

11/30/07 DATE IN	SUSPENSE	Brooks ENGINEER	12/3/07 LOGGED IN	NSL TYPE	PKJR 0733728301 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



Apache Corporation  
Owen "B" #13  
5757

**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  
2007 NOV 30 PM 4 46

11/30/07

**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](mailto:jamesbruc@aol.com)

November 30, 2007

Hand Delivered

Mark E. Fesmire, P.E.  
Oil Conservation Division  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505

Dear Mr. Fesmire:

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 Name:</u>	Owen B Well No. 13
<u>Well Location:</u>	<u>Surface:</u> 1120 feet FSL & 1650 feet FWL <u>Bottom Hole:</u> 1310 feet FSL & 1330 feet FWL
<u>Well Unit:</u>	SE¼SW¼ of Section 34, Township 21 South, Range 37 East, N.M.P.M., Lea County, New Mexico

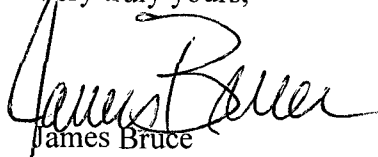
The well will test the Blinebry (Blinebry Oil and Gas Pool), Tubb (Tubb Oil and Gas Pool), and Drinkard (Drinkard Pool) formations, and applicant requests unorthodox location approval in all three zones. The Blinebry, Tubb, and Drinkard zones are expected to be oil productive.

The application is based on geological and engineering reasons. A complete discussion, with exhibits, is attached as Exhibit A. The well is in the approximate center of existing Blinebry, Tubb, and Drinkard wells, and the proposed location will drain additional undrained reserves.

Exhibit B is a land plat. The Owen B fee lease covers the SW¼ of Section 34. It has common ownership in the subject formations, and no offset owner is adversely affected by the application. Therefore, notice has not been provided to anyone.

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". The signature is written in dark ink and is positioned above the printed name "James Bruce".

James Bruce

Attorney for Apache Corporation

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

40 acres - SL: 1120' FSL & 1650' FWL  
BHL: 1310' FSL & 1330' FWL  
Section 34, Township 21 South, Range 37 East, NMPM  
Lea County, New Mexico

PRIMARY OBJECTIVES: Blinebry, Tubb, and Drinkard

In support:

1. Apache Corporation (Apache) is the operator of the proposed **Owen B #13** well (**Exhibit 1**).
2. The proposed unorthodox location encroaches toward following wells, which are, or have been, productive from various combinations of the Blinebry, Tubb, and Drinkard (**Exhibit 2**). **Exhibit 2** displays only those wells with a total depth equal to, or greater than, 5500', sufficient to penetrate at least part of the Blinebry, Tubb, and Drinkard interval. Production from the three reservoirs is assigned to individual Blinebry Oil and Gas, Tubb Oil and Gas, and Drinkard Pools, but downhole commingling is pre-approved pending submission of allocations to the Hobbs District Office. The cumulative and daily production values displayed on **Exhibit 2** are only for the Blinebry, Tubb, and Drinkard reservoirs.

API	Op.	Well	Loc	Pool	Cum O/G/W	Daily O/G/W
30025	BP America	Owen B #03	K-34	Drinkard (19190)	199/1925/10	0/0/0
06998	Apache Corp.	Owen B #06	K-34	Blinebry Gas (72480)	0/232/0	0/48/0
34321	Apache Corp.	Owen B #06	K-34	Tubb Gas (86440)	1/360/7	0/48/0
34321	Apache Corp.	Owen B #06	K-34	Drinkard (19190)	1/203/5	3/152/2
34321	Apache Corp.	Owen B #06	K-34	Wantz Abo (62700)	14/205/32	3/53/1
06997	Apache Corp.	Owen B #02	L-34	Tubb Gas (86440)	77/5787/8	1/68/8
06997	Apache Corp.	Owen B #02	L-34	Drinkard (19190)	212/1478/9	0/7/0
06996	Apache Corp.	Owen B #01	M-34	Blinebry (06660)	5/341/2	0/4/0
06996	Apache Corp.	Owen B #01	M-34	Drinkard (19190)	108/1638/9	0/0/0
35638	Apache Corp.	Owen B #10	M-34	Blinebry (06660)	6/415/7	1/78/0
37239	Apache Corp.	Owen B #12	M-34	Blinebry (06660)	6/51/5	18/155/9
06999	Apache Corp.	Owen B #04	N-34	Blinebry (72480)	76/10238/70	0/2/0
06999	Apache Corp.	Owen B #04	N-34	Drinkard (19190)	187/279/7	0/0/0

MBO  
MMCFG  
MBW

BOPD  
MCFGPD  
BWPD

3. Apache expects the proposed **Owen B #13** to test as an oil well in each of the three reservoirs. Should any reservoir test gas, Apache will either gain the appropriate approvals from the OCD to produce or abandon the reservoir.

