

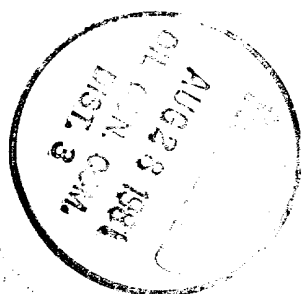
CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

CORE ANALYSIS REPORT

FOR

MESA PETROLEUM COMPANY

S. BLANCO NAVAJO 25-1
LYBROOK-GALLUP
SAN JUAN COUNTY, NEW MEXICO



CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
 DALLAS, TEXAS

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MESA PETROLEUM COMPANY
 S. BLANCO NAVAJO 25-1
 LYBROOK-GALLUP
 SAN JUAN COUNTY, NEW MEXICO

DATE : 7-14-81
 FORMATION : GALLUP
 DRLG. FLUID: W.B. GEL
 LOCATION : SE SE SEC 25-24N-8W

FILE NO : RP-3-3109
 ANALYSTS : GG; DS
 ELEVATION: 6924 KB

CONVENTIONAL CORE ANALYSIS - BOYLE'S LAW POROSITY

SAMPLE NUMBER	DEPTH	PERM Ka MAXIMUM	FOR. He	FLUID OIL	SATS. WTR	GRAIN DEN	DESCRIPTION
1	5370.0-71.0	0.01	2.7	24.3	56.8	2.68	SD-GRY,F GRN,SHL LAM
2	5371.0-72.0	0.34	3.2	25.7	65.7	2.67	SD-GRY F GRN,SHL LAM
3	5372.0-73.0	0.59	3.5	21.9	59.4	2.69	SD-GRY,F GRN, SHL LAM
4	5373.0-74.0	0.01	3.9	23.7	65.8	2.68	SD-GRY,F GRN,SHL LAM
5	5374.0-75.0	0.01	3.9	37.8	48.6	2.67	SD-GRY,F GRN,SHL LAM
6	5375.0-76.0	0.01	5.6	39.6	33.3	2.66	SD-GRY,F GRN,SHL LAM
7	5376.0-77.0	0.02	6.4	47.8	47.8	2.67	SD-GRY,F GRN,SHL LAM
8	5377.0-78.0	0.03	2.6	30.0	63.3	2.66	SD-GRY,F GRN,SHL LAM
9	5378.0-79.0	<0.01	3.1	31.6	60.5	2.67	SD-GRY,F GRN,SHL LAM
10	5379.0-80.0	0.01	3.1	25.0	63.9	2.66	SD-GRY,F GRN,SHL LAM
11	5380.0-81.0	0.07	2.8	20.8	62.5	2.68	SD-GRY,F GRN,SHL LAM
12	5381.0-82.0	0.02	3.5	25.7	60.0	2.67	SD-GRY,F GRN,SHL LAM
13	5382.0-83.0	0.05	3.2	25.7	54.3	2.67	SD-GRY,F GRN,SHL LAM
14	5383.0-84.0	0.01	3.0	27.8	44.4	2.68	SD-GRY,F GRN,SHL LAM
15	5384.0-85.0	0.03	3.2	19.2	65.4	2.66	SD-GRY,F GRN,SHL LAM
16	5385.0-86.0	0.05	3.3	16.7	70.0	2.67	SD-GRY,F GRN,SHL LAM
17	5386.0-87.0	0.18	3.5	35.5	41.9	2.66	SD-GRY,F GRN,SHL LAM
18	5387.0-88.0	<0.01	3.2	37.8	43.2	2.68	SD-GRY,F GRN,SHL LAM
19	5388.0-89.0	<0.01	2.2	25.9	55.6	2.66	SD-GRY,F GRN,SHL LAM
20	5389.0-90.0	0.02	2.2	25.0	60.7	2.67	SD-GRY,F GRN,SHL LAM
21	5390.0-91.0	0.01	3.5	31.6	55.3	2.68	SD-GRY,F GRN,SHL LAM
22	5391.0-92.0	0.01	2.9	24.1	58.6	2.66	SD-GRY,F GRN,SHL LAM
23	5392.0-93.0	<0.01	3.1	24.1	58.6	2.67	SD-GRY,F GRN,SHL LAM
24	5393.0-94.0	0.07	3.1	25.7	60.0	2.66	SD-GRY,F GRN,SHL LAM
25	5394.0-95.0	0.03	2.9	23.3	56.7	2.67	SD-GRY,F GRN,SHL LAM
26	5395.0-96.0	0.08	2.4	29.2	51.2	2.68	SD-GRY,F GRN,SHL LAM
27	5396.0-97.0	0.01	3.1	30.4	50.0	2.66	SD-GRY,F GRN,SHL LAM
28	5397.0-98.0	0.01	3.0	28.1	59.4	2.68	SD-GRY,F GRN,SHL LAM

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FILE NO : RP-3-3109
 ANALYSTS : GG; DS

CONVENTIONAL CORE ANALYSIS - BOYLE'S LAW POROSITY

SAMPLE NUMBER	DEPTH	PERM Ks MAXIMUM	FOR. He	FLUID OIL	SATS. WTR	GRAIN DEN	DESCRIPTION
29	5398.0-99.0	0.12	3.8	37.8	48.6	2.65	SD-GRY,F GRN,SHL LAM
30	5399.0-00.0	0.01	2.3	24.1	48.3	2.68	SD-GRY,F GRN,SHL LAM
31	5400.0-01.0	<0.01	3.0	20.0	60.0	2.68	SD-GRY,F GRN,SHL LAM
32	5401.0-02.0	0.09	3.1	25.0	42.9	2.67	SD-GRY,F GRN,SHL LAM
33	5402.0-03.0	0.04	2.8	20.8	58.3	2.65	SD-GRY,F GRN,SHL LAM
34	5403.0-04.0	0.04	2.4	16.7	63.3	2.65	SD-GRY,F GRN,SHL LAM
35	5404.0-05.0	0.39	3.0	24.1	51.7	2.64	SD-GRY,F GRN,SHL LAM
36	5405.0-06.0	0.01	3.3	23.7	55.3	2.66	SD-GRY,F GRN,SHL LAM
37	5406.0-07.0	<0.01	3.0	43.2	40.9	2.67	SD-GRY,F GRN,SHL LAM
38	5407.0-08.0	0.02	3.7	43.2	27.0	2.66	SD-GRY,F GRN,SHL LAM
39	5408.0-09.0	0.02	5.1	46.7	31.1	2.66	SD-GRY,F GRN,SHL LAM
40	5409.0-10.0	<0.01	1.3	23.8	28.6	2.66	SD-GRY,F GRN,SHL LAM
41	5410.0-11.0	<0.01	2.1	25.0	53.6	2.62	SD-GRY,F GRN,SHL LAM
42	5411.0-12.0	0.85*	1.7	30.8	59.6	2.61	SD-GRY,F GRN,SHL LAM
43	5412.0-13.0	**	2.2	29.2	60.4	2.59	SD-GRY,VF GRN,V/SHL LAM
44	5413.0-14.0	**	2.1	24.3	45.9	2.64	SD-GRY,VF GRN,V/SHL LAM
45	5414.0-15.0	**	(5.5)	25.5	63.6	**	SD-GRY,VF GRN,V/SHL LAM
46	5415.0-97.0						DRILLED
47	5497.0-98.0	<0.01	3.1	25.0	53.6	2.71	SD-GRY,F GRN,SHLY
48	5498.0-99.0	0.01	3.1	20.0	60.0	2.71	SD-GRY,F GRN,SHLY
49	5499.0-00.0	2.80	5.7	27.3	61.4	2.68	SD-GRY,F GRN,SHLY
50	5500.0-01.0	0.13	9.2	37.5	22.3	2.61	SD-BRN,F GRN,SHLY
51	5501.0-02.0	0.11	9.4	36.7	20.8	2.61	SD-BRN,F GRN,SHLY
52	5502.0-03.0	0.08	9.1	36.8	21.9	2.61	SD-BRN,F GRN,SHLY
53	5503.0-04.0	0.31	12.0	18.6	16.3	2.61	SD-BRN,F GRN,SHLY
54	5504.0-05.0	0.11	9.0	35.3	21.0	2.60	SD-BRN,F GRN,SHLY
55	5505.0-06.0	0.03	3.3	33.3	12.1	2.63	SD-LT GRY,F GRN,SL/SHL
56	5506.0-07.0	0.03	3.1	29.8	21.3	2.64	SD-LT GRY,F GRN,SL/SHL
57	5507.0-08.0	0.12	7.0	35.2	35.2	2.64	SD-LT GRY,F GRN,SHLY
57	5508.0-09.0	0.09	9.1	32.3	19.5	2.60	SD-BRN,F GRN,SHLY

