



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.	SR 332-12
County & State	Garfield County, CO
SDI Job No.	OP.003973
Rig	H&P 318

I, Mel Mireles Jr., having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 124 feet to a measured depth of 9,283 feet is true and correct as determined from all available records.


Signature

15-Sep-17
Date

Mel Mireles Jr.
Grand Junction Assistant Well Planner
Scientific Drilling - Colorado District

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SR 332-12 - Slot B13
Project:	Garfield County, CO NAD83	TVD Reference:	GL 7254' & RKB 24' @ 7278.00usft (H&P 318)
Site:	RU 32-12 Pad	MD Reference:	GL 7254' & RKB 24' @ 7278.00usft (H&P 318)
Well:	SR 332-12	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		RU 32-12 Pad			
Site Position:		Northing:	1,599,253.30 usft	Latitude:	39.4554808
From:	Map	Easting:	2,341,050.00 usft	Longitude:	-107.8339555
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.47 °

Well		SR 332-12 - Slot B13				
Well Position	+N/-S	0.00 usft	Northing:	1,599,168.00 usft	Latitude:	39.4552488
	+E/-W	0.00 usft	Easting:	2,341,080.30 usft	Longitude:	-107.8338405
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	7,254.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	9/1/2017	9.25	65.67	51,674

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	159.99	

Survey Program	Date	9/15/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
124.00	1,037.00	Survey #1 - Gyro MWD Survey (OH)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4	
659.00	1,037.00	Survey #2 - Surface MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	
1,178.00	9,283.00	Survey #3 - Production MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	

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	
124.00	0.97	166.64	123.99	-1.02	0.24	1.04	0.78	0.78	0.00	
First SDI Gyro MWD Survey										
175.00	1.94	163.83	174.98	-2.27	0.58	2.33	1.91	1.90	-5.51	
220.00	2.29	175.17	219.95	-3.90	0.87	3.96	1.21	0.78	25.20	
311.00	2.20	173.67	310.88	-7.45	1.22	7.41	0.12	-0.10	-1.65	
403.00	3.43	176.75	402.76	-11.95	1.57	11.76	1.35	1.34	3.35	
495.00	4.22	162.16	494.56	-17.92	2.76	17.78	1.36	0.86	-15.86	
588.00	4.31	162.69	587.30	-24.51	4.85	24.69	0.11	0.10	0.57	

