

OILFIELD RESEARCH LABORATORIES

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

September 9, 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 Jensen Lease, Well No. 17, located in Franklin County, Kansas and submitted to our laboratory on September 3, 1982.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Sanford A. Michel

SAM/rmc

4 c to Overland Park, Kansas
1 c to Hutchinson, 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 Jensen Well No. 17
 Location NE ¼
 Section 33 Twp. 17S Rge. 21E County Franklin State Kansas

Elevation, Feet

Name of Sand.....

Cattleman

Top of Core

656.0

Bottom of Core

663.0

Top of Sand

656.0

Bottom of Sand

663.0

Total Feet of Permeable Sand

5.6

Total Feet of Floodable Sand

5.6

Distribution of Permeable Sand:
Permeability Range
Millidarcys

Feet

Cum. Ft.

12 - 37

1.6

1.6

125 - 190

3.0

4.6

230 - 235

1.0

5.6

Average Permeability Millidarcys

127.8

Average Percent Porosity

19.3

Average Percent Oil Saturation

43.9

Average Percent Water Saturation

37.0

Average Oil Content, Bbls./A. Ft.

663.

Total Oil Content, Bbls./Acre

4,375.

Average Percent Oil Recovery by Laboratory Flooding Tests

13.6

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

220.

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

1,233.

Total Calculated Oil Recovery, Bbls./Acre

See "Calculated Recovery"
Section

-2-

The core was sampled and the samples sealed in plastic bags by a representative of the client.

FORMATION CORED

The detailed log of the formation cored is as follows:

<u>Depth Interval, Feet</u>	<u>Description</u>
656.0 - 657.0	Brown sandstone.
657.0 - 657.4	Gray calcareous very shaly sandstone.
657.4 - 662.0	Brown sandstone.
662.0 - 663.0	Grayish brown very shaly sandstone.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 1,233 barrels of oil per acre was obtained from 5.6 feet of sand. The weighted average percent oil saturation was reduced from 46.4 to 32.8, or represents an average recovery of 13.6 percent. The weighted average effective permeability of the samples is 6.32 millidarcys, while the average initial fluid production pressure is 15.0 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 7 samples tested, 6 produced water and oil. This indicates that approximately 86 percent of the sand represented by these samples is floodable pay sand.

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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 1,750 barrels of oil per acre. This is an average recovery of 312 barrels per acre foot from 5.6 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	25.0
Average porosity, percent	20.8
Oil saturation after flooding, percent	32.8
Performance factor, percent, estimated	50.0
Net floodable sand, feet	5.6

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Triple-I Energy Corporation Lease Jensen Well No. 17

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	656.5	15.9	59	36	95	728	12.	1.0	1.0	728	12.00
2	657.7	18.1	51	34	85	716	36.	0.6	1.6	430	21.60
3	658.5	21.9	39	34	73	663	127.	1.0	2.6	663	127.00
4	659.5	20.9	41	30	71	665	137.	1.0	3.6	665	137.00
5	660.6	23.9	47	30	77	871	231.	1.0	4.6	871	231.00
6	661.5	23.1	43	28	71	771	187.	1.0	5.6	771	187.00
7	662.3	10.6	30	66	96	247	Imp.	1.0	6.6	247	0.00

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company <u>Triple-I Energy Corporation</u>		Lease <u>Jensen</u>		Well No. <u>17</u>	
Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.		
656.0 - 663.0	5.6	127.8	715.60		
Depth Interval, Feet	Feet of Core Analyzed	Average Percent Porosity	Average Percent Oil Saturation	Average Percent Water Saturation	Total Oil Content Bbls./Acre
656.0 - 663.0	6.6	19.3	43.9	37.0	4,375
				663	

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company Triple-I Energy Corporation Lease Jensen Well No. 17

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	656.5	16.0	59	732	16	199	43	53	533	80	1.99	10
2	657.7	18.2	51	720	12	169	39	51	551	108	2.25	15
3	658.5	21.7	39	657	9	152	30	58	505	96	1.55	25
4	659.5	21.0	41	668	12	196	29	55	472	400	8.70	15
5	660.6	23.8	47	868	17	314	30	62	554	414	9.80	15
6	661.5	23.3	43	777	15	271	28	51	506	388	12.00	10
7	662.3	11.2	29	252	0	0	29	67	252	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

