

PRESSURE AND TEMPERATURE VS REAL TIME

Company: MULL DRILLING CO., INC.

Location:

McBRIDE MICHEL 'A' 1-31 (4400-4410)

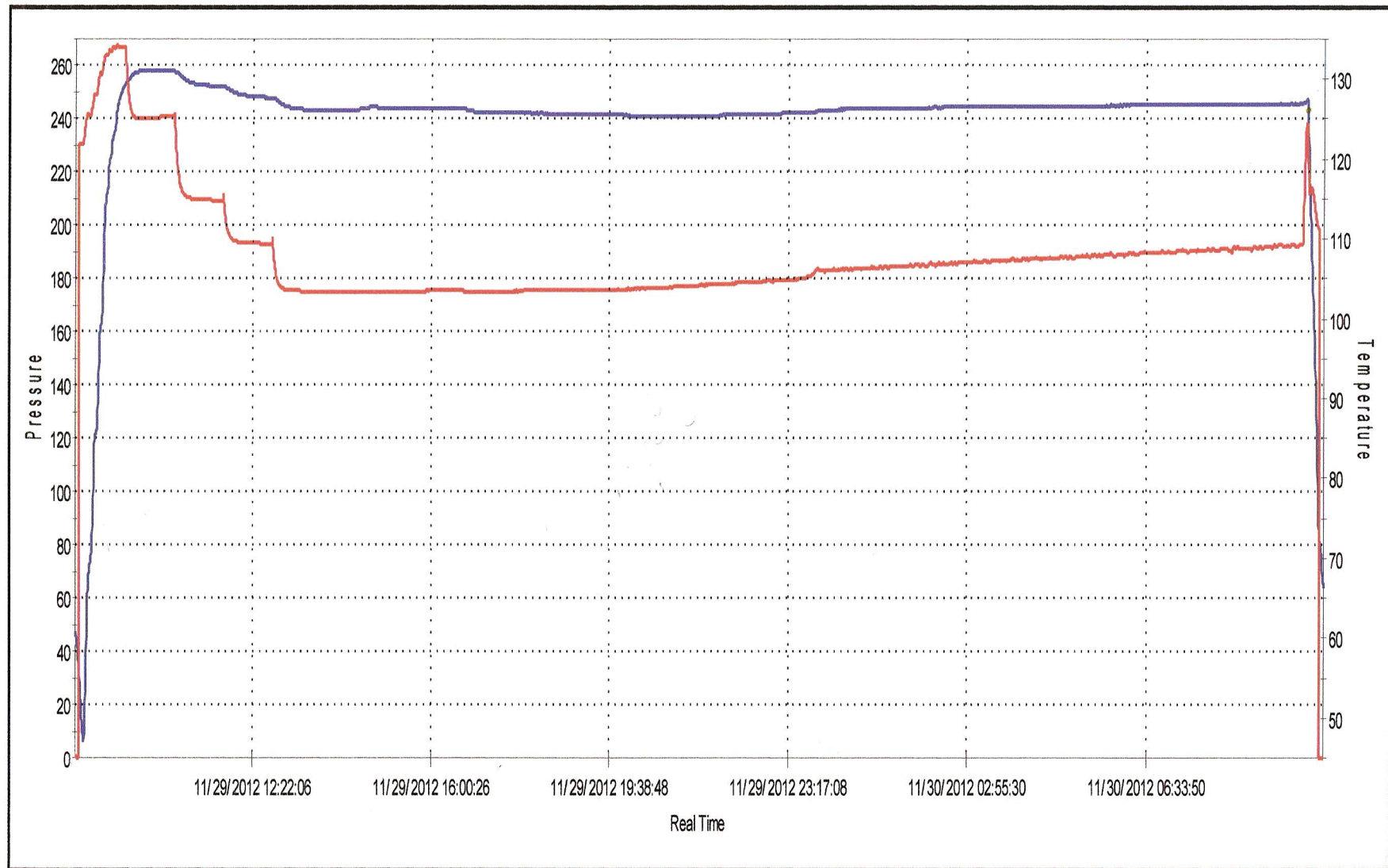
Serial #: 1283

Date

11-29-12 TO 11-30-12

Max Pressure: 282.51 PSia

Max Temperature: 55 Celsius



— 1283 Pressure (PSig) — 1283 Temperature (Fahrenheit)

