



Well Details: CC 697-09-35A

+N/-S	+E/-W	North	East	Latitude	Longitude	Slot
0.00	0.00	631290.22	1232460.29	39° 32' 6.516 N	108° 13' 18.078 W	M

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well CC 697-09-35A - Slot M, True North
Vertical (TVD) Reference: GL 8381' & RKB 30' @ 8411.00ft (H&P 353)
Section (VS) Reference: Slot - M(0.00N, 0.00E)
Measured Depth Reference: GL 8381' & RKB 30' @ 8411.00ft (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

15:13, June 08 2011
Created By: Janie Cooke

OXY USA RMAT

Garfield County, CO NAD27

Cascade Creek 609-33 Pad

CC 697-09-35A - Slot M

OH

Design: OH

Standard Survey Report

08 June, 2011



Scientific Drilling International, Inc.
Survey Report



Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-09-35A - Slot M
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8381' & RKB 30' @ 8411.00ft (H&P 353)
Site:	Cascade Creek 609-33 Pad	MD Reference:	GL 8381' & RKB 30' @ 8411.00ft (H&P 353)
Well:	CC 697-09-35A	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Rockies Compass Server

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

Site	Cascade Creek 609-33 Pad, Sec 9 T6S R97W				
Site Position:		Northing:	631,314.86 usft	Latitude:	39° 32' 6.734 N
From:	Map	Easting:	1,232,383.54 usft	Longitude:	108° 13' 19.067 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.72 °

Well	CC 697-09-35A - Slot M					
Well Position	+N/-S	0.00 ft	Northing:	631,290.22 usft	Latitude:	39° 32' 6.516 N
	+E/-W	0.00 ft	Easting:	1,232,460.29 usft	Longitude:	108° 13' 18.078 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	8,381.00 ft

Wellbore	OH				
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2005-10	12/31/2009	10.62	65.78	52,397

Design	OH				
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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	296.70

Survey Program		Date	6/8/2011		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
98.00	541.00	Survey #1 - Gyro MWD (OH)	SDI Gyro MWD 104	SDI Gyro MWD Error Model Ver 1.0.4	
617.00	2,658.00	Survey #2 - Surface MWD (OH)	MWD-SDI	MWD - Standard SCWSA	
2,785.00	9,190.00	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
98.00	0.26	188.00	98.00	-0.22	-0.03	-0.07	0.27	0.27	0.00
First Gyro Survey									
173.00	0.35	117.86	173.00	-0.50	0.15	-0.35	0.48	0.12	-93.52
265.00	0.35	135.97	265.00	-0.83	0.59	-0.90	0.12	0.00	19.68
358.00	0.35	134.47	358.00	-1.23	0.99	-1.44	0.01	0.00	-1.61
449.00	0.70	128.58	448.99	-1.77	1.62	-2.25	0.39	0.38	-6.47
541.00	1.06	274.75	540.99	-2.05	1.22	-2.01	1.83	0.39	158.88

