CA

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

CORE ANALYSIS RESULTS

Company EL PASO NATURAL GAS COMPANY | Formation GRANEROS | File RP-3-1264
Well SAN JUAN UNIT 28-6 # 98 | Core Type DIAMOND CONV. | Date Report 9/12/60
Field DAKOTA WILDCAT | Drilling Fluid OIL EMULSION | Analysts English
County RIO ARRIBA State N.MEXICO Elev. 6324 DF Location SEC 3 T28N 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-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 MILLIDARCYS	POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE OIL	RESIDUAL SATURATION PER CENT PORE TOTAL WATER	SAMPLE DESCRIPTION AND REMARKS
1	7286-87	<0.01	3.7	0.0	83.9	Vertical Fracture
2	87-88	<0.01	3.1	0.0	83.9	" "
3	88-89	<0.01	4.1	0.0	87.9	" "
4	89-90	<0.01	3.4	0.0	82.4	" "
5	90-91	<0.01	3.2	0.0	81.3	" "
6	91-92	<0.01	3.0	0.0	81.7	" "
7	92-93	<0.01	3.7	0.0	86.5	" "
8	93-94	<0.01	3.3	6.0	69.7	" "
9	94-95	<0.01	3.9	5.1	79.5	" "
10	95-96	0.01	3.5	5.7	71.5	" "
11	96-97	0.01	3.1	0.0	80.6	" "
12	97-98	0.01	3.5	5.7	71.4	" "
13	98-99	<0.01	3.2	0.0	72.0	" "
14	99-7300	0.01	3.2	0.0	78.0	" "
15	7300-01	<0.01	3.1	0.0	80.6	" "
16	01-02	<0.01	2.0	10.0	75.0	" "
17	02-03	<0.01	2.0	0.0	95.0	" "
18	03-04	<0.01	3.8	18.4	65.9	" "
19	04-05	0.01	4.2	11.9	69.0	" "
20	05-06	<0.01	4.4	15.9	66.0	" "
21	06-07	<0.01	4.3	16.3	62.9	" "
22	07-08	0.01	4.0	12.5	77.5	" "
23	08-09	0.02	4.1	12.2	80.5	" "
24	09-10	0.01	4.0	12.5	80.0	" "
25	10-11	<0.01	3.4	14.7	73.5	" "
26	11-12	<0.01	1.9	26.3	52.6	" "
27	12-13	<0.01	2.1	0.0	47.6	" "

7286-7313 The samples analyzed within this interval have the properties of non-productive Graneros Formation . However , there is evidence of a good fracture system , which could be the reservoir and the means of passage to the well bore for fluids within these fractures . Further testing should be done to evaluate the fractures .

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DALLAS, TEXAS

CORE ANALYSIS RESULTS

Company EL PASO NATURAL GAS COMPANY | Formation DAKOTA | File RP-3-1264
Well SAN JUAN UNIT 28-6 # 98 | Core Type DIAMOND CONV. | Date Report 9/14/60
Field DAKOTA WILDCAT | Drilling Fluid OIL EMULSION MUD | Analyst ENGLISH
County RIO ARRIBA State N.MEXICO Elev. 6324 DF Location SEC 3 ~~T28N~~ 27 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-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 MILLIDARCYS	POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE OIL	RESIDUAL SATURATION PER CENT PORE TOTAL WATER	SAMPLE DESCRIPTION AND REMARKS
53	7392-93	<0.01	2.9	0.0	96.6	Vertical Fracture
54	7395-96	<0.01	3.1	0.0	96.8	" "
55	7397-98	<0.01	1.8	0.0	94.6	" "
56	7408-09	<0.01	1.4	0.0	85.7	" "
57	09-10	<0.01	1.8	0.0	77.8	" "
58	10-11	<0.01	4.1	0.0	39.0	" "
59	11-12	0.02	7.5	0.0	13.3	
60	12-13	<0.01	6.9	0.0	20.2	

7392-7410 The samples analyzed within this interval have the properties of non-productive Dakota Sandstone .

7410-7413 This interval has fair porosity (6.2% average) and low permeability (0.01 md./ft. average) . The saturations (residual oil 0.0% average and total water 24.2% average) show this interval to be capable of producing gas . A formation treatment will depend upon the effectiveness of the vertical fracture system .

