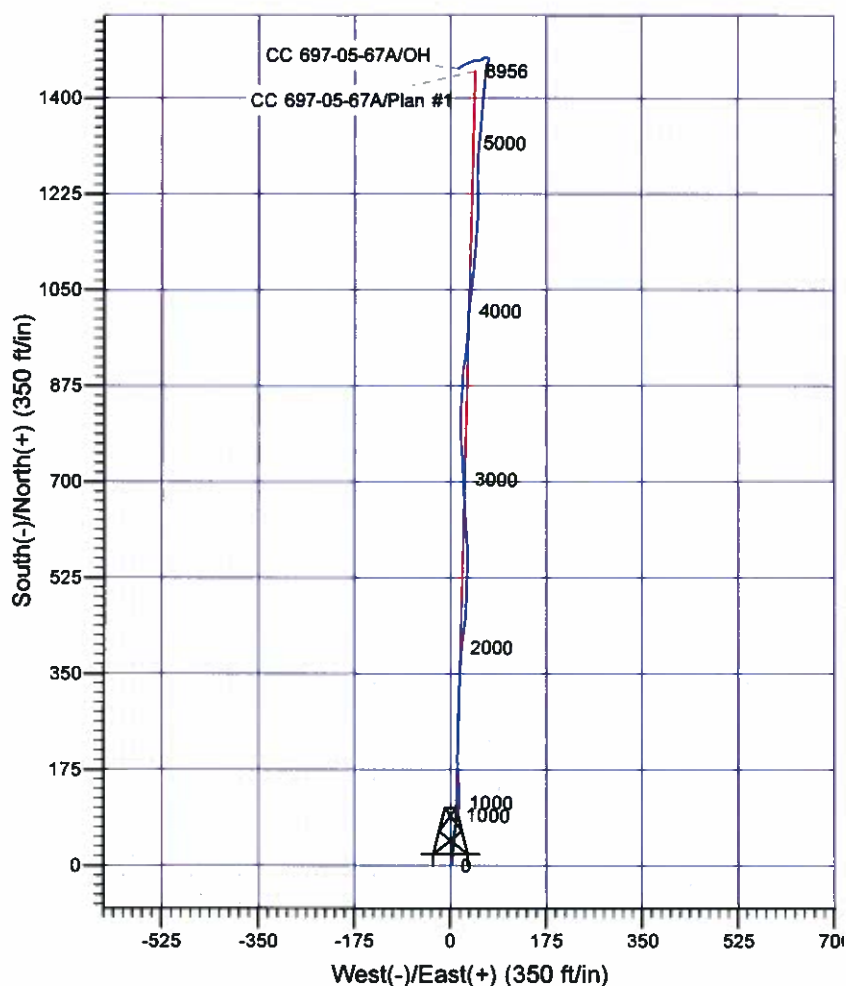
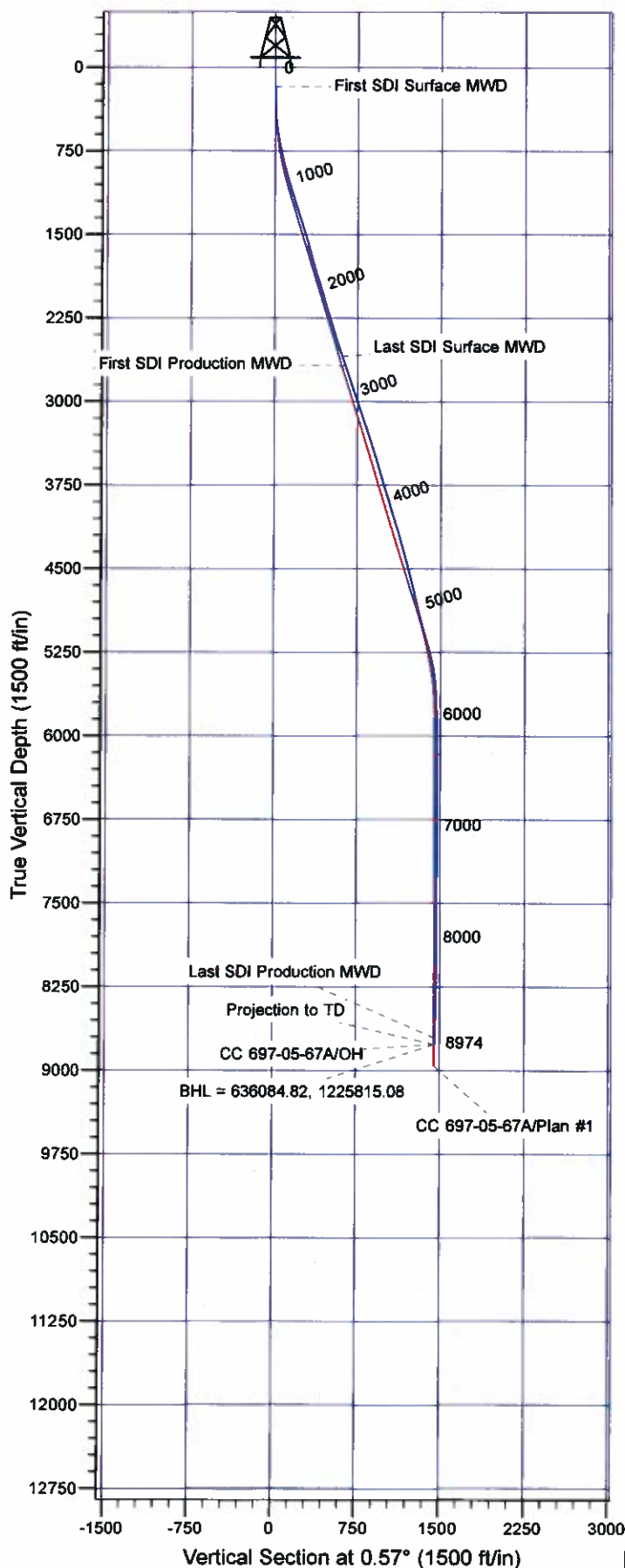




