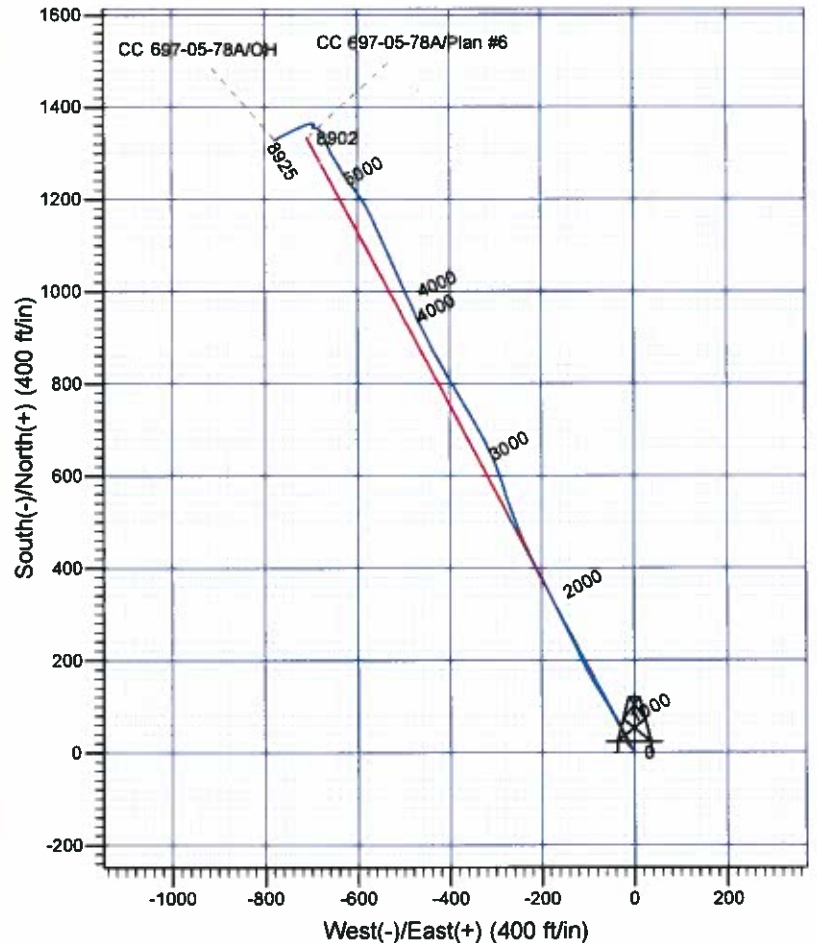
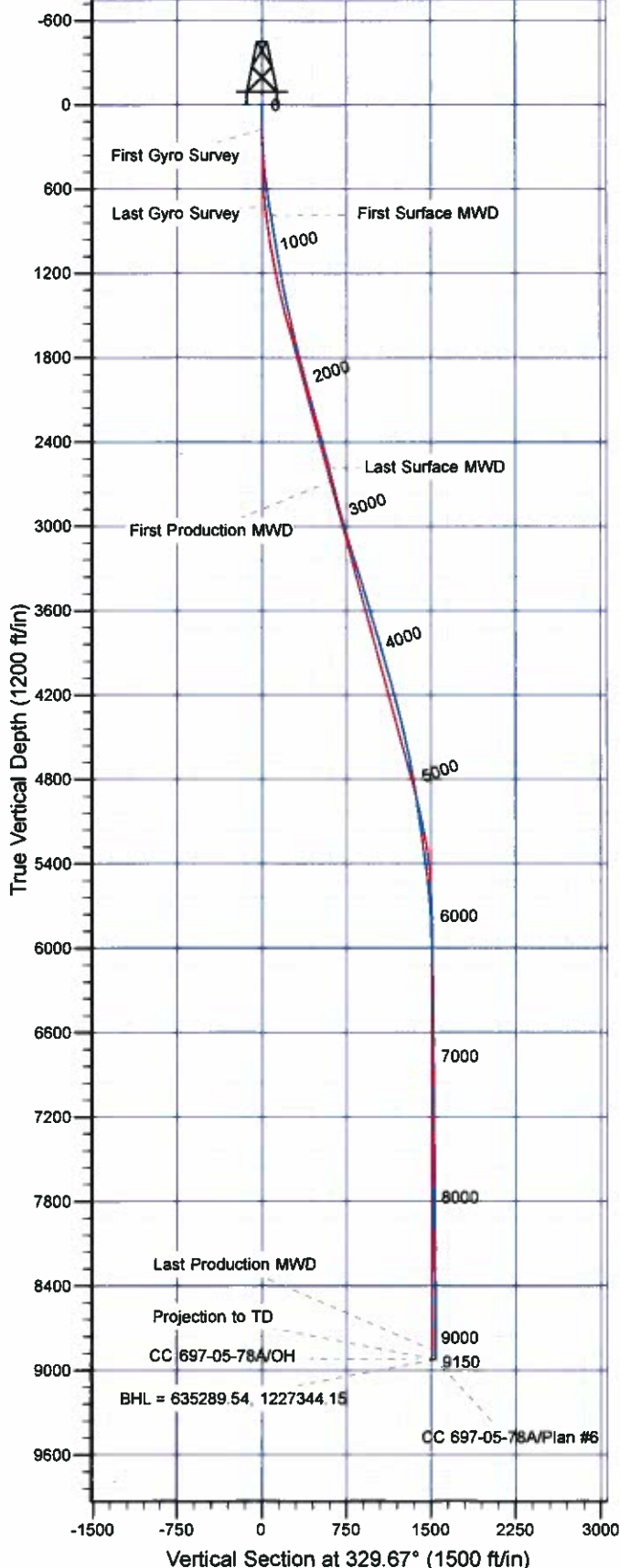