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CORE LABORATORIES, INC.
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CORE ANALYSIS RESULTS

Company EL PASO NATURAL GAS COMPANY | Formation GRANEROS | File RP-3-1264
Well SAN JUAN UNIT 28-6 # 98 | Core Type DIAMOND CONV. | Date Report 9/13/60
Field DAKOTA WILDCAT | Drilling Fluid OIL EMULSION MUD | Analysts ENGLISH
County RIO ARRIBA State N.MEXICO Elev. 6324 DF Location SEC 3 T28N R6W

Lithological Abbreviations

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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, VUGGY-VGY, FRACTURED-FRAC, LAMINATION-LAM, STYLOLITIC-STY, SLIGHTLY-SL/, VERY-V/, WITH-W/

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCYS	POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE: OIL	RESIDUAL SATURATION PER CENT PORE: TOTAL WATER	SAMPLE DESCRIPTION AND REMARKS
28	7312-13	<0.01	2.1	9.5	28.6	Vertical Fracture
29	13-14	<0.01	3.5	20.0	51.5	" "
30	14-15	<0.01	3.0	16.7	53.4	" "
31	15-16	<0.01	1.6	12.5	62.5	" "
32	16-17	<0.01	2.9	6.9	72.4	" "
33	17-18	<0.01	2.6	19.2	61.6	" "
34	18-19	<0.01	2.8	17.9	57.1	" "
35	19-20	<0.01	3.1	16.1	58.0	" "
36	20-21	<0.01	3.0	16.7	66.7	" "
37	21-22	<0.01	2.9	17.2	55.2	" "
38	22-23	<0.01	4.3	11.6	47.7	" "
39	23-24	<0.01	3.1	16.1	58.0	" "
40	24-25	<0.01	3.1	16.1	58.0	" "
41	25-26	<0.01	3.1	16.1	64.5	" "
42	26-27	<0.01	3.6	13.9	75.0	" "
43	27-28	<0.01	3.2	6.2	78.1	" "
44	28-29	<0.01	3.2	6.3	84.4	" "
45	29-30	<0.01	2.6	0.0	80.9	" "
46	30-31	<0.01	3.4	14.7	76.5	" "
47	31-32	0.02	2.6	19.2	73.1	" "
48	32-33	<0.01	2.8	17.9	75.0	" "
49	33-34	<0.01	2.9	6.9	86.3	" "
50	34-35	<0.01	3.4	0.0	94.1	" "
51	35-36	<0.01	2.8	0.0	96.4	" "
52	36-37	<0.01	3.1	16.1	71.0	" "

7312-7337 This interval has the properties of non-productive Graneros sandstone . There is evidence of a good fracture system , which could be the resevoir and the means of passage to the well bore for fluids within these fractures . Further testing should be done to evaluate the fracture system . .

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

CORE ANALYSIS RESULTS

Company EL PASO NATURAL GAS COMPANY Formation DAKOTA File RP-3-1264
Well SAN JUAN UNIT 28-6 # 98 Core Type DIAMOND CONV. Date Report 9/17/60
Field DAKOTA WILDCAT Drilling Fluid OIL EMULSION MUD Analysts ENGLISH
County RIO ARRIBA State N.MEXICO Elev. 6324 DF Location SEC 3 T28N 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-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 MILLIDARCYS	POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE OIL	RESIDUAL SATURATION PER CENT PORE TOTAL WATER	SAMPLE DESCRIPTION AND REMARKS
61	7413-14	<0.01	8.3	0.0	25.3	
62	14-15	0.01	7.2	0.0	33.3	
63	15-16	0.01	5.9	0.0	37.3	
64	16-17	<0.01	4.4	0.0	45.6	
65	17-18	<0.01	2.8	0.0	64.4	
66	18-19	<0.01	3.7	0.0	43.2	
67	19-20	0.02	5.2	0.0	50.0	
68	20-21	<0.01	6.9	0.0	32.0	
69	21-22	0.01	6.6	0.0	40.9	
70	22-23	0.03	4.7	0.0	51.2	
71	23-24	<0.01	2.9	0.0	55.1	
72	24-25	<0.01	2.4	0.0	58.2	
73	25-26	<0.01	4.5	0.0	48.9	
74	26-27	<0.01	3.2	0.0	31.2	
75	27-28	<0.01	6.0	0.0	23.3	
76	28-29	0.01	4.3	0.0	51.2	
77	29-30	<0.01	3.9	0.0	51.3	
78	30-31	0.02	2.9	0.0	79.4	
79	31-32	<0.01	3.2	0.0	84.3	
80	32-33	<0.01	4.1	0.0	75.7	
81	33-34	<0.01	3.0	0.0	90.2	
82	34-35	<0.01	3.4	0.0	85.4	
83	35-36	0.39	4.5	0.0	93.2	
84	36-37	<0.01	3.6	0.0	80.5	Vertical Fracture
85	37-38	<0.01	4.8	0.0	91.6	" "
86	38-39	<0.01	4.6	0.0	95.7	" "
87	39-40	<0.01	4.5	0.0	93.3	" "
88	40-41	<0.01	4.9	0.0	90.0	" "
89	41-42	<0.01	4.3	0.0	93.1	" "
90	42-43	<0.01	3.1	0.0	93.6	" "
91	43-44	0.01	1.8	0.0	66.7	" "
92	7448-49	<0.01	2.5	0.0	83.9	
93	49-50	<0.01	1.3	0.0	85.0	

