Case No.

7349

Application

Transcripts.

Small Exhibits

ETC

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

TONEY ANAYA
GOVERNOR

April 6, 1983

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(505) 827-5800

M & G Oil, Inc.
P. O. Box 957
Crossroads, New Mexico 88114

Attention: W. M. Groesbeck
Vice-President

Re: Jack Martin SWD Well No. 2
SE/4 SE/4 Section 11, Township 9 South, Range 35 East, NMPM, Lea County
Order No. R-6787
Case No. 7349

Dear Mr. Groesbeck:

Pursuant to your letter dated February 23, 1983, and the provisions of Order (6) of Division Order No. R-6787 for disposal of waters produced from other formations subject to submission of evidence establishing the compatibility of such waters with the native waters of the Pennsylvanian Bough "C" zone, approval is hereby granted to dispose of produced water from a Devonian producer in the vicinity and water being transported from the area to the disposal well.

Also you requested the substitution of 2 7/8" OD plastic-lined tubing for the originally proposed 2 3/8" OD plastic-lined tubing. This request is hereby granted.

If you have any questions concerning this matter, please contact me.

Yours very truly,

JOE D. RAMEY
Director

JDR/MES/fd

cc: OCD Hobbs
Case File 7349

M & G Oil, Inc.
OIL PRODUCERS
P. O. Box 957
Crossroads, New Mexico 88114

Gene Milford - President
Office (505) 675-2478
Home (505) 398-8844

W. M. Groesbeck - Vice-President
Office (505) 675-2478
Home (505) 393-2740

February 23, 1983

Nutter

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

Attn: Mr. Joe Ramey

Re: Markham No. 2-SWD (Order No. R-6787)
UL "P", Sec. 11, T-9-S, R-35-E, Lea County

Dear Sir:

M & G Oil, Inc. recently purchased the referenced salt water disposal well from Apollo Oil Company of Hobbs, New Mexico. A copy of our C-104, changing operator name, is enclosed.

The original order (Case No. 7349) authorized in paragraph (8) disposal of water produced from the Pennsylvanian (Bough "C" zone) only. However, provision was made in paragraph (8) for disposal of water from other zones subject to submission of evidence of compatibility.

We desire to dispose of water produced from the Devonian and also to allow transporters to haul in water from other zones. We obtained water samples from a (1) Pennsylvanian (Bough "C") well located near the disposal well; (2) from a Devonian producer in the vicinity from which we hope to receive water for disposal; and (3) from a representative sample of water being transported to disposal in this area. We delivered these three samples to Halliburton's laboratory in Hobbs, New Mexico for analysis and compatibility testing. The result of these tests is enclosed.

Newman

Apollo had not equipped the well for disposal prior to our purchase. We are presently acquiring equipment to do so. We desire approval to make one

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change in equipment. Paragraph (4) of Order No. R-6787 authorized use of 2 3/8" OD plastic lined tubing. We wish to use 2 7/8" OD plastic lined tubing.

Your consideration of these requests will be much appreciated.

Yours truly,

Wm. Groesbeck

W. M. Groesbeck
Vice President

WMG/ts
c: Gene Milford

1342 A

HALLIBURTON DIVISION LABORATORY

HALLIBURTON SERVICES
MIDLAND DIVISION
HOBBS, NEW MEXICO 88240

LABORATORY WATER ANALYSIS

No. W83-214

To Maurice L. Brown

Box 957

Crossroads, New Mexico

ATTN: Mr. Bill Groesbeck

Date 2-17-83

Submitted by

Date Rec. 2-16-83

Well No. As Marked Depth Formation

County Field Source

	Water from Kenneth's Tank Service #1	Walker Fed. #1 Penn - Htr. Trtr. #2	Mobil- Santa Fe Pacific #11 #3
Resistivity	0.060 @ 74°F.	0.078 @ 74°F.	0.136 @ 74°F.
Specific Gravity	1.132	1.086	1.046
pH	5.7	6.2	6.4
Calcium (Ca)	11,200	3,400	900 *MPL
Magnesium (Mg)	5,400	2,400	1,200
Chlorides (Cl)	120,000	75,000	37,500
Sulfates (SO_4)	1,650	1,300	2,250
Bicarbonates (HCO_3)	280	205	380
Soluble Iron (Fe)	110	10	Nil
Sodium, Na (Calc.)	55,568	40,848	22,218
TDS, mpl	194,208	123,163	64,448

Remarks: Compatibility tests were observed for 24 hours, with the results as follows:

*Milligrams per liter

#1,2,&3 mixed equally - Compatible
#1 &#3 " " - Compatible
#2 & #3 " " - Compatible
#1 & #3 mixed equally - Compatible

Respectfully submitted,

Analyst: Brewer

HALLIBURTON COMPANY

cc:

By W. L. Brewer
CHEMIST

NOTICE

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NEW MEXICO OIL CONSERVATION COMMISSION

REQUEST FOR ALLOWABLE
AND
AUTHORIZATION TO TRANSPORT OIL AND NATURAL GAS

Form C-104
Supersedes Old C-104 and C-116
Effective 1-1-65

RECEIVED
FEB 28 1983
OIL CONSERVATION DIVISION
SANTA FE

Operator
M & G Oil, Inc.

Address
P. O. Box 95 Crossroads, New Mexico 88114

Reason(s) for filing (Check proper box)

				Other (Please explain)
New Well		Change in Transporter of:		
Recompletion		Oil	Dry Gas	
Change in Ownership	X	Casinghead Gas	Condensate	

If change of ownership give name and address of previous owner Apollo Energy, Inc. P. O. Box 5315 Hobbs, New Mexico 88240

DESCRIPTION OF WELL AND LEASE

Lease Name	Well No.	Pool Name, Including Formation	Kind of Lease	Lease No.
Markham	2-SWD	Vada Penn	State, Federal or Fee Fee	R-6787 SWD

Location
Unit Letter P : 660' Feet From The South Line and 660' Feet From The East

Line of Section 11 Township 9-S Range 35-E , NMPM, Lea County

DESIGNATION OF TRANSPORTER OF OIL AND NATURAL GAS

Name of Authorized Transporter of Oil ☐ or Condensate ☐	Address (Give address to which approved copy of this form is to be sent)
Name of Authorized Transporter of Casinghead Gas ☐ or Dry Gas ☐	**Address (Give address to which approved copy of this form is to be sent)**

If well produces oil or liquids, give location of tanks.	Unit	Sec.	Twp.	Rge.	Is gas actually connected?	When

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

COMPLETION DATA

Designate Type of Completion – (X)	Oil Well	Gas Well	New Well	Workover	Deepen	Plug Back	Same Res'v.	Diff. Res'v.

Date Spudded	Date Compl. Ready to Prod.	Total Depth	P.B.T.D.
Elevations (DF, RKB, RT, GR, etc.)	**Name of Producing Formation**	**Top Oil/Gas Pay**	**Tubing Depth**
Perforations			**Depth Casing Shoe**

TUBING, CASING, AND CEMENTING RECORD

HOLE SIZE	CASING & TUBING SIZE	DEPTH SET	SACKS CEMENT

TEST DATA AND REQUEST FOR ALLOWABLE

(Test must be after recovery of total volume of load oil and must be equal to or exceed top allowable for this depth or be for full 24 hours)

OIL WELL

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

GAS WELL

Actual Prod. Test - MCF/D	Length of Test	Bbls. Condensate/MMCF	Gravity of Condensate
Testing Method (pitot, back pr.)	**Tubing Pressure (Shut-in)**	**Casing Pressure (Shut-in)**	**Choke Size**

CERTIFICATE OF COMPLIANCE

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

Wm. Braesbeck
(Signature)

Vice President
(Title)

2-17-83
(Date)

OIL CONSERVATION COMMISSION

APPROVED _____, 19 ____

BY _____

TITLE _____

This form is to be filed in compliance with RULE 1104.

If this is a request for allowable for a newly drilled or deepened well, this form must be accompanied by a tabulation of the deviation tests taken on the well in accordance with RULE 111.

All sections of this form must be filled out completely for allowable on new and recompleted wells.

Fill out only Sections I, II, III, and VI for changes of owner, well name or number, or transporter, or other such change of condition.

11

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OIL PRODUCERS
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Crossroads, New Mexico 88114

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Office (505) 675-2478
Home (505) 398-8844

W. M. Groesbeck - Vice-President
Office (505) 675-2478
Home (505) 393-2740

February 23, 1983

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

Attn: Mr. Joe Ramey

Re: Markham No. 2-SWD (Order No. R-6787)
UL "P", Sec. 11, T-9-S, R-35-E, Lea County

Dear Sir:

M & G Oil, Inc. recently purchased the referenced salt water disposal well from Apollo Oil Company of Hobbs, New Mexico. A copy of our C-104, changing operator name, is enclosed.

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We desire to dispose of water produced from the Devonian and also to allow transporters to haul in water from other zones. We obtained water samples from a (1) Pennsylvanian (Bough "C") well located near the disposal well; (2) from a Devonian producer in the vicinity from which we hope to receive water for disposal; and (3) from a representative sample of water being transported to disposal in this area. We delivered these three samples to Halliburton's laboratory in Hobbs, New Mexico for analysis and compatibility testing. The result of these tests is enclosed.

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change in equipment. Paragraph (4) of Order No. R-6787 authorized use of 2 3/8" OD plastic lined tubing. We wish to use 2 7/8" OD plastic lined tubing.

Your consideration of these requests will be much appreciated.

Yours truly,

Wm. Groesbeck

W. M. Groesbeck
Vice President

WMG/ts
c: Gene Milford

1342 A

HALLIBURTON DIVISION LABORATORY

HALLIBURTON SERVICES
MIDLAND DIVISION
HOBBS, NEW MEXICO 88240

LABORATORY WATER ANALYSIS

No. W83-214

To Maurice L. Brown

Box 957

Crossroads, New Mexico

ATTN: Mr. Bill Groesbeck

Date 2-17-83

Submitted by

Date Rec. 2-16-83

Well No. As Marked Depth Formation

County Field Source

	Water from Kennetta's Tank Service #1	Walker Fed. #1 Penn - Htr. Trtr. #2	Mobil- Santa Fe Pacific #11 #3	
Resistivity	0.060 @ 74°F.	0.078 @ 74°F.	0.136 @ 74°F.	
Specific Gravity	1.132	1.086	1.046	
pH	5.7	6.2	6.4	
Calcium (Ca)	11,200	3,400	900	*MPL
Magnesium (Mg)	5,400	2,400	1,200	
Chlorides (Cl)	120,000	75,000	37,500	
Sulfates (SO_4)	1,650	1,300	2,250	
Bicarbonates (HCO_3)	280	205	380	
Soluble Iron (Fe)	110	10	Nil	
Sodium, Na (Calc.)	55,568	40,848	22,218	
TDS, mpl	194,208	123,163	64,448	

Remarks: Compatibility tests were observed for 24 hours, with the results as follows:

*Milligrams per liter

#1,2,&3 mixed equally - Compatible
#1 &#3 " " - Compatible
#2 & #3 " " - Compatible
#1 & #3 mixed equally - Compatible

Respectfully submitted,

Analyst: Brewer

HALLIBURTON COMPANY

cc:

By W. L. Brewer
CHEMIST

NOTICE

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NEW MEXICO OIL CONSERVATION COMMISSION

REQUEST FOR ALLOWABLE

AND

AUTHORIZATION TO TRANSPORT OIL AND NATURAL GAS

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

RECEIVED
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OIL CONSERVATION DIVISION
SANTA FE

Operator

M & G Oil, Inc.

Address

P. O. Box 957 Crossroads, New Mexico 88114

Reason(s) for filing (Check proper box)

- New Well
- Recompletion
- Change in Ownership

Change in Transporter of:

- Oil
- Dry Gas
- Casinghead Gas
- Condensate

Other (Please explain)

If change of ownership give name and address of previous owner Apollo Energy, Inc. P.O. Box 5315 Hobbs, New Mexico 88240

DESCRIPTION OF WELL AND LEASE

Lease Name	Well No.	Pool Name, Including Formation	Kind of Lease	Lease No.
Markham	2-SWD	Vada Penn	State, Federal or Fee Fee	R-6787 SWD

Location

Unit Letter P : 660' Feet From The South Line and 660' Feet From The East

Line of Section 11 Township 9-S Range 35-E , NMPM, Lea County

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If well produces oil or liquids, give location of tanks.	Unit	Sec.	Twp.	Rge.	Is gas actually connected?	When

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

COMPLETION DATA

Designate Type of Completion – (X)	Oil Well	Gas Well	New Well	Workover	Deepen	Plug Back	Same Resv.	Diff. Resv.

Date Spudded	Date Compl. Ready to Prod.	Total Depth	P.B.T.D.
Elevations (DF, RKB, RT, GR, etc.)	Name of Producing Formation	Top Oil/Gas Pay	Tubing Depth
Perforations			Depth Casing Shoe

TUBING, CASING, AND CEMENTING RECORD

HOLE SIZE	CASING & TUBING SIZE	DEPTH SET	SACKS CEMENT

TEST DATA AND REQUEST FOR ALLOWABLE

(Test must be after recovery of total volume of load oil and must be equal to or exceed top allowable for this depth or be for full 24 hours)

OIL WELL

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

GAS WELL

Actual Prod. Test-MCF/D	Length of Test	Bbls. Condensate/MMCF	Gravity of Condensate
Testing Method (pitot, back pr.)	Tubing Pressure (Shut-in)	Casing Pressure (Shut-in)	Choke Size

CERTIFICATE OF COMPLIANCE

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

Wm. Groesbeck
(Signature)

Vice President
(Title)

2-17-83
(Date)

OIL CONSERVATION COMMISSION

APPROVED _____, 19 _____

BY _____

TITLE _____

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Analyst: Brewer

HALLIBURTON COMPANY

By W. L. Brewer
CHEMIST

cc:

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NEW MEXICO OIL CONSERVATION COMMISSION

REQUEST FOR ALLOWABLE

AND

AUTHORIZATION TO TRANSPORT OIL AND NATURAL GAS

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

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FEB 28 1983
OIL CONSERVATION DIVISION
SANTA FE

Operator
M & G Oil, Inc.

Address
P. O. Box 957 Crossroads, New Mexico 88114

Reason(s) for filing (Check proper box)

- New Well
- Recompletion
- Change in Ownership [X]
- Change in Transporter of: Oil, Dry Gas, Casinghead Gas, Condensate

Other (Please explain)

If change of ownership give name and address of previous owner Apollo Energy, Inc. P. O. Box 5315 Hobbs, New Mexico 88240

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Perforations			Depth Casing Shoe

TUBING, CASING, AND CEMENTING RECORD

HOLE SIZE	CASING & TUBING SIZE	DEPTH SET	SACKS CEMENT

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OIL WELL

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Length of Test	Tubing Pressure	Casing Pressure	Choke Size
Actual Prod. During Test	Oil - Bbls.	Water - Bbls.	Gas - MCF

GAS WELL

Actual Prod. Test - MCF/D	Length of Test	Bbls. Condensate/MMCF	Gravity of Condensate
Testing Method (pitot, back pr.)	Tubing Pressure (Shut-in)	Casing Pressure (Shut-in)	Choke Size

CERTIFICATE OF COMPLIANCE

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

Wm. Groesbeck
(Signature)

Vice President
(Title)

2-17-83
(Date)

OIL CONSERVATION COMMISSION

APPROVED _____, 19 _____

BY _____

TITLE _____

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All sections of this form must be filled out completely for allowable on new and recompleted wells.

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STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 7348
Order No. R-6787

APPLICATION OF APOLLO OIL COMPANY
FOR SALT WATER DISPOSAL, LEA COUNTY,
NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on September 9, 1981, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 30th day of September, 1981, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Apollo Oil Company, is the owner and operator of the Jack Markham Well No. 2, located in Unit P of Section 11, Township 9 South, Range 35 East, NMPM, Bough-Permo Pennsylvanian Pool, Lea County, New Mexico.

(3) That the applicant proposes to utilize said well to dispose of produced salt water into the Bough C formation, with injection into the perforated interval from approximately 9645 feet to 9654 feet.

(4) That the injection should be accomplished through 2 3/8-inch plastic lined tubing installed in a packer set at approximately 9495 feet; that the casing-tubing annulus should be filled with an inert fluid; and that a pressure gauge or approved leak detection device should be attached to the annulus in order to determine leakage in the casing, tubing, or packer.

(5) That the injection well or system should be equipped with a pop-off valve or acceptable substitute which will limit the wellhead pressure on the injection well to no more than 1925 psi.

(6) That the operator should notify the supervisor of the Hobbs district office of the Division of the date and time of the installation of disposal equipment so that the same may be inspected.

(7) That the operator should take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface.

(8) That disposal should be limited to waters produced from the Bough C zone of the Pennsylvanian unless additional evidence has been submitted as to the compatibility of waters from other formations, and the Division Director has approved the disposal of such other waters in the subject well.

(9) That approval of the subject application will prevent the drilling of unnecessary wells and otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Apollo Oil Company, is hereby authorized to utilize its Jack Markham Well No. 2, located in Unit P of Section 11, Township 9 South, Range 35 East, NMPM, Bough-Permo Pennsylvanian Pool, Lea County, New Mexico, to dispose of produced salt water into the Bough C formation, injection to be accomplished through 2 3/8-inch tubing installed in a packer set at approximately 9495 feet, with injection into the perforated interval from approximately 9645 feet to 9654 feet;

PROVIDED HOWEVER, that the tubing shall be plastic-lined; that the casing-tubing annulus shall be filled with an inert fluid; and that a pressure gauge shall be attached to the annulus or the annulus shall be equipped with an approved leak detection device in order to determine leakage in the casing, tubing, or packer.

