KELLAHIN and KELLAHIN
*Attorneys at Law*
500 Don Gaspar Avenue
Post Office Box 1769
Santa Fe, New Mexico 87501

Jason Kellahin
W. Thomas Kellahin
Karen Aubrey

Telephone 982-4285
Area Code 505

August 14, 1981

RECEIVED
AUG 19 1981
O. C. D.
ARTESIA, OFFICE

Mr. Joe Ramey
Oil Conservation Division
P.O. Box 2088
Santa Fe, New Mexico 87501

RE: Salt Water Disposal
Lovington State 9-2 Well
Section 9
T17S, R37E

Dear Joe:

Please set the enclosed original application and one copy for the examiner hearing on September 9, 1981.

Very truly yours,

W. Thomas Kellahin

WTK:jm
Enclosures

cc: Mr. Alan Ralston
OCD - Artesia
Certified Mail to All
Interested Parties

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501

FORM C-108
Revised 7-1-81

APPLICATION FOR AUTHORIZATION TO INJECT

RECEIVED
AUG 19 1981
O. C. D.
ARTESIA, OFFICE

I. Purpose: /7 Secondary Recovery /7 Pressure Maintenance /X7 Disposal /7 Storage
Application qualifies for administrative approval? /7 yes /7 no

II. Operator: APOLLO OIL COMPANY

Address: P. O. Box 1737, Hobbs, New Mexico, 88240

Contact party: Alan W. Ralston Phone: 505-397-3554

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? /7 yes /X7 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: W. Thomas Kellahin Title Attorney for applicant

Signature: W. Thomas Kellahin Date: August 3, 1981

• 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. _____

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate Division district office.

Exhibit A - Order No. R-6702

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.

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 87501 within 15 days.

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

---

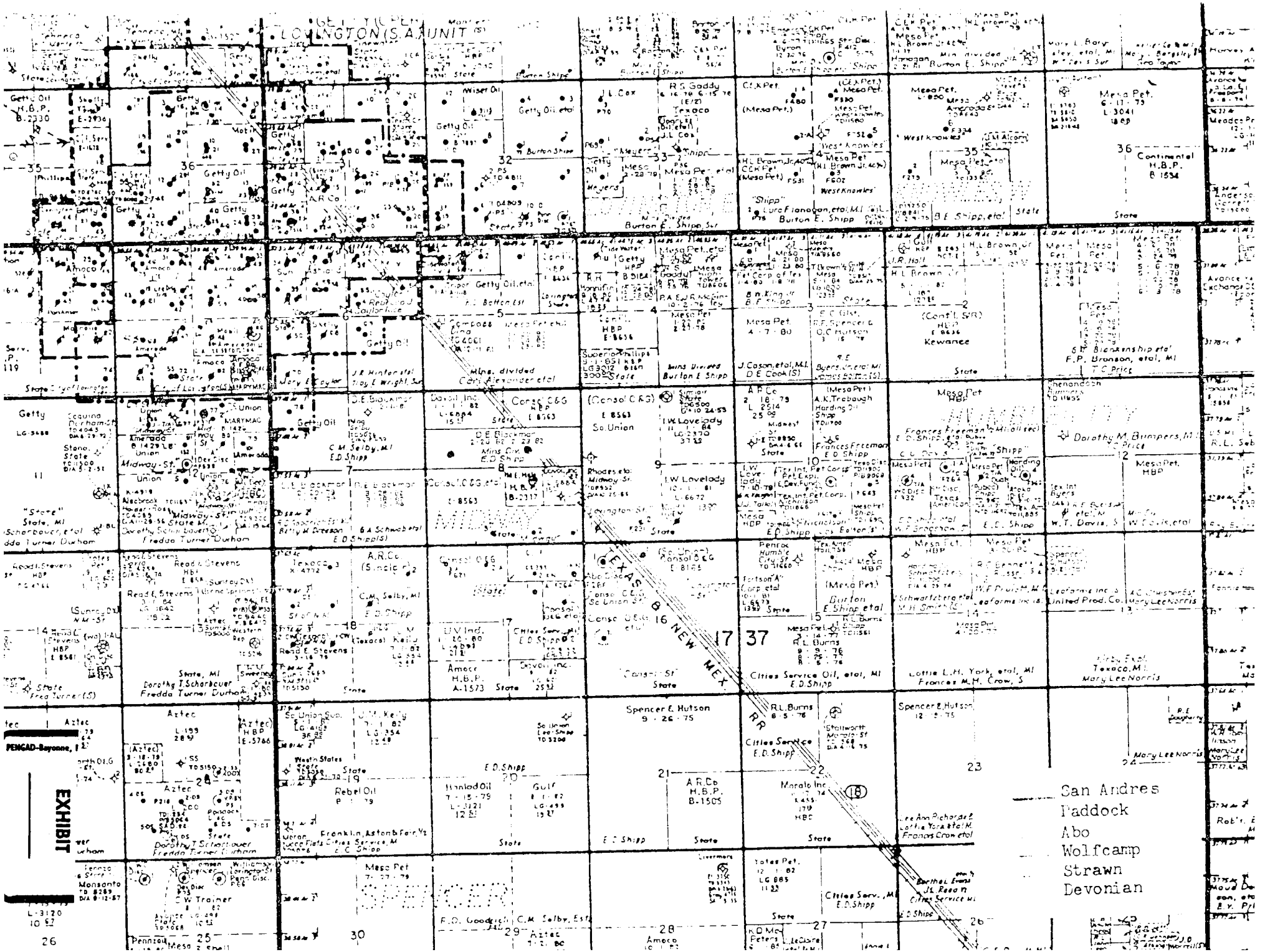
NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

