OILFIELD RESEARCH LABORATORIES

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

May 10, 1982

Lane Petroleum Company
R R 2
Rantoul, Kansas 66079

Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Giefer Lease, Well No. 1, located in Crawford County, Kansas and submitted to our laboratory on May 5, 1982.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Sanford A. Michel

SAM/kas

5 c to Rantoul, Kansas

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GENERAL INFORMATION & SUMMARY

Company Lane Petroleum Company Lease Giefer Well No. 1

Location 480' FNL & 480' FWL, SW¼

Section 34 Twp. 28S Rge. 22E County Crawford State Kansas

Elevation, Feet	
Name of Sand	Lower Bartlesville
Top of Core	385.0
Bottom of Core	396.4
Top of Sand	385.2
Bottom of Sand	395.8
Total Feet of Permeable Sand	10.2
Total Feet of Floodable Sand	6.8

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 10	3.0	3.0
10 - 30	1.8	4.8
30 - 50	5.4	10.2

Average Permeability Millidarcys	24.1
Average Percent Porosity	18.0
Average Percent Oil Saturation	47.0
Average Percent Water Saturation	34.3
Average Oil Content, Bbls./A. Ft.	654.
Total Oil Content, Bbls./Acre	6,670.
Average Percent Oil Recovery by Laboratory Flooding Tests	7.0
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	104.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	709.
Total Calculated Oil Recovery, Bbls./Acre	See "Calculated Recovery" Section

The core was sampled and the samples sealed in plastic bags by a representative of the client. Air and salt water were used as a drilling fluid.

FORMATION CORED

The detailed log of the formation cored is as follows:

Depth Interval, Feet	Description
385.0 - 385.2	Gray shale.
385.2 - 385.6	Brown sandstone.
385.6 - 386.0	Gray shale.
386.0 - 390.0	Brown sandstone.
390.0 - 391.0	Light brown shaly sandstone.
391.0 - 393.8	Brown sandstone.
393.8 - 395.8	Brown shaly sandstone.
395.8 - 396.4	Gray shale.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 709 barrels of oil per acre was obtained from 6.8 feet of sand. The weighted average percent oil saturation was reduced from 46.1 to 39.1, or represents an average recovery of 7.0 percent. The weighted average effective permeability of the samples is 0.85 millidarcys, while the average initial fluid production pressure is 30.0 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 11 samples tested, 7 produced water and oil, and 3 produced water only. This indicates that approximately 64 percent of the sand represented by these samples is floodable pay sand.

CALCULATED RECOVERY

It would appear from a study of the core data, that efficient primary and waterflood operations in the vicinity of this well should recover approximately 1,940 barrels of oil per acre. This is an average recovery of 286 barrels per acre foot from 6.8 feet of floodable sand analyzed in this core.

These recovery values were calculated using the following data and assumptions:

Original formation volume factor, estimated	1.03
Reservoir water saturation, percent, estimated	20.0
Average porosity, percent	19.1
Oil saturation after flooding, percent	39.1
Performance factor, percent, estimated	50.0
Net floodable sand, feet	6.8

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Lane Petroleum Company Lease Giefer Well No. 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	385.4	18.8	30	44	74	438	41.	0.4	0.4	175	16.40
2	386.6	18.9	41	44	85	601	12.	1.0	1.4	601	12.00
3	387.5	19.8	47	27	74	722	47.	1.0	2.4	722	47.00
4	388.5	19.9	51	24	75	787	44.	1.0	3.4	787	44.00
5	389.4	18.7	38	32	70	551	31.	1.0	4.4	551	31.00
6	390.4	15.8	46	46	92	564	5.2	1.0	5.4	564	5.20
7	391.5	18.8	49	29	78	715	31.	1.0	6.4	715	31.00
8	392.5	19.5	52	30	82	787	44.	1.0	7.4	787	44.00
9	393.4	18.3	44	42	86	625	13.	0.8	8.2	500	10.40
10	394.4	15.3	51	44	95	605	1.3	1.0	9.2	605	1.30
11	395.5	15.0	57	23	80	663	3.5	1.0	10.2	663	3.50

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company Lane Petroleum Company Lease Giefer Well No. 1

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
385.2 - 395.8	10.2	24.1	245.80

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
385.2 - 395.8	10.2	18.0	47.0	34.3	654	6,670

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company Lane Petroleum Company Lease Giefer Well No. 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	385.4	18.7	30	435	0	0	30	62	435	33	0.30	25
2	386.6	19.0	41	604	5	74	36	52	530	76	1.27	25
3	387.5	19.8	47	722	12	184	35	55	538	49	0.75	30
4	388.5	19.8	51	783	6	92	45	44	691	30	0.45	30
5	389.4	18.6	38	548	3	43	35	63	505	46	1.50	25
6	390.4	15.9	46	567	0	0	46	47	567	12	0.15	45
7	391.5	18.7	49	711	9	131	40	49	580	58	0.90	25
8	392.5	19.5	52	787	10	151	42	48	636	61	0.82	25
9	393.4	18.4	44	628	3	43	41	54	585	4	0.08	50
10	394.4	15.2	51	601	0	0	51	46	601	9	0.15	45
11	395.5	15.3	56	665	0	0	56	30	665	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.