Sample No: 20123908

PRECISION WIRELINE AND TESTING
NATURAL GAS ANALYSIS REPORT
620-624-4505

Operator:	MULL DRILLING	Analysis Date:	12/04/12
Well Name:	MCBRIDE MICHEL A 1-31	Sample Date:	11/30/12
Location:	31-18S-45W	Sample Pressure:	126.2
County:	KIOWA	Sample Temperature:	62
State:	COLORADO	Sample Time:	0945

Sample Source: WELLHEAD
Formation:
Bottle No: P-23
Requested By: MULL DRILLING
Sampled By: MARK

[illegible]

NATURAL GAS ANALYSIS

	Mole %	GPM
Helium	0.195	
Hydrogen	0.000	
Oxygen	0.000	
Nitrogen	6.140	
Carbon Dioxide	0.487	
Methane	62.123	
Ethane	17.703	6.639
Propane	8.955	3.357
Iso Butane	0.761	0.233
Normal Butane	2.246	0.714
Iso Pentane	0.411	0.113
Normal Pentane	0.523	0.145
Hexanes Plus	0.456	0.105
TOTALS	100.000	11.306
Z Factor:		0.9997
Specific Gravity:		0.8301
BTU/cu.ft. (sat, 60 F. 14.73 psia):		1321.4
BTU/cu.ft. (dry, 60 F. 14.73 psia):		1344.8
Octane Rating		111.2

Comments:

MULTIPOINT BACK PRESSURE TEST

TYPE TEST:		<input checked="" type="checkbox"/> Initial		<input type="checkbox"/> Annual		<input type="checkbox"/> Special		TEST DATE: 11-29-12	
COMPANY				LEASE				WELL NO.	
MULL DRILLING CO., INC.				MCBRIDE MICHEL				'A' 1-31	
COUNTY		LOCATION		SECTION		TWP		RNG (E/W)	
KIOWA		NW NE		31		18S		45W	
API WELL NUMBER		RESERVOIR		PIPELINE CONNECTION					
15 -									
COMPLETION DATE				PLUG BACK TOTAL DEPTH				PACKER SET AT	
								4384	
CASING SIZE		WT.		ID.		SET AT		PERF. TO	
4.5		11.6		4.000		4900		4400-4410	
TUBING SIZE		WT.		ID.		SET AT		PERF. TO	
2.375		4.7		1.995		4384			
TYPE COMPLETION (Describe)				TYPE FLUID PRODUCTION					
SINGLE GAS				NONE					
PRODUCING THRU				RESERVOIR TEMPERATURE F				BAR PRESS - Pa	
Tubing				123				14.4 Psia	
GAS GRAVITY - Gg		% CARBON DIOXIDE		% NITROGEN		API GRAVITY OF LIQUID			
.830		0.487		6.140					
VERTICAL DEPTH (H)				TYPE METER CONN.				PROVER SIZE	
4405								2 "	
REMARKS									

OBSERVED DATA

DURATION OF SHUT-IN 72.0 HR.

RATE No.	ORIFICE SIZE in.	PROVER PRESSURE psig	DIFF. NONE	FLOWING TEMP. t	WELL-HEAD TEMP. t	CASING WELLHEAD PRESS.		TUBING WELLHEAD PRESS.		DURATION HOURS	LIQUID PROD. Bbls.
						psig	(P _w) (P _c) psia	psig	(P _t) (P _c) psia		
SHUT IN						232.99	247.39	232.99	247.39	72.0	
1	1/8	210.1	.0	73		209.89	224.29	209.69	224.09	1.0	0
2	3/16	181.7	.0	67		182.31	196.71	181.34	195.74	1.0	0
3	7/32	166.8	.0	69		168.06	182.46	166.36	180.76	1.0	0
4	1/4	149.6	.0	71		152.57	166.97	150.02	164.42	1.0	0
5											

