

September 21, 1987

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

File 9238

Re: Hoover "ADR" State No. 6 Well
Township 17 South, Range 33 East, NMPM
Section 1: SW/4 SW/4
Lea County, New Mexico

Gentlemen:

Enclosed for filing, please find three copies of the Application of Yates Petroleum Corporation for an Exception to Rule 303(A) to Permit Downhole Commingling, Lea County, New Mexico.

We ask that this matter be set for hearing before an Examiner on October 21, 1987, and that we be furnished with a docket of said hearing.

Thank you.

Sincerely yours,

DICKERSON, FISK & VANDIVER

Chad Dickerson

CD:pv
Enclosures

cc w/enclosure: Mr. Jim Brown
Mr. Jerry Sexton

BEFORE THE OIL CONSERVATION DIVISION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION :
OF YATES PETROLEUM CORPORATION :
FOR AN EXCEPTION TO RULE 303(A) :
TO PERMIT DOWNHOLE COMMINGLING, :
LEA COUNTY, NEW MEXICO :

CASE NO. 9238

APPLICATION

COMES NOW Yates Petroleum Corporation, by its attorneys, and in support hereof, respectfully states:

1. Applicant is the operator of its Hoover "ADR" State No. 6 Well located 330 feet from the south line and 990 feet from the west line, on the following described lands in Lea County, New Mexico:

Township 17 South, Range 33 East, N.M.P.M.

Section 1: SW/4 SW/4

containing 40 acres, more or less.

2. Applicant seeks an exception to Rule 303(A) of the New Mexico Oil Conservation Division to permit downhole commingling of production from the Queen and Grayburg-San Andres formations in the wellbore of its Hoover "ADR" State No. 6 Well located on the above described lands for economic reasons.

3. Title to all royalty interest, overriding royalty interest and working interest production is common in all zones.

4. This Application does not qualify for administrative approval, and notice has been given as required by Rule 1207(a)(6) of the New Mexico Oil Conservation Division to all offset operators, whose names and addresses are as follows:

Petrus Oil Company
12201 Merit Drive
Suite 900
Dallas, Texas 75251

Tenneco Oil Company
7990 IH 10-W
San Antonio, Texas 78230

5. The approval of this Application will afford Applicant the opportunity to produce its just and equitable share of oil and gas, will prevent economic loss caused by the drilling of unnecessary wells, avoid the augmentation of risk arising from the drilling of an excessive number of wells, and will otherwise prevent waste and protect correlative rights.

WHEREFORE, Applicant prays:

A. That this Application be set for hearing before an examiner and that notice of said hearing be given as required by law.

B. That the Division enter its order permitting Applicant to commingle production from the Queen and Grayburg-San Andres formations in the wellbore of its Hoover "ADR" State No. 6 Well located in SW/4 SW/4 Section 1, Township 17 South, Range 33 East, N.M.P.M., Lea County, New Mexico.

C. And for such other and further relief as may be
just in the premises.

YATES PETROLEUM CORPORATION

By: Chad Dickerson
Chad Dickerson

DICKERSON, FISK & VANDIVER
Seventh and Mahone, Suite E
Artesia, New Mexico 88210
(505) 746-9841

Attorneys for Applicant

APPLICATION FOR DOWNHOLE COMMINGLING

Yates Petroleum seeks approval for downhole commingling of production from the Queen and Grayburg-San Andres formations in the Hoover "ADR" State #6, located 330' FSL & 990' FWL of Section 1-17S-33E, Lea County, New Mexico. See Attachment 1.

Yates Petroleum drilled the Hoover "ADR" State #1 (Unit I, Section 1-17S-33E) as a deep Wolfcamp test in 1986. The Wolfcamp was dry, but there was a porous Queen zone plus fair shows in the San Andres. The well was completed as a Queen producer from perforations at 3767-74 and Yates has subsequently drilled seven additional Queen producers in what is now called the Sanmal Queen pool. The Hoover "ADR" State #6 was drilled within the Sanmal Queen field to a depth of 4750' to test the San Andres on the basis of the San Andres shows in the discovery well. The Hoover "ADR" State #6 is producing from the Grayburg formation from perforations at 4470-74 and 4521-26, and from the San Andres formation from perforations at 4596-4600. A summary of the completion history is shown on Attachment 2. The Grayburg-San Andres was put on pump on July 25, 1987 and averaged 48 BOPD for the first 16 days of production. See Attachment 3, a well test for the Grayburg-San Andres. The Grayburg-San Andres was hydraulically fractured on August 26, 1987, and the well is presently being tested. After a good test on the Grayburg-San Andres, Yates Petroleum wishes to perforate the Queen zone and commingle the Queen and Grayburg-San Andres downhole. Attachments 4 and 5 are copies of the porosity log showing the Queen and Grayburg-San Andres zones for your reference.

