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

November 4, 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. 24, located in Linn County, Kansas and submitted to our laboratory on October 28, 1982.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Sanford A. Michel

SAM/rmc

5 c to Overland Park, Kansas

Oilfield Research Laboratories

GENERAL INFORMATION & SUMMARY

Company Triple-I Energy Corporation Lease Nolin Well No. 24

Location

Section 23 Twp. 19S Rge. 22E County Linn State Kansas

Elevation, Feet	
Name of Sand	Bartlesville
Top of Core	621.0
Bottom of Core	631.0
Top of Sand	621.6
Bottom of Sand	631.0
Total Feet of Permeable Sand	6.3
Total Feet of Floodable Sand	5.3

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
0 - 5	2.0	2.0
60 - 103	2.7	4.7
145 - 164	1.6	6.3

Average Permeability Millidarcys	79.4
Average Percent Porosity	21.4
Average Percent Oil Saturation	40.7
Average Percent Water Saturation	36.1
Average Oil Content, Bbls./A. Ft.	679.
Total Oil Content, Bbls./Acre	4,277.
Average Percent Oil Recovery by Laboratory Flooding Tests	12.0
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.	211.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre	1,116.
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. Air and KCl were used as drilling fluids. The core was reported to be from a non-virgin area.

FORMATION CORED

The detailed log of the formation cored is as follows:

Depth Interval, Feet	Description
621.0 - 621.6	Gray shale.
621.6 - 622.0	Brown sandstone.
622.0 - 622.2	Gray shale.
622.2 - 723.5	Brown sandstone.
623.5 - 626.4	Gray shale with widely scattered brown sandstone partings.
626.4 - 629.0	Brown sandstone.
629.0 - 631.0	Brown shaly sandstone with scattered micaceous partings.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 1,116 barrels of oil per acre was obtained from 5.3 feet of sand. The weighted average percent oil saturation was reduced from 42.2 to 30.2, or represents an average recovery of 12.0 percent. The weighted average effective permeability of the samples is 6.53 millidarcys, while the average initial fluid production pressure is 22.9 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 8 samples tested, 7 produced water and oil. This indicates that

approximately 88 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 2,140 barrels of oil per acre. This is an average recovery of 403 barrels per acre foot from 5.3 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	22.6
Oil saturation after flooding, percent	30.2
Performance factor, percent, estimated	50.0
Net floodable sand, feet	5.3

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Triple-I Energy Corporation **Lease** Nolin **Well No.** 24

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	621.7	23.1	47	18	65	842	96.	0.4	0.4	337	38.40
2	622.5	21.7	32	44	76	539	61.	0.7	1.1	377	42.70
3	623.4	23.8	46	23	69	849	97.	0.6	1.7	509	58.20
4	626.5	25.0	31	33	64	601	149.	0.6	2.3	361	89.40
5	627.6	24.1	44	29	73	823	163.	1.0	3.3	823	163.00
6	628.3	26.1	43	23	66	871	102.	1.0	4.3	871	102.00
7	629.4	16.3	49	45	94	620	4.0	1.0	5.3	620	4.00
8	630.5	14.8	33	59	92	379	2.5	1.0	6.3	379	2.50

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company Triple-I Energy Corporation Lease Nolin Well No. 24

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
621.6 - 623.5	1.7	81.9	139.30
626.4 - 631.0	4.6	78.5	360.90
621.6 - 631.0	6.3	79.4	500.20

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
621.6 - 623.5	1.7	22.8	40.5	30.5	719	1,223
626.4 - 631.0	4.6	20.9	40.8	38.2	664	3,054
621.6 - 631.0	6.3	21.4	40.7	36.1	679	4,277

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company Triple-I Energy Corporation Lease Nolin Well No. 24