EXHIBIT

**A**

4. The proposed **Owen B #13** bottom hole location of 1310' from south line and 1330' from west line is based upon drainage considerations. The bottom hole location was placed approximately equidistant from the older wells, to drain hydrocarbons not produced by older wells. Additionally, the existing producer in Drilling and Spacing Unit N, Owen B #4, is very marginal. The surface location of 1120' from south line and 1650' from west line was selected to avoid surface obstructions and minimize the directional drilling require to hit the bottom hole location. Apache will file the appropriate forms after TD when the actual bottom hole location has been determined.

#### **a. Geology**

The Blinebry, Tubb, and Drinkard Formations are members of the Yeso Group, Permian Leonardian in age. All three formations are shallow marine carbonates, consisting primarily of dolomite. The Tubb has appreciable clastic content and the Drinkard can become limey toward its base. Anhydrite can occur throughout the interval. Pay zones are thin, erratically distributed, and separated by thick impermeable intervals. Porosity and permeability are low. Wells are not generally capable of draining a full 40 Acre spacing unit. In fact, Apache's calculations indicate drainage area is usually no greater than 20 Acres.

Apache routinely fracture stimulates perforations in each of the three formations then produces commingled and allocates production based upon well tests. Often times, fractures created by the stimulations can grow up and down into adjacent reservoirs causing problems in production analysis. Comparison of production volumes and rates from wells of vastly different ages (Owen B #1, #2, #3, and #4 were completed in the late 1940's whereas the Owen B #6, #10 and #12 were completed within the last 10 years) creates another layer of complexity. Current high GOR from the older wells may be partly a result of depletion of oil volumes and changes in relative permeability within those reservoirs.

At this stage in the development history of the area, economics do not routinely permit development of individual reservoirs. Calculations of volumetrics become problematic considering compartmentalization of reservoirs, different perforated intervals, and vertical growth of induced fractures. Pay from all three reservoirs is considered for all well proposals, realizing, however, that the calculations are averaged across the three reservoirs and can be optimistic in some reservoirs yet pessimistic in others. This procedure has, however, proved successful for Apache in recent drilling in the area.

**Exhibit 3** is a cross section from the Owen B #12 to Owen B #6 of the Blinebry, Tubb, and Drinkard composed of gamma ray (scale: 0 to 100 APIU) and cross plotted porosity (scale: 30% to -10%) logs. Pay is indicated in green using a gamma ray range of 0-40 APIU and porosity range of 5%-20%. Pay zones which the cross section software calculates to be continuous are green intervals stretching between the two wells. Perforations are shown as purple boxes next to the depth tract. **Exhibit 4** demonstrates that perforations are structurally higher in Owen B #6 which would also explain its higher GOR. **Exhibit 4** also demonstrates that most pay zones are not continuous from well to well and that different intervals are perforated in each well based upon porosity distribution.

The location of **Owen B #13** is low to most of the wells on the lease as displayed by **Exhibit 4**, structure on the Tubb, and thus more likely to produce at a lower GOR than the structurally higher offsets.

The reservoir was analyzed by mapping hydrocarbon pore volume (SoPhiH) (**Exhibit 5**) of the entire Blinebry, Tubb, and Drinkard interval. SoPhiH is the product of feet of net pay (H) times average porosity (PhiA) times oil saturation (So). The values were obtained as follows:

- 1) Net Pay was read from modern neutron-density logs which have contractor calculated cross-plotted porosity (XPhi) using a minimum of 5% and a maximum of 20%. Additionally, gamma ray (40 APIU in the Blinebry and Drinkard and 50 APIU in the Tubb) and water saturation (10% - 50%, using a standard equation with  $a=1$  and  $m=n=2$ ) cutoffs were also employed.
- 2) Average Porosity was calculated for intervals meeting those criteria.
- 3) Oil Saturation is the additive inverse of water saturation.

