

January 16, 1946

Mr. M. C. Colt
Iola, Kansas

Dear Sir:

Included herewith are the results of laboratory tests made on a No. 6 Baker barrel core taken from your Cochran Lease, Well No. 33A, Anderson County, Kansas on January 11 and 12, 1946.

Very truly yours,

OIL FIELD RESEARCH LABORATORIES

Carl L. Pate

Carl L. Pate

CLP:lk

M. C. COLT, PRODUCER

CORE ANALYSIS REPORT

COCHRAN LEASE

WELL NO. 33A

ANDERSON COUNTY, KANSAS

OIL FIELD RESEARCH LABORATORIES

CHANUTE, KANSAS

JANUARY 16, 1946

M. C. COLT, PRODUCER

CORE ANALYSIS REPORT

COCHRAN LEASE

WELL NO. 33A

GENERAL INFORMATION & SUMMARY

Company: M. C. Colt, Producer
Lease & Well No: Cochran No. 33A
Location: E $\frac{1}{2}$ of the NE $\frac{1}{4}$ of Section 9, T 22S, R 21E, Anderson County, Kansas.

Name of Sand	-----	Bartlesville
Top of Core	-----	703.00
Bottom of Core	-----	740.50
Top of Sand	-----	708.82
Bottom of Sand	-----	736.15
Total Feet of Permeable Sand	-----	23.71

Distribution of Permeable Sand:

<u>Permeability Range</u>	<u>Feet</u>	<u>Cum. Ft.</u>	
0 - 10	2.57	2.57	
10 - 20	3.81	6.38	
20 - 40	4.72	11.10	
40 - 60	6.79	17.89	
60 - 80	4.33	22.22	
80 & above	1.49	23.71	
Average Permeability, Millidarcys	-----		41.04
Average Percent Porosity	-----		23.88
Average Percent Oil Saturation	-----		47.78
Average Oil Content, Bbls./A. Ft.	-----		870.
Total Oil Content, Bbls./Acre	-----		20,783.
Average Percent Oil Recovery by Laboratory Flooding Tests	-----		14.67
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	-----		278.

Total Oil Recovery by Laboratory Flooding Tests, - -	5,214.
Bbls./Acre - - - - -	
Total Feet of Floodable Sand - - - - -	13.5
Recommended water input rate, 2½ Bbls./Ft./24 hrs. -	34.

FORMATION CORED

The detailed log of the formation cored is as follows:

<u>Depth Interval,</u> <u>Feet</u>	<u>Description</u>
703.00 - 708.82	- Soft gray shale.
708.82 - 710.79	- Gray medium grained micaceous sandstone.
710.79 - 710.97	- Gray shale.
710.97 - 719.05	- Gray medium grained micaceous sandstone.
719.05 - 719.63	- Gray soft laminated micaceous carbonaceous sandstone.
719.63 - 721.25	- Gray medium grained micaceous sandstone.
721.25 - 721.52	- Gray laminated micaceous carbonaceous sandstone (oil)
721.52 - 724.04	- Gray medium grained micaceous sandstone.
724.04 - 724.23	- Soft laminated micaceous carbonaceous sandstone.
724.23 - 726.94	- Dark gray medium grained micaceous sandstone.
726.94 - 727.30	- Dark laminated micaceous carbonaceous sandstone (oil).
727.30 - 729.62	- Dark micaceous carbonaceous sandstone.
729.62 - 730.00	- Soft gray shale.
730.00 - 730.93	- Dark micaceous carbonaceous sandstone.
730.93 - 731.46	- Soft gray shale.
731.46 - 731.75	- Dark micaceous carbonaceous sandstone (oil).
731.75 - 733.33	- Gray shale.
733.33 - 733.92	- Gray medium grained micaceous sandstone (oil).
733.92 - 734.08	- Sandy conglomerate.

734.08 - 736.15 - Dark micaceous carbonaceous sandstone.

736.15 - 737.57 - Dark shale.

737.57 - 738.13 - Gray carbonaceous conglomeratic sandstone (some oil).

738.13 - 739.07 - Gray shale.

739.07 - 740.50 - Soft gray shale.