APOLLO OIL COMPANY

Lovington State 9-2 Well

Salt Water Disposal

INDEX


LOVINGTON (S.A.) UNIT
EXHIBIT
San Andres
Paddock
Abo
Wolfcamp
Strawn
Devonian

Tabular Summary
Wells Within One-Half Mile of
Apollo Oil Co. Lovington "9" No. 2

| | | | |
|---|---|---|---|
| Consolidated Oil & Gas, Inc. | Midway State #1 | 330' FSL & 330' FEL, Sec. 8, T17S, R37E | Total Depth 8939, Perfs 8688-8856 |
| | | Csg: 13" @ 304 w/300 sx. | Top cmt: surface |
| | | 8 5/8" @ 3973 w/350 sx. | Top cmt: 3052 est |
| | | 5 1/2" liner 3836-8936 w/425 sx. | Top cmt: 6484 est |
| Gulf Oil Corp. | Lea State EM #1 | 660' FSL & 1980' FEL, Sec. 9, T17S, R37E | Total Depth 9035, Perfs 8904-8991, P&A 7/23/71 |
| | | Csg: 13 3/8" @ 350 w/286 sx. | Top cmt: surface |
| | | 8 5/8" @ 4324 w/450 sx. | Top cmt: 2556 est |
| | | 5 1/2" @ 9034 w/260 sx. | Top cmt: 6895 TS Cut & pulled from 5200 |
| Supron Energy Corp. | Lovington 9 State #1 | 500' FSL & 500' FWL, Sec. 9, T17S, R37E | Total Depth 9217, Perfs 8813-8904, P&A 12/19/76 |
| | | Csg: 13 3/8" @ 303 w/250 sx. | Top cmt: surface |
| | | 8 5/8" @ 3548 w/400 sx. | Top cmt: 1976 est Cut & pulled from 1010 |
| | | 4 1/2" @ 9217 w/183 sx. | Top cmt: 8415 est Cut & pulled from 6175 |
| Consolidated Oil & Gas, Inc. | Southern Union State #1 | 500' FSL & 660' FWL, Sec. 16, T17S, R37E | Total Depth 9014, Perfs 8861-8898 |
| | | Csg: 13 3/8" @ 314 w/350 sx. | Top cmt: surface |
| | | 8 5/8" @ 3549 w/350 sx. | Top cmt: 2825 TS |
| | | 5 1/2" @ 9014 w/300 sx. | Top cmt: 7282 est |
| Apollo Oil Co. | Lovington 16 State #1 | 440' FNL & 1980' FWL, Sec. 16, T17S, R37E | Total Depth 9048, Perfs 8930-8979 |
| | | Csg: 13 3/8" @ 329 w/250 sx. | Top cmt: surface |
| | | 8 5/8" @ 3570 w/400 sx. | Top cmt: 1998 est |
| | | 4 1/2" @ 9048 w/300 sx. | Top cmt: 7623 TS |

Ref: Para VII-C-108

Apollo Oil Company

Exhibit 3

Lovington State 9-2
Salt Water Disposal Well
Section 9
T17S, R37E, NMPM
Lea County, New Mexico

## Data on Proposed Operation

1. Proposed average and maximum daily rate and volume of fluids to be injected:

   Average daily rate of 1,000 B/D
   Maximum daily rate of 2,500 B/D

2. System is closed.

3. Proposed average and maximum injection pressure:

   Average injection pressure: 250 psi
   Maximum injection pressure: 800 psi

4. (a) Source of injection fluid: Producing leases in area

   (b) Analysis of formation fluid:

5. Zone of disposal is productive of oil and gas within one mile of the proposed disposal well.

Ref: Para VIII-C-108

Apollo Oil Company

Exhibit 4

Lovington State 9-2
Salt Water Disposal Well
Section 9
T17S, R37E, NMPM
Lea County, New Mexico

## Geological Data on Injection Zone

Pool: Midway-Abo

Formation: Abo

Geological Name: Abo

Thickness: at 167 feet

Depth: 8763 top of Abo

Injection Interval: 1 perforation 8866 to 8884 feet
1 perforation 8834 to 8852 feet
2 perforations 8901 to 8968 feet

# PAN GEO ATLAS CORP.

PGAC

# Computed Porosity Log

FILE NO.

