



Terra Energy Partners, LLP

Garfield County, CO

Sec 20, T6S, R96W

CHEVRON GM 443-19

Wellbore #1

Design: Wellbore #1

QES Survey Certification Report

24 January, 2021



Quintana Energy Services

11390 FM 830
Willis, TX 77318
Phone: (936) 856-4332
Fax: (936) 856-8678



Survey Certification Sheet

Company	Job Number	Date
Terra Energy Partners, LLP	RM-200852	1/24/2021

Lease	Well Name	County & State
SWNW 20 6S96W 6PM	GM 443-19	Garfield County, CO

API No.	Survey Depth Range	Survey Type
05-045-24350	934 feet to 7688 feet MD	MWD

Sidetrack Information	Directional Supervisor/Surveyor
Click here to enter text.	Richie Moulton

Certification Statement

The data and calculations for this survey have been checked by me and conform to the standards and procedures set forth by Quintana Energy Services (QES). This report represents a true and correct directional survey of this well based on the original data obtained at the well site. Wellbore coordinates are calculated using minimum curvature.

Kristopher Ray

Kristopher Ray
Regulatory Compliance Manager
Quintana Energy Services

Digitally signed by Kristopher Ray
DN: cn=Kristopher Ray, o, ou,
email=kris.ray@klxenergy.com,
c=US
Date: 2021.01.27 10:48:58 -06'00'

Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well GM 443-19
Project:	Garfield County, CO	TVD Reference:	KB=24' @ 5771.70usft (H&P #318)
Site:	Sec 20, T6S, R96W	MD Reference:	KB=24' @ 5771.70usft (H&P #318)
Well:	GM 443-19	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Project	Garfield County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site		Sec 20, T6S, R96W			
Site Position:		Northing:	1,622,121.83 usft	Latitude:	39.511803
From:	Map	Easting:	2,255,366.39 usft	Longitude:	-108.139633
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.66 °

Well	GM 443-19					
Well Position	+N/-S	0.00 usft	Northing:	1,622,103.70 usft	Latitude:	39.511758
	+E/-W	0.00 usft	Easting:	2,255,423.57 usft	Longitude:	-108.139428
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	5,747.70 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM2021	1/21/2021	9.25	65.63	51,304.60000000

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	214.82	

Survey Program	Date	1/24/2021			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
117.00	934.00	Gyros (Wellbore #1)	GYRO-NS	OWSG Gyrocompass Gyro	
1,058.00	7,688.00	QES MWD Surveys (Wellbore #1)	OWSG (REV5) MWD HDGM	OWSG MWD - Standard	

Survey							
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)
934.00	23.02	215.70	918.41	-106.56	-73.71	129.56	214.67
Gyro Tie-in @ 934.00' MD / 918.41' TVD							
1,058.00	27.16	217.75	1,030.69	-148.64	-105.20	182.10	215.29
1,153.00	29.36	218.54	1,114.36	-184.01	-132.98	227.03	215.86
1,246.00	31.51	218.36	1,194.54	-220.90	-162.28	274.10	216.30
1,341.00	35.46	217.66	1,273.76	-262.20	-194.53	326.48	216.57
1,435.00	38.94	217.31	1,348.62	-307.29	-229.11	383.30	216.71
1,529.00	42.50	216.69	1,419.85	-356.27	-265.99	444.61	216.75
1,623.00	47.11	216.60	1,486.53	-409.40	-305.52	510.83	216.73
1,716.00	50.36	215.64	1,547.86	-465.87	-346.71	580.72	216.66
1,810.00	49.66	214.58	1,608.27	-524.78	-388.13	652.72	216.49

Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well GM 443-19
Project:	Garfield County, CO	TVD Reference:	KB=24' @ 5771.70usft (H&P #318)
Site:	Sec 20, T6S, R96W	MD Reference:	KB=24' @ 5771.70usft (H&P #318)
Well:	GM 443-19	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Survey								
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	
1,904.00	49.83	214.93	1,669.01	-583.72	-429.03	724.43	216.32	
1,998.00	49.97	215.90	1,729.56	-642.32	-470.69	796.32	216.23	
2,092.00	50.67	215.81	1,789.58	-700.95	-513.07	868.66	216.20	
2,185.00	50.76	215.99	1,848.46	-759.26	-555.28	940.64	216.18	
2,279.00	50.63	216.08	1,908.01	-818.08	-598.07	1,013.38	216.17	
2,373.00	50.89	215.55	1,967.47	-877.12	-640.67	1,086.18	216.15	
2,466.00	50.76	214.41	2,026.22	-936.19	-682.00	1,158.26	216.07	
2,560.00	50.27	214.41	2,085.99	-996.04	-723.00	1,230.78	215.97	
2,654.00	49.88	214.76	2,146.32	-1,055.39	-763.91	1,302.85	215.90	
2,749.00	48.69	214.67	2,208.28	-1,114.58	-804.92	1,374.84	215.84	
2,843.00	47.07	214.32	2,271.33	-1,172.04	-844.41	1,444.54	215.77	
2,938.00	46.49	214.14	2,336.38	-1,229.27	-883.35	1,513.74	215.70	
3,032.00	44.78	214.49	2,402.11	-1,284.78	-921.23	1,580.92	215.64	
3,126.00	42.36	214.41	2,470.21	-1,338.20	-957.88	1,645.69	215.59	
3,220.00	39.07	213.79	2,541.45	-1,388.96	-992.26	1,706.98	215.54	
3,315.00	35.51	214.41	2,617.01	-1,436.62	-1,024.51	1,764.51	215.49	
3,409.00	31.86	214.81	2,695.22	-1,479.52	-1,054.11	1,816.63	215.47	
3,503.00	30.15	217.92	2,775.79	-1,518.52	-1,082.78	1,865.03	215.49	
3,597.00	29.71	218.63	2,857.25	-1,555.34	-1,111.83	1,911.87	215.56	
3,692.00	29.62	219.33	2,939.80	-1,591.89	-1,141.41	1,958.81	215.64	
3,786.00	28.65	219.15	3,021.91	-1,627.34	-1,170.36	2,004.49	215.72	
3,880.00	26.72	218.27	3,105.14	-1,661.41	-1,197.68	2,048.10	215.79	
3,974.00	25.05	217.83	3,189.71	-1,693.72	-1,222.98	2,089.10	215.83	
4,068.00	23.64	216.52	3,275.35	-1,724.58	-1,246.40	2,127.84	215.86	
4,162.00	21.75	216.16	3,362.07	-1,753.79	-1,267.89	2,164.10	215.86	
4,255.00	18.85	214.58	3,449.28	-1,780.08	-1,286.59	2,196.36	215.86	
4,350.00	15.78	216.69	3,539.97	-1,803.08	-1,303.02	2,224.63	215.85	
4,444.00	12.88	215.72	3,631.03	-1,821.84	-1,316.78	2,247.89	215.86	
4,538.00	10.15	213.97	3,723.13	-1,837.22	-1,327.52	2,266.65	215.85	
4,633.00	7.82	214.67	3,816.96	-1,849.47	-1,335.88	2,281.48	215.84	
4,726.00	5.80	211.51	3,909.30	-1,858.69	-1,341.94	2,292.49	215.83	
4,821.00	3.96	209.75	4,003.95	-1,865.63	-1,346.07	2,300.54	215.81	
4,915.00	1.80	200.17	4,097.83	-1,869.83	-1,348.19	2,305.19	215.79	
5,009.00	1.32	70.27	4,191.81	-1,870.85	-1,347.68	2,305.72	215.77	
5,102.00	2.72	54.36	4,284.75	-1,869.20	-1,344.88	2,302.74	215.73	
5,196.00	2.37	50.93	4,378.66	-1,866.68	-1,341.56	2,298.75	215.70	
5,291.00	1.49	46.54	4,473.60	-1,864.59	-1,339.14	2,295.65	215.69	
5,385.00	1.58	46.27	4,567.57	-1,862.86	-1,337.31	2,293.17	215.67	
5,479.00	1.01	27.02	4,661.55	-1,861.22	-1,336.00	2,291.08	215.67	
5,573.00	0.75	26.50	4,755.54	-1,859.93	-1,335.35	2,289.65	215.68	
5,667.00	0.26	1.45	4,849.53	-1,859.17	-1,335.07	2,288.87	215.68	
5,761.00	0.09	279.27	4,943.53	-1,858.94	-1,335.14	2,288.73	215.69	
5,855.00	0.35	231.63	5,037.53	-1,859.11	-1,335.44	2,289.03	215.69	
5,949.00	0.62	224.69	5,131.53	-1,859.65	-1,336.02	2,289.81	215.69	
6,043.00	1.14	216.16	5,225.52	-1,860.77	-1,336.93	2,291.25	215.70	