RATE OF FLOW CALCULATIONS

RATE No.	COEFFICIENT F _p Mcfd	PROVER PRESSURE psia	EXTENSION $\sqrt{P_m \cdot h_w}$	GRAVITY FACTOR F _g	FLOWING TEMP. FACTOR F _t	DEVIATION FACTOR F _{pv}	RATE OF FLOW Q Mcfd	GOR (ft ³ /Bbl)	G _m
1	.272	224.50		1.0976	0.9877	1.0303	68.1	None	0.83
2	.624	196.10		1.0976	0.9933	1.0273	137.0	None	0.83
3	.861	181.20		1.0976	0.9915	1.0248	173.9	None	0.83
4	1.115	164.00		1.0976	0.9896	1.022	203.0	None	0.83
5									

PRESSURE CALCULATIONS

RATE No.	P _t psia	P _c psia	P _w psia	(P _c) ² THOUSANDS	(P _w) ² THOUSANDS	PLOTING POINTS		% SHUT-IN 100 $\left[\frac{P_w - P_a}{P_c - P_a} \right]$
						(P _c) ² - (P _w) ² THOUSANDS	Q Mcfd	
1	224.1	247.4	224.3	61.2	50.3	10.89	68.1	90.09
2	195.7	247.4	196.7	61.2	38.7	22.51	137.0	78.25
3	180.8	247.4	182.5	61.2	33.3	27.91	173.9	72.13
4	164.4	247.4	167.0	61.2	27.9	33.32	203.0	65.49
5								

INDICATED WELLHEAD OPEN FLOW

369

Mcfd @ 14.65 psia

"n" = 0.9833

The undersigned authority, on behalf of the Company, states that he is duly authorized to make the above report and that he has knowledge of the facts stated therein, and that said report is true and correct. Executed this the 29 day of NOVEMBER, 2012

Witness (if any)

For Commission

PRECISION WIRELINE AND TESTING

For Company

MARK BROCK

Checked by

(Rev. 10/96)

Operator : MULL DRILLING CO., INC.

Report Date : NOVEMBER, 29, 2012

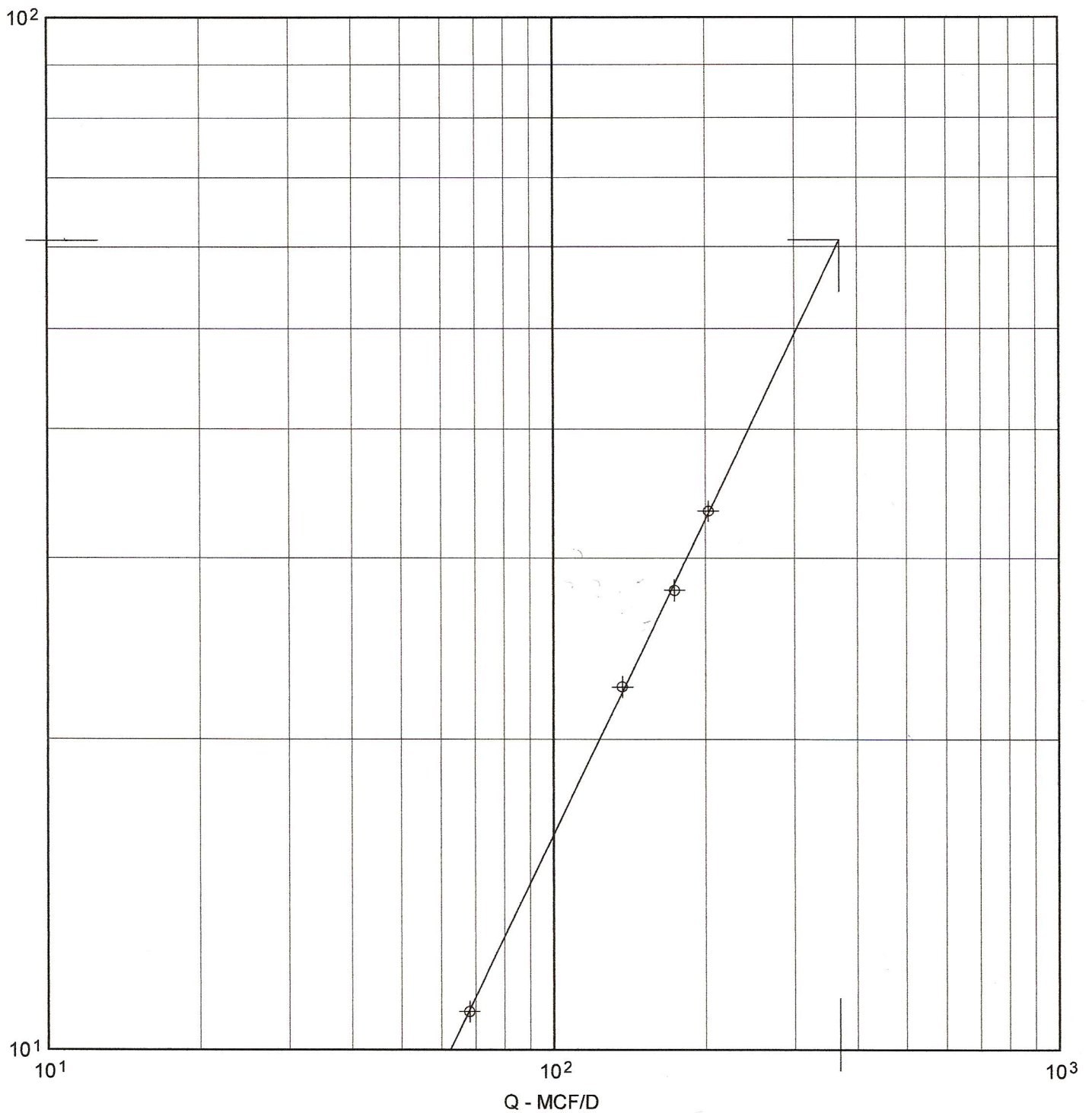
Well/Lease Name & No. : MCBRIDE MICHEL 'A' 1-31

