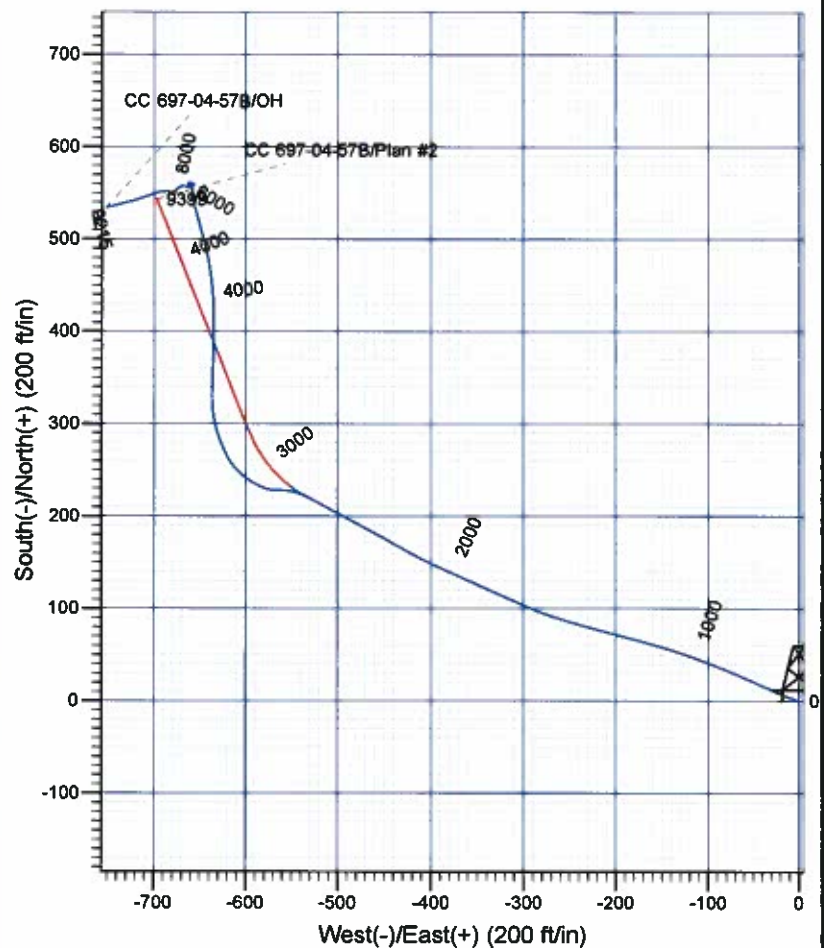
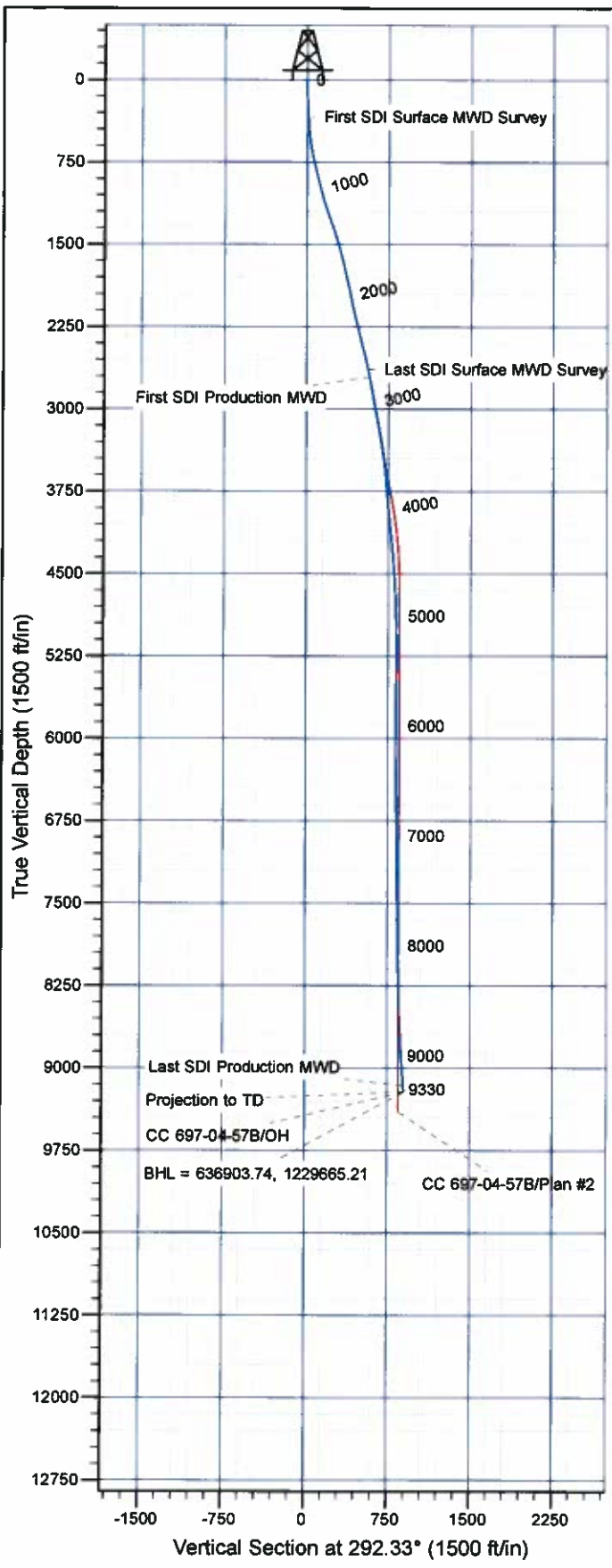




