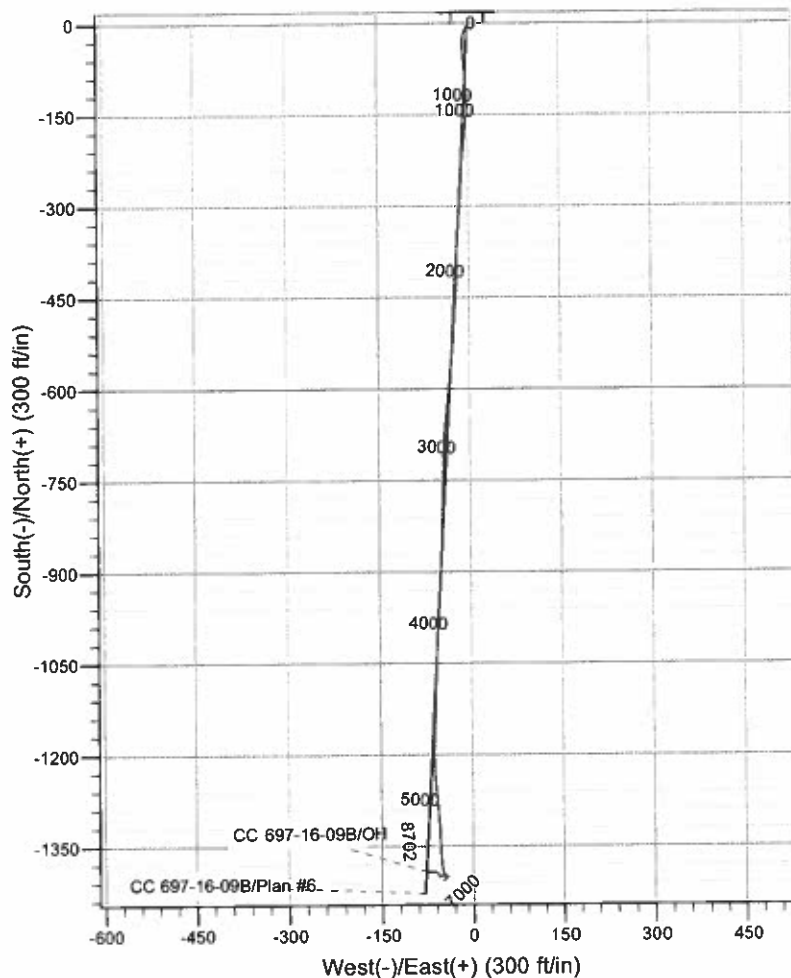
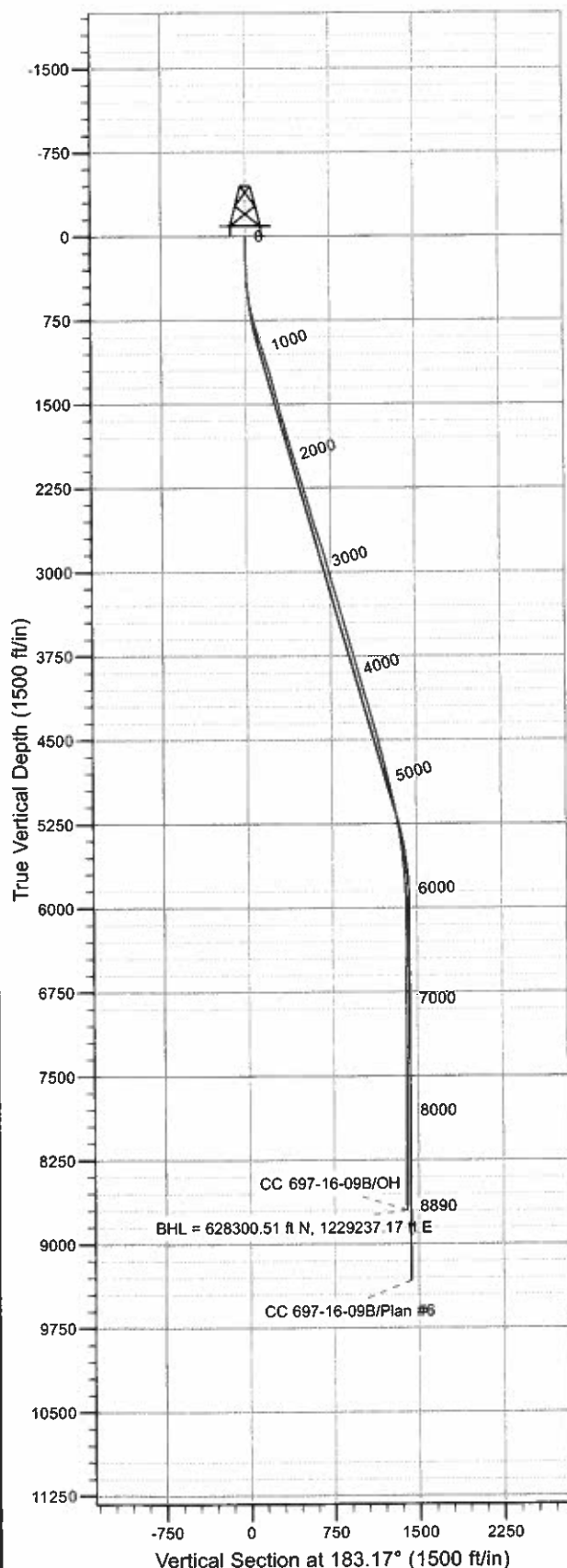




