



## **Terra Energy Partners, LLP**

**Garfield County, CO**

**Sec 20, T6S, R96W**

**CHEVRON GM 632-19**

**Wellbore #1**

**Design: Wellbore #1**

## **QES Survey Certification Report**

**05 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
TEP Rocky Mountain LLC	RM-200867	01/05/2021

Lease	Well Name	County & State
SWNW 20 6S96W 6 PM	GM 632-19	Garfield County, CO

API No.	Survey Depth Range	Survey Type
05-045-24361	976 feet to 7786 feet MD	MWD

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

Digitally signed by Kristopher Ray  
DN: cn=Kristopher Ray, o=Regulatory  
Compliance Manager, ou=QES DD,  
email=kris.ray@gesinc.com, c=US  
Date: 2021.01.07 08:10:15 -06'00'

Kristopher Ray  
Regulatory Compliance Manager  
Quintana Energy Services

<b>Company:</b>	Terra Energy Partners, LLP	<b>Local Co-ordinate Reference:</b>	Well GM 632-19
<b>Project:</b>	Garfield County, CO	<b>TVD Reference:</b>	KB=24' @ 5771.90usft (H&P #318)
<b>Site:</b>	Sec 20, T6S, R96W	<b>MD Reference:</b>	KB=24' @ 5771.90usft (H&P #318)
<b>Well:</b>	GM 632-19	<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 632-19					
Well Position	+N/-S	0.00 usft	Northing:	1,622,117.30 usft	Latitude:	39.511792
	+E/-W	0.00 usft	Easting:	2,255,380.69 usft	Longitude:	-108.139582
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	5,747.90 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>
	HDGM2020	12/31/2020	9.33	65.73	51,353.70000000

<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	260.36	

<b>Survey Program</b>	<b>Date</b>	1/5/2021			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
117.00	976.00	Gyros (Wellbore #1)	GYRO-NS	OWSG Gyrocompass Gyro	
1,059.00	7,786.00	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>	
976.00	29.34	258.75	940.95	-42.62	-203.68	208.09	258.18	
<b>Gyro Tie-in @ 976.00' MD / 940.95' TVD</b>								
1,059.00	31.38	258.32	1,012.57	-50.96	-244.79	250.04	258.24	
1,153.00	34.89	259.73	1,091.27	-60.71	-295.23	301.40	258.38	
1,246.00	38.01	262.37	1,166.07	-69.26	-349.80	356.59	258.80	
1,340.00	41.48	264.12	1,238.34	-76.30	-409.47	416.52	259.45	
1,434.00	45.53	263.07	1,306.51	-83.53	-473.76	481.07	260.00	
1,528.00	49.00	261.66	1,370.29	-92.73	-542.17	550.05	260.29	
1,622.00	49.17	261.05	1,431.85	-103.41	-612.40	621.07	260.42	
1,716.00	49.66	261.66	1,493.01	-114.14	-682.97	692.45	260.51	
1,810.00	49.79	259.38	1,553.78	-125.95	-753.70	764.15	260.51	

