

CORE ANALYSIS RESULTS

Company **EL PASO NATURAL GAS COMPANY** Formation **GRANEROS** File **RP-3-1116**
Well **RINCON # 127** Core Type **DIAMOND CONV.** Date Report **12/8/59**
Field **BLANCO MESA VERDE DAKOTA WILLCAT** Drilling Fluid **OIL EMULSION MUD** Analysts **ENGLISH**
County **RIO ARRIBA** State **N. MEXICO** Elev **6567 DF** Location **SEC28 T27N R6W**

Lithological Abbreviations

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCS	POROSITY PERCENT	RESIDUAL SATURATION PER CENT PORE		SAMPLE DESCRIPTION AND REMARKS
				OIL	TOTAL WATER	
1	7365-66	<0.01	3.8	23.7	58.0	
2	66-67	0.03	4.4	20.5	47.8	
3	67-68	0.08	6.9	10.1	24.6	
4	68-69	0.04	5.7	15.8	42.1	
5	69-70	0.02	5.2	13.5	50.0	
6	70-71	0.01	4.8	14.6	60.5	
7	71-72	0.02 ²	4.4	20.4	54.6	
8	72-73	0.02	5.0	14.0	50.0	
9	73-74	<0.01	4.4	11.3	63.7	
10	74-75	0.02	4.0	17.5	60.1	
11	75-76	<0.01	4.2	16.6	61.9	Vertical Fracture
12	7383-84	<0.01	3.9	12.8	74.2	
13	84-85	0.05	3.7	18.9	64.9	
14	85-86	0.04 ³	4.3 ³	16.3	51.2	Vertical Fracture
15	86-87	0.04	4.9	14.3	57.2	
16	87-88	0.01	8.1	13.6	28.3	Vertical Fracture
17	88-89	0.08	6.7	13.4	28.3	Vertical Fracture
18	89-90	0.03	4.6	10.9	58.6	
19	90-91	0.01	4.6 ¹	19.5	58.8	Vertical Fracture
20	91-92	<0.01 ²	4.5	11.1	68.9	
21	92-93	0.01	4.2	11.9	69.0	
22	93-94	<0.01	4.2	11.9	64.3	
23	94-95	0.02	3.8	13.1	73.7	
24	95-96	0.01	3.5	20.0	57.2	
25	96-97	0.07	3.7	18.9	64.9	Vertical Fracture
26	97-98	0.02	3.5 ⁶	14.3	71.5	
27	98-99	0.04 ³	3.7	13.5	62.2	Vertical Fracture
28	99-7400	0.02	3.8	13.2	65.9	
29	7400-01	<0.01	3.7	0.0	83.8	Vertical Fracture
30	01-02	<0.01	4.5	11.1	68.9	Vertical Fracture
31	02-03	<0.01	4.3	11.7	72.2	
32	03-04	<0.01	3.9	12.8	69.2	Vertical Fracture
33	04-05	<0.01 ¹	2.5	0.0	73.8	Vertical Fracture
34	05-06	<0.01	3.8	13.2	65.8	Vertical Fracture
35	06-07	<0.01	3.5	5.7	71.5	Vertical Fracture
36	07-08	0.01	3.2	6.2	78.2	Vertical Fracture
37	08-09	<0.01	3.4	14.7	79.4	
38	09-10	<0.01	4.2	11.9	64.3	
39	10-11	0.02	3.0	0.0	83.4	Vertical Fracture
40	11-12	<0.01	2.8	0.0	75.0	Vertical Fracture
41	12-13	<0.01	5.0	4.0	80.0	Vertical Fracture

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CORE ANALYSIS RESULTS

Company EL PASO NATURAL GAS COMPANY Formation GRANEROS File RP-3-1116
Well RINCON # 127 Core Type DIAMOND CONV. Date Report 12/8/59
Field BLANCO MESA VERDE DAKOTA WILDCAT Drilling Fluid OIL EMULSION MUD Analysts ENGLISH
County RIO ARRIOLA State N.MEXICO Elev. 6567 DF Location SEC28 T27N R6W

