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

March 9, 1982

Sand Dollar Energy Corporation
10 West 14th
P. O. Box 183
Chanute, Kansas 66720

Gentlemen:

Enclosed herewith is the report of the analysis of the rotary cores taken from the Cook Lease, Well No. 15, located in Montgomery County, Kansas and submitted to our laboratory on March 4, 1982.

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES

Sanford A. Michel

SAM/kas

5 c to Chanute, Kansas

Oilfield Research Laboratories

GENERAL INFORMATION & SUMMARY

Company Sand Dollar Energy Corporation Lease Cook Well No. 15

Location

Section 1 Twp. 35S Rge. 16E County Montgomery State Kansas

	Peru	Lower Cattleman
Elevation, Feet		
Name of Sand		
Top of Core	314.0	592.0
Bottom of Core	340.1	599.4
Top of Sand	314.0	*592.5
Bottom of Sand	*339.8	599.4
Total Feet of Permeable Sand	24.7	6.9
Total Feet of Floodable Sand		6.9

Distribution of Permeable Sand: Permeability Range Millidarcys	Feet	Cum. Ft.
	PERU SAND	
0 - 2	8.5	8.5
2 - 4	9.2	17.7
4 - 10	2.7	20.4
14 - 19	2.7	23.1
54 - 59	1.6	24.7
	LOWER CATTLEMAN SAND	
5 - 20	2.4	2.4
30 - 40	4.5	6.9

	Peru	Lower Cattleman
Average Permeability Millidarcys	7.3	26.5
Average Percent Porosity	13.8	18.6
Average Percent Oil Saturation	19.4	41.0
Average Percent Water Saturation	67.8	39.5
Average Oil Content, Bbls./A. Ft.	217.	592.
Total Oil Content, Bbls./Acre	5,595.	4,088.
Average Percent Oil Recovery by Laboratory Flooding Tests		9.6
Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft.		140.
Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre		967.
Total Calculated Oil Recovery, Bbls./Acre		See "Cal. Rec." Section

The core was sampled and the samples sealed in plastic bags by a representative of the client. Fresh water mud was used as a drilling flui The core was reported to be from a non-virgin area.

As requested by the client, only the Lower Cattleman sand was subjected to flooding susceptibility tests, therefore, the calculated recovery applies to the Lower Cattleman sand only.

FORMATION CORED

The detailed log of the formation cored is as follows:

Depth Interval, Feet	Description
	PERU SAND
314.0 - 315.0	Brown shaly sandstone.
315.0 - 317.0	Brown very shaly sandstone.
317.0 - 319.0	Gray very shaly sandstone.
319.0 - 320.0	Brown shaly sandstone.
320.0 - 321.3	Grayish brown shaly sandstone.
321.3 - 322.0	Brown slightly shaly sandstone.
322.0 - 323.0	Brown sandstone.
323.0 - 325.0	Grayish brown very shaly sandstone.
325.0 - 327.8	Gray very shaly sandstone.
327.8 - 330.7	Grayish brown shaly sandstone.
330.7 - 331.0	Gray shale.
331.0 - 331.8	Brown sandstone.
331.8 - 334.0	Grayish brown shaly sandstone.

334.0 - 337.6 Gray very shaly sandstone.

337.6 - 338.0 Brown sandstone.

338.0 - 338.5 Gray shaly sandstone.

338.5 - 339.8 Brown sandstone.

339.8 - 340.1 Grayish brown shaly sandstone.

340.1 - 592.0 No core.

LOWER CATTLEMAN SAND

592.0 - 592.5 Light brown sandstone.

592.5 - 592.9 Light brown sandstone with gray shale partings.

592.9 - 599.4 Light brown sandstone.

LABORATORY FLOODING TESTS

LOWER CATTLEMAN SAND

The Lower Cattleman sand in this core responded to laboratory flooding tests, as a total recovery of 967 barrels of oil per acre was obtained from 6.9 feet of sand. The weighted average percent oil saturation was reduced from 41.0 to 31.4, or represents an average recovery of 9.6 percent. The weighted average effective permeability of the samples is 1.10 millidarcys, while the average initial fluid production pressure is 28.1 pounds per square inch (See Table V).