**Scientific Drilling**  
Rocky Mountain Operations

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



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

TVD Reference: GL 8629' & RBK 30' @ 8659.00ft (8659.00ft Level: 8629.00)		Northing		Easting		Latitude		Longitude		Slot
+N/-S	+E/-W	636347.66	1230400.41	39° 32' 55.868 N	108° 13' 46.297 W					J

#### REFERENCE INFORMATION

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

14:30, March 28 2012  
Created By: Janie Cooke

# **OXY USA RMAT**

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

**OH**

**Design: OH**

## **Standard Survey Report**

**28 March, 2012**



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



<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-04-57B - Slot J
<b>Project:</b>	Garfield County, CO NAD27	<b>TVD Reference:</b>	GL 8629' & RBK 30' @ 8659.00ft (H&P)
<b>Site:</b>	Cascade Creek 697-04D Pad	<b>MD Reference:</b>	GL 8629' & RBK 30' @ 8659.00ft (H&P)
<b>Well:</b>	CC 697-04-57B	<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 697-04-57B - Slot J					
Well Position	+N/-S	0.00 ft	Northing:	636,347.66 usft	Latitude:	39° 32' 55.868 N
	+E/-W	0.00 ft	Easting:	1,230,400.41 usft	Longitude:	108° 13' 48.297 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	03/23/2011	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	292.33	

<b>Survey Program</b>	<b>Date</b>	03/28/2012			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
339.00	2,710.00	Survey #1 - Surface MWD (OH)	MWD-SDI	MWD - Standard   SCWSA	
2,776.00	9,330.00	Survey #2 - 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	
339.00	3.18	288.28	338.83	2.95	-8.93	9.38	0.94	0.94	0.00	
<b>First SDI Surface MWD Survey</b>										
430.00	4.84	292.33	429.60	5.20	-14.88	15.74	1.85	1.82	4.47	
522.00	6.60	293.48	521.14	8.78	-23.32	24.91	1.92	1.91	1.25	
613.00	10.02	295.41	611.17	14.26	-35.27	38.04	3.77	3.76	2.12	
703.00	11.87	292.07	699.53	21.10	-50.92	55.12	2.17	2.06	-3.71	
792.00	13.89	291.45	786.29	28.44	-69.35	74.96	2.27	2.27	-0.70	
883.00	13.98	292.77	874.61	36.69	-89.65	96.87	0.36	0.10	1.45	
973.00	14.86	289.96	961.77	44.84	-110.52	119.27	1.25	0.98	-3.12	