Lithological Abbreviations

SAND-SD SHALE-SH LIME-LM	DOLOMITE-DO CHERT-CH GYPSUM-GYP	ANHYDRITE-ANHY CONGLOMERATE-CONG FOSSILIFEROUS-FOSS	SANDY-SDY SHALY-SHY MUDY-LMY	FINE-FN MEDIUM-MED COARSE-CSE	CRYSTALLINE-XCN GRAIN-GRN GRANULAR-GRN	BROWN-BRN GRAY-GY VUGGY-VGY	FRACTURED-FRAC LAMINATION-LAM STYLOLITIC-STY	SLIGHTLY-SL/ VERT-V/ WIT-W/
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SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCY	POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE		SAMPLE DESCRIPTION AND REMARKS
				OIL	TOTAL WATER	
42	7413-14	0.01	3.3	6.1	75.8	Vertical Fracture
43	14-15	<0.01	2.7	7.4	70.4	Vertical Fracture
44	15-16	0.01	3.1	16.1	67.9	
45	16-17	<0.01	3.2	6.3	78.3	Vertical Fracture
46	17-18	0.01	4.3	4.7	72.1	Vertical Fracture
47	18-19	<0.01	3.7	5.4	78.5	Vertical Fracture
48	19-20	<0.01	3.4	5.9	73.5	Vertical Fracture
49	20-21	<0.01	3.9	5.1	84.6	Vertical Fracture

7365-7367 Low porosity (4.1% average), low permeability (0.02 md./ft. average) and high total water saturation (52.9% average) show this interval to be essentially non-productive . The saturation of residual oil is 22.1% average .

7367-7368 This one-foot interval is capable of producing a very low-capacity rich gas . A formation treatment to increase the permeability is required .

7368-7376 Low porosity (4.7% average), low permeability (0.02 md./ft. average) and high total water saturation (55.4% average) show this interval to be essentially non-productive . The saturation of residual oil is 15.4% average .

7383-7387 Low porosity (4.2% average), low permeability (0.03 md./ft. average) and high total water saturation (61.8% average) show this interval to be essentially non-productive . The saturation of residual oil is 15.5% average .

7387-7389 This two-foot interval has fair porosity (7.4% average) and low permeability (0.04 md./ft. average) . The saturations (residual oil 13.5% average and total water 28.3% average) show this interval to be capable of producing a low-capacity rich gas . A formation treatment will depend upon the effectiveness of the natural vertical fracture system . A rapid decline in the rate of production can be expected .

7389-7421 Low porosity (3.7% average), low permeability (0.01 md./ft. average) and high total water saturation (71.4% average) show this interval to be essentially non-productive . The saturation of residual oil is 9.6% average .

CORE ANALYSIS RESULTS

Company EL PASO NATURAL GAS COMPANY Formation DAKOTA File RP-3-1116
 Well RINCON # 127 Core Type DIAMOND CONV. Date Report 12/11/59
 Field BLANCO MESA VERDE DAKOTA WILDCAT Drilling Fluid OIL EMULSION MUD Analysts ENGLISH
 County RIO ARriba State N. MEXICO Elev. 6567 DF Location Sec 28 T27N R6W

Lithological Abbreviations

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCS	POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE		SAMPLE DESCRIPTION AND REMARKS
				OIL	TOTAL WATER	
50	7487-88	<0.01	3.8	5.3	68.4	
51	88-89	0.06	6.9	2.9	37.70	Vertical Fracture
52	89-90	0.06	11.1	0.0	22.6	
53	90-91	0.05	11.5	0.0	22.6	
54	91-92	0.06	10.6	0.0	16.0	
55	92-93	0.06	10.4	0.0	20.2	
56	93-94	0.04	9.9	0.0	26.3	
57	94-95	0.05	8.0	0.0	31.3	
58	95-96	0.04	9.4	0.0	26.6	
59	96-97	0.04	9.4	2.1	27.7	
60	97-98	0.04	8.8	0.0	26.2	
61	98-99	0.02	6.6	0.0	34.9	
62	99-7500	0.01	5.0	0.0	54.0	
63	7500 -01	<0.01	4.7	0.0	59.6	
64	01-02	0.02	6.1	0.0	39.4	
65	02-03	0.01	4.9	0.0	53.1	
66	03-04	0.01	5.4	3.7	37.0	Vertical Fracture
67	04-05	0.06	5.9	0.0	61.0	
68	05-06	0.01	4.6	0.0	71.7	
69	06-07	<0.01	4.5	0.0	77.7	
70	07-08	0.01	3.8	0.0	76.3	Vertical Fracture
71	08-09	<0.01	3.9	0.0	84.5	

