Well Done NEW MEXICO LLC

P.O. Box 10640 Bozeman, Montana 59719 (406) 460-0903

TO: Jim Griswold, NMOCD

FROM: Curtis Shuck, Chairman

DATE: July 24, 2023

RE: O'Brien Lightcap 7 #001 (30-005-60815) 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 O'Brien Lightcap 7 #001 by the WDF Measure 1 Field Team on March 18, 2023, revealed a cement filled casing, cutoff to -2'-0" below the surface. The WDF Measure 1Team took site photographs, performed field gas measurements and collected a gas sample for immediate laboratory analysis.

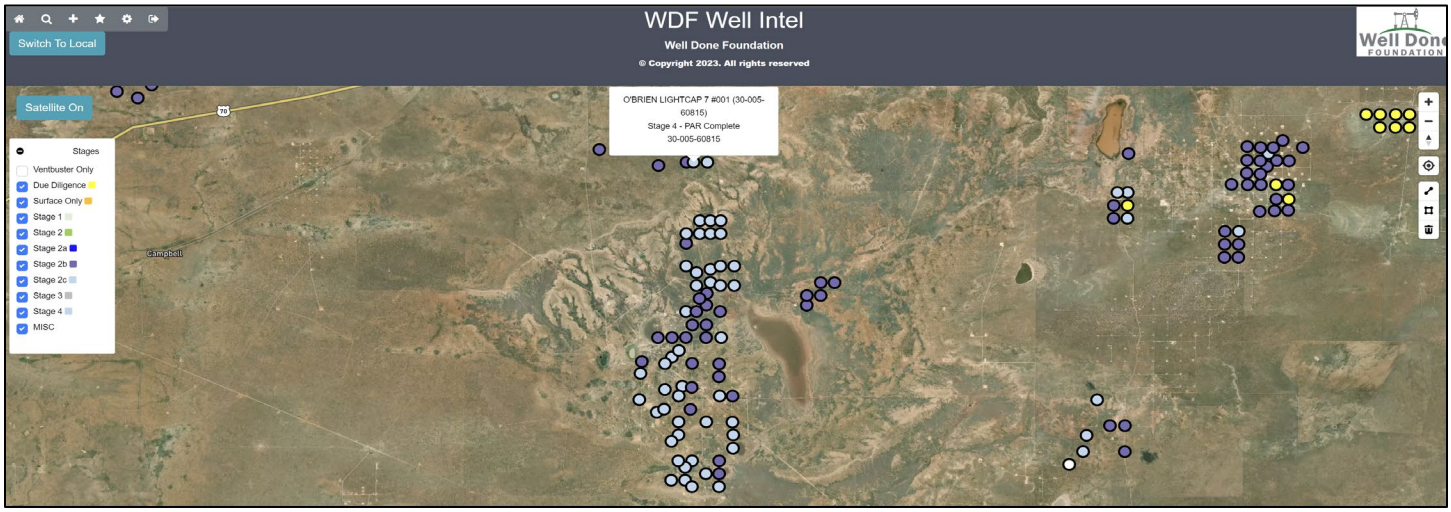


Image 1.1 – O'Brien Lightcap 7 #001 (30-005-60815) Orphan Well in Chaves County, NM

The Pre-Plugging Methane Flow Calculations were based on the O'Brien Field Averaging Analysis conducted by the Well Done Foundation and Well Done New Mexico LLC and monitored using Ventbuster™ Instruments VB100-45 Series Ultra-Low Flow Meter with GPS on December 17, 2022. The Methane Concentration was measured at 0.00 ppm and Methane Flow was measured at 0.24 cfd. Therefore, the adjusted average methane gas emission measured at this wellhead is calculated at **0.00 grams per hour (g/hour)**.[1]

The State of New Mexico used the methane flow data collected by WDF to prioritize the O'Brien Lightcap 7 #001 orphan well plugging under the IIJA Program and began mobilizing a contractor to location. J A Drake Well Service, Inc. of Farmington, NM was awarded the plugging contract.

WDF arrived at the O'Brien Lightcap 7 #001 location on March 20, 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: 0.00 g/hour.**

- [1] Methane Calculation: 717 grams CH4 per cubic meter (717 x 0.00 m3/day = 0.0 g/day total /24 = 0.00 g/hour x 0.00000 (methane concentration) = **0.00 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/m^3; 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/ft^3].

