

5-4-04

DATE IN

5-24-04

SUSPENSE

Stagner

ENGINEER

5-5-04

LOGGED IN

NSL

TYPE

PSEM0412644078

APP NO.

ABOVE THIS LINE FOR DIVISION USE ONLY

## NEW MEXICO OIL CONSERVATION DIVISION

- Engineering Bureau -

1220 South St. Francis Drive, Santa Fe, NM 87505



## ADMINISTRATIVE APPLICATION CHECKLIST

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

## Application Acronyms:

[NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication]

[DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]

[PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]

[WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]

[SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]

[EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]

## [1] TYPE OF APPLICATION - Check Those Which Apply for [A]

[A] Location - Spacing Unit - Simultaneous Dedication

☒ NSL ☐ NSP ☐ SD

Check One Only for [B] or [C]

[B] Commingling - Storage - Measurement

☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery

☐ WFX ☐ PMX ☐ SWD ☐ IPI ☐ EOR ☐ PPR

[D] Other: Specify \_\_\_\_\_

[2] NOTIFICATION REQUIRED TO: - Check Those Which Apply, or ☐ Does Not Apply[A] ☐ Working, Royalty or Overriding Royalty Interest Owners[B] ☒ Offset Operators, Leaseholders or Surface Owner[C] ☐ Application is One Which Requires Published Legal Notice[D] ☐ Notification and/or Concurrent Approval by BLM or SLO

U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office

[E] ☒ For all of the above, Proof of Notification or Publication is Attached, and/or,[F] ☐ Waivers are Attached

## [3] SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.

[4] CERTIFICATION: I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

James Bruce

Print or Type Name

Signature

Attorney for Applicant

Title

Date

jamesbruc@aol.com

e-mail Address

RECEIVED

MAY - 4 2004

Oil Conservation Division  
1220 S. St. Francis Drive  
Santa Fe, NM 87505

**JAMES BRUCE**  
ATTORNEY AT LAW

POST OFFICE BOX 1056  
SANTA FE, NEW MEXICO 87504

369 MONTEZUMA, NO. 213  
SANTA FE, NEW MEXICO 87501

(505) 982-2043 (Phone)  
(505) 660-6612 (Cell)  
(505) 982-2151 (Fax)

jamesbruc@aol.com

May 4, 2004

Hand Delivered

Michael E. Stogner  
Oil Conservation Division  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505

Dear Mr. Stogner:

Pursuant to Division Rule 104.F(2), Apache Corporation applies for administrative approval of an unorthodox oil well location for the following well:

|                   |                                                                                                                    |
|-------------------|--------------------------------------------------------------------------------------------------------------------|
| <u>Well:</u>      | Livingston Well No. 18                                                                                             |
| <u>Location:</u>  | 2845 feet FSL & 1075 feet FWL                                                                                      |
| <u>Well Unit:</u> | Lot 13 (Unit M) of (irregular) Section 3,<br>Township 21 South, Range 37 East, N.M.P.M.,<br>Lea County, New Mexico |

The well will be drilled to test the Grayburg formation (Penrose Skelly (Grayburg) Pool). The Penrose Skelly Pool is an oil pool spaced on 40 acres, with wells to be no closer than 330 feet to a quarter-quarter section line. (Under Commission Order R-98-B, there is no limiting gas:oil ratio in the pool.)

The application is based on engineering and topographical reasons. A complete discussion, with appropriate exhibits, is attached as Exhibit A. The proposed well will be located in the approximate center of four existing Grayburg wells. Based on drainage calculations and the low permeability of the reservoir, applicant believes that drilling the infill well will recover reserves which will not be recovered by existing Grayburg wells.

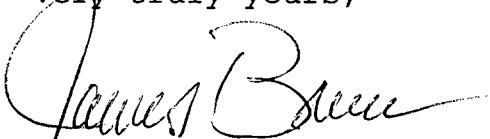
In addition, the calculated drainage area for the proposed well is 14 acres, which results in a drainage radius of about 250 feet. The proposed well is 205 feet from the south line and 245 feet from the east line of Lot 13. Thus, the effect on offsetting acreage is minimal.

In addition, as described in Exhibit A, applicant attempted to place the well at an orthodox location, but due to numerous pipelines and power lines in the southeast quadrant of Lot 13, the location had to be moved to the south and east of an orthodox location.

