



TEP Rocky Mountain LLC

Garfield County, CO NAD83

SG 11-22 Pad

SG 324-15 - Slot SG 324-15 (B1)

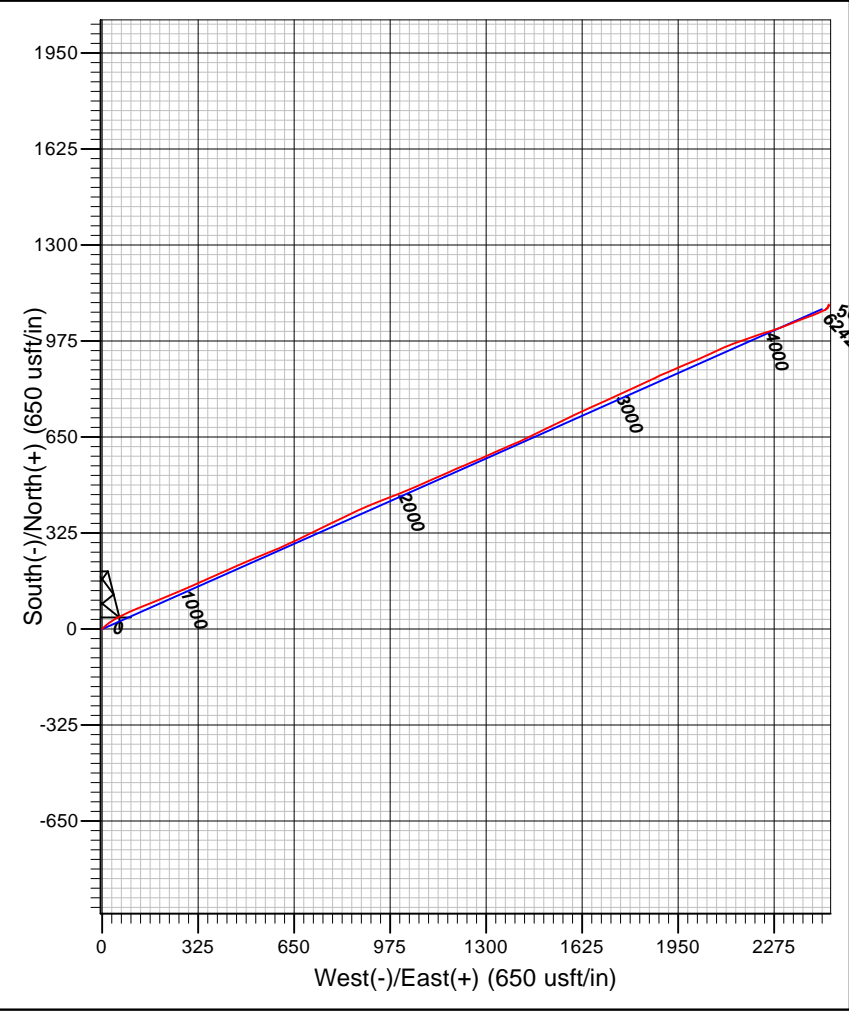
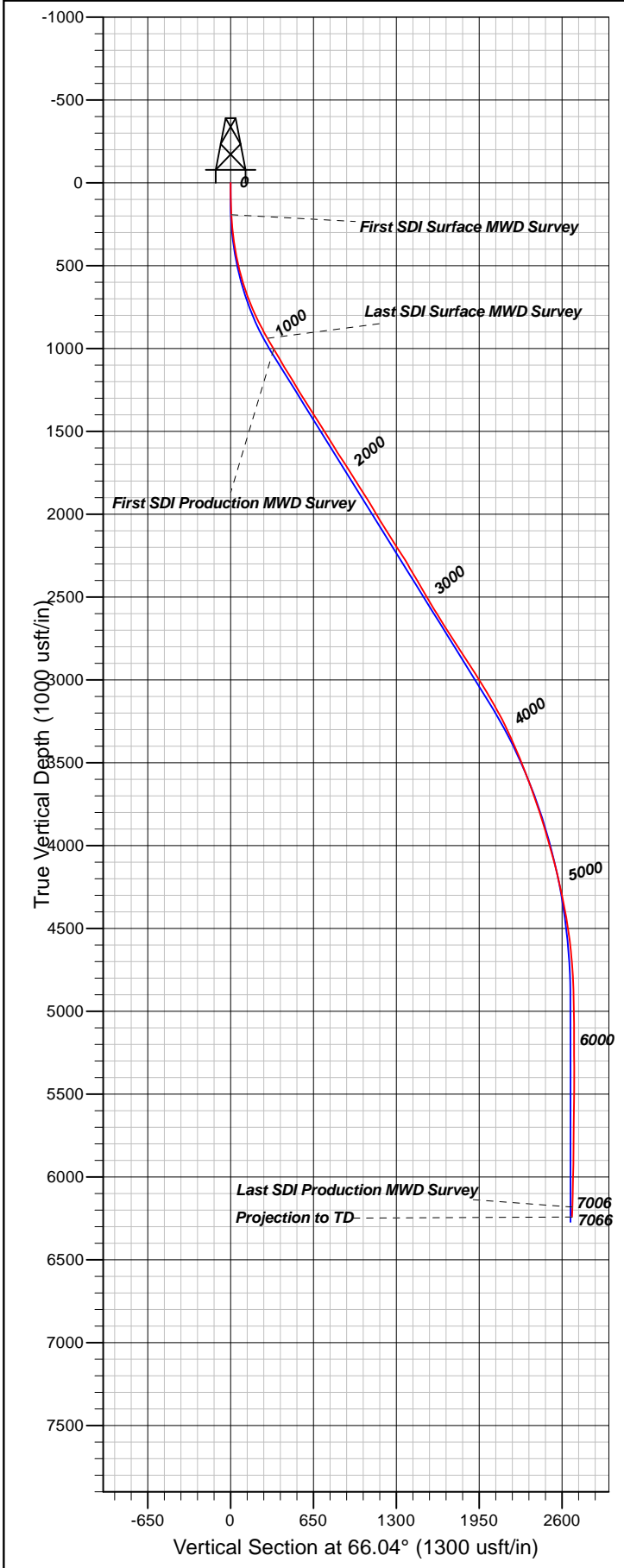
OH

