

WORK SHEET FOR STEPWISE CALCULATION

XXXXXXXXXX

PRESSURE

XXXXXXXXXX

Form C-122-E

(SURFACE)

(P_c & P_w)

Rate #1

MPANY Monsanto Company LEASE Rock Tank (Upper Morrow) WELL NO. 4 DATE 7-10-78

CATION: UNIT J SECTION 1 TOWNSHIP 23S RANGE 24E

9891 H 9891 L/H 1.0 G .617 % CO₂ 0 % N₂ 0 % H₂S 0
d 1.995 F .018231 Q_m 2.200 M² cfd (L/H) (F_Q)² r_m .001609 P_{cr} 671 T_{cr} 365

NE	ITEM	SOURCE	1	2	3	4	5	6	7	8	9	10
1	H		0	4945.5			9891					
2	H		0	3051.3			6102.7					
3	37.5GH		0	114427			228.853					
4	P _c or P _n		823.2	974.0	976.4	979.0	1134.0	1137.0	1140.2			
5	P _r		1.23	1.45	1.46	1.46	1.69	1.70	1.70			
5	T		553	586.5	586.5	586.5	620	620	620			
7	T _r		1.52	1.61	1.61	1.61	1.70	1.70	1.70			
3	Z		.887	.895	.894	.894	.906	.905	.905			
3	P/Z P/Z		4 ÷ 8	928.07	1088.35	1092.17	1095.08	1251.66	1256.35	1259.88		
2	P/PTZ		9 ÷ 6	1.6782	1.8556	1.8622	1.8681	2.0188	2.0263	2.0321		
1	(P/PTZ ² /1000		(10 ² /1000	.002817	.003443	.003468	.003490	.004076	.004106	.004129		
2	/H(F _r Q _m) ²			.001609	.001609	.001609	.001609	.001609	.001609	.001609		
3			11 + 12	.004426	.005052	.005077	.005099	.005685	.005715	.005738		
1	I _n		10 ÷ 13	379.221	367.277	366.811	366.381	355.138	354.545	354.300		
2	M=P _n -P _{n-1}			150.8	153.2	155.8	155.6	158.6	161.2			
3	N=1 _n + 1 _{n-1}			758.441	746.497	734.088	733.192	721.519	709.683			
7	M x N		15 x 16			114371			114401			
3	Σ (M x N)		Σ 17			114371			228772			

$$\Delta P = \frac{3(228853)}{379.221 + 4(366.381) + 354.300} = \frac{686559}{2199.045} = 312.2 \quad P = 823.2 + 312.2 = 1135.4$$