Attached as Exhibit B is a land plat. The proposed well is located on applicant's Livingston fee lease, which covers Lots 13, 14, NE $\frac{1}{4}$ SW $\frac{1}{4}$ , S $\frac{1}{2}$ SW $\frac{1}{4}$ , and SW $\frac{1}{4}$ SE $\frac{1}{4}$  of Section 3. Therefore, the only affected acreage is the NW $\frac{1}{4}$ SW $\frac{1}{4}$  of Section 3. The Grayburg operator of that well unit is Zia Energy, Inc., which has been notified of this application. See Exhibit C.

Please call me if you need any further information on this matter.

Very truly yours,

A handwritten signature in cursive script, appearing to read "James Bruce".

James Bruce

Attorney for Apache Corporation

Application of Apache Corporation for administrative  
approval of an unorthodox well location:

40 acres – 2845' FSL & 1075' FWL  
Section 3, Township 21 South, Range 37 East, NMPM  
Lea County, New Mexico

PRIMARY OBJECTIVE: GRAYBURG

In support:

1. Apache Corporation (Apache) is the operator of the proposed **Livingston #18** well (**Exhibit 1A**). The proposed total depth is 4350' in the San Andres formation.
2. The location is a nonstandard location in the Penrose Skelly; Grayburg Oil Pool, encroaching toward the following wells (**Exhibit 2**):

| OPER       | WELL           | LOC | RESERVOIR | CUM O/G/W | DAILY O/G/W |
|------------|----------------|-----|-----------|-----------|-------------|
| Apache     | Livingston #14 | 3-M | Grayburg  | 54/186/7  | 10/78/3     |
| Apache     | Livingston #16 | 3-N | Grayburg  | 32/88/25  | 11/51/12    |
| Apache     | Livingston 6   | 3-S | Grayburg  | 36/76/15  | 13/31/12    |
| Zia Energy | Texaco #1      | 3-T | Grayburg  | 25/100/19 | 15/69/27    |

Oil in MBO      BOPD  
Gas in MMCFG    MCFGPD  
Water in MBW    BWPD

3. The proposed **Livingston #18** unorthodox Grayburg location of 2845' from south line and 1075' from west line is based on surface restrictions and drainage considerations:

a) **Grayburg Reservoir**

The Grayburg is a series of alternating subtidal and supratidal dolomites, with the subtidal rock having porosity and hydrocarbons and the supratidal rock being tight. The Grayburg environments varied rapidly so that porous and tight intervals do not necessarily correlate well-to-well. Tight dolomite and/or anhydrite intervals within the Grayburg additionally create vertical hydraulic barriers between different zones of porosity. Average porosity of the Grayburg is less than 10%, and average permeability is less than 1 millidarcy. Grayburg wells are thus not typically capable of draining the 40 Acre spacing unit.



The reservoir was analyzed by ~~mapping hydrocarbon pore volume~~, commonly abbreviated as SOPHIH (**Exhibit 3**). SOPHIH is the product of feet of pay (h) times average porosity (PhiA) (the product of which is PhiH) times oil saturation (So). The map is the arithmetic product of grids interpreted from those values. The values were obtained as follows:

1. Net Pay was read either from modern neutron-density logs or estimated from a map developed from gross pay (clean dolomite) times net to gross ratio from modern logs.
2. Average Porosity was calculated from modern well logs using a minimum of 5% crossplot porosity and a maximum of 18%.
3. Oil Saturation was calculated from a fractional flow curve using recent producing water cut values.

The following table provides drainage areas calculated from the SOPHIH map and reserves of the offsetting wells. Light red bubbles on **Exhibit 3** represent the drainage areas of the offsetting wells.

| OPER   | WELL           | LOC | AREA<br>A | EUR<br>MBO | EUR<br>MMCFG |
|--------|----------------|-----|-----------|------------|--------------|
| Apache | Livingston #14 | 3-M | 14        | 80         | 477          |
| Apache | Livingston #16 | 3-N | 17        | 64         | 226          |
| Apache | Livingston 6   | 3-S | 17        | 62         | 103          |
| Zia    | Texaco #1      | 3-T | 10        | 46         | 202          |

Reserves for the proposed location are calculated by planimetry of the undrained area of the SOPHIH isopach which lies under a drainage circle (the size of which is the average of the direct offset drainage areas) centered on the proposed location. The results are as follows:

| WELL           | LOC | HCPV | AREA<br>A | EUR<br>MBO | EUR<br>MMCFG |
|----------------|-----|------|-----------|------------|--------------|
| Livingston #18 | 3-M | 5.20 | 14        | 69         | 300          |

#### b.) Surface Restrictions

Apache's intent was to drill a standard location in the southeast of Unit M to access unrecovered commercial reserves. Surveyors found, however numerous power lines and pipelines that precluded staking the well 330' from the south and east lines of the Unit (**Exhibit 1B**). The proposed location of 2845' from south line and 1075' from west line is the closest a well can be staked to the standard location.