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MESA PETROLEUM COMPANY
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FILE NO : RP-3-3109
 ANALYSTS : GG; DS

CONVENTIONAL CORE ANALYSIS - BOYLE'S LAW POROSITY

SAMPLE NUMBER	DEPTH	PERM K _a MAXIMUM	FOR, H _e	FLUID OIL	SATS, WTR	GRAIN DEN	DESCRIPTION
58	5509.0-10.0	0.08	7.4	27.7	27.7	2.62	SD-BRN,F GRN,SHLY
59	5510.0-11.0	0.12	6.3	25.7	45.9	2.64	SD-BRN,F GRN,SHLY
60	5511.0-12.0	0.14	2.4	17.9	59.0	2.67	SD-DK GRY,F GRN,SHLY
61	5512.0-13.0	0.07	5.8	8.9	57.1	2.67	SD-GRY,F GRN,SHLY
62	5513.0-14.0	0.04	5.6	10.0	48.0	2.65	SD-GRY,F GRN,SHLY
63	5514.0-15.0	0.25	3.2	8.1	48.4	2.67	SD-DK GRY,F GRN,SHLY
64	5515.0-16.0	0.02	2.3	8.3	41.7	2.67	SD-LT GRY,F GRN,SL/SHL
65	5516.0-17.0	0.03	2.9	8.0	32.0	2.65	SD-LT GRY,F GRN,SL/SHL
66	5517.0-18.0	1.70	4.3	9.6	57.7	2.67	SD-DK GRY,F GRN,SHLY
67	5518.0-19.0	0.48	2.7	14.7	61.8	2.65	SD-DK GRY,F GRN,SHLY
68	5519.0-20.0	0.98	3.7	13.5	51.4	2.66	SD-DK GRY,F GRN,SHLY
69	5520.0-21.0	0.01	2.8	12.8	69.2	2.66	SD-DK GRY,F GRN,SHLY
70	5521.0-22.0	0.01	2.9	12.2	61.0	2.67	SD-DK GRY,F GRN,SHLY
71	5522.0-23.0	0.01	3.1	11.9	45.2	2.65	SD-DK GRY,F GRN,SHLY
72	5523.0-24.0	0.04	2.2	24.2	58.6	2.66	SD-DK GRY,F GRN,SHLY
73	5524.0-25.0	0.09	1.8	18.5	63.0	2.66	SD-DK GRY,F GRN,SHLY
74	5525.0-26.0	0.59	2.3	14.3	71.4	2.65	SD-DK GRY,F GRN,SHLY
75	5526.0-27.0	0.03	3.0	12.8	64.1	2.66	SD-DK GRY,F GRN,SHLY
76	5527.0-28.0	0.24	2.8	13.9	75.0	2.66	SD-DK GRY,F GRN,SHLY
77	5528.0-29.0	0.06	2.7	16.1	67.7	2.67	SD-DK GRY,F GRN,SHLY
78	5529.0-30.0	0.30	2.1	8.3	54.2	2.67	SD-DK GRY,F GRN,SHLY
79	5530.0-31.0	0.52	2.2	20.0	65.7	2.65	SD-DK GRY,F GRN,SHLY
80	5531.0-32.0	0.01	3.2	14.3	71.4	2.68	SD-DK GRY,F GRN,SHLY
81	5532.0-33.0	<0.01	3.2	14.3	71.4	2.68	SD-DK GRY,F GRN,SHLY
82	5533.0-34.0	0.06	3.8	13.2	71.1	2.68	SD-DK GRY,F GRN,SHLY
83	5534.0-35.0	<0.01	3.0	13.5	67.6	2.68	SD-DK GRY,F GRN,SHLY
84	5535.0-36.0	0.02	3.6	13.2	71.1	2.68	SD-DK GRY,F GRN,SHLY
85	5536.0-37.0	0.35	2.5	15.9	65.9	2.66	SD-DK GRY,F GRN,SHLY
86	5537.0-38.0	0.11	3.1	14.7	67.6	2.69	SD-DK GRY,F GRN,SHLY
87	5538.0-39.0	0.01	2.9	21.9	59.4	2.68	SD-DK GRY,F GRN,SHLY

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CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
 DALLAS, TEXAS

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MESA PETROLEUM COMPANY
 S. BLANCO NAVAJO 25-1

DATE : 7-14-81
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FILE NO : RF-3-3109
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CONVENTIONAL CORE ANALYSIS - BOYLE'S LAW POROSITY

SAMPLE NUMBER	DEPTH	PERM Ks MAXIMUM	POR, He	FLUID OIL	SATS, WTR	GRAIN DEN	DESCRIPTION
88	5539.0-40.0	0.01	3.2	18.4	71.1	2.67	SD-DK GRY,F GRN,SHLY
89	5540.0-41.0	0.02	4.2	15.2	6.1	2.67	SD-GRY,F GRN,SHLY
90	5541.0-42.0	0.01	4.1	11.4	27.3	2.68	SD-GRY,F GRN,SHLY
91	5542.0-43.0	0.04	4.1	8.5	50.8	2.67	SD-GRY,F GRN,SHLY
92	5543.0-44.0	0.34	4.4	10.9	67.4	2.66	SD-GRY,F GRN,SHLY
93	5544.0-45.0	0.01	3.1	13.5	59.5	2.69	SD-DK GRY,F GRN,SHLY
94	5545.0-46.0	<0.01	3.4	12.5	67.5	2.69	SD-DK GRY,F GRN,SHLY
95	5546.0-47.0	<0.01	3.4	17.1	56.1	2.67	SD-DK GRY,F GRN,SHLY
96	5547.0-48.0	0.03	5.1	38.6	50.9	2.65	SD-DK GRY,F GRN,SHLY
97	5548.0-49.0	0.04	4.6	27.4	52.9	2.66	SD-DK GRY,F GRN,SHLY
98	5549.0-50.0	0.04	7.3	54.2	34.7	2.64	SD-BRN,F GRN,SHLY
99	5550.0-51.0	0.03	6.9	63.2	25.0	2.64	SD-BRN,F GRN,SHLY
100	5551.0-52.0	0.03	7.6	59.0	29.5	2.63	SD-BRN,F GRN,SHLY
101	5552.0-53.0	0.03	6.7	46.7	46.7	2.63	SD-BRN,F GRN,SHLY
102	5553.0-54.0	0.03	6.0	40.0	37.1	2.65	SD-BRN,F GRN,SHLY
103	5554.0-55.0	0.02	5.4	22.2	50.8	2.65	SD-BRN,F GRN,SHLY
104	5555.0-56.0	0.04	4.9	25.0	55.4	2.65	SD-BRN,F GRN,SHLY
105	5556.0-57.0	0.12	3.8	13.2	71.1	2.67	SD-GRY,F GRN,SHLY
106	5557.0-58.0	0.01	4.1	11.6	72.1	2.67	SD-GRY,F GRN,SHLY
107	5558.0-59.0	0.01	3.9	11.4	56.8	2.68	SD-GRY,F GRN,SHLY
108	5559.0-60.0	<0.01	3.2	12.5	62.5	2.67	SD-GRY,F GRN,SHLY
109	5560.0-61.0	0.01	2.9	13.9	75.0	2.67	SD-GRY,F GRN,SHLY
110	5561.0-62.0	0.03	5.2	20.6	41.2	2.67	SD-GRY,F GRN,SHLY
111	5562.0-63.0	0.02	5.2	18.4	53.1	2.67	SD-GRY,F GRN,SHLY
112	5563.0-64.0	0.02	5.6	13.2	60.5	2.66	SD-GRY,F GRN,SHLY
113	5564.0-65.0	0.04	5.4	22.6	48.4	2.67	SD-GRY,F GRN,SHLY
114	5565.0-66.0	0.04	5.8	26.7	47.1	2.65	SD-GRY,F GRN,SHLY
115	5566.0-67.0	0.04	7.7	36.5	34.1	2.65	SD-BRN,F GRN,SHLY
116	5567.0-68.0	0.03	6.4	25.9	53.7	2.66	SD-BRN,F GRN,SHLY
117	5568.0-69.0	0.08	10.6	31.1	22.7	2.65	SD-BRN,F GRN,SHLY

