



P.O. Box 10640 Bozeman, Montana 59719

(406) 460-0903

TO: Jim Griswold, NMOCD

FROM: Curtis Shuck, Chairman

DATE: July 23, 2023

RE: Artesia Metex #043 (30-015-02142) Orphan Well Post-Plugging Methane Monitoring

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 #52100-00000073985 for Orphan Oil & Gas Wells in Chaves County, NM.

The site conditions found at the Artesia Metex #043 by the WDF Measure 1 Field Team on June 27, 2023, revealed a cement filled casing to within 3'-6" of the surface. The WDF Measure 1 Team took site photographs, performed field gas measurements and collected a gas sample for immediate laboratory analysis.



Image 1.1 – Artesia Metex #043 (30-015-02142) Orphan Well in Eddy County, NM

The Pre-Plugging Methane Flow Calculations were conducted by the Well Done Foundation and Well Done New Mexico LLC and monitored using Ventbuster™ Instruments VB100-40 Series Ultra-Low Flow Meter with GPS on February 27, 2023. The Methane Concentration was measured at 7,050 ppm and Methane Flow was measured at 0.003 m3/d. Therefore, the adjusted average methane gas emission measured at this wellhead is calculated at **0.01 grams per hour (g/hour)**.¹

The State of New Mexico used the methane flow data collected by WDF to prioritize the Artesia Metex #043 orphan well plugging under the IJJA Program and began mobilizing a contractor to location. A-Plus P&A Well Service, Inc. of Farmington, NM was awarded the plugging contract.

WDF arrived at the Artesia Metex #043 location on June 27, 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**

¹ Methane Calculation: 717 grams CH₄ per cubic meter (717 x 0.003 m³/day = 2.15 g/day total /24 = 0.09 g/hour x 0.007050 (methane concentration) = **0.001 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].

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: 0.001 g/hour.



Test Report

Start Date: Monday, February 27th, 2023, 1:58 PM MST
End Date: Tuesday, February 28th, 2023, 10:45 AM MST
Device: VB100-0040
Well Licensee: 30-015-02142
Well Name: Artesia Metex 043
UWI: 30-015-02142
Well License Number: 30-015-02142
Surface Location: State of NM
Bottom Hole Location: Unknown

Test Operator: Sean O. Jacobson
Authorized By: State of NM
Test Reason: I/JA Pre Plugging
Scope Of Work: 12 Hour
AFE Number: 52100-0000072986
GPS: 32.72102,-104.21356
Notes: GTG

Flow Test

Average Flowrate
0.0028
 m³/d

Average Flow Temperature
15.4
 °C

Average Flow Pressure
3.2
 kPag

Flow Duration
20.8
 hours

Methane Flow Mass
0.0059
 gm/hour
 Methane Concentration: 7.05 %

Pressure Test

Maximum Shut-In Pressure
 --

Shut-in Pressure Duration
0.0
 hours

Flow/Pressure/Temperature Timeseries

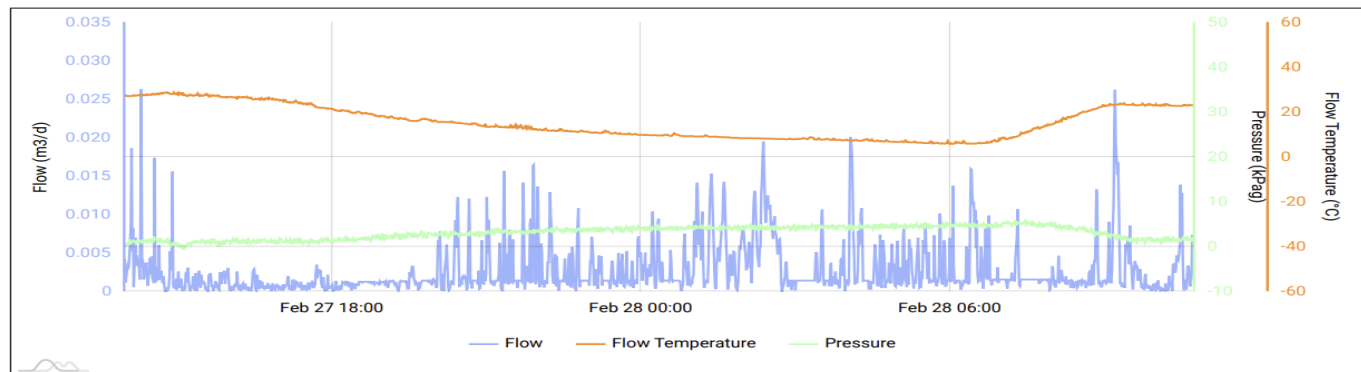


Image 2.1 – Artesia Metex #043 Pre Plugging Test Report

This orphan well did not 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.