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Survey Report



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Project:	Garfield County, CO NAD27	TVD Reference:	GL 8381' & RKB 30' @ 8411.00ft (H&P 353)
Site:	Cascade Creek 609-33 Pad	MD Reference:	GL 8381' & RKB 30' @ 8411.00ft (H&P 353)
Well:	CC 697-09-35A	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)
Last Gyro Survey									
617.00	2.99	282.33	616.94	-1.57	-1.42	0.56	2.56	2.54	9.97
First Surface MWD									
708.00	4.48	282.86	707.74	-0.27	-7.21	6.31	1.64	1.64	0.58
800.00	5.72	286.37	799.37	1.82	-15.11	14.31	1.39	1.35	3.82
892.00	6.95	288.04	890.81	4.83	-24.80	24.33	1.35	1.34	1.82
983.00	7.91	289.10	981.05	8.59	-35.95	35.98	1.07	1.05	1.16
1,078.00	10.02	285.41	1,074.88	12.92	-50.10	50.56	2.30	2.22	-3.88
1,173.00	12.40	289.10	1,168.06	18.46	-67.71	68.78	2.62	2.51	3.88
1,267.00	14.33	290.42	1,259.51	25.82	-88.15	90.35	2.08	2.05	1.40
1,362.00	17.15	293.05	1,350.94	35.41	-112.06	116.02	3.06	2.97	2.77
1,456.00	17.67	296.30	1,440.64	47.16	-137.60	144.11	1.17	0.55	3.46
1,551.00	18.99	299.47	1,530.82	61.15	-163.98	173.97	1.74	1.39	3.34
1,645.00	19.96	302.37	1,619.44	77.26	-190.85	205.22	1.46	1.03	3.09
1,740.00	20.31	303.42	1,708.64	95.03	-218.31	237.73	0.53	0.37	1.11
1,835.00	18.73	302.98	1,798.17	112.41	-244.87	269.26	1.67	-1.66	-0.46
1,929.00	18.91	302.83	1,887.15	128.84	-270.35	299.42	0.23	0.19	-0.37
2,024.00	20.31	301.67	1,976.63	145.80	-297.35	331.15	1.51	1.47	-1.01
2,119.00	20.49	299.91	2,065.68	162.74	-325.80	364.18	0.67	0.19	-1.85
2,213.00	20.05	298.15	2,153.86	178.55	-354.27	396.72	0.80	-0.47	-1.87
2,308.00	20.31	296.92	2,243.03	193.70	-383.33	429.48	0.52	0.27	-1.29
2,402.00	19.43	296.74	2,331.43	208.12	-411.83	461.43	0.94	-0.94	-0.19
2,497.00	19.70	296.30	2,420.94	222.32	-440.30	493.25	0.32	0.28	-0.46
2,592.00	19.70	295.51	2,510.38	236.31	-469.11	525.27	0.28	0.00	-0.83
2,658.00	19.35	296.39	2,572.59	245.96	-488.94	547.32	0.69	-0.53	1.33
Last Surface MWD									
2,785.00	19.17	296.56	2,692.48	264.64	-526.44	589.21	0.15	-0.14	0.13
First Production MWD									
2,879.00	20.05	297.52	2,781.03	278.98	-554.53	620.76	1.00	0.94	1.02
2,974.00	20.49	299.55	2,870.14	294.71	-583.44	653.65	0.87	0.46	2.14
3,069.00	21.10	297.44	2,958.96	310.79	-613.08	687.35	1.02	0.64	-2.22
3,163.00	19.11	295.23	3,047.23	325.15	-642.02	719.66	2.27	-2.12	-2.35
3,258.00	20.66	298.32	3,136.56	339.73	-670.84	751.96	1.97	1.63	3.25
3,353.00	22.25	299.99	3,224.98	356.67	-701.18	786.67	1.79	1.67	1.76
3,447.00	20.84	299.72	3,312.41	373.86	-731.11	821.14	1.50	-1.50	-0.29
3,542.00	19.96	299.99	3,401.45	390.34	-759.83	854.20	0.93	-0.93	0.28
3,637.00	21.90	297.79	3,490.18	406.71	-789.55	888.11	2.20	2.04	-2.32
3,732.00	22.16	299.90	3,578.24	423.90	-820.76	923.71	0.88	0.27	2.22
3,826.00	21.02	299.46	3,665.64	441.03	-850.81	958.25	1.22	-1.21	-0.47
3,921.00	19.61	298.67	3,754.73	457.06	-879.63	991.20	1.51	-1.48	-0.83
4,016.00	21.19	298.14	3,843.77	472.80	-908.76	1,024.30	1.67	1.66	-0.56
4,110.00	22.86	299.11	3,930.91	489.70	-939.70	1,059.53	1.82	1.78	1.03
4,205.00	21.28	298.58	4,018.95	506.92	-970.96	1,095.20	1.68	-1.66	-0.56
4,300.00	20.31	298.76	4,107.76	523.10	-1,000.55	1,128.91	1.02	-1.02	0.19