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SAMPLE NUMBER	DEPTH	PERM K _a MAXIMUM	FOR. He	FLUID OIL	SATS, WTR	GRAIN DEN	DESCRIPTION
118	5569.0-70.0	0.13	9.7	33.9	19.7	2.65	SD-BRN,F GRN,SHLY
119	5570.0-71.0	0.07	10.7	31.7	19.2	2.64	SD-BRN,F GRN,SHLY
120	5571.0-72.0	0.06	10.3	35.8	21.7	2.64	SD-BRN,F GRN,SHLY
121	5572.0-73.0	0.21	9.9	37.3	20.9	2.64	SD-BRN,F GRN,SHLY
122	5573.0-74.0	0.04	9.1	47.9	25.6	2.64	SD-BRN,F GRN,SHLY
123	5574.0-75.0	0.04	8.5	36.9	32.1	2.65	SD-BRN,F GRN,SHLY
124	5575.0-76.0	0.03	7.0	22.8	40.5	2.66	SD-GRY,F GRN,SHLY
125	5576.0-77.0	0.03	7.7	27.1	40.0	2.66	SD-GRY,F GRN,SHLY
126	5577.0-78.0	0.03	5.8	23.3	53.3	2.67	SD-GRY,F GRN,SHLY
127	5578.0-79.0	0.02	6.2	26.7	50.0	2.67	SD-GRY,F GRN,SHLY
128	5579.0-80.0	0.04	6.5	24.6	49.1	2.67	SD-GRY,F GRN,SHLY
129	5580.0-81.0	0.02	5.2	24.6	52.6	2.69	SD-GRY,F GRN,SHLY
130	5581.0-82.0	0.02	6.6	22.2	57.4	2.67	SD-GRY,F GRN,SHLY
131	5582.0-83.0	0.03	7.5	27.1	47.5	2.67	SD-GRY,F GRN,SHLY
132	5583.0-84.0	0.02	5.2	21.8	52.7	2.66	SD-GRY,F GRN,SHLY
133	5584.0-85.0	0.03	4.3	18.4	57.1	2.67	SD-GRY,F GRN,SHLY
134	5585.0-86.0	0.23	4.1	11.4	61.4	2.67	SD-GRY,F GRN,SHLY
135	5586.0-87.0	0.03	4.4	11.9	64.3	2.67	SD-GRY,F GRN,SHLY
136	5587.0-88.0	0.22	4.2	11.1	68.9	2.68	SD-GRY,F GRN,SHLY
137	5588.0-89.0	0.01	3.1	12.8	64.1	2.66	SD-GRY,F GRN,SHLY
138	5589.0-90.0	0.03	2.9	15.9	65.9	2.67	SD-GRY,F GRN,SHLY
139	5590.0-91.0	0.03	3.4	17.6	54.9	2.68	SD-GRY,F GRN,SHLY
140	5591.0-92.0	0.05	10.0	41.7	16.5	2.71	SD-BRN,F GRN,SHLY
141	5592.0-93.0	0.06	10.0	32.3	16.5	2.64	SD-BRN,F GRN,SHLY
142	5593.0-94.0	0.03	5.1	45.2	25.8	2.66	SD-BRN,F GRN,SHLY
143	5594.0-95.0	0.05	8.9	42.7	20.4	2.64	SD-BRN,F GRN,SHLY
144	5595.0-96.0	0.04	7.8	29.4	38.9	2.64	SD-BRN,F GRN,SHLY
145	5596.0-97.0	0.04	7.6	32.9	31.6	2.71	SD-GRY,F GRN,SHLY
146	5597.0-98.0	0.03	6.3	29.9	41.8	2.62	SD-GRY,F GRN,SHLY
147	5598.0-99.0	0.03	7.1	32.3	35.5	2.64	SD-GRY,F GRN,SHLY

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CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
 DALLAS, TEXAS

PAGE 6

MESA PETROLEUM COMPANY
 S. BLANCO NAVAJO 25-1

DATE : 7-14-81
 FORMATION : GALLUP

FILE NO : RF-3-3109
 ANALYSIS : GG; DS

CONVENTIONAL CORE ANALYSIS - BOYLE'S LAW POROSITY

SAMPLE NUMBER	DEPTH	PERM Ks MAXIMUM	FOR. He	FLUID OIL	SATS. WTR	GRAIN DEN	DESCRIPTION
148	5599.0-00.0	0.03	6.6	27.3	36.4	2.64	SD-GRY,F GRN,SHLY
149	5600.0-01.0	0.03	4.9	24.2	40.0	2.66	SD-GRY,F GRN,SHLY
150	5601.0-02.0	0.05	6.3	33.3	40.0	2.65	SD-GRY,F GRN,SHLY
151	5602.0-03.0	0.03	3.7	26.1	54.3	2.67	SD-GRY,F GRN,SHLY
152	5603.0-04.0	0.01	3.1	15.8	55.3	2.68	SD-BRN,F GRN,SHLY
153	5604.0-05.0	0.03	4.8	38.2	40.0	2.67	SD-BRN,F GRN,SHLY
154	5605.0-06.0	0.03	7.2	43.6	26.6	2.65	SD-BRN,F GRN,SHLY
155	5606.0-07.0	0.06	8.2	39.8	25.5	2.64	SD-BRN,F GRN,SHLY
156	5607.0-08.0	0.03	6.5	38.4	38.4	2.65	SD-BRN,F GRN,SHLY
157	5608.0-09.0	0.10	6.6	35.0	23.0	2.63	SD-BRN,F GRN,SHLY
158	5609.0-10.0	0.02	6.2	40.0	35.0	2.65	SD-BRN,F GRN,SHLY
159	5610.0-11.0	0.03	6.7	38.0	30.4	2.64	SD-BRN,F GRN,SHLY
160	5611.0-12.0	14.*	6.6	39.0	33.8	2.65	SD-BRN,F GRN,SHLY
161	5612.0-13.0	0.02	6.0	41.8	35.8	2.65	SD-BRN,F GRN,SHLY
162	5613.0-14.0	0.02	5.8	40.0	32.0	2.65	SD-BRN,F GRN,SHLY
163	5614.0-15.0	0.02	6.4	40.0	34.3	2.66	SD-BRN,F GRN,SHLY
164	5615.0-16.0	0.02	4.6	25.0	55.8	2.66	SD-BRN,F GRN,SHLY

R = RUBBLE

VF= VERTICAL FRACTURE

* = FRACTURE PERMEABILITY

** = SAMPLE NOT SUITABLE FOR ANALYSIS

() = SUMMATION OF FLUIDS ANALYSIS

GALLUP FORMATION UNSUITABLE FOR WHOLE CORE ANALYSIS, PLUG ANALYSIS USED.

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CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
 DALLAS, TEXAS

MESA PETROLEUM COMPANY
 S. BLANCO NAVAJO 25-1

DATE : 7-14-81
 FORMATION : GALLUP

FILE NO. : RP-3-3109
 ANALYSTS : GG; DS

*** CORE SUMMARY AVERAGES FOR 1 ZONE ***

DEPTH INTERVAL: 5497.0 TO 5511.0

FEET OF CORE ANALYZED : 14.0 FEET OF CORE INCLUDED IN AVERAGES: 13.0

-- SAMPLES FALLING WITHIN THE FOLLOWING RANGES WERE AVERAGED --

PERMEABILITY HORIZONTAL RANGE (MD.)	:	0.01 TO 100.	(UNCORRECTED FOR SLIPPAGE)
HELIUM POROSITY RANGE (%)	:	1.0 TO 100.0	
OIL SATURATION RANGE (%)	:	7.5 TO 50.0	
WATER SATURATION RANGE (%)	:	5.0 TO 80.0	

SHALE SAMPLES EXCLUDED FROM AVERAGES.