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



<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-04-57B - Slot J
<b>Project:</b>	Garfield County, CO NAD27	<b>TVD Reference:</b>	GL 8629' & RBK 30' @ 8659.00ft (H&P)
<b>Site:</b>	Cascade Creek 697-04D Pad	<b>MD Reference:</b>	GL 8629' & RBK 30' @ 8659.00ft (H&P)
<b>Well:</b>	CC 697-04-57B	<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)
1,067.00	15.04	288.11	1,052.59	52.75	-133.45	143.48	0.54	0.19	-1.97
1,257.00	19.79	284.60	1,233.84	68.53	-188.03	199.97	2.56	2.50	-1.85
1,352.00	20.84	284.16	1,322.93	76.71	-219.98	232.63	1.12	1.11	-0.46
1,446.00	18.55	287.32	1,411.42	85.26	-250.48	264.08	2.69	-2.44	3.36
1,541.00	15.04	289.26	1,502.36	93.83	-276.55	291.46	3.74	-3.69	2.04
1,636.00	15.04	294.53	1,594.11	103.01	-299.40	316.08	1.44	0.00	5.55
1,731.00	13.45	293.04	1,686.18	112.45	-320.78	339.45	1.72	-1.67	-1.57
1,825.00	12.66	295.15	1,777.75	121.11	-340.16	360.67	0.98	-0.84	2.24
1,920.00	12.49	295.32	1,870.47	129.92	-358.87	381.32	0.18	-0.18	0.18
2,015.00	11.43	292.95	1,963.41	137.99	-376.83	401.00	1.23	-1.12	-2.49
2,109.00	12.13	294.88	2,055.43	145.78	-394.36	420.18	0.85	0.74	2.05
2,204.00	13.45	297.52	2,148.07	155.08	-413.22	441.15	1.52	1.39	2.78
2,299.00	13.98	299.36	2,240.37	165.81	-433.02	463.54	0.72	0.56	1.94
2,394.00	14.60	300.24	2,332.43	177.47	-453.36	486.79	0.69	0.65	0.93
2,488.00	14.60	297.61	2,423.39	188.93	-474.10	510.32	0.71	0.00	-2.80
2,583.00	13.63	298.31	2,515.52	199.78	-494.56	533.38	1.04	-1.02	0.74
2,678.00	12.49	299.01	2,608.06	210.07	-513.40	554.72	1.21	-1.20	0.74
2,710.00	11.87	298.40	2,639.34	213.32	-519.32	561.43	1.98	-1.94	-1.91
<b>Last SDI Surface MWD Survey</b>									
2,776.00	11.17	297.07	2,704.01	219.46	-530.99	574.55	1.13	-1.06	-2.02
<b>First SDI Production MWD</b>									
2,871.00	9.85	285.47	2,797.43	225.81	-547.01	591.79	2.62	-1.39	-12.21
2,965.00	10.38	267.80	2,889.99	227.63	-563.23	607.48	3.34	0.56	-18.80
3,060.00	10.64	289.69	2,983.43	230.26	-580.04	624.03	4.19	0.27	23.04
3,155.00	10.99	304.10	3,076.76	238.29	-595.80	641.66	2.86	0.37	15.17
3,249.00	11.70	315.35	3,168.94	250.10	-609.92	659.21	2.47	0.76	11.97
3,344.00	12.66	333.54	3,261.83	266.28	-621.33	675.91	4.15	1.01	19.15
3,439.00	13.98	340.75	3,354.28	286.43	-629.76	691.36	2.23	1.39	7.59
3,534.00	13.63	351.21	3,446.55	308.33	-635.25	704.76	2.65	-0.37	11.01
3,628.00	15.48	1.32	3,537.54	331.82	-636.66	714.99	3.34	1.97	10.76
3,723.00	14.68	2.46	3,629.27	356.52	-635.85	723.63	0.90	-0.84	1.20
3,818.00	13.98	0.61	3,721.32	380.03	-635.21	731.96	0.88	-0.74	-1.95
3,912.00	13.10	1.14	3,812.70	402.03	-634.88	740.02	0.95	-0.94	0.56
4,007.00	12.75	359.12	3,905.30	423.28	-634.82	748.04	0.60	-0.37	-2.13
4,102.00	12.05	353.49	3,998.08	443.61	-636.11	756.96	1.47	-0.74	-5.93
4,196.00	11.43	352.97	4,090.12	462.60	-638.36	766.26	0.67	-0.66	-0.55
4,291.00	9.94	347.17	4,183.47	479.94	-641.33	775.59	1.93	-1.57	-8.11
4,386.00	9.50	347.61	4,277.10	495.60	-644.84	784.78	0.47	-0.46	0.46
4,481.00	6.95	342.51	4,371.12	508.74	-648.25	792.93	2.79	-2.68	-5.37
4,575.00	6.51	345.32	4,464.47	519.32	-651.31	799.78	0.58	-0.47	2.99
4,670.00	6.16	343.39	4,558.89	529.41	-654.13	806.22	0.43	-0.37	-2.03
4,713.54	5.88	342.93	4,602.20	533.78	-655.45	809.11	0.66	-0.65	-1.05
<b>CC 697-04-57B Top</b>									
4,765.00	5.54	342.33	4,653.40	538.66	-656.98	812.37	0.66	-0.65	-1.17