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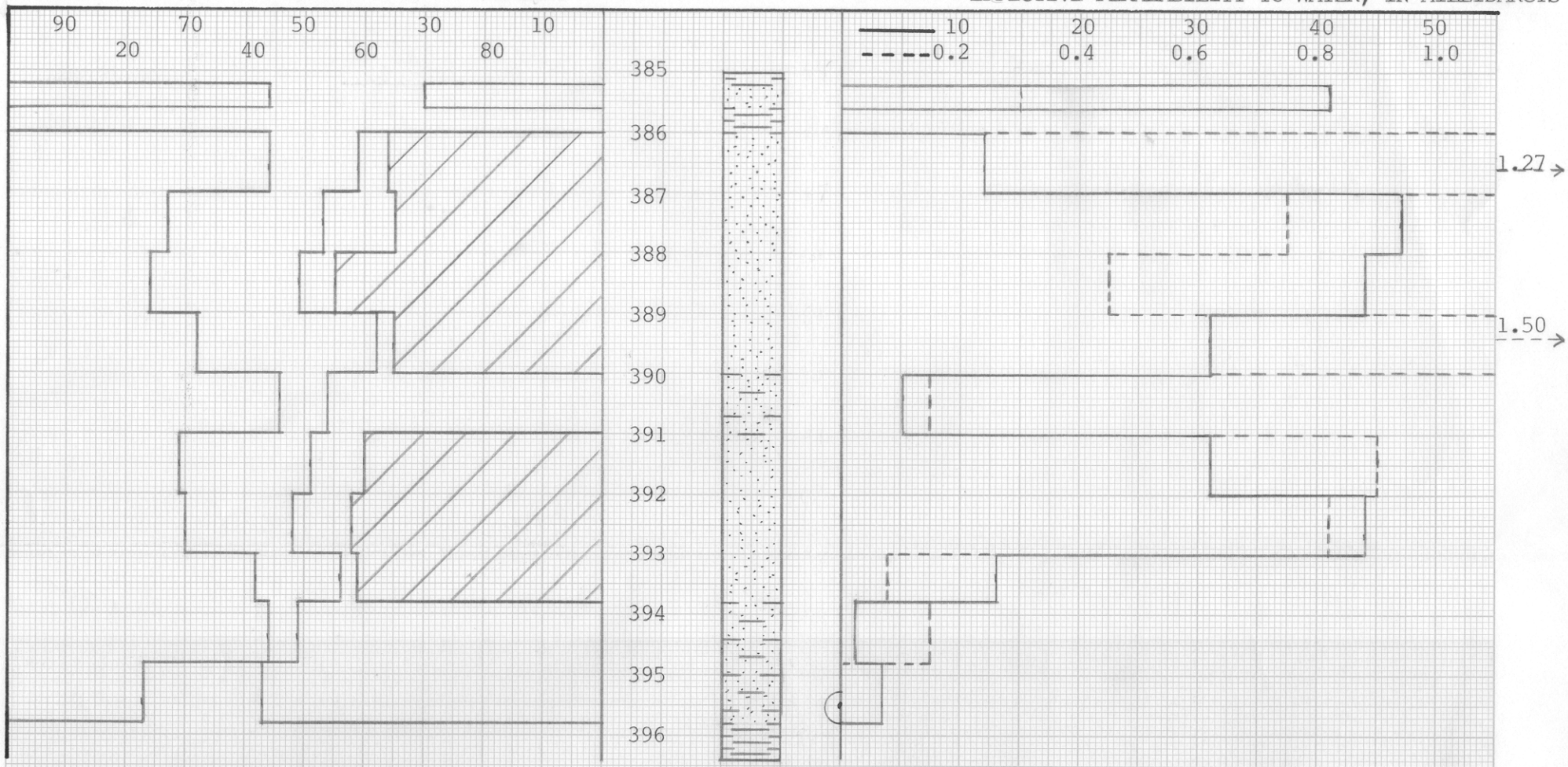
SUMMARY OF LABORATORY FLOODING TESTS

TABLE V

Company Lane Petroleum Company Lease Giefer Well No. 1

Depth Interval, Feet	385.2 - 395.8
Feet of Core Analyzed	6.8
Average Percent Porosity	19.1
Average Percent Original Oil Saturation	46.1
Average Percent Oil Recovery	7.0
Average Percent Residual Oil Saturation	39.1
Average Percent Residual Water Saturation	52.1
Average Percent Total Residual Fluid Saturation	91.2
Average Original Oil Content, Bbls./A. Ft.	685.
Average Oil Recovery, Bbls./A. Ft.	104.
Average Residual Oil Content, Bbls./A. Ft.	581.
Total Original Oil Content, Bbls./Acre	4,657.
Total Oil Recovery, Bbls./Acre	709.
Total Residual Oil Content, Bbls./Acre	3,948.
Average Effective Permeability, Millidarcys	0.85
Average Initial Fluid Production Pressure, p.s.i.	30.0

NOTE: Only those samples which recovered oil were used in calculating the above averages.



KEY:

SANDSTONE

IMPERMEABLE TO WATER

SHALE

SHALY SANDSTONE

FLOODPOT RESIDUAL OIL SATURATION

LANE PETROLEM COMPANY

GIEFER LEASE

WELL NO. 1

CRAWFORD COUNTY, KANSAS

CRAWFORD 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
385.2 - 395.8	10.2	18.0	47.0	34.3	24.1	1940 (PRIMARY AND WATERFLOODING)

OILFIELD RESEARCH LABORATORIES
CHANUTE, KANSAS
MAY, 1982 PDC