OILFIELD RESEARCH LABORATORIES

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

October 17, 1980

Brandes Oil Company
507 East Main
Chanute, Kansas 66720

Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Van Sickle Lease, Well No. 28, Neosho County, Kansas, and submitted to our laboratory on July 24, 1980.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Sanford A. Michel

SAM/km

5 c to Chanute, Kansas

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GENERAL INFORMATION & SUMMARY

Company Brandes Oil Company Lease Van Sickle Well No. 28

Location

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

Elevation, Feet	-
Name of Sand	Bartlesville
Top of Core	586.0
Bottom of Core	601.2
Top of Sand (Analyzed)	586.0
Bottom of Sand	598.3
Total Feet of Permeable Sand	11.3
Total Feet of Floodable Sand	5.7

Distribution of Permeable Sand:

Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 1	1.0	1.0
4 - 10	3.6	4.6
15 - 45	6.7	11.3

Average Permeability Millidarcys	20.2
Average Percent Porosity	15.0
Average Percent Oil Saturation	47.8
Average Percent Water Saturation	41.9
Average Oil Content, Bbls./A. Ft.	600.
Total Oil Content, Bbls./Acre	7,389.
Average Percent Oil Recovery by Laboratory Flooding Tests	5.8
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	76.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	431.
Total Calculated Oil Recovery, Bbls./Acre	See "Calculated Recovery" Section

Fresh water mud was used as the circulating fluid while taking this core. The core was sampled and the samples sealed in plastic bags by a representative of the client. The well was reported to have been drilled in semi-virgin territory.

FORMATION CORED

The detailed log of the formation cored is as follows:

Depth Interval, Feet	Description
586.0 - 588.0	Grayish light brown very shaly sandstone.
588.0 - 594.7	Brown sandstone.
594.7 - 595.7	Brown shaly sandstone.
595.7 - 598.3	Brown slightly carbonaceous slightly shaly sandstone.
598.3 - 601.2	Gray sandy shale.

LABORATORY FLOODING TESTS

The middle portion of the sand in this core responded to laboratory flooding tests, as a total recovery of 431 barrels of oil per acre was obtained from 5.7 feet of sand. The weighted average percent oil saturation was reduced from 52.0 to 46.2, or represents an average recovery of 5.8 percent. The weighted average effective permeability of the samples is 0.47 millidarcys.

CALCULATED RECOVERY

A study of the results of the laboratory tests indicate that efficient primary and waterflooding operations in the vicinity of this well should recover approximately 1,110 barrels of oil per acre. This is an average recovery of 195 barrels per acre foot from the 5.7 feet of floodable sand analyzed in this core.

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

Original formation volume factor (estimated)	1.02
Reservoir water saturation, percent, (estimated)	25.0
Average porosity, percent	16.7
Oil saturation after flooding, percent	46.2
Performance factor, percent (estimated)	55.0
Net floodable pay sand, feet	5.7

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Brandes Oil Company Lease Van Sickle Well No. 28

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	586.7	8.1	7	80	87	44	Imp.	1.0	1.0	44	0.00
2	587.5	8.7	10	81	91	67	0.46	1.0	2.0	67	0.46
3	588.7	14.3	46	44	90	510	31.	1.0	3.0	510	31.00
4	589.6	17.2	47	32	79	627	42.	1.0	4.0	627	42.00
5	590.4	16.3	47	35	82	594	26.	1.0	5.0	594	26.00
6	591.5	15.7	50	36	86	609	29.	1.0	6.0	609	29.00
7	592.3	17.0	58	32	90	765	31.	1.0	7.0	765	31.00
8	593.5	16.2	53	38	91	666	32.	1.0	8.0	666	32.00
9	594.5	17.0	60	29	89	791	15.	0.7	8.7	554	10.50
10	595.5	14.7	47	44	91	536	4.6	1.0	9.7	536	4.60
11	596.6	17.3	67	30	97	899	9.2	1.3	11.0	1168	11.96
12	597.5	17.2	72	26	98	961	8.3	1.3	12.3	1249	10.79

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company Brandes Oil Company Lease Van Sickle Well No. 28

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
586.0 - 598.3	11.3	20.2	229.31

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
586.0 - 598.3	12.3	15.0	47.8	41.9	600	7,389

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company Brandes Oil Company Lease Van Sickle Well No. 28

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	586.7	8.0	9	56	0	0	9	83	56	0	Imp.	-
2	587.5	8.8	9	61	0	0	9	87	61	0	Imp.	-
3	588.7	14.0	47	510	0	0	47	48	510	0	Imp.	-
4	589.6	17.5	47	638	6	81	41	56	557	41	0.75	30
5	590.4	16.7	47	609	3	39	44	54	570	64	1.20	35
6	591.5	16.0	50	621	7	87	43	53	534	16	0.30	40
7	592.3	16.8	58	756	9	117	49	44	639	8	0.15	50
8	593.5	16.0	53	658	4	50	49	45	608	8	0.15	50
9	594.5	17.5	60	815	6	81	54	37	734	8	0.15	50
10	595.5	14.6	46	521	0	0	46	48	521	0	Imp.	-
11	596.6	17.4	65	877	0	0	65	34	877	0	Imp.	-
12	597.5	17.4	72	972	0	0	72	28	972	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 Van Sickle Well No. 28

Depth Interval, Feet	586.0 - 598.3
Feet of Core Analyzed	5.7
Average Percent Porosity	16.7
Average Percent Original Oil Saturation	52.0
Average Percent Oil Recovery	5.8
Average Percent Residual Oil Saturation	46.2
Average Percent Residual Water Saturation	48.7
Average Percent Total Residual Fluid Saturation	94.9
Average Original Oil Content, Bbls./A. Ft.	677.
Average Oil Recovery, Bbls./A. Ft.	76.
Average Residual Oil Content, Bbls./A. Ft.	601.
Total Original Oil Content, Bbls./Acre	3,853.
Total Oil Recovery, Bbls./Acre	431.
Total Residual Oil Content, Bbls./Acre	3,422.
Average Effective Permeability, Millidarcys	0.47
Average Initial Fluid Production Pressure, p.s.i.	

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