

OILFIELD RESEARCH LABORATORIES

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

April 28, 1980

Scimitar Resources Limited
104 South Silver
P.O. Box 221
Paola, Kansas 66071

Gentlemen:

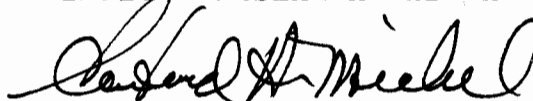
Enclosed herewith is the report of the analysis of the rotary core taken from the ~~Plug~~ Lease Well No. S-8A, Miami County, Kansas, and submitted to our laboratory on March 26, 1980.

PFLUG

Your business is greatly appreciated.

Very truly yours,

OILFIELD RESEARCH LABORATORIES


Sanford A. Michel

SAM/tem

4 c to Paola, Kansas

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GENERAL INFORMATION & SUMMARY

Company Scimitar Resources Limited Lease Phlug Well No. S-8A

Location S¹/₂ NW¹/₄

Section 25 Twp 16S Rge 21E County Miami State Kansas

Elevation, Feet - - - - -

Name of Sand - - - - - Squirrel

Top of Core - - - - - 667.0

Bottom of Core - - - - - 682.0

Top of Sand - - - - - 667.0

Bottom of Sand - - - - - 678.7

Total Feet of Permeable Sand - - - - - 8.6

Total Feet of Floodable Sand - - - - - 3.0

Distribution of Permeable Sand:
Permeability Range
Millidarcys

Feet

Cum. Ft.

0 - 5 4.2 4.2

5 - 10 2.9 7.1

20 - 30 1.5 8.6

Average Permeability Millidarcys - - - - - 7.9

Average Percent Porosity - - - - - 16.0

Average Percent Oil Saturation - - - - - 33.5

Average Percent Water Saturation - - - - - 52.6

Average Oil Content, Bbls./A. Ft. - - - - - 423.

Total Oil Content, Bbls./Acre - - - - - 3,923.

Average Percent Oil Recovery by Laboratory Flooding Tests - - - - - 9.7

Average Oil Recovery by Laboratory Flooding Tests, Bbls./A. Ft. - - - - - 132.

Total Oil Recovery by Laboratory Flooding Tests, Bbls./Acre - - - - - 394.

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. Fresh water mud was 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>
667.0 - 667.9	Brown shaly calcareous sandstone.
667.9 - 668.6	Brown calcareous sandstone.
668.6 - 669.1	Gray sandy shale.
669.1 - 669.8	Brown calcareous shaly sandstone.
669.8 - 670.4	Gray sandy shale.
670.4 - 670.9	Brown sandstone.
670.9 - 674.3	Brown shaly sandstone.
674.3 - 674.7	Brown sandstone.
674.7 - 676.0	Gray sandy shale.
676.0 - 678.7	Grayish brown shaly sandstone.
678.7 - 682.0	Gray sandy shale.

LABORATORY FLOODING TESTS

The sand in this core responded to laboratory flooding tests, as a total recovery of 394 barrels of oil per acre was obtained from 3.0 feet of sand. The weighted average percent oil saturation was reduced from 39.9 to 30.2, or represents an average recovery of 9.7 percent. The weighted average effective permeability of the samples is 0.27 millidarcys, while the average initial fluid production pressure is 27.5 pounds per square inch (See Table V).

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By observing the data given in Table IV, you will note that of the 11 samples tested, 4 produced water and oil, and 1 sample produced water only. This indicates that approximately 36 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 770 barrels of oil per acre. This is an average recovery of 256 barrels per acre foot from 3.0 feet of floodable sand analyzed in this core.

