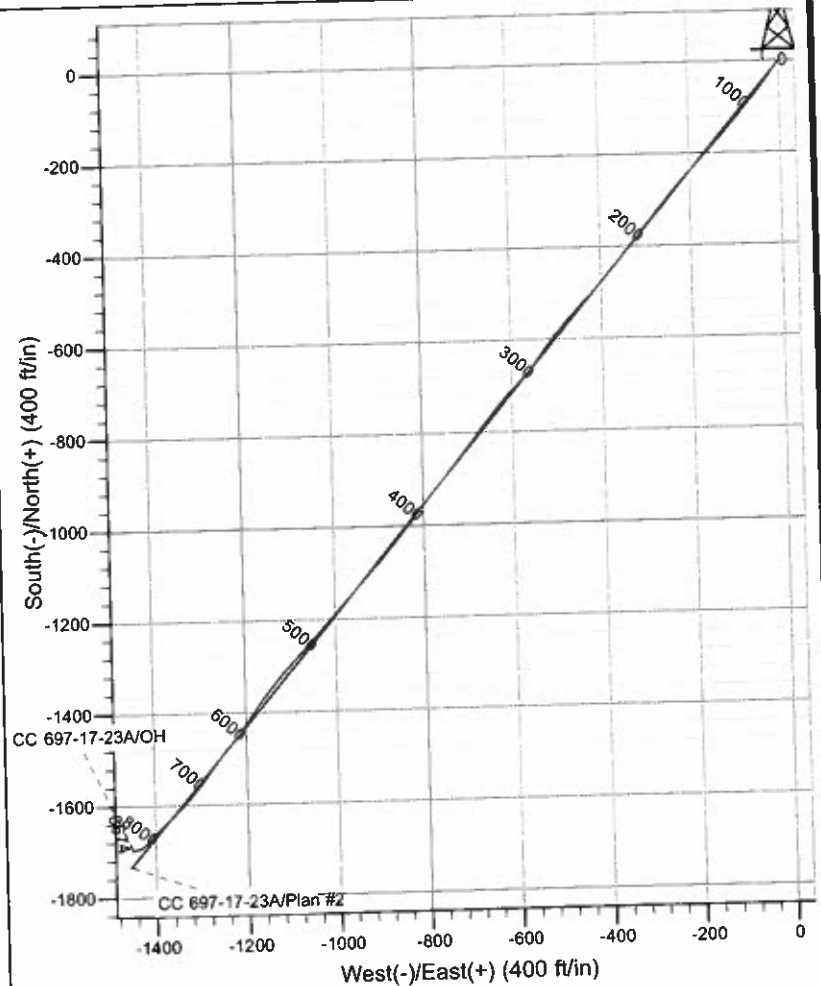
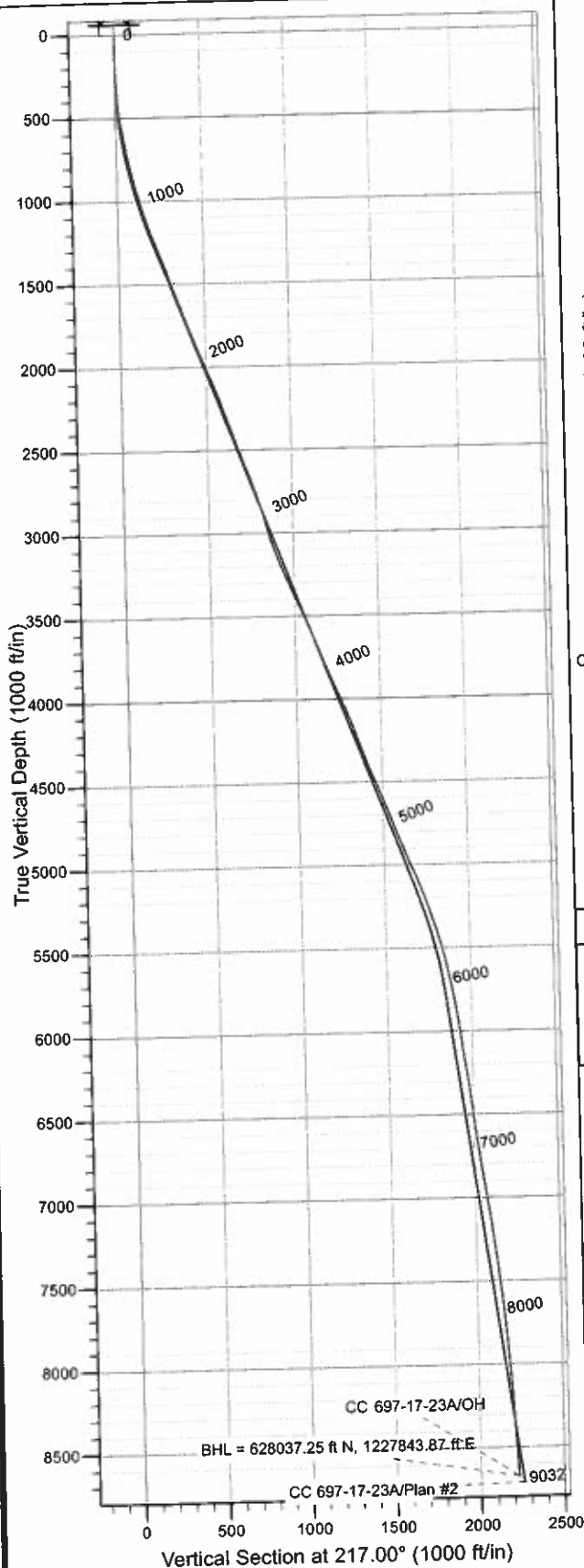




