Scientific Drilling
Rocky Mountain Operations

OXY USA RMAT

Garfield County, CO NAD27
Cascade Creek 697-16A II Pad
697-16-27A
OH

Design: OH

Standard Survey Report

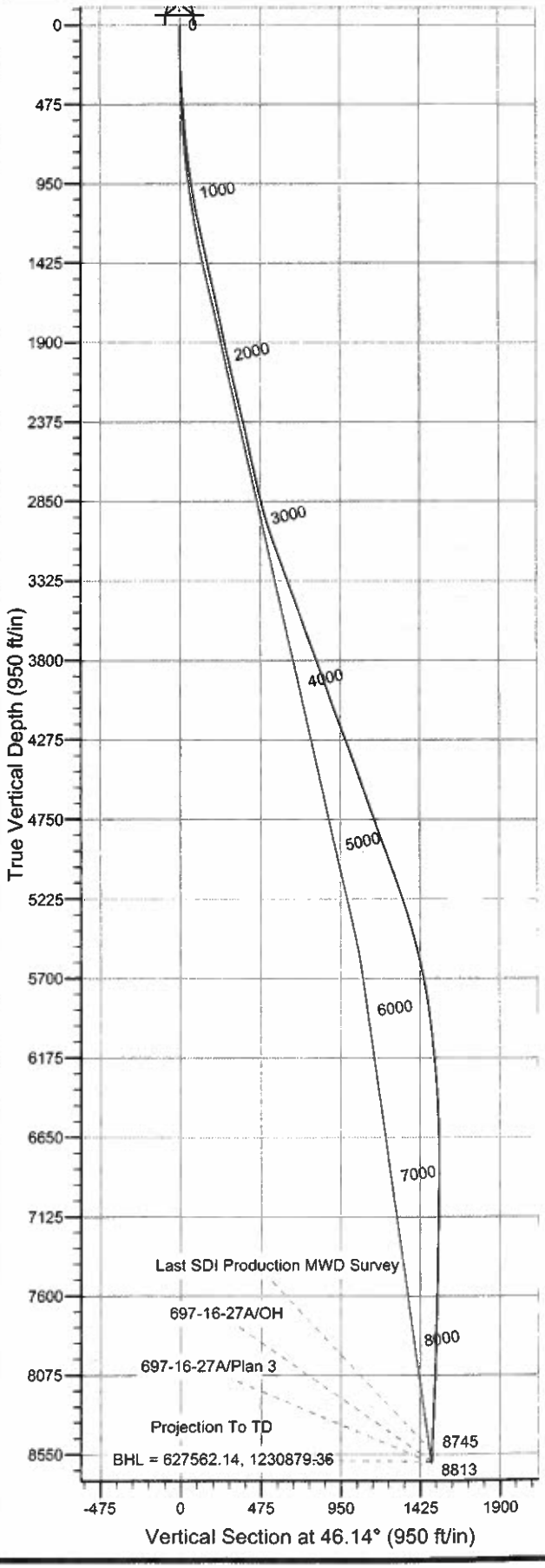
27 May, 2010

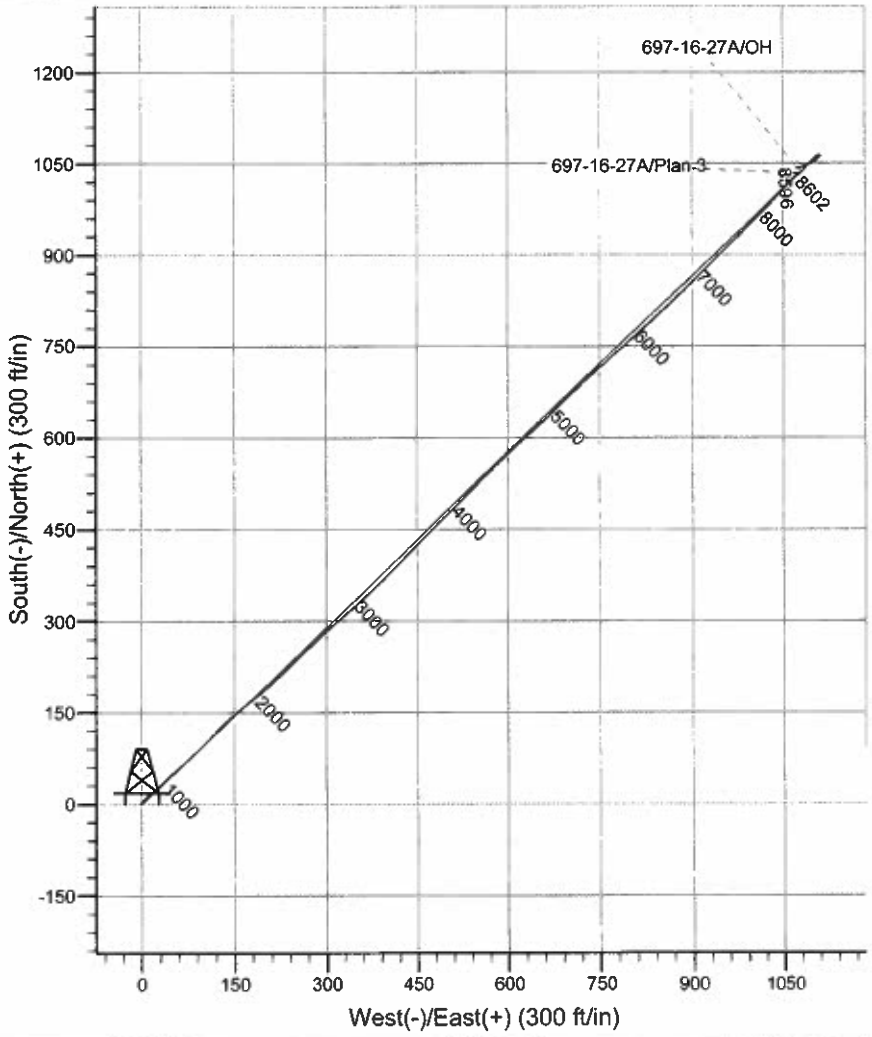
OXY

Scientific Drilling
Rocky Mountain Operations

Project: Garfield County, CO NAD27
Site: Cascade Creek 697-16A II Pad
Well: 697-16-27A
Wellbore: OH
Design: OH

OXY USA RMAT





WELL DETAILS: 697-16-27A

Ground Level: GL 8312' & RKB 30' @ 8342.00ft

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	626553.08	1229774.98	39° 31' 18.920 N	108° 13' 50.520 W

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well 697-16-27A, True North
Vertical (TVD) Reference: GL 8312' & RKB 30' @ 8342.00ft
Section (VS) Reference: Slot - (0.00N, 0.00E)
Measured Depth Reference: GL 8312' & RKB 30' @ 8342.00ft
Calculation Method: Minimum Curvature
Local North: True
Location: Sec 16 T6S R97W

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

Design: OH (697-16-27A/OH)

Created By: Rex Hall Date: 2010-05-27

