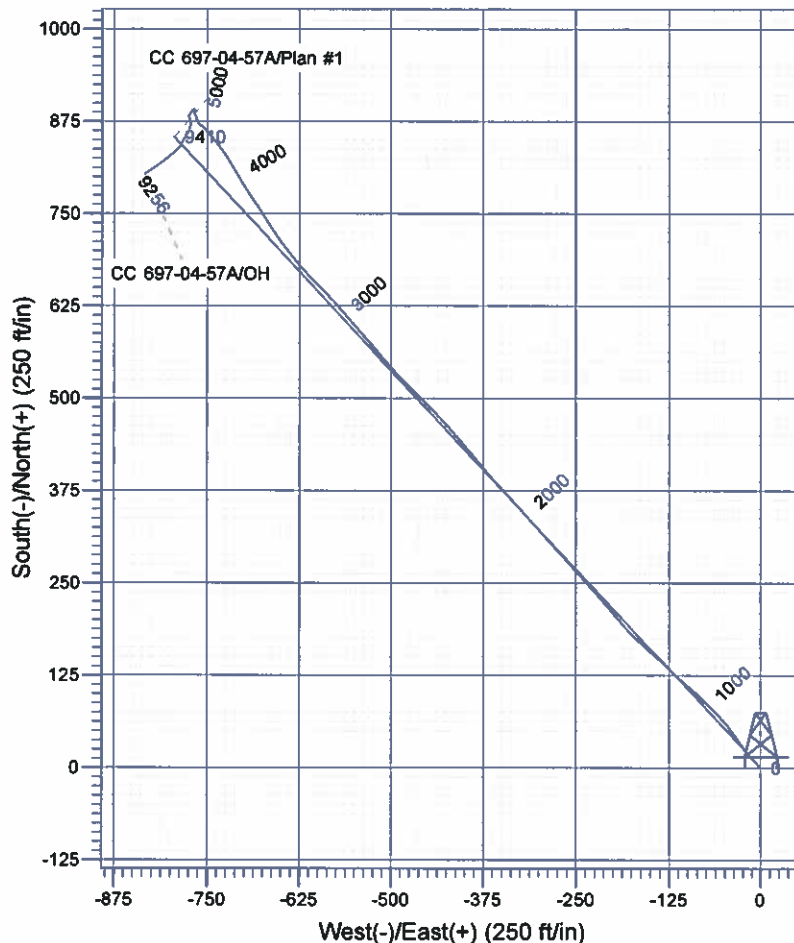
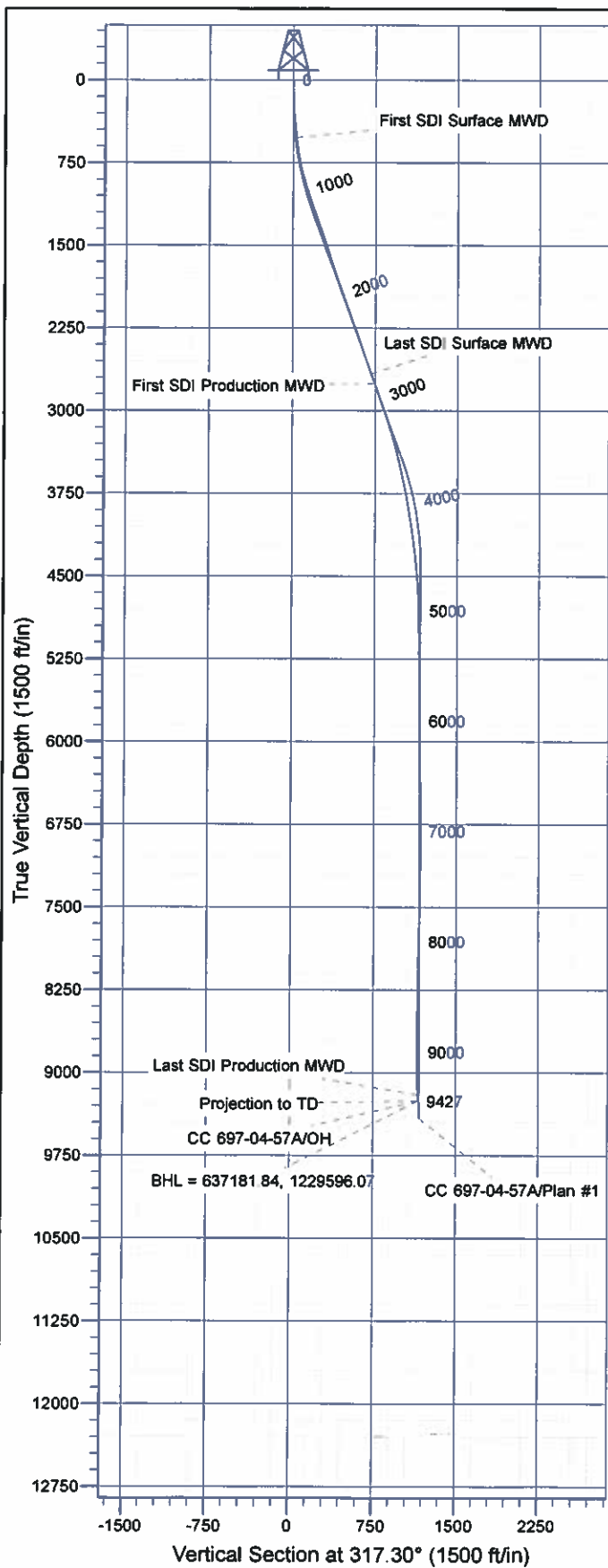