4. Notice

a. Apache is the operator of 3 of the 4 Grayburg wells toward which the proposed well will encroach. All of the working interest owner(s) of the other well(s) have been notified, being:

~~Plantation Petroleum Acquisition, LLC  
2203 Timberland Place  
The Woodlands, Texas 77380~~

Operator: Zia Energy, Inc.

5. Approval of this application will afford the interest owners in this spacing unit an opportunity to recover oil and gas which would not otherwise be recovered.

FROM : John West Surveying Company

FAX NO. : 505-393-3450

**EXHIBIT 1A****DISTRICT I**

P.O. Box 1980, Rehoboth, NM 80241-1980

**DISTRICT II**

P.O. Drawer DD, Artesia, NM 88211-0719

**DISTRICT III**

1000 Rio Brazos Rd., Aztec, NM 87410

**DISTRICT IV**

P.O. Box 2088, Santa Fe, N.M. 87504-2088

## State of New Mexico

Energy, Minerals and Natural Resources Department

Form C-102

Revised February 10, 1994

Submit to Appropriate District Office

State Lease - 4 Copies

Fee Lease - 3 Copies

**OIL CONSERVATION DIVISION**

P.O. Box 2088

Santa Fe, New Mexico 87504-2088

**WELL LOCATION AND ACREAGE DEDICATION PLAT**☐ AMENDED REPORT

|               |  |                                     |  |           |                    |
|---------------|--|-------------------------------------|--|-----------|--------------------|
| API Number    |  | Pool Code                           |  | Pool Name |                    |
| Property Code |  | Property Name<br>LIVINGSTON         |  |           | Well Number<br>18  |
| OGRID No.     |  | Operator Name<br>APACHE CORPORATION |  |           | Elevation<br>3421' |

**Surface Location**

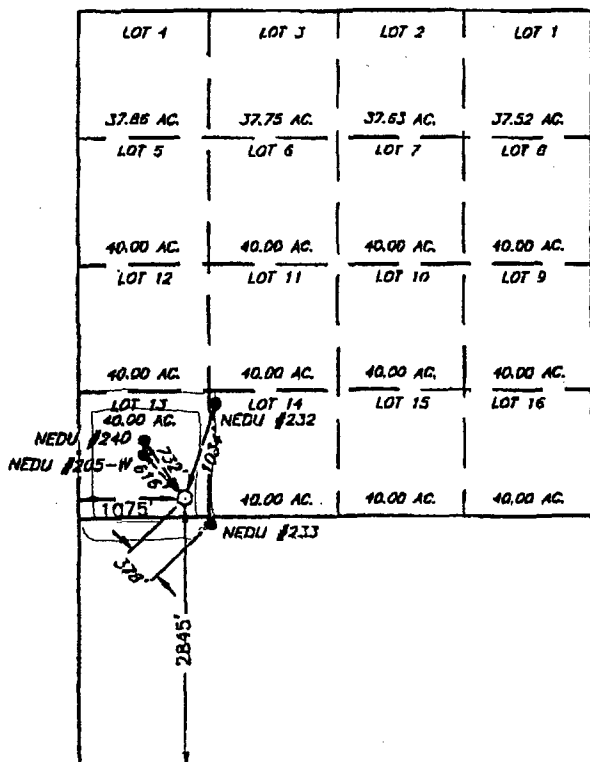
| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
| 13            | 3       | 21-S     | 37-E  |         | 2845          | SOUTH            | 1075          | WEST           | EDDY   |

**Bottom Hole Location If Different From Surface**

| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
|               |         |          |       |         |               |                  |               |                |        |

| Dedicated Acres | Joint or Infill | Consolidation Code | Order No. |
|-----------------|-----------------|--------------------|-----------|
|                 |                 |                    |           |

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED  
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

**GEODETTIC COORDINATES**  
NAD 27 NME

Y=551121.8 N

X=863011.8 E

LAT.= 32°30'34.67" N  
LONG.= 103°09'20.82" W**OPERATOR CERTIFICATION**

I hereby certify that the information  
contained herein is true and complete to the  
best of my knowledge and belief.

