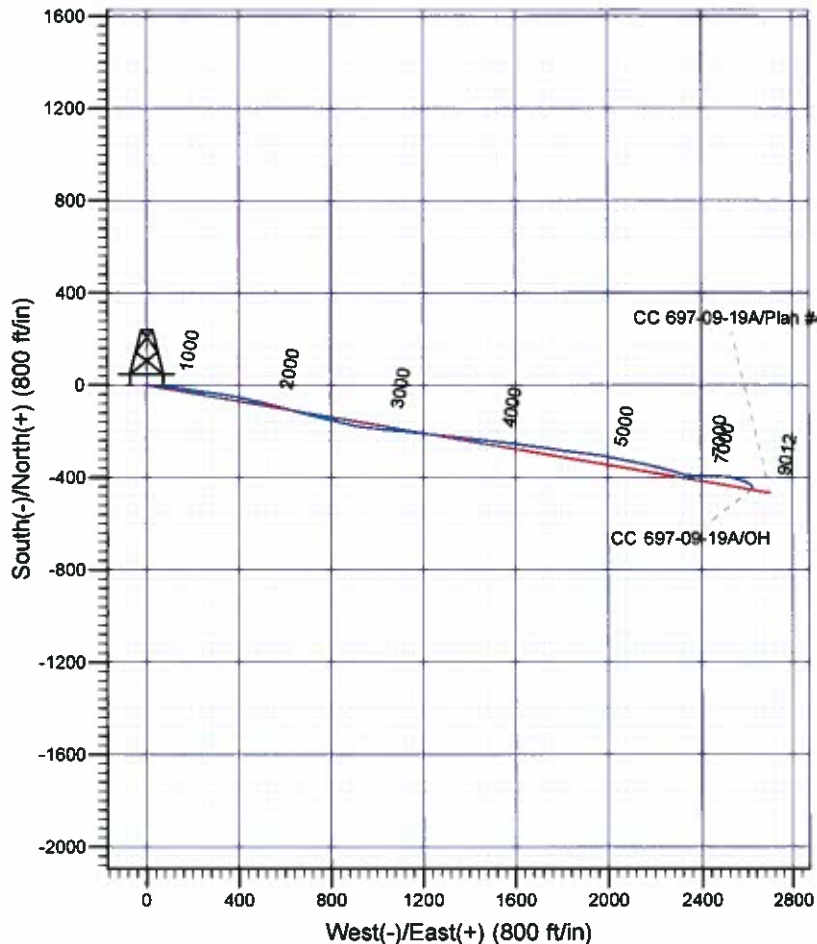
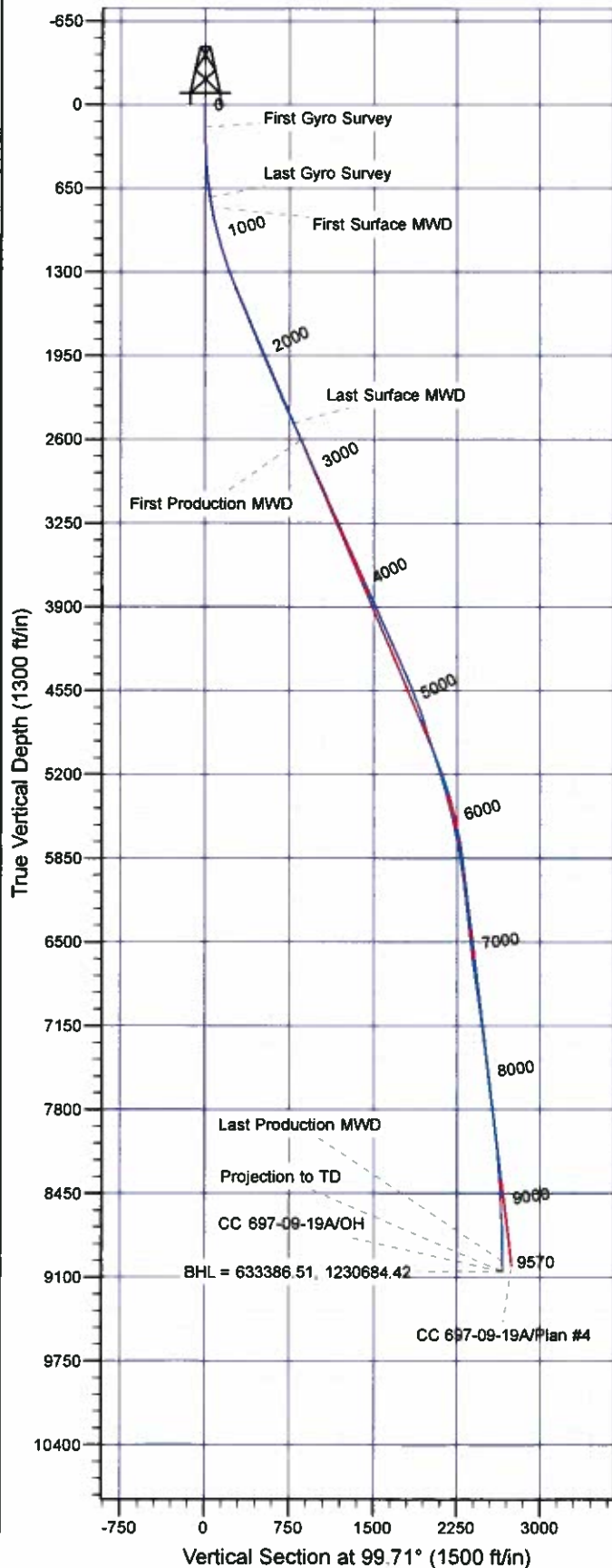