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<b>Site:</b>	Sec 20, T6S, R96W	<b>MD Reference:</b>	KB=24' @ 5771.90usft (H&P #318)
<b>Well:</b>	GM 632-19	<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 (°)	
1,903.00	50.01	258.32	1,613.68	-139.71	-823.50	835.26	260.37	
1,997.00	49.09	256.57	1,674.67	-155.25	-893.31	906.70	260.14	
2,090.00	48.38	257.45	1,736.01	-170.96	-961.43	976.51	259.92	
2,185.00	48.87	258.68	1,798.80	-185.70	-1,031.17	1,047.76	259.79	
2,277.00	49.48	258.76	1,858.95	-199.32	-1,099.44	1,117.37	259.72	
2,372.00	48.82	260.17	1,921.09	-212.46	-1,170.09	1,189.22	259.71	
2,466.00	48.60	261.49	1,983.12	-223.72	-1,239.81	1,259.84	259.77	
2,560.00	48.60	263.16	2,045.28	-233.13	-1,309.69	1,330.27	259.91	
2,655.00	48.38	263.51	2,108.24	-241.39	-1,380.35	1,401.29	260.08	
2,749.00	49.53	264.48	2,169.97	-248.80	-1,450.85	1,472.03	260.27	
2,843.00	47.81	263.69	2,232.04	-256.07	-1,521.06	1,542.46	260.44	
2,938.00	48.07	263.51	2,295.68	-263.93	-1,591.15	1,612.89	260.58	
3,032.00	46.58	262.19	2,359.40	-272.52	-1,659.72	1,681.94	260.68	
3,127.00	44.74	260.96	2,425.80	-282.47	-1,726.92	1,749.87	260.71	
3,221.00	42.45	259.64	2,493.87	-293.37	-1,790.81	1,814.68	260.70	
3,315.00	40.34	259.82	2,564.38	-304.45	-1,851.97	1,876.83	260.66	
3,409.00	38.45	261.84	2,637.03	-313.98	-1,910.85	1,936.48	260.67	
3,503.00	36.78	260.96	2,711.48	-322.55	-1,967.58	1,993.84	260.69	
3,597.00	37.18	261.22	2,786.57	-331.31	-2,023.44	2,050.38	260.70	
3,692.00	35.55	260.17	2,863.07	-340.41	-2,079.03	2,106.71	260.70	
3,786.00	33.88	260.08	2,940.34	-349.58	-2,131.76	2,160.24	260.69	
3,880.00	32.43	259.55	3,019.03	-358.67	-2,182.36	2,211.64	260.67	
3,973.00	30.67	259.38	3,098.28	-367.57	-2,230.20	2,260.29	260.64	
4,067.00	29.31	258.59	3,179.69	-376.54	-2,276.32	2,307.25	260.61	
4,161.00	27.55	258.94	3,262.35	-385.26	-2,320.21	2,351.98	260.57	
4,255.00	25.75	258.68	3,346.36	-393.44	-2,361.57	2,394.12	260.54	
4,350.00	23.73	259.12	3,432.64	-401.10	-2,400.58	2,433.86	260.51	
4,444.00	22.37	259.03	3,519.13	-408.07	-2,436.72	2,470.65	260.49	
4,538.00	20.43	259.47	3,606.65	-414.47	-2,470.41	2,504.94	260.48	
4,632.00	19.03	258.94	3,695.13	-420.41	-2,501.58	2,536.66	260.46	
4,726.00	16.96	257.88	3,784.53	-426.23	-2,530.03	2,565.68	260.44	
4,820.00	15.25	257.09	3,874.83	-431.87	-2,555.49	2,591.72	260.41	
4,914.00	13.85	258.94	3,965.82	-436.79	-2,578.58	2,615.31	260.39	
5,008.00	12.22	258.59	4,057.39	-440.92	-2,599.38	2,636.51	260.37	
5,103.00	10.33	256.74	4,150.55	-444.86	-2,617.52	2,655.06	260.35	
5,197.00	8.70	253.84	4,243.26	-448.78	-2,632.56	2,670.53	260.33	
5,291.00	7.03	259.99	4,336.37	-451.75	-2,645.05	2,683.35	260.31	
5,384.00	5.63	263.33	4,428.80	-453.27	-2,655.19	2,693.60	260.31	
5,479.00	2.72	264.56	4,523.54	-454.03	-2,662.06	2,700.50	260.32	
5,573.00	0.40	75.86	4,617.51	-454.16	-2,663.96	2,702.40	260.33	
5,666.00	0.66	135.10	4,710.51	-454.46	-2,663.27	2,701.77	260.32	
5,761.00	0.48	154.61	4,805.50	-455.21	-2,662.71	2,701.34	260.30	
5,854.00	0.35	196.80	4,898.50	-455.83	-2,662.63	2,701.37	260.29	
5,949.00	0.66	208.67	4,993.50	-456.59	-2,662.98	2,701.83	260.27	

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Survey								
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Distance (usft)	Closure Azimuth (°)	
6,042.00	0.88	217.10	5,086.49	-457.63	-2,663.66	2,702.69	260.25	
6,137.00	1.01	219.48	5,181.48	-458.86	-2,664.64	2,703.85	260.23	
6,231.00	1.63	210.86	5,275.45	-460.64	-2,665.85	2,705.35	260.20	
6,325.00	0.88	224.66	5,369.43	-462.30	-2,667.04	2,706.81	260.17	
6,419.00	1.01	227.21	5,463.41	-463.38	-2,668.16	2,708.10	260.15	
6,513.00	1.18	227.39	5,557.40	-464.60	-2,669.48	2,709.60	260.13	
6,607.00	1.58	230.46	5,651.37	-466.08	-2,671.19	2,711.55	260.10	
6,701.00	1.98	232.57	5,745.32	-467.89	-2,673.48	2,714.11	260.07	
6,795.00	1.76	232.84	5,839.27	-469.75	-2,675.92	2,716.84	260.04	
6,889.00	1.62	234.77	5,933.23	-471.39	-2,678.15	2,719.32	260.02	
6,983.00	1.36	226.95	6,027.20	-472.92	-2,680.05	2,721.46	259.99	
7,077.00	1.67	237.14	6,121.17	-474.42	-2,682.02	2,723.66	259.97	
7,171.00	1.80	247.51	6,215.13	-475.73	-2,684.53	2,726.36	259.95	
7,266.00	2.42	252.26	6,310.06	-476.91	-2,687.82	2,729.80	259.94	
7,360.00	3.12	249.54	6,403.95	-478.41	-2,692.11	2,734.29	259.92	
7,453.00	4.17	250.94	6,496.76	-480.40	-2,697.68	2,740.12	259.90	
7,547.00	4.75	254.54	6,590.48	-482.55	-2,704.66	2,747.37	259.88	
7,642.00	4.48	251.12	6,685.17	-484.80	-2,711.96	2,754.95	259.86	
7,715.00	4.48	252.61	6,757.95	-486.58	-2,717.38	2,760.60	259.85	
7,786.00	4.48	252.61	6,828.73	-488.23	-2,722.67	2,766.10	259.83	
Projection to TD @ 7786.00' MD / 6828.73' TVD								

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
976.00	940.95	-42.62	-203.68	Gyro Tie-in @ 976.00' MD / 940.95' TVD
7,786.00	6,828.73	-488.23	-2,722.67	Projection to TD @ 7786.00' MD / 6828.73' TVD

Checked By: _____	Approved By: _____	Date: _____
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