Test Date : 11-29-12

API Well Number : 15 -

Sec/Twp/Rge : 31 - 18S - 45W

County : KIOWA



WHAOF = 369 MCF/D

Slope = 1.017

(Pc2 - Pw2) = 60.9 (Thousands)

N = 0.9833

ONE POINT STABILIZED OPEN FLOW OR DELIVERABILITY TEST

TYPE TEST: <input type="checkbox"/> Deliverability <input checked="" type="checkbox"/> Open Flow		TEST DATE: 11-30-12		API No. 15 -	
COMPANY MULL DRILLING CO., INC.		LEASE MCBRIDE MICHEL		WELL NO. 'A' 1-31	
COUNTY KIOWA	LOCATION NW NE	SECTION 31	TWP 18S	RNG (E/W) 45W	ACRES
FIELD		RESERVOIR		PIPELINE CONNECTION	
COMPLETION DATE		PLUG BACK TOTAL DEPTH		PACKER SET AT 4384	
CASING SIZE 4.5	WT. 11.6	ID. 4.000	SET AT 4900	PERF. 4400-4410	TO
TUBING SIZE 2.375	WT. 4.7	ID. 1.995	SET AT 4384	PERF.	TO
TYPE COMPLETION (Describe) SINGLE GAS		TYPE FLUID PRODUCTION NONE			
PRODUCING THRU Tubing		RESERVOIR TEMPERATURE F 123		BAR PRESS - Pa 14.4 Psia	
GAS GRAVITY - Gg .830	% CARBON DIOXIDE 0.487	% NITROGEN 6.140		API GRAVITY OF LIQUID	
VERTICAL DEPTH (H) 4405		TYPE METER CONN.		PROVER SIZE 2 "	
SHUT-IN PRESSURE: SHUT IN		AT		TAKEN 11-29-12 AT 0945	
FLOW CHART: STARTED 11-29-12		AT 0945		TAKEN 11-30-12 AT 0945	

OBSERVED DATA

DURATION OF SHUT-IN 72.0 HR.

