Kansas Cores

PETROLEUM RESERVOIR ENGINEERING

WICHITA, KANSAS

COMPANY Mull Drilling & Walters Drilling DATE 3-10-65

WELL Ziegler #A-1 ANALYST IS

FIELD

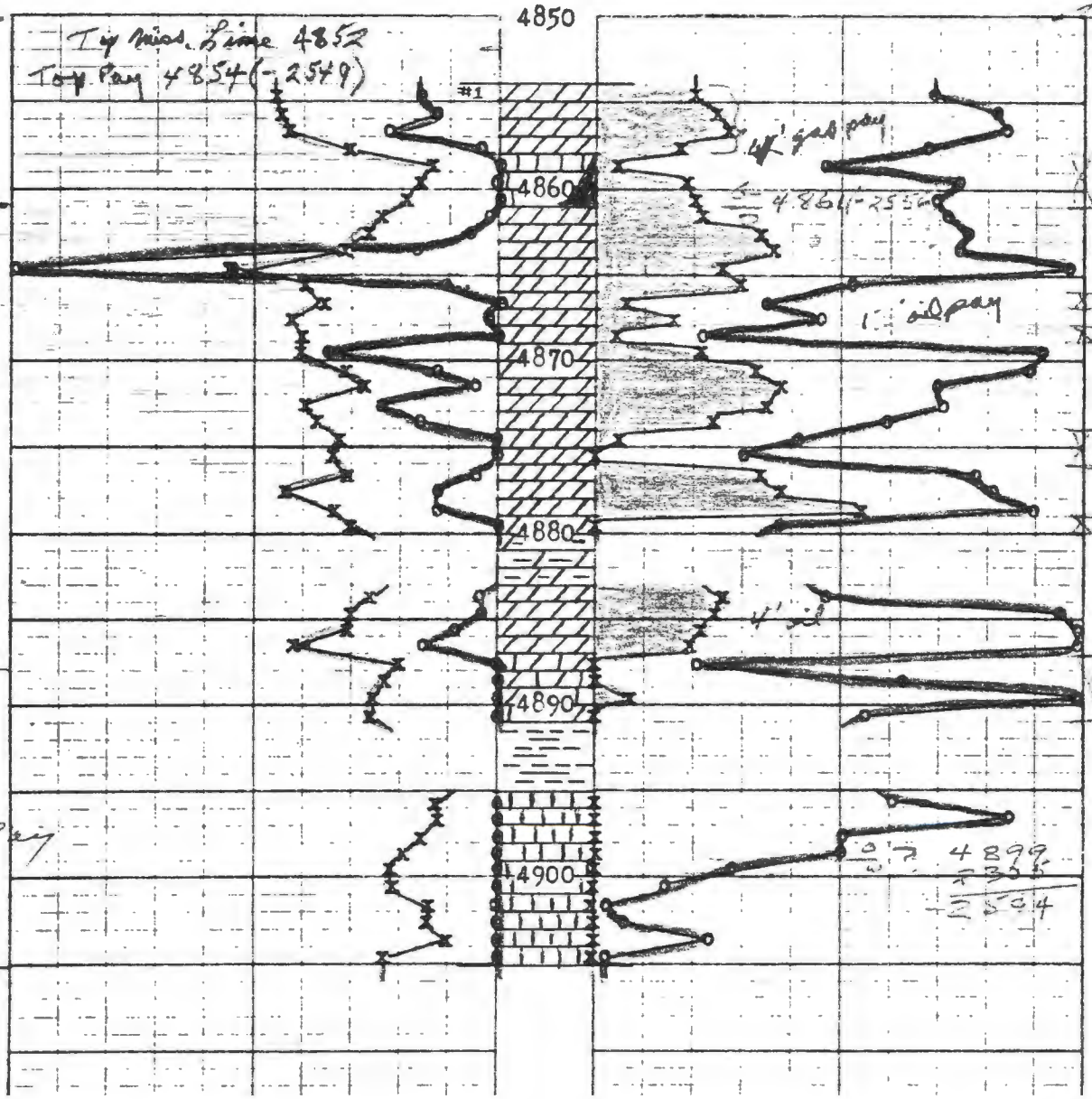
COUNTY Kiowa STATE Kansas

PERMEABILITY MILLIDARCYS 400 300 200 100 0

POROSITY—% X—X 20 10 0

CONNATE WATER % SATURATION 0 70 60 50 40

OIL % PORE SATURATION X—X 0 10 20



Kansas Cores
PETROLEUM RESERVOIR ENGINEERING
CORE ANALYSIS
1026 NORTH LIGHTNER
WICHITA, KANSAS 67208

Mar. 10, 1965

Re: CORE ANALYSIS REPORT
Mull Drlg. & Walters Drlg.
Ziegler #A-1
Kiowa County
Kansas

Mull Drilling Co.
Wichita Plaza Bldg.
Wichita, Kansas

Gentlemen:

The cores from your well, Ziegler #A-1, Kiowa County, Kansas have been analysed for permeability, porosity, and residual saturation of oil and water. The data will be found tabulated on the following pages and indicated on the coregraph. The data averages and recovery figures will be found at the end of this report.