7487-7488 This one-foot interval is essentially non-productive.

7488-7504 This interval has fair porosity (8.0% average) and low permeability (0.04 md./ft. average) . The saturations (residual oil 0.5% average and total water 33.4% average) show this interval to be capable of producing gas . A formation treatment to increase permeability will be required in order to establish and maintain commercial rates of production .

7504-7509 Low porosity (4.5% average) , low permeability (0.02 md./ft. average) and high total water saturations (74.2% average) show this interval to be essentially non-productive . The saturation of residual oil is 0.0% average .

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Petroleum Reservoir Engineering
DALLAS, TEXAS

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Company	EL PASO NATURAL GAS COMPANY	Formation	DAKOTA	File	RP-3-1116
Well	RINCON # 127	Core Type	DIAMOND CONV.	Date Report	12/14/59
Field	BLANCO MESA VERDE DAKOTA WILDCAT	Drilling Fluid	OIL EMULSION MUD	Analysts	ENGLISH
County	RIO ARriba	State	N.MEXICO	Elev	6567 DF
		Location	SEC28 T27N R6W		

Lithological Abbreviations

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCY	POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE		SAMPLE DESCRIPTION AND REMARKS
				OIL	TOTAL WATER	
72	7524-25	0.02	2.9	0.0	72.3	
73	25-26	0.03	4.9	0.0	75.6	
74	26-27	<0.01	2.5	0.0	76.0	
75	27-28	<0.01	3.9	5.1	79.4	
76	28-29	0.01	4.3	0.0	74.4	
77	7531-32	0.02	6.5	0.0	73.9	Vertical Fracture
78	32-33	0.02	6.9	0.0	68.1	Vertical Fracture
79	33-34	0.02	5.1	0.0	78.4	Vertical Fracture
80	34-35	0.01	3.8	0.0	84.3	
81	35-36	0.02	0.8	0.0	50.0	
82	36-37	0.01	3.7	5.4	78.6	Vertical Fracture
83						
83	7541-42	0.05	6.4	0.0	18.8	Vertical Fracture
84	42-43	0.08	6.3	0.0	15.9	
85	43-44	0.05	6.2	0.0	19.4	
86	44-45	0.02	6.2	0.0	19.3	Vertical Fracture
87	45-46	0.01	4.1	0.0	24.3	Vertical Fracture
88	46-47	0.01	3.6	5.6	33.3	
89	47-48	<0.01	2.7	0.0	37.0	
90	48-49	<0.01	4.9	4.1	32.6	Vertical Fracture
91	49-50	<0.01	3.3	6.1	30.3	Vertical Fracture
92	50-51	<0.01	1.9	0.0	63.2	Vertical Fracture
93	51-52	0.02	4.0	2.3	30.0	Vertical Fracture
94	52-53	<0.01	2.0	0.0	50.0	
95	7554-55	<0.01	2.2	0.0	36.4	
96	55-56	0.06	5.1	0.0	7.9	
97	56-57	0.02	5.5	0.0	10.9	
98	57-58	0.02	6.1	0.0	9.8	
99	58-59	<0.01	1.6	0.0	50.0	
100	59-60	<0.01	2.1	0.0	47.7	
101	60-61	<0.01	2.1	9.5	47.7	
102	61-62	<0.01	1.9	10.5	42.1	
103	62-63	<0.01	2.6	0.0	50.0	
104	63-64	<0.01	1.4	0.0	42.8	

7524-7537 Low porosity (4.1% average) and low permeability (0.02 md./ft. average) associated with high total water saturations (73.7% average) show this interval to be essentially non-productive . The saturation of residual oil is 1.0% average .

