

OXY USA RMAT

**Garfield County, CO NAD27
Cascade Creek 697-05C Pad
CC 697-05-38A - Slot R**

OH

Design: OH

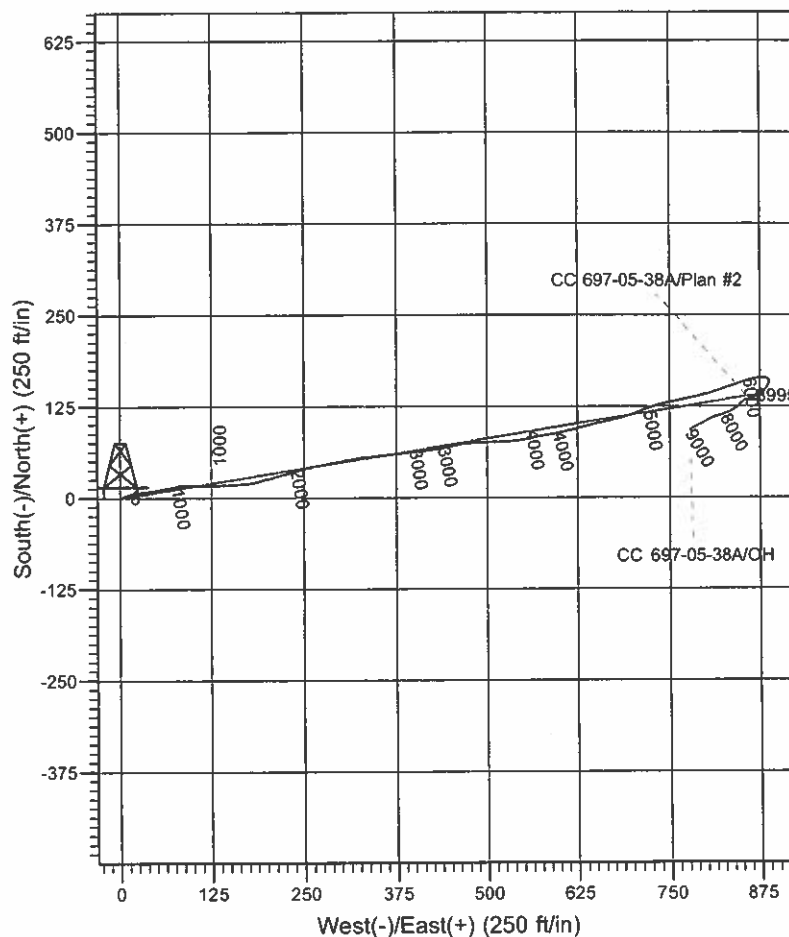
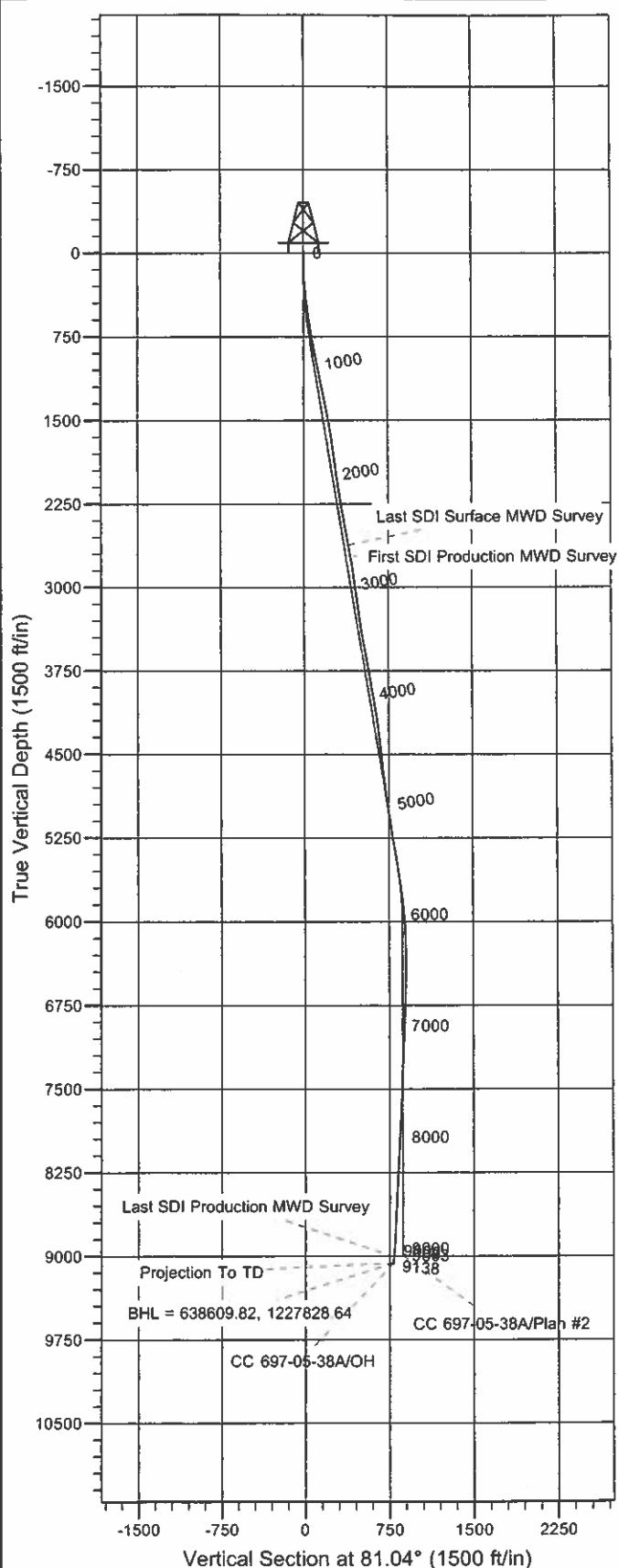
Standard Survey Report