(2) That the injection well or system shall be equipped with a pop-off valve or acceptable substitute which will limit the wellhead pressure on the injection well to no more than 1925 psi.

(3) That the operator shall notify the supervisor of the Hobbs district office of the Division of the date and time of the installation of disposal equipment so that the same may be inspected.

(4) That the operator shall immediately notify the supervisor of the Division's Hobbs district office of the failure of the tubing, casing, or packer, in said well or the leakage of water from or around said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

(5) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 704 and 1120 of the Division Rules and Regulations.

(6) That disposal into the subject well shall be limited to water produced from the Bough C zone of the Pennsylvanian formation, unless the Division Director has approved the disposal of waters produced from other formations upon receipt of evidence establishing the compatibility of such waters with the native waters of the Bough C zone.

(7) 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 the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

JOE D. RAMEY
Director

SEAL

fd/

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
9 September 1981

EXAMINER HEARING

IN THE MATTER OF:

Application of Apollo Oil Company for salt water disposal, Lea County, New Mexico. CASE **7349**

BEFORE: **Daniel S. Nutter**

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: W. Perry Pearce, Esq.
Legal Counsel to the Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

For the Applicant: **W. Thomas Kellahin, Esq.**
KELLAHIN & KELLAHIN
500 Don Gaspar
Santa Fe, New Mexico 87501

I N D E X

E X H I B I T S

MR. NUTTER: We'll call next Case Number 7349.

MR. PEARCE: Application of Apollo Oil Company for salt water disposal, Lea County, New Mexico.

MR. KELLAHIN: If the Examiner please, I'm Tom Kellahin of Santa Fe, New Mexico, appearing on behalf of the applicant.

I would like the record to reflect that Mr. Ralston is still under oath and is still qualified as an expert witness in this case.

MR. NUTTER: The record will so show.

MR. KELLAHIN: In addition to the exhibits on file with the Division, these are the return receipts from the surface and offset operators, showing that they received copies of the application.

ALAN RALSTON

being called as a witness and being previously sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Mr. Ralston, this is an application for salt water disposal in the Jake -- in the Jack Marham Well

No. 2 in Unit P of Section 11. Is that not true?

A. Yes, sir.

Q. And what is the disposal formation for this well?

A. The Permo-Penn Abo -- the Permo-Penn Bough C zone.

Q. All right, sir. The application indicates the disposal interval would be 9645 to 9654 feet in the Bough C formation.

A. Yes.

Q. Is that correct?

A. Yes, sir.

Q. All right, sir. Now where is this well in relation to the last well we just talked about?

A. Approximately 50 miles north.

Q. Entirely different area?

A. Yes, sir.

Q. All right, sir. If you'll turn to Exhibit Number One, this is a plat showing circles indicating where the half mile radius is and what wells that you determined penetrated the Bough C formation in this area, does it not, Mr. Ralston?

A. Yes, sir.

Q. All right, sir. What, then, is Exhibit

Number Two?

A. It's a listing of the balance of this packet.

Q. I'm sorry, Exhibit Number Two is the tabulation.

A. Oh, okay, okay.

Q. There you go.

A. It's a tabular summary of the offset operators within a half mile radius of the Jack Marham No. 2.

Q. All right, sir, you've caused to be searched the various well records and have located the wells on this tabulation that at one time or another penetrated through the disposal formation?

A. Yes, sir.

Q. And have you reviewed this summary to determine whether these wells are completed, plugged in such a fashion that they will not serve as a source to allow disposal fluids to migrate up into shallower fresh water sands?

A. Yes, sir, I have.

Q. All right. And you don't see any defect in any of these wells that will cause them to be sources of contamination?

A. No, these wells all have three strings of casing in them and those that are plugged were plugged by

Oil Conservation Commission rules.

Q All right, sir, let's turn to Exhibit Number Three and have you tell us what you generally intend to do with this disposal well.

A Dispose of waters from the area and they will be from the Bough C, San Andres, and the Queen formations. We should not have over approximately 1000 barrels a day disposal. There is no -- there is one disposal well in this area but it is on the downhill. It's just about where it won't take any more water, so there is a need for another disposal well.

Q These producing wells that produce water in this area produce from what formations, Mr. Ralston?

A In the immediate area they produce from the Bough C.

Q Okay.

A There's other waters in -- within a 20 mile radius there that possibly could be injected in this well.

Q You'll have the same limitation in this case as you had in the other insofar as you'll not be allowed to dispose of water produced from other formations until you submit the data to show that the formation fluids are compatible?

A Yes, sir.

Q All right, sir. You don't have presently with you the fluid analysis for any other formations apart from the Bough C, do you?

A I was not able to obtain these from any of the water companies for the water in that area. I will have to get samples and have a special analysis run on these waters.

Q All right, sir.

In terms of the injection pressure, Mr. Ralston, tell us a little something about your well. Will it take these fluids under vacuum or will it require pressure injection?

A It will take it under vacuum. We just recently purchased these wells from Tenneco and they were temporarily abandoned at the time. We tried to establish production. We gave them 1000 gallons of acid and about 75 barrels flush. We never saw the acid hit. There was no pressure of any kind and the flush never showed any pressure. We finally got some fluid back in the hole three days later after this small acid job.

So I don't anticipate very much injection pressure at all.

Q All right, sir, would a pressure limita-

tion based upon .2 of a pound per foot of depth be adequate for your purposes?

A. More than adequate.

Q. All right, sir, let's turn to Exhibit Number Four and have you confirm the information contained on that exhibit.

A. It's true.

Q. All right, sir, Exhibit Number Five is a copy of one of the logs for the disposal well?

Let's to to Exhibit Number Six, then. In fact it might be easier if we'll take Exhibits Number Six and Seven at the same time and if you'll correlate the tabulation with the schematic and then describe generally how you propose to complete this as a disposal well.

A. Well, we'll install a packer and packer fluid and 2-3/8ths plastic lined steel tubing. We'll have packer fluid, inert fluid on the annulus side, and a pressure gauge.

Q. All right, sir, with regards to the tubing, the 2-3/8ths, this is plastic lined tubing, is it not?

A. Plastic lined steel tubing.

Q. All right, so we should correct that Exhibit Number Six and Seven to indicate plastic lined.

If you'll look at the 9-5/8ths inch

casing, the schematic shows 3595 sacks and the tabulation shows 3995. Is the schematic correct in terms of sacks of cement?

This is a typographical error, Mr. Ralston.

A. Yeah, I'm sure with that much cement, it sure should be circulated.

Q. All right, sir. I think the correct amount is 3595, is it not?

A. Yes, sir.

Q. All right. Where is the top of the cement on the 9-5/8ths inch casing?

A. It's circulated; it's at surface.

Q. All right, and will that be true of the 13-3/8ths?

A. Yes, sir.

Q. And how about the 7-inch ? Is that from surface?

A. I can't say if the 7-inch circulated. Sometimes in these wells when they're re-entered they have such large washouts in some of the more porous zones that just about any amount of cement you pump will not circulate. But it should be back covering -- just a minute.

No, excuse me. The 7-inch is circulated because that was one of the deals we got from Tenneco. It's

not indicated here but Tenneco said there's no casing salvage on these wells, so there would -- I mean if there's -- if it's not circulated, it's within 200 to 300 feet of surface, because there's not any salvagible material as far as casing in these wells.

Q. Exhibit Number Six shows an indication of old perforations in this well. Apart from the Bough C perforations, Mr. Ralston, are the other perforations at shallower depth adequately sealed with cement or otherwise to insure that they'll not be conduits for contamination of shallower zones?

A. Yes, sir, they were squeezed when they re-entered this well and then the 7-inch casing was circulated when they completed it.

So that's more or less double insurance.

Q. All right, sir, let's go to Exhibit Number Eight, which is a series of four downhole schematics. What are these, Mr. Ralston?

A. This is the offset well belonging to Layton Enterprises, Layton Enterprises, Coquina Oil Company, and Layton Enterprises.

Q. Have you examined the information contained on those exhibits to satisfy yourself that they will not be sources of contamination of shallower sand?

A. Yes, sir.

Q. Let's go to Exhibit Number Nine and have you identify that for me.

A. This is the water and water analysis, fresh water in the area.

Q. In your opinion, Mr. Ralston, is the method of completion of this well for disposal purposes such that it will not contaminate fresh water sources in the area?

A. Yes, sir.

Q. All right, sir, let's go to Exhibit Number Ten. Are you aware of any faulting or other hydrologic connections between the disposal zone and any underground water sources?

A. To my knowledge there are no faults in this area for a 20-mile radius.

Q. All right, sir, and Exhibit Eleven is the notice to the offset operators and the surface owner.

A. Yes, sir.

Q. Were Exhibits One through Eleven compiled under your direction and supervision?

A. Yes, sir.

Q. And in your opinion, Mr. Ralston, will approval of this application be in the best interests of conservation, prevention of waste, and the protection of corre-

lative rights?

A Yes, sir.

MR. KELLAHIN: We move the introduction of Exhibits One through Eleven.

MR. NUTTER: Exhibits One through Eleven will be admitted in evidence.

Mr. Ralston, I don't have any questions of you regarding this case; however, when I get to Exhibit Nine, you say see attached map for location, that would be the locations of the water wells, and there is a plat here that shows wells indicated with red dots. Are those those water wells?

A Yes, sir.

MR. NUTTER: Okay, in my portfolio on the previous case that map was not attached, although the notation was there, see attached map.

MR. KELLAHIN: We've got one here, Mr. Nutter, we'll give it to you. See if you have one, Alan.

MR. NUTTER: A red dot map for the midway well. It would be about six red dots on a map there, Tom.

MR. KELLAHIN: Yeah, this is it.

MR. NUTTER: Yeah, that's the one. Okay, fine. Are there any other questions of Mr. Ralston?

He may be excused.

Do you have anything further, Mr. Kellahin?

MR. KELLAHIN: No, sir.

MR. NUTTER: Does anyone have anything they wish to offer in Case Number 7349?

We'll take the case under advisement.

(Hearing concluded.)

CERTIFICATE

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd C.S.R.

SALLY W. BOYD, C.S.R.
Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 7849 heard by me on 9/9 1981.

, Examiner
Oil Conservation Division

Apollo Oil Company

SENDER: Complete items 1, 2, and 3.
Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)
- ☐ Show to whom and date delivered.....¢
- ☐ Show to whom, date and address of delivery.....¢
- ☐ RESTRICTED DELIVERY
  Show to whom and date delivered.....¢
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  Show to whom, date, and address of delivery.$____

(CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:
Maurice L. Brown Company
Box 2237
Midland, Texas 79702

3. ARTICLE DESCRIPTION:

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	79702	

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE ☐Addressee ☐Authorized agent

4. DATE OF DELIVERY

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE:

POSTMARK: MIDLAND, TX AUG 20 1971

P.S. Form 3811, Jan. 1970 RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

☆GPO : 1970-388-848

Apollo Oil Company

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2. ARTICLE ADDRESSED TO:
Coquina Oil Corporation
Drawer 2960
Midland, Texas 79702

3. ARTICLE DESCRIPTION:

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- ☐ RESTRICTED DELIVERY.
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2. ARTICLE ADDRESSED TO:
W. Holmes Lovejoy
General Delivery
Milnesand, New Mexico 88125

3. ARTICLE DESCRIPTION:

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	768342	

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4. DATE OF DELIVERY W. H. Lovejoy Rich-

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☆GPO : 1970-388-848

APOLLO OIL COMPANY

PS Form 3811, Jan. 1979

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  Show to whom and date delivered.....¢
- [ ] RESTRICTED DELIVERY.
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2. ARTICLE ADDRESSED TO:
Maurice L. Brown Company
P.O. Box 11320
Kansas, Missouri 64112

3. ARTICLE DESCRIPTION:

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AUG 27 1981 SOUTH KANSAS CITY, MO.

RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

☆GPO : 1979-281-848

Apollo Oil Company

PS Form 3811, Jan. 1979

SENDER: Complete items 1, 2, and 3.
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- [ ] RESTRICTED DELIVERY
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- [ ] RESTRICTED DELIVERY.
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(CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:
Layton Enterprises Inc.
3103 79th Street
Lubbock, Texas 79423

3. ARTICLE DESCRIPTION:

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	768340	

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE [ ]Addressee [ ]Authorized agent
X [signature]

4. DATE OF DELIVERY — POSTMARK
8-20-81 208

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE: — CLERK'S INITIALS

RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

☆GPO : 1979-281-848

Apollo Oil Company

PS Form 3811, Jan. 1979

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- [ ] RESTRICTED DELIVERY.
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(CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:
Marks & Garner Production Co.
Box 1175
Lovington, New Mexico 88260

3. ARTICLE DESCRIPTION:

REGISTERED NO.	CERTIFIED NO.	INSURED NO.
	768339	

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE [ ]Addressee [ ]Authorized agent
Polly Landers

4. DATE OF DELIVERY — POSTMARK
8-19-81

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE: — CLERK'S INITIALS

RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

☆GPO : 1979-281-848

Apollo Oil Company

PS Form 3811, Apr. 1979

SENDER: Complete items 1, 2, and 3.
Add your address in the "RETURN TO" space on reverse.

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5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE:

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RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

USPO AUG 20 1981 MIDLAND, TX

☆GPO : 1979-286-848

Apollo Oil Company

PS Form 3811, Apr. 1979

SENDER: Complete items 1, 2, and 3.
Add your address in the "RETURN TO" space on reverse.

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- ☒ Show to whom and date delivered.....¢
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5. ADDRESS (Complete only if requested)

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CLERK'S INITIALS

RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

MIDLAND AUG 20 1981

☆GPO : 1979-286-848

Apollo Oil Company

PS Form 3811, Apr. 1979

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4. W. H. Lovejoy R.D. DATE OF DELIVERY

5. ADDRESS (Complete only if requested)

POSTMARK

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CLERK'S INITIALS

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☆GPO : 1979-286-848

APOLLO OIL COMPANY

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	712905[illegible]	

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SIGNATURE [ ] Addressee [ ] Authorized agent

4. DATE OF DELIVERY: AUG 27 1981 POSTMARK

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE: CLERK'S INITIALS

☆GPO : 1978-288-848

PS Form 3811, Jan. 1978 RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

Apollo Oil Company

SENDER: Complete items 1, 2, and 3. Add your address in the "RETURN TO" space on reverse.

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I have received the article described above.
SIGNATURE [ ] Addressee [ ] Authorized agent

X [signature]

4. DATE OF DELIVERY: 8-20-81 POSTMARK

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE: CLERK'S INITIALS

☆GPO : 1978-288-848

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4. DATE OF DELIVERY: 8-19-81 POSTMARK

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6. UNABLE TO DELIVER BECAUSE: CLERK'S INITIALS

☆GPO : 1978-288-848

PS Form 3811, Jan. 1978 RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

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

Case 7349

RECEIVED
AUG 4 1981
OIL CONSERVATION DIVISION
SANTA FE

APPLICATION FOR AUTHORIZATION TO INJECT

I. Purpose: [ ] Secondary Recovery [ ] Pressure Maintenance [X] Disposal [ ] Storage
Application qualifies for administrative approval? [ ] yes [ ] 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? [ ] yes [X] 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: [signature] 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

Jack Markham #2
Sec. 11, T9S, R35E
Lea County New Mexico

Exhibit 1 - Map required by Paragraph V C-108

Exhibit 2 - Tabular Summary Reuiqred by Paragraph VI of C-108

Exhibit 3 - Data sheet required by Paragraph VII of C-108

Exhibit 4 - Geological Data - Paragraph VIII

Exhibit 5 - Log of Disposal Well

Exhibit 6 - Data Sheet on Disposal Well

Exhibit 7 - Schematic SWP well

Exhibit 8 - Schematic of P & A wells within 1 mile

Exhibit 9 - Water Quality

Exhibit 10 - Statement per Paragraph XII of C-108

Exhibit 11 - Notice Requirements


VADA
CROSSROADS WEST
CROSS ROADS
JENKINS
San Andres
Penn
Devonian

Tabular Summary
Wells Within One-Half Mile of
Apollo Energy, Inc. Jack Markham No. 2

Maurice L. Brown Co. — **Hooper #1**

2310' FNL & 330' FEL, Sec. 11, T9S, R35E — Total Depth 9900, Perfs 9793-9822, TA 5/15/81
Csg: 10 3/4" @ 428 w/425 sx — Top cmt: surface
7 5/8" @ 4250 w/1800 sx — Top cmt: surface
5 1/2" @ 9900 w/300 sx — Top cmt: 6309 est

Marks & Garner Prod. Co. — **Betenbough #2**

660' FSL & 660' FWL, Sec. 12, T9S, R35E — Total Depth 11,569, Perfs 9596-9616
Csg: 13 3/8" @ 354 w/375 sx — Top cmt: surface
9 5/8" @ 6200 w/4500 sx — Top cmt: surface
7" liner 4493-9641 w/775 sx — Top cmt: 4965 est — Cut & pulled from 4493

Apollo Energy, Inc. — **Jack Markham #1**

660' FSL & 1980' FEL, Sec 11, T9S, R35E — Total Depth 9726, OH 9705-9726
Csg: 10 3/4" @ 467 w/450 sx — Top cmt: surface
7 5/8" @ 4258 w/2175 sx — Top cmt: surface
5 1/2" liner 4124-9705 w/1850 sx — Top cmt: 4124 est

