



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 322-12
County & State	Garfield County, CO
SDI Job No.	OP.002689 & OP.003600
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 122 feet to a measured depth of 9,460 feet is true and correct as determined from all available records.


Signature

06-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 322-12 - Slot A8
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 322-12	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 322-12 - Slot A8				
Well Position	+N/-S	0.00 usft	Northing:	1,599,202.20 usft	Latitude:	39.4553414
	+E/-W	0.00 usft	Easting:	2,341,062.00 usft	Longitude:	-107.8339084
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	8/18/2017	9.25	65.67	51,678

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	286.98	

Survey Program	Date	8/25/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
122.00	867.00	Survey #1 - Gyro MWD Survey (OH)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4	
942.00	1,036.00	Survey #2 - Surface MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	
1,178.00	9,460.00	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	
122.00	0.97	301.46	121.99	0.54	-0.88	1.00	0.80	0.80	0.00	
First SDI Gyro MWD Survey										
218.00	3.43	289.07	217.92	1.90	-4.29	4.66	2.60	2.56	-12.91	
310.00	5.28	277.91	309.65	3.38	-11.08	11.59	2.20	2.01	-12.13	
402.00	7.92	274.13	401.03	4.42	-21.60	21.95	2.91	2.87	-4.11	
494.00	10.47	272.46	491.84	5.24	-36.28	36.22	2.79	2.77	-1.82	
587.00	13.46	271.93	582.81	5.97	-55.54	54.86	3.22	3.22	-0.57	
679.00	15.13	273.69	671.96	7.10	-78.22	76.89	1.88	1.82	1.91	

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Site:	RU 32-12 Pad	MD Reference:	GL 7254' & RKB 24' @ 7278.00usft (H&P 318)
Well:	SR 322-12	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)
773.00	15.75	271.93	762.57	8.32	-103.22	101.15	0.83	0.66	-1.87
867.00	16.28	278.44	852.93	10.68	-129.00	126.50	1.99	0.56	6.93
Last SDI Gyro MWD Survey									
942.00	16.25	276.09	924.92	13.34	-149.84	147.20	0.88	-0.04	-3.13
First SDI Surface MWD Survey									
1,036.00	17.67	281.82	1,014.84	17.66	-176.88	174.33	2.33	1.51	6.10
Last SDI Surface MWD Survey									
1,178.00	18.43	282.53	1,149.85	26.94	-219.89	218.17	0.56	0.54	0.50
First SDI Production MWD Survey									
1,272.00	18.19	282.40	1,239.09	33.31	-248.72	247.61	0.26	-0.26	-0.14
1,367.00	17.90	282.95	1,329.42	39.77	-277.43	276.96	0.35	-0.31	0.58
1,461.00	18.17	276.99	1,418.81	44.79	-306.06	305.80	1.98	0.29	-6.34
1,556.00	18.12	275.99	1,509.08	48.14	-335.45	334.89	0.33	-0.05	-1.05
1,650.00	18.11	276.45	1,598.43	51.30	-364.51	363.61	0.15	-0.01	0.49
1,745.00	17.15	276.17	1,688.96	54.47	-393.11	391.88	1.01	-1.01	-0.29
1,839.00	16.97	276.70	1,778.83	57.56	-420.51	418.99	0.25	-0.19	0.56
1,934.00	16.75	276.55	1,869.74	60.74	-447.88	446.10	0.24	-0.23	-0.16
2,028.00	16.50	276.07	1,959.81	63.69	-474.61	472.53	0.30	-0.27	-0.51
2,123.00	16.36	276.09	2,050.93	66.54	-501.33	498.91	0.15	-0.15	0.02
2,217.00	15.97	276.40	2,141.22	69.38	-527.34	524.62	0.42	-0.41	0.33
2,311.00	15.47	277.42	2,231.70	72.44	-552.63	549.70	0.61	-0.53	1.09
2,406.00	15.15	277.54	2,323.33	75.71	-577.50	574.44	0.34	-0.34	0.13
2,501.00	15.26	277.77	2,415.00	79.03	-602.19	599.03	0.13	0.12	0.24
2,595.00	14.85	277.38	2,505.78	82.25	-626.39	623.11	0.45	-0.44	-0.41
2,689.00	14.59	277.30	2,596.69	85.30	-650.08	646.66	0.28	-0.28	-0.09
2,784.00	14.14	278.60	2,688.72	88.56	-673.42	669.94	0.58	-0.47	1.37
2,878.00	13.72	277.76	2,779.96	91.78	-695.82	692.30	0.50	-0.45	-0.89
2,973.00	14.51	279.73	2,872.09	95.31	-718.72	715.23	0.97	0.83	2.07
3,067.00	14.37	279.78	2,963.12	99.28	-741.82	738.48	0.15	-0.15	0.05
3,162.00	13.92	279.57	3,055.24	103.18	-764.70	761.51	0.48	-0.47	-0.22
3,257.00	13.54	278.46	3,147.53	106.72	-786.97	783.84	0.49	-0.40	-1.17
3,351.00	14.77	280.04	3,238.67	110.43	-809.65	806.62	1.37	1.31	1.68
3,446.00	14.55	278.14	3,330.58	114.23	-833.39	830.43	0.56	-0.23	-2.00
3,540.00	14.36	278.92	3,421.60	117.71	-856.60	853.64	0.29	-0.20	0.83
3,635.00	14.26	279.78	3,513.65	121.52	-879.76	876.91	0.25	-0.11	0.91
3,729.00	13.81	279.30	3,604.85	125.30	-902.24	899.52	0.49	-0.48	-0.51
3,824.00	16.13	281.24	3,696.62	129.71	-926.38	923.89	2.50	2.44	2.04
3,918.00	16.02	281.34	3,786.94	134.80	-951.91	949.79	0.12	-0.12	0.11
4,013.00	16.06	282.32	3,878.24	140.18	-977.60	975.93	0.29	0.04	1.03
4,107.00	15.52	283.70	3,968.70	145.94	-1,002.52	1,001.44	0.70	-0.57	1.47
4,202.00	15.04	282.59	4,060.34	151.63	-1,026.90	1,026.42	0.59	-0.51	-1.17
4,296.00	14.89	283.84	4,151.15	157.18	-1,050.53	1,050.64	0.38	-0.16	1.33
4,391.00	12.65	285.60	4,243.42	162.90	-1,072.40	1,073.23	2.40	-2.36	1.85
4,485.00	12.33	289.67	4,335.19	169.05	-1,091.76	1,093.55	1.00	-0.34	4.33

