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EARLOUGHER ENGINEERING

CORE SUMMARY

Company Kewanee Oil Company Lease Bandy Well No. 99

Location 1840 feet West, 40 feet North of SE Corner

Section 32 Twp. 20-S Rge. 21-E County Anderson State Kansas

Formation Cored Squirrel Sand Type Core Rotary, 3-inch

Date Cored 6-24-48 Date Shot _____ Date Completed _____

Depths:

Started coring, shaly sand	621.3 ft.
Top of oil sand	622.2 "
Bottom of oil sand	636.4 "
Net feet of oil sand	13.6 "
Bottom of core, shale	641.6 "
Total cored	20.3 "
Feet Analyzed	15.3 "

Shot Record: Set Packer 622.0 Feet

Depth, Feet From	To	Feet	Shell Diameter	Quarts Per Foot	Quarts Total
626	635	9	4"	2.5	22.5

Plug back to 636.0 feet.

Completion Data:

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

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

Remarks: Coring was commenced in shaly sand at 621.3 feet and topped the oil sand at 622.2 feet. Net feet of oil sand is 13.6 feet; however, the top 5.4 net feet and the bottom 2.7 net feet are quite shaly and have low permeability. The main oil pay occurs in the 5.5 net feet of sand between 628.1 and 633.6 feet. Although the sand section is small due to its edge location, the indicated oil recovery is reasonably good.

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PERMEABILITY Average permeability is 7.0 millidarcys with the upper 5.4 net feet averaging 2.4 millidarcys and the bottom 8.2 net feet, 10 millidarcys. Permeability capacity is 95 foot-millidarcys.

POROSITY Average porosity is 18.0 percent and values range from 13.2 to 23.2 percent.

PERCENT SATURATION Average oil saturation is 36 percent which is relatively low for rotary cores from this area. Average core water saturation is 37 percent. It is noted that the average total saturation for the bottom 8.2 net feet of sand is only 70 percent which may indicate that some oil was lost from this core during coring, probably by gas expansion.

OIL CONTENT Average oil content is 502 barrels per acre-foot and values range from 280 to 980 barrels per acre-foot.

LABORATORY FLOODING TESTS Laboratory flooding tests yielded an average oil recovery of 230 barrels per acre-foot and average residual oil saturation was 19 percent.

CONCLUSIONS

1. Net feet of oil sand is 13.6 feet located between 622.2 and 636.4 feet.

2. Although the sand section is thin, the net feet of oil sand is reasonably good for an edge well location.

3. Estimated oil recovery by water flooding is 2,800 barrels per acre from the area of which this core is representative. If oil was lost from this core during coring as indicated by the somewhat low average total core saturation in the bottom 8.2 net feet, the ultimate oil recovery may be slightly greater than estimated above.

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RESULTS OF SATURATION TESTS

COMPANY Kewanee Oil Company WELL Bandy No. 99

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	621.8	17.7	20.	35.	55.	270.	0.7*		
F- 1	622.7	17.0	32.	--	--	430.	0.9	0.9	390.
2	623.8	18.2	26.	39.	65.	360.	0.8	1.7	290.
F- 2	624.7	17.4	43.	--	--	580.	0.9	2.6	520.
3	625.5	22.0	36.	28.	64.	620.	0.6	3.2	370.
F- 3	626.8	12.3	30.	--	--	290.	1.6	4.8	460.
4	627.9	13.2	28.	63.	91.	280.	0.6	5.4	170.
F- 4	629.0	21.5	32.	--	--	540.	1.0	6.4	540.
5	629.9	22.4	38.	23.	61.	650.	1.1	7.5	720.
F- 5	630.8	23.2	54.	--	--	980.	1.0	8.5	980.
6	631.8	22.2	27.	26.	53.	460.	0.8	9.3	370.
F- 6	633.2	17.1	43.	--	--	570.	1.6	10.9	910.
7	634.6	16.6	33.	46.	79.	420.	1.1	12.0	460.
F- 7	636.1	15.8	33.	--	--	400.	1.6	13.6	640.
8	638.5	10.7	25.	75.	100.	200.	0.5*		
F- 8	639.4	13.6	25.	--	--	260.	0.5*		

* Not included in cumulative feet of sand.