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SR 332-12 - Slot B13
Project:	Garfield County, CO NAD83	TVD Reference:	GL 7254' & RKB 24' @ 7278.00usft (H&P 318)
Site:	RU 32-12 Pad	MD Reference:	GL 7254' & RKB 24' @ 7278.00usft (H&P 318)
Well:	SR 332-12	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									
659.00	4.70	160.38	658.08	-29.80	6.62	30.27	0.61	0.55	-3.25
First SDI Surface MWD Survey									
754.00	4.81	160.11	752.76	-37.21	9.28	38.14	0.12	0.12	-0.28
848.00	5.21	160.58	846.40	-44.94	12.04	46.35	0.43	0.43	0.50
943.00	5.26	161.07	941.00	-53.13	14.89	55.02	0.07	0.05	0.52
1,037.00	5.72	163.15	1,034.57	-61.69	17.64	64.00	0.53	0.49	2.21
Last SDI Surface MWD Survey									
1,178.00	6.09	164.29	1,174.82	-75.61	21.70	78.48	0.28	0.26	0.81
First SDI Production MWD Survey									
1,273.00	5.93	164.40	1,269.30	-85.19	24.39	88.39	0.17	-0.17	0.12
1,367.00	4.53	154.22	1,362.91	-93.21	27.31	96.93	1.78	-1.49	-10.83
1,461.00	4.44	151.63	1,456.62	-99.75	30.65	104.22	0.24	-0.10	-2.76
1,556.00	4.32	150.48	1,551.34	-106.10	34.16	111.39	0.16	-0.13	-1.21
1,650.00	4.29	140.81	1,645.08	-111.91	38.13	118.20	0.77	-0.03	-10.29
1,745.00	4.72	154.51	1,739.79	-118.19	42.06	125.45	1.22	0.45	14.42
1,839.00	4.50	152.00	1,833.48	-124.94	45.45	132.95	0.32	-0.23	-2.67
1,934.00	4.31	153.83	1,928.20	-131.43	48.78	140.19	0.25	-0.20	1.93
2,028.00	4.11	152.75	2,021.95	-137.60	51.88	147.04	0.23	-0.21	-1.15
2,123.00	3.95	149.70	2,116.71	-143.45	55.09	153.64	0.28	-0.17	-3.21
2,217.00	4.22	171.34	2,210.48	-149.66	57.24	160.22	1.65	0.29	23.02
2,312.00	4.19	170.57	2,305.23	-156.54	58.34	167.05	0.07	-0.03	-0.81
2,406.00	3.92	171.18	2,398.99	-163.11	59.39	173.58	0.29	-0.29	0.65
2,500.00	3.81	173.66	2,492.78	-169.39	60.23	179.77	0.21	-0.12	2.64
2,595.00	3.78	173.34	2,587.57	-175.63	60.94	185.88	0.04	-0.03	-0.34
2,690.00	3.61	172.55	2,682.37	-181.71	61.69	191.85	0.19	-0.18	-0.83
2,784.00	3.36	173.70	2,776.20	-187.38	62.38	197.41	0.28	-0.27	1.22
2,878.00	3.24	174.84	2,870.04	-192.76	62.92	202.66	0.15	-0.13	1.21
2,973.00	2.98	173.93	2,964.90	-197.89	63.42	207.65	0.28	-0.27	-0.96
3,067.00	2.90	180.72	3,058.78	-202.70	63.65	212.24	0.38	-0.09	7.22
3,162.00	2.97	155.56	3,153.66	-207.34	64.64	216.95	1.35	0.07	-26.48
3,257.00	2.99	153.80	3,248.53	-211.81	66.75	221.86	0.10	0.02	-1.85
3,351.00	2.94	157.03	3,342.40	-216.23	68.77	226.71	0.19	-0.05	3.44
3,446.00	2.62	154.24	3,437.29	-220.43	70.67	231.30	0.37	-0.34	-2.94
3,540.00	2.58	150.69	3,531.19	-224.21	72.64	235.53	0.18	-0.04	-3.78
3,635.00	2.53	158.71	3,626.10	-228.02	74.44	239.73	0.38	-0.05	8.44
3,729.00	2.37	158.02	3,720.01	-231.76	75.93	243.75	0.17	-0.17	-0.73
3,824.00	2.16	148.87	3,814.94	-235.11	77.59	247.47	0.44	-0.22	-9.63
3,918.00	2.01	151.28	3,908.88	-238.08	79.29	250.84	0.18	-0.16	2.56
4,013.00	1.86	153.59	4,003.82	-240.92	80.78	254.02	0.18	-0.16	2.43
4,107.00	1.94	153.68	4,097.77	-243.71	82.16	257.11	0.09	0.09	0.10
4,201.00	2.14	151.25	4,191.71	-246.67	83.71	260.43	0.23	0.21	-2.59
4,296.00	2.01	162.81	4,286.65	-249.82	85.06	263.85	0.46	-0.14	12.17
4,391.00	2.19	151.45	4,381.59	-253.01	86.42	267.31	0.48	0.19	-11.96

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Site:	RU 32-12 Pad	MD Reference:	GL 7254' & RKB 24' @ 7278.00usft (H&P 318)
Well:	SR 332-12	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

