

OILFIELD RESEARCH LABORATORIES

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

May 11, 1981

Mid-States Energy Corporation
P. O. Box 371
Paola, Kansas 66071

Gentlemen:

Enclosed herewith are the results of tests run on the rotary core taken from the Kirby-Nelson Lease, Well No. 5, located in Miami County, Kansas.

The core was sampled and sealed in plastic by a representative of the client and was submitted to our laboratory on May 5, 1981.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Sanford A. Michel

SAM/kas

5 c to Paola, Kansas

- REGISTERED ENGINEERS -

CORE ANALYSIS - WATER ANALYSIS - REPRESSURING ENGINEERING - SURVEYING & MAPPING - PROPERTY EVALUATION & OPERATION

Oilfield Research Laboratories
GENERAL INFORMATION & SUMMARY

Company Mid-States Energy Corporation Lease Kirby-Nelson Well No. 5
 Location NE $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$
 Section 31 Twp. 16S Rge. 24E County Miami State Kansas

Elevation, Feet

Name of Sand..... Cattleman

Top of Core 571.0

Bottom of Core 603.9

Top of Sand 571.0

Bottom of Sand 603.9

Total Feet of Permeable Sand 29.3

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 75	9.4	9.4
100 - 200	8.2	17.6
200 - 300	6.3	23.9
300 - 400	5.4	29.3

Average Permeability Millidarcys 167.4

Average Percent Porosity 21.6

Average Percent Oil Saturation 53.3

Average Percent Water Saturation 12.7

Average Oil Content, Bbls./A. Ft. 912.

Total Oil Content, Bbls./Acre 27,920.

OILFIELD RESEARCH LABORATORIESLOGName Mid-States Energy Corp. Lease Kirby-Nelson Well No. 5

<u>Depth Interval, Feet</u>	<u>Description</u>
571.0 - 572.0	Brown and gray laminated sandstone and shale.
572.0 - 575.3	Grayish brown shaly sandstone.
575.3 - 579.4	Brown and gray laminated slightly calcareous sandstone and shale.
579.4 - 580.7	Brown slightly calcareous sandstone.
580.7 - 581.8	Gray sandy shale.
581.8 - 587.3	Brown slightly calcareous sandstone.
587.3 - 588.2	Brown and gray laminated sandstone and shale.
588.2 - 600.2	Brown slightly calcareous sandstone.
600.2 - 601.4	Gray sandy shale.
601.4 - 603.9	Brown and gray laminated slightly calcareous sandstone and shale.

Oilfield Research Laboratories

RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE I-B

Company Mid-States Energy Corporation Lease Kirby-Nelson Well No. 5

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			Ft.	Cum. Ft.		
1	571.4	18.8	48	17	700	17.	1.0	1.0	700	17.00
2	572.4	14.6	51	5	578	0.98	1.0	2.0	578	0.98
3	573.5	14.6	9	61	102	1.3	1.0	3.0	102	1.30
4	574.5	11.8	20	68	183	Imp.	1.3	4.3	238	0.00
5	575.6	18.8	19	33	277	14.	1.0	5.3	277	14.00
6	576.6	23.8	57	3	979	145.	1.0	6.3	979	145.00
7	577.5	24.6	54	6	1031	373.	1.0	7.3	1031	373.00
8	578.7	25.7	51	9	1017	296.	1.1	8.4	1119	325.60
9	579.6	25.5	57	14	1128	346.	0.6	9.0	677	207.60
10	580.5	21.5	67	13	1118	56.	0.7	9.7	783	39.20
11	582.4	24.1	47	17	879	408.	1.0	10.7	879	408.00
12	583.5	24.4	59	13	1117	253.	1.0	11.7	1117	253.00
13	584.6	23.3	60	6	1085	167	1.0	12.7	1085	167.00
14	585.6	22.2	61	3	1051	155.	1.2	13.9	1261	186.00
15	586.4	23.1	53	15	950	72.	1.3	15.2	1235	93.60
16	587.6	13.4	29	47	302	2.7	0.9	16.1	272	2.43
17	588.4	25.0	66	12	1280	355.	0.8	16.9	1024	284.00
18	589.5	23.3	57	4	1030	340.	1.0	17.9	1030	340.00
19	590.5	25.2	57	1	1114	305.	1.0	18.9	1114	305.00
20	591.8	23.4	64	1	1162	203.	1.0	19.9	1162	203.00
21	592.7	23.6	61	1	1117	160.	1.0	20.9	1117	160.00
22	593.6	24.2	60	1	1127	236.	1.0	21.9	1127	236.00
23	594.6	24.2	63	4	1183	185.	1.0	22.9	1183	185.00
24	595.5	23.9	58	9	1075	196.	1.0	23.9	1075	196.00
25	596.6	20.3	72	2	1134	226.	1.0	24.9	1134	226.00
26	597.6	22.6	62	3	1087	138.	1.0	25.9	1087	138.00
27	598.4	20.5	69	3	1097	105.	1.0	26.9	1097	105.00
28	599.6	23.8	56	1	1034	210.	1.2	28.1	1241	252.00
29	601.5	18.4	43	2	614	28.	0.5	28.6	307	14.00
30	602.5	19.5	62	2	938	19.	1.0	29.6	938	19.00
31	603.4	17.5	70	3	950	7.4	1.0	30.6	950	7.40

