



Orphan Well Pre Plugging Methane Quantification Report

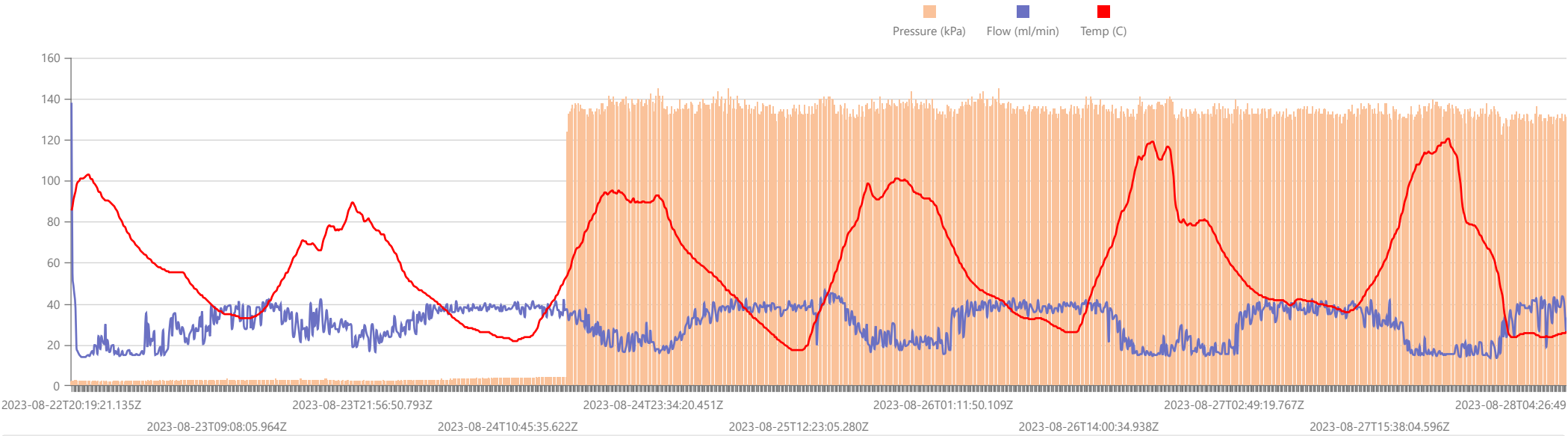
Start Date: Tue Aug 22 2023 20:23:25 GMT+0000 (Coordinated Universal Time) End Date: Tue Aug 29 2023 18:36:22 GMT+0000 (Coordinated Universal Time) Device: VB100-0024 Well Licensee: NMOCD Well Name: EF KING 003 UWI: 30-025-09235 Well License Number: 30-025-09335 Surface Location: unknown Bottom Hole Location: unknown	Test Operator: ces Authorized By: NMOCD Test Reason: IIHA PRE PLUG Scope Of Work: 12- hour AFE Number: 23.02.091 GPS: 32.31349,-103.21361 Notes: Casing Prepared By: Curtis Shuck, QMS
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Flow / Pressure Test

Flow Duration 166 hrs 12 minutes Duration	Average Flowrate 29.9854 m3/d	Average Pressure 124.7878 kPag	Average Flow Temperature 29.3586 °C	Average CH4 Mass 723.99 g/hr
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Methane Calculation: 717 grams CH4 per cubic meter (717 g/m³ x 29.9854 m³/day = 21499.53 g/day total /24 = 895.81 g/hour x 0.80819 (methane concentration) = **723.99 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/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 0.0448 *pound per cubic foot* [lb/ft³], or 0.0004144 *ounce per cubic inch* [oz/inch³].

Flow / Pressure / Temperature Timeseries



#	Date	Note
1	2023-10-22	After reviewing the data, it is Well Done New Mexico's opinion that this orphan well while leaking, was likely not the cause of the plume spotted by NASA. There was however evidence of recent pipeline work in the area that may have been the contributing culprit.
2	2023-08-29	ces: On location to stop the tests and rig the units down. No fluid is present at the location and the casing leak is the most persistent. Tightened the valve at the casing to improve the seal and reduce the emissions until this well can be scheduled for plugging by the NMOCD. WILDCAT OUT!
3	2023-08-22	ces: On location today with Measure 1. Found gas leaking at both the tubing valve and from the casing assembly. Pulled gas samples form each. Rig up VB100-64 at the tubing valve and VB100-24 at the casing port. Started each test and secured the location . Installed NM Test Well signage. Ran gas samples to the LSM Hobbs for analysis.





