



Well Details: SG 423-26

TVD Reference: GL 5076' & RKB 24' @ 5100.00usft		Ground Level: 5076.00		Slot
+N/-S	+E/-W	Northing	Easting	Latitude
0.00	0.00	1584779.60	2272325.60	39.4106597
				-108.0757950

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well SG 423-26, 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

14:15, 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 423-26
County & State	Garfield County, CO
SDI Job No.	OP.014409
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 142 feet to a measured depth of 5,564 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 423-26
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 423-26	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 423-26					
Well Position	+N/-S	0.00 usft	Northing:	1,584,779.60 usft	Latitude:	39.4106598
	+E/-W	0.00 usft	Easting:	2,272,325.60 usft	Longitude:	-108.0757951
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	11/8/2018	9.35	65.57	51,660

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	209.94	

Survey Program	Date	11/30/2018			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
142.00	577.00	Survey #1 - Gyro MWD Survey (OH)	Gyro MWD 105	Gyro MWD Error Model Ver 1.0.5	
650.00	944.00	Survey #2 - Surface MWD Survey (OH)	MWD+HDGM	OWSG MWD + HDGM	
1,080.00	5,564.00	Survey #3 - 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	
142.00	1.67	232.65	141.98	-1.26	-1.64	1.91	1.18	1.18	0.00	
First SDI Gyro MWD Survey										
213.00	3.17	229.22	212.91	-3.17	-3.95	4.72	2.12	2.11	-4.83	
305.00	5.45	219.55	304.65	-8.20	-8.66	11.43	2.59	2.48	-10.51	
396.00	8.01	214.10	395.02	-16.78	-14.97	22.01	2.90	2.81	-5.99	
488.00	10.73	208.74	485.78	-29.60	-22.68	36.97	3.10	2.96	-5.83	
577.00	13.02	207.51	572.87	-45.76	-31.30	55.27	2.59	2.57	-1.38	

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SG 423-26
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 423-26	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)
Last SDI Gyro MWD Survey									
650.00	15.99	204.57	643.54	-62.20	-39.28	73.50	4.19	4.07	-4.03
First SDI Surface MWD Survey									
744.00	20.76	203.79	732.72	-89.23	-51.39	102.97	5.08	5.07	-0.83
838.00	22.76	202.67	820.02	-121.26	-65.12	137.58	2.17	2.13	-1.19
932.00	26.54	201.22	905.44	-157.63	-79.74	176.39	4.07	4.02	-1.54
944.00	26.82	201.13	916.16	-162.65	-81.68	181.71	2.36	2.33	-0.75
Last SDI Surface MWD Survey									
1,080.00	29.38	200.16	1,036.12	-222.60	-104.24	244.92	1.91	1.88	-0.71
First SDI Production MWD Survey									
1,174.00	32.84	200.63	1,116.59	-268.11	-121.18	292.81	3.69	3.68	0.50
1,269.00	36.43	200.44	1,194.74	-318.67	-140.11	346.07	3.78	3.78	-0.20
1,363.00	38.08	198.41	1,269.56	-372.33	-159.01	402.00	2.19	1.76	-2.16
1,457.00	42.30	198.76	1,341.35	-429.81	-178.35	461.47	4.50	4.49	0.37
1,552.00	46.46	199.74	1,409.23	-492.52	-200.27	526.75	4.44	4.38	1.03
1,646.00	49.85	197.54	1,471.94	-558.86	-222.61	595.39	4.01	3.61	-2.34
1,740.00	51.75	194.52	1,531.35	-628.87	-242.70	666.07	3.21	2.02	-3.21
1,835.00	52.58	195.39	1,589.63	-701.35	-262.06	738.55	1.13	0.87	0.92
1,929.00	51.79	194.98	1,647.26	-773.02	-281.51	810.36	0.91	-0.84	-0.44
2,023.00	49.48	195.21	1,706.88	-843.18	-300.44	880.60	2.46	-2.46	0.24
2,118.00	47.57	195.42	1,769.79	-911.83	-319.23	949.47	2.02	-2.01	0.22
2,212.00	44.19	195.11	1,835.22	-976.91	-337.00	1,014.75	3.60	-3.60	-0.33
2,307.00	40.84	194.58	1,905.24	-1,038.96	-353.46	1,076.72	3.55	-3.53	-0.56
2,401.00	38.98	196.30	1,977.34	-1,097.09	-369.49	1,135.10	2.30	-1.98	1.83
2,496.00	35.94	196.07	2,052.74	-1,152.57	-385.60	1,191.22	3.20	-3.20	-0.24
2,590.00	32.46	197.79	2,130.47	-1,203.12	-400.95	1,242.68	3.84	-3.70	1.83
2,684.00	28.96	198.14	2,211.28	-1,248.77	-415.75	1,289.63	3.73	-3.72	0.37
2,779.00	25.29	196.62	2,295.82	-1,290.09	-428.72	1,331.90	3.93	-3.86	-1.60
2,873.00	23.02	195.52	2,381.58	-1,327.04	-439.38	1,369.25	2.46	-2.41	-1.17
2,967.00	20.85	195.59	2,468.77	-1,360.87	-448.79	1,403.26	2.31	-2.31	0.07
3,062.00	17.82	196.10	2,558.40	-1,391.13	-457.37	1,433.76	3.19	-3.19	0.54
3,156.00	14.82	196.50	2,648.60	-1,416.48	-464.77	1,459.42	3.19	-3.19	0.43
3,250.00	12.63	197.98	2,739.91	-1,437.78	-471.36	1,481.17	2.36	-2.33	1.57
3,344.00	10.31	198.19	2,832.03	-1,455.55	-477.16	1,499.46	2.47	-2.47	0.22
3,438.00	7.79	194.99	2,924.85	-1,469.70	-481.43	1,513.86	2.73	-2.68	-3.40
3,532.00	5.22	190.58	3,018.24	-1,480.06	-483.87	1,524.05	2.78	-2.73	-4.69
3,627.00	2.55	186.29	3,113.01	-1,486.41	-484.89	1,530.06	2.83	-2.81	-4.52
3,721.00	0.14	7.81	3,206.99	-1,488.37	-485.11	1,531.87	2.86	-2.56	-189.87
3,815.00	0.44	318.17	3,300.98	-1,487.99	-485.33	1,531.65	0.39	0.32	-52.81
3,863.96	0.56	296.88	3,349.94	-1,487.74	-485.67	1,531.61	0.44	0.24	-43.49
SG 423-26 KMW									
3,910.00	0.71	284.66	3,395.98	-1,487.57	-486.14	1,531.69	0.44	0.33	-26.54
4,004.00	0.93	285.35	3,489.97	-1,487.22	-487.44	1,532.04	0.23	0.23	0.73
4,099.00	0.91	262.29	3,584.96	-1,487.12	-488.93	1,532.69	0.39	-0.02	-24.27