COMPANY SOUTHERN UNION PRODUCTION COMPANY

WELL 2-9 LOVINGTON STATE

FIELD MIDWAY ABO

COUNTY LEA STATE NEW MEXICO

LOCATION: 660'FSL & 1980'FWL,

SEC 9 TWP 17-S RGE 37-E

Other Services
GR/A
IEL
MLL

Permanent Datum GROUND LEVEL Elev. 3774.5
Log Measured from K.B. 11' Ft. Above Permanent Datum
Drilling Measured from K.B.

Elevations
KB 3785.5
DF 3784.5
GL 3774.5

| | | | | |
|---|---|---|---|---|
| Date | 7/27/63 | | | |
| Run No. | ONE | | | |
| Matrix Velocity | 23,000 | | | |
| Bottom Logged Interval | 9000 | | | |
| Top Logged Interval | 8800 | | | |
| Rw | .04 @ 137°F | | | |
| Rmf | .1 @ 137°F | | | |
| Bit Size | 6 1/4 | | | |
| Type Fluid in Hole | FRESH WATER | | | |
| Density and Viscosity | 8.3 29 | | | |
| pH and Fluid Loss | 8.0 * cc | cc | cc | cc |
| Source of Sample | FLOWLINE | | | |
| Rm @ Meas. Temp. | 8.41@ 86 F | @ F | @ F | @ F |
| Rmf @ Meas. Temp. | * @ * F | @ F | @ F | @ F |
| Rmc @ Meas. Temp. | * @ * F | @ F | @ F | @ F |
| Source of Rmf and Rmc | MEASURED | | | |
| Rm @ BHT | 5.6 @137 F | @ F | @ F | @ F |
| Time Since Circ | 8 HOURS | | | |
| Max. Rec. Temp. Deg. F. | 137°F F | F | F | F |
| Equip. No. and Location | EL-25 HOBBS | | | |
| Recorded By | CAREY | | | |
| Witnessed By | MR. ROBERTS | | | |

AMENDED STANDARD PRACTICE RP 31

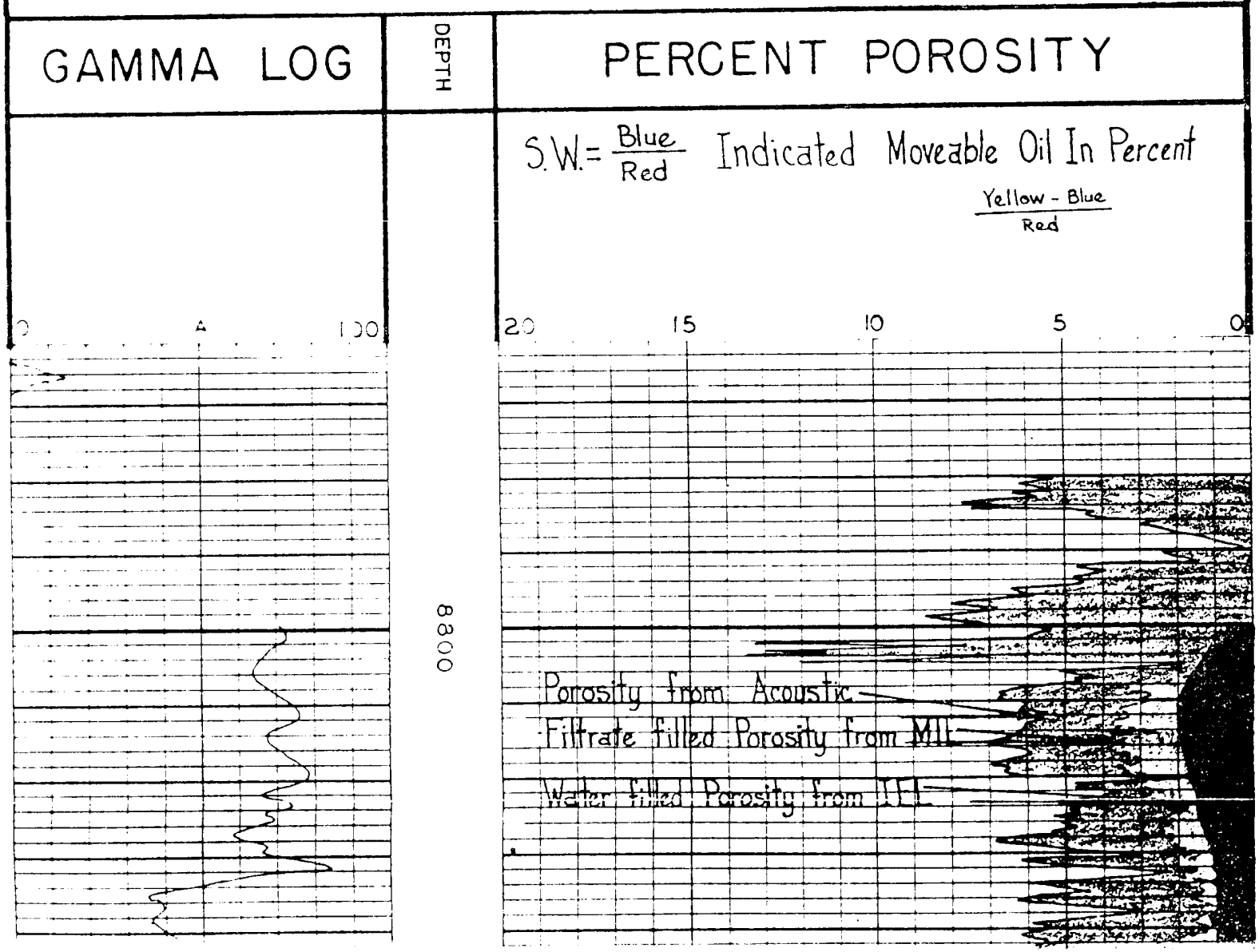
PENCAD-Bayonne.

