BLM BRADENHEAD IGNACIO-BLANCO FIELD TEST REPORT FORM

Lease #: ☐ I22IND _____ Well Name SOUTE 33-9 #22-11 FC API# Req'd ☒ #05-067-09244
☐ MOO-C _____
☒ 14-20-151-15 Operator Red Willow Date: 4-30-19 ☐ #05-083-_____
☐ 75_____ ☐ #05-007-_____
☐ COC_____ QQ: NWSW Sec 22 Twp 33 (N) Range 9 (W) Minerals: Federal-Indian-State-Fee
☐ FEE/CA#:_____

Well Status: **On-Line** (Flowing/Pumping/Plunger lift/Clock/Intermitter; **Shut-in** (GSI/TA), **P&A** **Type**: Gas *SWD* Injection *POW*
Number of Casings ~~If known: (circle)~~ Two *Two with liner* *Three* *Three with liner*

STEP 1: CLOSE all BLM & approved-to-vent surface & intermediate **VALVES** 10-14 days prior to test. (BLM well BHD valves shall normally be closed unless specific BLM authorization has been approved to vent casing to atmosphere as a remediation procedure.)

STEP 2: CERTIFY that **all** buried valves are in **OPEN** position: OPEN
If Buried Bradenhead vlv, **Confirmed Open**? Y/N
If Buried Intermediate vlv, **Confirmed Open**? Y/N
Expose piping for all BLM witnessed tests to demonstrate that buried valve is "open".

STEP 3: USING **calibrated** mechanical (2# accuracy) or digital Gauge, **MEASURE Initial** Tubing & Casing Pressures **& Record** on chart. Too small to measure = **"TSTM"**.

STEP 4: If initial Surface casing **is >25# (>5# within *sensitive* areas) SAMPLE All Casings (surface, intermediate, production)** using 10 individual cylinder purges &

record cylinder #s 413 (s) N/A (i) 257 (p).

STEP 5: Open & flow Bhd vlv. monitoring flow Character. **Record** other casing pressures within 1st 5 min, then @ 5, 10, 15, 20, 25, 30min. Record Surface Csg. flow characteristic. "Required time to monitor" on reverse. **IF < 5 min. to blow down** show in "elapsed time" column of Chart; ***Record below the time to "whisper" & time to "no flow"*** if different.

BHD *to "w" in ___min 15 sec & to "NF" in __min 45 sec.*

STEP 6: Record flow characteristic by letters: **NF**=no flow; **D**=gas diminished to no flow; **G**=continuous gas, **W**= whisper, **V**=vapor; **S**=surge; **VAC**=vacuum **H**=water; **M**=mud.

Water/mud character(circle): clear, fresh, salty, sulfur, black
(Sample analysis to be submitted with BHD test to BLM)

STEP 7: CLOSE ALL VALVES unless approved to vent.

REMARKS:
Note size of valve: BHD: __/__" needle valve or ½" ¾", 1", 2"
INTERMEDIATE: __/__needle valve or ½" ¾", 1",

2"Clarifying remarks:

Tested by: (print name) Kyle Joseph (signature) Kyle Joseph
Phone 970 769 6913 DATE 4-30-19

Witnessed by _____ BLM/COGCC

BRADENHEAD TEST RECORDING

Elapsed time	Tubing Fm ~~#~~	Tubing Fm ___	Prod. Casing	Intermed. Casing	Surface Casing
Initial Pressure	# 44	#	# 44	#	# 9 Pressure
:45 Min:Sec	# 65	#	# 65	#	Flow Char. D
05:00	65		65		Flow Char. NF
10:00					Flow Char.
15:00					Flow Char.
20:00					Flow Char.
25:00					Flow Char.
30:00					Flow Char.
				Instantaneous Ending Pressure	TSTM

INT *to "w" in ___ min __sec & to "NF" in __min __sec*

INTERMEDIATE TEST RECORDING
(If Intermediate Casing pressure decreases during Bradenhead Test)

Elapsed Time	Tubing Fm___	Tubing Fm___	Prod. Casing	Intermed. Casing
Initial Pressure	#	#	#	# Pressure
:___ Min:Sec	#	#	#	Flow Char.
05:00				Flow Char
10:00				Flow Char
15:00				Flow Char
20:00				Flow Char
25:00				Flow Char
30:00				Flow Char
			Ending Pressure	

COPY

Envirotech, Inc.
Highway 64, Farmington, New Mexico 87401
Office: (505) 632-0615 / Fax: (505) 632-1865

