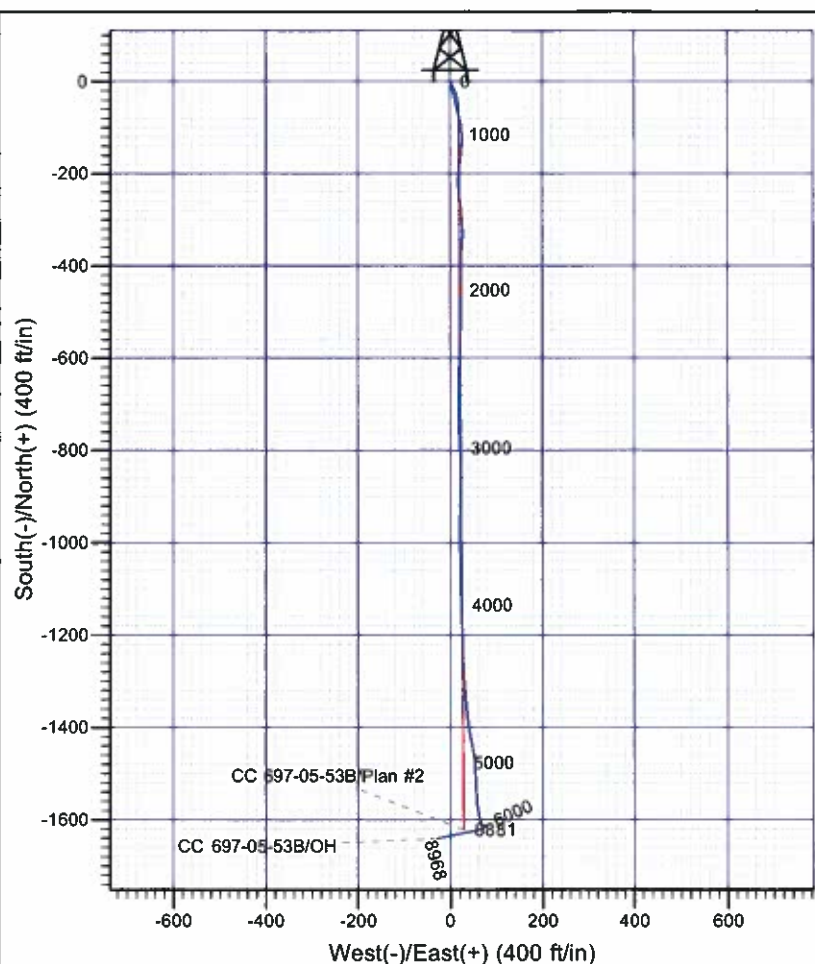
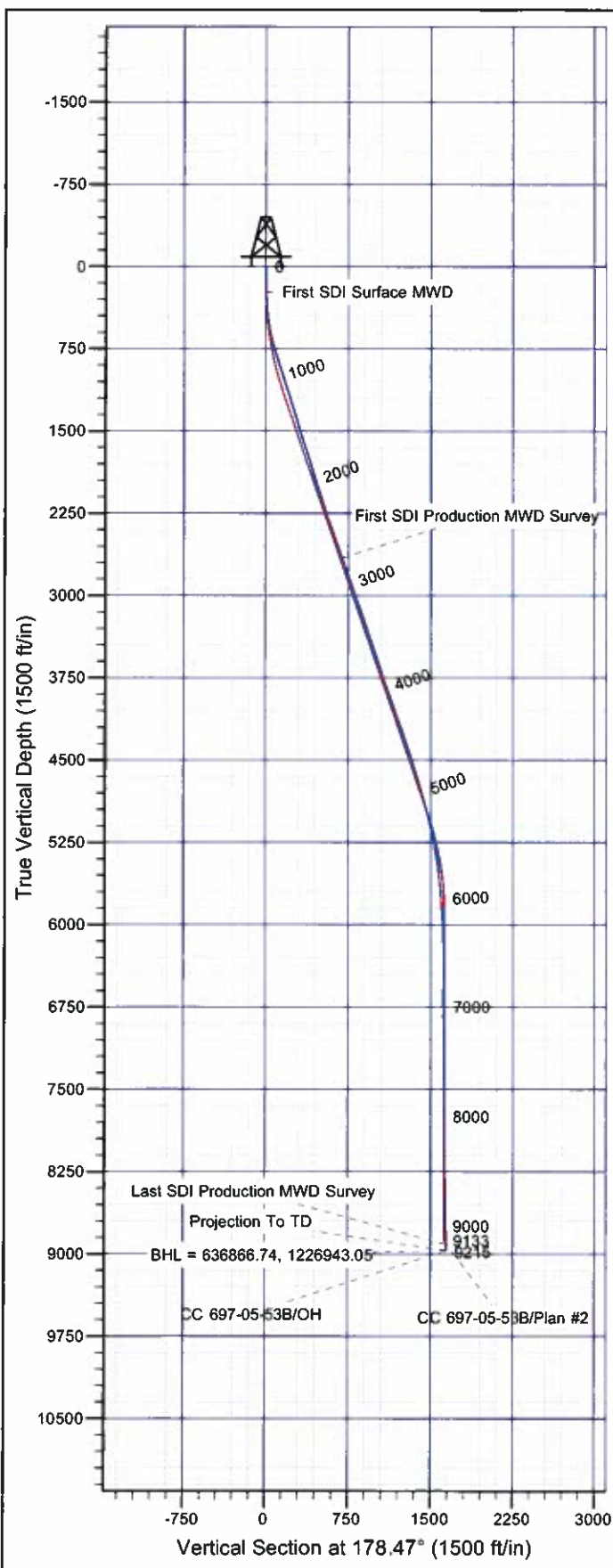