The following is a short discussion of the section cored and analysed.

4854' to 4887' - Oil Productive

This section in the Mississippian formation was composed for the most part of a finely crystalline to finely sucrosic dolomite, with some streaks of a barren, non permeable light grey-green dense dolomite. Good permeabilities and porosities were measured, along with water and oil percenatages in line for water free oil production. A good commercial well can be expected from this zone.

4895' to 4905' - Non Productive

A hard crystalline limestone was found at this depth with low porosities and no permeabilities. No production of any kind will be found from this zone.

Yours very truly,

KANSAS CORES

Ivan L. Stuber

Attachments
cc: 8 copies to Mull Drilling Co., Wichita, Kansas

Re: CORE DESCRIPTION
Mull Drlg. & Walters Drlg.
Ziegler #A-1
Kiowa Co., Kansas

CORE #1

4854' to 4905' Cut 51' Rec. 51'

4' Soft brown finely sucrosic dolomite with some inclusions and streaks of green dense barren dolomite: Good stain & odor

1' Hard coarsely crystalline limestone, dirty grey-brown: Slight stain, vertically fractured

2' Hard brown crystalline slightly dolomitic limestone, slightly fossiliferous: Good stain and odor

3' Soft brown limey dolomite, finely crystalline: Good stain & odor

1' Very soft dark brown sucrosic dolomite: Good stain and odor

1' Soft light brown finely crystalline dolomite with some green dense dolomite: Good stain and odor

3' Soft dense grey-green dolomite, slightly vugular in part, trace brown dolomite streaks: Poor streaked stain

5' Soft brown coarsely sucrosic dolomite, trace blue-green small calcite inclusions: Good stain and odor

2' Soft dense light grey-green dolomite, some large vugs filled with yellow to clear calcite & oil: Rest no stain or odor

3' Hard brown finely crystalline dolomite, vertically fractured bottom: Good stain and odor

1' Soft dense grey-green dolomite: No show

3' Same as above with some dark grey-black shale: No show

4' Hard brown finely crystalline dolomite with some blue-green inclusions of glauconite, vertically fractured: Good stain

4' Hard dense light grey-green dolomite, limey: No stain or odor

4' Grey-green slightly dolomitic shale

10' Light dirty grey crystalline limestone, slightly fossiliferous in part, finely crystalline to dense bottom 1': No stain, sulphor odor

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WICHITA, KANSAS 67208

WELL Ziegler #A-1 COUNTY Kiowa STATE Kansas

COMPANY Mull Drlg. & Walters Drlg. DATE 3-10-65 FILE NO. S-591

FIELD TYPE CORES Diamond ANALYST IS

ANALYSIS DATA AND INTERPRETATIONS

SAMPLE NO.	DEPTH	PERMEABILITY MILLIDARCYS HORIZONTAL	PERMEABILITY MILLIDARCYS VERTICAL	POROSITY %	SATURATION WATER % PORE SPACE	SATURATION OIL % PORE SPACE	PROBABLE PRODUCTION	REMARKS
1	4854 55	84.7	55.2	23.3	45.9	10.1	Oil	
2	4855 56	62.5	8.6	22.4	39.0	12.1	Oil	Gas ✓
3	4856 57	110	55.0	22.1	38.7	12.9	Oil	
4	4857 58 AVG	22.4 68.9	0.0 27.7	15.2 26.6	46.8 42.6	8.2 10.8	Oil	
5	4858 59	0.0	0.0	6.9	56.2	2.1	No Perm	Vertically fractured
6	4959 60	1.8	0.0	8.3	43.6	9.7	No Perm	
7	4860 61	0.0	0.0	9.4	45.2	10.1	No Perm	4860 2305 −2555 = GOC
8	4861 62	8.1	3.7	12.3	44.8	10.8	Oil	4½" @ 4861'
9	4862 63	34.6	10.0	14.2	41.6	16.2	Oil	
10	4863 64	92.5	36.7	15.8	43.4	17.6	Oil	
11	4864 65	570	305	28.1	31.7	12.9	Oil	
12	4865 66	53.0	10.1	19.9	54.2	14.9	Oil	
13	4866 67	0.0	0.0	18.0	62.9	3.1	No Perm	4854 2305 −2549
14	4867 68	13.6	0.0	21.7	57.0	7.8	No Perm	
15	4868 69	0.0	0.0	20.4	69.1	2.0	No Perm	
16	4869 70	180	77.6	20.3	34.4	10.8	Oil	
17	4870 71	66.5	42.9	15.8	36.1	16.2	Oil	
18	4871 72	27.9	11.1	14.3	45.5	18.3	Oil	
19	4872 73	120	86.9	19.9	44.9	17.2	Oil	
20	4873 74	82.5	61.5	18.7	50.2	11.3	Oil	
21	4874 75	0.0	0.0	16.3	59.6	2.1	No Perm	
22	4875 76	0.0	0.0	17.0	65.2	0.0	No Perm	
23	4876 77	21.6	19.6	15.7	41.1	16.4	Oil	
24	4877 78	61.6	62.0	22.4	39.7	18.9	Oil	

