

CORE ANALYSIS RESULTS

Company AMOCO PRODUCTION COMPANY Formation COUNCIL GROVE File CP-1-7648
Well MATER A NO. 2-A Core Type DIAMOND 3 1/2" Date Report 9-5-72
Field PANOMA Drilling Fluid WATER BASE MUD Analysts BOYLE
County STANTON State KANSAS Elev. 3132' KB Location SEC. 13-27S-39W

Lithological Abbreviations

SAND-SD SHALE-SH LIME-LM	DOLOMITE-DOL CHERT-CH GYPSUM-GYP	ANHYDRITE-ANHY CONGLOMERATE-CONG FOSSILIFEROUS-FOSS	SANDY-SDY SHALY-SHY LIMY-LMY	FINE-FN MEDIUM-MED COARSE-CSE	CRYSTALLINE-XLN GRAIN-GRN GRANULAR-GRNL	BROWN-BRN GRAY-GY UGGY-VGY	FRACTURED-FRAC LAMINATION-LAM STYLOLITIC-STY	SLIGHTLY-SL VERY-V/ WITH-W/
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SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCS		POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE		SAMPLE DESCRIPTION AND REMARKS
		PERM. MAX.	PERM. 90°		OIL	TOTAL WATER	
WHOLE-CORE ANALYSIS							
1	2587-88	<0.1	<0.1	3.1	0.0	28.6	Lm, sl/shy
2	88-89	<0.1	<0.1	4.2	0.0	27.1	Lm, sl/shy
3	89-90	<0.1	<0.1	4.7	0.0	46.3	Lm, sl/shy
4	90-91	<0.1	<0.1	5.3	0.0	43.5	Lm, sl/shy
5	91-92	<0.1	<0.1	4.1	0.0	43.5	Lm, sl/shy
6	92-93	<0.1	<0.1	3.9	0.0	43.9	Lm, shy
7	93-94	<0.1	<0.1	4.8	0.0	69.0	Lm, shy, vert frac
8	94-95	<0.1	<0.1	7.4	0.0	80.3	Siltstone, lmy, shy
	95-2601						Sh, lmy, red
9	2601-02	<0.1	<0.1	7.5	0.0	74.6	Siltstone, lmy, shy
10	02-03	<0.1	<0.1	11.4	0.0	71.1	Sd, lmy, silty
11	03-04	0.2	0.2	13.7	0.0	68.9	Sd, lmy, silty
12	04-05	0.6	0.4	14.7	0.0	59.4	Sd, sl/lmy, silty
13	05-06	0.7	0.7	15.4	0.0	50.9	Sd, sl/lmy, silty
14	06-07	1.0	0.7	12.9	0.0	49.2	Sd, lmy, silty, anhy
15	07-08	0.7	0.6	15.7	0.0	56.5	Sd, lmy, silty
16	08-09	0.3	0.2	15.4	0.0	64.6	Sd, lmy, silty
17	09-10	0.2	0.1	13.8	0.0	59.7	Sd, lmy, silty, sl/anhy
18	10-11	<0.1	<0.1	9.7	0.0	62.3	Sd, lmy, silty, sl/anhy
	11-13						Sh, lmy, red
19	13-14	<0.1	<0.1	5.4	0.0	67.3	Sd, lmy, v/silty
20	14-15	<0.1	<0.1	5.5	0.0	61.9	Sd, lmy, v/silty
21	15-16	<0.1	<0.1	6.0	0.0	61.5	Sd, lmy, v/silty
	16-20						Sh, lmy, red
22	20-21	<0.1	<0.1	4.9	0.0	44.6	Lm, anhy
23	21-22	<0.1	<0.1	4.6	0.0	39.6	Lm, vert frac
24	22-23	<0.1	<0.1	3.3	0.0	45.5	Lm
25	23-24	<0.1	<0.1	1.6	0.0	29.4	Lm, dse
	24-27						Sh, lmy
26	27-28	<0.1	<0.1	1.1	0.0	58.3	Lm, dse, sl/shy
27	28-29	<0.1	<0.1	0.8	0.0	33.3	Lm, dse
28	29-30	<0.1	<0.1	1.0	0.0	55.6	Lm, dse
	30-32						Sh, lmy, gray
29	32-33	<0.1	<0.1	4.6	0.0	37.0	Lm
30	33-34	<0.1	<0.1	6.9	0.0	34.6	Lm, vert frac
31	34-35	<0.1	<0.1	4.1	0.0	51.1	Lm, sl/shy, vert frac
32	35-36	<0.1	<0.1	3.7	0.0	59.1	Lm, sl/shy, vert frac
33	36-37	<0.1	<0.1	4.3	0.0	65.9	Lm, shy, vert frac
34	37-38	<0.1	<0.1	6.9	0.0	83.9	Lm, v/shy
35	2638-39	<0.1	<0.1	8.4	0.0	76.7	Lm, v/shy