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DALLAS, TEXAS

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CORE ANALYSIS RESULTS

Company EL PASO NATURAL GAS COMPANY Formation DAKOTA File RP-3-1116
Well RINCON # 127 Core Type DIAMOND CONV. Date Report 12/14/59
Field BLANCO MESA VERDE DAKOTA WILDCAT Drilling Fluid OIL EMULSION MUD Analysts ENGLISH
County RIO ARriba State N.MEXICO Elev. 6567 DF Location Sec28 T27N R6W

Lithological Abbreviations

SAND - F SHALE - SH LIME - LM	COLOMITE - COL CHERT - CH GYPSUM - GYP	ANHYDRITE - ANHY CONGLOMERATE - CONG FOSSILIFEROUS - FOS	SAND - SCY SHALE - SHY LIME - LMY	FINE - FN MEDIUM - MEC COARSE - CRE	CRYSTALLINE - XLN GRAIN - GRN GRANUL. AR - GRN	BROWN - BRN GRAY - GY VUGGY - VGY	FRACTURED - FRA LAMINATION - LAM STYLOLITE - STY	SLIGHTLY - SL/ ₂ VERY - V/ ₂ WITH - W/ ₂
SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCYS	POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE		SAMPLE DESCRIPTION AND REMARKS		
				OIL	TOTAL WATER			

7541-7558 This interval has low porosity (4.6% average) and low permeability (0.02 md./ft. average) . The saturations (residual oil 1.2% average and total water 25.1% average) show this interval to be capable of producing gas . A formation treatment will depend upon the effectiveness of the natural vertical fracture system. The one-foot interval 7550-7551 was excluded from the averages .

7558-7564 Low porosity (1.9% average) and low permeability (<0.01 md./ft. average) associated with high total water saturations (46.7% average) show this interval to be essentially non-productive . The saturation of residual oil is 6.6% average .

CORE ANALYSIS RESULTS

Company EL PASO NATURAL GAS COMPANY Formation DAKOTA File RP-3-1116
Well RINCON # 127 Core Type DIAMOND CONV. Date Report 12/15/59
Field BLANCO MESA VERDE DAKOTA WILDCAT Drilling Fluid OIL EMULSION MUD Analysts ENGLISH
County RIO ARriba State N. MEXICO Elev. 6567 DF Location Sec28 T27N R6W

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 - LMV	FINE - FN MEDIUM - MED COARSE - CSE	CRYSTALLINE - XLN GRAIN - GRN GRANULAR - GRNL	BROWN - BRN GRAY - GY VUGGY - VGY	FRACTURED - FRAC LAMINATION - LAM STYLOLITIC - STY	SLIGHTLY - SL/ VERY - V/ WITH - W/
SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCS	POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE OIL	TOTAL WATER	SAMPLE DESCRIPTION AND REMARKS		
105	7564-65	<0.01	1.0	0.0	80.0	Vertical Fracture		
106	65-66	<0.01	3.4	14.7	61.8	Vertical Fracture		
107	66-67	<0.01	1.3	0.0	77.0			
108	67-68	<0.01	3.6	5.6	39.0	Vertical Fracture		
109	68-69	<0.01	3.2	0.0	68.8			
110	69-70	<0.01	3.4	14.7	55.9			
111	70-71	0.01	3.0	0.0	50.0			
112	71-72	0.04	3.7	0.0	24.3			
113	72-73	<0.01	2.1	0.0	80.9			
114	73-74	0.01	2.1	0.0	76.3	Vertical Fracture		
115	74-75	0.05	4.2	0.0	38.1	Vertical Fracture		
116	75-76	<0.01	2.6	0.0	61.6	Vertical Fracture		
117	76-77	<0.01	2.7	0.0	85.3			
118	77-78	0.24	2.2	0.0	86.4			
119	78-79	<0.01	2.9	24.1	41.3			

7564-7571 Low porosity (2.7% average) and low permeability (<0.01 md./ft. average) associated with high total water saturations (61.8% average) show this interval to be essentially non-productive . The saturation of residual oil is 5.0% average .

