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MORRIS

CORE ANALYSIS REPORT

FOR

AMOCO PRODUCTION COMPANY
BREEDING "F" NO. 1 WELL
MORTON COUNTY, KANSAS

North Rolla Field

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering

OKLAHOMA CITY, OKLAHOMA

March 31, 1982

REPLY TO
SUITE 133
400 SOUTH VERMONT
OKLAHOMA CITY, OK
73108

Amoco Production Company
Amoco Building, Room 864
17th and Broadway
Denver, Colorado 80202

Attn: Mr. Ronald W. Sherwood

Subject: Core Analysis Data
Breeding "F" No. 1 Well
Morton County, Kansas
CLI File 3402-11215

Gentlemen:

Cores taken in the subject well were received at the Oklahoma City laboratory for special analytical testing described on the Procedure Page.

The accompanying Coregraph presents the Surface Core-Gamma Log and binomially averaged core analysis data in graphical form to aid correlation with downhole electrical surveys.

Tabular presentation of the measured physical properties may be found on pages one through eight of this report.

It is a pleasure to have this opportunity of serving you.

Very truly yours,

CORE LABORATORIES, INC.

J. Michael Edwards

J. Michael Edwards
District Manager

7 cc - Addressee

Amoco Production Company
Breeding "F" No. 1 Well
3402-11215

Procedure Page

Handling and Analytical Procedures

Diamond coring equipment and water base mud were used to obtain 4.0 inch diameter cores between 4800 and 4812, 4841 and 4916, 5140 and 5416 feet.

The cores were preserved at the well site in saran and aluminum foil by CLI personnel.

The cores were transported to Oklahoma City by CLI personnel.

A Core-Gamma Log was recorded for downhole electric log correlation.

Core analysis was made in the intervals requested on right cylinder full diameter samples.

Fluid removal was accomplished using vacuum retorts.

Porosity was determined by density balance method.

Air permeability in two horizontal directions was measured without Klinkenberg correction.

Cores have been shipped to:

Amoco Core Warehouse
Denver, Colorado
Attn: Mr. Butch Oliver

AMOCO PRODUCTION COMPANY
 BREEDING "F" NO. 1 WELL
 NORTH ROLLA FIELD
 MORTON COUNTY, KANSAS

DATE: 3-30-82
 FORMATION: AS NOTED
 DRLG. FLUID: WATER BASE MUD
 LOCATION: SEC. 34-31-40W

FILE NO: 3402-11215
 ANALYST: EDWARDS
 LABORATORY: OKLAHOMA CITY

FULL DIAMETER ANALYSIS

SAMPLE NUMBER	DEPTH FEET	PERM MD MAXIMUM	PERM MD 90 DEG	POR %	OIL% PORE	WTR% PORE	GRAIN DEN	DESCRIPTION
UPPER MORROW SAND								
	4800.0-12.0							SH
	4812.0-4841.0	DRILLED						
	4841.0-16.0							SH, LM STKS
	4916.0-5140.0	DRILLED						
	5140.0-59.0							SH
1	5159.0-60.0	*	0.09	2.0	0.0	81.1	2.74	SD, SHY, LMY
2	5160.0-61.0	0.22	0.18	1.7	0.0	71.0	2.72	SD, LMY
3	5161.0-62.0	0.20	0.17	2.8	0.0	62.2	2.71	SD, LMY, VF
4	5162.0-63.0	*	0.51	6.7	0.0	83.1	2.72	SD, LMY
5	5163.0-64.0	0.59	0.59	4.0	9.1	50.8	2.78	SD, DOL
+ 6	5164.0-65.0	1.20	0.27	4.3	7.7	53.1	2.78	SD, DOL
+ 7	5165.0-66.0	2.70	1.00	6.0	7.8	30.6	2.76	SD, DOL
+ 8	5166.0-67.0	11	7.70	4.3	11.6	41.3	2.79	SD, DOL
9	5167.0-68.0	0.40	0.40	5.7	9.5	32.2	2.71	SD, LMY, STY
10	5168.0-69.0	0.16	0.13	3.0	19.3	46.1	2.68	SD, LMY
11	5169.0-70.0	0.05	0.03	1.7	17.0	67.7	2.73	SD, LMY, VF
	5170.0-27.5							SH