Weather Band
LOWER PART
AND CONTENT

M. C. COLT, PRODUCER

CORE ANALYSIS REPORT

COCHRAN LEASE

WELL NO. 33A

SHOT RECOMMENDATION

<u>Depth Interval,</u> <u>Feet</u>	<u>Feet of</u> <u>Sand</u>	<u>Size of Shell</u> <u>Inches</u>	<u>qts./Ft.</u>	<u>Total quarts</u>
717.0 - 726.0	9.0	3	1.5	13.5

Packer setting - 713.0 feet.

Notes: (1) Plug hole back to 728.5 feet.

(2) This shot is to be used in case the sand refuses to take sufficient water.

M. C. COLT, PRODUCER

CORE ANALYSIS REPORT

COCHRAN LEASE

WELL NO. 33A

TABLE I

RESULTS OF PERMEABILITY TESTS

<u>Sample No.</u>	<u>Depth, Feet</u>	<u>Permeability, Millidarcys</u>	<u>Feet of Core Ft.</u>	<u>Core Cum. Ft.</u>	<u>Capacity Ft. x Md.</u>
A	708.97	19.	0.40	0.40	7.60
B	709.43	27.	0.50	0.90	13.50
1	710.03	42.	0.60	1.50	25.20
2	710.63	32.	0.50	2.00	16.00
3	711.04	2.5	0.43	2.43	1.07
4	711.80	15.	0.70	3.13	10.50
5	712.40	55.	0.45	3.58	24.80
6	712.68	37.	0.35	3.93	12.95
7	713.11	76.	0.50	4.43	38.00
8	713.65	63.	0.50	4.93	31.50
9	714.15	53.	0.45	5.38	23.85
10	714.55	79.	0.40	5.78	31.60
11	714.97	92.	0.45	6.23	41.45
12	715.35	49.	0.40	6.63	19.60
13	715.73	74.	0.40	7.03	29.60
14	716.26	44.	0.60	7.63	26.40
15	717.00	43.	0.70	8.33	30.10
16	717.54	43.	0.50	8.83	21.50
17	718.15	77.	0.60	9.43	46.20
18	718.70	52.	0.40	9.83	20.80
19	718.95	30.	0.25	10.08	7.50
20	719.52	36.	0.58	10.66	20.85
21	720.05	5.9	0.57	11.23	3.36
22	720.45	52.	0.50	11.75	26.00
23	720.82	60.	0.55	12.28	33.00
24	721.58	69.	0.38	12.66	26.25
25	722.12	54.	0.50	13.16	27.00
26	722.80	29.	0.60	13.76	17.40
27	723.30	99.	0.50	14.26	49.50
28	723.62	98.	0.54	14.80	52.98
29	724.27	27.	0.37	15.17	10.00
30	724.85	74.	0.50	15.67	37.00
31	725.34	40.	0.60	16.27	24.00
32	725.92	60.	0.50	16.77	30.00
33	726.55	43.	0.50	17.27	21.50
34	726.79	25.	0.24	17.51	6.00
35	727.34	16.	0.40	17.91	6.40
36	727.75	2.8	0.10	18.01	0.28
37	728.32	3.5	0.70	18.71	0.24
38	728.75	30.	0.40	19.11	12.00

M. C. COLT, PRODUCER

CORE ANALYSIS REPORT

COCHRAN LEASE

WELL NO. 33A

TABLE I

RESULTS OF PERMEABILITY TESTS

<u>Sample No.</u>	<u>Depth, Feet</u>	<u>Permeability, Millidarcys</u>	<u>Feet of Core Ft.</u>	<u>Core Cum. Ft.</u>	<u>Capacity Ft. x Md.</u>
39	729.03	11.	0.40	19.51	4.40
40	729.55	6.5	0.32	19.83	2.08
41	730.24	31.	0.50	20.33	15.50
42	730.82	20.	0.43	20.76	8.60
43	731.52	15.	0.29	21.05	4.35
44	733.46	52.	0.37	21.42	19.22
45	733.86	52.	0.22	21.64	11.43
46	734.42	12.	0.62	22.26	7.44
47	734.93	16.	0.50	22.76	8.00
48	735.45	16.	0.50	23.26	8.00
49	735.92	1.5	0.45	23.71	0.68