Tubing was run below the bottom perforations, and the well is presently "pumped off". Therefore, the producing bottom hole pressure is equal to the surface casing pressure plus the gas column hydrostatic pressure, or about 30 psig. Before commingling the Queen with the other zones, we will draw down the producing bottom-hole pressure in the Queen to prevent cross-flow.

We do not anticipate any water production from the Grayburg-San Andres, and therefore there will be no potential for incompatibility of fluids.

The oil in both the Queen and the lower zones is Texas/New Mexico Sour, and is presently being sold to Unocal Refining & Marketing, a Division of Unocal Corporation. Queen oil gravity is 35 API, and Grayburg-San Andres

oil gravity is 39 API. As shown on page 2 of Attachment 6, Unocal's gravity adjustment is \$0.015 per 0.1 API. Since API gravity is a volumetric property, the value of the commingled production will be equal to the sum of the values of the individual streams.

As stated above, before perforating the Queen, Yates Petroleum will get a good test of the Grayburg-San Andres. When enough production history is available, a decline curve will be drawn for the Grayburg-San Andres. After commingling with the Queen, production from the Grayburg-San Andres will be allocated according to the decline curve. All production in excess of the decline curve will be allocated to the Queen. To verify allocation accuracy, the measured API gravity of the commingled oil will be monitored. Since the API gravities of the two zones to be commingled are different, the ratio of production from the zones can be calculated. We anticipate the Queen to produce 20 to 30 BOPD and 60 to 80 BWPD initially. The mineral ownership for all of the zones is identical.

Economics

The incentive behind this application is economics: without approval to commingle production, the Grayburg-San Andres reservoir will not be developed.

The reserves from the Grayburg-San Andres zones are estimated to be 23,000 barrels of oil per 40-acre spacing unit, based on a volumetric calculation of the original oil in place from the logs (see Attachment 5) and the following assumptions:

Drainage area	= 40 acres
Porosity-feet	= 1.18 ft ³ /ft ²
So	= .7
Bo	= 1.3
Recovery factor	= 12% of OOIP by primary production.

