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EARLOUGHER ENGINEERING
CORE SUMMARY

Company Kewance Oil Company Lease Daniels Well No. 120

Location 1315 feet West, 1620 feet South of NE Corner

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

Formation Cored Squirrel Sand Type Core Rotary, 3-inch

Date Cored 6-21-48 Date Shot _____ Date Completed _____

Depths:	Started coring, top of oil sand	625.0 ft.
	Bottom of oil sand section	645.5 "
	Net feet of oil sand	13.7 "
	Bottom of core, shale	659.5 "
	Total cored	34.5 "
	Feet analyzed	17.3 "

Shot Record: Set Packer 624.0 Feet

Depth, Feet		Feet	Shell Diameter	Quarts Per Foot	Quarts Total
From	To				
627	644	17	4"	2.5	42.5

Plug back to 645.0 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 the top of the oil sand at 625.0 feet and stopped in shale at 659.5 feet. Net feet of oil sand is 13.7 feet located in a characteristic broken section between 625.0 and 645.5 feet. The top 7.6 net feet of sand represents the main oil pay section.

PERMEABILITY Average permeability is 10 millidarcys and values range from 0.2 to 29 millidarcys. The top 7.6 net feet of sand has an average permeability of 16 millidarcys while the bottom 6.1 net feet averages only 2.6

millidarcys. Permeability capacity is 137 foot-millidarcys.

POROSITY Average porosity is 16.8 percent and values range from 10.7 to 21.3 percent. The top 7.6 net feet of sand has an average porosity of 19.3 percent while the bottom 6.1 net feet averages only 13.7 percent.

PERCENT SATURATION The upper 7.6 net feet of sand is quite rich with an average oil saturation of 45 percent and average core water saturation of 31 percent. The bottom 6.1 net feet has a relatively low average oil saturation of 37 percent and average water saturation of 44 percent. Over-all average oil saturation is 42 percent.

OIL CONTENT Average oil content is 552 barrels per acre-foot with the upper section averaging 680 barrels per acre-foot and the lower section 394 barrels per acre-foot.

LABORATORY FLOODING TESTS Laboratory flooding tests yielded an average oil recovery of 275 barrels per acre-foot and average residual oil saturation was 21 percent. The upper 7.6 net feet of oil sand responded considerably better to water flooding than the lower 6.1 net feet. Thus the average oil recovery from the upper section was 403 barrels per acre-foot and from the lower section, 116 barrels per acre-foot. Average residual oil saturation was 18 percent for the upper section and 26 percent for the lower section.

CONCLUSIONS

1. Net feet of oil sand is 13.7 feet located in a broken section between 625.0 and 645.5 feet. The upper 7.6 net feet of sand represents the main oil pay zone.
2. This well is located on the East edge of the sand stringer and the lower part of the sand section is very nearly shaled out.

3. Estimated oil recovery by water flooding is 3,400 barrels per acre from the area of which this core is representative.

Respectfully submitted

EARLOUGHER ENGINEERING



J. M. Robinson, Engineer

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EARLOUGHER ENGINEERING

RESULTS OF SATURATION TESTS

COMPANY Kewanee WELL Daniels No. W-120

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	626.5	17.2	34.	39.	73.	460.	1.3	1.3	600.
F-1	627.2	15.5	44.	-	-	530.	0.6	1.9	320.
2	627.8	17.2	48.	36.	84.	640.	0.5	2.4	320.
F-2	628.2	17.2	51.	-	-	680.	0.7	3.1	480.
3	629.4	10.1	27.	73.	100.	230.	1.0		
F-4	630.7	21.3	57.	-	-	940.	1.3	4.4	1,220.
4	631.6	16.9	20.	47.	67.	260.	0.6		
6	633.5	21.2	42.	25.	67.	690.	1.1	55.	760.
F-5	634.2	19.8	42.	-	-	650.	0.9	6.4	590.
6	635.0	21.3	44.	23.	67.	730.	1.2	7.6	880.
F-6	636.2	13.2	39.	-	-	400.	1.1	8.7	440.
7	638.3	15.5	36.	49.	85.	440.	0.9	9.6	400.
F-7	639.2	16.0	30.	-	-	370.	0.8	10.4	300.
8	641.0	17.8	28.	39.	67.	390.	0.6	11.0	230.
F-8	642.9	14.3	38.	-	-	420.	0.7	11.7	290.
F-9	644.0	10.7	44.	-	-	370.	2.0	13.7	740.
*Not included in cumulative feet of sand.									

SUMMARY

	DEPTH FEET		FEET OF SAND	AVG. POROSITY	AVG. OIL SAT.	AVG. WATER SAT.	AVG. OIL CONTENT BBLs./A. FT.	TOTAL OIL CONT BBLs./ACRE
	FROM	TO						
1	625.0	635.9	7.6	19.3	45.	31.	680.	5,170.
2	635.9	645.5	6.1	13.7	37.	44.	394.	2,400.
& 2	625.0	645.5	13.7	16.8	42.	35.	552.	7,570.

