



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 323-12
County & State	Garfield County, CO
SDI Job No.	OP.005241
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 121 feet to a measured depth of 9,512 feet is true and correct as determined from all available records.

Signature

 27-Nov-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 323-12 - Slot SR 323-12 (A1)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Site:	SR 23-12 Pad	MD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Well:	SR 323-12	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	SR 23-12 Pad				
Site Position:		Northing:	1,597,713.40 usft	Latitude:	39.4511965
From:	Map	Easting:	2,340,229.70 usft	Longitude:	-107.8367194
Position Uncertainty:	0.00 usft	Slot Radius:	13.20 in	Grid Convergence:	-1.47 °

Well	SR 323-12 - Slot SR 323-12 (A1)					
Well Position	+N/-S	0.00 usft	Northing:	1,597,713.40 usft	Latitude:	39.4511965
	+E/-W	0.00 usft	Easting:	2,340,229.70 usft	Longitude:	-107.8367194
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	7,478.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	10/21/2017	9.23	65.65	51,655

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	307.53	

Survey Program	Date	10/31/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
121.00	400.00	Survey #1 - Gyro MWD Survey (OH)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4	
473.00	1,063.00	Survey #2 - Surface MWD Survey (OH)	SDI MWD	SDI MWD - Standard ver 1.0.1	
1,180.00	9,512.00	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	0.00
121.00	0.26	169.10	121.00	-0.27	0.05	-0.21	0.21	0.21	0.00	0.00
First SDI Gyro MWD Survey										
215.00	0.70	324.67	215.00	-0.01	-0.24	0.18	1.00	0.47	165.50	
308.00	2.02	318.87	307.97	1.69	-1.65	2.33	1.43	1.42	-6.24	
400.00	4.05	316.67	399.84	5.27	-4.94	7.13	2.21	2.21	-2.39	
Last SDI Gyro MWD Survey										
473.00	6.02	314.27	472.55	9.82	-9.45	13.48	2.71	2.70	-3.29	

