

MCA Historical Fracture Gradients

Table 1. - Grayburg (6th) Zone Est. Fracture Gradients

Well	Date	Mid-Perf Depth (ft)	ISIP surface (psi)	ISIP mid- perf (psi)	Frac Gradient (psi/ft)
MCA 367	6/4/1987	4003	2750	4490	1.12
MCA 368	5/15/1987	3792	2230	3880	1.02
MCA 369	3/27/1987	3755	2410	4050	1.08
MCA 370	5/1/1987	3960	2200	3930	0.99
MCA 371	9/18/1987	3939	2200	3920	1.00
MCA 373	10/16/1987	3742	2450	4080	1.09
MCA 376	12/29/1987	3983	3000	4740	1.19

Average Frac Gradient: 1.07

Table 2. - San Andres (7th) Zone Est. Fracture Gradients

Well	Date	Mid-Perf Depth (ft)	ISIP surface (psi)	ISIP mid- perf (psi)	Frac Gradient (psi/ft)
MCA 367	5/29/1987	4131	2870	4670	1.13
MCA 368	5/12/1987	3920	2725	4430	1.13
MCA 370	4/15/1987	4119	1950	3980	0.97
MCA 373	10/12/1987	3953	3100	4820	1.22

Average Frac Gradient: 1.11

Table 3. - 6th and 7th Fractured together

Well	Date	Mid-Perf Depth (ft)	ISIP surface (psi)	ISIP mid- perf (psi)	Frac Gradient (psi/ft)
MCA 374	11/11/1987	3740	2500	4130	1.10
MCA 375	12/1/1987	4027	2750	4500	1.12
MCA 377	1/6/1988	3940	2700	4420	1.12

Average Frac Gradient: 1.11

Maximum Surface Pressure: 3800 ft * 1.07 psi/ft - 3800 ft * 0.433 psi/ft

= 2419 psi (surface pressure)