



Well Details: SG 23-26

+N/-S	+E/-W	North	East	Latitude	Longitude	Slot
0.00	0.00	1584791.50	2272334.80	39.4106931	-108.0757637	

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well SG 23-26, True North
 Vertical (TVD) Reference: GL 5076' & RKB 24' @ 5100.00usft
 Section (VS) Reference: Slot - (0.00N, 0.00E)
 Measured Depth Reference: GL 5076' & RKB 24' @ 5100.00usft
 Calculation Method: Minimum Curvature

PROJECT DETAILS: Garfield County, CO NAD83

Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Colorado Central Zone

System Datum: Mean Sea Level

Plan: OH

17:04, November 30 2018
 Created By: Mel Mireles Jr.



Directional Survey Certification

2948 I-70 Business Loop
Grand Junction, CO 81504
(970)-245-9447 Fax (970)-245-9454

Operator	TEP Rocky Mountain, LLC.
Well Name & No.	SG 23-26
County & State	Garfield County, CO
SDI Job No.	OP.014680
Rig	H&P 271

I, Mel Mireles Jr., having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 82 feet to a measured depth of 5,426 feet is true and correct as determined from all available records.

A handwritten signature in black ink, appearing to read 'Mel Mireles Jr.', written over a horizontal line.

Signature

30-Nov-18

Date

Mel Mireles Jr.

Grand Junction Assistant Well Planner
Scientific Drilling - Colorado District

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SG 23-26
Project:	Garfield County, CO NAD83	TVD Reference:	GL 5076' & RKB 24' @ 5100.00usft
Site:	SG 32-26 Pad	MD Reference:	GL 5076' & RKB 24' @ 5100.00usft
Well:	SG 23-26	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

Project	Garfield County, CO NAD83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site		SG 32-26 Pad			
Site Position:		Northing:	1,584,791.50 usft	Latitude:	39.4106932
From:	Map	Easting:	2,272,334.80 usft	Longitude:	-108.0757637
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.62 °

Well	SG 23-26					
Well Position	+N/-S	0.00 usft	Northing:	1,584,791.50 usft	Latitude:	39.4106932
	+E/-W	0.00 usft	Easting:	2,272,334.80 usft	Longitude:	-108.0757637
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	5,076.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	11/20/2018	9.35	65.57	51,656

Design	OH				
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		216.81

Survey Program	Date	11/30/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
82.00	995.00	Survey #1 - Gyro MWD Survey (OH)	Gyro MWD 105	Gyro MWD Error Model Ver 1.0.5	
1,080.00	5,426.00	Survey #2 - Production MWD Survey (OH)	MWD+HDGM	OWSG MWD + HDGM	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
82.00	0.09	144.93	82.00	-0.05	0.04	0.02	0.11	0.11	0.00	
First SDI Gyro MWD Survey										
122.00	0.44	244.42	122.00	-0.14	-0.08	0.17	1.16	0.88	248.73	
212.00	2.20	261.83	211.97	-0.54	-2.11	1.69	1.98	1.96	19.34	
305.00	3.78	265.52	304.84	-1.03	-6.93	4.98	1.71	1.70	3.97	
396.00	4.93	243.28	395.59	-3.03	-13.41	10.46	2.22	1.26	-24.44	
487.00	6.60	230.71	486.13	-8.10	-20.95	19.04	2.29	1.84	-13.81	
577.00	8.97	223.51	575.29	-16.46	-29.79	31.03	2.84	2.63	-8.00	
669.00	13.20	220.08	665.56	-29.71	-41.49	48.65	4.65	4.60	-3.73	

