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EARLOUGHER ENGINEERING
CORE SUMMARY

Company Kewanee Oil Company Lease Parks Well No. WI-138

Location 2,080 feet N, 1,010 feet E of SW corner

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

Formation Cored Squirrel Sand Type Core Rotary, 3 inch

Date Cored 9-10-48 Date Shot _____ Date Completed _____

Depths:

Started coring, shale	638.5 feet
Top of oil sand section	641.5 "
Bottom of oil sand section	671.7 "
Net feet of oil sand	19.6 "
Bottom of core, shale	679.5 "
Total cored	41.0 "
Feet analyzed	22.3 "

Shot Record: Set Packer 647 Feet

Depth, Feet From	Depth, Feet To	Feet	Shell Diameter	Quarts Per Foot	Quarts Total
650	671	21	4-1/2"	3.2	67.2

Plug back to 672 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: This core shows 19.6 net feet of sand in a very broken section between 641.5 and 671.7 feet. The oil sand occurs for the most part in relatively thin streaks throughout a shale section.

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PERMEABILITY Permeability is uniformly low with the weighted average being 3.6 millidarcys. Individual values range from 0.2 to 10. millidarcys. Permeability capacity is 71. foot-millidarcys.

POROSITY Average porosity is 18.0 percent and values range from 12.9 to 23.0 percent.

PERCENT SATURATION Average oil saturation is 30. percent and average core water saturation 45. percent. The oil saturation is generally low throughout the section.

OIL CONTENT Average oil content of the oil sand is 413. barrels per acre foot and values range from 200. to 690. barrels per acre foot.

LABORATORY FLOODING TESTS Laboratory flooding tests yielded an average oil recovery of 164. barrels per acre foot and average residual oil saturation was 17. percent. These samples responded fairly well to water flooding in these laboratory tests with no indication of serious water by passing. Insofar as these tests are indicative this sand should respond satisfactorily to water flooding.

CONCLUSIONS

1. Net feet of oil sand is 19.6 feet located in a broken shale and sand section between 641.5 and 671.7 feet.
2. A vertical fracture occurs in the shaly sand between 640.5 and 641.5 feet for which reason it was recommended packer be set at 647. feet so that bottom of cement above the packer should be below 642. feet.

3. Although the average oil saturation is only 30. percent, laboratory flooding tests indicate that this sand should respond fairly well to water flooding.

4. Estimated oil recovery by water flooding is 143. barrels per acre foot or 2,800 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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RESULTS OF SATURATION TESTS

COMPANY Kewanee Oil Company WELL Parks No. WI-138

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	641.0	13.7	20	69	89	210	1.1*		
F 1	642.0	12.9	30	-	-	300	1.0	1.0	300
2	643.0	13.2	28	56	84	290	1.0	2.0	290
F 2	644.0	17.7	26	-	-	360	1.0	3.0	360
3	644.7	8.9	28	72	100	190	0.7*		
F 3	645.5	12.8	19	-	-	190	0 9*		
4	646.5	13.1	36	62	98	360	0.8	3.8	290
F 4	647.6	19.6	20	-	-	300	1.0	4.8	300
5	649.4	20.0	29	39	68	450	1.6	6.4	720
F 5	650.5	19.9	19	-	-	300	1.0	7.4	300
6	651.5	17.7	28	40	68	380	0.6	8.0	230
F 6	652.3	20.4	16	-	-	260	1.0	9.0	260
7	653.3	12.9	53	47	100	530	0.6	9.6	320
F 7	654.2	20.2	31	-	-	490	1.4	11.0	690
8	655.5	20.8	30	34	64	490	0.8	11.8	390
F 8	656.2	20.8	20	-	-	330	0.3	12.1	100
9	656.9	23.0	27	31	58	490	0.3	12.4	150
F 9	657.7	19.0	36	-	-	530	0.6	13.0	320
10	658.3	19.9	24	40	64	370	0.5	13.5	190
F 10	660.0	19.7	37	-	-	560	1.1	14.6	620
12	661.8	14.5	25.	67	92	280	0.7	15.3	200
F 11	663.0	19.6	45	-	-	690	1.0	16.3	690
14	664.5	19.6	30	40	70	460	0.5	16.8	230
F 12	668.0	19.1	31	-		460	0.8	17.6	370
15	668.9	15.4	31	55	86	370	0.8	18.4	300
F 13	670.7	17.4	33	-	-	440	0.5	18.9	220
16	671.5	17.0	28	33	60	370	0.7	19.6	260