Well Done FOUNDATION
VENTBUSTER INSTRUMENTS

Test Report

Start Date: Sat Dec 17 2022 21:48:23 GMT+0000 (Coordinated Universal Time)
End Date: Sun Dec 18 2022 22:55:58 GMT+0000 (Coordinated Universal Time)
Device: VB100-0045
Well Licensee: NMOCD
Well Name: OBrian Lightcap 7 001
UWI: 30-005-60815
Well License Number: 30-005-60815
Surface Location: Chaves County
Bottom Hole Location: unknown

Test Operator: ces
Authorized By: NMOCD
Test Reason: IIJA PRE PLUG
Scope Of Work: 12-Hour
AFE Number: 52100-072998
GPS: 33.63356,-104.03172
Notes: GTG
Prepared By: Curtis Shuck

Flow / Pressure Test

Flow Duration	Average Flowrate	Average Pressure	Average Flow Temperature	Average CH4 Mass
25 hrs 6 minutes	0.2448	0.4063	40.3283	0.00 g/hr
Duration	cfd	psig	°F	

Methane Calculation: 717 grams CH4 per cubic meter (717 g/m^3 x 0.0069 m^3/day = 4.95 g/day total /24 = 0.21 g/hour x 0 (methane concentration) = **0.00 g/hour CH4**). **Methane, gas** weighs 0.000717 *gram per cubic centimeter* or 0.717 *kilgram per cubic meter*, i.e. density of *methane, gas* is equal to 0.717 kg/m^3; at 0°C (32°F or 273.15K) at standard atmospheric pressure. In imperial or US customary measurement system, the density is equal to 0.0448 *pound per cubic foot* [lb/ft^3], or 0.0004144 *ounce per cubic inch* [oz/$inch^3$].

Flow / Pressure / Temperature Timeseries

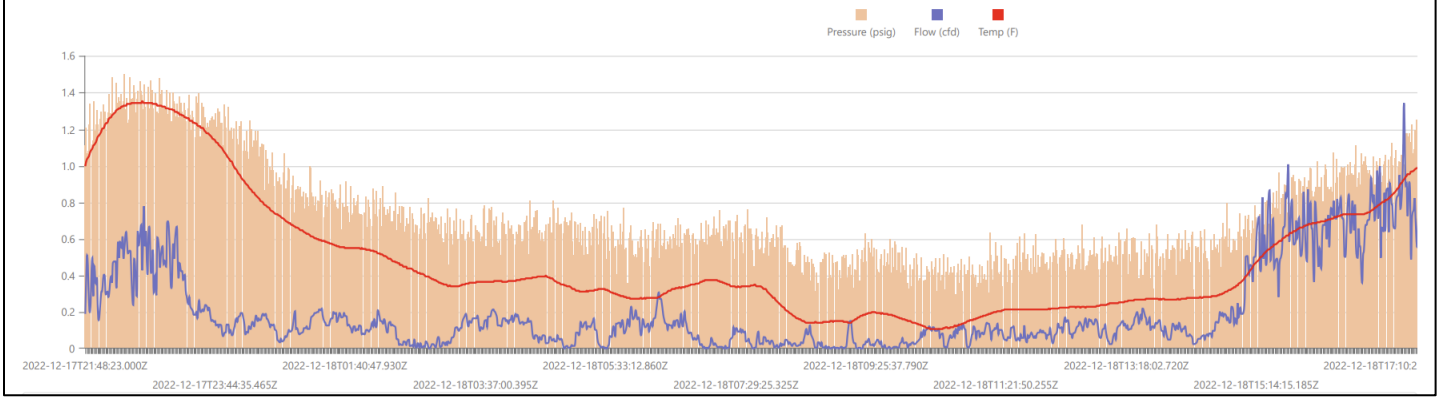


Image 2.1 – O'Brien Lightcap 7 #001 Pre Plugging Test Report

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).

