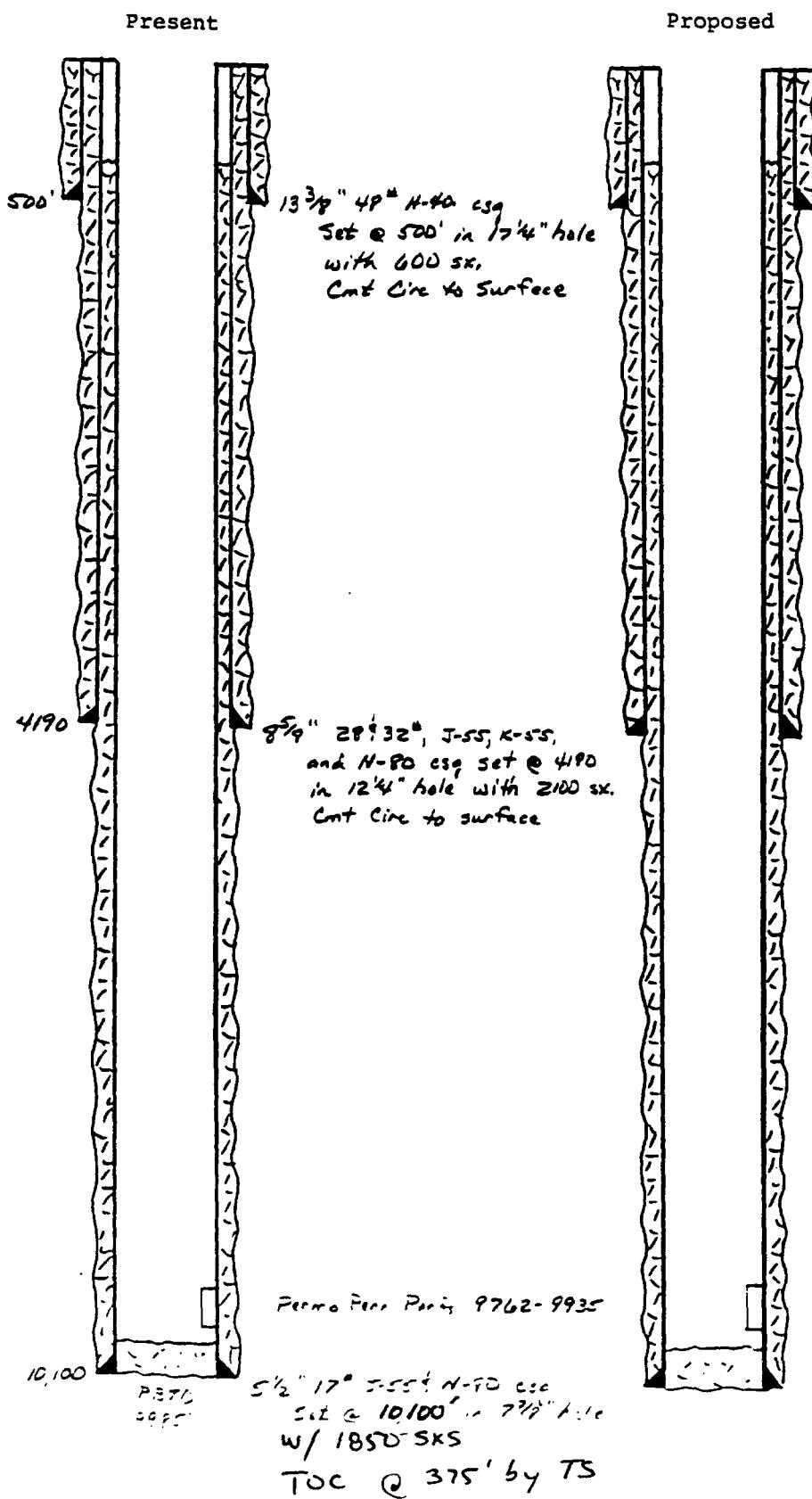


**Texaco Exploration and Production Inc.**  
Saunders Permo Upper Penn Pilot Flood  
N.M. State 'AN' and 'AT' Leases  
Sec. 15, 22 - T14S - R33E  
Lea County, New Mexico

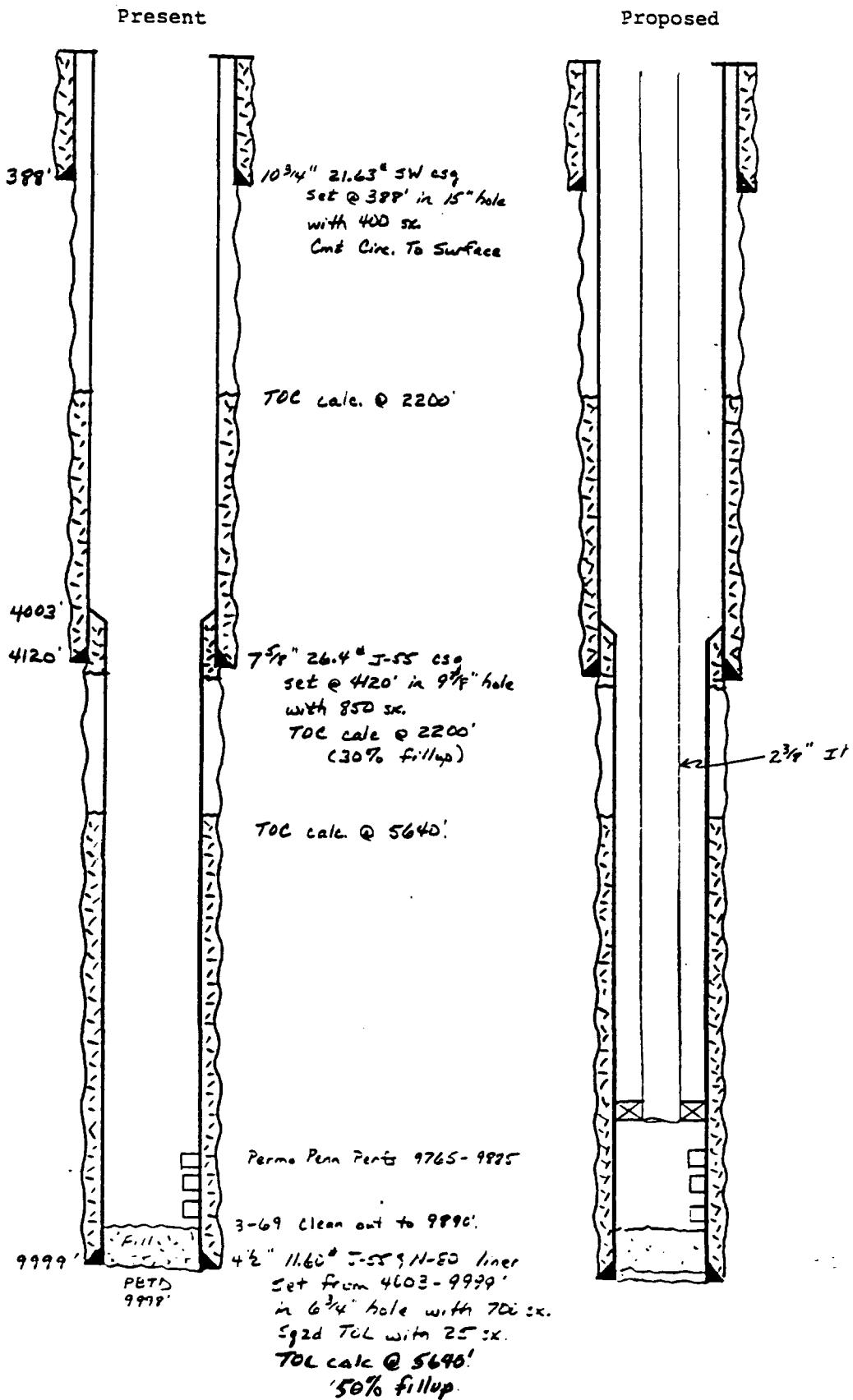
1) New Mexico 'AT' State well No. 4  
1980' FSL and 660' FEL  
sec. 15 - T14S - R33E  
Injection interval 9521 - 9974