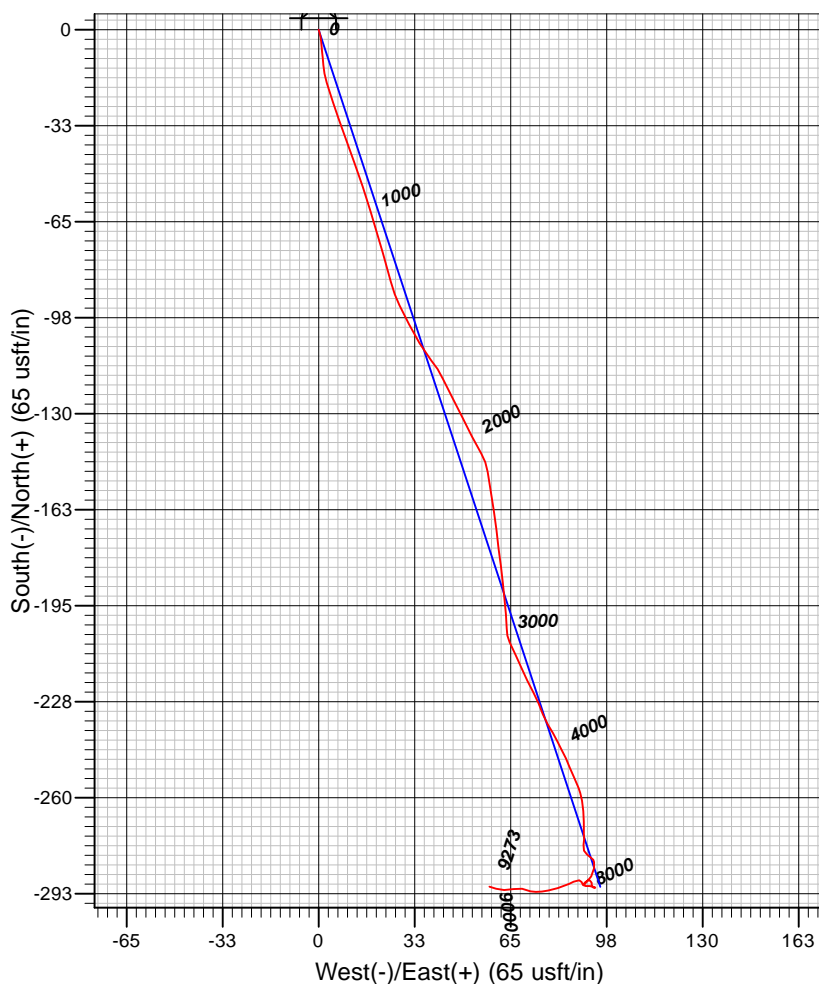
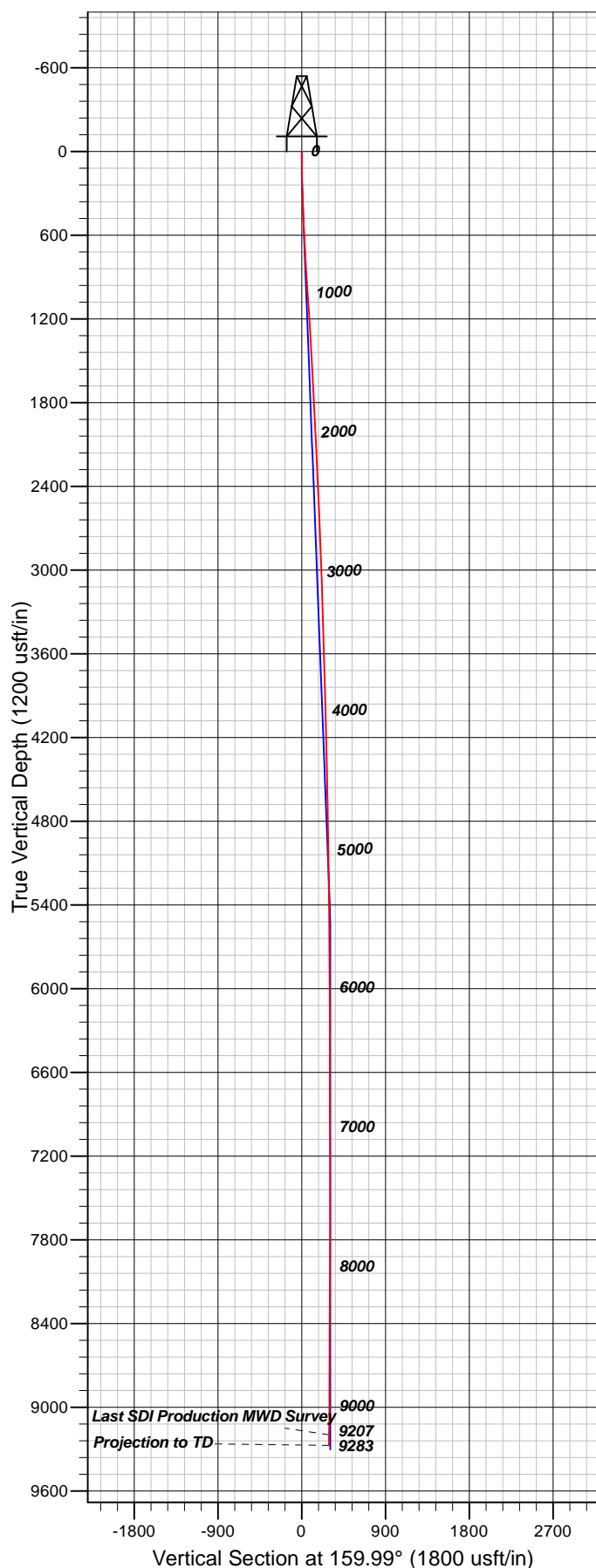
Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,485.00	1.85	164.11	4,475.53	-256.04	87.69	270.60	0.59	-0.36	13.47
4,580.00	1.87	158.81	4,570.48	-258.96	88.67	273.67	0.18	0.02	-5.58
4,674.00	1.90	176.94	4,664.43	-261.95	89.31	276.70	0.63	0.03	19.29
4,768.00	1.32	174.92	4,758.39	-264.59	89.49	279.24	0.62	-0.62	-2.15
4,863.00	1.61	171.94	4,853.36	-267.00	89.77	281.60	0.32	0.31	-3.14
4,957.00	1.78	186.44	4,947.32	-269.75	89.80	284.20	0.49	0.18	15.43
5,052.00	1.18	170.04	5,042.29	-272.18	89.80	286.48	0.77	-0.63	-17.26
5,146.00	1.03	183.60	5,136.27	-273.98	89.91	288.21	0.32	-0.16	14.43
5,241.00	1.42	190.31	5,231.25	-275.99	89.65	290.01	0.44	0.41	7.06
5,335.00	1.12	151.74	5,325.23	-277.95	89.88	291.92	0.94	-0.32	-41.03
5,429.00	0.88	130.28	5,419.21	-279.22	90.86	293.46	0.47	-0.26	-22.83
5,524.00	0.90	128.10	5,514.20	-280.15	92.00	294.73	0.04	0.02	-2.29
5,606.91	0.65	133.75	5,597.11	-280.88	92.86	295.70	0.31	-0.30	6.82
SR 332-12 MVRD									
5,618.00	0.62	134.85	5,608.19	-280.97	92.95	295.81	0.31	-0.29	9.88
5,712.00	0.64	190.97	5,702.19	-281.84	93.21	296.72	0.63	0.02	59.70
5,807.00	0.68	167.29	5,797.18	-282.91	93.23	297.74	0.29	0.04	-24.93
5,902.00	0.52	196.82	5,892.18	-283.88	93.23	298.64	0.36	-0.17	31.08
5,996.00	1.06	198.04	5,986.17	-285.11	92.84	299.67	0.57	0.57	1.30
6,091.00	0.92	204.37	6,081.15	-286.64	92.25	300.90	0.19	-0.15	6.66
6,184.00	1.51	229.18	6,174.13	-288.12	91.01	301.87	0.84	0.63	26.68
