

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

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AUG 04 2003

40 acres – 1250' FNL & 150' FWL
 Section 10, Township 21 South, Range 37 East, NMPMOIL CONSERVATION
 Lea County, New Mexico DIVISION

PRIMARY OBJECTIVE: Blinebry, Tubb and Drinkard

In support:

1. Apache Corporation (Apache) is the operator of the proposed **Northeast Drinkard Unit (NEDU) #418** well (**Exhibit 1**).
2. The proposed unorthodox location encroaches toward the following wells which are, or have been productive from various combinations of the Blinebry, Tubb, and Drinkard (**Exhibit 2**).

3.

OPER	WELL	LOC	RESRVR	CUM B-T-D O/G/W	DAILY B-T-D O/G/W	WELL CLASS	CURRENT POOL
Apache	Southland Royalty A #4	4-X	B-T-D	281/4787/48	0/0/0	N/A	Penrose Skelly: Grayburg
Apache	Southland Royalty A #7	9-A	B-T-D	202/1699/48	0/0/0	N/A	Penrose Skelly: Grayburg
Apache	NEDU #401	10-D	B-T	307/5192/60 4	10/170/88	OIL	Eunice; Bli-Tu-Dr, North
Lewis Burleson	State 10 #1	10-D	BLBY	71/749/0	0/0/0	N/A	Wantz; Abo
Apache	NEDU #302	3-U	DKRD	466/4074/89	9/36/24	OIL	Eunice; Bli-Tu-Dr, North
Apache	NEDU #332	3-U	B-T-D	19/103/69	8/109/69	OIL	Eunice; Bli-Tu-Dr, North

Oil in MBO
 Gas in MMCFG
 Water in MBW

BOPD
 MCFGPD
 BWPD

4. The proposed **Northeast Drinkard Unit (NEDU) #418** unorthodox Blinebry, Tubb, and Drinkard location of 1250' from north line and 150' from west line is necessitated by geological and drainage considerations, as well as to prevent waste:

5.

a. **Blinebry, Tubb and Drinkard**



The Blinebry, Tubb, and Drinkard Formations are members of the Yeso Group, Permian Leonardian in age. Portions of the Eunice area were unitized by Shell in 1987 into the Northeast Drinkard Unit for waterflood operations. The unit is governed by the North Eunice Blinebry-Tubb-Drinkard Field Rules. The stratigraphic relationships, specifically top of Blinebry being 75' above the Blinebry Marker, and fluid contacts, specifically Blinebry GOC at -2255 and Drinkard OWC at -3225, employed by Shell have also been used here.

All three formations are shallow marine carbonates, consisting primarily of dolomite. The Tubb can have appreciable clastic content and the Drinkard becomes limey toward its base. Anhydrite can occur throughout the interval. Structure is significant in that it controls the fluid distribution. Any oil water contacts in these formations occur miles from this location.

Apache approached its evaluation by mapping the following on each of the four major reservoirs (Blinebry Gas Cap, Blinebry Oil Leg, Tubb, and Drinkard):

1. Structure (primarily to locate fluid contacts on logs and cross sections),
2. Clean carbonate (less than 40 APIU gamma ray),
3. Net to gross ratio using only modern logs from which a cross plotted porosity could be calculated,
4. Net pay (h) which was either picked from modern logs or calculated by multiplying the clean carbonate grid by the net to gross ratio grid (thus estimating net pay for wells without modern logging suites),
5. Average porosity (PhiA), using only modern logs from which a average porosity could be calculated,
6. Porosity*Feet (PhiH) which was either calculated from modern logs or calculated by multiplying the net pay (h) grid by the average porosity (PhiA) grid.

Reservoir engineering used the four PhiH maps to estimate drainage of each offsetting well in each reservoir. Recoverable reserves for this location are calculated as the volumetrics under a 20 A radius (less if the direct offsets were not capable of draining 20 A) with reduced reservoir pressure where drainage has occurred. Drainage offsetting this location is as follows:

SEC	LEASE NAME	WELL	PROD ZONE NAME	EUR			DRAINED ACRES
				OIL	WATER	GAS	
4	SOUTHLAND ROYALTY A	4	BLINEBRY GAS CAP	69,211	5,424	305,283	0
9	SOUTHLAND ROYALTY A	7	BLINEBRY GAS CAP	119,219	13,566	1,042,548	8
10	State 10	1	BLINEBRY GAS CAP	71,499	93	749,402	8
3	NEDU	332	BLINEBRY GAS CAP	3,750	50,000	102,000	10
4	SOUTHLAND ROYALTY A	4	BLINEBRY OIL LEG	69,211	5,424	305,283	15
9	SOUTHLAND ROYALTY A	7	BLINEBRY OIL LEG	119,219	13,566	1,042,548	25
10	State 10	1	BLINEBRY OIL LEG	71,499	93	749,402	9
3	NEDU	332	BLINEBRY GAS CAP	3,750	50,000	102,000	1
4	SOUTHLAND ROYALTY A	4	TUBB	35,274	4,092	3,699,969	165
9	SOUTHLAND ROYALTY A	7	TUBB	931	656	12,444	1
10	NEDU	401	TUBB	105,549	12,502	3,122,963	141
3	NEDU	332	BLINEBRY GAS CAP	3,750	50,000	102,000	10
4	SOUTHLAND ROYALTY A	4	DRINKARD	177,285	9,651	781,800	64
9	SOUTHLAND ROYALTY A	7	DRINKARD	81,770	8,811	913,742	27
3	NEDU	332	BLINEBRY GAS CAP	3,750	50,000	102,000	1
3	NEDU	302	DRINKARD	205,611	3,246	1,535,459	85

Volumetrics for the proposed location are as follows:

		PROD ZONE NAME	RESERVOIR	DRAINAGE	EUR	
			PRESSURE	ACRES	OIL	GAS
NEDU	418	BLINEBRY GAS CAP	2500	8	2,080	208
		BLINEBRY OIL LEG	2300	16	133,310	867
		TUBB	500	20	0	0
		DRINKARD	900	20	19,342	126
		TOTAL			154,732	1,200

Exhibit 3 is a stratigraphic cross section, hung on the top of the Blinebry, trending north to south; passing near several wells Apache is considering drilling. It illustrates several critical points:

1. Wireline logging suites vary greatly. Many wells do not have reliable gamma ray or porosity logs.
2. Tops are easily correlated, but the presence of tight dolomite/anhydrite and shale **compartmentalizes** the reservoir.
3. All the reservoirs are low porosity.

b. Blinebry Gas Cap (Exhibit 4)

Thickness of the Blinebry Gas Cap is related to the subsea top of the Blinebry. The higher the top, the thicker the gas cap. Using a 5% threshold, porosity averages 10.2% in 118 wells selected for analysis. PhiH at this location is expected to be 8.1'.

c. Blinebry Oil Leg (Exhibit 5)

Thickness of the Blinebry Leg is related to the subsea top of the Blinebry, the higher the top, the thinner the gas cap. Using a 5% threshold, porosity averages 8.4% in 146 wells selected for analysis. PhiH at this location is expected to be 11.0'.

c. Tubb (Exhibit 6)

Thickness of the Tubb varies little in the area, ranging mostly from 300' to 360'. Using a 5% threshold, porosity averages 8.4% in 145 wells selected for analysis. PhiH at this location is expected to be 4.2'.

d. Drinkard (Exhibit 7)

The thickness of the Drinkard is also related to its subsea position, the higher the top, the thicker the interval. Using a 5% threshold, porosity averages 9.3% in 128 wells selected for analysis. PhiH at this location is expected to be 14.0'.

e. B-T-D (Exhibit 8)