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SG 23-26
Project:	Garfield County, CO NAD83	TVD Reference:	GL 5076' & RKB 24' @ 5100.00usft
Site:	SG 32-26 Pad	MD Reference:	GL 5076' & RKB 24' @ 5100.00usft
Well:	SG 23-26	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
764.00	17.51	216.91	757.14	-49.44	-57.07	73.78	4.62	4.54	-3.34
858.00	20.41	214.01	846.04	-74.34	-74.73	104.30	3.24	3.09	-3.09
952.00	22.96	216.39	933.38	-102.69	-94.78	139.01	2.87	2.71	2.53
995.00	24.11	217.62	972.80	-116.40	-105.12	156.18	2.91	2.67	2.86
Last SDI Gyro MWD Survey									
1,080.00	24.69	217.68	1,050.21	-144.20	-126.57	191.29	0.68	0.68	0.07
First SDI Production MWD Survey									
1,174.00	27.58	216.31	1,134.59	-177.28	-151.46	232.69	3.14	3.07	-1.46
1,269.00	29.67	215.71	1,217.97	-214.10	-178.21	278.19	2.22	2.20	-0.63
1,363.00	32.69	216.78	1,298.39	-253.33	-206.99	326.85	3.27	3.21	1.14
1,457.00	37.30	213.09	1,375.38	-297.55	-237.76	380.69	5.39	4.90	-3.93
1,552.00	38.31	212.53	1,450.44	-346.50	-269.31	438.78	1.12	1.06	-0.59
1,646.00	38.89	213.75	1,523.90	-395.60	-301.38	497.30	1.02	0.62	1.30
1,740.00	37.47	212.49	1,597.79	-444.25	-333.13	555.28	1.72	-1.51	-1.34
1,835.00	37.23	214.21	1,673.31	-492.40	-364.81	612.81	1.13	-0.25	1.81
1,929.00	34.11	214.79	1,749.67	-537.57	-395.84	667.57	3.34	-3.32	0.62
2,023.00	33.49	213.79	1,827.78	-580.77	-425.31	719.81	0.89	-0.66	-1.06
2,118.00	31.23	214.95	1,908.02	-622.74	-453.99	770.60	2.47	-2.38	1.22
2,212.00	29.03	216.06	1,989.32	-661.16	-481.38	817.77	2.41	-2.34	1.18
2,306.00	26.26	214.32	2,072.58	-696.78	-506.54	861.36	3.07	-2.95	-1.85
2,401.00	24.03	214.86	2,158.57	-730.01	-529.45	901.69	2.36	-2.35	0.57
2,496.00	21.41	215.75	2,246.20	-759.96	-550.64	938.37	2.78	-2.76	0.94
2,590.00	18.86	215.05	2,334.44	-786.33	-569.39	970.71	2.72	-2.71	-0.74
2,684.00	16.81	215.71	2,423.92	-809.80	-586.05	999.49	2.19	-2.18	0.70
2,779.00	14.93	216.71	2,515.30	-830.77	-601.38	1,025.46	2.00	-1.98	1.05
2,873.00	13.92	219.66	2,606.33	-849.18	-615.84	1,048.87	1.33	-1.07	3.14
2,967.00	11.69	218.06	2,697.99	-865.39	-628.93	1,069.68	2.40	-2.37	-1.70
3,062.00	9.84	213.79	2,791.32	-879.71	-639.38	1,087.41	2.12	-1.95	-4.49
3,156.00	8.22	213.10	2,884.15	-892.02	-647.51	1,102.14	1.73	-1.72	-0.73
3,250.00	7.26	210.88	2,977.29	-902.75	-654.23	1,114.75	1.07	-1.02	-2.36
3,344.00	5.55	205.56	3,070.70	-911.95	-659.24	1,125.12	1.92	-1.82	-5.66
3,438.00	3.65	193.36	3,164.40	-918.96	-661.90	1,132.33	2.26	-2.02	-12.98
3,533.00	2.01	171.27	3,259.28	-923.55	-662.34	1,136.27	2.04	-1.73	-23.25
3,627.00	0.71	206.32	3,353.25	-925.70	-662.35	1,137.99	1.58	-1.38	37.29
3,640.04	0.73	210.53	3,366.29	-925.84	-662.43	1,138.16	0.42	0.13	32.24
SG 23-26 KMV									
3,721.00	0.90	231.57	3,447.24	-926.68	-663.19	1,139.28	0.42	0.21	25.99
3,815.00	1.26	234.20	3,541.23	-927.74	-664.60	1,140.98	0.39	0.38	2.80
3,910.00	0.70	67.06	3,636.22	-928.13	-664.91	1,141.48	2.05	-0.59	-175.94
4,004.00	0.10	355.47	3,730.22	-927.82	-664.39	1,140.92	0.72	-0.64	-76.16
4,099.00	0.24	261.31	3,825.22	-927.77	-664.60	1,141.00	0.28	0.15	-99.12
4,193.00	0.45	245.54	3,919.22	-927.95	-665.13	1,141.46	0.24	0.22	-16.78
4,287.00	0.87	243.27	4,013.21	-928.43	-666.10	1,142.42	0.45	0.45	-2.41
4,382.00	1.21	221.86	4,108.19	-929.50	-667.41	1,144.07	0.54	0.36	-22.54

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SG 23-26
Project:	Garfield County, CO NAD83	TVD Reference:	GL 5076' & RKB 24' @ 5100.00usft
Site:	SG 32-26 Pad	MD Reference:	GL 5076' & RKB 24' @ 5100.00usft
Well:	SG 23-26	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,476.00	1.81	246.36	4,202.16	-930.83	-669.44	1,146.35	0.92	0.64	26.06
4,571.00	0.67	68.24	4,297.15	-931.23	-670.29	1,147.18	2.61	-1.20	-187.49
4,665.00	0.34	92.62	4,391.15	-931.04	-669.51	1,146.56	0.41	-0.35	25.94
4,760.00	0.97	263.04	4,486.14	-931.15	-670.02	1,146.95	1.38	0.66	179.39
4,854.00	1.46	250.16	4,580.12	-931.65	-671.94	1,148.50	0.59	0.52	-13.70
4,949.00	2.52	255.62	4,675.06	-932.58	-675.10	1,151.14	1.13	1.12	5.75
5,043.00	3.14	261.90	4,768.95	-933.46	-679.65	1,154.57	0.74	0.66	6.68
5,138.00	2.43	276.72	4,863.84	-933.59	-684.23	1,157.42	1.06	-0.75	15.60
5,232.00	2.42	280.31	4,957.75	-933.00	-688.16	1,159.30	0.16	-0.01	3.82
5,326.00	3.17	270.91	5,051.64	-932.60	-692.71	1,161.71	0.93	0.80	-10.00
5,366.00	3.08	267.05	5,091.58	-932.64	-694.89	1,163.05	0.57	-0.23	-9.65
Last SDI Production MWD Survey									
5,426.00	3.08	267.05	5,151.49	-932.80	-698.11	1,165.11	0.00	0.00	0.00
Projection to TD - SG 23-26 PBHL									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
82.00	82.00	-0.05	0.04	First SDI Gyro MWD Survey
995.00	972.80	-116.40	-105.12	Last SDI Gyro MWD Survey
1,080.00	1,050.21	-144.20	-126.57	First SDI Production MWD Survey
5,366.00	5,091.58	-932.64	-694.89	Last SDI Production MWD Survey
5,426.00	5,151.49	-932.80	-698.11	Projection to TD

Checked By: _____ Approved By: _____ Date: _____