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SR 323-12 - Slot SR 323-12 (A1)
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Site:	SR 23-12 Pad	MD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Well:	SR 323-12	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)	
First SDI Surface MWD Survey										
565.00	6.96	307.47	563.96	16.58	-17.33	23.84	1.32	1.02	-7.39	
656.00	7.24	306.72	654.26	23.36	-26.30	35.09	0.32	0.31	-0.82	
751.00	7.75	309.43	748.45	31.01	-36.05	47.48	0.65	0.54	2.85	
845.00	8.33	302.67	841.53	38.71	-46.68	60.60	1.18	0.62	-7.19	
939.00	8.86	298.61	934.47	45.85	-58.77	74.53	0.86	0.56	-4.32	
1,034.00	9.78	298.83	1,028.22	53.25	-72.26	89.74	0.97	0.97	0.23	
1,063.00	9.93	299.72	1,056.79	55.67	-76.59	94.65	0.74	0.52	3.07	
Last SDI Surface MWD Survey										
1,180.00	10.25	299.53	1,171.98	65.81	-94.40	114.95	0.27	0.27	-0.16	
First SDI Production MWD Survey										
1,275.00	9.62	300.11	1,265.56	73.95	-108.63	131.20	0.67	-0.66	0.61	
1,369.00	10.03	307.61	1,358.18	82.89	-121.91	147.17	1.43	0.44	7.98	
1,463.00	9.96	307.91	1,450.75	92.88	-134.80	163.49	0.09	-0.07	0.32	
1,558.00	9.84	309.40	1,544.34	103.08	-147.56	179.81	0.30	-0.13	1.57	
1,653.00	9.72	309.05	1,637.96	113.29	-160.06	195.94	0.14	-0.13	-0.37	
1,747.00	9.62	308.61	1,730.62	123.19	-172.36	211.73	0.13	-0.11	-0.47	
1,842.00	9.49	309.20	1,824.31	133.09	-184.63	227.49	0.17	-0.14	0.62	
1,936.00	9.17	310.15	1,917.06	142.82	-196.36	242.72	0.38	-0.34	1.01	
2,030.00	9.06	310.59	2,009.88	152.46	-207.71	257.59	0.14	-0.12	0.47	
2,125.00	8.79	310.51	2,103.73	162.04	-218.91	272.31	0.28	-0.28	-0.08	
2,219.00	8.74	310.70	2,196.63	171.37	-229.78	286.62	0.06	-0.05	0.20	
2,314.00	8.79	310.01	2,290.52	180.74	-240.81	301.07	0.12	0.05	-0.73	
2,408.00	8.62	310.13	2,383.44	189.90	-251.70	315.29	0.18	-0.18	0.13	
2,502.00	8.48	311.33	2,476.39	199.01	-262.29	329.24	0.24	-0.15	1.28	
2,597.00	7.95	311.39	2,570.42	207.98	-272.48	342.78	0.56	-0.56	0.06	
2,691.00	7.81	312.76	2,663.53	216.62	-282.04	355.63	0.25	-0.15	1.46	
2,785.00	7.89	313.33	2,756.65	225.38	-291.43	368.41	0.12	0.09	0.61	
2,880.00	7.59	314.22	2,850.78	234.23	-300.67	381.13	0.34	-0.32	0.94	
2,975.00	7.29	304.46	2,944.99	242.02	-310.13	393.38	1.37	-0.32	-10.27	
3,069.00	6.95	304.80	3,038.26	248.64	-319.72	405.01	0.36	-0.36	0.36	
3,164.00	6.64	304.56	3,132.59	255.03	-328.96	416.24	0.33	-0.33	-0.25	
3,258.00	6.51	309.00	3,225.98	261.47	-337.58	426.99	0.56	-0.14	4.72	
3,353.00	6.08	308.63	3,320.40	268.00	-345.69	437.41	0.45	-0.45	-0.39	
3,447.00	5.61	310.09	3,413.91	274.07	-353.10	446.97	0.52	-0.50	1.55	
3,541.00	5.41	312.53	3,507.48	280.02	-359.88	455.98	0.33	-0.21	2.60	
3,636.00	5.05	312.80	3,602.08	285.89	-366.25	464.60	0.38	-0.38	0.28	
3,730.00	6.01	310.54	3,695.65	291.90	-373.02	473.64	1.05	1.02	-2.40	
3,825.00	5.60	305.91	3,790.16	297.85	-380.56	483.24	0.65	-0.43	-4.87	
3,919.00	5.44	307.33	3,883.72	303.24	-387.81	492.28	0.22	-0.17	1.51	
4,013.00	5.45	307.00	3,977.30	308.63	-394.92	501.20	0.03	0.01	-0.35	
4,108.00	5.49	307.99	4,071.87	314.14	-402.11	510.25	0.11	0.04	1.04	
4,202.00	5.31	308.88	4,165.45	319.64	-409.04	519.10	0.21	-0.19	0.95	
4,297.00	5.00	309.39	4,260.06	325.03	-415.66	527.63	0.33	-0.33	0.54	

Company:	TEP Rocky Mountain LLC	Local Co-ordinate Reference:	Well SR 323-12 - Slot SR 323-12 (A1)
Project:	Garfield County, CO NAD83	TVD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Site:	SR 23-12 Pad	MD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Well:	SR 323-12	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Grand Junction District

