



OILFIELD RESEARCH LABORATORIES

P.O. BOX 647 - 536 N. HIGHLAND - CHANUTE, KANSAS 66720 - PHONE (316) 431-2650

November 23, 1987

Gerald Williams Production Company
9401 Indian Creek Parkway
40 Corporate Woods
P. O. Box 25830
Overland Park, KS 66225

Dear Sir:

Enclosed herewith is the report of the analysis of the rotary core taken from the Hicks Lease, Well No. 8, located in Johnson County, Kansas and submitted to our laboratory on November 4, 1987.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Alan M. Dunning

Alan M. Dunning

AMD/rmc

5 c to Overland Park, KS

RECEIVED
STATE CORPORATION COMMISSION

JUN - 6 1988

CONSERVATION DIVISION
Wichita, Kansas

JUN 20 1988
KANSAS GEOLOGICAL SURVEY
WICHITA BRANCH

Oilfield Research Laboratories
GENERAL INFORMATION & SUMMARY

Company Gerald Williams Production Co. Lease Hicks Well No. 8

Location _____

Section 28 Twp. 14S Rge. 22E County Johnson State Kansas

Elevation, Feet

Name of Sand.....

BARTLESVILLE

Top of Core

834.0

Bottom of Core

853.0

Top of Sand

834.0

Bottom of Sand

841.8

Total Feet of Permeable Sand (Tested)

6.5

Total Feet of Floodable Sand

5.3

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 1	0.0	0.0
5 - 15	1.8	1.8
110 - 130	2.7	4.5
260 - 320	2.0	6.5

Average Permeability Millidarcys

140.7

Average Percent Porosity

23.5

Average Percent Oil Saturation

42.8

Average Percent Water Saturation.....

37.3

Average Oil Content, Bbls./A. Ft.

779.

Total Oil Content, Bbls./Acre.....

6,075.

Average Percent Oil Recovery by Laboratory Flooding Tests.....

13.3

Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.

246.

Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre

1,302.

Total Calculated Oil Recovery, Bbls./Acre.....

See "Calculated Recovery"
Section

The core was sampled by a representative of Oilfield Research Laboratories.

FORMATION CORED

The detailed log of the formation cored is as follows:

<u>Depth Interval, Feet</u>	<u>Description</u>
834.0 - 835.0	Sandstone, dark brown, with widely scattered shale partings.
835.0 - 836.0	Sandstone, dark brown.
836.0 - 838.0	Sandstone, dark brown, with scattered shale partings.
838.0 - 838.7	Sandstone, brown, with scattered shale partings.
838.7 - 840.0	Sandstone, dark brown, with scattered shale partings.
840.0 - 841.0	Sandstone, light brown, with scattered shale partings.
841.0 - 841.8	Sandstone, brown, slightly shaly, with scattered shale partings.
841.8 - 844.0	Shale and sandstone, gray and light gray, laminated.
844.0	
841.8 - 846.2	Shale, gray, with widely scattered light gray sandstone partings.
846.2 - 853.0	Shale, gray, silty.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 1,302 barrels of oil per acre was obtained from 5.3 feet of sand. The weighted average percent oil saturation was

reduced from 48.5 to 35.2, or represents an average recovery of 13.3 percent. The weighted average effective permeability of the samples is 8.14 millidarcys while the average initial fluid production pressure is 14.0 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 8 samples tested, 5 produced water and oil, and 2 produced water only. This indicates that approximately 63 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 1,770 barrels of oil per acre. This is an average recovery of 334 barrels per acre foot from 5.3 feet of floodable sand analyzed in this core.

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

Original formation volume factor, estimated	1.04
Reservoir water saturation, percent, estimated	25.0
Average porosity, percent	23.3
Oil saturation after flooding, percent	35.2
Performance factor, percent, estimated	50.0
Net floodable sand, feet	5.3

RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Gerald Williams Production Company Lease Hicks Well No. 8

[illegible]

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company	Gerald Williams Production Company		Lease	Hicks	Well No.		8
Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.				
834.0 - 841.8	6.5	140.7	914.50				
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	
834.0 - 841.8	7.8	23.5	42.8	37.3	779	6,075	

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company		Gerald Williams Production Company				Lease		Hicks		Well No.	
										8	
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	834.5	18.5	48	689	10	144	38	57	318	10.81	15
2	835.5	27.6	55	1178	19	407	36	56	248	13.10	10
3	836.6	23.0	45	803	16	285	29	61	246	11.77	10
4	837.4	19.2	48	715	11	164	37	50	180	1.93	20
5	838.4	26.4	30	614	0	0	30	67	508	5.06	10
6	839.5	27.2	47	992	11	232	36	56	319	4.26	15
7	840.5	23.5	25	456	0	0	25	59	6	0.17	40
8	841.4	20.4	38	601	0	0	38	43	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	Gerald Williams Production Company	Lease	Hicks	Well No.	8
Depth Interval, Feet	834.0 - 841.8				
Feet of Core Analyzed	5.3				
Average Percent Porosity	23.3				
Average Percent Original Oil Saturation	48.5				
Average Percent Oil Recovery	13.3				
Average Percent Residual Oil Saturation	35.2				
Average Percent Residual Water Saturation	56.0				
Average Percent Total Residual Fluid Saturation	91.2				
Average Original Oil Content, Bbls./A. Ft.	882.				
Average Oil Recovery, Bbls./A. Ft.	246.				
Average Residual Oil Content, Bbls./A. Ft.	636.				
Total Original Oil Content, Bbls./Acre	4,675.				
Total Oil Recovery, Bbls./Acre	1,302.				
Total Residual Oil Content, Bbls./Acre	3,373.				
Average Effective Permeability, Millidarcys	8.14				
Average Initial Fluid Production Pressure, p.s.i.	14.0				

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

OILFIELD RESEARCH LABORATORIES

GERALD WILLIAMS PRODUCTION COMPANY

LEASE <u>Hicks</u>	WELL NO. <u>8</u>	DATE RECEIVED <u>11-4-87</u>
FIELD _____		ELEVATION _____
COUNTY <u>Johnson</u>	STATE <u>Kansas</u>	FORMATION <u>Bartlesville</u>
LOCATION <u>E₄, NW₄</u>		DRILLING FLUID _____
<u>Sec. 28, T14S, R22E</u>		TYPE OF CORE <u>Rotary</u>
INTERVAL CORED <u>834.0' - 853.0'</u>		INTERVAL RECEIVED <u>834.0' - 853.0'</u>

HS-11 17000