Layton Enterprises, Inc. — **Betenbough B #2**

330' FSL & 2310' FWL, Sec. 11, T9S, R35E — Total Depth 9758, Perfs 9749-4754, P&A 9/11/80
Csg: 10 3/4" @ 478 w/450 sx — Top cmt: surface
7 5/8" @ 4240 w/1059 sx — Top cmt: 480 TS
5 1/2" liner 4105-9747 w/1192 sx — Top cmt: 4105 circ.
4" liner 9686-9754 w/sx NA

Layton Enterprises, Inc. — **John Allen #1**

660' FNL & 2310' FWL, Sec 14, T9S, R35E — Total Depth 9860, Perfs 9750-9774, P&A 10/7/80
Csg: 13 3/8" @ 400 w/450 sx — Top cmt: surface
9 5/8" @ 4085 w/1800 sx — Top cmt: 570 TS
7" 8304-9733 w/200 sx — Top cmt: 8745 TS — Cut & pulled from 8304
5 1/2" liner 9638-9748 w/80 sx. (orig: TD 9757 & P&A)
Hole sidetracked @ 8187
5 1/2" @ 9860 w/195 sx. — Top cmt: 8735 est — Cut & pulled from 5513

Layton Enterprises, Inc. — **Betenbough B #3**

660' FNL & 1980' FEL, Sec. 14, T9S, R35E — Total Depth 12,574, Perfs 9710-9730, TA 7/31/80
Csg: 13 3/8" @ 410 w/400 sx — Top cmt: surface
9 5/8" @ 4260 w/2550 sx — Top cmt: surface
7" @ 9805 w/2470 sx — Top cmt: 5290 TS — Cut & pulled from 4690
Run 7" w/csg bowl on re-entry

EXHIBIT 2

Tabular Summary
Apollo Energy, Inc. Jack Markham #2

Layton Enterprises, Inc.	Batenbough B #1	660" FNL & 660' FEL, Sec. 14, T9S, R35E	Total Depth 9659, Perfs 4757-4769
		Csg: 13 3/8" @ 372 w/350 sx	Top cmt: surface
		9 5/8" @ 4429 w/1500 sx	Top cmt: 2300 TS
		7" @ 9638 w/1987 sx	Top cmt: 300 TS
Coquina Oil Corp.	Federal 13 #1	660' FNL & 660' FWL, Sec. 13, T9S, R35E	Total Depth 9615, Perfs 9585-9605, P&A 7/5/77
		Csg: 13 3/8" @ 375 w/350 sx	Top cmt: surface
		9 5/8" @ 4433 w/1900 sx	Top cmt: surface
		7" @ 9615 w/1790 sx	Top cmt: surface
Layton Enterprises, Inc.	Batenbough B #4	1874' FNL & 554" FEL, Sec. 14, T9S, R35E	Total Depth 12,088, Perfs 9601-9623, P&A 9/8/80
		Csg: 12 3/4" @ 380 w/375 sx	Top cmt: surface
		8 5/8" @ 4055 w/300 sx	Top cmt: 2875 est Cut & pulled from 4211
		5 1/2" @ 9752 w/250 sx	Top cmt: 8310 est Cut & pulled from 1128

Ref: Para VII-C-108

Apollo Oil Company
Exhibit 3

Jack Markham #2
Salt Water Disposal Well
Section 11
T9S, R35E, NMPM
Lea County, New Mexico

Data on Proposed Operation

1. Proposed average and maximu 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

   Bough "C" ✓ Devonian ✓
   San Andres ✓ Queen ✓

   (b) Analysis of formation fluid:

   The Bough C Formation
   (milligrams per liter)

   chloride: 36 to 25
   Calcium: 2500
   magnesium: 2 to 500
   sodium: 20,000
   bi-carbonate: 370 to 400
   sulfate: 11 to 1500
   ph: 6.2 to 6.4
   carbonate hardness: 8500 to 9000
   non-carbonate: 8000 to 9500

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

Jack Markham #2
Salt Water Disposal Well
Section 11
T9S, R35E, NMPM
Lea County, New Mexico

Geological Data on Injection Zone

Pool: Bough-Permo Pennsylvanian Pool

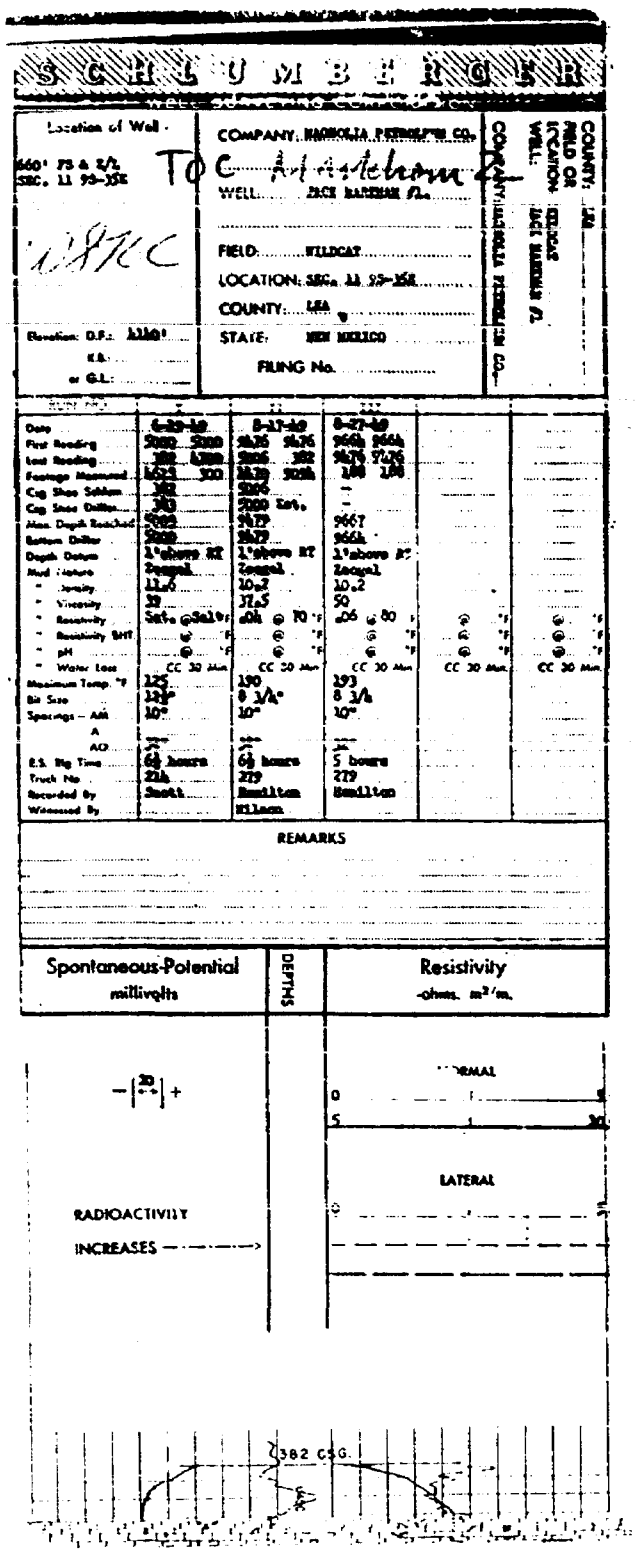
Formation: Bough C

Geological Name: Bough C

Thickness: at 44 feet

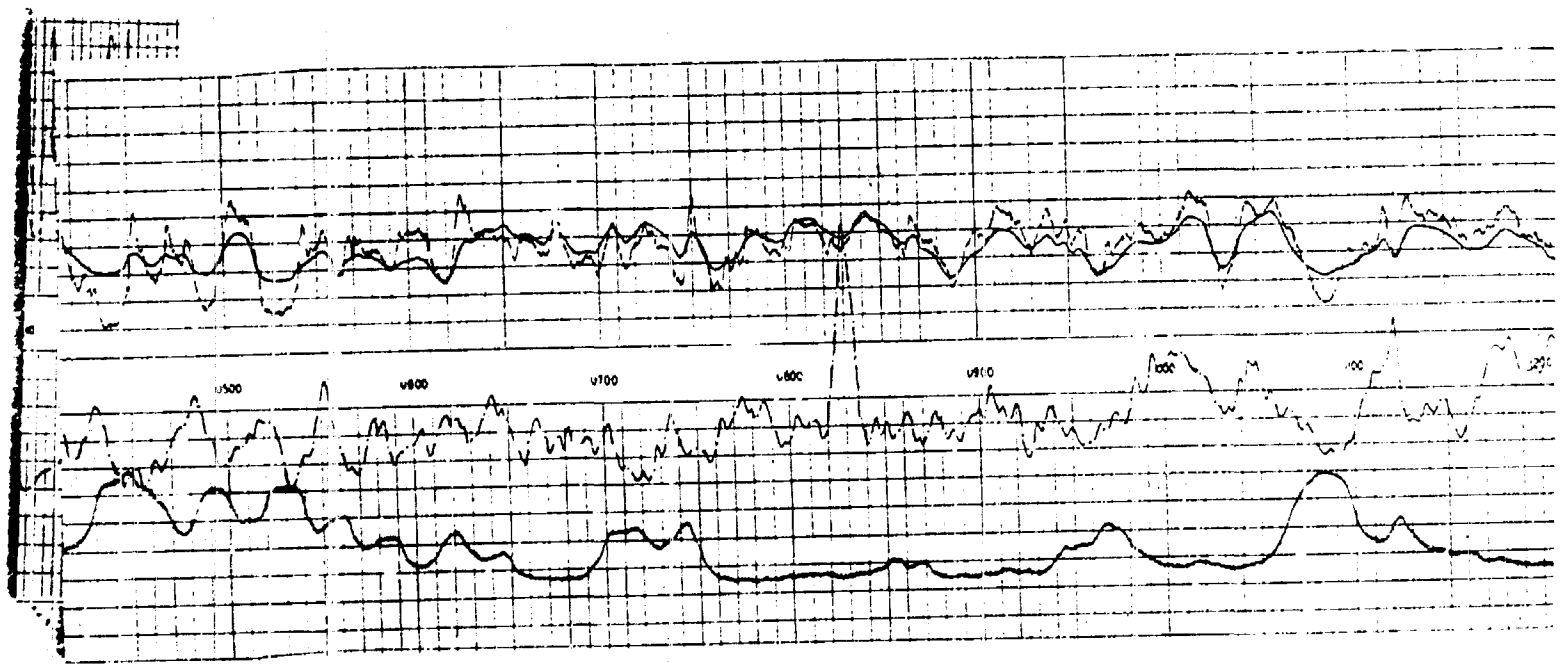
Depth: 9645

Injection Interval: 51 perforations
9645 feet to 9654 feet



Log of disposal well

EXHIBIT 5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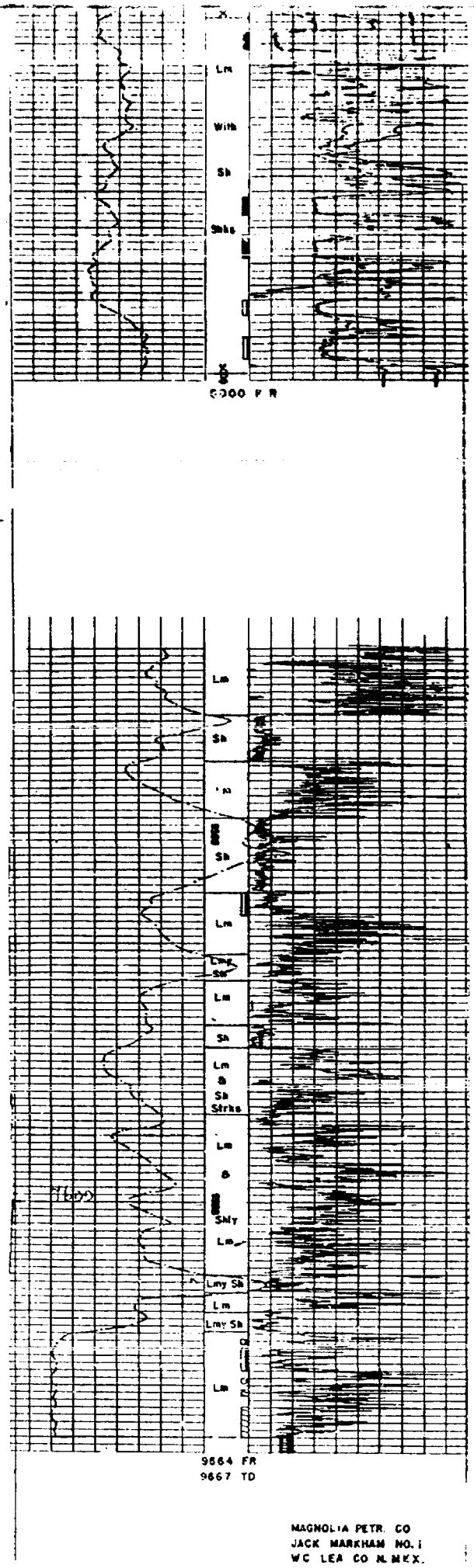
v600
v700
v800
v900



MAGNOLIA PETR. CO
JACK MARKHAM NO. 1
WC LEA CO N. MEX.

Ref: Para III-C-108

APOLLO OIL COMPANY

Exhibit 6

Jack Markham #2
Salt Water Disposal Well
Section 11
T9S, R35E, NMPM
Lea County, New Mexico

WELL DATA ON DISPOSAL WELL

Stimulation Program: none anticipated

Log: See attached

A(1) W. Holmes Lovejoy Lease
Jack Markham #2 well
Unit P 660 feet from South and East
Section 11, T9S, R35E, NMPM, Lea County, New Mexico

A(2) Casing Strings:

1. 13 3/8" casing at 383 feet with 375 sacks, circulated
2. 9 5/8" casing at 5000 feet with 3595 sacks, ciruclated
3. top of cement 5350 feet, calculated
4. 7" casing at 9668 feet with 1425 sacks.

A(3) Tubing:

2 3/8" plastic tubing set at 9495 feet

A(4) Baker Loc-set packer at 9495 feet

B(1) Injection formation is the Bough C in the Permo-Penn Pool

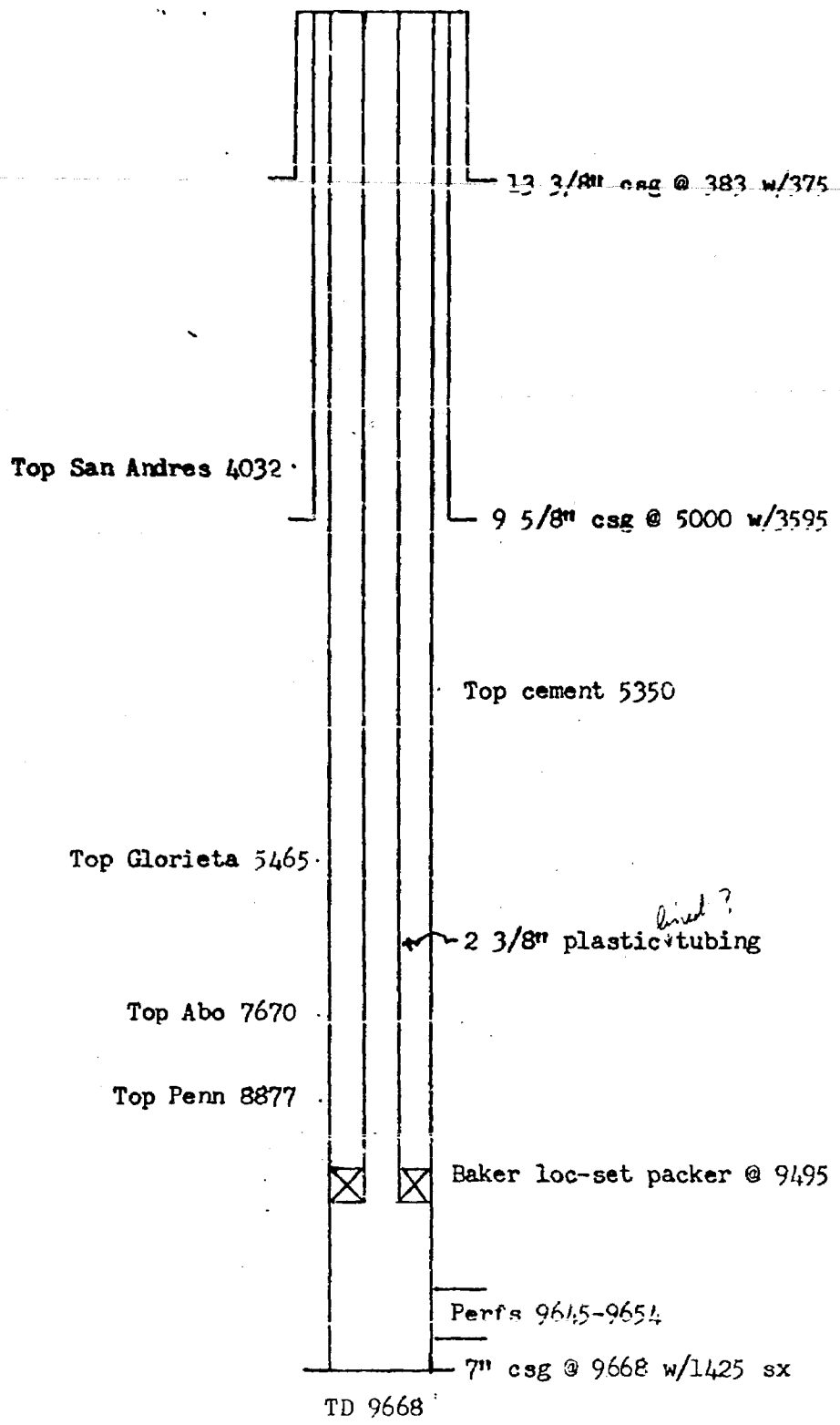
B(2) Injection interval through perforations at 9645 to 9654 feet