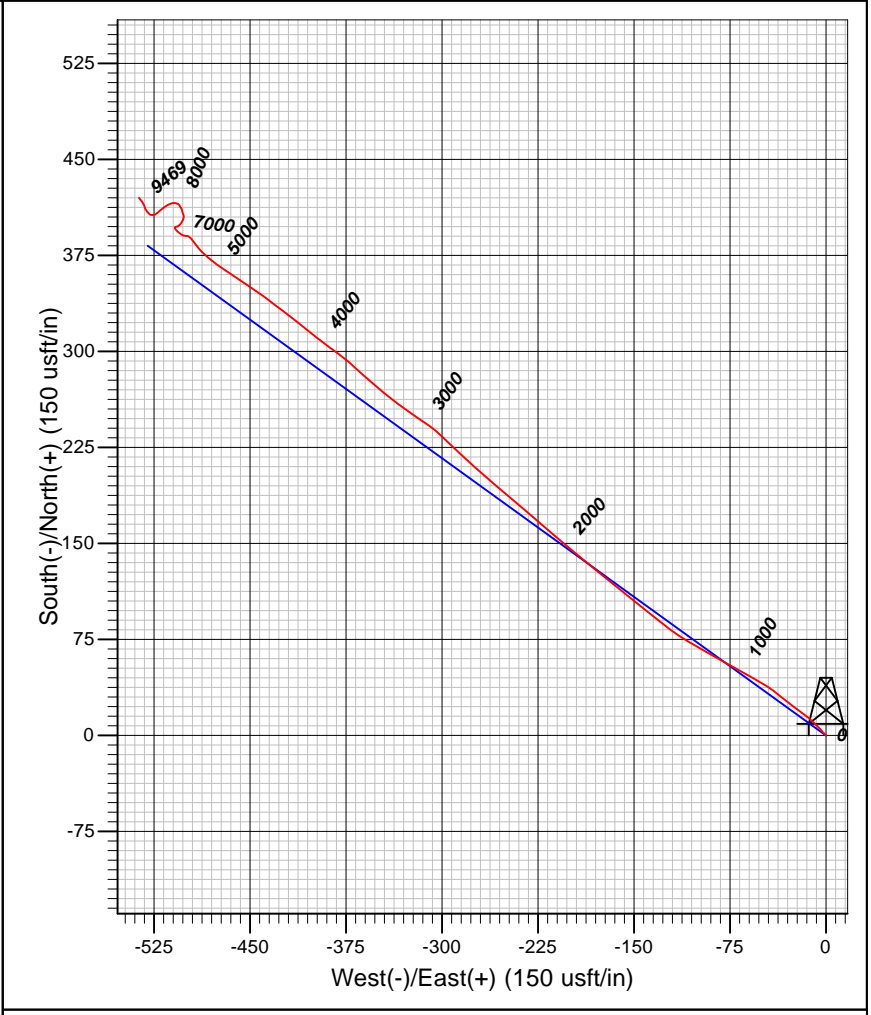
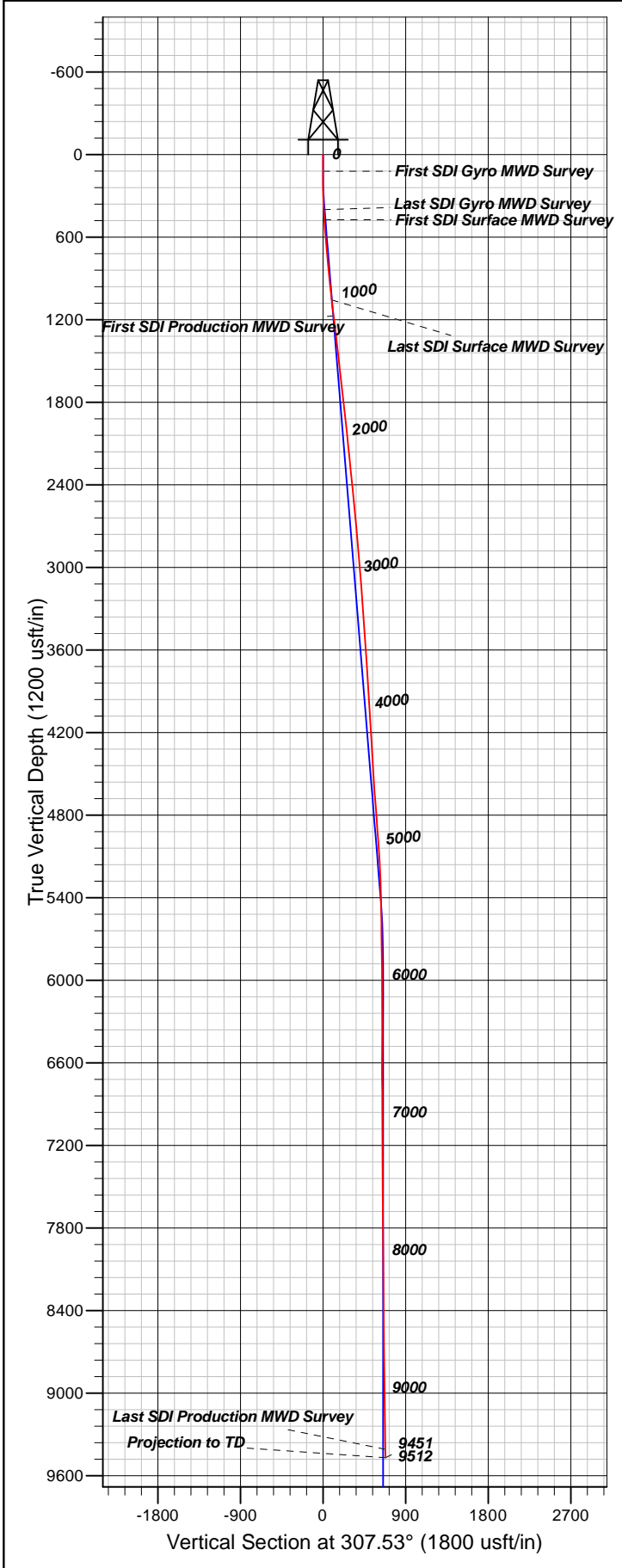
Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,391.00	5.24	305.76	4,353.69	330.14	-422.31	536.01	0.43	0.26	-3.86	
4,486.00	5.11	307.17	4,448.30	335.23	-429.20	544.58	0.19	-0.14	1.48	
4,580.00	4.93	308.39	4,541.94	340.26	-435.70	552.81	0.22	-0.19	1.30	
4,675.00	6.42	304.08	4,636.47	345.78	-443.30	562.19	1.63	1.57	-4.54	
4,769.00	6.32	304.41	4,729.89	351.64	-451.92	572.60	0.11	-0.11	0.35	
4,863.00	6.38	303.50	4,823.32	357.45	-460.54	582.98	0.12	0.06	-0.97	
4,958.00	6.14	303.68	4,917.75	363.18	-469.17	593.31	0.25	-0.25	0.19	
5,053.00	6.06	307.04	5,012.21	369.02	-477.40	603.40	0.39	-0.08	3.54	
5,147.00	6.14	312.40	5,105.68	375.40	-485.08	613.37	0.61	0.09	5.70	
5,241.00	4.14	322.38	5,199.30	381.48	-490.86	621.66	2.32	-2.13	10.62	
5,337.00	2.64	322.91	5,295.13	385.99	-494.31	627.14	1.56	-1.56	0.55	
5,432.00	2.20	313.68	5,390.04	388.99	-496.95	631.06	0.62	-0.46	-9.72	
5,527.00	1.17	272.25	5,485.01	390.29	-499.24	633.66	1.61	-1.08	-43.61	
5,622.00	0.88	275.89	5,579.99	390.40	-500.93	635.08	0.31	-0.31	3.83	
5,717.00	0.94	293.39	5,674.98	390.78	-502.37	636.45	0.30	0.06	18.42	
5,811.00	1.16	298.20	5,768.96	391.54	-503.92	638.14	0.25	0.23	5.12	
5,889.35	1.20	311.10	5,847.29	392.46	-505.24	639.74	0.34	0.06	16.47	
SR 323-12 BTV										
5,906.00	1.22	313.69	5,863.94	392.69	-505.50	640.10	0.34	0.10	15.53	
6,000.00	1.30	315.46	5,957.92	394.14	-506.97	642.15	0.09	0.09	1.88	
6,094.00	1.37	319.29	6,051.89	395.76	-508.45	644.30	0.12	0.07	4.07	
