

*Exhibit "A"*  
*Phillips Petroleum Company*  
*Vacuum Abo Unit Pressure Maintenance Project*  
*Division Administrative Order PMX-162*

| <i>Well Name and Number</i> | <i>Location</i>                | <i>S-T-R</i> | <i>Injection Perforation</i> | <i>Packer Depth</i> | <i>Maximum Surface Injection Pressure (PSIG)</i> |
|-----------------------------|--------------------------------|--------------|------------------------------|---------------------|--------------------------------------------------|
| Tract 6 Well No. 72         | 2080' FSL & 660' FEL (Unit I)  | 26-17S-35E   | 8696' - 8892'                | 8640'               | 1739                                             |
| Tract 13 Well No. 12        | 1650' FNL & 1980' FEL (Unit G) | 4-18S-35E    | 8716' - 9020'                | 8660'               | 1743                                             |
| Tract 13 Well No. 15        | 2310' FSL & 660' FWL (Unit L)  | 4-18S-35E    | 8558' - 8995'                | 8500'               | 1712                                             |

EXHIBIT "J"

PHILLIPS PETROLEUM COMPANY

CHICAGO ASO UNIT PRESSURE MAINTENANCE PROJECT

CHICAGO ADMINISTRATIVE ORDER ~~NO~~ PMX-

WELL NUMBER

ACQUISITION

STK

INTERVAL

WELL DEPTH

DATE

Tract 6 well No. 72

2050' SUR 660' FEZ (Chalk I)

20.170-352

\$696' - \$823'

\$640

1739 ASO

Tract 13 well No. 12

1650' SUR 1980' FEZ (Chalk 6)

41-180-352

\$716 - \$920'

\$660'

1743 ASO

Tract 13 well No. 15

2300' SUR 660' FEZ (Chalk 6)

4-145-352

\$558' - \$895'

\$500'

1712 ASO



## PHILLIPS PETROLEUM COMPANY

ODESSA, TEXAS 79702  
4001 PENBROOKEXPLORATION AND PRODUCTION GROUP  
Permian Basin Region

## TELECOPY COVER SHEET

DATE: 11/21/90PANAFAX UF 600  
(915) 368-1554TO: David Catanach FROM: Charles Suggs

COMPANY: \_\_\_\_\_ ROOM: \_\_\_\_\_

ROOM NO.: \_\_\_\_\_ TEL. EXT.: \_\_\_\_\_ SECTION: \_\_\_\_\_

TELECOPY NO.: (505) 827-5741 ODESSA, TEXAS

CITY/STATE: \_\_\_\_\_

WE ARE SENDING \_\_\_\_\_ PAGES OF TEXT, INCLUDING THIS COVER SHEET.

PLEASE CALL \_\_\_\_\_ AT (915) \_\_\_\_\_ IF THERE ARE ANY  
PROBLEMS OR QUESTIONS.

ADDITIONAL MESSAGE: \_\_\_\_\_

Ref - Vacuum Abu Unit Water Injection Expansion

All waivers except Amoco's have been received.  
Amoco has indicated that they have no objection to  
the conversions, but we have not received their waiver.  
We would like to start the conversion work  
for wells 13-15 and 13-12 while we are waiting on  
Amoco's approval. Attached are waivers and  
certified mail receipts

Thanks  
CNS

PS Form 3811, July 1983 447-845

**SENDER: Complete items 1, 2, 3 and 4.**

Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and special boxes (for services) requested.

- ☐ Show to whom, date and address of delivery.
- ☐ Restricted Delivery.

3. Article Addressed to:  
BHP Petroleum USA Inc  
5441 San Felipe, Ste 3600  
Houston TX 77057

4. Type of Service: Article Number  
☐ Registered ☐ Insured  
☒ Certified ☐ COD P 512 089 804  
☐ Express Mail

Always obtain signature of addressee or agent and **DATE DELIVERED.**

5. Signature - Addressee  
X

6. Signature - Agent  
X *[Signature]*

7. Date of Delivery  
10 22 90

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

DOMESTIC RETURN RECEIPT

PS Form 3811, July 1983 447-845

**SENDER: Complete items 1, 2, 3 and 4.**

Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and special boxes (for services) requested.

- ☐ Show to whom, date and address of delivery.
- ☐ Restricted Delivery.

3. Article Addressed to:  
Bledsoe Petroleum Corp  
3450 N. Central  
Bethany, OK 73008

4. Type of Service: Article Number  
☐ Registered ☐ Insured  
☒ Certified ☐ COD P 512 089 802  
☐ Express Mail

Always obtain signature of addressee or agent and **DATE DELIVERED.**

5. Signature - Addressee  
X

6. Signature - Agent  
X *[Signature]*

7. Date of Delivery  
10 22 90

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

DOMESTIC RETURN RECEIPT

PS Form 3811, July 1983 447-845

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- ☐ Show to whom, date and address of delivery.
- ☐ Restricted Delivery.

3. Article Addressed to:  
OXY USA Inc.  
P.O. Box 50250  
Midland TX 79720

4. Type of Service: Article Number  
☐ Registered ☐ Insured  
☒ Certified ☐ COD P 512 089 803  
☐ Express Mail

Always obtain signature of addressee or agent and **DATE DELIVERED.**

5. Signature - Addressee  
X

6. Signature - Agent  
*[Signature]*  
Delivery

DOMESTIC

Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for service(s) requested.

1. ☐ Show to whom, date and address of delivery.  
2. ☐ Restricted Delivery.

3. Article Addressed to:  
Chapman USA Inc.  
P.O. Box 1150  
Midland TX 79702

4. Type of Service: ☐ Registered ☐ Insured  
☒ Certified ☐ COD  
☐ Express Mail

Article Number  
P 512 089 802

Always obtain signature of addressee or agent and  
**DATE DELIVERED.**

5. Signature - Addressee  
X

6. Signature - Agent  
X [Signature]

7. Date of Delivery  
OCT 22 1990

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

DOMESTIC RETURN RECEIPT

Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for service(s) requested.

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2. ☐ Restricted Delivery.

3. Article Addressed to:  
Chapman USA Inc.  
P.O. Box 1150  
Midland, TX 79702

4. Type of Service: ☐ Registered ☐ Insured  
☒ Certified ☐ COD  
☐ Express Mail

Article Number  
P 512 089 801

Always obtain signature of addressee or agent and  
**DATE DELIVERED.**

5. Signature - Addressee  
X

6. Signature - Agent  
X [Signature]

7. Date of Delivery  
OCT 22 1990

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

DOMESTIC RETURN RECEIPT

Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for service(s) requested.

1. ☐ Show to whom, date and address of delivery.  
2. ☐ Restricted Delivery.

3. Article Addressed to:  
YATES PETROLEUM  
105 S. FARMER  
ARTIST N.M. 88210

4. Type of Service: ☐ Registered ☐ Insured  
☒ Certified ☐ COD  
☐ Express Mail

Article Number  
P 512 089 797

Always obtain signature of addressee or agent and  
**DATE DELIVERED.**

5. Signature - Addressee  
X

6. Signature - Agent  
X [Signature]

7. Date of Delivery  
OCT 22 1990

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

DOMESTIC RETURN RECEIPT

Put your address in the "RETURN TO" space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for service(s) requested.

1. ☐ Show to whom, date and address of delivery.  
2. ☐ Restricted Delivery.

3. Article Addressed to:  
Bill Phillips  
Texas, Inc.  
P.O. Box 3109  
Midland TX 79702

4. Type of Service: ☐ Registered ☐ Insured  
☒ Certified ☐ COD  
☐ Express Mail

Article Number  
P 512 089 798

Always obtain signature of addressee or agent and  
**DATE DELIVERED.**

5. Signature - Addressee  
X

6. Signature - Agent  
X [Signature]

7. Date of Delivery  
OCT 22 1990

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

DOMESTIC RETURN RECEIPT

P-512 059 802

RECEIPT FOR CERTIFIED MAIL

NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES

|                                                             |         |
|-------------------------------------------------------------|---------|
| Sent to<br><b>Shannon USA</b>                               |         |
| Street and No.<br><b>Midland</b>                            |         |
| P.O. State and ZIP Code<br><b>Midland</b>                   | Postage |
| Certified Fee                                               |         |
| Special Delivery Fee                                        |         |
| Registered Delivery Fee                                     |         |
| Return Receipt showing to whom and Date of Delivery         |         |
| Return Receipt showing to whom Date and Address of Delivery |         |
| TOTAL Postage and Fees                                      | 7.20    |
| Postmark or Date<br>10-19-90                                |         |

P-512 089 804

RECEIPT FOR CERTIFIED MAIL

NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES

|                                                             |         |
|-------------------------------------------------------------|---------|
| Sent to<br><b>BHP USA Inc</b>                               |         |
| Street and No.<br><b>Houston</b>                            |         |
| P.O. State and ZIP Code<br><b>Houston</b>                   | Postage |
| Certified Fee                                               |         |
| Special Delivery Fee                                        |         |
| Registered Delivery Fee                                     |         |
| Return Receipt showing to whom and Date of Delivery         |         |
| Return Receipt showing to whom Date and Address of Delivery |         |
| TOTAL Postage and Fees                                      | 7.20    |
| Postmark or Date<br>10-19-90                                |         |

P-512 089 803

RECEIPT FOR CERTIFIED MAIL

NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES

|                                                             |         |
|-------------------------------------------------------------|---------|
| Sent to<br><b>OKY USA</b>                                   |         |
| Street and No.<br><b>Midland</b>                            |         |
| P.O. State and ZIP Code<br><b>Midland</b>                   | Postage |
| Certified Fee                                               |         |
| Special Delivery Fee                                        |         |
| Registered Delivery Fee                                     |         |
| Return Receipt showing to whom and Date of Delivery         |         |
| Return Receipt showing to whom Date and Address of Delivery |         |
| TOTAL Postage and Fees                                      | 7.20    |
| Postmark or Date<br>10-19-90                                |         |