B(3) Well drilled as a producing well in October 1964

perforated: 4764-68 squeezed on December 14, 1964 with 100 sacks

perforated: 4747, 4750, 4757, 4759 on December 14, 1964 and squeezed with 25 sacks

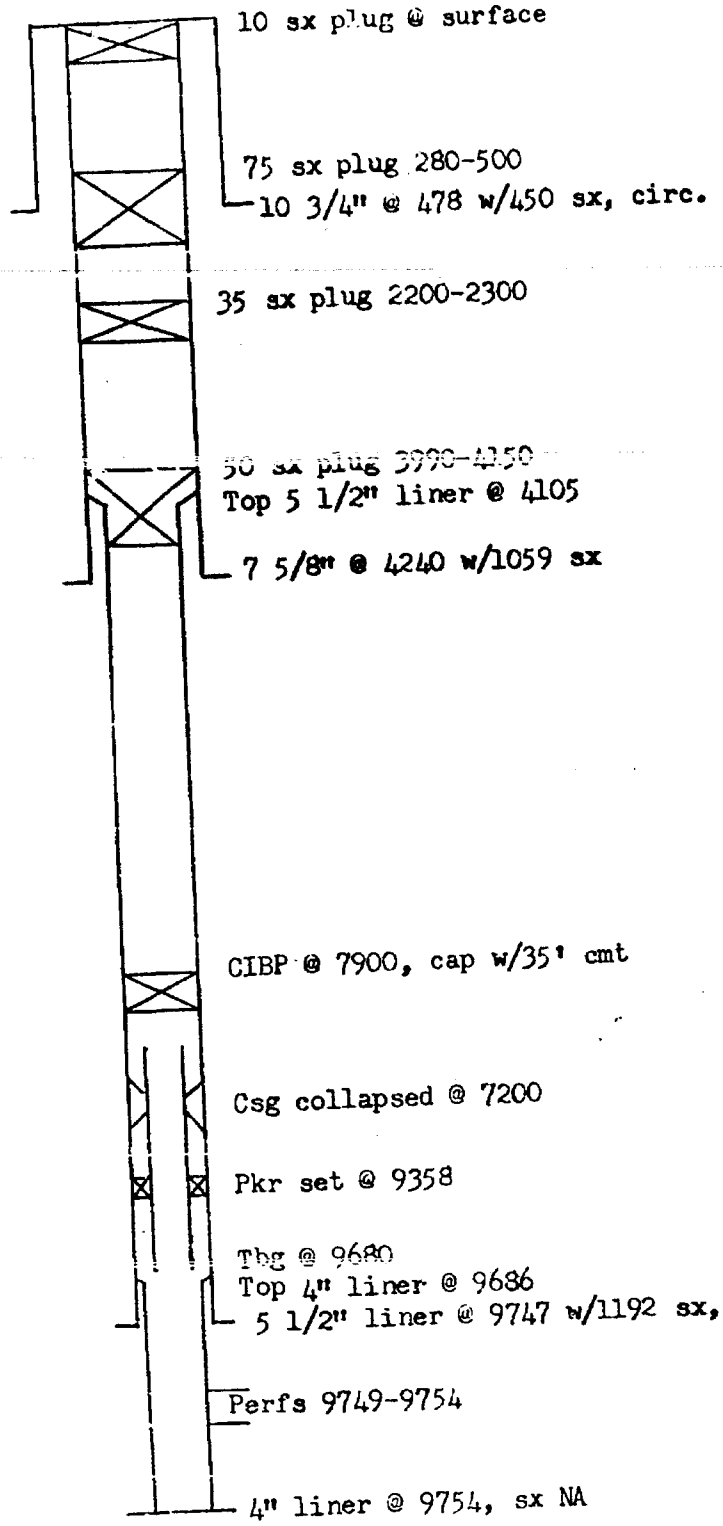
perforated: 9645-9654 produced from Bough "C"



Proposed Water Injection Well

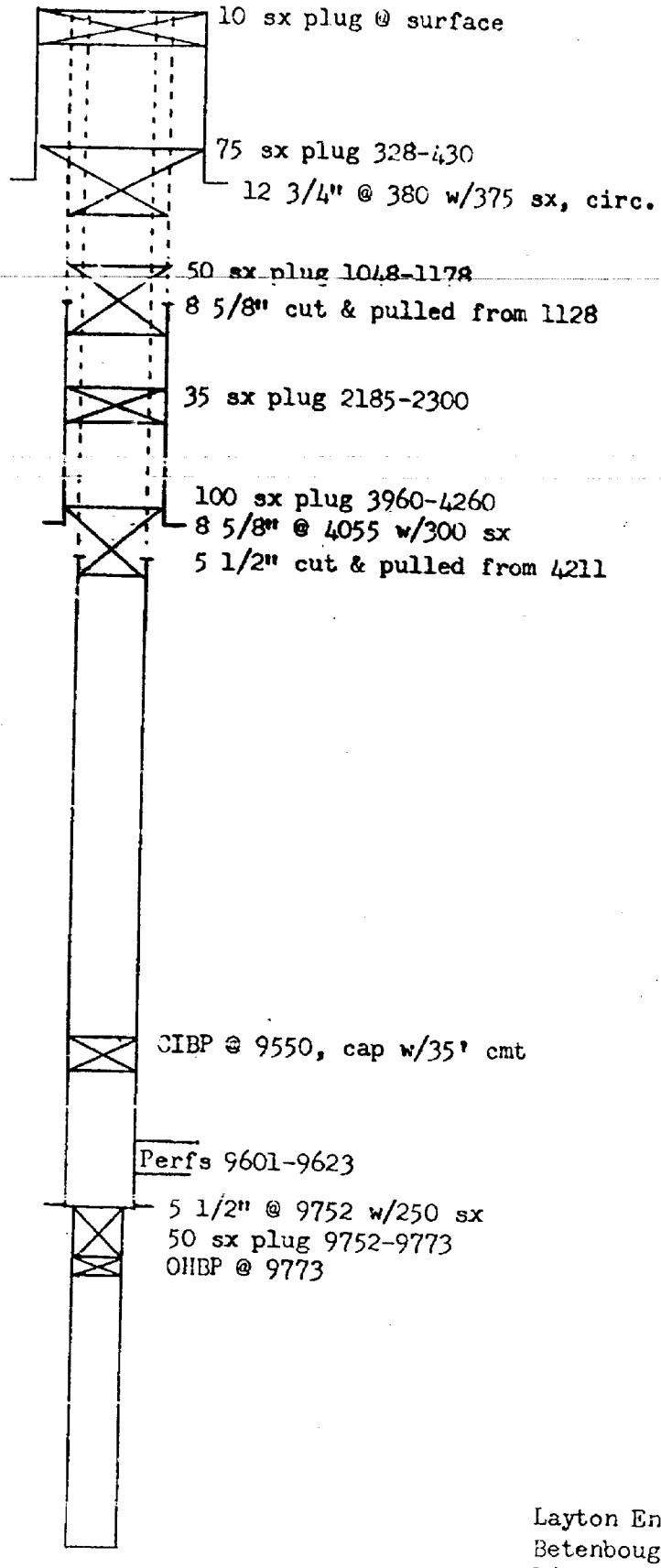
Apollo Energy, Inc.
Jack Markham No. 2
660' FSL & 660' FEL
Sec. 11, T9S, R35E

EXHIBIT 7



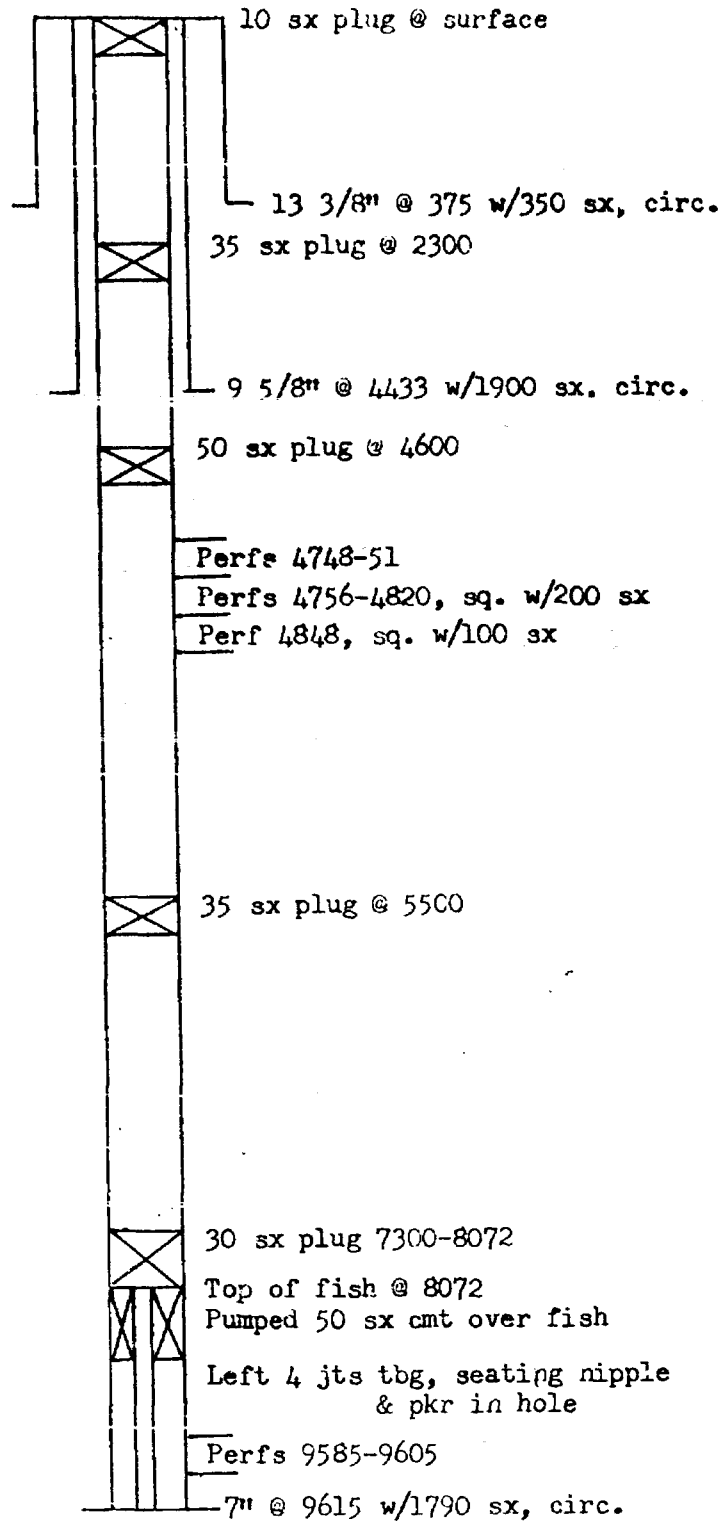
Layton Enterprises, Inc.
Betenbough B No. 2
330' FSL & 2310' FWL
Sec. 11, T9S, R35E

EXHIBIT 7



TD 12,088

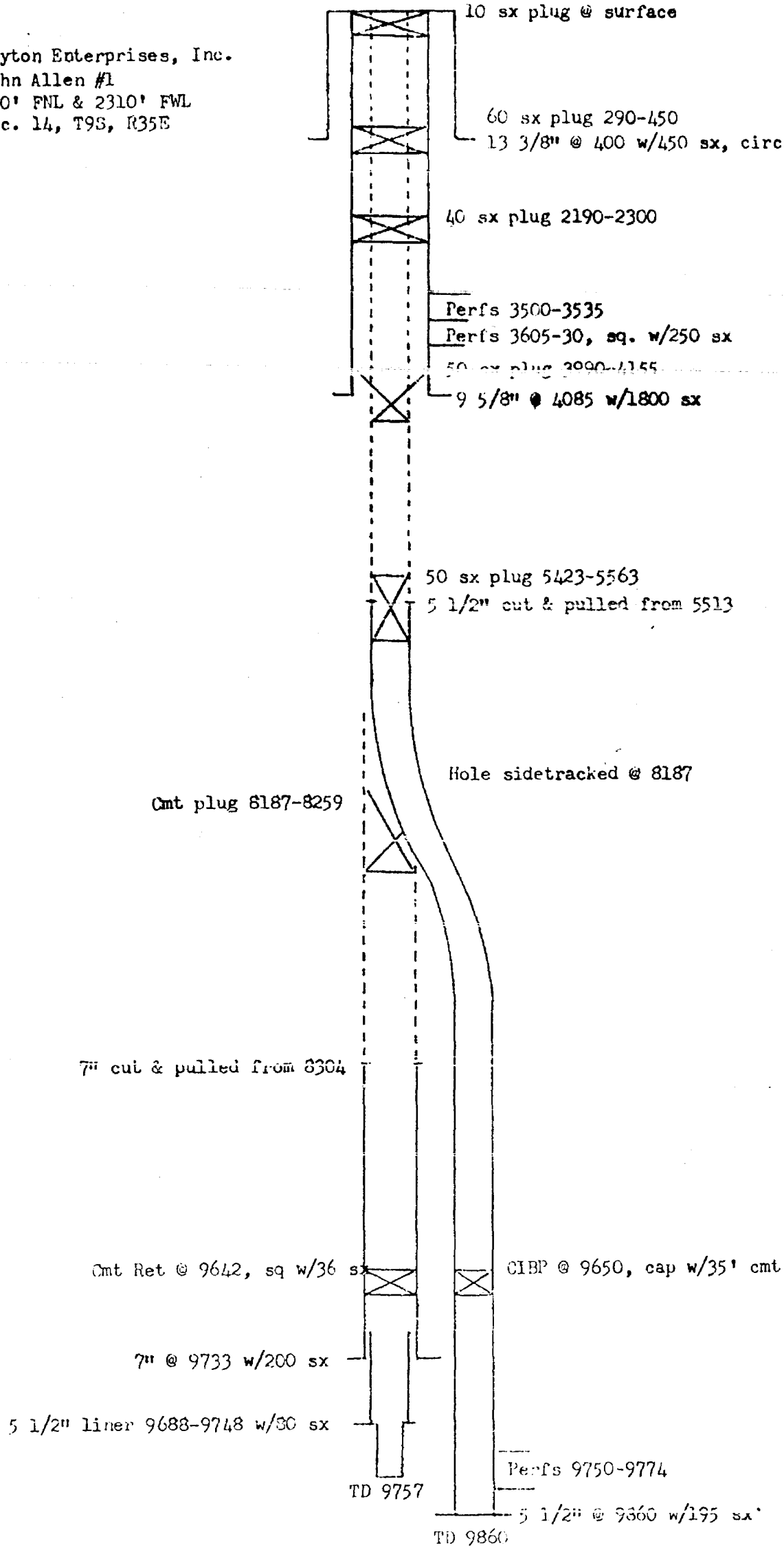
Layton Enterprises, Inc.
Betenbough B No. 4
1874' FNL & 554' FEL
Sec. 14, T9S, R35E



TD 9615

Coquina Oil Corporation
Federal 13 No. 1
660' FNL & 660' FWL
Sec. 13, T9S, R35E

Layton Enterprises, Inc.
John Allen #1
660' FNL & 2310' FWL
Sec. 14, T9S, R35E



Ref: Para XI C-108

Apollo Oil Company

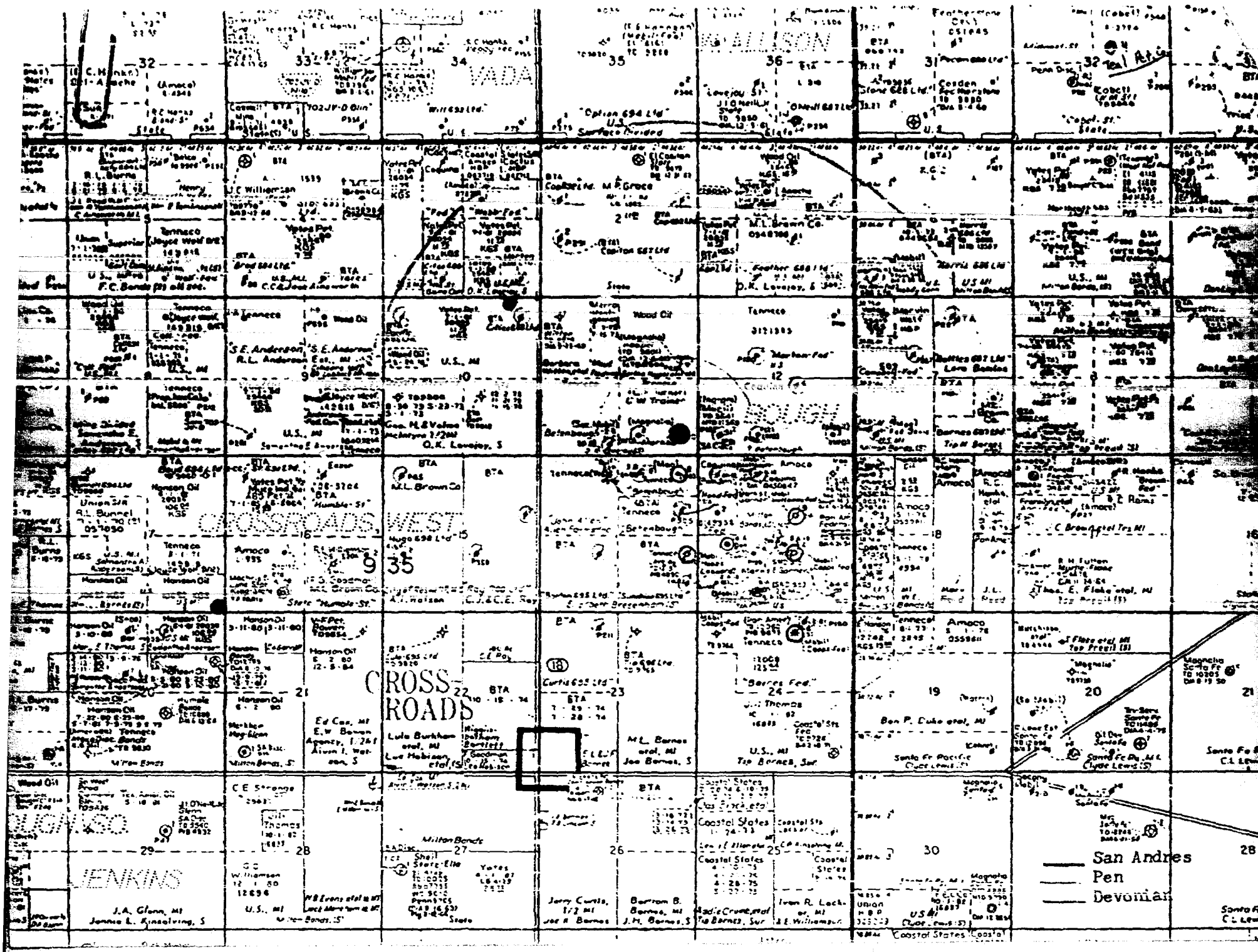
Exhibit 9

Jack Markham #2
Salt Water Disposal Well
Section 11
T9S, R35E, NMPM
Lea County, New Mexico

QUALITY OF WATER CONTROL IN SECTIONS NEAR SECTION 11-9S-35E

LOCATION	DATE SPLD.	CHLORIDE	SPECIFIC ELECTRIC CONDUCTANCE	TOTAL DISSOLVED SOLIDS
Section 7-9S-35E	11-09-79	104	1108	720.0
Section 10-9S-35E	11-08-79	110	1037	674.05
Sections 11, 12, 14	None			
Section 17-9S-35E	12-06-79	122	1139	740.35

NOTE: See attached map for locations.