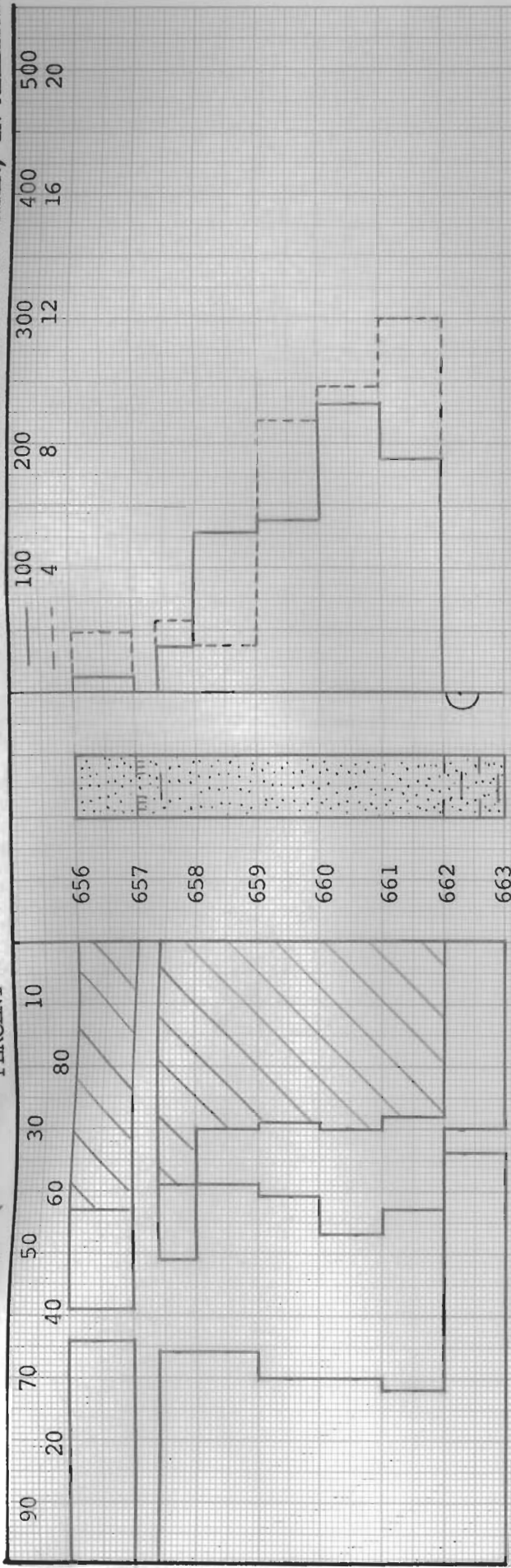
Company	Triple-I Energy Corporation	Lease	Jensen	Well No.	17
Depth Interval, Feet	656.0 - 663.0				
Feet of Core Analyzed	5.6				
Average Percent Porosity	20.8				
Average Percent Original Oil Saturation	46.4				
Average Percent Oil Recovery	13.6				
Average Percent Residual Oil Saturation	32.8				
Average Percent Residual Water Saturation	55.3				
Average Percent Total Residual Fluid Saturation	88.1				
Average Original Oil Content, Bbls./A. Ft.	738.				
Average Oil Recovery, Bbls./A. Ft.	220.				
Average Residual Oil Content, Bbls./A. Ft.	518.				
Total Original Oil Content, Bbls./Acre	4,134.				
Total Oil Recovery, Bbls./Acre	1,233.				
Total Residual Oil Content, Bbls./Acre	2,901.				
Average Effective Permeability, Millidarcys	6.32				
Average Initial Fluid Production Pressure, p.s.i.	15.0				

