OILFIELD RESEARCH LABORATORIES

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

May 15, 1982

Lane Petroleum Company
c/o Jim Chambers
R R 1
Lane, Kansas 66042

Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Giefer Lease, Well No. 2, located in Crawford County, Kansas and submitted to our laboratory on May 11, 1982.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Sanford A. Michel

SAM/kas

5 c to Lane, Kansas

Oilfield Research Laboratories

GENERAL INFORMATION & SUMMARY

Company Lane Petroleum Company Lease Giefer Well No. 2

Location

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

Elevation, Feet	
Name of Sand	Bartlesville
Top of Core	392.0
Bottom of Core	403.4
Top of Sand	392.0
Bottom of Sand	403.4
Total Feet of Permeable Sand	11.4
Total Feet of Floodable Sand	8.6

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 10	4.9	4.9
10 - 30	5.5	10.4
60 - 65	1.0	11.4

Average Permeability Millidarcys	15.5
Average Percent Porosity	17.6
Average Percent Oil Saturation	39.5
Average Percent Water Saturation	38.5
Average Oil Content, Bbls./A. Ft.	540.
Total Oil Content, Bbls./Acre	6,161.
Average Percent Oil Recovery by Laboratory Flooding Tests	7.7
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	106.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	911.
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 drilling fluids.

FORMATION CORED

The detailed log of the formation cored is as follows:

Depth Interval, Feet	Description
392.0 - 393.5	Brown slightly shaly sandstone.
393.5 - 400.0	Brown sandstone.
400.0 - 400.6	Brown slightly shaly sandstone.
400.6 - 402.0	Brown shaly sandstone.
402.0 - 403.4	Brown very shaly sandstone.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 911 barrels of oil per acre was obtained from 8.6 feet of sand. The weighted average percent oil saturation was reduced from 40.3 to 32.6, or represents an average recovery of 7.7 percent. The weighted average effective permeability of the samples is 0.82 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, 9 produced water and oil. This indicates that approximately 82 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 2,550 barrels of oil per acre. This is an average recovery of 297 barrels per acre foot from 8.6 feet of floodable sand analyzed in this core.

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

Original formation volume factor, estimated	1.04
Reservoir water saturation, percent, estimated	25.0
Average porosity, percent	17.6
Oil saturation after flooding, percent	32.6
Performance factor, percent, estimated	55.0
Net floodable sand, feet	8.6

Oilfield Research Laboratories

RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Lane Petroleum Company Lease Giefer Well No. 2

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	392.6	15.7	40	34	74	487	6.0	1.0	1.0	487	6.00
2	393.4	17.3	45	34	79	609	6.3	0.5	1.5	305	3.15
3	394.5	17.6	41	39	80	560	14.	1.5	3.0	840	21.00
4	395.6	18.7	43	33	76	624	29.	1.0	4.0	624	29.00
5	396.6	17.8	49	22	71	677	62.	1.0	5.0	677	62.00
6	397.3	17.0	41	38	79	541	21.	1.0	6.0	541	21.00
7	398.7	18.7	36	38	74	522	13.	1.0	7.0	522	13.00
8	399.8	17.4	33	49	82	445	11.	1.0	8.0	445	11.00
9	400.5	16.8	34	44	78	443	8.3	0.6	8.6	266	4.98
10	401.2	18.3	36	46	82	511	3.5	1.4	10.0	715	4.90
11	402.7	17.9	38	42	80	528	0.69	1.4	11.4	739	0.97

Oilfield Research Laboratories

SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company Lane Petroleum Company Lease Giefer Well No. 2

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
392.0 - 403.4	11.4	15.5	177.00

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
392.0 - 403.4	11.4	17.6	39.5	38.5	540	6,161

Oilfield Research Laboratories

RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company Lane Petroleum Company Lease Giefer Well No. 2

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	392.6	15.8	40	490	8	98	32	54	392	16	0.22	25
2	393.4	17.4	45	607	7	94	38	45	513	16	0.30	40
3	394.5	17.7	41	563	5	69	36	59	494	170	2.55	25
4	395.6	18.8	43	627	13	190	30	67	437	42	0.60	25
5	396.6	17.9	49	680	14	194	35	58	486	44	0.75	30
6	397.3	17.2	41	547	9	120	32	61	427	30	0.52	35
7	398.7	18.6	36	519	5	72	31	63	447	8	0.30	45
8	399.8	17.6	33	451	4	55	29	67	396	38	0.60	25
9	400.5	16.7	34	440	4	52	30	62	388	12	0.15	45
10	401.2	17.8	37	511	0	0	37	45	511	0	Imp.	-
11	402.7	18.0	38	525	0	0	38	43	525	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.