EXHIBIT

_____

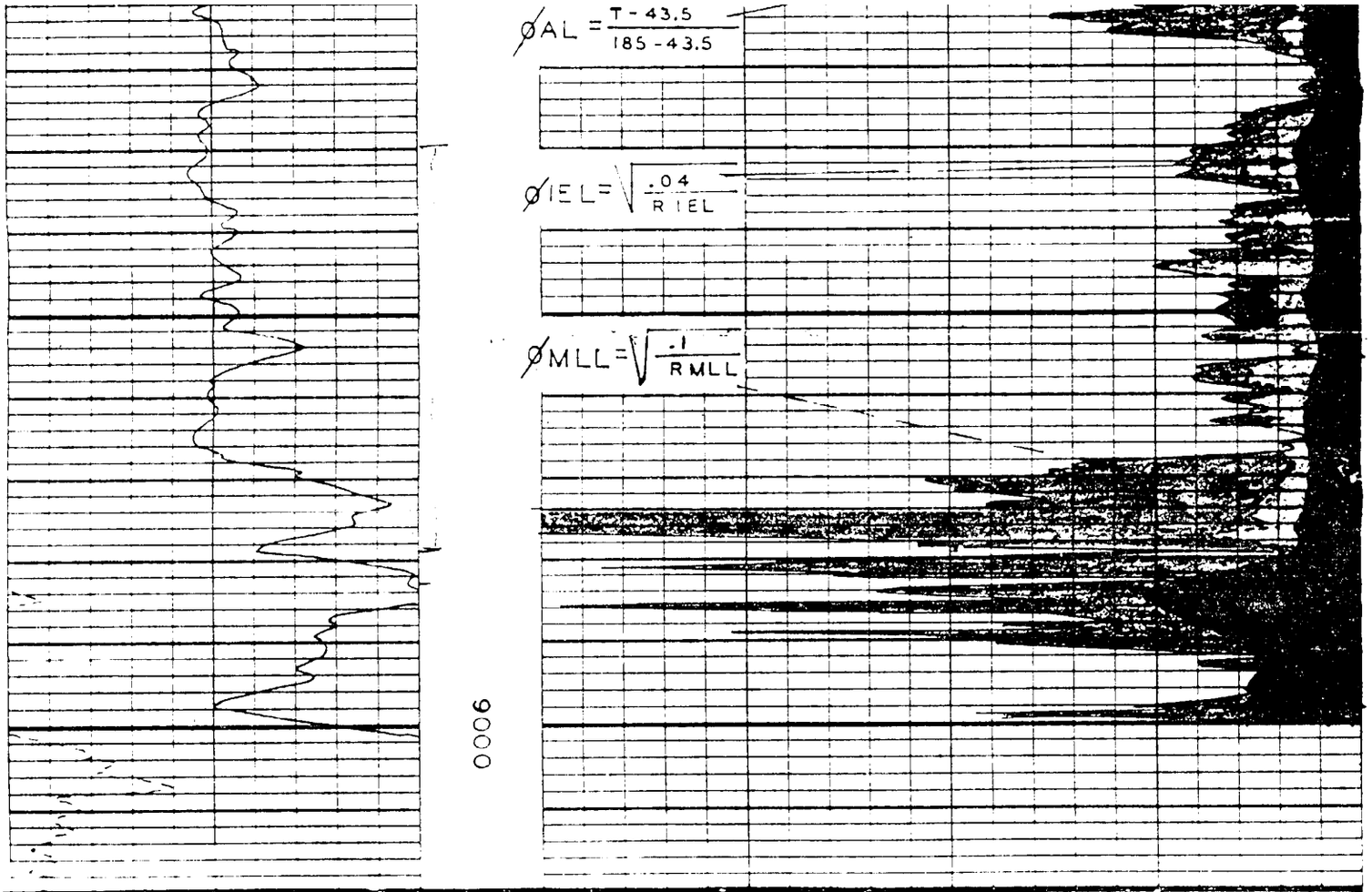
* INFORMATION NOT AVAILABLE.
* INFORMATION COULD NOT BE OBTAINED DUE TO FRESH WATER BEING THE DRILLING FLUID. R.M.F. ADJUSTED TO 0.1 FOR POROSITY LOG.