**Scientific Drilling**  
Rocky Mountain Operations

Company: OXY USA RMAT  
Project: Garfield County, CO NAD27  
Site: Cascade Creek 608-41 Pad  
Well: CC 697-05-78A  
Wellbore: OH  
Design: OH



#### Well Details: CC 697-05-78A

TVD Reference: GL 8407' & RKB 30' @ 8437.00ft (H&P) Level: 8407.00		Slot B	
+N/-S	+E/-W	North	East
0.00	0.00	633938.25	1228080.97

#### REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well CC 697-05-78A - Slot B, True North  
Vertical (TVD) Reference: GL 8407' & RKB 30' @ 8437.00ft (H&P)  
Section (VS) Reference: Slot - B(0.00N, 0.00E)  
Measured Depth Reference: GL 8407' & RKB 30' @ 8437.00ft (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

10:28, June 08 2011  
Created By: Janie Cooke

# **OXY USA RMAT**

**Garfield County, CO NAD27  
Cascade Creek 608-41 Pad  
CC 697-05-78A - Slot B**

**OH**

**Design: OH**

## **Standard Survey Report**

**08 June, 2011**



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



<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-05-78A - Slot B
<b>Project:</b>	Garfield County, CO NAD27	<b>TVD Reference:</b>	GL 8407' & RKB 30' @ 8437.00ft (H&P)
<b>Site:</b>	Cascade Creek 608-41 Pad	<b>MD Reference:</b>	GL 8407' & RKB 30' @ 8437.00ft (H&P)
<b>Well:</b>	CC 697-05-78A	<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 608-41 Pad, Section 8 T6S R97W				
Site Position:		Northing:	633,966.95 usft	Latitude:	39° 32' 31.685 N
From:	Map	Easting:	1,228,168.67 usft	Longitude:	108° 14' 13.859 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.73 °

Well	CC 697-05-78A - Slot B,					
Well Position	+N/-S	0.00 ft	Northing:	633,938.25 usft	Latitude:	39° 32' 31.376 N
	+E/-W	0.00 ft	Easting:	1,228,080.97 usft	Longitude:	108° 14' 14.967 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	8,407.00 ft

<b>Wellbore</b>	OH				
-----------------	----	--	--	--	--

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2005-10	10/15/2008	10.79	65.81	52,516

<b>Design</b>	OH				
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<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	329.67

Survey Program		Date	6/8/2011		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
175.00	726.00	Survey #1 - Gyro (OH)	Gyro		
798.00	2,671.00	Survey #2 - Surface MWD (OH)	MWD-SDI	MWD - Standard  SCWSA	
2,763.00	9,150.00	Survey #3 - Production MWD (OH)	MWD-SDI	MWD - Standard  SCWSA	

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
175.00	1.67	351.30	174.98	2.52	-0.39	2.37	0.95	0.95	0.00
<b>First Gyro Survey</b>									
267.00	2.46	317.99	266.92	5.31	-1.91	5.55	1.53	0.86	-36.21
359.00	4.93	306.74	358.72	9.15	-6.40	11.13	2.79	2.68	-12.23
450.00	6.86	319.83	449.24	15.64	-13.04	20.08	2.57	2.12	14.38
542.00	9.59	346.90	540.32	27.31	-18.32	32.82	5.07	2.97	29.42
634.00	10.12	333.54	630.97	42.01	-23.66	48.21	2.55	0.58	-14.52
726.00	11.52	328.71	721.34	57.10	-32.04	65.46	1.81	1.52	-5.25

