

Lincoln 77, Inc.

Le

Bartlett #9 • API # 15-031-21, 356

NE SE NE of NE $\frac{1}{4}$, Sec 12, T23S-R16E

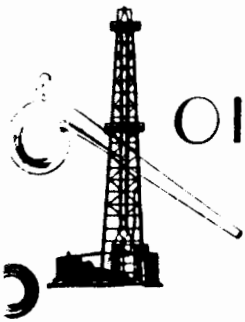
Coffey County, Kansas

LOWER SQUIRREL

3/29/83 Cored 923-943 (full Recovery)

Boxed 923-943.2 (7 Boxes) 8-m log CA

ID, D3



OILFIELD RESEARCH LABORATORIES

536 NORTH HIGHLAND - CHANUTE, KANSAS 66720 - PHONE (316) 431-2650

April 5, 1983

Lincoln 77
3633 O Street, Suite 4
P. O. Box 30538
Lincoln, Nebraska 68510

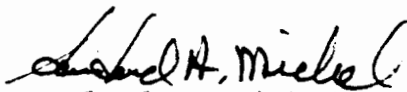
Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Bartlett Lease, Well No. 9, located in Coffey County, Kansas and submitted to our laboratory on March 30, 1983.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES


Sanford A. Michel

SAM/rmc

4 c to Lincoln, Nebraska
1 c to Topeka, Kansas

Oilfield Research Laboratories
GENERAL INFORMATION & SUMMARY

Company Lincoln 77 Lease Bartlett Well No. 9
Location NE $\frac{1}{4}$, SE $\frac{1}{4}$, NE $\frac{1}{4}$, NE $\frac{1}{4}$
Section 12 Twp. 23S Rge. 16E County Coffey State Kansas

Elevation, Feet

Name of Sand.....

Lower Squirrel (Upper Cherokee)

Top of Core

24.0

Bottom of Core

45.0

Top of Sand (Tested)

27.0

Bottom of Sand

38.0

Total Feet of Permeable Sand

9.4

Total Feet of Floodable Sand

3.4

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 10	4.1	4.1
10 - 20	1.8	5.9
30 - 53	3.5	9.4

Average Permeability Millidarcys

21.9

Average Percent Porosity

18.7

Average Percent Oil Saturation

41.9

Average Percent Water Saturation

45.5

Average Oil Content, Bbls./A. Ft.

612.

Total Oil Content, Bbls./Acre

6,307.

Average Percent Oil Recovery by Laboratory Flooding Tests

7.4

Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.

120.

Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre

408.

Total Calculated Oil Recovery, Bbls./Acre

See "Calculated Recovery"
Section

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-2-

The core was sampled and the samples sealed in plastic bags by a representative of the client. Fresh water mud was used as a drilling fluid.

FORMATION CORED

The detailed log of the formation cored is as follows:

<u>Depth Interval, Feet</u>	<u>Description</u>
924.0 - 926.5	Gray shale.
926.5 - 927.0	Grayish brown slightly calcareous very shaly sandstone.
927.0 - 927.9	Grayish brown very shaly sandstone.
927.9 - 928.6	Gray slightly sandy shale.
928.6 - 933.9	Brown sandstone.
933.9 - 936.0	Brown slightly shaly sandstone with scattered gray shale partings.
936.0 - 937.0	Alternate layers gray shale and brown sandstone.
937.0 - 938.0	Brown shaly sandstone.
938.0 - 945.0	Gray shale containing a vertical fracture.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 408 barrels of oil per acre was obtained from 3.4 feet of sand. The weighted average percent oil saturation was reduced from 44.2 to 36.8, or represents an average recovery of 7.4 percent. The weighted average effective permeability of the samples is 4.55 millidarcys, while the average initial fluid production pressure is 12.5 pounds per square inch (See Table V).

-3-

By observing the data given in Table IV, you will note that of the 11 samples tested, 4 produced water and oil, and 3 produced water only. This indicates that approximately 36 percent of the sand represented by these samples is floodable pay sand.

CALCULATED RECOVERY

It would appear from a study of the core data, that efficient primary and waterflood operations in the vicinity of this well should recover approximately 910 barrels of oil per acre. This is an average recovery of 269 barrels per acre foot from 3.4 feet of floodable sand analyzed in this core.