NOTE: Computations for this survey are based on empirical relationships. Therefore, the validity of this information is not guaranteed.



8900


Filtrate Filled Porosity from MLL
Water Filled Porosity from IEL
$\phi AL = \frac{T - 43.5}{185 - 43.5}$
$\phi IEL = \sqrt{\frac{.04}{RIEL}}$
$\phi MLL = \sqrt{\frac{.1}{RMLL}}$




$F_{MLL} = \frac{R_{mf}}{R_{xo}}$ $\phi = \sqrt{\frac{1}{F}}$ or $\phi = \sqrt{\frac{R_{mf}}{R_{xo}}}$

COMPANY [illegible] PRODUCTION COMPANY

WELL [illegible] LOCKHART STATE

FIELD WILDCAT AEC

COUNTY LEA STATE NEW MEXICO

$F_{IEL} = \frac{R_t}{R_w}$ $\phi_{IEL} = \sqrt{\frac{1}{F}}$ or $\phi = \sqrt{\frac{R_w}{R_t}}$

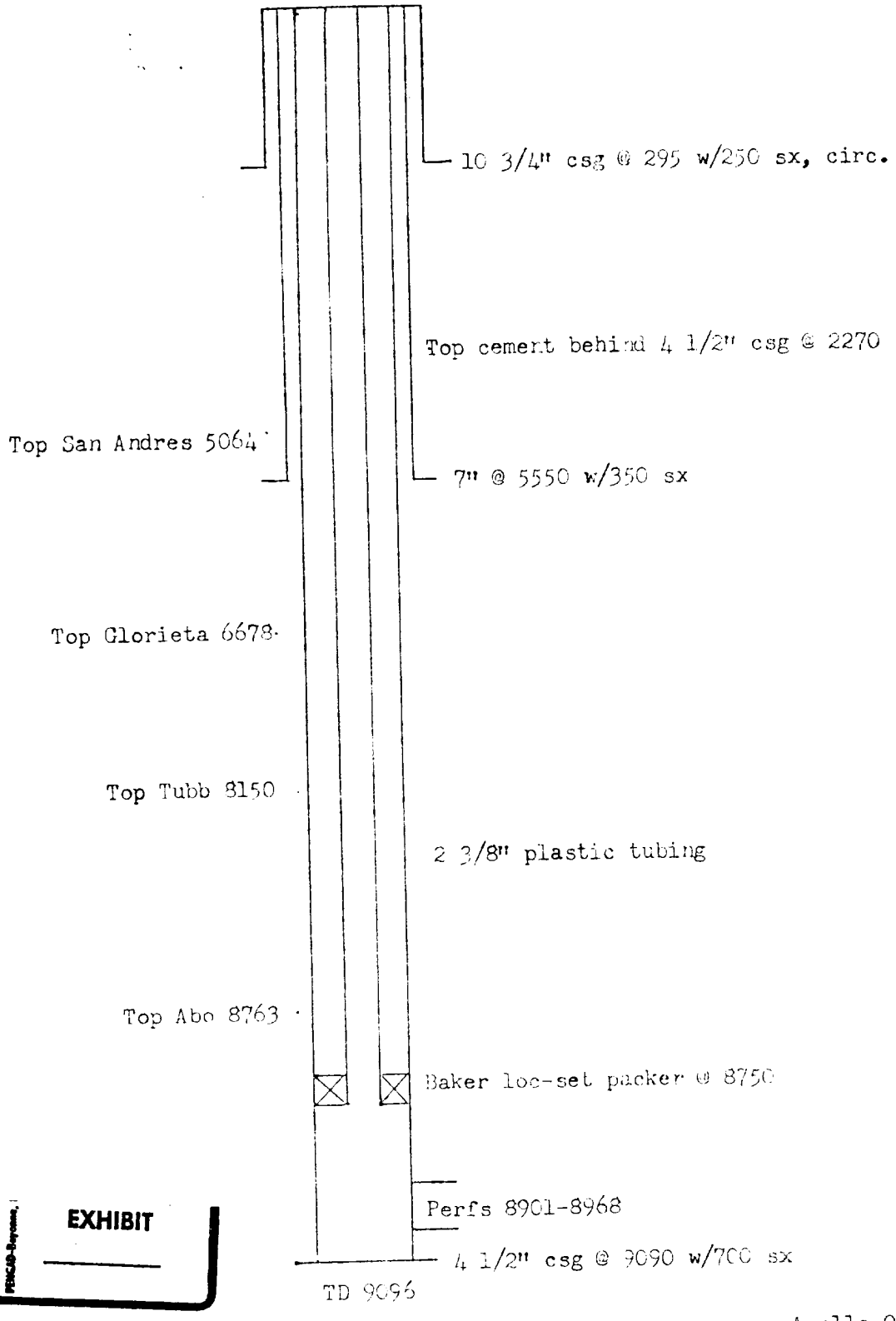
$\phi_{IEL} = \sqrt{\frac{R_w}{R_t}}$

$\phi_{MLL} = \sqrt{\frac{R_{mf}}{R_{xo}}}$

$R_w = 0.04$ $R_t$ FROM IEL

$R_{mf} = 0.1$ $R_{xo}$ FROM MLL

PAN GEO ATLAS CORP.




EXHIBIT

Proposed Water Injection Well

Apollo Oil Company
Lovington 9 State No. 2
660' FSL & 1980' FWL
Section 9, T17S, R37E

Ref: Para III -C-108

Apollo Oil Company

Exhibit 7

Lovington State 9-2
Salt Water Disposal Well
Section 9
T17S, R37E, NMPM
Lea County, New Mexico

## WELL DATA ON DISPOSAL WELL

Stimulation Program: none anticipated

Log: See attached

A(1) Lovington State Lease
Lovington State 9-2
Unit N 660 feet from South and 1980 feet from West
Section 9, T17S, R37E, NMPM, Lea County, New Mexico

A(2) Casing Strings:

1. 10 3/4" casing at 295 feet with 250 sacks, circulated
2. 4 1/2" casing at 5350 feet to 9090 feet with 700 sacks, circulated
3. top of cement 2270 feet, calculated
4. 7" casing at 5550 feet with 350 sacks.

A(3) Tubing:

2 3/8" plastic tubing set at 8750 feet

A(4) Baker Loc-set packer at 8750 feet

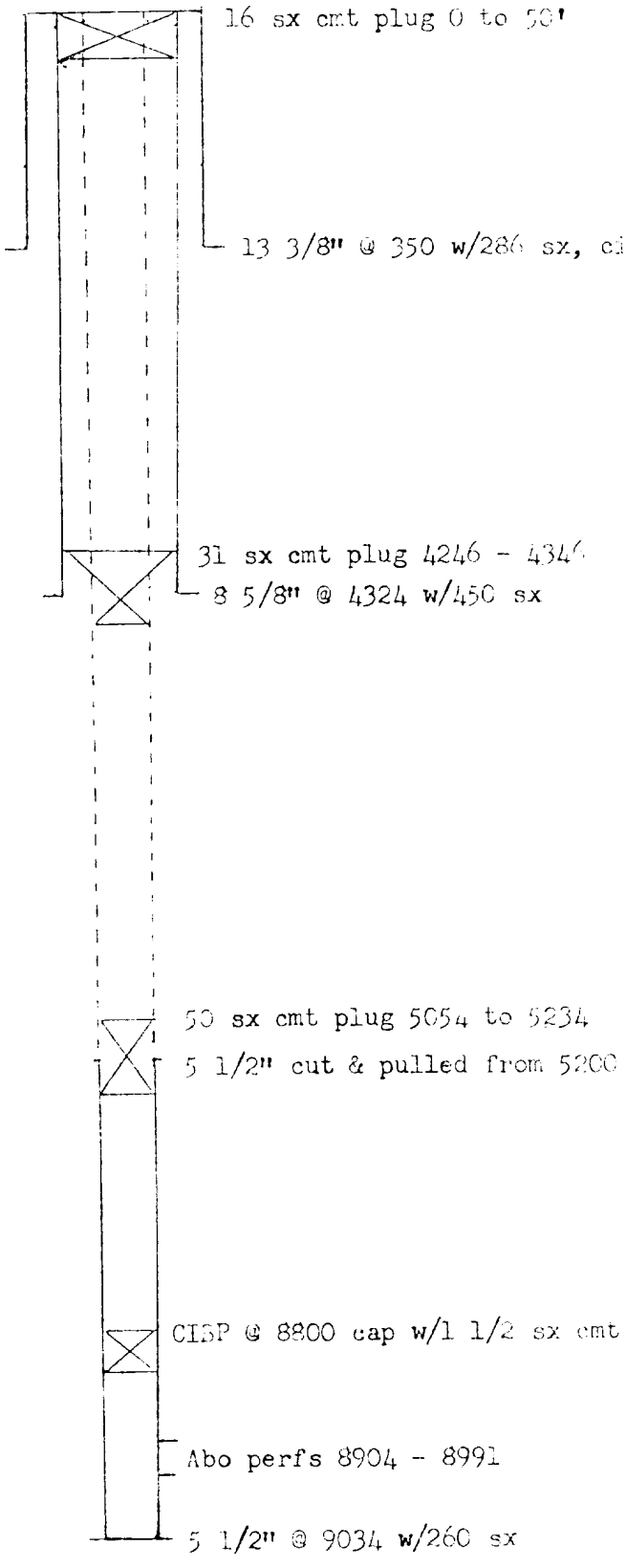
B(1) Injection formation is the Abo in the Midway-Abo Pool