Scientific Drilling

Project: Garfield County, CO NAD27
Site: Cascade Creek 609-14 Pad
Well: CC 697-16-09B
Wellbore: OH
Design: OH

OXY USA RMAT



WELL DETAILS: CC 697-16-09B

Ground Level: GL 8393' & RKB 30' @ 8423.00ft (H&P 330)
Northing Easting Latitude Longitude
0.00 0.00 629690.19 1229353.55 39° 31' 49.787 N 108° 13' 57.100 W X

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well CC 697-16-09B - Slot X, True North
Vertical (TVD) Reference: GL 8393' & RKB 30' @ 8423.00ft (H&P 330)
Section (VS) Reference: Slot - X(0.00N, 0.00E)
Measured Depth Reference: GL 8393' & RKB 30' @ 8423.00ft (H&P 330)
Calculation Method: Minimum Curvature
Local North: True
Location: Sec 9 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 (CC 697-16-09B/OH)

Created By: Julie Cruse Date: 2010-08-03



SDI
Survey Report



Company: OXY USA RMAT
Project: Garfield County, CO NAD27
Site: Cascade Creek 609-14 Pad
Well: CC 697-16-09B
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well CC 697-16-09B - Slot X
TVD Reference: GL 8393' & RKB 30' @ 8423.00ft (H&P 330)
MD Reference: GL 8393' & RKB 30' @ 8423.00ft (H&P 330)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: Rockies-R5000.1

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 609-14 Pad, Sec 9 T6S R97W			
Site Position:		Northing:	629,789.23 usft	Latitude: 39° 31' 50.765 N
From:	Map	Easting:	1,229,350.88 usft	Longitude: 108° 13' 57.172 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence: -1.72 °

Well	CC 697-16-09B - Slot X, 124' FSL 274' FWL				
Well Position	+N/-S	0.00 ft	Northing:	629,690.19 usft	Latitude: 39° 31' 49.787 N
	+E/-W	0.00 ft	Easting:	1,229,353.55 usft	Longitude: 108° 13' 57.100 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level: 8,393.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	2008-06-24	10.83	65.81	52,540

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		183.17

Survey Program	Date 2010-08-03			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
92.00	829.00	Survey #1 - Surface Gyro (OH)	Standard Keeper 103	Standard Wireline Keeper ver 1.0.3
895.00	2,635.00	Survey #2 - Surface MWD (OH)	MWD-SDI	MWD - Standard ISCWSA
2,699.00	8,890.00	Survey #3 - Production (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	
92.00	1.08	89.78	91.99	0.00	0.87	-0.05	1.17	1.17	0.00	
First Gyro Survey										
122.00	0.76	94.74	121.99	-0.01	1.35	-0.06	1.10	-1.07	16.53	
153.00	0.24	136.45	152.99	-0.08	1.60	-0.01	1.94	-1.68	134.55	
184.00	0.32	217.66	183.99	-0.19	1.59	0.10	1.19	0.26	261.97	
215.00	1.01	222.20	214.99	-0.46	1.35	0.39	2.23	2.23	14.65	
245.00	1.43	224.23	244.98	-0.93	0.91	0.87	1.41	1.40	6.77	
276.00	2.42	211.61	275.96	-1.76	0.30	1.74	3.46	3.19	-40.71	