ALLISON
VADA
CROSSROADS WEST
CROSS-ROADS
JENKINS
San Andres
Pen
Devonian

Ref: Para XII C-108

APOLLO OIL COMPANY

Exhibit 10

Jack Markham #2
Salt Water Disposal Well
Section 11
T9S, R35E, NMPM
Lea County, New Mexico

AFFIRMATIVE STATEMENT

APOLLO OIL COMPANY has examined available geologic 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

Jack Markham #2
Salt Water Disposal Well
Section 11
T9S, R35E, NMPM
Lea County, New Mexico

NOTICE

Pursuant to Section XIV,

Applicant has mailed copies of the application to the following:

Surface owner:

W. Holmes Lovejoy
General Delivery
Milnesand, New Mexico 88125

Leasehold Operators within one-half mile:

Maurice L. Brown Company
Box 2237
Midland, Texas 79702

Marks & Garner Production Co.
Box 1175
Lovington, New Mexico 88260

Layton Enterprises, Inc.
3103-79th Street
Lubbock, Texas 79423

Coquina Oil Corporation
400 North Marienfeld
Drawer 2960
Midland, Texas 79702

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 Meixco Oil Conservation Division, APOLLO OIL COMPANY, hereby gives public notice that it has applied to the Division for an order approving its Jack Markham #2 well located 660 feet from the South and East lines of Section 11, T9S, R35E, NMPM, Lea County, New Mexico as a disposal well in the Bough C formation of the Permo-Penn Pool at a depth of 9645 feet to 9654 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

CASE 7348: Application of Apollo Oil Company for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Abo formation in the interval from 8834 feet to 8968 feet in its Lovington State 9 Well No. 2 in Unit N of Section 9, Township 17 South, Range 37 East, Midway-Abo Pool.

CASE 7349: Application of Apollo Oil Company for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Bough C Formation in the interval from 9645 feet to 9654 feet in its Jack Markham Well No. 2 in Unit P of Section 11, Township 9 South, Range 35 East, Bough-Permo Pennsylvanian Pool.

CASE 7350: Application of Conoco, Inc. for salt water disposal, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Cisco formation in the interval from 8144 feet to 8160 feet in its Levers Federal Well No. 2 in Unit R of Section 2, Township 20 South, Range 25 East, Springs-Upper Penn Gas Pool.

CASE 7351: Application of Mid-America Petroleum, Inc. for compulsory pooling and the rescission of Order No. R-6722, Lea County, New Mexico.
Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Pennsylvanian formations underlying the W/2 of Section 12, Township 23 South, Range 34 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well. Applicant further seeks rescission of Order No. R-6722 which approved an unorthodox location for the subject well based on dedication of the S/2 of said Section 12.

CASE 7352: Application of Yates Petroleum Corporation for designation of a tight formation, Eddy County, New Mexico.
Applicant, in the above-styled cause, pursuant to Section 107 of the Natural Gas Policy Act 18-CFR Section 271.701-705, seeks the designation as a tight formation of the Permo-Penn and formation underlying all of the following townships:

Township 17 South, Ranges 24 thru 26 East;

18 South, 24 and 25 East;

19 South, 23 thru 25 East;

20 South, 21 thru 24 East;

20 ½ South, 21 and 22 East;

21 South, 21 and 22 East;

Also Sections 1 thru 12 in 22 South, 21 and 22 East,

All of the above containing a total of 315,000 acres more or less.

****

Docket No. 28-91

DOCKET: EXAMINER HEARING - WEDNESDAY - SEPTEMBER 16, 1981

9 A.M. - OIL CONSERVATION DIVISION CONFERENCE ROOM
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

The following cases will be heard before Richard L. Stamets, Examiner, or Daniel S. Nutter, Alternate Examiner:

ALLOWABLE: (1) Consideration of the allowable production of gas for October, 1981, from fifteen prorated pools in Lea, Eddy, and Chaves Counties, New Mexico.

(2) Consideration of the allowable production of gas for October, 1981, from four prorated pools in San Juan, Rio Arriba, and Sandoval Counties, New Mexico.

Dockets Nos. 29-81 and 30-81 are tentatively set for September 23 and October 7, 1981. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: EXAMINER HEARING - WEDNESDAY - SEPTEMBER 9, 1981

9 A.M. - OIL CONSERVATION DIVISION CONFERENCE ROOM
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

The following cases will be heard before Daniel S. Nutter, Examiner, or Richard L. Stamets, Alternate Examiner:

CASE 7341: Application of Superior Oil Company for downhole commingling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of South Carlsbad Strawn and Morrow production in the wellbore of its Collatt State Com Well No. 1 located in Unit J of Section 1, Township 23 South, Range 26 East.

CASE 7342: Application of Arco Oil and Gas Company for downhole commingling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Blinebry and Drinkard production in the wellbore of its State 367 Well No. 2 located in Unit L of Section 36 and its Roy Barton Well No. 2 located in Unit B of Section 23, both in Township 21 South, Range 37 East.

CASE 7343: Application of Caribou Four Corners, Inc. for compulsory pooling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Cha Cha Gallup - Oil Pool underlying the E/2 NW/4 of Section 18, Township 29 North, Range 14 West, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

CASE 7344: Application of Read & Stevens, Inc. for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Morrow formation underlying the W/2 of Section 19, Township 23 South, Range 28 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

CASE 7345: Application of Bass Enterprises Production Company for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Lovington Penn Pool underlying the N/2 NE/4 of Section 13, Township 16 South, Range 36 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

CASE 7346: Application of Cibola Energy Corporation for compulsory pooling, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Wolfcamp through Devonian formations underlying the W/2 of Section 19, Township 10 South, Range 29 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

CASE 7347: Application of Tenneco Oil Company for an unorthodox gas well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of a well to be drilled 660 feet from the South Line and 860 feet from the West Line of Section 20, Township 16 South, Range 34 East, Kemnitz-Morrow Gas Pool, the W/2 of said Section 20 to be dedicated to the well.

Ref: Para VII-C-108

Apollo Oil Company

Exhibit 3

Jack Markham #2
Salt Water Disposal Well
Section 11 Unit P
T9S, R35E, NMPM
Lea County, New Mexico

Data on Proposed Operation

1. Proposed average and maximu 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

   Bough "C" ✓ Devonian —
   San Andres ✓ Queen —

   (b) Analysis of formation fluid:

   The Bough C Formation
   (milligrams per liter)

   chloride: 36 to 25
   Calcium: 2500
   magnesium: 2 to 500
   sodium: 20,000
   bi-carbonate: 370 to 400
   sulfate: 11 to 1500
   ph: 6.2 to 6.4
   carbonate hardness: 8500 to 9000
   non-carbonate: 8000 to 9500

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

9645
2
19 29.0

APOLLO OIL COMPANY

Jack Markham #2
Sec. 11, T9S, R35E
Lea County New Mexico

Exhibit 1 - Map required by Paragraph V C-108

Exhibit 2 - Tabular Summary Reuiqred by Paragraph VI of C-108

Exhibit 3 - Data sheet required by Paragraph VII of C-108

Exhibit 4 - Geological Data - Paragraph VIII

Exhibit 5 - Log of Disposal Well

Exhibit 6 - Data Sheet on Disposal Well

Exhibit 7 - Schematic SWP well

Exhibit 8 - Schematic of P & A wells within 1 mile

Exhibit 9 - Water Quality

Exhibit 10 - Statement per Paragraph XII of C-108

Exhibit 11 - Notice Requirements

1-11

Ref: Para III-C-108

APOLLO OIL COMPANY

Exhibit 6

Jack Markham #2
Salt Water Disposal Well
Section 11 Unit P
T9S, R35E, NMPM
Lea County, New Mexico

WELL DATA ON DISPOSAL WELL

Stimulation Program: none anticipated

Log: See attached

A(1) W. Holmes Lovejoy Lease
Jack Markham #2 well
Unit P 660 feet from South and East
Section 11, T9S, R35E, NMPM, Lea County, New Mexico

A(2) Casing Strings:

1. 13 3/8" casing at 383 feet with 375 sacks, circulated
2. 9 5/8" casing at 5000 feet with ~~3995~~ 3595 sacks, ciruclated
3. top of cement 5350 feet, calculated
4. 7" casing at 9668 feet with 1425 sacks.

A(3) Tubing: lined

2 3/8" plastic tubing set at 9495 feet

A(4) Baker Loc-set packer at 9495 feet

B(1) Injection formation is the Bough C in the Permo-Penn Pool

B(2) Injection interval through perforations at 9645 to 9654 feet

B(3) Well drilled as a producing well in October 1964

perforated: 4764-68 squeezed on December 14, 1964 with 100 sacks

perforated: 4747, 4750, 4757, 4759 on December 14, 1964 and squeezed with 25 sacks

perforated: 9645-9654 produced from Bough "C"

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
[illegible] BOX 2088
STATE LAND OFFICE BUILDING
[illegible]

FORM C-108
Revised 7-1-81

Case 7349

APPLICATION FOR AUTHORIZATION TO INJECT

I. Purpose: ☐ Secondary Recovery ☐ Pressure Maintenance ☒ Disposal ☐ Storage
Application qualifies for administrative approval? ☐ yes ☐ 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? ☐ yes ☒ no
If yes, give the Division order number authorizing the project _____

RECEIVED
AUG 14 1981
OIL CONSERVATION DIVISION
SANTA FE

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.

Tabular Summary
Wells Within One-Half Mile of
Apollo Energy, Inc. Jack Markham No. 2

Maurice L. Brown Co. — **Hooper #1**

2310' FNL & 330' FEL, Sec. 11, T9S, R35E — Total Depth 9900, Perfs 9793--9822, TA 5/15/81
Csg: 10 3/4" @ 428 w/425 sx — Top cmt: surface
7 5/8" @ 4250 w/1800 sx — Top cmt: surface
5 1/2" @ 9900 w/300 sx — Top cmt: 6309 est

Marks & Garner Prod. Co. — **Betenbough #2**

660' FSL & 660' FWL, Sec. 12, T9S, R35E — Total Depth 11,569, Perfs 9596-9616
Csg: 13 3/8" @ 354 w/375 sx — Top cmt: surface
9 5/8" @ 6200 w/4500 sx — Top cmt: surface
7" liner 4493-9641 w/775 sx — Top cmt: 4965 est — Cut & pulled from 4493

Apollo Energy, Inc. — **Jack Markham #1**

660' FSL & 1980' FEL, Sec 11, T9S, R35E — Total Depth 9726, OH 9705-9726
Csg: 10 3/4" @ 467 w/450 sx — Top cmt: surface
7 5/8" @ 4258 w/2175 sx — Top cmt: surface
5 1/2" liner 4124-9705 w/1850 sx — Top cmt: 4124 est

Layton Enterprises, Inc. — **Betenbough B #2**

330' FSL & 2310' FWL, Sec. 11, T9S, R35E — Total Depth 9758, Perfs 9749-4754, P&A 9/11/80
Csg: 10 3/4" @ 478 w/450 sx — Top cmt: surface
7 5/8" @ 4240 w/1059 sx — Top cmt: 480 TS
5 1/2" liner 4105-9747 w/1192 sx — Top cmt: 4105 circ.
4" liner 9686-9754 w/sx NA

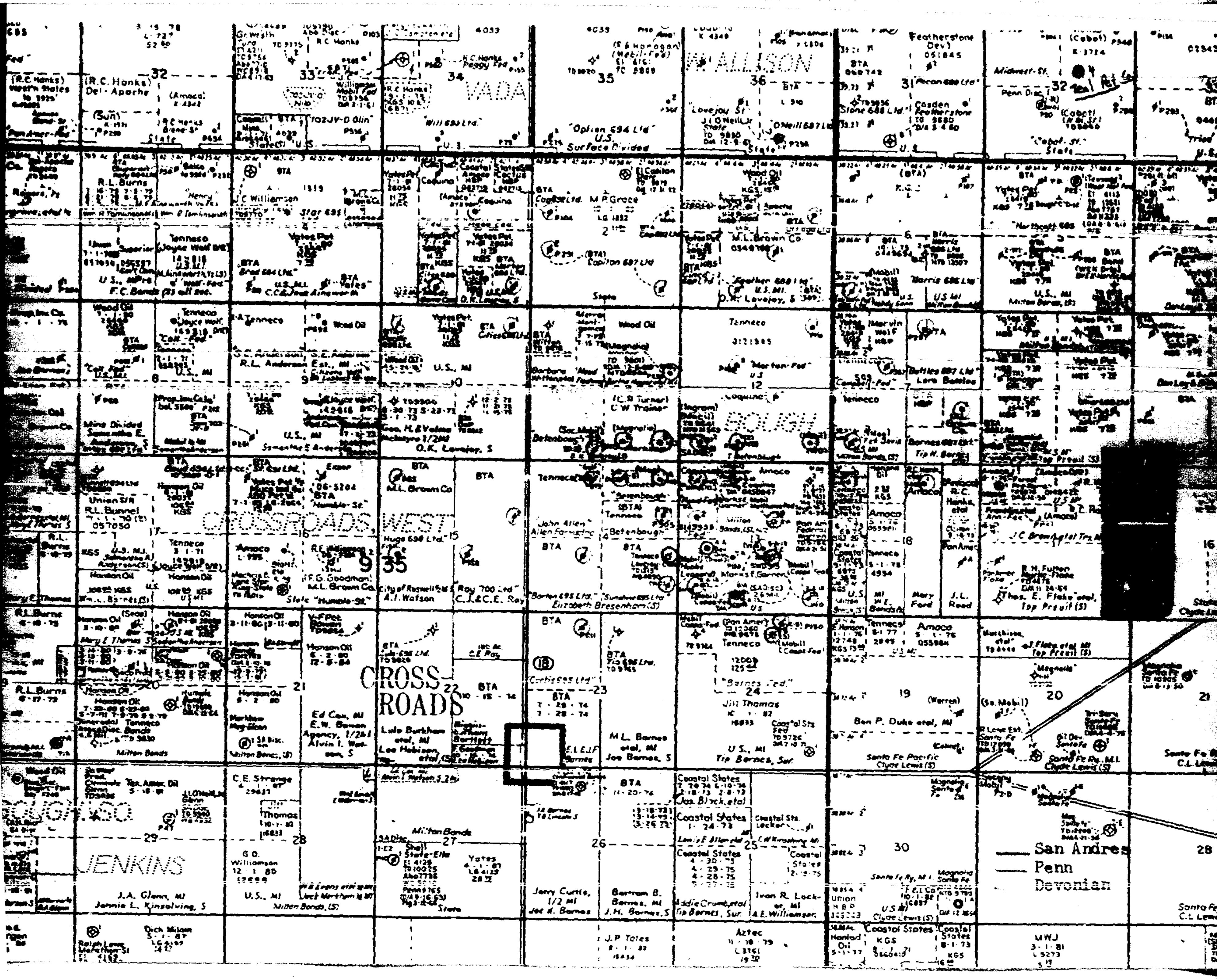
Layton Enterprises, Inc. — **John Allen #1**