# Scientific Drilling

Company: OXY USA RMAT  
 Project: Garfield County, CO NAD27  
 Site: Cascade Creek 697-04D Pad  
 Well: CC 697-04-57A  
 Wellbore: OH  
 Design: OH



## Well Details: CC 697-04-57A

+N-S	+E-W	North	East	Latitude	Longitude	Slot
0.00	0.00	636353.43	1230405.20	39° 32' 55.927 N	108° 13' 46.238 W	H

## REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well CC 697-04-57A - Slot H, True North  
 Vertical (TVD) Reference: GL 8629' & RKB 30' @ 8659.00ft (H&P)  
 Section (VS) Reference: Slot - H(0.00N, 0.00E)  
 Measured Depth Reference: GL 8629' & RKB 30' @ 8659.00ft (H&P)  
 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

15:47, May 08 2012  
 Created By: Janie Cooke

# **OXY USA RMAT**

**Garfield County, CO NAD27  
Cascade Creek 697-04D Pad  
CC 697-04-57A - Slot H**

**OH**

**Design: OH**

## **Standard Survey Report**

**08 May, 2012**

# Scientific Drilling International

## Survey Report

<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-04-57A - Slot H
<b>Project:</b>	Garfield County, CO NAD27	<b>TVD Reference:</b>	GL 8629' & RKB 30' @ 8659.00ft (H&P)
<b>Site:</b>	Cascade Creek 697-04D Pad	<b>MD Reference:</b>	GL 8629' & RKB 30' @ 8659.00ft (H&P)
<b>Well:</b>	CC 697-04-57A	<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 697-04D Pad			
Site Position:		Northing:	635,530.62 usft	Latitude:	39° 32' 47.760 N
From:	Map	Easting:	1,230,276.10 usft	Longitude:	108° 13' 47.570 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.72 °

Well	CC 697-04-57A - Slot H					
Well Position	+N/-S	0.00 ft	Northing:	636,353.43 usft	Latitude:	39° 32' 55.927 N
	+E/-W	0.00 ft	Easting:	1,230,405.20 usft	Longitude:	108° 13' 46.238 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	8,629.00 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	03/23/11	10.47	65.76	52,283

<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	317.30	

<b>Survey Program</b>	<b>Date</b>	05/08/12			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
522.00	2,775.00	Survey #1 - Surface MWD (OH)	MWD-SDI	MWD - Standard ISCWSA	
2,870.00	9,427.00	Survey #2 - Production MWD (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
522.00	6.42	317.81	520.91	21.65	-19.62	29.21	1.23	1.23	0.00
<b>First SDI Surface MWD</b>									
614.00	8.35	322.56	612.14	30.76	-27.14	41.01	2.20	2.10	5.16
703.00	9.76	326.42	700.03	42.18	-35.24	54.89	1.72	1.58	4.34
793.00	12.93	321.24	788.26	56.39	-45.76	72.48	3.70	3.52	-5.76
883.00	15.48	316.05	875.51	72.89	-60.41	94.53	3.16	2.83	-5.77
973.00	17.50	314.21	961.80	90.98	-78.44	120.06	2.32	2.24	-2.04
1,068.00	19.08	310.80	1,052.00	111.04	-100.47	149.74	2.05	1.66	-3.80
1,162.00	18.38	314.38	1,141.03	131.41	-122.73	179.80	1.49	-0.74	4.02