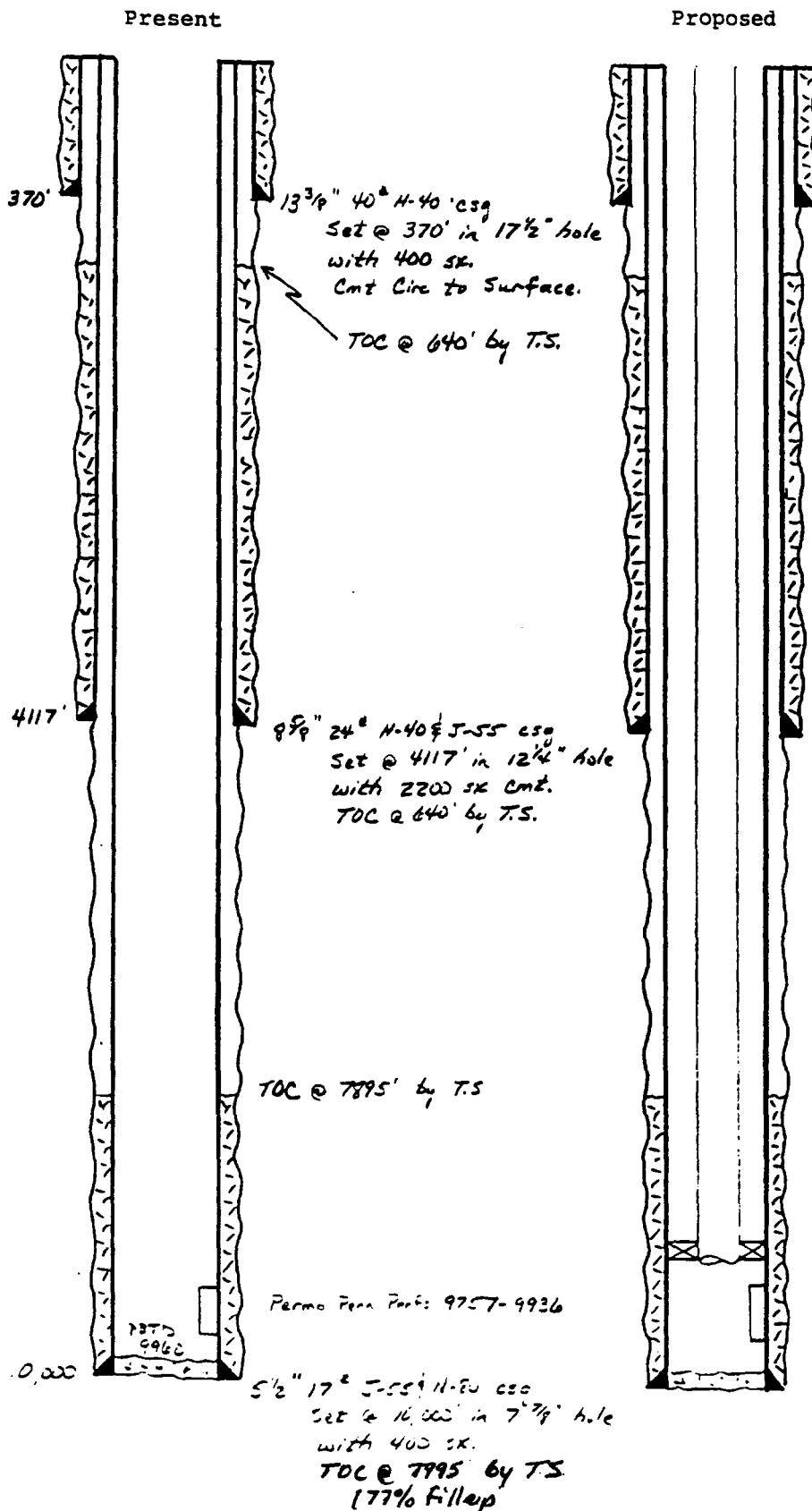
2) New Mexico 'AT' State well No. 10  
1650' FSL and 2305' FWL  
sec. 15 - T14S - R33E  
Injection interval 9762 - 9935



3) New Mexico 'AN' State well No. 9  
660' FNL and 1980' FWL  
sec. 22 - T14S - R33E  
Injection interval 9765 - 9885



4) New Mexico 'AN' State well No. 7  
660' FNL and 660' FEL  
sec. 22 - T14S - R33E  
Injection interval 9757 - 9936

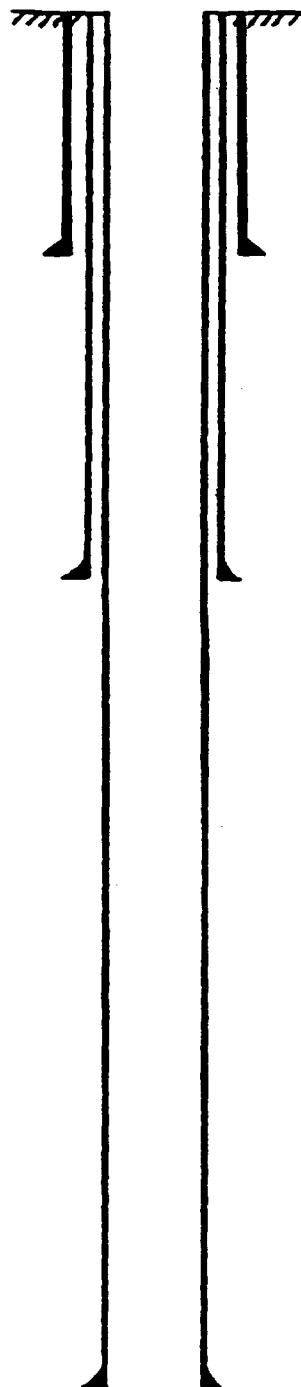


OPERATOR	Texaco Exploration and Production Inc	DATE	9-11-91
LEASE	New Mexico BG State NCT-1	WELL NO.	2 LOCATION drift # 14-14-33