P-512 089 799

RECEIPT FOR CERTIFIED MAIL

NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES

|                                                             |         |
|-------------------------------------------------------------|---------|
| Sent to<br><b>Yates Ret. Corp</b>                           |         |
| Street and No.<br><b>Artesia N.M.</b>                       |         |
| P.O. State and ZIP Code<br><b>Artesia N.M.</b>              | Postage |
| Certified Fee                                               |         |
| Special Delivery Fee                                        |         |
| Registered Delivery Fee                                     |         |
| Return Receipt showing to whom and Date of Delivery         |         |
| Return Receipt showing to whom Date and Address of Delivery |         |
| TOTAL Postage and Fees                                      | 7.20    |
| Postmark or Date<br>10-19-90                                |         |

P-512 089 798

RECEIPT FOR CERTIFIED MAIL

NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES

|                                                             |         |
|-------------------------------------------------------------|---------|
| Sent to<br><b>Shannon USA</b>                               |         |
| Street and No.<br><b>Midland</b>                            |         |
| P.O. State and ZIP Code<br><b>Midland</b>                   | Postage |
| Certified Fee                                               |         |
| Special Delivery Fee                                        |         |
| Registered Delivery Fee                                     |         |
| Return Receipt showing to whom and Date of Delivery         |         |
| Return Receipt showing to whom Date and Address of Delivery |         |
| TOTAL Postage and Fees                                      | 7.20    |

P-512 089 800

RECEIPT FOR CERTIFIED MAIL

NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES

|                                                             |         |
|-------------------------------------------------------------|---------|
| Sent to<br><b>Ludox Ret. Corp</b>                           |         |
| Street and No.<br><b>Artesia N.M.</b>                       |         |
| P.O. State and ZIP Code<br><b>Artesia N.M.</b>              | Postage |
| Certified Fee                                               |         |
| Special Delivery Fee                                        |         |
| Registered Delivery Fee                                     |         |
| Return Receipt showing to whom and Date of Delivery         |         |
| Return Receipt showing to whom Date and Address of Delivery |         |
| TOTAL Postage and Fees                                      | 7.20    |

P-512 089 801

RECEIPT FOR CERTIFIED MAIL

NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES

|                                                             |         |
|-------------------------------------------------------------|---------|
| Sent to<br><b>Great Western Only Co</b>                     |         |
| Street and No.<br><b>Midland</b>                            |         |
| P.O. State and ZIP Code<br><b>Midland</b>                   | Postage |
| Certified Fee                                               |         |
| Special Delivery Fee                                        |         |
| Registered Delivery Fee                                     |         |
| Return Receipt showing to whom and Date of Delivery         |         |
| Return Receipt showing to whom Date and Address of Delivery |         |
| TOTAL Postage and Fees                                      | 7.20    |

11/21/1000 16:10 FROM 01... 446 F1... OF C30 TO

0160E0376741 P.04



**PHILLIPS PETROLEUM COMPANY**

ODESSA, TEXAS 79762  
4001 PENBROOK

October 18, 1990

EXPLORATION AND PRODUCTION GROUP

Vacuum Abo Unit - Well Conversions  
Offset Operator Notification  
Lea County, New Mexico

Ed Behm  
Oxy USA Inc.  
P.O. Box 50250  
Midland, TX 79710

Dear Mr. Behm:

Phillips Petroleum Company, as operator of the Vacuum Abo Unit (Lea County, New Mexico), has filed an application to the State for expansion of the Vacuum Abo Unit water injection system. This expansion includes three additional conversions to water injection. Attached is a copy of the application along with a map identifying the conversions and radius of notification.

If your company has no objections to these conversions, telecopy a signed waiver to (915) 368-1554. Should you have any questions, please contact Charles Sugg at (915) 368-1232.

Sincerely,

*C. N. Sugg*  
Charles N. Sugg

Objection Waiver:

Oxy USA Inc., hereby waives any and all objections to Phillips Petroleum Company's application to convert the Vacuum Abo Unit Wells 13-12, 13-15, and 6-72 to water injection.

Signed: Edward J. Behm Jr.  
Name: Edward J. Behm Jr.  
Title: Lead Res Eng.  
Date: 10/26/90

**PHILLIPS PETROLEUM COMPANY**ODESSA, TEXAS 79762  
4001 PENBROOK

October 18, 1990

EXPLORATION AND PRODUCTION GROUP

Vacuum Abo Unit - Well Conversions  
Offset Operator Notification  
Lea County, New MexicoRoger Artley  
Great Western Drilling Co.  
P.O. Box 1659  
Midland, TX 79702

Dear Mr. Artley:

Phillips Petroleum Company as operator of the Vacuum Abo Unit (Lea County, New Mexico), has filed an application to the State for expansion of the Vacuum Abo Unit water injection system. This expansion includes three additional conversions to water injection. Attached is a copy of the application along with a map identifying the conversions and radius of notification.

If your company has no objections to these conversions, telecopy a signed waiver to (915) 368-1554. Should you have any questions, please contact Charles Sugg at (915) 368-1232.

Sincerely,

  
Charles N. SuggObjection Waiver:

Great Western Drilling CO., hereby waives any and all objections to Phillips Petroleum Company's application to convert the Vacuum Abo Unit Wells 13-12, 13-15, and 6-72 to water injection.

Signed:

Name: Roger ArtleyTitle: Chief EngineerDate: October 24, 1990



**PHILLIPS PETROLEUM COMPANY**

ODESSA, TEXAS 79762  
4001 PENBROOK

October 18, 1990

EXPLORATION AND PRODUCTION GROUP

Vacuum Abo Unit - Well Conversions  
Offset Operator Notification  
Lea County, New Mexico

Bill Phillips  
Texaco Inc.,  
P.O. Box 3109  
Midland, TX 79702

Dear Mr. Phillips:

Phillips Petroleum Company as operator of the Vacuum Abo Unit (Lea County, New Mexico), has filed an application to the State for expansion of the Vacuum Abo Unit water injection system. This expansion includes three additional conversions to water injection. Attached is a copy of the application along with a map identifying the conversions and radius of notification.

If your company has no objections to these conversions, telecopy a signed waiver to (915) 368-1554. Should you have any questions, please contact Charles Sugg at (915) 368-1232.

Sincerely,

*C. M. Sugg*  
Charles M. Sugg

Objection Waiver:

Texaco Inc., hereby waives any and all objections to Phillips Petroleum Company's application to convert the Vacuum Abo Unit Wells 13-12, 13-15, and 6-72 to water injection.

Signed: H. C. Pallison  
Name: H. C. Pallison  
Title: Asst. Division Manager  
Date: 10-23-90

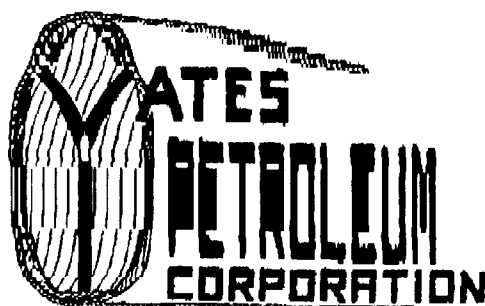
11/21/1990 15:18 FROM Odessa-4th Floor UF-620 TO

915058275741 P.08

MARTIN YATES, III

1916-1990

FRANK W. YATES  
1936 - 1986



105 SOUTH FOURTH STREET  
ARTESIA, NEW MEXICO 88210  
TELEPHONE (505) 748-1471

S. P. YATES  
CHAIRMAN OF THE BOARD

JOHN L. YATES

PRESIDENT

PEYTON YATES  
EXECUTIVE VICE PRESIDENT  
RANDY G. PATTERSON  
SECRETARY  
DENNIS G. KINSEY  
TREASURER

November 1, 1990

Phillips Petroleum Company  
4001 Penbrook  
Odessa, Texas 79702

ATTN: Charles Sugg

RE: Vacuum Abo Unit

Dear Sir:

Yates Petroleum Corporation has no objection to the Phillips plan for adding three injection wells at the Vacuum Abo Unit.

Sincerely,

*Dave Boneau*

DAVID F. BONEAU  
Reservoir Engineering Supervisor

DFB/cvg



**PHILLIPS PETROLEUM COMPANY**

ODESSA, TEXAS 79762  
4001 PENBROOK

October 18, 1990

EXPLORATION AND PRODUCTION GROUP

Vacuum Abo Unit - Well Conversions  
Offset Operator Notification  
Lea County, New Mexico

Gary Garbacz  
Bledsoe Petroleum Corporation  
3908 N. Peniel  
Bethany, OK 73008

Dear Mr. Garbacz:

Phillips Petroleum Company as operator of the Vacuum Abo Unit (Lea County, New Mexico), has filed an application to the State for expansion of the Vacuum Abo Unit water injection system. This expansion includes three additional conversions to water injection. Attached is a copy of the application along with a map identifying the conversions and radius of notification.

If your company has no objections to these conversions, telecopy a signed waiver to (915) 368-1554. Should you have any questions, please contact Charles Sugg at (915) 368-1232.

Sincerely,

*C. N. Sugg*  
Charles N. Sugg

Objection Waiver:

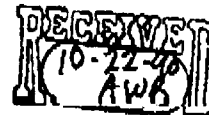
Bledsoe Petroleum Corporation hereby waives any and all objections to Phillips Petroleum Company's application to convert the Vacuum Abo Unit Wells 13-12, 13-15, and 6-72 to water injection.

