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

April 23, 1981

McGown Drilling
Box 216
Mound City, Kansas 66056

Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Giblin Lease, Well No. 3, located in Johnson County, Kansas and submitted to our laboratory on April 9, 1981.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Sanford A. Michel

SAM/kas

5 c to Mound City, Kansas

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GENERAL INFORMATION & SUMMARY

Company McGown Drilling Lease Giblin Well No. 3

Location

Section 35 Twp. 13S Rge. 25E County Johnson State Kansas

Elevation, Feet	
Name of Sand	Squirrel
Top of Core	365.0
Bottom of Core	374.0
Top of Sand	365.5
Bottom of Sand	374.0
Total Feet of Permeable Sand	8.5
Total Feet of Floodable Sand	2.0

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 10	4.5	4.5
30 - 50	3.2	7.7
120 - 130	0.8	8.5

Average Permeability Millidarcys	27.8
Average Percent Porosity	16.4
Average Percent Oil Saturation	36.3
Average Percent Water Saturation	52.4
Average Oil Content, Bbls./A. Ft.	467.
Total Oil Content, Bbls./Acre	3,968.
Average Percent Oil Recovery by Laboratory Flooding Tests	9.8
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	141.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	282.
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.

FORMATION CORED

The detailed log of the formation cored is as follows:

Depth Interval, Feet	Description
365.0 - 365.5	Gray sandy shale.
365.5 - 366.0	Brown shaly sandstone.
366.0 - 368.8	Brown slightly calcareous sandstone.
368.8 - 374.0	Light brown and gray laminated sandstone and shale.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 282 barrels of oil per acre was obtained from 2.0 feet of sand. The weighted average percent oil saturation was reduced from 48.4 to 38.6, or represents an average recovery of 9.8 percent. The weighted average effective permeability of the samples is 2.46 millidarcys, while the average initial fluid production pressure is 37.5 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 9 samples tested, 2 produced water and oil. This indicates that approximately 22 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 540 barrels of oil per acre. This is an average recovery of 272 barrels per 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	1.03
Reservoir water saturation, percent, estimated	25.0
Average porosity, percent	18.6
Oil saturation after flooding, percent	38.6
Performance factor, percent, estimated	55.0
Net floodable sand, feet	2.0

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Mc Gown Drilling Lease Giblin Well No. 3

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	365.7	18.6	44	48	92	635	3.8	0.5	0.5	318	1.90
2	366.4	20.3	35	59	94	551	31.	1.0	1.5	551	31.00
3	367.6	17.4	46	27	73	621	46.	1.0	2.5	621	46.00
4	368.5	18.6	49	33	82	707	123.	0.8	3.3	566	98.40
5	369.5	18.3	48	39	87	682	39.	1.2	4.5	818	46.80
6	370.7	10.1	46	40	86	360	4.2	1.0	5.5	360	4.20
7	371.3	15.1	22	72	94	258	1.7	1.0	6.5	258	1.70
8	372.7	15.3	13	80	93	154	5.4	1.0	7.5	154	5.40
9	373.3	14.8	28	70	98	322	1.1	1.0	8.5	322	1.10

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company McGown Drilling Lease Giblin Well No. 3

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
365.5 - 370.0	4.5	49.8	224.10
370.0 - 374.0	4.0	3.1	12.40
365.5 - 374.0	8.5	27.8	236.50

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
365.5 - 370.0	4.5	18.6	44.4	40.7	639	2,874
370.0 - 374.0	4.0	13.8	27.3	65.5	274	1,094
365.5 - 374.0	8.5	16.4	36.3	52.4	467	3,968

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company McGown Drilling Lease Giblin Well No. 3