AVERAGES FOR DEPTH INTERVAL: 5497.0 TO 5511.0

AVERAGE PERMEABILITY (MILLIDARCIES)		PRODUCTIVE CAPACITY (MILLIDARCY-FEET)	
ARITHMETIC PERMEABILITY	: 0.31	ARITHMETIC CAPACITY	: 4.0
GEOMETRIC PERMEABILITY	: 0.10	GEOMETRIC CAPACITY	: 1.3
HARMONIC PERMEABILITY	: 0.05	HARMONIC CAPACITY	: 0.68
AVERAGE POROSITY (PERCENT)	: 7.2	AVERAGE TOTAL WATER SATURATION (PERCENT OF PORE SPACE)	: 27.2
AVERAGE RESIDUAL OIL SATURATION (PERCENT OF PORE SPACE)	: 30.9	AVERAGE CONNATE WATER SATURATION (PERCENT OF PORE SPACE)	: 27.2

** ESTIMATED FROM TOTAL
 WATER SATURATION.

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
 DALLAS, TEXAS

MESA PETROLEUM COMPANY
 S. BLANCO NAVAJO 25-1

DATE : 7-14-81
 FORMATION : GALLUP

FILE NO. : KP-3-3109
 ANALYSTS : GG; DS

*** CORE SUMMARY AND CALCULATED RECOVERABLE OIL ***

DEPTH INTERVAL: 5511.0 TO 5615.0

FEET OF CORE ANALYZED : 104.0 FEET OF CORE INCLUDED IN AVERAGES: 96.0

-- SAMPLES FALLING WITHIN THE FOLLOWING RANGES WERE AVERAGED --

PERMEABILITY HORIZONTAL RANGE (MD.)	: 0.01 TO 100.	(UNCORRECTED FOR SLIPPAGE)
HELIUM POROSITY RANGE (%)	: 1.0 TO 100.0	
OIL SATURATION RANGE (%)	: 7.5 TO 50.0	
WATER SATURATION RANGE (%)	: 5.0 TO 80.0	

SHALE SAMPLES EXCLUDED FROM AVERAGES.

AVERAGE PERMEABILITY (MILLIDARCIES)	:	0.24	AVERAGE TOTAL WATER SATURATION	:	42.6
ARITHMETIC PERMEABILITY	:	0.05	(PERCENT OF PORE SPACE)		
GEOMETRIC PERMEABILITY	:	0.03	AVERAGE CONNATE WATER SATURATION	:	42.6
HARMONIC PERMEABILITY	:		(PERCENT OF PORE SPACE)		

PRODUCTIVE CAPACITY (MILLIDARCY-FEET)	:	23.	OIL GRAVITY (API)	:	38.0
ARITHMETIC CAPACITY	:	4.3			
GEOMETRIC CAPACITY	:	2.7	ORIGINAL FORMATION VOLUME FACTOR	:	1.20
HARMONIC CAPACITY	:		(BRLS SATURATED OIL/STOCK-TANK BRL)		
AVERAGE POROSITY (PERCENT)	:	5.2			

AVERAGE RESIDUAL OIL SATURATION	:	27.1	ORIGINAL STOCK-TANK OIL IN PLACE	:	195.
(PERCENT OF PORE SPACE)			(BARRELS PER ACRE-FOOT)		

INTERPRETATION OF DATA

5370.0 TO 5415.0	NONPRODUCTIVE
5497.0 TO 5511.0	GAS PRODUCTIVE WHERE PERMEABLE
5511.0 TO 5616.0	OIL PRODUCTIVE WHERE PERMEABLE
(C) CALCULATED	(E) ESTIMATED
(H) MEASURED	(*) REFER TO ATTACHED LETTER.

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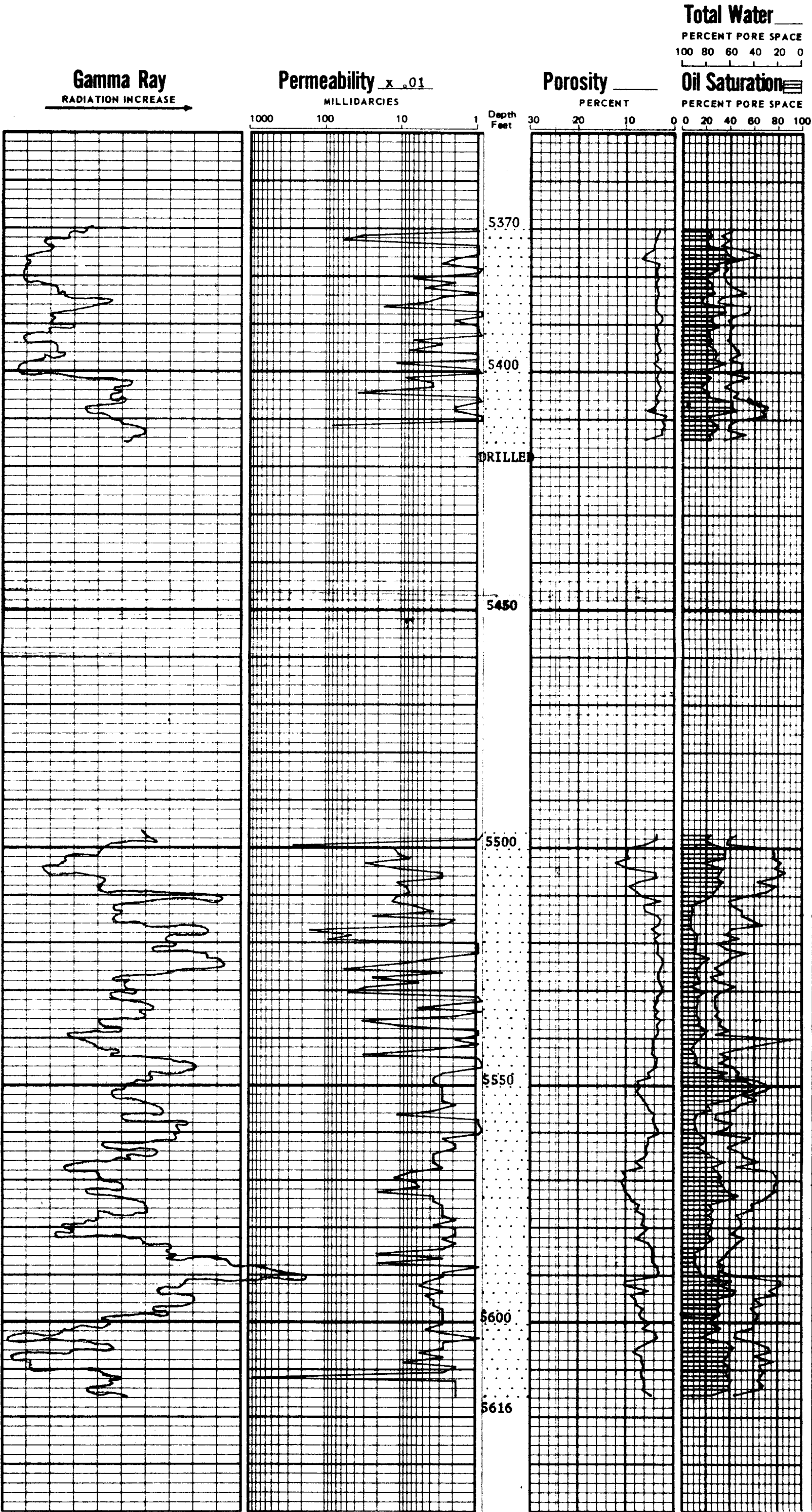