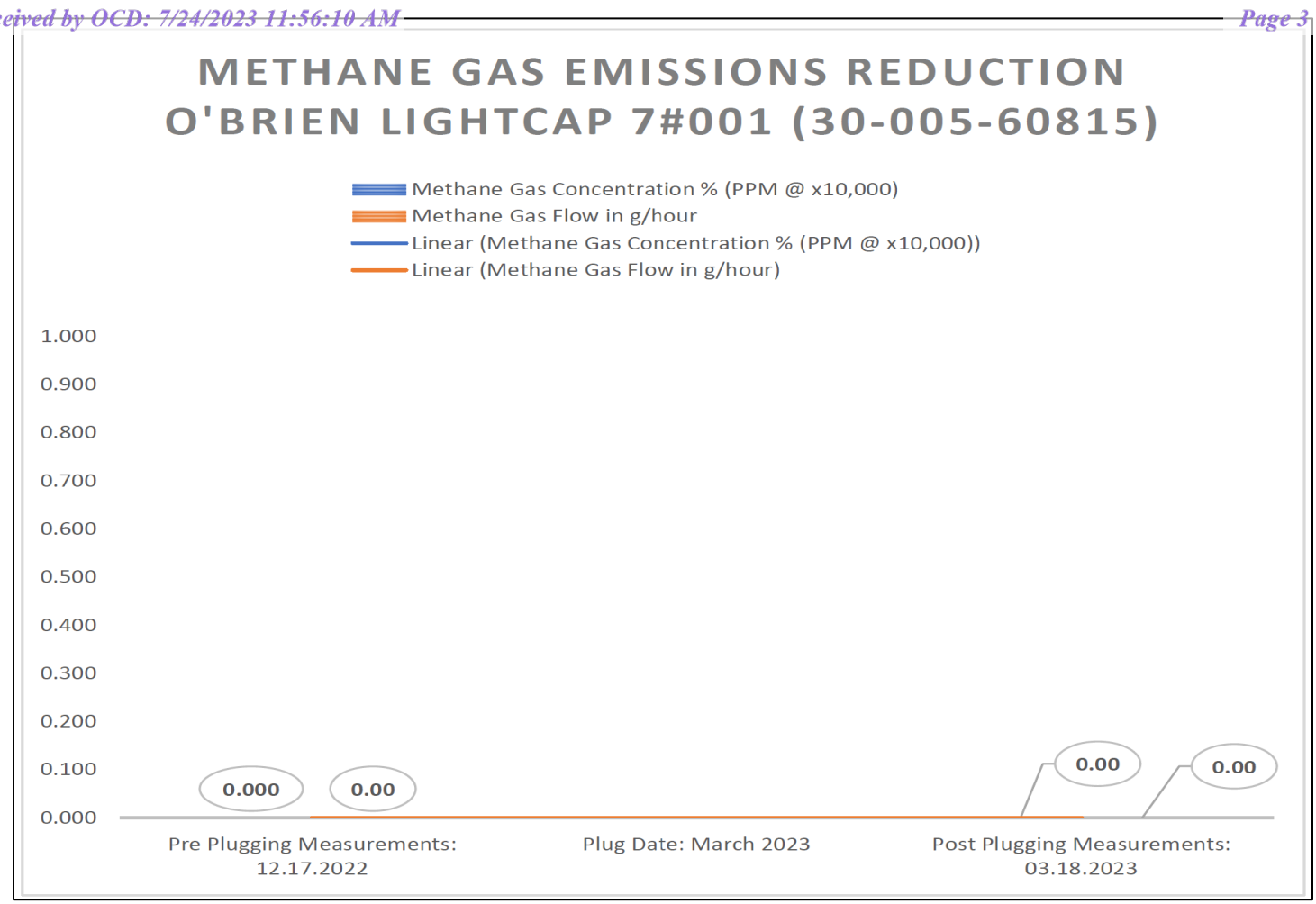


Image 3.1 – O'Brien Lightcap 7 #001 (30-005-60815) Methane Gas Emissions Reduction Pre Plugging to Post Plugging

TECHNICAL FINDINGS

O'Brien Lightcap 7 #001 (30-005-60815):

- **Total C1 through C6 Gas Concentration: 3,680 ppm**
- **Total Measured Wellhead Gas Emissions: <0.00 m3/day**
- **Methane Gas Concentration: 0.00 ppm**
- **Calculated Average Wellhead Methane Gas Emissions: 0.00 g/hour**
- **Post Plugging Methane Gas Concentration: 0.00 ppm**
- **Post Plugging Methane Flow: 0.00 g/hour**

CONCLUSIONS

- The O'Brien Lightcap 7 #001 (30-005-60815) was not emitting Methane gas pre-plugging during the cope of this test, which is 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 O'Brien Lightcap 7 #001 (30-005-60815) 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	2023-03-18	ces: WDF Measure 1 on location to perform post plugging methane measurements. Field gas analysis produced a non detect for methane. Collect gas sample for Laboratory analysis. Place ribbon at cemented well casing and take photos. WILDCAT OUT!
2	2022-12-18	FV: Pulled gas sample. Rig down VB100-045. Leave Dorothy up on location until her next move.
3	2022-12-17	ces: Rig up VB100-045 using Dorothy for the open hole Methane Measurement. Took site photos, measured Field Gas (ND) and started Methane Flow Test and will collect Laboratory Gas Sample on 2/18/2022.