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RESULTS OF LABORATORY

COMPANY Keweenaw Oil Company

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COMPANY

Sample No.	Depth	Porosity	Perm. Approx.	BEFORE FLOODING 1/			Max. Press. Psi.	Water Thru c.c.
				Oil Sat.	Water Sat.	Oil Content B./A. Ft.		
F-1	627.2	15.5	3.0	44.		530.	40.	493.
F-2	628.2	17.2	-0-	51.		680.	40.	662.
F-4	630.7	21.3	17.	57.		940.	40.	7,290.
F-5	634.2	19.8	20.	42.		650.	40.	3,734.
F-6	636.2	13.2	2.3	39.		400.	40.	245.
F-7	639.2	16.0	-0-	30.		370.	40.	285.
F-8	642.9	14.3	3.0	38.		420.	40.	27.
F-9	644.0	10.7	-0-	44.		370.	40.	70.

SUMMARY

Sec.	DEPTH, FEET		Net Ft. of Sand	Avg. Por.	Average Core Sat.		CORE OIL CONTENT		PERMEABIL	
	From	To			Oil	Water	Avg. B./A. Ft.	Total Bbl./Ac.	Avg. Mds.	Cap Ft.
2	635.9	645.5	6.1	13.7	37.	44.	394.	2,400.	2.6	
1 & 2	625.0	645.5	13.7**	16.8	42.	35.	552.	7,570.	10.	

**Includes 1.1 feet of sand cored but not analyzed.

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

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EARLOUGHER ENGINEERING

RESULTS OF PERMEABILITY TESTS

COMPANY Kewanee Oil Company

WELL Daniels No. W-120

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	625.4	20.	0.6	0.6	12.	17	635.3	29.	1.2	7.6	35.
2	626.3	4.5	0.7	1.3	3.2	18	635.9	0.6	0.2	7.8	0.1
3	626.9	1.2	0.6	1.9	0.7	19	636.2	2.3	0.3	8.1	0.7
4	627.5	4.0	0.5	2.4	2.0	20	636.9	14.	0.6	8.7	8.4
5	628.0	0.5	0.1*			21	637.8	2.9	0.2	8.9	0.6
6	628.7	3.4	0.7	3.1	2.4	22	638.2	1.0	0.5	9.4	0.5
7	629.4	0.5	0.6*			23	638.8	4.3	0.2	9.6	0.9
8	629.7	0.7	0.4*			24	639.6	0.3	0.8	10.4	0.2
9	630.4	25.	0.7	3.8	18.	24A	640.0	Imp.	0.7*		
10	631.1	3.7	0.6	4.4	2.2	24B	640.7	0.5	0.3	10.7	0.2
11	631.6	8.4	0.6*			25	641.1	7.7	0.3	11.0	2.3
12	632.1	0.1	0.7*			26	641.5	Imp.	0.5*		
13	632.9	Cracked				27	642.6	4.0	0.4	11.4	1.6
14	633.2	27.	0.6	5.0	16.	28	643.2	0.6	0.3	11.7	0.2
15	633.8	17.	0.5	5.5	8.5	29	643.7	0.2	2.0	13.7**	0.4
16	634.5	23.	0.9	6.4	21.						

*Not included in cumulative feet of sand.

**Includes 1.1 feet of sand cored but not analyzed.

SUMMARY

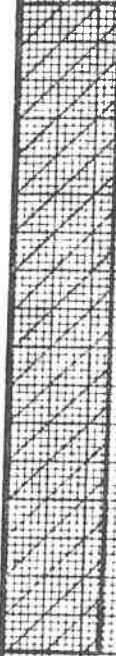
	DEPTH FEET		FEET OF SAND	AVERAGE PERMEABILITY	CAPACITY FT. X MD.
	FROM	TO			
1	625.0	635.9	7.6	16.	121.
2	635.9	645.5	6.1	2.6	16.
1 & 2	625.0	645.5	13.7**	10.	137.

Shot, Qts./Ft.