M. C. COLT, PRODUCER

CORE ANALYSIS REPORT

COCHRAN LEASE

WELL NO. 33A

TABLE II

SUMMARY OF PERMEABILITY TESTS

<u>Depth Interval Feet</u>	<u>Feet of Core Analyzed</u>	<u>Average Permeability, Millidarcys</u>	<u>Permeability Capacity Ft. x Md.</u>
708.82 - 712.90	3.93	28.40	111.62
712.90 - 726.94	13.58	55.44	752.94
726.94 - 736.15	6.20	17.52	108.62
708.82 - 736.15	23.71	41.04	973.18

M. C. COLT, PRODUCER

CORE ANALYSIS REPORT

COCHRAN LEASE

WELL NO. 33A

TABLE III

COMPARISON OF WET AND DRY PERMEABILITY

<u>Sample No.</u>	<u>Depth, Feet</u>	<u>Permeability, Millidarcys</u>	
		<u>Dry (Air)</u>	<u>Wet (Flood Pot)</u>
1	709.68	70.	6.6
2	712.20	203.	18.
3	713.45	98.	16.
4	714.67	143.	12.
5	715.95	93.	16.
6	717.37	81.	3.6
7	718.63	67.	2.3
9	721.13	54.	-
10	722.54	120.	3.9
11	723.79	204.	7.3
12	725.05	55.	6.2
13	726.37	54.	2.4
14	728.13	45.	3.1
18	735.21	28.	Imp.

M. C. COLT, PRODUCER

CORE ANALYSIS REPORT

COCHRAN LEASE

WELL NO. 33A

TABLE IV

RESULTS OF SATURATION TESTS

<u>Sat. No.</u>	<u>Depth, Feet</u>	<u>Effective Porosity Percent</u>	<u>Percent Saturation</u>			<u>Oil Content, Bbls./A. Ft.</u>	<u>Feet of Core</u>	<u>of Core Cum. Ft.</u>	<u>Total Oil Content, Bbls./Acre</u>
			<u>Oil</u>	<u>Water</u>	<u>Total</u>				
1	709.68	21.4	41.6	-	-	691	1.97	1.97	1,361
2	712.20	28.0	31.6	-	-	687	1.93	3.90	1,355
3	713.45	25.3	43.7	-	-	858	1.20	5.10	1,031
4	714.67	26.2	38.7	-	-	787	1.20	6.30	943
5	715.95	22.9	61.4	-	-	1,091	1.30	7.60	1,419
6	717.37	23.0	60.0	-	-	1,071	1.40	9.00	1,500
7	718.63	24.2	65.9	-	-	1,238	1.05	10.05	1,300
8	719.87	21.8	52.8	34.0	86.8	895	1.15	11.20	1,030
9	721.13	23.9	48.6	-	-	906	1.32	12.52	1,196
10	722.54	27.7	36.5	-	-	784	1.58	14.10	1,240
11	723.79	28.8	61.0	-	-	1,364	1.13	15.23	1,541
12	725.05	25.7	48.5	-	-	969	1.47	16.70	1,424
13	726.37	22.9	45.7	-	-	812	1.24	17.94	1,007
14	728.13	23.0	35.2	-	-	628	1.56	19.50	980
15	729.27	19.1	62.8	33.7	96.5	933	1.12	20.62	1,047
16	730.55	21.5	55.9	33.9	89.8	934	0.93	21.55	868
17	734.26	19.0	47.2	22.2	69.4	695	0.92	22.47	639
18	735.21	21.5	47.0	-	-	785	1.15	23.62	902