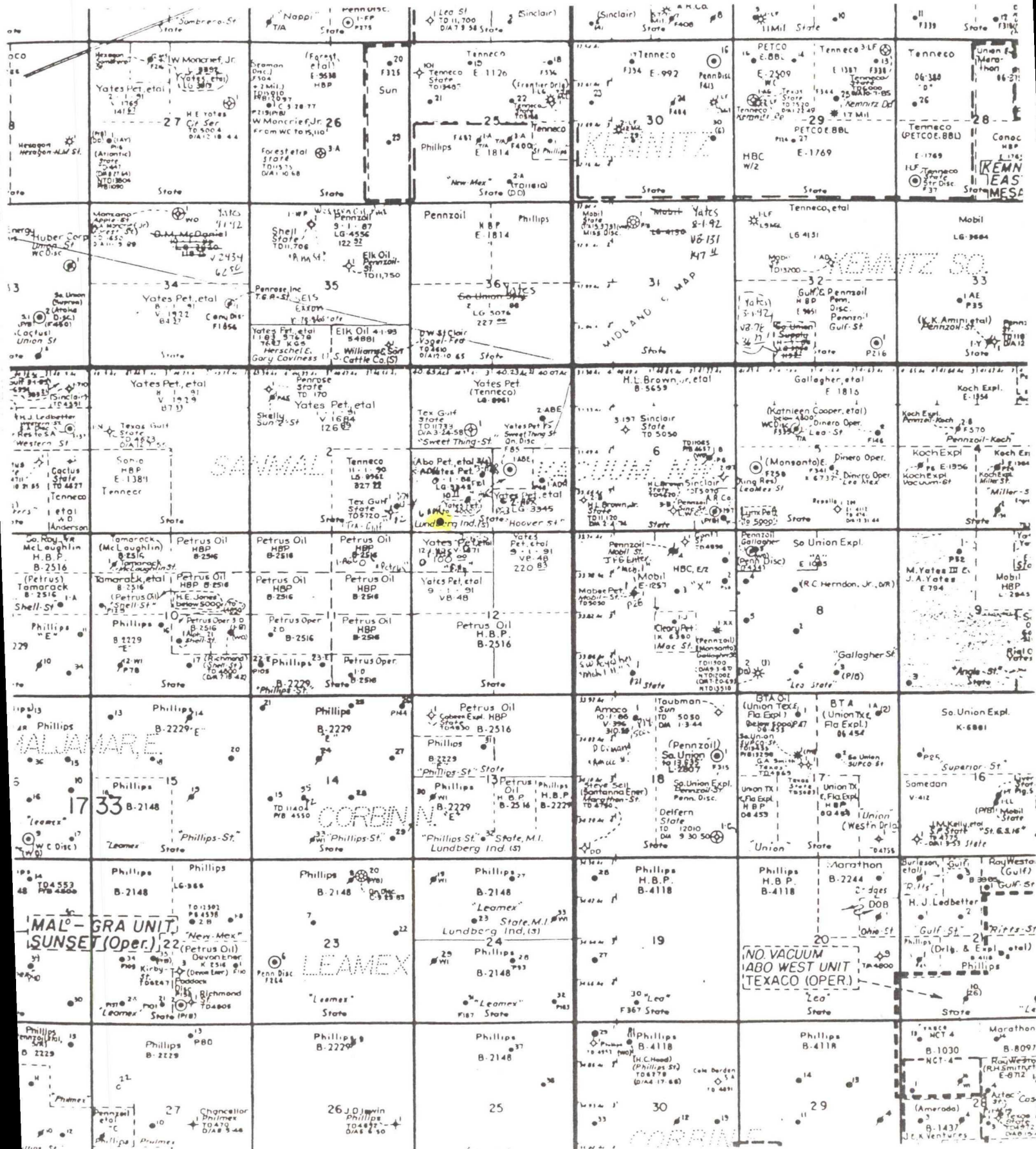
Calculated OOIP	= 200,000 STB
Recoverable primary reserves	= 23,000 STB

Attachment 7 summarizes the capital and operating cost estimates and the results of the economic evaluation of commingled production versus dual completion. The capital cost estimates represent the incremental costs to drill, complete, and install production facilities to produce the Grayburg-San Andres in excess of the cost to drill, complete and install production facilities to produce the Queen. Likewise, "incremental operating costs" represent the incremental cost to operate a well completed in the Queen-Grayburg-San Andres in excess of

the cost to operate a well completed in the Queen only. The economic evaluation shows that if a dual completion is required, Yates Petroleum loses \$90,000 due to the incremental investment to develop the Grayburg-San Andres reserves. If commingling is approved, a profit of \$152,000 is realized, and further development of Grayburg-San Andres reserves will continue.

All offset operators have been notified of the proposed commingling by copy of this letter of application. Offset operators are listed on Attachment 8.

ATTACHMENT 1
Plat
HOOVER "ADR" STATE #6
Unit M Section 1-17S-33E



Attachment #2

Hoover "ADR" #6

Completion History

<u>Perforations</u>	<u>Formation (Zone)</u>	<u>Acid Treatment</u>	<u>Swabbing Report</u>	<u>Fracture Treatment</u>
4470-74	Grayburg (Metex)	1000 gal	ISDP 3000 psi, swab 0 BO, 11 BW	
4521-26	Grayburg (Premier)	1000 gal	ISDP 2450 psi. swabbed with Metex 40 BO, 50 BW	Frac'd Metex, Premier, and Vacuum together with 52000 gal.
4596-4600	San Andres (Vacuum)	1000 gal	ISDP 3300, Swab 32 BO, 106 BW	cross-linked gal and 90,000 #
		10,000 gal	ISDP 3190 psi. Swab 139 BO, 304 BW	20/40 sand
4661-65	San Andres (Lovington Sand)	1000 gal	ISDP 3400 psi Swab 0 BO, 46 BW Isolated by CIBP at 4650.	