01 December, 2011



Scientific Drilling

Company: OXY USA RMAT
 Project: Garfield County, CO NAD27
 Site: Cascade Creek 697-05C Pad
 Well: CC 697-05-38A
 Wellbore: OH
 Design: OH



Well Details: CC 697-05-38A

TVD Reference: GL 8423' & RKB 30' @ 8453.00ft (H&P 353)		North		East		Latitude		Longitude		Slot	
+N/-S	+E/-W	North	East	North	East	Latitude	Longitude	North	East	North	East
0.00	0.00	638540.14	1227048.40	39° 33' 16.531 N	108° 14' 29.915 W						

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well CC 697-05-38A - Slot R, True North
 Vertical (TVD) Reference: GL 8423' & RKB 30' @ 8453.00ft (H&P 353)
 Section (VS) Reference: Slot - R (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

13:13, December 01 2011
 Created By: Rex Hall

Scientific Drilling International

Survey Report

Company: OXY USA RMAT
 Project: Garfield County, CO NAD27
 Site: Cascade Creek 697-05C Pad
 Well: CC 697-05-38A
 Wellbore: OH
 Design: OH

Local Co-ordinate Reference: Well CC 697-05-38A - Slot R
 TVD Reference: GL 8423' & RKB 30' @ 8453.00ft (H&P 353)
 MD Reference: GL 8423' & RKB 30' @ 8453.00ft (H&P 353)
 North Reference: True
 Survey Calculation Method: Minimum Curvature
 Database: Rockies Compass Server

Project: Garfield County, CO NAD27
 Map System: US State Plane 1927 (Exact solution)
 Geo Datum: NAD 1927 (NADCON CONUS)
 Map Zone: Colorado Central 502
 System Datum: Mean Sea Level

Site: Cascade Creek 697-05C Pad, Sec. 5 T6S R97W

Site Position: Northing: 637,463.43 usft Latitude: 39° 33' 5.626 N
 From: Map Easting: 1,226,150.07 usft Longitude: 108° 14' 40.963 W
 Position Uncertainty: 0.00 ft Slot Radius: 0.000 in Grid Convergence: -1.73 °

Well: CC 697-05-38A - Slot R

Well Position: +N/-S 0.00 ft Northing: 638,540.14 usft Latitude: 39° 33' 16.531 N
 +E/-W 0.00 ft Easting: 1,227,048.40 usft Longitude: 108° 14' 29.915 W
 Position Uncertainty: 0.00 ft Wellhead Elevation: ft Ground Level: 8,423.00 ft

Wellbore: OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2005-10	2010/12/16	10.51	65.77	52,312

Design: OH

Audit Notes:
 Version: 1.0 Phase: ACTUAL Tie On Depth: 0.00
 Vertical Section: Depth From (TVD) (ft) +N/-S (ft) +E/-W (ft) Direction (°)
 0.00 0.00 0.00 81.04