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CORE LABORATORIES, INC.
 Petroleum Reservoir Engineering
 DALLAS, TEXAS

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 Well MATER A NO. 2-A

CORE ANALYSIS RESULTS

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCS		POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE		SAMPLE DESCRIPTION AND REMARKS
		MAX.	90°		OIL	TOTAL WATER	
36	2639-40	<0.1	<0.1	2.8	0.0	70.0	Lm, shy
	40-42						Sh, lmy, gray
37	42-43	<0.1	<0.1	4.5	0.0	74.5	Lm, shy
38	43-44	<0.1	<0.1	2.1	0.0	62.5	Lm, shy
39	44-45	<0.1	<0.1	1.9	0.0	63.2	Lm, shy
40	45-46	<0.1	<0.1	4.5	0.0	31.4	Lm, sl/shy
41	46-47	<0.1	<0.1	5.8	0.0	78.2	Lm, shy
	47-55						Sh, lmy, red
42	55-56	<0.1	<0.1	7.3	0.0	74.4	Lm, dol, shy
43	56-57	<0.1	<0.1	6.8	0.0	78.2	Sd, v/lmy, silty
44	57-58	<0.1	<0.1	9.5	0.0	75.3	Sd, lmy, silty
45	58-59	0.1	0.1	9.0	0.0	74.5	Sd, lmy, silty
46	59-60	0.2	0.1	9.8	0.0	73.2	Sd, lmy, silty
47	60-61	<0.1	<0.1	7.3	0.0	78.1	Sd, lmy, silty
48	61-62	<0.1	<0.1	6.1	0.0	78.1	Sd, lmy, silty
49	62-63	<0.1	<0.1	6.3	0.0	84.1	Sd, lmy, v/silty
	63-67						Sh, lmy, red
50	67-68	<0.1	<0.1	1.9	0.0	65.0	Lm, sl/sdy, sl/shy
51	68-69	<0.1	<0.1	3.7	0.0	65.1	Lm, sdy, silty
52	69-70	3.6	3.5	9.7	0.0	40.0	Sd, lmy, silty
53	70-71	6.0	5.3	11.5	0.0	45.9	Sd, lmy, silty
54	71-72	13	13	13.0	0.0	42.5	Sd, lmy, silty
55	72-73	13	12	13.7	0.0	43.3	Sd, lmy, silty
56	73-74	12	12	15.2	0.0	45.5	Sd, lmy, silty
57	74-75	4.0	3.7	12.6	0.0	60.2	Sd, lmy, sl/shy, silty
58	75-76	15	13	14.2	0.0	54.5	Sd, lmy, sl/shy, silty
59	76-77	23	21	17.7	0.0	46.3	Sd, lmy, silty
60	77-78	24	21	17.6	0.0	47.5	Sd, lmy, silty
61	78-79	9.8	9.6	15.7	0.0	56.4	Sd, lmy, sl/shy, silty
62	79-80	11	10	13.9	0.0	68.3	Sd, lmy, shy, silty
63	80-81	6.7	6.3	12.8	0.0	56.9	Sd, lmy, sl/shy, silty
64	81-82	3.8	3.3	12.1	0.0	62.3	Sd, lmy, sl/shy, silty
65	82-83	1.1	1.0	10.4	0.0	51.3	Sd, lmy, silty
66	83-84	<0.1	<0.1	6.8	0.0	81.0	Sd, lmy, silty
67	84-85	<0.1	<0.1	5.9	0.0	83.3	Sd, lmy, shy, silty
68	85-86	<0.1	<0.1	5.0	0.0	73.3	Sd, lmy, shy, silty
69	86-87	<0.1	<0.1	3.2	0.0	60.9	Sd, v/lmy, shy, silty
70	87-88	<0.1	<0.1	2.2	0.0	57.7	Lm, sl/sdy
71	88-89	<0.1	<0.1	2.0	0.0	60.9	Lm, sl/sdy, sl/anhy
72	89-90	<0.1	<0.1	1.7	0.0	60.0	Lm, dse, sl/shy
	90-91						Sh, lmy, red
73	91-92	<0.1	<0.1	1.6	0.0	47.1	Lm, dse, vert frac
74	92-93	<0.1	<0.1	2.1	0.0	52.2	Lm, dse, vert frac
75	93-94	640	<0.1	3.7	0.0	77.1	Lm, sl/shy, vert frac
76	94-95	425	<0.1	6.4	0.0	80.0	Siltstone, v/lmy, shy, vert frac
77	95-96	<0.1	<0.1	6.4	0.0	85.5	Siltstone, lmy, shy
78	2696-97	0.1	<0.1	12.1	0.0	85.7	Siltstone, lmy, shy