Design: OH

Standard Survey Report

28 January, 2019





Well Details: SG 324-15	
TVD Reference: GL 6092.4' & RKB 24' @ 6116.40usft +N/-S +E/-W Northing Easting Latitude Longitude Slot 0.00 0.00 1591242.60 2264573.00 39.4277900 -108.1038780 SG 324-15 (B1)	
REFERENCE INFORMATION	
Co-ordinate (N/E) Reference: Well SG 324-15 - Slot SG 324-15 (B1), True North Vertical (TVD) Reference: GL 6092.4' & RKB 24' @ 6116.40usft Section (VS) Reference: Slot - SG 324-15 (B1)(0.00N, 0.00E) Measured Depth Reference: GL 6092.4' & RKB 24' @ 6116.40usft 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 12:47, January 28 2019 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	<u>TEP Rocky Mountain, LLC.</u>
Well Name & No.	<u>SG 324-15</u>
County & State	<u>Garfield County, CO</u>
SDI Job No.	<u>OP.015885</u>
Rig	<u>H&P 318</u>

I, Mel Mireles Jr., having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 194 feet to a measured depth of 7,066 feet is true and correct as determined from all available records.

Signature

29-Jan-19

Date

Mel Mireles Jr.

Grand Junction Assistant Well Planner
Scientific Drilling - Colorado District



Scientific Drilling, Intl Survey Report

Company: TEP Rocky Mountain LLC	Local Co-ordinate Reference: Well SG 324-15 - Slot SG 324-15 (B1)
Project: Garfield County, CO NAD83	TVD Reference: GL 6092.4' & RKB 24' @ 6116.40usft
Site: SG 11-22 Pad	MD Reference: GL 6092.4' & RKB 24' @ 6116.40usft
Well: SG 324-15	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 11-22 Pad					
Site Position:		Northing:	1,591,239.00 usft	Latitude:	39.4277783
From: Map		Easting:	2,264,548.70 usft	Longitude:	-108.1039637
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.64 °

Well SG 324-15 - Slot SG 324-15 (B1)						
Well Position	+N/-S	0.00 usft	Northing:	1,591,242.60 usft	Latitude:	39.4277901
	+E/-W	0.00 usft	Easting:	2,264,573.00 usft	Longitude:	-108.1038780
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	6,092.40 usft

Wellbore OH					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	1/17/2019	9.40	65.60	51,624

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	66.04	

Survey Program		Date 1/25/2019
From (usft)	To (usft)	Survey (Wellbore)
194.00	1,003.00	Survey #1 - Surface MWD Survey (OH)
1,085.00	7,066.00	Survey #2 - Production MWD Survey (OH)
		Tool Name
		MWD+HDGM
		Description
		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	0.00
194.00	3.82	44.96	193.86	4.57	4.57	6.03	1.97	1.97	0.00	
First SDI Surface MWD Survey										
286.00	7.87	48.36	285.36	10.93	11.44	14.90	4.42	4.40	3.70	
378.00	12.06	52.97	375.95	20.91	23.83	30.27	4.63	4.55	5.01	
470.00	14.95	58.62	465.40	32.88	41.64	51.40	3.45	3.14	6.14	
561.00	18.76	64.44	552.48	45.31	64.87	77.68	4.57	4.19	6.40	
653.00	23.96	66.04	638.14	59.29	95.31	111.17	5.69	5.65	1.74	
747.00	27.50	67.70	722.80	75.28	132.84	151.97	3.84	3.77	1.77	
842.00	31.32	68.34	805.55	92.72	176.10	198.58	4.03	4.02	0.67	