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Survey Report

Company:	OXY USA RMAT	**Local Co-ordinate Reference:**	Well 697-16-27A
Project:	Garfield County, CO NAD27	**TVD Reference:**	GL 8312' & RKB 30' @ 8342.00ft
Site:	Cascade Creek 697-16A II Pad	**MD Reference:**	GL 8312' & RKB 30' @ 8342.00ft
Well:	697-16-27A	**North Reference:**	True
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	OH	**Database:**	EDM 2003.16 Multi-User Db

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 697-16A II Pad, Sec 16 T6S R97W

Site Position:		**Northing:**	626,314.75 ft	**Latitude:**	39° 31' 16.584 N
From:	Map	**Easting:**	1,229,837.54 ft	**Longitude:**	108° 13' 49.631 W
Position Uncertainty:	0.00 ft	**Slot Radius:**	in	**Grid Convergence:**	-1.72 °

Well 697-16-27A

Well Position	**+N/-S**	0.00 ft	**Northing:**	626,553.08 ft	**Latitude:**	39° 31' 18.920 N
	+E/-W	0.00 ft	**Easting:**	1,229,774.98 ft	**Longitude:**	108° 13' 50.520 W
Position Uncertainty		0.00 ft	**Wellhead Elevation:**	ft	**Ground Level:**	8,312.00 ft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	2008/01/17	10.88	65.81	52,578

