

CORE LABORATORIES, INC.
 Petroleum Reservoir Engineering
 DALLAS, TEXAS

Page No. 1**CORE ANALYSIS RESULTS**

Company EL PASO NATURAL GAS COMPANY Formation GRANEROS File RP-3-1434
 Well RINCON UNIT # 159 Core Type DIAMOND CONV. Date Report 5/10/61
 Field BASIN DAKOTA Drilling Fluid OIL EMULSION MUD Analysts MCCOMAS
 County BIO ARKIBA State NEW MEX. Elev. 6618 GR Location SEC 18 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	
1	7444-45	<0.01	1.8	0.0	83.2	
2	45-46	0.72	3.5	14.2	82.9	
3	46-47	0.21	4.4	11.3	79.6	
4	47-48	0.03	3.4	5.9	85.3	
5	48-49	<0.01	4.1	4.9	90.5	
6	49-50	0.06	5.6	3.6	85.6	
7	50-51	0.09	4.5	4.5	82.5	
8	51-52	0.08	3.3	15.1	76.0	
9	52-53	<0.01	4.1	12.2	80.5	
10	53-54	<0.01	4.2	4.8	90.5	VERTICAL FRACTURE
11	54-55	0.01	4.9	14.3	71.6	" "
12	55-56	<0.01	3.9	17.9	51.2	
13	56-57	0.01	4.6	15.2	52.2	
14	57-58	<0.01	5.0	18.0	44.0	
15	58-59	0.01	5.1	17.6	47.0	
16	59-60	<0.01	5.4	16.6	35.2	
17	60-61	<0.01	5.2	17.3	44.2	
18	61-62	0.01	5.0	14.0	50.0	
19	62-63	0.02	3.5	20.0	68.6	
20	63-64	<0.01	3.6	19.4	75.0	VERTICAL FRACTURE
21	64-65	<0.01	3.2	6.3	75.0	" "
22	65-66	<0.01	3.6	13.9	66.7	
23	66-67	0.01	2.7	25.9	59.4	VERTICAL FRACTURE
24	67-68	<0.01	6.8	13.2	11.7	" "
25	68-69	0.01	5.0	14.0	42.0	" "
26	69-70	0.02	5.4	12.9	22.2	
27	70-71	<0.01	4.4	15.9	40.9	
28	71-72	<0.01	4.0	12.5	55.0	
29	72-73	0.52	4.3	11.6	51.2	
30	73-74	<0.01	4.2	16.7	52.3	VERTICAL FRACTURE
31	74-75	0.01	4.0	17.5	45.0	" "
32	75-76	<0.01	6.3	7.9	6.4	
33	76-77	<0.01	7.1	9.9	26.7	
34	77-78	<0.01	7.0	8.6	18.6	
35	78-79	0.01	3.9	17.9	46.1	
36	79-80	<0.01	2.9	17.2	62.1	
37	80-81	0.02	2.4	20.8	58.4	
38	81-82	<0.01	4.9	10.4	75.5	VERTICAL FRACTURE
39	82-83	<0.01	5.0	10.0	78.0	

7444-7483 Low porosity and permeability show that this interval is essentially non-productive.

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CORE ANALYSIS RESULTS

Company **EL PASO NATURAL GAS COMPANY** Formation **GRANEROS** File **RP-3-1434**
 Well **RINCON UNIT # 159** Core Type **DIAMOND CONV.** Date Report **5/11/61**
 Field **BASIN DAKOTA** Drilling Fluid **OIL EMULSION MUD** Analysts **McCOMAS**
 County **ALO ARriba** State **NEW MEX.** Elev. **6612 GR** Location **SEC 18 T27N R6W**

