



## **Terra Energy Partners, LLP**

**Garfield County, CO**

**Sec 20, T6S, R96W**

**CHEVRON GM 442-19**

**Wellbore #1**

**Design: Wellbore #1**

## **QES Survey Certification Report**

**16 January, 2021**



## Quintana Energy Services

11390 FM 830  
Willis, TX 77318  
Phone: (936) 856-4332  
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### Survey Certification Sheet

Company	Job Number	Date
TEP Rocky Mountain LLC	RM-200855	1/16/2021

Lease	Well Name	County & State
SWNW 20 6S 96W 6 PM	GM 442-19	Garfield County, CO

API No.	Survey Depth Range	Survey Type
05-045-24359	294 feet to 7252 feet MD	MWD

Sidetrack Information	Directional Supervisor/Surveyor
<a href="#">Click here to enter text.</a>	James Franklin

### 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  
Regulatory Compliance Manager  
Quintana Energy Services

<b>Company:</b>	Terra Energy Partners, LLP	<b>Local Co-ordinate Reference:</b>	Well GM 442-19
<b>Project:</b>	Garfield County, CO	<b>TVD Reference:</b>	KB=24' @ 5771.70usft (H&P #318)
<b>Site:</b>	Sec 20, T6S, R96W	<b>MD Reference:</b>	KB=24' @ 5771.70usft (H&P #318)
<b>Well:</b>	GM 442-19	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	EDM 5000.1 Single User Db

<b>Project</b>	Garfield County, CO		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	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 442-19					
Well Position	+N/-S	0.00 usft	Northing:	1,622,110.50 usft	Latitude:	39.511775
	+E/-W	0.00 usft	Easting:	2,255,402.13 usft	Longitude:	-108.139505
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	5,747.70 usft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	HDGM2021	1/14/2021	9.25	65.63	51,306.70000000

<b>Design</b>	Wellbore #1				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	234.28	

<b>Survey Program</b>	<b>Date</b>	1/16/2021			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
294.00	7,252.00	QES MWD Surveys (Wellbore #1)	OWSG (REV5) MWD HDGM	OWSG MWD - Standard	

<b>Survey</b>								
<b>MD (usft)</b>	<b>Inc (°)</b>	<b>Azi (azimuth) (°)</b>	<b>TVD (usft)</b>	<b>N/S (usft)</b>	<b>E/W (usft)</b>	<b>Closure Distance (usft)</b>	<b>Closure Azimuth (°)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
294.00	3.91	218.60	293.77	-7.84	-6.26	10.03	218.60	
<b>First MWD Survey @ 294.00' MD / 293.77' TVD</b>								
383.00	6.77	221.59	382.38	-14.13	-11.63	18.30	219.46	
474.00	9.10	227.30	472.50	-23.03	-20.48	30.82	221.65	
564.00	11.78	233.10	561.00	-33.37	-33.06	46.98	224.73	
655.00	14.90	233.80	649.54	-45.86	-49.94	67.80	227.44	
746.00	19.25	236.35	736.51	-61.09	-71.88	94.33	229.64	
835.00	23.33	238.29	819.42	-78.49	-99.09	126.41	231.62	
927.00	27.86	236.44	902.37	-99.96	-132.52	165.99	232.97	
1,060.00	32.83	234.53	1,017.11	-138.09	-187.82	233.11	233.68	
1,154.00	31.51	235.85	1,096.68	-166.66	-228.90	283.15	233.94	