# Scientific Drilling

Company: OXY USA KMAI  
 Project: Garfield County, CO NAD27  
 Site: Cascade Creek 697-08A Pad  
 Well: CC 697-05-67A  
 Wellbore: OH  
 Design: OH



## Well Details: CC 697-05-67A

+N/-S	+E/-W	TVD Reference: GL 8401' & RKB 30' @ 8431.00ft (H&P Rig)	North	East	Latitude	Longitude	Slot
0.00	0.00	634632.21	1225756.69	39° 32' 37.538 N	108° 14' 44.891 W	G	

## REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well CC 697-05-67A - Slot G, True North  
 Vertical (TVD) Reference: GL 8401' & RKB 30' @ 8431.00ft (H&P Rig)  
 Section (VS) Reference: Slot - G(0.00N, 0.00E)  
 Measured Depth Reference: GL 8401' & RKB 30' @ 8431.00ft (H&P Rig)  
 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, June 21 2012  
 Created By: Janie Collins

# **OXY USA RMAT**

**Garfield County, CO NAD27  
Cascade Creek 697-08A Pad  
CC 697-05-67A - Slot G**

**OH**

**Design: OH**

## **Standard Survey Report**

**21 June, 2012**

# Scientific Drilling International

## Survey Report

<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-05-67A - Slot G
<b>Project:</b>	Garfield County, CO NAD27	<b>TVD Reference:</b>	GL 8401' & RKB 30' @ 8431.00ft (H&P Rig)
<b>Site:</b>	Cascade Creek 697-08A Pad	<b>MD Reference:</b>	GL 8401' & RKB 30' @ 8431.00ft (H&P Rig)
<b>Well:</b>	CC 697-05-67A	<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 697-08A Pad, Sec 8 T6S R97W		
<b>Site Position:</b>		<b>Northing:</b>	635,765.16 usft
<b>From:</b>	Lat/Long	<b>Easting:</b>	1,225,748.33 usft
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13.200 in
		<b>Latitude:</b>	39° 32' 48.728 N
		<b>Longitude:</b>	108° 14' 45.434 W
		<b>Grid Convergence:</b>	-1.73 °

<b>Well</b>	CC 697-05-67A - Slot G		
<b>Well Position</b>	+N/-S	0.00 ft	<b>Northing:</b> 634,632.22 usft
	+E/-W	0.00 ft	<b>Easting:</b> 1,225,756.69 usft
<b>Position Uncertainty</b>	0.00 ft	<b>Wellhead Elevation:</b>	ft
		<b>Latitude:</b>	39° 32' 37.538 N
		<b>Longitude:</b>	108° 14' 44.891 W
		<b>Ground Level:</b>	8,401.00 ft

<b>Wellbore</b>	OH		
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>
	IGRF2010	2011/05/24	10.48
			<b>Dip Angle (°)</b> 65.73
			<b>Field Strength (nT)</b> 52,230

<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>
	0.00	0.00	0.00
			<b>Direction (°)</b> 0.57