Signature

Printed Name

Title

Date

**SURVEYOR CERTIFICATION**

I hereby certify that the well location shown  
on this plat was plotted from field notes of  
actual surveys made by me or under my  
supervision and that the same is true and  
correct to the best of my belief.

APRIL 19, 2004

Date Surveyed

Signature & Seal of  
Professional Surveyor

GARY EIDSON

APR 19 2004

04.11.04256

Certificate No. GARY EIDSON

PROFESSIONAL

12641

**EXHIBIT 15**

100 0 100 200 Feet

Scale: 1"=100'

|                         |                     |
|-------------------------|---------------------|
| Survey Date: 4/14/04    | Sheet 1 of 1 Sheets |
| W.O. Number: 04.11.0425 | Dr By: L. Perales   |



**PROVIDING SURVEYING SERVICES  
SINCE 1948  
JOHN WEST SURVEYING COMPANY  
412 N. DAL PASO  
HOBBS, N.M. 88240**

# LIVINGSTON #18

Sec 3, T21S-R37E, Lea Co

## EXHIBIT 2

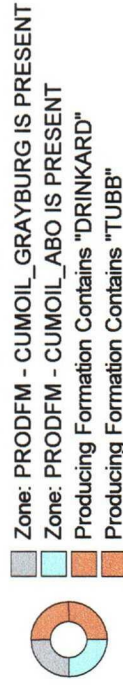
### WELL DATA



#### POSTED WELL DATA

Operator Well Label  
OCD\_HEARINGS - BOPD[REC]  
OCD\_HEARINGS - MCFD[REC]  
OCD\_HEARINGS - GRBG\_MBO[REC]  
OCD\_HEARINGS - GRBG\_MMCFG[REC]  
OCD\_HEARINGS - GRBG\_MBW[REC]