Weather in Hobbs, August 22

Weather Forecast for August 22 in Hobbs, New Mexico - temperature, wind, atmospheric pressure, humidity and precipitations. Detailed hourly weather chart.

August 20	August 21	Select date: 	August 23	August 24	
August 22, 2023					
	Atmospheric conditions and temperature °F	RealFeel® °F	Atmospheric pressure (inHg)	Wind speed mph	Humidity
Night	 +81°	+81°	26.5	↖ 9.2	35%
Morning	 +73°	+73°	26.5	↘ 6.5	41%
Day	 +90°	+90°	26.6	↖ 12.3	24%
Evening	 +90°	+90°	26.5	↖ 11.2	31%

Weather in Hobbs, August 23

Weather Forecast for August 23 in Hobbs, New Mexico - temperature, wind, atmospheric pressure, humidity and precipitations. Detailed hourly weather chart.

August 21	August 22	Select date:	August 24	August 25	
August 23, 2023					
	Atmospheric conditions and temperature °F	RealFeel® °F	Atmospheric pressure (inHg)	Wind speed (mph)	Humidity
Night	+81°	+81°	26.5	↘ 6.5	35%
Morning	+73°	+73°	26.5	↗ 7.4	55%
Day	+84°	+88°	26.5	↖ 17.7	66%
Evening	+84°	+86°	26.5	↘ 13	54%

Weather in Hobbs, August 24

Weather Forecast for August 24 in Hobbs, New Mexico - temperature, wind, atmospheric pressure, humidity and precipitations. Detailed hourly weather chart.

August 22	August 23	Select date:	August 25	August 26	
August 24, 2023					
	Atmospheric conditions and temperature °F	RealFeel °F	Atmospheric pressure (inHg)	Wind speed mph	Humidity
Night	+72°	+72°	26.5	▲ 6.9	68%
Morning	+70°	+70°	26.5	▼ 6.9	82%
Day	+88°	+90°	26.6	▲ 12.3	42%
Evening	+88°	+90°	26.5	▲ 10.3	44%

Weather in Hobbs, August 25

Weather Forecast for August 25 in Hobbs, New Mexico - temperature, wind, atmospheric pressure, humidity and precipitations. Detailed hourly weather chart.

August 23	August 24	Select date:	August 26	August 27	
August 25, 2023					
	Atmospheric conditions and temperature °F	RealFeel °F	Atmospheric pressure (inHg)	Wind speed (mph)	Humidity
Night	+79°	+79°	26.5	8.1	69%
Morning	+68°	+68°	26.5	5.4	73%
Day	+91°	+91°	26.5	13	20%
Evening	+90°	+90°	26.5	11.6	21%

Weather in Hobbs, August 26

Weather Forecast for August 26 in Hobbs, New Mexico - temperature, wind, atmospheric pressure, humidity and precipitations. Detailed hourly weather chart.

August 24	August 25	Select date:	August 27	August 28	
August 26, 2023					
	Atmospheric conditions and temperature °F	RealFeel °F	Atmospheric pressure (inHg)	Wind speed mph	Humidity
Night	+77°	+77°	26.5	↘ 5.4	50%
Morning	+72°	+73°	26.5	↖ 3.8	73%
Day	+93°	+93°	26.6	↖ 5.8	25%
Evening	+90°	+90°	26.5	↘ 6.7	26%

Weather in Hobbs, August 27

Weather Forecast for August 27 in Hobbs, New Mexico - temperature, wind, atmospheric pressure, humidity and precipitations. Detailed hourly weather chart.

August 25	August 26	Select date:	August 28	August 29	
August 27, 2023					
	Atmospheric conditions and temperature °F	RealFeel °F	Atmospheric pressure (inHg)	Wind speed mph	Humidity
Night	+79°	+79°	26.5	▼ N 3.6	45%
Morning	+70°	+70°	26.5	▲ NE 9.2	68%
Day	+88°	+88°	26.5	◀ E 6.5	29%
Evening	+88°	+95°	26.5	◀ E 11.2	56%

Weather in Hobbs, August 28

Weather Forecast for August 28 in Hobbs, New Mexico - temperature, wind, atmospheric pressure, humidity and precipitations. Detailed hourly weather chart.

