OILFIELD RESEARCH LABORATORIES

536 NORTH HIGHLAND - CHANUTE, KANSAS 66720 - PHONE (316) 431-2650

June 23, 1980

Vera Cruz Petroleum
6312 South Helena Road
Spokane, Washington 99203

Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Cheyney Lease, Well No. T-1, Neosho County, Kansas, and submitted to our laboratory on May 11, 1980.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Sanford A. Michel

SAM/tem

5 c to Spokane, Washington

Oilfield Research Laboratories

GENERAL INFORMATION & SUMMARY

Company Vera Cruz Petroleum Lease Cheyney Well No. T-1

Location 515' SNL & 165' WEL NE¼

Section 24 Twp. 28S Rge. 18E County Neosho State Kansas

Elevation, Feet - - - - - - - - - - - - - - -

Name of Sand	Bartlesville
Top of Core	719.2
Bottom of Core	733.8
Top of Sand	719.2
Bottom of Sand	733.8
Total Feet of Permeable Sand	12.9
Total Feet of Floodable Sand	0.0

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 10	5.4	5.4
10 - 20	1.9	7.3
20 - 30	4.0	11.3
30 - 40	1.6	12.9

Average Permeability Millidarcys	17.7
Average Percent Porosity	18.0
Average Percent Oil Saturation	28.7
Average Percent Water Saturation	39.1
Average Oil Content, Bbls./A. Ft.	401.
Total Oil Content, Bbls./Acre	5,175.
Average Percent Oil Recovery by Laboratory Flooding Tests	0
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	0
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	0
Total Calculated Oil Recovery, Bbls./Acre	0

The core was sampled and the samples sealed in plastic bags by a representative of the client. Air and water were used as a drilling fluid. The core was reported to be from a virgin area.

Since the core did not respond to flooding susceptability tests, no calculated recovery is given.

FORMATION CORED

The detailed log of the formation cored is as follows:

Depth Interval, Feet	Description
719.2 - 721.1	Brown sandstone.
721.1 - 721.6	Brown and gray laminated sandstone and shale.
721.6 - 723.2	Brown sandstone.
723.2 - 723.8	Brown shaly sandstone.
723.8 - 725.0	Brown sandstone.
725.0 - 725.9	Brown shaly sandstone.
725.9 - 726.8	Brown sandstone.
726.8 - 728.0	Brown carbonaceous shaly sandstone.
728.0 - 730.0	Brown sandstone.
730.0 - 732.1	Brown shaly sandstone.
732.1 - 733.2	Brown slightly carbonaceous sandstone.
733.2 - 733.8	Brown carbonaceous shaly sandstone.

Oilfield Research Laboratories

RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Vera Cruz Petroleum Lease Cheyney Well No. T-1

Sample No.	Depth, Feet	Effective Porosity Percent	Percent Saturation			Oil Content Bbls. / A Ft.	Perm., Mill.	Feet of Sand		Total Oil Content	Perm. Capacity Ft. X md.
			Oil	Water	Total			Ft.	Cum. Ft.		
1	719.5	16.3	25	46	71	316	18.	0.9	0.9	284	16.20
2	720.5	18.7	22	40	62	319	35.	1.0	1.9	319	35.00
3	721.7	16.2	28	38	66	352	88.	0.6	2.5	211	22.80
4	722.5	19.1	19	41	60	282	27.	1.0	3.5	282	27.00
5	723.5	18.4	29	31	60	414	5.4	0.6	4.1	248	3.24
6	724.5	19.6	29	33	62	441	19.	1.0	5.1	441	19.00
7	725.5	15.7	27	49	76	329	1.9	1.1	6.2	362	2.09
8	726.5	19.3	23	44	67	344	27.	0.9	7.1	310	24.30
9	728.6	16.7	22	52	74	285	27.	1.0	8.1	285	27.00
10	729.5	15.3	33	47	80	392	10.	1.0	9.1	392	10.00
11	730.5	19.0	33	28	61	486	2.7	1.0	10.1	486	2.70
12	731.5	18.8	27	37	64	394	5.5	1.1	11.2	433	6.05
13	732.5	19.5	47	31	78	711	29.	1.1	12.3	782	31.90
14	733.5	18.7	39	20	59	566	0.80	0.6	12.9	340	0.48