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Site:	RU 32-12 Pad	MD Reference:	GL 7254' & RKB 24' @ 7278.00usft (H&P 318)
Well:	SR 322-12	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

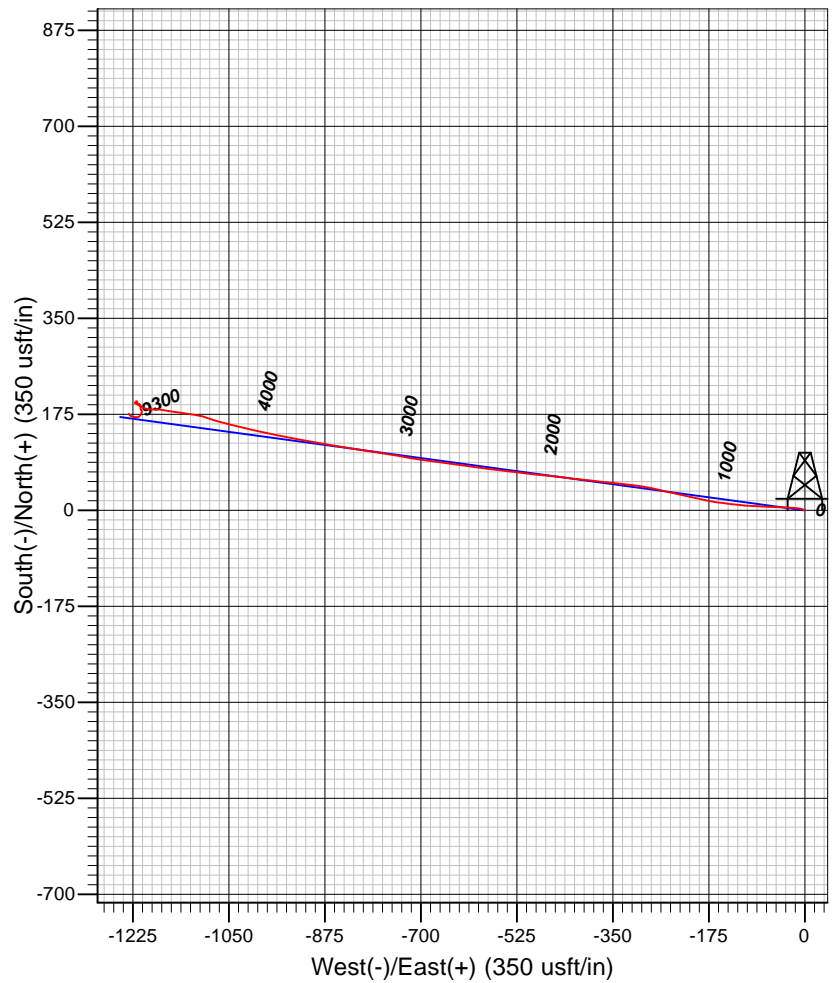
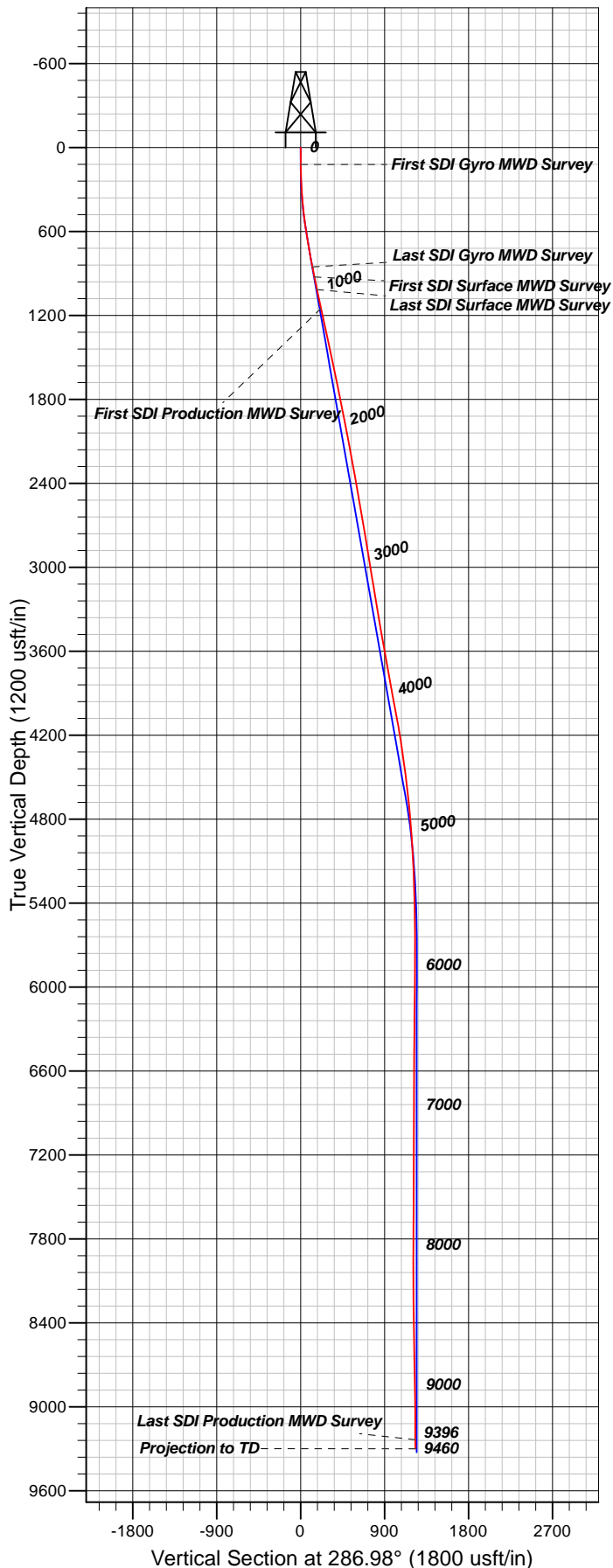
Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,579.00	10.83	278.09	4,427.29	173.67	-1,109.96	1,112.30	2.94	-1.60	-12.32	
4,674.00	10.55	278.17	4,520.64	176.16	-1,127.41	1,129.72	0.30	-0.29	0.08	
4,768.00	10.52	279.25	4,613.06	178.76	-1,144.39	1,146.72	0.21	-0.03	1.15	
4,863.00	8.09	277.94	4,706.80	181.08	-1,159.58	1,161.92	2.57	-2.56	-1.38	
4,957.00	7.71	278.99	4,799.91	182.98	-1,172.35	1,174.70	0.43	-0.40	1.12	
5,052.00	6.69	269.29	4,894.16	183.91	-1,184.18	1,186.28	1.67	-1.07	-10.21	
5,146.00	6.00	272.26	4,987.58	184.03	-1,194.57	1,196.25	0.81	-0.73	3.16	
5,241.00	3.96	293.19	5,082.23	185.52	-1,202.55	1,204.31	2.84	-2.15	22.03	
5,335.00	3.77	296.33	5,176.01	188.17	-1,208.30	1,210.59	0.30	-0.20	3.34	
5,429.00	4.01	302.31	5,269.80	191.30	-1,213.85	1,216.81	0.50	0.26	6.36	
5,523.00	1.54	291.19	5,363.68	193.51	-1,217.80	1,221.24	2.68	-2.63	-11.83	