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WELL _____ COUNTY _____ STATE _____

COMPANY _____ DATE _____ FILE No. _____

FIELD _____ TYPE CORES _____ ANALYST _____

ANALYSIS DATA AND INTERPRETATIONS

SAMPLE No.	DEPTH	PERMEABILITY MILLIDARCYS HORIZONTAL	PERMEABILITY MILLIDARCYS VERTICAL	POROSITY %	SATURATION WATER % PORE SPACE	SATURATION OIL % PORE SPACE	PROBABLE PRODUCTION	REMARKS
25	4878 79	62.0	92.0	16.2	35.6	26.9	Oil	Vertically fractured
26	4879 80	0.0	0.0	15.4	61.2	0.0	No Perm	
27	4883 84	22.8	18.6	13.6	56.4	12.9	Oil	Vertically fractured
28	4884 85	14.9	9.8	15.3	32.7	11.6	Oil	Vertically fractured
29	4885 86	46.1	24.7	15.4	27.8	10.2	Oil	Vertically fractured
30	4886 87	77.1	33.4	21.6	22.0	9.2	Oil	
		83.4	43.7	18.4	41.3	13.8		
	4887 88	0.0	0.0	10.0	69.7	0.0	No Perm	
32	4888 89	0.0	0.0	11.6	48.8	0.0	No Perm	
33	4889 90	0.0	0.0	12.7	26.9	3.7	No Perm	
34	4890 91	0.0	0.0	13.0	52.6	0.0	No Perm	
35	4895 96	0.0	0.0	6.5	49.8	0.0	No Perm	
36	4896 97	0.0	0.0	6.2	37.7	0.0	No Perm	
37	4897 98	0.0	0.0	8.2	54.7	0.0	No Perm	
38	4898 99	0.0	0.0	9.7	54.9	0.0	No Perm	
39	4899 4900	0.0	0.0	10.6	66.6	0.0	No Perm	
40	4900 01	0.0	0.0	10.2	73.8	0.0	No Perm	
41	4901 02	0.0	0.0	7.3	79.8	0.0	No Perm	
42	4902 03	0.0	0.0	7.3	77.3	0.0	No Perm	
43	4903 04	0.0	0.0	5.1	68.6	0.0	No Perm	
44	4904 05	0.0	0.0	11.5	95.1	0.0	No Perm	

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DATA AVERAGES AND OIL RECOVERY FIGURES

DEPTH	4854'-4887'			
FEET OF PRODUCTION FORMATION OF SECTION ANALYZED	21			
AVERAGE PERMEABILITY IN MILLIDARCYS	84.8			
AVERAGE POROSITY, PER CENT	18.2			
AVERAGE TOTAL WATER % OF PORE SPACE	41.5			
AVERAGE RESIDUAL OIL % OF PORE SPACE	14.6			
AVERAGE CONNATE WATER CALCULATED % OF PORE SPACE	33.2			
ESTIMATED FORMATION VOLUME FACTOR — USED IN CALCULATING RECOVERABLE OIL	1.30			
PRODUCTIVE CAPACITY — PRODUCTIVE FEET X AVERAGE PERMEABILITY IN MILLIDARCYS	1,781			
RECOVERABLE OIL BY WATER DRIVE — BBLS. PER ACRE FOOT	520			
RECOVERABLE OIL BY GAS EXPANSION — BBLS. PER ACRE FOOT	312*			

*From original bottom hole pressure to zero