Doering A-7 17-21-20E

OIL FIELD RESEARCH LABORATORIES
CHANUTE, KANSAS

December 13, 1951

Oko Oil & Gas Company
Atlas Life Building
Tulsa, Oklahoma

Attention: Mr. T. F. Lawry

Gentlemen:

Enclosed herewith is the report of the partial analysis of the 2½" Rotary core taken from your Doering Lease, Well No. A-7, Anderson County, Kansas, and submitted to our laboratory on November 29, 1951.

In calculating the recovery for the vicinity of this well, an allowance was made for oil lost during coring, and it was assumed that the true water saturation of the sand is 38 percent and that the sand is not pressured up. Since we do not have the packer setting, the calculated recovery represents complete sand section.

Very truly yours,

OIL FIELD RESEARCH LABORATORIES

Clayton A. Nattier

CAN:mm

c.c. to Mr. D. K. Auld
Garnett, Kansas

OKO OIL & GAS COMPANY

CORE ANALYSIS REPORT

DOERING LEASE WELL NO. A-7

ANDERSON COUNTY, KANSAS

OIL FIELD RESEARCH LABORATORIES

CHANUTE, KANSAS

DECEMBER 13, 1951

Oil Field Research Laboratories

GENERAL INFORMATION & SUMMARY

Company Oko Oil & Gas Company Lease Doering Well No. A-7

Location NE¼

Section 17 Twp. 21S Rge. 20E County Anderson State Kansas

Name of Sand	Squirrel
Top of Core	804.50
Bottom of Core	842.00
Top of Sand	840.58
Bottom of Pay Sand	835.60
Total Feet of Permeable Sand	20.07
Total Feet of Floodable Sand	20.07

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.

Average Effective Permeability Millidarcys	5.12
Average Percent Porosity	19.51
Average Percent Oil Saturation	35.44
Average Percent Water Saturation	-
Average Oil Content, Bbls./A. Ft.	535.
Total Oil Content, Bbls./Acre	11,871.
Average Percent Oil Recovery by Laboratory Flooding Tests	11.35
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	174.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	3,483.
Total Calculated Oil Recovery, Bbls./Acre	4,550.
Packer Setting, Feet	
Viscosity, Centipoises @	
A. P. I. Gravity, degrees @ 60 °F	
Elevation, Feet	

OIL FIELD RESEARCH LABORATORIES
CHANUTE, KANSAS

LOG

Company Oko Oil & Gas Company Lease Doering Well No. A-7

Depth Interval, Feet	Description
804.50 - 804.58	Gray sandy shale.
804.58 - 805.05	Brown fine grained micaceous sandstone.
805.05 - 805.45	Finely laminated sandy shale.
805.45 - 806.65	Gray laminated shaley sandstone.
806.65 - 806.90	Gray sandy shale.
806.90 - 807.70	Laminated sandstone and shale.
807.70 - 810.70	Brown fine grained laminated micaceous shaley sandstone.
810.70 - 810.95	Finely laminated sandy shale.
810.95 - 811.65	Brown fine grained laminated micaceous shaley sandstone.
811.65 - 812.25	Gray sandy shale.
812.25 - 812.90	Brown fine grained micaceous sandstone.
812.90 - 813.15	Finely laminated sandy shale.
813.15 - 813.30	Brown fine grained laminated micaceous shaley sandstone.
813.30 - 813.40	Gray sandy shale.
813.40 - 813.95	Brown fine grained laminated micaceous shaley sandstone.
813.95 - 814.40	Brown fine grained micaceous sandstone.
814.40 - 815.10	Gray sandy shale.
815.10 - 815.70	Brown fine grained finely laminated micaceous shaley sandstone.
815.70 - 816.25	Laminated sandy shale.
816.25 - 816.75	Brown fine grained finely laminated micaceous shaley sandstone.
816.75 - 817.15	Brown fine grained laminated micaceous shaley sandstone

817.15 - 818.50 - Brown fine grained micaceous sandstone.