5,618.00	1.67	290.94	5,458.64	194.47	-1,220.29	1,223.89	0.14	0.14	-0.26	
5,714.00	0.77	29.97	5,554.63	195.52	-1,221.27	1,225.14	2.03	-0.94	103.16	
5,755.81	0.87	35.63	5,596.43	196.03	-1,220.94	1,224.98	0.30	0.23	13.54	
SR 322-12 MVRD										
5,808.00	1.00	41.07	5,648.62	196.69	-1,220.42	1,224.67	0.30	0.25	10.42	
5,903.00	1.21	20.98	5,743.60	198.25	-1,219.51	1,224.26	0.46	0.22	-21.15	
5,997.00	0.88	120.80	5,837.59	198.81	-1,218.54	1,223.49	1.72	-0.35	106.19	
6,091.00	0.82	103.75	5,931.58	198.28	-1,217.26	1,222.12	0.28	-0.06	-18.14	
6,186.00	1.42	188.08	6,026.57	196.95	-1,216.77	1,221.25	1.65	0.63	88.77	
6,280.00	1.11	203.93	6,120.54	194.97	-1,217.30	1,221.18	0.49	-0.33	16.86	
6,374.00	0.65	113.85	6,214.53	193.92	-1,217.18	1,220.77	1.37	-0.49	-95.83	
6,469.00	1.23	75.34	6,309.52	193.96	-1,215.70	1,219.36	0.87	0.61	-40.54	
6,563.00	0.77	103.51	6,403.51	194.07	-1,214.11	1,217.87	0.70	-0.49	29.97	
6,657.00	0.62	130.10	6,497.50	193.59	-1,213.11	1,216.77	0.37	-0.16	28.29	
6,752.00	0.80	150.35	6,592.49	192.68	-1,212.39	1,215.82	0.32	0.19	21.32	
6,847.00	0.09	89.58	6,687.49	192.11	-1,211.99	1,215.27	0.80	-0.75	-63.97	