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-16-09B - Slot X
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8393' & RKB 30' @ 8423.00ft (H&P 330)
Site:	Cascade Creek 609-14 Pad	MD Reference:	GL 8393' & RKB 30' @ 8423.00ft (H&P 330)
Well:	CC 697-16-09B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Rockies-R5000.1

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)	
307.00	3.15	210.87	306.93	-3.05	-0.48	3.07	2.36	2.35	-2.39	
338.00	3.74	208.64	337.87	-4.67	-1.40	4.74	1.95	1.90	-7.19	
368.00	4.19	207.53	367.80	-6.50	-2.38	6.62	1.52	1.50	-3.70	
399.00	5.26	208.18	398.69	-8.76	-3.57	8.94	3.46	3.45	2.10	
430.00	6.20	202.93	429.54	-11.55	-4.89	11.80	3.47	3.03	-16.94	
461.00	7.04	203.68	460.33	-14.83	-6.31	15.16	2.72	2.71	2.42	
491.00	7.51	196.57	490.09	-18.39	-7.61	18.79	3.38	1.57	-23.70	
522.00	7.94	193.30	520.81	-22.42	-8.68	22.87	1.98	1.39	-10.55	
553.00	8.37	185.79	551.49	-26.75	-9.40	27.23	3.70	1.39	-24.23	
645.00	10.10	174.63	642.31	-41.44	-9.32	41.90	2.70	1.88	-12.13	
737.00	13.13	175.06	732.41	-59.89	-7.66	60.22	3.29	3.29	0.47	
829.00	16.43	174.90	821.36	-83.27	-5.61	83.45	3.59	3.59	-0.17	
Last Gyro Survey										
895.00	17.23	175.74	884.53	-102.31	-4.05	102.38	1.27	1.21	1.27	
First SDI MWD Survey										
987.00	17.67	180.31	972.30	-129.86	-3.11	129.84	1.56	0.48	4.97	
1,082.00	17.15	185.14	1,062.95	-158.23	-4.45	158.24	1.62	-0.55	5.08	
1,177.00	17.67	185.40	1,153.60	-186.54	-7.06	186.64	0.55	0.55	0.27	
1,271.00	16.88	187.25	1,243.36	-214.28	-10.12	214.51	1.02	-0.84	1.97	
1,366.00	13.72	183.73	1,334.98	-239.21	-12.60	239.54	3.47	-3.33	-3.71	
1,461.00	14.86	180.75	1,427.04	-262.63	-13.49	262.98	1.43	1.20	-3.14	
1,555.00	16.18	184.53	1,517.61	-287.74	-14.68	288.12	1.77	1.40	4.02	
1,650.00	15.39	186.28	1,609.03	-313.47	-17.11	313.94	0.97	-0.83	1.84	
1,744.00	16.00	184.00	1,699.53	-338.79	-19.37	339.35	0.92	0.65	-2.43	
1,839.00	16.27	182.50	1,790.79	-365.15	-20.87	365.74	0.52	0.28	-1.58	
1,934.00	16.09	180.48	1,882.02	-391.61	-21.56	392.20	0.62	-0.19	-2.13	
2,029.00	16.88	180.57	1,973.12	-418.56	-21.81	419.13	0.83	0.83	0.09	
2,123.00	17.94	183.47	2,062.81	-446.66	-22.82	447.24	1.46	1.13	3.09	
2,218.00	16.97	183.91	2,153.44	-475.10	-24.65	475.73	1.03	-1.02	0.46	
2,313.00	17.06	182.50	2,244.28	-502.85	-26.20	503.53	0.44	0.09	-1.48	
2,407.00	16.00	185.58	2,334.39	-529.52	-28.06	530.26	1.46	-1.13	3.28	
2,502.00	15.39	186.37	2,425.85	-555.08	-30.73	555.93	0.68	-0.64	0.83	
2,597.00	17.59	184.61	2,516.94	-581.92	-33.29	582.87	2.37	2.32	-1.85	
2,635.00	18.20	184.79	2,553.10	-593.56	-34.24	594.54	1.61	1.61	0.47	
Last Survey in 14 3/4" Hole										
2,699.00	18.73	186.28	2,613.81	-613.73	-36.20	614.80	1.11	0.83	2.33	
First Survey in 8 3/4" Hole										
2,794.00	18.17	186.45	2,703.92	-643.61	-39.54	644.81	0.59	-0.59	0.18	
2,889.00	16.80	184.35	2,794.53	-672.02	-42.24	673.33	1.59	-1.44	-2.21	
2,983.00	14.95	181.98	2,884.94	-697.69	-43.69	699.04	2.09	-1.97	-2.52	
3,078.00	15.92	180.57	2,976.52	-722.96	-44.24	724.30	1.09	1.02	-1.48	
3,173.00	16.00	181.01	3,067.85	-749.08	-44.60	750.40	0.15	0.08	0.46	
3,267.00	17.32	182.42	3,157.91	-776.02	-45.42	777.34	1.47	1.40	1.50	
3,362.00	16.44	181.45	3,248.81	-803.58	-46.36	804.92	0.97	-0.93	-1.02	