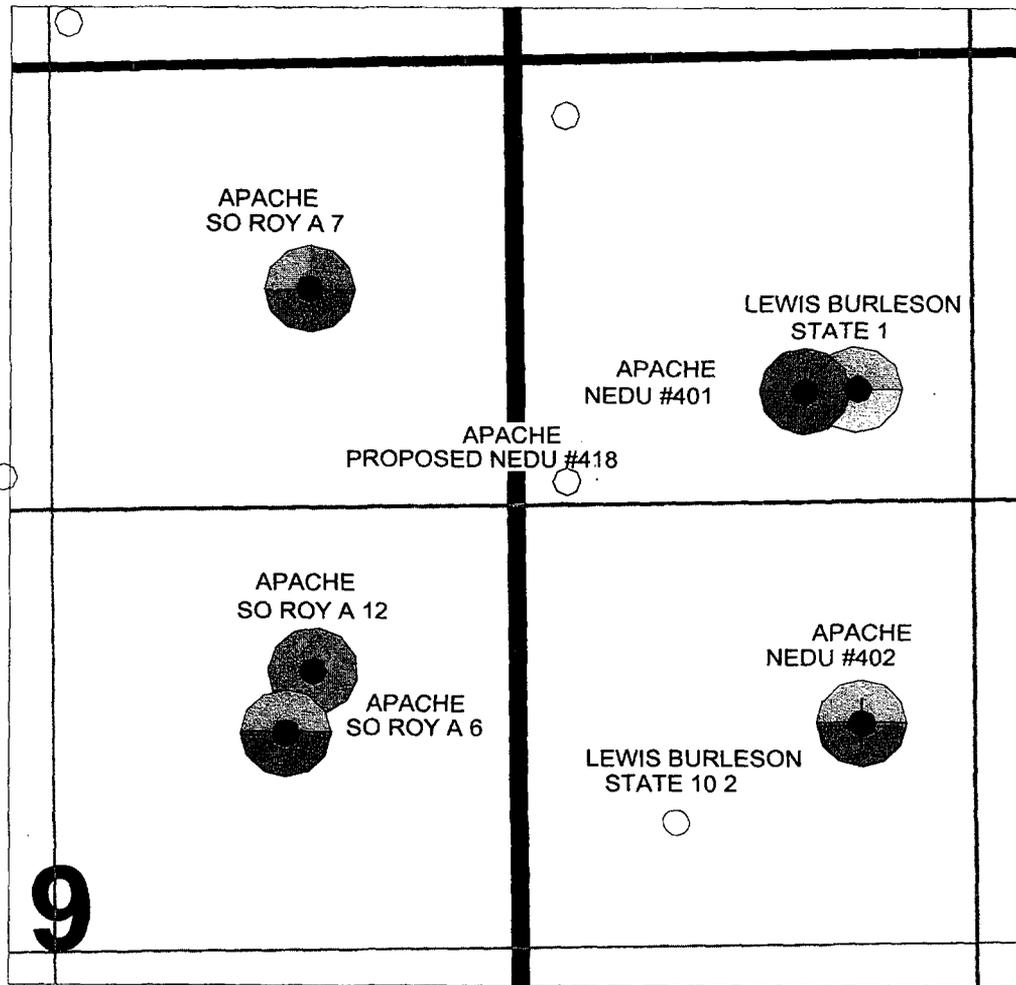
The expected PhiH in the combined interval is 37.3'.

6. Notice

N/A

7. 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. Correlative rights of the offsetting unit will be protected by a sharing agreement set forth in a letter agreement.

8.