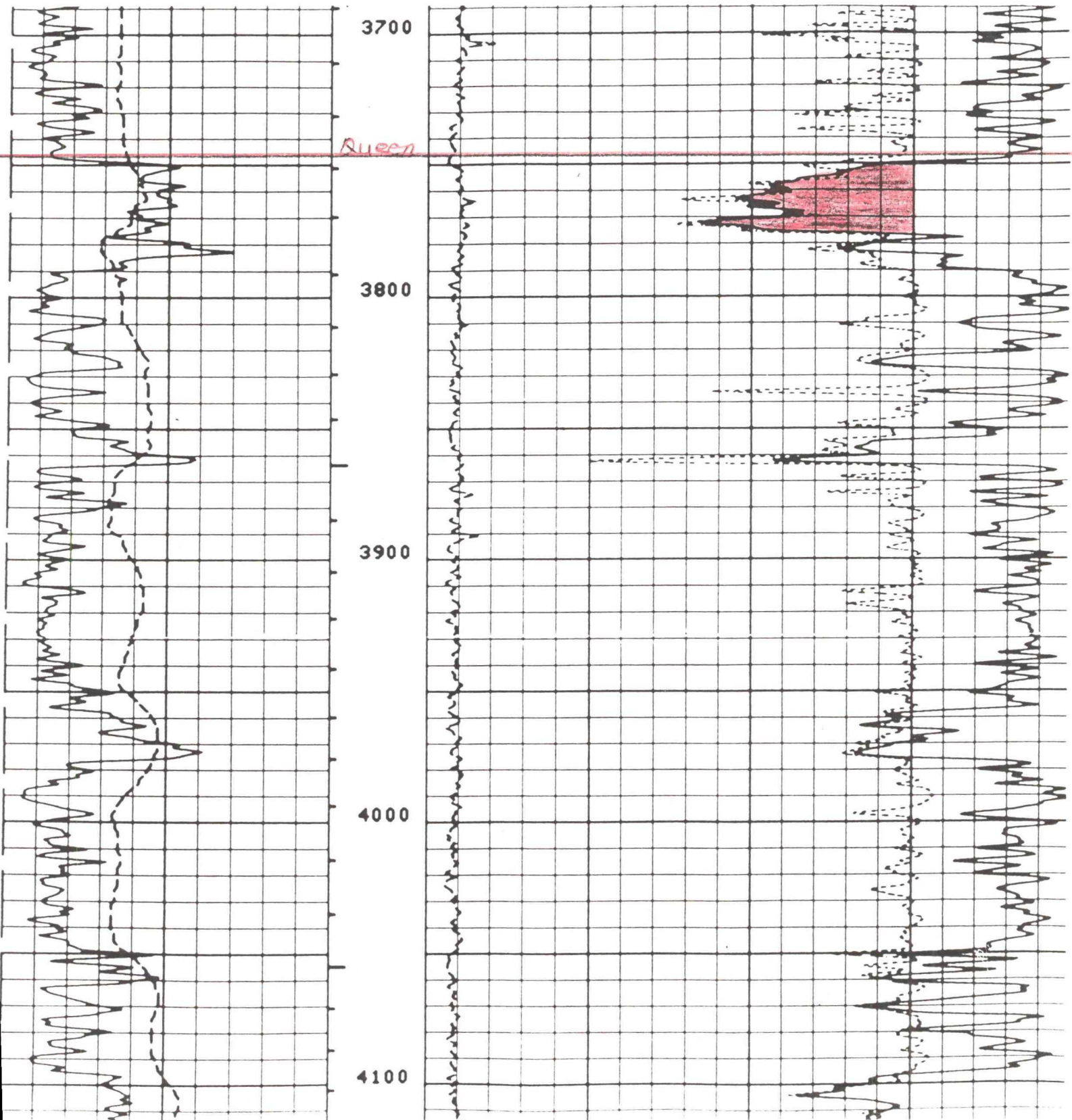
ATTACHMENT 3

HOOVER ADR STATE #6 WELL TEST*
GRAYBURG-SAN ANDRES ZONES

<u>DATE</u>	<u>OIL (BBLs)</u>	<u>WATER (BBLs)</u>	<u>DATE</u>	<u>OIL (BBLs)</u>	<u>WATER (BBLs)</u>
7/25/87	14	129	8/22/87	39	0
7/27/87	23	0	8/23/87	30	0
7/28/87	87	0	8/24/87	25	0
7/29/87	57	0	8/25/87	0	0
7/30/87	57	0	8/26/87	Frac Job	
7/31/87	58	0	8/27/87	0	245
8/01/87	49	0	8/28/87	0	42
8/02/87	51	0	8/29/87	0	6
8/03/87	56	0	8/30/87	0	0
8/04/87	37	0	8/31/87	0	0
8/05/87	43	0	9/01/87	0	110
8/06/87	43	0	9/02/87	0	96
8/07/87	31	0	9/03/87	0	85