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	46.14

Survey Program **Date** 2010/05/27

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
249.00	2,694.00	Survey #1 - Surface MWD (OH)	MWD-SDI	MWD - Standard ISCWSA
2,792.00	8,813.00	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)	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
249.00	1.31	10.12	248.98	2.80	0.50	2.30	0.53	0.53	0.00
First SDI Surface MWD Survey									
341.00	3.02	40.59	340.91	5.68	2.26	5.57	2.18	1.86	33.12
433.00	4.62	52.23	432.71	9.79	6.77	11.66	1.92	1.74	12.65
525.00	4.81	49.68	524.39	14.55	12.64	19.20	0.31	0.21	-2.77
618.00	4.96	52.01	617.06	19.55	18.78	27.09	0.27	0.16	2.51
710.00	5.47	47.42	708.68	24.97	25.14	35.43	0.72	0.55	-4.99
804.00	6.86	43.28	802.13	32.08	32.29	45.51	1.55	1.48	-4.40
898.00	8.46	44.89	895.29	41.07	41.02	58.03	1.72	1.70	1.71
992.00	8.91	49.19	988.21	50.73	51.41	72.22	0.84	0.48	4.57
1,087.00	9.86	48.78	1,081.94	60.90	63.10	87.69	1.00	1.00	-0.43

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Survey Report

Company:	OXY USA RMAT	**Local Co-ordinate Reference:**	Well 697-16-27A
Project:	Garfield County, CO NAD27	**TVD Reference:**	GL 8312' & RKB 30' @ 8342.00ft
Site:	Cascade Creek 697-16A II Pad	**MD Reference:**	GL 8312' & RKB 30' @ 8342.00ft
Well:	697-16-27A	**North Reference:**	True
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	OH	**Database:**	EDM 2003.16 Multi-User Db

