OILFIELD RESEARCH LABORATORIES
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October 2, 1981

Centurion Mineral & Petroleum Resources
9667 Firdale Ave.
Edmonds, Washington 98020

Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Chapman Lease, Well No. 4, located in Labette County, Kansas and submitted to our laboratory on September 17, 1981.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Sanford A. Michel

SAM/kas

4 c to Edmonds, Washington
1 c to Caney, Kansas

Oilfield Research Laboratories

GENERAL INFORMATION & SUMMARY

Company Centurion Mineral & Petro. Res. Lease Chapman Well No. 4

Location 900' EL & 850' SL SW¼

Section 7 Twp. 32S Rge. 19E County Labette State Kansas

Elevation, Feet	
Name of Sand	Tucker
Top of Core	832.0
Bottom of Core	844.0
Top of Sand	832.0
Bottom of Sand	842.2
Total Feet of Permeable Sand	8.1
Total Feet of Floodable Sand	3.0

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 12	4.1	4.1
30 - 45	2.0	6.1
80 - 146	2.0	8.1

Average Permeability Millidarcys	39.8
Average Percent Porosity	14.5
Average Percent Oil Saturation	54.0
Average Percent Water Saturation	23.2
Average Oil Content, Bbls./A. Ft.	616.
Total Oil Content, Bbls./Acre	6,226.
Average Percent Oil Recovery by Laboratory Flooding Tests	5.0
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	64.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	193.
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. Fresh water mud was used as a drilling fluid. The core was reported to be from a non-virgin area.

FORMATION CORED

The detailed log of the formation cored is as follows:

Depth Interval, Feet	Description
832.0 - 835.0	Black slightly carbonaceous sandstone.
835.0 - 836.2	Grayish black slightly carbonaceous shaly sandstone.
836.2 - 838.3	Black slightly carbonaceous sandstone.
838.3 - 840.1	Grayish light brown shaly sandstone.
840.1 - 840.2	Coal.
840.2 - 842.2	Grayish light brown slightly carbonaceous slightly vuggy shaly sandstone.
842.2 - 844.0	Gray shale.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 193 barrels of oil per acre was obtained from 3.0 feet of sand. The weighted average percent oil saturation was reduced from 55.7 to 50.7, or represents an average recovery of 5.0 percent. The weighted average effective permeability of the samples is 9.14 millidarcys, while the average initial fluid production pressure is 26.7 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 10 samples tested, 3 produced water and oil, and 2 samples produced water only. This indicates that approximately 30 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 640 barrels of oil per acre. This is an average recovery of 214 barrels per acre foot from 3.0 feet of floodable sand analyzed in this core.

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

Original formation volume factor, estimated	1.06
Reservoir water saturation, percent, estimated	15.0
Average porosity, percent	16.6
Oil saturation after flooding, percent	50.7
Performance factor, percent, estimated	55.0
Net floodable sand, feet	3.0

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Centurion Mineral & Petroleum Resources Lease Chapman Well No. 4

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	832.7	15.0	56	17	73	652	44.	1.0	1.0	652	44.00
2	833.4	17.0	57	16	73	752	80.	1.0	2.0	752	80.00
3	834.4	17.5	54	21	75	733	145.	1.0	3.0	733	145.00
4	835.4	7.6	60	30	90	354	5.6	1.2	4.2	425	6.72
5	836.4	17.1	64	24	88	849	31.	1.0	5.2	849	31.00
6	837.6	16.6	51	11	62	657	11.	1.1	6.3	723	12.10
7	838.5	16.2	76	13	89	955	2.2	0.8	7.1	764	1.76
8	839.4	19.5	55	9	64	832	1.6	1.0	8.1	832	1.60
9	840.5	4.9	40	42	82	152	Imp.	1.0	9.1	152	0.00
10	841.4	14.8	30	47	77	344	Imp.	1.0	10.1	344	0.00

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company Centurion Mineral & Petroleum Resources Lease Chapman Well No. 4

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
832.0 - 835.0	3.0	89.7	269.00
835.0 - 842.2	5.1	10.4	53.18
832.0 - 842.2	8.1	39.8	322.18

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
832.0 - 835.0	3.0	16.5	55.7	18.0	712	2,137
835.0 - 842.2	7.1	13.6	53.2	25.4	576	4,089
832.0 - 842.2	10.1	14.5	54.0	23.2	616	6,226

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company Centurion Mineral & Petroleum Resources Lease Chapman Well No. 4

