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

October 18, 1982

Brandes Oil Company
c/o Wilkins & Wilkins
507 East Main Street
Chanute, Kansas 66720

Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the VanSickle Lease, Well No. 33 WSW, located in Neosho County, Kansas and submitted to our laboratory on October 13, 1982.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Sanford A. Michel

SAM/rmc

5 c to Chanute, Kansas

Oilfield Research Laboratories

GENERAL INFORMATION & SUMMARY

Company Brandes Oil Company Lease VanSickle Well No. 33 WSW

Location

Section 22 Twp. 28S Rge. 19E County Neosho State Kansas

Elevation, Feet	
Name of Sand	Lower Cattleman
Top of Core	596.0
Bottom of Core	615.1
Top of Sand	596.5
Bottom of Sand	605.8
Total Feet of Permeable Sand	9.3
Total Feet of Floodable Sand	6.9

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 13	3.0	3.0
27 - 30	2.1	5.1
49 - 85	4.2	9.3

Average Permeability Millidarcys	36.5
Average Percent Porosity	19.2
Average Percent Oil Saturation	47.8
Average Percent Water Saturation	27.0
Average Oil Content, Bbls./A. Ft.	714.
Total Oil Content, Bbls./Acre	6,644.
Average Percent Oil Recovery by Laboratory Flooding Tests	11.5
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	181.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	1,251.
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. Air and water mist were used as a drilling fluid. The core was reported to be from a non-virgin area.

FORMATION CORED

The detailed log of the formation cored is as follows:

Depth Interval, Feet	Description
596.0 - 596.5	Gray shale.
596.5 - 597.3	Grayish brown shaly sandstone.
597.3 - 597.9	Brown sandstone with scattered fine shale partings.
597.9 - 604.2	Dark brown sandstone.
604.2 - 605.8	Grayish brown shaly sandstone with scattered shale partings.
605.8 - 615.1	Gray shale.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 1,251 barrels of oil per acre was obtained from 6.9 feet of sand. The weighted average percent oil saturation was reduced from 48.9 to 37.4, or represents an average recovery of 11.5 percent. The weighted average effective permeability of the samples is 1.42 millidarcys, while the average initial fluid production pressur is 32.1 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 10 samples tested, 7 produced water and oil. This indicates that approximately 70 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 2,390 barrels of oil per acre. This is an average recovery of 347 barrels per acre foot from 6.9 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	15.0
Average porosity, percent	20.2
Oil saturation after flooding, percent	37.4
Performance factor, percent, estimated	50.0
Net floodable sand, feet	6.9

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Brandes Oil Company **Lease** VanSickle **Well No.** 33 WSW

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	596.6	17.3	34	39	73	456	3.3	0.8	0.8	365	2.64
2	597.6	18.7	50	19	69	725	12.	0.6	1.4	435	7.20
3	598.5	19.9	60	21	81	926	28.	1.1	2.5	1,019	30.80
4	599.5	21.4	50	20	70	830	62.	1.0	3.5	830	62.00
5	600.4	21.4	45	24	69	747	84.	1.0	4.5	747	84.00
6	601.5	19.2	44	20	64	655	49.	1.0	5.5	655	49.00
7	602.4	19.7	43	32	75	657	27.	1.0	6.5	657	27.00
8	603.4	20.3	50	21	71	787	56.	1.2	7.7	944	67.20
9	604.4	15.8	50	44	94	613	8.0	1.0	8.7	613	8.00
10	605.6	16.6	49	33	82	631	2.2	0.6	9.3	379	1.32

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company Brandes Oil Company Lease VanSickle Well No. 33 WSW

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
596.5 - 605.8	9.3	36.5	339.16

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
596.5 - 605.8	9.3	19.2	47.8	27.0	714	6,644

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company Brandes Oil Company Lease VanSickle Well No. 33 WSW