SHUT-IN OR FLOW	ORIFICE SIZE in.	PROVER PRESSURE psig	DIFF. NONE	FLOWING TEMP. t	WELL-HEAD TEMP. t	CASING WELLHEAD PRESS.		TUBING WELLHEAD PRESS.		DURATION HOURS	LIQUID PROD. Bbls.
						psig	(P _w) (P _c) psia	psig	(P _t) (P _c) psia		
SHUT IN						232.99	247.39	232.99	247.39	72.0	
FLOW	1/4	126.2	.0	62		167.97	182.37	166.24	180.64	24.0	0

RATE OF FLOW CALCULATIONS

COEFFICIENT F _p Mcf/d	PROVER PRESSURE psia	PRESS. EXTENSION $\sqrt{P_m \cdot h_w}$	GRAVITY FACTOR F _g	FLOWING TEMP FACTOR F _t	DEVIATION FACTOR F _{pv}	RATE OF FLOW R Mcf/d	GOR (ft ³ /Bbl)	G _m
1.115	140.60		1.0976	0.9981	1.0198	175.2	None	0.83

OPEN FLOW CALCULATIONS

$(P_c)^2 = 61.2$		$(P_w)^2 = 33.3$		$P_d = 73.7 \%$		$(P_c - 14.4) + 14.4 = 247.4$		$(P_a)^2 = 0.20736$		$(P_d)^2 =$	
$(P_c)^2 - (P_a)^2$	$(P_c)^2 - (P_w)^2$	$\frac{(P_c)^2 - (P_a)^2}{(P_c)^2 - (P_w)^2}$	$\text{LOG} \left[\frac{(P_c)^2 - (P_a)^2}{(P_c)^2 - (P_w)^2} \right]$	BACKPRESSURE CURVE "n"	$n * \text{LOG} \left[\frac{(P_c)^2 - (P_a)^2}{(P_c)^2 - (P_w)^2} \right]$	ANTILOG	OPEN FLOW DELIVERABILITY EQUALS R x ANTILOG Mcf/d				
60.99	27.94	2.183	0.3390	0.9833	0.3334	2.1547	377.40				

OPEN FLOW 377 Mcfd @ 14.65 psia DELIVERABILITY Mcfd @ 14.65 psia

The undersigned authority, on behalf of the Company, states that he is duly authorized to make the above report and that he has knowledge of the facts stated therein, and that said report is true and correct. Executed this the 30 day of NOVEMBER, 2012

Witness (if any)

For Commission

PRECISION WIRELINE AND TESTING
For Company

MARK BROCK

Checked by (Rev. 10/96)

PRECISION WIRELINE and TESTING
P.O. BOX 560
LIBERAL, KANSAS 67905-0560
620-624-4505

PRODUCER MULL DRILLINGCO., INC.
WELL NAME McBRIDE MICHEL 'A' 1-31
LOCATION NW NE 31-18S-45W
COUNTY KIOWA STATE KS

CSG 4.5 WT 11.6 SET @ 4900 TD PB GL
TBG 2.375 WT 4.7 SET @ SN 4384 PKR KB EST. GL+12'
PERFS 4400 TO 4410 , TO , TO
PROVER 2" METER TAPS ORIFICE PCR TCR
GG API , @ GM RESERVOIR