MIDDLE MORROW SAND

AMOCO PRODUCTION COMPANY
 BREEDING "F" NO. 1 WELL

DATE: 3-30-82
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 ANALYST: EDWARDS

FULL DIAMETER ANALYSIS

SAMPLE NUMBER	DEPTH FEET	PERM MD MAXIMUM	PERM MD 90 DEG	POR %	OIL% PORE	WTR% PORE	GRAIN DEN	DESCRIPTION
12	5227.5-28.0	0.05	0.02	2.3	0.0	65.6	2.75	SD, LMY, SHY
13	5228.0-29.0	0.50	0.17	2.9	0.0	63.8	2.73	SD, LMY, SHY
+ 14	5229.0-30.0	29	0.16	4.0	0.0	70.7	2.76	SD, LMY, VF
15	5230.0-31.0	*	0.02	2.3	0.0	66.9	2.72	SD, LMY, SHY, VF
16	5231.0-32.0	*	0.01	4.1	0.0	75.6	2.75	SD, LMY, SHY
17	5232.0-33.0	0.81	0.49	4.1	0.0	73.7	2.72	SD, LMY, VF
+ 18	5233.0-34.0	8.60	6.70	3.2	0.0	69.1	2.73	SD, LMY, VF
19	5234.0-35.0	*	0.54	8.3	0.0	82.7	2.73	SD, LMY, SHY
+ 20	5235.0-36.0	34	14	8.3	4.6	81.8	2.72	SD, LMY, SHY, VF
+ 21	5236.0-37.0	19	9.30	11.3	3.0	86.1	2.75	SD, LMY, SHY, VF
+ 22	5237.0-38.0	*	4.40	9.5	2.6	77.1	2.74	SD, LMY, SHY, VF
+ 23	5238.0-39.0	*	14	9.3	2.6	77.0	2.72	SD, LMY, SHY, VF
+ 24	5239.0-40.0	8.60	1.10	9.9	5.7	87.2	2.73	SD, LMY, SHY, VF
25	5240.0-41.0	*	6.00	10.5	3.2	85.9	2.71	SD, LMY, SHY, VF
26	5241.0-42.0	0.85	0.80	6.9	7.2	86.3	2.74	SD, LMY, SHY, VF
27	5242.0-43.0	0.69	0.47	7.1	6.4	92.3	2.73	SD, LMY, SHY, VF
	5243.0-54.0							SH

LOWER MORROW SAND

+ 28	5254.0-55.0	14	8.10	12.0	6.3	73.5	2.68	SD, LMY, SHY
+ 29	5255.0-56.0	73	31	11.0	6.1	66.3	2.70	SD, LMY, SHY
+ 30	5256.0-57.0	5.40	3.40	9.1	7.3	61.6	2.70	SD, LMY, SHY, VF
31	5257.0-58.0	*	0.35	11.2	4.8	54.6	2.68	SD, LMY, SHY
32	5258.0-59.0	2.00	1.60	12.8	5.8	61.4	2.71	SD, LMY, SHY
33	5259.0-60.0	1.40	1.40	12.3	3.6	59.3	2.69	SD, LMY, SHY
34	5260.0-61.0	3.00	1.40	11.7	3.5	60.0	2.69	SD, LMY, SHY
35	5261.0-62.0	*	0.53	10.2	5.1	66.7	2.71	SD, LMY, SHY
+ 36	5262.0-63.0	16	5.60	10.4	4.9	64.1	2.70	SD, LMY, SHY, VF
+ 37	5263.0-64.0	43	9.00	7.2	6.6	67.9	2.71	SD, LMY, SHY, VF

AMOCO PRODUCTION COMPANY
 BREEDING "F" NO. 1 WELL

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FILE NO: 3402-11215
 ANALYST: EDWARDS

