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EARLOUGHER ENGINEERING

CORE SUMMARY

Company Kewanee Oil Company Lease Daniels Well No. 122

Location 1890 feet West, 1580 feet South, NE Corner

Section 4 Twp. 21-S Rge. 21-E County Anderson State Kansas

Formation Cored Squirrel Sand Type Core No. 6 Baker Barrel

Date Cored 3/21 & 22/48 Date Shot \_\_\_\_\_ Date Completed \_\_\_\_\_

Depths:

Started coring, shale	636.5 ft.
Top of oil sand	644.0 "
Bottom of oil sand	672.1 "
Net feet of oil sand	13.7 "
Bottom of core, sandy shale	672.2 "
Total cored	35.7 "
Feet analyzed	25.6 "

Shot Record:

Set Packer 651.0 Feet

Depth, Feet		Feet	Shell Diameter	Quarts Per Foot	Quarts Total
From	To				
654.	662.	8.	4 1/2"	3.2	25.6
662.	672.	10.	3 1/2"	2.0	20.0
					45.6

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 well was cored with No. 6 Baker barrel. The oil saturation is good in the clean sand streaks but is low in the shaly sand sections. It was noted that the sand and shale between depths 654.0 and 662.0 feet was very rotten and crumbled easily. Permeability was low in this soft sand and it was recommended that this section be shot somewhat heavier than the good sand below.

Results of analysis indicate 13.7 net feet of oil sand between depths 644.0 and 672.1 feet. The main oil pay section lies at the base of the sand body between 662.1 and 672.1 feet.

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PERMEABILITY Average permeability is 9.5 millidarcys and values range from impermeable to 42 millidarcys. Permeability capacity is 130 foot millidarcys.

POROSITY Average porosity is 18.1 percent which is somewhat below the average for this lease. Individual values range from 14.7 to 23.3 percent.

PERCENT SATURATION Average oil saturation is 42 percent and average core water saturation 51 percent. The oil saturation is higher than normally shown by cable tool cores from this lease; however, the core water saturation is about normal for cable tool cores.

OIL CONTENT Average oil content of the oil sand is 597 barrels per acre-foot and values range from 420 to 850 barrels per acre-foot.

LABORATORY FLOODING TESTS Four flood samples were obtained from the oil sand section. Average oil recovery was 332 barrels per acre-foot and average residual oil saturation 20 percent.

CONCLUSIONS:

1. Net feet of oil sand is 13.7 feet located in a broken section between depths 644.0 and 672.1 feet.
2. The average oil saturation is 42 percent which is somewhat higher than normally found in cable tool cores from this lease.
3. Estimated oil recovery by water flooding is 286 barrels per acre-foot or 3,900 barrels per acre from the area of which this core is representative.

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# EARLOUGHER ENGINEERING

## RESULTS OF SATURATION TESTS

COMPANY Kewanee Oil Company

WELL Daniels Well No. 122

Sat. No.	Depth Feet	Porosity Per Cent	PER CENT SAT.			Avg. Oil Content Bbls./A. Ft.	FT. OF SAND		Total Oil Content Bbls./Acre
			Oil	Water	Total		Ft.	Cum.	
1	643.0	13.9	31.	67.	98.	340.	0.8*		
2	645.2	15.9	38.	44.	82.	460.	1.5	1.5	690.
3	647.2	12.6	27.	73.	100.	270.	1.3*		
4	648.0	23.3	26.	33.	59.	470.	0.7	2.2	330.
F- 1	648.3	23.3	35.	--	--	630.	0.6	2.8	380.
5	649.2	12.9	34.	66.	100.	340.	1.0	3.8	340.
6	650.4	15.9	26.	57.	83.	320.	1.1	4.9	350.
7	651.3	16.1	29.	51.	80.	360.	1.2	6.1	430.
8	653.2	14.7	37.	53.	90.	420.	0.8	6.9	340.
9	654.2	15.5	41.	59.	100.	490.	1.1	8.0	540.
10	655.5	16.0	42.	58.	100.	520.	0.7	8.7	360.
11	656.6	16.2	46.	43.	89.	580.	0.7	9.4	410.
12	657.8	12.5	20.	80.	100.	200.	1.2*		
13	659.0	13.7	35.	65.	100.	370.	1.2	10.6	440.
14	660.2	14.9	30.	70.	100.	350.	1.2	11.8	420.
15	661.7	19.2	21.	48.	69.	320.	0.9	12.7	290.
16	662.7	16.2	41.	59.	100.	520.	1.2	13.9	620.
F- 2	664.1	23.2	42.	--	--	760.	1.0	14.9	760.
17	664.7	22.0	50.	42.	92.	850.	0.7	15.6	600.
F- 3	665.1	22.0	36.	--	--	610.	0.6	16.2	370.
18	666.2	15.5	46.	54.	100.	550.	1.5	17.7	830.
19	668.2	17.5	50.	50.	100.	680.	1.1	18.8	750.
20	668.8	21.4	20.	46.	66.	340.	0.8*		
21	669.8	14.7	35.	65.	100.	400.	1.2*		
F- 4	671.1	18.7	54.	--	--	790.	1.1	19.9	870.
22	671.9	21.8	48.	38.	86.	820.	0.4	20.3	330.
							<u>25.6</u>		

\* - Not included in cumulative feet of sand.

