



P.O. Box 10640 Bozeman, Montana 59719

(406) 460-0903

TO: Jim Griswold, NMOCD

FROM: Curtis Shuck, Chairman

DATE: October 22, 2023

RE: BRC Madera #001 (30-015-22373) Orphan Well Post-Plugging Methane Monitoring **Correct API 30-015-22372**

TECHNICAL MEMORANDUM

Well Done New Mexico LLC and the Well Done Foundation, Inc. (WDF) performing contract professional services methane monitoring for the State of New Mexico Energy, Minerals and Natural Resources Department – Oil Conservation Division (OCD) under Purchase Order #52100-0000075134 for Orphan Oil & Gas Wells in Eddy and Lea County, NM.

The site conditions found at the BRC Madera #001 by the WDF Measure 1 Field Team on September 21, 2023, revealed a cement plugged orphan well with a Dry Hole Marker of the top of the plugged casing. The WDF Measure 1 Team took site photographs, performed field gas measurements and collected a gas sample for immediate laboratory analysis.



Image 1.1 – BRC Madera #001 (30-015-22373) Orphan Well in Eddy County, NM

The Pre-Plugging Methane Flow Monitoring Test on August 26, 2023, using Ventbuster™ Instruments VB100-005 Ultra-Low Flow Meter with GPS, resulted in 98.33 cubic meters per day of total measured wellhead emissions. A composite gas sample collected at the wellhead by WDF during the flow test established a methane gas concentration level measured at 941,030 ppm, pursuant to Test ID 2023074445 performed by Laboratory Services of Hobbs, NM. Therefore, the adjusted average methane gas emission measured at this wellhead is calculated at **2,764.12 grams per hour (g/hour)**.¹

WDF arrived at the BRC Madera #001 location on September 21, 2023, to perform post-plugging orphan well methane testing and sampling on behalf of the State of New Mexico. **WDF post plugging field gas tests revealed 0.00% of methane or H2s gasses. The post plugging collected gas samples, analyzed by Laboratory Services, Inc. confirmed 0.00 ppm or methane gas and 0.00 ppm of H2s gas. THEREFORE, the total Methane Gas Emissions Reduction is: 2,764.12 g/hour.**

- ¹ Methane Calculation: 717 grams CH₄ per cubic meter (717 x 98.33 m³/day = 70,502.61 g/day total /24 = 2,937.61 g/hour x 0.941030 (methane concentration) = **2,764.12 g/hour CH₄**). **Methane, gas** weighs 0.000717 gram per cubic centimeter or 0.717 kilogram per cubic meter, i.e. density of methane, gas is equal to 0.717 kg/m³; at 0°C (32°F or 273.15K) at standard atmospheric pressure. In Imperial or US customary measurement system, the density is equal to 0.044 pound per cubic foot [lb/ft³].

The State of New Mexico used the methane flow data collected by WDF to prioritize the BRC Madera #001 orphan well plugging under the IJJA Program and began mobilizing a contractor to location. J A Drake Well Service, Inc. of Farmington, NM was awarded the plugging contract.

This orphan well did exceed the >1 g/hour federal program reporting requirements for methane emissions reductions as described in Section 40601 (Orphaned well site plugging, remediation, and restoration) of Title V (Methane Reduction Infrastructure) of the 2021 Bipartisan Infrastructure Law (BIL; Public Law 117-58)².