Signed: *J. D. Rawdon*

Name: *J. D. Rawdon*

Title: *Operations Mgr.*

Date: *10/23/90*

**PHILLIPS PETROLEUM COMPANY**ODESSA, TEXAS 79762  
4001 PENBROOK

October 18, 1990

EXPLORATION AND PRODUCTION GROUP

Vacuum Abo Unit - Well Conversions  
Offset Operator Notification  
Lea County, New MexicoAllan W. Bohling  
Chevron USA Inc.  
P.O. Box 1150  
Midland, TX 79702

Dear Mr. Bohling:

Phillips Petroleum Company as operator of the Vacuum Abo Unit (Lea County, New Mexico), has filed an application to the State for expansion of the Vacuum Abo Unit water injection system. This expansion includes three additional conversions to water injection. Attached is a copy of the application along with a map identifying the conversions and radius of notification.

If your company has no objections to these conversions, telecopy a signed waiver to (915) 368-1554. Should you have any questions, please contact Charles Sugg at (915) 368-1232.

Sincerely,

  
Charles N. SuggObjection Waiver:

Chevron USA Inc., hereby waives any and all objections to Phillips Petroleum Company's application to convert the Vacuum Abo Unit Wells 13-12, 13-15, and 6-72 to water injection.

Signed:   
Name: Alan W. Bohling  
Title: Production Engineer  
Date: November 2, 1990

**PHILLIPS PETROLEUM COMPANY**ODESSA TEXAS 79762  
4001 PENBROOK

October 18, 1990

EXPLORATION AND PRODUCTION GROUP

Vacuum Abo Unit - Well Conversions  
Offset Operator Notification  
Lea County, New MexicoRandy Ray  
BHP Petroleum USA Inc.  
5847 San Felipe, Suite 3600  
Houston, TX 77057

Dear Mr. Ray:

Phillips Petroleum Company as operator of the Vacuum Abo Unit (Lea County, New Mexico), has filed an application to the State for expansion of the Vacuum Abo Unit water injection system. This expansion includes three additional conversions to water injection. Attached is a copy of the application along with a map identifying the conversions and radius of notification.

If your company has no objections to these conversions, telecopy a signed wavier to (915) 368-1554. Should you have any questions, please contact Charles Sugg at (915) 368-1232.

Sincerely,

*C. N. Sugg*  
Charles N. SuggObjection Wavier:

BHP Petroleum USA Inc., hereby waives any and all objections to Phillips Petroleum Company's application to convert the Vacuum Abo Unit Wells 13-12, 13-15, and 6-72 to water injection.

Signed: Wayne F. Kotovsky  
Name: WAYNE F. KOTOVSKY  
Title: RESERVOIR ENGINEER  
Date: 11-3-90

10 pages

TOTAL P.11



EDUCATION  
'90 DEC 7 AM 8 52

**Amoco Production Company**

Houston Region  
501 WestLake Park Boulevard  
Post Office Box 3092  
Houston, Texas 77253

James F. Trickett  
Regional Environmental, Safety &  
Regulatory Affairs Manager

*PMX-162*

November 30, 1990

New Mexico Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Re: Well Conversions  
Vacuum Abo Unit  
Lea County, New Mexico

File: JCA-2878-986.51NM

Attention: William J. LeMay

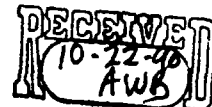
Amoco Production Company has been advised that Phillips Petroleum Company has filed an application for administrative approval for expansion of the Vacuum Abo Unit water injection system. This expansion includes three additional conversions to water injection.

As an offset operator, Amoco Production Company has no objection to Phillips' application to convert the Vacuum Abo Unit Wells 13-12, 13-15, and 6-72 to water injection.

Yours very truly,

*James F. Trickett*  
MLC/

Phillips Petroleum Company  
4001 Penbrook  
Odessa, TX 79762



PHILLIPS PETROLEUM COMPANY  
DIVISION



PHILLIPS PETROLEUM COMPANY

ODESSA, TEXAS 79762  
4001 PENBROOK

October 18, 1990

EXPLORATION AND PRODUCTION GROUP

Vacuum Abo Unit - Well Conversions  
Offset Operator Notification  
Lea County, New Mexico

Allan W. Bohling  
Chevron USA Inc.  
P.O. Box 1150  
Midland, TX 79702

Dear Mr. Bohling:

Phillips Petroleum Company as operator of the Vacuum Abo Unit (Lea County, New Mexico), has filed an application to the State for expansion of the Vacuum Abo Unit water injection system. This expansion includes three additional conversions to water injection. Attached is a copy of the application along with a map identifying the conversions and radius of notification.

If your company has no objections to these conversions, telecopy a signed waiver to (915) 368-1554. Should you have any questions, please contact Charles Sugg at (915) 368-1232.

Sincerely,

*C. N. Sugg*  
Charles N. Sugg

Objection Waiver:

Chevron USA Inc., hereby waives any and all objections to Phillips Petroleum Company's application to convert the Vacuum Abo Unit Wells 13-12, 13-15, and 6-72 to water injection.

Signed: *Alan W. Bohling*

Name: *Alan W. Bohling*

Title: *Proration Engineer*

Date: *November 2, 1990*



STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT  
OIL CONSERVATION DIVISION  
HOBBS DISTRICT OFFICE

GARREY CARRUTHERS  
GOVERNOR

POST OFFICE BOX 1980  
HOBBS, NEW MEXICO 88241-1980  
(505) 393-6161

~~PMX~~ PMX-162

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

RE: Proposed:

MC \_\_\_\_\_  
DHC \_\_\_\_\_  
NSL \_\_\_\_\_  
NSP \_\_\_\_\_  
SWD \_\_\_\_\_  
WFX \_\_\_\_\_  
PMX ☒ \_\_\_\_\_

Gentlemen:

I have examined the application for the:

*Phillips Petroleum Co. - Vacuum about 4.5" - 4.75"*  
Operator \_\_\_\_\_ Lease & Well No. \_\_\_\_\_ Unit \_\_\_\_\_ S-T-R \_\_\_\_\_

and my recommendations are as follows:

*OK*  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Yours very truly,

*Jerry Sexton*  
Jerry Sexton  
Supervisor, District 1

/ed

APPLICATION FOR AUTHORIZATION TO INJECT

- I. Purpose: ☐ Secondary Recovery ☒ Pressure Maintenance ☐ Disposal ☐ Storage  
Application qualifies for administrative approval? ☐ yes ☐ no
- II. Operator: PHILLIPS PETROLEUM COMPANY  
Address: 4001 PENBROOK AVENUE  
Contact party: L. M. SANDERS Phone: (915) 368-1488
- 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 R-3181, R-3181A & R-3181B.
- 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 to bottom of all underground sources of drinkable water. Give the geologic name, and depth to bottom of all underground sources of drinkable water with total dissolved solids concentrations of injection zone as well as any such source injection interval.
- IX. Describe the proposed stimulation program
- \* X. Attach appropriate logging and test data with the Division they need not be resubmitted
- \* XI. Attach a chemical analysis of fresh water available and producing within one mile location of wells and dates samples were taken
- XII. Applicants for disposal wells must make examined available geologic and engineering or any other hydrologic connection between source of drinking water. results
- XIII. Applicants must complete the "Proof of Interest" 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. J. MUELLER

Title PRINCIPAL RESERVOIR ENGINEER

Signature: [Signature]

Date: 8/31/90

- \* 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. JANUARY 4, 1967, CASE NO. 3509, APPLICATION FOR PRESSURE MAINTENANCE

PROJECT AMENDED AUG. 27, 1969 CASE NO. 4194 & OCT. 12, 1983 CASE NO. 7974

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

## 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.

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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.

# AFFIDAVIT OF PUBLICATION

State of New Mexico,  
County of Lea.

I, Don Teer

of the Hobbs Daily News-Sun, a daily newspaper published at Hobbs, New Mexico, do solemnly swear that the clipping attached hereto was published once a week in the regular and entire issue of said paper, and not a supplement thereof for a period

of \_\_\_\_\_

One weeks.  
Beginning with the issue dated

July 27, 1990  
and ending with the issue dated

July 27, 1990

[Signature]

Business Manager  
Sworn and subscribed to before

me this 31 day of

July, 1990

Rhonda Copeland  
Notary Public.

My Commission expires \_\_\_\_\_

July 24, 1991  
(Seal)

This newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Laws of 1937, and payment of fees for said publication has been made.

## 44 LEGAL NOTICE July 27, 1990

Notice is hereby given of the application of Phillips Petroleum Company, Attention: K. Am, Manager, Permian Basin Region, 4001 Penbrook St., Odessa, Texas 79762, telephone (915) 367-1324 to the Oil Conservation Division, New Mexico Energy and Minerals Department, for approval of the following injection wells for the purpose of water injection.  
Well Nos.: Tract 6, Well No. 72; Tract 13, Well No. 12, Tract 13, Well No. 15.  
Unit Name: Vacuum Abo Unit.

Location: Township 17 and 18 South, Range 35 East, Lea County, New Mexico.

The injection formation is Abo Reef at an approximate depth between 8600-9000 feet below the surface of the ground. Expected maximum injection rate is 5000 barrels per day per well and expected maximum injection pressure is 1500 pounds per square inch.

Interested parties must file objections or request

Received

AUG 01 1990

P.B.R. Regulatory Section

for hearing with the Oil Conservation Division, P.O. Box 2088, Santa Fe, New Mexico, 87501 within fifteen days of this publication.