This analysis requires modern neutron-density and resistivity logs. Although water saturations can be adequately estimated from offsetting modern wells, many wells had to be excluded from analysis because of the vintage or type of porosity logs. SoPhiH isopach lines were modeled after cumulative production isopach lines where new well control is lacking.

#### b. Drainage

The following table provides drainage areas calculated from the SoPhiH map and reserves of the offsetting wells in the four spacing units impacted. SoPhiH values are either from modern logs, or estimated from the grid. Wells with values determined from modern logs are in bold font.

Op.	Well	Loc	Reservoir	SoPhiH FT	Area A	EUR MBO	EUR MMCFG
BP America	Owen B #03	K-34	BTB	24.90	12	199	1925
Apache Corp.	Owen B #06	K-34	BTB	23.69	6	1	1400
Apache Corp.	Owen B #02	L-34	BTB	19.85	21	289	8100
Apache Corp.	Owen B #01	M-34	BTB	18.53	9	113	1979
Apache Corp.	Owen B #10	M-34	BTB	19.30	3	6	600
<b>Apache Corp.</b>	<b>Owen B #12</b>	<b>M-34</b>	<b>BTB</b>	<b>18.24</b>	<b>4</b>	<b>45</b>	<b>282</b>
Apache Corp.	Owen B #04	N-34	BTB	19.92	19	263	10517

The proposed **Owen B #13** was planned as a "true" 20 Acre infill location between existing Blinebry, Tubb, and Drinkard producers. The bottom hole location was placed in the center of the vacant area between the existing wells, then the surface location was selected to avoid surface obstruction, yet require the minimum directional drill.

Reserves for the proposed location were calculated by planimetry 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. Any competitive drainage is shared between the proposed well and the existing offset wells. The results are as follows:

				SoPhiH	Area	EUR	EUR
Op.	Well	Loc	Reservoir	Ft	A	MBO	MMCFG
Apache	Owen B #13	N-34	BTD	21.80	4	56	500

**5. Notice**

Apache is the operator and only working interest owner in the Blinbry, Tubb, and Drinkard wells toward which the proposed well will encroach, so no other parties need to be notified.

6. Approval of this application will afford the interest owners in these spacing units an opportunity to recover oil and gas which would not otherwise be recovered and to do so without violating correlative rights.

DISTRICT I  
1625 N. FRENCH DR., HOBBBS, NM 88240

DISTRICT II  
1301 W. GRAND AVENUE, ARTESIA, NM 88210

DISTRICT III  
1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV  
1220 S. ST. FRANCIS DR., SANTA FE, NM 87505

State of New Mexico  
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION  
1220 SOUTH ST. FRANCIS DR.  
Santa Fe, New Mexico 87505

Form C-102  
Revised October 12, 2005  
Submit to Appropriate District Office  
State Lease - 4 Copies  
Fee Lease - 3 Copies

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number	Pool Code	Pool Name
Property Code	Property Name OWEN "B"	Well Number 13
OGRID No.	Operator Name APACHE CORPORATION	Elevation 3443'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	34	21-S	37-E		1120	SOUTH	1650	WEST	LEA

