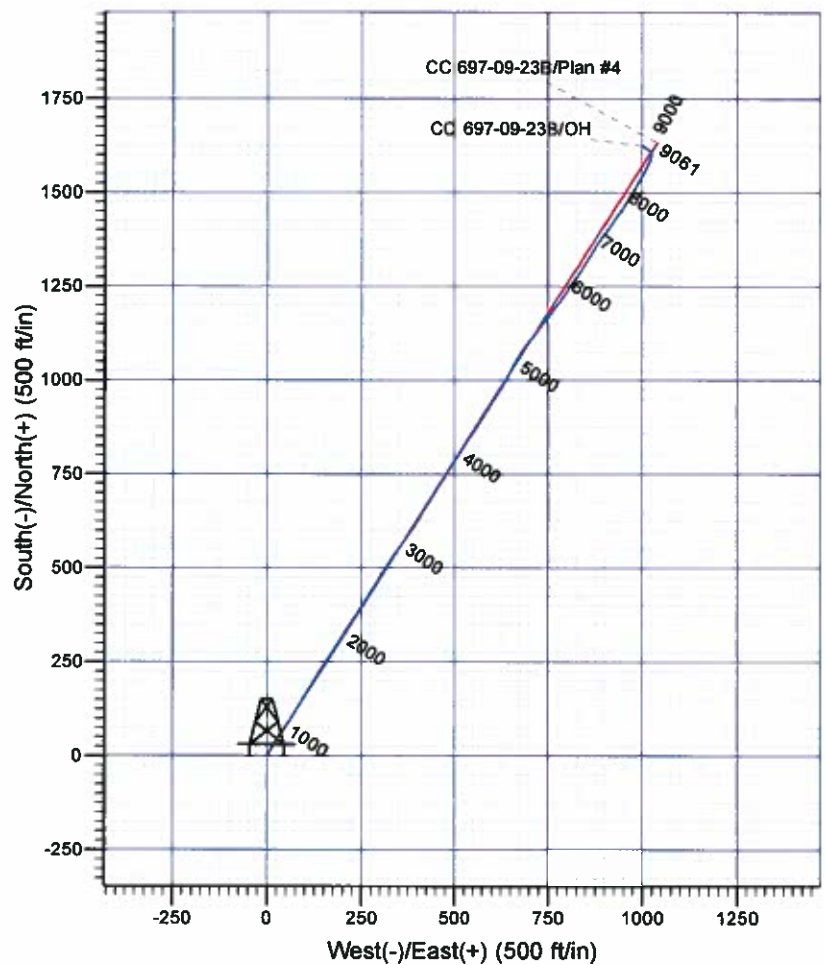
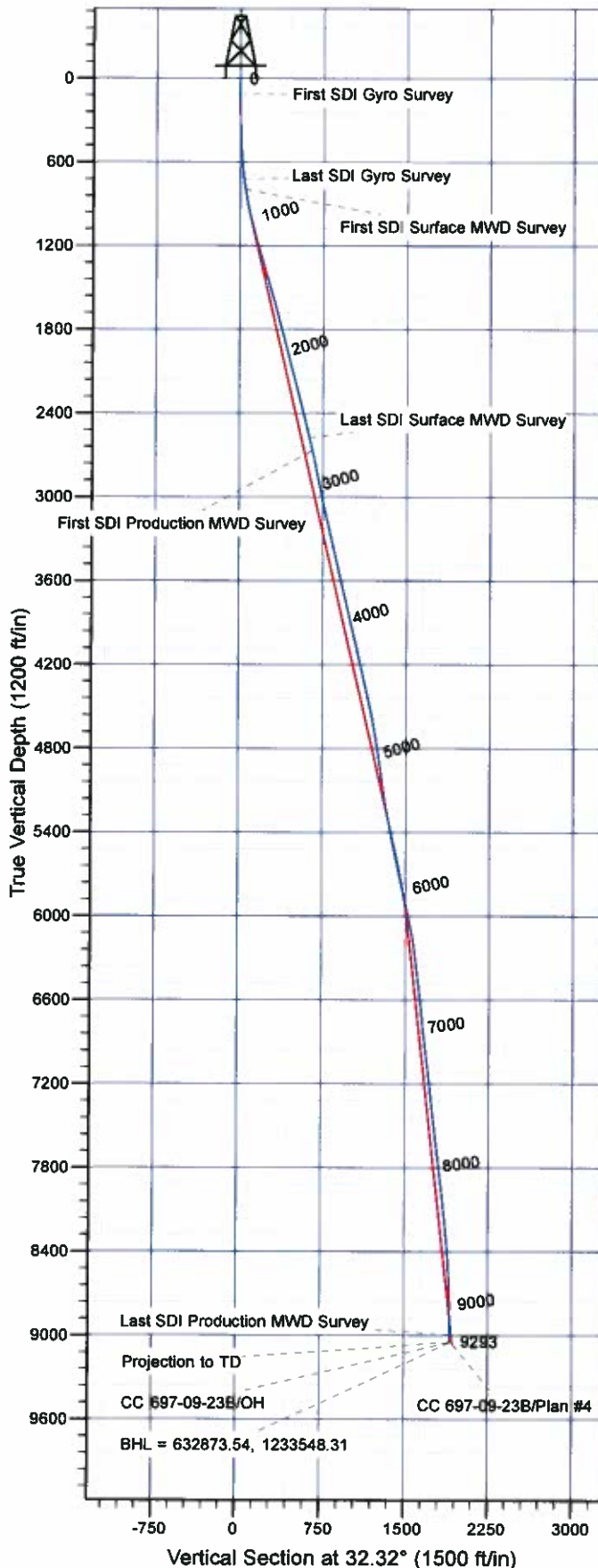