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	Bbls./A. Ft.			
1	621.7	23.0	47	839	17	303	30	54	536	112	1.83	30
2	622.5	21.5	32	534	4	67	28	52	467	22	0.37	30
3	623.4	23.7	46	846	14	257	32	50	589	30	0.59	35
4	626.5	24.9	31	599	4	77	27	58	522	266	16.92	15
5	627.6	24.0	44	819	15	279	29	57	540	312	12.74	15
6	628.3	26.0	43	867	15	303	28	65	564	220	9.56	10
7	629.4	16.5	49	627	13	166	36	59	461	48	0.82	25
8	630.5	15.3	32	380	0	0	32	60	380	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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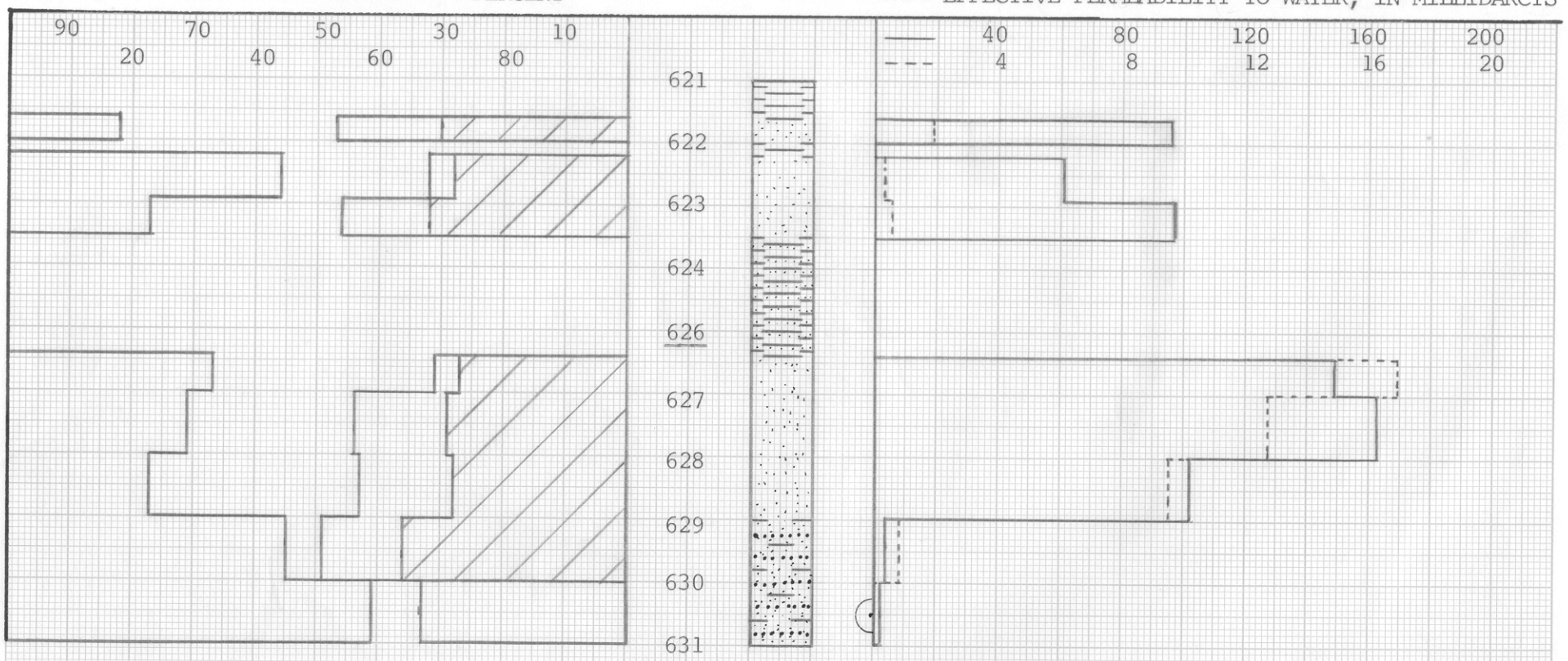
SUMMARY OF LABORATORY FLOODING TESTS

TABLE V

Company Triple-I Energy Corporation Lease Nolin Well No. 24

Depth Interval, Feet	621.6 - 623.5	626.4 - 631.0	621.6 - 631.0
Feet of Core Analyzed	1.7	3.6	5.3
Average Percent Porosity	22.6	22.6	22.6
Average Percent Original Oil Saturation	40.5	42.9	42.2
Average Percent Oil Recovery	10.6	12.6	12.0
Average Percent Residual Oil Saturation	29.9	30.3	30.2
Average Percent Residual Water Saturation	51.8	59.9	57.3
Average Percent Total Residual Fluid Saturation	81.7	90.2	87.5
Average Original Oil Content, Bbls./A. Ft.	715.	743.	734.
Average Oil Recovery, Bbls./A. Ft.	189.	221.	211.
Average Residual Oil Content, Bbls./A. Ft.	526.	522.	523.
Total Original Oil Content, Bbls./Acre	1,216.	2,672.	3,888.
Total Oil Recovery, Bbls./Acre	322.	794.	1,116.
Total Residual Oil Content, Bbls./Acre	894.	1,878.	2,772.
Average Effective Permeability, Millidarcys	0.79	9.24	6.53
Average Initial Fluid Production Pressure, p.s.i.	31.7	16.3	22.9

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



KEY:

SANDSTONE

IMPERMEABLE TO WATER

FLOODPOT RESIDUAL OIL SATURATION

SHALE

SHALE WITH SANDSTONE PARTINGS

SHALY SANDSTONE WITH MICACEOUS PARTINGS

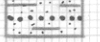
TRIPLE I ENERGY CORPORATION

NOLIN LEASE WELL NO. 24

LINN COUNTY, KANSAS

DEPTH INTERVAL, FEET	FEET OF CORE ANALYZED	AVERAGE PERCENT POROSITY	AVG. OIL SATURATION PERCENT	AVG. WATER SATURATION PERCENT	AVERAGE PERMEAILITY, MILLIDARCYS	CALCULATED OIL RECOVERY BBLS. /ACRE
621.6 - 623.5	1.7	22.8	40.5	20.5	81.9	

IMPERMEABLE TO WATER



SHALY SANDSTONE WITH MICACEOUS PARTINGS

FLOODPOT RESIDUAL OIL SATURATION

TRIPLE I ENERGY CORPORATION

NOLIN LEASE WELL NO. 24

LINN COUNTY, KANSAS

DEPTH INTERVAL, FEET	FEET OF CORE ANALYZED	AVERAGE PERCENT POROSITY	AVG. OIL SATURATION PERCENT	AVG. WATER SATURATION PERCENT	AVERAGE PERMEAILITY, MILLIDARCYS	CALCULATED OIL RECOVERY BBLS. /ACRE
621.6 - 623.5	1.7	22.8	40.5	30.5	81.9	
626.4 - 631.0	4.6	20.9	40.8	38.2	78.5	
621.6 - 631.0	6.3	21.4	40.7	36.1	79.4	2140 (PRIMARY AND WATERFLOODING)

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CHANUTE, KANSAS
NOVEMBER, 1982 PDC