FULL DIAMETER ANALYSIS

SAMPLE NUMBER	DEPTH FEET	PERM MD MAXIMUM	PERM MD 90 DEG	POR %	OIL% PORE	WTR% PORE	GRAIN DEN	DESCRIPTION
+ 38	5264.0-65.0	4.50	0.25	5.8	9.0	68.0	2.72	SD, LMY, SHY, VF
+ 39	5265.0-66.0	277	0.61	5.1	10.3	84.6	2.72	SD, LMY, SHY, VF
40	5266.0-67.0	*	0.53	9.0	4.1	93.3	3.04	SD, LMY, SHY, SID, VF
+ 41	5267.0-68.0	1649	26	7.3	4.4	82.0	2.73	SD, LMY, SHY, VF
42	5268.0-69.0	*	0.46	5.2	9.4	77.8	2.72	SD, LMY, SHY, VF
	5269.0-81.0							SH
CHESTER LIME								
43	5281.0-82.0	0.41	0.28	3.6	5.9	73.9	2.70	SD, LMY, SHY
44	5282.0-83.0	0.70	0.27	2.7	13.7	64.9	2.71	LM, SLTY, SHY
45	5283.0-84.0	0.12	0.12	3.4	9.7	59.4	2.72	LM, SHY
+ 46	5284.0-85.0	8.90	0.76	4.7	9.6	70.0	2.73	LM, SHY, VF
+ 47	5285.0-86.0	4.70	0.48	3.8	8.7	67.2	2.71	LM, SHY
48	5286.0-87.0	0.03	0.03	3.5	12.2	64.3	2.70	LM, SHY, VF
+ 49	5287.0-88.0	74	42	5.2	8.8	69.3	2.76	LM, DOL, SHY, VF
50	5288.0-89.0	*	0.07	5.7	4.0	74.3	2.72	LM, SHY, VF
+ 51	5289.0-90.0	1.20	0.75	4.8	9.9	78.3	2.75	LM, DOL, SHY
	5290.0-95.0							SH
ST. GENEVIEVE LIME								
+ 52	5295.0-96.0	29	13	3.9	10.8	71.0	2.72	LM, SHY
53	5296.0-97.0	0.44	0.20	3.2	6.4	80.3	2.70	LM, SHY
+ 54	5297.0-98.0	8.00	1.00	4.8	6.0	80.7	2.72	LM, SHY
55	5298.0-99.0	0.36	0.36	5.7	3.1	80.9	2.71	LM, SHY, VF
+ 56	5299.0- 0.0	1.10	1.10	5.3	8.1	79.3	2.72	LM, SHY, VF
57	5300.0- 1.0	0.31	0.17	4.0	5.7	82.0	2.72	LM, SHY
+ 58	5301.0- 2.0	2.60	1.90	4.4	6.9	79.2	2.71	LM, SHY
59	5302.0- 3.0	*	0.17	5.4	7.4	87.2	2.74	LM, SHY

