

OILFIELD RESEARCH LABORATORIES

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

November 4, 1980

Worldwide Oil Corporation
% Gobal Oil
116 Harbor Drive #2
Key Biscayne, Florida 33149

Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Hayes Lease, Well No. 3, located in Miami County, Kansas and submitted to our laboratory on August 14, 1980.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES


Sanford A. Michel

SAM/mkf

4 c to Key Biscayne, Florida
1 c to Rantoul, Kansas

- REGISTERED ENGINEERS -

CORE ANALYSIS - WATER ANALYSIS - REPRESSURING ENGINEERING - SURVEYING & MAPPING - PROPERTY EVALUATION & OPERATION

Oilfield Research Laboratories

GENERAL INFORMATION & SUMMARY

Company Worldwide Oil Corporation Lease Hayes Well No. 3

Location NW $\frac{1}{4}$ - NW $\frac{1}{4}$

Section 29 Twp. 17S Rge. 22E County Miami State Kansas

Elevation, Feet - - - - -

Name of Sand - - - - - Peru

Top of Core - - - - - 438.0

Bottom of Core - - - - - 456.3

Top of Sand - - - - - 438.5

Bottom of Sand - - - - - 444.1

Total Feet of Permeable Sand - - - - - 5.6

Total Feet of Floodable Sand - - - - - 4.7

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 5	0.9	0.9
100 - 200	0.7	1.6
200 - 300	3.0	4.6
500 - 600	1.0	5.6

Average Permeability Millidarcys - - - - - 263.1

Average Percent Porosity - - - - - 17.7

Average Percent Oil Saturation - - - - - 42.5

Average Percent Water Saturation - - - - - 27.2

Average Oil Content, Bbls./A. Ft. - - - - - 598.

Total Oil Content, Bbls./Acre - - - - - 3346.

Average Percent Oil Recovery by Laboratory Flooding Tests - - - - - 15.4

Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft. - - - - - 234.

Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre - - - - - 1100.

Total Calculated Oil Recovery, Bbls./Acre - - - - - See "Calculated Recovery" Section

-2-

The core was sampled by a representative of Oilfield Research Laboratories. Fresh water mud was used as a drilling fluid. The core was reported to be from a virgin area.

FORMATION CORED

The detailed log of the formation cored is as follows:

<u>Depth Interval, Feet</u>	<u>Description</u>
438.0 - 438.5	Gray sandy shale.
438.5 - 443.2	Dark brown slightly calcareous sandstone.
443.2 - 444.1	Light brown slightly calcareous shale and sandstone.
444.1 - 454.0	Gray shale.
454.0 - 456.3	Pawnee Limestone.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 1100 barrels of oil per acre was obtained from 4.7 feet of sand. The weighted average percent oil saturation was reduced from 44.7 to 29.3, or represents an average recovery of 15.4 percent. The weighted average effective permeability of the samples is 19.16 millidarcys, while the average initial fluid production pressure is 21.0 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 6 samples tested, 5 produced water and oil. This indicates that approximately 83 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 1920 barrels of oil per acre. This is an average recovery of 409 barrels per acre foot from 4.7 feet of floodable sand analyzed in this core.

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

Original formation volume (estimated)	1.03
Reservoir water saturation, percent, (estimated)	15.0
Average porosity, percent	19.8
Oil saturation after flooding, percent	29.3
Performance factor, percent (estimated)	50.0
Net floodable sand, feet	4.7

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Worldwide Oil Corp. Lease Hayes 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	438.7	16.6	33	52	85	425	113.	0.7	0.7	280	79.10
2	439.5	18.6	51	16	67	736	266.	1.0	1.7	736	266.00
3	440.5	23.8	49	16	65	905	566.	1.0	2.7	905	566.00
4	441.5	23.9	39	26	65	723	288.	1.0	3.7	723	288.00
5	442.5	14.8	48	22	70	551	273.	1.0	4.7	551	273.00
6	443.5	7.0	31	40	71	168	1.5	0.9	5.6	151	1.35

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company		Worldwide Oil Corp.		Lease		Hayes		Well No.		3	
Depth Interval, Feet	Feet of Core Analyzed	Average Percent Porosity	Average Percent Oil Saturation	Average Percent Water Saturation	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.	Total Oil Content Bbbl./Acre				
438.5 - 444.1	5.6	17.7	42.5	27.2	263.1	1,473.45	3,346				

