

OILFIELD RESEARCH LABORATORIES

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

July 28, 1982

Andercan Energy Corporation
227½ South Main
P.O. Box 108
Ottawa, Kansas 66067

Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Black Lease, Well No. B-3, located in Miami County, Kansas and submitted to our laboratory on July 21, 1982.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES



Sanford A. Michel

SAM/dlb

5 c to Ottawa, Kansas

Oilfield Research Laboratories
GENERAL INFORMATION & SUMMARY

Company American Energy Corporation Lease Black Well No. B-3

Location _____

Section 14 Twp. 17S Rge. 21E County Miami State Kansas

Elevation, Feet	
Name of Sand.....	Peru
Top of Core	471.0
Bottom of Core	483.0
Top of Sand	471.0
Bottom of Sand	482.7
Total Feet of Permeable Sand	11.7
Total Feet of Floodable Sand	4.4

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 12	5.8	5.8
12 - 30	4.9	10.7
75 - 77	1.0	11.7

Average Permeability Millidarcys	18.1
Average Percent Porosity	17.8
Average Percent Oil Saturation	30.1
Average Percent Water Saturation.....	53.5
Average Oil Content, Bbls./A. Ft.....	419.
Total Oil Content, Bbls./Acre.....	4,903.
Average Percent Oil Recovery by Laboratory Flooding Tests.....	6.4
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	96.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	421.
Total Calculated Oil Recovery, Bbls./Acre.....	

See "Calculated Recovery"
Section

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>
471.0 - 472.3	Grayish brown slightly calcareous very shaly sandstone.
472.3 - 472.7	Light brown slightly calcareous slightly shaly sandstone.
472.7 - 473.8	Grayish light brown slightly calcareous very shaly sandstone.
473.8 - 474.8	Brown slightly calcareous sandstone with scattered gray shale partings.
474.8 - 480.7	Brown slightly calcareous sandstone with widely scattered gray shale partings.
480.7 - 482.1	Grayish brown slightly calcareous shaly sandstone.
482.1 - 482.7	Brown slightly calcareous slightly shaly sandstone.
482.7 - 483.0	Gray sandy shale.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 421 barrels of oil per acre was obtained from 4.4 feet of sand. The weighted average percent oil saturation was reduced from 35.9 to 29.5, or represents an average recovery of 6.4 percent. The weighted average effective permeability of the samples is 1.18 millidarcys, while the average initial fluid production pressure is 28.0 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 12 samples tested, 5 produced water and oil, and 3 samples water only. This indicates that approximately 42 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 1,200 barrels of oil per acre. This is an average recovery of 272 barrels per acre foot from 4.4 feet of floodable sand analyzed in this core.

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

Original formation volume factor, estimated	1.04
Reservoir water saturation, percent, estimated	35.0
Average porosity, percent	19.3
Oil saturation after flooding, percent	29.5
Performance factor, percent, estimated	55.0
Net floodable sand, feet	4.4

RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Andercan Energy CorporationLease BlackWell No. B-3

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	471.5	16.6	14	65	79	180	0.98	1.3	1.3	234	1.27
2	472.5	19.8	32	52	84	492	8.2	0.4	1.7	197	3.28
3	473.6	15.6	23	73	96	278	0.48	1.1	2.8	306	0.53
4	474.6	19.4	24	50	74	361	11.	1.0	3.8	361	11.00
5	475.5	18.9	41	50	91	601	76.	1.0	4.8	601	76.00
6	476.4	20.2	38	52	90	596	28.	1.0	5.8	596	28.00
7	477.7	19.1	33	51	84	489	24.	1.0	6.8	489	24.00
8	478.6	16.4	27	63	90	344	28.	0.9	7.7	310	25.20
9	479.5	13.6	36	57	93	380	13.	1.0	8.7	380	13.00
10	480.5	18.9	33	42	75	484	18.	1.0	9.7	484	18.00
11	481.4	18.8	35	40	75	511	4.5	1.4	11.1	715	6.30
12	482.4	16.5	30	43	73	384	8.7	0.6	11.7	230	5.22

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company	Andercan Energy Corporation		Lease	Black	Well No.	B-3			
Depth Interval, Feet	Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.	Average Percent Porosity	Average Percent Oil Saturation	Average Percent Water Saturation	Average Oil Content Bbl./A. Ft.	Total Oil Content Bbls./Acre
471.0 - 474.8	471.0 - 474.8	3.8	4.2	16.08	17.4	21.1	62.0	289	1,098
474.8 - 482.7	474.8 - 482.7	7.9	24.8	195.72	17.9	34.5	49.4	482	3,805
471.0 - 482.7	471.0 - 482.7	11.7	18.1	211.80	17.8	30.1	53.5	419	4,903

Oilfield Research Laboratories

RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company Andercan Energy Corporation Lease Black Well No. B-3