Compatibility  
Study.  
Vac Abo  
Sulfate  
Fresh water

3 UNICHEM INTL HOBBS NM P07

Unichem International

707 North Leech

P.O.Box 1499

Hobbs, New Mexico 88240

Company : PHILLIPS PETROLEUM

Date : 07-30-1990

Location: VAC ABO PRODUCED WATER (on 07-27-1990)

Specific Gravity:

Total Dissolved Solids:

pH:

IONIC STRENGTH:

Sample 1

1.051

71215

7.28

1.342

CATIONS:

|              |                     | <u>me/liter</u> | <u>mg/liter</u> |
|--------------|---------------------|-----------------|-----------------|
| Calcium      | (Ca <sup>+2</sup> ) | 104             | 2080            |
| Magnesium    | (Mg <sup>+2</sup> ) | 76.0            | 923             |
| Sodium       | (Na <sup>+1</sup> ) | 1040            | 23800           |
| Iron (total) | (Fe <sup>+2</sup> ) | 0.021           | 0.600           |
| Barium       | (Ba <sup>+2</sup> ) | 0.001           | 0.100           |

ANIONS:

|             |                                   |      |       |
|-------------|-----------------------------------|------|-------|
| Bicarbonate | (HCO <sub>3</sub> <sup>-1</sup> ) | 17.8 | 1090  |
| Carbonate   | (CO <sub>3</sub> <sup>-2</sup> )  | 0    | 0     |
| Hydroxide   | (OH <sup>-1</sup> )               | 0    | 0     |
| Sulfate     | (SO <sub>4</sub> <sup>-2</sup> )  | 69.2 | 3330  |
| Chloride    | (Cl <sup>-1</sup> )               | 1130 | 40000 |

SCALING INDEX (positive value indicates scale)

Temperature  
86°F 30°C

|           |         |
|-----------|---------|
| Calcium   | Calcium |
| Carbonate | Sulfate |
| 0.95      | -9.5    |

JUL 30 '90 12:37 UNICHEM INTL HOBBS NM P02

Unichem International

707 North Leech

P.O.Box 1499

Hobbs, New Mexico 88240

Company : PHILLIPS PETROLEUM

Date : 07-30-1990

Location: ~~WYOMING~~ 7-16-1990 10:28 AM (on 07-27-1990)

|                         | <u>Sample 1</u> |
|-------------------------|-----------------|
| Specific Gravity:       | 1.001           |
| Total Dissolved Solids: | 2045            |
| pH:                     | 7.03            |
| IONIC STRENGTH:         | 0.043           |

---

| <u>CATIONS:</u> |                     | <u>me/liter</u> | <u>mg/liter</u> |
|-----------------|---------------------|-----------------|-----------------|
| Calcium         | (Ca <sup>2+</sup> ) | 4.80            | 96.0            |
| Magnesium       | (Mg <sup>2+</sup> ) | 10.4            | 126             |
| Sodium          | (Na <sup>+</sup> )  | 19.4            | 445             |
| Iron (total)    | (Fe <sup>2+</sup> ) | 0.018           | 0.500           |
| Barium          | (Ba <sup>2+</sup> ) | 0.012           | 0.800           |

| <u>ANIONS:</u> |                                   |       |      |
|----------------|-----------------------------------|-------|------|
| Bicarbonate    | (HCO <sub>3</sub> <sup>-1</sup> ) | 5.60  | 342  |
| Carbonate      | (CO <sub>3</sub> <sup>-2</sup> )  | 0     | 0    |
| Hydroxide      | (OH <sup>-1</sup> )               | 0     | 0    |
| Sulfate        | (SO <sub>4</sub> <sup>-2</sup> )  | 0.750 | 36.0 |
| Chloride       | (Cl <sup>-1</sup> )               | 28.2  | 1000 |

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SCALING INDEX (positive value indicates scale)

|                    |                  |                |
|--------------------|------------------|----------------|
| <u>Temperature</u> | <u>Calcium</u>   | <u>Calcium</u> |
| 86°F      30°C     | <u>Carbonate</u> | <u>Sulfate</u> |
|                    | -0.09            | -17            |

Unichem International

707 North Leech

P.O.Box 1499

Hobbs, New Mexico 88240

Company : PHILLIPS PETROLEUM

Date : 07-30-1990

Location: ~~XXXXXXXXXX~~ (on 07-27-1990)

|                         |          |
|-------------------------|----------|
|                         | Sample 1 |
| Specific Gravity:       | 1.001    |
| Total Dissolved Solids: | 1099     |
| pH:                     | 7.08     |
| IONIC STRENGTH:         | 0.027    |

| <u>CATIONS:</u> |                     | <u>me/liter</u> | <u>mg/liter</u> |
|-----------------|---------------------|-----------------|-----------------|
| Calcium         | (Ca <sup>+2</sup> ) | 3.07            | 61.3            |
| Magnesium       | (Mg <sup>+2</sup> ) | 11.7            | 143             |
| Sodium          | (Na <sup>+1</sup> ) | 4.29            | 98.5            |
| Iron (total)    | (Fe <sup>+2</sup> ) | 0.100           | 2.80            |
| Barium          | (Ba <sup>+2</sup> ) | 0.003           | 0.200           |

| <u>ANIONS:</u> |                                   |       |      |
|----------------|-----------------------------------|-------|------|
| Bicarbonate    | (HCO <sub>3</sub> <sup>-1</sup> ) | 4.40  | 268  |
| Carbonate      | (CO <sub>3</sub> <sup>-2</sup> )  | 0     | 0    |
| Hydroxide      | (OH <sup>-1</sup> )               | 0     | 0    |
| Sulfate        | (SO <sub>4</sub> <sup>-2</sup> )  | 0.583 | 28.0 |
| Chloride       | (Cl <sup>-1</sup> )               | 14.1  | 500  |

SCALING INDEX (positive value indicates scale)

|      |                    |                  |                |
|------|--------------------|------------------|----------------|
|      | <u>Temperature</u> | <u>Calcium</u>   | <u>Calcium</u> |
| 86°F | 30°C               | <u>Carbonate</u> | <u>Sulfate</u> |
|      |                    | -0.27            | -18            |

JUL 30 '90 12:38 UNICHEM INTL HOBBS NM P05

Unichem International

707 North Leech

P.O.Box 1499

Hobbs, New Mexico 88240

Company : PHILLIPS PETROLEUM

Date : 07-30-1990

Location: ~~Phillips 66 Station~~ (on 07-27-1990)

Specific Gravity:

Total Dissolved Solids:

pH:

IONIC STRENGTH:

Sample 1

1.115

160621

7.71

2.881

CATIONS:

|              |                     | <u>me/liter</u> | <u>mg/liter</u> |
|--------------|---------------------|-----------------|-----------------|
| Calcium      | (Ca <sup>+2</sup> ) | 124             | 2480            |
| Magnesium    | (Mg <sup>+2</sup> ) | 64.0            | 778             |
| Sodium       | (Na <sup>+1</sup> ) | 2560            | 58900           |
| Iron (total) | (Fe <sup>+2</sup> ) | 0.075           | 2.10            |
| Barium       | (Ba <sup>+2</sup> ) | 0.004           | 0.300           |

ANIONS:

|             |                                   |      |       |
|-------------|-----------------------------------|------|-------|
| Bicarbonate | (HCO <sub>3</sub> <sup>-1</sup> ) | 6.80 | 415   |
| Carbonate   | (CO <sub>3</sub> <sup>-2</sup> )  | 0    | 0     |
| Hydroxide   | (OH <sup>-1</sup> )               | 0    | 0     |
| Sulfate     | (SO <sub>4</sub> <sup>-2</sup> )  | 63.5 | 3050  |
| Chloride    | (Cl <sup>-1</sup> )               | 2680 | 95000 |

SCALING INDEX (positive value indicates scale)

Temperature  
86°F      30°C

|                  |                |
|------------------|----------------|
| <u>Calcium</u>   | <u>Calcium</u> |
| <u>Carbonate</u> | <u>Sulfate</u> |
| 1.3              | -21            |

JUL 30 '90 12:38 UNICHEM INTL HOBBS NM P06

Unichem International

707 North Leech

P.O.Box 1499

Hobbs, New Mexico 88240

Company : PHILLIPS PETROLEUM

Date : 07-30-1990

Location: ~~COMPATIBILITY~~ (on 07-30-1990)

Specific Gravity:

Total Dissolved Solids:

pH:

IONIC STRENGTH:

Sample 1

1.036

50373

7.22

0.950

CATIONS:

|              |                     | <u>me/liter</u> | <u>mg/liter</u> |
|--------------|---------------------|-----------------|-----------------|
| Calcium      | (Ca <sup>+2</sup> ) | 72.9            | 1460            |
| Magnesium    | (Mg <sup>+2</sup> ) | 56.0            | 680             |
| Sodium       | (Na <sup>+1</sup> ) | 731             | 16800           |
| Iron (total) | (Fe <sup>+2</sup> ) | 0.046           | 1.30            |
| Barium       | (Ba <sup>+2</sup> ) | 0.002           | 0.133           |

ANIONS:

|             |                                   |      |       |
|-------------|-----------------------------------|------|-------|
| Bicarbonate | (HCO <sub>3</sub> <sup>-1</sup> ) | 13.5 | 826   |
| Carbonate   | (CO <sub>3</sub> <sup>-2</sup> )  | 0    | 0     |
| Hydroxide   | (OH <sup>-1</sup> )               | 0    | 0     |
| Sulfate     | (SO <sub>4</sub> <sup>-2</sup> )  | 47.9 | 2300  |
| Chloride    | (Cl <sup>-1</sup> )               | 798  | 28300 |

DISSOLVED GASES

|                  |                    |   |
|------------------|--------------------|---|
| Carbon Dioxide   | (CO <sub>2</sub> ) | 0 |
| Hydrogen Sulfide | (H <sub>2</sub> S) | 0 |
| Oxygen           | (O <sub>2</sub> )  | 0 |