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SG 423-26
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 423-26	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)	
4,193.00	1.23	265.52	3,678.94	-1,487.30	-490.68	1,533.72	0.35	0.34	3.44	
4,287.00	1.28	273.51	3,772.92	-1,487.31	-492.73	1,534.76	0.19	0.05	8.50	
4,382.00	1.44	254.79	3,867.89	-1,487.56	-494.94	1,536.08	0.49	0.17	-19.71	
4,476.00	1.54	260.76	3,961.86	-1,488.07	-497.33	1,537.71	0.20	0.11	6.35	
4,571.00	1.87	274.09	4,056.82	-1,488.17	-500.14	1,539.19	0.54	0.35	14.03	
4,665.00	0.88	193.75	4,150.80	-1,488.76	-501.84	1,540.56	2.05	-1.05	-85.47	
4,760.00	0.77	166.23	4,245.79	-1,490.09	-501.86	1,541.72	0.43	-0.12	-28.97	
4,854.00	0.96	183.58	4,339.78	-1,491.49	-501.76	1,542.88	0.34	0.20	18.46	
4,949.00	1.49	212.73	4,434.76	-1,493.32	-502.48	1,544.83	0.84	0.56	30.68	
5,043.00	2.05	227.08	4,528.71	-1,495.49	-504.37	1,547.65	0.76	0.60	15.27	
5,137.00	2.32	235.01	4,622.64	-1,497.73	-507.16	1,550.98	0.43	0.29	8.44	
5,232.00	2.46	237.21	4,717.56	-1,499.94	-510.45	1,554.54	0.18	0.15	2.32	
5,326.00	1.32	251.14	4,811.51	-1,501.38	-513.17	1,557.15	1.30	-1.21	14.82	
5,420.00	1.14	292.54	4,905.49	-1,501.37	-515.06	1,558.08	0.94	-0.19	44.04	
5,504.00	1.49	276.89	4,989.47	-1,500.92	-516.91	1,558.62	0.59	0.42	-18.63	
Last SDI Production MWD Survey										
5,564.00	1.49	276.89	5,049.45	-1,500.73	-518.46	1,559.23	0.00	0.00	0.00	
Projection to TD - SG 423-26 PBHL										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
142.00	141.98	-1.26	-1.64	First SDI Gyro MWD Survey	
577.00	572.87	-45.76	-31.30	Last SDI Gyro MWD Survey	
650.00	643.54	-62.20	-39.28	First SDI Surface MWD Survey	
944.00	916.16	-162.65	-81.68	Last SDI Surface MWD Survey	
1,080.00	1,036.12	-222.60	-104.24	First SDI Production MWD Survey	
5,504.00	4,989.47	-1,500.92	-516.91	Last SDI Production MWD Survey	
5,564.00	5,049.45	-1,500.73	-518.46	Projection to TD	

Checked By: _____	Approved By: _____	Date: _____
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