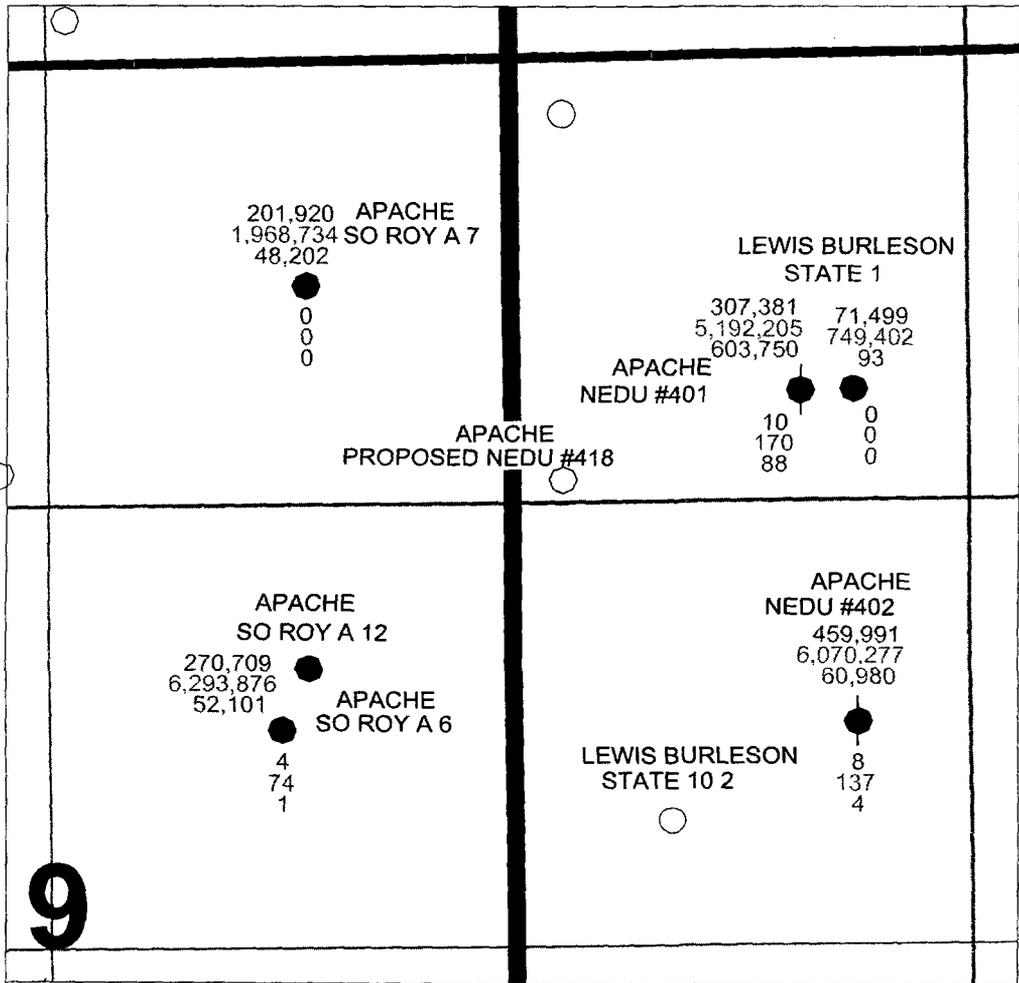


WELL SYMBOLS

- Location Only
- Oil Well



	TWO WARREN PLACE, SUITE 1500 6120 SOUTH YALE TULSA, OKLAHOMA 74136-4224
	CORPORATION CENTRAL REGION
NEDU # 418	
T215-R37E LEA COUNTY, NEW MEXICO	
EXHIBIT 1 WELL INFORMATION	
DATE: 6-5-03	DWG: NEDU 418 EX1 (CURTIS)