SCALING INDEX (positive value indicates scale)

Temperature  
86°F      30°C

|                  |                |
|------------------|----------------|
| <u>Calcium</u>   | <u>Calcium</u> |
| <u>Carbonate</u> | <u>Sulfate</u> |
| 0.56             | -24            |

Comments:

VAC ABO PRODUCED WATER 68%

SANTA FE      17 1%

EVGSAU SUPPLY WELL 2721-SO4 31%

JUL 30 '90 12:37 UNICHEM INTL HOBBS NM P04

Unichem International

707 North Leech

P.O.Box 1499

Hobbs, New Mexico 88240

Company : PHILLIPS PETROLEUM

Date : 07-30-1990

Location: ~~COMPATIBILITY~~ (on 07-27-1990)

Specific Gravity:

Total Dissolved Solids:

pH:

IONIC STRENGTH:

Sample 1

1.036

50667

7.21

0.955

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| <u>CATIONS:</u> |                     | <u>me/liter</u> | <u>mg/liter</u> |
|-----------------|---------------------|-----------------|-----------------|
| Calcium         | (Ca <sup>2+</sup> ) | 73.4            | 1470            |
| Magnesium       | (Mg <sup>2+</sup> ) | 55.5            | 675             |
| Sodium          | (Na <sup>+</sup> )  | 736             | 16900           |
| Iron (total)    | (Fe <sup>2+</sup> ) | 0.021           | 0.584           |
| Barium          | (Ba <sup>2+</sup> ) | 0.005           | 0.319           |

| <u>ANIONS:</u> |                                   |      |       |
|----------------|-----------------------------------|------|-------|
| Bicarbonate    | (HCO <sub>3</sub> <sup>-1</sup> ) | 13.9 | 848   |
| Carbonate      | (CO <sub>3</sub> <sup>-2</sup> )  | 0    | 0     |
| Hydroxide      | (OH <sup>-1</sup> )               | 0    | 0     |
| Sulfate        | (SO <sub>4</sub> <sup>-2</sup> )  | 47.9 | 2300  |
| Chloride       | (Cl <sup>-1</sup> )               | 803  | 28500 |

| <u>DISSOLVED GASES</u> |                    |   |
|------------------------|--------------------|---|
| Carbon Dioxide         | (CO <sub>2</sub> ) | 0 |
| Hydrogen Sulfide       | (H <sub>2</sub> S) | 0 |
| Oxygen                 | (O <sub>2</sub> )  | 0 |

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SCALING INDEX (positive value indicates scale)

| <u>Temperature</u> |      | <u>Calcium</u>   | <u>Calcium</u> |
|--------------------|------|------------------|----------------|
| 86°F               | 30°C | <u>Carbonate</u> | <u>Sulfate</u> |
|                    |      | 0.55             | -24            |

Comments:

68% VAC ABO PRODUCED WATER 1% SANTA FE

17 31% SPS WATER SUPPLY 28

PHILLIPS PETROLEUM COMPANY

VACUUM ABO PRESSURE MAINTENANCE PROJECT

Typical Conversion to Injection Procedure For  
Tract 6, Well No. 72; Tract 13, Well No. 12; Tract 13, Well No. 15

1. Move in completion unit, circulation unit, and drill string.
2. Attach blowout prevention equipment and pull downhole production equipment out of well.
3. Drill out cement plugs to original PTD of well. Circulate hole clean.
4. Selectivity perforate the Abo Reef formation with deep penetrating DML charges at 2 JSPF.
5. Acidize perforations with 10,000 to 17,500 gallons of a 90/10 mixture of 28% Fe HCl acid and xylene.
6. Swab back load.
7. Run in and set injection packer assembly with 2-3/8" internally plastic coated tubing at a point less than 100' above top perforation.
8. Displace tubing-casing annulus with inhibited brine.
9. Move out completion unit and all other workover equipment and commence injection.

PHILLIPS PETROLEUM COMPANY  
VACUUM ABO PRESSURE MAINTENANCE PROJECT

Data on Proposed Operation

1. Average water injection shall be 1000 BPD per well. Maximum daily water injection should not exceed 4000 BPD per well.
2. The system is closed.
3. The average injection pressure is anticipated to be 1000 psig. The maximum injection pressure should not exceed 1600 psig (0.2 psi/ft X 8000').
4. Analyses and compatability tests are attached.