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	471.5	16.5	14	179	0	0	14	67	0	Imp.	-
2	472.5	19.7	32	489	5	76	27	61	8	0.15	45
3	473.6	15.3	24	285	0	0	24	73	0	Imp.	-
4	474.6	19.5	24	363	0	0	24	51	0	Imp.	-
5	475.5	19.0	41	604	10	147	31	63	56	0.75	25
6	476.4	20.2	38	596	9	141	29	64	144	1.80	20
7	477.7	19.0	33	486	5	74	28	62	104	1.57	25
8	478.6	16.3	27	341	0	0	27	65	30	0.45	35
9	479.5	13.7	36	383	0	0	36	58	24	0.37	35
10	480.5	18.8	33	481	2	29	31	56	76	1.00	25
11	481.4	18.9	35	513	0	0	35	62	26	0.37	35
12	482.4	16.2	31	390	0	0	31	45	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.

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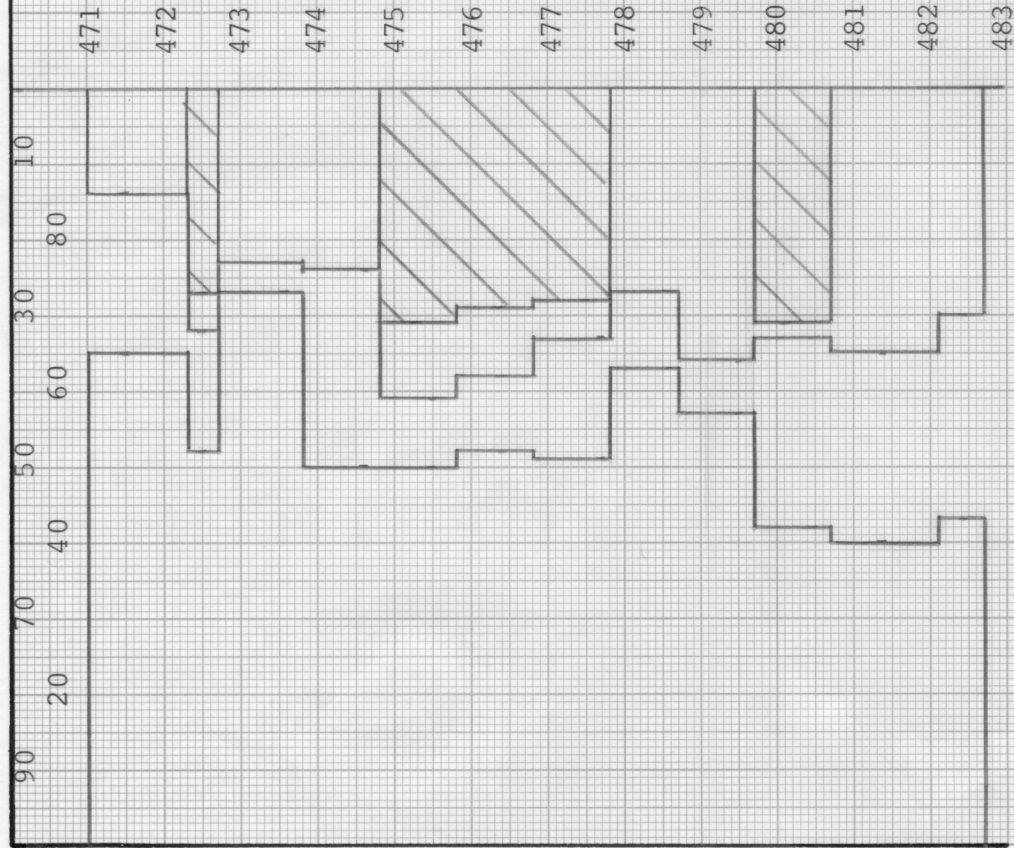
SUMMARY OF LABORATORY FLOODING TESTS

TABLE V

Company <u>Andercan Energy Corporation</u>	Lease <u>Black</u>	Well No. <u>B-3</u>
Depth Interval, Feet	471.0 - 474.8	474.8 - 482.7
	471.0 - 482.7	
Feet of Core Analyzed	0.4	4.0
	4.4	
Average Percent Porosity	19.7	19.3
Average Percent Original Oil Saturation	32.0	36.3
Average Percent Oil Recovery	5.0	6.5
	6.4	
Average Percent Residual Oil Saturation	27.0	29.8
Average Percent Residual Water Saturation	61.0	61.3
Average Percent Total Residual Fluid Saturation	88.0	91.1
Average Original Oil Content, Bbls./A. Ft.	489.	542.
Average Oil Recovery, Bbls./A. Ft.	76.	98.
Average Residual Oil Content, Bbls./A. Ft.	413.	444.
Total Original Oil Content, Bbls./Acre	195.	2,167.
Total Oil Recovery, Bbls./Acre	30.	391.
Total Residual Oil Content, Bbls./Acre	165.	1,776.
Average Effective Permeability, Millidarcys	0.15	1.28
Average Initial Fluid Production Pressure, p.s.i.	45.0	23.8
	28.0	

