

# OILFIELD RESEARCH LABORATORIES

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

December 9, 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 Lease, Well No. I-6, located in Franklin County, Kansas and submitted to our laboratory on December 2, 1981.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

  
Sanford A. Michel

SAM/tem

5 c to Rantoul, Kansas

T175, R21E, Sec 32

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**GENERAL INFORMATION & SUMMARY**

Company Don McGinnis Lease McGinnis Well No. I-6  
 Location -  
 Section - Twp. - Rge. - County Franklin State Kansas

Elevation, Feet .....  
 Name of Sand ..... Cattleman  
 Top of Core ..... 720.0  
 Bottom of Core ..... 723.0  
 Top of Sand ..... 720.0  
 Bottom of Sand ..... 723.0  
 Total Feet of Permeable Sand ..... 3.0  
 Total Feet of Floodable Sand ..... 2.0

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 32	2.0	2.0
60 - 61	1.0	3.0

Average Permeability Millidarcys ..... 32.0  
 Average Percent Porosity ..... 19.8  
 Average Percent Oil Saturation ..... 47.7  
 Average Percent Water Saturation ..... 30.7  
 Average Oil Content, Bbls./A. Ft. .... 724.  
 Total Oil Content, Bbls./Acre ..... 2,171.  
 Average Percent Oil Recovery by Laboratory Flooding Tests ..... 17.5  
 Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft. .... 259.  
 Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre ..... 518.  
 Total Calculated Oil Recovery, Bbls./Acre .....

See "Calculated Recovery" Section

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The core was sampled and the samples sealed in plastic bags by a representative of the client. The core was reported to be from a non-virgin area.

#### FORMATION CORED

The detailed log of the formation cored is as follows:

<u>Depth Interval,</u> <u>Feet</u>	<u>Description</u>
720.0 - 721.0	Brown sandstone.
721.0 - 722.0	Grayish brown shaly sandstone.
722.0 - 723.0	Brown sandstone.

#### LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 518 barrels of oil per acre was obtained from 2.0 feet of sand. The weighted average percent oil saturation was reduced from 52.0 to 34.5, or represents an average recovery of 17.5 percent. The weighted average effective permeability of the samples is 2.25 millidarcys, while the average initial fluid production pressure is 25.0 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 3 samples tested, 2 produced water and oil, and 1 produced water only. This indicates that approximately 67 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 630 barrels of oil per acre. This is an average recovery of 317 barrels per

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acre foot from 2.0 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	20.0
Average porosity, percent	19.6
Oil saturation after flooding, percent	34.5
Performance factor, percent, estimated	50.0
Net floodable sand, feet	2.0

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## RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE I-B

Company Don McGinnis Lease McGinnis Well No. I-6

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	720.3	20.6	39	26	65	623	60	1.0	1.0	623	60.00
2	721.3	20.7	41	43	84	658	5.0	1.0	2.0	658	5.00
3	722.4	18.2	63	23	86	890	31.	1.0	3.0	890	31.00

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## SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company	Lease	Well No.	I-6				
Don Mc Ginnis	Mc Ginnis						
Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.	Average Oil Saturation	Average Percent Water Saturation	Average Oil Content Bbl./A. Ft.	Total Oil Content Bbls./Acre
720.0 - 723.0	3.0	32.0	96.00				
720.0 - 723.0	3.0			47.7	30.7	724	2,171
				19.8			

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## RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company Don Mc Ginnis Lease Mc Ginnis Well No. I-6

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			
1	720.3	20.1	40	624	0	0	40	53	10	0.15	50
2	721.3	20.7	41	658	10	161	31	59	8	0.15	30
3	722.4	18.4	63	899	25	357	38	53	212	4.35	20