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	5303.0- 4.0							SH
+ 60	5304.0- 5.0	2.60	2.10	3.6	0.0	84.4	2.73	LM,SHY
+ 61	5305.0- 6.0	0.74	0.26	3.9	0.0	74.6	2.71	LM,SHY,VF
62	5306.0- 7.0	0.97	0.34	3.1	0.0	65.6	2.71	LM,SHY
+ 63	5307.0- 8.0	19	9.70	3.6	0.0	69.5	2.73	LM,SHY,VF
64	5308.0- 9.0	*	0.03	3.9	0.0	65.1	2.72	LM,SHY
65	5309.0-10.0	2.40	1.40	3.2	0.0	81.7	2.71	LM,SHY,VF
66	5310.0-11.0	0.82	0.65	4.0	0.0	70.0	2.72	LM,SHY,VF
+ 67	5311.0-12.0	15	7.60	3.4	0.0	64.2	2.72	LM,SHY,VF
+ 68	5312.0-13.0	1.60	1.60	3.8	0.0	75.0	2.71	LM,SHY,VF
+ 69	5313.0-14.0	1.50	1.50	3.8	0.0	77.8	2.72	LM,SHY,VF
+ 70	5314.0-15.0	11	4.50	3.5	0.0	72.6	2.72	LM,SHY,VF
+ 71	5315.0-16.0	4.90	3.20	4.0	0.0	70.3	2.73	LM,SHY
	5316.0-18.0							SH
+ 72	5318.0-19.0	5.90	5.90	6.3	5.8	79.0	2.72	SH,SLTY,DOL
+ 73	5319.0-20.0	*	6.40	7.3	5.0	83.0	2.76	SLT/STN,DOL
+ 74	5320.0-20.5	20	11	4.0	8.5	71.0	2.73	LM,SLTY,SHY
	5320.5-5321.0	LOST CORE						
75	5321.0-22.0	1107	0.15	3.7	0.0	92.2	2.71	LM,SHY,ANHY,VF
76	5322.0-23.0	259	0.54	5.1	0.0	88.8	2.70	LM,SHY,VF
77	5323.0-24.0	966	0.04	3.4	0.0	83.1	2.70	LM,VF
78	5324.0-25.0	226	0.01	2.5	0.0	77.8	2.69	LM,VF
79	5325.0-26.0	189	0.11	2.5	0.0	74.4	2.69	LM,VF
80	5326.0-27.0	294	0.01	2.3	0.0	61.6	2.70	LM,VF
81	5327.0-28.0	420	0.05	2.5	0.0	74.5	2.70	LM,VF
82	5328.0-29.0	*	0.02	2.3	0.0	64.3	2.70	LM,VF
83	5329.0-30.0	*	0.03	2.6	0.0	81.7	2.69	LM,VF
84	5330.0-31.0	*	0.04	3.4	0.0	78.2	2.71	LM,VF

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AMOCO PRODUCTION COMPANY
 BREEDING "F" NO. 1 WELL

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FULL DIAMETER ANALYSIS

SAMPLE NUMBER	DEPTH FEET	PERM MD MAXIMUM	PERM MD 90 DEG	POR %	OIL% PORE	WTR% PORE	GRAIN DEN	DESCRIPTION
85	5331.0-32.0	*	0.02	4.7	0.0	87.9	2.71	LM,VF
86	5332.0-33.0	*	0.01	3.0	0.0	76.1	2.69	LM,VF
87	5333.0-34.0	*	0.02	2.6	0.0	75.3	2.69	LM,VF
88	5334.0-35.0	0.01	0.01	2.0	0.0	67.8	2.69	LM,VF
89	5335.0-36.0	0.03	0.01	2.1	0.0	81.7	2.69	LM,VF
+ 90	5336.0-37.0	0.41	0.03	2.3	0.0	68.9	2.70	LM
91	5337.0-38.0	0.01	0.01	2.6	0.0	70.4	2.70	LM
+ 92	5338.0-39.0	0.74	0.08	4.3	0.0	85.4	2.70	LM
93	5339.0-40.0	0.01	0.01	2.0	0.0	74.5	2.68	LM
94	5340.0-41.0	0.01	0.01	1.9	0.0	68.9	2.69	LM
95	5341.0-42.0	0.05	0.02	2.4	0.0	79.2	2.69	LM
+ 96	5342.0-43.0	6.80	6.60	4.3	0.0	85.2	2.72	LM,SHY
+ 97	5343.0-44.0	0.95	0.06	2.6	0.0	83.7	2.70	LM,SHY
98	5344.0-45.0	1.49	0.01	3.0	0.0	69.0	2.70	LM,VF
99	5345.0-46.0	0.01	0.01	2.2	0.0	69.1	2.68	LM,VF
100	5346.0-47.0	0.01	0.01	2.0	0.0	81.6	2.69	LM
101	5347.0-48.0	0.01	0.01	3.3	0.0	81.2	2.69	LM
102	5348.0-49.0	0.01	0.01	1.7	0.0	69.8	2.69	LM
+ 103	5349.0-50.0	519	1.50	4.0	0.0	86.7	2.68	LM,VF
+ 104	5350.0-51.0	322	1.00	3.0	0.0	75.9	2.68	LM,VF
+ 105	5351.0-52.0	8.50	2.00	4.1	0.0	85.3	2.70	LM,VF
106	5352.0-53.0	24	0.74	4.4	0.0	91.8	2.69	LM,VF
+ 107	5353.0-54.0	1.90	0.87	4.5	0.0	91.9	2.70	LM,SHY
+ 108	5354.0-55.0	0.56	0.21	5.2	0.0	88.6	2.71	LM,SHY
+ 109	5355.0-56.0	2.30	0.35	4.2	0.0	88.1	2.69	LM,SHY
+ 110	5356.0-57.0	8.30	8.20	4.5	0.0	89.4	2.71	LM,SHY
+ 111	5357.0-58.0	37	0.74	4.4	0.0	90.8	2.71	LM,SHY
+ 112	5358.0-59.0	0.77	0.17	4.4	0.0	87.3	2.72	LM,SHY
+ 113	5359.0-60.0	0.43	0.08	2.2	0.0	78.7	2.69	LM,SHY
+ 114	5360.0-61.0	8.70	0.02	2.0	0.0	67.8	2.70	LM,SHY