B(2) Injection interval through perforations at 8901 to 8968 feet

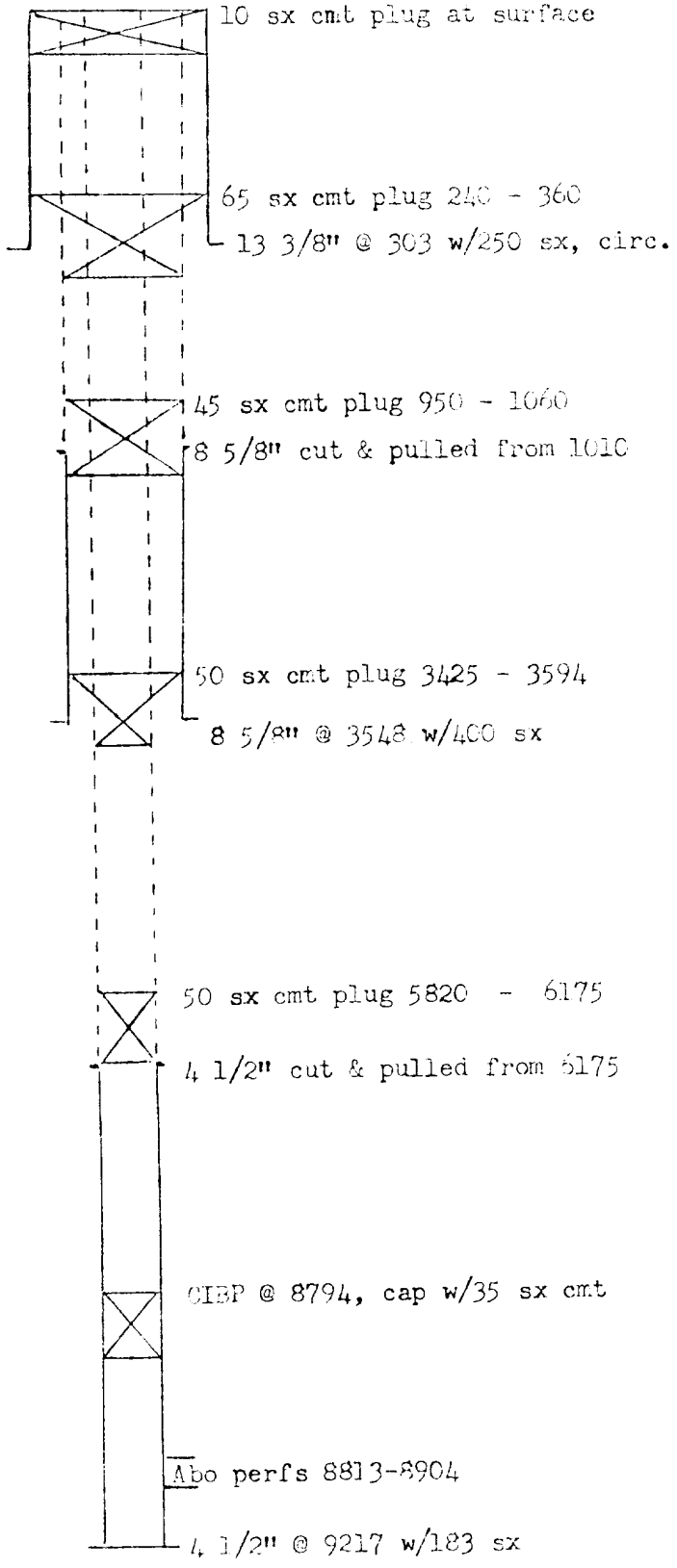
B(3) Well drilled as a producing well in June 8, 1963