SUMMARY

DEPTH FEET FROM	DEPTH FEET TO	FEET OF SAND	AVG. POROSITY	AVG. OIL SAT.	AVG. WATER SAT.	AVG. OIL CONTENT BBLS./A. FT.	TOTAL OIL CONTENT BBLS./ACRE
622.2	628.1	5.4	16.0	33.	43.	407.	2,200.
628.1	636.4	8.2	19.3	38.	32.	564.	4,620.
622.2	636.4	13.6	18.0	36.	37.	502.	6,820.

EARLOUGHER ENGINEERING

RESULTS OF PERMEABILITY TESTS

COMPANY Kewanee Oil Company WELL Bandy No. 99

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	621.4	5.5	0.2*			16	629.4	16.	0.6	7.0	9.6
2	621.8	1.5	0.5*			17	629.9	26.	0.5	7.5	13.
3	622.3	2.3	0.4	0.4	0.9	18	630.5	37.	1.0	8.5	37.
4	623.0	1.4	0.5	0.9	0.7	19	631.2	5.3	0.3	8.8	1.6
5	623.3	6.5	0.3	1.2	2.0	20	631.8	13.	0.5	9.3	6.5
6	623.8	3.5	0.5	1.7	1.8	21	632.3	0.7	0.5	9.8	0.4
7	624.3	2.6	0.9	2.6	2.3	22	632.7	3.1	0.5	10.3	1.6
8	625.1	3.0	0.3	2.9	0.9	23	633.5	6.2	0.6	10.9	3.7
9	625.5	7.2	0.3	3.2	2.2	24	634.1	2.8	0.6	11.5	1.7
10	626.1	0.5	0.5	3.7	0.3	25	634.6	2.7	0.5	12.0	1.4
11	626.5	0.7	0.7	4.4	0.5	26	635.3	0.1	0.8	12.8	0.1
12	627.2	1.3	0.4	4.8	0.5	27	635.7	0.5	0.8	13.6	0.4
13	627.9	1.2	0.6	5.4	0.7	28	638.5	0.2	0.5*		
14	628.2	14.	0.3	5.7	4.2	29	639.1	0.1	0.5*		
15	628.7	1.4	0.7	6.4	1.0						

* Not included in cumulative feet of sand.

SUMMARY

	DEPTH FEET FROM	DEPTH FEET TO	FEET OF SAND	AVERAGE PERMEABILITY	CAPACITY FT. X MD.
1	622.2	628.1	5.4	2.4	13.
2	628.1	636.4	8.2	10.	82.
1&2	622.2	636.4	13.6	7.0	95.

EARLOUGHER ENGINEERING

RESULTS OF LABORATORY FLOODING TESTS

COMPANY Kewanee Oil Company LEASE Bandy WELL NO. 99

Sample No.	Depth	Porosity Pct.	Perm. Approx.	BEFORE FLOODING 1/ Oil Sat.	Water Sat.	Oil Content B./A. Ft.	Max. Press. Psi.	Water Thru c.c.	Flow Mcf. Time Min.	FLOOD POT RESIDUALS Oil Sat.	Water Sat.	Oil Content B./A. Ft.	OIL RECOVERY B./A. Ft. Diff. 2/	Flood Pot
F-1	622.7	17.0	2.4	32.	--	430.	40.	78.	1,123.	23.	59.	310.		118.
F-2	624.7	17.4	3.0	43.	--	580.	40.	2,780.	1,123.	21.	76.	280.		298.
F-3	626.8	12.3	1.0	30.	--	290.	40.	158.	1,123.	21.	88.	200.		92.
F-4	629.0	21.5	8.0	32.	--	540.	40.	3,495.	1,123.	12.	59.	200.		338.
F-5	630.8	23.2	26.	54.	--	980.	40.	9,320.	555.	16.	75.	300.		684.
F-6	633.2	17.1	5.0	43.	--	570.	40.	3,615.	1,123.	18.	80.	240.		328.
F-7	636.1	15.8	0.2	33.	--	400.	40.	88.	1,123.	24.	76.	300.		98.
F-8	639.4	13.6	-0-	25.	--	260.	40.	20.	1,123.	21.	79.	220.		40.

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	622.2	628.1	5.4	16.0	33.	43.	407.	2,200.	2.4	13.	22.	74.	273.	1,470.	730.	910.
2	628.1	636.4	8.2	19.3	38.	32.	564.	4,620.	10.	82.	18.	73.	270.	2,210.	2,410.	2,970.
1&2	622.2	636.4	13.6	18.0	36.	37.	502.	6,820.	7.0	95.	19.	73.	271.	3,680.	3,140.	3,880.

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.