POSTED WELL DATA

CUM OIL
CUM GAS
CUM WATER

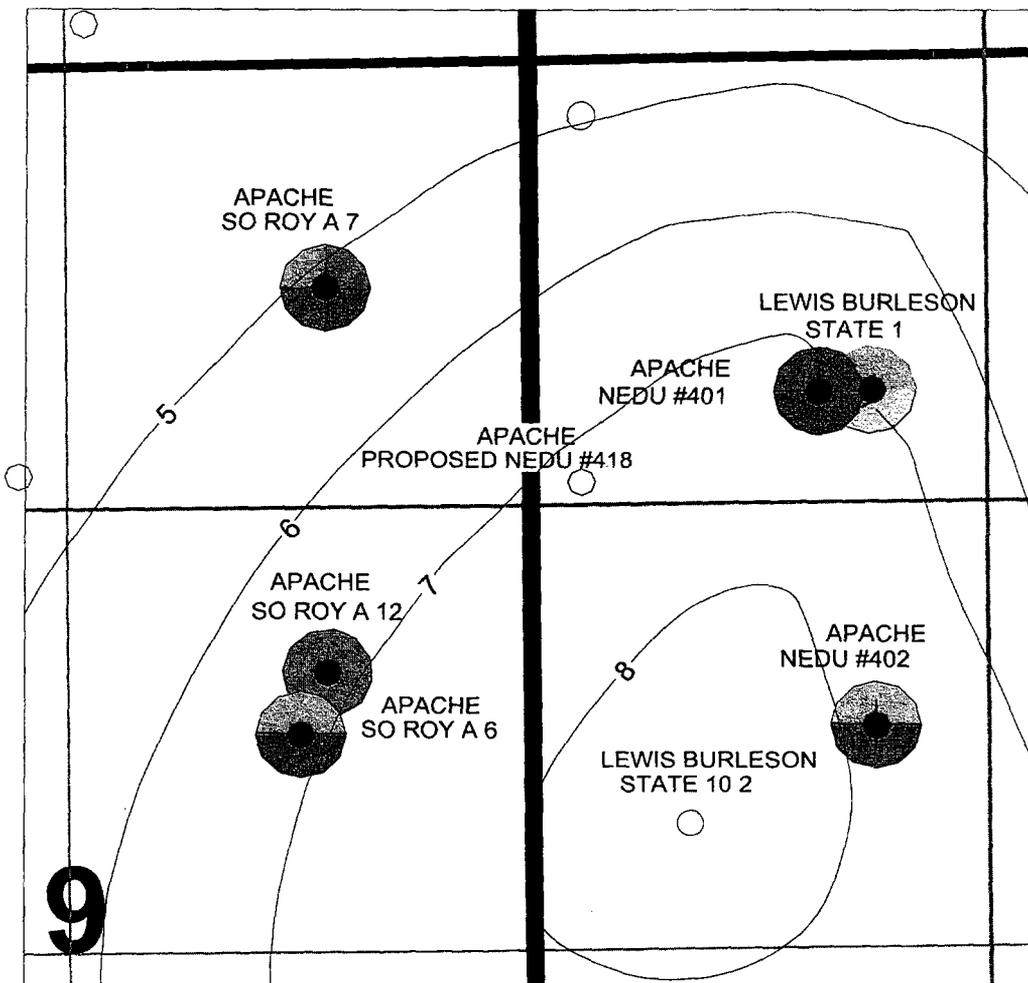
DAILY OIL
DAILY GAS
DAILY WATER

WELL SYMBOLS

- Location Only
- Oil Well
- ☼ Gas Well



	TWO WARREN PLACE, SUITE 1500 6120 SOUTH YALE TULSA, OKLAHOMA 74136-4224
	NEDU #418 T21S-R37E LEA COUNTY, NEW MEXICO
EXHIBIT 2 PRODUCTION	
DATE: 8-5-03	DWG: NEDU 418 EX2 (CURTIS)



POSTED WELL DATA

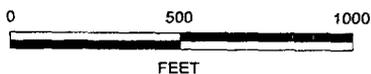
PHIH •

WELL SYMBOLS

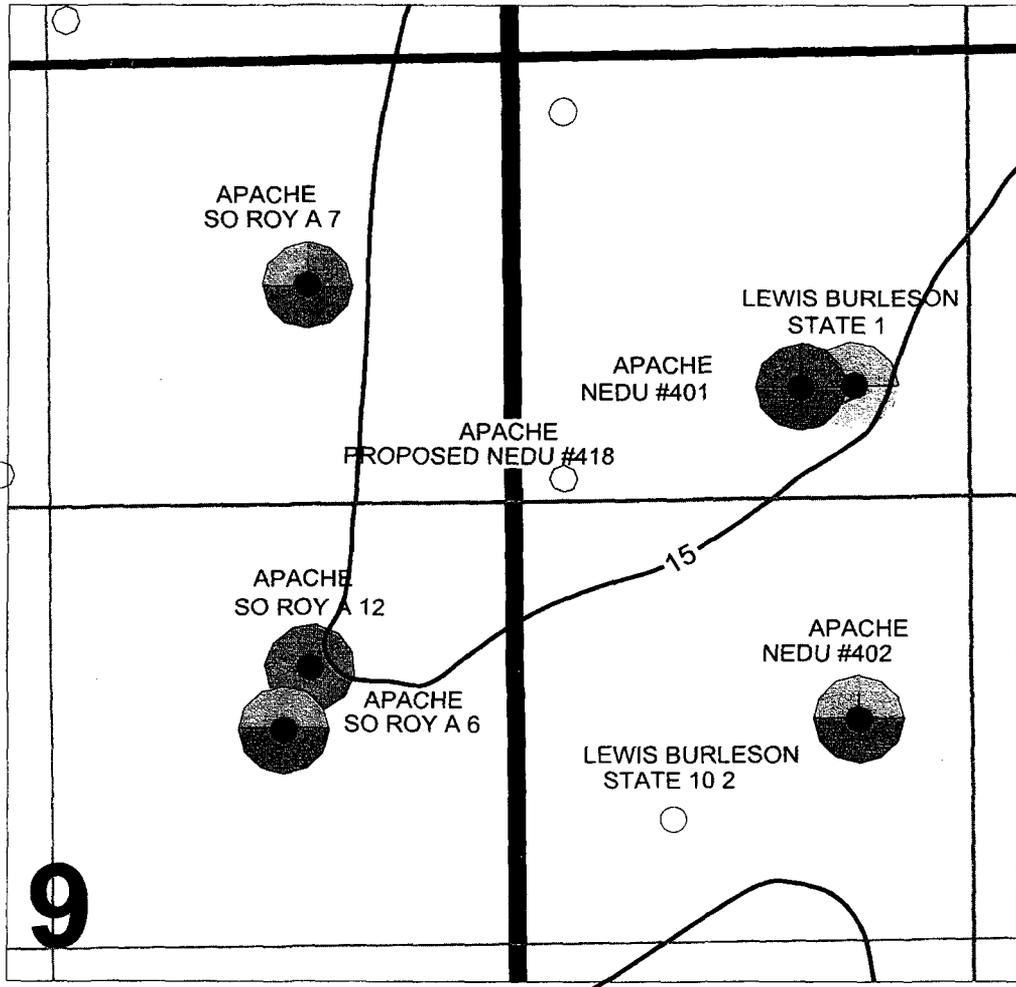
- Location Only
- Oil Well



- BLINEBRY PRODUCER
- TUBB PRODUCER
- DRINKARD PRODUCER
- GRAYBURG PRODUCER
- ABO PRODUCER



	TWO WARREN PLACE, SUITE 1500 6120 SOUTH YALE TULSA, OKLAHOMA 74136-4224
	CORPORATION CENTRAL REGION
NEDU # 418	
T21S-R37E LEA COUNTY, NEW MEXICO	
EXHIBIT 4 BLBY GAS CAP CUTOFF: 5% DOLOMITE	
DATE: 6-5-03	DWG: NEDU 418 EX4 (CURTIS)



POSTED WELL DATA

PHIH .