COMPANY	MESA PETROLEUM COMPANY	FILE NO.	RP-3-3100
WELL	S. BLANCO NAVAJO 25-1	DATE	7-14-81
FIELD	LYBROOK-GALLUP	FORMATION	GALLUP
COUNTY	SAN JUAN	STATE	N.M.
		DRLG. FLD.	W.B. GEL
LOCATION	SE SE SEC 25-24N-04W	ELEV.	6924 KB
		CORES	

CORRELATION COREGRAPH

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VERTICAL SCALE: 5" = 100'



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PERMEABILITY VS POROSITY

WELL : S. BLANCO NAVAJO 25-1
COUNTY, STATE: SAN JUAN COUNTY, NEW MEXICO

DEPTH INTERVAL	RANGE & SYMBOL	PERMEABILITY MINIMUM MAXIMUM	POROSITY MIN. MAX.	POROSITY AVERAGE	PERMEABILITY AVERAGES ARITHMETIC HARMONIC GEOMETRIC.
10-15					
15-20					
20-25					
25-30					
30-35					
35-40					
40-45					
45-50					
50-55					
55-60					
60-65					
65-70					
70-75					
75-80					
80-85					
85-90					
90-95					
95-100					

$$\text{EQUATION OF REDUCED LINE RELATING PERMEABILITY(K) TO POROSITY :}$$

$$\text{LOG(K) = (SLOPE)(POROSITY) + LOG OF INTERCEPT}$$

$$\text{K} = \text{ANTILOG}(\{\text{SLOPE}\}(\text{POROSITY}) + \text{LOG OF INTERCEPT})$$

```
1 FERM = ANTILOG(( 0.2300)(FOROSITY) + -2.6059)
```

PERMEABILITY:MILLIDARCIES

0.1

0.01

1.0

3.0

5.0

7.0

9.0

11.0

13.0

POROSITY:PERCENT

PERMEABILITY VS. POROSITY

MESA PETROLEUM COMPANY

S. BLANCO NAVAJO 25-1

LYBROOK-GALLUP 5497.0-5511.0

SAN JUAN COUNTY, NEW MEXICO

STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: MESA PETROLEUM COMPANY
FIELD : LYBROOK-GALLUP

WELL : S. BLANCO NAVAJO 25-1
COUNTY, STATE: SAN JUAN COUNTY, NEW MEXICO

AIR PERMEABILITY : MD. (HORIZONTAL) RANGE USED 0.009 TO 100.
POROSITY : PERCENT (HELIUM) RANGE USED 1.0 TO 46.0

(PERMEABILITY UNCORRECTED FOR SLIPPAGE)

DEPTH LIMITS : 5497.0 - 5511.0 INTERVAL LENGTH : 14.0
FEET ANALYZED IN ZONE : 15.0 LITHOLOGY EXCLUDED : NONE

DATA SUMMARY

POROSITY	PERMEABILITY AVERAGES	
AVERAGE	ARITHMETIC	HARMONIC GEOMETRIC
6.9	0.30	0.05 0.10

DALLAS, TEXAS

STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: MESA PETROLEUM COMPANY WELL : S. BLANCO NAVAJO 25-1
FIELD : LYBROOK-GALLUP COUNTY, STATE: SAN JUAN COUNTY, NEW MEXICO

GROUPING BY POROSITY RANGES

POROSITY RANGE	FEET IN RANGE	AVERAGE POROSITY	AVERAGE PERM. (GEOM.) (ARITH)	FREQUENCY (PERCENT)	CUMULATIVE FREQUENCY (%)
2.0 - 4.0	4.0	3.0	0.034	28.6	28.6
4.0 - 6.0	1.0	5.7	2.8	7.1	35.7
6.0 - 8.0	3.0	6.9	0.105	21.4	57.1
8.0 - 10.0	5.0	9.2	0.103	35.7	92.9
12.0 - 14.0	1.0	12.0	0.310	7.1	100.0

TOTAL NUMBER OF FEET = 14.0

STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: MESA PETROLEUM COMPANY WELL : S. BLANCO NAVAJO 25-1
 FIELD : LYBROOK-GALLUP COUNTY, STATE: SAN JUAN COUNTY, NEW MEXICO

GROUPING BY PERMEABILITY RANGES

PERMEABILITY RANGE	FEET IN RANGE	AVERAGE PERM. (GEOM.)	(ARITH)	AVERAGE POROSITY	FREQUENCY (PERCENT)	CUMULATIVE FREQUENCY (%)
0.010 - 0.020	1.0	0.010	0.010	3.1	7.1	7.1
0.020 - 0.039	2.0	0.030	0.030	3.2	14.3	21.4
0.078 - 0.156	9.0	0.107	0.109	7.7	64.3	85.7
0.156 - 0.312	1.0	0.310	0.310	12.0	7.1	92.9
2.500 - 5.000	1.0	2.8	2.8	5.7	7.1	100.0

TOTAL NUMBER OF FEET = 14.0

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering

DALLAS, TEXAS

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STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: MESA PETROLEUM COMPANY
 FIELD : LYBROOK-GALLUP

WELL : S. BLANCO NAVAJO 25-1
 COUNTY, STATE: SAN JUAN COUNTY, NEW MEXICO

POROSITY-FEET OF STORAGE CAPACITY LOST FOR SELECTED POROSITY CUT OFF

POROSITY CUT OFF	FEET LOST	CAPACITY LOST (%)	FEET REMAINING	CAPACITY REMAINING (%)	ARITH MEAN	MEDIAN
0.0	0.0	0.0	14.0	100.0	6.9	7.3
2.0	0.0	0.0	14.0	100.0	6.9	7.3
4.0	4.0	12.4	10.0	87.6	8.4	8.4
6.0	5.0	18.3	9.0	81.7	8.7	8.6
8.0	8.0	39.9	6.0	60.1	9.6	
10.0	13.0	87.5	1.0	12.5	12.0	
12.0	13.0	87.5	1.0	12.5	12.0	
14.0	14.0	100.0	0.0	0.0		