6,279.00	0.50	195.05	6,269.12	-289.34	89.96	302.66	1.19	-1.06	-35.93
6,374.00	0.34	15.45	6,364.12	-289.47	89.93	302.77	0.88	-0.17	-189.05
6,468.00	0.24	319.49	6,458.12	-289.05	89.87	302.36	0.30	-0.11	-59.53
6,562.00	0.62	64.18	6,552.11	-288.68	90.20	302.12	0.77	0.40	111.37
6,656.00	0.35	38.08	6,646.11	-288.23	90.84	301.92	0.36	-0.29	-27.77
6,751.00	0.42	74.80	6,741.11	-287.91	91.35	301.79	0.26	0.07	38.65
6,846.00	0.28	145.62	6,836.11	-288.01	91.82	302.05	0.44	-0.15	74.55
6,940.00	0.41	132.54	6,930.10	-288.43	92.20	302.57	0.16	0.14	-13.91
7,034.00	0.17	175.88	7,024.10	-288.80	92.46	303.00	0.33	-0.26	46.11
7,129.00	0.61	179.74	7,119.10	-289.44	92.47	303.61	0.46	0.46	4.06
7,223.00	0.35	129.40	7,213.10	-290.13	92.69	304.33	0.50	-0.28	-53.55
7,318.00	0.17	126.85	7,308.10	-290.39	93.03	304.70	0.19	-0.19	-2.68
7,412.00	0.27	85.00	7,402.10	-290.46	93.36	304.87	0.19	0.11	-44.52
7,507.00	0.07	133.65	7,497.10	-290.48	93.63	304.98	0.24	-0.21	51.21
7,601.00	0.23	345.34	7,591.10	-290.34	93.62	304.84	0.31	0.17	-157.78
7,696.00	0.70	270.02	7,686.09	-290.15	92.99	304.46	0.71	0.49	-79.28
7,790.00	0.87	288.91	7,780.08	-289.92	91.74	303.81	0.33	0.18	20.10
7,885.00	0.84	250.30	7,875.07	-289.92	90.40	303.35	0.60	-0.03	-40.64
7,979.00	0.79	336.29	7,969.07	-289.56	89.50	302.70	1.18	-0.05	91.48
8,074.00	0.61	331.45	8,064.06	-288.52	88.99	301.55	0.20	-0.19	-5.09
8,168.00	0.69	280.99	8,158.06	-287.97	88.20	300.76	0.59	0.09	-53.68
8,263.00	1.67	246.55	8,253.04	-288.41	86.36	300.55	1.23	1.03	-36.25