Lithological Abbreviations

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCS	POROSITY PERCENT	RESIDUAL SATURATION PER CENT PORE		SAMPLE DESCRIPTION AND REMARKS
				Oil	TOTAL WATER	
40	7484-85	0.02	1.7	29.4	59.0	VERTICAL FRACTURE
41	85-86	<0.01	2.8	25.0	64.5	" "
42	86-87	<0.01	2.9	24.1	72.6	
43	87-88	<0.01	3.1	16.1	81.6	
44	88-89	0.07	3.3	15.1	81.9	
45	89-90	<0.01	2.6	7.7	83.6	
46	90-91	<0.01	2.4	14.7	79.5	
47	91-92	<0.01	2.9	17.3	72.5	
48	92-93	0.06	3.0	23.2	70.0	VERTICAL FRACTURE
49	93-94	0.01	3.5	25.8	60.0	
50	94-95	<0.01	3.3	21.3	63.6	VERTICAL FRACTURE
51	95-96	<0.01	2.8	17.9	82.6	
52	96-97	<0.01	2.4	0.0	96.0	
53	97-98	<0.01	2.8	0.0	96.5	
54	98-99	<0.01	2.4	0.0	96.2	VERTICAL FRACTURE
55	99-7500	<0.01	2.4	0.0	96.2	
56	7500-01	<0.01	1.8	0.0	94.6	
57	01-02	<0.01	3.1	0.0	96.8	VERTICAL FRACTURE
58	02-03	<0.01	3.2	6.0	87.3	
59	03-04	<0.01	3.2	6.0	90.6	VERTICAL FRACTURE
60	04-05	<0.01	2.2	0.0	95.6	" "
61	05-06	0.01	3.0	0.0	93.6	" "
62	06-07	<0.01	2.9	0.0	96.6	
63	07-08	<0.01	2.6	0.0	96.2	
64	08-09	<0.01	3.1	0.0	90.5	
65	09-10	<0.01	3.3	6.0	88.4	VERTICAL FRACTURE
66	10-11	0.01	4.2	11.9	78.5	
67	11-12	<0.01	3.4	0.0	97.1	

7484-7512 This interval is essentially non-productive.

CORE ANALYSIS RESULTS

Company EL PASO NATURAL GAS COMPANY Formation DAKOTA File RP-2-1434
 Well RINCON UNIT # 159 Core Type DIAMOND CONV. Date Report 5/12/61
 Field BASIN DAKOTA Drilling Fluid OIL EMULSION MUD Analysts McCOMAS
 County RIO ARriba State NEW MEX. Elev. 6618 GR Location SEC 18 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	
68	7540-41	0.01	4.2	4.8	83.5	
69	7542-43	0.07	2.9	0.0	86.3	
70	7544-45	<0.01	3.5	0.0	88.5	
71	7546-47	0.01	4.4	0.0	91.0	
72	7550-51	<0.01	2.2	0.0	95.5	
73	7553-54	<0.01	3.0	6.7	90.0	
74	7555-56	0.01	3.2	6.3	90.6	VERTICAL FRACTURE
75	56-57	0.01	3.0	0.0	90.0	" "
76	57-58	<0.01	2.8	0.0	96.5	" "
77	58-59	<0.01	1.8	0.0	94.5	" "
78	59-60	<0.01	2.7	0.0	96.3	" "
79	60-61	<0.01	3.3	6.1	91.0	
80	7572-73	<0.01	3.7	0.0	59.4	
81	73-74	0.07	10.0	0.0	19.0	
82	74-75	0.27	10.3	0.0	22.3	
83	75-76	0.07	11.1	0.0	23.4	
84	76-77	0.05	9.5	0.0	24.2	
85	77-78	0.06	8.7	0.0	23.8	
86	78-79	0.04	10.9	0.0	23.0	
87	79-80	0.32	9.2	0.0	31.5	
88	80-81	0.05	8.3	0.0	35.0	
89	81-82	<0.01	5.7	0.0	50.9	
90	82-83	<0.01	5.3	0.0	51.0	
91	83-84	<0.01	5.8	0.0	46.6	
92	84-85	0.01	4.6	0.0	58.7	
93	85-86	<0.01	5.0	0.0	66.0	
94	86-87	0.01	4.5	0.0	71.1	
95	87-88	<0.01	4.5	0.0	69.0	

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CORE ANALYSIS RESULTS

Client: EL PASO PETROLEUM GAS COMPANY Formation: DIABOTA File: RF-2-1224
Well: RINKO UNIT # 159 Core Type: DIABOND CONV. Date Report: 5/22/61
Field: BASIN DIABOTA Drilling Fluid: OIL EMULSION AND Analysis: McJUGAS
Core: RIO ANTELOA Site: NEW MEX. Elev: 6618.26 Loc: SIX 18 127N R6W

Lithological Abbreviations

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCYS	POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE		SAMPLE DESCRIPTION AND REMARKS	
				OIL	TOTAL WATER		

7540-7573 This interval is essentially non-productive.