Oilfield Research Laboratories

SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company Vera Cruz Petroleum Lease Cheyney Well No. T-1

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
719.2 - 733.8	12.9	17.7	227.76

Depth Interval, Feet	Feet of Core Analyzed	Average Percent Porosity	Average Percent Oil Saturation	Average Percent Water Saturation	Average Oil Content Bbl./A. Ft.	Total Oil Content Bbls./Acre
719.2 - 733.8	12.9	18.0	28.7	39.1	401	5,175

Oilfield Research Laboratories

RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company Vera Cruz Petroleum Lease Cheyney Well No. T-1

Sample No.	Depth, Feet	Effective Porosity Percent	Original Oil Saturation		Oil Recovery		Residual Saturation			Volume of Water Recovered cc*	Effective Permeability Millidarcys**	Initial Fluid Production Pressure Lbs./Sq./In.
			%	Bbls./A. Ft.	%	Bbls./A. Ft.	% Oil	% Water	Bbls./A. Ft.			
1	719.5	16.8	24	313	0	0	24	50	313	0	Imp.	-
2	720.5	18.4	23	328	0	0	23	70	328	178	3.15	20
3	721.7	16.2	28	352	0	0	28	38	352	0	Imp.	-
4	722.5	18.7	20	290	0	0	20	71	290	117	2.10	20
5	723.5	18.5	29	416	0	0	29	64	416	183	3.15	20
6	724.5	19.3	29	434	0	0	29	65	434	76	1.20	20
7	725.5	16.0	27	335	0	0	27	64	335	9	0.15	50
8	726.5	19.1	23	341	0	0	23	64	341	80	1.50	30
9	728.6	16.7	22	285	0	0	22	65	285	36	0.60	35
10	729.5	15.8	32	392	0	0	32	59	392	25	0.30	40
11	730.5	18.7	33	479	0	0	33	40	479	22	0.15	25
12	731.5	19.0	27	398	0	0	27	40	398	0	Imp.	-
13	732.5	19.1	48	711	0	0	48	32	711	0	Imp.	-
14	733.5	19.0	38	560	0	0	38	23	560	0	Imp.	-

Notes: cc—cubic centimeter.

*—Volume of water recovered at the time of maximum oil recovery.

**—Determined by passing water through sample which still contains residual oil.

WATER SAT., PERCENT → ← OIL SAT., PERCENT

90 20 70 40 50 60 30 80 10

719 720 721 722 723 724 725 726 727 728 729 730 731 732 733

——— PERMEABILITY, IN MILLIDARCYS

– – – EFFECTIVE PERMEABILITY TO WATER, IN MILLIDARCYS

10 20 30 40 50
1 2 3 4 5

KEY:

SANDSTONE

SHALY SANDSTONE

LAMINATED SANDSTONE & SHALE

CARBONACEOUS SHALY SANDSTONE

 CARBONACEOUS SANDSTONE

○ IMPERMEABLE TO WATER

VERA CRUZ PETROLEUM

CHEYNEY LEASE WELL NO. T-1

NEOSHO COUNTY, KANSAS

DEPTH INTERVAL, FEET	FEET OF CORE ANALYZED	AVERAGE PERCENT POROSITY	AVG. OIL SATURATION PERCENT	AVG. WATER SATURATION PERCENT	AVERAGE PERMEABILITY MILLIDARCYS	CALCULATED OIL RECOVERY BBLS./ACRE
719.2 - 733.8	12.9	18.0	28.7	39.1	17.7	—

OILFIELD RESEARCH LABORATORIES
CHANUTE, KANSAS
JUNE, 1980

VM