TOTAL -----20,783

M. C. COLT, PRODUCER

CORE ANALYSIS REPORT

COCHRAN LEASE

WELL NO. 33A

TABLE VI

RESULTS OF FLOOD POT TESTS

Sample No.	Depth, Feet	Effective Porosity Percent	Original Oil Saturation		Oil Recovery		Residual Saturation			Vol. of Water Recovered, cc*	Perm. Milds.	Average Pressure Lbs./Sq. In.
			Percent	Bbls./A. Ft.	Percent	Bbls./A.Ft.	%Oil	%Water	Bbls./A.Ft.			
1	709.68	21.4	41.6	691	11.6	193	30.0	58.3	498	184	70.	17.0
2	712.20	28.0	31.6	687	0.0	0	31.6	47.3	687	142	203.	18.0
3	713.45	25.3	43.7	858	16.3	320	27.4	52.6	538	252	98.	9.0
4	714.67	26.2	38.7	787	9.6	195	29.1	50.0	592	742	143.	18.0
5	715.95	22.9	61.4	1,091	35.4	629	26.0	57.6	462	370	93.	4.0
6	717.37	23.0	60.0	1,071	26.4	472	53.6	53.8	599	302	81.	16.0
7	718.63	24.2	65.9	1,238	38.4	721	27.5	50.0	517	379	67.	3.0
9	721.13	23.9	48.8	906	16.9	314	31.9	47.6	592	26	54.	8.5
10	722.54	27.7	36.5	784	12.4	266	24.1	52.9	518	193	120.	16.0
11	723.79	28.8	61.0	1,364	20.1	448	40.9	40.8	916	93	204.	3.0
12	725.05	25.7	48.5	969	20.6	412	27.9	47.3	557	497	55.	24.0
13	726.37	22.9	45.7	812	9.3	165	36.4	36.4	647	162	54.	28.0
14	728.13	23.0	35.2	628	0.0	0	35.2	35.6	628	14	45.	45.0
18	735.21	21.5	47.0	785	0.0	0	47.0	24.0	785	0	28.	45.0

Notes: cc - cubic centimeter

Milds. - Millidarcys

*Volume of water recovered at the time of maximum oil recovery.

M. C. COLT, PRODUCER

CORE ANALYSIS REPORT

COCHRAN LEASE

WELL NO. 33A

TABLE V

SUMMARY OF SATURATION TESTS

<u>Depth Interval, Feet</u>	<u>Feet of Core Analyzed</u>	<u>Average Porosity Percent</u>	<u>Average Percent Oil Saturation</u>	<u>Average Oil Content, Bbls./A. Ft.</u>	<u>Total Oil Content, Bbls./Acre</u>
708.82 - 712.90	3.90	24.64	36.67	696	2,716
712.90 - 726.94	14.04	24.81	50.64	971	13,631
726.94 - 736.15	5.68	21.06	48.34	781	4,436
708.82 - 736.15	23.62	23.88	47.78	870	20,783

