

OIL FIELD RESEARCH LABORATORIES  
CHANUTE, KANSAS

January 28, 1952

Okla Oil & Gas Company  
Atlas Life Building  
Tulsa, Oklahoma

Gentlemen:

Enclosed herewith is the report of the partial analysis of the 3" Rotary core taken from the W. Ware Lease, Well No. G-15, Anderson County, Kansas, and submitted to our laboratory on January 14, 1952.

In calculating the recovery for the area represented by this core an allowance was made for oil lost during coring, and it was assumed that the primary production and true water saturation of the sand are 10 and 38 percent respectively.

Very truly yours,

OIL FIELD RESEARCH LABORATORIES

Carl L. Pate

CLP:bl  
c.c. to Mr. D. K. Auld

OKO OIL & GAS COMPANY

CORE ANALYSIS REPORT

W. WARE LEASE

WELL NO. G-15

ANDERSON COUNTY, KANSAS

OIL FIELD RESEARCH LABORATORIES

CHANUTE, KANSAS

JANUARY 28, 1952

# Oil Field Research Laboratories

## GENERAL INFORMATION & SUMMARY

Company Oko Oil & Gas Company Lease H. Ware Well No. G-15

Location \_\_\_\_\_

Section 15 Twp. 21 Rge. 20E County Anderson State Kansas

Name of Sand		<b>Squirrel</b>
Top of Core		804.00
Bottom of Core		840.00
Top of Sand		811.95
Bottom of Sand		836.80
Total Feet of Permeable Sand	(Analyzed)	14.77
Total Feet of Floodable Sand	(Analyzed)	14.37
Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.

Average <sup>Effective</sup> Permeability Millidarcys		1.11
Average Percent Porosity		18.01
Average Percent Oil Saturation		42.54
Average Percent Water Saturation		-
Average Oil Content, Bbls./A. Ft.		603.
Total Oil Content, Bbls./Acre		10,746.
Average Percent Oil Recovery by Laboratory Flooding Tests		16.34
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.		245.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre		3,517.
Total Calculated Oil Recovery, Bbls./Acre		3,050.
Packer Setting, Feet		
Viscosity, Centipoises @		
A. P. I. Gravity, degrees @ 60 °F		
Elevation, Feet		

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LOG

Company Okro Oil & Gas Company Lease W. Ware Well No. C-15

<u>Depth Interval, Feet</u>	<u>Description</u>
804.00 - 804.30	- Laminated shale and sandstone.
804.30 - 804.95	- Gray shale.
804.95 - 805.10	- Brown fine grained micaceous shaley sandstone.
805.10 - 805.42	- Gray shale.
805.42 - 805.70	- Brown fine grained laminated micaceous shaley sandstone.
805.70 - 807.35	- Gray shale.
807.35 - 807.65	- Laminated sandstone and shale.
807.65 - 808.90	- Gray shale.
808.90 - 809.08	- Brown fine grained micaceous shaley sandstone.
809.08 - 809.20	- Laminated sandy shale.
809.20 - 809.40	- Brown fine grained laminated micaceous shaley sandstone.
809.40 - 809.50	- Laminated sandy shale.
809.50 - 809.65	- Brown fine grained micaceous sandstone.
809.65 - 809.75	- Laminated sandstone and shale.
809.75 - 810.40	- Brown fine grained finely laminated micaceous shaley sandstone.
810.40 - 811.11	- Brown fine grained micaceous sandstone.
811.11 - 811.65	- Gray shale.
811.65 - 812.20	- Laminated sandstone and shale.
812.20 - 812.50	- Finely laminated shaley sandstone.
812.50 - 813.00	- Laminated sandstone and shale.
813.00 - 813.35	- Finely laminated shaley sandstone.
813.35 - 814.65	- Alternate layers of sandstone and shale.
814.65 - 815.36	- Brown fine grained laminated micaceous shaley sandstone.

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- 815.36 - 815.50 - Laminated sandstone and shale.
- 815.50 - 815.80 - Finely laminated shaley sandstone.
- 815.80 - 816.10 - Gray shale.
- 816.10 - 816.60 - Brown fine grained micaceous sandstone.
- 816.60 - 817.40 - Brown fine grained slightly laminated micaceous shaley carbonaceous sandstone.
- 817.40 - 817.85 - Brown fine grained laminated micaceous shaley sandstone containing a shale streak.
- 817.85 - 818.25 - Brown fine grained finely laminated micaceous shaley sandstone.
- 818.25 - 818.43 - Brown fine grained micaceous sandstone.
- 818.43 - 818.70 - Brown fine grained slightly laminated micaceous shaley sandstone.
- 818.70 - 819.20 - Brown fine grained micaceous sandstone.
- 819.20 - 819.35 - Brown fine grained slightly laminated micaceous shaley sandstone.
- 819.35 - 819.70 - Laminated sandstone and shale.
- 819.70 - 820.80 - Gray shale.
- 820.80 - 821.20 - Brown fine grained laminated micaceous shaley sandstone.
- 821.20 - 821.50 - Laminated sandstone and shale.
- 821.50 - 821.90 - Laminated shaley sandstone.
- 821.90 - 822.40 - Laminated sandy shale.
- 822.40 - 822.70 - Brown fine grained slightly laminated micaceous shaley sandstone.
- 822.70 - 823.50 - Brown fine grained micaceous sandstone.
- 823.50 - 824.65 - Brown fine grained laminated micaceous shaley sandstone.
- 824.65 - 825.15 - Laminated sandy shale.
- 825.15 - 825.40 - Finely laminated shale and sandstone.
- 825.40 - 825.90 - Laminated sandy shale.
- 825.90 - 826.15 - Brown fine grained slightly laminated micaceous shaley sandstone.