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)
1,181.00	11.35	47.14	1,174.33	72.49	75.93	104.98	1.62	1.59	-1.74
1,276.00	13.03	44.79	1,267.19	86.45	90.33	125.03	1.84	1.77	-2.47
1,370.00	11.98	44.74	1,358.96	100.90	104.66	145.38	1.12	-1.12	-0.05
1,465.00	11.87	44.10	1,451.90	114.92	118.40	165.00	0.18	-0.12	-0.67
1,559.00	12.78	42.36	1,543.74	129.55	132.13	185.04	1.05	0.97	-1.85
1,654.00	11.95	47.74	1,636.54	143.93	146.49	205.35	1.49	-0.87	5.66
1,748.00	11.25	53.31	1,728.62	155.95	161.05	224.18	1.40	-0.74	5.93
1,843.00	11.78	49.89	1,821.71	167.73	175.90	243.05	0.91	0.56	-3.60
1,937.00	12.66	50.15	1,913.58	180.52	191.14	262.90	0.94	0.94	0.28
2,032.00	13.25	49.22	2,006.16	194.30	207.38	284.16	0.66	0.62	-0.98
2,126.00	13.30	45.91	2,097.65	208.86	223.30	305.73	0.81	0.05	-3.52
2,221.00	12.89	45.60	2,190.18	223.88	238.72	327.25	0.44	-0.43	-0.33
2,315.00	12.80	45.14	2,281.83	238.56	253.60	348.15	0.14	-0.10	-0.49
2,410.00	13.24	45.45	2,374.38	253.61	268.81	369.55	0.47	0.46	0.33
2,504.00	13.02	47.01	2,465.93	268.38	284.22	390.90	0.44	-0.23	1.66
2,599.00	12.29	47.74	2,558.62	282.48	299.54	411.71	0.79	-0.77	0.77
2,694.00	12.45	48.03	2,651.41	296.13	314.63	432.05	0.18	0.17	0.31
Last SDI Surface MWD Survey									
2,792.00	11.87	50.52	2,747.21	309.60	330.27	452.65	0.80	-0.59	2.54
First SDI Production MWD Survey									
2,887.00	13.81	49.11	2,839.83	323.24	346.38	473.72	2.07	2.04	-1.48
2,981.00	16.09	46.56	2,930.65	339.54	364.32	497.95	2.52	2.43	-2.71
3,076.00	17.76	46.21	3,021.53	358.62	384.34	525.61	1.76	1.76	-0.37
3,170.00	20.75	44.54	3,110.26	380.41	406.38	556.60	3.23	3.18	-1.78
3,265.00	19.96	44.71	3,199.33	403.93	429.59	589.63	0.83	-0.83	0.18
3,359.00	19.26	44.98	3,287.88	426.30	451.83	621.17	0.75	-0.74	0.29
3,454.00	20.05	45.15	3,377.34	448.87	474.45	653.12	0.83	0.83	0.18
3,548.00	19.52	45.51	3,465.79	471.24	497.08	684.93	0.58	-0.56	0.38
3,643.00	20.49	45.42	3,555.06	494.03	520.25	717.43	1.02	1.02	-0.09
3,737.00	19.61	44.45	3,643.36	516.84	543.01	749.65	1.00	-0.94	-1.03
3,832.00	20.31	44.71	3,732.65	539.94	565.78	782.07	0.74	0.74	0.27
3,926.00	19.35	45.59	3,821.08	562.43	588.38	813.95	1.07	-1.02	0.94
4,021.00	19.96	47.35	3,910.54	584.43	611.55	845.90	0.89	0.64	1.85
4,116.00	19.52	48.41	3,999.96	605.95	635.34	877.97	0.60	-0.46	1.12
4,210.00	20.31	47.00	4,088.34	627.50	659.02	909.97	0.98	0.84	-1.50
4,305.00	21.10	44.71	4,177.20	650.90	683.11	943.55	1.19	0.83	-2.41
4,400.00	19.43	45.68	4,266.32	674.09	706.45	976.45	1.79	-1.76	1.02
4,494.00	19.96	46.56	4,354.82	696.05	729.28	1,008.13	0.65	0.56	0.94
4,589.00	21.19	48.93	4,443.76	718.48	754.00	1,041.49	1.56	1.29	2.49
4,683.00	19.08	47.61	4,532.01	740.00	778.16	1,073.83	2.30	-2.24	-1.40
4,778.00	19.17	47.35	4,621.77	761.04	801.10	1,104.94	0.13	0.09	-0.27
4,872.00	19.79	48.67	4,710.39	782.00	824.40	1,136.27	0.81	0.66	1.40
4,967.00	19.61	46.21	4,799.83	803.66	847.99	1,168.28	0.89	-0.19	-2.59
5,062.00	20.49	45.42	4,889.07	826.36	871.34	1,200.85	0.97	0.93	-0.83
5,156.00	20.84	44.36	4,977.02	849.86	894.75	1,234.01	0.54	0.37	-1.13
5,251.00	19.87	44.63	5,066.09	873.43	917.90	1,267.04	1.03	-1.02	0.28
5,345.00	18.91	44.89	5,154.76	895.59	939.88	1,298.24	1.03	-1.02	0.28
5,440.00	18.03	44.80	5,244.86	916.93	961.10	1,328.33	0.93	-0.93	-0.09
5,535.00	16.62	44.98	5,335.55	936.98	981.06	1,356.61	1.49	-1.48	0.19
5,630.00	15.92	45.33	5,426.75	955.75	999.93	1,383.22	0.74	-0.74	0.37
5,724.00	14.16	45.24	5,517.52	972.91	1,017.27	1,407.61	1.87	-1.87	-0.10
5,819.00	12.49	43.40	5,609.96	988.55	1,032.58	1,429.49	1.81	-1.76	-1.94
5,914.00	10.82	43.66	5,703.00	1,002.47	1,045.79	1,448.66	1.76	-1.76	0.27
6,008.00	9.32	44.98	5,795.55	1,014.24	1,057.27	1,465.09	1.61	-1.60	1.40

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Site:	Cascade Creek 697-16A II Pad	**MD Reference:**	GL 8312' & RKB 30' @ 8342.00ft
Well:	697-16-27A	**North Reference:**	True
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	OH	**Database:**	EDM 2003.16 Multi-User Db

