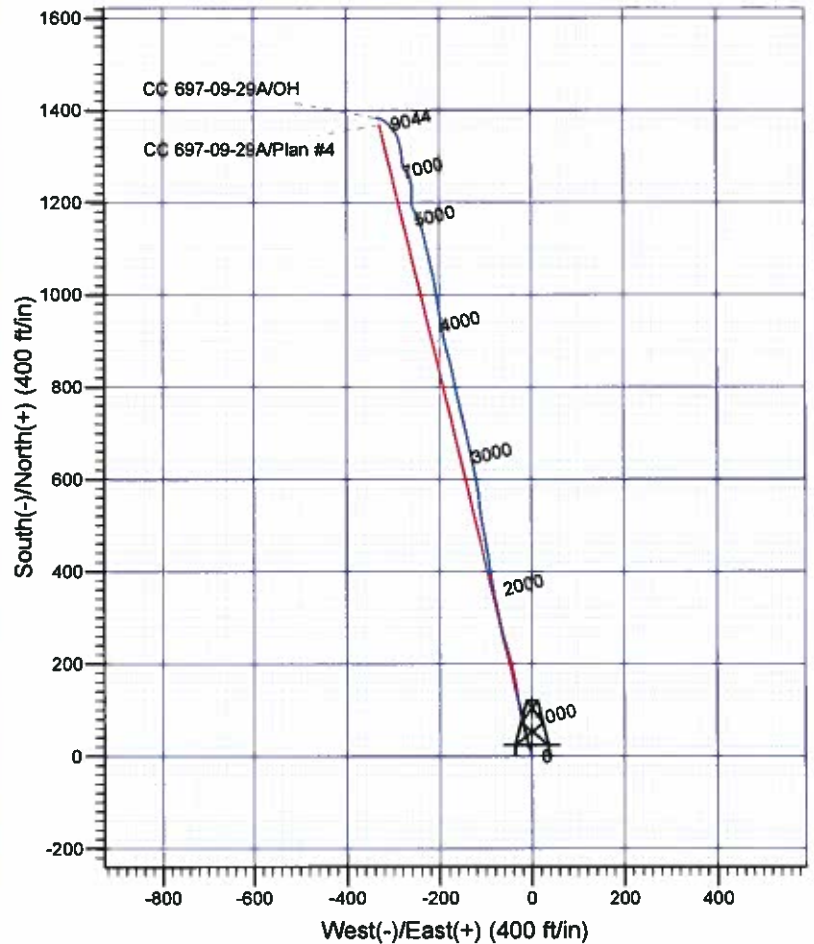
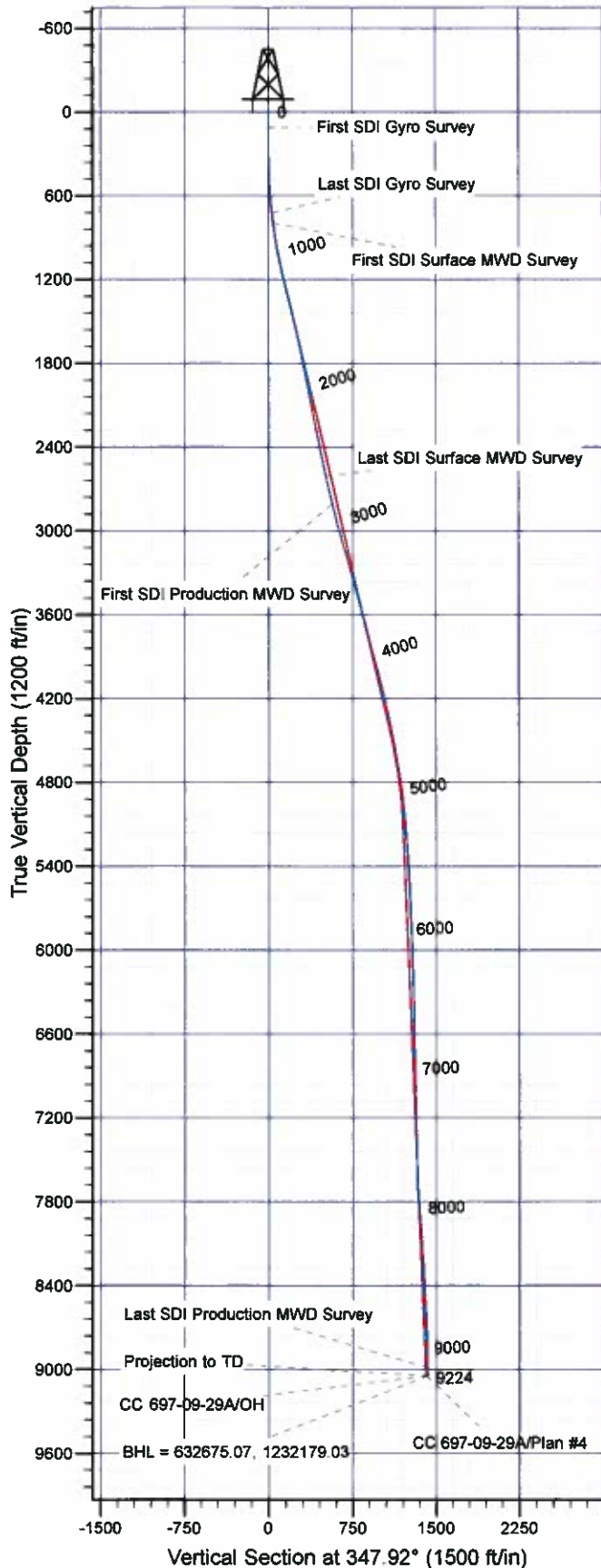