818.50 - 818.90 - Finely laminated sandy shale.

818.90 - 819.45 - Finely laminated shale and sandstone.

819.45 - 819.75 - Finely laminated sandy shale.

819.75 - 821.40 - Gray sandy shale.

821.40 - 821.60 - Brown fine grained laminated micaceous shaley sandstone.

821.60 - 822.25 - Laminated sandy shale.

822.25 - 822.60 - Brown fine grained micaceous sandstone.

822.60 - 822.80 - Brown fine grained slightly laminated micaceous shaley sandstone.

822.80 - 823.20 - Brown fine grained micaceous conglomeratic sandstone.

823.20 - 823.50 - Brown fine grained micaceous sandstone.

823.50 - 824.10 - Brown fine grained laminated micaceous shaley sandstone

824.10 - 824.40 - Brown fine grained slightly laminated micaceous shaley sandstone.

824.40 - 825.20 - Brown fine grained micaceous shaley sandstone.

825.20 - 825.40 - Brown fine grained micaceous sandstone.

825.40 - 826.00 - Brown fine grained micaceous shaley sandstone.

826.00 - 826.25 - Brown fine grained slightly laminated micaceous carbonaceous sandstone.

826.25 - 826.80 - Brown fine grained micaceous slightly shaley sandstone.

826.80 - 832.00 - Brown fine grained micaceous sandstone.

832.00 - 832.45 - Brown fine grained micaceous conglomeratic sandstone.

832.45 - 832.60 - Brown fine grained finely laminated micaceous carbonaceous sandstone.

832.60 - 833.25 - Brown fine grained micaceous sandstone.

833.25 - 833.85 - Brown fine grained slightly laminated micaceous carbonaceous sandstone.

833.85 - 834.10 - Brown fine grained laminated micaceous carbonaceous sandstone.

834.10 - 835.60 - Brown fine grained micaceous sandstone.

835.60 - 835.90 - Brown fine grained laminated micaceous carbonaceous sandstone.

835.90 - 836.35 - Limestone.

836.35 - 836.70 - Gray calcareous shale.

836.70 - 837.50 - Gray calcareous fossiliferous shale.

837.50 - 837.80 - Dark gray shale.

837.80 - 842.00 - According to log, limestone and black shale (Discarded at well).

Oil Field Research Laboratories

RESULTS OF SATURATION TESTS

TABLE III

Company Oko Oil & Gas Company Lease Doering Well No. A-7

Sat. No.	Depth, Feet	Effective Porosity Percent	Percent Saturation			Oil Content, Bbls./A. Ft.	Feet of Core		Total Oil Content Bbls./Acre
			Oil	Water	Total		Ft.	Cum. Ft.	
1	804.80	18.0	34.5	-	-	482	0.47	0.47	227
2	805.70	14.3	13.5	-	-	150	0.55	1.02	83
4	807.85	17.4	42.9	-	-	579	0.55	1.57	318
5	808.65	16.6	45.2	-	-	583	0.75	2.32	437
6	809.40	17.8	49.5	-	-	684	0.70	3.02	479
7	810.00	16.6	32.8	-	-	423	1.00	4.02	423
8	811.10	16.5	44.8	-	-	573	0.70	4.72	401
9	812.60	20.1	39.7	-	-	619	0.65	5.37	402
10	813.50	16.0	27.1	-	-	337	0.45	5.82	152
11	814.10	22.0	30.1	-	-	514	0.45	6.27	231
12	815.25	16.4	25.8	-	-	328	0.60	6.87	197
14	816.85	15.2	28.4	-	-	335	0.90	7.77	302
15	817.55	21.2	31.7	-	-	522	0.65	8.42	339
16	818.05	20.4	32.5	-	-	515	0.70	9.12	361
17	819.05	14.8	35.6	-	-	294	0.55	9.67	162
20A	821.55	20.0	34.0	-	-	528	0.20	9.87	106
21	822.40	22.1	32.9	-	-	564	0.55	10.42	310