TOTAL STORAGE CAPACITY IN POROSITY-FEET = 96.4

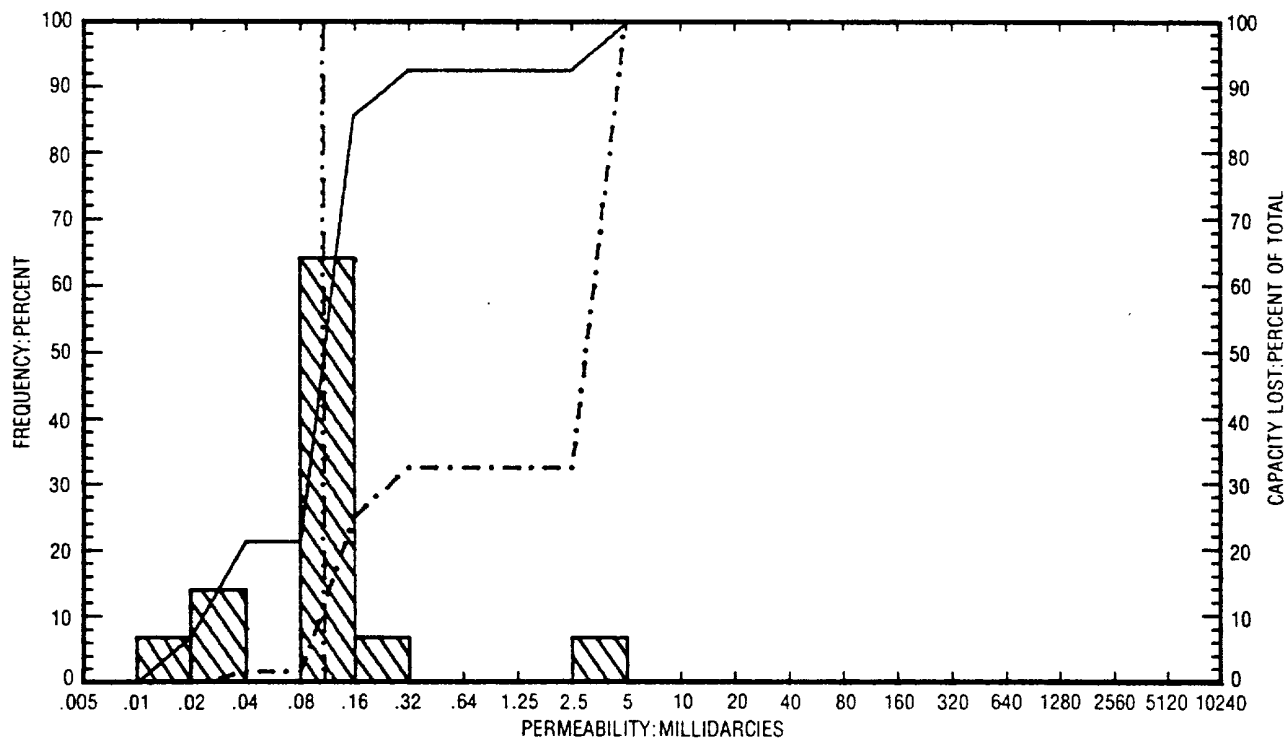
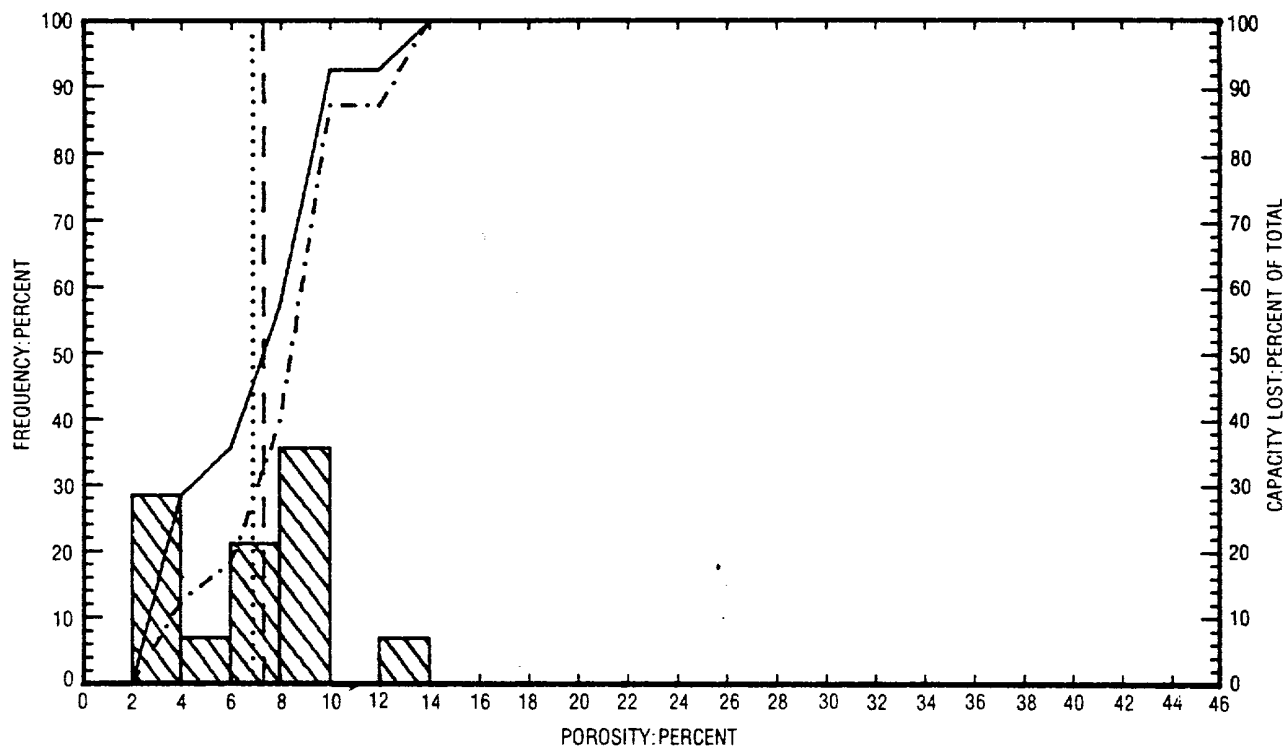
STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: MESA PETROLEUM COMPANY WELL : S. BLANCO NAVAJO 25-1
FIELD : LYBROOK-GALLUP COUNTY, STATE: SAN JUAN COUNTY, NEW MEXICO

MILLIDARCY-FEET OF FLOW CAPACITY LOST FOR SELECTED PERMEABILITY CUT OFF

PERMEABILITY CUT OFF	FEET LOST	CAPACITY LOST (%)	FEET REMAINING	CAPACITY REMAINING (%)	GEOM MEAN	MEDIAN
0.005	0.0	0.0	14.0	100.0	0.10	0.11
0.010	0.0	0.0	14.0	100.0	0.10	0.11
0.020	1.0	0.2	13.0	99.8	0.12	0.11
0.039	3.0	1.7	11.0	98.3	0.16	
0.078	3.0	1.7	11.0	98.3	0.16	
0.156	12.0	25.2	2.0	74.8	0.93	0.31
0.312	13.0	32.7	1.0	67.3	2.80	3.54
0.625	13.0	32.7	1.0	67.3	2.80	3.54
1.250	13.0	32.7	1.0	67.3	2.80	
2.500	13.0	32.7	1.0	67.3	2.80	
5.	14.0	100.0	0.0	0.0		

TOTAL FLOW CAPACITY IN MILLIDARCY-FEET (ARITHMETIC) = 4.16



PERMEABILITY AND POROSITY HISTOGRAMS

MESA PETROLEUM COMPANY
 S. BLANCO NAVAJO 25-1
 LYBROOK-GALLUP 5497.0-5511.0
 SAN JUAN COUNTY, NEW MEXICO

LEGEND

ARITHMETIC MEAN POROSITY
 GEOMETRIC MEAN PERMEABILITY
 MEDIAN VALUE
 CUMULATIVE FREQUENCY
 CUMULATIVE CAPACITY LOST
 CUMULATIVE CAPACITY LOST

PERMEABILITY VS POROSITY

COMPANY: MESA PETROLEUM COMPANY WELL : S. BLANCO NAVAJO 25-1
FIELD : LYBROOK-GALLUP COUNTY, STATE: SAN JUAN COUNTY, NEW MEXICO

AIR PERMEABILITY : MD - HORIZONTAL (UNCORRECTED FOR SLIPPAGE)
POROSITY : PERCENT (HELIUM)

DEPTH INTERVAL	RANGE & SYMBOL	PERMEABILITY MINIMUM MAXIMUM	POROSITY MIN. MAX.	POROSITY AVERAGE	PERMEABILITY AVERAGES	
					ARITHMETIC	HARMONIC GEOMETRIC
5511.0 - 5615.0	1 (X)	0.009 100.0	1.0 10.0	5.1	0.24	0.03
						0.04

EQUATION OF REDUCED LINE RELATING PERMEABILITY(K) TO POROSITY :
 $\log(K) = (\text{SLOPE})(\text{POROSITY}) + \log \text{ OF INTERCEPT}$
 $K = \text{ANTILOG}(\text{SLOPE})(\text{POROSITY}) + \log \text{ OF INTERCEPT}$

RANGE	EQUATION OF THE LINE	
1	PERM = ANTILOG((	0.2322)(POROSITY) + -2.5491)