7573-7581 This interval has fair porosity (9.7% average) and very low permeability (0.10 md./ft. average). The saturations Residual Oil (0.0% average) and Total Water (25.8% average) are within the range normally associated with gas production. A good formation treatment will be necessary to enhance the low permeability.

7581-7588 This interval is essentially non-productive.

CORE ANALYSIS RESULTS

Company EL PASO NATURAL GAS COMPANY Formation DAKOTA File RP-3-1434
 Well RINCON UNIT # 159 Core Type DIAMOND CONV. Date Report 5/12/61
 Field BASIN DAKOTA Drilling Fluid OIL EMULSION MUD Analysts McCOMAS
 County RIO ARriba State NEW MEX Elev 6613 GR Location SEC 18 T27N R6W

Lithological Abbreviations

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCS	POROSITY PER CENT	RESIDUAL SATURATION PER CENT PQRE		SAMPLE DESCRIPTION AND REMARKS
				OIL	TOTAL WATER	
96	7587-88	0.07	5.4	0.0	66.7	
97	88-89	0.03	4.8	0.0	79.2	
98	89-90	<0.01	4.3	0.0	76.8	
99	90-91	<0.01	4.0	0.0	84.9	
100	91-92	<0.01	3.9	0.0	87.1	
101	92-93	<0.01	3.9	0.0	83.0	
102	93-94	<0.01	3.9	0.0	84.5	
103	94-95	0.01	3.4	0.0	90.9	
104	95-96	<0.01	3.5	0.0	88.2	
105	96-97	<0.01	4.7	0.0	98.0	
106	97-98	<0.01	2.6	0.0	96.5	
107	7599-7600	<0.01	1.2	0.0	91.9	
108	7605-06	0.07	3.7	0.0	83.5	
109	06-07	0.05	4.6	0.0	71.8	
110	07-08	0.01	2.9	0.0	55.2	
111	08-09	0.10	4.8	0.0	33.2	
112	09-10	0.06	5.3	0.0	47.0	
113	10-11	0.05	4.2	16.6	78.5	
114	11-12	<0.01	1.7	11.8	70.6	

7587-7612 This interval is essentially non-productive.

CORE ANALYSIS RESULTS

Company	EL PASO NATURAL GAS COMPANY	Formation	DAKOTA	File	RP-3-1434
Well	RINCON UNIT # 159	Core Type	DIAMOND CONV.	Date Report	5/13/61
Field	BASIN DAKOTA	Drilling Fluid	OIL EMULSION MUD	Analysts	McCOMAS
County	RIO ARriba State NEW MEX.	Elev	6618 GR	Location	SEC 18 T27N R6W