Oil Field Research Laboratories

RESULTS OF SATURATION TESTS

TABLE III

Company Oko Oil & Gas Company Lease Doering Well No. A-7

Sat. No.	Depth, Feet	Effective Porosity Percent	Percent Saturation			Oil Content, Bbls./A. Ft.	Feet of Core		Total Oil Content Bbls./Acre
			Oil	Water	Total		Ft.	Cum. Ft.	
22	823.35	21.0	36.1	-	-	588	0.70	11.12	412
23	824.25	20.9	35.2	-	-	572	0.90	12.02	515
24	825.30	20.0	37.4	-	-	581	1.00	13.02	581
25	826.12	19.6	38.2	-	-	581	0.85	13.87	494
26	826.92	18.4	42.4	-	-	605	0.95	14.82	575
27	827.52	23.1	37.4	-	-	671	0.70	15.52	470
28	828.32	21.8	37.7	-	-	638	0.70	16.22	447
29	828.92	21.9	34.7	-	-	586	0.70	16.92	408
30	829.70	22.5	33.1	-	-	578	0.90	17.82	520
31	830.70	22.6	32.4	-	-	569	0.80	18.62	455
32	831.29	22.0	33.3	-	-	568	0.60	19.22	341
33	831.90	21.6	37.4	-	-	628	0.40	19.62	251
34	832.35	21.6	30.5	-	-	577	0.45	20.07	260
35	833.40	20.9	43.2	-	-	701	0.60	20.67	421
36	834.35	21.0	34.2	-	-	558	0.65	21.32	363
37	835.15	19.8	32.8	-	-	504	0.85	22.17	428
							Total - - - - -		11,871

Note: "A" samples was taken from the core after it was received in the laboratory.

Oil Field Research Laboratories

SUMMARY OF SATURATION TESTS

TABLE IV

Company Oko Oil & Gas Company Lease Doering Well No. A-7

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
804.58 - 821.60	9.87	17.55	34.81	-	468	4,620
822.25 - 835.60	12.30	21.09	35.71	-	590	7,251
804.58 - 835.60	22.17	19.51	35.44	-	535	11,871