**Scientific Drilling**  
Rocky Mountain Operations

Company: OXY USA RMA  
Project: Garfield County, CO NAD27  
Site: Cascade Creek 608-41 Pad  
Well: CC 697-09-19A  
Wellbore: OH  
Design: OH



#### Well Details: CC 697-09-19A

TVD Reference: GL 8407' & RKB 30' @ 8437.00ft (H&P) and Level: 8407.00  
+N/-S +E/-W Northing Easting Latitude Longitude Slot  
0.00 0.00 633914.36 1228075.74 39° 32' 31.138 N 106° 14' 15.025 W V

#### REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well CC 697-09-19A - Slot V, True North  
Vertical (TVD) Reference: GL 8407' & RKB 30' @ 8437.00ft (H&P)  
Section (VS) Reference: Slot - V(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

11:48, May 11 2011  
Created By: Janie Cooke

# **OXY USA RMAT**

**Garfield County, CO NAD27**

**Cascade Creek 608-41 Pad**

**CC 697-09-19A - Slot V**

**OH**

**Design: OH**

## **Standard Survey Report**

**11 May, 2011**

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

<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-09-19A - Slot V
<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 697-09-19A	<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		

<b>Site</b>	Cascade Creek 608-41 Pad, SEction 8 T6S R97W		
<b>Site Position:</b>		<b>Northing:</b>	633,966.95 usft
<b>From:</b>	Map	<b>Easting:</b>	1,228,168.67 usft
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13.200 in
		<b>Latitude:</b>	39° 32' 31.685 N
		<b>Longitude:</b>	108° 14' 13.859 W
		<b>Grid Convergence:</b>	-1.73 °

<b>Well</b>	CC 697-09-19A - Slot V		
<b>Well Position</b>	+N/-S	0.00 ft	<b>Northing:</b> 633,914.36 usft
	+E/-W	0.00 ft	<b>Easting:</b> 1,228,075.74 usft
<b>Position Uncertainty</b>	0.00 ft	<b>Wellhead Elevation:</b>	ft
		<b>Latitude:</b>	39° 32' 31.138 N
		<b>Longitude:</b>	108° 14' 15.025 W
		<b>Ground Level:</b>	8,407.00 ft

<b>Wellbore</b>	OH
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2005-10	12/31/2009	10.63	65.78	52,398

<b>Design</b>	OH
---------------	----

<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	99.71

Survey Program	Date	5/11/2011		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
175.00	725.00	Survey #1 - Gyro Survey (OH)	Gyro	
800.00	2,633.00	Survey #2 - Surface MWD (OH)	MWD-SDI	MWD - Standard ISCWSA
2,781.00	9,570.00	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
	175.00	0.62	23.03	175.00	0.87	0.37	0.22	0.35	0.35	0.00
<b>First Gyro Survey</b>										
	267.00	1.76	75.31	266.98	1.69	1.93	1.62	1.59	1.24	56.83
	358.00	2.82	108.98	357.91	1.31	5.40	5.10	1.83	1.16	37.00
	450.00	2.64	97.73	449.80	0.29	9.64	9.45	0.61	-0.20	-12.23
	542.00	5.45	94.13	541.57	-0.31	16.10	15.92	3.07	3.05	-3.91
	633.00	8.53	94.48	631.88	-1.15	27.14	26.94	3.38	3.38	0.38
	725.00	11.00	93.34	722.54	-2.19	42.71	42.46	2.69	2.68	-1.24

