



**Scientific Drilling**  
Rocky Mountain Operations

Company: OXY USA RMAT  
Project: Garfield County, CO NAD27  
Site: Cascade Creek 697-06D Pad



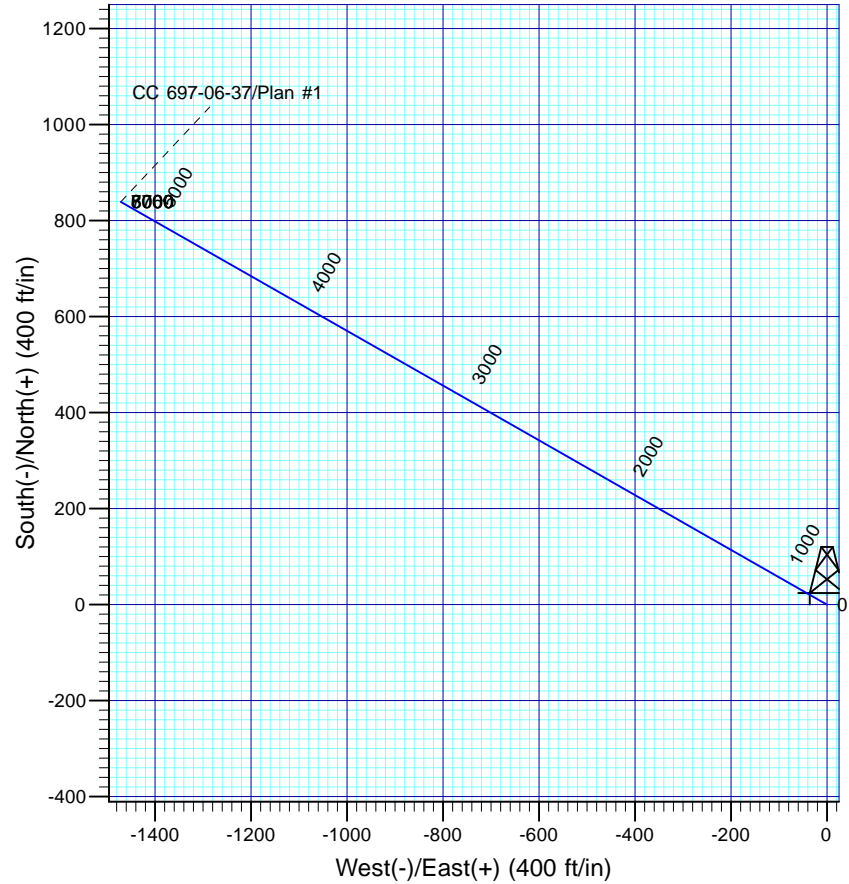
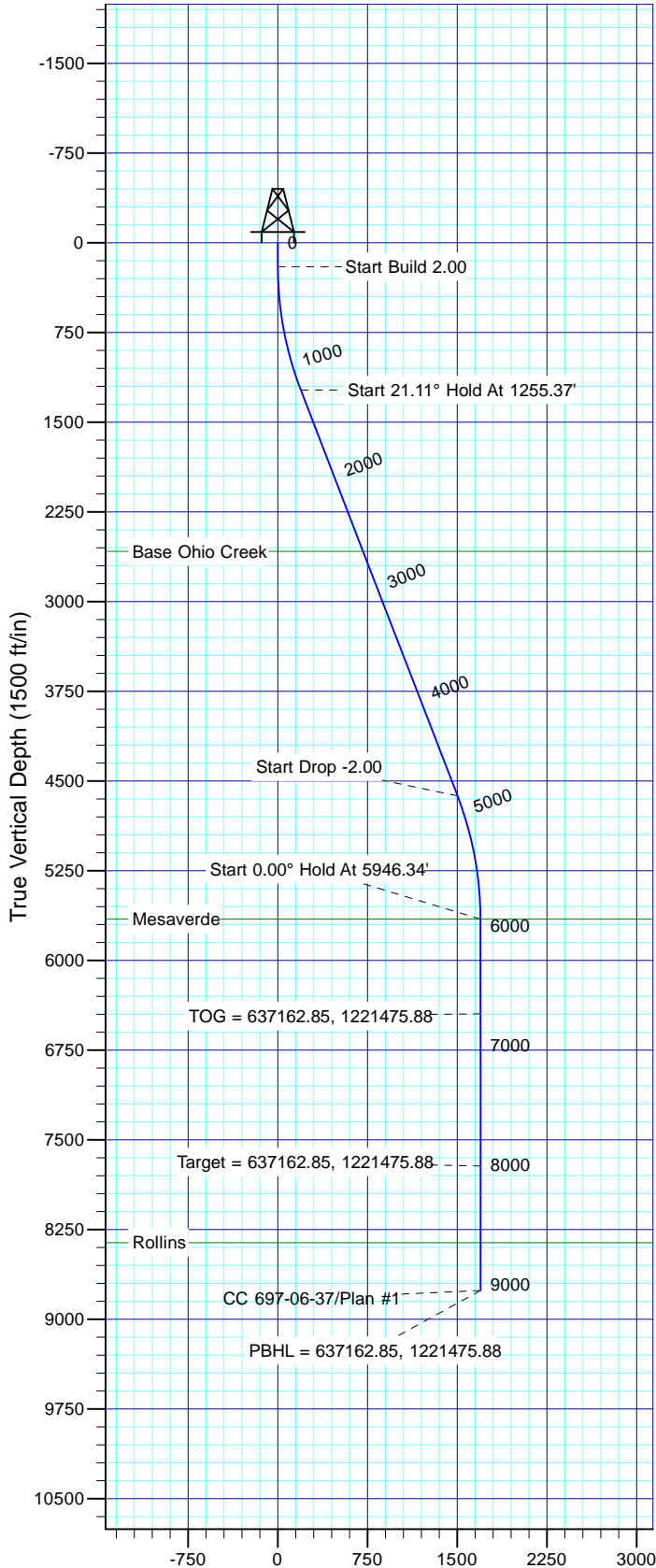
Well Details: CC 697-06-37