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CORE LABORATORIES, INC.

Petroleum Reservoir Engineering

DALLAS, TEXAS

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CORE ANALYSIS RESULTS

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCYs		POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE		SAMPLE DESCRIPTION AND REMARKS
		MAX.	90°		OIL	TOTAL WATER	
79	2697-98	<0.1	<0.1	6.1	0.0	83.9	Siltstone, lmy, shy
80	98-99	<0.1	<0.1	4.6	0.0	82.9	Siltstone, lmy, shy
	99-2704						Sh, lmy, silty, red
81	2704-05	<0.1	<0.1	9.8	0.0	83.3	Siltstone, lmy, shy
82	05-06	<0.1	<0.1	7.1	0.0	73.8	Siltstone, lmy, shy
	06-10						Sh, lmy, silty, red
83	10-11	<0.1	<0.1	1.2	0.0	83.3	Lm, dse
84	11-12	<0.1	<0.1	2.6	0.0	79.3	Lm, dse, anhy
85	12-13	<0.1	<0.1	3.9	0.0	52.6	Lm, dse, anhy
86	13-14	<0.1	<0.1	1.9	0.0	66.9	Lm, dse, sl/sdy
87	14-15	<0.1	<0.1	2.3	0.0	69.2	Lm, dse, sdv
88	15-16	<0.1	<0.1	2.9	0.0	73.3	Lm, sdv
89	16-17	<0.1	<0.1	1.5	0.0	66.7	Lm, dse, sl/anhy
	17-20						Sh, lmy, red
90	20-21	<0.1	<0.1	7.2	0.0	96.6	Siltstone, lmy, shy
91	21-22	<0.1	<0.1	5.4	0.0	84.9	Siltstone, lmy, shy
92	22-23	<0.1	<0.1	6.4	0.0	80.6	Siltstone, lmy
93	23-24	<0.1	<0.1	6.7	0.0	81.7	Siltstone, lmy
94	24-25	<0.1	<0.1	10.7	0.0	85.7	Siltstone, lmy, shy
95	25-26	0.1	<0.1	12.5	0.0	90.4	Sd, v/silty
96	26-27	1.2	0.7	15.9	0.0	84.1	Sd, sl/lmy, silty
97	27-28	<0.1	<0.1	7.0	0.0	84.0	Siltstone, lmy, shy
98	28-29	<0.1	<0.1	9.3	0.0	90.1	Siltstone, lmy, shy, sl/anhy
99	29-30	<0.1	<0.1	9.4	0.0	89.4	Siltstone, lmy, shy, sl/anhy
100	30-31	0.2	0.1	6.5	0.0	79.8	Sd, lmy, silty
101	31-32	<0.1	<0.1	8.7	0.0	86.5	Sd, lmy, silty
102	32-33	0.2	0.2	14.2	0.0	81.1	Sd, sl/lmy, silty
103	33-34	<0.1	<0.1	7.7	0.0	82.0	Sd, silty
104	34-35	<0.1	<0.1	5.5	0.0	75.9	Sd, silty
	35-36						Sh, red
105	36-37	<0.1	<0.1	3.2	0.0	95.0	Lm, sl/shy
106	2737-38	<0.1	<0.1	3.9	0.0	69.6	Lm, sl/shy

Tot = 638.7
65

Avg 638.7 = 9.83%
65

2.5w = 4.75%
65