# Scientific Drilling International, Inc.

## Survey Report

<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-09-19A - Slot V
<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 697-09-19A	<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>									
800.00	12.15	91.30	796.01	-2.79	57.74	57.38	1.63	1.53	-2.72
<b>First Surface MWD</b>									
895.00	14.87	94.28	888.38	-3.92	79.90	79.41	2.95	2.86	3.14
989.00	16.78	100.11	978.81	-7.21	105.29	104.99	2.64	2.03	6.20
1,084.00	18.52	99.01	1,069.34	-11.98	133.69	133.79	1.86	1.83	-1.16
1,178.00	19.72	98.77	1,158.15	-16.73	164.11	164.58	1.28	1.28	-0.26
1,273.00	21.60	98.93	1,247.04	-21.89	197.23	198.09	1.98	1.98	0.17
1,367.00	23.13	98.23	1,333.97	-27.22	232.59	233.85	1.65	1.63	-0.74
1,462.00	23.59	96.99	1,421.18	-32.20	269.93	271.49	0.71	0.48	-1.31
1,557.00	25.24	99.11	1,507.68	-37.72	308.80	310.74	1.97	1.74	2.23
1,651.00	26.28	100.46	1,592.34	-44.68	349.05	351.59	1.27	1.11	1.44
1,746.00	24.63	99.90	1,678.12	-51.90	389.24	392.41	1.76	-1.74	-0.59
1,840.00	25.58	101.21	1,763.23	-59.21	428.44	432.29	1.17	1.01	1.39
1,935.00	26.43	102.54	1,848.62	-67.79	469.20	473.91	1.09	0.89	1.40
2,029.00	26.08	104.04	1,932.92	-77.34	509.66	515.41	0.80	-0.37	1.60
2,124.00	27.41	104.56	2,017.75	-87.91	551.09	558.02	1.42	1.40	0.55
2,219.00	25.87	106.30	2,102.67	-99.22	592.15	600.40	1.82	-1.62	1.83
2,313.00	25.17	104.37	2,187.50	-109.94	631.20	640.70	1.16	-0.74	-2.05
2,407.00	25.29	105.62	2,272.53	-120.31	669.90	680.59	0.58	0.13	1.33
2,501.00	27.82	102.99	2,356.61	-130.65	710.62	722.47	2.97	2.69	-2.80
2,596.00	28.60	102.80	2,440.33	-140.67	754.39	767.31	0.83	0.82	-0.20
2,633.00	28.35	103.28	2,472.85	-144.65	771.58	784.92	0.92	-0.68	1.30
<b>Last Surface MWD</b>									
2,781.00	27.02	104.12	2,603.90	-160.92	838.38	853.51	0.94	-0.90	0.57
<b>First Production MWD</b>									
2,876.00	26.03	103.58	2,688.90	-171.08	879.57	895.83	1.07	-1.04	-0.57
2,970.00	27.79	100.41	2,772.73	-179.88	921.18	938.32	2.42	1.87	-3.37
3,065.00	26.82	95.05	2,857.15	-185.77	964.32	981.84	2.78	-1.02	-5.64
3,159.00	26.56	96.81	2,941.14	-190.13	1,006.31	1,023.96	0.89	-0.28	1.87
3,254.00	27.08	96.63	3,025.92	-195.15	1,048.88	1,066.77	0.55	0.55	-0.19
3,348.00	26.91	92.86	3,109.68	-198.68	1,091.38	1,109.25	1.83	-0.18	-4.01
3,443.00	27.26	95.76	3,194.27	-201.93	1,134.50	1,152.30	1.44	0.37	3.05
3,538.00	27.17	97.60	3,278.75	-206.99	1,177.65	1,195.69	0.89	-0.09	1.94
3,632.00	27.70	97.69	3,362.18	-212.75	1,220.57	1,238.97	0.57	0.56	0.10
3,726.00	28.84	95.58	3,444.97	-217.88	1,264.79	1,283.42	1.61	1.21	-2.24
3,821.00	26.03	94.70	3,529.28	-221.81	1,308.37	1,327.04	2.99	-2.96	-0.93
3,915.00	26.91	95.32	3,613.42	-225.48	1,350.11	1,368.80	0.98	0.94	0.66
4,010.00	27.87	96.90	3,697.77	-230.14	1,393.56	1,412.41	1.27	1.01	1.66
4,104.00	27.61	97.51	3,780.97	-235.62	1,436.97	1,456.12	0.41	-0.28	0.65
4,199.00	26.47	96.02	3,865.58	-240.72	1,479.85	1,499.25	1.40	-1.20	-1.57
4,293.00	26.03	98.48	3,949.89	-245.96	1,521.09	1,540.78	1.25	-0.47	2.62
4,388.00	28.23	95.67	4,034.44	-251.25	1,564.07	1,584.04	2.68	2.32	-2.96
4,483.00	28.31	97.69	4,118.11	-256.49	1,608.75	1,628.97	1.01	0.08	2.13