# Scientific Drilling International, Inc.

## Survey Report



<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-05-78A - Slot B
<b>Project:</b>	Garfield County, CO NAD27	<b>TVD Reference:</b>	GL 8407' & RKB 30' @ 8437.00ft (H&P)
<b>Site:</b>	Cascade Creek 608-41 Pad	<b>MD Reference:</b>	GL 8407' & RKB 30' @ 8437.00ft (H&P)
<b>Well:</b>	CC 697-05-78A	<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)
<b>Last Gyro Survey</b>									
798.00	11.26	334.79	791.92	69.60	-38.76	79.65	1.71	-0.36	8.44
<b>First Surface MWD</b>									
890.00	11.17	330.05	882.17	85.45	-47.04	97.51	1.01	-0.10	-5.15
982.00	11.17	329.61	972.42	100.86	-56.00	115.33	0.09	0.00	-0.48
1,077.00	12.31	329.08	1,065.43	117.48	-65.86	134.68	1.21	1.20	-0.56
1,171.00	13.54	328.55	1,157.05	135.47	-76.75	155.68	1.31	1.31	-0.56
1,266.00	13.19	329.08	1,249.48	154.25	-88.12	177.64	0.39	-0.37	0.56
1,361.00	13.37	331.28	1,341.94	173.18	-98.97	199.46	0.56	0.19	2.32
1,455.00	14.95	336.64	1,433.08	193.85	-109.00	222.36	2.18	1.68	5.70
1,550.00	16.62	335.76	1,524.50	217.49	-119.43	246.03	1.78	1.76	-0.93
1,644.00	16.27	331.72	1,614.65	241.34	-131.19	274.56	1.27	-0.37	-4.30
1,739.00	17.67	333.91	1,705.52	266.01	-143.84	302.24	1.62	1.47	2.31
1,833.00	17.23	333.56	1,795.19	291.29	-156.31	330.36	0.48	-0.47	-0.37
1,928.00	18.82	334.79	1,885.53	317.75	-169.10	359.66	1.72	1.67	1.29
2,023.00	18.55	332.51	1,975.52	345.02	-182.61	390.01	0.82	-0.28	-2.40
2,117.00	18.64	331.63	2,064.61	371.51	-196.65	419.96	0.31	0.10	-0.94
2,212.00	19.79	332.68	2,154.32	399.15	-211.24	451.19	1.26	1.21	1.11
2,306.00	19.17	333.65	2,242.94	427.12	-225.40	482.48	0.74	-0.66	1.03
2,401.00	18.64	335.93	2,332.81	454.96	-238.51	513.13	0.96	-0.56	2.40
2,495.00	19.26	337.87	2,421.72	483.04	-250.48	543.41	0.94	0.66	2.06
2,590.00	18.91	338.75	2,511.50	511.90	-261.96	574.12	0.48	-0.37	0.93
2,671.00	17.41	339.89	2,588.46	535.51	-270.88	599.01	1.90	-1.85	1.41
<b>Last Surface MWD</b>									
2,763.00	16.83	344.01	2,676.39	561.24	-279.29	625.46	1.46	-0.63	4.48
<b>First Production MWD</b>									
2,858.00	17.50	340.77	2,767.16	587.95	-287.78	652.80	1.23	0.71	-3.41
2,952.00	17.94	340.59	2,856.70	614.95	-297.24	680.89	0.47	0.47	-0.19
3,047.00	20.05	335.76	2,946.53	643.60	-308.79	711.45	2.77	2.22	-5.08
3,141.00	20.40	332.24	3,034.73	672.79	-323.04	743.84	1.35	0.37	-3.74
3,236.00	21.63	330.49	3,123.41	702.68	-339.38	777.89	1.45	1.29	-1.84
3,331.00	21.63	329.61	3,211.72	733.03	-356.86	812.91	0.34	0.00	-0.93
3,425.00	20.31	329.08	3,299.50	761.97	-374.01	846.55	1.42	-1.40	-0.56
3,520.00	21.98	330.31	3,388.10	791.56	-391.29	880.81	1.82	1.76	1.29
3,614.00	20.49	329.69	3,475.71	821.04	-408.30	914.86	1.60	-1.59	-0.66
3,709.00	20.05	330.22	3,564.83	849.53	-424.78	947.77	0.50	-0.46	0.56
3,803.00	20.14	332.42	3,653.11	877.86	-440.28	980.04	0.81	0.10	2.34
3,897.00	20.66	334.09	3,741.21	907.12	-455.02	1,012.74	0.83	0.55	1.78
3,992.00	19.96	334.53	3,830.31	936.84	-469.31	1,045.61	0.75	-0.74	0.46
4,087.00	19.87	335.67	3,919.63	966.19	-482.94	1,077.82	0.42	-0.09	1.20
4,181.00	19.17	336.02	4,008.22	994.84	-495.79	1,109.05	0.75	-0.74	0.37
4,276.00	19.06	336.02	4,097.98	1,023.27	-508.44	1,139.97	0.12	-0.12	0.00
4,370.00	18.64	335.32	4,186.94	1,050.94	-520.95	1,170.17	0.51	-0.45	-0.74
4,465.00	18.73	336.37	4,276.94	1,078.71	-533.40	1,200.43	0.37	0.09	1.11