# Scientific Drilling International

## Survey Report

**Company:** OXY USA RMAT  
**Project:** Garfield County, CO NAD27  
**Site:** Cascade Creek 697-04D Pad  
**Well:** CC 697-04-57A  
**Wellbore:** OH  
**Design:** OH

**Local Co-ordinate Reference:** Well CC 697-04-57A - Slot H  
**TVD Reference:** GL 8629' & RKB 30' @ 8659.00ft (H&P)  
**MD Reference:** GL 8629' & RKB 30' @ 8659.00ft (H&P)  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**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)
1,257.00	20.40	312.19	1,230.64	153.00	-145.71	211.26	2.26	2.13	-2.31
1,352.00	20.49	314.21	1,319.65	175.72	-169.89	244.35	0.75	0.09	2.13
1,447.00	18.73	320.36	1,409.15	199.06	-191.55	276.19	2.85	-1.85	6.47
1,542.00	18.20	318.78	1,499.28	221.97	-211.05	306.25	0.77	-0.56	-1.86
1,636.00	18.03	318.60	1,588.60	243.92	-230.35	335.47	0.19	-0.18	-0.19
1,731.00	18.11	318.25	1,678.91	265.96	-249.90	364.93	0.14	0.08	-0.37
1,826.00	18.64	317.90	1,769.07	288.25	-269.91	394.88	0.57	0.56	-0.37
1,920.00	19.17	318.69	1,858.00	310.98	-290.17	425.33	0.63	0.56	0.84
2,015.00	20.22	318.43	1,947.44	334.98	-311.36	457.34	1.11	1.11	-0.27
2,110.00	19.52	318.93	2,036.78	358.86	-333.09	489.62	0.91	-0.74	-1.58
2,205.00	19.17	317.46	2,126.42	381.95	-354.48	521.09	0.41	-0.37	0.56
2,299.00	20.40	320.10	2,214.87	405.89	-375.42	552.89	1.62	1.31	2.81
2,394.00	20.66	319.83	2,303.84	431.40	-396.85	586.17	0.29	0.27	-0.28
2,489.00	18.82	318.60	2,393.25	455.70	-417.80	618.24	1.99	-1.94	-1.29
2,584.00	18.99	316.58	2,483.13	478.42	-438.56	649.01	0.71	0.18	-2.13
2,678.00	18.91	314.56	2,572.04	500.22	-459.92	679.52	0.70	-0.09	-2.15
2,775.00	19.61	315.61	2,663.61	522.88	-482.51	711.49	0.81	0.72	1.08
Last SDI Surface MWD									
2,870.00	18.37	319.09	2,753.44	545.59	-503.47	742.39	1.77	-1.31	3.66
First SDI Production MWD									
2,965.00	19.79	318.47	2,843.22	568.94	-523.93	773.43	1.51	1.49	-0.65
3,060.00	19.96	319.09	2,932.56	593.23	-545.21	805.72	0.29	0.18	0.65
3,154.00	19.87	319.44	3,020.94	617.49	-566.11	837.72	0.16	-0.10	0.37
3,249.00	18.38	315.49	3,110.89	640.44	-587.11	868.82	2.08	-1.57	-4.16
3,344.00	16.62	315.57	3,201.29	660.83	-607.12	897.38	1.85	-1.85	0.08
3,438.00	15.48	319.79	3,291.63	680.01	-624.63	923.35	1.73	-1.21	4.49
3,533.00	14.16	321.55	3,383.47	698.79	-640.04	947.60	1.47	-1.39	1.85
3,628.00	13.45	325.24	3,475.73	716.97	-653.57	970.13	1.19	-0.75	3.88
3,723.00	12.57	326.91	3,568.29	734.71	-665.51	991.27	1.01	-0.93	1.76
3,817.00	12.13	327.09	3,660.11	751.57	-676.46	1,011.09	0.47	-0.47	0.19
3,912.00	10.99	325.68	3,753.18	767.43	-686.99	1,029.88	1.24	-1.20	-1.48
4,007.00	10.11	326.91	3,846.58	781.89	-696.65	1,047.06	0.96	-0.93	1.29
4,101.00	9.58	330.08	3,939.19	795.58	-705.05	1,062.82	0.81	-0.56	3.37
4,196.00	9.23	330.43	4,032.92	809.06	-712.76	1,077.95	0.37	-0.37	0.37
4,291.00	8.44	326.74	4,126.79	821.52	-720.34	1,092.25	1.02	-0.83	-3.88
4,385.00	7.91	328.41	4,219.83	832.80	-727.51	1,105.40	0.62	-0.56	1.78
4,480.00	6.86	323.04	4,314.04	842.90	-734.35	1,117.46	1.32	-1.11	-5.65
4,575.00	5.19	317.60	4,408.52	850.61	-740.66	1,127.40	1.86	-1.76	-5.73
4,669.00	4.31	316.98	4,502.19	856.33	-745.93	1,135.19	0.94	-0.94	-0.66
4,764.00	4.31	319.97	4,596.92	861.67	-750.66	1,142.32	0.24	0.00	3.15
4,859.00	2.90	315.49	4,691.73	866.12	-754.65	1,148.29	1.51	-1.48	-4.72
4,953.00	0.88	314.87	4,785.68	868.32	-756.82	1,151.39	2.15	-2.15	-0.66
5,048.00	1.14	298.52	4,880.66	869.29	-758.17	1,153.01	0.41	0.27	-17.21