660' FNL & 2310' FWL, Sec 14, T9S, R35E — Total Depth 9860, Perfs 9750-9774, P&A 10/7/80
Csg: 13 3/8" @ 400 w/450 sx — Top cmt: surface
9 5/8" @ 4085 w/1800 sx — Top cmt: 570 TS
7" 8304-9733 w/200 sx — Top cmt: 8745 TS — Cut & pulled from 8304
5 1/2" liner 9688-9748 w/80 sx. (orig: TD 9757 & P&A)
Hole sidetracked @ 8187
5 1/2" @ 9860 w/195 sx. — Top cmt: 8735 est — Cut & pulled from 5513

Layton Enterprises, Inc. — **Betenbough B #3**

660' FNL & 1980' FEL, Sec. 14, T9S, R35E — Total Depth 12,574, Perfs 9710-9730, TA 7/31/80
Csg: 13 3/8" @ 410 w/400 sx — Top cmt: surface
9 5/8" @ 4260 w/2550 sx — Top cmt: surface
7" @ 9805 w/2470 sx — Top cmt: 5290 TS — Cut & pulled from 4690
Run 7" w/csg bowl on re-entry

Layton Enterprises, Inc.	Beterbough B #1	660" FNL & 660' FEL, Sec. 14, T9S, R35E	Total Depth 9659, Perfs 4757-4769
		Csg: 13 3/8" @ 372 w/350 sx	Top cmt: surface
		9 5/8" @ 4429 w/1500 sx	Top cmt: 2300 TS
		7" @ 9638 w/1987 sx	Top cmt: 300 TS
Coquina Oil Corp.	Federal 13 #1	660' FNL & 660' FWL, Sec. 13, T9S, R35E	Total Depth 9615, Perfs 9585-9605, P&A 7/5/77
		Csg: 13 3/8" @ 375 w/350 sx	Top cmt: surface
		9 5/8" @ 4433 w/1900 sx	Top cmt: surface
		7" @ 9615 w/1790 sx	Top cmt: surface
Layton Enterprises, Inc.	Beterbough B #4	1874' FNL & 554" FEL, Sec. 14, T9S, R35E	Total Depth 12,088, Perfs 9601-9623, P&A 9/8/80
		Csg: 12 3/4" @ 380 w/375 sx	Top cmt: surface
		8 5/8" @ 4055 w/300 sx	Top cmt: 2875 est Cut & pulled from 4211
		5 1/2" @ 9752 w/250 sx	Top cmt: 8310 est Cut & pulled from 1128



W. ALLISON
VADA
BOUGH
CROSSROADS WEST
CROSS-ROADS
JENKINS
San Andres
Penn
Devonian

Ref: Para VIII-C-108

Apollo Oil Company
Exhibit 4

Jack Markham #2
Salt Water Disposal Well
Section 11 unit P
T9S, R35E, NMPM
Lea County, New Mexico

Geological Data on Injection Zone

Pool: Bough-Permo Pennsylvanian Pool

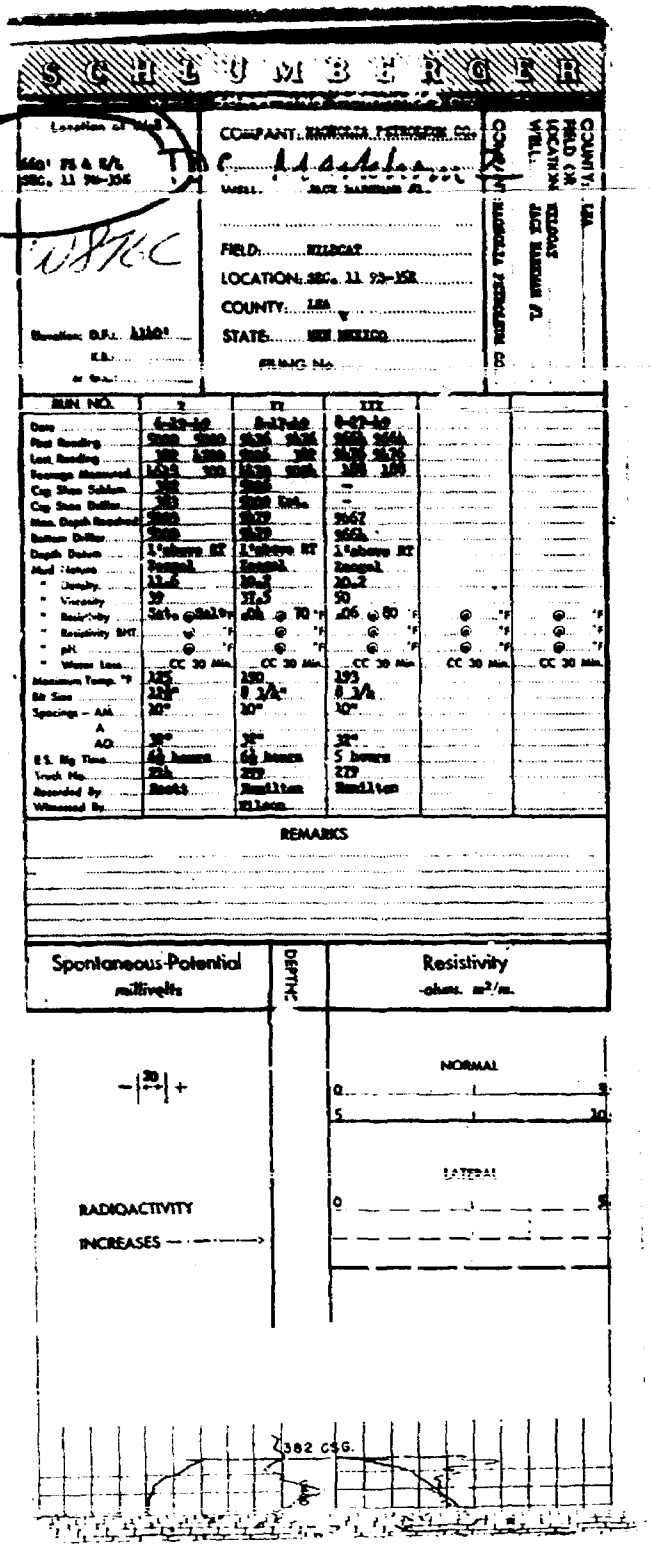
Formation: Bough C

Geological Name: Bough C

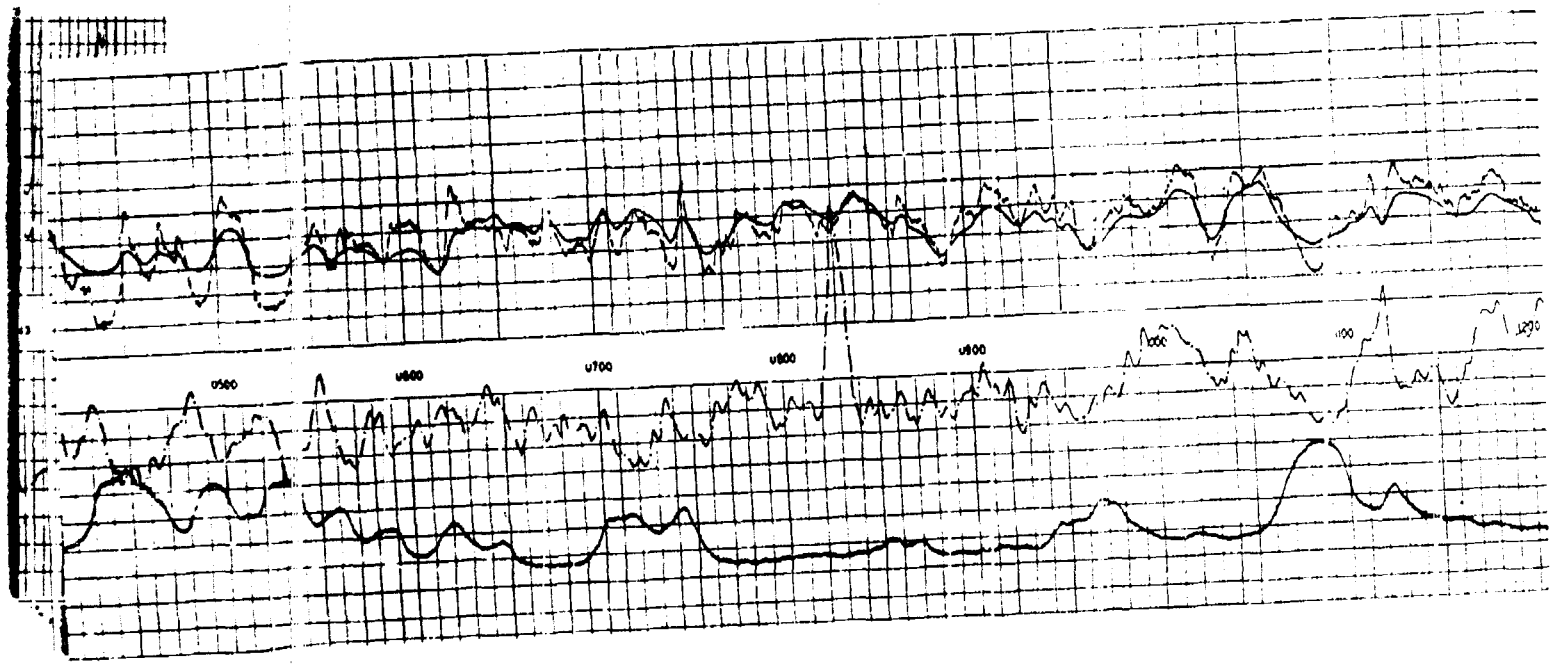
Thickness: at 44 feet

Depth: 9645

Injection Interval: 51 perforations
9645 feet to 9654 feet



Log of disposal well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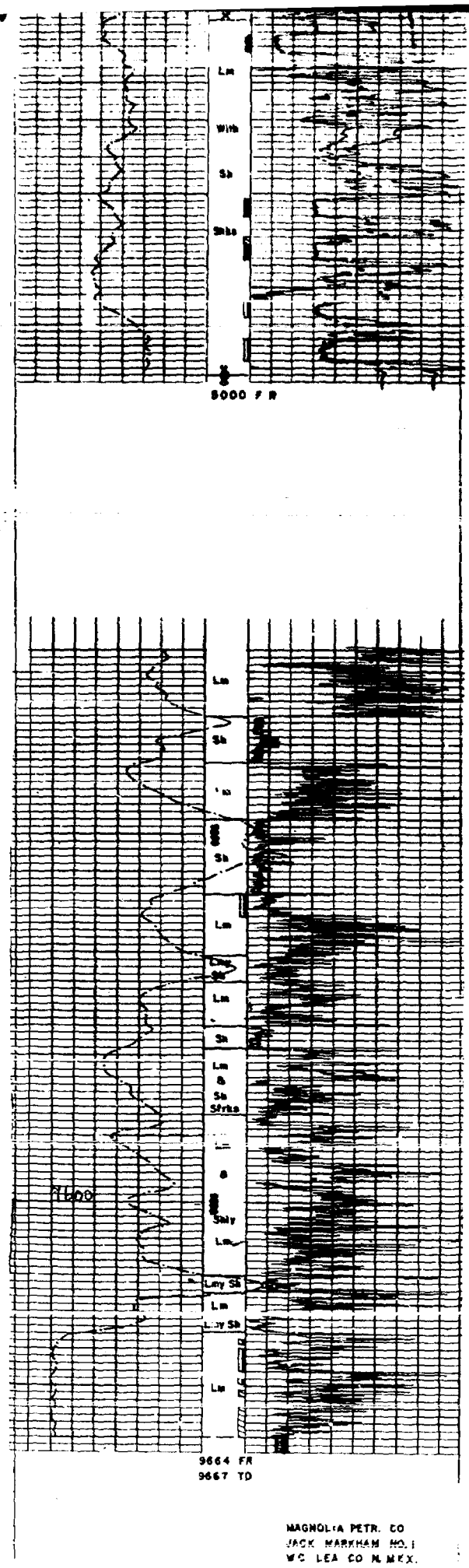
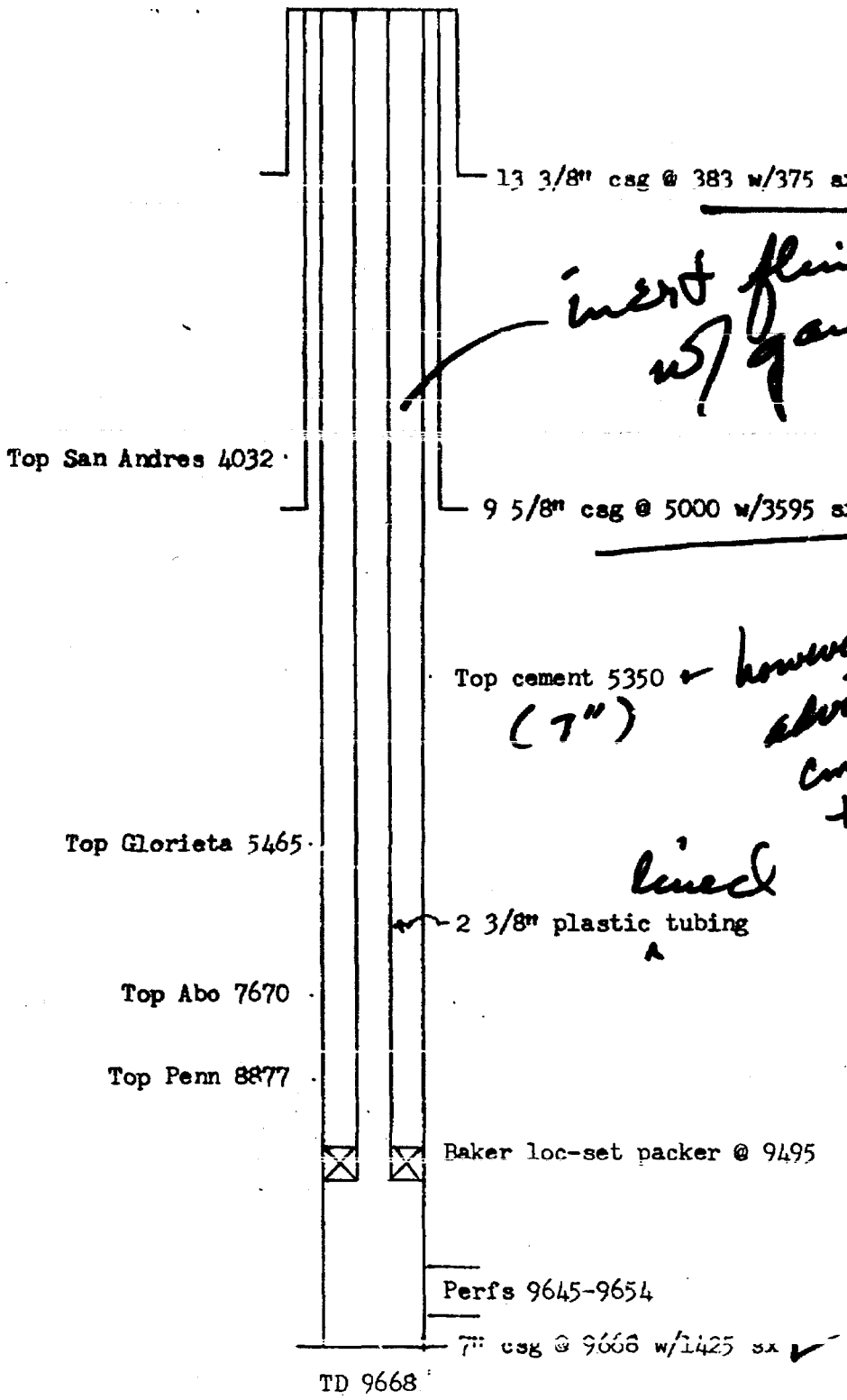
u600
u700
u800
u900

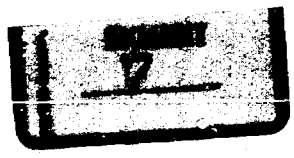


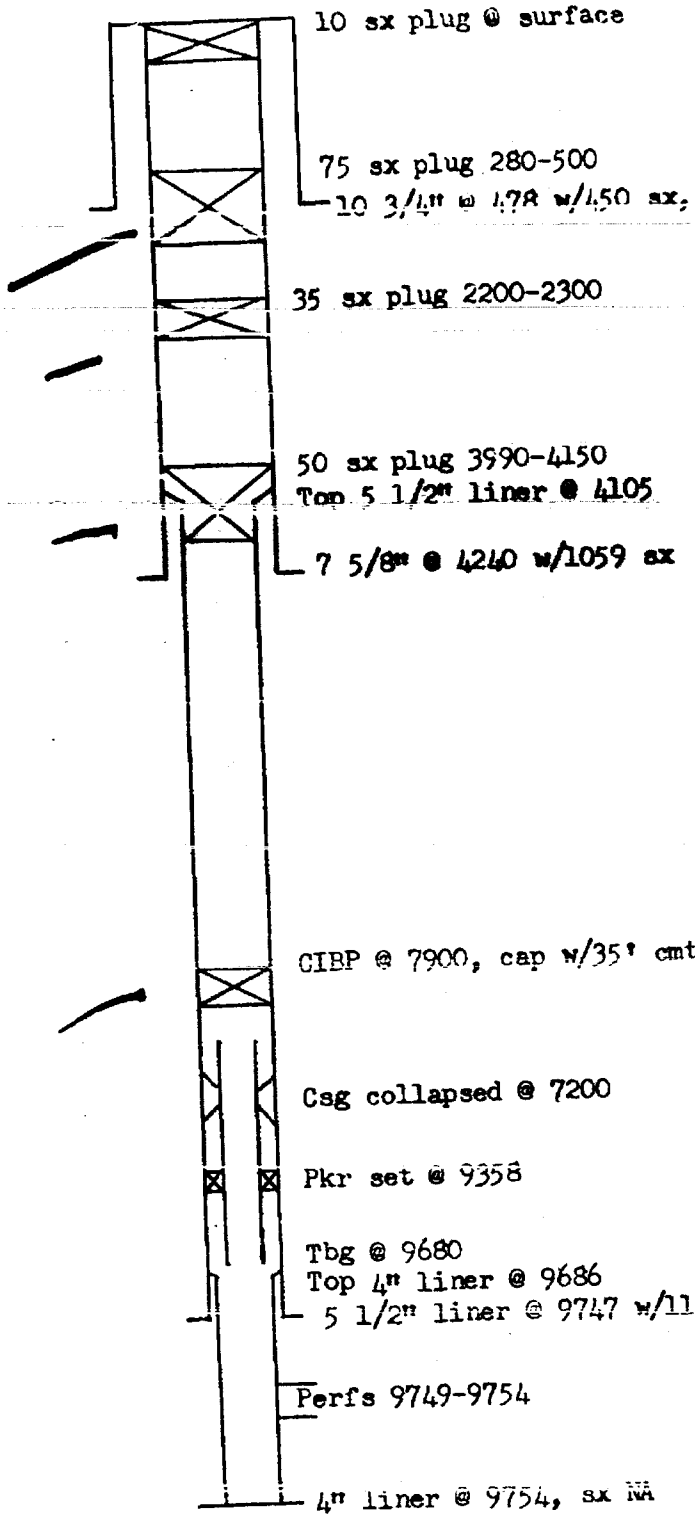
MAGNOLIA PETR. CO
JACK MARKHAM NO. 1
WC LEA CO N. MEX.