# Scientific Drilling International, Inc.

## Survey Report

<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-09-19A - Slot V
<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 697-09-19A	<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)
4,577.00	26.38	97.16	4,201.60	-262.07	1,651.57	1,672.11	2.07	-2.05	-0.56
4,672.00	27.17	98.04	4,286.42	-267.74	1,693.99	1,714.87	0.93	0.83	0.93
4,766.00	28.05	97.25	4,369.71	-273.53	1,737.16	1,758.41	1.01	0.94	-0.84
4,861.00	27.00	99.18	4,453.96	-279.79	1,780.61	1,802.29	1.45	-1.11	2.03
4,955.00	25.50	98.30	4,538.26	-286.11	1,821.70	1,843.86	1.65	-1.60	-0.94
5,050.00	24.27	98.04	4,624.44	-291.80	1,861.27	1,883.82	1.30	-1.29	-0.27
5,144.00	21.63	96.55	4,710.99	-296.48	1,897.62	1,920.43	2.88	-2.81	-1.59
5,239.00	19.61	95.84	4,799.90	-300.10	1,930.87	1,953.82	2.14	-2.13	-0.75
5,333.00	19.26	98.48	4,888.55	-303.99	1,961.90	1,985.06	1.01	-0.37	2.81
5,428.00	21.02	102.00	4,977.74	-309.84	1,994.07	2,017.76	2.25	1.85	3.71
5,522.00	21.28	102.17	5,065.41	-316.94	2,027.23	2,051.64	0.28	0.28	0.18
5,617.00	19.87	101.56	5,154.35	-323.81	2,059.90	2,085.00	1.50	-1.48	-0.64
5,712.00	18.99	101.38	5,243.93	-330.10	2,090.87	2,116.59	0.93	-0.93	-0.19
5,806.00	18.29	101.03	5,333.00	-335.94	2,120.34	2,146.62	0.75	-0.74	-0.37
5,900.00	18.03	100.94	5,422.32	-341.52	2,149.10	2,175.91	0.28	-0.28	-0.10
5,995.00	15.65	102.61	5,513.24	-347.11	2,176.05	2,203.41	2.56	-2.51	1.76
6,089.00	13.81	105.86	5,604.15	-352.94	2,199.21	2,227.23	2.15	-1.96	3.46
6,184.00	13.01	105.60	5,696.56	-358.92	2,220.42	2,249.14	0.84	-0.84	-0.27
6,278.00	11.78	105.95	5,788.37	-364.40	2,239.84	2,269.21	1.31	-1.31	0.37
6,373.00	10.46	104.90	5,881.58	-369.28	2,257.49	2,287.44	1.41	-1.39	-1.11
6,468.00	9.50	103.49	5,975.14	-373.33	2,273.45	2,303.85	1.04	-1.01	-1.48
6,562.00	8.44	106.39	6,067.99	-377.08	2,287.61	2,318.44	1.23	-1.13	3.09
6,657.00	7.47	108.41	6,162.08	-381.00	2,300.16	2,331.47	1.06	-1.02	2.13
6,751.00	6.51	107.45	6,255.38	-384.53	2,311.04	2,342.79	1.03	-1.02	-1.02
6,846.00	6.95	105.07	6,349.72	-387.64	2,321.73	2,353.85	0.55	0.46	-2.51
6,940.00	6.60	100.41	6,443.07	-390.09	2,332.54	2,364.91	0.69	-0.37	-4.96
7,035.00	7.30	97.95	6,537.37	-391.92	2,343.88	2,376.41	0.80	0.74	-2.59
7,129.00	8.53	92.59	6,630.47	-393.06	2,356.76	2,389.29	1.52	1.31	-5.70
7,224.00	10.11	93.91	6,724.21	-393.94	2,372.12	2,404.58	1.68	1.68	1.39
7,318.00	10.38	91.01	6,816.72	-394.66	2,388.82	2,421.16	0.62	0.29	-3.09
7,413.00	9.67	92.68	6,910.27	-395.18	2,405.35	2,437.54	0.81	-0.75	1.76
7,507.00	8.88	90.66	7,003.04	-395.63	2,420.49	2,452.54	0.91	-0.84	-2.15
7,602.00	8.88	89.08	7,096.90	-395.60	2,435.15	2,466.99	0.26	0.00	-1.66
7,696.00	8.97	89.69	7,189.76	-395.44	2,449.73	2,481.33	0.14	0.10	0.65
7,791.00	8.09	88.72	7,283.71	-395.25	2,463.82	2,495.19	0.94	-0.93	-1.02
7,885.00	8.09	89.16	7,376.77	-395.01	2,477.05	2,508.18	0.07	0.00	0.47
7,980.00	8.18	96.46	7,470.82	-395.67	2,490.45	2,521.50	1.09	0.09	7.68
8,074.00	8.35	95.14	7,563.84	-397.03	2,503.89	2,534.98	0.27	0.18	-1.40
8,169.00	8.71	100.15	7,657.79	-398.92	2,517.84	2,549.05	0.87	0.38	5.27
8,263.00	8.00	101.03	7,750.79	-401.43	2,531.27	2,562.71	0.77	-0.76	0.94
8,357.00	8.09	106.13	7,843.87	-404.52	2,544.04	2,575.82	0.77	0.10	5.43
8,452.00	8.53	105.60	7,937.87	-408.27	2,557.25	2,589.47	0.47	0.46	-0.56
8,546.00	8.27	108.85	8,030.86	-412.33	2,570.36	2,603.08	0.58	-0.28	3.46