Company:	Terra Energy Partners, LLP	Local Co-ordinate Reference:	Well GM 443-19
Project:	Garfield County, CO	TVD Reference:	KB=24' @ 5771.70usft (H&P #318)
Site:	Sec 20, T6S, R96W	MD Reference:	KB=24' @ 5771.70usft (H&P #318)
Well:	GM 443-19	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	EDM 5000.1 Single User Db

Survey							
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)
6,137.00	1.27	210.28	5,319.50	-1,862.42	-1,338.00	2,293.22	215.69
6,231.00	1.71	212.21	5,413.46	-1,864.51	-1,339.28	2,295.66	215.69
6,325.00	1.67	223.81	5,507.42	-1,866.68	-1,340.97	2,298.41	215.69
6,419.00	2.07	224.07	5,601.37	-1,868.89	-1,343.10	2,301.45	215.70
6,513.00	2.11	222.58	5,695.31	-1,871.38	-1,345.45	2,304.85	215.71
6,607.00	2.29	222.23	5,789.24	-1,874.05	-1,347.89	2,308.43	215.73
6,701.00	2.50	233.22	5,883.16	-1,876.67	-1,350.79	2,312.25	215.75
6,795.00	2.72	233.74	5,977.06	-1,879.21	-1,354.23	2,316.33	215.78
6,889.00	3.08	236.91	6,070.94	-1,881.91	-1,358.15	2,320.81	215.82
6,983.00	3.08	238.05	6,164.81	-1,884.63	-1,362.40	2,325.50	215.86
7,077.00	3.34	237.08	6,258.66	-1,887.45	-1,366.85	2,330.39	215.91
7,171.00	3.12	230.84	6,352.51	-1,890.55	-1,371.13	2,335.42	215.95
7,266.00	2.94	227.77	6,447.38	-1,893.83	-1,374.94	2,340.30	215.98
7,360.00	3.21	234.01	6,541.24	-1,896.99	-1,378.85	2,345.17	216.01
7,454.00	3.91	233.22	6,635.06	-1,900.46	-1,383.55	2,350.73	216.05
7,548.00	4.79	236.64	6,728.79	-1,904.53	-1,389.39	2,357.47	216.11
7,615.00	4.66	235.32	6,795.56	-1,907.62	-1,393.97	2,362.66	216.16
7,688.00	4.66	235.32	6,868.32	-1,911.00	-1,398.84	2,368.26	216.20
TD @ 7688.00' MD / 6868.32' TVD							

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
934.00	918.41	-106.56	-73.71	Gyro Tie-in @ 934.00' MD / 918.41' TVD	
7,688.00	6,868.32	-1,911.00	-1,398.84	TD @ 7688.00' MD / 6868.32' TVD	

Checked By: _____ Approved By: _____ Date: _____