



Well Details: SG 323-26

+N/-S	+E/-W	North	East	Latitude	Longitude	Slot
0.00	0.00	1584785.60	2272330.20	39.4106766	-108.0757794	

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well SG 323-26, 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

16:09, 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 323-26
County & State	Garfield County, CO
SDI Job No.	OP.014623
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 122 feet to a measured depth of 5,526 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 323-26
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 323-26	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 323-26					
Well Position	+N/-S	0.00 usft	Northing:	1,584,785.60 usft	Latitude:	39.4106766
	+E/-W	0.00 usft	Easting:	2,272,330.20 usft	Longitude:	-108.0757794
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	11/17/2018	9.35	65.57	51,657

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	208.28	

Survey Program	Date	11/30/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
122.00	952.00	Survey #1 - Gyro MWD Survey (OH)	Gyro MWD 105	Gyro MWD Error Model Ver 1.0.5	
1,081.00	5,526.00	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	
122.00	0.62	266.04	122.00	-0.05	-0.66	0.35	0.51	0.51	0.00	
First SDI Gyro MWD Survey										
212.00	1.94	248.12	211.97	-0.65	-2.56	1.78	1.51	1.47	-19.91	
305.00	4.49	244.69	304.82	-2.79	-7.31	5.92	2.75	2.74	-3.69	
396.00	6.25	224.74	395.42	-7.83	-14.02	13.54	2.79	1.93	-21.92	
487.00	9.77	216.65	485.53	-17.55	-22.12	25.93	4.05	3.87	-8.89	
577.00	14.08	213.40	573.56	-32.82	-32.71	44.40	4.84	4.79	-3.61	
669.00	18.04	211.11	661.96	-54.37	-46.23	69.78	4.36	4.30	-2.49	
763.00	22.35	210.23	750.16	-82.29	-62.76	102.20	4.60	4.59	-0.94	

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SG 323-26
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 323-26	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)
857.00	24.72	207.77	836.33	-115.13	-80.92	139.72	2.73	2.52	-2.62
952.00	27.54	205.22	921.62	-152.58	-99.54	181.53	3.19	2.97	-2.68
Last SDI Gyro MWD Survey									
1,081.00	28.76	204.68	1,035.36	-207.76	-125.20	242.28	0.97	0.95	-0.42
First SDI Production MWD Survey									
1,175.00	32.39	207.74	1,116.28	-250.61	-146.37	290.04	4.20	3.86	3.26
1,269.00	35.54	209.92	1,194.23	-296.58	-171.72	342.54	3.59	3.35	2.32
1,364.00	34.77	207.73	1,271.91	-344.49	-198.10	397.23	1.56	-0.81	-2.31
1,458.00	38.87	210.00	1,347.14	-393.79	-225.33	453.54	4.59	4.36	2.41
1,552.00	39.37	208.29	1,420.07	-445.58	-254.21	512.84	1.27	0.53	-1.82
1,647.00	39.50	207.83	1,493.45	-498.83	-282.60	573.18	0.34	0.14	-0.48
1,741.00	38.80	207.32	1,566.34	-551.44	-310.07	632.53	0.82	-0.74	-0.54
1,835.00	38.58	204.75	1,639.72	-604.22	-335.86	691.23	1.72	-0.23	-2.73
1,929.00	38.54	205.79	1,713.22	-657.21	-360.87	749.74	0.69	-0.04	1.11
2,024.00	38.40	203.58	1,787.61	-710.90	-385.55	808.72	1.45	-0.15	-2.33
2,118.00	36.61	203.72	1,862.17	-763.32	-408.51	865.76	1.91	-1.90	0.15
2,213.00	34.15	203.67	1,939.62	-813.69	-430.61	920.58	2.59	-2.59	-0.05
2,307.00	32.71	206.49	2,018.08	-860.59	-452.53	972.27	2.25	-1.53	3.00
2,401.00	30.78	206.97	2,098.01	-904.76	-474.77	1,021.71	2.07	-2.05	0.51
2,496.00	28.29	210.08	2,180.66	-945.91	-497.09	1,068.52	3.08	-2.62	3.27
2,591.00	24.66	211.14	2,265.69	-982.37	-518.62	1,110.83	3.85	-3.82	1.12
2,685.00	22.32	208.37	2,351.89	-1,014.86	-537.25	1,148.27	2.75	-2.49	-2.95
2,779.00	19.98	210.15	2,439.56	-1,044.46	-553.80	1,182.18	2.58	-2.49	1.89
2,873.00	17.05	210.50	2,528.68	-1,070.23	-568.86	1,212.00	3.12	-3.12	0.37
2,968.00	15.74	208.51	2,619.82	-1,093.55	-582.08	1,238.81	1.50	-1.38	-2.09
3,062.00	14.07	209.13	2,710.65	-1,114.74	-593.73	1,262.98	1.78	-1.78	0.66
3,157.00	12.84	209.22	2,803.04	-1,134.04	-604.51	1,285.09	1.29	-1.29	0.09
3,251.00	10.49	211.00	2,895.09	-1,150.49	-614.01	1,304.08	2.53	-2.50	1.89
3,345.00	8.44	207.19	2,987.81	-1,163.96	-621.57	1,319.53	2.28	-2.18	-4.05
3,439.00	6.24	200.51	3,081.04	-1,174.89	-626.52	1,331.49	2.51	-2.34	-7.11
3,533.00	4.02	206.46	3,174.65	-1,182.62	-629.78	1,339.84	2.43	-2.36	6.33
3,627.00	0.70	177.56	3,268.56	-1,186.15	-631.22	1,343.63	3.64	-3.53	-30.74
3,714.72	0.88	195.89	3,356.27	-1,187.33	-631.38	1,344.75	0.35	0.21	20.89
SG 323-26 KMV									
3,722.00	0.90	197.05	3,363.55	-1,187.44	-631.41	1,344.86	0.35	0.25	15.98
3,816.00	1.23	212.18	3,457.54	-1,189.00	-632.17	1,346.59	0.46	0.35	16.10
3,910.00	1.17	220.71	3,551.52	-1,190.58	-633.33	1,348.54	0.20	-0.06	9.07
4,005.00	1.24	213.35	3,646.50	-1,192.17	-634.53	1,350.51	0.18	0.07	-7.75
4,099.00	1.64	230.07	3,740.47	-1,193.89	-636.12	1,352.77	0.61	0.43	17.79
4,194.00	1.11	338.95	3,835.45	-1,193.90	-637.49	1,353.43	2.38	-0.56	114.61
4,288.00	0.60	296.28	3,929.44	-1,192.83	-638.26	1,352.86	0.83	-0.54	-45.39
4,382.00	0.54	236.61	4,023.44	-1,192.86	-639.07	1,353.26	0.61	-0.06	-63.48
4,477.00	1.31	225.05	4,118.42	-1,193.87	-640.21	1,354.70	0.83	0.81	-12.17
4,571.00	1.35	237.03	4,212.40	-1,195.23	-641.90	1,356.70	0.30	0.04	12.74

