

OILFIELD RESEARCH LABORATORIES

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October 27, 1982

Triple-I Energy Corporation
8100 Marty, Suite 117
Overland Park, Kansas 66204

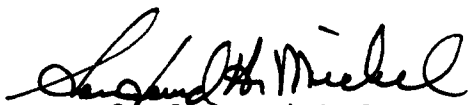
Gentlemen:

Enclosed herewith is the report of the analysis of the rotary core taken from the Nolin Lease, Well No. 25, located in Linn County, Kansas and submitted to our laboratory on October 21, 1982.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES


Sanford A. Michel

SAM/rmc

5 c to Overland Park, Kansas

- REGISTERED ENGINEERS -

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

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GENERAL INFORMATION & SUMMARY

Company Triple-I Energy Corporation Lease Nolin Well No. 25
 Location _____
 Section 23 Twp. 19S Rge. 22E County Linn State Kansas

Elevation, Feet

Name of Sand..... Bartlesville

Top of Core 624.0

Bottom of Core 644.2

Top of Sand 624.3

Bottom of Sand 644.2

Total Feet of Permeable Sand 16.8

Total Feet of Floodable Sand 10.4

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 10	3.2	3.2
10 - 20	3.8	7.0
50 - 93	3.2	10.2
127 - 190	5.4	15.6
575 - 580	1.2	16.8

Average Permeability Millidarcys 112.5

Average Percent Porosity 23.4

Average Percent Oil Saturation 53.2

Average Percent Water Saturation 20.3

Average Oil Content, Bbls./A. Ft. 967.

Total Oil Content, Bbls./Acre 16,247.

Average Percent Oil Recovery by Laboratory Flooding Tests 18.6

Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft. 344.

Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre 3,578.

Total Calculated Oil Recovery, Bbls./Acre See "Calculated Recovery"
 Section

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The core was sampled and the samples sealed in plastic bags by a representative of the client. Air and a water mist were 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>
624.0 - 624.3	Gray shale.
624.3 - 624.9	Brown sandstone.
624.9 - 626.1	Alternate layers gray shale and brown sandstone.
626.1 - 627.0	Gray shale.
627.0 - 627.4	Brown sandstone.
627.4 - 628.4	Alternate layers gray shale and brown sandstone.
628.4 - 628.6	Brown sandstone.
628.6 - 629.2	Alternate layers gray shale and brown sandstone.
629.2 - 636.6	Brown sandstone.
636.6 - 637.3	Gray shale.
637.3 - 640.3	Brown sandstone.
640.3 - 641.0	Brownish black sandstone.
641.0 - 643.0	Blackish brown slightly carbonaceous slightly shaly sandstone.
643.0 - 644.2	Blackish brown slightly carbonaceous slightly micaceous sandstone.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 3,578 barrels of oil per acre was obtained from 10.4 feet of sand. The weighted average percent oil saturation was

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reduced from 52.2 to 33.6, or represents an average recovery of 18.6 percent. The weighted average effective permeability of the samples is 10.77 millidarcys, while the average initial fluid production pressure is 14.5 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 17 samples tested, 11 produced water and oil. This indicates that approximately 65 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 5,110 barrels of oil per acre. This is an average recovery of 491 barrels per acre foot from 10.4 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	15.0
Average porosity, percent	24.3
Oil saturation after flooding, percent	33.6
Performance factor, percent, estimated	50.0
Net floodable sand, feet	10.4

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Triple-I Energy Corporation Lease Nolin Well No. 25