6,189.00	0.62	47.02	6,146.88	396.97	-508.81	645.33	1.56	-0.79	92.35	
6,283.00	0.70	79.63	6,240.88	397.42	-507.88	644.86	0.40	0.09	34.69	
6,377.00	0.80	68.06	6,334.87	397.77	-506.70	644.14	0.19	0.11	-12.31	
6,472.00	0.93	53.45	6,429.86	398.47	-505.47	643.59	0.27	0.14	-15.38	
6,566.00	0.88	38.50	6,523.85	399.49	-504.41	643.37	0.26	-0.05	-15.90	
6,661.00	0.97	32.07	6,618.83	400.74	-503.53	643.44	0.14	0.09	-6.77	
6,755.00	0.72	27.95	6,712.82	401.94	-502.83	643.61	0.27	-0.27	-4.38	
6,850.00	0.62	26.55	6,807.82	402.93	-502.32	643.81	0.11	-0.11	-1.47	
6,944.00	0.85	11.45	6,901.81	404.07	-501.95	644.21	0.32	0.24	-16.06	
7,039.00	0.53	7.82	6,996.80	405.19	-501.75	644.74	0.34	-0.34	-3.82	
7,133.00	0.34	341.44	7,090.80	405.89	-501.78	645.19	0.29	-0.20	-28.06	
7,228.00	0.62	346.91	7,185.80	406.65	-501.99	645.82	0.30	0.29	5.76	
7,322.00	0.88	337.55	7,279.79	407.82	-502.38	646.83	0.30	0.28	-9.96	
7,416.00	0.88	340.84	7,373.78	409.17	-502.89	648.06	0.05	0.00	3.50	
7,510.00	0.93	351.33	7,467.77	410.60	-503.24	649.22	0.18	0.05	11.16	
7,605.00	0.44	315.27	7,562.76	411.62	-503.62	650.13	0.66	-0.52	-37.96	
7,699.00	0.62	331.97	7,656.76	412.33	-504.11	650.96	0.25	0.19	17.77	
7,794.00	0.70	328.89	7,751.75	413.28	-504.65	651.96	0.09	0.08	-3.24	
7,887.00	0.81	331.65	7,844.74	414.34	-505.26	653.09	0.12	0.12	2.97	
7,982.00	0.74	295.35	7,939.73	415.20	-506.13	654.30	0.51	-0.07	-38.21	
8,076.00	1.06	288.46	8,033.72	415.73	-507.50	655.72	0.36	0.34	-7.33	
8,171.00	1.14	267.01	8,128.70	415.96	-509.28	657.27	0.44	0.08	-22.58	
8,265.00	1.75	253.15	8,222.67	415.50	-511.59	658.82	0.74	0.65	-14.74	