DATE TIME OF READING	ELAP TIME HOUR	WELLHEAD PRESSURE DATA						MEASUREMENT DATA				LIQUIDS		TYPE TEST: <u>ANNUAL</u> <u> </u> <u> </u> <u> </u> INITIAL <u> </u> SPEICAL <u> </u> ENDING <u> </u> RETEST <u> </u> DATE <u>11-30-12</u>
		CSG PSIG	Δ P CSG	TBG PSIG	Δ P TBG	BHP PSIG	Δ P BHP	PRESS PSIG	DIFF.	TEMP	Q MCFD	COND BBLs.	WATER BBLs.	
THURSDAY														2" C.F. PROVER INSTALLED DIRECTLY OFF WELLHEAD
11-29-12														
0843														POWER UP EMR PR-600 INSTRUMENTS
0848														PRESSURE UP LUBRICATOR
0857														INSTRUMENTS SET @ 1000'(KB)
0906														INSTRUMENTS SET @ 2000'(KB)
0913														INSTRUMENTS SET @ 3000'(KB)
0919														INSTRUMENTS SET @ 4000'(KB)
0924														INSTRUMENTS SET @ 4205'(KB)
0928														INSTRUMENTS SET @ 4305'(KB)
0933		PKR		233.1		267.4								INSTRUMENTS SET @ 4405'(KB)
0945				233.1	0	267.4	0							1 ST RATE OF MULTI-PT. TEST 2" PROVER 1/8" PLATE
0950				214.2	-18.9	246.4	-21.0	214.2		75	69			
0955				210.0	-4.2	241.1	-5.3	210.0		73	68			
1000				209.5	-0.5	240.4	-0.7	209.5		73	68			
1015	0.5			209.3	-0.2	240.3	-0.1	209.3		73	68			
1030				209.8	+0.5	240.8	+0.5	209.8		73	68			
1045	1.0	PKR		210.1	+0.3	240.9	+0.1	210.1		73	68	0	0	
1045														2ND RATE OF MULTI-PT. TEST 2" PROVER 3/16" PLATE
1050				189.9	-20.2	218.6	-22.3	189.9		60	143			
1055				184.8	-5.1	212.6	-6.0	184.8		62	139			
1100				183.0	-1.8	210.9	-1.7	183.0		62	138			
1115	1.5			182.0	-1.0	209.9	-1.0	182.0		64	137			
1130				181.8	-0.2	209.6	-0.3	181.8		66	137			
1145	2.0	PKR		181.7	-0.1	209.3	-0.3	181.7		67	137	0	0	1
1145														3RD RATE OF MULTI-PT. TEST 2" PROVER 7/32" PLATE
1150				171.7	-10.0	198.7	-13.8	171.7		68	179			
1155				168.6	-3.1	195.2	-3.5	168.6		68	176			
1200				167.6	-1.0	194.1	-1.1	167.6		68	175			
1215	2.5			167.2	-0.4	193.5	-0.6	167.2		68	174			
1230				167.0	-0.2	193.2	-0.3	167.0		68	174			
1245	3.0	PKR		166.8	-0.2	193.0	-0.2	166.8		69	174	0	0	