TVD Reference: GL 8345' & RKB 30' @ 8375.00ft (H&P) Ground Level: 8345.00  
+N/-S 0.00 +E/-W 0.00 Northing 636279.61 Easting 1222921.00 Latitude 39° 32' 52.965 N Longitude 108° 15' 21.710 W Slot D



Azimuths to True North  
Magnetic North: 10.35°

Magnetic Field  
Strength: 52188.5nT  
Dip Angle: 65.73°  
Date: 03/06/2012  
Model: IGRF2005-10



#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
2580.00	2700.68	Base Ohio Creek
5655.00	5946.34	Mesaverde
8360.00	8651.34	Rollins

Plan: Plan #1

13:29, March 07 2012  
Created By: Janie Cooke

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

#### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VFace	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
3	1255.37	21.11	299.69	1231.66	95.21	-166.97	2.00	299.69	192.21	
4	4890.97	21.11	299.69	4623.34	743.78	-1304.28	0.00	0.001501.45		
5	5946.34	0.00	0.00	5655.00	839.00	-1471.25	2.00	180.001693.66		
6	8010.09	0.00	0.00	7718.75	839.00	-1471.25	0.00	0.001693.66		
7	9051.34	0.00	0.00	8760.00	839.00	-1471.25	0.00	0.001693.66		

CC 697-06-37 Target

# **OXY USA RMAT**

**Garfield County, CO NAD27  
Cascade Creek 697-06D Pad  
CC 697-06-37 - Slot D**

**OH**

**Plan: Plan #1**

## **Standard Planning Report**

**07 March, 2012**





<b>Database:</b>	EDM-R5000-JanieCooke-Local	<b>Local Co-ordinate Reference:</b>	Well CC 697-06-37 - Slot D
<b>Company:</b>	OXY USA RMAT	<b>TVD Reference:</b>	GL 8345' & RKB 30' @ 8375.00ft (H&P)
<b>Project:</b>	Garfield County, CO NAD27	<b>MD Reference:</b>	GL 8345' & RKB 30' @ 8375.00ft (H&P)
<b>Site:</b>	Cascade Creek 697-06D Pad	<b>North Reference:</b>	True
<b>Well:</b>	CC 697-06-37	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1		

<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 697-06D Pad, Sec 6 T6S R97W		
<b>Site Position:</b>		<b>Northing:</b>	636,260.71 usft
<b>From:</b>	Map	<b>Easting:</b>	1,222,814.04 usft
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13.200 in
		<b>Latitude:</b>	39° 32' 52.746 N
		<b>Longitude:</b>	108° 15' 23.068 W
		<b>Grid Convergence:</b>	-1.74 °

