

Gas Production

B.T. Gauge Numbers			7303	7302	Ticket Num.	343336
			PRESSURE	PRESSURE		
Initial Hydrostatic			7430.7	7569.5	Elevation	- ft.
Final Hydrostatic			7408.3	7592.6	1st Flow	- MCF
1st Flow	Initial	Time	1265.1	1484.5	Production Rate	2nd Flow *1408.5 MCF
	Final	31.2	1535.8	1689.6		3rd Flow - MCF
	Closed In Pressure	58.2	7212.1	7369.1		
2nd Flow	Initial	Time	1198.7	1316.8	Hole Size	6.5 in.
	Final	92.7	732.8	861.0	Footage Tested	7 ft.
	Closed In Pressure	177.9	7236.7	7387.5	Mud Weight	12.5 lbs./gal.
3rd Flow	Initial	Time			Gas Viscosity	.031 cp
	Final				Gas Gravity	Est. 0.60
	Closed In Pressure				Gas Compressibility	1.2
					Temperature	182 °F
Extrapolated Static Pressure			1st	7315		
			2nd	7475		
			3rd			
Slope P/10			1st			
			2nd	6928	7075	
			3rd			

Remarks: *-Calculations may be somewhat questionable. Rate used as basis of calculations does not appear to have stabilized down hole.

SUMMARY

B.T. Gauge No. 7303
Depth 11425'

B.T. Gauge No. 7302
Depth 11610'

PRODUCT	EQUATION	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	UNITS
Transmissibility	$\frac{Kh}{\mu} = \frac{1637 Q_r ZT}{m}$		322.262			305.210		md. ft. cp
Theoretical Flow Capacity	$Kh = \frac{Kh}{\mu} \mu$		9.990			9.462		md. ft.
Average Effective Permeability	$K = \frac{Kh}{h}$		-			-		md.
	$K_1 = \frac{Kh}{h_1}$		1.427			1.352		md.
Indicated Flow Capacity	$(Kh)_s = \frac{3200 Q_r \mu ZT \log(0.472 b/r_w)}{P_s^2 - P_r^2}$		2.850			2.715		md. ft.
Damage Ratio	$DR = \frac{\text{Theo. Flow Cap}}{\text{Indicated Flow Cap}} \frac{Kh}{(Kh)_s}$		3.506			3.485		-
Indicated Flow Rate	$OF_1 = \frac{Q_r P_s^2}{P_s^2 - P_r^2}$ Max.		1423			1427		MCFD
	$OF_2 = \frac{Q_r P_s}{\sqrt{P_s^2 - P_r^2}}$ Min.		1416			1418		MCFD
Theoretical Potential Rate	$OF_3 = OF_1 DR$ Max.		4988			4974		MCFD
	$OF_4 = OF_2 DR$ Min.		4963			4941		MCFD
Approx. Radius of Investigation	$b \approx \sqrt{Kt}$ or $\sqrt{Kt_0}$		-			-		ft.
	$b_1 \approx \sqrt{K_1 t}$ or $\sqrt{K_1 t_0}$		13.6			13.2		ft.
Potentiometric Surface *	$Pot. = (EI - GD) + (2.319 Ps)$							ft.

NOTICE: These calculations are based upon information furnished by you and taken from Drill Stem Test pressure charts, and are furnished you for your information. In furnishing such calculations and evaluations based thereon, Halliburton is merely expressing its opinion. You agree that Halliburton makes no warranty express or implied as to the accuracy of such calculations or opinions, and that Halliburton shall not be liable for any loss or damage, whether due to negligence or otherwise, in connection with such calculations and opinions.