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



<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-04-57B - Slot J
<b>Project:</b>	Garfield County, CO NAD27	<b>TVD Reference:</b>	GL 8629' & RBK 30' @ 8659.00ft (H&P)
<b>Site:</b>	Cascade Creek 697-04D Pad	<b>MD Reference:</b>	GL 8629' & RBK 30' @ 8659.00ft (H&P)
<b>Well:</b>	CC 697-04-57B	<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)
4,859.00	4.31	0.97	4,747.05	546.52	-658.29	816.58	2.13	-1.31	19.83
4,954.00	2.64	356.40	4,841.88	552.27	-658.37	818.84	1.78	-1.76	-4.81
5,049.00	1.32	354.02	4,936.82	555.54	-658.62	820.31	1.39	-1.39	-2.51
5,143.00	1.85	268.24	5,030.79	556.57	-660.25	822.21	2.33	0.56	-91.26
5,238.00	2.55	349.19	5,125.74	558.60	-662.18	824.77	3.06	0.74	85.21
5,333.00	0.44	54.23	5,220.71	560.89	-662.28	825.73	2.52	-2.22	68.46
5,427.00	0.53	102.04	5,314.70	561.01	-661.56	825.11	0.43	0.10	50.86
5,522.00	0.70	115.58	5,409.70	560.67	-660.61	824.10	0.23	0.18	14.25
5,617.00	0.70	108.79	5,504.69	560.25	-659.53	822.94	0.11	0.00	-9.25
5,712.00	0.70	130.43	5,599.68	559.71	-658.53	821.81	0.30	0.00	24.88
5,806.00	0.35	98.44	5,693.68	559.29	-657.81	820.99	0.47	-0.37	-34.03
5,901.00	0.44	110.83	5,788.68	559.12	-657.19	820.34	0.13	0.09	13.04
5,995.00	0.26	113.73	5,882.68	558.91	-656.65	819.77	0.19	-0.19	3.09
6,090.00	0.18	194.59	5,977.68	558.68	-656.49	819.53	0.31	-0.08	85.12
6,184.00	0.26	248.55	6,071.68	558.46	-656.73	819.67	0.23	0.09	57.40
6,279.00	0.44	274.39	6,166.67	558.41	-657.29	820.17	0.25	0.19	27.20
6,373.00	0.44	280.02	6,260.67	558.50	-658.01	820.86	0.05	0.00	5.99
6,468.00	0.62	243.63	6,355.67	558.33	-658.83	821.56	0.39	0.19	-38.31
6,563.00	1.14	245.21	6,450.66	557.71	-660.15	822.54	0.55	0.55	1.66
6,657.00	1.14	261.65	6,544.64	557.18	-661.92	823.98	0.35	0.00	17.49
6,752.00	1.49	253.48	6,639.61	556.69	-664.04	825.76	0.42	0.37	-8.60
6,846.00	0.88	294.96	6,733.59	556.65	-665.87	827.43	1.08	-0.65	44.13
6,941.00	0.26	296.81	6,828.59	557.05	-666.72	828.37	0.65	-0.65	1.95
7,035.00	0.44	287.40	6,922.59	557.26	-667.25	828.95	0.20	0.19	-10.01
7,130.00	0.88	267.63	7,017.58	557.34	-668.33	829.97	0.51	0.46	-20.81
7,224.00	1.14	257.69	7,111.56	557.11	-669.97	831.40	0.33	0.28	-10.57
7,318.00	1.06	243.28	7,205.55	556.52	-671.66	832.74	0.31	-0.09	-15.33
7,413.00	1.32	230.89	7,300.53	555.43	-673.29	833.84	0.38	0.27	-13.04
7,508.00	1.76	233.17	7,395.49	553.87	-675.31	835.11	0.47	0.46	2.40
7,602.00	2.02	231.06	7,489.44	551.96	-677.75	836.64	0.29	0.28	-2.24
7,697.00	1.23	240.12	7,584.40	550.40	-679.94	838.07	0.87	-0.83	9.54
7,791.00	1.58	273.78	7,678.38	549.98	-682.11	839.92	0.94	0.37	35.81
7,886.00	0.18	337.94	7,773.36	550.21	-683.47	841.27	1.59	-1.47	67.54
7,981.00	0.62	8.96	7,868.36	550.85	-683.44	841.49	0.50	0.46	32.65
8,075.00	0.88	300.67	7,962.35	551.72	-683.99	842.32	0.92	0.28	-72.65
8,170.00	1.14	260.07	8,057.34	551.93	-685.54	843.84	0.78	0.27	-42.74
8,265.00	1.58	270.61	8,152.31	551.78	-687.79	845.86	0.53	0.46	11.09
8,360.00	1.93	286.40	8,247.27	551.70	-690.69	848.51	0.39	0.37	-4.43
8,454.00	2.46	250.31	8,341.20	550.92	-694.17	851.44	0.86	0.56	-17.12
8,473.04	2.58	250.65	8,360.23	550.64	-694.96	852.06	0.66	0.65	1.77
<b>CC 697-04-57B Target</b>									
8,549.00	3.08	251.72	8,436.09	549.43	-698.51	854.89	0.66	0.65	1.41
8,644.00	2.99	252.42	8,530.96	547.88	-703.30	858.73	0.10	-0.09	0.74