Image 4.1 – O'Brien Lightcap 7 #001 (30-005-60815) Field Notes from WDF Well Intel™ Orphan Well Project Management IoT

1) O'Brien Lightcap 7 #001 – Field Gas

2) O'Brien Lightcap 7 #001 – Gas Sample


3) O'Brien Lightcap 7 #001 – Green Ribbon

LABORATORY SERVICES Natural Gas Analysis
www.permianls.com
575.397.3713 2609 W Marland Hobbs NM 88240

C6+ Gas Analysis Report

16406G	OBrien Lightcap 7 #1	OBrien Lightcap 7 #1
Sample Point Code	Sample Point Name	Sample Point Location

Laboratory Services	2023066041	Tedlar Bag	CES - Spot
Source Laboratory	Lab File No	Container Identity	Sampler

USA	USA	USA	New Mexico
District	Area Name	Field Name	Facility Name

Mar 18, 2023 17:30	Mar 18, 2023 17:30	Mar 24, 2023 08:51	Mar 24, 2023
Date Sampled	Date Effective	Date Received	Date Reported

		Luis	
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)	98.8700	98.87059	
CO2 (CO2)	0.0510	0.0512	
Methane (C1)	0.0000	0	
Ethane (C2)	0.0400	0.03964	0.0110
Propane (C3)	0.0400	0.03977	0.0110
I-Butane (IC4)	0.0000	0	0.0000
N-Butane (NC4)	0.0360	0.03616	0.0110
I-Pentane (IC5)	0.0260	0.02565	0.0100
N-Pentane (NC5)	0.0490	0.04911	0.0180
Hexanes Plus (C6+)	0.8880	0.88787	0.3850
TOTAL	100.0000	100.0000	0.4460

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

Gross Heating Values (Real, BTU/ft³)

14.696 PSI @ 60.00 Â°F		14.73 PSI @ 60.00 Â°F	
Dry	Saturated	Dry	Saturated
51.6	51.6	51.7	51.7

Calculated Total Sample Properties

GPA2145-16 *Calculated at Contract Conditions

Relative Density Real	Relative Density Ideal
0.9892	0.9892

Molecular Weight: 28.6515

C6+ Group Properties

Assumed Composition: C6 - 60.000% C7 - 30.000% C8 - 10.000%

Field H2S: 0 PPM

PROTREND STATUS: Passed By Validator on Mar 27, 2023

DATA SOURCE: Imported

PASSED BY VALIDATOR REASON: First sample taken @ this point, composition looks reasonable