660' FSL + 660' FWL

Status: Active Producer

Sanders Perm - Penn



$13\frac{3}{8}$ " CSG set @ 344' w/ 425 sxs circ  
 $17\frac{1}{2}$ " hole

$8\frac{7}{8}$ " casing set at 4120' with 2400 sx of \_\_\_\_\_ cement  
Hole size  $12\frac{1}{4}$ " Cmt circulated

perf 9753 - 9794

perf 9857 - 9920

$5\frac{1}{2}$ " casing set at 9999' with 400 sx of \_\_\_\_\_ cemen

Total Depth 10,000' Hole size  $7\frac{7}{8}$ " TOC by temps

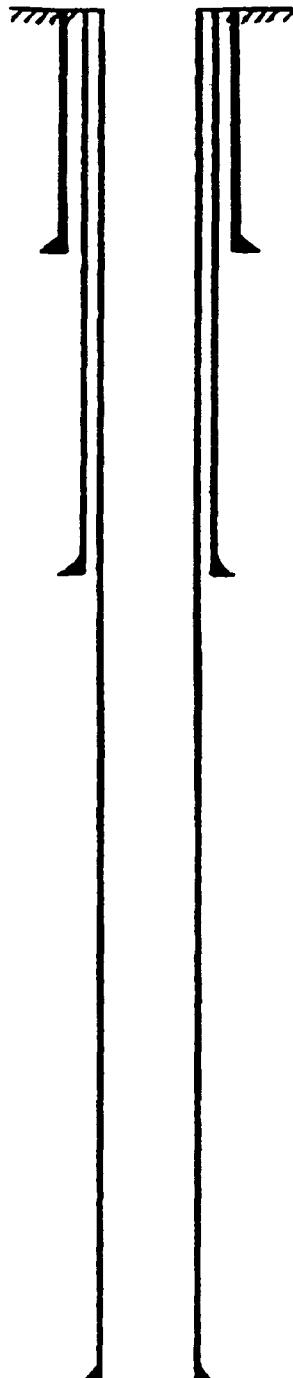
Survey 8290'

OPERATOR	Toroco Exploration and Production Inc	DATE	9-11-91
LEASE	New Mexico OG State NCT-1	WELL NO.	3

1980' FSL and 1651' FWL

STATUS: Active produced

Sauvage Penn-Penn



$11\frac{3}{4}$ " CSG set @ 365' w/ 350 sxs circ  
15" hole.

$8\frac{5}{8}$ " casing set at 4150' with 900 sx of \_\_\_\_\_ cement  
Hole size  $10\frac{1}{8}$ " TOC @ 1536' using 50% efficiency

pyf 9754 - 9947

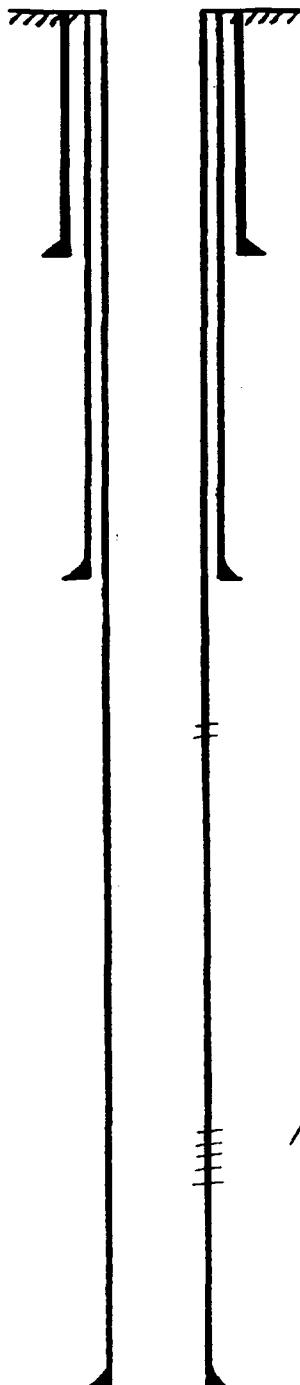
$4\frac{1}{2}$ " casing set at 10045' with 1100 sx of \_\_\_\_\_ cement  
Total Depth 10045' Hole size  $7\frac{1}{8}$ " TOC @ 7099'  
using 50% efficiency

OPERATOR	Texaco Exploration + Production Inc	DATE	9-11-91
LEASE	New Mexico 86 State NCT-1	WELL NO.	4

1980' FNL and 660' FWL

STATUS: Active Producer

Saunders Perm - Penn



$11\frac{3}{4}$ " CSG set @ 387' w/ 225 SX5 circ

$8\frac{7}{8}$ " casing set at 4150' with 900 sx of \_\_\_\_\_ cement  
Hole size  $10\frac{5}{8}$ " TOC @ 1536' using 50% efficiency

CSG leak @ 4929-61 perf 4950 w/ 2 SHOTS  
5QZ w/ 100 sx

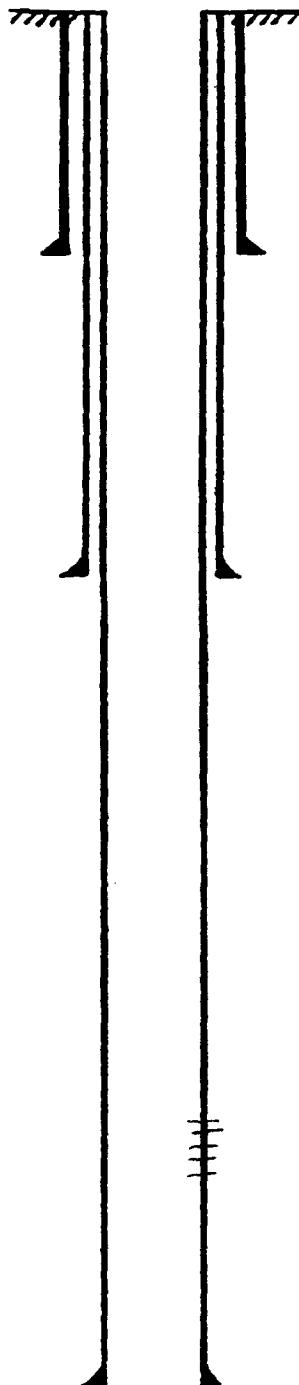
perf 9771 - 9954

$4\frac{1}{2}$ " casing set at 1008' with 1100 sx of \_\_\_\_\_ cemer  
Total Depth 10,015' Hole size  $7\frac{7}{8}$ " TOC @ 7069'  
using 50% efficien

OPERATOR	TEXACO EXPLORATION AND PRODUCING INC.	DATE	9-11-91
LEASE	NM- STATE AT LEASE	WELL NO	LOCATION 3 UNIT P 15-14-33

660' FSL + 660' FEL

Status: Active Producer  
Saunders Pennzoil-Penn



$13\frac{3}{8}$ " CSG set @ 348' cmt w/ 475 sxs circ  
 $17\frac{1}{2}$ " hole

$8\frac{5}{8}$ " casing set at 4114' with 2400 sx of \_\_\_\_\_ cement  
Hole size 11" cement circ

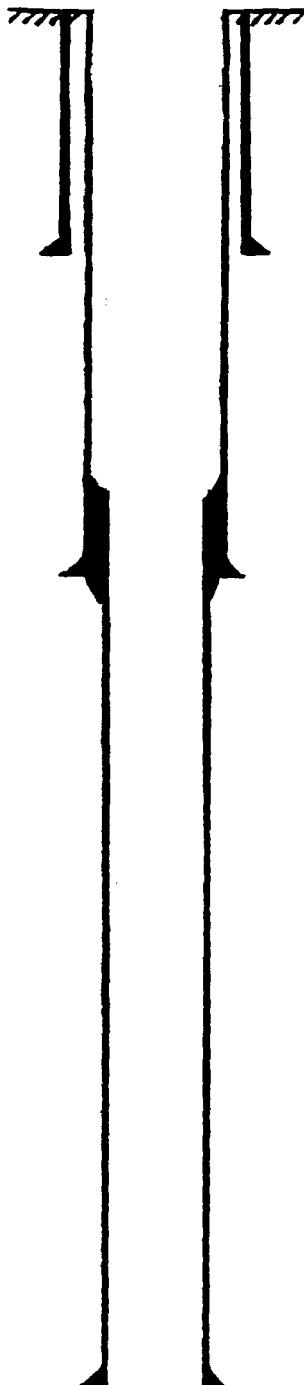
perf 9748 - 9910 Selectively A/ 580 gal 15%  
perf 9948 - 9958