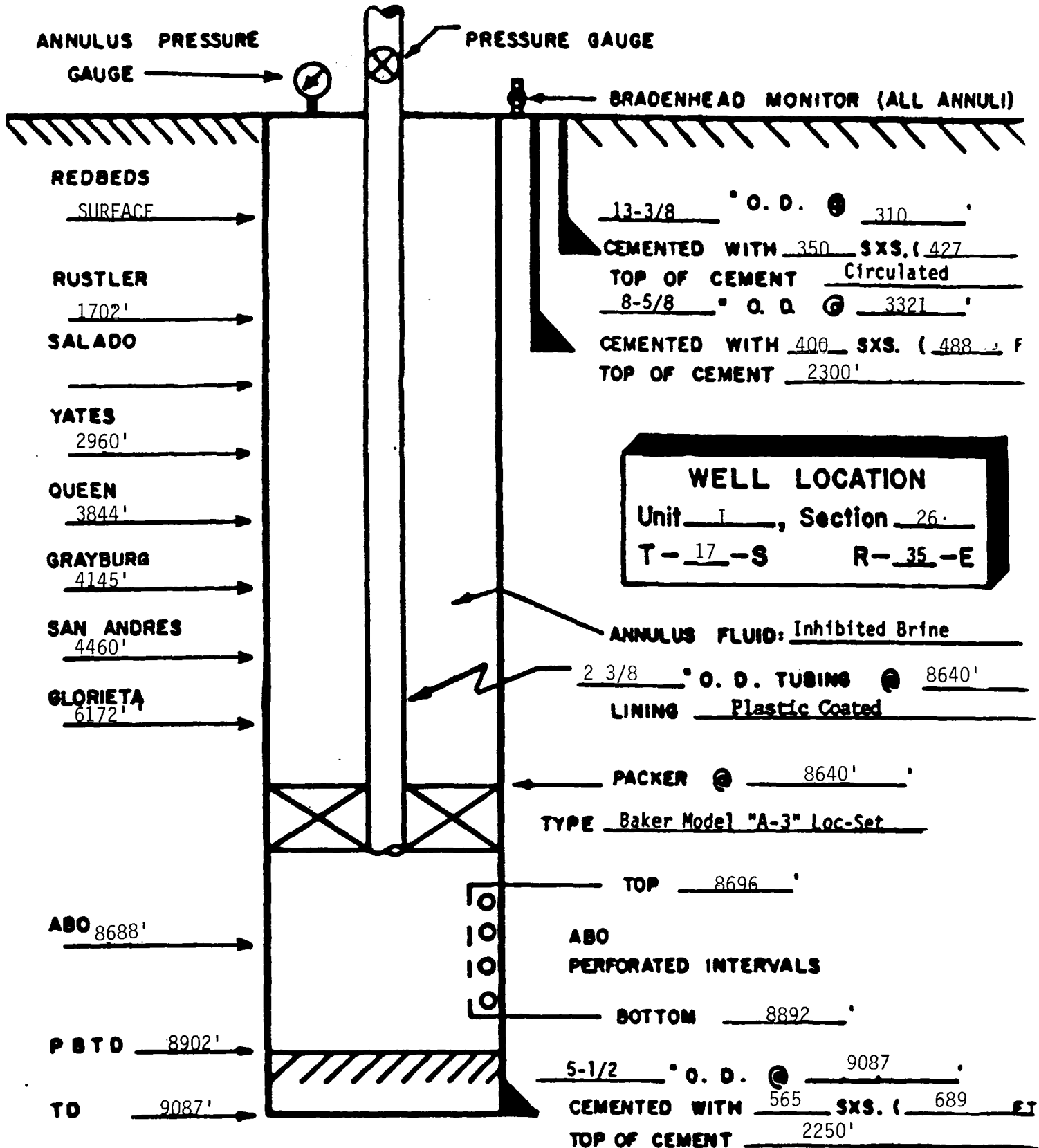
# PHILLIPS PETROLEUM COMPANY

## VACUUM ABO UNIT PRESSURE MAINTENANCE PROJECT

N.M.O.C.D. R-3181, R-3181A, & R-3181B

VACUUM ABO REEF FIELD, LEA COUNTY, NEW MEXICO

TRACT 6 WELL 72  
CONVERSION TO WATER INJECTION STATUS



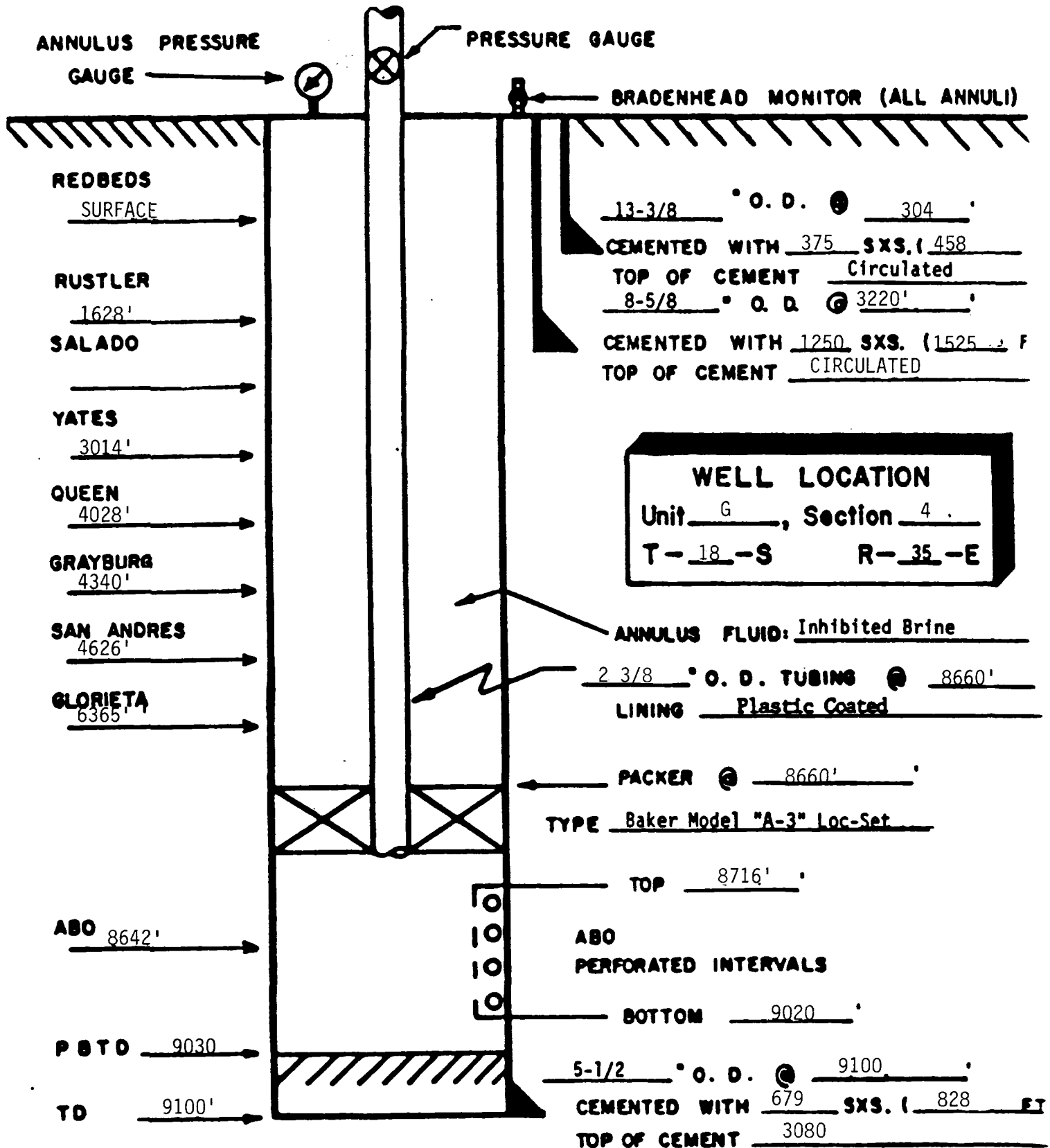
# PHILLIPS PETROLEUM COMPANY

## VACUUM ABO UNIT PRESSURE MAINTENANCE PROJECT

N.M.O.C.D. R-3181, R-3181A, & R-3181B

VACUUM ABO REEF FIELD, LEA COUNTY, NEW MEXICO

TRACT 13 WELL 12  
CONVERSION TO WATER INJECTION STATUS



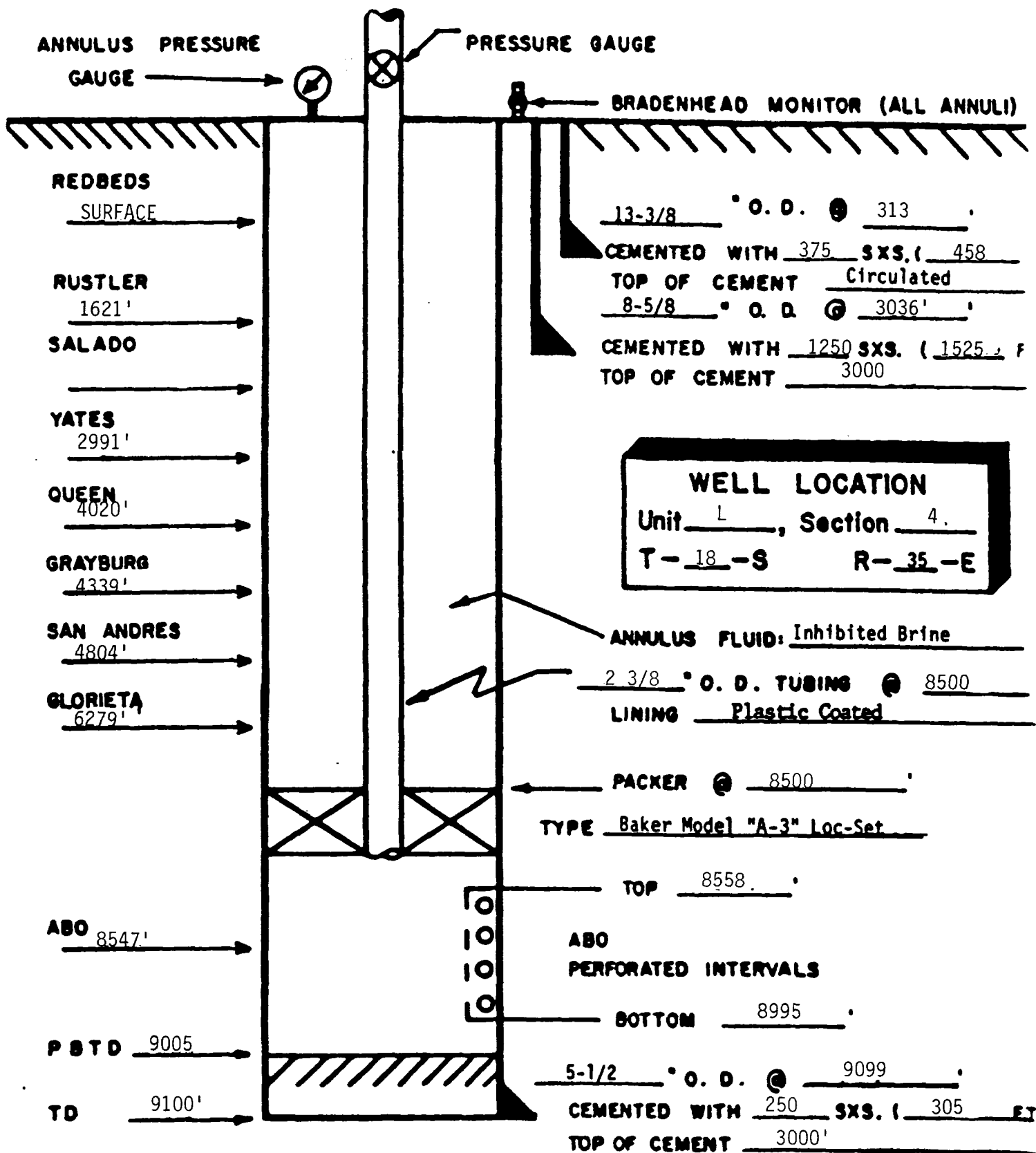
# PHILLIPS PETROLEUM COMPANY

## VACUUM ABO UNIT PRESSURE MAINTENANCE PROJECT

N.M.O.C.D. R-3181, R-3181A, & R-3181B

VACUUM ABO REEF FIELD, LEA COUNTY, NEW MEXICO

TRACT 13 WELL 15  
CONVERSION TO WATER INJECTION STATUS



VACUUM ABO UNIT PRESSURE MAINTENANCE AREA

LEA COUNTY, NEW MEXICO

TABULATION OF ABO WELLBORE PENETRATIONS

I.S.---TEMPERATURE SURVEY; CIRC.--CIRCULATED; CALC.--CALCULATED

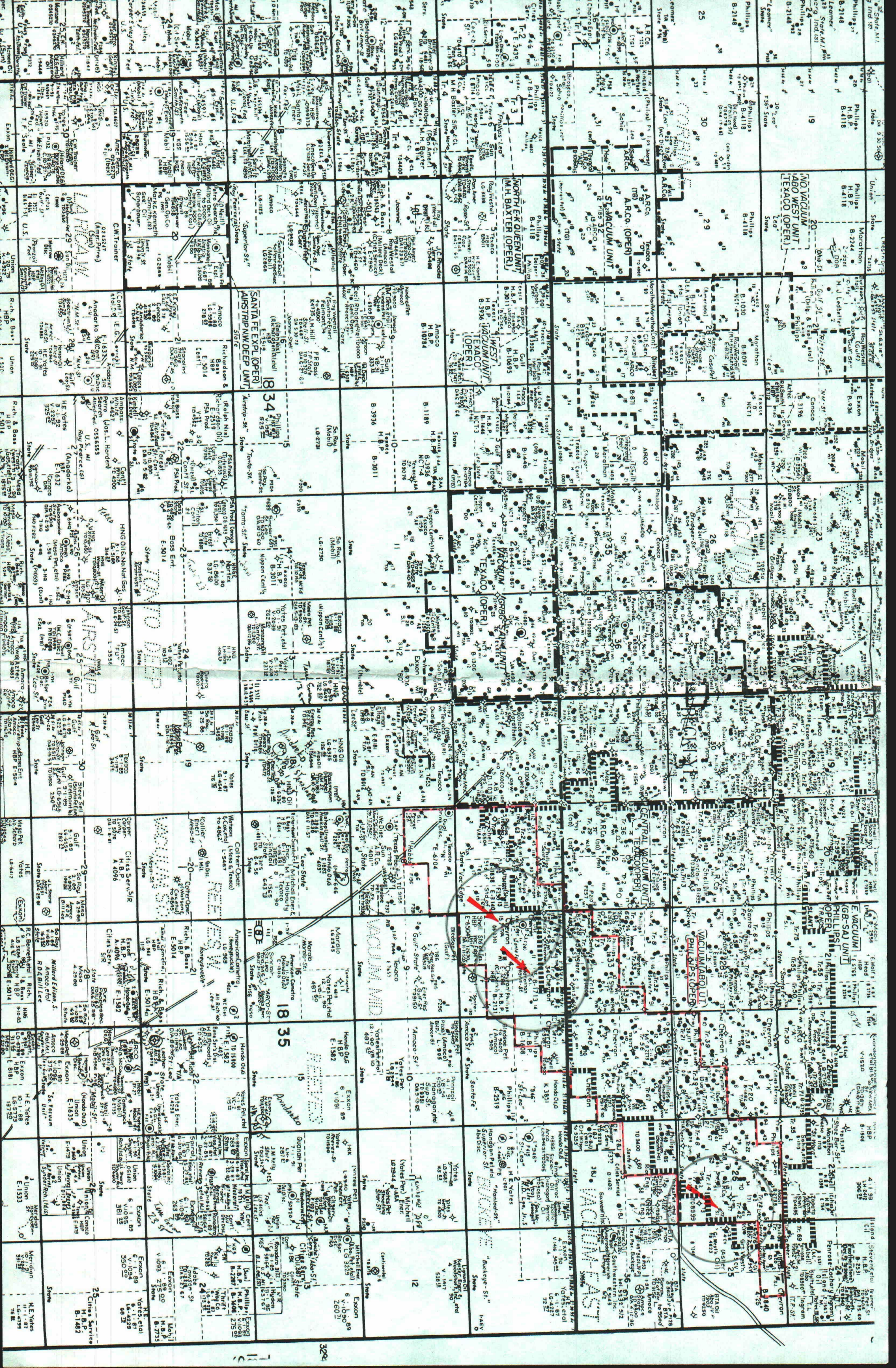
| RATOR<br>SE &<br>L NO.          | LOCATION<br>U S I R |  |  | WELL<br>TYPE | SURFACE CASING       |                    |              | INTERMEDIATE CASING |                      |                    | PRODUCTION CASING |                     |                      | PRODUCING<br>DEPTH<br>FT | TOTAL<br>DEPTH<br>FT | DATE<br>DRID    | REMARKS            |                    |              |                     |
|---------------------------------|---------------------|--|--|--------------|----------------------|--------------------|--------------|---------------------|----------------------|--------------------|-------------------|---------------------|----------------------|--------------------------|----------------------|-----------------|--------------------|--------------------|--------------|---------------------|
|                                 |                     |  |  |              | CASING<br>SIZE<br>IN | DEPTH<br>SET<br>FT | SX<br>CEMENT | TOP<br>CEMENT<br>FT | CASING<br>SIZE<br>IN | DEPTH<br>SET<br>FT | SX<br>CEMENT      | TOP<br>CEMENT<br>FT | CASING<br>SIZE<br>IN |                          |                      |                 |                    | DEPTH<br>SET<br>FT | SX<br>CEMENT | TOP<br>CEMENT<br>FT |
| LLIPS PETROLEUM<br>UUM ABO UNIT |                     |  |  |              |                      |                    |              |                     |                      |                    |                   |                     |                      |                          |                      |                 |                    |                    |              |                     |
| 5                               | A 26 17 35          |  |  | P            | 10-3/4"              | 330'               | 450          | Circ.               | 7-5/8"               | 3596'              | 2290              | Circ.               | 5-1/2"               | 9100'                    | 710                  | Circ.           | 8674'-8854'<br>ABO | 9100'              | 9/62         |                     |
| 6                               | B 26 17 35          |  |  | WI           | 10-3/4"              | 353'               | 450          | Circ.               | 7-5/8"               | 3600'              | 2460              | Circ.               | 5-1/2"               | 9085'                    | 750                  | Circ.           | 8586'-8850'<br>ABO | 9085'              | 9/62         |                     |
| 1                               | J 26 17 35          |  |  | P            | 13-3/8"              | 339'               | 300          | Circ.               | 8-5/8"               | 3133'              | 300               | 1203'<br>CALC       | 4-1/2"               | 9103'                    | 1825                 | 2633'<br>CALC   | 8520'-8556'<br>ABO | 8564'<br>PBSD      | 5/62         |                     |