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	624.6	20.0	53	29	82	822	11.	0.6	0.6	493	6.60
2	625.6	21.8	40	27	67	677	6.8	1.2	1.8	812	8.16
3	627.3	20.4	30	40	70	475	19.	1.3	3.1	618	24.70
4	628.5	21.1	54	24	78	884	52.	0.2	3.3	177	10.40
5	629.4	24.5	54	15	69	1026	169.	1.0	4.3	1026	169.00
6	630.5	22.9	56	18	74	995	62.	1.0	5.3	995	62.00
7	631.5	22.3	59	15	74	1021	69.	1.0	6.3	1021	69.00
8	632.5	24.9	47	19	66	908	169.	1.0	7.3	908	169.00
9	633.5	23.4	50	22	72	908	92.	1.0	8.3	908	92.00
10	634.6	23.6	48	21	69	879	127.	1.2	9.5	1055	152.40
11	635.5	26.3	51	20	71	1041	169.	1.2	10.7	1249	202.80
12	637.6	25.8	46	22	68	921	577.	1.2	11.9	1105	692.40
13	639.4	24.2	60	8	68	1127	189.	1.0	12.9	1127	189.00
14	640.4	23.6	69	15	84	1263	10.	0.7	13.6	884	7.00
15	841.5	22.8	68	15	83	1203	6.5	1.0	14.6	1203	6.50
16	642.5	22.8	70	18	88	1238	8.9	1.0	15.6	1238	8.90
17	643.6	23.6	65	15	80	1190	17.	1.2	16.8	1428	20.40

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company		Triple-I Energy Corporation		Lease		Nolin		Well No.		25
Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.	Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.	Average Percent Oil Saturation	Average Percent Water Saturation	Total Oil Content Bbls./Acre
624.3 - 628.6	3.3	15.1	49.86	624.3 - 628.6	3.3	15.1	49.86	39.3	32.3	2,100
629.2 - 639.5	9.6	187.3	1797.60	629.2 - 639.5	9.6	187.3	1797.60	52.1	18.0	9,394
640.3 - 644.2	3.9	11.0	42.80	640.3 - 644.2	3.9	11.0	42.80	67.8	15.8	4,753
624.3 - 644.2	16.8	112.5	1890.26	624.3 - 644.2	16.8	112.5	1890.26	53.2	20.3	16,247

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company		Triple-I Energy Corporation			Lease		Nolin		Well No.		25	
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.	%	Bbls./A. Ft.	% Oil	% Water			
1	624.6	20.2	53	831	16	251	37	40	580	26	0.50	25
2	625.6	21.5	41	684	0	0	41	29	684	0	Imp.	-
3	627.3	20.7	29	466	0	0	29	43	466	0	Imp.	-
4	628.5	21.0	54	880	21	342	33	50	538	56	1.00	10
5	629.4	24.5	54	1026	22	418	32	51	608	420	13.99	10
6	630.5	22.7	56	986	23	405	33	48	581	212	16.56	10
7	631.5	22.4	59	1025	26	452	33	49	573	136	2.20	15
8	632.5	25.0	47	912	15	291	32	49	621	126	2.90	20
9	633.5	23.4	50	908	15	272	35	54	636	356	8.10	15
10	634.6	23.5	48	875	17	310	31	51	565	240	6.80	15
11	635.5	26.1	51	1033	21	425	30	52	608	310	10.20	15
12	637.6	25.9	46	924	14	281	32	63	643	364	25.70	10
13	639.4	24.3	60	1131	16	302	44	51	829	208	16.56	15
14	640.4	23.3	70	1265	0	0	70	16	1265	0	Imp.	-
15	641.5	23.1	67	1201	0	0	67	17	1201	0	Imp.	-
16	642.5	23.2	69	1242	0	0	69	19	1242	0	Imp.	-
17	643.6	23.3	66	1193	0	0	66	15	1193	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