# Scientific Drilling International, Inc.

## Survey Report



<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-05-78A - Slot B
<b>Project:</b>	Garfield County, CO NAD27	<b>TVD Reference:</b>	GL 8407' & RKB 30' @ 8437.00ft (H&P)
<b>Site:</b>	Cascade Creek 608-41 Pad	<b>MD Reference:</b>	GL 8407' & RKB 30' @ 8437.00ft (H&P)
<b>Well:</b>	CC 697-05-78A	<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)
4,559.00	17.85	336.02	4,366.19	1,105.70	-545.30	1,229.73	0.94	-0.94	-0.37
4,654.00	16.39	336.29	4,456.97	1,131.28	-556.61	1,257.52	1.54	-1.54	0.28
4,749.00	15.30	335.06	4,548.36	1,154.92	-567.29	1,283.31	1.20	-1.15	-1.29
4,843.00	13.37	332.24	4,639.43	1,175.78	-577.58	1,306.52	2.18	-2.05	-3.00
4,937.00	13.19	328.90	4,730.92	1,194.58	-588.18	1,328.10	0.84	-0.19	-3.55
5,032.00	11.78	324.16	4,823.68	1,211.73	-599.46	1,348.59	1.83	-1.48	-4.99
5,126.00	10.90	322.05	4,915.84	1,226.51	-610.54	1,366.95	1.03	-0.94	-2.24
5,221.00	10.20	325.83	5,009.23	1,240.55	-620.79	1,384.25	1.04	-0.74	3.98
5,315.00	10.46	329.17	5,101.71	1,254.77	-629.84	1,401.09	0.69	0.28	3.55
5,410.00	9.76	329.43	5,195.24	1,269.11	-638.35	1,417.76	0.74	-0.74	0.27
5,504.00	9.76	329.17	5,287.88	1,282.81	-646.49	1,433.70	0.05	0.00	-0.28
5,599.00	9.58	329.08	5,381.53	1,296.50	-654.68	1,449.65	0.19	-0.19	-0.09
5,694.00	8.71	336.90	5,475.32	1,309.90	-661.56	1,464.70	1.59	-0.92	8.23
5,788.00	7.83	338.92	5,568.34	1,322.42	-666.66	1,478.08	0.99	-0.94	2.15
5,883.00	5.19	338.81	5,662.72	1,332.47	-670.54	1,488.71	2.78	-2.78	-0.12
5,977.00	4.31	343.14	5,756.40	1,339.82	-673.10	1,498.34	1.01	-0.94	4.61
6,072.00	3.08	325.30	5,851.20	1,345.33	-675.59	1,502.36	1.76	-1.29	-18.78
6,166.00	2.11	311.85	5,945.11	1,348.56	-678.32	1,506.52	1.21	-1.03	-14.31
6,261.00	2.81	297.53	6,040.02	1,350.80	-681.68	1,510.16	0.98	0.74	-15.07
6,355.00	2.20	305.35	6,133.93	1,352.91	-685.20	1,513.75	0.74	-0.65	8.32
6,450.00	1.32	306.14	6,228.88	1,354.61	-687.57	1,516.42	0.93	-0.93	0.83
6,544.00	0.79	280.12	6,322.87	1,355.37	-689.08	1,517.83	0.75	-0.56	-27.68
6,639.00	1.32	270.54	6,417.85	1,355.49	-690.82	1,518.82	0.59	0.56	-10.08
6,733.00	1.93	274.24	6,511.81	1,355.62	-693.48	1,520.27	0.66	0.65	3.94
6,828.00	1.14	268.00	6,606.78	1,355.70	-696.02	1,521.63	0.85	-0.83	-6.57
6,922.00	0.70	357.56	6,700.77	1,356.24	-696.98	1,522.58	1.42	-0.47	95.28
7,017.00	2.37	44.14	6,795.73	1,358.23	-695.64	1,523.62	2.06	1.76	49.03
7,111.00	1.41	29.64	6,889.68	1,360.63	-693.71	1,524.72	1.13	-1.02	-15.43
7,206.00	0.79	27.53	6,984.66	1,362.23	-692.83	1,525.65	0.65	-0.65	-2.22
7,300.00	0.26	355.10	7,078.66	1,363.02	-692.55	1,526.19	0.62	-0.56	-34.50
7,395.00	0.35	296.56	7,173.66	1,363.36	-692.83	1,526.63	0.32	0.09	-61.62
7,489.00	0.62	294.54	7,267.66	1,363.70	-693.55	1,527.28	0.29	0.29	-2.15
7,584.00	0.88	267.73	7,362.65	1,363.89	-694.74	1,528.05	0.45	0.27	-28.22
7,678.00	1.67	261.49	7,456.62	1,363.66	-696.82	1,528.90	0.85	0.84	-6.64
7,773.00	1.49	282.15	7,551.59	1,363.71	-699.40	1,530.24	0.62	-0.19	21.75
7,867.00	0.44	297.00	7,645.57	1,364.13	-700.91	1,531.37	1.14	-1.12	15.80
7,962.00	0.70	250.94	7,740.57	1,364.11	-701.79	1,531.79	0.53	0.27	-48.48
8,056.00	1.85	251.74	7,834.54	1,363.45	-703.77	1,532.22	1.22	1.22	0.85
8,151.00	3.08	251.03	7,929.45	1,362.13	-707.64	1,533.05	1.30	1.29	-0.75
8,245.00	2.81	257.10	8,023.33	1,360.80	-712.27	1,534.23	0.44	-0.29	6.46
8,340.00	2.90	238.99	8,118.21	1,359.04	-716.60	1,534.90	0.95	0.09	-19.06
8,434.00	3.43	240.40	8,212.07	1,356.43	-721.09	1,534.91	0.57	0.56	1.50
8,528.00	4.22	249.63	8,305.86	1,353.83	-726.77	1,535.54	1.06	0.84	9.82