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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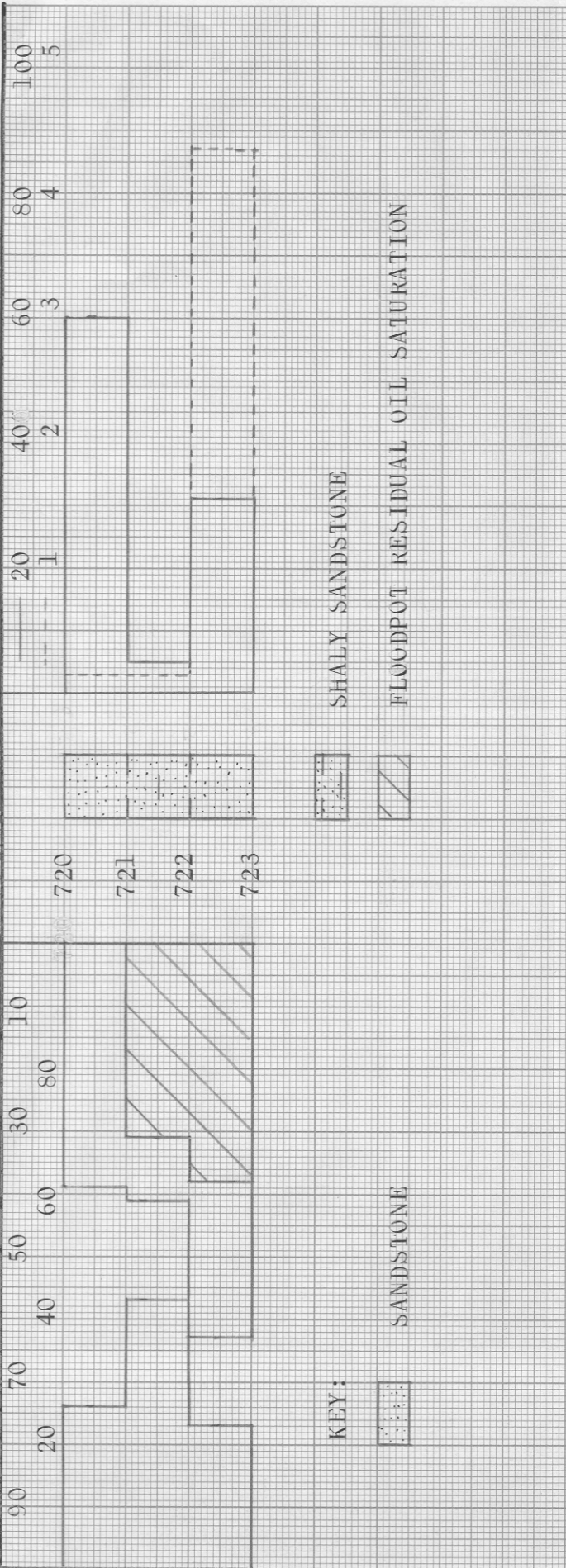
## SUMMARY OF LABORATORY FLOODING TESTS

TABLE V

Company	Don McGinnis	Lease	Mc Ginnis	Well No.	I-6
Depth Interval, Feet	720.0 - 723.0				
Feet of Core Analyzed	2.0				
Average Percent Porosity	19.6				
Average Percent Original Oil Saturation	52.0				
Average Percent Oil Recovery	17.5				
Average Percent Residual Oil Saturation	34.5				
Average Percent Residual Water Saturation	56.0				
Average Percent Total Residual Fluid Saturation	90.5				
Average Original Oil Content, Bbls./A. Ft.	779.				
Average Oil Recovery, Bbls./A. Ft.	259.				
Average Residual Oil Content, Bbls./A. Ft.	520.				
Total Original Oil Content, Bbls./Acre	1,557.				
Total Oil Recovery, Bbls./Acre	518.				
Total Residual Oil Content, Bbls./Acre	1,039.				
Average Effective Permeability, Millidarcys	2.25				
Average Initial Fluid Production Pressure, p.s.i.	25.0				

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

WATER SAT., PERCENT → < OIL SAT., PERCENT  
 --- EFFECTIVE PERMEABILITY TO WATER, MILLIDARCYS  
 --- PERMEABILITY, IN MILLIDARCYS



KEY:  
 SANDSTONE  
 SHALY SANDSTONE  
 FLOODPOT RESIDUAL OIL SATURATION

# DON MC GINNIS

MC GINNIS LEASE  
 FRANKLIN COUNTY, KANSAS  
 WELL NO. I-6

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
720. - 723.0	3.0	19.8	47.7	30.7	32.0	630

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 CHANUTE, KANSAS  
 DECEMBER, 1981

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