# Scientific Drilling

Company: OXY USA RMAT  
 Project: Garfield County, CO NAD27  
 Site: Cascade Creek 697-05C Pad  
 Well: CC 697-05-53B  
 Wellbore: OH  
 Design: OH



Well Details: CC 697-05-53B

TVD Reference: GL 8423' & RKB 30' @ 8453.00ft (H&P 353) Level: 8423.00  
 +N/-S +E/-W Northing Easting Latitude Longitude Slot  
 0.00 0.00 638505.58 1227019.76 39° 33' 16.181 N 108° 14' 30.267 W F

## REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well CC 697-05-53B - Slot F, True North  
 Vertical (TVD) Reference: GL 8423' & RKB 30' @ 8453.00ft (H&P 353)  
 Section (VS) Reference: Slot - F(0.00N, 0.00E)  
 Measured Depth Reference: GL 8423' & RKB 30' @ 8453.00ft (H&P 353)  
 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

13:14, February 06 2012  
 Created By: Rex Hall

# **OXY USA RMAT**

**Garfield County, CO NAD27  
Cascade Creek 697-05C Pad  
CC 697-05-53B - Slot F**

**OH**

**Design: OH**

## **Standard Survey Report**

**06 February, 2012**

# Scientific Drilling International

## Survey Report

<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-05-53B - Slot F
<b>Project:</b>	Garfield County, CO NAD27	<b>TVD Reference:</b>	GL 8423' & RKB 30' @ 8453.00ft (H&P 353)
<b>Site:</b>	Cascade Creek 697-05C Pad	<b>MD Reference:</b>	GL 8423' & RKB 30' @ 8453.00ft (H&P 353)
<b>Well:</b>	CC 697-05-53B	<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 697-05C Pad, Sec. 5 T6S R97W		
<b>Site Position:</b>		<b>Northing:</b>	637,463.43 usft
<b>From:</b>	Map	<b>Easting:</b>	1,226,150.07 usft
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	0.000 in
		<b>Latitude:</b>	39° 33' 5.626 N
		<b>Longitude:</b>	108° 14' 40.963 W
		<b>Grid Convergence:</b>	-1.73 °

<b>Well</b>	CC 697-05-53B - Slot F		
<b>Well Position</b>	+N/-S	0.00 ft	<b>Northing:</b> 638,505.58 usft
	+E/-W	0.00 ft	<b>Easting:</b> 1,227,019.76 usft
<b>Position Uncertainty</b>	0.00 ft	<b>Wellhead Elevation:</b>	ft
		<b>Latitude:</b>	39° 33' 16.181 N
		<b>Longitude:</b>	108° 14' 30.267 W
		<b>Ground Level:</b>	8,423.00 ft

<b>Wellbore</b>	OH		
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>
	IGRF2005-10	12/16/10	10.51
			<b>Dip Angle (°)</b>
			65.77
			<b>Field Strength (nT)</b>
			52,312