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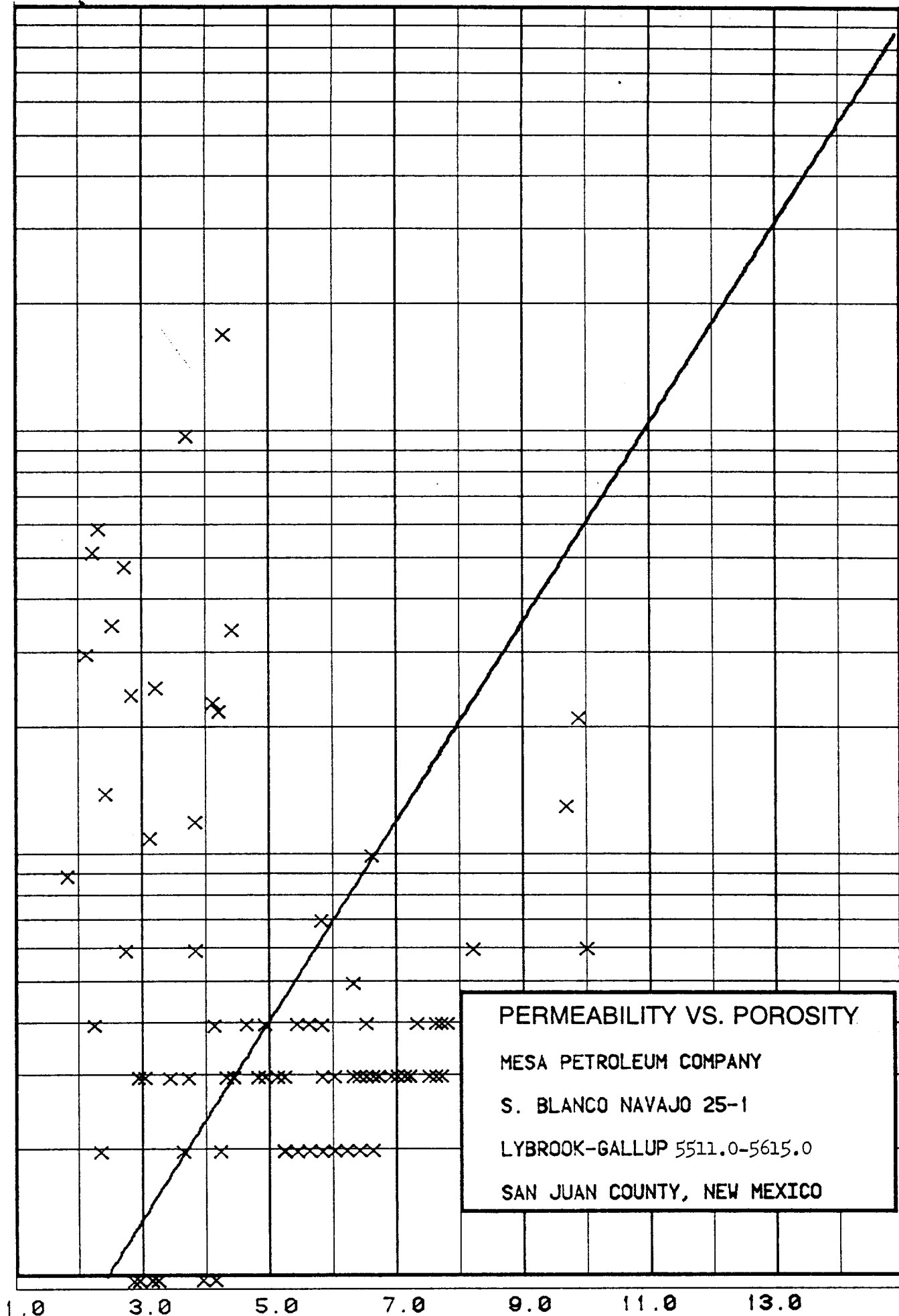
PERMEABILITY: MILLIDARCIES

0.01

0.1

1

10



PERMEABILITY VS. POROSITY

MESA PETROLEUM COMPANY

S. BLANCO NAVAJO 25-1

LYBROOK-GALLUP 5511.0-5615.0

SAN JUAN COUNTY, NEW MEXICO

POROSITY: PERCENT

STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: MESA PETROLEUM COMPANY
FIELD : LYBROOK-GALLUP
WELL : S. BLANCO NAVAJO 25-1
COUNTY, STATE: SAN JUAN COUNTY, NEW MEXICO

AIR PERMEABILITY : MD. (HORIZONTAL) RANGE USED 0.009 TO 100.
POROSITY : PERCENT (HELIUM) RANGE USED 1.0 TO 46.0

(PERMEABILITY UNCORRECTED FOR SLIPPAGE)

DEPTH LIMITS : 5511.0 - 5615.0 INTERVAL LENGTH : 104.0
FEET ANALYZED IN ZONE : 105.0 LITHOLOGY EXCLUDED : NONE

DATA SUMMARY

POROSITY	PERMEABILITY AVERAGES	
AVERAGE	ARITHMETIC	HARMONIC GEOMETRIC
-----	-----	-----
5.3	0.24	0.03 0.04

STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: MESA PETROLEUM COMPANY WELL : S. BLANCO NAVAJO 25-1
 FIELD : LYBROOK-GALLUP COUNTY, STATE: SAN JUAN COUNTY, NEW MEXICO

GROUPING BY POROSITY RANGES

POROSITY RANGE	FEET IN RANGE	AVERAGE POROSITY	AVERAGE PERM. (GEOM.) (ARITH)	FREQUENCY (PERCENT)	CUMULATIVE FREQUENCY (%)
0.0 - 2.0	1.0	1.8	0.090	1.0	1.0
2.0 - 4.0	32.0	3.0	0.047	32.0	33.0
4.0 - 6.0	29.0	4.9	0.039	29.0	62.0
6.0 - 8.0	27.0	6.8	0.039	27.0	89.0
8.0 - 10.0	6.0	9.1	0.071	6.0	95.0
10.0 - 12.0	5.0	10.3	0.063	5.0	100.0

TOTAL NUMBER OF FEET = 100.0

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DALLAS, TEXAS

STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: MESA PETROLEUM COMPANY
FIELD : LYBROOK-GALLUP
WELL : S. BLANCO NAVAJO 25--1
COUNTY, STATE: SAN JUAN COUNTY, NEW MEXICO

GROUPING BY PERMEABILITY RANGES

PERMEABILITY RANGE	FEET IN RANGE	AVERAGE (GEOM.)	PERM. (ARITH)	AVERAGE POROSITY	FREQUENCY (PERCENT)	CUMULATIVE FREQUENCY (%)
0.010 - 0.020	13.0	0.010	0.010	3.3	13.0	13.0
0.020 - 0.039	42.0	0.026	0.026	5.5	42.0	55.0
0.039 - 0.078	24.0	0.047	0.048	6.8	24.0	79.0
0.078 - 0.156	7.0	0.108	0.110	5.4	7.0	86.0
0.156 - 0.312	6.0	0.240	0.242	4.4	6.0	92.0
0.312 - 0.625	5.0	0.445	0.456	2.8	5.0	97.0
0.625 - 1.250	1.0	0.980	0.980	3.7	1.0	98.0
1.250 - 2.500	1.0	1.7	1.7	4.3	1.0	99.0
10. - 20.	1.0	14.	14.	6.6	1.0	100.0

TOTAL NUMBER OF FEET = 100.0

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W
G
A
P

COMPANY: MESA PETROLEUM COMPANY
FIELD : LYBROOK-GALLUP
WELL : S. BLANCO NAVAJO 25-1
COUNTY, STATE: SAN JUAN COUNTY, NEW MEXICO

POROSITY--FEET OF STORAGE CAPACITY LOST FOR SELECTED POROSITY CUT OFF

POROSITY CUT OFF	FEET LOST	CAPACITY LOST (%)	FEET REMAINING	CAPACITY REMAINING (%)	ARITH MEAN	MEDIAN
0.0	0.0	0.0	100.0	100.0	5.3	5.2
2.0	1.0	0.3	99.0	99.7	5.3	5.2
4.0	33.0	18.4	67.0	81.6	6.4	6.3
6.0	62.0	45.2	38.0	54.8	7.6	
8.0	89.0	80.0	11.0	20.0	9.6	
10.0	95.0	90.3	5.0	9.7	10.3	
12.0	100.0	100.0	0.0	0.0		

TOTAL STORAGE CAPACITY IN POROSITY-FEET = 529.4

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Petroleum Reservoir Engineering
 DALLAS, TEXAS