5.5" casing set at 9999' with 350 sx of \_\_\_\_\_ cemer  
Total Depth 9999' Hole size 7\frac{1}{8}" TOC @ 8767'  
using 50% efficien

OPERATOR	TEXACO EXPLORATION AND PRODUCING INC.	DATE	9-11-91
LEASE	AM- STATE AT LEASE	WELL NO	6      LOCATION Unit F      15-14-33

1980 FNL mo 1980' FNL

STATUS: Active Producer Saenger  
Perm - Penn



10 3/4" CSG set @ 366' w/ 400 sxs circ  
15" hole

7 5/8" casing set at 4140' with 700 sx of \_\_\_\_\_ cement  
Hole size 10 5/8" TOC @ 2837' using 50% efficiency

perf 9359 - 9387  
9501 - 9684 } these perfs to be sqrs  
9495 - 9601 }

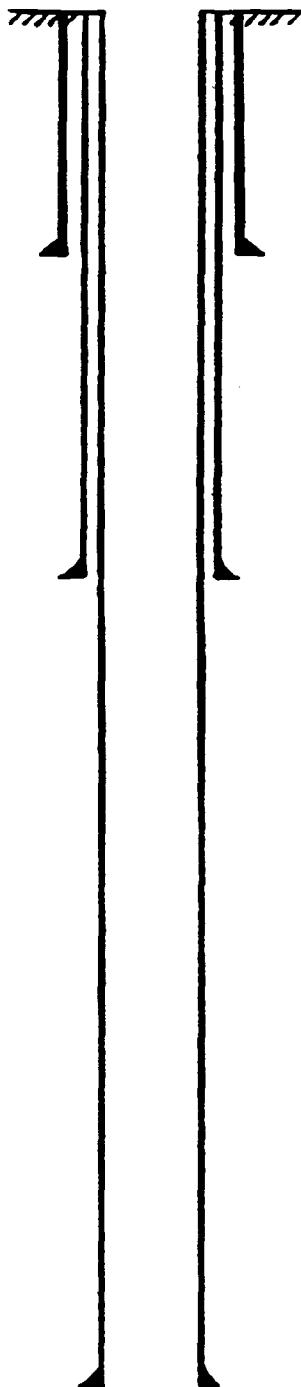
perf 9866 - 9874 1/100 LSTNE  
9773 - 9930  
9769 - 9944

4 1/2" liner Liner top @ 3969  
casing set at 10000' with 700 sx of \_\_\_\_\_ cemnt

Total Depth 10000' Hole size 6 3/4" Circ cmt  
1 AM 6029' Liner

OPERATOR	TEXACO EXPLORATION AND PRODUCING INC.	DATE	9-11-91
LEASE	NM- STATE AT LEASE	WELL NO	LOCATION 8 UNIT L 15-14-33

1980' FSL and 660' FWL  
 STATUS: Active Producer  
 SANDSIS Permo-Turon



$13\frac{3}{8}$ " CSG set @ 480' w/ 700 sxs cement Circ.  
 $17\frac{1}{2}$ " hole

$8\frac{5}{8}$ " casing set at 4190' with 1500 sx of \_\_\_\_\_ cement  
 Hole size  $12\frac{1}{4}$ " TD by temp survey 1250'

9813 - 9873  
 perf 9973 - 9983 }  $\frac{1}{2}$ /sec gal 15% NE acid  
 9910 - 9944

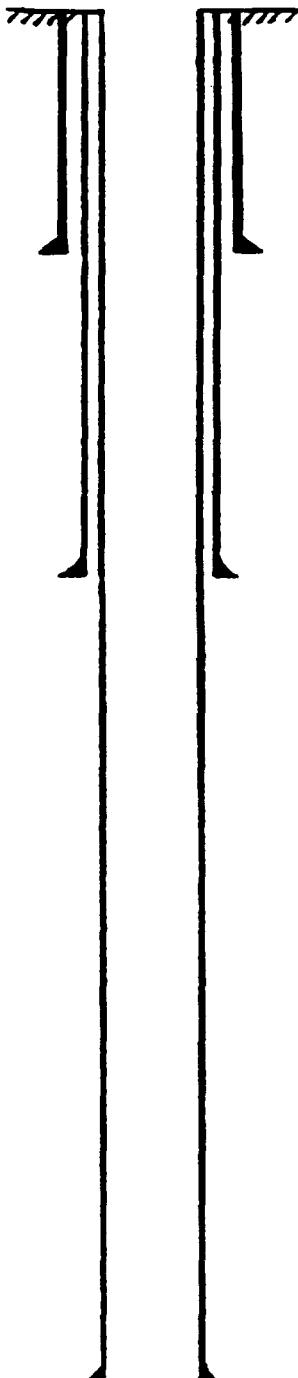
OV tool @  $6997$  1<sup>st</sup> stage w/ 900 sxs  
 2<sup>nd</sup> stage w/ 750 sxs Circ.  
 $5\frac{1}{2}$ " casing set at 10,100' with \_\_\_\_\_ sx of \_\_\_\_\_ cemer  
 Total Depth 10,100' Hole size  $7\frac{1}{8}$ "

OPERATOR	TEXACO EXPLORATION AND PRODUCING INC.	DATE	9-11-91
LEASE	NM- STATE AT LEASE	WELL NO	LOCATION UNIT M 15-14-33

860' FSL and 660 FWL

Status: Active Producer

Sanders Permo-Penn



$13\frac{3}{8}$ " CSG set @ 470' Cnts w/ 700 sxs circ  
 $17\frac{1}{2}$ " hole

$8\frac{5}{8}$ " casing set at 4185' with 1600 sx of \_\_\_\_\_ cement  
Hole size 11" Cnt circulated

pert 9806 - 10015 A/9500 gal 15% NE acid

OV tool @ 7015' 1<sup>st</sup> stage cnt w/ 1100 sxs  
2<sup>nd</sup> stage cnt w/ 900 sxs circ

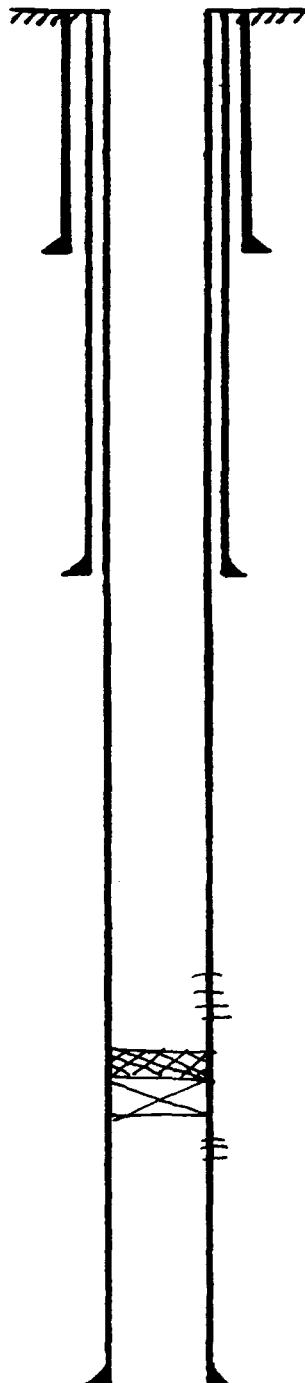
$5\frac{1}{2}$ " casing set at 10,100' with \_\_\_\_\_ sx of \_\_\_\_\_ cement  
Total Depth 10,100' Hole size 7\frac{1}{2}"