Scientific Drilling

Project: Garfield County, CO NAD27  
Site: Cascade Creek 609-14 Pad  
Well: CC 697-17-23A  
Wellbore: OH  
Design: OH

OXY USA RMAT



WELL DETAILS: CC 697-17-23A

Ground Level: GL 8393' & RKB 30' @ 8423.00ft (H&P 330)	
North	East
0.00	0.00
629690.38	1229343.91
Latitude	Longitude
39° 31' 49.786 N	108° 13' 57.223 W
	W

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well CC 697-17-23A - Slot W, True North  
Vertical (TVD) Reference: GL 8393' & RKB 30' @ 8423.00ft (H&P 330)  
Section (VS) Reference: Slot - W(0.00N, 0.00E)  
Measured Depth Reference: GL 8393' & RKB 30' @ 8423.00ft (H&P 330)  
Calculation Method: Minimum Curvature  
Local North: True  
Location: Sec 9 T6S R97W

PROJECT DETAILS: Garfield County, CO NAD27

Geodetic System: US State Plane 1927 (Exact solution)  
Datum: NAD 1927 (NADCON CONUS)  
Ellipsoid: Clarke 1866  
Zone: Colorado Central 502

Design: OH (CC 697-17-23A/OH)

Created By: Julie Cruse Date: 2010-08-03

<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-17-23A - Slot W
<b>Project:</b>	Garfield County, CO NAD27	<b>TVD Reference:</b>	GL 8393' & RKB 30' @ 8423.00ft (H&P 330)
<b>Site:</b>	Cascade Creek 609-14 Pad	<b>MD Reference:</b>	GL 8393' & RKB 30' @ 8423.00ft (H&P 330)
<b>Well:</b>	CC 697-17-23A	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Rockies-R5000.1

<b>Project</b>	Garfield County, CO NAD27		
<b>Map System:</b>	US State Plane 1927 (Exact solution)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD 1927 (NADCON CONUS)		
<b>Map Zone:</b>	Colorado Central 502		

<b>Site</b>	Cascade Creek 609-14 Pad, Sec 9 T6S R97W		
<b>Site Position:</b>		<b>Northing:</b>	629,789.23 usft
<b>From:</b>	Map	<b>Easting:</b>	1,229,350.88 usft
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13.200 in
		<b>Latitude:</b>	39° 31' 50.765 N
		<b>Longitude:</b>	108° 13' 57.172 W
		<b>Grid Convergence:</b>	-1.72 °

<b>Well</b>	CC 697-17-23A - Slot W		
<b>Well Position</b>	+N-S	0.00 ft	<b>Northing:</b> 629,690.38 usft
	+E-W	0.00 ft	<b>Easting:</b> 1,229,343.91 usft
<b>Position Uncertainty</b>	0.00 ft	<b>Wellhead Elevation:</b>	ft
		<b>Latitude:</b>	39° 31' 49.786 N
		<b>Longitude:</b>	108° 13' 57.223 W
		<b>Ground Level:</b>	8,393.00 ft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	2010-05-04	10.60	65.75	52,330