Survey Program: Date 2011/12/01

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
183.00	2,653.00	Survey #1 - Surface MWD (OH)	MWD-SDI	MWD - Standard ISCWSA
2,761.00	9,138.00	Survey #2 - 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)	Buid 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
183.00	1.99	65.95	182.96	1.30	2.90	3.07	1.09	1.09	0.00
243.00	3.76	67.31	242.89	2.48	5.67	5.99	2.95	2.95	2.27
334.00	5.56	75.38	333.58	4.74	12.69	13.27	2.10	1.98	8.87
424.00	6.71	81.88	423.07	6.59	22.11	22.87	1.49	1.28	7.22
514.00	7.74	83.02	512.35	8.06	33.33	34.18	1.16	1.14	1.27
603.00	8.53	80.91	600.45	9.84	45.80	46.77	0.95	0.89	-2.37
694.00	9.50	79.85	690.33	12.23	59.86	61.03	1.08	1.07	-1.16
784.00	10.73	76.87	778.93	15.44	75.33	76.81	1.48	1.37	-3.31
874.00	10.90	90.40	867.34	17.28	92.00	93.57	2.82	0.19	15.03

Scientific Drilling International

Survey Report

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 Wellbore: OH
 Design: OH

Local Co-ordinate Reference: Well CC 697-05-38A - Slot R
 TVD Reference: GL 8423' & RKB 30' @ 8453.00ft (H&P 353)
 MD Reference: GL 8423' & RKB 30' @ 8453.00ft (H&P 353)
 North Reference: True
 Survey Calculation Method: Minimum Curvature
 Database: 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)
964.00	12.05	92.69	955.54	16.78	109.89	111.16	1.37	1.28	2.54
1,059.00	10.55	87.32	1,048.70	16.72	128.49	129.52	1.93	-1.58	-5.65
1,154.00	11.26	86.18	1,141.99	17.75	146.43	147.41	0.78	0.75	-1.20
1,248.00	12.31	87.59	1,234.00	18.78	165.60	166.50	1.16	1.12	1.50
1,343.00	10.46	76.51	1,327.14	21.22	184.11	185.16	3.01	-1.95	-11.66
1,437.00	10.46	74.05	1,419.58	25.55	200.61	202.14	0.48	0.00	-2.62
1,532.00	10.90	74.40	1,512.94	30.34	217.55	219.62	0.47	0.46	0.37
1,626.00	10.90	72.29	1,605.24	35.43	234.58	237.23	0.42	0.00	-2.24
1,721.00	7.83	78.18	1,698.96	39.49	249.47	252.58	3.38	-3.23	6.20
1,815.00	7.74	76.16	1,792.10	42.32	261.88	265.28	0.31	-0.10	-2.15
1,910.00	7.30	80.73	1,886.28	44.82	274.05	277.69	0.78	-0.46	4.81
2,005.00	6.86	80.29	1,980.56	46.75	285.60	289.40	0.47	-0.46	-0.46
2,099.00	8.62	78.71	2,073.70	49.08	298.04	302.05	1.89	1.87	-1.68
2,194.00	8.44	77.74	2,167.65	51.95	311.84	316.12	0.24	-0.19	-1.02
2,288.00	10.46	82.93	2,260.37	54.46	327.05	331.54	2.33	2.15	5.52
2,382.00	9.94	84.25	2,352.88	56.33	343.59	348.17	0.61	-0.55	1.40
2,477.00	10.38	82.31	2,446.39	58.29	360.23	364.91	0.59	0.46	-2.04
2,571.00	10.46	84.42	2,538.84	60.26	377.11	381.90	0.41	0.09	2.24
2,653.00	10.55	83.46	2,619.47	61.84	391.98	396.83	0.24	0.11	-1.17
Last SDI Surface MWD Survey									
2,761.00	10.38	83.49	2,725.67	64.07	411.47	416.43	0.16	-0.16	0.03
First SDI Production MWD Survey									
2,855.00	9.23	80.03	2,818.30	66.33	427.31	432.42	1.37	-1.22	-3.68
2,950.00	7.91	79.59	2,912.23	68.83	441.24	446.58	1.39	-1.39	-0.46
3,044.00	6.86	79.06	3,005.45	71.07	453.12	458.65	1.12	-1.12	-0.56
3,139.00	6.51	79.85	3,099.81	73.09	463.99	469.71	0.38	-0.37	0.83
3,233.00	7.74	82.31	3,193.08	74.88	475.51	481.37	1.35	1.31	2.62
3,328.00	8.88	88.47	3,287.08	75.93	489.18	495.03	1.52	1.20	6.48
3,423.00	10.29	90.75	3,380.75	76.01	504.99	510.67	1.54	1.48	2.40
3,517.00	9.94	87.15	3,473.29	76.31	521.49	527.01	0.77	-0.37	-3.83
3,612.00	9.15	82.67	3,566.98	77.68	537.17	542.71	1.14	-0.83	-4.72
3,706.00	9.41	78.27	3,659.75	80.19	552.11	557.86	0.80	0.28	-4.68
3,801.00	9.94	79.94	3,753.40	83.21	567.78	573.81	0.63	0.56	1.76
3,895.00	10.29	80.56	3,845.94	86.00	584.05	590.32	0.39	0.37	0.66
3,990.00	9.94	78.36	3,939.46	89.05	600.46	607.00	0.55	-0.37	-2.32
4,084.00	9.67	76.25	4,032.09	92.56	616.07	622.97	0.48	-0.29	-2.24
4,179.00	8.62	75.20	4,125.88	96.27	630.70	638.00	1.12	-1.11	-1.11
4,273.00	7.65	74.84	4,218.93	99.71	643.55	651.23	1.03	-1.03	-0.38
4,368.00	7.83	76.87	4,313.07	102.83	655.96	663.97	0.34	0.19	2.14
4,462.00	6.42	78.01	4,406.34	105.38	667.34	675.61	1.51	-1.50	1.21
4,557.00	6.07	75.99	4,500.78	107.70	677.40	685.91	0.43	-0.37	-2.13
4,652.00	5.36	78.10	4,595.30	109.83	686.62	695.35	0.78	-0.75	2.22
4,746.00	6.07	70.63	4,688.84	112.38	695.61	704.62	1.09	0.76	-7.95