# Scientific Drilling International

## Survey Report

<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-04-57A - Slot H
<b>Project:</b>	Garfield County, CO NAD27	<b>TVD Reference:</b>	GL 8629' & RKB 30' @ 8659.00ft (H&P)
<b>Site:</b>	Cascade Creek 697-04D Pad	<b>MD Reference:</b>	GL 8629' & RKB 30' @ 8659.00ft (H&P)
<b>Well:</b>	CC 697-04-57A	<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)
5,143.00	0.70	274.88	4,975.65	869.79	-759.58	1,154.34	0.60	-0.46	-24.88
5,238.00	0.62	305.55	5,070.65	870.14	-760.58	1,155.27	0.38	-0.08	32.28
5,333.00	0.62	337.72	5,165.64	870.91	-761.19	1,156.25	0.36	0.00	33.86
5,427.00	0.62	2.68	5,259.64	871.89	-761.36	1,157.09	0.29	0.00	26.55
5,522.00	0.97	336.05	5,354.63	873.14	-761.66	1,158.21	0.53	0.37	-28.03
5,616.00	0.88	325.51	5,448.61	874.46	-762.39	1,159.68	0.20	-0.10	-11.21
5,711.00	0.35	336.40	5,543.61	875.33	-762.92	1,160.67	0.57	-0.56	11.46
5,806.00	0.35	304.59	5,638.61	875.76	-763.28	1,161.23	0.20	0.00	-33.48
5,900.00	0.35	337.81	5,732.60	876.19	-763.62	1,161.78	0.21	0.00	35.34
5,995.00	0.70	351.26	5,827.60	877.03	-763.82	1,162.53	0.39	0.37	14.16
6,089.00	0.53	348.36	5,921.60	878.02	-763.99	1,163.38	0.18	-0.18	-3.09
6,184.00	0.70	356.36	6,016.59	879.03	-764.12	1,164.21	0.20	0.18	8.42
6,279.00	0.88	327.44	6,111.58	880.23	-764.55	1,165.38	0.45	0.19	-30.44
6,373.00	0.97	344.31	6,205.57	881.60	-765.15	1,166.80	0.30	0.10	17.95
6,468.00	1.32	331.31	6,300.55	883.34	-765.90	1,168.58	0.46	0.37	-13.68
6,562.00	1.14	349.85	6,394.53	885.21	-766.58	1,170.41	0.48	-0.19	19.72
6,657.00	0.97	15.96	6,489.51	886.91	-766.53	1,171.63	0.53	-0.18	27.48
6,751.00	1.23	352.49	6,583.50	888.67	-766.44	1,172.87	0.55	0.28	-24.97
6,846.00	0.62	333.86	6,678.48	890.15	-766.80	1,174.19	0.71	-0.64	-19.61
6,940.00	0.70	308.45	6,772.48	890.96	-767.47	1,175.25	0.32	0.09	-27.03
7,035.00	0.88	219.25	6,867.47	890.76	-768.39	1,175.72	1.18	0.19	-93.89
7,129.00	1.23	216.87	6,961.46	889.39	-769.45	1,175.44	0.38	0.37	-2.53
7,224.00	1.76	211.86	7,056.42	887.34	-770.83	1,174.86	0.57	0.56	-5.27
7,318.00	1.93	225.66	7,150.37	885.00	-772.73	1,174.43	0.50	0.18	14.68
7,413.00	1.58	203.07	7,245.33	882.68	-774.38	1,173.85	0.81	-0.37	-23.78
7,507.00	1.58	151.57	7,339.30	880.35	-774.27	1,172.06	1.46	0.00	-54.79
7,602.00	1.49	157.90	7,434.27	878.05	-773.19	1,169.64	0.20	-0.09	6.66
7,696.00	1.67	171.70	7,528.23	875.56	-772.53	1,167.36	0.45	0.19	14.68
7,791.00	2.20	178.55	7,623.18	872.37	-772.28	1,164.85	0.61	0.56	7.21
7,885.00	2.02	187.87	7,717.11	868.93	-772.46	1,162.44	0.41	-0.19	9.91
7,980.00	1.93	199.56	7,812.06	865.76	-773.23	1,160.63	0.43	-0.09	12.31
8,075.00	2.02	197.71	7,907.00	862.66	-774.27	1,159.08	0.12	0.09	-1.95
8,170.00	2.29	214.32	8,001.93	859.50	-775.85	1,157.81	0.71	0.28	17.48
8,264.00	2.99	210.72	8,095.83	855.84	-778.16	1,156.69	0.76	0.74	-3.83
8,359.00	3.34	213.36	8,190.69	851.40	-780.95	1,155.31	0.40	0.37	2.78
8,454.00	1.32	196.57	8,285.61	848.04	-782.79	1,154.09	2.22	-2.13	-17.67
8,535.34	1.10	200.86	8,366.93	846.41	-783.33	1,153.28	0.30	-0.27	5.28
<b>CC 697-04-57A Target</b>									
8,549.00	1.06	201.76	8,380.59	846.17	-783.42	1,153.15	0.30	-0.27	6.57
8,643.00	1.93	203.69	8,474.55	843.91	-784.38	1,152.14	0.93	0.93	2.05
8,738.00	2.46	217.93	8,569.48	840.84	-786.28	1,151.17	0.80	0.56	14.99
8,833.00	3.08	222.94	8,664.37	837.36	-789.27	1,150.64	0.70	0.65	5.27
8,928.00	4.22	230.76	8,759.18	833.28	-793.72	1,150.66	1.31	1.20	8.23
9,022.00	4.57	230.06	8,852.90	828.69	-799.27	1,151.05	0.38	0.37	-0.74