OPERATOR	TEXACO EXPLORATION AND PRODUCING INC.	DATE	9-11-91
LEASE	NM- STATE AT LEASE	WELL NO.	12 UNIT 6 15-14-33

1980' FNLL and 1650' FEL

STATUS: Active Producer

Smokers Permo-Aren



13 1/2" CSG set @ 525' w/ 650 sxs cut Circ

8 1/2" casing set at 4200' with 2000 sx of \_\_\_\_\_ cement  
Hole size \_\_\_\_\_ TOC by temp survey @ 750'

9768 - 9833',  
9883 - 9898,  
9994 - 9999

perf  
spot CISP @ 9950' + 10' cut.

AV tool @ 7000' 1st stage cut w/ 950 sxs  
2nd stage cut w/ 1200 sxs Circ

5 1/2" casing set at 10019' with \_\_\_\_\_ sx of \_\_\_\_\_ cemer

Total Depth 10,019' Hole size 7 1/8"

OPERATOR	TEXACO EXPLORATION AND PRODUCING INC.	DATE	9-11-91
LEASE	NM- STATE AT LEASE	WELL NO.	LOCATION

13

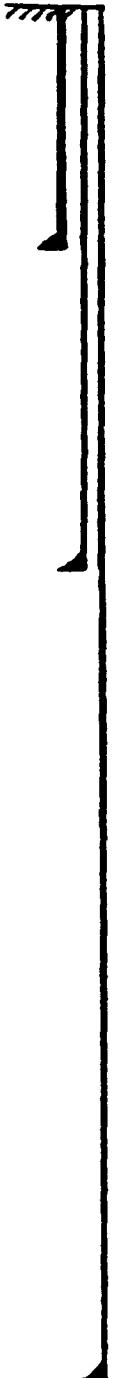
UNIT E

15-14-33

1980' FWL AND 600' FWL

STATUS: ACTIVE PRODUCER

SAUNDERS PENN-PENN



$13\frac{3}{8}$ " Casing set @ 525 w/ 600 sxs cmt Circ  
 $17\frac{1}{2}$ " hole

$9\frac{7}{8}$ " casing set at 4166' with 2200 sx of \_\_\_\_\_ cement  
 Hole size  $12\frac{1}{4}$ " Cmt Circ

perf 9790 - 9979' A/ 8000 gal 15%

SV tool @ 6994' 1st stage cmts w/ 1000 sxs  
 2nd stage cmts w/ 1200 sxs Circ

$5\frac{1}{2}$ " casing set at 10100' with \_\_\_\_\_ sx of \_\_\_\_\_ cemen  
 Total Depth 10100' Hole size  $7\frac{1}{8}$ "

OPERATOR	TEXACO EXPLORATION AND PRODUCING INC.	DATE	9-11-91
LEASE	NM- STATE AT LEASE	WELL NO.	LOCATION UNIT D 15-14-33

660' FSL MD 1980' FEL

STATUS: Active Producer

Sandias Permo - Penn



$13\frac{3}{8}$  CSG set @ 525' cmt w/ 660 sxs circ  
 $17\frac{1}{2}$  hole

$8\frac{7}{8}$  " casing set at 525' with 4200 2200  
 ~~$8\frac{7}{8}$~~  " with 600 sx of \_\_\_\_\_ cement  
Hole size  $12\frac{1}{4}$ " cmt circ

perf 9786-10002 A/12000 gal 15% NE acid

SV tool @ 700' 1st stage cmts w/ 950 sxs  
2nd stage cmts w/ 1200 sxs circ

$5\frac{1}{2}$  " casing set at  $10\frac{1}{2}$ ' with \_\_\_\_\_ sx of \_\_\_\_\_ cement  
Total Depth  $10\frac{1}{2}$ ' Hole size  $7\frac{7}{8}$ "

OPERATOR	MAIZANO O.I Corp	DATE	9-11-91
LEASE	LEA VF STATE	WELL NO.	LOCATION UNIT P 16-14-33

330' FSL and 330' FOL

STATUS: Active Producer  
Savanna's Perm - Penn



11 3/4" CSG set @ 412' w/ 400 sxs cmt. Circ  
14 3/4" hole

8 1/2" casing set at 4157' with 1500 sx of \_\_\_\_\_ cement

Hole size 11" Cmt circuted

Sidetrack Hole starts @ 6200'

CSG collapse @ 8675'

Set SV tool @ 8408 pump 100 sxs  
Class C. NO SQZ

Cut and pull 5 1/2" CSG @ 6250 pump 160  
sxs @ stub

6250

8408

old perf  
9935 -  
9984

Sidetrack Td 10120'

5 1/2" CSG set @ 10120' w/ DV tool @ 7515'

1st stage cmt w/ 670 sxs

2nd stage cmt w/ 700 sxs - cmt circ

Perf 9847 - 9984 1/2 250 gtr/

5 1/2" casing set at 10074' with 400 sx of \_\_\_\_\_ cement

Total Depth 10100' Hole size 7 7/8" Toc by survey  
@ 8670'

OPERATOR	TEXACO EXPLORATION AND PRODUCING INC.	DATE	9-11-91
LEASE	STATE AN LEASE	WELL NO.	LOCATION MI + 4 22-14-33

1980' FNL and 660' FEL

Status: Active producer

Spindles Permo-Penn

10 3/4" CSG set @ 369' w/ ~~400~~ <sup>475</sup> SXS cut circ.  
hole size 15"

7 5/8" casing set at 4122' with 1700 sx of \_\_\_\_\_ cement  
Hole size 9 1/8" TOC Circ

5 9/16" CSG leak @ 4912 - 5380 w/ 200 SXS

ref 9776 - 9794  
ref 9870 - 9920  
ref 9967 - 9970

Top of Liner @ 3971' Cut bottom of liner w/ 250 SXS  
cut top of liner w/ 100 SXS

4 1/2" <sup>Liner</sup> casing set at 10000' with \_\_\_\_\_ sx of \_\_\_\_\_ cemen

Total Depth 10000' Hole size 6 3/4"