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company Worldwide Oil Corp. Lease Hayes 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			
1	438.7	16.4	33	420	6	76	27	67	397	6.90	25
2	439.5	18.7	51	740	21	305	30	64	308	22.06	20
3	440.5	24.0	49	912	18	335	31	53	268	32.09	20
4	441.5	24.1	39	729	10	187	29	57	250	20.49	20
5	442.5	14.9	48	555	19	220	29	66	223	10.59	20
6	443.5	7.2	31	173	0	0	31	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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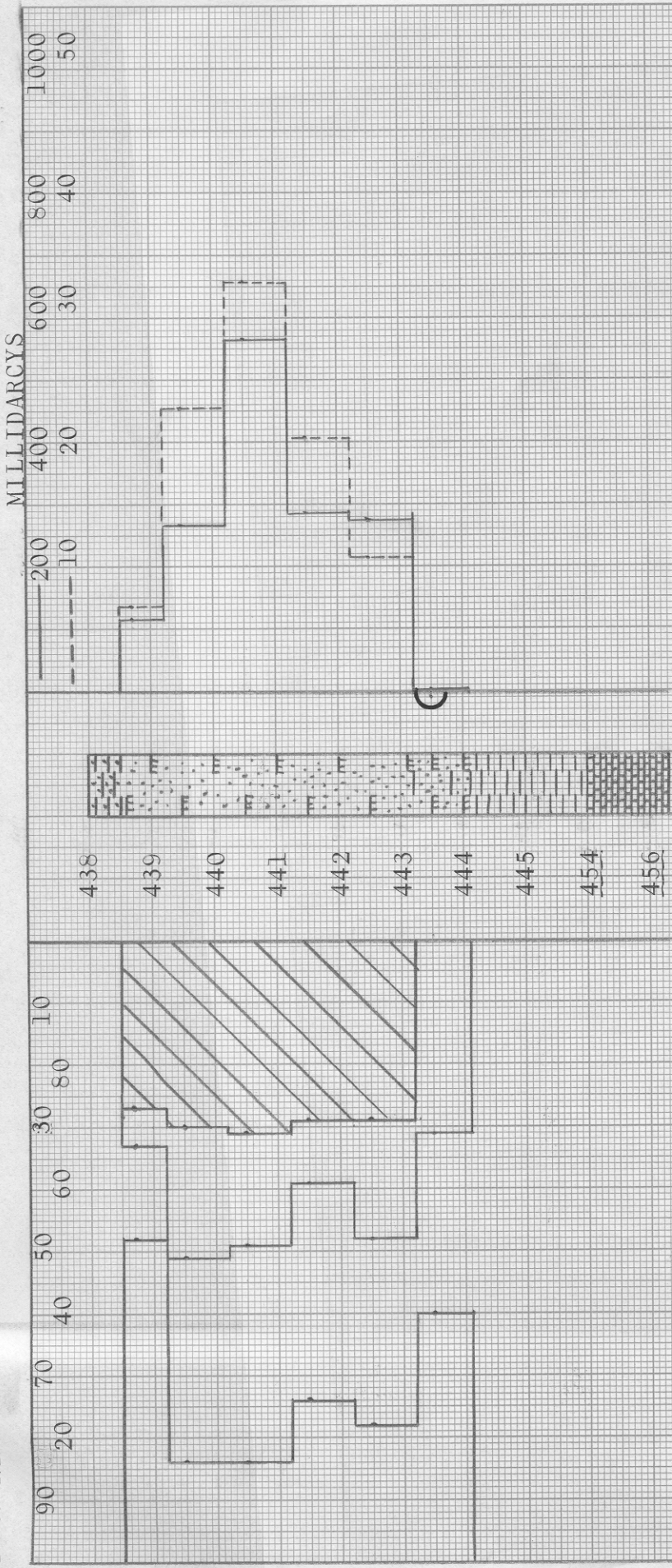
SUMMARY OF LABORATORY FLOODING TESTS

TABLE V

Company	Worldwide Oil Corp.	Lease	Hayes	Well No.	3
Depth Interval, Feet	438.5 - 444.1				
Feet of Core Analyzed	4.7				
Average Percent Porosity	19.8				
Average Percent Original Oil Saturation	44.7				
Average Percent Oil Recovery	15.4				
Average Percent Residual Oil Saturation	29.3				
Average Percent Residual Water Saturation	61.0				
Average Percent Total Residual Fluid Saturation	90.3				
Average Original Oil Content, Bbls./A. Ft.	687.				
Average Oil Recovery, Bbls./A. Ft.	234.				
Average Residual Oil Content, Bbls./A. Ft.	453.				
Total Original Oil Content, Bbls./Acre	3230.				
Total Oil Recovery, Bbls./Acre	1100.				
Total Residual Oil Content, Bbls./Acre	2130.				
Average Effective Permeability, Millidarcys	16.				
Average Initial Fluid Production Pressure, p.s.i.	21.0				

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



KEY:

- SANDY SHALE
- CALCAREOUS SANDSTONE
- SHALE
- SHALY CALCAREOUS SANDSTONE
- LIMESTONE
- FLOODPOT RESIDUAL OIL SATURATION
- IMPERMEABLE TO WATER

WORLD WIDE OIL CORP.

HAYES LEASE
MIAMI COUNTY, KANSAS
WELL NO. 3

WORLD WIDE OIL CORP.

HAYES LEASE

WELL NO. 3

MIAMI COUNTY, KANSAS

DEPTH INTERVAL, FEET	FEET OF CORE ANALYZED	AVERAGE		AVG. OIL		AVG. WATER		AVERAGE		CALCULATED
		PERCENT	POROSITY	SATURATION	PERCENT	SATURATION	PERCENT	PERMEABILITY, MILLIDARCS	OIL RECOVERY BBS. / ACRE	
438.5 - 444.1	5.6	17.7		42.5	27.2			263.1		1920

(PRIMARY AND
WATERFLOODING)

OILFIELD RESEARCH LABORATORIES
CHANUTE, KANSAS
NOVEMBER, 1980