



OILFIELD RESEARCH LABORATORIES

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August 5, 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 cores taken from the Caylor Lease, Well No. 26, located in Franklin County, Kansas and submitted to our laboratory on July 30, 1982.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Sanford A. Michel

SAM/rmc

4 c Overland Park, Kansas
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Oilfield Research Laboratories
GENERAL INFORMATION & SUMMARY

Company Triple I Energy Corporation Lease Caylor Well No. 26

Location _____

Section 33 Twp. 17S Rge. 21E County Franklin State Kansas

Elevation, Feet

Name of Sand.....	First Squirrel	Cattleman
Top of Core	642.0	789.0
Bottom of Core	662.0	794.6
Top of Sand	642.5	792.7
Bottom of Sand (Tested)	660.7	794.4
Total Feet of Permeable Sand	13.3	1.5
Total Feet of Floodable Sand	2.1	0.0

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
<u>First Squirrel Sand</u>		
0 - 4	5.4	5.4
4 - 8	2.2	7.6
8 - 12	1.0	8.6
12 - 33	4.7	13.3
<u>Cattleman Sand</u>		
0 - 3	1.5	1.5

Average Permeability Millidarcys	8.7	1.6
Average Percent Porosity	20.0	16.6
Average Percent Oil Saturation	46.7	55.4
Average Percent Water Saturation	29.5	23.4
Average Oil Content, Bbls./A. Ft.	724.	711.
Total Oil Content, Bbls./Acre	9,628.	1,209.
Average Percent Oil Recovery by Laboratory Flooding Tests	6.7	0.
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	106.	0.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	223.	0.
Total Calculated Oil Recovery, Bbls./Acre	See "Calculated Recovery" Section	0.

The core was sampled by a representative of Oilfield Research Laboratories. Fresh water mud was used as a drilling fluid. The core was reported to be from a non-virgin area.

Since only the First Squirrel Sand responded to flooding susceptibility tests, a calculated recovery is given for the First Squirrel Sand only.

FORMATION CORED

The detailed log of the formation cored is as follows:

<u>Depth Interval, Feet</u>	<u>Description</u>
	<u>FIRST SQUIRREL SAND</u>
642.0 - 642.5	Gray sandy shale.
642.5 - 643.2	Grayish brown shaly sandstone.
643.2 - 644.0	Gray shale with scattered brown sandstone partings.
644.0 - 645.2	Grayish brown very shaly sandstone.
645.2 - 649.1	Brown sandstone.
649.1 - 650.2	Brown slightly shaly sandstone.
650.2 - 651.3	Brown sandstone.
651.3 - 653.0	Brown shaly sandstone.
653.0 - 654.1	Alternate layers gray shale and brown sandstone.
654.1 - 654.5	Brown shaly sandstone.
654.5 - 654.9	Brown slightly calcareous sandstone.
654.9 - 656.0	Brown shaly sandstone.
656.0 - 657.0	Grayish brown shaly sandstone.
657.0 - 657.6	Grayish brown very shaly sandstone.
657.6 - 660.0	Gray slightly sandy shale.

<u>Depth Interval, Feet</u>	<u>Description</u>
660.0 - 660.7	Brown sandstone.
660.7 - 661.7	Alternate layers gray shale and brown sandstone.
661.7 - 662.0	Gray shale.
662.0 - 789.0	No core.
<u>CATTLEMAN SAND</u>	
789.0 - 792.7	Gray shale.
792.7 - 792.9	Grayish brown very shaly sandstone.
792.9 - 793.5	Brownish black sandstone.
793.5 - 794.4	Grayish black slightly carbonaceous shaly sandstone.
794.4 - 794.6	Gray shale.

LABORATORY FLOODING TESTS

The First Squirrel Sand in this core responded to laboratory flooding tests, as a total recovery of 223 barrels of oil per acre was obtained from 2.1 feet of sand. The weighted average percent oil saturation was reduced from 44.2 to 37.5, or represents an average recovery of 6.7 percent. The weighted average effective permeability of the samples is 1.57 millidarcys, while the average initial fluid production pressure is 32.5 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 15 samples tested, 2 produced water and oil, and 1 sample water only. This indicates that approximately 13 percent of the sand represented by these samples is floodable pay sand.