By observing the data given in Table IV, you will note that of the 8 samples tested, 8 produced water and oil. This indicates that 100 percent of the sand represented by these samples is floodable pay sand.

CALCULATED RECOVERY

LOWER CATTLEMAN 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 1,930 barrels of oil per acre. This is an average recovery of 280 barrels per acre foot from 6.9 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	30.0
Average porosity, percent	18.6
Oil saturation after flooding, percent	31.4
Performance factor, percent, estimated	55.0
Net floodable sand, feet	6.9

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Sand Dollar Energy Corporation **Lease** Cook **Well No.** 15

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.		
						PERU SAND					
1	314.4	15.5	37	57	94	445	4.5	1.0	1.0	445	4.50
2	315.3	14.8	30	59	89	345	0.42	1.0	2.0	345	0.42
3	316.4	13.4	25	58	83	260	1.5	1.0	3.0	260	1.50
4	317.4	14.1	11	83	94	120	2.2	1.0	4.0	120	2.20
5	318.5	13.3	7	88	95	72	1.4	1.0	5.0	72	1.40
6	319.4	13.2	18	65	83	184	2.5	1.0	6.0	184	2.50
7	320.4	14.6	6	83	89	68	2.6	1.3	7.3	88	3.38
8	321.4	15.6	27	53	80	327	9.1	0.7	8.0	229	6.37
9	322.7	16.2	28	55	83	352	14.	1.0	9.0	352	14.00
10	323.3	13.9	21	67	88	227	2.1	1.0	10.0	227	2.10
11	324.6	13.7	34	50	84	361	2.0	1.0	11.0	361	2.00
12	325.6	13.2	3	89	92	31	1.3	1.0	12.0	31	1.30
13	326.5	13.5	9	83	92	94	1.2	1.0	13.0	94	1.20
14	327.6	13.3	11	84	95	113	2.3	0.8	13.8	90	1.84
15	328.6	14.0	18	63	81	196	3.5	0.9	14.7	176	3.15
16	329.5	14.5	28	53	81	315	3.9	1.0	15.7	315	3.90
17	330.4	14.9	23	60	83	266	4.2	1.0	16.7	266	4.20
18	331.5	17.7	32	48	80	439	18.	1.1	17.8	483	19.80
19	332.4	11.1	14	81	95	121	2.1	1.2	19.0	145	2.52
20	333.4	11.5	11	85	96	98	1.8	1.0	20.0	98	1.80
21	334.4	8.7	19	63	83	128	1.4	1.0	21.0	128	1.40
22	335.4	8.4	15	80	95	98	0.37	1.5	22.5	147	0.56
23	336.6	9.1	14	79	93	99	Imp.	1.1	23.6	109	0.00

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Sand Dollar Energy Corporation **Lease** Cook **Well No.** 15

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.		
24	337.8	20.7	24	45	69	385	58.	0.9	24.5	347	52.20
25	338.8	17.9	23	54	77	319	14.	0.6	25.1	191	8.40
26	339.7	19.9	27	51	78	417	54.	0.7	25.8	292	37.50
						LOWER CATTLEMAN SAND					
27	592.7	15.7	42	32	74	512	5.0	0.4	0.4	205	2.00
28	593.7	17.7	41	37	78	563	35.	1.0	1.4	563	35.00
29	594.6	17.7	34	46	80	467	33.	1.0	2.4	467	33.00
30	595.4	18.0	39	41	80	545	19.	1.0	3.4	545	19.00
31	596.1	16.9	45	46	91	590	15.	1.0	4.4	590	15.00
32	597.2	17.6	40	39	79	546	38.	0.5	4.9	273	19.00
33	598.3	21.9	47	35	82	799	30.	1.0	5.9	799	30.00
34	599.2	20.8	40	35	75	646	30.	1.0	6.9	646	30.00

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company Sand Dollar Energy Corporation Lease Cook Well No. 15

Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.
	PERU SAND		
314.0 - 337.6	22.5	3.6	82.04
337.6 - 339.8	2.2	44.7	98.40
314.0 - 339.8	24.7	7.3	180.44
	LOWER CATTLEMAN SAND		
592.5 - 599.4	6.9	26.5	183.00

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
			PERU SAND			
314.0 - 337.6	23.6	13.3	18.9	69.5	202	4,765
337.6 - 339.8	2.2	19.6	24.7	49.4	377	830
314.0 - 339.8	25.8	13.8	19.4	67.8	217	5,595
			LOWER CATTLEMAN SAND			
592.5 - 599.4	6.9	18.6	41.0	39.5	592	4,088

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company Sand Dollar Energy Corporation Lease Cook Well No. 15

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.			
					LOWER CATTLEMAN SAND							
27	592.7	15.8	42	515	10	123	32	58	392	36	0.60	30
28	593.7	17.6	41	560	9	123	32	64	437	62	0.97	20
29	594.6	17.9	34	472	6	83	28	63	389	80	1.42	30
30	595.4	17.8	39	539	9	124	30	66	415	92	1.35	25
31	596.1	17.0	45	593	9	119	36	55	474	38	0.60	30
32	597.2	17.7	40	549	10	137	30	54	412	24	0.37	40
33	598.3	22.0	47	802	13	222	34	50	580	124	1.65	20
34	599.2	20.9	40	649	11	178	29	57	471	82	1.20	30

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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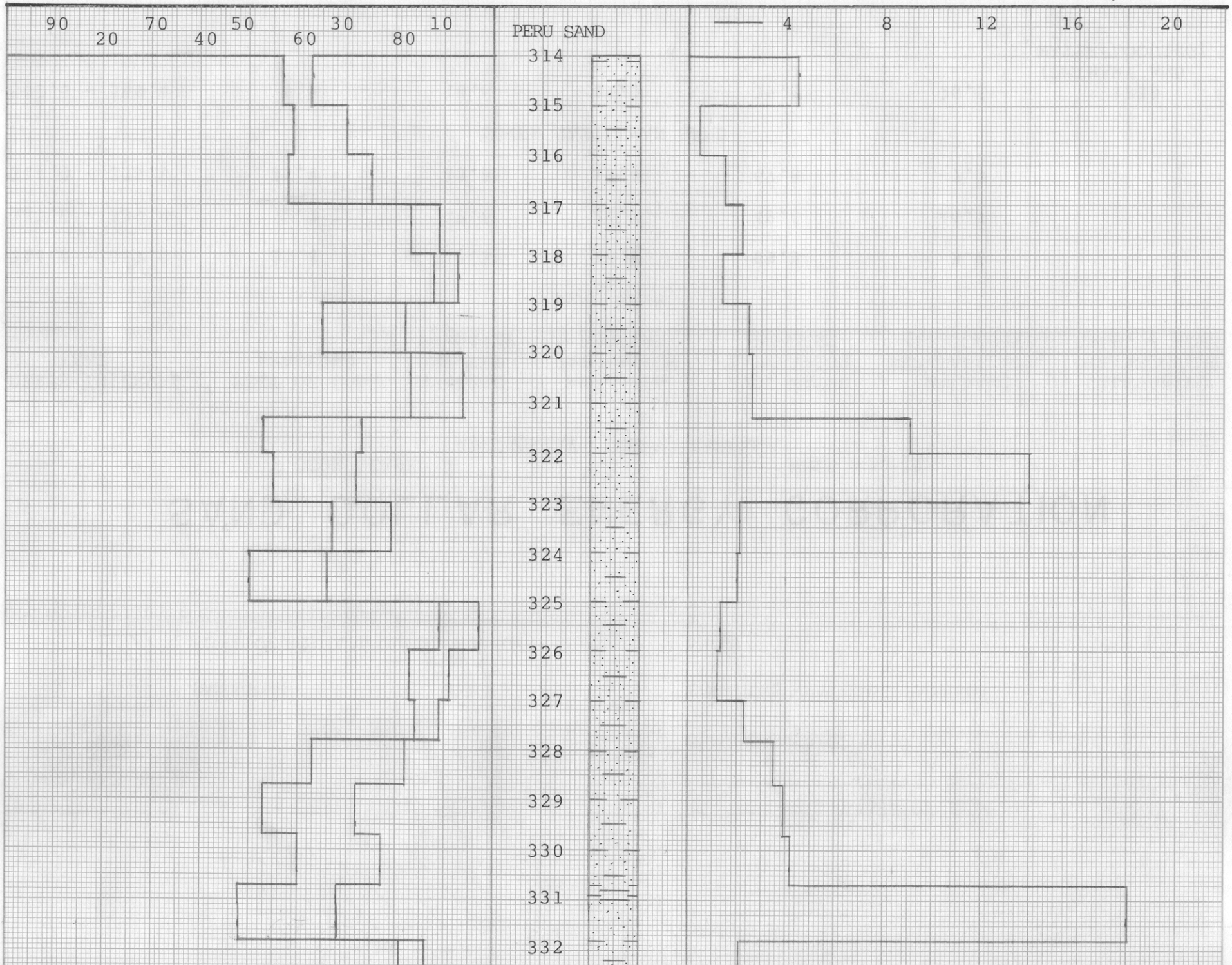
SUMMARY OF LABORATORY FLOODING TESTS

