

File in this file

13-31N-104

Microscopic Description of Cores from
El Paso Natural Gas Company
San Juan 32-9 Unit No. 31

CORE No. 1 - From 5070 to 5114, Recovered 36 feet.

- 5070-71 Sh, dk gy V. Aren W. carb residue.
71-78 Thinly lam, Sh & SS, dk gy, FG ang, P. std sl calc, V argil.
S. & P.
78-79 Same as above.
79-83 Same as above.
83-85 Ss, wt F-MG ang P. std, V. sl calc, S & P, tr gn minerals.
85-87 Ss, same as above interbedded W/dk gy carb Sh.
87-92 Thinly lam, SS & SH, SS dk gy, FG, ang P. std, V argil S & P
sl calc.
92-93 Same as above, Sh predominating.
93-98 Same as above. Ss predominating.
98-5100 Ss, lt gy, F-MG ang P. std, V sl. calc, S & P.
5100-02 Ss, gy F-MG ang P. std, V. sl calc argil, S & P.
02-04 Ss, wt F-MG ang P. std, S & P, sl calc.
04-05 Ss, same as above.
05-06 Ss, dk gy F-MG P. std, S & P, sl calc, V argil. Interbedded with
thin Sh laminations.
06-07 Ss, same as 02-04.

CORE No. 2 - From 5114 to 5137, Recovered 17 feet.

- 5114-15 Ss, wt F-MG ang, P. std, S & P, Sl calc containing tr gn minerals.
15-17 Ss, dk gy F-MG ang P. std, S & P, Sl calc, V. argil W/thin Sh lam.
17-20 Ss, same as 14-15.
20-21 Ss, same as 15-17.
21-22 Ss, dk gy FG, ang P. std, S & P, Sl calc, sl argil vit W/thin Sh
lam.
22-23 Ss, dk gy F-MG, ang P. std, S & P, sl calc, sl argil vit W/thin
Sh lam.
23-24 Sh, dk gy carb W/thin Ss lam.
24-25 Ss, Wt F-MG ang, P std, S & P, sl calc containing tr gn min. Sl
foss (Pelecypods).
25-26 Sh, dk gy, carb W/thin Ss lam., carb residue.
26-27 Ss, wt well cmted F-MG ang P. std, S & P, Sl calc.
27-29 Sh, dk gy carb W/thin Ss lam & carb residue. (Leaf prints).
29-31 Ss, wt well cmted F-MG ang P. std, S & P, sl calc.

CORE No. 3 - From 5137 to 5185, Recovered 45 feet.

- 5137-38 Ss, wt well cmted F-MG ang P. std, S & P, V. sl calc.
39-42 Ss, gy well cmted F-MG ang P. std, S & P, V sl calc vit containing
tr gn min.

5142-43 Ss, same as above interbedded W/dk gy carb Sh.
 43-46 Sh, dk gy carb W/thin Ss lam. Ss same as above.
 46-48 Ss, wt to gy, well cmtd F-MG ang P. std, S & P, V sl calc vit containing gn min.
 48-50 Ss, same as above less Sh.
 50-53 Sh, dk gy carb W/thin Ss lam, Ss dk gy well cmtd FG ang P. std V argil carb sl calc.
 53-59 Ss, wt well cmtd F-MG ang P. std, V sl calc, S & P, containing tr gn min.
 59-60 Ss, gy well cmtd F-MG ang, P. std, sl calc, S & P, containing tr gn min, Biotite, argil.
 60-70 Ss, same as 53-59.
 70-72 Ss, same as 59-60 - not argil.
 72-82 Ss, wt well cmtd F-MG, ang P. std, V. sl calc, S & P W/Biotite, tr gn mineral.

CORE No. 4 - From 5185 to 5191 feet. Recovered 4 feet.

5185-89 Ss, wt well cmtd F-MG ang P. std vit W/tr gn min, S & P, sl calc. Wt cly cmt.

CORE No 5. - From 5239 to 5247 feet. Recovered 3 feet.

5239-40 Ss, dk gy, well cmtd, F-MG ang P. std carb argil.
 40-41 Ss, dk gy well cmtd F-MG ang P. std, very carb argil.
 41-41.5 Sh, dk gy to blk V. carb argil W/coal lam.
 41.5-42 Sh, dk gy to blk carb, V argil, tr V frac.

CORE No. 6 - From 5247 to 5293 feet. Recovered 9 feet.

