CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS 75207

June 23, 1972

REPLY TO BOX 4337
MIDLAND, TEXAS
79701

625-7.1

Pubco Petroleum Corporation
P. O. Box 869
Albuquerque, New Mexico 87101

Attention: Mr. Charles Sanders

Gentlemen:

In accordance with your request we have performed a depletion drive study of the Strawn oil reservoir available to your Shipp Well No. 2, Lea County, New Mexico. Two cases of reservoir drainage per well were investigated: 80 acre and 160 acre. A summary of basic data and study results is presented below:

	80 Acre Case	160 Acre Case
Avg. Porosity, Pct.	6.3	6.3
Avg. Oil Permeability, Md.	5.3	5.3
Avg. Interstitial Water Sat., Pct.	25.0	25.0
Avg. Net Productive Thickness, Ft.	30.0	30.0
Oil FVF at 4800 psig, Vol/Vol	1.642	1.642
Oil FVF at 2835 psig (BP), Vol/Vol	1.707	1.707
Original Oil in Place, STB	535,783	1,071,568
Original Oil in Place, Bbl/Ac. Ft.	223	223
Ultimate Oil Recovery, Pct. of Oil in Place	16.76	16.76
Ultimate Oil Recovery, STB	89,815	179,630
Ultimate Oil Recovery, Bbl/Ac. Ft.	37.4	37.4
Ultimate Gas Recovery, MSCF	476,788	953,577
Total Primary Producing Life, Yrs.	5.9	11.8

Certain assumptions were made in the performance of the two cases. It was assumed that the average reservoir thickness, rock and fluid properties exhibited by the Shipp No. 2 would be constant throughout the two drainage areas considered. Also, it was assumed that the reservoir would produce under the primary influence of a solution gas drive mechanism to an abandonment reservoir pressure of 500 psig. To arrive at the producing life it was assumed that productivity would decline in accord with the effects of increasing reservoir gas saturation on relative oil permeability.

We are enclosing copies of our computer output pertaining to core data grouping and averaging and the two cases of depletion drive material balance. Table II of the material balance for each area case presents the time-rate calculation results.

EXHIBIT 6A

If you have any question regarding this study or require additional assistance in this regard, please do not hesitate to call.

Very truly yours,

CORE LABORATORIES, INC.

C. K. Osborn,
Division Engineer

CKO:wjy
Enclosures

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION

EXHIBIT NO. 6

CASE NO.

Submitted by

Hearing Date

RECOVERABLE OIL RESERVES
HUMBLE CITY-STRAWN POOL

BASIC DATA

		Log	Core
Average Porosity - Harding Shipp #1		5.10%	--
Average Porosity - Pubco - Shipp #2		6.30%	6.00%
Assumed Average Porosity, Field	6.30%		
Average Feet of Pay, h	30'		
Water Saturation	25%		
Recovery Factor	16.76%		
FVF @ original BHP 4800 psi	1.642		

VOLUMETRIC CALCULATION

$$\text{Original Recoverable Oil, Bbls/Ac-Ft} = \frac{7758\ \phi\ (1-Sw)}{(FVF)} \times (RF)$$

$$\frac{(7758)\ (0.063)\ (0.75)}{1.642} \times (0.1676) = 37.4 \text{ Barrels Oil Per Acre Foot}$$

Where,

ϕ = Fractional porosity of rock

Sw = Interstitial water saturation, fraction of pore space

h = Vertical feet of net pay

FVF = Formation volume factor, barrels oil at original reservoir conditions per barrel stock tank oil at normal surface conditions.

RF = Recovery factor, fractional part of original oil in place recoverable by solution gas drive mechanism.

EXHIBIT 7

ECONOMICS FOR
HUMBLE CITY-STRAWN POOL
LEA COUNTY, NEW MEXICO

	80-Acre Spacing	160-Acre Spacing
Revenue For Average Well		
80-acre - 89,815 barrels oil per well @ $3.56	$ 319,741	$
476,788 MCF per well @ $0.25	119,197	
	$ 438,938	
160-acre - 179,630 barrels oil per well @ $3.56		639,483
953,577 MCF per well @ $0.25		238,394
		$ 877,877
Less Royalty @ 18.75%	82,301	164,602
Less Taxes @ 7.1%	31,165	62,329
Total Revenue	$ 325,472	$ 650,946
Expense		
Drilling, Completion, Tank Battery	$ 230,000	$ 230,000
Pumping Equipment	30,000	30,000
Operating Cost:		
80-acre - 5.9 years @ $6,000	35,400	
160-acre - 11.8 years @ $6,000		70,800
Total Expense	$ 295,400	$ 330,800
Net Profit	$ 30,072	$ 320,146
Profit to Investment Ratio	0.12	1.27

NOTE: The analysis does not consider any dry holes that may be drilled. Estimated dry hole cost is $162,000.

One (1) producer on 160-acre spacing will support two (2) dry holes.

Five plus (5+) producers on 80-acre spacing will be required to support one (1) dry hole.

EXHIBIT 8