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-16-09B - Slot X
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8393' & RKB 30' @ 8423.00ft (H&P 330)
Site:	Cascade Creek 609-14 Pad	MD Reference:	GL 8393' & RKB 30' @ 8423.00ft (H&P 330)
Well:	CC 697-16-09B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Rockies-R5000.1

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Buidl Rate (°/100ft)	Turn Rate (°/100ft)
3,457.00	15.39	181.36	3,340.17	-829.63	-47.00	830.96	1.11	-1.11	-0.09
3,552.00	15.65	182.68	3,431.71	-855.03	-47.90	856.37	0.46	0.27	1.39
3,646.00	15.65	182.86	3,522.22	-880.36	-49.12	881.73	0.05	0.00	0.19
3,741.00	16.00	183.65	3,613.62	-906.22	-50.60	907.63	0.43	0.37	0.83
3,836.00	16.09	182.94	3,704.92	-932.43	-52.11	933.89	0.23	0.09	-0.75
3,930.00	15.83	184.17	3,795.30	-958.23	-53.71	959.73	0.45	-0.28	1.31
4,025.00	16.71	181.54	3,886.49	-984.81	-55.01	986.34	1.21	0.93	-2.77
4,120.00	15.92	182.24	3,977.67	-1,011.48	-55.89	1,013.02	0.86	-0.83	0.74
4,215.00	16.44	182.77	4,068.90	-1,037.92	-57.05	1,039.49	0.57	0.55	0.56
4,309.00	15.74	182.59	4,159.22	-1,063.95	-58.27	1,065.54	0.75	-0.74	-0.19
4,404.00	15.74	180.48	4,250.66	-1,089.70	-58.96	1,091.30	0.60	0.00	-2.22
4,499.00	16.09	182.86	4,342.02	-1,115.74	-59.72	1,117.33	0.78	0.37	2.51
4,594.00	14.86	181.98	4,433.57	-1,141.06	-60.80	1,142.68	1.32	-1.29	-0.93
4,688.00	15.48	183.65	4,524.30	-1,165.63	-62.02	1,167.27	0.81	0.66	1.78
4,783.00	13.89	182.06	4,616.19	-1,189.68	-63.23	1,191.35	1.73	-1.67	-1.67
4,878.00	13.89	178.46	4,708.42	-1,212.47	-63.34	1,214.12	0.91	0.00	-3.79
4,972.00	14.07	175.03	4,799.63	-1,235.13	-62.04	1,236.67	0.90	0.19	-3.65
5,067.00	14.16	174.07	4,891.77	-1,258.20	-59.84	1,259.58	0.26	0.09	-1.01
5,162.00	13.19	175.03	4,984.07	-1,280.55	-57.70	1,281.78	1.05	-1.02	1.01
5,256.00	12.66	174.59	5,075.69	-1,301.49	-55.80	1,302.58	0.57	-0.56	-0.47
5,351.00	10.82	177.76	5,168.70	-1,320.77	-54.47	1,321.76	2.05	-1.94	3.34