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CHANUTE, KANSAS

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- 826.15 - 826.70 - Brown fine grained micaceous sandstone.
- 826.70 - 827.02 - Gray shale.
- 827.02 - 828.35 - Brown fine grained micaceous sandstone.
- 828.35 - 829.40 - Cross bedded sandstone and shale.
- 829.40 - 833.75 - Brown fine grained micaceous sandstone.
- 833.75 - 834.58 - Brown fine grained micaceous carbonaceous shaley slightly calcareous sandstone.
- 834.58 - 834.75 - Brown fine grained micaceous sandstone.
- 834.75 - 835.30 - Brown fine grained micaceous shaley carbonaceous slightly calcareous sandstone.
- 835.30 - 836.70 - Black shale.
- 836.70 - 840.00 - According to log, discarded at well.

**Oil Field Research Laboratories**  
**RESULTS OF SATURATION TESTS**

**TABLE III**

Company **Oko Oil & Gas Company** Lease **W. Ware** Well No. **0-15**

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	809.30	14.5	35.8	-	-	403	0.20	0.20	81
2	809.86	14.6	32.5	-	-	368	0.65	0.85	239
3	810.53	19.7	35.0	-	-	535	0.71	1.56	980
4	812.35	14.5	40.0	-	-	450	0.70	1.86	135
5	813.15	16.9	43.1	-	-	565	0.35	2.21	198
6	814.37	15.7	42.0	-	-	512	0.25	2.46	128
7	815.03	14.8	36.4	-	-	419	0.71	3.17	298
8	815.65	17.8	33.4	-	-	758	0.30	3.47	107
9	816.27	19.9	37.1	-	-	573	0.50	3.97	286
10	817.26	17.3	39.8	-	-	535	1.17	5.14	626
11	818.10	15.1	41.1	-	-	482	0.40	5.54	193
12	818.92	19.5	42.0	-	-	676	0.95	6.49	604
13	820.93	17.2	42.0	-	-	560	0.40	6.89	224
14	821.74	17.8	36.8	-	-	794	0.40	7.29	158
15	822.55	16.8	41.0	-	-	534	0.30	7.59	160
16	823.35	18.4	44.7	-	-	638	0.80	8.39	511
17	824.03	17.8	72.9	-	-	454	0.80	9.19	364

**Oil Field Research Laboratories**  
**RESULTS OF SATURATION TESTS**

**TABLE III**

Company Okla Oil & Gas Company Lease W. Ware Well No. 0-15

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.	
18	824.54	16.3	41.5	-	-	525	0.35	9.54	184
19	825.26	13.9	27.3	-	-	294	0.25	9.79	78
20	826.03	14.2	42.0	-	-	463	0.25	10.04	116
21	826.60	17.2	48.0	-	-	641	0.55	10.59	352
22	827.42	19.8	47.7	-	-	733	0.68	11.27	498
23	827.97	20.5	50.7	-	-	807	0.65	11.92	525
24	829.54	20.2	57.3	-	-	898	0.70	12.62	629
25	830.62	19.7	40.5	-	-	619	1.00	13.62	619
26	831.50	20.3	51.7	-	-	814	0.80	14.42	651
27	832.37	19.9	56.5	-	-	873	0.80	15.22	698
28	833.14	20.1	42.8	-	-	667	1.05	16.27	700
29	834.00	18.9	50.9	-	-	747	1.00	17.27	747
30	834.87	17.6	34.7	-	-	474	0.55	17.82	261
						<b>Total</b>	<b>- - - -</b>	<b>- - - -</b>	<b>10,746</b>

Oil Field Research Laboratories

SUMMARY OF SATURATION TESTS

TABLE IV

Company	Lease	Well No.				
	Okro Oil & Gas Company	W. Ware	9-15			
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
809.20-819.20	5.49	16.93	38.23	-	505	3,275
820.50-826.70	4.10	16.73	40.05	-	523	2,143
827.02-835.30	7.23	19.71	48.06	-	737	5,328
809.20-835.30	17.82	18.01	42.64	-	603	10,746