Bottom Hole Location If Different From Surface

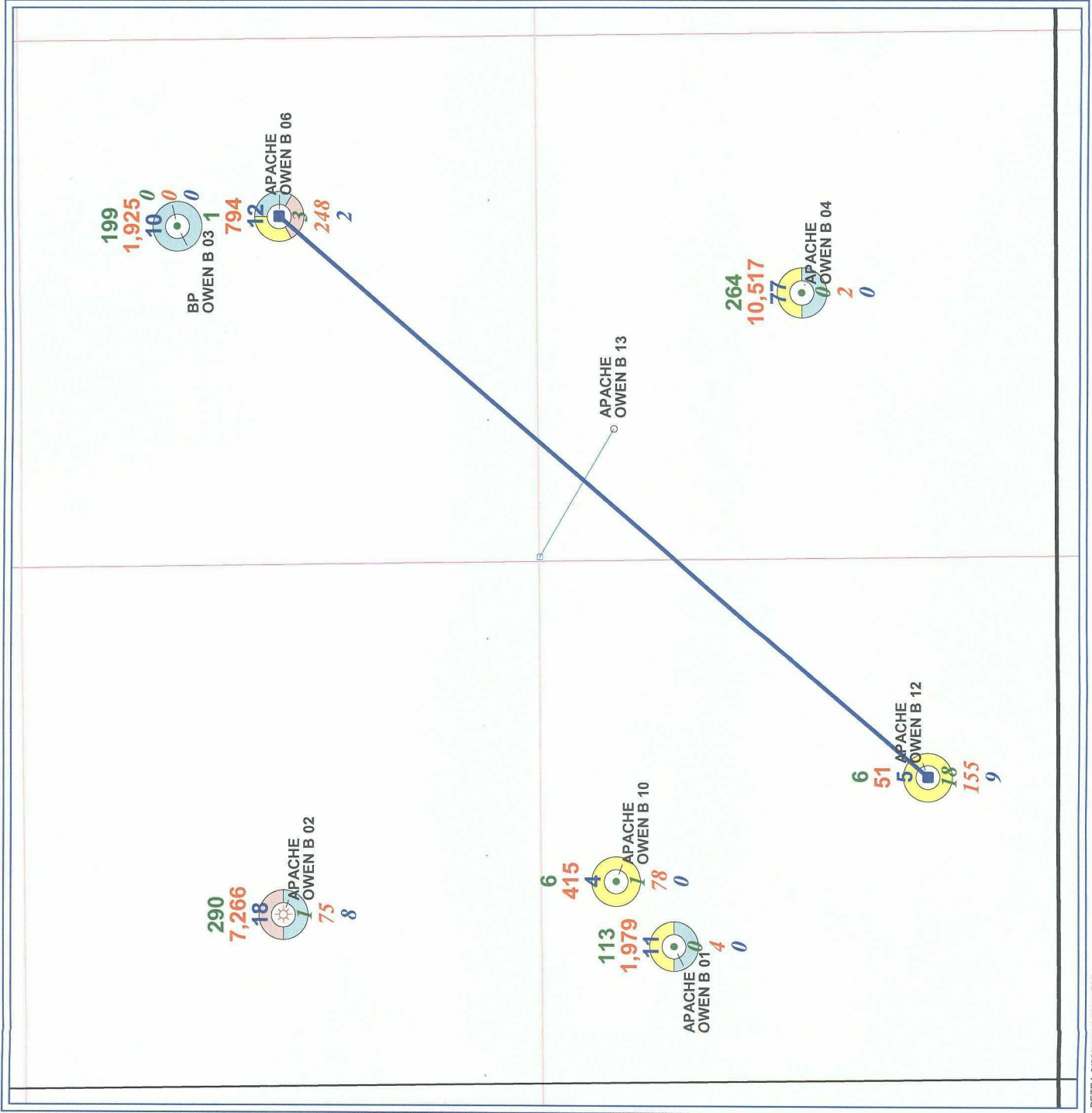
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	34	21-S	37-E		1310	SOUTH	1330	WEST	LEA

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

<p>GEODETIC COORDINATES NAD 27 NME SURFACE HOLE LOCATION Y=522546.3 N X=863989.9 E</p> <p>LAT.=32.431068° N LONG.=104.153635° W</p> <p>LAT.=32° 25' 51.84" N LONG.=103° 09' 13.09" W</p> <p>GRID. AZ. - 371°39'00" HORZ. DIST. - 371.5'</p> <p>1330' 1650'</p> <p>BH S.L.</p> <p>1310' 1120'</p> <p>BOTTOM HOLE LOCATION Y=522732.4 N X=863668.6 E</p>	<p>OPERATOR CERTIFICATION</p> <p>I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.</p> <p>Signature _____ Date _____</p> <p>Printed Name _____</p> <p>SURVEYOR CERTIFICATION</p> <p>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.</p> <p>SEP 24 2007 Date Surveyed: 9/24/07 Signature: [Signature] Seal of Professional Surveyor 3239 Certificate No. GARY EIDSON 12641</p>
--	---