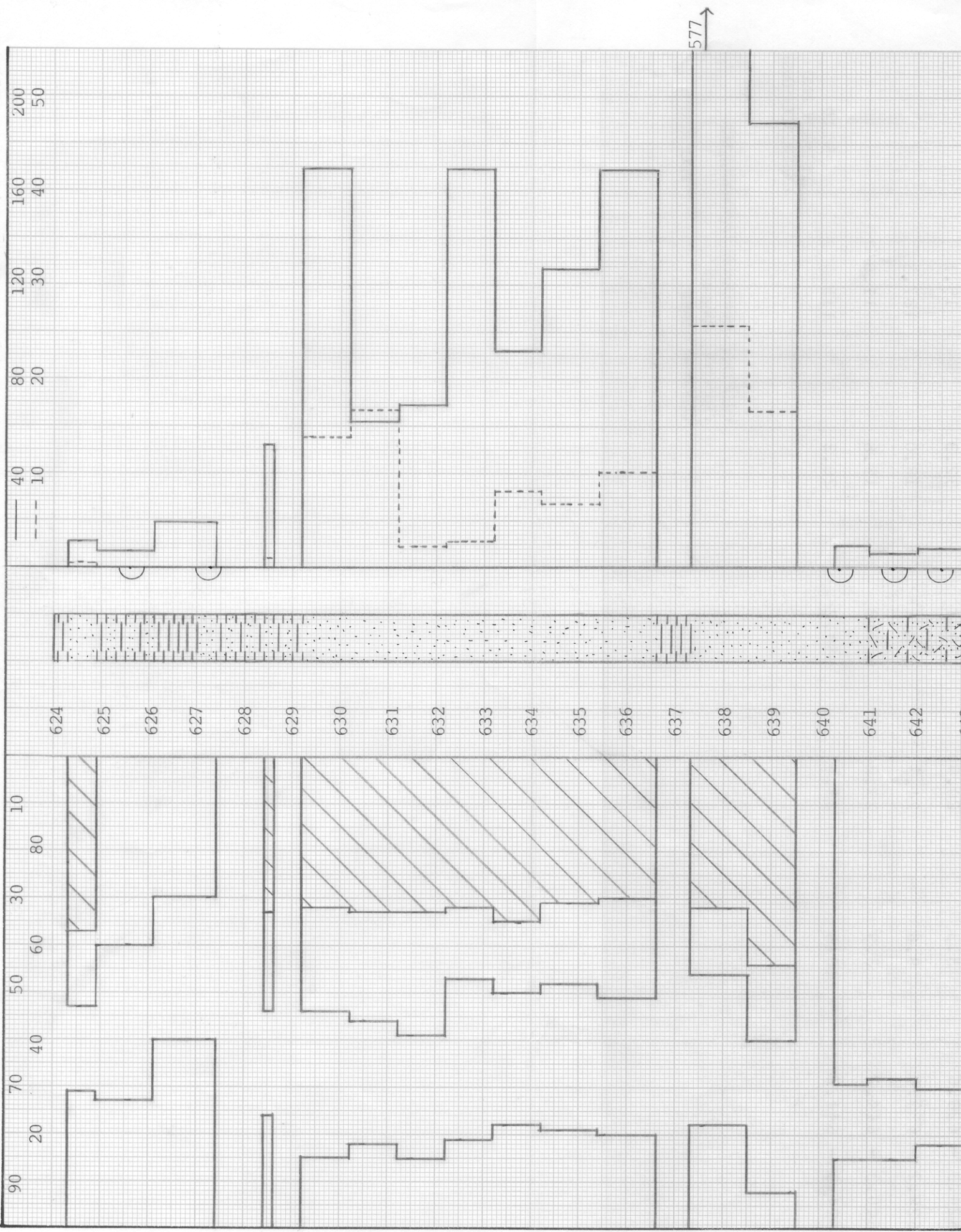
Company	Triple-I Energy Corporation	Lease	Nolin	Well No.	25
Depth Interval, Feet	624.3 - 628.6	629.2 - 639.5	624.3 - 639.5		
Feet of Core Analyzed	0.8	9.6	10.4		
Average Percent Porosity	20.4	24.3	24.0		
Average Percent Original Oil Saturation	53.3	52.1	52.2		
Average Percent Oil Recovery	17.3	18.7	18.6		
Average Percent Residual Oil Saturation	36.0	33.4	33.6		
Average Percent Residual Water Saturation	42.5	52.2	51.5		
Average Percent Total Residual Fluid Saturation	78.5	85.6	85.1		
Average Original Oil Content, Bbls./A. Ft.	844.	978.	967.		
Average Oil Recovery, Bbls./A. Ft.	274.	350.	344.		
Average Residual Oil Content, Bbls./A. Ft.	570.	628.	623.		
Total Original Oil Content, Bbls./Acre	675.	9,387.	10,062.		
Total Oil Recovery, Bbls./Acre	219.	3,359.	3,578.		
Total Residual Oil Content, Bbls./Acre	456.	6,028.	6,484.		
Average Effective Permeability, Millidarcys	0.63	11.62	10.77		
Average Initial Fluid Production Pressure, p.s.i.	17.5	13.9	14.5		