8/08/87	39	0	9/04/87	0	92
8/09/87	11	0	9/05/87	0	76
8/10/87	66	0	9/06/87	0	85
8/11/87	42	0	9/07/87	0	80
8/12/87	31	0	9/08/87	0	81
8/13/87	44	0	9/09/87	0	76
8/14/87	39	0	9/10/87	0	83
8/15/87	41	0	9/11/87	1	80
8/16/87	38	0	9/12/87	5	70
8/17/87	41	0	9/13/87	10	50
8/18/87	32	0	9/14/87	20	30
8/19/87	45	0	9/15/87	19	20
8/20/87	35	0	9/16/87	20	20
8/21/87	28	0	9/17/87	20	20

*No gas measurement capability at test battery.

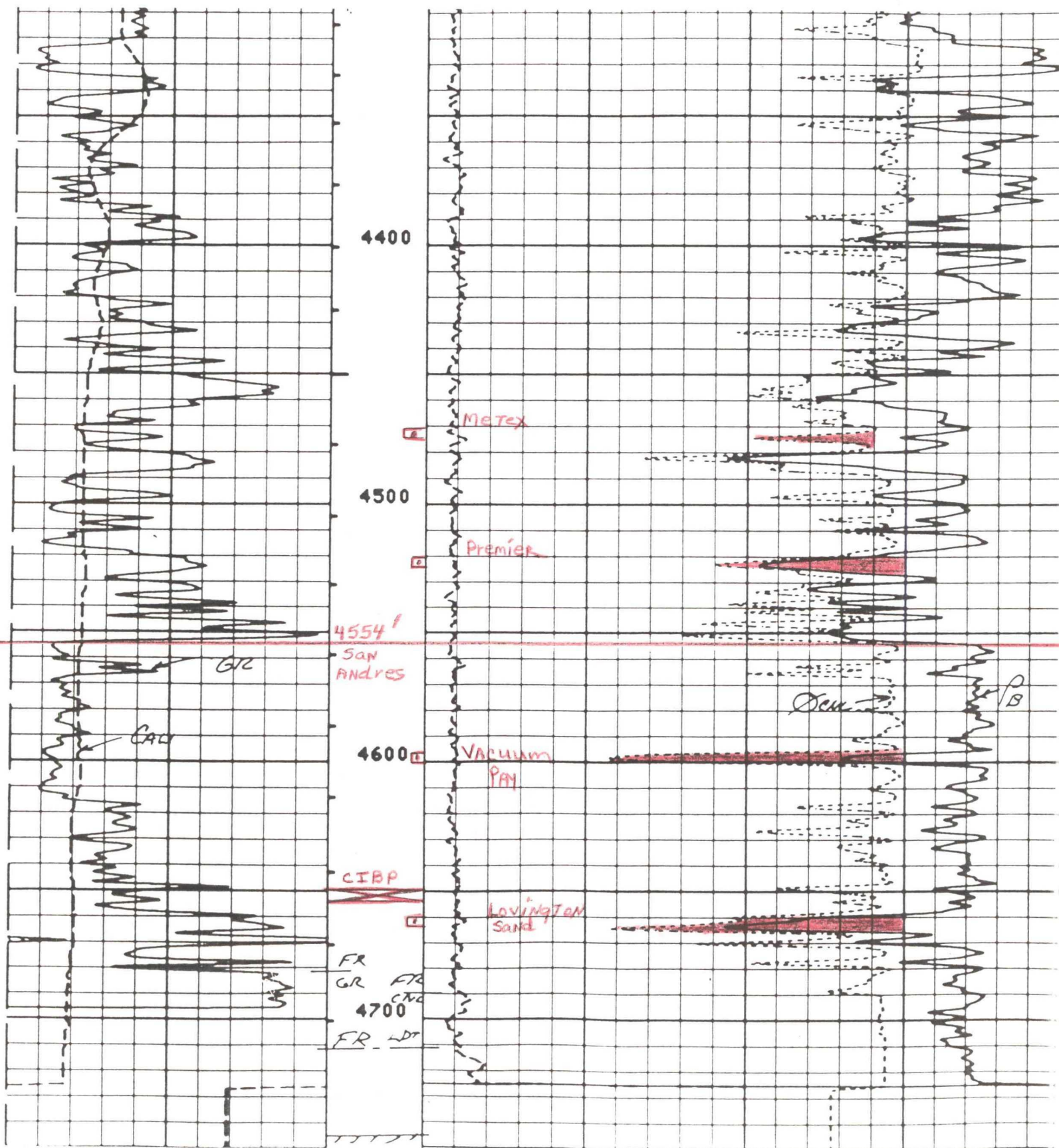
ATTACHMENT 4
Compensated Neutron-Litho Density Log
for HOOVER "ADR" #6