<b>Design</b>	OH				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N-S (ft)</b>	<b>+E-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00		217.00

<b>Survey Program</b>	<b>Date</b>	2010-08-03			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
92.00	645.00	Survey #1 - Surface Gyro (OH)	Standard Keeper 103	Standard Wireline Keeper ver 1.0.3	
712.00	2,890.00	Survey #2 - Surface MWD (OH)	MWD-SDI	MWD - Standard ISCWSA	
3,016.00	9,032.00	Survey #3 - Production (OH)	MWD-SDI	MWD - Standard ISCWSA	

<b>Survey</b>									
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N-S (ft)</b>	<b>+E-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
92.00	0.63	52.44	92.00	0.31	0.40	-0.49	0.68	0.68	0.00
122.00	0.23	101.40	122.00	0.40	0.59	-0.67	1.70	-1.33	163.20
153.00	0.52	198.78	153.00	0.25	0.61	-0.57	1.92	0.94	314.13
184.00	1.02	213.86	183.99	-0.11	0.41	-0.16	1.73	1.61	48.65
215.00	1.53	233.82	214.99	-0.58	-0.08	0.51	2.16	1.65	64.39
245.00	1.90	237.35	244.97	-1.09	-0.82	1.36	1.28	1.23	11.77
276.00	2.61	233.81	275.95	-1.78	-1.82	2.52	2.33	2.29	-11.42
307.00	3.02	223.29	306.91	-2.79	-2.95	4.01	2.12	1.32	-33.94



SDI

## Survey Report



Company: OXY USA RMAT  
Project: Garfield County, CO NAD27  
Site: Cascade Creek 609-14 Pad  
Well: CC 697-17-23A  
Wellbore: OH  
Design: OH

Local Co-ordinate Reference: Well CC 697-17-23A - Slot W  
TVD Reference: GL 8393' & RKB 30' @ 8423.00ft (H&P 330)  
MD Reference: GL 8393' & RKB 30' @ 8423.00ft (H&P 330)  
North Reference: True  
Survey Calculation Method: Minimum Curvature  
Database: Rockies-R5000.1

## Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
338.00	3.87	219.36	337.86	-4.20	-4.18	5.87	2.84	2.74	-12.68
368.00	4.05	219.26	367.78	-5.80	-5.49	7.94	0.60	0.60	-0.33
399.00	5.04	217.88	398.69	-7.72	-7.02	10.39	3.21	3.19	-4.45
430.00	5.23	217.28	429.56	-9.92	-8.71	13.17	0.64	0.61	-1.94
461.00	5.74	215.40	460.42	-12.31	-10.46	16.13	1.74	1.65	-6.06
522.00	8.83	215.02	520.92	-18.63	-14.92	23.86	5.07	5.07	-0.62
553.00	9.69	216.60	551.52	-22.68	-17.84	28.85	2.89	2.77	5.10
645.00	9.63	212.94	642.21	-35.35	-26.64	44.26	0.67	-0.07	-3.98
Last Gyro Survey									
712.00	10.87	215.86	708.14	-45.17	-33.39	56.17	2.01	1.85	4.36
First SDI MWD Survey									
804.00	12.44	219.86	798.24	-59.81	-44.82	74.74	1.92	1.71	4.35
897.00	13.89	220.40	888.80	-76.00	-58.48	95.89	1.56	1.56	0.58
990.00	15.92	219.17	978.66	-94.39	-73.77	119.78	2.21	2.18	-1.32
1,084.00	17.85	219.96	1,068.61	-115.43	-91.17	147.06	2.07	2.05	0.84
1,179.00	19.08	219.69	1,158.71	-138.54	-110.44	177.11	1.30	1.29	-0.28
1,274.00	20.22	221.01	1,248.18	-162.88	-131.13	209.00	1.29	1.20	1.39
1,368.00	21.37	222.33	1,336.06	-187.80	-153.32	242.25	1.32	1.22	1.40
1,463.00	19.96	223.12	1,424.94	-212.43	-176.06	275.61	1.51	-1.48	0.83
1,557.00	20.40	223.39	1,513.17	-236.05	-198.28	307.85	0.48	0.47	0.29
1,652.00	20.31	221.72	1,602.24	-260.39	-220.63	340.73	0.62	-0.09	-1.76
1,747.00	20.49	221.19	1,691.28	-285.21	-242.55	373.75	0.27	0.19	-0.56
1,841.00	21.28	218.55	1,779.11	-310.93	-264.02	407.21	1.31	0.84	-2.81
1,936.00	21.60	219.72	1,867.53	-337.86	-285.93	441.91	0.56	0.34	1.23
2,031.00	21.28	218.89	1,955.96	-364.73	-307.93	476.60	0.46	-0.34	-0.87
2,126.00	23.24	219.19	2,043.88	-392.67	-330.60	512.56	2.07	2.06	0.32
2,220.00	21.42	218.97	2,130.82	-420.40	-353.11	548.25	1.94	-1.94	-0.23
2,315.00	20.68	218.23	2,219.48	-447.06	-374.40	582.36	0.83	-0.78	-0.78
2,410.00	19.23	220.57	2,308.78	-472.12	-394.96	614.75	1.74	-1.53	2.46
2,504.00	19.68	223.09	2,397.41	-495.44	-415.84	645.94	1.01	0.48	2.68
2,599.00	20.90	223.78	2,486.52	-519.36	-438.50	678.67	1.31	1.28	0.73
2,694.00	21.36	221.27	2,575.13	-544.60	-461.63	712.75	1.07	0.48	-2.64
2,788.00	21.20	221.15	2,662.72	-570.26	-484.11	746.78	0.18	-0.17	-0.13
2,890.00	19.29	220.57	2,758.42	-596.95	-507.20	781.99	1.88	-1.87	-0.57
Last Survey in 14 3/4" Hole									
3,016.00	15.29	214.63	2,878.71	-626.44	-530.19	819.38	3.47	-3.17	-4.71
Last Survey in 8 3/4" Hole									
3,078.00	15.35	214.66	2,938.50	-639.92	-539.50	835.75	0.10	0.10	0.05
3,173.00	16.68	219.41	3,029.82	-660.80	-555.31	861.93	1.96	1.40	5.00
3,268.00	20.74	223.13	3,119.78	-683.62	-575.48	892.29	4.45	4.27	3.92
3,362.00	22.42	222.59	3,207.19	-708.96	-598.99	926.69	1.80	1.79	-0.57
3,457.00	23.86	222.03	3,294.55	-736.57	-624.11	963.86	1.53	1.52	-0.59
3,552.00	23.80	218.37	3,381.45	-765.88	-648.88	1,002.16	1.56	-0.06	-3.85
3,646.00	22.53	217.60	3,467.87	-795.01	-671.64	1,039.13	1.39	-1.35	-0.82

**Company:** OXY USA RMAT  
**Project:** Garfield County, CO NAD27  
**Site:** Cascade Creek 609-14 Pad  
**Well:** CC 697-17-23A  
**Wellbore:** OH  
**Design:** OH

**Local Co-ordinate Reference:** Well CC 697-17-23A - Slot W  
**TVD Reference:** GL 8393' & RKB 30' @ 8423.00ft (H&P 330)  
**MD Reference:** GL 8393' & RKB 30' @ 8423.00ft (H&P 330)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Database:** Rockies-R5000.1