OPERATOR	TEXACO EXPLORATION AND PRODUCING INC.	DATE	9-11-91
LEASE	STATE AN LEASE	WELL NO.	LOCATION

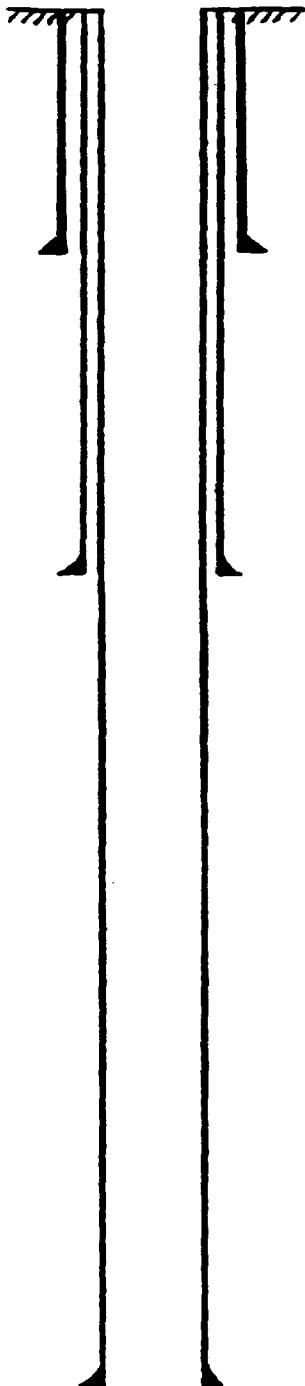
10

Unit E 22-14-33

1980' FNL and 660' FWL

Status: Active producer

Sanders Penn Penn



11 3/4" CSG set @ 355' w/ 300 sxs circ  
15" hole

8 1/2" casing set at 4120' with 500 sx of        cement  
Hole size 10 1/2" TOC @ 2668' 50% efficiency

perf 9790 - 9798

perf 9898 - 9913

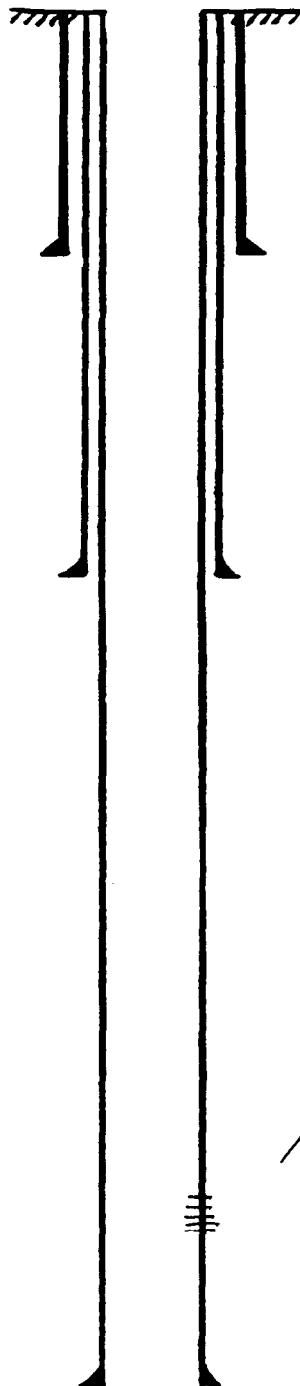
perf 9902 - 9967

4 1/2" casing set at 10 060' with 1100 sx of        cemen  
Total Depth 10 060' Hole size 7 1/8" TOC @ 7 1/4' usin  
50% efficiency

OPERATOR	TEXACO EXPLORATION AND PRODUCING INC.	DATE	9-11-91
LEASE	STATE AN LEASE	WELL NO	LOCATION UNIT D 22-14-33

660' FNL and 660' FWL

Status: Active Producer  
Saunders Perm - Penn



$13\frac{3}{8}$ " CSG set @ 500' cants w/ 600 sxs circ  
 $17\frac{1}{2}$ " hole

$8\frac{5}{8}$ " casing set at 4190' with 2800 sx of \_\_\_\_\_ cement  
Hole size  $12\frac{1}{4}$ " Cmt Circ

perf 9792-9971

DV tool @ 7052' 1<sup>st</sup> stage cants w/ 900 sxs  
2<sup>nd</sup> stage cants w/ 1320 sxs circ

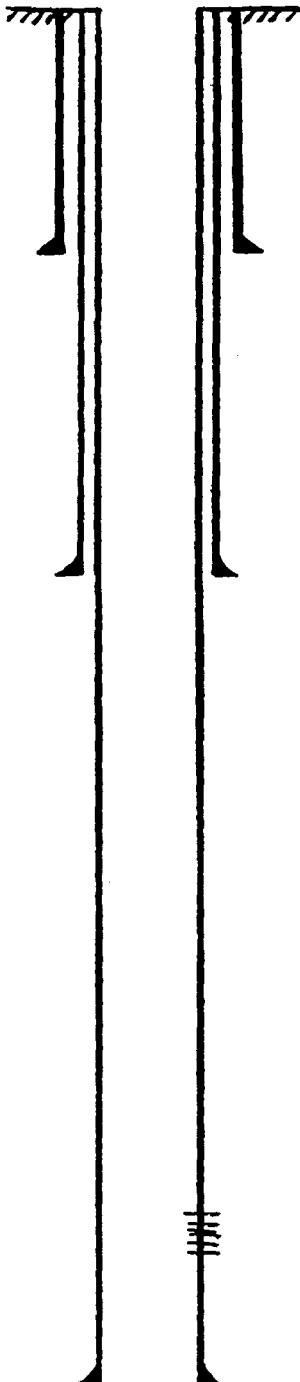
$5\frac{1}{2}$ " casing set at 10,100' with \_\_\_\_\_ sx of \_\_\_\_\_ cemer.

Total Depth 10,100' Hole size  $7\frac{1}{8}$ "

OPERATOR	TEXACO EXPLORATION AND PRODUCING INC.	DATE	9-11-91
LEASE	STATE AN LEASE	WELL NO.	LOCATION unit 6 22-14-33

1980' FNL and 2303 FEL

Status: Active producer  
Saunders Perm - Penn



$13\frac{3}{8}$ " CSG set @ 525' cmts w/ 650 sxs circ  
 $17\frac{1}{2}$ " hole

$8\frac{5}{8}$ " casing set at 4200' with 2000 sx of \_\_\_\_\_ cement  
Hole size  $12\frac{1}{4}$ " Cmt circ

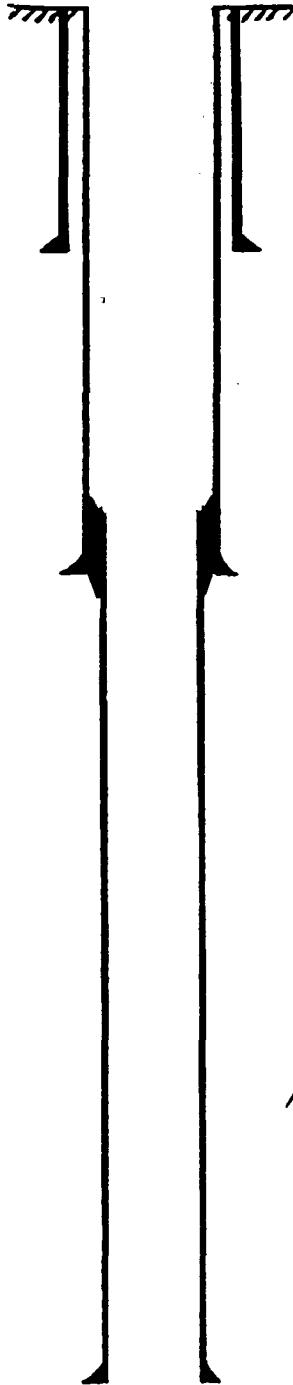
perf 9791 - 9944

Dr tool @ 6975      1st stage cmts w/ 950 sxs  
                        2nd stage cmts w/ 1200 sxs circ