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	596.6	16.8	35	456	0	0	35	40	456	0	Imp.	-
2	597.6	18.8	50	729	13	190	37	44	539	9	0.15	45
3	598.5	20.0	60	931	22	341	38	50	590	39	0.67	30
4	599.5	21.2	50	822	15	247	35	55	575	62	1.04	30
5	600.4	21.5	45	751	10	167	35	56	584	230	4.87	30
6	601.5	19.3	44	659	7	105	37	55	554	79	1.49	30
7	602.4	19.6	43	654	6	91	37	55	563	44	0.67	30
8	603.4	20.4	50	791	8	127	42	48	664	45	0.74	30
9	604.4	15.3	51	605	0	0	51	44	605	0	Imp.	-
10	605.6	16.9	48	629	0	0	48	35	629	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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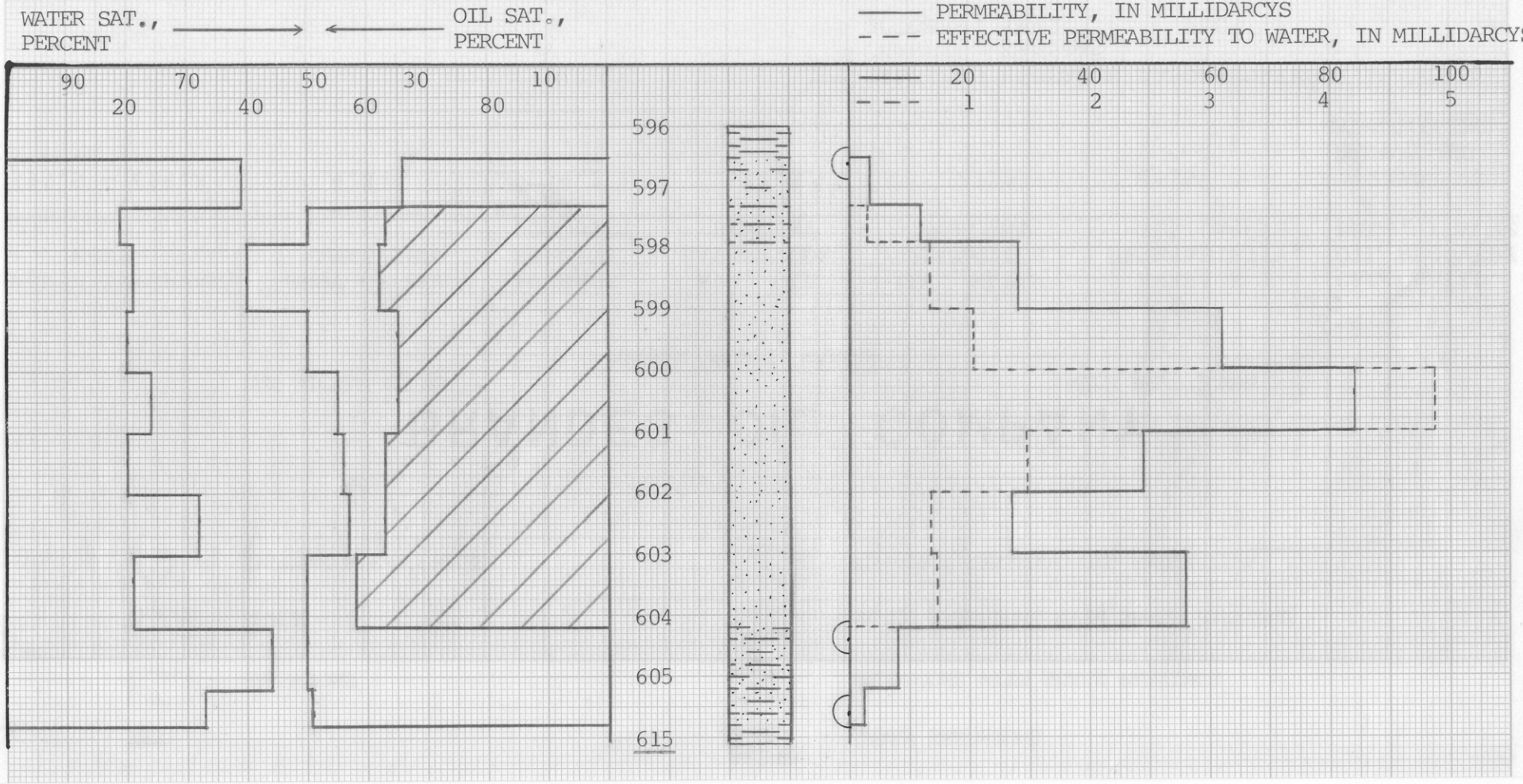
SUMMARY OF LABORATORY FLOODING TESTS

TABLE V

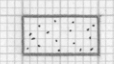
Company Brandes Oil Company Lease VanSickle Well No. 33 WSW

Depth Interval, Feet	596.5 - 605.8
Feet of Core Analyzed	6.9
Average Percent Porosity	20.2
Average Percent Original Oil Saturation	48.9
Average Percent Oil Recovery	11.5
Average Percent Residual Oil Saturation	37.4
Average Percent Residual Water Saturation	52.2
Average Percent Total Residual Fluid Saturation	89.6
Average Original Oil Content, Bbls./A. Ft.	767.
Average Oil Recovery, Bbls./A. Ft.	181.
Average Residual Oil Content, Bbls./A. Ft.	586.
Total Original Oil Content, Bbls./Acre	5,296.
Total Oil Recovery, Bbls./Acre	1,251.
Total Residual Oil Content, Bbls./Acre	4,045.
Average Effective Permeability, Millidarcys	1.42
Average Initial Fluid Production Pressure, p.s.i.	32.1

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


WATER SAT., PERCENT
OIL SAT., PERCENT
90
70
50
30
10
20
40
60
80
PERMEABILITY, IN MILLIDARCYS
EFFECTIVE PERMEABILITY TO WATER, IN MILLIDARCYS
20
40
60
80
100
1
2
3
4
5
596
597
598
599
600
601
602
603
604
605
615

KEY:


SANDSTONE


SHALE


IMPERMEABLE TO WATER


SHALY SANDSTONE


SANDSTONE WITH SHALE PARTINGS


SHALY SANDSTONE WITH SHALE PARTINGS


FLOODPOT RESIDUAL OIL SATURATION

BRANDES OIL COMPANY

VAN SICKLE LEASE WELL NO. 33 WSW

NEOSHO 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
596.5 - 605.8	9.3	19.2	47.8	27.0	36.5	2390 (PRIMARY AND WATERFLOODING)

OILFIELD RESEARCH LABORATORIES
CHANUTE, KANSAS
OCTOBER, 1982 PDC