# Owen B #13

## EXHIBIT 2

### Well Data

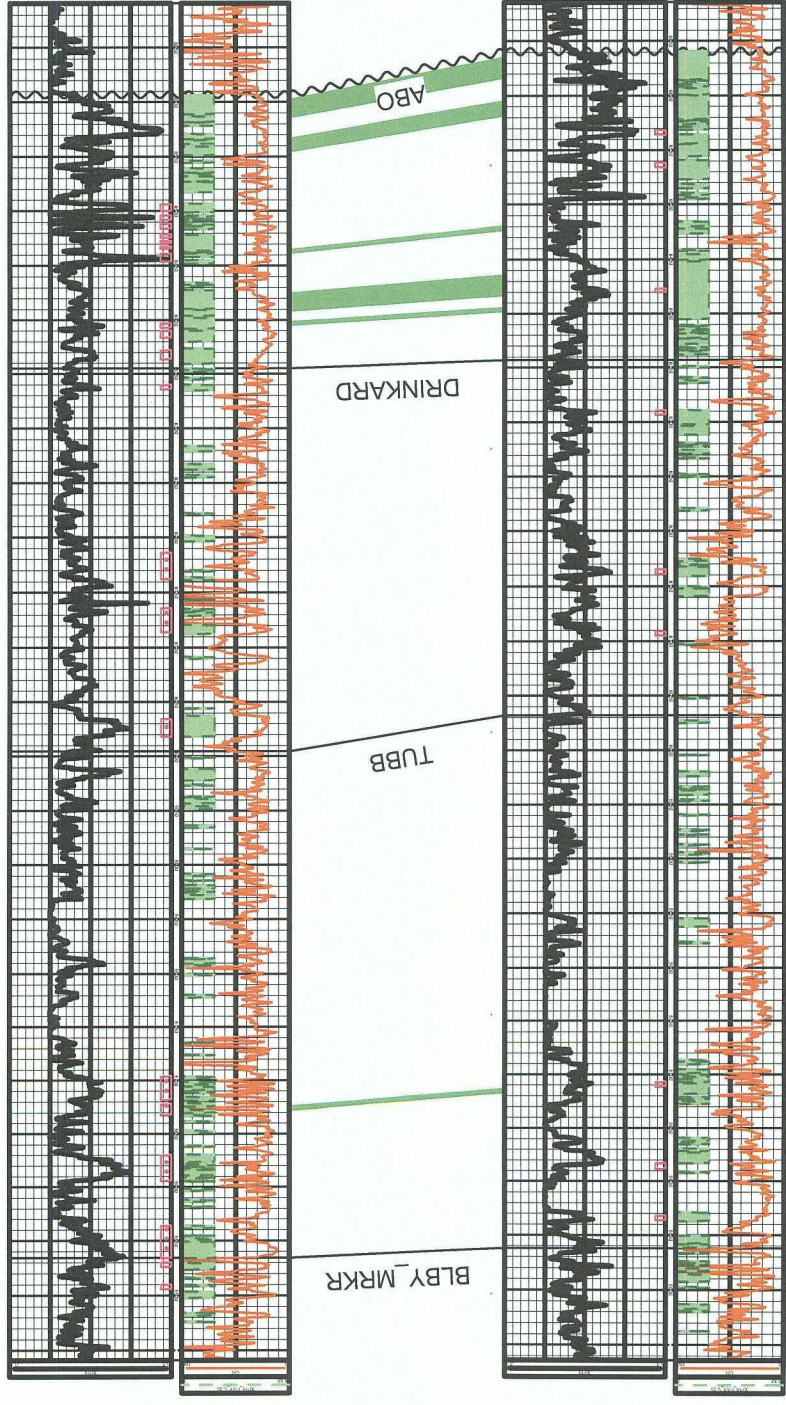
POSTED WELL DATA  
 BTD\_PRODUCTION - CUMOIL  
 BTD\_PRODUCTION - CUMGAS  
 BTD\_PRODUCTION - CUMWTR  
 Operator Well Label  
 BTD\_PRODUCTION - ROPD  
 BTD\_PRODUCTION - MCFD  
 BTD\_PRODUCTION - BWPD

