

NORTHERN NATURAL GAS COMPANY BACK-PRESSURE CALCULATION SHEET

TYPE TEST:



INITIAL



ANNUAL



RETEST



SPECIAL

TEST DATE: _____

OPERATOR McClellan Oil Corp. LEASE McGrea Comm. Fee WELL NO. #2
SEC. 1 TWP. 10 RNG. 25 COUNTY Chaves STA. NO. _____ PIPELINE CONN. Vent
GA SYSTEM Bitter Lakes FIELD Pecos Slope A RESERVOIR ABO

CSG. SIZE _____ WT. _____ TBG. SIZE _____ WT. _____ PERFS: _____ TO _____
TYPE COMPLETION Single Gas PACKER @ NONE ft. AVG. VERTICAL DEPTH _____ ft.

TYPE LIQUID PRODUCED _____ LIQUID COMPOSITION _____ API GRAVITY _____
GAS GRAVITY (G_g)(G_l) 0.647 CO₂ _____ % N₂ _____ % H₂S _____ P_{cr} 665 psia T_{cr} 357 °R
PRODUCING THRU Tubing TYPE TAPS NONE (PROVER)(METER) SIZE 2" BAR. PRESS. 15.025

METER OR PROVER DATA

OBSERVED DATA						COMPRESSABILITY FACTOR			REMARKS (QUALITY OF MEASUREMENT)
RATE NO.	ORIFICE SIZE IN.	(METER) (PROVER) TEMP °F	(METER) (PROVER) PRESSURE PSIG	(P _m)(P _p) PSIA	DIFF (H _w)	$\frac{(P_m \times P_p)}{P_{cr}}$	$\frac{(T_m \times T_p)}{T_{cr}}$	Z	
1	0.385	73	225.4	240.43	}	0.362	1.49	0.962	Pseudocritical Property Adjustments CO ₂ P _{cr} = 74 T _{cr} = -1 N ₂ P _{cr} = -9 T _{cr} = -14
2	0.385	74	209.6	224.63		0.338	1.50	0.965	
3	0.385	76	202.3	217.33		0.327	1.50	0.966	
4	0.385	77	188.6	203.63		0.306	1.50	0.968	
5	0.385	76	176.1	191.13		0.287	1.50	0.970	

FLOW RATE CALCULATION

RATE NO.	COEFF MCF/DAY	(P _m H _w) (P _p)	EXTENSION $\sqrt{P_m H_w}$	GRAVITY FACTOR	METER TEMP FACTOR	DEVIATION FACTOR	FLOW RATE MCF/DAY	LENGTH OF FLOW	REMARKS (TYPE OF FLOW)
1	2.378	240.43	}	1.243	0.9877	1.020	716.0	1.0 hr.	
2	2.378	224.63		1.243	0.9868	1.018	667.0	2.0 hr.	
3	2.378	217.33		1.243	0.9850	1.017	643.5	3.0 hr.	
4	2.378	203.63		1.243	0.9840	1.016	601.7	6.0 hr.	
5	2.378	191.13		1.243	0.9850	1.015	564.8	8.0 hr.	

WELLHEAD SHUT-IN AND FLOWING DATA

RATE NO.	CASING PRESSURE DATA				TUBING PRESSURE DATA				WELL-HEAD TEMP °F	REMARKS (QUALITY OF PRESSURES)
	PSIG	(P _c) & (P _w)(P _i) PSIA	(P _w)(P _i) P _c	(P _c ²) & (P _w ²)(P _i ²)	PSIG	(P _c) & (P _w)(P _i) PSIA	(P _w)(P _i) P _c	(P _c ²) & (P _w ²)(P _i ²)		
SHUT IN	451.7	466.73	1.000	217.83	451.7	466.73	1.000	217.83	74	Hours shut in: <u>47.75</u>
1										
2										
3										
4										
5	263.6	278.63	0.565	77.63	176.1	191.13	0.410	36.53		

SUMMARY

RATE NO.	WATER PROD. BBLs.	LIQUID PETR. BBLs.	GOR MCF/BBL	(P _c ² - P _w ²)	Q	(P _c ² - P _i ²)	WH slope (n): _____	ABS slope (n): _____
1					716.0		WH potential: _____	MCF/D after _____ hr.
2					667.0		ABS potential: _____	MCF/D after _____ hr.
3					643.5		72 hr. WH potential _____	MCF/D
4					601.7		Stabl. WH potential _____	MCF/D
5				140.2	564.8	181.3	DEL @ _____ after _____ hr:	MCF/D
							DEL @ 0.8 P _c after 72 hr:	MCF/D
							Stabl. DEL @ P _c = _____ psig:	MCF/D
							72 hr to t ₉₀ hr stabl factor:	
							_____ hr to 72 hr stabl factor:	

REMARKS: _____

TESTED BY: _____

CALCULATED BY: _____

WITNESSED BY: _____

CHECKED BY: _____