CALCULATED RECOVERYFIRST SQUIRREL SAND

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 600 barrels of oil per acre. This is an average recovery of 285 barrels per acre foot from 2.1 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	20.0
Average porosity, percent	21.1
Oil saturation after flooding, percent	37.5
Performance factor, percent, estimated	45.0
Net floodable sand, feet	2.1

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Triple-I Energy Corporation Lease Caylor Well No. 26

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	642.7	16.3	36	38	74	2.2	0.7	0.7	319	1.54
2	644.3	16.8	30	44	74	0.48	1.0	1.7	391	0.48
3	645.4	21.8	33	25	58	15.	0.8	2.5	446	12.00
4	646.7	22.4	40	20	60	32.	1.0	3.5	695	32.00
5	647.5	22.0	53	29	82	11.	1.0	4.5	905	11.00
6	649.4	20.2	40	33	73	7.8	1.1	5.6	690	8.58
7	650.7	21.3	43	35	78	13.	1.1	6.7	782	14.30
8	651.5	19.5	71	21	92	4.1	0.7	7.4	752	2.87
9	652.5	18.1	66	30	96	2.4	1.0	8.4	927	2.40
10	653.7	19.9	48	25	73	12.	1.1	9.5	815	13.20
11	654.4	15.6	56	31	87	5.7	0.4	9.9	271	2.28
12	655.4	19.5	43	33	76	1.7	1.1	11.0	716	1.87
13	656.5	21.7	56	23	79	2.7	1.0	12.0	943	2.70
14	657.5	18.4	43	28	71	0.89	0.6	12.6	368	0.53
15	660.6	22.4	50	24	74	14.	0.7	13.3	608	9.80
16	792.8	15.8	21	64	85	Imp.	0.2	0.2	51	0.00
17	793.3	16.1	69	21	90	2.3	0.6	0.8	517	1.38
18	794.2	17.0	54	16	70	1.1	0.9	1.7	641	0.99

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SUMMARY OF PERMEABILITY & SATURATION TESTS
TABLE III

Company	Triple-I Energy Corporation			Lease	Caylor	Well No.	26
	Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.			
	<u>FIRST SQUIRREL SAND</u>						
	642.5 - 660.7	13.3	8.7	115.55			
	<u>CATTLEMAN SAND</u>						
	792.7 - 794.4	1.5	1.6	2.37			
	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
	<u>FIRST SQUIRREL SAND</u>						
	642.5 - 660.7	13.3	20.0	46.7	29.5	724	9,628
	<u>CATTLEMAN SAND</u>						
	792.7 - 794.4	1.7	16.6	55.4	23.4	711	1,209

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company			Triple-I Energy Corp.			Lease		Caylor		Well No.		26	
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					
FIRST SQUIRREL SAND													
1	642.7	16.8	35	456	0	0	35	40	0	Imp.	-		
2	644.3	16.4	31	394	0	0	31	44	0	Imp.	-		
3	645.4	21.6	33	553	0	0	33	29	0	Imp.	-		
4	646.7	22.3	40	692	3	52	37	44	12	0.15	45		
5	647.5	22.3	52	900	0	0	52	31	0	Imp.	-		
6	649.4	19.7	41	627	0	0	41	34	0	Imp.	-		
7	650.7	21.4	43	714	0	0	43	37	0	Imp.	-		
8	651.5	19.6	71	1080	0	0	71	24	104	1.80	30		
9	652.5	18.1	66	927	0	0	66	31	0	Imp.	-		
10	653.7	20.0	48	745	10	155	38	53	200	2.85	20		
11	654.4	15.8	55	674	0	0	55	34	0	Imp.	-		
12	655.4	19.1	44	652	0	0	44	35	0	Imp.	-		
13	656.5	22.1	55	943	0	0	55	25	0	Imp.	-		
14	657.5	18.3	43	610	0	0	43	30	0	Imp.	-		
15	660.6	22.9	49	871	0	0	49	28	0	Imp.	-		
CATTLEMAN SAND													
16	792.8	15.6	22	266	0	0	22	64	0	Imp.	-		
17	793.3	16.1	69	862	0	0	69	22	0	Imp.	-		
18	794.2	17.3	53	711	0	0	53	18	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	Caylor	Well No.	26
	<u>FIRST SQUIRREL SAND</u>				
Depth Interval, Feet	642.5 - 660.7				
Feet of Core Analyzed	2.1				
Average Percent Porosity	21.1				
Average Percent Original Oil Saturation	44.2				
Average Percent Oil Recovery	6.7				
Average Percent Residual Oil Saturation	37.5				
Average Percent Residual Water Saturation	48.7				
Average Percent Total Residual Fluid Saturation	86.2				
Average Original Oil Content, Bbls./A. Ft.	720.				
Average Oil Recovery, Bbls./A. Ft.	106.				
Average Residual Oil Content, Bbls./A. Ft.	614.				
Total Original Oil Content, Bbls./Acre	1,512.				
Total Oil Recovery, Bbls./Acre	223.				
Total Residual Oil Content, Bbls./Acre	1,289.				
Average Effective Permeability, Millidarcys	1.57				
Average Initial Fluid Production Pressure, p.s.i.	32.5				

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