5247-49 Sh, dk gy to blk, V carb, V aren W/thin coal lam.
 49-51 Sh, dk gy to blk, aren W/carb residue (leaf prints.).
 51-53 Ss, gy well cmtd F-MG ang P. std W/thin carb Sh lam.
 53-54 Sh, dk gy aren, sl carb.
 54-55 Sh, dk gy to blk, V. carb. (Leaf prints).
 55-56 Sh, dk gy to blk V. carb, V. aren.
 56-56.5 Sh, dk by carb. (Leaf prints).

CORE No. 7 - From 5296 to 5321 feet. Recovered 19 feet.

5296-97 Ss, gy to bn, well cmtd F-MG ang P. std, V carb argil, V sl calc.
 97-98 Sh, gy W/carb residue (leaf prints.).
 98-99 Sh, same as above, V aren.
 99-5303 Ss, gy to bn, well cmtd, F-MG ang P. std, V argil, carb, sl calc. Thin gy carb Sh lamin.
 03-05 Ss, lt bn, same as above W/plant foss. remains.
 05-06 Ss, same as above. V carb.
 06-07 Ss, lt bn, well cmtd FG ang, P. std carb V calc (calc. cmt.).
 07-08 Ss, lt bn well cmtd, F-G ang, P. std, V carb, sl calc (leaf & stem prints.).

08-09	Ss, lt gy to lt bn, well cmted F-MG ang. P. std V. calc, V carb argil
09-12	Ss, lt gy to bn, well cmted FG-MG ang, P std carb (plant foss.) sl calc, tr biotite argil.
12-14	Ss, same as above W/out calcite.
14-15	Sh, blk V carb, V aren, fissil.

CORE No. 8 - From 5321-5354 feet. Recovered 18 feet.

5321-22	Sh, blk, V carb, V aren, fissil.
22-27	Sh, same as above - massive.
27-29	Ss, lt gy-bn, well cmted F-MG ang P std, sl calc, tr biotite argil carb (plant foss.)
29-32	Sh, dk gy carb (Plant foss) massive.
32-33	Sh, same as above - V aren.
33-36	Ss, bn well cmted FG and P std, V carb (plant foss), argil
36-38	Slt stn, lt gy to bn, V argil, V carb (plant foss) W/thin V carb aren blk Sh lam. tr V. frac.
38-39	Ss, lt bn well cmted FG, ang P std, V carb argil W/thin V carb blk Sh lam.

CORE No. 9 - From 5354 to 5392 feet. Recovered 22 feet.

5354-57	Ss, lt gy to bn, well cmted, FG and P std, V carb (plant foss), V argil.
57-59	Ss, lt bn, well cmted, F-MG ang P. std, V calc, carb (plant foss).
59-62	Ss, gy to bn, well cmted FG ang P std, V carb (plant foss), V argil.
62-63	Sh, gy aren, massive.
63-66	Sh, blk V carb (plant Foss) coaly, V aren, fissil.
66-68	Sh, gy aren carb, massive.
68-69	Ss, gy well cmted, FG ang P std, sl calc, V argil, V carb.
69-70	Coal.
70-72	Sh, blk V carb, V aren, massive.
72-73	Coal.
73-76	Sh, dk gy aren carb, massive.

CORE No. 10 - From 5392 to 5433. Recovered 19 feet.

5392-94	Ss, dk gy, well cmted, FG ang P std argil. Carb (plant foss).
94-96	Ss, lt bn, well cmted F-MG ang P std, V carb argil, sl calc.
96-97	Slt S, gy to bn, argil carb.
97-5401	Sh, dk gy carb, aren, massive.
Op-02	Slt S, gy to bn argil carb.
02-06	Ss, lt bn well cmted, F-MG, ang P std. (Bn cly cmt).
06-07	Ss, same as above - sl calc. Coarser grained.
07-08	Ss, wt well cmted, F-MG ang P. std, sl calc, S & P.
08-09	Ss, lt bn, well cmted F-MG ang, P std, V calc, S & P vit.
09-11	Sh, blk V carb (plant foss) fissil.

CORE No 11 - From 5433 to 5456 feet. Recovered 8 feet.

5433-34	Slt S, gy to bn, V argil carb W/calcite cmt.
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5434-35 Ss, gy to lt bn, well cmtd F-MG ang P. std, S & P, sl carb aren.
 35-36 Slt S, dk gy aren, V argil carb.
 36-37 Ss, lt bn well cmtd, F-MG ang, P std carb argil, sl calc, tr
 biotite, gy Sh inc.
 37-38 Ss, same as above.
 38-40 Ss, lt bn well cmtd, F-MG ang, P std, V carb argil, sl calc W/
 Muscovite.
 40-41 Sh, dk gy carb aren.

