

WORKSHEET FOR CALCULATION OF STATIC COLUMN WELLHEAD PRESSURE (P_w)

COMPANY Llano, Inc. LEASE Terry Com. WELL NO. 1 DATE 12-3-76

LOCATION: Unit 6 Section 14 Township 18S Range 26E

9090 H 9090 L/H 1,000 G .630 % CO₂ 0.47 % N₂ 0.49 % H₂S -0-

d 1.995 F_r .018231 GH 5726.7 P_{cr} 673 T_{cr} 364

TABLE IX & X

LINE	1	2	1	2	1	2	1	2	1	2	1	2
1 Q _m	.653		.749		.737		.762					
2 T _w (W.H. °R)	532		526		524		523					
3 T _s (B.H. °R)	622		622		622		622					
4 T = ($\frac{T_w + T_s}{2}$)	577		574		573		572.5					
5 Z (Est.)	.900	.918	.915	.929	.910	.931	.940	.935				
6 T _Z	519	529.7	525.2	533.2	521.4	533.5	538.2	535.3				
7 GH/TZ	11.028	10.811	10.904	10.739	10.983	10.735	10.641	10.698				
8 e ^s (Table XIV)	1.512	1.500	1.505	1.496	1.510	1.496	1.490	1.494				
9 1 - e ^s (Table XIV)	.339	.333	.336	.332	.338	.332	.329	.331				
10 P _t	618.2	618.2	519.2	519.2	497.2	497.2	453.2	453.2				
11 P _t ² /1000	382.2	382.2	269.6	269.6	247.2	247.2	205.4	205.4				
12 F _r (Table XV)	.018231	.018231	.018231	.018231	.018231	.018231	.018231	.018231				
13 F _c = F _r T _Z	9.462	9.657	9.575	9.721	9.506	9.726	9.812	9.759				
14 F _c Q _m	6.179	6.306	7.172	7.281	7.006	7.168	7.477	7.436				
15 L/H (F _c Q _m) ²	38.175	39.766	51.432	53.011	49.079	51.384	55.901	55.300				
16 F _w = L/H (F _c Q _m) ² (1 - e ^{-s})	12.9	13.242	17.281	17.600	16.589	17.059	18.391	18.304				
17 P _w ² = P _t ² + F _w	395.1	395.4	286.9	287.2	263.8	264.3	223.8	223.7				
18 P _s ² = e ^s P _w ²	597.4	593.1	431.8	429.6	398.3	395.4	333.5	334.2				
19 P _s	773.0	770.1	657.1	655.5	631.1	628.8	577.5	578.1				
20 P = ($\frac{P_t + P_s}{2}$)	695.6	694.1	588.2	587.4	564.2	563.0	515.4	515.6				
21 P _r = (P/P _{cr})	1.034	1.03	.874	.873	.84	.84	.77	.77				
22 T _r = (T/T _{cr})	1.585	1.585	1.577	1.577	1.574	1.574	1.573	1.573				
23 Z (Table XI)	.918	.918	.929	.929	.931	.931	.935	.935				