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

December 22, 1981

Don McGinnis
Rural Route # 1
Rantoul, Kansas 66079

Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the McGinnis Lease, Well No. I-7, located in Franklin County, Kansas and submitted to our laboratory on December 15, 1981.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Sanford A. Michel

SAM/kas

5 c to Rantoul, Kansas

T17S, R21E, Sec. 32

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GENERAL INFORMATION & SUMMARY

Company Don McGinnis Lease McGinnis Well No. I-7

Location

Section ____ Twp. ____ Rge. ____ County Franklin State Kansas

Elevation, Feet	
Name of Sand	Cattleman
Top of Core	739.0
Bottom of Core	746.4
Top of Sand	739.0
Bottom of Sand	746.4
Total Feet of Permeable Sand	7.4
Total Feet of Floodable Sand	6.4

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
64 - 90	4.0	4.0
137 - 189	3.4	7.4

Average Permeability Millidarcys	112.0
Average Percent Porosity	20.9
Average Percent Oil Saturation	60.0
Average Percent Water Saturation	16.7
Average Oil Content, Bbls./A. Ft.	981.
Total Oil Content, Bbls./Acre	7,257.
Average Percent Oil Recovery by Laboratory Flooding Tests	27.9
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	461.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	2,951.
Total Calculated Oil Recovery, Bbls./Acre	See "Calculated Recovery"

The core was sampled and the samples sealed in plastic bags by a representative of the client.

FORMATION CORED

The detailed log of the formation cored is as follows:

Depth Interval, Feet	Description
739.0 - 741.7	Brown sandstone.
741.7 - 746.4	Dark brown sandstone.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 2,951 barrels of oil per acre was obtained from 6.4 feet of sand. The weighted average percent oil saturation was reduced from 65.0 to 37.1, or represents an average recovery of 27.9 percent. The weighted average effective permeability of the samples is 21.4 millidarcys, while the average initial fluid production pressure is 14.2 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 7 samples tested, 6 produced water and oil. This indicates that approximately 86 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 399 barrels per acre foot from 6.4 feet of floodable sand analyzed in this core.

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

Original formation volume factor, estimated	1.05
Reservoir water saturation, percent, estimated	15.0
Average porosity, percent	21.3
Oil saturation after flooding, percent	37.1
Performance factor, percent, estimated	55.0
Net floodable sand, feet	6.4

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Don McGinnis Lease McGinnis Well No. I-7

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	739.7	19.1	28	23	51	415	64.	1.0	1.0	415	64.00
2	740.5	19.6	49	7	56	745	87.	1.0	2.0	745	87.00
3	741.6	22.5	43	26	69	751	188.	0.7	2.7	526	131.60
4	742.6	21.8	74	13	87	1252	137.	1.7	4.4	2128	232.90
5	743.8	22.3	61	18	79	1055	149.	1.0	5.4	1055	149.00
6	744.8	21.0	78	16	94	1271	89.	1.0	6.4	1271	89.00
7	746.1	20.0	72	19	91	1117	75.	1.0	7.4	1117	75.00

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company Don McGinnis Lease McGinnis Well No. I-7

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
739.0 - 746.4	7.4	112.0	828.50

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
739.0 - 746.4	7.4	20.9	60.0	16.7	981	7,257

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company Don McGinnis Lease McGinnis Well No. I-7

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	739.7	18.6	29	418	0	0	29	23	418	0	Imp.	-
2	740.5	19.5	49	741	10	151	39	48	590	188	3.60	30
3	741.6	22.6	43	754	11	193	32	44	561	270	21.74	15
4	742.6	21.9	74	1257	31	527	43	45	730	324	48.73	10
5	743.8	22.4	61	1060	30	521	31	53	539	286	11.80	10
6	744.8	21.1	78	1277	41	671	37	58	606	268	10.12	10
7	746.1	20.1	72	1123	37	577	35	57	546	284	13.49	10

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 Don McGinnis Lease McGinnis Well No. I-7