<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>
			178.47

<b>Survey Program</b>	<b>Date</b>	02/06/12		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
234.00	2,657.00	Survey #1 - Surface MWD (OH)	MWD-SDI	MWD - Standard ISCWSA
2,763.00	9,215.00	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
234.00	2.30	164.35	233.94	-4.52	1.27	4.55	0.98	0.98	0.00
<b>First SDI Surface MWD</b>									
324.00	2.60	168.38	323.85	-8.26	2.17	8.32	0.38	0.33	4.48
415.00	5.44	162.19	414.62	-14.39	3.90	14.49	3.15	3.12	-6.80
505.00	9.11	166.38	503.88	-25.38	6.88	25.55	4.12	4.08	4.66
594.00	11.91	168.10	591.38	-41.22	10.44	41.48	3.17	3.15	1.93
685.00	14.86	167.28	679.90	-61.79	14.94	62.17	3.25	3.24	-0.90
775.00	17.32	166.05	766.37	-86.06	20.72	86.58	2.76	2.73	-1.37
865.00	17.94	174.67	852.16	-112.86	25.23	113.50	2.98	0.69	9.58

# Scientific Drilling International

## Survey Report

<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-05-53B - Slot F
<b>Project:</b>	Garfield County, CO NAD27	<b>TVD Reference:</b>	GL 8423' & RKB 30' @ 8453.00ft (H&P 353)
<b>Site:</b>	Cascade Creek 697-05C Pad	<b>MD Reference:</b>	GL 8423' & RKB 30' @ 8453.00ft (H&P 353)
<b>Well:</b>	CC 697-05-53B	<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)
955.00	17.15	185.65	937.99	-139.88	25.22	140.50	3.78	-0.88	12.20
1,050.00	19.26	189.87	1,028.24	-169.26	21.15	169.76	2.62	2.22	4.44
1,145.00	18.11	186.27	1,118.23	-199.37	16.85	199.75	1.71	-1.21	-3.79
1,239.00	16.44	174.93	1,208.01	-227.15	16.43	227.51	3.99	-1.78	-12.06
1,334.00	18.64	171.41	1,298.59	-255.56	19.89	256.00	2.57	2.32	-3.71
1,428.00	15.92	174.58	1,388.34	-283.25	23.35	283.77	3.06	-2.89	3.37
1,523.00	15.56	174.32	1,479.78	-308.90	25.84	309.48	0.39	-0.38	-0.27
1,617.00	18.20	183.72	1,569.74	-336.11	26.14	336.68	4.03	2.81	10.00
1,712.00	19.52	184.77	1,659.64	-366.73	23.85	367.24	1.43	1.39	1.11
1,806.00	17.23	180.56	1,748.84	-396.31	22.41	396.76	2.81	-2.44	-4.48
1,901.00	17.23	180.29	1,839.58	-424.45	22.20	424.89	0.08	0.00	-0.28
1,996.00	17.32	180.38	1,930.29	-452.66	22.04	453.08	0.10	0.09	0.09
2,090.00	17.41	179.68	2,020.01	-480.71	22.02	481.13	0.24	0.10	-0.74
2,185.00	17.32	180.82	2,110.68	-509.06	21.90	509.47	0.37	-0.09	1.20
2,279.00	16.71	180.20	2,200.57	-536.57	21.65	536.95	0.68	-0.65	-0.66
2,373.00	18.91	181.52	2,290.06	-565.31	21.20	565.68	2.38	2.34	1.40
2,468.00	19.61	183.19	2,379.74	-596.62	19.91	596.94	0.94	0.74	1.76
2,562.00	19.08	181.70	2,468.43	-627.72	18.57	628.00	0.77	-0.56	-1.59
2,657.00	19.43	181.61	2,558.12	-659.04	17.67	659.28	0.37	0.37	-0.09
2,763.00	20.15	180.56	2,657.86	-694.92	16.99	695.13	0.76	0.68	-0.99
<b>First SDI Production MWD Survey</b>									
2,857.00	20.76	178.88	2,745.93	-727.77	17.16	727.97	0.90	0.65	-1.79
2,952.00	19.70	177.30	2,835.07	-760.60	18.25	760.81	1.26	-1.12	-1.66
3,046.00	18.03	175.02	2,924.02	-790.92	20.26	791.18	1.94	-1.78	-2.43
3,140.00	18.29	176.78	3,013.34	-820.14	22.35	820.44	0.65	0.28	1.87
3,235.00	19.61	180.99	3,103.19	-850.96	22.91	851.27	2.00	1.39	4.43
3,330.00	19.61	182.75	3,192.68	-882.82	21.87	883.09	0.62	0.00	1.85
3,424.00	19.35	180.91	3,281.30	-914.15	20.86	914.38	0.71	-0.28	-1.96
3,519.00	18.99	181.08	3,371.03	-945.34	20.32	945.55	0.38	-0.38	0.18
3,614.00	18.64	180.20	3,460.96	-975.98	19.98	976.16	0.47	-0.37	-0.93
3,708.00	17.67	179.76	3,550.28	-1,005.27	19.99	1,005.44	1.04	-1.03	-0.47
3,803.00	16.53	178.97	3,641.07	-1,033.20	20.29	1,033.37	1.22	-1.20	-0.83
3,897.00	18.11	178.62	3,730.81	-1,061.17	20.88	1,061.35	1.68	1.68	-0.37
3,992.00	19.79	177.92	3,820.66	-1,092.01	21.82	1,092.20	1.78	1.77	-0.74
4,086.00	19.26	178.27	3,909.25	-1,123.41	22.87	1,123.62	0.58	-0.56	0.37
4,181.00	18.11	177.92	3,999.24	-1,153.83	23.88	1,154.05	1.22	-1.21	-0.37
4,275.00	20.14	178.89	4,088.05	-1,184.61	24.72	1,184.85	2.19	2.16	1.03
4,369.00	20.31	177.30	4,176.26	-1,217.08	25.80	1,217.34	0.61	0.18	-1.69
4,464.00	19.26	178.01	4,265.65	-1,249.21	27.12	1,249.49	1.13	-1.11	0.75
4,559.00	17.85	178.36	4,355.71	-1,279.43	28.08	1,279.72	1.49	-1.48	0.37
4,653.00	18.38	173.96	4,445.05	-1,308.57	30.05	1,308.90	1.56	0.56	-4.68
4,748.00	18.29	175.81	4,535.23	-1,338.33	32.72	1,338.73	0.62	-0.09	1.95
4,843.00	16.09	174.75	4,625.98	-1,366.31	35.01	1,366.76	2.34	-2.32	-1.12