7571-7572 This one-foot interval is interpreted to be low-capacity gas-productive .

7572-7574 Low porosity (2.1% average) , low permeability (<0.01 md./ft. average) and high total water saturation (78.6% average) show this interval to be essentially non-productive , The saturation of residual oil is 0.0% average .

7574-7575 This one-foot interval is interpreted to be low-capacity gas-productive .

7575-7579 Low porosity (2.6% average) , low permeability (0.06 md./ft. average) and high total water saturation (68.6% average) show this interval to be essentially non-productive.

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Petroleum Reservoir Engineering
DALLAS, TEXAS

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CORE ANALYSIS RESULTS

Company EL PASO NATURAL GAS COMPANY Formation DAKOTA File RP-3-1116
Well RINCON # 127 Core Type DIAMOND CONV. Date Report 12/16/59
Field BLANCO MESA VEDE DAKOTA WILDCAT Drilling Fluid OIL EMULSION MUD Analysts ENGLISH
County RIO ARriba State N.MEXICO Elev. 6567 DF Location Sec28 T27N R6W

Lithological Abbreviations

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCY	POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE		SAMPLE DESCRIPTION AND REMARKS
				OIL	TOTAL WATER	
120	7579-80	<0.01	2.6	7.7	38.4	
121	80-81	<0.01	2.5	2.0	55.9	
122	81-82	0.02	1.6	0.0	87.4	
123	82-83	<0.01	1.7	0.0	64.6	
124	83-84	<0.01	1.2	0.0	66.7	
125	84-85	0.06	3.1	0.0	87.1	
126	85-86	0.01	2.9	6.9	86.4	
127	86-87	<0.01	1.6	0.0	93.8	
128	87-88	<0.01	4.5	11.1	69.0	
129	88-89	<0.01	3.8	13.1	81.6	
130	89-90	<0.01	2.5	20.0	76.0	
131	90-91	<0.01	2.4	8.3	87.5	
132	91-92	<0.01	1.5	13.3	80.0	
133	92-93	0.10	0.8	25.0	50.0	
134	7608-09	<0.01	2.8	0.0	28.6	
135	09-10	<0.01	2.4	0.0	33.3	

7579-7593 Low porosity (2.3% average) and low permeability (0.02 md./ft. average) associated with high total water saturations (73.2% average) show this interval to be essentially non-productive . The saturation of residual oil is 7.2% average .

7608-7610 Low porosity (2.6% average) and low permeability (<0.01 md./ft. average) show this interval to be ~~essentially~~ essentially non-productive . Other properties are : saturation of residual oil 0.0% average and saturation of total water 30.9% average .

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 County RIO ARriba State N.MEXICO Elev. 6567 DF Location SEC28 T27N R6W

Lithological Abbreviations

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCY	POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE		SAMPLE DESCRIPTION AND REMARKS
				OIL	TOTAL WATER	
136	7610-11	0.02	2.8	0.0	42.9	Vertical Fracture
137	11-12	0.71	4.1	4.9	43.9	
138	12-13	0.08	4.0	0.0	45.1	Vertical Fracture
139	13-14	0.03	6.3	3.2	31.7	
140	14-15	0.08	4.5	0.0	40.0	
141	15-16	0.02	3.9	5.1	41.1	
142	16-17	0.12	7.7	0.0	10.4	
143	17-18	0.01	3.7	0.0	67.6	
144	18-19	0.04	4.3	0.0	18.6	

7610-7619 Low permeability (0.12 md./ft. average) and high total water saturation (39.0% average *) show this interval to be essentially non-productive. Other properties are : porosity (4.6% average) and saturation of residual oil (1.4% average) .

- * This sandstone has a very high capillary attraction for water , which can conduct the water from the inside of the core to the surface where evaporation can take place . Future cores from this section should be quick-frozen at the location and should be protected by plastic bags during the gamma logging of the core in order to preserve the residual saturations as they exist when the core is removed from the core-barrel .