5,446.00	9.15	179.08	5,262.26	-1,337.23	-54.00	1,338.17	1.77	-1.76	1.39
5,540.00	8.35	174.15	5,355.16	-1,351.49	-53.19	1,352.37	1.17	-0.85	-5.24
5,635.00	7.56	177.93	5,449.25	-1,364.60	-52.26	1,365.40	1.00	-0.83	3.98
5,730.00	6.24	177.58	5,543.56	-1,376.01	-51.82	1,376.76	1.39	-1.39	-0.37
5,825.00	5.19	171.25	5,638.09	-1,385.41	-50.94	1,386.11	1.29	-1.11	-6.66
5,919.00	4.40	160.27	5,731.76	-1,393.01	-49.08	1,393.59	1.28	-0.84	-11.68
6,014.00	2.90	161.85	5,826.56	-1,398.72	-47.10	1,399.18	1.58	-1.58	1.66
6,109.00	1.76	186.99	5,921.49	-1,402.45	-46.53	1,402.88	1.58	-1.20	26.46
6,204.00	1.06	220.38	6,016.46	-1,404.57	-47.28	1,405.03	1.11	-0.74	35.15
6,298.00	0.79	232.87	6,110.45	-1,405.62	-48.36	1,406.15	0.36	-0.29	13.29
6,393.00	0.70	41.53	6,205.44	-1,405.58	-48.49	1,406.11	1.56	-0.09	177.54
6,488.00	1.06	38.80	6,300.43	-1,404.47	-47.56	1,404.95	0.38	0.38	-2.87
6,582.00	1.14	52.25	6,394.41	-1,403.22	-46.27	1,403.63	0.29	0.09	14.31
6,677.00	0.62	57.17	6,489.40	-1,402.36	-45.09	1,402.71	0.55	-0.55	5.18
6,772.00	0.35	68.25	6,584.40	-1,401.97	-44.39	1,402.28	0.30	-0.28	11.66
6,866.00	0.44	54.71	6,678.40	-1,401.66	-43.83	1,401.94	0.14	0.10	-14.40
6,961.00	0.62	54.89	6,773.39	-1,401.15	-43.11	1,401.39	0.19	0.19	0.19
7,056.00	0.70	5.05	6,868.39	-1,400.28	-42.64	1,400.49	0.59	0.08	-52.46
7,151.00	0.62	326.56	6,963.38	-1,399.27	-42.87	1,399.50	0.46	-0.08	-40.52
7,246.00	0.53	297.03	7,058.38	-1,398.64	-43.55	1,398.91	0.32	-0.09	-31.08
7,340.00	0.62	269.16	7,152.37	-1,398.45	-44.45	1,398.77	0.31	0.10	-29.65
7,435.00	0.79	278.74	7,247.37	-1,398.36	-45.61	1,398.74	0.22	0.18	10.08

Company:	OXY USA RMAT	Local Co-ordinate Reference:	Well CC 697-16-09B - Slot X
Project:	Garfield County, CO NAD27	TVD Reference:	GL 8393' & RKB 30' @ 8423.00ft (H&P 330)
Site:	Cascade Creek 609-14 Pad	MD Reference:	GL 8393' & RKB 30' @ 8423.00ft (H&P 330)
Well:	CC 697-16-09B	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Rockies-R5000.1