# Scientific Drilling International

## Survey Report

<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-05-53B - Slot F
<b>Project:</b>	Garfield County, CO NAD27	<b>TVD Reference:</b>	GL 8423' & RKB 30' @ 8453.00ft (H&P 353)
<b>Site:</b>	Cascade Creek 697-05C Pad	<b>MD Reference:</b>	GL 8423' & RKB 30' @ 8453.00ft (H&P 353)
<b>Well:</b>	CC 697-05-53B	<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)
4,937.00	16.71	172.65	4,716.16	-1,392.68	37.93	1,393.20	0.91	0.66	-2.23
5,032.00	16.27	168.69	4,807.25	-1,419.28	42.29	1,419.90	1.27	-0.46	-4.17
5,126.00	15.39	167.37	4,897.68	-1,444.36	47.60	1,445.12	1.01	-0.94	-1.40
5,221.00	13.72	174.75	4,989.64	-1,467.89	51.39	1,468.73	2.62	-1.76	7.77
5,315.00	12.57	175.98	5,081.18	-1,489.19	53.13	1,490.08	1.26	-1.22	1.31
5,410.00	11.96	177.65	5,174.01	-1,509.34	54.25	1,510.25	0.74	-0.64	1.76
5,504.00	11.26	178.53	5,266.08	-1,528.24	54.89	1,529.16	0.77	-0.74	0.94
5,599.00	9.50	175.55	5,359.53	-1,545.33	55.74	1,546.27	1.94	-1.85	-3.14
5,693.00	8.97	177.48	5,452.31	-1,560.39	56.66	1,561.34	0.65	-0.56	2.05
5,788.00	5.80	172.03	5,546.51	-1,572.54	57.65	1,573.52	3.41	-3.34	-5.74
5,882.00	5.10	166.32	5,640.08	-1,581.31	59.30	1,582.33	0.94	-0.74	-6.07
5,977.00	4.40	167.37	5,734.76	-1,588.97	61.09	1,590.03	0.74	-0.74	1.11
6,071.00	3.87	173.79	5,828.51	-1,595.64	62.22	1,596.73	0.75	-0.56	6.83
6,166.00	5.54	162.63	5,923.19	-1,603.20	63.94	1,604.34	2.00	1.76	-11.75
6,260.00	3.43	153.75	6,016.90	-1,610.06	66.54	1,611.26	2.36	-2.24	-9.45
6,355.00	1.58	109.63	6,111.81	-1,613.05	69.03	1,614.31	2.68	-1.95	-46.44
6,449.00	1.67	77.02	6,205.78	-1,613.17	71.59	1,614.51	0.97	0.10	-34.69
6,543.00	1.23	74.30	6,299.75	-1,612.59	73.89	1,613.99	0.47	-0.47	-2.89
6,638.00	0.44	125.36	6,394.74	-1,612.53	75.17	1,613.96	1.07	-0.83	53.75
6,732.00	0.18	288.40	6,488.74	-1,612.69	75.33	1,614.13	0.65	-0.28	173.45
6,827.00	0.62	242.96	6,583.73	-1,612.88	74.73	1,614.30	0.54	0.46	-47.83
6,921.00	1.06	224.68	6,677.72	-1,613.73	73.66	1,615.12	0.54	0.47	-19.45
7,016.00	1.23	222.83	6,772.70	-1,615.10	72.35	1,616.45	0.18	0.18	-1.95
7,111.00	0.79	239.71	6,867.69	-1,616.18	71.09	1,617.50	0.55	-0.46	17.77
7,205.00	0.70	207.27	6,961.68	-1,617.01	70.27	1,618.31	0.45	-0.10	-34.51
7,300.00	0.18	126.59	7,056.68	-1,617.62	70.12	1,618.91	0.73	-0.55	-84.93
7,394.00	0.44	175.37	7,150.68	-1,618.07	70.27	1,619.37	0.37	0.28	51.89