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	832.7	15.1	56	656	5	59	51	37	597	330	4.57	20
2	833.4	16.9	57	747	6	79	51	29	668	66	1.12	30
3	834.4	17.7	54	742	4	55	50	33	687	222	3.45	30
4	835.4	7.6	60	354	0	0	60	32	354	420	5.32	25
5	836.4	16.9	65	852	0	0	65	26	852	0	Imp.	-
6	837.6	16.9	50	656	0	0	50	12	656	0	Imp.	-
7	838.5	16.4	75	954	0	0	75	15	954	62	0.90	35
8	839.4	19.3	55	824	0	0	55	12	824	0	Imp.	-
9	840.5	5.0	39	151	0	0	39	44	151	0	Imp.	-
10	841.4	14.7	30	342	0	0	30	48	342	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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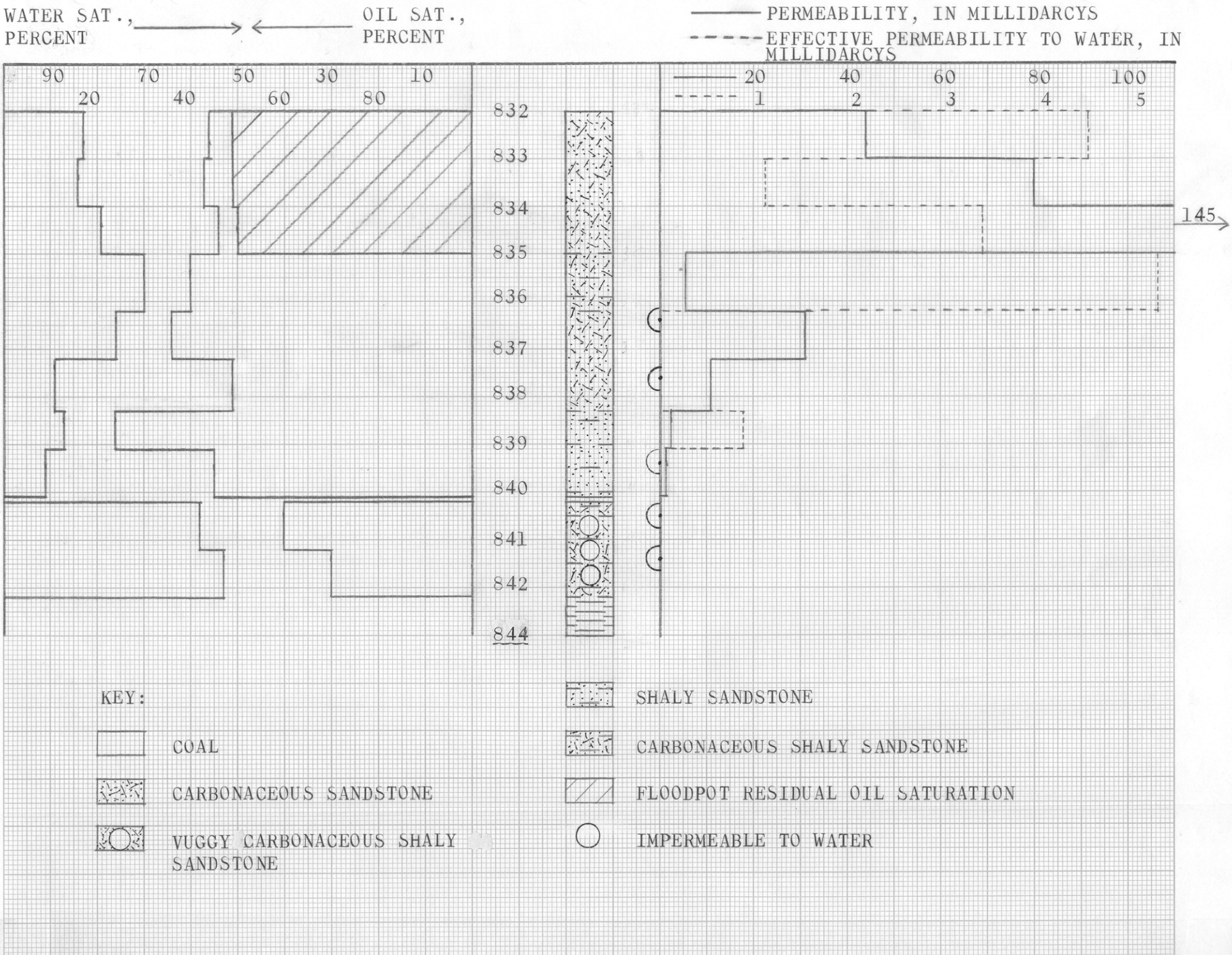
SUMMARY OF LABORATORY FLOODING TESTS

TABLE V

Company Centurion Mineral & Petroleum Resources Lease Chapman Well No. 4

Depth Interval, Feet	832.0 - 835.0
Feet of Core Analyzed	3.0
Average Percent Porosity	16.6
Average Percent Original Oil Saturation	55.7
Average Percent Oil Recovery	5.0
Average Percent Residual Oil Saturation	50.7
Average Percent Residual Water Saturation	33.0
Average Percent Total Residual Fluid Saturation	83.7
Average Original Oil Content, Bbls./A. Ft.	715.
Average Oil Recovery, Bbls./A. Ft.	64.
Average Residual Oil Content, Bbls./A. Ft.	651.
Total Original Oil Content, Bbls./Acre	2,145.
Total Oil Recovery, Bbls./Acre	193.
Total Residual Oil Content, Bbls./Acre	1,952.
Average Effective Permeability, Millidarcys	9.14
Average Initial Fluid Production Pressure, p.s.i.	26.7

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




VUGGY CARBONACEOUS SHALY SANDSTONE


IMPERMEABLE TO WATER

CENTURION MINERAL & PETROLEUM RESOURCES

CHAPMAN LEASE WELL NO. 4

LABETTE 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
832.0 - 835.0	3.0	16.5	55.7	18.0	89.7	
835.0 - 842.2	7.1	13.6	53.2	25.4	10.4	
832.0 - 842.2	10.1	14.5	54.0	23.2	39.8	640 (PRIMARY AND WATERFLOODING)

OILFIELD RESEARCH LABORATORIES
CHANUTE, KANSAS
OCTOBER, 1981

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