<b>Survey Program</b>	<b>Date</b>	2012/06/21		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
175.00	2,683.00	Survey #1 - Surface MWD (OH)	MWD-SDI	MWD - Standard ISCWSA
2,772.00	8,974.00	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
175.00	0.62	30.65	175.00	0.81	0.48	0.82	0.35	0.35	0.00
<b>First SDI Surface MWD</b>									
235.00	1.05	21.60	234.99	1.60	0.85	1.61	0.75	0.72	-15.08
327.00	1.39	35.66	326.97	3.30	1.81	3.31	0.49	0.37	15.28
420.00	3.03	8.34	419.90	6.64	2.83	6.67	2.05	1.76	-29.38
511.00	6.51	359.11	510.57	14.18	3.09	14.21	3.90	3.82	-10.14
601.00	9.67	358.94	599.66	26.85	2.88	26.87	3.51	3.51	-0.19
691.00	10.73	7.55	688.25	42.71	3.84	42.75	2.06	1.18	9.57
783.00	12.93	10.80	778.29	61.31	6.89	61.38	2.50	2.39	3.53

# Scientific Drilling International

## Survey Report

<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-05-67A - Slot G
<b>Project:</b>	Garfield County, CO NAD27	<b>TVD Reference:</b>	GL 8401' & RKB 30' @ 8431.00ft (H&P Rig)
<b>Site:</b>	Cascade Creek 697-08A Pad	<b>MD Reference:</b>	GL 8401' & RKB 30' @ 8431.00ft (H&P Rig)
<b>Well:</b>	CC 697-05-67A	<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)
874.00	15.21	11.15	866.55	83.03	11.11	83.14	2.51	2.51	0.38
964.00	16.09	5.35	953.22	107.03	14.55	107.17	1.99	0.98	-6.44
1,058.00	16.53	357.70	1,043.45	133.37	15.23	133.51	2.33	0.47	-8.14
1,153.00	18.55	355.42	1,134.03	161.94	13.48	162.06	2.25	2.13	-2.40
1,247.00	18.20	359.73	1,223.24	191.52	12.22	191.63	1.49	-0.37	4.59
1,342.00	17.06	1.31	1,313.77	220.29	12.47	220.40	1.30	-1.20	1.66
1,437.00	18.20	1.13	1,404.31	249.06	13.08	249.17	1.20	1.20	-0.19
1,531.00	17.23	2.36	1,493.85	277.64	13.94	277.77	1.11	-1.03	1.31
1,626.00	15.12	2.10	1,585.09	304.09	14.98	304.22	2.22	-2.22	-0.27
1,720.00	14.68	2.36	1,675.93	328.24	15.92	328.38	0.47	-0.47	0.28
1,815.00	16.88	2.63	1,767.34	354.05	17.04	354.20	2.32	2.32	0.28
1,909.00	17.59	4.47	1,857.12	381.84	18.78	382.01	0.95	0.76	1.96
2,004.00	17.32	6.49	1,947.75	410.20	21.49	410.40	0.70	-0.28	2.13
2,099.00	17.50	9.57	2,038.40	438.34	25.47	438.57	0.99	0.19	3.24
2,193.00	16.44	2.01	2,128.31	465.57	28.28	465.83	2.60	-1.13	-8.04
2,288.00	16.00	2.10	2,219.53	492.09	29.24	492.36	0.46	-0.46	0.09
2,382.00	17.76	0.61	2,309.48	519.37	29.86	519.65	1.93	1.87	-1.59
2,477.00	18.82	2.36	2,399.68	549.17	30.65	549.45	1.26	1.12	1.84
2,571.00	18.38	356.74	2,488.78	579.12	30.43	579.40	1.96	-0.47	-5.98
2,666.00	18.99	356.30	2,578.77	609.50	28.58	609.75	0.66	0.64	-0.46
2,683.00	19.08	355.95	2,594.84	615.03	28.21	615.28	0.86	0.53	-2.06
<b>Last SDI Surface MWD</b>									
2,772.00	19.39	357.15	2,678.87	644.30	26.44	644.53	0.56	0.35	1.35
<b>First SDI Production MWD</b>									
2,867.00	17.11	356.00	2,769.09	673.99	24.68	674.21	2.43	-2.40	-1.21
2,961.00	17.67	359.64	2,858.79	702.05	23.63	702.25	1.30	0.60	3.87
3,056.00	17.85	354.72	2,949.27	730.97	22.20	731.16	1.59	0.19	-5.18
3,150.00	19.70	357.09	3,038.27	761.14	20.07	761.30	2.13	1.97	2.52
3,245.00	19.26	356.21	3,127.83	792.77	18.22	792.91	0.56	-0.46	-0.93
3,339.00	19.35	4.30	3,216.56	823.77	18.36	823.91	2.84	0.10	8.61
3,434.00	18.29	3.77	3,306.48	854.34	20.52	854.50	1.13	-1.12	-0.56
3,529.00	16.97	1.66	3,397.01	883.08	21.91	883.25	1.54	-1.39	-2.22
3,623.00	17.41	9.31	3,486.83	910.67	24.58	910.87	2.45	0.47	8.14
3,717.00	15.92	7.46	3,576.88	937.33	28.53	937.57	1.68	-1.59	-1.97
3,812.00	17.76	3.59	3,667.80	964.71	31.13	964.98	2.27	1.94	-4.07
3,906.00	16.44	1.66	3,757.65	992.32	32.41	992.59	1.53	-1.40	-2.05
4,001.00	17.41	7.28	3,848.54	1,019.86	34.60	1,020.15	2.00	1.02	5.92
4,095.00	16.09	6.05	3,938.55	1,046.76	37.76	1,047.09	1.45	-1.40	-1.31
4,189.00	18.20	6.58	4,028.36	1,074.30	40.81	1,074.65	2.25	2.24	0.56
4,284.00	16.71	4.82	4,118.99	1,102.65	43.66	1,103.03	1.66	-1.57	-1.85
4,378.00	16.27	4.91	4,209.12	1,129.24	45.92	1,129.64	0.47	-0.47	0.10
4,473.00	14.77	3.86	4,300.65	1,154.58	47.88	1,155.00	1.61	-1.58	-1.11
4,567.00	14.42	4.03	4,391.62	1,178.21	49.50	1,178.64	0.38	-0.37	0.18