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SG 323-26
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Site:	SG 32-26 Pad	MD Reference:	GL 5076' & RKB 24' @ 5100.00usft
Well:	SG 323-26	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)
4,666.00	1.67	251.71	4,307.37	-1,196.28	-644.16	1,358.68	0.53	0.34	15.45
4,760.00	1.89	249.97	4,401.32	-1,197.24	-646.91	1,360.83	0.24	0.23	-1.85
4,855.00	2.55	253.13	4,496.25	-1,198.39	-650.41	1,363.50	0.71	0.69	3.33
4,949.00	3.52	261.77	4,590.12	-1,199.41	-655.27	1,366.70	1.14	1.03	9.19
5,043.00	3.70	250.71	4,683.93	-1,200.82	-660.98	1,370.66	0.76	0.19	-11.77
5,138.00	3.88	257.13	4,778.72	-1,202.55	-667.01	1,375.04	0.48	0.19	6.76
5,232.00	3.19	261.07	4,872.54	-1,203.67	-672.69	1,378.71	0.78	-0.73	4.19
5,326.00	3.08	262.02	4,966.40	-1,204.42	-677.78	1,381.78	0.13	-0.12	1.01
5,421.00	3.25	255.27	5,061.26	-1,205.46	-682.91	1,385.13	0.43	0.18	-7.11
5,467.00	3.34	256.24	5,107.18	-1,206.11	-685.47	1,386.92	0.23	0.20	2.11
Last SDI Production MWD Survey									
5,526.00	3.34	256.24	5,166.08	-1,206.93	-688.81	1,389.22	0.00	0.00	0.00
Projection to TD - SG 323-26 PBHL									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
122.00	122.00	-0.05	-0.66	First SDI Gyro MWD Survey
952.00	921.62	-152.58	-99.54	Last SDI Gyro MWD Survey
1,081.00	1,035.36	-207.76	-125.20	First SDI Production MWD Survey
5,467.00	5,107.18	-1,206.11	-685.47	Last SDI Production MWD Survey
5,526.00	5,166.08	-1,206.93	-688.81	Projection to TD

Checked By: _____ Approved By: _____ Date: _____