#### ATTRIBUTE MAP

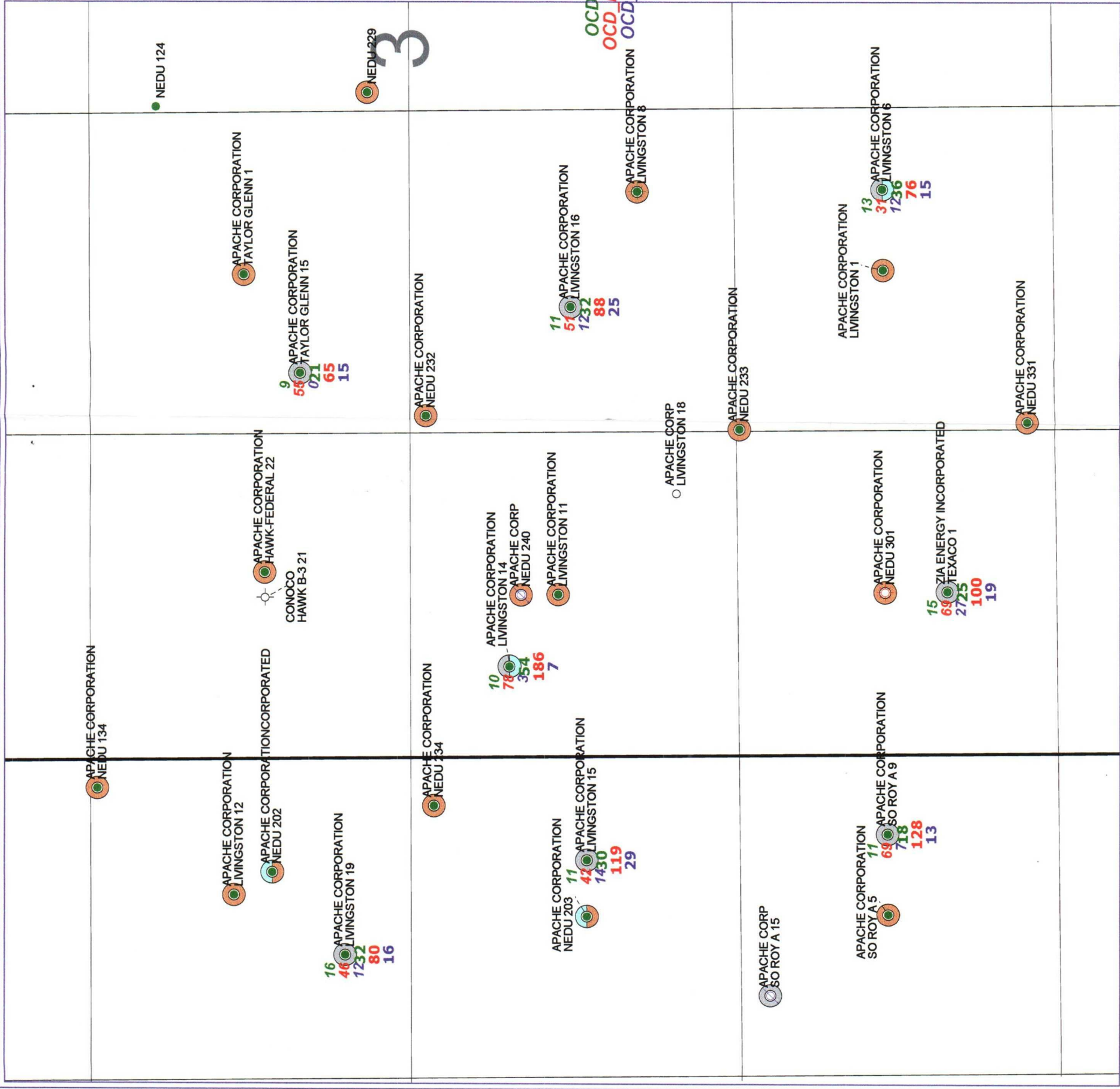


#### WELL SYMBOLS



#### REMARKS

April 21, 2004



LIVINGSTON #18

Sec 3, T21S-R37E, Lea Co

EXHIBIT 3

SOPHIH



POSTED WELL DATA

GRAYBURG - SOPHIH[REC] ● Operator Well Label

BUBBLE MAP

GRAYBURG - CUM\_RAD - DRAINAGE RADIUS CUM PROD  
GRAYBURG - EUR\_RAD - EUR RADIUS  
Radius is Proportional To Map Scale

ATTRIBUTE MAP

- Zone: PRODFM - CUMOIL\_GRAYBURG IS PRESENT
- Zone: PRODFM - CUMOIL\_ABO IS PRESENT
- Producing Formation Contains "DRINKARD"
- Producing Formation Contains "TUBB"