<b>Well</b>	CC 697-06-37 - Slot D		
<b>Well Position</b>	<b>+N/-S</b>	22.14 ft	<b>Northing:</b>
	<b>+E/-W</b>	106.34 ft	<b>Easting:</b>
<b>Position Uncertainty</b>	0.00 ft		<b>Wellhead Elevation:</b>
			<b>Latitude:</b>
			<b>Longitude:</b>
			<b>Ground Level:</b>

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2005-10	03/06/2012	10.35	65.73	52,188

<b>Design</b>	Plan #1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>
	(ft)	(ft)	(ft)	(°)
	0.00	0.00	0.00	299.69

<b>Plan Sections</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,255.37	21.11	299.69	1,231.66	95.21	-166.97	2.00	2.00	0.00	299.69	
4,890.97	21.11	299.69	4,623.34	743.78	-1,304.28	0.00	0.00	0.00	0.00	
5,946.34	0.00	0.00	5,655.00	839.00	-1,471.25	2.00	-2.00	0.00	180.00	
8,010.09	0.00	0.00	7,718.75	839.00	-1,471.25	0.00	0.00	0.00	0.00	CC 697-06-37 Target
9,051.34	0.00	0.00	8,760.00	839.00	-1,471.25	0.00	0.00	0.00	0.00	



**Database:** EDM-R5000-JanieCooke-Local  
**Company:** OXY USA RMat  
**Project:** Garfield County, CO NAD27  
**Site:** Cascade Creek 697-06D Pad  
**Well:** CC 697-06-37  
**Wellbore:** OH  
**Design:** Plan #1

**Local Co-ordinate Reference:**  
**TVD Reference:**  
**MD Reference:**  
**North Reference:**  
**Survey Calculation Method:**

Well CC 697-06-37 - Slot D  
 GL 8345' & RKB 30' @ 8375.00ft (H&P)  
 GL 8345' & RKB 30' @ 8375.00ft (H&P)  
 True  
 Minimum Curvature