$5\frac{1}{2}$ " casing set at 10009' with \_\_\_\_\_ sx of \_\_\_\_\_ cement  
Total Depth 10,009' Hole size  $7\frac{7}{8}$ "

OPERATOR	Charles B. Gillespie, Jr.	DATE	9-11-91
LEASE	STATE J	WELL NO.	UNIT E 23-14-33

660' FWC and 1980' FNC  
STATUS: Active Producer  
Saunders Perm - Penn



$13\frac{3}{8}$ " CSG @  $\frac{295}{306}$ ' cmtos w/ 250 sxs circ  
 $17\frac{1}{2}$ " hole

$8\frac{5}{8}$ " casing set at 4169' with 1500 sx of \_\_\_\_\_ cement  
Hole size 11" TOC by survey @ 2036'

ref 9765 - 9791  
9808 - 9883  
9914 - 9929

Top of Liner @ 4046' sqz top of liner w/ 200 sxs

$5\frac{1}{2}$ " <sup>Liner</sup> ~~casing~~ set at 9949' with 600 sx of \_\_\_\_\_ cemen

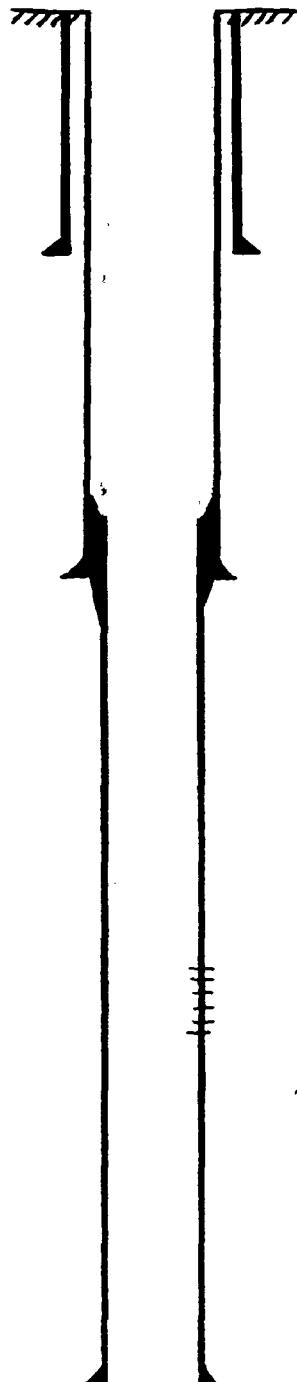
Total Depth 9950' Hole size 7\frac{3}{8}"

OPERATOR	Charles B. Gillespie Jr	DATE	9-11-91
LEASE STATE	J	WELL NO.	5 unit D 23-14-33

660' FNL + 660' FNL

status: Active producer

Saunders Perm - Penn



$13\frac{3}{8}$ " CSG set @ 295' w/ 250 sxs circ  
17 $\frac{1}{2}$ " hole

$8\frac{7}{8}$ " casing set at 4154' with 1500 sx of \_\_\_\_\_ cement  
Hole size 11" TOC 544' using 50% efficiency

ref 9760 - 9804  
ref 9857 - 9870

Top of liner @ 4011

$5\frac{1}{2}$ " liner  
 $5\frac{1}{2}$ " casing set at 9985' with 600 sx of \_\_\_\_\_ cement

Total Depth \_\_\_\_\_' Hole size  $7\frac{7}{8}$ "

TOC 7788' by TS

FORM C - 108 cont.

Part III. A

1.) New Mexico 'AT' State No. 4  
1980' FSL and 660' FEL  
Sec. 15 - T14S - R33E  
Unit I  
Lea County, New Mexico

New Mexico 'AT' State No. 10  
1650' FSL and 2305' FWL  
Sec. 15 - T14S - R33E  
Unit K  
Lea County, New Mexico

New Mexico 'AN' State No. 9  
660' FNL and 1980' FWL  
Sec. 22 - T14S - R33E  
Unit C  
Lea County, New Mexico

New Mexico 'AN' State No. 7  
660' FNL and 660' FEL  
Sec. 22 - T14S - R33E  
Unit A  
Lea County, New Mexico

- 2.) See attached wellbore schematic's.
- 3.) Propose to run 2 3/8" plastic coated tubing, and set at approximately 100' above top perf.
- 4.) Propose to run IPC Model R Packer as a seal, and load the backside with packer fluid.

Part III. B

- 1.) The injection interval is the Permo Upper Penn, and the wells are located in the Saunders Permo Upper Penn Field.
- 2.) The injection interval will be cased at approximately 9748' - 9974'.
- 3.) These wells were originally drilled as producing wells.
- 4.) See wellbore schematic
- 5.) There is no deeper oil horizon or shallower oil producing zone in the immediate vicinity.

Part VII.

- 1.) The proposed daily injection will be 2000 bbls. per day.  
The maximum will be 2000 bbls. per day.
- 2.) The system will be closed.
- 3.) The average injection pressure will be 0(Vacuum). The maximum will not exceed the limits set forth by the OCD.
- 4.) The source of the injection water will be from fresh water wells drilled on or near each injection well.
- 5.) The Saunders Permo Upper Penn is productive within one mile of the injection wells.

Part VIII

The injection interval is the Permo Upper Penn in the Saunders Permo Upper Penn Field, and is composed of alternating beds of red shale and porous limestone. The top of the Permo Penn section is the top of the Wolfcamp at approximately 9119'. This entire area is overlain by the Quaternary Alluvium and caliche. The fresh water in the area comes from the Ogallala aquifer. There are no fresh water zones below the Saunders Permo Upper Penn section.

Part IX

The disposal interval will be treated with a breakdown acid job.

