

WORK SHEET FOR STEPWISE CALCULATION

(SUBSURFACE)

PRESSURE

(P_f & P_s)

Form C-122-E

(SURFACE)

(P_c & P_w)

COMPANY MONSANTO COMPANY LEASE LONE TREE WELL NO. 1 DATE 7/20/77

LOCATION: UNIT K SECTION 13 TOWNSHIP 21S RANGE 27E

L 9497 H 9497 L/H 1.0 G .888 % CO₂ -0- %N₂ -0- %H₂S -0-

d F_r Q_m M² cfd (L/H) (F_r Q_m)² P_{cr} 663 T_{cr} 451

LINE	ITEM	SOURCE	1	2	3	4	5	6	7	8	9	10
1	H		9497	4748		0						
2	GH		8432	4216		0						
3	37.5GH		316250	158125		0						
4	P _c or P _n		872.1	731.0	738.1	605.1	611.1	621.1				
5	P _r		1.315	1.102	1.113	.913	.922	.936				
6	T		605	567.5	567.5	530	530	530				
7	T _r		1.34	1.26	1.26	1.18	1.18	1.18				
8	Z		.808	.798	.736	.778	.781	.778				
9	P/Z P/Z	$4 \div 8$	1079.33	916.103	1002.85	777.763	782.458	798.329				
10	P/TZ	$9 \div 6$	1.784	1.614	1.767	1.467	1.476	1.506				
11	$(P/TZ)^2/1000$	$(10^2/1000)$										
12	$L/H(F_r Q_m)^2$											
13		$11 + 12$										
14	I _n	$10 \div 13$	560.532	619.471	565.885	681.441	677.352	663.886				
15	$M = P_n - P_{n-1}$			141	134	133	127	117				
16	$N = 1_n + 1_{n-1}$			1121.064	1180.003	1185.356	1247.326	1358.793				
17	M x N	15×16			158120			158978				
18	$\Sigma (M \times N)$	$\Sigma 17$			158120			317098				

delta P = $3 (316250)$ $\frac{948750}{3487.958}$ = 272.0 $P = 872.1 - 272.0 = 600.1$