WS

EARLOUGHER ENGINEERING

CORE SUMMARY

Company Kewanee Oil Company Lease Parks Well No. 137

Location 575 feet South, 675 feet East of Center of West Section Line

Section 27 Twp. 20-S Rge. 21-E County Anderson State Kansas

Formation Cored Squirrel Sand Type Core Rotary, 3-inch

Date Cored 2-8-49 Date Shot _____ Date Completed _____

Depths:

Started coring, shale	640.5 ft.
Top of oil sand section	658.8 "
Bottom of oil sand section	683.2 "
Net feet of oil sand	8.2 "
Bottom of core, sandy shale	684.0 "
Total cored	43.5 "
Feet analyzed	10.6 "

Shot Record: Total Depth 684.0 feet Set Packer 659.0 Feet

Depth, Feet From	Depth, Feet To	Feet	Shell Diameter	Quarts Per Foot	Quarts Total
662	683	21	4-1/2"	3.2	67.2

Completion Data:

Hrs. well stood after coring _____; Feet Fluid in Hole _____ (Oil _____ Water _____)

Clean-out time, hrs. _____; Initial production, bbls. day _____ (Oil _____ Water _____)

Remarks: This core shows 8.2 net feet of fair oil sand in a very broken section between depths 658.8 and 683.2 feet. In general the section corresponds with Parks Well No. 5 although the net feet of oil pay is considerably less in this present core Well No. 137.

PERMEABILITY Permeability is low with the weighted average being 2.8 millidarcys. Permeability capacity is 23 foot-millidarcys. Individual permeability values vary from 0.4 to 6.6 millidarcys.

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POROSITY The porosity is low also, averaging 16.2 percent.

PERCENT SATURATION Average oil saturation is 38 percent and average water saturation 52 percent. The high water saturation probably results from the low permeability of the sand.

OIL CONTENT Average oil content of the oil sand is 484 barrels per acre-foot and values range from 360 to 660 barrels per acre-foot.

LABORATORY FLOODING TESTS Laboratory flooding tests yielded an average oil recovery of 195 barrels per acre-foot and average residual oil saturation was 23 percent. Permeability to water is low.

CONCLUSIONS

1. Net feet of oil sand is 8.2 feet located in a very broken section between 658.8 and 683.2 feet. The section is similar to that shown by core from Parks Well No. 5, although the net feet of sand is less in this present core well.

2. The sand responded quite well to water flooding in the laboratory although permeability to water was low.

3. Estimated oil recovery by water flooding is 158 barrels per acre-foot or 1,300 barrels per acre from the area of which this core is representative.

Respectfully submitted

EARLOUGHER ENGINEERING

J. M. Robinson

J. M. Robinson, Engineer

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EARLOUGHER ENGINEERING

RESULTS OF SATURATION TESTS

COMPANY Kewanee Oil Company WELL Parks No. 137

Sat. No.	Depth Feet	Porosity Per Cent	PER CENT SAT. Oil	Water	Total	Avg. Oil Content Bbls./A. Ft.	FT. OF SAND Ft.	Cum.	Total Oil Content Bbls./Acre
1	659.0	15.8	30.	55.	85.	360.	1.2	1.2	430.
2	662.7	14.1	40.	60.	100.	430.	0.6	1.8	260.
F- 2	663.2	17.4	42.	--	--	570.	0.4	2.2	230.
3	665.3	12.8	30.	70.	100.	290.	0.6*		
F- 3	667.8	16.6	51.	--	--	660.	0.8	3.0	530.
F- 4	671.1	19.4	39.	--	--	590.	1.0	4.0	590.
4	673.3	19.6	27.	43.	70.	420.	0.9	4.9	380.
5	675.2	14.2	46.	53.	100.	510.	1.4	6.3	710.
F- 5	678.4	15.1	38.	--	--	450.	0.8	7.1	360.
F- 6	681.4	15.0	34.	--	--	400.	0.3	7.4	120.
6	682.5	14.2	41.	50.	91.	450.	0.8	8.2	360.

*Not included in cumulative feet of sand.

SUMMARY

	DEPTH FEET FROM	TO	FEET OF SAND	AVG. POROSITY	AVG. OIL SAT.	AVG. WATER SAT.	AVG. OIL CONTENT BBLS./A. FT.	TOTAL OIL CONTENT BBLS./ACRE
1.	658.8	683.2	8.2	16.2	38.	52.	484.	3970.