perforated: 8901-8968 feet on
August 12, 1963

Gulf Oil Corporation
Lea State EM No. 1
660' FSL & 1980' FEL
Sec. 9, T17S, R37E
P & A 7/23/71



Suprom Energy Corporation
Levington 9 State No. 1
500' FSL & 500' FWL
Sec. 9, T17S, R37E
P & A 12/19/76



Ref: Para XI C-108

Apollo Oil Company

Exhibit 9

Lovington State 9-2 well
Salt Water Disposal Well
Section 9
T17S, R37E, NMPM
Lea County, New Mexico

QUALITY OF WATER CONTROL IN SECTION NEAR SECTION 9-17S-37E

| LOCATION | DATE SPLD. | CHLORIDE | SPECIFIC ELECTRIC CONDUCTANCE | TOTAL DISSOLVED SOLIDS |
|---|---|---|---|---|
| Section 10-17S-37E | 10-03-79 | 62 | 818 | 531.70 |
| Section 11-17S-37E | 10-02-79 | 120 | 817 | 531.05 |
| Section 12-17S-37E | 10-11-79 | 36 | 624 | 405.60 |
| Section 14-17S-37E | 10-03-79 | 46 | 695 | 451.75 |
| Section 18-17S-37E | 10-17-79 | 28 | 587 | 381.55 |
| Section 21-17S-37E | 10-17-79 | 54 | 844 | 548.60 |

NOTE: See attached map for locations.

Ref: Para XII C-108

APOLLO OIL COMPANY

Exhibit 10

Lovington State 9-2
Salt Water Disposal Well
Section 9
T17S, R37E, NMPM
Lea County, New Mexico

AFFIRMATIVE STATEMENT

APOLLO OIL COMPANY has examined available geological and engineering data and finds no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.

Ref: Para XIV

APOLLO OIL COMPANY

Exhibit 11

Lovington State 9-2
Salt Water Disposal Well
Section 9
T17S, R37E, NMPM
Lea County New Mexico

NOTICE

Pursuant to Section XIV

Applicant has mailed copies of the application to the following :

Surface owner:

Commissioner of Public Lands
P.O. Box 1148
Santa Fe, New Mexico 87501
ATTN: Mr. Ray Graham

Leasehold Operators within one-half mile:

Gulf Oil Corporation
Box 1150
Midland, Texas 79702

Supron Energy Corp.
Bldg. V, Fifth Floor
10300 North Central Expressway
Dallas, Texas 75231

Consolidated Oil & Gas Inc.
1300 Lincoln Tower Bldg.
1860 Lincoln Street
Denver, Colorado 80295

Applicant has caused to be published in the Lovington Leader, a newspaper of general circulation in Lea County, the attached notice.

NOTICE OF PUBLICATION

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
SANTA FE, NEW MEXICO

NOTICE: To all persons having any right, title, interest or claim in the following:

Pursuant to the Rules and Regulations of the New Mexico Oil Conservation Division, APOLLO OIL COMPANY, hereby gives public notice that it has applied to the Division for an order approving its Lovington State Well #9-2 located 660 feet from the South line and 1980 feet from the West line of Section 9, T17S, R37E, NMPM, Lea County, New Mexico as a disposal well in the Abo formation of the Midway-Abo Pool at a depth of 8866 feet to 8968 feet at a maximum rate of 2,500 barrels per day at a maximum injection pressure of 800 psi.

Any interested party must file objections or requests for hearing with the Oil Conservation Division, P.O. Box 2088, Santa Fe, New Mexico 87501 within fifteen (15) days of the date of publication of this notice.

KELLAHIN & KELLAHIN
Attorneys at Law
P.O. Box 1769
Santa Fe, New Mexico 87501
(505) 982-4285
Attorneys for Apollo Oil Company