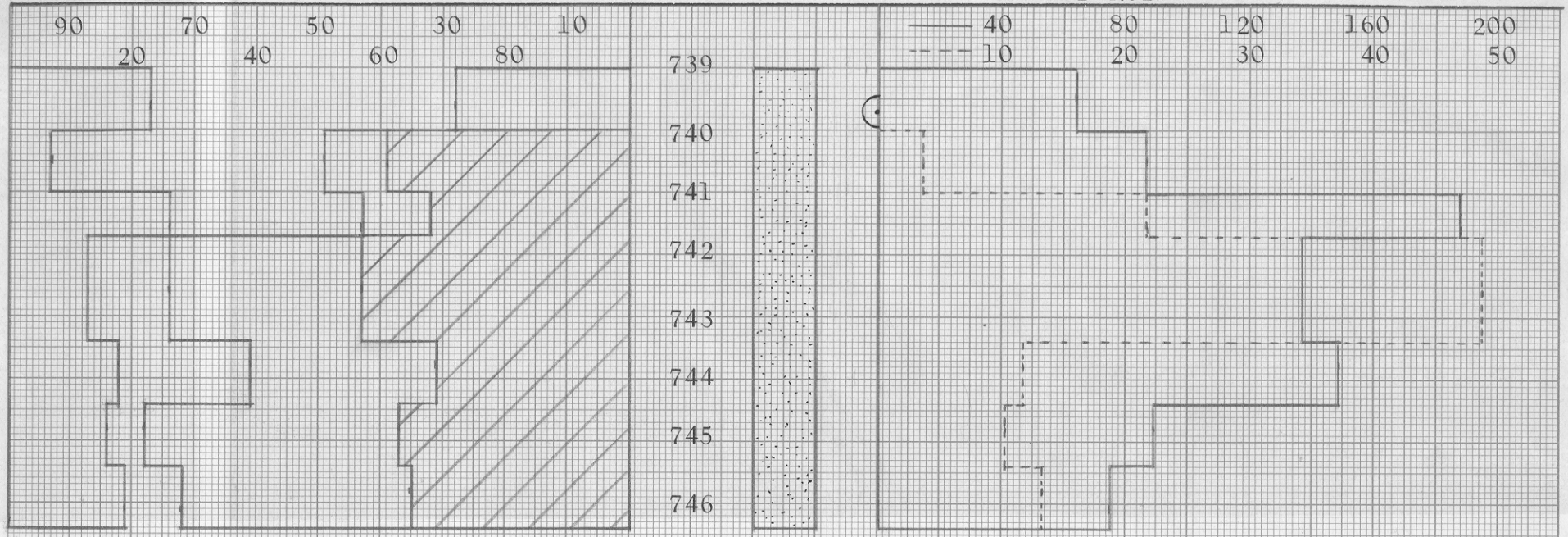
Depth Interval, Feet	739.0 - 746.4
Feet of Core Analyzed	6.4
Average Percent Porosity	21.3
Average Percent Original Oil Saturation	65.0
Average Percent Oil Recovery	27.9
Average Percent Residual Oil Saturation	37.1
Average Percent Residual Water Saturation	50.5
Average Percent Total Residual Fluid Saturation	87.6
Average Original Oil Content, Bbls./A. Ft.	1,073.
Average Oil Recovery, Bbls./A. Ft.	461.
Average Residual Oil Content, Bbls./A. Ft.	612.
Total Original Oil Content, Bbls./Acre	6,866.
Total Oil Recovery, Bbls./Acre	2,951.
Total Residual Oil Content, Bbls./Acre	3,915.
Average Effective Permeability, Millidarcys	21.4
Average Initial Fluid Production Pressure, p.s.i.	14.2

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

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

——— PERMEABILITY, IN MILLIDARCYS

- - - - EFFECTIVE PERMEABILITY TO WATER, IN MILLIDARCYS



KEY:

IMPERMEABLE TO WATER

SANDSTONE

FLOODPOT RESIDUAL OIL SATURATION

DON MC GINNIS

MC GINNIS LEASE WELL NO. I-7

FRANKLIN COUNTY, KANSAS

DEPTH INTERVAL,	FEET OF CORE	AVERAGE	AVG. OIL	AVG. WATER	AVERAGE	CALCULATED

 IMPERMEABLE TO WATER

 FLOODPOT RESIDUAL OIL SATURATION

DON MC GINNIS

MC GINNIS LEASE WELL NO. I-7

FRANKLIN 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
739.0 - 746.4	7.4	20.9	60.0	16.7	112.0	2550 (PRIMARY AND WATERFLOODING)

OILFIELD RESEARCH LABORATORIES
CHANUTE, KANSAS
DECEMBER, 1981

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