AMOCO PRODUCTION COMPANY
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115	5361.0-62.0	0.07	0.06	1.4	0.0	74.2	2.69	LM
116	5362.0-63.0	0.03	0.03	1.4	0.0	67.5	2.69	LM
117	5363.0-64.0	0.04	0.03	1.2	0.0	72.2	2.69	LM
118	5364.0-65.0	0.07	0.05	2.6	0.0	88.9	2.70	LM
ST. LOUIS LIME								
119	5365.0-66.0	0.16	0.04	4.0	0.0	89.0	2.72	LM,SHY
+ 120	5366.0-67.0	3.00	3.00	4.6	0.0	89.9	2.73	LM,SHY
121	5367.0-68.0	0.79	0.04	1.5	0.0	75.9	2.71	LM,SHY,VF
122	5368.0-69.0	*	0.01	2.3	0.0	79.1	2.68	LM,VF
123	5369.0-70.0	*	0.01	4.0	0.0	71.1	2.68	LM,VF
+ 124	5370.0-71.0	4.60	4.60	3.0	0.0	69.8	2.68	LM,VF
125	5371.0-72.0	*	<0.01	3.2	0.0	81.0	2.70	LM,VF
126	5372.0-73.0	*	<0.01	6.9	0.0	90.1	2.76	LM,VF
127	5373.0-73.5	*	0.02	2.5	0.0	77.4	2.69	LM,VF
5373.5-5374.0 LOST CORE								
128	5374.0-75.0	0.38	0.01	1.9	0.0	84.2	2.70	LM,VF
129	5375.0-76.0	21	0.03	2.2	0.0	71.4	2.71	LM,VF
130	5376.0-77.0	8.00	0.01	5.3	0.0	88.1	2.75	LM,VF
131	5377.0-78.0	0.79	0.01	3.2	0.0	46.3	2.71	LM,VF
132	5378.0-79.0	0.09	0.09	2.7	0.0	55.4	2.70	LM,VF
133	5379.0-80.0	*	0.02	3.4	0.0	69.9	2.70	LM,VF
+ 134	5380.0-81.0	0.46	0.43	3.3	0.0	62.1	2.70	LM,VF
+ 135	5381.0-82.0	0.85	0.85	2.9	0.0	71.1	2.70	LM,VF
136	5382.0-83.0	*	0.01	3.0	0.0	73.8	2.69	LM,VF
137	5383.0-84.0	*	0.01	3.4	0.0	47.6	2.71	LM,VF
138	5384.0-85.0	*	0.01	3.1	0.0	72.0	2.71	LM,VF