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

WATER SAT., PERCENT → ← OIL SAT., PERCENT



KEY:

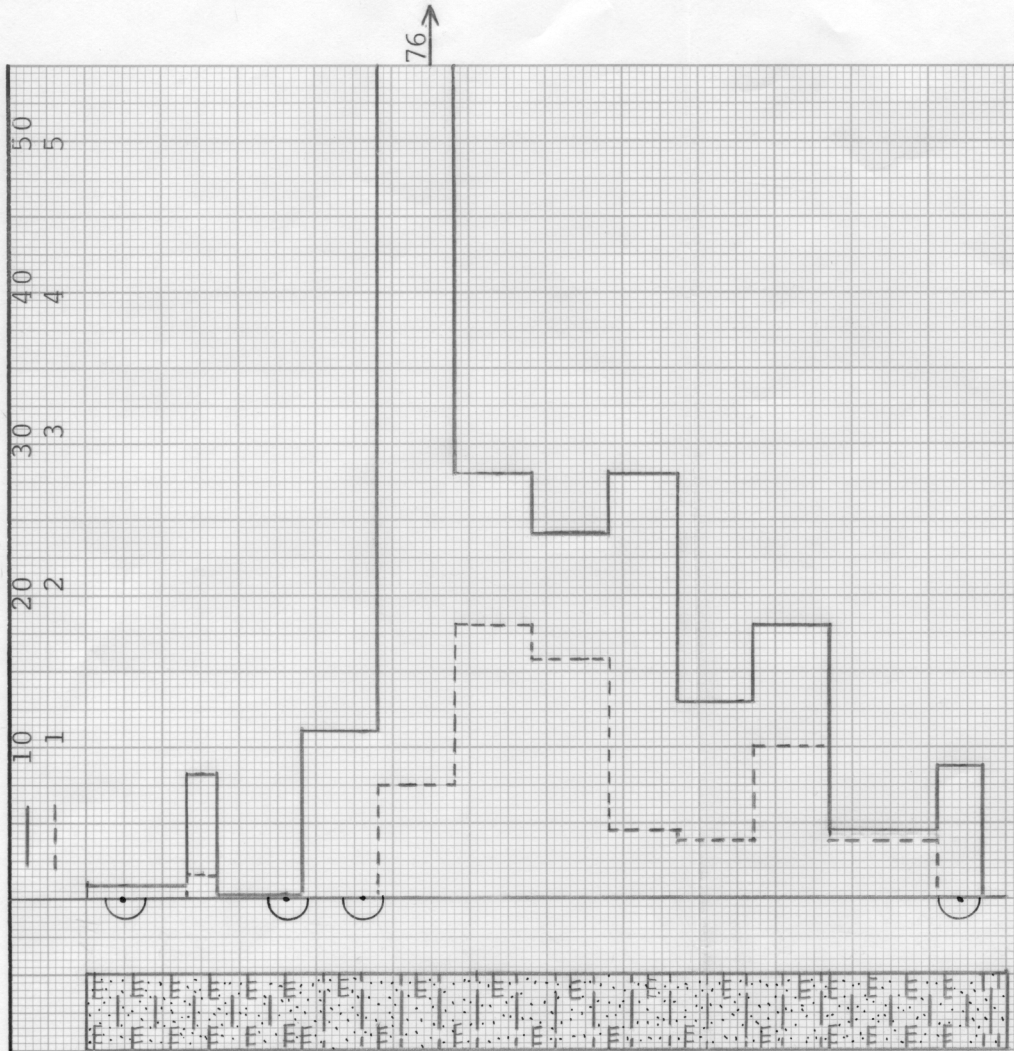


SANDY SHALE



IMPERMEABLE TO WATER

PERMEABILITY, IN MILLIDARCS
EFFECTIVE PERMEABILITY TO WATER, IN MILLIDARCS



SHALY CALCAREOUS SANDSTONE

CALCAREOUS SANDSTONE WITH SHALE PARTINGS

FLOODPOT RESIDUAL OIL SATURATION

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ANDERCAN ENERGY CORPORATION

BLACK LEASE

WELL NO. B-3

MIAMI COUNTY, KANSAS

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
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471.0 - 474.8	3.8	17.4	21.1	62.0	4.2	
474.8 - 482.7	7.9	17.9	34.5	49.4	24.8	
471.0 - 482.7	11.7	17.8	30.1	53.5	18.1	1200 (PRIMARY AND WATERFLOODING)

OILFIELD RESEARCH LABORATORIES
 CHANUTE, KANSAS
 JULY, 1982
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