Scientific Drilling International

Survey Report

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-05-38A - Slot R
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8423' & RKB 30' @ 8453.00ft (H&P 353)
Site:	Cascade Creek 697-05C Pad	MD Reference:	GL 8423' & RKB 30' @ 8453.00ft (H&P 353)
Well:	CC 697-05-38A	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Rockies Compass Server

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Bulld Rate (°/100ft)	Turn Rate (°/100ft)
4,841.00	8.35	68.34	4,783.08	116.60	706.76	716.29	2.42	2.40	-2.41
4,935.00	8.62	67.99	4,876.05	121.76	719.63	729.81	0.29	0.29	-0.37
5,030.00	8.00	73.09	4,970.05	126.35	732.56	743.30	1.01	-0.65	5.37
5,124.00	8.27	77.48	5,063.11	129.72	745.41	756.52	0.72	0.29	4.67
5,219.00	8.62	78.18	5,157.08	132.65	759.05	770.45	0.38	0.37	0.74
5,313.00	8.88	77.74	5,249.98	135.64	773.04	784.73	0.29	0.28	-0.47
5,408.00	9.32	77.22	5,343.79	138.90	787.70	799.73	0.47	0.46	-0.55
5,502.00	9.67	73.96	5,436.50	142.76	802.71	815.16	0.68	0.37	-3.47
5,597.00	9.23	72.82	5,530.21	147.22	817.66	830.61	0.50	-0.46	-1.20
5,691.00	9.23	72.47	5,623.00	151.71	832.05	845.53	0.06	0.00	-0.37
5,786.00	8.09	70.45	5,716.91	156.25	845.62	859.64	1.24	-1.20	-2.13
5,880.00	7.03	74.14	5,810.09	160.03	857.38	871.85	1.24	-1.13	3.93
5,975.00	4.92	75.28	5,904.57	162.66	866.92	881.67	2.22	-2.22	1.20
6,069.00	3.78	83.11	5,998.30	164.05	873.89	888.78	1.36	-1.21	8.33
6,164.00	2.81	96.46	6,093.14	164.17	879.32	894.16	1.30	-1.02	14.05
6,258.00	2.29	110.00	6,187.05	163.26	883.37	898.02	0.84	-0.55	14.40
6,353.00	1.49	134.87	6,282.00	161.74	886.03	900.41	1.19	-0.84	26.18
6,447.00	1.58	173.28	6,375.97	159.59	887.05	901.08	1.08	0.10	40.86
6,542.00	1.93	196.66	6,470.92	156.76	886.74	900.34	0.83	0.37	24.61
6,636.00	2.29	202.29	6,564.86	153.51	885.58	898.68	0.44	0.38	5.99
6,730.00	2.64	216.17	6,658.77	150.02	883.59	896.17	0.73	0.37	14.77
6,825.00	2.64	226.10	6,753.67	146.74	880.72	892.82	0.48	0.00	10.45
6,920.00	2.55	234.10	6,848.58	143.98	877.43	889.15	0.39	-0.09	8.42
7,014.00	2.46	243.15	6,942.49	141.84	873.94	885.36	0.43	-0.10	9.63
7,109.00	2.58	238.10	7,037.40	139.79	870.30	881.45	0.27	0.13	-5.32
7,203.00	2.69	243.61	7,131.30	137.70	866.53	877.40	0.29	0.12	5.86
7,298.00	2.07	257.21	7,226.22	136.32	862.86	873.56	0.88	-0.65	14.32