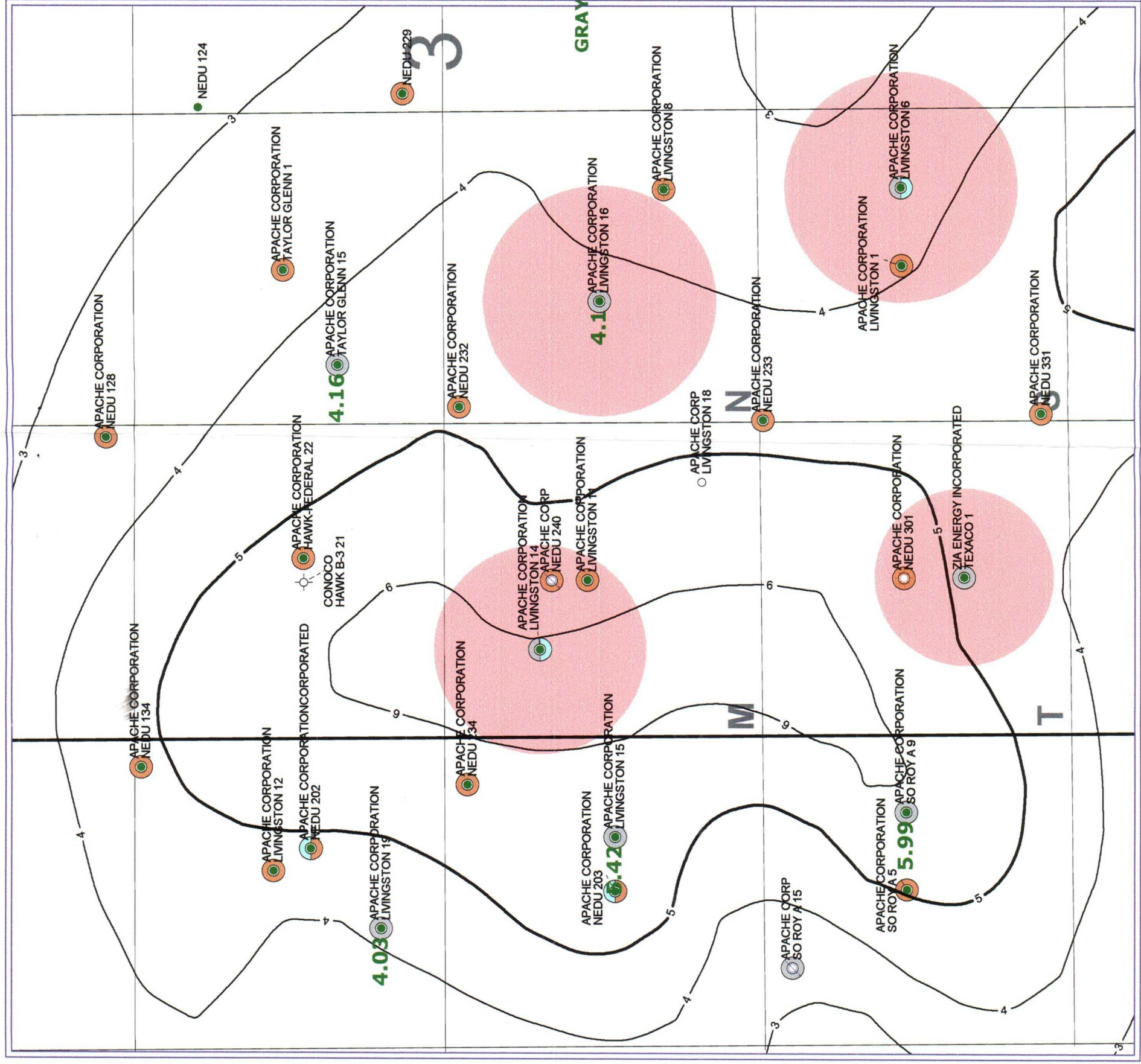
CONTOURS

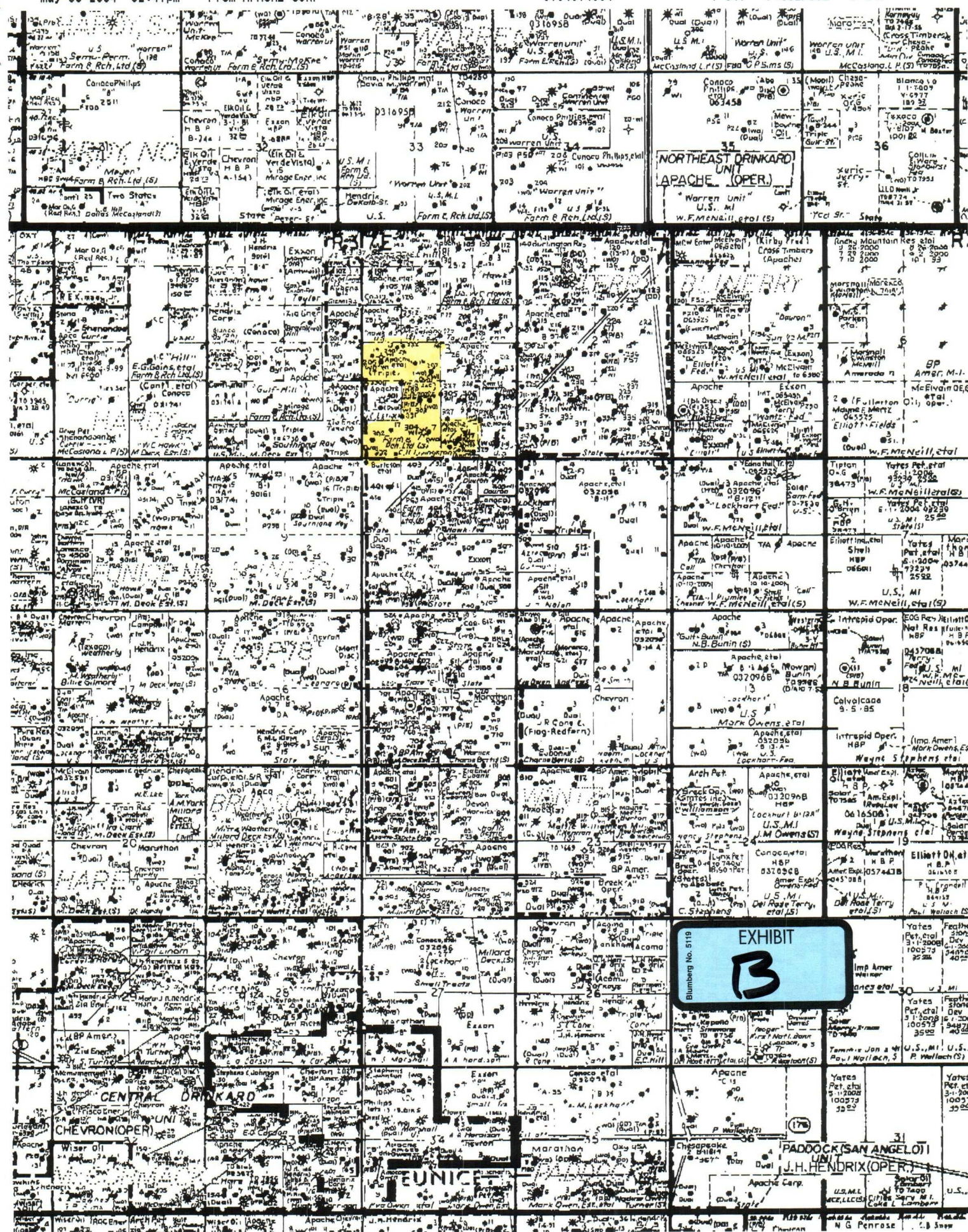
GRAYBURG HCPV  
GRBG HCPV.GRD  
Contour Interval = 1