Oil Field Research Laboratories

RESULTS OF LABORATORY FLOODING TESTS

TABLE V

Company Oko Oil & Gas Company

Lease W. Ware

Well No. 0-15

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	809.50	14.5	35.8	403	0.0	0	35.8	66.0	403	0	Imp.	50+
2	809.88	14.6	32.5	368	0.0	0	32.5	60.6	368	0	Imp.	50+
3	810.53	19.7	35.0	535	8.2	125	26.8	64.5	410	46	0.915	20
4	812.35	14.5	40.0	450	0.0	0	40.0	54.8	450	0	Imp.	50+
5	813.15	16.9	43.1	565	0.0	0	43.1	52.3	565	0	Imp.	50+
6	814.37	15.7	42.0	512	3.6	46	36.2	56.1	466	0	0.940	50
7	815.03	14.8	36.4	419	7.2	83	29.2	64.1	336	1	0.092	50
8	816.65	13.8	33.4	368	0.0	0	33.4	59.7	358	0	Imp.	50+
9	816.87	19.9	37.1	575	12.1	187	25.0	67.6	366	72	1.69	20
10	817.26	17.3	39.8	555	15.2	177	26.6	73.0	358	15	0.312	20
11	818.10	15.1	41.1	462	0.0	0	41.1	57.9	462	4	0.093	50
12	818.92	19.5	42.0	536	12.1	244	25.9	70.5	392	49	1.03	20
13	820.93	17.2	42.0	560	2.4	38	39.6	58.7	528	13	0.275	50
14	821.74	13.8	36.8	394	0.0	0	36.8	55.0	394	0	Imp.	50+
15	822.55	16.8	41.0	534	10.3	134	30.7	63.5	400	9	0.198	50
16	823.35	18.4	44.7	638	19.4	277	25.3	62.6	361	28	0.395	20
17	824.03	17.6	32.9	454	6.5	90	26.4	67.4	364	10	0.190	50
18	824.54	16.3	41.5	525	0.0	0	41.5	47.6	525	0	Imp.	50+
19	825.26	13.9	27.3	294	0.0	0	27.3	70.3	294	0	Imp.	50+
20	826.05	14.2	42.0	463	0.0	0	42.0	55.0	463	0	Imp.	50+
21	826.60	17.8	48.0	641	16.0	214	32.0	65.3	427	6	0.196	20
22	827.42	19.8	47.7	733	20.2	310	27.5	66.7	423	30	0.825	15
23	827.97	20.5	50.7	607	27.9	443	22.6	67.6	384	46	1.23	10
24	829.54	20.2	67.3	636	34.4	539	22.9	69.9	359	20	0.331	15
25	830.62	19.7	40.5	619	16.5	266	22.0	75.4	336	106	3.28	15
26	831.50	20.3	61.7	814	23.3	395	26.4	69.7	416	65	2.42	10
27	832.37	19.9	56.5	673	30.3	468	26.2	67.3	405	79	2.12	5
28	833.14	20.1	42.8	667	17.6	274	25.2	68.6	395	98	2.64	15
29	834.00	18.9	50.9	747	13.4	197	37.5	54.8	550	5	0.182	25
30	834.87	17.6	34.7	474	3.2	44	31.5	63.4	430	6	0.206	35

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.

## Oil Field Research Laboratories

### SUMMARY OF LABORATORY FLOODING TESTS

TABLE VI

Company	Lease	W. More	Well No.
Okro Oil & Gas Company	810.40	820.80	810.40
Depth Interval Feet	819.20	826.70	835.30
Feet of Core Analyzed	4.29	2.85	14.37
Average Percent Porosity	17.97	17.65	18.78
Average Percent Original Oil Saturation	38.76	41.26	43.93
Average Percent Oil Recovery	11.35	11.79	16.34
Average Percent Residual Oil Saturation	27.41	29.47	27.59
Average Percent Residual Water Saturation	61.12	64.04	64.72
Average Percent Total Residual Fluid Saturation	88.53	93.51	92.31
Average Original Oil Content, Bbls./A. Ft.	542.	566.	645.
Average Oil Recovery, Bbls./A. Ft.	162.	163.	245.
Average Residual Oil Content, Bbls./A. Ft.	380.	403.	400.
Total Original Oil Content, Bbls./Acre	2,322.	1,612.	9,260.
Total Oil Recovery, Bbls./Acre	693.	465.	3,517.
Total Residual Oil Content, Bbls./Acre	1,629.	1,147.	5,743.
Average Effective Permeability, Millidarcys	0.732	0.318	1.11
Average Initial Fluid Production Pressure, p.s.i.	30.0	20.0	24.8
		827.02	
		835.30	
		7.23	
		19.71	
		48.05	
		21.09	
		26.96	
		67.14	
		94.10	
		736.	
		326.	
		410.	
		5,326.	
		2,359.	
		2,967.	
		1.64	
		16.1	

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