6,941.00	0.77	151.25	6,781.49	191.56	-1,211.61	1,214.74	0.78	0.72	65.61	
7,035.00	0.82	162.70	6,875.48	190.36	-1,211.10	1,213.91	0.18	0.05	12.18	
7,130.00	0.79	190.74	6,970.47	189.07	-1,211.02	1,213.46	0.41	-0.03	29.52	
7,224.00	0.97	172.02	7,064.46	187.64	-1,211.03	1,213.05	0.36	0.19	-19.91	
7,319.00	0.76	205.32	7,159.45	186.28	-1,211.19	1,212.80	0.56	-0.22	35.05	
7,413.00	0.43	146.70	7,253.44	185.42	-1,211.27	1,212.62	0.69	-0.35	-62.36	
7,508.00	0.97	150.67	7,348.44	184.42	-1,210.68	1,211.77	0.57	0.57	4.18	
7,602.00	0.44	118.16	7,442.43	183.56	-1,209.97	1,210.84	0.69	-0.56	-34.59	
7,696.00	0.24	219.44	7,536.43	183.23	-1,209.77	1,210.56	0.58	-0.21	107.74	
7,790.00	0.36	161.38	7,630.43	182.80	-1,209.81	1,210.46	0.33	0.13	-61.77	
7,884.00	0.62	140.34	7,724.42	182.13	-1,209.39	1,209.87	0.33	0.28	-22.38	
7,979.00	1.06	167.14	7,819.41	180.88	-1,208.86	1,209.00	0.61	0.46	28.21	
8,074.00	1.09	189.18	7,914.40	179.13	-1,208.81	1,208.44	0.43	0.03	23.20	
8,168.00	1.21	203.42	8,008.38	177.34	-1,209.35	1,208.43	0.33	0.13	15.15	
8,262.00	1.21	198.27	8,102.36	175.48	-1,210.05	1,208.56	0.12	0.00	-5.48	
8,357.00	1.46	229.11	8,197.33	173.74	-1,211.28	1,209.23	0.79	0.26	32.46	