PRECISION WIRELINE and TESTING MULL DRILLING CO., INC. McBRIDE MICHEL 'A' 1-31

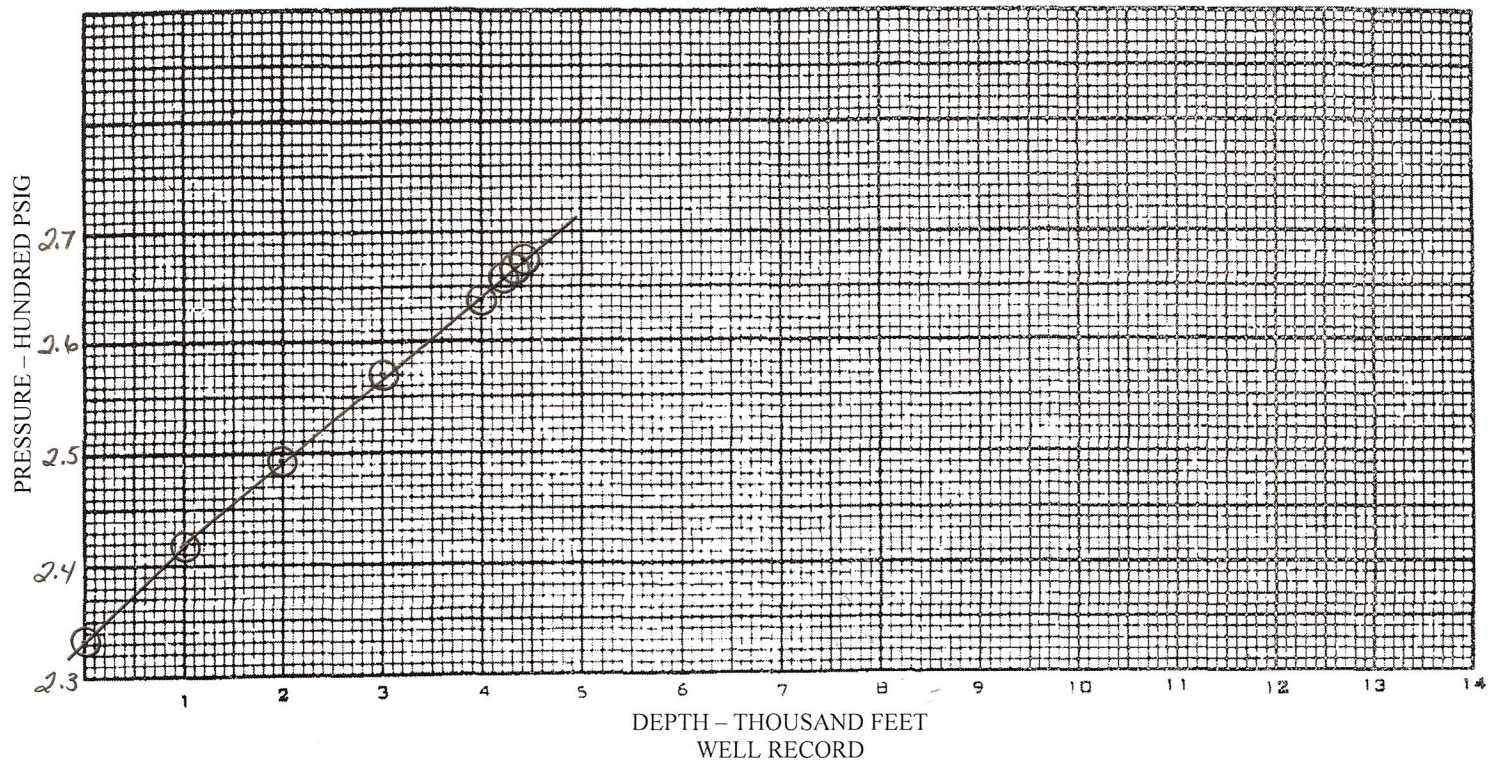
DATE TIME OF READING	ELAP TIME HOUR	WELLHEAD PRESSURE DATA						MEASUREMENT DATA				LIQUIDS		TYPE	INITIAL	SPEICAL	ENDING
		CSG	Δ P	TBG	Δ P	BHP	Δ P	PRESS	DIFF.	TEMP	Q	COND	WATER	TEST:	ANNUAL	RETEST	DATE
		PSIG	CSG	PSIG	TBG	PSIG	BHP	PSIG			MCFD	BBLS.	BBLS.	REMARKS PERTINENT TO TEST DATA QUALITY			
THURSDAY	(CONTD)													2" C.F PROVER INSTALLED DIRECTLY OFF WELLHEAD			
11-29-12														4 TH RATE OF MULTI-PT. TEST 2" PROVER ¼" PLATE			
1245																	
1250		PKR		154.4	-12.4	180.8	-12.2	154.4		69	209						
1255				151.5	-2.9	177.0	-3.8	151.5		69	205						
1300				150.6	-0.9	176.0	-1.0	150.6		69	204						
1315				150.0	-0.6	175.5	-0.5	150.0		70	203						
1330				149.8	-0.2	175.4	-0.1	149.8		70	203						
1345	4.0	PKR		149.6	-0.2	175.3	-0.1	149.6		71	203	0	0				
1345														WELL ON 1PT. TEST ¼" PLATE			
1415	4.5			149.2	-0.4	175.3	0	149.2		70	204						
1445	5.0			148.9	-0.3	175.2	-0.1	148.9		70	203	0	0				
1545	6.0			148.6	-0.3	175.4	+0.2	148.6		70	203	0	0				
1645	7.0			147.6	-1.0	175.2	-0.2	147.6		68	202	0	0				
1745	8.0			147.1	-0.5	175.3	+0.1	147.1		64	201	0	0				
1845	9.0			146.7	-0.4	175.7	+0.4	146.7		62	201	0	0				
1945	10.0			146.2	-0.5	176.1	+0.4	146.2		60	200	0	0				
2045	11.0			145.8	-0.4	176.7	+0.6	145.8		60	200	0	0				
2145	12.0			144.6	-1.2	178.0	+1.3	144.6		60	198	0	0				
2245	13.0			143.1	-1.5	179.0	+1.0	143.1		60	196	0	0				
2345	14.0			141.3	-1.8	181.3	+2.3	141.3		60	194	0	0				
FRIDAY																	
11-30-12																	
0045	15.0			138.7	-2.6	183.7	+2.4	138.7		60	191	0	0				
0145	16.0			137.2	-1.5	185.2	+1.5	137.2		60	189	0	0				
0245	17.0			135.8	-1.4	186.1	+0.9	135.8		60	187	0	0				
0345	18.0			133.8	-2.0	187.1	+1.0	133.8		60	185	0	0				
0445	19.0			132.5	-1.3	187.8	+0.7	132.5		60	183	0	0	OCCASIONAL VERY LIGHT MIST OF FLUID OUT END OF PROVER			
0545	20.0			130.9	-2.1	189.1	+1.2	130.9		60	181	0	0	OCCASIONAL VERY LIGHT MIST OF FLUID OUT END OF PROVER			
0645	21.0			129.7	-1.2	189.9	+0.8	129.7		60	180	0	0	OCCASIONAL VERY LIGHT MIST OF FLUID OUT END OF PROVER			
0745	22.0			128.6	-1.1	190.5	+0.6	128.6		60	178	0	0	OCCASIONAL VERY LIGHT MIST OF FLUID OUT END OF PROVER			
0845	23.0			127.5	-1.1	192.1	+1.6	127.5		59	177	0	0	OCCASIONAL VERY LIGHT MIST OF FLUID OUT END OF PROVER			
0945	24.0	PKR		126.2	-1.3	192.9	+0.8	126.2		62	175	0	0	OBTAIN GAS SAMPLE AND SHUT WELL IN.			
0949														REMOVE INSTRUMENTS FROM WELL			
1005														RELEASE PRESSURE FROM LUBRICATOR			
1011														POWER DOWN EMR PR-600 INSTRUMENTS			
														ASCII FILE: MCBA1311L			