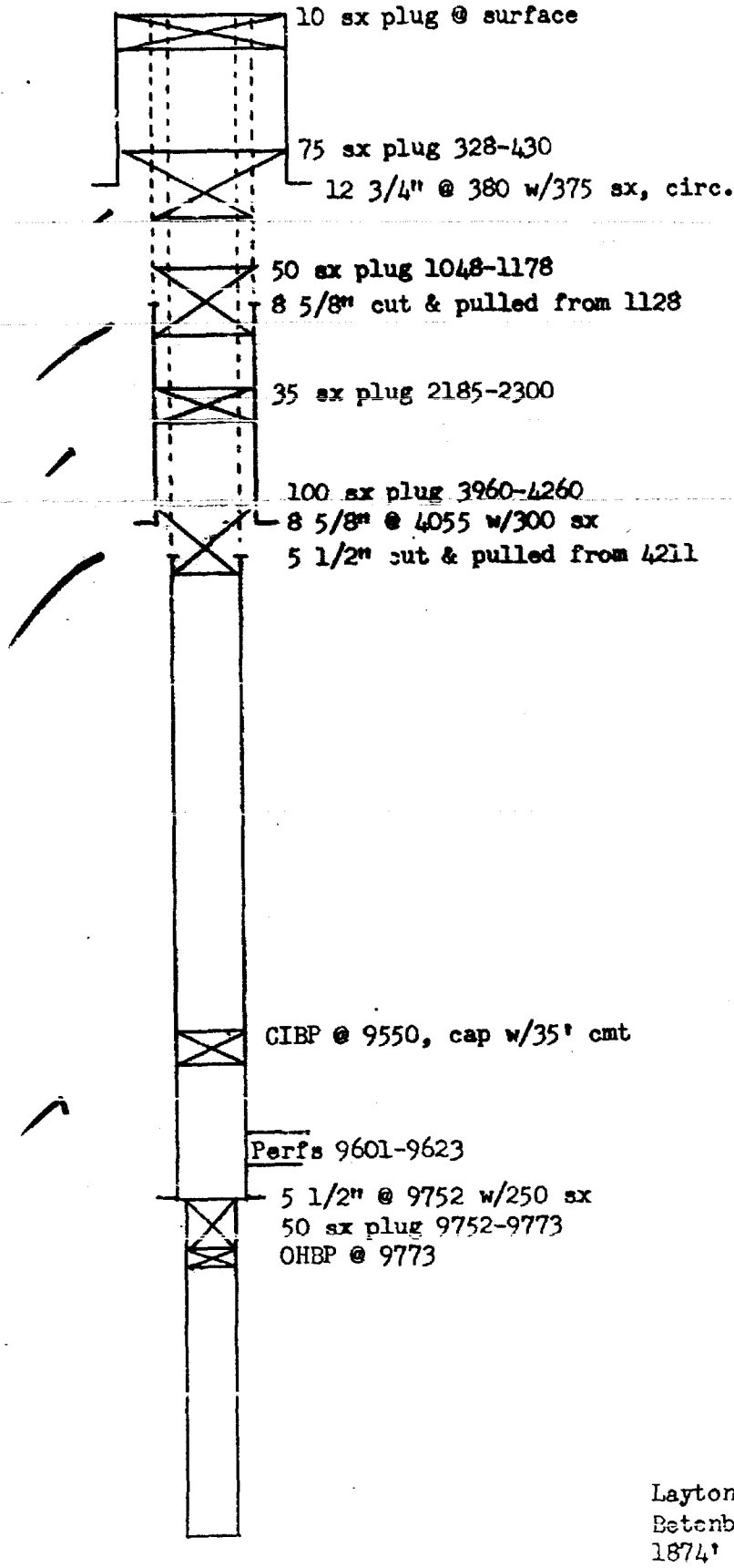
Proposed Water Injection Well

Apollo Energy, Inc.
Jack Markham No. 2
660' FSL & 660' FEL
Sec. 11, T9S, R35E

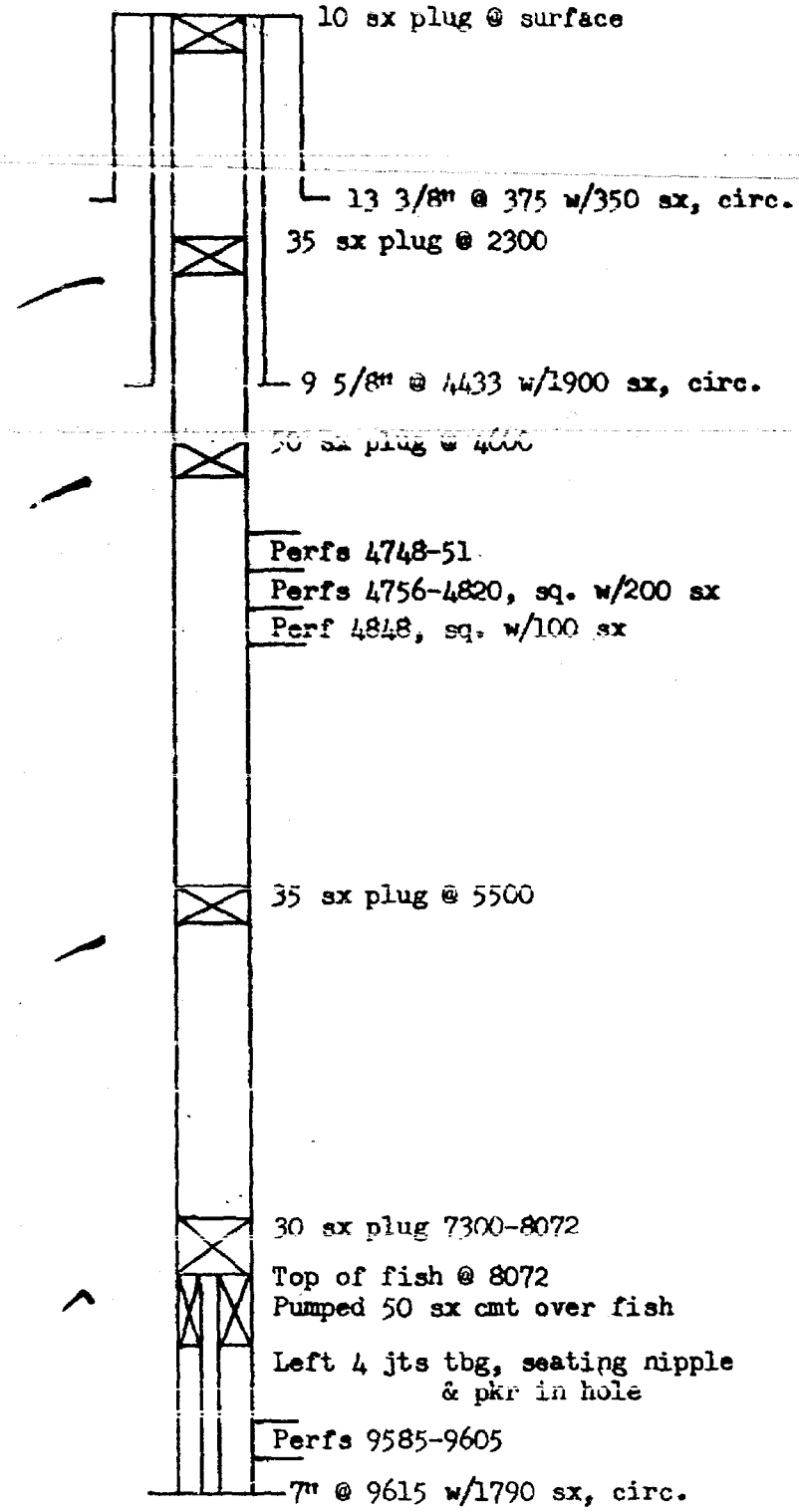




Layton Enterprises, Inc.
Betenbough B No. 2
330' FSL & 2310' FWL
Sec. 11, T9S, R35E



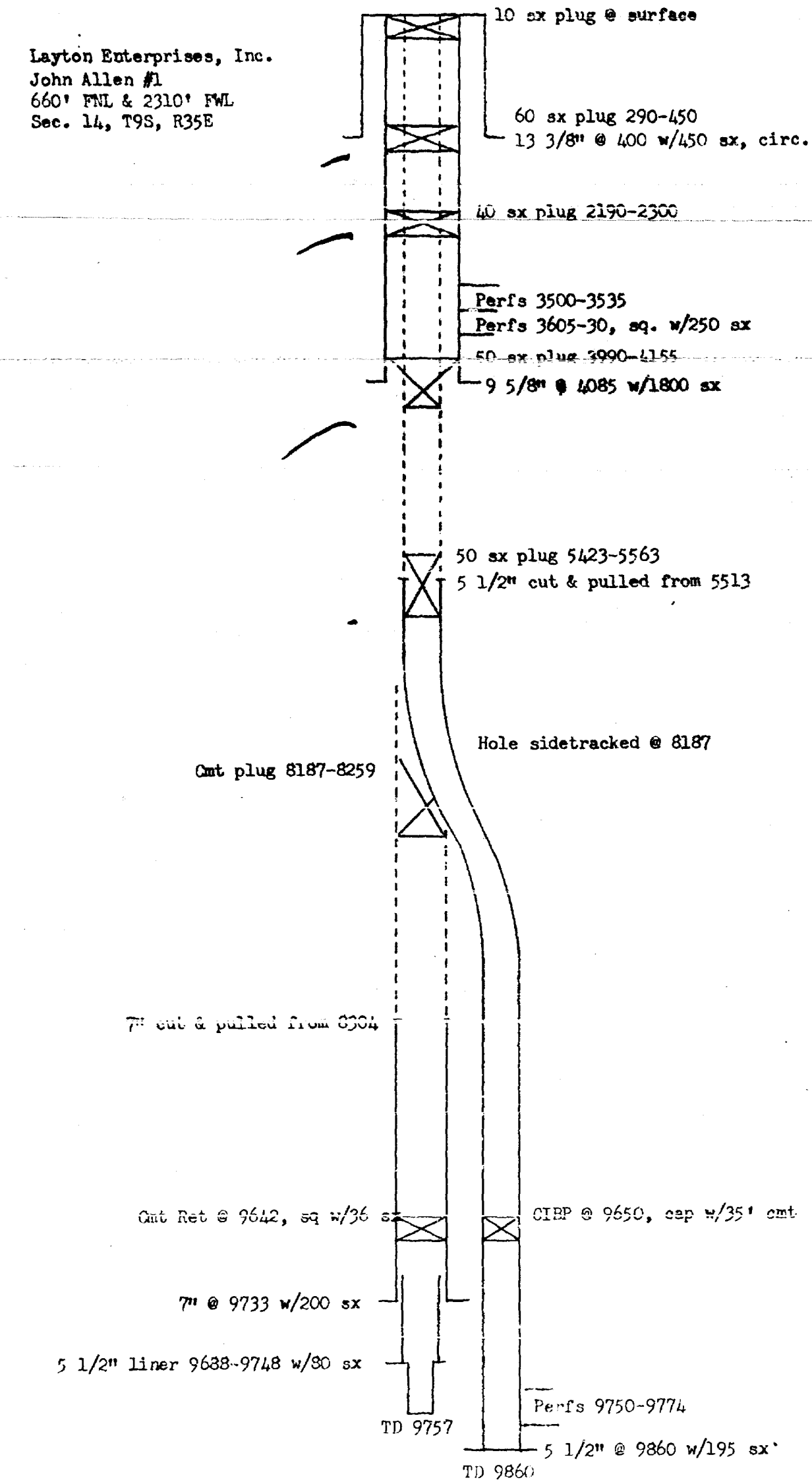
Layton Enterprises, Inc.
Betenbough B No. 4
1874' FNL & 554' FEL
Sec. 14, T9S, R35E



TD 9615

Coquina Oil Corporation
Federal 13 No. 1
660' FNL & 660' FWL
Sec. 13, T9S, R35E

Layton Enterprises, Inc.
John Allen #1
660' FNL & 2310' FWL
Sec. 14, T9S, R35E



Ref: Para XI C-108

Apollo Oil Company

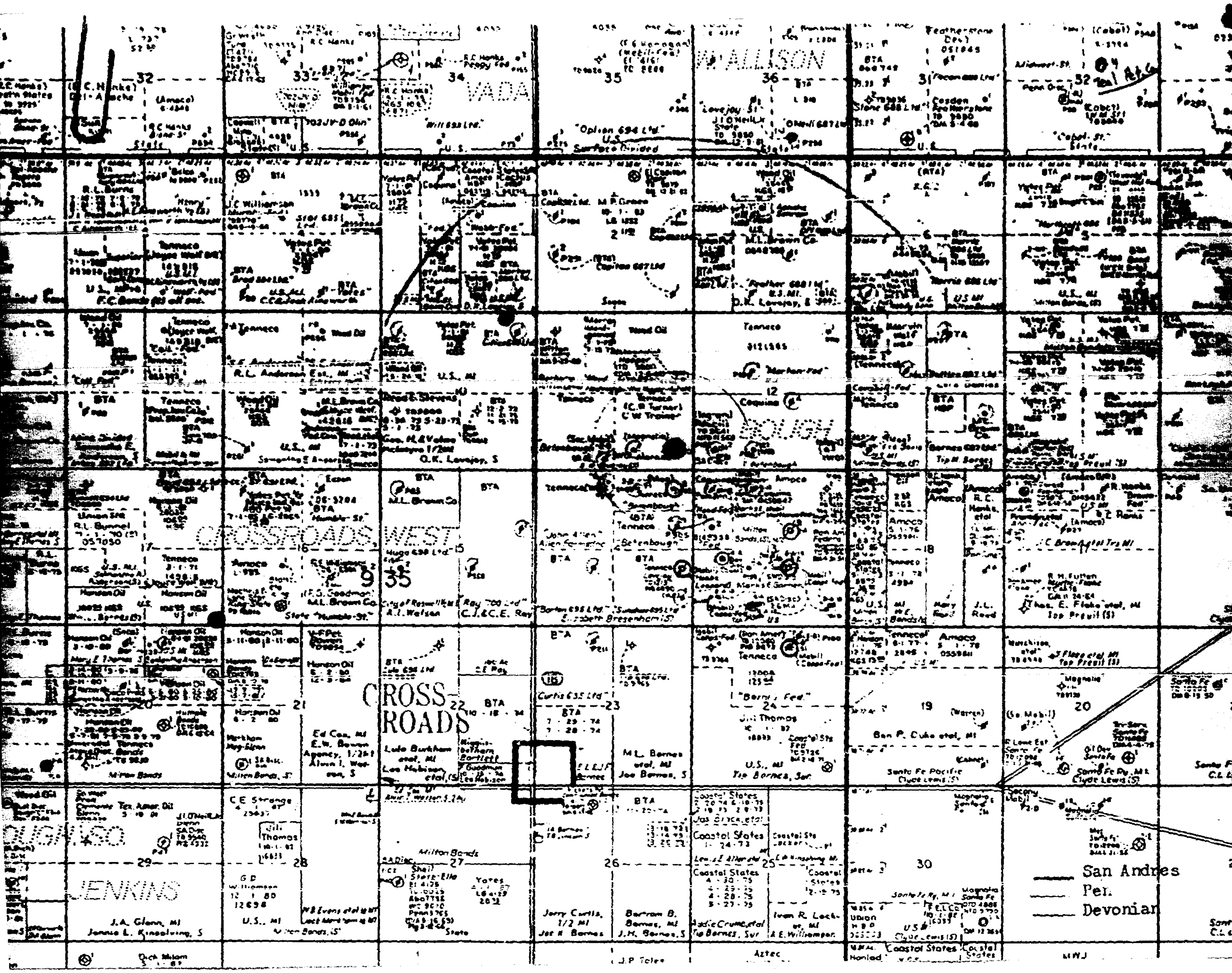
Exhibit 9

Jack Markham #2
Salt Water Disposal Well
Section 11
T9S, R35E, NMPM
Lea County, New Mexico

QUALITY OF WATER CONTROL IN SECTIONS NEAR SECTION 11-9S-35E

LOCATION	DATE SPLD.	CHLORIDE	SPECIFIC ELECTRIC CONDUCTANCE	TOTAL DISSOLVED SOLIDS
Section 7-9S-35E	11-09-79	104	1108	720.0
Section 10-9S-35E	11-08-79	110	1037	674.05
Sections 11, 12, 14	None			
Section 17-9S-35E	12-06-79	122	1139	740.35

NOTE: See attached map for locations.