WELL SYMBOLS

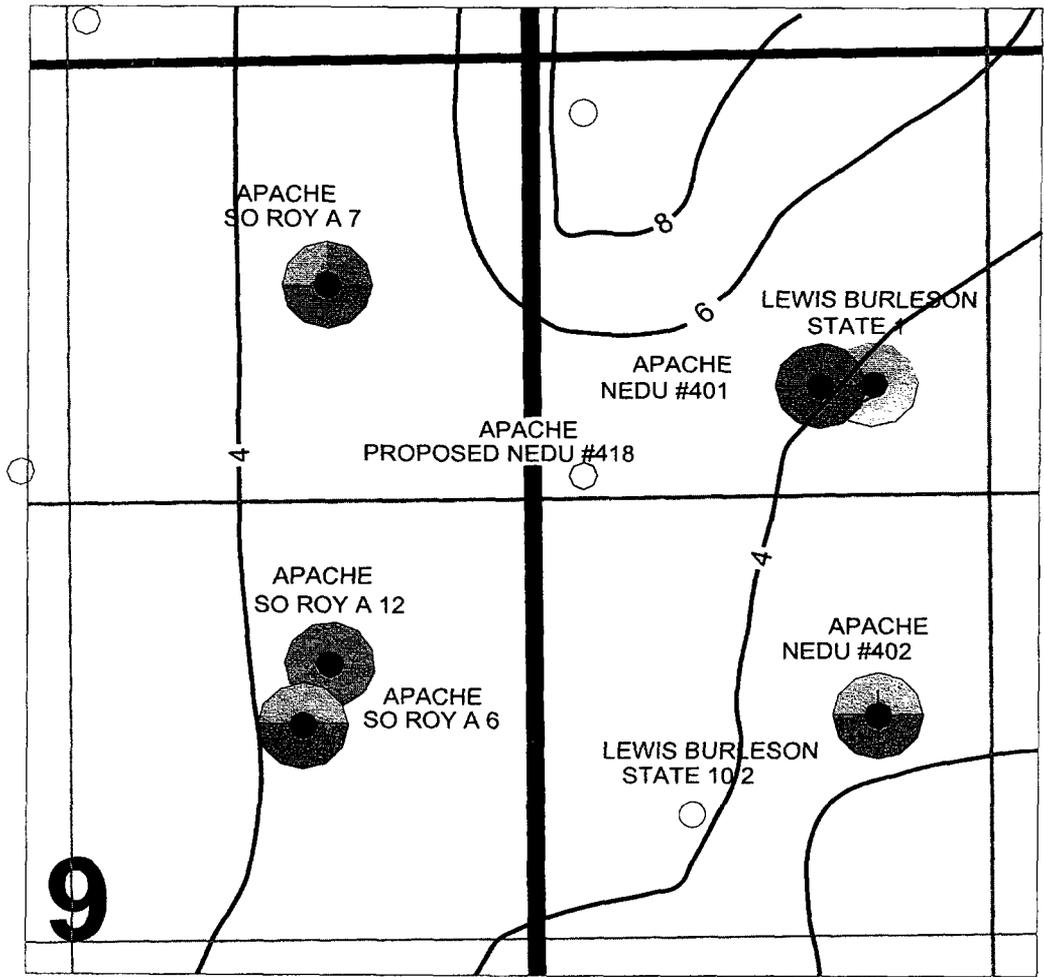
- Location Only
- Oil Well



- BLINEBRY PRODUCER
- TUBB PRODUCER
- DRINKARD PRODUCER
- GRAYBURG PRODUCER
- ABO PRODUCER



	TWO WARREN PLACE, SUITE 1500 6120 SOUTH YALE TULSA, OKLAHOMA 74136-4224
	CORPORATION CENTRAL REGION
NEDU # 418	
T21S-R37E LEA COUNTY, NEW MEXICO	
EXHIBIT 5 BLBY OIL LEG CUTOFF: 5% DOLOMITE	
DATE: 6-5-03	DWG: NEDU 418 EX5 (CURTIS)