# Scientific Drilling International

## Survey Report

<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-05-67A - Slot G
<b>Project:</b>	Garfield County, CO NAD27	<b>TVD Reference:</b>	GL 8401' & RKB 30' @ 8431.00ft (H&P Rig)
<b>Site:</b>	Cascade Creek 697-08A Pad	<b>MD Reference:</b>	GL 8401' & RKB 30' @ 8431.00ft (H&P Rig)
<b>Well:</b>	CC 697-05-67A	<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)
4,662.00	16.09	0.61	4,483.27	1,203.17	50.48	1,203.62	2.00	1.76	-3.60
4,756.00	13.89	357.79	4,574.07	1,227.48	50.18	1,227.92	2.47	-2.34	-3.00
4,851.00	13.81	358.32	4,666.31	1,250.21	49.41	1,250.63	0.16	-0.08	0.56
4,945.00	12.57	3.33	4,757.83	1,271.63	49.67	1,272.06	1.79	-1.32	5.33
5,040.00	12.93	4.03	4,850.49	1,292.55	51.02	1,293.00	0.41	0.38	0.74
5,134.00	14.77	4.65	4,941.75	1,314.99	52.73	1,315.45	1.96	1.96	0.66
5,229.00	16.97	5.44	5,033.12	1,340.86	55.03	1,341.35	2.33	2.32	0.83
5,323.00	16.36	5.35	5,123.17	1,367.70	57.56	1,368.21	0.65	-0.65	-0.10
5,418.00	15.48	3.68	5,214.53	1,393.68	59.62	1,394.20	1.04	-0.93	-1.76
5,512.00	12.75	6.76	5,305.68	1,416.50	61.65	1,417.04	3.01	-2.90	3.28
5,607.00	9.41	6.14	5,398.90	1,434.64	63.72	1,435.20	3.52	-3.52	-0.65
5,702.00	7.21	2.63	5,492.90	1,448.31	64.82	1,448.89	2.38	-2.32	-3.69
5,796.00	4.57	12.56	5,586.40	1,457.86	65.90	1,458.45	3.00	-2.81	10.56
5,891.00	2.90	30.05	5,681.19	1,463.64	67.93	1,464.24	2.11	-1.76	18.41
5,985.00	1.32	18.80	5,775.13	1,466.72	69.47	1,467.34	1.73	-1.68	-11.97
6,080.00	0.97	12.65	5,870.11	1,468.54	70.00	1,469.17	0.39	-0.37	-6.47
6,175.00	0.79	17.39	5,965.10	1,469.95	70.37	1,470.58	0.20	-0.19	4.99
6,269.00	0.70	1.75	6,059.09	1,471.15	70.58	1,471.77	0.24	-0.10	-16.64
6,363.00	0.70	323.60	6,153.08	1,472.18	70.26	1,472.81	0.49	0.00	-40.59
6,458.00	0.53	289.77	6,248.08	1,472.80	69.50	1,473.42	0.41	-0.18	-35.61
6,553.00	0.79	288.27	6,343.07	1,473.15	68.47	1,473.76	0.27	0.27	-1.58
6,647.00	1.41	271.04	6,437.05	1,473.37	66.69	1,473.97	0.74	0.66	-18.33
6,742.00	1.67	263.22	6,532.02	1,473.23	64.15	1,473.80	0.35	0.27	-8.23
6,837.00	2.02	267.62	6,626.97	1,473.00	61.10	1,473.53	0.40	0.37	4.63
6,931.00	0.35	156.52	6,720.95	1,472.67	59.56	1,473.19	2.31	-1.78	-118.19
7,025.00	0.44	113.81	6,814.95	1,472.26	60.01	1,472.78	0.32	0.10	-45.44
7,120.00	0.88	216.54	6,909.94	1,471.53	59.91	1,472.05	1.12	0.46	108.14
7,215.00	0.09	273.33	7,004.94	1,470.94	59.40	1,471.46	0.88	-0.83	59.78
7,309.00	0.18	268.23	7,098.94	1,470.94	59.18	1,471.46	0.10	0.10	-5.43
7,404.00	0.53	245.47	7,193.94	1,470.76	58.63	1,471.27	0.39	0.37	-23.96
7,498.00	1.14	246.00	7,287.93	1,470.20	57.38	1,470.69	0.65	0.65	0.56
7,593.00	1.67	253.20	7,382.90	1,469.41	55.19	1,469.89	0.59	0.56	7.58
7,687.00	2.11	251.36	7,476.85	1,468.46	52.24	1,468.91	0.47	0.47	-1.96
7,782.00	1.14	279.13	7,571.81	1,468.05	49.65	1,468.47	1.29	-1.02	29.23
7,876.00	1.41	286.57	7,665.79	1,468.53	47.62	1,468.93	0.34	0.29	7.91
7,971.00	1.76	268.23	7,760.75	1,468.82	45.04	1,469.19	0.64	0.37	-19.31
8,066.00	0.26	106.25	7,855.74	1,468.71	43.79	1,469.08	2.11	-1.58	-170.51
8,119.31	0.14	177.80	7,909.05	1,468.62	43.91	1,468.98	0.47	-0.23	134.23
<b>CC 697-05-67A Target</b>									
8,160.00	0.26	224.20	7,949.74	1,468.50	43.84	1,468.86	0.47	0.30	114.02
8,255.00	1.41	243.36	8,044.73	1,467.82	42.65	1,468.17	1.23	1.21	20.17
8,349.00	1.23	249.78	8,138.70	1,466.96	40.67	1,467.29	0.25	-0.19	6.83
8,444.00	1.58	247.58	8,233.67	1,466.10	38.50	1,466.41	0.37	0.37	-2.32
8,538.00	2.29	251.53	8,327.62	1,465.01	35.52	1,465.30	0.77	0.76	4.20