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SUMMARY OF PERMEABILITY & SATURATION TESTS

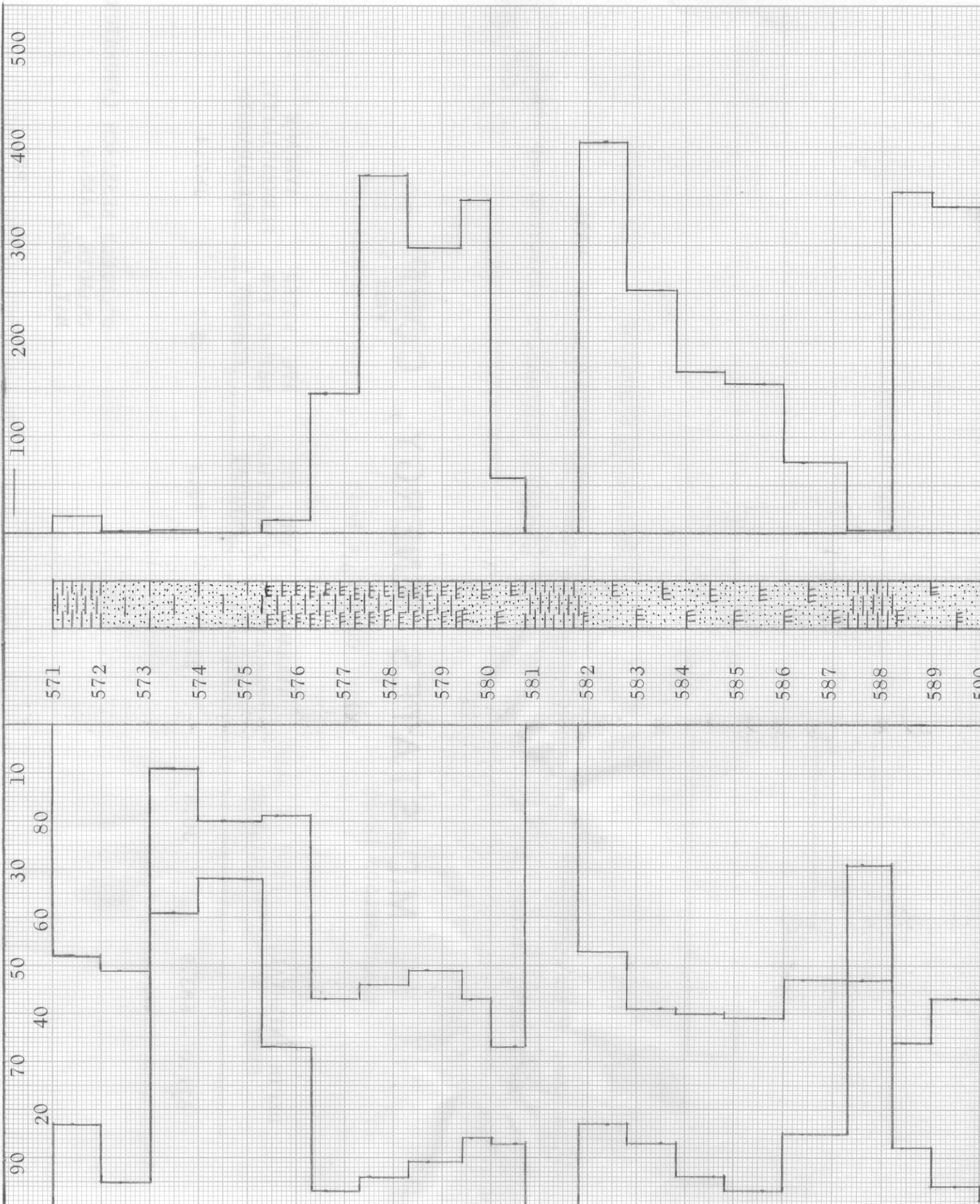
TABLE III

Company	Lease	Kirby-Nelson	Well No.	
Mid-States Energy Corporation				5
Depth Interval, Feet	571.0 - 603.9	Feet of Core Analyzed	29.3	Average Permeability, Millidarcys
			167.4	Permeability Capacity Ft. x Md.
			4904.11	
Depth Interval, Feet	571.0 - 603.9	Average Percent Porosity	21.6	Average Percent Water Saturation
		Average Percent Oil Saturation	53.3	Average Oil Content Bbl./A. Ft.
		Feet of Core Analyzed	30.6	Total Oil Content Bbls./Acre
			12.7	912
			27,920	