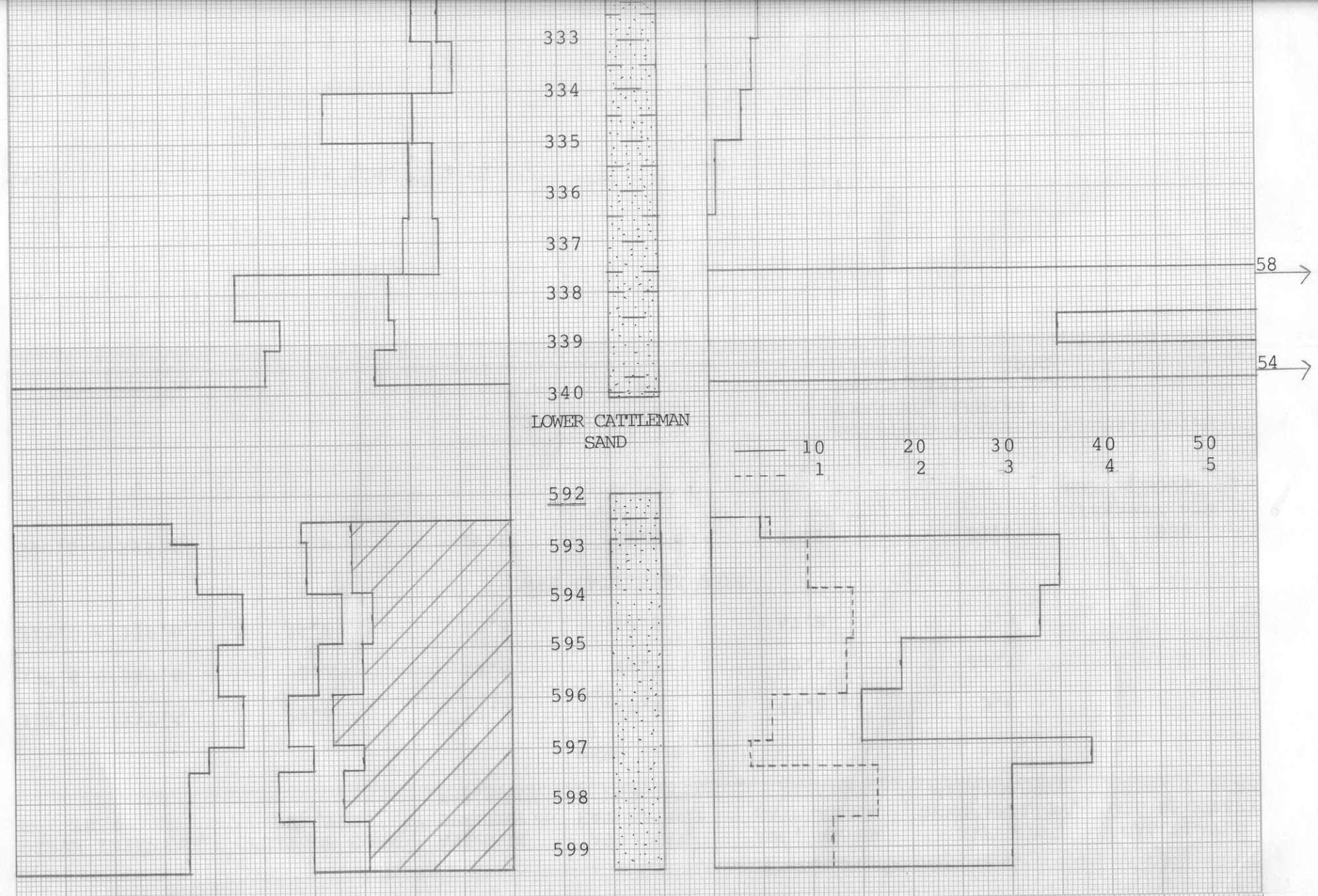
TABLE V

Company Sand Dollar Energy Corporation Lease Cook Well No. 15

	LOWER CATTLEMAN SAND
Depth Interval, Feet	592.5 - 599.4
Feet of Core Analyzed	6.9
Average Percent Porosity	18.6
Average Percent Original Oil Saturation	41.0
Average Percent Oil Recovery	9.6
Average Percent Residual Oil Saturation	31.4
Average Percent Residual Water Saturation	58.7
Average Percent Total Residual Fluid Saturation	90.1
Average Original Oil Content, Bbls./A. Ft.	593.
Average Oil Recovery, Bbls./A. Ft.	140.
Average Residual Oil Content, Bbls./A. Ft.	453.
Total Original Oil Content, Bbls./Acre	4,096.
Total Oil Recovery, Bbls./Acre	967.
Total Residual Oil Content, Bbls./Acre	3,129.
Average Effective Permeability, Millidarcys	1.10
Average Initial Fluid Production Pressure, p.s.i.	28.1

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