These recovery values were calculated using the following data and assumptions:

Original formation volume factor, estimated	1.04
Reservoir water saturation, percent, estimated	30.0
Average porosity, percent	17.8
Oil saturation after flooding, percent	30.2
Performance factor percent, estimated	45.0
Net floodable sand, feet	3.0

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RESULTS OF SATURATION & PERMEABILITY TESTS

TABLE 1-B

Company Scimitar Resources Lease Phlug Well No. S-8A

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	667.5	14.7	37	43	80	422	4.4	0.9	0.9	380	3.96
2	668.5	11.6	36	40	76	324	9.9	0.7	1.6	227	6.93
3	669.3	16.9	45	50	95	590	9.0	0.7	2.3	413	6.30
4	670.5	20.6	49	33	82	783	9.2	0.5	2.8	392	4.60
5	671.5	20.3	35	40	75	551	21.	1.1	3.9	606	23.10
6	672.5	5.8	30	62	92	135	1.0	1.0	4.9	135	1.00
7	673.5	15.6	28	65	93	339	1.4	1.3	6.2	441	1.82
8	674.5	13.9	33	60	93	356	20.	0.4	6.6	142	8.00
9	676.5	22.2	40	38	78	689	4.5	1.0	7.6	689	4.50
10	677.5	17.9	15	76	91	208	8.0	1.0	8.6	208	8.00
11	678.5	16.2	34	60	94	427	Imp.	0.7	9.3	299	0.00

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SUMMARY OF PERMEABILITY & SATURATION TESTS

TABLE III

Company	Scimitar Resources Limited	Lease	Plug	Well No.	S-8A
Depth Interval, Feet	Feet of Core Analyzed	Average Permeability, Millidarcys	Permeability Capacity Ft. x Md.		
667.0 - 672.0	3.9	11.5	44.89		
672.0 - 678.7	4.7	5.0	23.32		
667.0 - 678.7	8.6	7.9	68.21		

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
667.0 - 672.0	3.9	16.9	39.2	41.6	517	2,018
672.0 - 678.7	5.4	15.4	29.3	60.5	354	1,914
667.0 - 678.7	9.3	16.0	33.5	52.6	423	3,923

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RESULTS OF LABORATORY FLOODING TESTS

TABLE IV

Company			Scimitar Resources Limited			Lease			Phlug			Well No.			S-8A		
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	667.5	15.1	36	422	0	0	36	44	422	0	Imp.	-					
2	668.5	12.1	36	338	6	56	30	67	282	12	0.22	25					
3	669.3	17.1	45	597	14	166	31	65	411	31	0.45	25					
4	670.5	20.5	49	779	19	302	30	65	477	12	0.22	35					
5	671.5	20.6	35	557	5	80	30	66	479	15	0.22	25					
6	672.5	6.0	30	140	0	0	30	53	140	0	Imp.	-					
7	673.5	15.6	28	339	0	0	28	66	339	0	Imp.	-					
8	674.5	14.1	33	361	0	0	33	61	361	272	3.45	35					
9	676.5	21.8	40	676	0	0	40	57	676	0	Imp.	-					
10	677.5	17.4	16	216	0	0	16	78	216	0	Imp.	-					
11	678.5	16.4	34	433	0	0	34	60	433	0	Imp.	-					

Company Scimitar Resources Limited

Lease Phlug

Well No. S-8A

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	Scimitar Resources Limited	Lease	Plug	Well No.
				S-8A
Depth Interval, Feet	667.0 - 672.0			
Feet of Core Analyzed	3.0			
Average Percent Porosity	17.8			
Average Percent Original Oil Saturation	39.9			
Average Percent Oil Recovery	9.7			
Average Percent Residual Oil Saturation	30.2			
Average Percent Residual Water Saturation	65.8			
Average Percent Total Residual Fluid Saturation	96.0			
Average Original Oil Content, Bbls./A. Ft.	549.			
Average Oil Recovery, Bbls./A. Ft.	132.			
Average Residual Oil Content, Bbls./A. Ft.	417.			
Total Original Oil Content, Bbls./Acre	1,644.			
Total Oil Recovery, Bbls./Acre	394.			
Total Residual Oil Content, Bbls./Acre	1,250.			
Average Effective Permeability, Millidarcys	0.27			
Average Initial Fluid Production Pressure, p.s.i.	27.5			

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