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SR 332-12 - Slot B13
Project:	Garfield County, CO NAD83	TVD Reference:	GL 7254' & RKB 24' @ 7278.00usft (H&P 318)
Site:	RU 32-12 Pad	MD Reference:	GL 7254' & RKB 24' @ 7278.00usft (H&P 318)
Well:	SR 332-12	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)	
8,357.00	1.80	241.81	8,346.99	-289.65	83.81	300.85	0.21	0.14	-5.04	
8,451.00	1.71	263.23	8,440.95	-290.52	81.11	300.73	0.70	-0.10	22.79	
8,546.00	1.97	249.62	8,535.90	-291.25	78.17	300.42	0.53	0.27	-14.33	
8,640.00	1.49	269.23	8,629.86	-291.83	75.44	300.03	0.80	-0.51	20.86	
8,734.00	1.32	269.67	8,723.83	-291.85	73.13	299.26	0.18	-0.18	0.47	
8,829.00	1.35	291.35	8,818.80	-291.45	71.00	298.15	0.53	0.03	22.82	
8,923.00	1.41	281.54	8,912.78	-290.82	68.83	296.82	0.26	0.06	-10.44	
9,018.00	2.20	259.34	9,007.73	-290.92	65.89	295.91	1.10	0.83	-23.37	
9,112.00	1.63	269.97	9,101.68	-291.26	62.78	295.16	0.71	-0.61	11.31	
9,207.00	1.76	287.95	9,196.64	-290.81	60.05	293.80	0.57	0.14	18.93	
Last SDI Production MWD Survey										
9,283.00	1.76	287.95	9,272.60	-290.09	57.82	292.36	0.00	0.00	0.00	
Projection to TD - SR 332-12 PBHL										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
124.00	123.99	-1.02	0.24	First SDI Gyro MWD Survey	
588.00	587.30	-24.51	4.85	Last SDI Gyro MWD Survey	
659.00	658.08	-29.80	6.62	First SDI Surface MWD Survey	
1,037.00	1,034.57	-61.69	17.64	Last SDI Surface MWD Survey	
1,178.00	1,174.82	-75.61	21.70	First SDI Production MWD Survey	
9,207.00	9,196.64	-290.81	60.05	Last SDI Production MWD Survey	
9,283.00	9,272.60	-290.09	57.82	Projection to TD	

Checked By: _____	Approved By: _____	Date: _____
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Well Details: SR 332-12

TVD Reference: GL 7254' & RKB 24' @ 7278.00usft (H&P 318) Level: 7254.00						
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	1599168.00	2341080.30	39.4552488	-107.8338404	B13

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well SR 332-12 - Slot B13, True North
 Vertical (TVD) Reference: GL 7254' & RKB 24' @ 7278.00usft (H&P 318)
 Section (VS) Reference: Slot - B13(0.00N, 0.00E)
 Measured Depth Reference: GL 7254' & RKB 24' @ 7278.00usft (H&P 318)
 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

10:51, September 15 2017
 Created By: Mel Mireles Jr.