AMOCO PRODUCTION COMPANY
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DATE: 3-30-82
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SAMPLE NUMBER	DEPTH FEET	PERM MD MAXIMUM	PERM MD 90 DEG	POR %	OIL% PORE	WTR% PORE	GRAIN DEN	DESCRIPTION
139	5385.0-86.0	0.05	0.01	2.6	0.0	53.3	2.71	LM,SHY,VF
140	5386.0-87.0	0.69	0.01	1.9	0.0	51.9	2.69	LM,SHY,VF
141	5387.0-88.0	2.50	0.01	1.9	0.0	57.9	2.69	LM,SHY,VF
142	5388.0-89.0	0.01	0.01	1.6	0.0	57.1	2.69	LM,SHY
143	5389.0-90.0	0.01	0.01	2.1	0.0	57.7	2.70	LM,SHY
144	5390.0-91.0	0.01	0.01	2.2	0.0	56.5	2.70	LM,SHY
+ 145	5391.0-92.0	32	0.01	1.8	0.0	71.7	2.71	LM,SHY
146	5392.0-93.0	0.02	0.01	2.4	0.0	65.2	2.70	LM,SHY
147	5393.0-94.0	0.01	0.01	2.4	0.0	58.3	2.70	LM,SHY,VF
148	5394.0-95.0	0.01	0.01	2.2	0.0	65.3	2.71	LM,SHY,VF
149	5395.0-96.0	1351	0.96	2.9	0.0	82.6	2.70	LM,VF
+ 150	5396.0-97.0	1233	19	3.1	0.0	67.1	2.70	LM,SHY,VF
151	5397.0-98.0	291	0.01	3.1	0.0	66.5	2.70	LM,VF
152	5398.0-99.0	*	0.01	3.4	0.0	55.4	2.69	LM,VF
153	5399.0- 0.0	*	0.01	2.7	0.0	46.2	2.71	LM,VF
154	5400.0- 1.0	*	<0.01	2.3	0.0	79.4	2.71	LM,VF
+ 155	5401.0- 2.0	0.85	0.85	3.4	0.0	78.3	2.71	LM,SHY,VF
+ 156	5402.0- 3.0	0.95	0.95	3.1	0.0	82.1	2.71	LM,SHY,VF
157	5403.0- 4.0	0.01	0.01	4.7	0.0	73.5	2.73	LM,VF
158	5404.0- 5.0	*	<0.01	2.5	0.0	34.1	2.68	LM,VF
159	5405.0- 6.0	*	0.01	5.8	0.0	73.6	2.74	LM,VF
160	5406.0- 7.0	*	<0.01	4.6	0.0	56.8	2.71	LM,VF
161	5407.0- 8.0	0.02	0.01	2.3	0.0	81.2	2.70	LM,VF
162	5408.0- 9.0	0.05	0.03	2.3	0.0	83.1	2.71	LM,VF
163	5409.0-10.0	<0.01	<0.01	2.3	0.0	75.6	2.71	LM
+ 164	5410.0-11.0	0.22	0.15	1.8	0.0	81.8	2.69	LM,VF
+ 165	5411.0-12.0	4.30	3.00	3.2	0.0	84.9	2.72	LM,SHY
166	5412.0-13.0	*	0.18	2.9	0.0	81.6	2.71	LM,SHY
+ 167	5413.0-14.0	1.20	0.79	2.8	0.0	87.2	2.71	LM,SHY
+ 168	5414.0-15.0	*	3.00	4.5	0.0	82.7	2.73	SH,LMY

AMOCO PRODUCTION COMPANY
BREEDING "F" NO. 1 WELL

DATE: 3-30-82
FORMATION: AS NOTED

FILE NO: 3402-11215
ANALYST: EDWARDS

FULL DIAMETER ANALYSIS

SAMPLE NUMBER	DEPTH FEET	PERM MD MAXIMUM	PERM MD 90 DEG	POR %	OIL% PORE	WTR% PORE	GRAIN DEN	DESCRIPTION
+ 169	5415.0-16.0	*	27	3.7	0.0	86.5	2.71	SH, LMY