# Scientific Drilling International

## Survey Report

<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-05-67A - Slot G
<b>Project:</b>	Garfield County, CO NAD27	<b>TVD Reference:</b>	GL 8401' & RKB 30' @ 8431.00ft (H&P Rig)
<b>Site:</b>	Cascade Creek 697-08A Pad	<b>MD Reference:</b>	GL 8401' & RKB 30' @ 8431.00ft (H&P Rig)
<b>Well:</b>	CC 697-05-67A	<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)
8,633.00	2.90	246.61	8,422.52	1,463.46	31.51	1,463.70	0.68	0.64	-5.18
8,727.00	3.17	244.59	8,516.39	1,461.40	26.98	1,461.60	0.31	0.29	-2.15
8,822.00	3.52	238.00	8,611.23	1,458.73	22.14	1,458.88	0.55	0.37	-6.94
8,916.00	3.43	236.33	8,705.05	1,455.64	17.35	1,455.74	0.14	-0.10	-1.78
<b>Last SDI Production MWD</b>									
8,974.00	3.43	236.33	8,762.95	1,453.72	14.46	1,453.79	0.00	0.00	0.00
<b>Projection to TD - BHL = 636084.82, 1225815.08</b>									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
175.00	175.00	0.81	0.48	First SDI Surface MWD
2,683.00	2,594.84	615.03	28.21	Last SDI Surface MWD
2,772.00	2,678.87	644.30	26.44	First SDI Production MWD
8,916.00	8,705.05	1,455.64	17.35	Last SDI Production MWD
8,974.00	8,762.95	1,453.72	14.46	Projection to TD
8,974.00	8,762.95	1,453.72	14.46	BHL = 636084.82, 1225815.08

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