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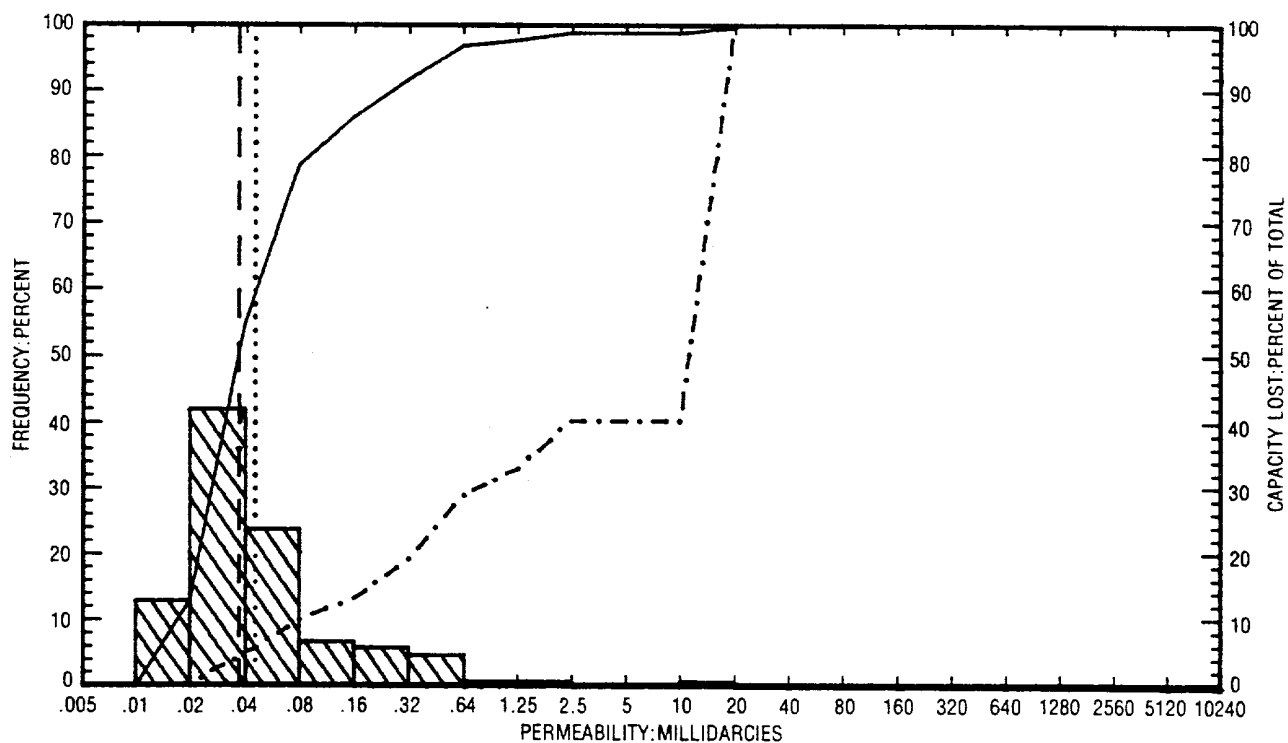
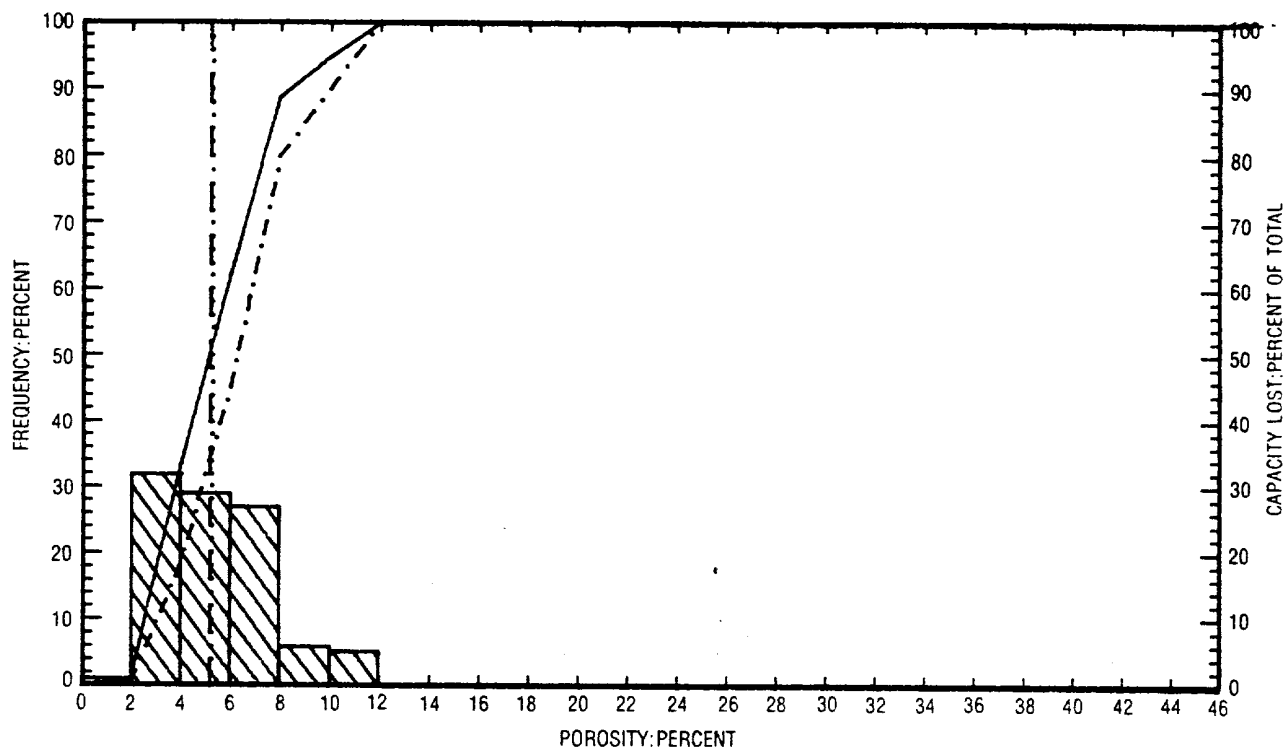
STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: MESA PETROLEUM COMPANY WELL : S. BLANCO NAVAJO 25-1
 FIELD : LYBROOK-GALLUP COUNTY, STATE: SAN JUAN COUNTY, NEW MEXICO

MILLIDARCY-FEET OF FLOW CAPACITY LOST FOR SELECTED PERMEABILITY CUT OFF

PERMEABILITY CUT OFF	FEET LOST	CAPACITY LOST (%)	FEET REMAINING	CAPACITY REMAINING (%)	GEOM MEAN	MEDIAN
0.005	0.0	0.0	100.0	100.0	0.04	0.04
0.010	0.0	0.0	100.0	100.0	0.04	0.04
0.020	13.0	0.6	87.0	99.4	0.06	0.04
0.039	55.0	5.3	45.0	94.7	0.11	
0.078	79.0	10.1	21.0	89.9	0.30	0.23
0.156	86.0	13.4	14.0	86.6	0.51	0.36
0.312	92.0	19.6	8.0	80.4	0.89	
0.625	97.0	29.2	3.0	70.8	2.86	1.77
1.250	98.0	33.4	2.0	66.6	4.88	2.50
2.500	99.0	40.6	1.0	59.4	14.00	14.14
5.	99.0	40.6	1.0	59.4	14.00	
10.	99.0	40.6	1.0	59.4	14.00	
20.	100.0	100.0	0.0	0.0		

TOTAL FLOW CAPACITY IN MILLIDARCY-FEET (ARITHMETIC) = 23.57



PERMEABILITY AND POROSITY HISTOGRAMS

MESA PETROLEUM COMPANY
 S. BLANCO NAVAJO 25-1
 LYBROOK-GALLUP 5511.0-5615.0
 SAN JUAN COUNTY, NEW MEXICO

LEGEND

ARITHMETIC MEAN POROSITY
 GEOMETRIC MEAN PERMEABILITY
 MEDIAN VALUE
 CUMULATIVE FREQUENCY
 CUMULATIVE CAPACITY LOST
 (Note: The legend uses different line styles than those shown in the graphs.)