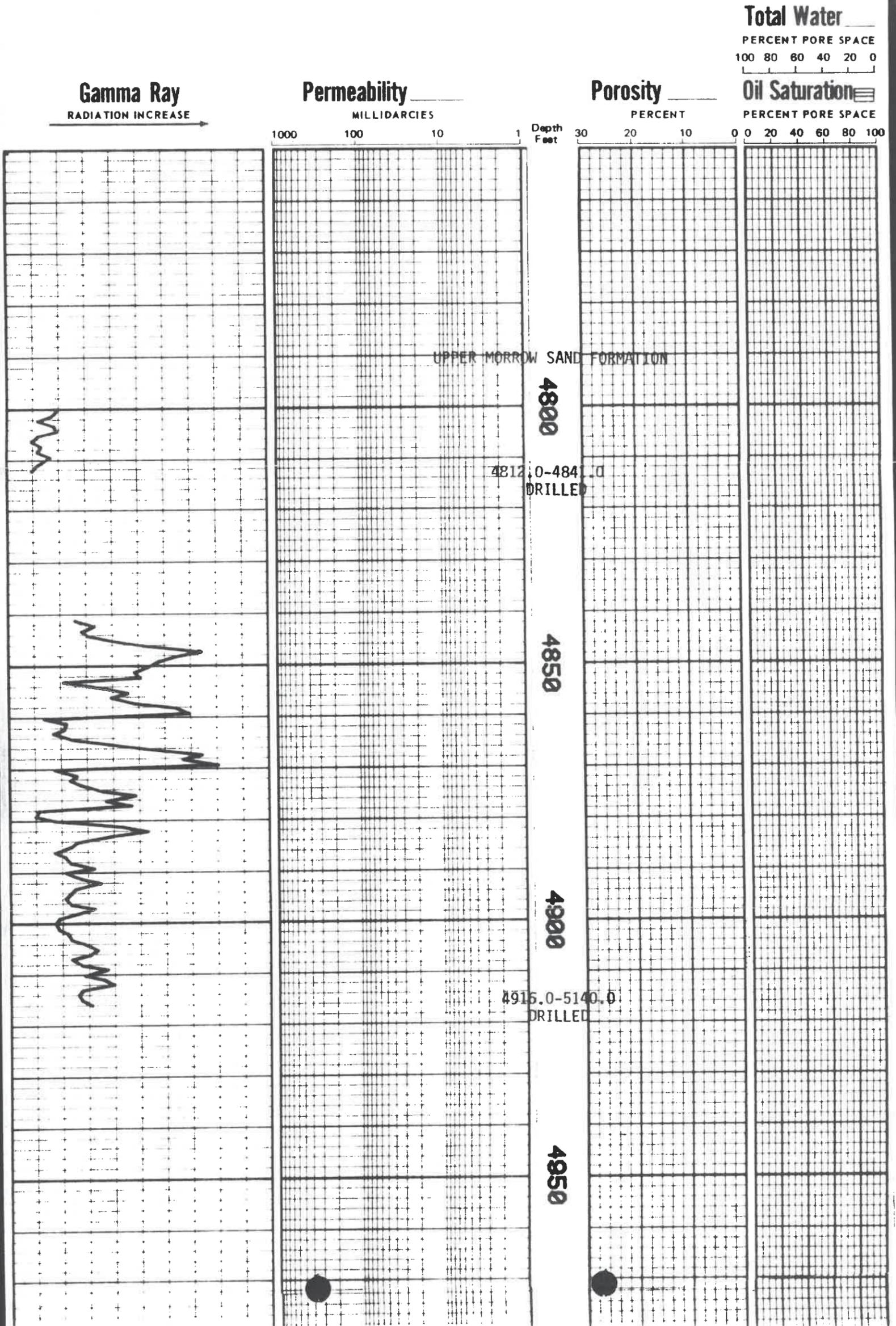
* DENOTES PLUG PERM
+ DENOTES HORIZONTAL CRACKS