Lithological Abbreviations

SANDY TO SHALE SH LIME LM	OOLITE TO CHERT CH GYPSUM GP	ANHYDR TO ANHY CONGLOMERATE CONC FOSSILIFEROUS FOSS	SANDY TO SHALE SHY LIME LM	FINE FN MEDIUM MED COARSE CSE	CRYSTALLINE YLN GRAIN GRN GRANULAR GHN	BROWN BRN GRAY GR JUGGY JGY	FRACTURED FRA LAMINATION LAM STYOLITIC STY	SLIGHTLY SL VERY V WITH W
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SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCY	POROSITY PER CENT	RES. SATURATION PER CENT PORE OIL	TOTAL WATER	SAMPLE DESCRIPTION AND REMARKS
115	7612-13	<0.01	0.9	0.0	66.6	
116	13-14	0.01	4.1	4.9	85.5	
117	14-15	0.02	3.9	0.0	92.1	
118	7616-17	0.01	3.0	0.0	83.2	
119	17-18	0.06	3.3	6.1	93.7	
120	18-19	<0.01	1.6	0.0	94.0	
121	19-20	<0.01	2.0	0.0	95.0	VERTICAL FRACTURE
122	20-21	<0.01	2.6	0.0	96.0	
123	21-22	<0.01	2.2	0.0	95.5	
124	22-23	0.03	2.9	0.0	86.2	VERTICAL FRACTURE
125	23-24	0.01	3.6	0.0	66.6	" "
126	24-25	0.13	6.3	0.0	50.8	" "
127	25-26	0.03	5.2	0.0	46.1	
128	26-27	<0.01	2.5	0.0	80.0	VERTICAL FRACTURE
129	27-28	0.04	2.7	0.0	81.5	" "
130	7629-30	<0.01	2.6	19.2	73.1	
131	30-31	<0.01	2.7	18.5	77.9	VERTICAL FRACTURE
132	31-32	<0.01	0.9	0.0	89.0	
133	32-33	<0.01	0.7	0.0	57.2	
134	33-34	<0.01	0.9	0.0	89.0	VERTICAL FRACTURE
135	34-35	<0.01	1.2	0.0	66.6	" "
136	35-36	<0.01	0.7	0.0	57.2	" "
137	36-37	<0.01	1.7	0.0	23.6	" "
138	37-38	<0.01	2.2	0.0	54.5	
139	38-39	<0.01	2.2	9.1	54.5	
140	39-40	<0.01	3.3	2.1	76.0	
141	40-41	<0.01	3.1	2.3	64.6	
142	41-42	0.02	4.2	16.7	76.1	
143	42-43	<0.01	2.7	18.5	74.0	
144	43-44	<0.01	2.5	20.0	64.0	
145	7645-46	<0.01	1.1	0.0	91.5	VERTICAL FRACTURE
146	46-47	<0.01	1.1	0.0	91.5	" "
147	47-48	0.01	3.2	0.0	31.3	" "
148	48-49	<0.01	1.4	0.0	86.0	" "
149	49-50	<0.01	1.1	0.0	72.5	" "
150	50-51	<0.01	3.4	20.6	97.0	" "

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CORE ANALYSIS RESULTS

Company EL PASO NATURAL GAS COMPANY Formation DAKOTA
Well RINCON UNIT # 159 Core Type DIAMOND CONV.
Field BASIN DAKOTA Drilling Fluid OIL EMULSION MUD
County RIO ARriba NEW MEX. Well 6618GR Location SEC 18 T27N R6W
File # FT-3-1434
Date Report 5/13/61
Analyst McCOMAS

Lithological Abbreviations

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCY	POROSITY PERCENT	RESIDUAL SATURATION PER CENT PORE		SAMPLE DESCRIPTION AND REMARKS
				OIL	TOTAL WATER	
151	7651-52	<0.01	3.8	5.3	92.1	VERTICAL FRACTURE
152	52-53	<0.01	3.5	5.7	88.6	" "
153	7656-57	<0.01	3.0	6.7	86.9	VERTICAL FRACTURE
154	57-58	0.02	7.0	2.8	58.6	" "
155	58-59	<0.01	9.0	2.2	41.2	
156	59-60	0.03	6.3	0.0	31.8	
157	60-61	0.01	4.1	4.9	83.1	
158	61-62	<0.01	2.7	0.0	89.0	
159	62-63	<0.01	2.4	0.0	95.6	VERTICAL FRACTURE

7612-7663 In this interval there are two small zones that are capable of producing a small amount of gas. The two foot interval from 7624-7626, and the three foot interval from 7657-7660, have fair porosity and very low permeability. A good formation treatment would be necessary to increase the permeability. The remainder of the interval from 7612-7663 is essentially non-productive.

CORE ANALYSIS RESULTS

Company EL PASO NATURAL GAS COMPANY Formation DAKOTA File RF-3-1434
 Well RINCON UNIT # 159 Core Type DIAMOND CONV. Date Report 5/15/61
 Field BASIN DAKOTA Drilling Fluid OIL EMULSION MUD Analysts McCOMAS
 County RIO ARriba State NEW MEX Elev. 6618 GR Location SEC 18 T29N R6W