**Scientific Drilling**  
Rocky Mountain Operations

Company: OXY USA RMA  
Project: Garfield County, CO NAD27  
Site: Cascade Creek 609-33 Pad  
Well: CC 697-09-29A  
Wellbore: OH  
Design: OH



#### Well Details: CC 697-09-29A

+N/-S	+E/-W	North	East	Latitude	Longitude	Slot
0.00	0.00	631282.80	1232473.32	39° 32' 6.446 N	108° 13' 17.909 W	1

#### REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well CC 697-09-29A - Slot 1, True North  
Vertical (TVD) Reference: GL 8381' & RKB 30' @ 8411.00ft (H&P 353)  
Section (VS) Reference: Slot - I(0.00N, 0.00E)  
Measured Depth Reference: GL 8381' & RKB 30' @ 8411.00ft (H&P 353)  
Calculation Method: Minimum Curvature

#### 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

System Datum: Mean Sea Level

Plan: OH

9:23, June 22 2011  
Created By: Janie Cooke

# **OXY USA RMAT**

**Garfield County, CO NAD27**

**Cascade Creek 609-33 Pad**

**CC 697-09-29A - Slot I**

**OH**

**Design: OH**

## **Standard Survey Report**

**22 June, 2011**



**Scientific Drilling International, Inc.**  
Survey Report



<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-09-29A - Slot I
<b>Project:</b>	Garfield County, CO NAD27	<b>TVD Reference:</b>	GL 8381' & RKB 30' @ 8411.00ft (H&P 353)
<b>Site:</b>	Cascade Creek 609-33 Pad	<b>MD Reference:</b>	GL 8381' & RKB 30' @ 8411.00ft (H&P 353)
<b>Well:</b>	CC 697-09-29A	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Rockies Compass Server

<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		

Site		Cascade Creek 609-33 Pad, Sec 9 T6S R97W			
Site Position:		Northing:	631,314.66 usft	Latitude:	39° 32' 6.734 N
From:	Map	Easting:	1,232,383.54 usft	Longitude:	108° 13' 19.067 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.72 °

Well	CC 697-09-29A - Slot I					
Well Position	+N/-S	0.00 ft	Northing:	631,282.81 usft	Latitude:	39° 32' 6.446 N
	+E/-W	0.00 ft	Easting:	1,232,473.32 usft	Longitude:	108° 13' 17.909 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	8,381.00 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>
	IGRF2005-10	12/31/2009	10.62	65.78	52,397

<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		347.92

<b>Survey Program</b>	<b>Date</b>	8/22/2011			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
111.00	725.00	Survey #1 - Gyro MWD (OH)	Gyro		
800.00	2,676.00	Survey #2 - Surface MWD (OH)	MWD-SDI	MWD - Standard   SCWSA	
2,879.00	9,224.00	Survey #3 - Production MWD (OH)	MWD-SDI	MWD - Standard   SCWSA	

<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
111.00	0.18	201.71	111.00	-0.16	-0.06	-0.14	0.16	0.16	0.00
<b>First SDI Gyro Survey</b>									
173.00	0.53	168.05	173.00	-0.53	-0.04	-0.51	0.63	0.56	-54.29
265.00	0.26	52.65	265.00	-0.82	0.21	-0.85	0.74	-0.29	-125.43
357.00	1.14	15.21	356.99	0.19	0.62	0.05	1.03	0.96	-40.70
449.00	2.38	344.00	448.95	2.91	0.33	2.77	1.66	1.35	-33.92
541.00	5.19	336.01	540.74	8.55	-1.89	8.75	3.10	3.05	-8.68
633.00	7.30	339.35	632.19	17.82	-5.64	18.60	2.33	2.29	3.63