These recovery values were calculated using the following data and assumptions:

Original formation volume factor, estimated	1.05
Reservoir water saturation, percent, estimated	30.0
Average porosity, percent	21.1
Oil saturation after flooding, percent	36.8
Performance factor, percent, estimated	55.0
Net floodable sand, feet	3.4

RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE I-B

Company Lincoln 77 Lease Bartlett Well No. 9

Sample No.	Depth, Feet	Effective Porosity Percent	Percent Saturation			Oil Content Bbls. / A Ft.	Perm., Mill.	Feet of Sand		Total Oil Content	Perm. Capacity Ft. X md.
			Oil	Water	Total			Ft.	Cum. Ft.		
1	927.8	12.2	13	79	92	123	Imp.	0.9	0.9	111	0.00
2	928.8	18.1	34	48	82	477	15.	1.0	1.9	477	15.00
3	929.7	21.2	28	54	82	461	42.	0.9	2.8	415	37.80
4	930.6	20.8	40	55	95	646	33.	0.9	3.7	581	29.70
5	931.5	21.5	46	37	83	767	52.	1.0	4.7	767	52.00
6	932.5	21.1	39	39	78	638	47.	0.7	5.4	447	32.90
7	933.2	20.7	51	42	93	819	19.	0.8	6.2	655	15.20
8	934.5	19.2	45	45	90	670	7.5	1.1	7.3	737	8.25
9	935.5	17.9	62	30	92	861	9.4	1.0	8.3	861	9.40
10	936.6	15.2	60	36	96	708	0.42	1.0	9.3	708	0.42
11	937.7	18.1	39	38	77	548	5.2	1.0	10.3	548	5.20

Oilfield Research Laboratories

SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company Lincoln 77 Lease Bartlett Well No. 9

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
927.0 - 931.4	2.8	29.5	82.50
931.4 - 938.0	6.6	18.7	123.37
927.0 - 938.0	9.4	21.9	205.87

Depth Interval, Feet	Feet of Core Analyzed	Average Percent Porosity	Average Percent Oil Saturation	Average Percent Water Saturation	Average Oil Content Bbl./A. Ft.	Total Oil Content Bbls./Acre
927.0 - 931.4	3.7	18.1	28.9	58.7	428	1,584
931.4 - 938.0	6.6	19.0	49.2	38.1	716	4,723
927.0 - 938.0	10.3	18.7	41.9	45.5	612	6,307

RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company		Lincoln 77		Lease		Bartlett		Well No.		9	
Sample No.	Depth, Feet	Effective Porosity Percent	Original Oil Saturation		Oil Recovery		Residual Saturation		Volume of Water Recovered cc*	Effective Permeability Millidarcys**	Initial Fluid Production Pressure Lbs./Sq./In.
			%	Bbls./A. Ft.	%	Bbls./A. Ft.	% Oil	% Water			
1	927.8	12.7	12	118	0	0	12	80	0	Imp.	-
2	928.8	18.2	34	480	0	0	34	61	3	0.22	50
3	929.7	21.4	28	465	0	0	28	60	258	2.50	10
4	930.6	20.9	40	649	4	65	36	61	562	6.50	10
5	931.5	21.5	46	767	6	100	40	55	464	5.83	10
6	932.5	21.2	39	641	5	82	34	64	200	3.00	15
7	933.2	20.6	51	815	15	240	36	59	160	2.10	15
8	934.5	19.3	45	674	0	0	45	48	24	0.50	40
9	935.5	18.2	61	861	0	0	61	31	0	Imp.	-
10	936.6	15.5	59	709	0	0	59	37	0	Imp.	-
11	937.7	18.0	39	545	0	0	39	39	0	Imp.	-

Notes: cc—cubic centimeter.

*—Volume of water recovered at the time of maximum oil recovery.