# Scientific Drilling International

## Survey Report

<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-04-57A - Slot H
<b>Project:</b>	Garfield County, CO NAD27	<b>TVD Reference:</b>	GL 8629' & RKB 30' @ 8659.00ft (H&P)
<b>Site:</b>	Cascade Creek 697-04D Pad	<b>MD Reference:</b>	GL 8629' & RKB 30' @ 8659.00ft (H&P)
<b>Well:</b>	CC 697-04-57A	<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)
9,117.00	5.63	231.29	8,947.52	823.35	-805.80	1,151.55	1.12	1.12	1.29
9,212.00	6.07	233.31	9,042.03	817.43	-813.47	1,152.41	0.51	0.46	2.13
9,306.00	6.60	237.18	9,135.46	811.54	-821.99	1,153.85	0.72	0.56	4.12
9,371.00	6.68	235.86	9,200.02	807.39	-828.26	1,155.06	0.27	0.12	-2.03
<b>Last SDI Production MWD</b>									
9,427.00	6.68	235.86	9,255.64	803.73	-833.65	1,156.03	0.00	0.00	0.00
<b>Projection to TD - BHL = 637181.84, 1229596.07</b>									

### Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
522.00	520.91	21.65	-19.62	First SDI Surface MWD
2,775.00	2,663.61	522.88	-482.51	Last SDI Surface MWD
2,870.00	2,753.44	545.59	-503.47	First SDI Production MWD
9,371.00	9,200.02	807.39	-828.26	Last SDI Production MWD
9,427.00	9,255.64	803.73	-833.65	Projection to TD
9,427.00	9,255.64	803.73	-833.65	BHL = 637181.84, 1229596.07

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