**Scientific Drilling International, Inc.**  
Survey Report



<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-09-29A - Slot I
<b>Project:</b>	Garfield County, CO NAD27	<b>TVD Reference:</b>	GL 8381' & RKB 30' @ 8411.00ft (H&P 353)
<b>Site:</b>	Cascade Creek 609-33 Pad	<b>MD Reference:</b>	GL 8381' & RKB 30' @ 8411.00ft (H&P 353)
<b>Well:</b>	CC 697-09-29A	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Rockies Compass Server

**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)
725.00	7.92	344.00	723.38	29.38	-9.45	30.71	0.95	0.67	5.05
<b>Last SDI Gyro Survey</b>									
800.00	8.71	345.87	797.59	39.85	-12.26	41.54	1.11	1.05	2.49
<b>First SDI Surface MWD Survey</b>									
891.00	10.38	346.93	887.32	54.52	-15.80	56.62	1.85	1.84	1.16
983.00	11.26	344.73	977.69	71.26	-20.04	73.88	1.06	0.96	-2.39
1,078.00	14.42	350.36	1,070.30	91.88	-24.46	94.96	3.57	3.33	5.93
1,172.00	17.15	352.20	1,160.75	117.15	-28.30	120.48	2.95	2.90	1.96
1,267.00	17.59	351.06	1,251.42	145.21	-32.43	148.78	0.59	0.46	-1.20
1,361.00	16.53	347.98	1,341.28	172.32	-37.43	176.34	1.48	-1.13	-3.28
1,456.00	16.44	344.56	1,432.38	198.50	-43.82	203.27	1.03	-0.09	-3.60
1,550.00	16.62	344.56	1,522.50	224.28	-50.94	229.97	0.19	0.19	0.00
1,645.00	15.56	343.15	1,613.77	249.57	-58.25	256.23	1.19	-1.12	-1.48
1,740.00	14.16	346.93	1,705.60	273.08	-64.57	280.55	1.79	-1.47	3.98
1,834.00	13.81	350.01	1,796.81	295.33	-69.12	303.26	0.87	-0.37	3.28
1,929.00	13.45	346.31	1,889.14	317.23	-73.70	325.63	0.99	-0.38	-3.89
2,024.00	13.89	346.49	1,981.45	339.06	-78.98	348.08	0.47	0.46	0.19
2,118.00	13.37	348.95	2,072.80	360.69	-83.70	370.22	0.83	-0.55	2.62
2,213.00	13.28	352.64	2,165.24	382.30	-87.20	392.08	0.90	-0.09	3.88
2,307.00	13.81	352.29	2,256.63	404.12	-90.09	414.03	0.57	0.56	-0.37
2,402.00	14.51	351.32	2,348.74	427.12	-93.41	437.21	0.78	0.74	-1.02
2,497.00	14.95	350.09	2,440.62	450.96	-97.31	461.34	0.57	0.46	-1.29
2,591.00	14.95	348.60	2,531.44	474.79	-101.79	485.58	0.41	0.00	-1.59
2,676.00	15.48	348.34	2,613.46	496.64	-106.25	507.88	0.63	0.62	-0.31
<b>Last SDI Surface MWD Survey</b>									
2,879.00	16.80	355.34	2,808.47	552.42	-114.11	564.07	1.16	0.65	3.45
<b>First SDI Production MWD Survey</b>									
2,974.00	17.76	350.60	2,899.19	580.40	-117.60	592.16	1.79	1.01	-4.99
3,069.00	20.49	348.22	2,988.94	610.98	-123.36	623.27	2.99	2.87	-2.51
3,163.00	18.82	348.31	3,077.46	641.94	-129.79	654.88	1.78	-1.78	0.10
3,258.00	21.10	346.91	3,166.75	673.60	-136.77	687.31	2.45	2.40	-1.47
3,352.00	20.14	346.82	3,254.72	705.84	-144.29	720.41	1.02	-1.02	-0.10
3,447.00	18.64	346.55	3,344.33	736.53	-151.55	751.94	1.58	-1.58	-0.28
3,542.00	18.99	347.17	3,434.25	766.37	-158.51	782.57	0.42	0.37	0.65
3,637.00	18.29	348.75	3,524.27	796.06	-164.85	812.93	0.91	-0.74	1.66
3,731.00	18.38	347.17	3,613.50	824.98	-171.02	842.50	0.54	0.10	-1.68
3,826.00	18.91	346.20	3,703.51	854.53	-178.02	872.86	0.65	0.56	-1.02
3,921.00	17.23	344.97	3,793.83	883.07	-185.34	902.30	1.81	-1.77	-1.29
4,016.00	18.91	349.54	3,884.14	911.80	-191.79	931.75	2.31	1.77	4.81
4,110.00	19.08	350.33	3,973.02	941.92	-197.13	962.32	0.33	0.18	0.84
4,205.00	18.11	350.88	4,063.06	971.80	-202.13	992.58	1.03	-1.02	0.37
4,300.00	17.23	349.98	4,153.58	1,000.23	-206.97	1,021.39	0.95	-0.93	-0.74
4,394.00	16.18	350.33	4,243.61	1,028.85	-211.59	1,048.39	1.12	-1.12	0.37
4,489.00	14.86	347.96	4,335.15	1,051.81	-216.36	1,073.80	1.54	-1.39	-2.49