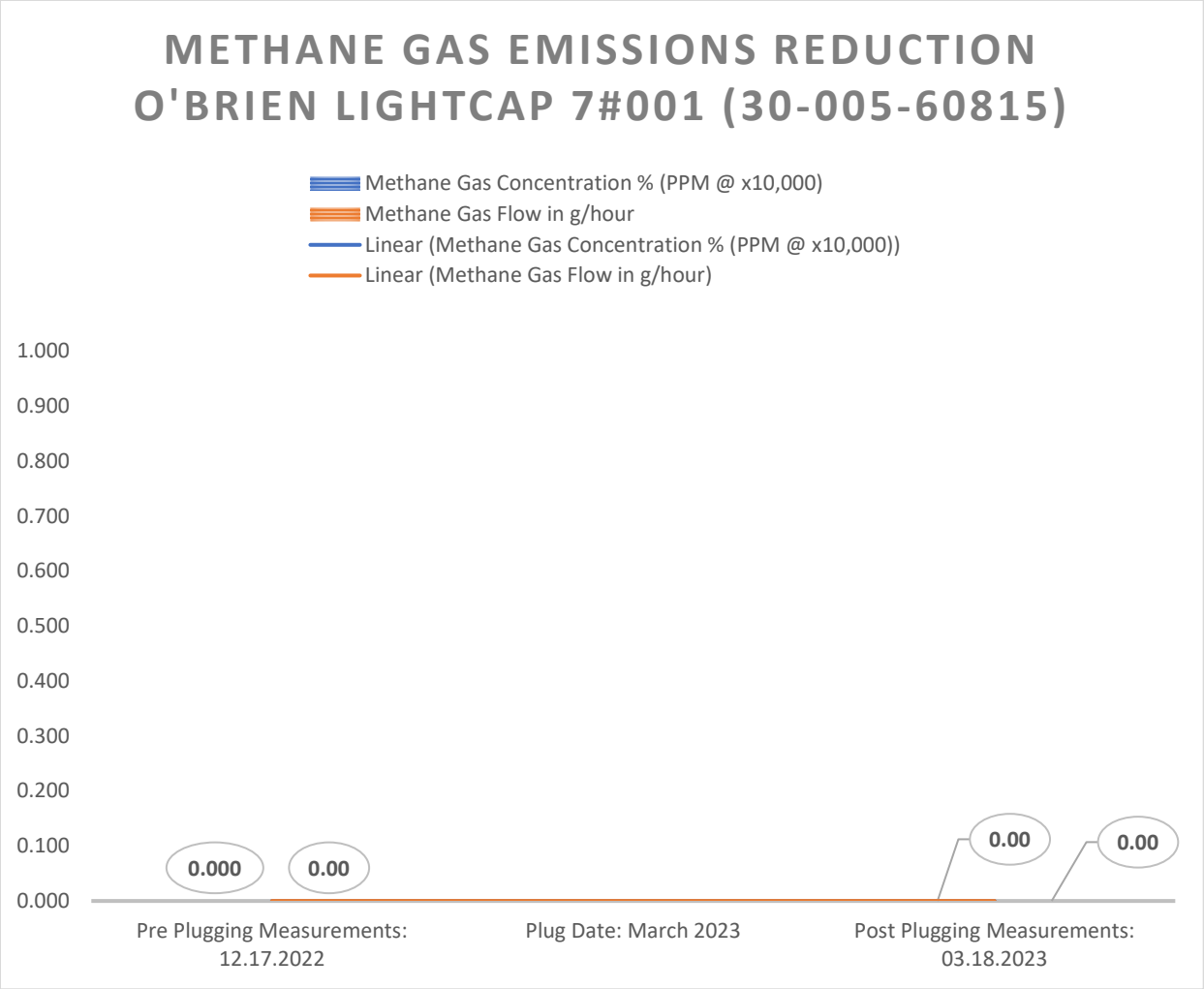
VALIDATOR: Brooke Rush

VALIDATOR COMMENTS: OK

Analyzer Information

Device Type:	Gas Chromatograph	Device Make:	Shimadzu
Device Model:	GC-2014	Last Cal Date:	Feb 13, 2023

Source	Date	Notes
Brooke Rush	Mar 27, 2023 2:45 pm	Methane = 0 PPM


METHANE GAS EMISSIONS REDUCTION
O'BRIEN LIGHTCAP 7#001 (30-005-60815)
Methane Gas Concentration % (PPM @ x10,000)
Methane Gas Flow in g/hour
Linear (Methane Gas Concentration % (PPM @ x10,000))
Linear (Methane Gas Flow in g/hour)
1.000
0.900
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
0.000
0.00
0.00
0.00
Pre Plugging Measurements: 12.17.2022
Plug Date: March 2023
Post Plugging Measurements: 03.18.2023

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

Operator: CANYON E & P COMPANY 251 O'Connor Ridge Blvd. Irving, TX 75038	OGRID: 269864
	Action Number: 243647
	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.

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QUESTIONS

Action 243647

QUESTIONS

Operator: CANYON E & P COMPANY 251 O'Connor Ridge Blvd. Irving, TX 75038	OGRID: 269864
	Action Number: 243647
	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	**[30-005-60815] O'BRIEN LIGHTCAP 7 #001**
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	03/18/2023
Latitude	33.6336784
Longitude	-104.0316315

Monitoring Event Details *Please answer all the questions in this group.*	
Flow rate in cubic meters per day (m^3/day)	0.00
Test duration in hours (hr)	1.0
Average flow temperature in degrees Celsius (°C)	9.8
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