Oil Field Research Laboratories

RESULTS OF LABORATORY FLOODING TESTS

TABLE V

Company Oko Oil & Gas Company Lease Doering Well No. A-7

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.
			Percent	Bbls./A. Ft.	Percent	Bbls./A. Ft.	% Oil	% Water	Bbls./A. Ft.			
1	804.80	18.0	34.5	482	5.8	81	28.7	71.3	401	127	3.23	15
2	805.70	14.3	13.5	150	0.0	0	13.5	71.8	150	0	Imp.	50+
4	807.85	17.4	42.9	579	19.5	263	23.4	68.0	316	15	0.499	20
5	808.65	16.6	45.2	583	17.3	223	27.9	64.6	360	4	0.203	25
6	809.40	17.8	49.5	684	19.5	270	30.0	68.3	414	8	0.202	20
7	810.00	16.6	32.8	423	5.5	71	27.3	68.3	352	22	0.636	30
8	811.10	16.5	44.8	573	18.8	241	26.0	66.0	332	10	0.295	15
9	812.60	20.1	39.7	619	14.5	226	25.2	65.9	393	207	11.79	15
10	813.50	16.0	27.1	337	0.0	0	27.1	66.7	337	0	Imp.	50+
11	814.10	22.0	30.1	514	7.6	130	22.5	73.0	384	195	12.99	10
12	815.25	16.4	25.8	328	0.0	0	25.8	64.5	328	0	Imp.	50+
14	816.85	15.2	28.4	335	1.1	13	27.3	67.5	322	5	0.183	35
15	817.55	21.2	31.7	522	9.8	161	21.9	69.5	361	191	6.49	10
16	818.05	20.4	32.5	515	10.3	163	22.2	70.9	352	220	11.91	15
17	819.05	14.8	35.6	294	1.3	15	24.3	73.8	279	2	0.197	50
20A	821.55	20.0	34.0	528	8.1	126	25.9	70.5	402	59	1.40	20
21	822.40	22.1	32.9	564	11.5	197	21.4	69.1	367	174	6.76	10
22	823.35	21.0	36.1	588	16.1	262	20.0	77.0	326	155	7.65	10
23	824.25	20.9	35.2	572	13.8	224	21.4	68.4	348	172	5.91	10
24	825.30	20.0	37.4	581	13.2	205	24.2	68.5	376	121	3.48	15
25	826.12	19.6	38.2	581	13.7	208	24.5	69.5	373	148	4.06	15
26	826.92	18.4	42.4	605	14.1	201	28.3	63.0	404	99	2.80	20
27	827.52	23.1	37.4	671	12.6	226	24.8	69.5	445	167	9.25	10
28	828.32	21.8	37.7	638	16.0	271	21.7	70.3	367	133	7.06	10
29	828.92	21.9	34.7	586	11.3	192	23.4	71.7	394	199	7.96	15
30	829.70	22.5	33.1	578	8.8	154	24.3	69.5	424	134	6.19	10
31	830.70	22.6	32.4	569	10.3	181	22.1	74.1	388	193	9.89	10
32	831.29	22.0	33.3	568	7.0	120	26.3	67.3	448	183	8.00	10
33	831.90	21.6	37.4	628	9.9	166	27.5	68.3	462	172	7.91	10
34	832.35	21.6	30.5	577	13.4	123	27.1	68.8	454	137	11.16	5

Oil Field Research Laboratories

RESULTS OF LABORATORY FLOODING TESTS

TABLE V

Company Oke Oil & Gas Company Lease Doering Well No. A-7

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.
			Percent	Bbls./A. Ft.	Percent	Bbls./A. Ft.	% Oil	% Water	Bbls./A. Ft.			
35	833.40	20.9	43.2	701	7.4	120	35.8	39.3	581	127	2.46	15
36	834.35	21.0	34.2	558	9.5	152	24.9	66.0	406	251	4.38	10
37	835.15	19.8	32.8	504	3.4	52	29.4	66.4	452	75	1.80	10

Notes: cc - cubic centimeter
* Volume of water recovered at the time of maximum oil recovery.
** Determined by passing water through a sample which still contains residual oil.
"A" Sample was taken from the core after it was received in the laboratory.

Oil Field Research Laboratories

SUMMARY OF LABORATORY FLOODING TESTS

TABLE VI

Company Oko Oil & Gas Company Lease Doering Well No. A-7

Depth Interval Feet	804.58 - 821.60	822.25 - 835.60	804.58 - 835.60
Feet of Core Analyzed	7.77	12.30	20.07
Average Percent Porosity	17.63	21.11	19.77
Average Percent Original Oil Saturation	37.01	36.36	36.60
Average Percent Oil Recovery	11.31	11.38	11.35
Average Percent Residual Oil Saturation	25.70	24.98	25.25
Average Percent Residual Water Saturation	68.70	68.57	68.62
Average Percent Total Residual Fluid Saturation	94.40	93.55	93.87
Average Original Oil Content, Bbls./A. Ft.	517.	589.	562.
Average Oil Recovery, Bbls./A. Ft.	160.	182.	174.
Average Residual Oil Content, Bbls./A. Ft.	357.	407.	388.
Total Original Oil Content, Bbls./Acre	4,018.	7,253.	11,271.
Total Oil Recovery, Bbls./Acre	1,242.	2,241.	3,483.
Total Residual Oil Content, Bbls./Acre	2,776.	5,012.	7,788.
Average Effective Permeability, Millidarcys	3.79	5.96	5.12
Average Initial Fluid Production Pressure, p.s.i.	21.5	11.5	15.8

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