Analytical Report

Client:	Red Willow	Project No:	09078-0006	Date Received:	5/8/2019
Site Name:	S. Ute 33-9	Date Sampled:	4/30/2019	Date Reported:	5/22/2019
Meter ID:	#22-11	Time Sampled:	11:30	Date Analyzed:	5/22/2019
Sampling Co.:	Red Willow	Other Effective date:	NA	Time Analyzed:	15:34
Sampled By:	Red Willow	Composite Start Date:	NA	File ID:	P905028-01
Spot Cyliner (Y/N)	Y	Composite End Date:	NA	Inst. ID:	GC-TCD #2F
Fill & Empty / He Pop:	Fill & Empty	Sample Pressure:	64	Inst. Model:	GC Scion 456
Amb. Temp @ Sampling:	NA	Sample Temperature:	39	Date of IC:	10/12/2018
Heat used @ Sampling:	NA	Sample Flow Rate:	120	Date of CV:	4/10/2019

GPA 2261-13 Analytical Method

Analyte	Result Un-normalized mol %	Result Normalized mol %	Wt %	GPM Total	Gal/ideal MCF 14.696 psia
Nitrogen	9.818	5.772	8.655		
Carbon Dioxid	11.719	6.889	16.231		
Methane	148.316	87.193	74.879		
Ethane	0.248	0.146	0.235	GPM C2+	0.039
Propane	0.000	0.000		GPM C3+	0.000
i-Butane	0.000	0.000		GPM IC4+	0.000
n-Butane	0.000	0.000		GPM nC4+	0.000
i-Pentane	0.000	0.000		GPM iC5+	0.000
n-Pentane	0.000	0.000		GPM nC5+	0.000
C6+	0.000	0.000		GPM C6+	0.000
Sum	170.101	100.000	100.000		

Note: Non-normalized analysis was greater than +/1 3%

GPA 2172-09 Calculations

	Dry	Units	Saturated	Units
Compresssibility (Z)	0.9980		0.9976	
Compresssibility (Z), dry air	0.9996			
Relative Density (G), Ideal	0.6450		0.6446	
Relative Density (G), Real	0.6460		0.6458	
Dry Molecular Weight:	18.681	g/mol		
Gross Heating Value (Ideal)	883.2	BTU/ft³	867.8	BTU/ft³
Gross Heating Value (Real)	885.0	BTU/ft³	869.9	BTU/ft³
Water Mole%			1.7447	
Base Pressure:	14.696			
Base Temperature:	60°F			

Analyst: EM Date: 5/22/2019

The results in this report apply to the samples submitted to Envirotech'a Analytical Laboratory and were analyzed in accordance with Method GPA 2261-13, GPA 2172-09, using the chain of custody document supplied by you, the client, and as such are for your exclusive use only.

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Analytical Report

Client:	Red Willow	Project No:	09078-0006	Date Received:	5/8/2019
Site Name:	S Ute 33-9	Date Sampled:	4/30/2019	Date Reported:	5/23/2019
Meter ID:	#22-11	Time Sampled:	11:30	Date Analyzed:	5/23/2019
Sampling Co.:	Red Willow	Other Effective date:	NA	Time Analyzed:	13:53
Sampled By:	Red Willow	Composite Start Date:	NA	File ID:	P905028-02
Spot Cyliner (Y/N)	Y	Composite End Date:	NA	Inst. ID:	GC-TCD #2F
Fill & Empty / He Pop:	Fill & Empty	Sample Pressure:	9	Inst. Model:	GC Scion 456
Amb. Temp @ Sampling:	NA	Sample Temperature:	39	Date of IC:	10/12/2018
Heat used @ Sampling:	NA	Sample Flow Rate:	LP	Date of CV:	4/10/2019

GPA 2261-13 Analytical Method

Analyte	Result Un-normalized mol %	Result Normalized mol %	Wt %	GPM Total	Gal/ideal MCF 14.696 psia
Nitrogen	15.543	45.779	59.246		
Carbon Dioxid	0.032	0.094	0.192		
Methane	18.334	54.000	40.021		
Ethane	0.000	0.000		GPM C2+	0.055
Propane	0.000	0.000		GPM C3+	0.055
i-Butane	0.000	0.000		GPM IC4+	0.055
n-Butane	0.000	0.000		GPM nC4+	0.055
i-Pentane	0.000	0.000		GPM iC5+	0.055
n-Pentane	0.000	0.000		GPM nC5+	0.055
C6+	0.043	0.127	0.541	GPM C6+	0.055
Sum	33.952	100.000	100.000		

Note: Non-normalized analysis was greater than +/1 3%

GPA 2172-09 Calculations

	Dry	Units	Saturated	Units
Compresssibility (Z)	0.9990		0.9987	
Compresssibility (Z), dry air	0.9996			
Relative Density (G), Ideal	0.7474		0.7452	
Relative Density (G), Real	0.7479		0.7459	
Dry Molecular Weight:	21.646	g/mol		
Gross Heating Value (Ideal)	551.9	BTU/ft³	542.3	BTU/ft³
Gross Heating Value (Real)	552.5	BTU/ft³	543.0	BTU/ft³
Water Mole%			1.7447	
Base Pressure:	14.696			
Base Temperature:	60°F			