WELL SYMBOLS

- Location Only
- Oil Well
- Gas Well
- Oil & Gas Well
- Dry Hole
- Injection Well

April 21, 2004





**JAMES BRUCE**  
ATTORNEY AT LAW

POST OFFICE BOX 1056  
SANTA FE, NEW MEXICO 87504

369 MONTEZUMA, NO. 213  
SANTA FE, NEW MEXICO 87501

(505) 982-2043 (Phone)  
(505) 660-6612 (Cell)  
(505) 982-2151 (Fax)

jamesbruc@aol.com

May 4, 2004

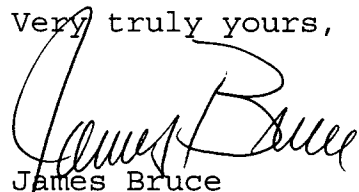
**CERTIFIED MAIL - RETURN RECEIPT REQUESTED**

Zia Energy, Inc.  
P.O. Box 2510  
Hobbs, New Mexico 88241

Gentlemen:

Enclosed is a copy of an application, filed with the New Mexico Oil Conservation Division by Apache Corporation, requesting administrative approval of an unorthodox oil well location in Lot 13 of Section 3, Township 21 South, Range 37 East, NMPM, Lea County, New Mexico. If you object to the well's location, you must notify the Division in writing no later than Monday, May 24, 2004 (1220 South St. Francis Drive, Santa Fe, New Mexico 87505; attention: Michael E. Stogner). Failure to object will preclude you from contesting this matter at a later date.

Very truly yours,



James Bruce

Attorney for Apache Corporation



Sec : 03 Twp : 21S Rng : 37E Section Type : NORMAL

| 12                                  | 4     | 5     | 11                                  | 3     | 6     | 10                              | 2     | 7     | 1                                   | 8     | 9     |
|-------------------------------------|-------|-------|-------------------------------------|-------|-------|---------------------------------|-------|-------|-------------------------------------|-------|-------|
| 40.00                               | 37.86 | 40.00 | 40.00                               | 37.75 | 40.00 | 40.00                           | 37.63 | 40.00 | 37.52                               | 40.00 | 40.00 |
| Federal owned<br>U U<br>A A A A A P |       |       | Federal owned<br>U U<br>A A A A A P |       |       | Fee owned<br>U U<br>P P A A A A |       |       | Federal owned<br>U U<br>A A A A P P |       |       |
| 13                                  |       |       | 14                                  |       |       | 15                              |       |       | 16                                  |       |       |
| 40.00                               |       |       | 40.00                               |       |       | 40.00                           |       |       | 40.00                               |       |       |
| Federal owned<br>U<br>A P A         |       |       | Federal owned<br>U<br>P A A         |       |       | Federal owned<br>U<br>A A A     |       |       | Federal owned<br>U<br>A A A         |       |       |
| L                                   |       |       | K                                   |       |       | J                               |       |       | I                                   |       |       |
| 40.00                               |       |       | 40.00                               |       |       | 40.00                           |       |       | 40.00                               |       |       |
| Fee owned<br>U<br>P A               |       |       | Fee owned<br>U<br>P A A A A         |       |       | Federal owned<br>U<br>A A A A A |       |       | Fee owned<br>U<br>A A A A A         |       |       |
| M                                   |       |       | N                                   |       |       | O                               |       |       | P                                   |       |       |
| 40.00                               |       |       | 40.00                               |       |       | 40.00                           |       |       | 40.00                               |       |       |
| Fee owned<br>U<br>P A A A           |       |       | Fee owned<br>U<br>A P               |       |       | Fee owned<br>U<br>A P A A A     |       |       | Federal owned<br>U<br>A A A A       |       |       |