7413-7423 This interval has fair porosity (5.6% average) and low permeability (0.01 md./ft. average) . The saturations (residual oil 0.0% average and total water 42.3% average) show this interval to be capable of producing gas . A formation treatment to increase permeability will be required .

7423-7425 This interval is essentially non-productive .

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CORE ANALYSIS RESULTS

Company EL PASO NATURAL GAS COMPANY | Formation DAKOTA | File RP-3-1264
Well SAN JUAN UNIT 28-6 # 98 | Core Type DIAMOND CONV. | Date Report 9/20/60
Field DAKOTA WILDCAT | Drilling Fluid OIL EMULSION MUD | Analysts ENGLISH
County RIO ARRIBA | State N.MEXICO | Elev. 6324 DF | Location SEC 3 T28N 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-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 MILLIDARCYS	POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE OIL	RESIDUAL SATURATION PER CENT PORE TOTAL WATER	SAMPLE DESCRIPTION AND REMARKS
103	7461-62	0.02	4.4	0.0	22.7	
104	62-63	0.01	3.6	0.0	33.3	
105	63-64	<0.01	1.2	0.0	83.4	
106	64-65	<0.01	1.0	0.0	80.0	
107	65-66	<0.01	1.2	0.0	83.4	
108	66-67	<0.01	1.0	0.0	80.0	
109	67-68	<0.01	1.2	0.0	83.4	
110	7474-75	<0.01	1.9	10.5	78.9	Vertical Fracture
111	75-76	<0.01	0.9	0.0	89.1	" "

7461-7463 This interval has fair porosity (4.0% average) and low permeability (0.015 md./ft. average) . The saturations (residual oil o.o% average and total water 28.0% average) show this interval to be capable of producing gas . A formation treatment to increase the permeability will be required .

7463-7476 The samples analyzed within this interval have the properties of non-productive sandstone .

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CORE ANALYSIS RESULTS

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Well SAN JUAN UNIT 28-6 # 98 | Core Type DIAMOND CONV. | Date Report 9/17/60
Field DAKOTA WILDCAT | Drilling Fluid OIL EMULSION MUD | Analysts ENGLISH
County RIO ARRIBA State N.MEXICO Elev. 6324 DF Location SEC 3 T28N R6W 27

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 VUGGY-VGY	FRACTURED-FRAC LAMINATION-LAM STYLOLITIC-STY	SLIGHTLY-SL/ VERY-V/ WITH-W/

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

7425-7430 This interval has low porosity (4.4% average) and very low permeability (<0.01 md./ft. average) . The saturations (residual oil 0.0% average and total water 41.2% average) show this interval to be capable of producing gas . A formation treatment to increase permeability will be required .

7430-7450 This interval is essentially non-productive .