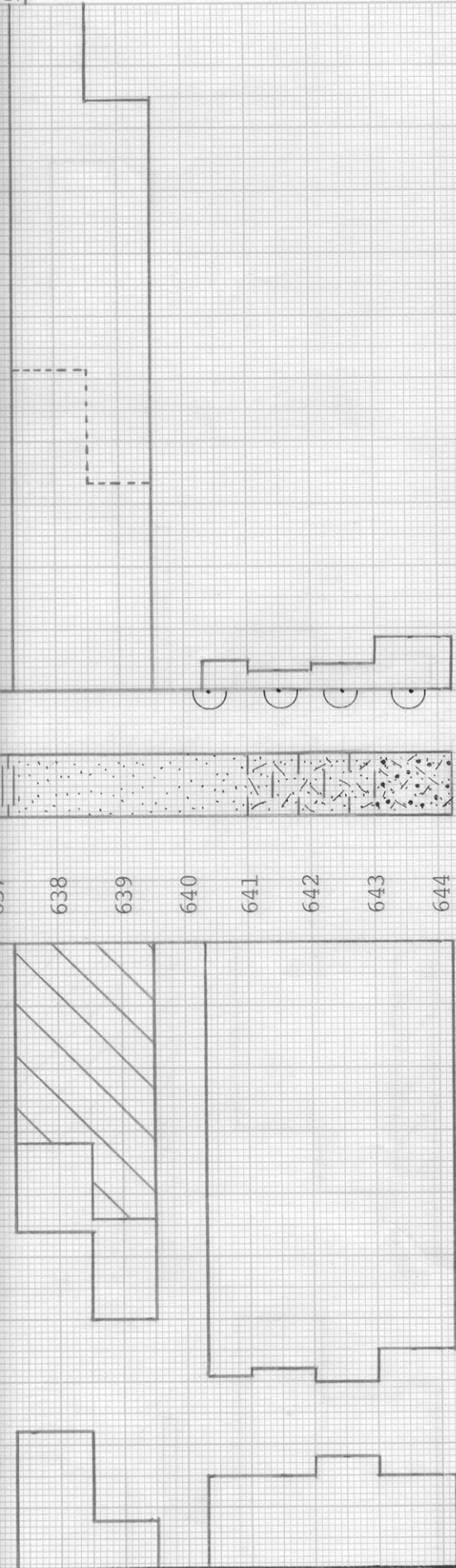
NOTE: Only those samples which recovered oil were used in calculating the above averages.

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

PERMEABILITY, IN MILLIDARCYS

EFFECTIVE PERMEABILITY TO WATER, IN MILLIDARCYS





KEY:

-  SANDSTONE
-  SHALE
-  IMPERMEABLE TO WATER

-  ALTERNATE LAYERS OF SANDSTONE AND SHALE
-  CARBONACEOUS SHALY SANDSTONE
-  MICACEOUS CARBONACEOUS SANDSTONE
-  FLOODPOT RESIDUAL OIL SATURATION

TRIPLE I ENERGY CORPORATION

NOLIN LEASE

LINN COUNTY, KANSAS

WELL NO. 25

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
624.3 - 628.6	3.3	20.9	39.3	32.3	15.1	
629.2 - 639.5	9.6	24.3	52.1	18.0	187.3	
640.3 - 644.2	3.9	23.2	67.8	15.8	11.0	
624.3 - 644.2	16.8	23.4	53.2	20.3	112.5	5110 (PRIMARY AND WATERFLOODING)