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)
7,530.00	1.14	275.40	7,342.35	-1,398.17	-47.19	1,398.64	0.37	0.37	-3.52
7,625.00	1.06	268.55	7,437.33	-1,398.10	-49.01	1,398.67	0.16	-0.08	-7.21
7,719.00	0.88	245.70	7,531.32	-1,398.42	-50.54	1,399.08	0.45	-0.19	-24.31
7,814.00	0.97	243.06	7,626.31	-1,399.09	-51.92	1,399.82	0.10	0.09	-2.78
7,909.00	0.88	245.70	7,721.30	-1,399.75	-53.30	1,400.56	0.10	-0.09	2.78
8,003.00	0.53	242.09	7,815.29	-1,400.25	-54.35	1,401.12	0.38	-0.37	-3.84
8,098.00	0.35	263.10	7,910.29	-1,400.49	-55.02	1,401.39	0.25	-0.19	22.12
8,193.00	0.44	317.68	8,005.28	-1,400.26	-55.56	1,401.19	0.39	0.09	57.45
8,288.00	0.88	345.45	8,100.28	-1,399.28	-55.99	1,400.24	0.56	0.46	29.23
8,382.00	1.41	338.51	8,194.26	-1,397.51	-56.59	1,398.50	0.58	0.56	-7.38
8,477.00	1.58	326.47	8,289.23	-1,395.33	-57.74	1,396.39	0.37	0.18	-12.67
8,572.00	1.93	294.83	8,384.18	-1,393.57	-59.92	1,394.75	1.07	0.37	-33.31
8,667.00	2.37	279.36	8,479.12	-1,392.57	-63.31	1,393.94	0.76	0.46	-16.28
8,761.00	2.99	270.66	8,573.02	-1,392.23	-67.68	1,393.84	0.79	0.66	-9.26
8,839.00	3.08	265.91	8,650.91	-1,392.36	-71.80	1,394.20	0.34	0.12	-6.09
Last SDI MWD Survey									
8,890.00	3.08	265.91	8,701.83	-1,392.55	-74.53	1,394.54	0.00	0.00	0.00
Projection to TD - BHL = 628300.51 ft N, 1229237.17 ft E									

Design Targets
Target Name

- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- Shape									
CC 697-16-09B Target	-8.00	182.99	7,825.00	-1,427.23	-79.09	628,265.99	1,229,231.58	39° 31' 35.681 N	108° 13' 58.109 W
- actual wellpath misses target center by 36.52ft at 8012.96ft MD (7825.24 TVD, -1400.29 N, -54.43 E)									
- Circle (radius 50.00)									
CC 697-16-09B Target 2	-8.00	182.99	7,877.00	-1,427.23	-79.09	628,265.99	1,229,231.58	39° 31' 35.681 N	108° 13' 58.109 W
- actual wellpath misses target center by 36.14ft at 8064.95ft MD (7877.24 TVD, -1400.45 N, -54.81 E)									
- Circle (radius 50.00)									
CC 697-16-09B 8°	0.00	183.17	7,877.00	-1,427.23	-79.09	628,265.99	1,229,231.58	39° 31' 35.681 N	108° 13' 58.109 W
- actual wellpath misses target center by 36.14ft at 8064.95ft MD (7877.24 TVD, -1400.45 N, -54.81 E)									
- Circle (radius 50.00)									



SDI
Survey Report



Company: OXY USA RMAT
Project: Garfield County, CO NAD27
Site: Cascade Creek 609-14 Pad
Well: CC 697-16-09B
Wellbore: OH
Design: OH

Local Co-ordinate Reference: Well CC 697-16-09B - Slot X
TVD Reference: GL 8393' & RKB 30' @ 8423.00ft (H&P 330)
MD Reference: GL 8393' & RKB 30' @ 8423.00ft (H&P 330)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: Rockies-R5000.1

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
92.00	91.99	0.00	0.87	First Gyro Survey
829.00	821.36	-83.27	-5.61	Last Gyro Survey
895.00	884.53	-102.31	-4.05	First SDI MWD Survey
2,635.00	2,553.10	-593.56	-34.24	Last Survey in 14 3/4" Hole
2,699.00	2,613.81	-613.73	-36.20	First Survey in 8 3/4" Hole
8,839.00	8,650.91	-1,392.36	-71.80	Last SDI MWD Survey
8,890.00	8,701.83	-1,392.55	-74.53	Projection to TD
8,890.00	8,701.83	-1,392.55	-74.53	BHL = 628300.51 ft N, 1229237.17 ft E

Checked By: _____

Approved By: _____

Date: _____