Scientific Drilling, Intl Survey Report

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SG 324-15 - Slot SG 324-15 (B1)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 6092.4' & RKB 24' @ 6116.40usft
Site:	SG 11-22 Pad	MD Reference:	GL 6092.4' & RKB 24' @ 6116.40usft
Well:	SG 324-15	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)	
936.00	34.29	67.73	884.55	111.78	223.32	249.47	3.18	3.16	-0.65	
1,003.00	36.93	66.97	939.01	126.81	259.31	288.47	4.00	3.94	-1.13	
Last SDI Surface MWD Survey										
1,085.00	37.44	65.95	1,004.34	146.60	304.75	338.02	0.98	0.62	-1.24	
First SDI Production MWD Survey										
1,179.00	37.50	65.92	1,078.95	169.92	356.96	395.21	0.07	0.06	-0.03	
1,274.00	38.96	66.39	1,153.57	193.68	410.73	453.99	1.57	1.54	0.49	
1,368.00	37.65	66.08	1,227.33	217.16	464.06	512.26	1.41	-1.39	-0.33	
1,463.00	38.92	67.77	1,301.90	240.22	518.21	571.10	1.73	1.34	1.78	
1,557.00	39.47	67.35	1,374.75	262.89	573.11	630.49	0.65	0.59	-0.45	
1,652.00	40.38	65.50	1,447.61	287.28	628.98	691.45	1.57	0.96	-1.95	
1,746.00	38.78	63.41	1,520.06	313.09	683.02	751.31	2.21	-1.70	-2.22	
1,840.00	38.89	64.08	1,593.28	339.17	735.88	810.21	0.46	0.12	0.71	
1,935.00	40.56	64.85	1,666.34	365.33	790.67	870.90	1.83	1.76	0.81	
2,029.00	38.70	63.78	1,738.74	391.30	844.70	930.82	2.11	-1.98	-1.14	
2,124.00	39.45	67.00	1,812.50	416.22	899.13	990.68	2.28	0.79	3.39	
2,219.00	40.19	68.96	1,885.46	439.02	955.53	1,051.47	1.53	0.78	2.06	
2,313.00	37.79	68.46	1,958.52	460.49	1,010.63	1,110.55	2.58	-2.55	-0.53	
2,407.00	37.80	65.93	2,032.81	482.81	1,063.73	1,168.13	1.65	0.01	-2.69	
2,502.00	39.48	66.65	2,107.01	506.66	1,118.04	1,227.45	1.83	1.77	0.76	
2,596.00	39.35	65.86	2,179.63	530.69	1,172.67	1,287.13	0.55	-0.14	-0.84	
2,690.00	40.27	67.40	2,251.84	554.55	1,227.91	1,347.31	1.43	0.98	1.64	
2,784.00	37.47	66.31	2,325.02	577.72	1,282.16	1,406.28	3.07	-2.98	-1.16	
2,879.00	36.79	65.99	2,400.76	600.91	1,334.60	1,463.63	0.74	-0.72	-0.34	
2,973.00	37.25	67.10	2,475.81	623.43	1,386.52	1,520.22	0.86	0.49	1.18	
3,067.00	37.67	64.13	2,550.43	647.03	1,438.58	1,577.38	1.97	0.45	-3.16	
3,162.00	40.20	64.06	2,624.32	673.12	1,492.28	1,637.04	2.66	2.66	-0.07	
3,256.00	38.38	64.29	2,697.07	699.05	1,545.85	1,696.53	1.94	-1.94	0.24	
3,350.00	39.82	64.37	2,770.02	724.73	1,599.29	1,755.78	1.53	1.53	0.09	
3,445.00	40.05	65.36	2,842.86	750.63	1,654.49	1,816.75	0.71	0.24	1.04	
3,539.00	40.96	65.73	2,914.33	775.90	1,710.07	1,877.80	1.00	0.97	0.39	
3,633.00	39.51	65.50	2,986.09	800.97	1,765.37	1,938.52	1.55	-1.54	-0.24	
3,728.00	37.92	65.02	3,060.21	825.83	1,819.33	1,997.93	1.70	-1.67	-0.51	
3,822.00	36.92	64.59	3,134.87	850.14	1,871.02	2,055.03	1.10	-1.06	-0.46	
3,917.00	34.65	67.14	3,211.93	872.88	1,921.69	2,110.57	2.86	-2.39	2.68	
4,011.00	32.48	67.01	3,290.25	893.12	1,969.55	2,162.53	2.31	-2.31	-0.14	
4,106.00	30.03	66.56	3,371.46	912.54	2,014.85	2,211.81	2.59	-2.58	-0.47	
4,200.00	28.29	65.73	3,453.54	931.06	2,056.74	2,257.61	1.90	-1.85	-0.88	
4,295.00	26.76	64.89	3,537.79	949.39	2,096.63	2,301.50	1.66	-1.61	-0.88	
4,389.00	26.28	69.97	3,621.91	965.50	2,135.35	2,343.43	2.47	-0.51	5.40	
4,484.00	24.19	70.89	3,707.84	979.07	2,173.50	2,383.81	2.24	-2.20	0.97	
4,578.00	22.76	69.98	3,794.06	991.60	2,208.78	2,421.14	1.57	-1.52	-0.97	
4,672.00	22.27	72.98	3,880.89	1,003.04	2,242.90	2,456.96	1.33	-0.52	3.19	