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Site:	RU 32-12 Pad	MD Reference:	GL 7254' & RKB 24' @ 7278.00usft (H&P 318)
Well:	SR 322-12	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)	
8,451.00	1.43	216.05	8,291.30	172.01	-1,212.88	1,210.25	0.35	-0.03	-13.89	
8,546.00	1.38	234.26	8,386.28	170.38	-1,214.51	1,211.33	0.47	-0.05	19.17	
8,640.00	1.68	268.88	8,480.24	169.69	-1,216.80	1,213.33	1.02	0.32	36.83	
8,735.00	1.85	277.92	8,575.20	169.87	-1,219.71	1,216.17	0.34	0.18	9.52	
8,830.00	2.36	269.95	8,670.14	170.08	-1,223.19	1,219.55	0.62	0.54	-8.39	
8,924.00	2.04	289.93	8,764.07	170.65	-1,226.70	1,223.07	0.88	-0.34	21.26	
9,019.00	1.66	313.01	8,859.02	172.17	-1,229.29	1,226.00	0.87	-0.40	24.29	
9,113.00	0.48	345.72	8,953.00	173.48	-1,230.38	1,227.42	1.36	-1.26	34.80	
9,207.00	0.70	323.70	9,047.00	174.32	-1,230.82	1,228.09	0.33	0.23	-23.43	
9,302.00	0.44	278.99	9,141.99	174.85	-1,231.53	1,228.91	0.52	-0.27	-47.06	
9,396.00	0.49	335.29	9,235.99	175.27	-1,232.05	1,229.54	0.47	0.05	59.89	
Last SDI Production MWD Survey										
9,460.00	0.49	335.29	9,299.99	175.77	-1,232.28	1,229.90	0.00	0.00	0.00	
Projection to TD - SR 322-12 PBHL										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
9,396.00	9,235.99	175.27	-1,232.05	Last SDI Production MWD Survey	
9,460.00	9,299.99	175.77	-1,232.28	Projection to TD	

Checked By: _____	Approved By: _____	Date: _____
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Well Details: SR 322-12

+N/-S	+E/-W	North	East	Latitude	Longitude	Slot
0.00	0.00	1599202.20	2341062.00	39.4553413	-107.8339083	A8

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well SR 322-12 - Slot A8, True North
 Vertical (TVD) Reference: GL 7254' & RKB 24' @ 7278.00usft (H&P 318)
 Section (VS) Reference: Slot - A8(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

11:21, September 06 2017
 Created By: Mel Mireles Jr.