Analyst: EM·A Date: 5/23/2019

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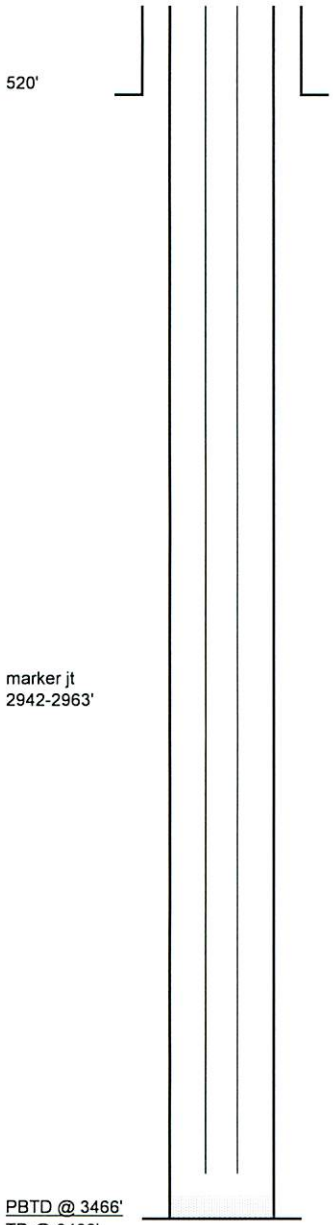
Southern Ute FC 33-9 #22-11
Wellbore Drawing (08-07)
05-067-09244
suface loc 1575' FSL & 1090' FWL, sec 22
bottomhole loc 694' FSL & 1950' FWL, sec 22
Section 22-T33N-R9W
GR 6607', KB 14'
La Plata County, CO

Directional well

KOP of 550'
build at 4.0 deg per hundred to 28 deg at 1579'
hold approx 28 deg to TD of 3590'



520'

12 jts 8 5/8", 24#, J55, STC,
30 bbls circulated to surface

Fruitland Coal perfs (4 spf, 188 holes)
Fruitland Coal from Schlumberger RST (2/27/07)
3102'-07
3110'-15'
total 10 ft

3226'-34'
3282'-89'
3291'-3302'
3305'-10'
3344'-46'
3350'-56'
3360'-64'
3366'-68'
3375'-77'
total 47 ft

total 57 ft

	Kb=14' use only 12' well head 2' above ground level	12.00'
	108-Jts 2 7/8 6.5# N-80 8rd tbg.	3369.57'
	2 7/8 Seating nipple	1.10' @ 3381.57'
	1-jt 2 7/8 6.5# N-80rd tbg.	31.22'
	2 7/8 Notched collar	. 44' @ 3414.33'

2.5" x 1.25" x 10' x 14' Rhac-zhvr insert pump (#477) w/ 105" sl w 12" strainner nipple
7/8" Stablilizer bar
131 3/4" Guided 3/4" rods
2-3/4" Pony rods 8', 4'
1.25" X 22' Polish rod w/1.5" x 12' liner

marker jt
2942-2963'

PBTD @ 3466'
TD @ 3498'
5 1/2" 17# set @ 3490', circ 55 bbls cmt

Well History

3-27-07 - drilled & completed
8-8-07 - rod up
11-21-07 to 4-20-09 -, (3) rod wear splits, (2) in jt # 94 & (1) jt # 63, 29' fill
9-1-09 - rods stacked, 12' fill
11-10-09 - tbg leak, x-out tbg w/silicone coated tbg
12-2-10 - rod wear split in jt # 67, jt # 65 failed press test, layed dn jts # 41-53-54-63 & 93 from rod wear, acidize w/ 250 gals 15% hcl, replaced 10 plain rods w/ scraper rods
3-30-12 - rod wear split jt # 56, total 5 bad from rod wear,1/8" scale btm 5 jts tbg, ran bit & scraper, acidize w/600 gals 20% hcl
12-04-12 - jts # 42-83-84 bad f/rod wear, # 60-93-94 failed 2000# press test
12-10-13 - rods stacked, pump was bad & had coal fines in pump bbl, rod wear split in jt # 78, c/o 13' fill, all tbg is silicone coated
2-21-15 - No tbg test, 5 bad rods, 14 bad tbg joints, Jts 100, 101, 108 had scale, Jts 24,30, 31, 41, 52, 53, 54, 70, 80, 81 for rod wear, joint 55 had 1' split
10-21-15 - Attempt to test tbg with no success. (Found 8-bad scraper rods, 4-bad plain rods, 11-bad wheels on wrgs., moderate scale on pull tube in pump, moderate scale on rod string) TIH tag @ 3452' 14' above Pbtd. Rig up Tuboscope. (Found 9-yellowband, 30-blueband, 16-greenband, 59-redband, with 18" rod wear split in jt. #12 from surface, very light scale on jt above seating nipple.)
4/28/17: 210 gal 7.5% HCL + 8 bbls fresh H20 w/24 SI.