ATTACHMENT 5

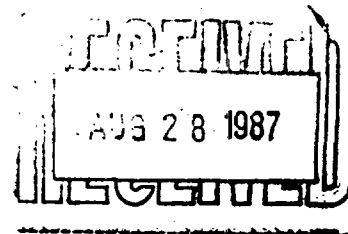
Compensated Neutron-Litho Density Log

for HOOVER "ADR" #6



UNOCAL 76

CRUDE OIL PRICE SCHEDULE NO. 87-12



Effective 7:00 a.m., August 20, 1987, subject to change without notice, and subject to the terms and conditions of its Division Orders and other contracts, Unocal will pay the following prices for each barrel of 42 U.S. gallons of merchantable crude oil and condensate purchased and delivered for its account into the facilities of its authorized receiving agent. All prices are shown for 40° API gravity and above, except as noted, and are subject to deductions for transportation and other charges where applicable.

<u>AREA</u>		PRICE:	FOR GRAVITY ADJUSTMENT
		<u>\$/BARREL</u>	<u>SEE COLUMN</u>
Alabama/Florida	Panhandle Sweet.	19.50 *	1
Colorado	Eastern Sweet.	19.25 *	1
Illinois	Sweet.	19.00 *	2
Kansas	Sweet.	19.00 *	3
Louisiana	South Louisiana Sweet (Onshore). . .	19.85 *	3
Montana	Cutbank Sour	19.25 *	5
Nebraska	Sweet.	19.25 *	1
Oklahoma	Sweet.	19.50 *	3
Texas/New Mexico	Intermediate	19.50 *	1
	Sour	19.50 *	5
Texas	Gulf Coast Sweet	19.50 *	1
	North Texas Sweet.	19.50 *	1
Wyoming	Sweet (Carbon, Lincoln, Sublette, . .	20.25	1
	Sweetwater & Uinta Counties)		
	Sweet (All Other Counties)	19.25 *	1
	Asphalt Sour	19.00 *	4
	General Sour	19.00 *	4

Merchantable crude and condensate is defined as virgin crude and/or condensate, produced from wells, which is free of either injected or outside foreign contamination, or added chemicals containing, but not limited to, halogenated organic compounds and/or oxygenated compounds which is fit for normal refinery processing and acceptable to the receiving agency designated by Unocal.

Prices are based upon the use of 100% tank tables or mutually acceptable automatic measuring equipment with customary adjustment of volume and gravity for temperature and full deduction for basic sediment and water. The company reserves the right to reject any crude petroleum which does not meet its standards of purity.

If any governmental authority causes the prices hereon to be amended, whether or not retroactive, causing any excess payment by Unocal, Unocal reserves the right to withhold an amount equal to the excess payment from future purchases or separately invoice for such excess.