# Scientific Drilling International, Inc.

## Survey Report



<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-05-78A - Slot B
<b>Project:</b>	Garfield County, CO NAD27	<b>TVD Reference:</b>	GL 8407' & RKB 30' @ 8437.00ft (H&P)
<b>Site:</b>	Cascade Creek 608-41 Pad	<b>MD Reference:</b>	GL 8407' & RKB 30' @ 8437.00ft (H&P)
<b>Well:</b>	CC 697-05-78A	<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)
8,623.00	4.48	246.90	8,400.59	1,351.16	-733.46	1,536.62	0.35	0.27	-2.87
8,717.00	4.92	245.41	8,494.27	1,348.04	-740.51	1,537.48	0.49	0.47	-1.59
8,811.00	5.10	243.83	8,587.91	1,344.52	-747.92	1,538.19	0.24	0.19	-1.68
8,906.00	5.45	243.03	8,682.51	1,340.62	-755.73	1,538.76	0.38	0.37	-0.84
9,001.00	5.89	241.72	8,777.05	1,336.26	-764.05	1,539.20	0.48	0.46	-1.38
9,091.00	5.89	238.38	8,866.57	1,331.65	-772.04	1,539.26	0.38	0.00	-3.71
<b>Last Production MWD</b>									
9,150.00	5.89	238.38	8,925.26	1,328.48	-777.20	1,539.12	0.00	0.00	0.00
<b>Projection to TD - BHL = 635289.54, 1227344.15</b>									

### Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
175.00	174.98	2.52	-0.39	First Gyro Survey
726.00	721.34	57.10	-32.04	Last Gyro Survey
798.00	791.92	69.60	-38.76	First Surface MWD
2,671.00	2,588.46	535.51	-270.88	Last Surface MWD
2,763.00	2,676.39	561.24	-279.29	First Production MWD
9,091.00	8,866.57	1,331.65	-772.04	Last Production MWD
9,150.00	8,925.26	1,328.48	-777.20	Projection to TD
9,150.00	8,925.26	1,328.48	-777.20	BHL = 635289.54, 1227344.15

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