#### ATTRIBUTE MAP

Zone: PRODFM - Q\_BUNEERY IS PRESENT  
 Zone: PRODFM - G\_TUBB IS PRESENT  
 Zone: PRODFM - Q\_DRINKARD IS PRESENT



OWEN B #13  
EXHIBIT 3  
Structural Cross Section

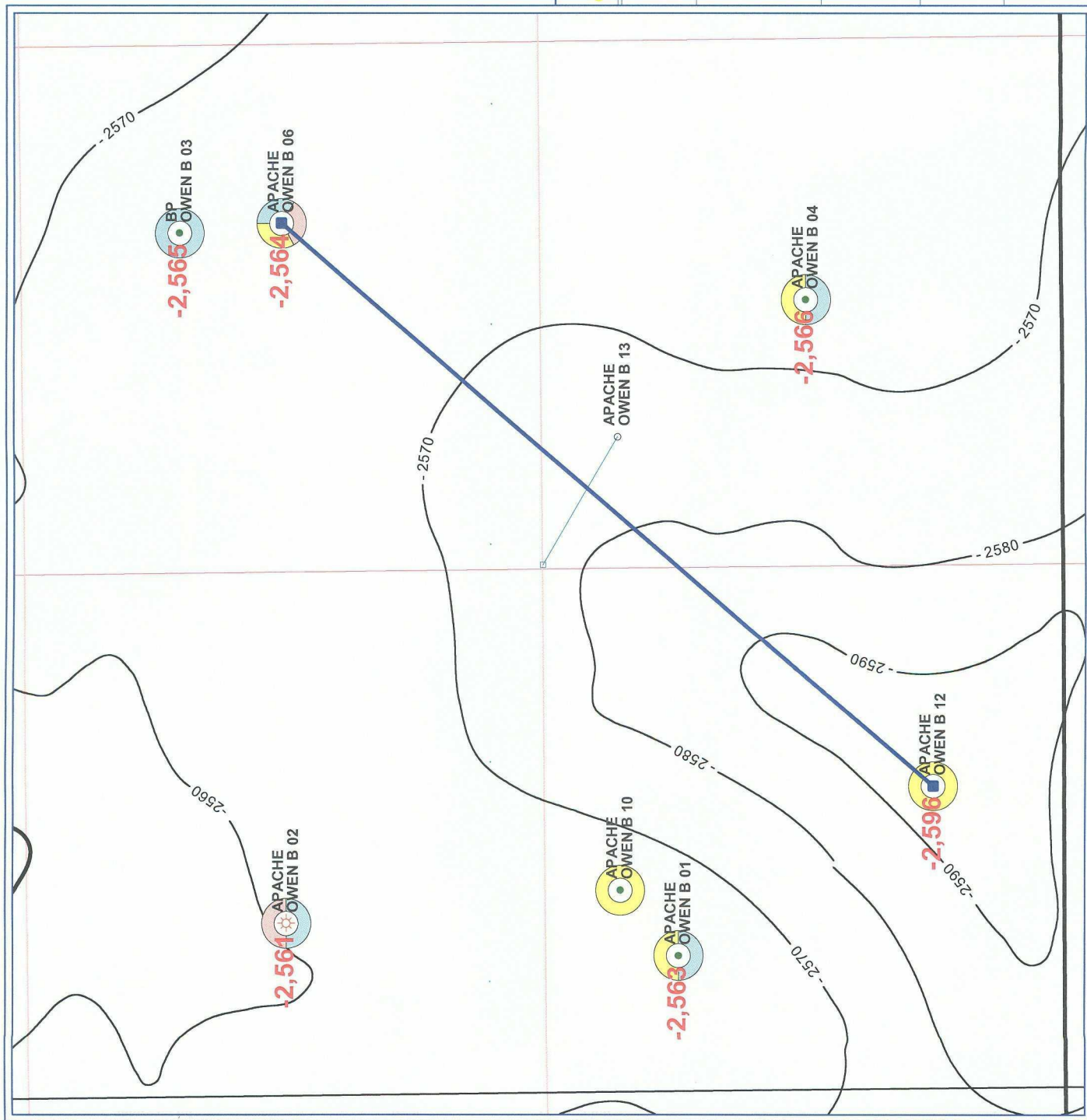


APACHE CORP  
OWEN B 06  
T21S R37E S34  
1980 FSL 2180 FWL

APACHE CORP  
OWEN B 12  
T21S R37E S34  
330 FSL 760 FWL

Eunice Area





**Apache** APACHE CORPORATION

**Owen B #13**

**EXHIBIT 4**

**Structure Top Tubing**

POSTED WELL DATA

FMTOPS - TUBB[GDS] (SS) ● Operator Well Label

ATTRIBUTE MAP

Zone: PRODFM - Q\_BLUEBRY IS PRESENT  
 Zone: PRODFM - G\_TUBB IS PRESENT  
 Zone: PRODFM - Q\_DRINKARD IS PRESENT





Owen B #13

EXHIBIT *AS*

BTD SoPhiH

POSTED WELL DATA

B-T-D - SOPHIH    Operator Well Label

ATTRIBUTE MAP

Zone: PRODFM - O\_BLINEBRY IS PRESENT  
Zone: PRODFM - G\_TUBB IS PRESENT  
Zone: PRODFM - O\_DRINKARD IS PRESENT