**Scientific Drilling International, Inc.**  
Survey Report



<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-09-29A - Slot 1
<b>Project:</b>	Garfield County, CO NAD27	<b>TVD Reference:</b>	GL 8381' & RKB 30' @ 8411.00ft (H&P 353)
<b>Site:</b>	Cascade Creek 609-33 Pad	<b>MD Reference:</b>	GL 8381' & RKB 30' @ 8411.00ft (H&P 353)
<b>Well:</b>	CC 697-09-29A	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Rockies Compass Server

**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)
4,583.00	13.72	346.73	4,426.24	1,074.45	-221.43	1,097.00	1.25	-1.21	-1.31
4,678.00	12.40	345.41	4,518.78	1,095.29	-226.59	1,118.45	1.42	-1.39	-1.39
4,773.00	13.10	349.10	4,611.44	1,115.73	-231.19	1,139.41	1.13	0.74	3.88
4,867.00	12.31	345.59	4,703.14	1,135.90	-235.70	1,160.07	1.17	-0.84	-3.73
4,962.00	10.99	341.46	4,796.18	1,154.29	-241.10	1,179.19	1.64	-1.39	-4.35
5,057.00	9.06	335.66	4,889.73	1,169.69	-247.06	1,195.50	2.29	-2.03	-6.11
5,152.00	7.74	328.36	4,983.71	1,181.96	-253.50	1,208.84	1.78	-1.39	-7.68
5,246.00	6.33	342.77	5,077.00	1,192.30	-258.36	1,219.96	2.39	-1.50	15.33
5,341.00	5.45	3.43	5,171.51	1,201.80	-259.64	1,229.53	2.40	-0.93	21.75
5,436.00	5.19	4.83	5,266.10	1,210.59	-259.01	1,237.98	0.31	-0.27	1.47
5,530.00	5.36	4.40	5,359.70	1,219.20	-258.31	1,246.26	0.19	0.18	-0.46
5,625.00	3.78	358.51	5,454.40	1,226.76	-258.05	1,253.60	1.73	-1.66	-6.20
5,720.00	3.25	348.75	5,549.22	1,232.53	-258.66	1,259.37	0.84	-0.56	-10.27
5,814.00	2.99	349.19	5,643.08	1,237.55	-259.64	1,264.48	0.28	-0.28	0.47
5,909.00	2.90	351.48	5,737.96	1,242.36	-260.46	1,269.36	0.16	-0.09	2.41
6,004.00	2.90	344.09	5,832.84	1,247.05	-261.48	1,274.15	0.39	0.00	-7.78
6,099.00	2.73	345.94	5,927.72	1,251.55	-262.68	1,278.81	0.20	-0.18	1.95
6,193.00	2.64	340.14	6,021.62	1,255.76	-263.96	1,283.20	0.30	-0.10	-6.17
6,288.00	2.55	332.75	6,116.52	1,259.70	-265.67	1,287.40	0.36	-0.09	-7.78
6,383.00	2.11	321.07	6,211.44	1,262.94	-267.74	1,291.00	0.68	-0.46	-12.29
6,478.00	2.11	317.20	6,306.38	1,265.58	-270.03	1,294.07	0.15	0.00	-4.07
6,572.00	1.85	317.20	6,400.32	1,267.96	-272.24	1,296.86	0.28	-0.28	0.00
6,667.00	2.02	337.50	6,495.27	1,270.64	-273.92	1,299.82	0.74	0.18	21.37
6,762.00	1.67	323.70	6,590.22	1,273.30	-275.38	1,302.73	0.59	-0.37	-14.53
6,856.00	1.76	353.15	6,684.18	1,275.83	-276.36	1,305.42	0.93	0.10	31.33
6,951.00	1.49	353.15	6,779.14	1,278.51	-276.68	1,308.10	0.28	-0.28	0.00
7,045.00	1.14	352.79	6,873.12	1,280.65	-276.95	1,310.25	0.37	-0.37	-0.38
7,140.00	0.97	334.78	6,968.10	1,282.32	-277.41	1,311.98	0.39	-0.18	-18.96
7,235.00	1.06	322.47	7,063.09	1,283.74	-278.28	1,313.55	0.25	0.09	-12.96
7,329.00	1.76	352.53	7,157.06	1,285.86	-279.00	1,315.78	1.06	0.74	31.98
7,424.00	2.20	355.87	7,252.00	1,289.13	-279.32	1,319.04	0.48	0.46	3.52
7,518.00	1.58	3.60	7,345.95	1,292.22	-279.37	1,322.07	0.71	-0.66	8.22
7,613.00	1.14	354.02	7,440.92	1,294.47	-279.39	1,324.27	0.52	-0.46	-10.08
7,707.00	1.85	349.63	7,534.89	1,296.89	-279.76	1,326.72	0.76	0.76	-4.67
7,802.00	2.55	355.25	7,629.82	1,300.50	-280.21	1,330.35	0.77	0.74	5.92
7,897.00	3.52	353.41	7,724.69	1,305.51	-280.72	1,335.35	1.03	1.02	-1.94
7,991.00	5.98	349.63	7,818.36	1,313.19	-281.93	1,343.11	2.64	2.62	-4.02
8,086.00	6.42	348.22	7,912.80	1,323.26	-283.91	1,353.37	0.49	0.46	-1.48
8,181.00	5.63	344.00	8,007.28	1,332.94	-286.28	1,363.33	0.95	-0.83	-4.44
8,275.00	4.92	339.61	8,100.88	1,341.15	-288.95	1,371.92	0.87	-0.76	-4.67
8,370.00	4.04	328.45	8,195.59	1,347.82	-292.12	1,379.11	1.30	-0.93	-11.75
8,465.00	3.78	318.52	8,290.37	1,353.02	-295.95	1,384.99	0.76	-0.27	-10.45
8,559.00	4.40	323.97	8,384.13	1,358.25	-300.12	1,390.98	0.78	0.66	5.80