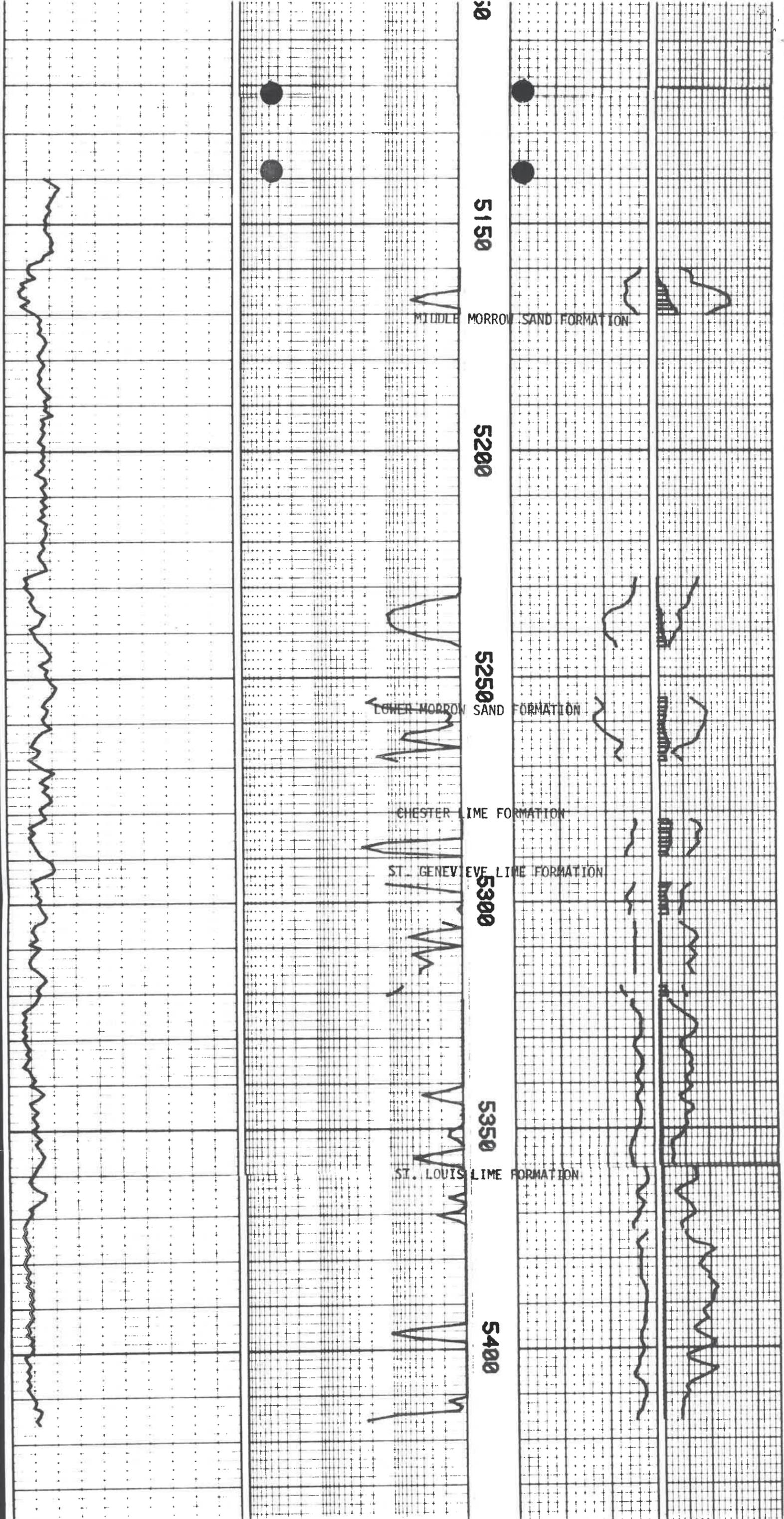
COMPANY AMOCO PRODUCTION COMPANY FILE NO. 3402-11215
 WELL BREEDING "F" NO. 1 DATE 3/30/82
 FIELD NORTH ROLLA FORMATION AS NOTED ELEV. _____
 COUNTY MORTON STATE KANSAS DRLG. FLD. WATER BASE MUD CORES _____
 LOCATION SEC. 34-31-40W

CORRELATION COREGRAPH

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VERTICAL SCALE: 5" = 100'





5100

5150

5200

5250

5300

5350

5400

MIDDLE MORROW SAND FORMATION

LOWER MORROW SAND FORMATION

CHESTER LIME FORMATION

ST. GENEVIEVE LIME FORMATION

ST. LOUIS LIME FORMATION