POSTED WELL DATA

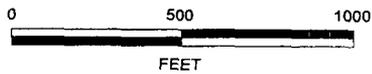
PHIH •

WELL SYMBOLS

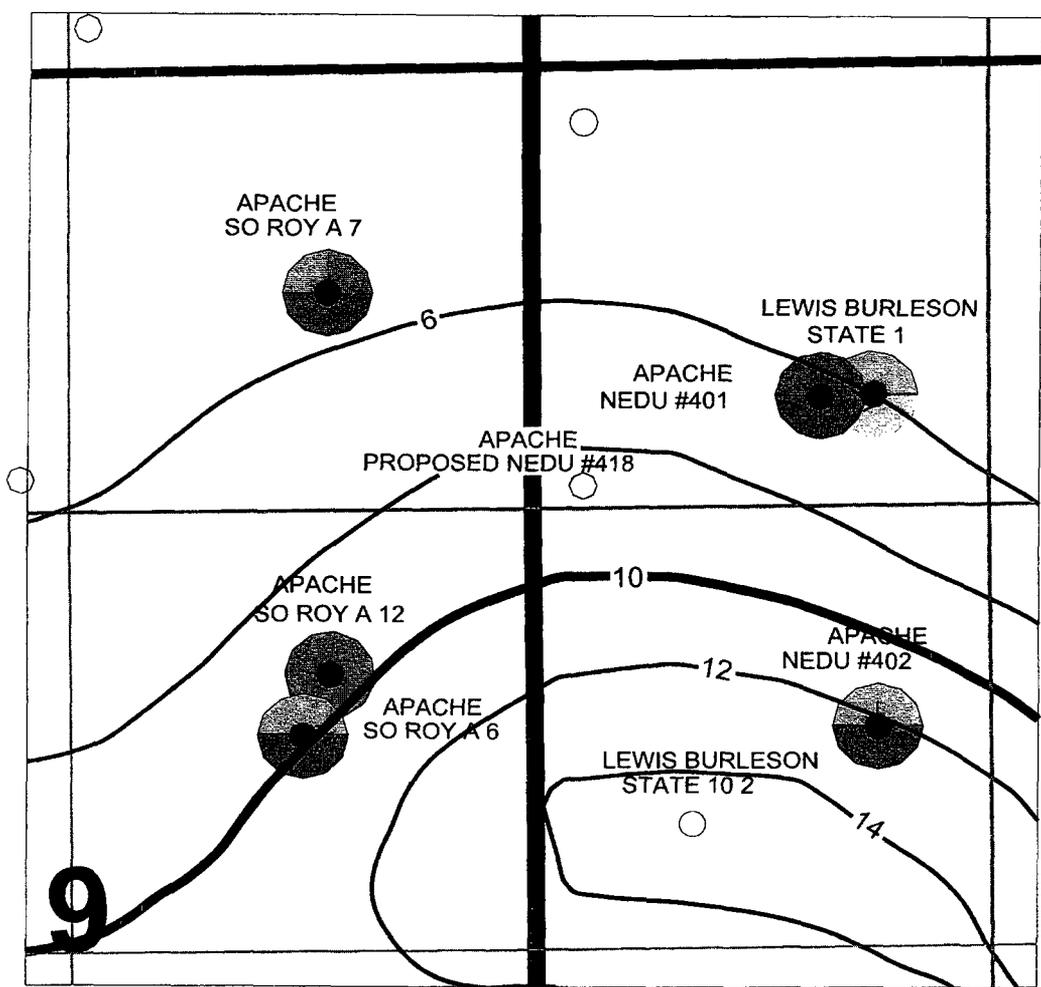
- Location Only
- Oil Well



- ▨ BLINEBRY PRODUCER
- TUBB PRODUCER
- DRINKARD PRODUCER
- ▨ GRAYBURG PRODUCER
- ▨ ABO PRODUCER



	TWO WARREN PLACE, SUITE 1500 6120 SOUTH YALE TULSA, OKLAHOMA 74136-4224
CORPORATION CENTRAL REGION	
<h2>NEDU # 418</h2>	
T21S-R37E LEA COUNTY, NEW MEXICO	
<h3>EXHIBIT 6</h3>	
TUBB PHIH CUTOFF: 5% DOLOMITE	
DATE: 6-5-03	DWG: NEDU 418 EX6 (CURTIS)



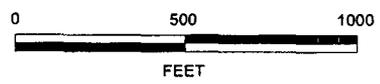
POSTED WELL DATA
PHIH .