August 26	August 27	Select date:	August 29	August 30	
August 28, 2023					
	Atmospheric conditions and temperature °F	RealFeel® °F	Atmospheric pressure (inHg)	Wind speed (mi)	Humidity
Night	+70°	+70°	26.4	↖ E 4.3	85%
Morning	+70°	+70°	26.5	↘ N 6.3	83%
Day	+81°	+81°	26.5	↗ NE 8.1	44%
Evening	+81°	+81°	26.5	↗ NE 7.6	52%

Weather in Hobbs, August 29

Weather Forecast for August 29 in Hobbs, New Mexico - temperature, wind, atmospheric pressure, humidity and precipitations. Detailed hourly weather chart.

August 27	August 28	Select date:	August 30	August 31	
August 29, 2023					
	Atmospheric conditions and temperature °F	RealFeel °F	Atmospheric pressure (inHg)	Wind speed mph	Humidity
Night	+73°	+73°	26.5	↗ 4.5	68%
Morning	+68°	+68°	26.5	▼ 6.9	84%
Day	+86°	+86°	26.5	▼ 6.7	29%
Evening	+84°	+84°	26.5	▼ 8.9	29%



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C6+ Gas Analysis Report

18090G Sample Point Code		EF King Pre Plug Casing Sample Point Name		EF King Pre Plug Casing Sample Point Location	
Laboratory Services		2023074240		BAG	
Source Laboratory		Lab File No		Container Identity	
USA		USA		USA	
District		Area Name		Field Name	
Aug 22, 2023 13:50		Aug 22, 2023 13:50		Aug 24, 2023 08:28	
Date Sampled		Date Effective		Date Received	
Admin		Admin		Admin	
Ambient Temp (°F)		Flow Rate (McF)		Analyst	
Press PSI @ Temp °F		Source Conditions		Source Conditions	
Well Done Foundation		Operator		NG	
Lab Source Description		Lab Source Description		Lab Source Description	
Component		Normalized Mol %		Un-Normalized Mol %	
GPM		GPM		GPM	
H2S (H2S)		0.0000		0	
Nitrogen (N2)		3.9720		3.9724	
CO2 (CO2)		0.0000		0	
Methane (C1)		80.8190		80.81984	
Ethane (C2)		8.1240		8.12367	
Propane (C3)		3.9050		3.90501	
I-Butane (IC4)		0.5050		0.50476	
N-Butane (NC4)		1.1540		1.15386	
I-Pentane (IC5)		0.3590		0.3586	
N-Pentane (NC5)		0.3430		0.34312	
Hexanes Plus (C6+)		0.8190		0.81873	
TOTAL		100.0000		100.0000	
Gross Heating Values (Real, BTU/ft³)		14.696 PSI @ 60.00 °F		14.73 PSI @ 60.00 °F	
Dry		Saturated		Dry	
1,186.7		1,167.4		1,189.4	
Calculated Total Sample Properties		GPA2145-16 °C Calculated at Contract Conditions		Relative Density Real	
0.7090		Relative Density Ideal		0.7070	
Molecular Weight		20.4768		C6+ Group Properties	
Assumed Composition		C6 - 60.000%		C7 - 30.000%	
C8 - 10.000%		PROTEND STATUS:		DATA SOURCE:	
Passed By Validator on Sep 1, 2023		Imported		PASSED BY VALIDATOR REASON:	
First sample taken @ this point, composition looks reasonable		VALIDATOR:		Rush	
Validator Comments:		OK		Validator Comments:	
OK		Source		Date	
Notes		Sep 1, 2023 3:08 pm		Methane: 80.819%	