PRECISION WIRELINE AND TESTING
P.O. BOX 560
LIBERAL, KS 67905-0560
620-624-4505
STATIC BOTTOM HOLE PRESSURE TEST

MULL DRILLING CO., INC.
COMPANY

DATE 11-29-12

LEASE McBRIDE MICHEL 'A' WELL NO. 1-31 TYPE COMPLETION SINGLE GAS FIELD _____
LOCATION NW NE 31-18S-45W COUNTY KIOWA STATE KS



DEPTH	PRESSURE (PSIG)	DIFF	GRADIENT
0	233.1		
1000	241.8	8.7	.009
2000	249.3	7.5	.008
3000	257.0	7.7	.008
4000	263.9	6.9	.007
4205	265.9	2.0	.009
4305	266.8	0.9	.009
4405	267.4	0.6	.006

ELEVATIONS:

GROUND: _____
DERICK FLOOR _____
KELLY BUSHING _____
PERMANENT ZERO _____ EST GL+12'
INSTRUMENT ZERO _____ GL+7'
INSTRUMENT TO PERMANENT ZERO -5'

CASING RECORD

OD SIZE	WEIGHT Lb/Ft.	GRADE	SETTING DEPTH
4.5	11.6		4900

PERFORATION RECORD

FROM	TO	FROM	TO
4400	4410		

TUBING RECORD

OD SIZE	WEIGHT Lb/Ft.	GRADE	SETTING DEPTH
2.375	4.7		4384

TOTAL DEPTH _____
PLUGBACK TOTAL DEPTH _____

WELL TEST DATA

SHUT IN:	
FORMATION:	
ELEVATION:	
DATUM:	4405'
TEST DEPTH:	4405'
CASING PSIG:	PKR
TUBING PSIG:	233.1
TOP OF FLUID:	NONE
TOP OF WATER:	NONE
TEST DEPTH TEMP:	126
SHUT IN TIME:	
INSTRUMENT:	W1283
CALIB. DATE	4-25-12
LAST TEST DATE:	INITIAL
PSIG LAST TEST:	INITIAL
BHP CHANGE PSI:	
OPERATOR:	BROCK

INSTRUMENT AT 4405 Ft. @ 0933

REMARKS _____