**Survey**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
3,741.00	24.03	218.74	3,555.13	-824.52	-694.85	1,076.67	1.65	1.58	1.20
3,836.00	22.82	218.73	3,642.30	-853.98	-718.48	1,114.42	1.27	-1.27	-0.01
3,930.00	21.14	217.81	3,729.47	-881.60	-740.28	1,149.59	1.82	-1.79	-0.98
4,025.00	22.32	219.32	3,817.72	-909.09	-762.21	1,184.75	1.37	1.24	1.59
4,120.00	23.89	218.64	3,905.09	-938.07	-785.66	1,222.00	1.68	1.65	-0.72
4,215.00	23.11	218.67	3,992.21	-967.65	-809.32	1,259.87	0.82	-0.82	0.03
4,309.00	22.09	218.67	4,078.99	-995.86	-831.89	1,295.97	1.09	-1.09	0.00
4,404.00	20.62	218.91	4,167.47	-1,022.82	-853.56	1,330.55	1.55	-1.55	0.25
4,499.00	19.14	219.19	4,256.81	-1,047.91	-873.91	1,362.83	1.56	-1.56	0.29
4,594.00	20.93	221.93	4,346.05	-1,072.61	-895.09	1,395.31	2.13	1.88	2.88
4,688.00	22.47	221.90	4,433.39	-1,098.47	-918.31	1,429.93	1.64	1.64	-0.03
4,783.00	22.79	222.80	4,521.08	-1,125.48	-942.93	1,466.33	0.50	0.34	0.95
4,878.00	21.22	222.26	4,609.15	-1,151.71	-967.00	1,501.76	1.67	-1.65	-0.57
4,972.00	21.03	221.27	4,696.84	-1,176.98	-989.56	1,535.52	0.43	-0.20	-1.05
5,067.00	21.00	221.45	4,785.52	-1,202.55	-1,012.07	1,569.48	0.07	-0.03	0.19
5,162.00	22.80	221.46	4,873.66	-1,229.10	-1,035.53	1,604.81	1.89	1.89	0.01
5,256.00	23.60	223.30	4,960.06	-1,256.45	-1,060.50	1,641.67	1.15	0.85	1.96
5,351.00	23.39	223.34	5,047.18	-1,284.00	-1,086.48	1,679.32	0.22	-0.22	0.04
5,446.00	21.44	221.57	5,135.00	-1,310.71	-1,110.95	1,715.37	2.17	-2.05	-1.86
5,540.00	19.44	219.99	5,223.08	-1,335.55	-1,132.40	1,748.12	2.21	-2.13	-1.68
5,635.00	17.58	217.41	5,313.16	-1,359.06	-1,151.28	1,778.26	2.14	-1.96	-2.72
5,730.00	16.14	216.64	5,404.08	-1,381.05	-1,167.87	1,805.81	1.53	-1.52	-0.81
5,825.00	14.77	215.19	5,495.64	-1,401.54	-1,182.73	1,831.12	1.50	-1.44	-1.53
5,919.00	13.34	213.91	5,586.82	-1,420.34	-1,195.69	1,853.92	1.56	-1.52	-1.36
6,014.00	11.78	214.85	5,679.55	-1,437.39	-1,207.35	1,874.56	1.66	-1.64	0.99
6,109.00	10.12	216.73	5,772.81	-1,452.04	-1,217.88	1,892.60	1.79	-1.75	1.98
6,204.00	8.32	220.59	5,866.58	-1,463.95	-1,227.34	1,907.80	2.00	-1.89	4.06
6,298.00	8.21	221.33	5,959.61	-1,474.15	-1,236.20	1,921.28	0.16	-0.12	0.79
6,393.00	7.98	221.99	6,053.66	-1,484.15	-1,245.09	1,934.62	0.26	-0.24	0.69
6,488.00	8.50	216.39	6,147.68	-1,494.70	-1,253.67	1,948.21	1.01	0.55	-5.89
6,582.00	8.41	215.84	6,240.66	-1,505.87	-1,261.82	1,962.03	0.13	-0.10	-0.59
6,677.00	8.16	216.81	6,334.67	-1,516.90	-1,269.92	1,975.71	0.30	-0.26	1.02
6,772.00	7.95	216.33	6,428.73	-1,527.59	-1,277.86	1,989.03	0.23	-0.22	-0.51
6,866.00	6.96	213.96	6,521.93	-1,537.55	-1,284.89	2,001.21	1.10	-1.05	-2.52
6,961.00	6.46	220.37	6,616.29	-1,546.39	-1,291.57	2,012.30	0.95	-0.53	6.75
7,056.00	7.48	220.23	6,710.58	-1,555.19	-1,299.02	2,023.81	1.07	1.07	-0.15
7,151.00	9.26	219.69	6,804.57	-1,565.79	-1,307.90	2,037.62	1.88	1.87	-0.57
7,246.00	9.40	219.48	6,898.31	-1,577.66	-1,317.71	2,053.00	0.15	0.15	-0.22
7,340.00	8.81	221.27	6,991.12	-1,589.00	-1,327.34	2,067.85	0.70	-0.63	1.90
7,435.00	8.06	222.03	7,085.10	-1,599.41	-1,336.60	2,081.74	0.80	-0.79	0.80
7,530.00	7.84	224.14	7,179.18	-1,609.01	-1,345.57	2,094.80	0.38	-0.23	2.22
7,625.00	7.68	224.49	7,273.31	-1,618.19	-1,354.53	2,107.52	0.18	-0.17	0.37
7,719.00	7.26	225.48	7,366.52	-1,626.83	-1,363.17	2,119.63	0.47	-0.45	1.05