90 70 50 30 10
20 40 60 80
PERU SAND
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
4 8 12 16 20



KEY:

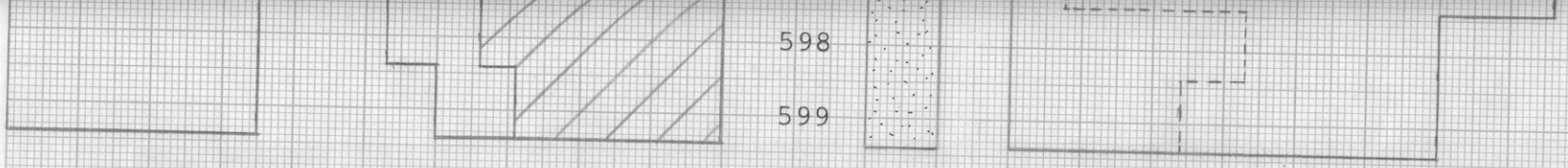
SANDSTONE

FLOODPOT RESIDUAL OIL SATURATION

SHALY SANDSTONE

SANDSTONE WITH SHALE PARTINGS

SHALE



KEY:

SANDSTONE

FLOODPOT RESIDUAL OIL SATURATION

SHALY SANDSTONE

SANDSTONE WITH SHALE PARTINGS

SHALE

SAND DOLLAR ENERGY CORPORATION

COOK LEASE WELL NO. 15

MONTGOMERY COUNTY, KANSAS

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
			PERU SAND			
314.0 - 337.6	23.6	13.3	18.9	69.5	3.6	
337.6 - 339.8	2.2	19.6	24.7	49.4	44.7	
314.0 - 339.8	25.8	13.8	19.4	67.8	7.3	
			LOWER CATTLEMAN SAND			
592.5 - 599.4	6.9	18.6	41.0	39.5	26.5	1930 (PRIMARY AND WATERFLOODING)

OILFIELD RESEARCH LABORATORIES
CHANUTE, KANSAS
MARCH, 1982

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