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C6+ Gas Analysis Report

18090G Sample Point Code	EF King Pre Plug Casing Sample Point Name	EF King Pre Plug Casing Sample Point Location	
Laboratory Services Source Laboratory	2023074240 Lab File No	BAG Container Identity	CES - Spot Sampler
USA District	USA Area Name	USA Field Name	New Mexico Facility Name
Aug 22, 2023 13:50 Date Sampled	Aug 22, 2023 13:50 Date Effective	Aug 24, 2023 08:28 Date Received	Aug 29, 2023 Date Reported
Admin			
Ambient Temp (°F)	Flow Rate (Mcf)	Analyst	Press PSI @ Temp °F Source Conditions
Well Done Foundation Operator		NG Lab Source Description	

Component	Normalized Mol %	Un-Normalized Mol %	GPM
H2S (H2S)	0.0000	0	
Nitrogen (N2)	3.9720	3.9724	
CO2 (CO2)	0.0000	0	
Methane (C1)	80.8190	80.81984	
Ethane (C2)	8.1240	8.12367	2.1720
Propane (C3)	3.9050	3.90501	1.0760
I-Butane (IC4)	0.5050	0.50476	0.1650
N-Butane (NC4)	1.1540	1.15386	0.3640
I-Pentane (IC5)	0.3590	0.3586	0.1310
N-Pentane (NC5)	0.3430	0.34312	0.1240
Hexanes Plus (C6+)	0.8190	0.81873	0.3550
TOTAL	100.0000	100.0000	4.3870

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

Gross Heating Values (Real, BTU/ft³)			
14.696 PSI @ 60.00 Å°F		14.73 PSI @ 60.00 Å°F	
Dry	Saturated	Dry	Saturated
1,186.7	1,167.4	1,189.4	1,170.1

Calculated Total Sample Properties	
GPA2145-16 *Calculated at Contract Conditions	
Relative Density Real	Relative Density Ideal
0.7090	0.7070
Molecular Weight	
20.4768	

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

PROTREND STATUS: Passed By Validator on Sep 1, 2023
DATA SOURCE: Imported
PASSED BY VALIDATOR REASON: First sample taken @ this point, composition looks reasonable
VALIDATOR: Rush

VALIDATOR COMMENTS:
OK

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

Source	Date	Notes
	Sep 1, 2023 3:08 pm	Methane: 80.819%

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
<https://www.emnrd.nm.gov/ocd/contact-us>

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

DEFINITIONS

Action 535168

DEFINITIONS

Operator: Well Done New Mexico LLC (OPG Vendor) 333 Main St Shelby, MT 59474	OGRID: 333567
	Action Number: 535168
	Action Type: [UF-OMA] Pre-Plug Methane Monitoring (UF-OMA-MMA)

DEFINITIONS

The OCD Mitigation Activity (OMA) forms are a subset of the OCD's forms exclusively designed for activities related to State of New Mexico's contracted evaluation, plugging, decommissioning, remediation, salvage and reclamation activities. Specifically, these forms are typically used where the OCD has acquired a hearing order allowing the OCD to perform mitigation activities on wells and associated facilities that no longer have an authorized or viable operator to perform the necessary work. These forms are not to be utilized for any other purpose.

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QUESTIONS

Action 535168

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Operator: Well Done New Mexico LLC (OPG Vendor) 333 Main St Shelby, MT 59474	OGRID: 333567
	Action Number: 535168
	Action Type: [UF-OMA] Pre-Plug Methane Monitoring (UF-OMA-MMA)

QUESTIONS

Prerequisites	
[OGRID] Well Operator	[142624] ROCA PRODUCTION INC.
[API] Well Name and Number	[30-025-09335] E F KING #003
Well Status	Reclamation Fund Approved

Monitoring Event Information	
<i>Please answer all the questions in this group.</i>	
Reason For Filing	Pre-Plug Methane Monitoring
Date of monitoring	08/22/2023
Latitude	32.3134842
Longitude	-103.2134628

Monitoring Event Details	
<i>Please answer all the questions in this group.</i>	
Flow rate in cubic meters per day (m ³ /day)	29.98
Test duration in hours (hr)	96.0
Average flow temperature in degrees Celsius (°C)	29.3
Average gauge flow pressure in kilopascals (kPag)	100.0
Methane concentration in part per million (ppm)	808,190
Methane emission rate in grams per hour (g/hr)	723.99
Testing Method	Steady State

Monitoring Contractor	
<i>Please answer all the questions in this group.</i>	
Name of monitoring contractor	WELL DONE NEW MEXICO LLC