Scientific Drilling
Rocky Mountain Operations

Company: OXY USA RMAT
Project: Garfield County, CO NAD27
Site: Cascade Creek 809-33 Pad
Well: CC 697-09-23B
Wellbore: OH
Design: OH



Well Details: CC 697-09-23B

TVD Reference: GL 8381' & RKB 30' @ 8411.00ft (H&P 353)							Slot G
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude		
0.00	0.00	631280.38	1232497.82	39° 32' 6.430 N	108° 13' 17.596 W		

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well CC 697-09-23B - Slot G, True North
Vertical (TVD) Reference: GL 8381' & RKB 30' @ 8411.00ft (H&P 353)
Section (VS) Reference: Slot - G(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

16:22, August 22 2011
Created By: Janie Cooke

OXY USA RMAT

Garfield County, CO NAD27

Cascade Creek 609-33 Pad

CC 697-09-23B - Slot G

OH

Design: OH

Standard Survey Report

22 August, 2011





Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-09-23B - Slot G
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8381' & RKB 30' @ 8411.00ft (H&P 353)
Site:	Cascade Creek 609-33 Pad	MD Reference:	GL 8381' & RKB 30' @ 8411.00ft (H&P 353)
Well:	CC 697-09-23B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Rockies Compass Server

Project	Garfield County, CO NAD27		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	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 697-09-23B - Slot G					
Well Position	+N/-S	0.00 ft	Northing:	631,280.38 usft	Latitude:	39° 32' 6.430 N
	+E/-W	0.00 ft	Easting:	1,232,497.82 usft	Longitude:	108° 13' 17.596 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	8,381.00 ft

Wellbore	OH				
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2005-10	12/31/2009	10.62	65.78	52,397

Design	OH				
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Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	32 32

Survey Program		Date	08/22/2011		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
110.00	724.00	Survey #1 - Gyro Survey (OH)	Standard Keeper 103	Standard Wireline Keeper ver 1.0.3	
800.00	2,672.00	Survey #2 - Surface MWD (OH)	MWD-SDI	MWD - Standard ISCWSA	
2,767.00	9,293.00	Survey #3 - Production MWD (OH)	MWD-SDI	MWD - Standard ISCWSA	

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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110.00	0.53	75.23	110.00	0.13	0.49	0.37	0.48	0.48	0.00
First SDI Gyro Survey									
172.00	0.70	69.52	171.99	0.34	1.12	0.88	0.29	0.27	-9.21
264.00	0.88	46.41	263.99	1.02	2.16	2.02	0.39	0.20	-25.12
356.00	1.85	29.36	355.96	2.80	3.40	4.19	1.13	1.05	-18.53
448.00	3.17	26.72	447.87	6.37	5.27	8.20	1.44	1.43	-2.87
540.00	4.75	23.82	539.65	12.12	7.96	14.50	1.73	1.72	-3.15
632.00	6.69	25.05	631.18	20.46	11.76	23.58	2.11	2.11	1.34



Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-09-23B - Slot G
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8381' & RKB 30' @ 8411.00ft (H&P 353)
Site:	Cascade Creek 609-33 Pad	MD Reference:	GL 8381' & RKB 30' @ 8411.00ft (H&P 353)
Well:	CC 697-09-23B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	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)
724.00	8.89	32.43	722.33	31.32	17.85	36.01	2.62	2.39	8.02
Last SDI Gyro Survey									
800.00	10.99	32.69	797.19	42.38	24.91	49.13	2.76	2.76	0.34
First SDI Surface MWD Survey									
891.00	14.25	35.33	885.98	58.82	36.07	68.99	3.64	3.58	2.90
983.00	16.00	35.15	974.79	78.42	49.92	92.97	1.90	1.90	-0.20
1,077.00	18.11	32.60	1,064.65	101.33	65.25	120.52	2.38	2.24	-2.71
1,172.00	19.96	31.11	1,154.45	127.65	81.59	151.50	2.01	1.95	-1.57
1,267.00	20.31	30.40	1,243.65	155.75	98.31	184.19	0.45	0.37	-0.75
1,362.00	19.61	31.46	1,332.94	183.57	114.97	216.60	0.83	-0.74	1.12
1,457.00	20.31	31.46	1,422.23	211.24	131.90	249.03	0.74	0.74	0.00
1,551.00	20.05	32.78	1,510.46	238.70	149.14	281.45	0.56	-0.28	1.40
1,646.00	18.82	33.74	1,600.05	265.13	166.46	313.06	1.34	-1.29	1.01
1,741.00	18.55	31.63	1,690.04	290.74	182.90	343.49	0.77	-0.28	-2.22
1,835.00	17.67	31.28	1,779.38	315.67	198.15	372.70	0.94	-0.94	-0.37
1,930.00	18.82	33.39	1,869.61	340.79	214.07	402.44	1.40	1.21	2.22
2,024.00	17.50	33.83	1,958.92	365.19	230.28	431.73	1.41	-1.40	0.47
2,119.00	18.47	31.90	2,049.28	389.83	246.19	461.06	1.20	1.02	-2.03
2,214.00	18.29	31.90	2,139.43	415.26	262.02	491.01	0.19	-0.19	0.00
2,309.00	18.20	32.42	2,229.66	440.44	277.85	520.75	0.20	-0.09	0.55
2,404.00	16.88	31.28	2,320.24	464.75	292.96	549.38	1.44	-1.39	-1.20
2,498.00	17.94	32.07	2,409.93	488.68	307.74	577.50	1.16	1.13	0.84
2,593.00	17.67	33.92	2,500.38	513.05	323.55	606.55	0.66	-0.28	1.95
2,672.00	15.65	35.33	2,576.06	531.69	336.40	629.18	2.61	-2.56	1.78
Last SDI Surface MWD Survey									
2,767.00	15.39	36.02	2,667.60	552.34	351.23	654.55	0.34	-0.27	0.73
First SDI Production MWD Survey									
2,861.00	16.18	36.46	2,758.05	572.96	366.35	680.06	0.85	0.84	0.47
2,956.00	14.33	35.93	2,849.70	593.13	381.11	705.00	1.95	-1.95	-0.56
3,051.00	13.81	32.85	2,941.85	612.17	394.16	728.07	0.96	-0.55	-3.24
3,145.00	14.42	29.78	3,033.02	631.76	406.06	750.98	1.03	0.65	-3.27
3,240.00	15.56	30.13	3,124.78	653.05	418.33	775.53	1.20	1.20	0.37
3,334.00	16.71	34.96	3,215.08	675.03	432.41	801.63	1.88	1.22	5.14
3,429.00	17.06	31.71	3,305.99	698.08	447.56	829.21	1.06	0.37	-3.42
3,524.00	16.00	32.33	3,397.06	720.99	461.88	856.24	1.13	-1.12	0.65
3,619.00	16.36	31.18	3,488.30	743.50	475.81	882.71	0.51	0.38	-1.21
3,713.00	15.83	32.15	3,578.61	765.69	489.49	908.77	0.63	-0.56	1.03
3,808.00	16.18	32.15	3,669.93	787.86	503.43	934.96	0.37	0.37	0.00
3,903.00	16.62	32.59	3,761.06	810.52	517.79	961.78	0.48	0.46	0.46
3,998.00	15.54	33.96	3,852.35	832.52	532.22	988.09	1.20	-1.14	1.44
4,092.00	16.62	34.35	3,942.67	854.06	546.83	1,014.11	1.15	1.15	0.41
4,187.00	15.39	34.70	4,033.98	875.64	561.68	1,040.28	1.30	-1.29	0.37
4,282.00	16.53	31.45	4,125.32	897.54	575.91	1,066.39	1.52	1.20	-3.42
4,376.00	15.74	30.74	4,215.62	919.90	589.40	1,092.51	0.87	-0.84	-0.76



Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-09-23B - Slot G
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8381' & RKB 30' @ 8411.00ft (H&P 353)
Site:	Cascade Creek 609-33 Pad	MD Reference:	GL 8381' & RKB 30' @ 8411.00ft (H&P 353)
Well:	CC 697-09-23B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	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)
4,471.00	16.36	33.73	4,306.92	942.11	603.42	1,118.77	1.09	0.65	3.15
4,565.00	15.56	33.03	4,397.29	963.69	617.64	1,144.61	0.88	-0.85	-0.74
4,660.00	14.33	29.60	4,489.08	984.59	630.39	1,169.09	1.59	-1.29	-3.61
4,755.00	14.25	29.25	4,581.14	1,005.02	641.91	1,192.51	0.12	-0.08	-0.37
4,849.00	13.19	28.90	4,672.46	1,024.50	652.75	1,214.77	1.13	-1.13	-0.37
4,944.00	11.78	26.09	4,765.21	1,042.70	662.25	1,235.23	1.62	-1.48	-2.96
5,039.00	10.29	28.81	4,858.45	1,058.84	670.61	1,253.34	1.66	-1.57	2.86
5,134.00	8.71	32.41	4,952.15	1,072.35	678.55	1,269.01	1.78	-1.66	3.79
5,228.00	9.94	36.90	5,044.90	1,084.85	687.24	1,284.21	1.52	1.31	4.78
5,323.00	12.31	38.92	5,138.11	1,099.29	698.52	1,302.45	2.53	2.49	2.13
5,418.00	11.96	39.97	5,230.99	1,114.71	711.21	1,322.26	0.44	-0.37	1.11
5,512.00	13.28	38.48	5,322.72	1,130.63	724.19	1,342.65	1.45	1.40	-1.59
5,607.00	14.33	37.25	5,414.97	1,148.53	738.09	1,365.21	1.15	1.11	-1.29
5,702.00	13.72	35.67	5,507.14	1,167.04	751.78	1,388.17	0.76	-0.64	-1.66
5,796.00	15.04	35.75	5,598.19	1,185.99	765.40	1,411.48	1.40	1.40	0.09
5,891.00	16.44	35.93	5,689.63	1,206.88	780.49	1,437.20	1.47	1.47	0.19
5,986.00	14.86	34.96	5,781.10	1,227.75	795.36	1,462.78	1.69	-1.66	-1.02
6,081.00	16.09	35.23	5,872.66	1,248.49	809.94	1,488.10	1.30	1.29	0.28
6,175.00	14.77	33.82	5,963.27	1,269.09	824.12	1,513.09	1.46	-1.40	-1.50
6,270.00	13.89	32.94	6,055.31	1,288.72	837.06	1,536.60	0.95	-0.93	-0.93
6,365.00	12.75	32.59	6,147.75	1,307.12	848.91	1,558.48	1.20	-1.20	-0.37
6,460.00	9.94	31.62	6,240.89	1,322.94	858.86	1,577.17	2.96	-2.96	-1.02
6,554.00	8.97	30.48	6,333.61	1,336.16	866.83	1,592.61	1.05	-1.03	-1.21
6,649.00	8.71	28.46	6,427.48	1,348.87	874.01	1,607.19	0.43	-0.27	-2.13
6,744.00	8.53	36.11	6,521.41	1,360.89	881.59	1,621.39	1.22	-0.19	8.05
6,838.00	6.95	37.78	6,614.55	1,371.01	889.19	1,634.01	1.70	-1.68	1.78
6,933.00	6.95	29.95	6,708.86	1,380.54	895.58	1,645.48	1.00	0.00	-8.24
7,027.00	7.74	36.90	6,802.09	1,390.53	902.22	1,657.47	1.26	0.84	7.39
7,122.00	9.41	37.51	6,896.02	1,401.80	910.79	1,671.58	1.76	1.76	0.64
7,217.00	8.97	33.91	6,989.80	1,414.11	919.65	1,686.72	0.76	-0.46	-3.79
7,311.00	8.71	34.61	7,082.68	1,426.05	927.78	1,701.16	0.30	-0.28	0.74
7,406.00	8.27	33.73	7,176.64	1,437.65	935.66	1,715.17	0.48	-0.46	-0.93
7,500.00	7.83	35.93	7,269.72	1,448.46	943.17	1,728.32	0.57	-0.47	2.34
7,595.00	8.18	36.28	7,363.79	1,459.15	950.97	1,741.52	0.37	0.37	0.37
7,689.00	7.74	29.95	7,456.89	1,470.02	958.08	1,754.52	1.04	-0.47	-6.73
7,784.00	8.79	29.60	7,550.90	1,481.88	964.86	1,768.16	1.11	1.11	-0.37
7,879.00	8.97	33.21	7,644.76	1,494.39	972.50	1,782.82	0.62	0.19	3.80
7,973.00	7.56	30.57	7,737.78	1,505.84	979.66	1,796.33	1.55	-1.50	-2.81
8,068.00	8.88	28.37	7,831.81	1,517.68	986.33	1,809.89	1.43	1.39	-2.32
8,163.00	8.44	30.22	7,925.72	1,530.15	993.32	1,824.17	0.55	-0.46	1.95
8,257.00	8.97	31.27	8,018.64	1,542.38	1,000.60	1,838.39	0.59	0.56	1.12
8,352.00	8.35	26.26	8,112.56	1,554.89	1,007.49	1,852.65	1.03	-0.65	-5.27
8,447.00	6.95	25.65	8,206.71	1,566.26	1,013.03	1,865.22	1.48	-1.47	-0.64



Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-09-23B - Slot G
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8381' & RKB 30' @ 8411.00ft (H&P 353)
Site:	Cascade Creek 609-33 Pad	MD Reference:	GL 8381' & RKB 30' @ 8411.00ft (H&P 353)
Well:	CC 697-09-23B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	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)
8,541.00	5.98	22.66	8,300.11	1,575.91	1,017.38	1,875.70	1.09	-1.03	-3.18
8,636.00	5.63	23.10	8,394.62	1,584.76	1,021.12	1,885.18	0.37	-0.37	0.46
8,730.00	4.90	8.47	8,488.23	1,592.97	1,023.52	1,893.40	1.62	-0.78	-15.56
8,825.00	4.90	10.90	8,582.88	1,600.97	1,024.88	1,900.89	0.22	0.00	2.56
8,920.00	4.28	325.10	8,677.61	1,607.86	1,023.62	1,906.04	3.80	-0.65	-48.21
9,014.00	4.61	311.31	8,771.33	1,613.23	1,018.77	1,907.99	1.19	0.35	-14.67
9,109.00	3.88	304.05	8,866.07	1,617.55	1,013.24	1,908.68	0.95	-0.77	-7.64
9,203.00	4.14	300.21	8,959.84	1,621.04	1,007.68	1,908.65	0.40	0.28	-4.09
9,237.00	3.83	297.57	8,993.76	1,622.18	1,005.61	1,908.51	1.06	-0.91	-7.76
Last SDI Production MWD Survey									
9,293.00	3.83	297.57	9,049.63	1,623.92	1,002.29	1,908.20	0.00	0.00	0.00
Projection to TD - BHL = 632873.54, 1233548.31									

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
110.00	110.00	0.13	0.49	First SDI Gyro Survey
724.00	722.33	31.32	17.85	Last SDI Gyro Survey
800.00	797.19	42.38	24.91	First SDI Surface MWD Survey
2,672.00	2,576.06	531.69	336.40	Last SDI Surface MWD Survey
2,767.00	2,667.60	552.34	351.23	First SDI Production MWD Survey
9,237.00	8,993.76	1,622.18	1,005.61	Last SDI Production MWD Survey
9,293.00	9,049.63	1,623.92	1,002.29	Projection to TD
9,293.00	9,049.63	1,623.92	1,002.29	BHL = 632873.54, 1233548.31

Checked By: _____ Approved By: _____ Date: _____