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)
6,103.00	7.39	46.82	5,889.54	1,023.86	1,067.16	1,478.89	2.05	-2.03	1.94
6,198.00	6.60	48.14	5,983.83	1,031.68	1,075.68	1,490.46	0.85	-0.83	1.39
6,293.00	6.16	45.77	6,078.24	1,038.88	1,083.40	1,501.01	0.54	-0.46	-2.49
6,387.00	5.45	44.01	6,171.76	1,045.61	1,090.11	1,510.51	0.78	-0.76	-1.87
6,482.00	5.01	40.94	6,266.36	1,051.99	1,095.97	1,519.15	0.55	-0.46	-3.23
6,577.00	3.96	46.30	6,361.07	1,057.39	1,101.06	1,526.56	1.19	-1.11	5.64
6,671.00	2.99	56.49	6,454.90	1,060.99	1,105.45	1,532.22	1.22	-1.03	10.84
6,766.00	1.85	76.27	6,549.81	1,062.72	1,109.00	1,535.99	1.47	-1.20	20.82
6,861.00	0.79	102.20	6,644.79	1,062.94	1,111.13	1,537.68	1.25	-1.12	27.29
6,955.00	0.18	96.92	6,738.78	1,062.79	1,111.91	1,538.13	0.65	-0.65	-5.62
7,050.00	0.18	148.86	6,833.78	1,062.64	1,112.14	1,538.19	0.17	0.00	54.67
7,145.00	0.35	187.80	6,928.78	1,062.23	1,112.18	1,537.93	0.25	0.18	40.99
7,240.00	0.53	204.94	7,023.78	1,061.54	1,111.95	1,537.30	0.23	0.19	18.04
7,334.00	0.62	221.99	7,117.77	1,060.77	1,111.43	1,536.38	0.20	0.10	18.14
7,429.00	0.70	222.52	7,212.77	1,059.96	1,110.69	1,535.29	0.08	0.08	0.56
7,524.00	1.32	222.25	7,307.75	1,058.72	1,109.56	1,533.62	0.65	0.65	-0.28
7,619.00	1.67	225.86	7,402.72	1,056.95	1,107.83	1,531.15	0.38	0.37	3.80
7,713.00	1.49	227.70	7,496.68	1,055.17	1,105.95	1,528.55	0.20	-0.19	1.96
7,808.00	1.49	229.64	7,591.65	1,053.54	1,104.09	1,526.09	0.05	0.00	2.04
7,903.00	0.88	238.43	7,686.63	1,052.36	1,102.53	1,524.14	0.67	-0.64	9.25
7,998.00	0.97	252.14	7,781.62	1,051.73	1,101.14	1,522.71	0.25	0.09	14.43
8,093.00	1.06	247.48	7,876.60	1,051.15	1,099.57	1,521.16	0.13	0.09	-4.91
8,187.00	1.58	255.12	7,970.58	1,050.48	1,097.51	1,519.22	0.58	0.55	8.13
8,282.00	2.29	252.49	8,065.52	1,049.57	1,094.43	1,516.37	0.75	0.75	-2.77
8,377.00	3.08	245.19	8,160.42	1,047.93	1,090.31	1,512.26	0.90	0.83	-7.68
8,472.00	2.73	245.90	8,255.30	1,045.94	1,085.93	1,507.72	0.37	-0.37	0.75
8,566.00	2.55	238.34	8,349.20	1,043.93	1,082.10	1,503.57	0.42	-0.19	-8.04
8,661.00	2.20	255.83	8,444.12	1,042.37	1,078.54	1,499.92	0.84	-0.37	18.41
8,756.00	1.76	267.78	8,539.06	1,041.87	1,075.31	1,497.24	0.63	-0.46	12.58
Last SDI Production MWD Survey									
8,813.00	1.76	267.78	8,596.03	1,041.80	1,073.56	1,495.94	0.00	0.00	0.00

Projection To TD - BHL = 627562.14, 1230879.36

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
CC 697-16-27A Target A	-8.00	46.12	7,811.00	956.42	995.23	627,479.16	1,230,798.50	39° 31' 28.373 N	108° 13' 37.819 W
- actual wellpath misses target center by 142.00ft at 8029.72ft MD (7813.33 TVD, 1051.56 N, 1100.63 E)									
- Circle (radius 50.00)									
697-16-27A Target	-8.00	36.83	7,821.00	954.94	992.73	627,477.75	1,230,795.96	39° 31' 28.358 N	108° 13' 37.851 W
- actual wellpath misses target center by 144.69ft at 8039.77ft MD (7823.38 TVD, 1051.50 N, 1100.46 E)									
- Circle (radius 50.00)									
697-16-27A WF Target	-8.00	46.14	7,811.00	956.42	995.23	627,479.16	1,230,798.50	39° 31' 28.373 N	108° 13' 37.819 W
- actual wellpath misses target center by 142.00ft at 8029.72ft MD (7813.33 TVD, 1051.56 N, 1100.63 E)									
- Circle (radius 50.00)									

Checked By: _____ Approved By: _____ Date: _____