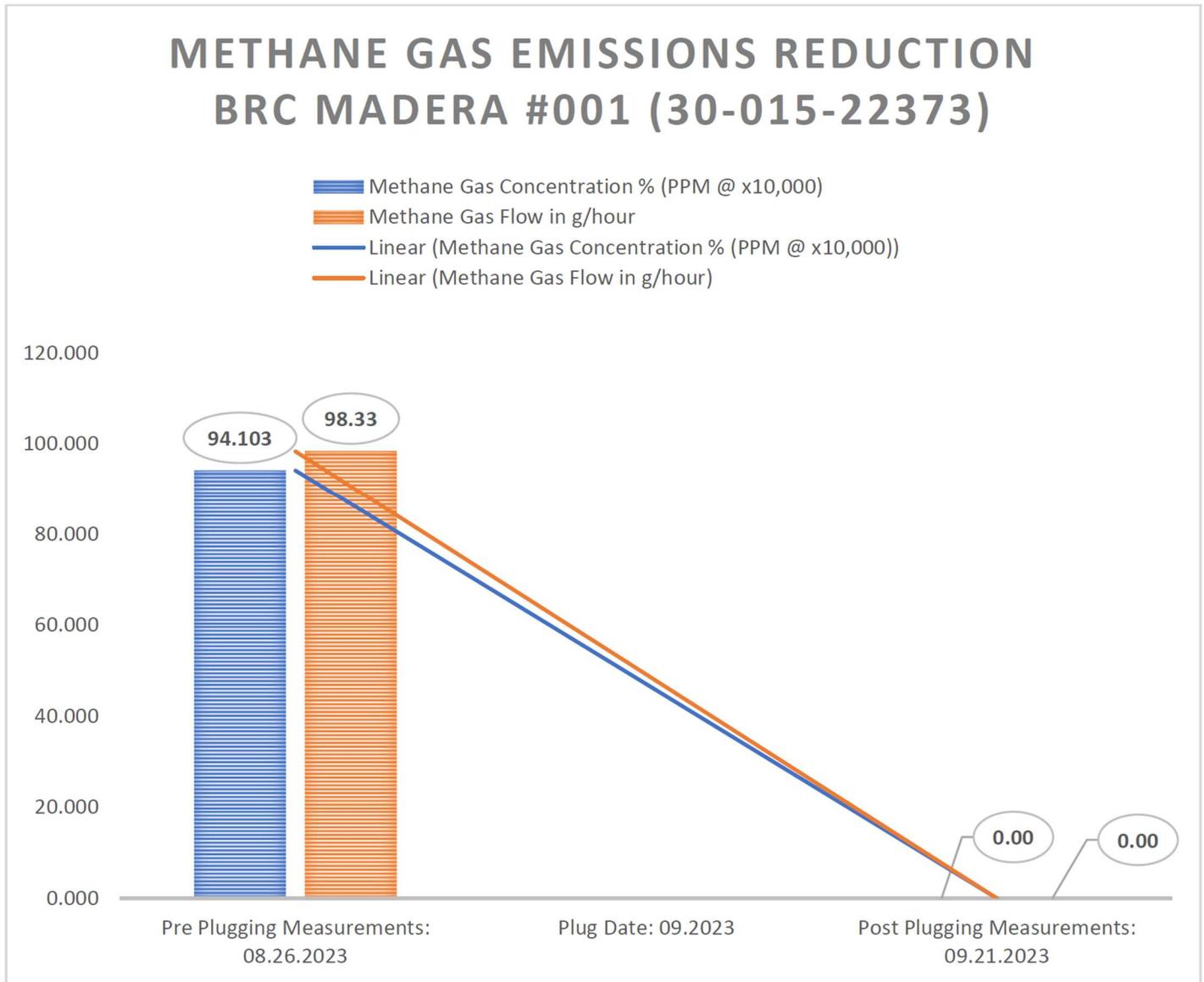


Image 2.1 – BRC Madera #001 (30-015-22373) Methane Gas Emissions Reduction Pre Plugging to Post Plugging

² These April 11, 2022 Guidelines were developed to meet the federal program reporting requirements for methane emissions reductions as described in Section 40601 (Orphaned well site plugging, remediation, and restoration) of Title V (Methane Reduction Infrastructure) of the 2021 Bipartisan Infrastructure Law (BIL; Public Law 117-58).

TECHNICAL FINDINGS

BRC Madera #001 (30-015-22373):

- Total C1 through C6 Gas Concentration: 965,860 ppm
- Total Measured Wellhead Gas Emissions: 98.33 m3/day
- Methane Gas Concentration: 941,030 ppm
- Calculated Average Wellhead Methane Gas Emissions: 2,764.12 g/hour
- Post Plugging Methane Gas Concentration: 0.00 ppm
- Post Plugging Methane Flow: 0.00 g/hour

CONCLUSIONS

- The Madera #001 (30-015-22373) was emitting Methane gas pre-plugging at the average rate of 2,764.12 g/hour, which was above the Federal minimum threshold for reporting described in Section 40601 (Orphaned well site plugging, remediation, and restoration) of Title V (Methane Reduction Infrastructure) of the 2021 Bipartisan Infrastructure Law (BIL; Public Law 117-58) which is >1g/hour.
- Post Plugging, the Madera #001 (30-015-22373) presented 0.00 ppm of Methane gas emissions from field gas tests and laboratory analysis of WDF collected gas samples.

FIELD NOTES

The screenshot shows the 'Well Site' interface for BRC Madera #001. It features a navigation menu with tabs for Info, Well File, Images, Well Data, Regulatory, Safety, Environmental, Field Notes (selected), Live Data View, ABB Data, Access, and Remove Well. Below the menu is a 'Date' field set to 12/13/2023 and a 'New Note' input field with a 'Required' label and an 'Add' button. A table of field notes is displayed below, with columns for '#', 'Date', and 'Note'. Each note entry includes a description of the well activity and has associated edit and delete icons.