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	365.7	18.1	45	632	0	0	45	48	632	0	Imp.	-
2	366.4	20.1	35	546	0	0	35	60	546	0	Imp.	-
3	367.6	17.8	45	621	0	0	45	29	621	0	Imp.	-
4	368.5	18.7	49	711	11	160	38	60	551	96	1.95	35
5	369.5	18.4	48	685	9	128	39	51	557	12	0.75	40
6	370.7	10.2	46	364	0	0	46	42	364	0	Imp.	-
7	371.3	14.7	23	262	0	0	23	72	262	0	Imp.	-
8	372.7	15.1	14	164	0	0	14	80	164	0	Imp.	-
9	373.3	15.2	27	318	0	0	27	71	318	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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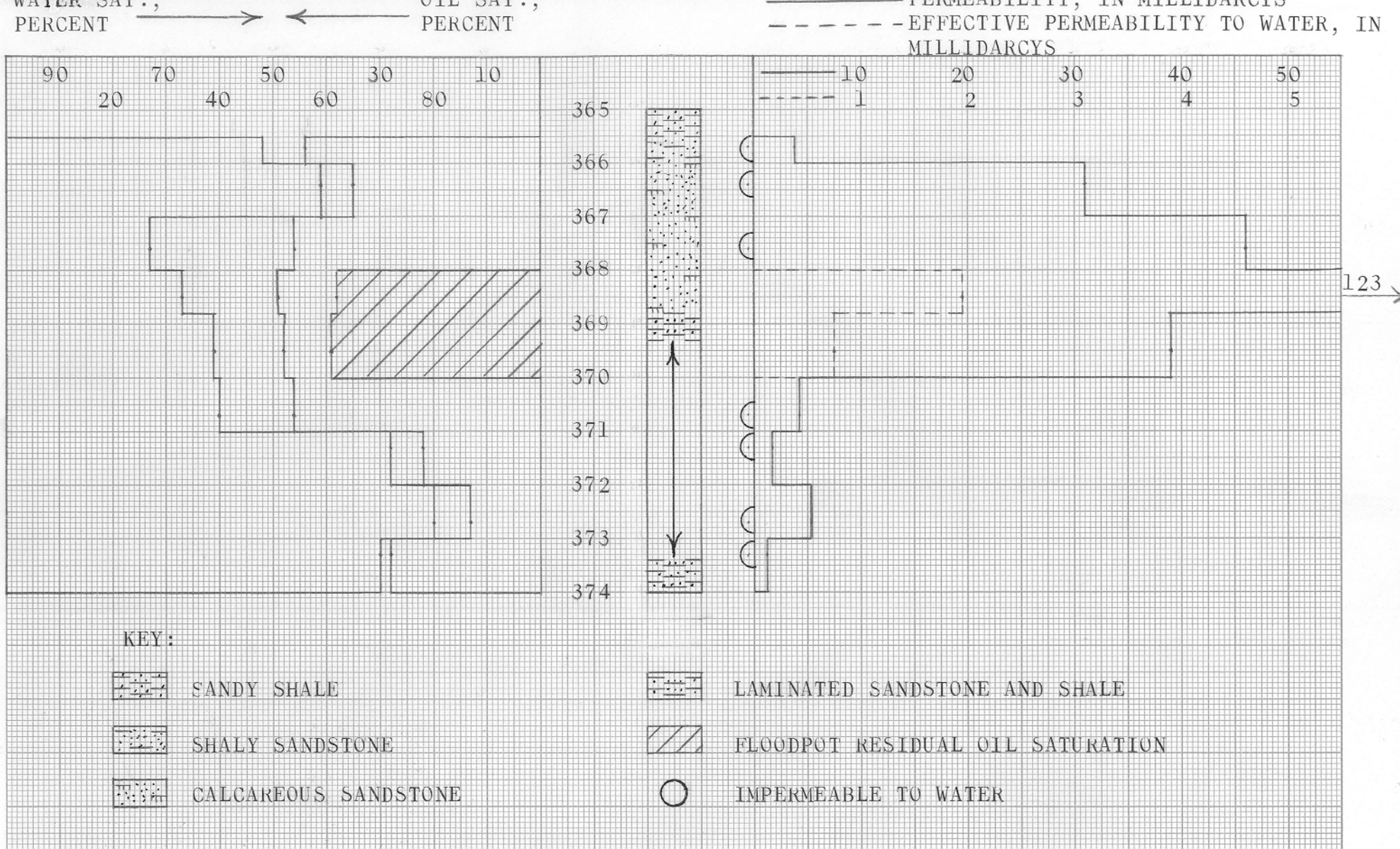
SUMMARY OF LABORATORY FLOODING TESTS

TABLE V

Company McGown Drilling Lease Giblin Well No. 3

Depth Interval, Feet	365.5 - 370.0
Feet of Core Analyzed	2.0
Average Percent Porosity	18.6
Average Percent Original Oil Saturation	48.4
Average Percent Oil Recovery	9.8
Average Percent Residual Oil Saturation	38.6
Average Percent Residual Water Saturation	54.6
Average Percent Total Residual Fluid Saturation	93.2
Average Original Oil Content, Bbls./A. Ft.	696.
Average Oil Recovery, Bbls./A. Ft.	141.
Average Residual Oil Content, Bbls./A. Ft.	555.
Total Original Oil Content, Bbls./Acre	1,391.
Total Oil Recovery, Bbls./Acre	282.
Total Residual Oil Content, Bbls./Acre	1,109.
Average Effective Permeability, Millidarcys	2.46
Average Initial Fluid Production Pressure, p.s.i.	37.5

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
90 70 50 30 10
20 40 60 80
10 20 30 40 50
1 2 3 4 5
365
366
367
368
369
370
371
372
373
374
123
KEY:
SANDY SHALE
SHALY SANDSTONE
CALCAREOUS SANDSTONE
LAMINATED SANDSTONE AND SHALE
FLOODPOT RESIDUAL OIL SATURATION
IMPERMEABLE TO WATER

Mc GOWN DRILLING

GIBLIN LEASE WELL NO. 3

JOHNSON 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
365.5 - 370.0	4.5	18.6	44.4	40.7	49.8	
370.0 - 374.0	4.0	13.8	27.3	65.5	3.1	
365.5 - 374.0	8.5	16.4	36.3	52.4	27.8	540 (PRIMARY AND WATERFLOODING)

OILFIELD RESEARCH LABORATORIES
CHANUTE, KANSAS
APRIL, 1981

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