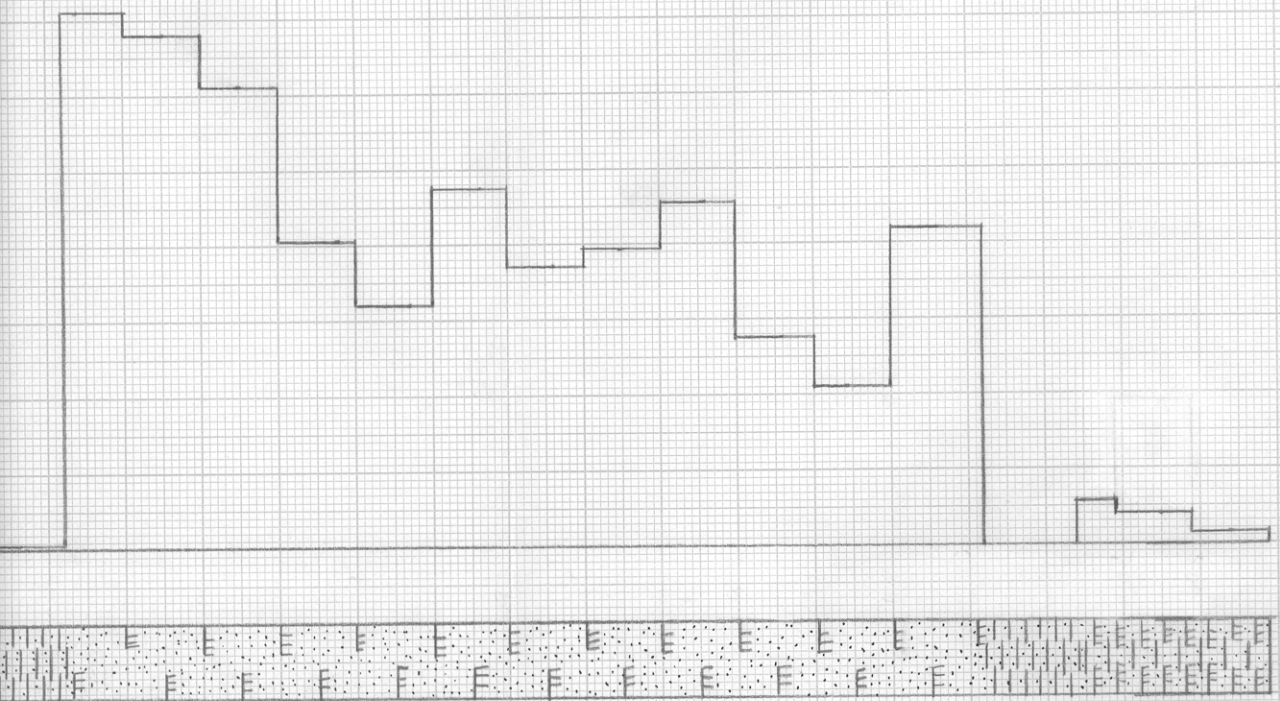
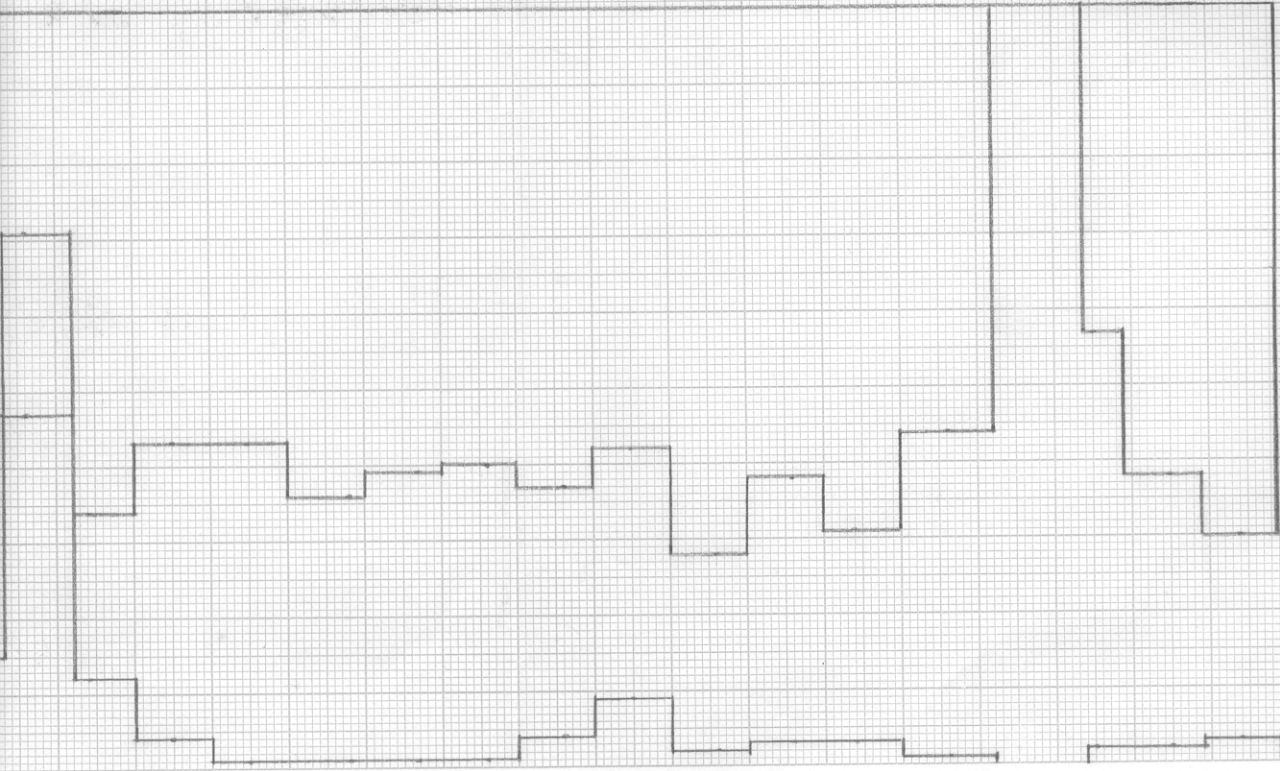
WATER SAT., PERCENT

OIL SAT., PERCENT



PERMEABILITY, IN MILLIDARCYS





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


KEY:

-  SHALY SANDSTONE
-  SANDY SHALE

 CALCAREOUS SANDSTONE

 LAMINATED SANDSTONE AND SHALE

 LAMINATED CALCAREOUS SANDSTONE AND SHALE

LAMINATED CALCAREOUS SANDSTONE AND SHALE

SANDY SHALE

MID-STATES ENERGY, CORP.

KIRBY-NELSON LEASE

WELL NO. 5

MIAMI COUNTY, KANSAS

DEPTH INTERVAL, FEET	FEET OF CORE ANALYZED	AVERAGE PERCENT POROSITY	AVG. OIL SATURATION PERCENT	AVG. WATER SATURATION PERCENT	AVERAGE PERMEABILITY, MILLIDARCS
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571.0 - 603.9	30.6	21.6	53.3	12.7	167.4
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OILFIELD RESEARCH LABORATORIES
 CHANUTE, KANSAS
 MAY, 1981

PDC

OIL 241

FRANK C. P.

БЕКМЕРИТИЛЖ' ИИ МИТТӨДКККП

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