CMD : ONGARD 05/06/04 11:03:00  
 OG6IWCN INQUIRE WELL COMPLETIONS OGOMES -TP7N

API Well No : 30 25 28671 Eff Date : 07-01-2000 WC Status : A  
 Pool Idn : 50350 PENROSE SKELLY;GRAYBURG  
 OGRID Idn : 873 APACHE CORP  
 Prop Idn : 23108 LIVINGSTON

Well No : 014  
 GL Elevation: 3429

U/L Sec Township Range North/South East/West Prop/Act (P/A)  
 -----  
 B.H. Locn : 13 3 21S 37E FTG 3500 F S FTG 367 F W A  
 Lot Identifier:  
 Dedicated Acre: 40.00  
 Lease Type : P  
 Type of consolidation (Comm, Unit, Forced Pooling - C/U/F/O) :

M0025: Enter PF keys to scroll  
 PF01 HELP PF02 PF03 EXIT PF04 GOTO PF05 PF06  
 PF07 PF08 PF09 PF10 NEXT-WC PF11 HISTORY PF12 NXTREC

CMD : ONGARD 05/06/04 11:03:07  
OG6ACRE C102-DEDICATE ACREAGE OGOMES -TP7N  
Page No : 1

API Well No : 30 25 28671 Eff Date : 02-26-2001 Well No : 014  
Pool Idn : 50350 PENROSE SKELLY;GRAYBURG  
Prop Idn : 23108 LIVINGSTON  
Spacing Unit : 54263 OCD Order : Simultaneous Dedication:  
Sect/Twp/Rng : 3 21S 37E Acreage : 40.00 Revised C102? (Y/N) :  
Dedicated Land:

|   |          |     |     |     |         |     |           |     |     |
|---|----------|-----|-----|-----|---------|-----|-----------|-----|-----|
| S | Base U/L | Sec | Twp | Rng | Acreage | L/W | Ownership | Lot | Idn |
| E | 13       | 3   | 21S | 37E | 40.00   | N   | FD        |     |     |

E0005: Enter data to modify or PF keys to scroll  
PF01 HELP PF02 PF03 EXIT PF04 GOTO PF05 PF06 CONFIRM  
PF07 BKWD PF08 FWD PF09 PF10 LAND PF11 NXTSEC PF12 RECONF

CMD : ONGARD  
 OG6IPRD INQUIRE PRODUCTION BY POOL/WELL

05/06/04 11:03:18  
 OGOMES -TP7N  
 Page No: 1

OGRID Identifier : 873 APACHE CORP  
 Pool Identifier : 50350 PENROSE SKELLY;GRAYBURG  
 API Well No : 30 25 28671 Report Period - From : 01 2004 To : 04 2004

| API Well No | Property Name | Prodn. Days<br>MM/YY Prod | Production Volumes<br>Gas Oil Water | Well<br>Stat |
|-------------|---------------|---------------------------|-------------------------------------|--------------|
| 30 25 28671 | LIVINGSTON    | 01 04 31                  | 2419 295                            | 101 P        |
| 30 25 28671 | LIVINGSTON    | 02 04 28                  | 2127 269                            | 100 P        |

Reporting Period Total (Gas, Oil) : 4546 564 201

M0025: Enter PF keys to scroll

PF01 HELP PF02 PF03 EXIT PF04 GOTO PF05 PF06 CONFIRM  
 PF07 BKWD PF08 FWD PF09 PF10 NXTPool PF11 NXTOGD PF12