| 2                               | O 26 17 35          |  |  | WI           | 13-3/8"              | 322'               | 325          | Circ.               | 8-5/8"               | 3150'              | 300               | 1195'<br>CALC       | 4-1/2"               | 8990'                    | 875                  | 453'<br>CALC    | 8660'-8676'<br>ABO | 8681'<br>PBSD      | 6/62         |                     |
| 57                              | N 33 17 35          |  |  | P            | 13-3/8"              | 320'               | 350          | Circ.               | 8-5/8"               | 3300'              | 400               | 2300'<br>TS         | 5-1/2"               | 8993'                    | 540                  | 3300'<br>TS     | 8612'-8854'<br>ABO | 8960'<br>PTD       | 3/61         |                     |
| 69                              | K 26 17 35          |  |  | P            | 13-3/8"              | 309'               | 350          | Circ.               | 8-5/8"               | 3358'              | 400               | 2500'<br>TS         | 5-1/2"               | 9099'                    | 600                  | 2600'<br>TS     | 8416'-8469'<br>ABO | 8485'<br>PTD       | 6/62         |                     |
| 70                              | G 26 17 35          |  |  | P            | 13-3/8"              | 333'               | 350          | Circ.               | 8-5/8"               | 3343'              | 400               | 2500'<br>TS         | 5-1/2"               | 9032'                    | 625                  | 3150'<br>TS     | 8578'-8648'<br>ABO | 8660'<br>PBSD      | 7/62         |                     |
| 71                              | H 26 17 35          |  |  | P            | 13-3/8"              | 356'               | 350          | Circ.               | 8-5/8"               | 3365'              | 400               | 2800'<br>TS         | 5-1/2"               | 9100'                    | 715                  | Circ.           | 8494'-8896'<br>ABO | 9033'<br>PBSD      | 8/62         |                     |
| 72                              | I 26 17 35          |  |  | P            | 13-3/8"              | 310'               | 350          | Circ.               | 8-5/8"               | 3321'              | 400               | 2300'<br>TS         | 5-1/2"               | 9087'                    | 565                  | 2250'<br>TS     | 8696'-8766'<br>ABO | 8743'<br>PBSD      | 9/62         |                     |
| 75                              | D 25 17 35          |  |  | P            | 13-3/8"              | 332'               | 350          | Circ.               | 8-5/8"               | 3400'              | 400               | 2300'<br>TS         | 5-1/2"               | 9000'                    | 560                  | 2500'<br>TS     | 8692'-8902'<br>ABO | 8962'<br>PBSD      | 11/62        |                     |
| 76                              | F 26 17 35          |  |  | P            | 13-3/8"              | 323'               | 350          | Circ.               | 9-5/8"               | 3295'              | 750               | 1100'<br>TS         | 5-1/2"               | 9058'                    | 1040                 | 1700'<br>TS     | 8556'-8901'<br>ABO | 9018'<br>PTD       | 4/63         |                     |
| -5                              | O 33 17 35          |  |  | P            | 13-3/8"              | 318'               | 300          | Circ.               | 8-5/8"               | 3166'              | 950               | Circ.               | 5-1/2"               | 9003'                    | 500                  | Surface<br>CALC | 8682'-8730'<br>ABO | 8735'<br>PTD       | 2/61         |                     |

