WORK SHEET FOR STEPWISE CALCULATION (SUBSURFACE) PRESSURE (P_f & P_s) (SURFACE) (P_c & P_w) Form C-122-E

RATE NO. 2

COMPANY GULF OIL CORP. LEASE WHITE CITY PEN GAS COM UNIT WELL NO. 3 DATE 1-18-77

LOCATION: UNIT SECTION TOWNSHIP RANGE

L 11157 H 11157 L/H 1.00 G 0.579 % CO_2 0.01 %N_2 0.00 %H_2S 0.00

d 1.995 F_r 0.018231 Q_m 2.941 M^2cfd (L/H) $(F_rQ_m)^2$ 0.002875 F_{cr} 671 T_{cr} 358

LINE	ITEM	SOURCE	1	2	3	4	5	6	7	8	9	10
1	H		0	5579		11157						
2	GH		0	3230		6460						
3	37.5GH		0	121123		242246						
4	P_c or P_n		3723.2	4274.2	4252.2	4780.2	4742.2					
5	P_r		5.55	6.37	6.34	7.12	7.07					
6	T		518	582	582	645	645					
7	T_r		1.45	1.62	1.62	1.80	1.80					
8	Z		0.818	0.915	0.914	0.993	0.991					
9	P/Z P/Z	$\overline{4} \div \overline{8}$	4551.59	4672.28	4654.33	4813.90	4785.27					
10	P/TZ	$\overline{9} \div \overline{6}$	8.7869	8.0349	8.0040	7.4634	7.4190					
11	$(P/TZ^2/1000$	$(10^2/1000$	0.077209	0.064559	0.064064	0.055702	0.055042					
12	$L/H(F_rQ_m)^2$		0.002875	0.002875	0.002875	0.002875	0.002875					
13		$\overline{11} + \overline{12}$	0.080084	0.067434	0.066939	0.058577	0.057917					
14	I_n	$\overline{10} \div \overline{13}$	109.721	119.152	119.572	127.411	128.098					
15	$M=P_n-P_{n-1}$			551	529	528	490	489				
16	$N=I_n + I_{n-1}$			228.873	229.293	246.983	247.670					
17	M x N	$\overline{15} \times \overline{16}$			121296		121358					
18	(M x N)	$\overline{17}$			121296		242654					

$$\text{Delta P} = \frac{3[242246]}{109.721 + 4[119.572] + 128.098} = \frac{726739}{716.107} = 1014.8 \qquad P = 3723.2 + 1014.8 = 4738.0$$