CORE No. 12 - From 5456 to 5464. Recovered 5 feet.

5456-59 Sh, dk gy, sl aren, massive.
 59-60 Ss, gy to bn, well cmtd, FG, Ang P. std carb.
 60-61 Sh, gy V aren, carb, massive.

CORE No. 13 - From 5464 to 5498. Recovered 25 feet.

5464-70 Ss, lt bn, well cmtd F-MG ang, P. std, sl carb mica.
 70-71 Ss, bn well cmtd, F-MG ang, P. std, sl S & P, sl calc, argil //
 bn cly cmt.
 71-72 Ss, same as above, V carb.
 72-76 Ss, bn well cmtd, F-MG ang, P. std mica, sl calc, sl carb W/tr
 gn mineral.
 76-77 Ss, same as above W/vert frac.
 77-78 Ss, same as above W/out vert frac.
 78-79 Ss, bn well cmtd, F-MG ang P. std, clac argil.
 79-80 Ss, lt bn well cmtd F-MG ang P. std, argil, V carb (leaf prints).
 80-81 Sh, blk aren, V carb, massive.
 81-82 Sh, dk gy aren, V carb (leaf prints) W/vert frac, massive.
 82-84 Sh, gy sl carb - massive.
 84-85 Ss, dk gy well cmtd, FG ang P std, V carb, V argil.
 85-87 Sh, gy massive.
 87-89 Ss, lt bn, well cmtd F-MG ang, P. std, S & P.

CORE No. 14 - From 5498 to 5519. Recovered 7 feet.

5498-00 Ss, bn well cmtd, F-MG, P std, argil carb, sl calc.
 5500-01 Sh, gy to bn, sl aren, massive.
 01-02 Sh, same as above, carb.
 02-03 Ss, lt bn, well cmtd FG ang, P std, carb (plant foss).
 03-04 Slt S, gy to lt bn, carb (plant foss), argil.
 04-05 Sh, dk gy, V carb (plant foss.) aren, massive.

CORE No. 15 - From 5519-5560 feet. Recovered 24 feet.

5519-20 Sh, dk gy carb, massive.
 20-21 Sh, same as above, V carb (plant foss.).
 21-22 Sh, gy, sl carb, V aren, Massive.
 22-24 Sh, gy sl carb, massive.
 24-25 Sh, gy sl carb, V aren, massive.
 25-26 Sh, gy, massive.

5526-28 Coal interbedded w/ Sh, gy carb, massive.
 28-29 Ss, bn, well cmted, F-MG ang, P std, calc, V carb (plant foss.), V. argil.
 29-30 Sh, gy, V aren, massive W/vert frac. lined W/secondary calcite.
 30-32 Sh, dk gy, massive.
 32-33 Slt S, dk gy to blk, V argil, V carb (plant foss.).
 33-34 Coal, interbedded W/blk carb Sh.
 34-35 Sh, dk gy carb (plant foss.) aren, massive.
 35-36 Slt S, Bn argil carb (plant foss.).
 36-37 Sh, gy carb (plant foss.) aren, massive.
 37-39 Slt S, gy to bn, V carb (plant foss.), argil.
 39-42 Ss, lt bn, well cmted F-G ang, P std, sl calc, sl carb (plant foss.) argil.
 42-43 Ss, same as above W/vert frac. Sec. calcite on frac face.

CORE No. 16 - From 5560 to 5621. Recovered 49 feet.

5560-63 Sh, carb, massive. (plant foss).
 63-64 Slt S, bn carb argil mica.
 64-68 Sh, gy carb (plant foss), massive.
 68-69 Ss, lt bn, well cmted, F-MG ang P std, S & P, mica, sl carb.
 69-70 Ss, wt well cmted, F-MG ang, P. std, S & P, mica W/tr gn mineral.
 Tr vert frac. Wt cly cmt.
 70-71 Ss, same as above W/out V. frac.
 71-72 Same as above W/V frac & secondary calcite along frac face.
 72-77 Ss, same as above W/out frac.
 77-80 Ss, same as above, carb (plant foss).
 80-81 Ss, same as above - not carb.
 81-82 Ss, wt, well cmted, F-MG ang P. std, S & P, mica W/wt cly cmt.
 Tr gn min.
 82-86 Ss, wt well cmted, F-MG ang, P std, S & P mica, sl carb W/wt cly cmt.
 Tr gn mineral.
 86-92 Ss, same as above W/out carb mat.
 92-93 Ss, same as above, carb.
 93-94 Ss, wt well cmted, F-MG ang, P std, S & P mica, calc W/wt cly cmt, tr gn min.
 94-95 Ss, same as above, sl calc.
 95-98 Ss, same as above. Not calc.
 98-5600 Ss, wt, well cmted, F-CG ang P. std, S & P, W/tr gy min.
 5600-05 Ss, wt, well cmted F-MG ang. P std, S & P, mica, carb (plant foss) W/wt cly cmt. Tr gn min.
 05-09 Ss, wt well cmted, F-MG ang, P std, S & P, mica carb W/wt cly cmt, Tr gn min.