Scientific Drilling International, Inc.
Survey Report



Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-09-35A - Slot M
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8381' & RKB 30' @ 8411.00ft (H&P 353)
Site:	Cascade Creek 609-33 Pad	MD Reference:	GL 8381' & RKB 30' @ 8411.00ft (H&P 353)
Well:	CC 697-09-35A	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)
4,394.00	19.08	299.19	4,196.26	538.45	-1,028.27	1,160.56	1.32	-1.31	0.46
4,489.00	20.75	298.49	4,285.57	554.05	-1,056.62	1,192.90	1.78	1.76	-0.74
4,583.00	20.05	298.49	4,373.68	569.68	-1,085.41	1,225.65	0.74	-0.74	0.00
4,678.00	18.03	297.26	4,463.47	584.18	-1,112.80	1,256.63	2.17	-2.13	-1.29
4,773.00	19.35	299.99	4,553.46	598.78	-1,139.50	1,287.04	1.67	1.39	2.87
4,868.00	20.66	298.58	4,642.73	614.67	-1,167.85	1,319.51	1.47	1.38	-1.48
4,962.00	19.08	297.44	4,731.13	629.68	-1,196.05	1,351.45	1.73	-1.68	-1.21
5,057.00	17.32	294.18	4,821.38	642.63	-1,222.73	1,381.10	2.14	-1.85	-3.43
5,152.00	15.74	293.39	4,912.45	653.54	-1,247.46	1,408.09	1.68	-1.66	-0.83
5,246.00	14.51	291.55	5,003.19	662.93	-1,270.12	1,432.55	1.40	-1.31	-1.96
5,341.00	13.45	291.55	5,095.38	671.36	-1,291.46	1,455.41	1.12	-1.12	0.00
5,436.00	13.72	302.89	5,187.73	681.53	-1,311.20	1,477.62	2.81	0.28	11.94
5,530.00	12.93	303.15	5,279.20	693.34	-1,329.37	1,499.15	0.84	-0.84	0.28
5,625.00	12.66	303.59	5,371.84	704.91	-1,346.94	1,520.05	0.30	-0.28	0.46
5,720.00	11.87	304.38	5,464.68	716.19	-1,363.67	1,540.07	0.85	-0.83	0.83
5,815.00	11.34	304.73	5,557.73	727.02	-1,379.41	1,559.00	0.56	-0.56	0.37
5,909.00	10.99	303.59	5,649.95	737.25	-1,394.47	1,577.04	0.44	-0.37	-1.21
6,004.00	8.53	308.51	5,743.57	746.64	-1,407.53	1,592.93	2.73	-2.59	5.18
6,099.00	7.91	306.14	5,837.60	754.89	-1,418.32	1,606.28	0.74	-0.65	-2.49
6,194.00	6.51	306.14	5,931.84	761.92	-1,427.95	1,618.04	1.47	-1.47	0.00
6,288.00	5.10	310.44	6,025.36	767.77	-1,435.44	1,627.36	1.57	-1.50	4.57
6,383.00	3.25	316.16	6,120.10	772.45	-1,440.52	1,634.00	1.99	-1.95	6.02
6,478.00	3.17	315.63	6,214.95	776.27	-1,444.22	1,639.02	0.09	-0.08	-0.56
6,572.00	2.37	307.02	6,308.84	779.30	-1,447.59	1,643.39	0.96	-0.85	-9.16
6,667.00	2.29	301.83	6,403.77	781.48	-1,450.77	1,647.21	0.24	-0.08	-5.46
6,762.00	1.93	289.61	6,498.70	783.02	-1,453.89	1,650.69	0.60	-0.38	-12.86
6,856.00	2.37	286.89	6,592.64	784.12	-1,457.24	1,654.18	0.48	0.47	-2.89
6,951.00	1.85	270.10	6,687.57	784.69	-1,460.65	1,657.49	0.84	-0.55	-17.67
7,046.00	2.29	281.00	6,782.51	785.06	-1,464.05	1,660.68	0.62	0.46	11.47
7,140.00	2.55	268.70	6,876.43	785.37	-1,467.98	1,664.34	0.62	0.28	-13.09
7,235.00	2.37	269.31	6,971.34	785.30	-1,472.06	1,667.95	0.19	-0.19	0.64
7,329.00	2.64	270.19	7,065.25	785.28	-1,476.17	1,671.61	0.29	0.29	0.94
7,424.00	2.81	271.16	7,160.14	785.33	-1,480.68	1,675.67	0.19	0.18	1.02
7,519.00	2.46	272.12	7,255.04	785.46	-1,485.05	1,679.62	0.37	-0.37	1.01
7,613.00	2.55	265.01	7,348.95	785.35	-1,489.15	1,683.24	0.34	0.10	-7.56
7,708.00	2.73	262.37	7,443.85	784.87	-1,493.50	1,686.90	0.23	0.19	-2.78
7,802.00	2.46	264.74	7,537.75	784.38	-1,497.72	1,690.46	0.31	-0.29	2.52
7,897.00	2.11	253.32	7,632.68	783.69	-1,501.43	1,693.46	0.60	-0.37	-12.02
7,992.00	2.29	254.02	7,727.61	782.67	-1,504.93	1,696.13	0.19	0.19	0.74
8,086.00	2.37	252.52	7,821.53	781.57	-1,508.59	1,698.91	0.11	0.09	-1.60
8,181.00	2.37	255.16	7,916.45	780.48	-1,512.36	1,701.78	0.11	0.00	2.78
8,276.00	2.55	252.61	8,011.36	779.34	-1,516.28	1,704.77	0.22	0.19	-2.68
8,370.00	2.64	257.53	8,105.27	778.25	-1,520.39	1,707.95	0.26	0.10	5.23