**—Determined by passing water through sample which still contains residual oil.

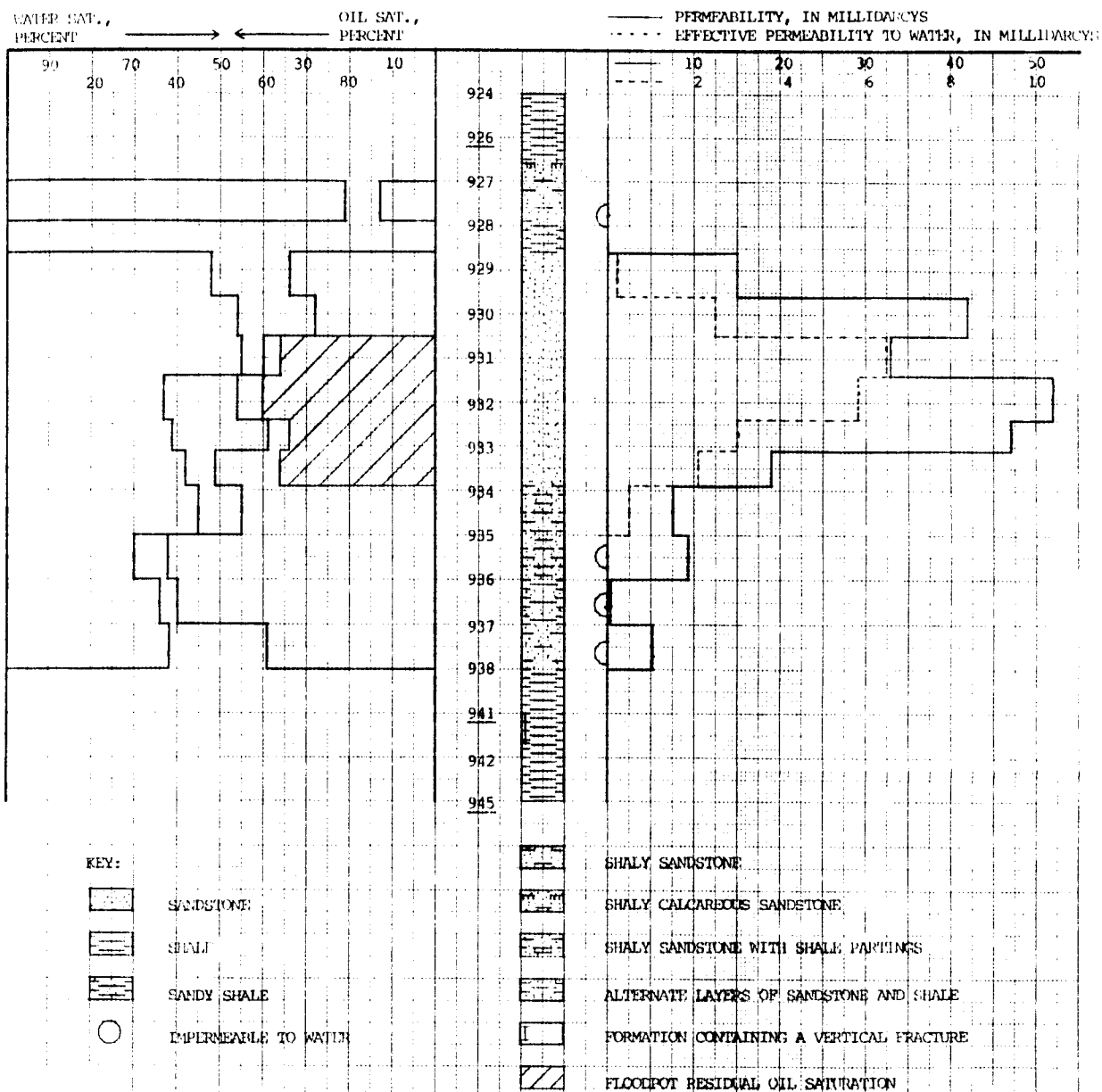
Oilfield Research Laboratories

SUMMARY OF LABORATORY FLOODING TESTS

TABLE V

Company	Lincoln 77	Lease	Bartlett	Well No.	9
Depth Interval, Feet	927.0 - 931.4	931.4 - 938.0	927.0 - 938.0		
Feet of Core Analyzed	0.9	2.5	3.4		
Average Percent Porosity	20.9	21.1	21.1		
Average Percent Original Oil Saturation	40.0	45.6	44.2		
Average Percent Oil Recovery	4.0	8.6	7.4		
Average Percent Residual Oil Saturation	36.0	37.0	36.8		
Average Percent Residual Water Saturation	61.0	58.8	59.4		
Average Percent Total Residual Fluid Saturation	97.0	95.8	96.2		
Average Original Oil Content, Bbls./A. Ft.	649.	747.	721.		
Average Oil Recovery, Bbls./A. Ft.	65.	140.	120.		
Average Residual Oil Content, Bbls./A. Ft.	584.	607.	601.		
Total Original Oil Content, Bbls./Acre	585.	1,867.	2,452.		
Total Oil Recovery, Bbls./Acre	59.	349.	408.		
Total Residual Oil Content, Bbls./Acre	526.	1,518.	2,044.		
Average Effective Permeability, Millidarcys	6.50	3.84	4.55		
Average Initial Fluid Production Pressure, p.s.i.	10.0	13.3	12.5		

NOTE: Only those samples which recovered oil were used in calculating the above averages.



LINCOLN 77

BARTLETT LEASE

COFFEY COUNTY, KANSAS

WELL NO. 9

DEPTH INTERVAL, FEET	FEET OF CORE ANALYZED	AVERAGE PERCENT POROSITY	AVG. OIL SATURATION PERCENT	AVG. WATER SATURATION PERCENT	AVERAGE PERMEABILITY, MILLIDARCYs	CALCULATED OIL RECOVERY BBLs. / ACRE
927.0 - 931.4	3.7	18.1	28.9	58.7	29.5	
931.4 - 938.0	6.6	19.0	49.2	38.1	18.7	
927.0 - 938.0	10.3	18.7	41.9	45.5	21.9	910 (PRIMARY AND WATERFLOODING)

OILFIELD RESEARCH LABORATORIES
 CHANUTE, KANSAS
 APRIL, 1983

FDC