<b>Company:</b>	Terra Energy Partners, LLP	<b>Local Co-ordinate Reference:</b>	Well GM 442-19
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<b>Site:</b>	Sec 20, T6S, R96W	<b>MD Reference:</b>	KB=24' @ 5771.70usft (H&P #318)
<b>Well:</b>	GM 442-19	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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 (°)	
1,248.00	31.42	237.35	1,176.86	-193.67	-269.86	332.16	234.33	
1,342.00	31.64	237.35	1,256.98	-220.19	-311.25	381.26	234.72	
1,436.00	30.27	238.05	1,337.59	-246.03	-352.11	429.55	235.06	
1,530.00	30.59	236.47	1,418.65	-271.78	-392.15	477.13	235.28	
1,624.00	29.58	236.20	1,499.98	-297.90	-431.37	524.24	235.37	
1,718.00	30.23	235.58	1,581.47	-324.18	-470.17	571.10	235.41	
1,812.00	29.75	234.71	1,662.88	-351.03	-508.73	618.08	235.39	
1,906.00	30.89	234.62	1,744.02	-378.48	-547.44	665.53	235.34	
2,000.00	29.84	235.32	1,825.13	-405.76	-586.35	713.05	235.32	
2,093.00	30.19	233.04	1,905.66	-432.98	-624.06	759.55	235.25	
2,187.00	29.36	232.51	1,987.25	-461.22	-661.23	806.19	235.10	
2,280.00	29.40	234.36	2,068.29	-488.40	-697.87	851.79	235.01	
2,374.00	30.54	236.91	2,149.72	-514.88	-736.63	898.74	235.05	
2,467.00	30.03	235.76	2,230.03	-540.87	-775.67	945.63	235.11	
2,562.00	28.65	235.06	2,312.84	-567.29	-813.99	992.17	235.13	
2,656.00	29.58	233.48	2,394.96	-594.01	-851.11	1,037.90	235.09	
2,750.00	30.45	232.95	2,476.36	-622.17	-888.77	1,084.90	235.01	
2,845.00	28.21	233.57	2,559.18	-650.01	-926.05	1,131.41	234.93	
2,939.00	26.85	235.32	2,642.53	-675.28	-961.38	1,174.85	234.92	
3,033.00	26.02	233.48	2,726.70	-699.63	-995.41	1,216.69	234.90	
3,128.00	26.54	233.57	2,811.88	-724.64	-1,029.24	1,258.74	234.85	
3,222.00	28.78	234.97	2,895.14	-750.10	-1,064.67	1,302.37	234.83	
3,316.00	27.51	235.50	2,978.02	-775.38	-1,101.09	1,346.71	234.85	
3,411.00	26.37	235.15	3,062.71	-799.87	-1,136.48	1,389.74	234.86	
3,505.00	25.18	235.41	3,147.36	-823.15	-1,170.08	1,430.62	234.87	
3,599.00	24.04	232.95	3,232.82	-846.04	-1,201.82	1,469.75	234.86	
3,693.00	22.85	232.92	3,319.06	-868.58	-1,231.67	1,507.13	234.81	
3,787.00	21.14	229.00	3,406.22	-890.71	-1,259.02	1,542.24	234.72	
3,881.00	19.34	227.94	3,494.41	-912.26	-1,283.38	1,574.57	234.59	
3,975.00	17.58	227.77	3,583.57	-932.23	-1,305.44	1,604.13	234.47	
4,069.00	15.38	226.36	3,673.70	-950.37	-1,324.98	1,630.58	234.35	
4,163.00	14.06	225.92	3,764.61	-966.92	-1,342.20	1,654.22	234.23	
4,257.00	12.74	226.36	3,856.05	-982.02	-1,357.91	1,675.79	234.13	
4,351.00	12.57	226.27	3,947.77	-996.24	-1,372.80	1,696.19	234.03	
4,445.00	10.11	228.73	4,039.93	-1,008.76	-1,386.39	1,714.55	233.96	
4,540.00	8.57	229.61	4,133.67	-1,018.84	-1,398.05	1,729.91	233.92	
4,634.00	6.46	230.40	4,226.85	-1,026.75	-1,407.46	1,742.18	233.89	
4,728.00	4.57	228.47	4,320.41	-1,032.61	-1,414.34	1,751.18	233.87	
4,822.00	1.93	238.22	4,414.25	-1,035.92	-1,418.49	1,756.49	233.86	
4,916.00	1.67	239.90	4,508.21	-1,037.44	-1,421.02	1,759.43	233.87	
5,010.00	0.92	184.96	4,602.19	-1,038.88	-1,422.27	1,761.29	233.85	
5,104.00	0.92	197.44	4,696.17	-1,040.36	-1,422.56	1,762.39	233.82	
5,198.00	1.27	217.75	4,790.16	-1,041.90	-1,423.43	1,764.00	233.80	
5,293.00	1.23	212.21	4,885.14	-1,043.59	-1,424.62	1,765.96	233.78	

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Survey								
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5,387.00	1.58	219.15	4,979.11	-1,045.45	-1,425.97	1,768.15	233.75	
5,481.00	1.49	224.16	5,073.07	-1,047.33	-1,427.64	1,770.61	233.74	
5,574.00	1.58	232.16	5,166.04	-1,048.99	-1,429.50	1,773.09	233.73	
5,668.00	1.27	228.12	5,260.01	-1,050.48	-1,431.30	1,775.42	233.72	
5,763.00	1.01	240.16	5,354.99	-1,051.60	-1,432.81	1,777.30	233.72	
5,856.00	1.10	228.12	5,447.98	-1,052.60	-1,434.18	1,779.00	233.72	
5,950.00	1.45	245.17	5,541.95	-1,053.70	-1,435.93	1,781.06	233.73	
6,044.00	1.89	237.35	5,635.91	-1,055.04	-1,438.32	1,783.78	233.74	
6,138.00	1.80	238.49	5,729.86	-1,056.65	-1,440.88	1,786.80	233.75	
6,232.00	2.20	233.39	5,823.81	-1,058.50	-1,443.59	1,790.07	233.75	
6,327.00	1.41	236.56	5,918.76	-1,060.23	-1,446.03	1,793.06	233.75	
6,421.00	1.19	244.55	6,012.74	-1,061.28	-1,447.87	1,795.18	233.76	
6,515.00	1.41	241.48	6,106.71	-1,062.25	-1,449.77	1,797.28	233.77	
6,609.00	2.20	247.45	6,200.66	-1,063.50	-1,452.45	1,800.18	233.79	
6,703.00	1.27	249.74	6,294.62	-1,064.55	-1,455.10	1,802.94	233.81	
6,797.00	2.02	248.16	6,388.58	-1,065.53	-1,457.61	1,805.54	233.83	
6,891.00	2.06	246.49	6,482.52	-1,066.82	-1,460.70	1,808.80	233.86	
6,985.00	3.30	239.90	6,576.42	-1,068.85	-1,464.59	1,813.14	233.88	
7,079.00	3.12	241.30	6,670.27	-1,071.44	-1,469.17	1,818.36	233.90	
7,173.00	2.59	244.90	6,764.15	-1,073.56	-1,473.34	1,822.98	233.92	
7,252.00	2.59	244.90	6,843.07	-1,075.08	-1,476.57	1,826.49	233.94	
TD @ 7252.00' MD / 6843.07' TVD								

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
294.00	293.77	-7.84	-6.26	First MWD Survey @ 294.00' MD / 293.77' TVD	
7,252.00	6,843.07	-1,075.08	-1,476.57	TD @ 7252.00' MD / 6843.07' TVD	

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_