### SUMMARY

	DEPTH FEET		FEET OF SAND	AVG. POROSITY	AVG. OIL SAT.	AVG. WATER SAT.	AVG. OIL CONTENT BBL./A. FT.	TOTAL OIL CONTENT BBL./ACRE
	FROM	TO						
1	644.0	648.8	2.8	19.3	33.	39.	500.	1,400.
2	648.8	652.4	3.3	15.1	29.	58.	339.	1,120.
3	652.9	656.9	3.3	15.5	42.	53.	500.	1,650.
4	658.3	662.1	3.3	15.6	29.	61.	348.	1,150.
5	662.1	672.1	7.6	18.8	46.	49.	675.	5,130.
,3&5	644.0	672.1	13.7	18.1	42.	51.	597.	8,180.

EARLOUGHER ENGINEERING

RESULTS OF PERMEABILITY TESTS

COMPANY Kewanee Oil Company

WELL Daniels Well No. 122

Sample No.	Depth Feet	Permeability Millidarcys	FEET OF SAND		Capacity Ft. X Md.	Sample No.	Depth Feet	Permeability Millidarcys	FEET OF SAND		Capacity Ft. X Md.
			Ft.	Cum. Ft.					Ft.	Cum. Ft.	
1	642.0	Imp.	1.0*			25	657.5	Imp.	0.2*		
2	642.8	20.	0.4*			26	658.0	Cracked	*		
3	643.4	1.0	0.4*			27	658.3	9.3	0.2	9.6	1.9
4	644.1	5.0	0.4	0.4	2.0	28	659.3	Imp.	1.0	10.6	
5	644.9	5.9	0.4	0.8	2.4	29	660.0	0.5	1.2	11.8	0.6
6	645.4	6.6	0.7	1.5	4.6	30	661.1	Imp.	0.3*		
7	646.1	0.4	0.8*			31	662.1	5.5	0.9	12.7	5.0
8	646.9	Imp.	0.2*			32	663.0	0.6	1.2	13.9	0.7
9	647.5	0.6	0.5*			33	663.5	26.	0.5	14.4	13.
10	647.8	12.	0.7	2.2	8.4	34	663.9	24.	0.5	14.9	7.0
11	648.6	29.	0.6	2.8	17.	35	664.3	12.	0.4	15.3	4.8
12	649.5	Imp.	1.0	3.8		36	664.9	23.	0.3	15.6	6.9
13	650.1	0.6	0.4	4.2	0.2	37	665.4	25.	0.6	16.2	15.
14	650.7	8.0	0.7	4.9	5.6	38	665.8	Imp.	0.1*		
15	651.0	2.8	1.2	6.1	3.4	39	666.4	0.5	1.1	17.3	0.6
16	651.6	Imp.	0.3*			40	667.1	1.4	0.4	17.7	0.6
17	653.0	Imp.	0.2	6.3		41	667.8	3.3	0.9	18.6	3.0
18	653.4	0.6	0.6	6.9	0.4	42	668.5	42.	0.2	18.8	8.4
19	653.9	0.7	1.1	8.0	0.8	43	669.6	1.7	1.0*		
20	654.4	Imp.	0.3*			44	670.1	0.8	0.7*		
21	655.1	0.7	0.1*			45	670.5	2.3	0.3*		
22	655.8	2.7	0.7	8.7	1.9	46	671.3	22.	1.1	19.9	24.
23	656.5	1.0	0.7	9.4	0.7	47	671.8	19.	0.4	20.3	7.6
24	657.0	0.1	1.2*			48	672.1	0.6	0.1*		
									28.2		

\* - Not included in cumulative feet of sand.