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Well:	SG 324-15	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)	
4,767.00	20.29	73.31	3,969.41	1,013.04	2,275.90	2,491.18	2.09	-2.08	0.35	
4,861.00	19.68	67.35	4,057.76	1,023.82	2,306.12	2,523.17	2.26	-0.65	-6.34	
4,956.00	18.12	67.97	4,147.64	1,035.52	2,334.58	2,553.93	1.66	-1.64	0.65	
5,050.00	15.85	68.90	4,237.53	1,045.63	2,360.11	2,581.36	2.43	-2.41	0.99	
5,145.00	15.21	70.35	4,329.06	1,054.49	2,383.95	2,606.75	0.79	-0.67	1.53	
5,239.00	12.85	69.05	4,420.25	1,062.37	2,405.32	2,629.48	2.53	-2.51	-1.38	
5,268.77	12.19	68.43	4,449.31	1,064.71	2,411.34	2,635.93	2.25	-2.21	-2.08	
SG 324-15 BTV										
5,334.00	10.76	66.81	4,513.24	1,069.64	2,423.34	2,648.90	2.25	-2.20	-2.48	
5,428.00	8.66	65.79	4,605.89	1,076.00	2,437.87	2,664.76	2.24	-2.23	-1.09	
5,523.00	5.89	58.77	4,700.11	1,081.46	2,448.56	2,676.75	3.06	-2.92	-7.39	
5,617.00	4.30	47.99	4,793.74	1,086.32	2,455.30	2,684.88	1.97	-1.69	-11.47	
5,711.00	2.73	18.56	4,887.57	1,090.80	2,458.63	2,689.75	2.49	-1.67	-31.31	
5,805.00	1.94	11.27	4,981.49	1,094.49	2,459.66	2,692.18	0.90	-0.84	-7.76	
5,900.00	0.97	9.76	5,076.46	1,096.86	2,460.11	2,693.55	1.02	-1.02	-1.59	
5,994.00	0.17	105.62	5,170.45	1,097.60	2,460.38	2,694.10	1.07	-0.85	101.98	
6,089.00	0.68	9.82	5,265.45	1,098.12	2,460.61	2,694.52	0.76	0.54	-100.84	
6,183.00	0.37	357.29	5,359.45	1,098.97	2,460.69	2,694.94	0.35	-0.33	-13.33	
6,278.00	0.40	226.57	5,454.45	1,099.05	2,460.43	2,694.74	0.74	0.03	-137.60	
6,372.00	1.22	206.61	5,548.44	1,097.93	2,459.75	2,693.66	0.91	0.87	-21.23	
6,467.00	1.32	196.17	5,643.41	1,095.98	2,458.99	2,692.17	0.26	0.11	-10.99	
6,562.00	0.90	189.19	5,738.40	1,094.19	2,458.57	2,691.06	0.46	-0.44	-7.35	
6,656.00	1.22	185.38	5,832.38	1,092.46	2,458.35	2,690.16	0.35	0.34	-4.05	
6,751.00	1.53	206.16	5,927.35	1,090.32	2,457.70	2,688.70	0.61	0.33	21.87	
6,845.00	2.10	216.74	6,021.31	1,087.81	2,456.12	2,686.23	0.70	0.61	11.26	
6,939.00	1.67	227.70	6,115.25	1,085.51	2,454.07	2,683.43	0.59	-0.46	11.66	
7,006.00	2.90	226.05	6,182.20	1,083.68	2,452.13	2,680.91	1.84	1.84	-2.46	
Last SDI Production MWD Survey										
7,066.00	2.90	226.05	6,242.12	1,081.57	2,449.95	2,678.06	0.00	0.00	0.00	
Projection to TD - SG 324-15 PBHL										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
194.00	193.86	4.57	4.57	First SDI Surface MWD Survey	
1,003.00	939.01	126.81	259.31	Last SDI Surface MWD Survey	
1,085.00	1,004.34	146.60	304.75	First SDI Production MWD Survey	
7,006.00	6,182.20	1,083.68	2,452.13	Last SDI Production MWD Survey	
7,066.00	6,242.12	1,081.57	2,449.95	Projection to TD	

Checked By: _____ Approved By: _____ Date: _____