SDI  
Survey Report



Company: OXY USA RMAT  
Project: Garfield County, CO NAD27  
Site: Cascade Creek 609-14 Pad  
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Wellbore: OH  
Design: OH

Local Co-ordinate Reference: Well CC 697-17-23A - Slot W  
TVD Reference: GL 8393' & RKB 30' @ 8423.00ft (H&P 330)  
MD Reference: GL 8393' & RKB 30' @ 8423.00ft (H&P 330)  
North Reference: True  
Survey Calculation Method: Minimum Curvature  
Database: Rockies-R5000.1

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
7,814.00	6.83	227.35	7,460.80	-1,634.87	-1,371.60	2,131.12	0.51	-0.45	1.97
7,909.00	6.52	224.64	7,555.15	-1,642.53	-1,379.55	2,142.02	0.47	-0.33	-2.85
8,003.00	6.26	226.08	7,648.57	-1,649.89	-1,386.99	2,152.37	0.32	-0.28	1.53
8,098.00	5.81	226.65	7,743.04	-1,656.78	-1,394.21	2,162.23	0.48	-0.47	0.60
8,193.00	5.03	223.51	7,837.62	-1,663.10	-1,400.58	2,171.11	0.88	-0.82	-3.31
8,288.00	4.65	218.28	7,932.28	-1,669.14	-1,405.83	2,179.10	0.61	-0.40	-5.51
8,382.00	3.97	215.45	8,026.01	-1,674.79	-1,410.08	2,186.16	0.76	-0.72	-3.01
8,477.00	4.29	225.09	8,120.77	-1,679.97	-1,414.50	2,192.96	0.80	0.34	10.15
8,572.00	4.05	229.82	8,215.52	-1,684.65	-1,419.58	2,199.75	0.44	-0.25	4.98
8,667.00	3.93	233.86	8,310.29	-1,688.73	-1,424.77	2,206.14	0.32	-0.13	4.25
8,761.00	4.10	245.85	8,404.06	-1,692.01	-1,430.44	2,212.17	0.91	0.18	12.76
8,856.00	4.14	257.06	8,498.81	-1,694.16	-1,436.88	2,217.77	0.85	0.04	11.80
8,951.00	4.42	255.12	8,593.55	-1,695.87	-1,443.76	2,223.27	0.33	0.29	-2.04
8,981.00	4.30	254.39	8,623.46	-1,696.47	-1,445.96	2,225.07	0.44	-0.40	-2.43
Last SDI MWD Survey									
9,032.00	4.30	254.39	8,674.32	-1,697.50	-1,449.65	2,228.11	0.00	0.00	0.00
Projection to TD - BHL = 628037.25 ft N, 1227843.87 ft E									

Design Targets

Target Name

- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- Shape									
CC 697-17-23A 8°	8.00	219.97	7,874.00	-1,643.45	-1,377.77	628,089.12	1,227,917.34	39° 31' 33.542 N	108° 14' 14.806 W
- actual wellpath misses target center by 33.12ft at 8226.74ft MD (7871.23 TVD, -1665.25 N, -1402.55 E)									
- Circle (radius 50.00)									

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
645.00	642.21	-35.35	-26.64	Last Gyro Survey
712.00	708.14	-45.17	-33.39	First SDI MWD Survey
2,890.00	2,758.42	-596.95	-507.20	Last Survey in 14 3/4" Hole
3,016.00	2,878.71	-626.44	-530.19	Last Survey in 8 3/4" Hole
8,981.00	8,623.46	-1,696.47	-1,445.96	Last SDI MWD Survey
9,032.00	8,674.32	-1,697.50	-1,449.65	Projection to TD
9,032.00	8,674.32	-1,697.50	-1,449.65	BHL = 628037.25 ft N, 1227843.87 ft E

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_