M. C. COLT, PRODUCER

CORE ANALYSIS REPORT

COCHRAN LEASE

WELL NO. 33A

TABLE VII

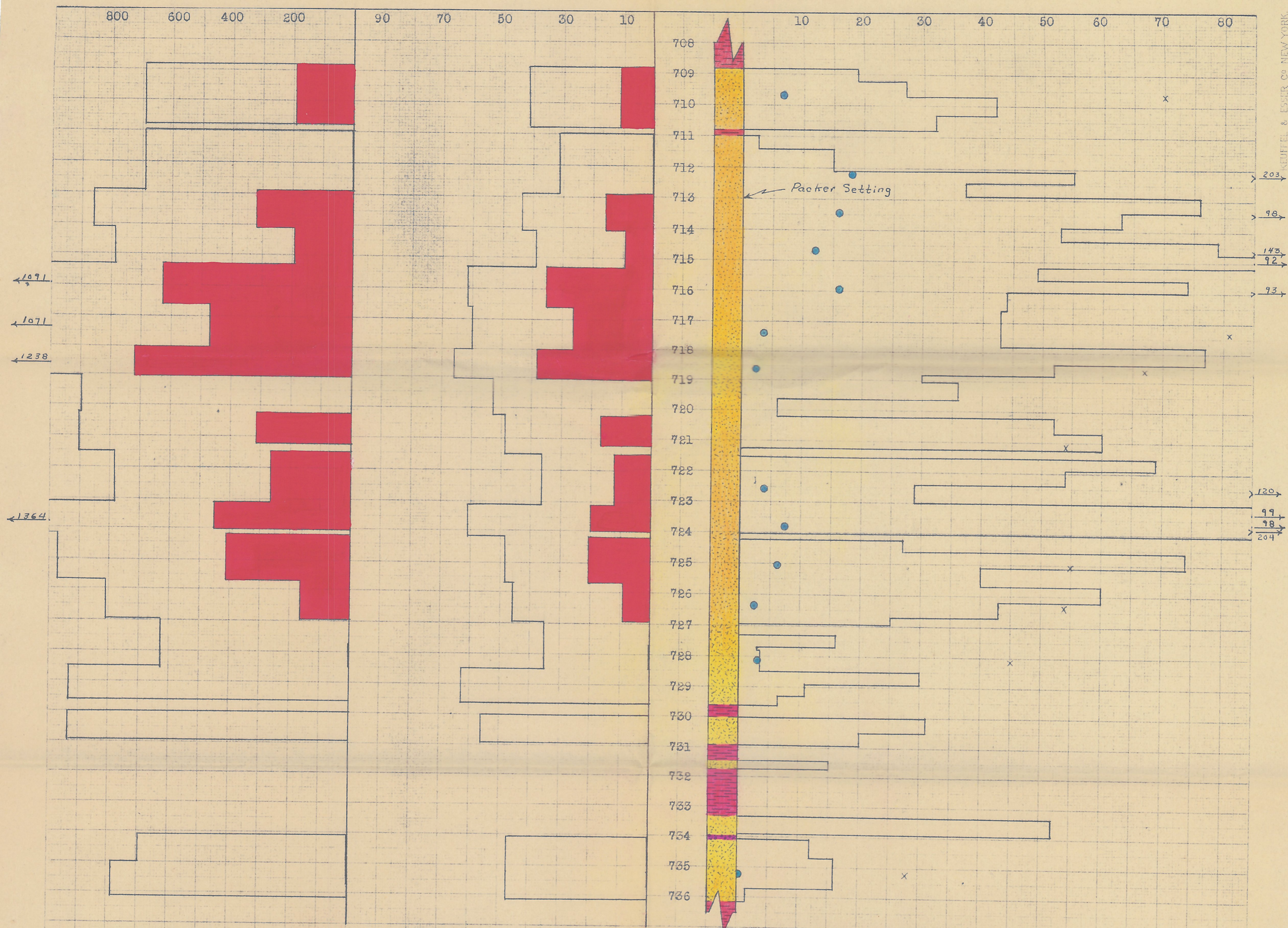
SUMMARY OF LABORATORY FLOODING TESTS

	<u>708.82-712.90</u>	<u>712.90-726.94</u>	<u>727.70-735.70</u>	<u>708.82-712.90</u>
Depth Interval, Feet				
Feet of Core Analyzed	3.90	12.43	2.42	18.75
Average Percent Porosity	24.67	25.03	21.98	24.56
Avg. Percent Orig. Oil Saturation	36.64	50.25	43.10	46.49
Average Percent Oil Recovery	5.85	20.30	0.00	14.67
Avg. Percent Residual Oil Saturation	30.79	29.95	43.10	31.82
Avg. Percent Residual Water Saturation	52.92	49.24	27.81	47.13
Avg. Orig. Oil Content, Bbls./A. Ft.	689.	972.	733.	883.
Avg. Oil Recovery, Bbls./A. Ft.	97.	388.	0.	278.
Avg. Residual Oil Content, Bbls./A. Ft.	592.	584.	733.	605.
Total Orig. Oil Content, Bbls./Acre	2,688.	12,090.	1,775.	16,553.
Total Oil Recovery, Bbls./Acre	380.	4,834.	0.	5,214.
Total Residual Oil Content, Bbls./Acre	2,308.	7,256.	1,775.	11,339.
Avg. Pressure, Lbs./Sq. In.	17.5	12.9	45.0	18.2
Avg. Dry Permeability, Millidarcys	135.82	94.91	33.62	95.51
Avg. Wet Permeability, Millidarcys	12.43	7.00	0.79	7.29

OIL CONTENT,
BBL./A. FT.

PERCENT OIL SATURATION

● - WET PERMEABILITY, IN MILLIDARCYS
x - DRY PERMEABILITY, IN MILLIDARCYS



M. C. COLT, PRODUCER
COCHRAN LEASE WELL NO. 33A
ANDERSON COUNTY, KANSAS

- KEY:
- MICACEOUS SANDSTONE
 - MICACEOUS CARBONACEOUS SANDSTONE
 - SANDY CONGLOMERATE
 - SHALE
 - FLOOD POT RECOVERY
 - x FLOOD POT PERMEABILITY

DEPTH, IN FEET	FEET OF SAND	AVG. OIL SATURATION, PERCENT	AVG. OIL CONTENT, BBL./A. FT.	TOTAL OIL CONTENT, BBL./ACRE	AVG. PERMEABILITY, MILLIDARCYS
708.82 - 712.90	3.90	36.67	696	2,716	28.40
712.90 - 726.94	14.04	50.64	971	13,631	55.40
726.94 - 736.15	5.68	48.34	781	4,436	17.52
708.82 - 736.15	23.62	47.78	870	20,783	41.04