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CORE ANALYSIS RESULTS

Company EL PASO NATURAL GAS COMPANY | Formation DAKOTA | File RP-3-1264
Well SAN JUAN UNIT 28-6 # 98 | Core Type DIAMOND CONV. | Date Report 9/18/60
Field DAKOTA WILDCAT | Drilling Fluid OIL EMULSION MUD | Analysts ENGLISH
County RIO ARRIBA State N.MEXICO Elev. 6324 DF Location SEC 3 T26N 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-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 MILLIDARCYS	POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE OIL	RESIDUAL SATURATION PER CENT PORE TOTAL WATER	SAMPLE DESCRIPTION AND REMARKS
94	7449-50	<0.01	1.3	0.0	84.5	Vertical Fracture
95	50-51	<0.01	3.7	0.0	83.9	
96	51-52	<0.01	2.0	0.0	69.9	
97	52-53	<0.01	2.3	0.0	85.6	
98	53-54	0.01	4.2	0.0	85.8	" "
99	54-55	0.01	3.7	13.5	64.9	" "
100	55-56	<0.01	1.1	0.0	91.0	" "
101	56-57	<0.01	1.7	11.7	82.5	
102	57-58	<0.01	2.4	0.0	33.3	" "

7449-7458 These samples have the properties of non-productive sandstone . Further testing should be done to evaluate the fracture system .

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DALLAS, TEXAS

CORE ANALYSIS RESULTS

Company EL PASO NATURAL GAS COMPANY | Formation DAKOTA | File RP-3-1264
Well SAN JUAN UNIT 28-6 # 98 | Core Type DIAMOND CONV. | Date Report 9/22/60
Field DAKOTA WILDCAT | Drilling Fluid OIL EMULSION MUD | Analysts ENGLISH
County RIO ARRIBA State N.MEXICO Elev. 6324 DF Location Sec 3 T26N R6W

Lithological Abbreviations

SAND-SD, SHALE-SH, LIME-LM, DOLOMITE-DOL, CHERT-CH, GYPSUM-GYP, ANHYDRITE-ANHY, CONGLOMERATE-CONG, FOSSILIFERGUS-FOSS, SANDY-SDY, SHALY-SHY, LIMY-LMY, 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 MILLIDARCYS	POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE OIL	RESIDUAL SATURATION PER CENT PORE TOTAL WATER	SAMPLE DESCRIPTION AND REMARKS
112	7475-76	<0.01	0.8	0.0	50.0	Vertical Fracture
113	76-77	<0.01	1.2	0.0	91.9	
114	77-78	<0.01	1.7	11.7	70.7	
115	78-79	<0.01	1.5	0.0	26.7	
116	79-80	<0.01	1.2	0.0	83.4	

7475-7480 This interval is essentially non-productive .

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CORE ANALYSIS RESULTS

Company EL PASO NATURAL GAS COMPANY | Formation DAKOTA | File RP-3-1264
Well SAN JUAN UNIT 28-6 # 98 | Core Type DIAMOND CONV. | Date Report 9/25/60
Field DAKOTA WILDCAT | Drilling Fluid OIL EMULSION MUD | Analysts ENGLISH
County RIO ARRIBA State N.MEXICO Elev. 6324 DF Location Sec 3 T28N R6W
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Lithological Abbreviations

SAND-SD	DOLOMITE-DOL	ANHYDRITE-ANHY	SANDY-SDY	FINE-FN	CRYSTALLINE-XLN	BROWN-BRN	FRACTURED-FRAC	SLIGHTLY-SL/
SHALE-SH	CHERT-CH	CONGLOMERATE-CONG	SHALY-SHY	MEDIUM-MED	GRAIN-GRN	GRAY-GY	LAMINATION-LAM	VERY-V/
LIME-LM	GYPSUM-GYP	FOSSILIFEROUS-FOSS	LIMY-LMY	COARSE-CSE	GRANULAR-GRNL	VUGGY-VGY	STYLOLITIC-STY	WITH-W/

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCYS	POROSITY PER CENT	RESIDUAL SATURATION PER CENT PORE OIL	RESIDUAL SATURATION PER CENT PORE TOTAL WATER	SAMPLE DESCRIPTION AND REMARKS
117	7480-81	0.02	1.3	0.0	46.1	Vertical Fracture
118	81-82	0.02	2.3	8.7	73.9	" "
119	82-83	0.01	1.2	16.6	50.0	" "
120	83-84	<0.01	1.3	15.4	61.6	" "
121	84-85	0.02	1.8	11.1	44.4	" "
122	85-86	<0.01	1.8	0.0	66.7	"
123	86-87	0.02	2.4	0.0	41.7	
124	7489-90	<0.01	0.6	0.0	66.6	" "
125	7491-92	0.07	1.4	0.0	28.6	" "

7480-7492 The samples analyzed within this interval have the properties of non-productive sandstone . Further testing should be done to evaluate the fracture system .