

WORK SHEET FOR CALCULATION OF WELLHEAD PRESSURES (P_c or P_w)

FROM KNOWN BOTTOM HOLE PRESSURE (P_f or P_s)

COMPANY Cities Service LEASE Ives A Com WELL NO. 1 DATE 4/2/79
LOCATION: Unit J Section 30 Township 21 Range 27
L 11336 H 11336 LH 100 G 589 %CO₂ _____ %N₂ _____ %H₂S _____

GH 6677 P_{cr} 672 T_{cr} 350
TABLE IX A TABLE IX B

LINE	RATE I			RATE II			RATE III		
	1	2	3	4	5	6	7	8	
1	T _w (W.H. °R)	534	534	534	534	534	534	534	
2	T _s (B.H. °R)	647	647	647	647	647	647	647	
3	$T = \frac{T_w + T_s}{2}$	591	591	591	591	591	591	591	
4	Z (Est.)	1.921	1.895	1.902	1.880	1.882	1.865	1.855	
5	TZ	544.3	528.9	533.1	520.1	521.3	511.2	505.3	
6	GH/TZ	12.267	12.623	12.525	12.838	12.809	13.061	13.244	
7	e ^s (Table XIV)	1.5841	1.605	1.599	1.618	1.617	1.632	1.641	
8	P _f or P _s	4088.2	4088.2	3786.2	3788.2	3426.2	2868.2	2868.2	
9	P _f ² or P _s ²	16713.4	16713.4	14350.5	14350.5	11738.8	8226.6	8226.6	
10	$P_c^2 = P_f^2/e^s$ or $P_w^2 = P_s^2/e^s$	10550.7	10413.3	8974.6	8869.3	7259.6	5055.4	5013.2	
11	P _c or P _w	3248.2	3227.0	2995.8	2978.1	2654.4	2282.0	2235.0	
12	$P = \left(\frac{P_w + P_s}{2} \right)$ or $\left(\frac{P_c + P_f}{2} \right)$	3668.2	3657.6	3392.0	3383.2	3060.3	2554.1	2553.6	
13	P _T = (P/P _{cr})	5.46	5.44	5.05	5.03	4.55	4.54	3.80	
14	T _T = (T/T _{cr})	1.69	1.69	1.69	1.69	1.69	1.69	1.69	
15	Z (Table XI)	1.895	1.895	1.880	1.880	1.865	1.865	1.855	