

JOHN DAVIS

CORE ANALYSIS REPORT

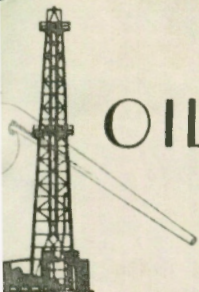
UMBARGER LEASE WELL NO. J-14

WILSON COUNTY, KANSAS

OILFIELD RESEARCH LABORATORIES

536 N. HIGHLAND

CHANDLER, KANSAS



OILFIELD RESEARCH LABORATORIES

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

November 20, 1978

John Davis
212 East Locust
Independence, Kansas 67301

Gentlemen:

Enclosed herewith is the report of the analysis of the core taken from the Umbarger Lease, Well No. J-14, Wilson County, Kansas, and submitted to our laboratory on November 10, 1978.

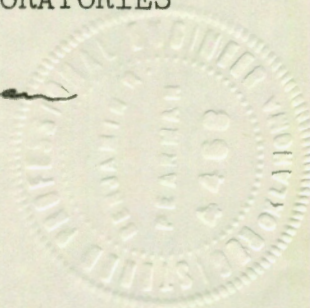
Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Benjamin R. Pearman
Benjamin R. Pearman

SAM:km
5 c to Independence, Kansas



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GENERAL INFORMATION & SUMMARY

Company John Davis Lease Umbarger Well No. J-14

Location 500' WEL & 1150' NSL SW1/4

Section 36 Twp. 28S Rge. 16E County Wilson State Kansas

Name of Sand - - - - - Squirrel

Top of Core - - - - - 659.0

Bottom of Core - - - - - 674.0

Top of Sand - - - - - 660.7

Bottom of Sand - - - - - 674.0

Total Feet of Permeable Sand - - - - - 12.2

Total Feet of Floodable Sand - - - - - 10.0

Distribution of Permeable Sand:
Permeability Range
Millidarcys

Feet

Cum. Ft.

0 - 10	2.2	2.2
10 - 50	4.7	6.9
50 - 100	4.3	11.2
100 & Above	1.0	12.2

Average Permeability Millidarcys - - - - - 48.6

Average Percent Porosity - - - - - 18.1

Average Percent Oil Saturation - - - - - 45.3

Average Percent Water Saturation - - - - - 24.5 = 69.8

Average Oil Content, Bbls./A. Ft. - - - - - 635.

Total Oil Content, Bbls./Acre - - - - - 7,747.

Average Percent Oil Recovery by Laboratory Flooding Tests - - - - - 4.7

Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft. - - - - - 69.

Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre - - - - - 692.

Total Calculated Oil Recovery, Bbls./Acre (Primary & Waterflooding) 3,140.

Packer Setting, Feet - - - - -

Viscosity, Centipoises @ - - - - -

A. P. I. Gravity, degrees @ 60 °F - - - - -

Elevation, Feet - - - - -

The core was reported to be from virgin territory. The core was sampled and the samples were sealed in plastic bags by a representative of the client. The drilling fluid was salt water mud.

FORMATION CORED

The detailed log of the formation cored is as follows:

<u>Depth Interval, Feet</u>	<u>Description</u>
659.0 - 660.7	Light brown laminated sandy shale.
660.7 - 662.1	Brown slightly calcareous sandstone.
662.1 - 663.2	Gray limestone.
663.2 - 670.0	Brown slightly calcareous sandstone.
670.0 - 672.3	Gray and brown laminated shaly sandstone.
672.3 - 672.8	Gray slightly carbonaceous sandstone.
672.8 - 674.0	Gray and brown laminated shaly sandstone.

SUMMARY

It appears from a study of the data, that efficient primary and waterflooding operations in the vicinity of this well should recover approximately 3,140 barrels of oil per acre. This is an average recovery of 314 barrels per acre foot from the 10.0 feet of floodable 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	18.9

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Oil saturation after flooding, percent	38.9
Performance factor, percent	50.0
Net floodable pay sand, feet	10.0

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company John Davis Lease Umbarger Well No. J-14

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	660.8	16.7	45	33	78	583	3.2	0.4	0.4	233	1.28
2	661.5	10.7	37	17	54	307	3.1	1.0	1.4	307	3.10
3	663.5	21.7	49	17	66	825	9.4	0.8	2.2	660	7.52
4	664.5	20.9	45	23	68	730	29.	1.0	3.2	730	29.00
5	665.5	20.2	39	31	70	611	23.	1.0	4.2	611	23.00
6	666.5	16.8	48	23	71	626	55.	1.0	5.2	626	55.00
7	667.5	21.6	39	23	62	654	97.	1.0	6.2	654	97.00
8	668.5	19.8	43	20	63	661	92.	1.0	7.2	661	92.00
9	669.5	17.7	50	23	73	687	133.	1.0	8.2	687	133.00
10	670.5	21.4	44	19	63	731	49.	1.0	9.2	731	49.00
11	671.5	15.4	47	33	80	562	53.	1.3	10.5	731	68.90
12	672.5	19.2	46	22	68	685	35.	0.5	11.0	343	17.50
13	673.5	15.1	55	33	88	644	14.	1.2	12.2	773	16.80

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company John Davis Lease Umbarger Well No. J-14

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
660.7 - 674.0	12.2	48.6	593.10

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
660.7 - 674.0	12.2	18.1	45.3	24.5	635	7,747

RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company John Davis Lease Umbarger Well No. J-14

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	660.8	17.2	45	600	8	107	37	49	493	30	0.56	35
2	661.5	11.2	37	321	0	0	37	42	321	0	Imp.	-
3	663.5	21.3	49	810	8	132	41	46	678	1	0.07	50
4	664.5	20.6	45	719	3	48	42	50	671	45	0.76	30
5	665.5	20.4	39	618	2	32	37	54	586	109	2.35	20
6	666.5	17.3	48	644	7	94	41	52	550	318	8.24	20
7	667.5	21.6	39	653	4	67	35	46	586	146	2.65	20
8	668.5	19.8	43	660	5	77	38	45	583	233	12.24	10
9	669.5	18.3	50	710	7	99	43	40	611	271	6.83	20
10	670.5	21.5	44	734	3	50	41	44	684	128	2.45	20
11	671.5	15.9	47	580	5	62	42	41	518	332	10.75	20
12	672.5	19.5	46	696	2	30	44	38	666	16	0.29	35
13	673.5	15.3	55	653	0	0	55	33	653	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	John Davis	Lease	Umbarger	Well No.	J-14
Depth Interval, Feet	660.7 - 674.0				
Feet of Core Analyzed	10.0				
Average Percent Porosity	18.9				
Average Percent Original Oil Saturation	43.6				
Average Percent Oil Recovery	4.7				
Average Percent Residual Oil Saturation	38.9				
Average Percent Residual Water Saturation	44.7				
Average Percent Total Residual Fluid Saturation	83.6				
Average Original Oil Content, Bbls./A. Ft.	655.				
Average Oil Recovery, Bbls./A. Ft.	69.				
Average Residual Oil Content, Bbls./A. Ft.	586.				
Total Original Oil Content, Bbls./Acre	6,554.				
Total Oil Recovery, Bbls./Acre	692.				
Total Residual Oil Content, Bbls./Acre	5,862.				
Average Effective Permeability, Millidarcys	4.71				
Average Initial Fluid Production Pressure, p.s.i.	25.5				

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