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).

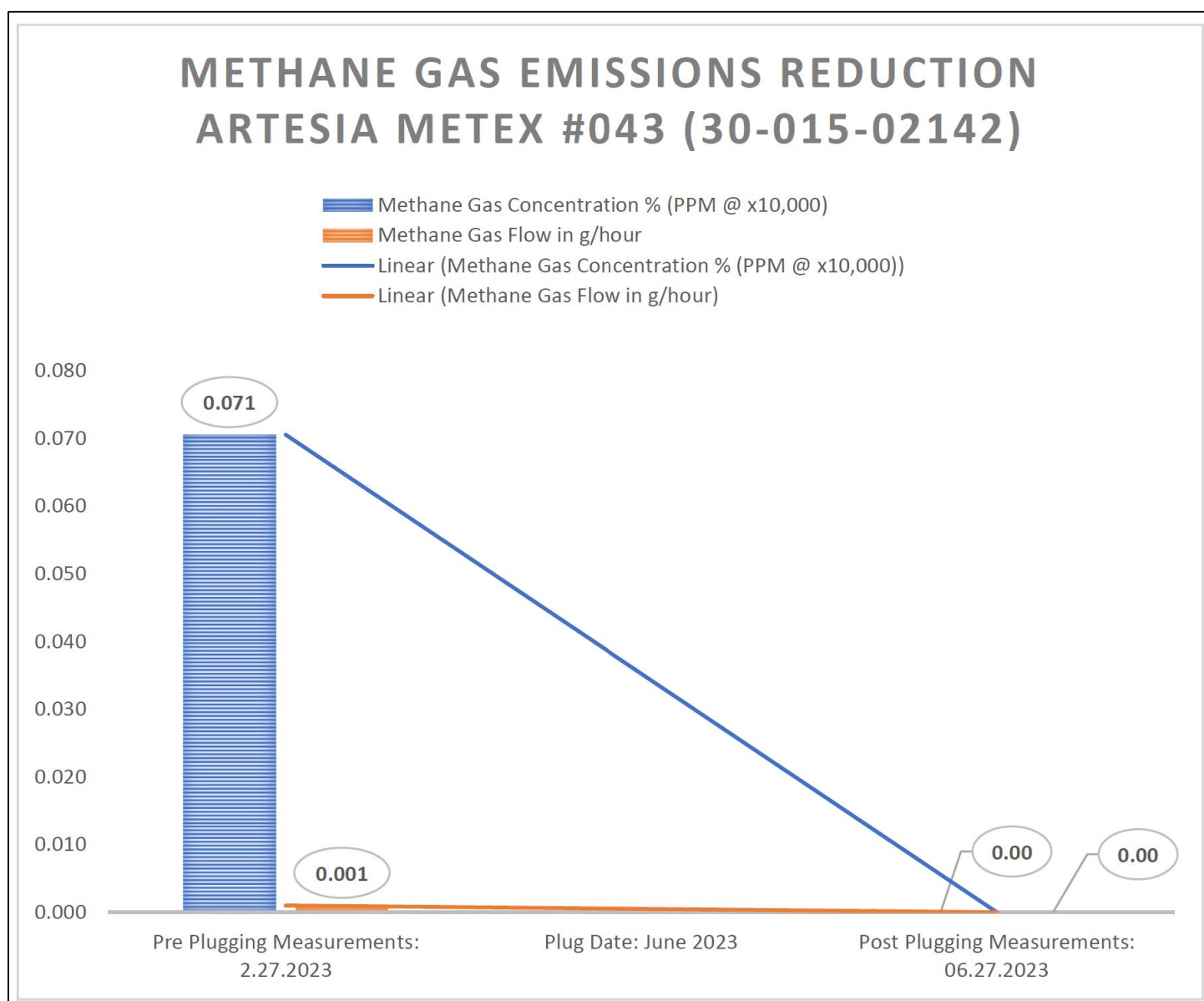


Image 3.1 – Artesia Metex #043 (30-015-02142) Methane Gas Emissions Reduction Pre Plugging to Post Plugging

TECHNICAL FINDINGS

Artesia Metex #043 (30-015-02142):

- Total C1 through C6 Gas Concentration: 13,780 ppm
- Total Measured Wellhead Gas Emissions: 0.001 m³/day
- Methane Gas Concentration: 7,050 ppm
- Calculated Average Wellhead Methane Gas Emissions: 0.001 g/hour
- Post Plugging Methane Gas Concentration: 0.00 ppm
- Post Plugging Methane Flow: 0.00 g/hour

CONCLUSIONS

- The Artesia Metex #043 (30-015-02142) was emitting Methane gas pre-plugging at the average rate of 0.04 g/hour, which was below 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 Artesia Metex #043 (30-015-02142) presented 0.00 ppm of Methane gas emissions from field gas tests and laboratory analysis of WDF collected gas samples.