*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
641.5	671.7	19.6	18.0	30	45	413	8,100

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RESULTS OF PERMEABILITY TESTS

COMPANY Kewanee Oil Company WELL Parks No. WI-138

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	641.3	0.5	1.1*			20	654.5	10.	0.7	11.0	7.0
2	641.7	1.5	1.0	1.0	1.5	21	655.3	5.0	0.3	11.3	1.5
3	642.7	0.3	0.5	1.5	0.2	22	655.8	6.0	0.8	12.1	4.8
4	643.3	0.3	0.5	2.0	0.2	23	656.8	4.8	0.3	12.4	1.4
5	643.7	1.6	0.5	2.5	0.8	24	657.5	2.1	0.2	12.6	0.4
6	644.2	2.4	0.5	3.0	1.2	25	658.0	2.2	0.9	13.5	2.0
7	644.5	Imp.	0.7*			26	659.0	4.7	0.2	13.7	0.9
8	645.3	0.2	0.9*			27	659.6	0.8	0.3	14.0	0.2
9	646.3	0.5	0.3	3.3	0.2	28	660.3	2.6	0.6	14.6	1.6
10	646.7	0.4	0.5	3.8	0.2	29	661.6	4.0	0.7	15.3	2.8
11	647.5	0.2	0.7	4.5	0.1	30	662.3	1.3	0.1	15.4	0.1
12	648.0	4.0	0.3	4.8	1.2	31	662.7	7.3	0.9	16.3	6.6
13	649.2	3.4	1.6	6.4	5.4	32	664.3	4.3	0.5	16.8	2.2
14	650.1	3.7	0.3	6.7	1.1	33	667.7	3.3	0.3	17.1	1.0
15	650.8	4.0	0.7	7.4	2.8	34	668.2	3.5	0.5	17.6	1.8
16	651.8	1.8	0.6	8.0	1.1	35	668.7	7.6	0.4	18.0	3.0
17	652.7	7.4	1.0	9.0	7.4	36	669.3	1.2	0.4	18.4	0.5
18	653.1	0.2	0.6	9.6	0.1	37	670.9	5.0	0.5	18.9	2.5
19	653.9	6.4	0.7	10.3	4.5	38	671.4	3.7	0.7	19.6	2.6

*Not included in cumulative feet of sand.

SUMMARY

DEPTH FEET FROM	DEPTH FEET TO	FEET OF SAND	AVERAGE PERMEABILITY	CAPACITY FT. X MD.
641.5	671.7	19.6	3.6	71.

EARLOUGHER ENGINEERING

RESULTS OF LABORATORY FLOODING TESTS

COMPANY Kewanee Oil Company LEASE Parks WELL NO. WI-138

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 1	642.0	12.9	2.0	30.	-	300.	40	33	675	22	85	230		72.
F 2	644.0	17.7	3.0	26	-	360.	40	35	675	17	61	240		124
F 3	645.5	12.8	0.3	19.	-	190.	40	+	555	19	87	180		11.
F 4	647.6	19.6	0.4	20.	-	300.	40	82	675	14	53	210		86
F 5	650.5	19.9	4.0	19.	-	300.	40	29	675	14	54	220		84
F 6	652.3	20.4	5.0	16.	-	260.	40	35	675	13	52	210		46
F 7	654.2	20.2	8.0	31.	-	490.	40	149	675	18	61	290		202
F 8	656.2	20.8	3.0	20.	-	330	40	31	615	14	53	220		113
F 9	657.7	19.0	3.0	36	-	530.	40	330	1350	22	71	320		205
F 10	660.0	19.7	2.0	37.	-	560.	40	399	1350	19	71	290		268
F 11	663.0	19.6	3.0	45.	-	690.	40	1016	1350	20	78	310		375.
F 12	668.0	19.1	2.0	31.	-	460.	40	609	1350	18	70	260		200.
F 13	670.7	17.4	3.0	33.	-	440	40	85	1350	18	67	250		193.

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
	641.5	671.7	19.6	18.0	30.	45.	413.	8,100	3.6	71.	17.	65	238.	4,660.	3,440.	3,210.

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.