# Scientific Drilling International, Inc.

## Survey Report



<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-04-57B - Slot J
<b>Project:</b>	Garfield County, CO NAD27	<b>TVD Reference:</b>	GL 8629' & RBK 30' @ 8659.00ft (H&P)
<b>Site:</b>	Cascade Creek 697-04D Pad	<b>MD Reference:</b>	GL 8629' & RBK 30' @ 8659.00ft (H&P)
<b>Well:</b>	CC 697-04-57B	<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)
8,738.00	3.43	247.94	8,824.81	546.08	-708.24	862.62	0.54	0.47	-4.77
8,833.00	3.69	251.37	8,719.63	544.04	-713.77	866.95	0.35	0.27	3.61
8,928.00	3.96	254.09	8,814.41	542.16	-719.82	871.84	0.34	0.28	2.86
9,023.00	4.75	255.06	8,909.14	540.25	-726.78	877.55	0.84	0.83	1.02
9,117.00	4.57	254.00	9,002.83	538.22	-734.14	883.58	0.21	-0.19	-1.13
9,274.00	5.01	256.46	9,159.28	534.89	-746.82	894.04	0.31	0.28	1.57
<b>Last SDI Production MWD</b>									
9,330.00	5.01	256.46	9,215.07	533.74	-751.57	898.01	0.00	0.00	0.00
<b>Projection to TD - BHL = 636903.74, 1229665.21</b>									

### Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
339.00	338.83	2.95	-8.93	First SDI Surface MWD Survey
2,710.00	2,639.34	213.32	-519.32	Last SDI Surface MWD Survey
2,776.00	2,704.01	219.46	-530.99	First SDI Production MWD
9,274.00	9,159.28	534.89	-746.82	Last SDI Production MWD
9,330.00	9,215.07	533.74	-751.57	Projection to TD
9,330.00	9,215.07	533.74	-751.57	BHL = 636903.74, 1229665.21

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