FIELD NOTES

#	Date	Note
1	2023-06-27	ces: Arrive on location with WDF Measure 1. Inspect cement. Perform Field Gas Analysis. Collect Gas Sample for Laboratory analysis. Take site photos. WILDCAT OUT!
2	2023-03-12	Arrived 11:18am 3/12/2023. Rigged down flow test. SP VB #20
3	2023-03-11	Arrived 12:46pm 3/11/2023. Rigged up flow test. SP VB #20
4	2023-02-28	Arrived 10:45am 2/28/2023. Rigged down flow test.
5	2023-02-27	Arrived 1:30pm 2/27/2023. Rigged up Ventbuster #40 for flow testing.

Image 4.1 – Artesia Metex #043 (30-015-02142) Field Notes from WDF Well Intel™ Orphan Well Project Management IoT



1) Artesia Metex #043 – Cement



2) Artesia Metex #043 – Gas Sample



3) Artesia Metex #043 – Field Gas



www.permianls.com
575.397.3713 2609 W Marland Hobbs NM 88240

C6+ Gas Analysis Report

17421G	Open Hole Casing	Artesia Metex #43 Post
Sample Point Code	Sample Point Name	Sample Point Location
Laboratory Services	2023070982	Tedlar Bag
Source Laboratory	Lab File No	Container Identity
USA	USA	USA
District	Area Name	Field Name
Jun 27, 2023 18:24	Jun 27, 2023 18:24	Jun 28, 2023 13:10
Date Sampled	Date Effective	Date Received
Admin		
Ambient Temp (°F)	Flow Rate (Mcf)	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)	99.7820	99.78177	
CO2 (CO2)	0.0370	0.03694	
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+)	0.1810	0.18129	0.0790
TOTAL	100.0000	100.0000	0.0790

Method(s): Gas C6+ - GPA 2261, Extended Gas - GPA 2286, Calculations - GPA 2172

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

Gross Heating Values (Real, BTU/ft³)			
14.696 PSI @ 60.00 Å°F		14.73 PSI @ 60.00 Å°F	
Dry	Saturated	Dry	Saturated
9.3	10.0	9.3	10.0
Calculated Total Sample Properties			
GPA2145-16 *Calculated at Contract Conditions			
Relative Density Real		Relative Density Ideal	
0.9714		0.9715	
Molecular Weight			
28.1373			
C6+ Group Properties			
Assumed Composition			
C6 - 60.000%	C7 - 30.000%	C8 - 10.000%	
Field H2S			
0 PPM			

PROTREND STATUS:

Passed By Validator on Jul 7, 2023

DATA SOURCE:

Imported

PASSED BY VALIDATOR REASON:

First sample taken @ this point, composition looks reasonable

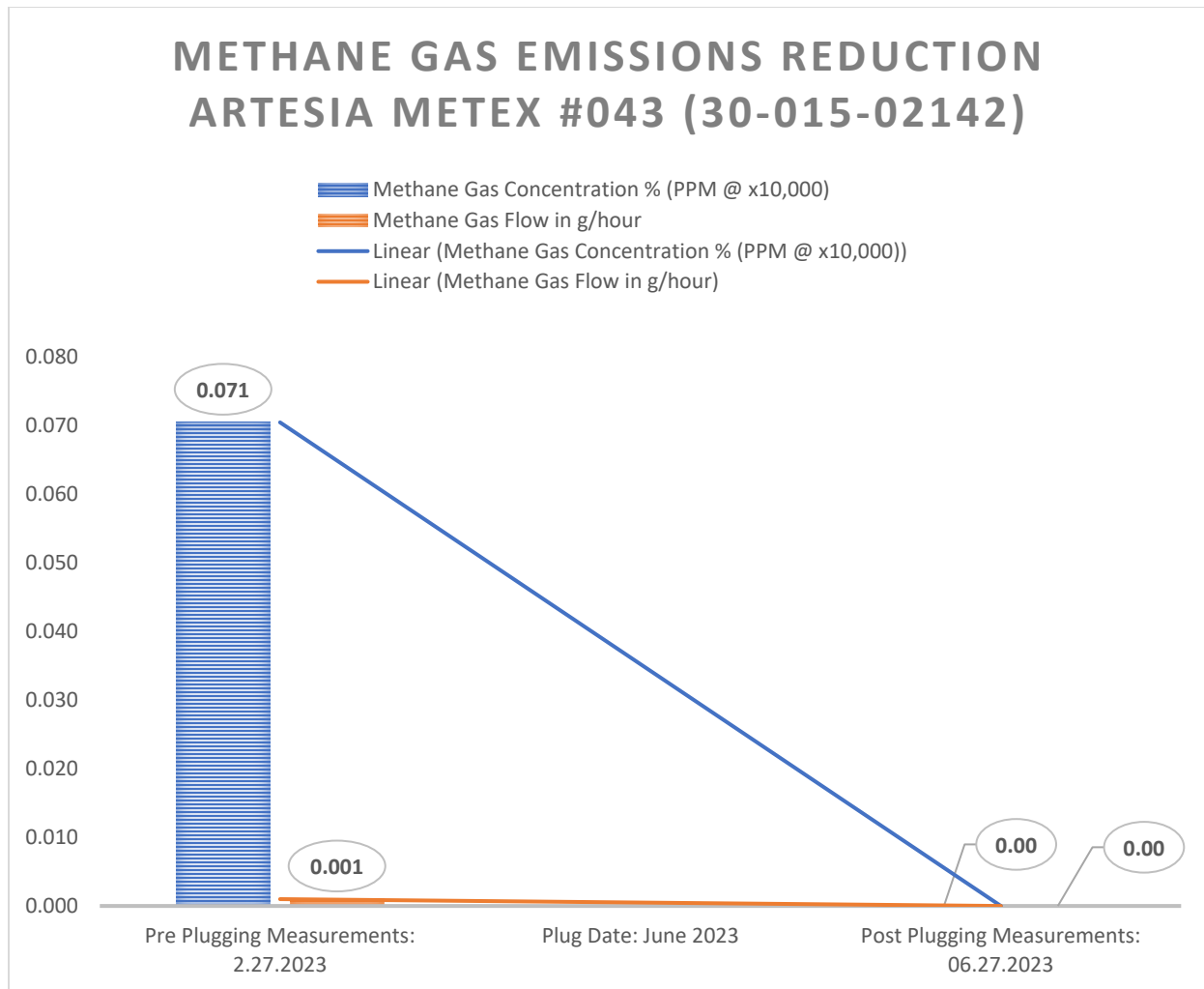
VALIDATOR:

. Rush

VALIDATOR COMMENTS:

OK

Source	Date	Notes
. Rush	Jul 7, 2023 12:01 pm	Methane = 0 ppm



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

DEFINITIONS

Action 243475

DEFINITIONS

Operator: CANYON E & P COMPANY 251 O'Connor Ridge Blvd. Irving, TX 75038	OGRID: 269864
	Action Number: 243475
	Action Type: [UF-OMA] Post-Plug Methane Monitoring (UF-OMA-MMB)

DEFINITIONS

The Orphan Well Mitigation Activity (OMA) forms are a subset of the OCD's forms exclusively designed for activities related to State of New Mexico's contracted plugging and reclamation activities. Specifically, these forms are used for orphan wells or associated facilities which are in a "Reclamation Fund Approved" status. This status represents wells or facilities where the OCD has acquired a hearing order allowing the OCD to perform plugging or reclamation on wells and associated facilities that no longer have a viable operator to perform the necessary work. These forms are not to be utilized for any other purpose.

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

QUESTIONS

Action 243475

QUESTIONS

Operator: CANYON E & P COMPANY 251 O'Connor Ridge Blvd. Irving, TX 75038	OGRID: 269864
	Action Number: 243475
	Action Type: [UF-OMA] Post-Plug Methane Monitoring (UF-OMA-MMB)

QUESTIONS

Prerequisites	
[OGRID] Well Operator	[269864] CANYON E & P COMPANY
[API] Well Name and Number	[30-015-02142] ARTESIA METEX UNIT #043
Well Status	Plugged (not released)

Monitoring Event Information*Please answer all the questions in this group.*

Reason For Filing	Post-Plug Methane Monitoring
Date of monitoring	06/27/2023
Latitude	32.7210083
Longitude	-104.2136993

Monitoring Event Details*Please answer all the questions in this group.*

Flow rate in cubic meters per day (m³/day)	0.00
Test duration in hours (hr)	1.0
Average flow temperature in degrees Celsius (°C)	38.8
Average gauge flow pressure in kilopascals (kPag)	0.0
Methane concentration in part per million (ppm)	0
Methane emission rate in grams per hour (g/hr)	0.00
Testing Method	Other

Monitoring Contractor*Please answer all the questions in this group.*

Name of monitoring contractor	Well Done New Mexico LLC
-------------------------------	--------------------------