VADA
ALLISON
CROSSROADS, WEST
CROSS-ROADS
JENKINS
32
33
34
35
36
31
32
2
6
5
12
16
15
17
18
9
35
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21
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29
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27
26
25
30
San Andres
Per.
Devonian
(Amoco)
R.C. Hanks
"Oplien 694 Ltd."
U.S.
Surface Divided
State
"Lovejoy St."
Featherstone
Cosden
"Cabot St."
R.L. Burns
J.C. Williamson
M.P. Grace
Tenneco
Yates Pet.
BTA
M.L. Brown Co.
D.K. Lovejoy, S
F.C. Bonds
Wood Oil
R.L. Anderson Est., MI
O.K. Lovejoy, S
Amoco
R.L. Bunnel
Hanson Oil
M.L. Brown Co.
State "Humble St."
C.J.&C.E. Ray
Betenbough
Ed Cox, MI
E.W. Bowen
Lula Burkham etal, MI
Milton Bonds
ML Barnes etal, MI
Joe Barnes, S
Jill Thomas
U.S., MI
Tip Barnes, Sur
Ben P. Cuke etal, MI
Santa Fe Pacific
Clyde Lewis (S)
Magnolia
C.E. Strange
Jill Thomas
G.D. Williamson
U.S., MI
Shell
Yates
Jerry Curtis, 1/2 MI
Joe H. Barnes
Barron B. Barnes, MI
J.H. Barnes, S
Coastal States
Ivan R. Lock-er, MI
J.A. Glenn, MI
Jennie L. Kinsolving, S
Dick Mixom
J.P. Toles
Aztec

Ref: Para XII C-108

APOLLO OIL COMPANY

Exhibit 10

Jack Markham #2
Salt Water Disposal Well
Section 11
T9S, R35E, NMPM
Lea County, New Mexico

AFFIRMATIVE STATEMENT

APOLLO OIL COMPANY has examined available geologic 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

Jack Markham #2
Salt Water Disposal Well
Section 11
T9S, R35E, NMPM
Lea County, New Mexico

NOTICE

Pursuant to Section XIV,

Applicant has mailed copies of the application to the following:

Surface owner:

W. Holmes Lovejoy
General Delivery
Milnesand, New Mexico 88125

Leasehold Operators within one-half mile:

Maurice L. Brown Company
Box 2237
Midland, Texas 79702

Marks & Garner Production Co.
Box 1175
Lovington, New Mexico 88260

Layton Enterprises, Inc.
3103-79th Street
Lubbock, Texas 79423

Coquina Oil Corporation
400 North Marienfeld
Drawer 2960
Midland, Texas 79702

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 Meixco Oil Conservation Division, APOLLO OIL COMPANY, hereby gives public notice that it has applied to the Division for an order approving its Jack Markham #2 well located 660 feet from the South and East lines of Section 11, T9S, R35E, NMPM, Lea County, New Mexico as a disposal well in the Bough C formation of the Permo-Penn Pool at a depth of 9645 feet to 9654 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

ROUGH

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 7349

Order No. R- 6787

APPLICATION OF APOLLO OIL COMPANY
FOR SALT WATER DISPOSAL, LEA COUNTY,
NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on September 9, 19 81, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter

NOW, on this _____ day of September, 19 81, ~~the Division~~ Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Apollo Oil Company, is the owner and operator of the Jack Markham Well No. 2, located in Unit P of Section 11, Township 9 South, Range 35 East, NMPM, Bough-Permo Pennsylvanian Pool, Lea County, New Mexico.

(3) That the applicant proposes to utilize said well to dispose of produced salt water into the Bough C formation, with injection into the perforated interval from approximately 9645 feet to 9654 feet.

(4) That the injection should be accomplished through 2 3/8 -inch plastic lined tubing installed in a packer set at approximately 9495 feet; that the casing-tubing annulus should be filled with an inert fluid; and that a pressure gauge or approved leak detection device should be attached to the annulus in order

to determine leakage in the casing, tubing, or packer.

(5) That the injection well or system should be equipped with a pop-off valve or acceptable substitute which will limit the wellhead pressure on the injection well to no more than 1496 psi.

~~(6) That the Director of the Division should be authorized to administratively approve an increase in the injection pressure upon a proper showing by the operator that such higher pressure will not result in migration of the injected waters from the Bough C formation.~~

(6) That the operator should notify the supervisor of the Hobbs district office of the Division of the date and time of the installation of disposal equipment so that the same may be inspected.

(7) That the operator should take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface.

(9) That approval of the subject application will prevent the drilling of unnecessary wells and otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Apollo Oil Company, is hereby authorized to utilize its Jack Markham Well No. 2, located in Unit P of Section 11, Township 9 South, Range 35 East, NMPM, Bough-Permo Pennsylvanian Pool, Lea County, New Mexico, to dispose of produced salt water into the Bough C formation, injection to be accomplished through 2 3/8-inch tubing installed in a packer set at approximately 9495 feet, with injection into the _____ interval from approximately 9645 feet to 9654 feet;

(8) That disposal should be limited to waters produced from the Bough C zone of the Pennsylvanian unless additional evidence has been submitted as to the compatibility of waters from other formations, and the ~~Division~~ Director has approved the disposal of such other waters in the subject well.

PROVIDED HOWEVER, that the tubing shall be plastic-lined; that the casing-tubing annulus shall be filled with an inert fluid; and that a pressure gauge shall be attached to the annulus or the annulus shall be equipped with an approved leak detection device in order to determine leakage in the casing, tubing, or packer.

(2) That the injection well or system shall be equipped with a pop-off valve or acceptable substitute which will limit the wellhead pressure on the injection well to no more than 1925 psi.

~~(3) That the Director of the Division may authorize an increase in injection pressure upon a proper showing by the operator of said well that such higher pressure will not result in migration of the injected fluid from the Bough C formation.~~

(3) That the operator shall notify the supervisor of the Hobbs district office of the Division of the date and time of the installation of disposal equipment so that the same may be inspected.

(4) That the operator shall immediately notify the supervisor of the Division's Hobbs district office of the failure of the tubing, casing, or packer, in said well or the leakage of water from or around said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

(5) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 704 and 1120 of the Division Rules and Regulations.

(7) 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 the day and year hereinabove designated.

(6) That disposal into the subject well shall be limited to water produced from the Bough C zone of the Pennsylvanian formation, unless the Division Director has approved the disposal of waters produced from other formations upon receipt of evidence establishing the compatibility of such waters with the native waters of the Bough C zone.

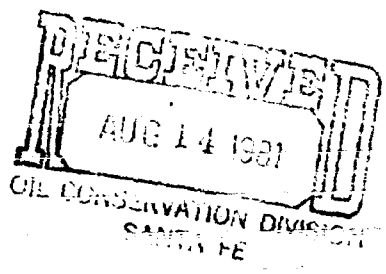
KELLAHIN and KELLAHIN
Attorneys at Law
500 Don Gaspar Avenue
Post Office Box 1769
Santa Fe, New Mexico 87501

Jason Kellahin
W. Thomas Kellahin

Karen Aubrey

Telephone 982-4285
Area Code 505

August 13, 1981



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

Case 7349

RE: Salt Water Disposal
Jack Markham #2
Section 11
T9S, R35E

Dear Joe:

Please set the enclosed application for the examiner hearing on September 9, 1981.

Very truly yours,

W. Thomas Kellahin

WTK:jm
Enclosure

cc: Mr. Alan Ralston

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

LARRY KEHOE
SECRETARY

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
[illegible]

October 1, 1981

Re: CASE NO. 7349
ORDER NO R-6787

Mr. Thomas Kellahin
Kellahin & Kellahin
Attorneys at Law
Post Office Box 1769
Santa Fe, New Mexico

Applicant:

Apollo Oil Company

Dear Sir:

Enclosed herewith are two copies of the above-referenced Division order recently entered in the subject case.

Yours very truly,

JOE D. RAMEY
Director

JDR/fd

Copy of order also sent to:

Hobbs OCD x
Artesia OCD x
Aztec OCD

Other

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
9 September 1981

EXAMINER HEARING

IN THE MATTER OF:

Application of Apollo Oil Company for salt water disposal, Lea County, New Mexico. CASE 7349

BEFORE: Daniel S. Nutter

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: W. Perry Pearce, Esq.
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For the Applicant: W. Thomas Kellahin, Esq.
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I N D E X

E X H I B I T S

MR. NUTTER: We'll call next Case Number 7349.

MR. PEARCE: Application of Apollo Oil Company for salt water disposal, Lea County, New Mexico.

MR. KELLAHIN: If the Examiner please, I'm Tom Kellahin of Santa Fe, New Mexico, appearing on behalf of the applicant.

I would like the record to reflect that Mr. Ralston is still under oath and is still qualified as an expert witness in this case.

MR. NUTTER: The record will so show.

MR. KELLAHIN: In addition to the exhibits on file with the Division, these are the return receipts from the surface and offset operators, showing that they received copies of the application.

ALAN RALSTON

being called as a witness and being previously sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Ralston, this is an application for salt water disposal in the Jake -- in the Jack Marham Well

No. 2 in Unit P of Section 11. Is that not true?

A. Yes, sir.

Q. And what is the disposal formation for this well?

A. The Permo-Penn Abo -- the Permo-Penn Bough C zone.

Q. All right, sir. The application indicates the disposal interval would be 9645 to 9654 feet in the Bough C formation.

A. Yes.

Q. Is that correct?

A. Yes, sir.

Q. All right, sir. Now where is this well in relation to the last well we just talked about?

A. Approximately 50 miles north.

Q. Entirely different area?

A. Yes, sir.

Q. All right, sir. If you'll turn to Exhibit Number One, this is a plat showing circles indicating where the half mile radius is and what wells that you determined penetrated the Bough C formation in this area, does it not, Mr. Ralston?

A. Yes, sir.

Q. All right, sir. What, then, is Exhibit

Number Two?

A. It's a listing of the balance of this packet.

Q. I'm sorry, Exhibit Number Two is the tabulation.

A. Oh, okay, okay.

Q. There you go.

A. It's a tabular summary of the offset operators within a half mile radius of the Jack Marham No. 2.

Q. All right, sir, you've caused to be searched the various well records and have located the wells on this tabulation that at one time or another penetrated through the disposal formation?

A. Yes, sir.

Q. And have you reviewed this summary to determine whether these wells are completed, plugged in such a fashion that they will not serve as a source to allow disposal fluids to migrate up into shallower fresh water sands?

A. Yes, sir, I have.

Q. All right. And you don't see any defect in any of these wells that will cause them to be sources of contamination?

A. No, these wells all have three strings of casing in them and those that are plugged were plugged by

Oil Conservation Commission rules.

Q All right, sir, let's turn to Exhibit Number Three and have you tell us what you generally intend to do with this disposal well.

A Dispose of waters from the area and they will be from the Bough C, San Andres, and the Queen formations. We should not have over approximately 1800 barrels a day disposal. There is no -- there is one disposal well in this area but it is on the downhill. It's just about where it won't take any more water, so there is a need for another disposal well.

Q These producing wells that produce water in this area produce from what formations, Mr. Ralston?

A In the immediate area they produce from the Bough C.

Q Okay.

A There's other waters in -- within a 20 mile radius there that possibly could be injected in this well.

Q You'll have the same limitation in this case as you had in the other insofar as you'll not be allowed to dispose of water produced from other formations until you submit the data to show that the formation fluids are compatible?

A. Yes, sir.

Q. All right, sir. You don't have presently with you the fluid analysis for any other formations apart from the Bough C, do you?

A. I was not able to obtain these from any of the water companies for the water in that area. I will have to get samples and have a special analysis run on these waters.

Q. All right, sir.

In terms of the injection pressure, Mr. Ralston, tell us a little something about your well. Will it take these fluids under vacuum or will it require pressure injection?

A. It will take it under vacuum. We just recently purchased these wells from Tenneco and they were temporarily abandoned at the time. We tried to establish production. We gave them 1000 gallons of acid and about 75 barrels flush. We never saw the acid hit. There was no pressure of any kind and the flush never showed any pressure. We finally got some fluid back in the hole three days later after this small acid job.

So I don't anticipate very much injection pressure at all.

Q. All right, sir, would a pressure limita-

tion based upon .2 of a pound per foot of depth be adequate for your purposes?

A. More than adequate.

Q. All right, sir, let's turn to Exhibit Number Four and have you confirm the information contained on that exhibit.

A. It's true.

Q. All right, sir, Exhibit Number Five is a copy of one of the logs for the disposal well?

Let's to to Exhibit Number Six, then. In fact it might be easier if we'll take Exhibits Number Six and Seven at the same time and if you'll correlate the tabulation with the schematic and then describe generally how you propose to complete this as a disposal well.

A. Well, we'll install a packer and packer fluid and 2-3/8ths plastic lined steel tubing. We'll have packer fluid, inert fluid on the annulus side, and a pressure gauge.

Q. All right, sir, with regards to the tubing, the 2-3/8ths, this is plastic lined tubing, is it not?

A. Plastic lined steel tubing.

Q. All right, so we should correct that Exhibit Number Six and Seven to indicate plastic lined.

If you'll look at the 9-5/8ths inch

casing, the schematic shows 3595 sacks and the tabulation shows 3995. Is the schematic correct in terms of sacks of cement?

This is a typographical error, Mr. Ralston.

A. Yeah, I'm sure with that much cement, it sure should be circulated.

Q. All right, sir, I think the correct amount is 3595, is it not?

A. Yes, sir.

Q. All right. Where is the top of the cement on the 9-5/8ths inch casing?

A. It's circulated; it's at surface.

Q. All right, and will that be true of the 13-3/8ths?

A. Yes, sir.

Q. And how about the 7-inch ? Is that from surface?

A. I can't say if the 7-inch circulated. Sometimes in these wells when they're re-entered they have such large washouts in some of the more porous zones that just about any amount of cement you pump will not circulate. But it should be back covering -- just a minute.

No, excuse me. The 7-inch is circulated because that was one of the deals we got from Tenneco. It's

not indicated here but Tenneco said there's no casing salvage on these wells, so there would -- I mean if there's -- if it's not circulated, it's within 200 to 300 feet of surface, because there's not any salvagible material as far as casing in these wells.

Q Exhibit Number Six shows an indication of old perforations in this well. Apart from the Bough C perforations, Mr. Ralston, are the other perforations at shallower depth adequately sealed with cement or otherwise to insure that they'll not be conduits for contamination of shallower zones?

A Yes, sir, they were squeezed when they re-entered this well and then the 7-inch casing was circulated when they completed it.

So that's more or less double insurance.

Q All right, sir, let's go to Exhibit Number Eight, which is a series of four downhole schematics. What are these, Mr. Ralston?

A This is the offset well belonging to Layton Enterprises, Layton Enterprises, Coquina Oil Company, and Layton Enterprises.

Q Have you examined the information contained on those exhibits to satisfy yourself that they will not be sources of contamination of shallower sand?

A. Yes, sir.

Q. Let's go to Exhibit Number Nine and have you identify that for me.

A. This is the water and water analysis, fresh water in the area.

Q. In your opinion, Mr. Ralston, is the method of completion of this well for disposal purposes such that it will not contaminate fresh water sources in the area?

A. Yes, sir.

Q. All right, sir, let's go to Exhibit Number Ten. Are you aware of any faulting or other hydrologic connections between the disposal zone and any underground water sources?

A. To my knowledge there are no faults in this area for a 20-mile radius.

Q. All right, sir, and Exhibit Eleven is the notice to the offset operators and the surface owner.

A. Yes, sir.

Q. Were Exhibits One through Eleven compiled under your direction and supervision?

A. Yes, sir.

Q. And in your opinion, Mr. Ralston, will approval of this application be in the best interests of conservation, prevention of waste, and the protection of corre-

lative rights?

A. Yes, sir.

MR. KELLAHIN: We move the introduction of Exhibits One through Eleven.

MR. NUTTER: Exhibits One ~~through~~ Eleven will be admitted in evidence.

Mr. Ralston, I don't have any questions of you regarding this case; however, when I get to Exhibit Nine, you say see attached map for location, that would be the locations of the water wells, and there is a plat here that shows wells indicated with red dots. Are those those water wells?

A. Yes, sir.

MR. NUTTER: Okay, in my portfolio on the previous case that map was not attached, although the notation was there, see attached map.

MR. KELLAHIN: We've got one here, Mr. Nutter, we'll give it to you. See if you have one, Alan.

MR. NUTTER: A red dot map for the midway well. It would be about six red dots on a map there, Tom.

MR. KELLAHIN: Yeah, this is it.

MR. NUTTER: Yeah, that's the one. Okay, fine. Are there any other questions of Mr. Ralston?

He may be excused.

Do you have anything further, Mr. Kellahin?

MR. KELLAHIN: No, sir.

MR. NUTTER: Does anyone have anything they wish to offer in Case Number 7349?

We'll take the case under advisement.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd C.S.R.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 7369 heard by me on 9/9 1981.

Examiner
Oil Conservation Division

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