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

December 28, 1981

Don McGinnis
Rural Route # 1, Box 99
Rantoul, Kansas 66079

Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the McGinnis "A" Lease, Well No. I-18, located in Franklin County, Kansas and submitted to our laboratory on December 22, 1981.

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 Don McGinnis Lease McGinnis "A" Well No. I-18

Location

Section 32 Twp. 17S Rge. 21E County Franklin State Kansas

Elevation, Feet	
Name of Sand	Cattleman
Top of Core	707.0
Bottom of Core	713.8
Top of Sand	707.0
Bottom of Sand	713.8
Total Feet of Permeable Sand	6.8
Total Feet of Floodable Sand	4.0

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
6 - 17	1.8	1.8
35 - 40	3.0	4.8
47 - 63	2.0	6.8

Average Permeability Millidarcys	35.5
Average Percent Porosity	21.4
Average Percent Oil Saturation	54.8
Average Percent Water Saturation	22.6
Average Oil Content, Bbls./A. Ft.	921.
Total Oil Content, Bbls./Acre	6,262.
Average Percent Oil Recovery by Laboratory Flooding Tests	15.8
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	269.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	1,075.
Total Calculated Oil Recovery, Bbls./Acre	See "Calculated Recovery" Section

The core was sampled and the sampled 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
707.0 - 713.1	Brownish black slightly carbonaceous slightly micaceous sandstone.
713.1 - 713.8	Grayish brown slightly shaly sandstone.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 1,075 barrels of oil per acre was obtained from 4.0 feet of sand. The weighted average percent oil saturation was reduced from 50.8 to 35.0, or represents an average recovery of 15.8 percent. The weighted average effective permeability of the samples is 1.50 millidarcys, while the average initial fluid production pressure is 23.8 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 7 samples tested, 4 produced water and oil. This indicates that approximately 57 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 1,710 barrels of oil per acre. This is an average recovery of 427 barrels per acre foot from 4.0 feet of floodable sand analyzed in this core.

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

Original formation volume factor, estimated	1.05
Reservoir water saturation, percent, estimated	15.0
Average porosity, percent	21.8
Oil saturation after flooding, percent	35.0
Performance factor, percent, estimated	55.0
Net floodable sand, feet	4.0

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Don McGinnis Lease McGinnis "A" Well No. I-18

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	707.6	22.0	43	27	70	734	39.	1.0	1.0	734	39.00
2	708.6	22.1	51	20	71	874	47.	1.0	2.0	874	47.00
3	709.4	22.8	55	18	73	973	62.	1.0	3.0	973	62.00
4	710.4	20.4	54	25	79	855	35.	1.0	4.0	855	35.00
5	711.4	21.2	52	27	79	855	36.	1.0	5.0	855	36.00
6	712.4	20.2	71	20	91	1212	16.	1.1	6.1	1333	17.60
7	713.4	21.0	56	21	77	912	7.1	0.7	6.8	638	4.97

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company Don McGinnis Lease McGinnis "A" Well No. I-18

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
707.0 - 711.0	4.0	45.8	183.00
711.0 - 713.8	2.8	20.9	58.57
707.0 - 713.8	6.8	35.5	241.57

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
707.0 - 711.0	4.0	21.8	50.8	22.5	859	3,436
711.0 - 713.8	2.8	20.8	60.5	22.8	1,009	2,826
707.0 - 713.8	6.8	21.4	54.8	22.6	921	6,262

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company Don McGinnis Lease McGinnis "A" Well No. I-18