WELL SYMBOLS

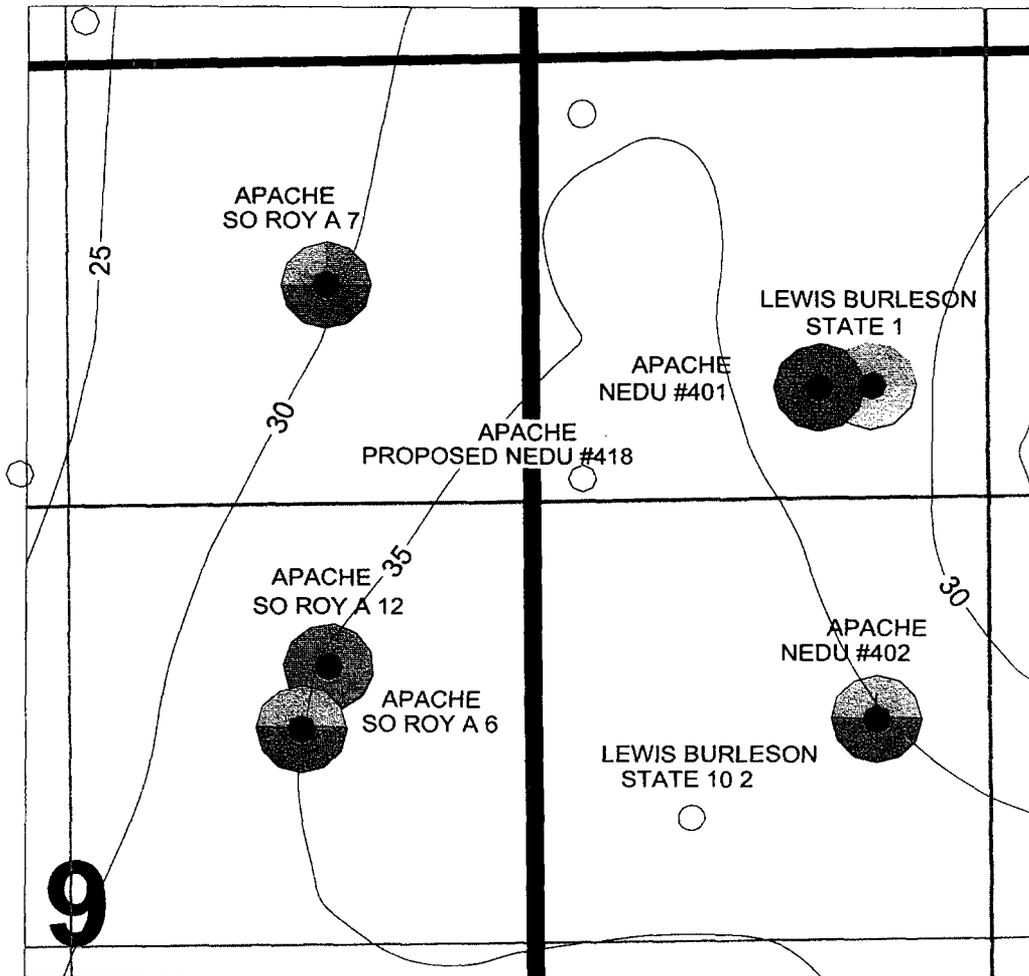
- Location Only
- Oil Well



- ▨ BLINEBRY PRODUCER
- TUBB PRODUCER
- DRINKARD PRODUCER
- GRAYBURG PRODUCER
- ▨ ABO PRODUCER



	TWO WARREN PLACE, SUITE 1500 6120 SOUTH YALE TULSA, OKLAHOMA 74136-4224
	CORPORATION CENTRAL REGION
NEDU # 418	
T21S-R37E LEA COUNTY, NEW MEXICO	
EXHIBIT 7 DRKD PHIH CUTOFF: 5% DOLOMITE	
DATE: 6-5-03	DWG: NEDU 418 EX7 (CURTIS)



POSTED WELL DATA

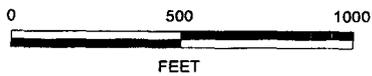
PHIH ●

WELL SYMBOLS

- Location Only
- Oil Well



- BLINEBRY PRODUCER
- TUBB PRODUCER
- DRINKARD PRODUCER
- GRAYBURG PRODUCER
- ABO PRODUCER



	TWO WARREN PLACE, SUITE 1500 6120 SOUTH YALE TULSA, OKLAHOMA 74136-4224
	CORPORATION CENTRAL REGION
NEDU # 418	
T21 S-R37E LEA COUNTY, NEW MEXICO	
EXHIBIT 8 B-T-D PHIH CUTOFF: 5% DOLOMITE	
DATE: 6-5-03	DWG: NEDU 418 EX8 (CURTIS)