#	Date	Note
1	2023-08-27	ces: Back on location at 06:45 to stop test and rig down. Wait for the Drake Crew to get as much run time on the test as possible. No decline. Test remained steady through the night. Pull EOT Gas Sample. Stop Test and rig down. Site back to the Drake Crew. - WILDCAT OUT!
2	2023-08-26	ces: On location of the BRC Madera with the Drake Crew. Rig up VB100-005 to the tubing. Gas is steady, even after the well received 80 bbls of Brine to kill. Run the Methane Flow Test all night with plans to stop test and rig down at first light. Pull BOT Gas Sample.

Image 3.1 – BRC Madera #001 (30-015-22373) Field Notes from WDF Well Intel™ Orphan Well Project Management IoT

Appendix A – Site Photos for BRC Madera #001 (30-015-22373)



1) BRC Madera #001 – Pre Plug Methane Quantification



2) BRC Madera #001 – Pre Plug Methane Quantification



3) BRC Madera #001 – Post Plug Methane Sampling



4) Madera #001 – Post Plug Gas Sample



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575.397.3713 2609 W Marland Hobbs NM 88240

C6+ Gas Analysis Report

18169G	BRC Madera #1 Post Plug	BRC Madera #1 Post Plug	
Sample Point Code	Sample Point Name	Sample Point Location	
Laboratory Services	2023075954	BAG	CES - Spot
Source Laboratory	Lab File No	Container Identity	Sampler
USA	USA	USA	New Mexico
District	Area Name	Field Name	Facility Name
Sep 21, 2023 15:02	Sep 21, 2023 15:02	Sep 25, 2023 10:35	Sep 27, 2023
Date Sampled	Date Effective	Date Received	Date Reported
System Administrator			
Ambient Temp (°F)	Flow Rate (Mcf)	Analyst	Press PSI @ Temp °F Source Conditions
Well Done Foundation		NG	
Operator		Lab Source Description	

Component	Normalized Mol %	Un-Normalized Mol %	GPM
H2S (H2S)	0.0000	0	
Nitrogen (N2)	99.8600	99.86	
CO2 (CO2)	0.0380	0.038	
Methane (C1)	0.0000	0	
Ethane (C2)	0.0000	0	0.0000
Propane (C3)	0.0000	0	0.0000
I-Butane (IC4)	0.0000	0	0.0000
N-Butane (NC4)	0.0000	0	0.0000
I-Pentane (IC5)	0.0000	0	0.0000
N-Pentane (NC5)	0.0000	0	0.0000
Hexanes Plus (C6+)	0.1020	0.102	0.0440
TOTAL	100.0000	100.0000	0.0440

Gross Heating Values (Real, BTU/ft³)			
14.696 PSI @ 60.00 Å°F		14.73 PSI @ 60.00 Å°F	
Dry	Saturated	Dry	Saturated
5.2	6.0	5.2	6.0

Calculated Total Sample Properties	
GPA2145-16 *Calculated at Contract Conditions	
Relative Density Real	Relative Density Ideal
0.9696	0.9697
Molecular Weight	
28.0860	

C6+ Group Properties		
Assumed Composition		
C6 - 60.000%	C7 - 30.000%	C8 - 10.000%

PROTREND STATUS: Passed By Validator on Sep 29, 2023
DATA SOURCE: Imported

PASSED BY VALIDATOR REASON: Close enough to be considered reasonable.

VALIDATOR: Criselda Sepulveda

VALIDATOR COMMENTS: OK

Analyzer Information	
Device Type:	Device Make:
Device Model:	Last Cal Date:

Source	Date	Notes
Criselda Sepulveda	Sep 29, 2023 10:09 am	METHANE=0

District I
 1625 N. French Dr., Hobbs, NM 88240
 Phone:(575) 393-6161 Fax:(575) 393-0720

District II
 811 S. First St., Artesia, NM 88210
 Phone:(575) 748-1283 Fax:(575) 748-9720

District III
 1000 Rio Brazos Rd., Aztec, NM 87410
 Phone:(505) 334-6178 Fax:(505) 334-6170

District IV
 1220 S. St Francis Dr., Santa Fe, NM 87505
 Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 294606

CONDITIONS

Operator: Energy Acumen LLC 10103 Gutierrez Rd NE Albuquerque, NM 87111	OGRID: 373817
	Action Number: 294606
	Action Type: [IM-SD] Well File Support Doc (ENG) (IM-AWF)

CONDITIONS

Created By	Condition	Condition Date
ahvermersch	None	12/14/2023