Part X

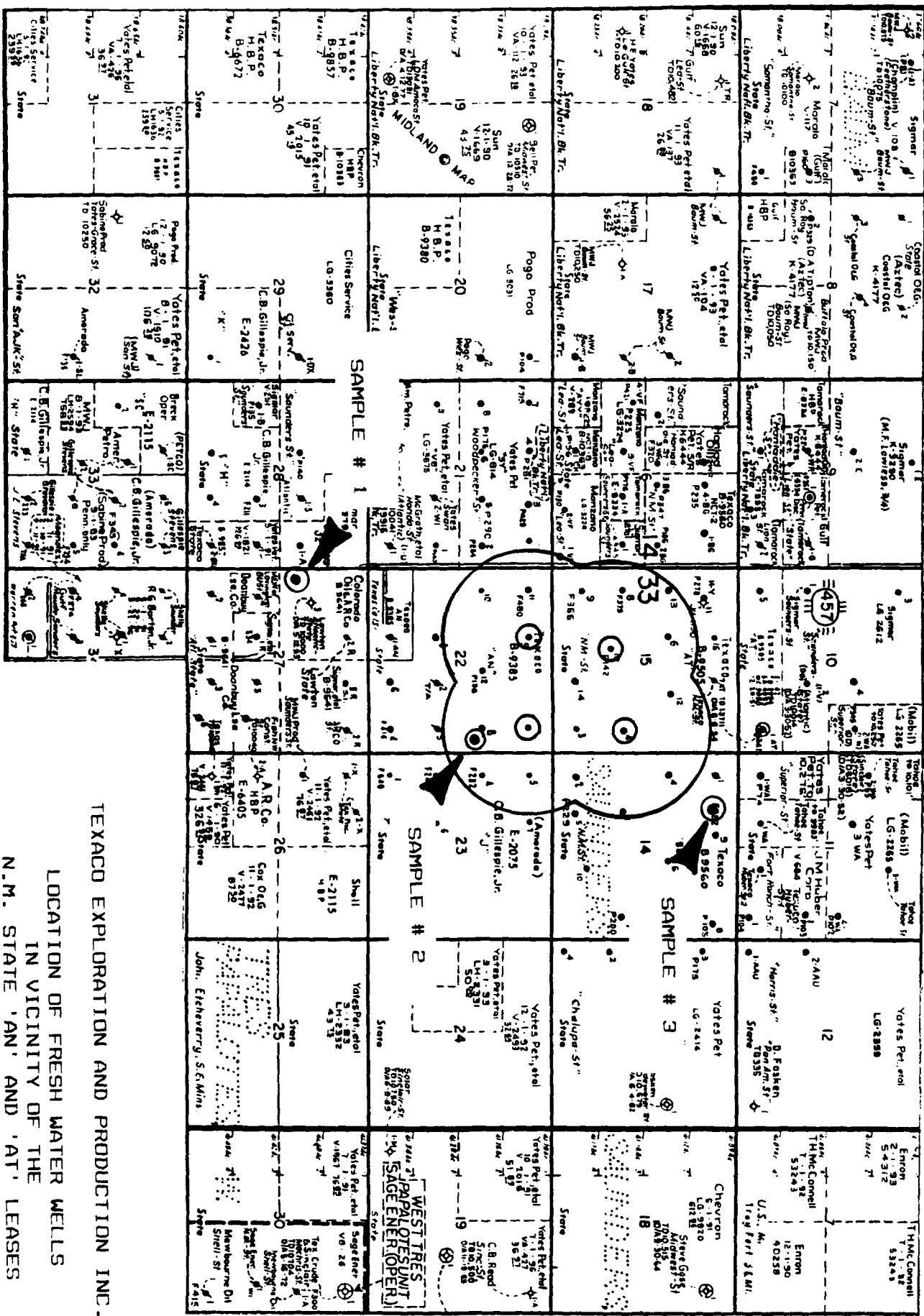
The logs have been submitted by Texaco.

Part XI

The water analysis for fresh water wells within one mile of the proposed injection wells are attached.

Part XII

We have examined all available geologic and engineering data, and find no evidence of open faults or any other hydrologic connection between the disposal interval and any underground source of drinking water.



TEXACO EXPLORATION AND PRODUCTION INC.

**LOCATION OF FRESH WATER WELLS  
IN VICINITY OF THE  
N.M. STATE 'AN' AND 'AT' LEASES**

## HALLIBURTON DIVISION LABORATORY

HALLIBURTON SERVICES

MIDLAND DIVISION

HOBBS, NEW MEXICO 88240

## LABORATORY REPORT

No. 379

To Texaco Exploration and Production Inc.

Date 09-17-91

Box 728

Hobbs, New Mexico 88240

This report is the property of Halliburton Company and neither it nor any part thereof nor a copy thereof is to be published or disclosed without first securing the express written approval of laboratory management; it may however, be used in the course of regular business operations by any person or concern and employees thereof receiving such report from Halliburton Company.

Submitted by Mike Pierce

Date Rec. 09-17-91

Well No. See Below Depth Formation

County Lea Field Saunders Source see below

Sample #1 Located Southwest of Atlantic #3  
 Water from windmill to run Cl. count  
 Cl. ---- 80 mpl

Sample #2 Located South East of N.M. AN #8  
 Water from windmill to run Cl count  
 Cl. --- 105 mpl

Sample #3 Located at the Old Hilborn Ranch House  
 Water from water well (pump) to run Cl.  
 Cl. --- 100 mpl

John Eubank

Respectfully submitted,

Analyst:

HALLIBURTON COMPANY

cc:

By

CHEMIST

## NOTICE

THIS REPORT IS LIMITED TO THE DESCRIBED SAMPLE TESTED. ANY USER OF THIS REPORT AGREES THAT HALLIBURTON SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE, WHETHER IT BE TO ACT OR OMISSION, RESULTING FROM SUCH REPORT OR ITS USE.

P 567 657 954

P 567 657 954

P 567 657 957

**RECEIPT FOR CERTIFIED MAIL**  
NO INSURANCE COVERAGE PROVIDED  
NOT FOR INTERNATIONAL MAIL  
(See Reverse)

Street and No.	1000
City	Rockford
State and Zip Code	IL 61050
Postage	1.44
Certified Fee	1.00
Special Delivery Fee	0.00
Restricted Delivery Fee	0.00
Return Receipt showing to whom and Date Delivered	16 JUN 1985
Return Receipt showing Date and Address of Delivery	16 JUN 1985
TOTAL Postage and Fees	2.44
Postmark or Date	16 JUN 1985

PS Form 3800, June 1985

Street and No.	1000
City	Rockford
State and Zip Code	IL 61050
Postage	1.44
Certified Fee	1.00
Special Delivery Fee	0.00
Restricted Delivery Fee	0.00
Return Receipt showing to whom and Date Delivered	16 JUN 1985
Return Receipt showing Date and Address of Delivery	16 JUN 1985
TOTAL Postage and Fees	2.44
Postmark or Date	16 JUN 1985

PS Form 3800, June 1985

**RECEIPT FOR CERTIFIED MAIL**  
NO INSURANCE COVERAGE PROVIDED  
NOT FOR INTERNATIONAL MAIL  
(See Reverse)

Street and No.	1000
City	Rockford
State and Zip Code	IL 61050
Postage	1.44
Certified Fee	1.00
Special Delivery Fee	0.00
Restricted Delivery Fee	0.00
Return Receipt showing to whom and Date Delivered	16 JUN 1985
Return Receipt showing Date and Address of Delivery	16 JUN 1985
TOTAL Postage and Fees	2.44
Postmark or Date	16 JUN 1985

PS Form 3800, June 1985

P 567 657 956

**RECEIPT FOR CERTIFIED MAIL**  
NO INSURANCE COVERAGE PROVIDED  
NOT FOR INTERNATIONAL MAIL  
(See Reverse)

Street and No.	BU X 571
P.O. State and Zip Code	AC 54511 NM 88202
Postage	1.44
Certified Fee	1.00
Special Delivery Fee	0.00
Restricted Delivery Fee	0.00
Return Receipt showing to whom and Date Delivered	16 JUN 1985
Return Receipt showing Date and Address of Delivery	16 JUN 1985
TOTAL Postage and Fees	2.44
Postmark or Date	16 JUN 1985

P 567 657 955

**RECEIPT FOR CERTIFIED MAIL**  
NO INSURANCE COVERAGE PROVIDED  
NOT FOR INTERNATIONAL MAIL  
(See Reverse)

Street and No.	BU X 571
P.O. State and Zip Code	AC 54511 NM 88202
Postage	1.44
Certified Fee	1.00
Special Delivery Fee	0.00
Restricted Delivery Fee	0.00
Return Receipt showing to whom and Date Delivered	16 JUN 1985
Return Receipt showing Date and Address of Delivery	16 JUN 1985
TOTAL Postage and Fees	2.44
Postmark or Date	16 JUN 1985

ILLEGIBLE