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

SHALY SANDSTONE

SHALY CALCAREOUS SANDSTONE

FLOODPOT RESIDUAL OIL SATURATION

TRIPLE I ENERGY CORPORATION

JENSEN LEASE

FRANKLIN COUNTY, KANSAS

WELL NO. 17

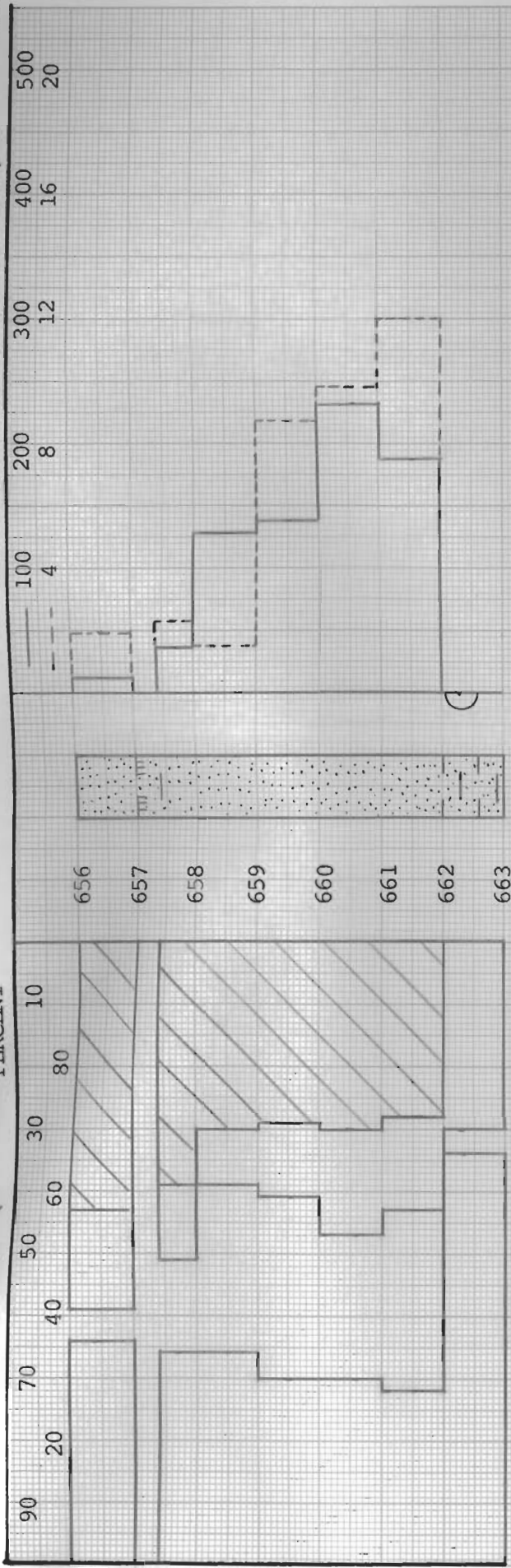
DEPTH INTERVAL, FEET	FEET OF CORE ANALYZED	AVERAGE PERCENT POROSITY	AVG. OIL SATURATION PERCENT	AVG. WATER SATURATION PERCENT	AVERAGE PERMEABILITY, MILLIDARCYS	CALCULATED OIL RECOVERY BBLs. / ACRE
656.0 - 663.0	6.6	19.3	43.9	37.0	127.8	1750 (PRIMARY AND WATERFLOODING)

OILFIELD RESEARCH LABORATORIES
CHANUTE, KANSAS
SEPTEMBER, 1982
PDC

WATER SAT.,
PERCENT

OIL SAT.,
PERCENT

PERMEABILITY, IN MILLIDARCS
EFFECTIVE PERMEABILITY TO WATER, IN MILLIDARCS



KEY:

SANDSTONE

SHALY SANDSTONE

SHALY CALCAREOUS SANDSTONE

IMPERMEABLE TO WATER

FLOODPOT RESIDUAL OIL SATURATION

TRIPLE I ENERGY CORPORATION

JENSEN LEASE

FRANKLIN COUNTY, KANSAS

WELL NO. 17

DEPTH INTERVAL, FEET	FEET OF CORE ANALYZED	AVERAGE PERCENT POROSITY	AVG. OIL SATURATION PERCENT	AVG. WATER SATURATION PERCENT	AVERAGE PERMEABILITY, MILLIDARCS	CALCULATED OIL RECOVERY BBLs. / ACRE
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656.0 - 663.0	6.6	19.3	43.9	37.0	127.8	1750 (PRIMARY AND WATERFLOODING)
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OILFIELD RESEARCH LABORATORIES
CHANUTE, KANSAS
SEPTEMBER, 1982

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