| OPERATOR<br>LEASE &<br>WELL NO. | LOCATION<br>U S I R | WELL<br>TYPE | SURFACE CASING       |                    |                    |                     | INTERMEDIATE CASING  |                    |                    |                     | PRODUCTION CASING    |                    |                    |                     | TOTAL<br>DEPTH<br>FT | DATE<br>DRLD | REMARKS                                                                                             |
|---------------------------------|---------------------|--------------|----------------------|--------------------|--------------------|---------------------|----------------------|--------------------|--------------------|---------------------|----------------------|--------------------|--------------------|---------------------|----------------------|--------------|-----------------------------------------------------------------------------------------------------|
|                                 |                     |              | CASING<br>SIZE<br>IN | DEPTH<br>SET<br>FT | SX<br>CEMENT<br>FT | TOP<br>CEMENT<br>FT | CASING<br>SIZE<br>IN | DEPTH<br>SET<br>FT | SX<br>CEMENT<br>FT | TOP<br>CEMENT<br>FT | CASING<br>SIZE<br>IN | DEPTH<br>SET<br>FT | SX<br>CEMENT<br>FT | TOP<br>CEMENT<br>FT |                      |              |                                                                                                     |
| 11-6                            | P 33 17 35          | P            | 13-3/8"              | 297'               | 275                | Circ.               | 8-5/8"               | 3133'              | 1050               | Circ.               | 5-1/2"               | 9099'              | 525                | Surface<br>CALC     | 8740'<br>CIBP        | 4/61         |                                                                                                     |
| 13-2                            | E 4 18 35           | P            | 13-3/8"              | 301'               | 325                | Circ.               | 8-5/8"               | 4986'              | 600                | Circ.               | 5-1/2"               | 8980'              | 725                | 3800'<br>CALC       | 8907'<br>PTD         | 10/60        | DV Tool @<br>7458'                                                                                  |
| 13-3                            | C 4 18 35           | P            | 13-3/8"              | 312'               | 350                | Circ.               | 8-5/8"               | 3237'              | 1200               | Surface<br>CALC     | 5-1/2"               | 8940'              | 1045               | 1390'<br>CALC       | 8940'                | 10/61        | DV Tool @<br>6924'                                                                                  |
| 13-4                            | B 4 18 35           | P            | 13-3/8"              | 317'               | 300                | Circ.               | 8-5/8"               | 3216'              | 1200               | Circ.               | 5-1/2"               | 8890'              | 1045               | 1658'<br>CALC       | 8823'<br>PTD         | 5/61         | DV Tool<br>6883'<br>packer 8555'                                                                    |
| 13-5                            | H 5 18 35           | P            | 13-3/8"              | 304'               | 350                | Circ.               | 8-5/8"               | 3276'              | 1050               | Surface<br>CALC     | 5-1/2"               | 9100'              | 575                | 3265'               | 9064'                | 7/62         |                                                                                                     |
| 13-6                            | A 4 18 35           | P            | 13-3/8"              | 322'               | 350                | Circ.               | 8-5/8"               | 3263'              | 1200               | Circ.<br>CALC       | 5-1/2"               | 9144'              | 488                | 3290'<br>TS         | 8627'<br>PBTD        | 7/62         | 8627'-9045'<br>Hydromite<br>plug<br>8938'-9045'<br>sqzd 100 sx                                      |
| 13-8                            | D 4 18 35           | P            | 13-3/8"              | 308'               | 375                | Circ.               | 8-5/8"               | 3257'              | 1250               | Circ.<br>CALC       | 5-1/2"               | 8911'              | 640                | 3292'<br>TS         | 8876'<br>PTD         | 5/61         |                                                                                                     |
| 13-11                           | F 4 18 35           | P            | 13-3/8"              | 305'               | 375                | Circ.               | 8-5/8"               | 3244'              | 1250               | Circ.               | 5-1/2"               | 9100'              | 670                | 3240'<br>TS         | 8696'<br>PBTD        | 11/61        | 8642'-8730'<br>Hydromite<br>plug<br>CIBP 8740'<br>8799'-8857'<br>sqzd<br>150 sx CIBP<br>8950'&8870' |
| 13-12                           | G 4 18 35           | P            | 13-3/8"              | 304'               | 375                | Circ.               | 8-5/8"               | 3220'              | 1250               | Circ.               | 5-1/2"               | 9100'              | 929                | 3080'<br>TS         | 8737'<br>PBTD        | 5/61         | 8803'-8884'<br>sqzd 50 sx<br>8803'-8910'<br>8929'-9020'<br>sqzd 300 sx<br>BP 8794'                  |

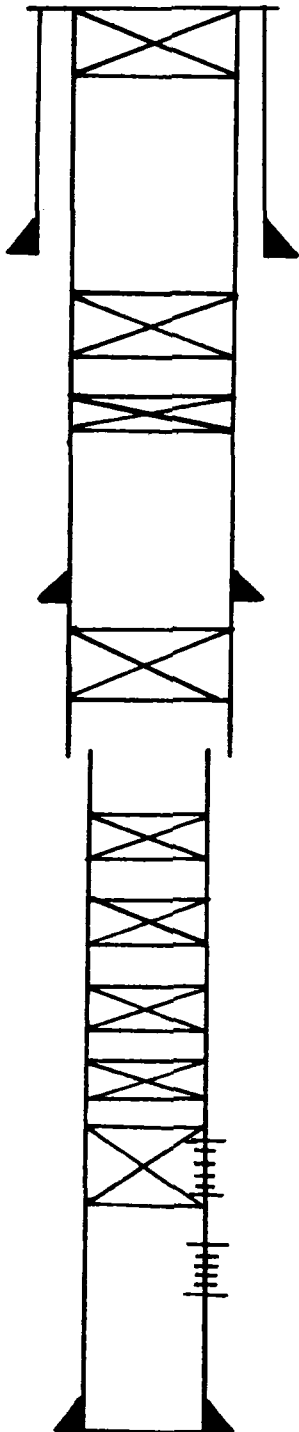


| OPERATOR<br>LEASE &<br>WELL NO. | LOCATION<br>U S I R | WELL<br>TYPE | SURFACE CASING       |                    |                    | INTERMEDIATE CASING |                      |                    | PRODUCTION CASING  |                     |                      | PRODUCING<br>DEPTH<br>FT | TOTAL<br>DEPTH<br>FT | DATE<br>DRLD | REMARKS      |                    |                    |
|---------------------------------|---------------------|--------------|----------------------|--------------------|--------------------|---------------------|----------------------|--------------------|--------------------|---------------------|----------------------|--------------------------|----------------------|--------------|--------------|--------------------|--------------------|
|                                 |                     |              | CASING<br>SIZE<br>IN | DEPTH<br>SET<br>FT | SX<br>CEMENT<br>FT | TOP<br>CEMENT<br>FT | CASING<br>SIZE<br>IN | DEPTH<br>SET<br>FT | SX<br>CEMENT<br>FT | TOP<br>CEMENT<br>FT | CASING<br>SIZE<br>IN |                          |                      |              |              | DEPTH<br>SET<br>FT | SX<br>CEMENT<br>FT |
| AMOCO PRODUCTION                |                     |              |                      |                    |                    |                     |                      |                    |                    |                     |                      |                          |                      |              |              |                    |                    |
| State 'CV' L 25 17 35<br>No. 4  |                     | P&A          | 13-3/8"              | 355'               | 350                | Circ.               | 8-5/8"               | 3375'              | 250                | 300'                | 4-1/2"               | 8898'                    | 1200                 | 3890'        | 8746' -8877' | 8887'              | 10/64              |
| State 'CV' F 25 17 35<br>No. 5  |                     | P&A          | 13-3/8"              | 353'               | 350                | Circ.               | 8-5/8"               | 3375'              | 250                | 370'                | 4-1/2"               | 8894'                    | 1200                 | 3625'        | 8667' -8889' | 8892'              | 11/64              |

RESV:CSUGG:vautab



AMOCO PRODUCTION STATE "CV" NO. 4  
UNIT L, SEC. 25, T-17-S, R-35-E  
LEA COUNTY, NEW MEXICO



Surface - 325 sx. cmt. plug

17 1/2" hole

13 3/8" csg. @ 355'. Cmt'd w/350 sx.  
TOC circ.

1785' - 10 sx. cmt. plug

1798' - cmt. ret., 130 sx. cmt. plug

2850' - 30 sx. cmt. plug

12 1/4" hole

8 5/8" csg. @ 3375'. Cmt'd w/250 sx.  
TOC @ 300'

3356' - 10 sx. cmt. plug

3422' - 50 sx. cmt. plug

4 1/2" csg/ shot and pulled @ 3824'

3876' - 50 sx. cmt. plug

5000' - 81 sx. cmt. plug

6240' - 21 sx. cmt. plug

Set BP @ 8650' and capped w/3 sx. cmt.

Perfs: 8746'-8797'

8818'-8828'

Sqzd. perfs and plugged back w/30 sx. cmt.

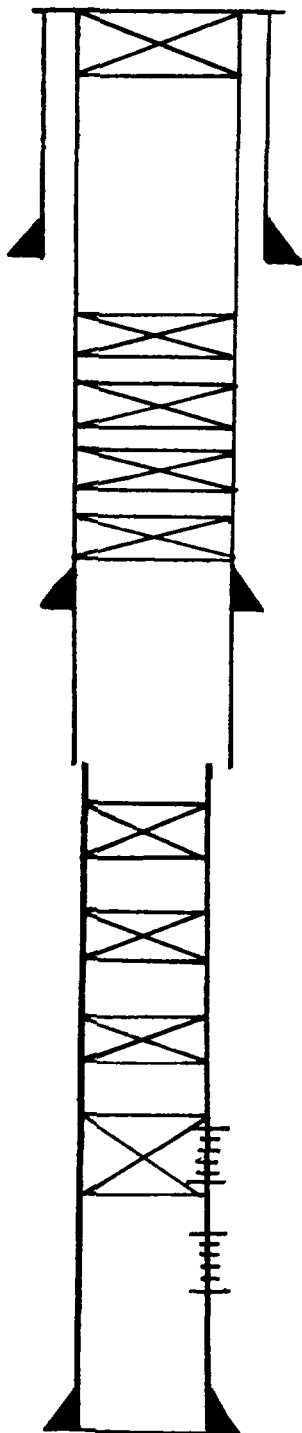
Perfs: 8864'-8877'

Sqzd. w/150 sx.

7 7/8" hole

4 1/2" csg. @ 8898'. Cmt'd w/1200 sx.  
TOC @ 3890'

AMOCO PRODUCTION STATE "CV" NO. 5  
UNIT F, SEC. 25, T-17-S, R-35-E  
LEA COUNTY, NEW MEXICO



Surface - 12 sx. cmt. plug  
124' - 35 sx. cmt. plug  
340' - 165 sx. cmt. plug

17 1/2" hole  
13 3/8" csg. @ 355'. Cmt'd w/350 sx.  
TOC circ.

1535' - 35 sx. cmt. plug

2002' - 20 sx. cmt. plug

2898' - 20 sx. cmt. plug

3115' - cmt. ret., 200 sx. cmt. plug

12 1/4" hole  
8 5/8" csg. @ 3375'. Cmt'd w/250 sx.  
TOC @ 370'

4 1/2" csg. cut and pulled @ 3563'

3625' - 35 sx. cmt. plug

5200' - 65 sx. cmt. plug

Set CIBP @ 8635' and capped w/2 sx. cmt.

Perfs 8667-8753'  
Sqzd. and plugged back w/30 sx. cmt.

Perfs 8873' - 8889'

7 7/8" hole  
4 1/2" csg. @ 8894'. Cmt'd w/1200 sx.

LARGE FORMAT  
EXHIBIT HAS  
BEEN REMOVED  
AND IS LOCATED  
IN THE NEXT FILE