**Scientific Drilling International, Inc.**  
Survey Report



<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-09-29A - Slot I
<b>Project:</b>	Garfield County, CO NAD27	<b>TVD Reference:</b>	GL 8381' & RKB 30' @ 8411.00ft (H&P 353)
<b>Site:</b>	Cascade Creek 609-33 Pad	<b>MD Reference:</b>	GL 8381' & RKB 30' @ 8411.00ft (H&P 353)
<b>Well:</b>	CC 697-09-29A	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	Rockies Compass Server

**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)
8,654.00	4.40	322.30	8,478.85	1,364.08	-304.49	1,397.60	0.13	0.00	-1.76
8,748.00	4.75	320.36	8,572.55	1,369.93	-309.18	1,404.30	0.41	0.37	-2.06
8,843.00	4.48	307.53	8,667.24	1,375.22	-314.83	1,410.62	1.12	-0.28	-13.51
8,938.00	3.17	296.90	8,762.03	1,378.67	-319.92	1,415.09	1.56	-1.38	-11.19
9,032.00	2.99	292.06	8,855.89	1,380.77	-324.51	1,418.10	0.34	-0.19	-5.15
9,127.00	3.25	280.72	8,950.75	1,382.20	-329.45	1,420.54	0.70	0.27	-11.94
9,167.00	3.96	274.48	8,990.68	1,382.52	-331.94	1,421.37	2.03	1.78	-15.60
<b>Last SDI Production MWD Survey</b>									
9,224.00	3.96	274.48	9,047.54	1,382.83	-335.87	1,422.49	0.00	0.00	0.00
<b>Projection to TD - BHL = 632675.07, 1232179.03</b>									

**Design Annotations**

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
111.00	111.00	-0.16	-0.06	First SDI Gyro Survey
725.00	723.38	29.38	-9.45	Last SDI Gyro Survey
800.00	797.59	39.85	-12.26	First SDI Surface MWD Survey
2,678.00	2,613.46	496.64	-106.25	Last SDI Surface MWD Survey
2,879.00	2,808.47	552.42	-114.11	First SDI Production MWD Survey
9,167.00	8,990.68	1,382.52	-331.94	Last SDI Production MWD Survey
9,224.00	9,047.54	1,382.83	-335.87	Projection to TD
9,224.00	9,047.54	1,382.83	-335.87	BHL = 632675.07, 1232179.03

Checked By: _____	Approved By: _____	Date: _____
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