# Scientific Drilling International, Inc.

## Survey Report

<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-09-19A - Slot V
<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 697-09-19A	<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)
8,641.00	6.60	106.13	8,125.06	-416.05	2,582.07	2,615.25	1.80	-1.76	-2.86
8,735.00	4.84	116.75	8,218.59	-419.34	2,590.81	2,624.41	2.18	-1.87	11.30
8,829.00	4.22	117.38	8,312.30	-422.71	2,597.42	2,631.50	0.66	-0.66	0.67
8,924.00	4.48	115.97	8,407.03	-425.94	2,603.86	2,638.39	0.30	0.27	-1.48
9,019.00	4.31	124.76	8,501.75	-429.60	2,610.13	2,645.19	0.73	-0.18	9.25
9,113.00	3.78	124.50	8,595.51	-433.37	2,615.58	2,651.20	0.56	-0.56	-0.28
9,208.00	3.17	138.82	8,690.34	-437.12	2,619.89	2,656.08	1.11	-0.64	15.07
9,302.00	1.93	155.35	8,784.25	-440.52	2,622.26	2,658.99	1.52	-1.32	17.59
9,397.00	1.93	161.06	8,879.19	-443.49	2,623.45	2,660.66	0.20	0.00	6.01
9,491.00	1.85	187.85	8,973.14	-446.49	2,623.76	2,661.47	0.94	-0.09	28.50
<b>Last Production MWD</b>									
9,570.00	1.85	187.85	9,052.10	-449.01	2,623.41	2,661.56	0.00	0.00	0.00
<b>Projection to TD - BHL = 633386.51, 1230684.42</b>									

### Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
175.00	175.00	0.87	0.37	First Gyro Survey
725.00	722.54	-2.19	42.71	Last Gyro Survey
800.00	796.01	-2.79	57.74	First Surface MWD
2,633.00	2,472.85	-144.65	771.58	Last Surface MWD
2,781.00	2,603.90	-160.92	838.38	First Production MWD
9,491.00	8,973.14	-446.49	2,623.76	Last Production MWD
9,570.00	9,052.10	-449.01	2,623.41	Projection to TD
9,570.00	9,052.10	-449.01	2,623.41	BHL = 633386.51, 1230684.42

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