

JOHN DAVIS

CORE ANALYSIS REPORT

UMBARGER LEASE

WELL NO. K-13

WILSON COUNTY, KANSAS



OILFIELD RESEARCH LABORATORIES

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

November 27, 1978

John Davis
212 East Locust
Independence, Kansas 67301

Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Umbarger Lease, Well No. K-13, Wilson County, Kansas, and submitted to our laboratory on November 13, 1978.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Benjamin R. Pearman
Benjamin R. Pearman

BRP:km
5 c to Independence, Kansas



Salt water mud was used as the circulating fluid while taking this core. The well was reportedly drilled in virgin territory. The core was sampled and the samples were sealed in plastic bags by a representative of the client.

FORMATION CORED

The detailed log of the formation cored is as follows:

<u>Depth Interval, Feet</u>	<u>Description</u>
660.0 - 666.0	Brown slightly shaly sandstone.
666.0 - 668.7	Dark slightly carbonaceous sandstone.
668.7 - 669.8	Gray carbonaceous sandstone.
669.8 - 672.2	Brown laminated shaly slightly carbonaceous sandstone.
672.2 - 674.0	Light brown laminated shaly sandstone.

SUMMARY

Based on the results of the laboratory data, it appears that efficient primary and waterflooding operations in the vicinity of this well should recover approximately 4,060 barrels of oil per acre. This is an average recovery of 333 barrels per acre foot from the 12.2 feet of floodable pay sand analyzed in this core.

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

Original formation volume factor	1.04
Reservoir water saturation, percent	15.0
Average porosity, percent	20.5
Oil saturation after flooding, percent	39.6

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Performance factor, percent	50.0
Net floodable pay sand, feet	12.2

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company John Davis Lease Umberger Well No. K-13

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	660.4	21.4	50	19	69	830	22.	1.0	1.0	830	22.00
2	661.5	21.4	49	22	71	814	4.6	1.0	2.0	814	4.60
3	662.5	22.0	40	29	69	683	82.	1.0	3.0	683	82.00
4	663.5	21.3	42	27	69	694	121.	1.0	4.0	694	121.00
5	664.5	23.2	67	21	88	1,206	94.	1.0	5.0	1206	94.00
6	665.5	21.9	37	26	63	629	125.	1.0	6.0	629	125.00
7	666.5	22.3	42	17	59	727	96.	1.0	7.0	727	96.00
8	667.5	17.1	47	21	68	625	95.	1.0	8.0	625	95.00
9	668.5	21.9	45	24	69	765	49.	0.7	8.7	535	34.30
10	669.5	20.2	46	19	65	721	7.7	1.1	9.8	783	8.47
11	670.5	14.5	53	38	91	596	41.	1.2	11.0	715	49.20
12	671.5	21.2	44	23	67	724	45.	1.2	12.2	868	54.00
13	672.5	15.8	35	50	85	429	5.3	0.8	13.0	343	4.24
14	673.5	16.4	34	48	82	433	7.6	1.0	14.0	433	7.60

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company John Davis Lease Umbarger Well No. K-13

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
660.0 - 666.0	6.0	74.6	448.60
666.0 - 674.0	8.0	43.6	348.81
660.0 - 674.0	14.0	57.0	797.41

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
660.0 - 666.0	6.0	21.9	47.5	24.0	809	4,856
666.0 - 674.0	8.0	18.6	43.6	29.6	629	5,029
660.0 - 674.0	14.0	20.0	45.3	27.2	706	9,885

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company John Davis Lease Umberger Well No. K-13

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	660.4	21.7	50	841	15	252	35	59	589	206	7.82	20
2	661.5	21.7	49	824	16	269	33	55	555	25	0.88	25
3	662.5	21.6	40	669	3	50	37	49	619	46	1.17	20
4	663.5	21.1	42	686	2	32	40	48	654	69	2.27	20
5	664.5	22.8	67	1,183	28	494	39	52	689	234	7.84	20
6	665.5	21.8	37	625	2	34	35	56	591	294	12.38	20
7	666.5	22.0	42	716	2	35	40	50	681	291	10.53	20
8	667.5	17.6	47	641	8	109	39	47	532	59	1.98	20
9	668.5	21.6	45	753	2	34	43	50	719	155	5.57	20
10	669.5	19.8	46	705	3	46	43	39	659	9	0.29	35
11	670.5	15.0	53	616	5	58	48	44	558	5	0.22	40
12	671.5	20.8	44	710	2	32	42	40	678	3	0.15	50
13	672.5	15.6	35	423	0	0	35	55	423	5	0.22	35
14	673.5	16.7	35	454	0	0	35	55	454	45	1.03	20

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	John Davis	Lease	Umbarger	Well No.	K-13
Depth Interval, Feet	660.0 - 666.0		666.0 - 674.0		660.0 - 674.0
Feet of Core Analyzed	6.0		6.2		12.2
Average Percent Porosity	21.8		19.3		20.5
Average Percent Original Oil Saturation	47.5		46.3		46.9
Average Percent Oil Recovery	11.0		3.7		7.3
Average Percent Residual Oil Saturation	36.5		42.6		39.6
Average Percent Residual Water Saturation	53.1		44.4		48.7
Average Percent Total Residual Fluid Saturation	89.6		87.0		88.3
Average Original Oil Content, Bbls./A. Ft.	805.		682.		741.
Average Oil Recovery, Bbls./A. Ft.	189.		52.		119.
Average Residual Oil Content, Bbls./A. Ft.	616.		630.		622.
Total Original Oil Content, Bbls./Acre	4,828.		4,226.		9,054.
Total Oil Recovery, Bbls./Acre	1,131.		325.		1,456.
Total Residual Oil Content, Bbls./Acre	3,697.		3,901.		7,598.
Average Effective Permeability, Millidarcys	5.39		2.77		4.06
Average Initial Fluid Production Pressure, p.s.i.	20.8		30.8		25.8

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