7,489.00	0.53	204.81	7,245.67	-1,618.83	70.12	1,620.12	0.28	0.09	30.99
7,583.00	1.32	215.02	7,339.66	-1,620.11	69.31	1,621.38	0.86	0.84	10.86
7,678.00	0.97	247.44	7,434.64	-1,621.32	67.94	1,622.55	0.76	-0.37	34.13
7,772.00	0.97	257.55	7,528.63	-1,621.79	66.43	1,622.99	0.18	0.00	10.76
7,867.00	1.23	273.66	7,623.61	-1,621.90	64.63	1,623.05	0.42	0.27	16.96
7,961.00	1.23	260.10	7,717.59	-1,622.01	62.63	1,623.10	0.31	0.00	-14.43
8,056.00	1.58	267.39	7,812.56	-1,622.24	60.31	1,623.28	0.41	0.37	7.67
8,150.00	2.55	255.79	7,906.50	-1,622.82	56.99	1,623.76	1.12	1.03	-12.34
8,244.00	3.17	262.29	8,000.38	-1,623.68	52.39	1,624.50	0.74	0.66	6.91
8,339.00	3.61	259.31	8,095.22	-1,624.59	46.85	1,625.26	0.50	0.46	-3.14
8,433.00	3.69	258.51	8,189.03	-1,625.74	40.97	1,626.25	0.10	0.09	-0.85
8,528.00	4.57	255.61	8,283.78	-1,627.29	34.31	1,627.62	0.95	0.93	-3.05
8,623.00	4.92	257.81	8,378.45	-1,629.09	26.67	1,629.22	0.42	0.37	2.32
8,717.00	5.19	255.44	8,472.09	-1,631.01	18.61	1,630.92	0.36	0.29	-2.52
8,812.00	5.45	262.56	8,566.68	-1,632.67	9.98	1,632.36	0.75	0.27	7.49
8,906.00	5.45	258.78	8,660.25	-1,634.12	1.17	1,633.57	0.38	0.00	-4.02
9,001.00	5.72	260.36	8,754.80	-1,635.79	-7.92	1,635.00	0.33	0.28	1.66

# Scientific Drilling International

## Survey Report

<b>Company:</b>	OXY USA RMAT	<b>Local Co-ordinate Reference:</b>	Well CC 697-05-53B - Slot F
<b>Project:</b>	Garfield County, CO NAD27	<b>TVD Reference:</b>	GL 8423' & RKB 30' @ 8453.00ft (H&P 353)
<b>Site:</b>	Cascade Creek 697-05C Pad	<b>MD Reference:</b>	GL 8423' & RKB 30' @ 8453.00ft (H&P 353)
<b>Well:</b>	CC 697-05-53B	<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)
9,095.00	5.54	255.97	8,848.35	-1,637.67	-16.94	1,636.64	0.50	-0.19	-4.67
9,160.00	4.92	254.73	8,913.08	-1,639.17	-22.67	1,637.98	0.97	-0.95	-1.91
<b>Last SDI Production MWD Survey</b>									
9,215.00	4.92	254.73	8,967.88	-1,640.41	-27.22	1,639.10	0.00	0.00	0.00
<b>Projection To TD - BHL = 636866.74, 1226943.05</b>									

### Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
234.00	233.94	-4.52	1.27	First SDI Surface MWD
2,763.00	2,657.86	-694.92	16.99	First SDI Production MWD Survey
9,160.00	8,913.08	-1,639.17	-22.67	Last SDI Production MWD Survey
9,215.00	8,967.88	-1,640.41	-27.22	Projection To TD
9,215.00	8,967.88	-1,640.41	-27.22	BHL = 636866.74, 1226943.05

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