7,392.00	1.66	247.36	7,320.17	135.42	859.95	870.54	0.55	-0.44	-10.48
7,487.00	2.65	246.98	7,415.10	134.04	856.66	867.08	1.04	1.04	-0.40
7,581.00	2.64	239.66	7,509.00	132.09	852.79	862.95	0.36	-0.01	-7.79
7,676.00	2.67	228.71	7,603.90	129.53	849.24	859.05	0.53	0.03	-11.53
7,770.00	2.85	225.78	7,697.79	126.45	845.92	855.29	0.24	0.19	-3.12
7,865.00	3.21	235.21	7,792.65	123.29	842.04	850.97	0.65	0.38	9.93
7,959.00	3.26	240.63	7,886.51	120.48	837.55	846.09	0.33	0.05	5.77
8,054.00	3.19	240.90	7,981.35	117.87	832.89	841.08	0.08	-0.07	0.28
8,148.00	3.52	248.93	8,075.19	115.56	827.91	835.80	0.61	0.35	8.54
8,243.00	3.26	253.99	8,170.03	113.76	822.59	830.27	0.42	-0.27	5.33
8,337.00	2.99	254.95	8,263.89	112.39	817.65	825.18	0.29	-0.29	1.02
8,432.00	2.91	256.99	8,358.76	111.20	812.91	820.31	0.14	-0.08	2.15
8,526.00	2.54	249.98	8,452.66	109.95	808.63	815.88	0.53	-0.39	-7.46
8,621.00	2.18	243.27	8,547.58	108.42	805.04	812.10	0.48	-0.38	-7.06
8,715.00	2.61	231.06	8,641.49	106.27	801.78	808.54	0.71	0.46	-12.99
8,810.00	3.18	240.31	8,736.37	103.61	797.80	804.20	0.77	0.60	9.74
8,904.00	3.21	243.36	8,830.23	101.13	793.19	799.26	0.18	0.03	3.24

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Project:	Garfield County, CO NAD27	TVD Reference:	GL 8423' & RKB 30' @ 8453.00ft (H&P 353)
Site:	Cascade Creek 697-05C Pad	MD Reference:	GL 8423' & RKB 30' @ 8453.00ft (H&P 353)
Well:	CC 697-05-38A	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	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)
8,999.00	4.00	245.41	8,925.04	98.56	787.80	793.53	0.84	0.83	2.16
9,083.00	4.99	240.51	9,008.78	95.54	781.95	787.29	1.26	1.18	-5.83
Last SDI Production MWD Survey									
9,138.00	4.99	240.51	9,063.57	93.19	777.79	782.81	0.00	0.00	0.00
Projection To TD - BHL = 638609.82, 1227828.64									

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2,653.00	2,619.47	61.84	391.98	Last SDI Surface MWD Survey
2,761.00	2,725.67	64.07	411.47	First SDI Production MWD Survey
9,083.00	9,008.78	95.54	781.95	Last SDI Production MWD Survey
9,138.00	9,063.57	93.19	777.79	Projection To TD
9,138.00	9,063.57	93.19	777.79	BHL = 638609.82, 1227828.64

Checked By: _____	Approved By: _____	Date: _____
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