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Site:	SR 23-12 Pad	MD Reference:	GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
Well:	SR 323-12	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)
8,360.00	2.16	240.37	8,317.62	414.19	-514.53	660.36	0.63	0.43	-13.45
8,454.00	2.11	235.55	8,411.55	412.34	-517.50	661.58	0.20	-0.05	-5.13
8,548.00	2.11	228.17	8,505.49	410.20	-520.21	662.43	0.29	0.00	-7.85
8,643.00	1.67	229.66	8,600.44	408.14	-522.57	663.05	0.47	-0.46	1.57
8,737.00	1.23	248.82	8,694.41	406.89	-524.56	663.86	0.69	-0.47	20.38
8,832.00	0.88	275.36	8,789.39	406.59	-526.23	665.01	0.62	-0.37	27.94
8,926.00	0.55	273.30	8,883.39	406.68	-527.40	665.99	0.35	-0.35	-2.19
9,021.00	1.41	310.52	8,978.37	407.47	-528.75	667.54	1.08	0.91	39.18
9,115.00	1.67	318.43	9,072.34	409.25	-530.54	670.04	0.36	0.28	8.41
9,209.00	1.61	345.59	9,166.30	411.55	-531.77	672.42	0.82	-0.06	28.89
9,303.00	1.83	336.30	9,260.26	414.20	-532.71	674.78	0.38	0.23	-9.88
9,398.00	2.20	323.18	9,355.20	417.05	-534.41	677.86	0.62	0.39	-13.81
9,451.00	1.85	320.98	9,408.17	418.53	-535.56	679.67	0.68	-0.66	-4.15
Last SDI Production MWD Survey									
9,512.00	1.85	320.98	9,469.13	420.06	-536.80	681.59	0.00	0.00	0.00
Projection to TD - SR 323-12 PBHL									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
121.00	121.00	-0.27	0.05	First SDI Gyro MWD Survey
400.00	399.84	5.27	-4.94	Last SDI Gyro MWD Survey
473.00	472.55	9.82	-9.45	First SDI Surface MWD Survey
1,063.00	1,056.79	55.67	-76.59	Last SDI Surface MWD Survey
1,180.00	1,171.98	65.81	-94.40	First SDI Production MWD Survey
9,451.00	9,408.17	418.53	-535.56	Last SDI Production MWD Survey
9,512.00	9,469.13	420.06	-536.80	Projection to TD

Checked By: _____ Approved By: _____ Date: _____



Well Details: SR 323-12

TVD Reference: GL 7478' & RKB 24' @ 7502.00usft (H&P 318) @ Level: 7478.00					
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	1597713.40	2340229.70	39.4511965	-107.8367194
SR 323-12 (A1)					

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well SR 323-12 - Slot SR 323-12 (A1), True North
 Vertical (TVD) Reference: GL 7478' & RKB 24' @ 7502.00usft (H&P 318)
 Section (VS) Reference: Slot - SR 323-12 (A1)(0.00N, 0.00E)
 Measured Depth Reference: GL 7478' & RKB 24' @ 7502.00usft (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