EARLOUGHER ENGINEERING

RESULTS OF PERMEABILITY TESTS

COMPANY Kewanee Oil Company WELL Parks No. 137

Sample No.	Depth Feet	Permeability Millidarcys	FEET OF SAND Ft.	FEET OF SAND Cum. Ft.	Capacity Ft. X Md.	Sample No.	Depth Feet	Permeability Millidarcys	FEET OF SAND Ft.	FEET OF SAND Cum. Ft.	Capacity Ft. X Md.
1	659.2	1.3	0.8	0.8	1.0	13	671.4	6.2	0.8	4.0	5.0
2	659.6	0.4	0.2	1.0	0.1	14	672.2	2.1	0.3	4.3	0.6
3	660.0	4.0	0.2	1.2	0.8	15	673.1	2.1	0.4	4.7	0.8
4	661.5	4.6	1.0	2.2	4.6	16	673.6	6.6	0.2	4.9	1.3
5	662.2	0.4	0.7*			17	674.6	1.0	0.4	6.3	0.4
6	663.0	0.3	0.1*			18	675.1	1.3	0.3	5.6	0.4
7	663.5	0.2	0.5*			19	675.9	2.6	0.7	6.3	1.8
8	664.4	0.2	0.2*			20	678.6	0.2	0.3*		
9	665.1	1.2	0.6*			21	679.2	2.9	0.8	7.1	2.3
10	666.9	3.6	0.2	2.4	0.7	22	681.4	1.4	0.3	7.4	0.5
11	667.6	2.4	0.6	3.0	1.4	23	682.3	0.9	0.4	7.8	0.4
12	670.5	2.4	0.2	3.2	0.5	24	682.9	0.9	0.4	8.2	0.4

*Not included in cumulative feet of sand.

SUMMARY

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	DEPTH FEET FROM	DEPTH FEET TO	FEET OF SAND	AVERAGE PERMEABILITY	CAPACITY FT. X MD.
1.	658.8	683.2	8.2	2.8	23.

Squirrel 656.8 683

CASE PARKS WELL NO 137
LOCATION 575'S., 675'E. of Center of W. Sec. Line
C 27 T 20-S R 21-E COUNTY Anderson
STATE Kansas DATE 3-2-49
EARLOUGHER ENGINEERING TULSA, OKLAHOMA

EARLOUGHER ENGINEERING

RESULTS OF LABORATORY FLOODING TESTS

COMPANY Kewanee Oil Company LEASE Parks WELL NO. 137

Sample No.	Depth	Porosity	Perm. Approx.	BEFORE FLOODING 1/ Oil Sat.	Water Sat.	Oil Content B./A. Ft.	Max. Press. Psi.	Water Thru c.c.	Time Min.	FLOOD POT RESIDUALS Oil Sat.	Water Sat.	Oil Content B./A. Ft.	OIL RECOVERY B./A. Ft. Diff. 2/	Flood Pot
F-2	663.2	17.4	--	42.	--	570.	40.	597.	855.	22.	78.	290.		284.
F-3	667.8	16.6	2.0	51.	--	660.	40.	250.	795.	23.	80.	300.		355.
F-4	671.1	19.4	2.0	39.	--	590.	40.	140.	615.	20.	61.	300.		286.
F-5	678.4	15.1	1.0	38.	--	450.	40.	95.	855.	25.	75.	290.		160.
F-6	681.4	15.0	1.0	34.	--	400.	40.	51.	855.	26.	75.	310.		90.

SUMMARY

Sec.	DEPTH, FEET From	To	Net Ft. of Sand	Avg. Por.	Average Core Sat. Oil	Water	CORE OIL CONTENT Avg. B./A. Ft.	Total Bbl./Ac.	PERMEABILITY Avg. Mds.	Capacity Ft. x Md.	FLOOD POT RESIDUALS Saturation Oil	Water	Oil Content B./A. Ft.	Bbl./Ac.	OIL RECOVERY Bbl./Ac. Diff.	Flood Pot
1	658.8	683.2	8.2	16.2	38.	52.	484.	3970.	2.8	23.	23.	74.	289.	2370.	1600.	1930.

REMARKS: 1/ Unless otherwise noted, oil content and saturation before flooding equals flood pot oil recovery plus flood pot residual.
2/ Oil recovery as B./A. Ft. Diff. equals B./A. Ft. oil content from adjacent saturation sample minus flood pot residual oil content for flood sample.