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Survey Report



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Well:	CC 697-09-35A	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)
8,465.00	2.29	254.02	8,200.18	777.25	-1,524.35	1,711.04	0.40	-0.37	-3.69
8,559.00	2.11	238.99	8,294.11	775.85	-1,527.63	1,713.35	0.64	-0.19	-15.99
8,654.00	1.67	229.41	8,389.06	774.04	-1,530.18	1,714.82	0.57	-0.46	-10.08
8,748.00	2.11	244.79	8,483.01	772.42	-1,532.79	1,716.41	0.71	0.47	16.36
8,843.00	2.46	252.61	8,577.93	771.06	-1,536.32	1,718.96	0.49	0.37	8.23
8,938.00	2.55	247.69	8,672.84	769.65	-1,540.22	1,721.81	0.25	0.09	-5.18
9,032.00	2.29	247.95	8,766.76	768.15	-1,543.89	1,724.42	0.28	-0.28	0.28
9,134.00	2.81	243.82	8,868.66	766.28	-1,548.03	1,727.27	0.54	0.51	-4.05
Last Production MWD									
9,190.00	2.81	243.82	8,924.59	765.07	-1,550.49	1,728.92	0.00	0.00	0.00
Projection to TD - BHL = 632101.39, 1230933.42									

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
98.00	98.00	-0.22	-0.03	First Gyro Survey
541.00	540.99	-2.05	1.22	Last Gyro Survey
617.00	616.94	-1.57	-1.42	First Surface MWD
2,658.00	2,572.59	245.96	-488.94	Last Surface MWD
2,785.00	2,692.48	264.64	-526.44	First Production MWD
9,134.00	8,868.66	766.28	-1,548.03	Last Production MWD
9,190.00	8,924.59	765.07	-1,550.49	Projection to TD
9,190.00	8,924.59	765.07	-1,550.49	BHL = 632101.39, 1230933.42

Checked By: _____ Approved By: _____ Date: _____