Oilfield Research Laboratories

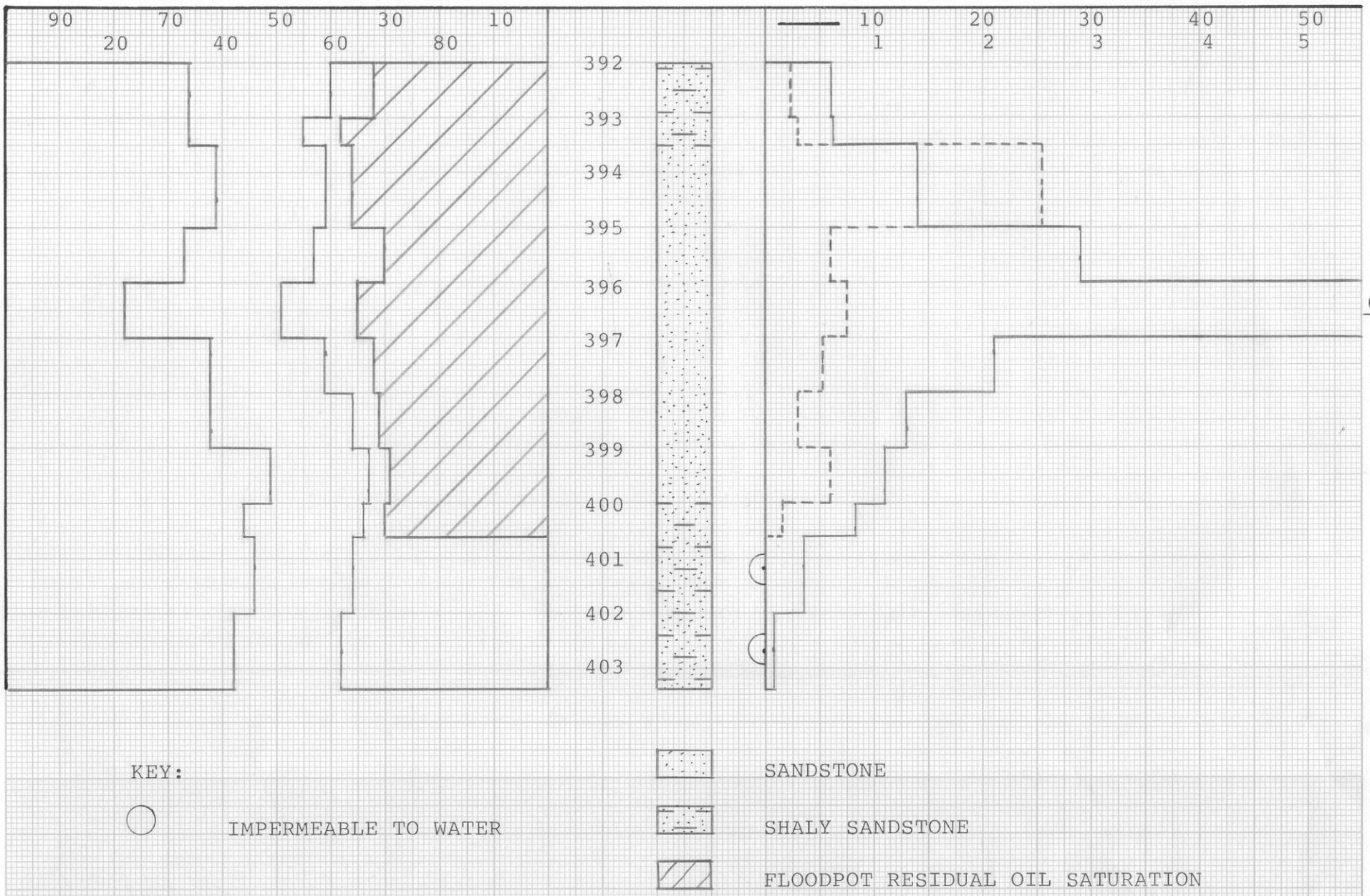
SUMMARY OF LABORATORY FLOODING TESTS

TABLE V

Company Lane Petroleum Company Lease Giefer Well No. 2

Depth Interval, Feet	392.0 - 403.4
Feet of Core Analyzed	8.6
Average Percent Porosity	17.6
Average Percent Original Oil Saturation	40.3
Average Percent Oil Recovery	7.7
Average Percent Residual Oil Saturation	32.6
Average Percent Residual Water Saturation	60.3
Average Percent Total Residual Fluid Saturation	92.9
Average Original Oil Content, Bbls./A. Ft.	550.
Average Oil Recovery, Bbls./A. Ft.	106.
Average Residual Oil Content, Bbls./A. Ft.	444.
Total Original Oil Content, Bbls./Acre	4,727.
Total Oil Recovery, Bbls./Acre	911.
Total Residual Oil Content, Bbls./Acre	3,816.
Average Effective Permeability, Millidarcys	0.82
Average Initial Fluid Production Pressure, p.s.i.	30.0

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



LANE PETROLEUM COMPANY

GIEFER LEASE WELL NO. 2

CRAWFORD COUNTY, KANSAS

LANE PETROLEUM COMPANY

GIEFER LEASE — WELL NO. 2

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
392.0 - 403.4	11.4	17.6	39.5	38.5	15.5	2550 (PRIMARY AND WATERFLOODING)

OILFIELD RESEARCH LABORATORIES
CHANUTE, KANSAS
MAY, 1982 PDC