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	707.6	21.8	43	727	11	186	32	60	541	64	1.05	25
2	708.6	22.2	51	878	14	241	37	57	637	52	0.75	25
3	709.4	22.9	55	977	24	426	31	61	551	184	3.30	20
4	710.4	20.4	54	855	14	222	40	53	633	58	0.90	25
5	711.4	21.7	51	859	0	0	51	30	859	0	Imp.	-
6	712.4	21.6	72	1207	0	0	72	20	1207	0	Imp.	-
7	713.4	21.5	55	917	0	0	55	24	917	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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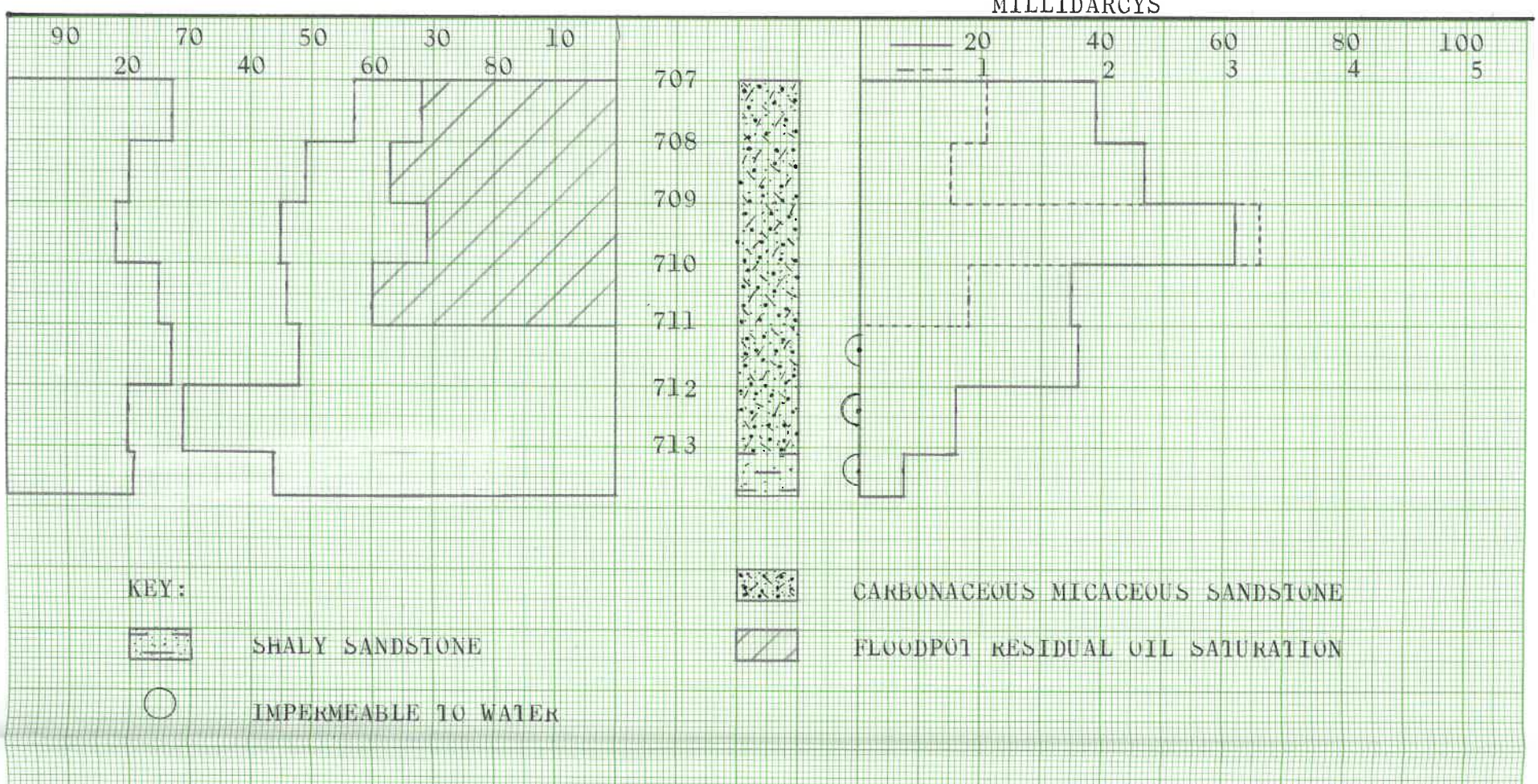
SUMMARY OF LABORATORY FLOODING TESTS

TABLE V

Company Don McGinnis Lease McGinnis "A" Well No. I-18

Depth Interval, Feet	707.0 - 711.0
Feet of Core Analyzed	4.0
Average Percent Porosity	21.8
Average Percent Original Oil Saturation	50.8
Average Percent Oil Recovery	15.8
Average Percent Residual Oil Saturation	35.0
Average Percent Residual Water Saturation	57.8
Average Percent Total Residual Fluid Saturation	92.8
Average Original Oil Content, Bbls./A. Ft.	860.
Average Oil Recovery, Bbls./A. Ft.	269.
Average Residual Oil Content, Bbls./A. Ft.	591.
Total Original Oil Content, Bbls./Acre	3,437.
Total Oil Recovery, Bbls./Acre	1,075.
Total Residual Oil Content, Bbls./Acre	2,362.
Average Effective Permeability, Millidarcys	1.50
Average Initial Fluid Production Pressure, p.s.i.	23.8

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



DON MC GINNIS

MC GINNIS "A" LEASE — WELL NO. I-18

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
707.0 - 711.0	4.0	21.8	50.8	22.5	45.8	
711.0 - 713.8	2.8	20.8	60.5	22.8	20.9	
707.0 - 713.8	6.8	21.4	54.8	22.6	35.5	1710 (PRIMARY AND WATERFLOODING)

OILFIELD RESEARCH LABORATORIES
CHANUTE, KANSAS
DECEMBER, 1981

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