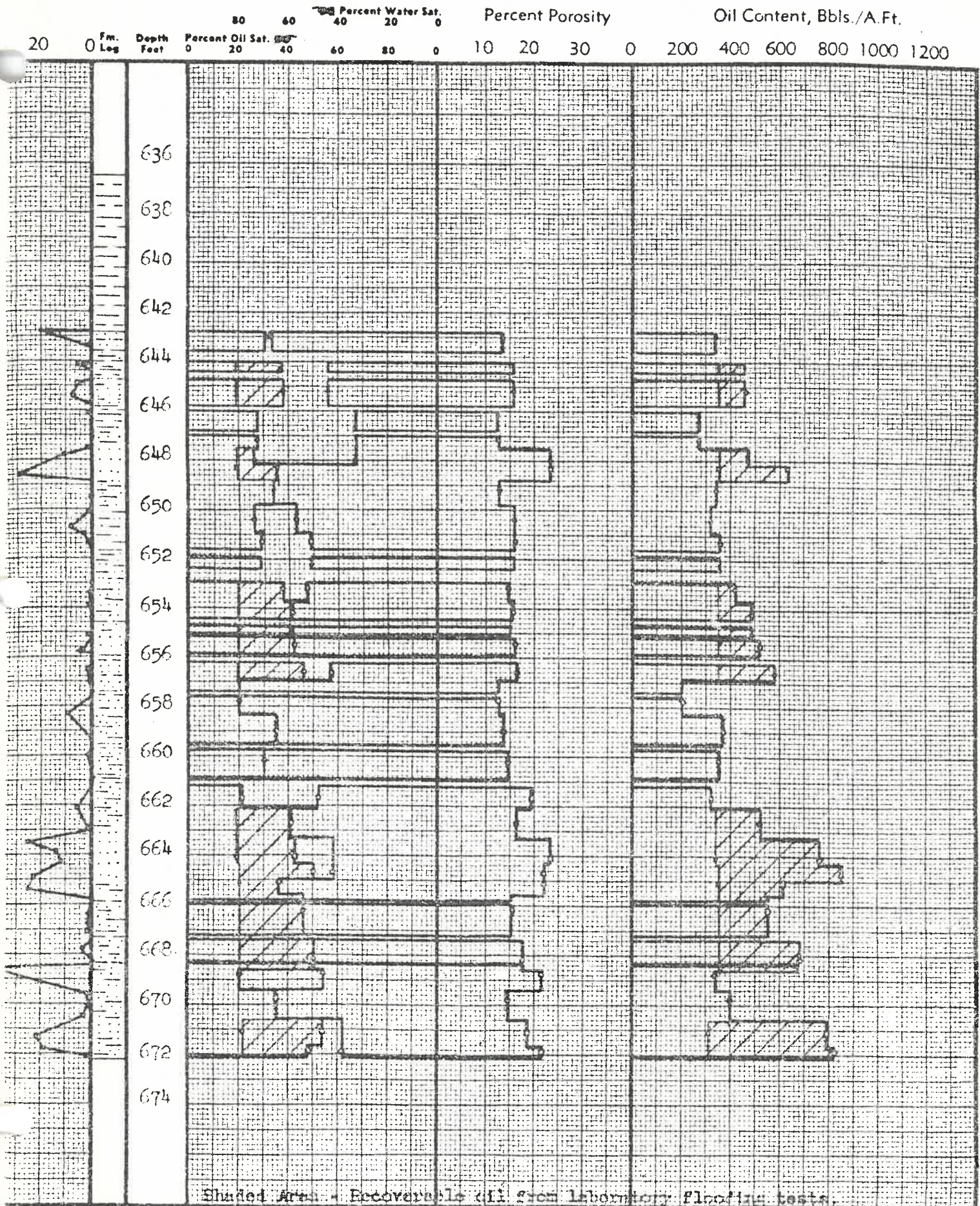
SUMMARY

	DEPTH FEET		FEET OF SAND	AVERAGE PERMEABILITY	CAPACITY FT. X MD.
	FROM	TO			
1	644.0	648.8	2.8	12.	34.
2	648.8	652.4	3.3	2.8	9.2
3	652.9	656.9	3.3	1.1	3.8
4	658.3	662.1	3.3	2.3	7.5
5	662.1	672.1	7.6	12.	92.
1, 3 & 5	644.0	672.1	13.7	9.5	130.









Shaded Area - Recoverable Oil from Laboratory Flooding tests.

Permeability	Capacity Ft x Md.	Flood Pot Residuals		
		Saturation		Oil Content
		Oil	Water	B / A Ft.    Bbl / Ac.
	34.	19.	76.	284.    800.
2	9.2	--	--	--    --
1	3.8	20.	--	241.    800.
3	7.5	--	--	--    --
	92.	20.	72.	292.    2,220.
5	130.	20.	73.	278.    3,820.

COMPANY KEMWEE OIL COMPANY  
 LEASE DANTELS WELL NO. 122  
 LOCATION 1000' W., 1500' S., NE Corner  
SEC 4 T. 21S R. 21E COUNTY Anderson  
 STATE Oklahoma DATE 1-1-57  
 EARLOUGHER ENGINEERING TULSA, OKLAHOMA