0 2 4 340 320 300 280 260 240 220 200 180 160 140 120 100 80

COMPANY

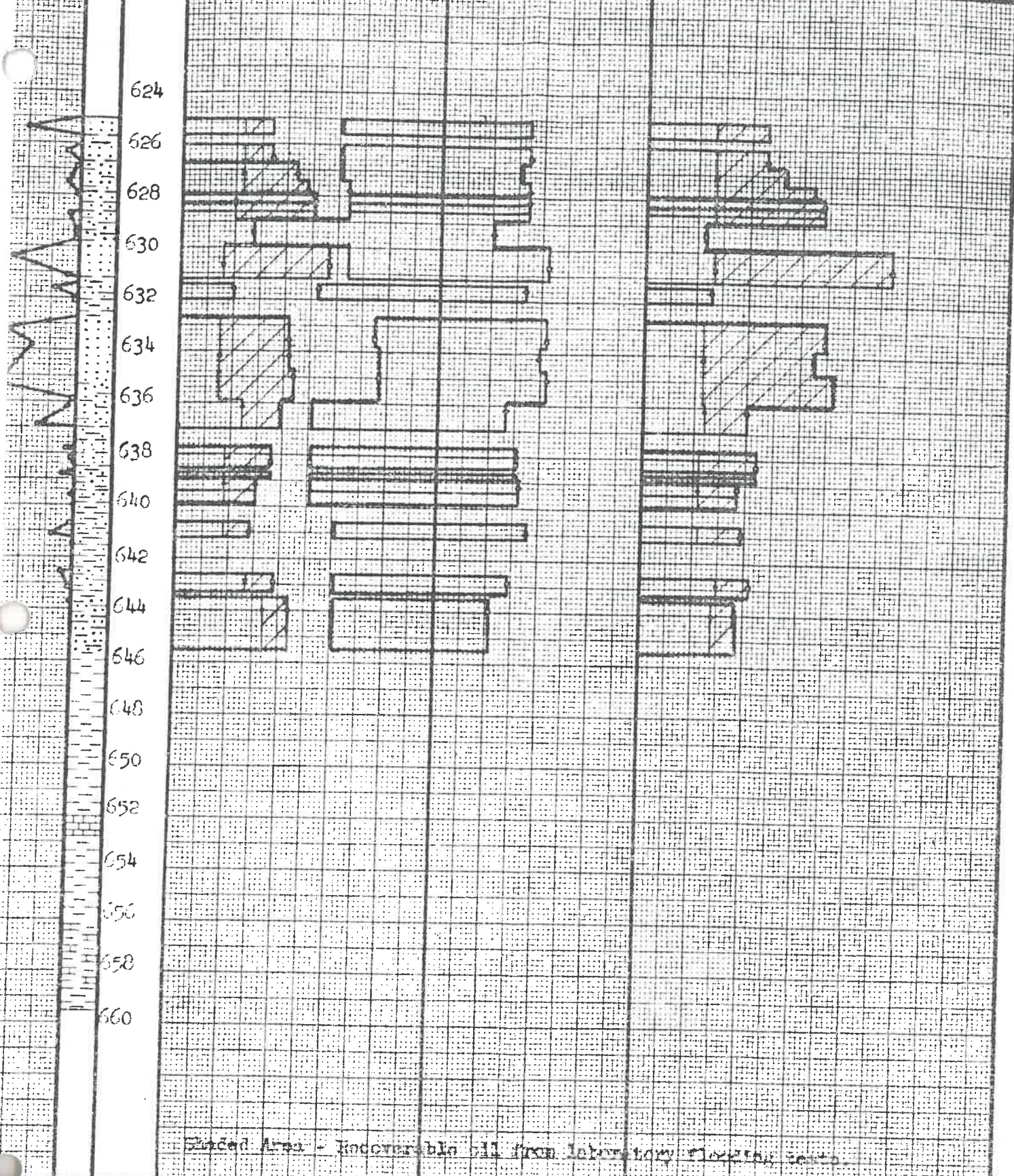
Bot marker at 625.0 feet
 Plug back to 645.0 feet
 Total shot = 42.5 qts



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Sec.	Sand	Depth, Feet		Net Ft. of Sand	Avg. Por.	Average Core Sat.		Core Oil Cont.	
		From	To			Oil	Water	Avg B./A.Ft.	Tc Bbl
1	Squirrel	625.0	635.9	7.6	19.3	45.	31.	680.	5.1
2	Squirrel	635.9	645.5	6.1	13.7	37.	44.	304.	2.4

20 0 Fm. Log Depth Feet 80 60 40 20 0 Percent Oil Sat. 0 20 40 60 80 0 Percent Porosity 10 20 30 0 200 400 600 800 1000 1200 Oil Content, bbls/Ac.



Capacity Ft x Md.	Flood Pot Residuals			
	Saturation		Oil Content	
	Oil	Water	B / A Ft	Bbl / Ac
111.	18.	75.	277.	2,116.
1.	26.	71.	277.	1,690.
127	21	72	277	2,014

COMPANY Kewanee Oil Company
 LEASE Dawrels WELL NO. 120
 LOCATION 1315' W., 1620' S of NE Corner
 SEC. 4 T. 21-SR 21-E COUNTY Anderson
 STATE Kansas DATE 6-20-48