Lithological Abbreviations

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCY	POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE		SAMPLE DESCRIPTION AND REMARKS
				OIL	TOTAL WATER	
						SAND, SH. SHALE, SH LIME, LM DOLOMITE, DOLO CHERT, CH GYPSUM, GYP ANHYDRITE, ANHY CONGLOMERATE, CONG FOSSILIFEROUS, FOSS SANDY, SDY SHALY, SHY LIMY, LMY FINE, FIN MEDIUM, MED COARSE, COE CRYSTALLINE, XCN GRAIN, GRN GRANULAR, GRNL BROWN, BRN GRAY, GY VUGGY, VGY FRACTURED, FRAC LAMINATION, LAV STYLOLITIC, STY SLIGHTLY, SL/ VERY, V/ WITH, W/
160	7664-65	0.03	4.1	0.0	75.6	VERTICAL FRACTURE
161	65-66	0.01	5.2	0.0	61.5	" "
162	66-67	0.02	3.7	0.0	73.0	
163	67-68	0.05	6.2	0.0	58.0	
164	68-69	0.02	6.0	0.0	36.7	
165	69-70	0.05	5.4	0.0	66.6	VERTICAL FRACTURE
166	7681-82	0.21	3.1	16.1	61.4	
167	82-83	<0.01	3.1	16.1	61.4	VERTICAL FRACTURE
168	83-84	0.01	3.3	6.1	75.6	" "
169	84-85	0.01	2.5	8.0	76.0	" "
170	85-86	<0.01	1.3	0.0	77.1	" "
171	86-87	<0.01	2.8	7.1	68.0	" "
172	87-88	0.01	2.0	0.0	80.0	" "
173	88-89	<0.01	2.3	8.7	74.0	" "
174	89-90	0.01	2.1	9.5	81.0	" "
175	90-91	<0.01	2.4	0.0	75.4	
176	91-92	<0.01	2.1	9.5	76.4	
177	92-93	<0.01	2.0	0.0	75.0	
178	93-94	<0.01	4.0	12.5	80.0	
179	94-95	0.09	2.3	8.7	74.0	
180	95-96	0.01	3.2	15.1	51.5	
181	96-97	<0.01	3.8	0.0	58.0	VERTICAL FRACTURE
182	97-98	<0.01	4.2	0.0	81.0	" "
183	98-99	0.02	5.7	0.0	35.0	" "
184	99-7700	0.05	6.4	0.0	64.0	" "
185	7700-01	0.04	7.4	0.0	66.3	" "
186	01-02	0.13	6.1	0.0	42.5	" "
187	02-03	0.12	5.1	0.0	31.2	
188	03-04	0.05	5.2	0.0	42.1	
189	04-05	1.6	8.0	0.0	55.0	VERTICAL FRACTURE
190	05-06	0.06	9.3	0.0	72.1	" "
191	06-07	0.01	8.4	2.4	81.0	" "
192	07-08	0.01	6.4	0.0	79.6	" "
193	08-09	<0.01	3.2	0.0	77.9	" "
194	09-10	0.05	4.9	0.0	69.4	" "
195	10-11	0.01	7.6	0.0	76.3	" "
196	11-12	0.09	8.4	0.0	65.6	" "
197	12-13	0.08	8.7	0.0	63.3	" "
198	13-14	0.05	10.4	1.9	68.2	" "

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CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

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CORE ANALYSIS RESULTS

Company EL PASO NATURAL GAS COMPANY Formation DAKOTA File RP-3-1434
Well RINCON UNIT # 159 Core Type DIAMOND CONV. Date Report 5/15/61
Field BASIN DAKOTA Drilling Fluid OIL EMULSION MUD Analysts McCOMAS
County RIO ARRIBA State NEW MEX. Elev 6618 GR Location SEC 18 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, LMY	FINE, FN MEDIUM, MED COARSE, COE	CRYSTALLINE, XLN GRAIN, GRN GRANULAR, GRNL	BROWN, BRN GRAY, GY VUGGY, VGY	FRACTURED, FRA LAMINATION, LAM STYLOLITIC, STY	SLIGHTLY, SL/ VERY, V/ WITH, W/
SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCS	POROSITY PER CENT	RESIDUAL SATURATION		SAMPLE DESCRIPTION AND REMARKS		
				OIL	TOTAL WATER			

7664-7699 With the exception of interval from 7667-7669, which is capable of producing a small amount of gas, this interval is essentially non-productive.

7699-7714 This interval is low capacity water productive.