GRAVITY ADJUSTMENT DEDUCTIONS

(DEDUCTION IN \$/BARREL)

GRAVITY °API	1	2	3	4	5
Above 45.0	**	**	**	**	**
40 to 45.0	0.00	0.00	0.00	0.00	0.00
39 to 39.9	0.02	0.02	0.02	0.02	Below 40.0 Deduct \$0.015 per 0.1° API
38 to 38.9	0.04	0.04	0.04	0.04	
37 to 37.9	0.06	0.07	0.06	0.06	
36 to 36.9	0.08	0.10	0.08	0.08	
35 to 35.9	0.10	0.13	0.10	0.12	
34 to 34.9	0.12	0.16	Below 35.0 Deduct \$0.015 per 0.1° API	0.16	
33 to 33.9	0.14	0.19	Below 34 to 20 Deduct \$0.02 per 0.1° API	Below 20.0 Deduct \$0.04 per 0.1° API	
32 to 32.9	0.16	0.22			
31 to 31.9	0.18	0.25			
30 to 30.9	0.20	0.28			
29 to 29.9	0.22	0.31			
28 to 28.9	0.24	0.34			
27 to 27.9	0.26	0.37			
26 to 26.9	0.28	0.40			
25 to 25.9	0.30	0.43			
24 to 24.9	0.32	0.46			
23 to 23.9	0.34	0.49			
22 to 22.9	0.36	0.52			
21 to 21.9	0.38	0.55			
20 to 20.9	0.40	0.58			
Below 20	0.42	0.61			
Examples:					
27.6	0.26	0.37	1.21	1.44	1.86
18.3	0.42	0.61	2.605	3.64	3.255

** Above 45.0°, deduct \$0.015 per 0.1° API

FIELD OFFICE CONTACTS

<u>Area</u>	<u>Address</u>	<u>Phone No.</u>
Kansas, Oklahoma, East Texas, North Texas	717 N. Harwood Street, Suite 2630 DALLAS, TX 75201	214-969-1976
Colorado, Montana, Nebraska, the NW Quarter of New Mexico, No. Dakota, So. Dakota, Utah & Wyoming	410 Seventeenth Street Suite 530 DENVER, CO 80202	303-623-1776
Gulf of Mexico & Texas Gulf Coast	4615 Southwest Freeway 620 Executive Plaza East HOUSTON, TX 77027	713-621-7600
Alabama, Louisiana (Onshore), Mississippi, & other S.E. states	315 S. College Road Suite 180 LAFAYETTE, LA 70503	318-234-1804
New Mexico, Panhandle & West Texas	1004 N. Big Spring, Suite 501 MIDLAND, TX 79702	915-684-8231

ATTACHMENT 7

ECONOMICS

<u>ITEM</u>	<u>DUAL COMPLETION</u>	<u>COMMINGLED COMPLETION</u>
<u>CAPITAL COSTS</u>		
Drilling costs, 3900' to 4800', including 5 1/2" casing	30,000	30,000
Incremental casing cost, due to dual completion:		
9 5/8" vs. 8 5/8"	8,500	
7" vs. 5 1/2"	41,000	
Incremental tank battery	44,000	
Incremental pumping equip't	33,500	
Dual pkr., wellhead, tubing	19,500	
Completion Cost (GB-SA only)	<u>90,000</u>	<u>90,000</u>
Total Incremental Capital Costs to develop the GB-SA	\$266,500	\$120,000
<u>OPERATING COSTS</u>		
Incremental operating cost, \$/well/month	2,500	1,000
<u>ECONOMICS</u>		
Initial oil rate, BOPD	25	25
Gas-oil ratio, SCF/STB	1,000	1,000
Decline rate, %/year	30	30
Oil price, \$/bbl.	18	18
Gas price, \$/MCF	1	1
Recoverable oil, bbl.	20,100	23,400
Gross revenue, \$	383,000	444,000
State royalty and severance taxes, \$	75,000	87,000
Operating expenses, \$	132,000	85,000
Operating profit, \$	176,000	272,000
Profit after capital cost, \$	(90,000)	152,000
Rate of return, %	---	82

ATTACHMENT 8

OFFSET OPERATORS

Petrus Oil Co.
12201 Merit Dr.
Suite 900
Dallas, TX 75251

Tenneco Oil Co.
7990 IH 10-W
San Antonio, TX 78230

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