CORE No 17 - From 5621 to 5681. Recovered 59 feet.

5621-26 Ss, wt, well cmted, F-MG ang, P. std, V sl calc, S & P, W/tr gn & red min. Wt. cly cmt.
 26-27 Ss, same as above, calc, W/tr gy carb, Sh inc.
 27-28 Ss, wt well cmted, F-MG ang P. std, V calc, (cementing material) S & P, W/tr gn & red min. Vert frac.

CORE No. 18 - From 5681 to 5715. Recovered 27 feet.

5681-82	Ss, lt gy well cmted, (Calcite), F-MG ang P std, S & P, mica (Biot.) V calc W/thin carb dk gy Sh lam.
82-85	Ss, wt well cmted, (Calcite) F-MG ang P std, S & P mica (Biot.) V calc W/tr gn min.
85-87	Ss, lt bn well cmted, (calcite) F-MG ang P std, S & P, sl mica (Biot.) V. calc W/tr gn min.
87-89	Ss, wt well cmted, (calcite) F-MG ang P std, S & P, mica (Biot.) V calc W/tr gn min.
89-90	Ss, same as above, sl calc W/cly cmt.
90-91	Ss, same as above, V calc W/calc cmt.
91-92	Ss, same as above, V calc W/calc cmt. Carb (plant foss.) W/thin gy carb Sh lam.
92-93	Ss, gy to bn well cmted, F-MG ang P std, S & P, mica (Biot.) sl calc W/thin carb Sh, lam, Vfrac.
93-94	Sh, dk gy aren, mass. carb.
94-96	Sh, dk gy aren, mass, carb mica (Biot.)
96-97	Sh, dk gy V aren carb mass, W/thin bn Ss lam. Ss bn, well cmted (Calc.) FG ang P std, V calc vit.
98-5701	Sh, dk gy carb, mass interbedded W/Ss, bn well cmted (Calc.) FG ang P std, V calc, argil carb W/V sl V frac.
01-02	Ss, tan, well cmted (calcite & cly) F-MG ang P std, V calc argil carb (plant foss.) sl mica W/tr gn min.
02-06	Ss, same as above W/thin carb Sh lam.
06-08	Ss, wt, well cmted, F-MG ang P std, S & P, V sl calc vit W/thin dk gy carb Sh lam. Vert frac,

CORE No. 19 - From 5715 to 5740 feet. Recovered 20 feet.

5715-16	Ss, tan well cmted (calcite) F-MG ang P std, vit, V calc, argil interbedded W/Sh gy, V aren, (Ss W/Vfrac.)
16-17	Ss, tan, well cmted (calc.) F-MG ang P std, vit, V calc sl carb inter- bedded W/Sh gy carb
17-24	Sh, gy aren carb, mass W/thin Ss lam (Ss same as above) and inter- bedded W/Ss.
24-25	Ss, wt well cmted (calc) F-MG ang P std, V calc vit, S & P, W/tr gn min.
25-26	Ss, wt well cmted (calc) F-MG ang P std, calc vit, S & P, W/tr gn min. Thin gy Sh lam.
26-28	Ss tan, well cmted (calc & cly) F-MG ang P std, calc, V argil. Sh gy aren.
28-30	Sh, gy aren, mass interbedded W/Slt S, gy argil. Ss same as above.
30-32	Ss, wt well cmted, (calc) F-MG ang P std, V calc, S & P
32-33	Ss, wt well cmted (calc) F-MG ang P std, V calc S & P, mica (Biot.) Thin gy carb Sh lam.
33-34	Sh, gy carb interbedded W/Ss same as above.
34-35	Ss, tan, well cmted (calc) F-MG ang P std, calc sl carb mica W/tr gn min.