## Planned 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
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Start Build 2.00</b>									
300.00	2.00	299.69	299.98	0.86	-1.52	1.75	2.00	2.00	0.00
400.00	4.00	299.69	399.84	3.46	-6.06	6.98	2.00	2.00	0.00
500.00	6.00	299.69	499.45	7.77	-13.63	15.69	2.00	2.00	0.00
600.00	8.00	299.69	598.70	13.81	-24.22	27.88	2.00	2.00	0.00
700.00	10.00	299.69	697.47	21.56	-37.81	43.52	2.00	2.00	0.00
800.00	12.00	299.69	795.62	31.01	-54.38	62.60	2.00	2.00	0.00
900.00	14.00	299.69	893.06	42.15	-73.92	85.10	2.00	2.00	0.00
1,000.00	16.00	299.69	989.64	54.98	-96.40	110.98	2.00	2.00	0.00
1,100.00	18.00	299.69	1,085.27	69.46	-121.80	140.21	2.00	2.00	0.00
1,200.00	20.00	299.69	1,179.82	85.58	-150.08	172.77	2.00	2.00	0.00
1,255.37	21.11	299.69	1,231.66	95.21	-166.97	192.21	2.00	2.00	0.00
<b>Start 21.11° Hold At 1255.37'</b>									
1,300.00	21.11	299.69	1,273.30	103.18	-180.93	208.28	0.00	0.00	0.00
1,400.00	21.11	299.69	1,366.59	121.02	-212.21	244.29	0.00	0.00	0.00
1,500.00	21.11	299.69	1,459.88	138.86	-243.49	280.30	0.00	0.00	0.00
1,600.00	21.11	299.69	1,553.17	156.69	-274.78	316.31	0.00	0.00	0.00
1,700.00	21.11	299.69	1,646.46	174.53	-306.06	352.33	0.00	0.00	0.00
1,800.00	21.11	299.69	1,739.75	192.37	-337.34	388.34	0.00	0.00	0.00
1,900.00	21.11	299.69	1,833.04	210.21	-368.62	424.35	0.00	0.00	0.00
2,000.00	21.11	299.69	1,926.33	228.05	-399.91	460.36	0.00	0.00	0.00
2,100.00	21.11	299.69	2,019.62	245.89	-431.19	496.37	0.00	0.00	0.00
2,200.00	21.11	299.69	2,112.91	263.73	-462.47	532.38	0.00	0.00	0.00
2,300.00	21.11	299.69	2,206.20	281.57	-493.75	568.40	0.00	0.00	0.00
2,400.00	21.11	299.69	2,299.49	299.41	-525.04	604.41	0.00	0.00	0.00
2,500.00	21.11	299.69	2,392.78	317.25	-556.32	640.42	0.00	0.00	0.00
2,600.00	21.11	299.69	2,486.07	335.09	-587.60	676.43	0.00	0.00	0.00
2,700.00	21.11	299.69	2,579.37	352.93	-618.88	712.44	0.00	0.00	0.00
2,700.68	21.11	299.69	2,580.00	353.05	-619.10	712.69	0.00	0.00	0.00
<b>Base Ohio Creek</b>									
2,800.00	21.11	299.69	2,672.66	370.77	-650.17	748.46	0.00	0.00	0.00
2,900.00	21.11	299.69	2,765.95	388.61	-681.45	784.47	0.00	0.00	0.00
3,000.00	21.11	299.69	2,859.24	406.45	-712.73	820.48	0.00	0.00	0.00
3,100.00	21.11	299.69	2,952.53	424.28	-744.02	856.49	0.00	0.00	0.00
3,200.00	21.11	299.69	3,045.82	442.12	-775.30	892.50	0.00	0.00	0.00
3,300.00	21.11	299.69	3,139.11	459.96	-806.58	928.51	0.00	0.00	0.00
3,400.00	21.11	299.69	3,232.40	477.80	-837.86	964.53	0.00	0.00	0.00
3,500.00	21.11	299.69	3,325.69	495.64	-869.15	1,000.54	0.00	0.00	0.00
3,600.00	21.11	299.69	3,418.98	513.48	-900.43	1,036.55	0.00	0.00	0.00
3,700.00	21.11	299.69	3,512.27	531.32	-931.71	1,072.56	0.00	0.00	0.00
3,800.00	21.11	299.69	3,605.56	549.16	-962.99	1,108.57	0.00	0.00	0.00
3,900.00	21.11	299.69	3,698.85	567.00	-994.28	1,144.58	0.00	0.00	0.00
4,000.00	21.11	299.69	3,792.14	584.84	-1,025.56	1,180.60	0.00	0.00	0.00
4,100.00	21.11	299.69	3,885.44	602.68	-1,056.84	1,216.61	0.00	0.00	0.00
4,200.00	21.11	299.69	3,978.73	620.52	-1,088.12	1,252.62	0.00	0.00	0.00
4,300.00	21.11	299.69	4,072.02	638.36	-1,119.41	1,288.63	0.00	0.00	0.00
4,400.00	21.11	299.69	4,165.31	656.20	-1,150.69	1,324.64	0.00	0.00	0.00
4,500.00	21.11	299.69	4,258.60	674.04	-1,181.97	1,360.65	0.00	0.00	0.00
4,600.00	21.11	299.69	4,351.89	691.87	-1,213.25	1,396.67	0.00	0.00	0.00
4,700.00	21.11	299.69	4,445.18	709.71	-1,244.54	1,432.68	0.00	0.00	0.00



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**Site:** Cascade Creek 697-06D Pad  
**Well:** CC 697-06-37  
**Wellbore:** OH  
**Design:** Plan #1

**Local Co-ordinate Reference:**  
**TVD Reference:**  
**MD Reference:**  
**North Reference:**  
**Survey Calculation Method:**

Well CC 697-06-37 - Slot D  
 GL 8345' & RKB 30' @ 8375.00ft (H&P)  
 GL 8345' & RKB 30' @ 8375.00ft (H&P)  
 True  
 Minimum Curvature

## Planned 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)
4,800.00	21.11	299.69	4,538.47	727.55	-1,275.82	1,468.69	0.00	0.00	0.00
4,890.97	21.11	299.69	4,623.34	743.78	-1,304.28	1,501.45	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
4,900.00	20.93	299.69	4,631.77	745.39	-1,307.09	1,504.69	2.00	-2.00	0.00
5,000.00	18.93	299.69	4,725.77	762.27	-1,336.70	1,538.77	2.00	-2.00	0.00
5,100.00	16.93	299.69	4,820.91	777.52	-1,363.43	1,569.55	2.00	-2.00	0.00
5,200.00	14.93	299.69	4,917.07	791.11	-1,387.27	1,596.99	2.00	-2.00	0.00
5,300.00	12.93	299.69	5,014.13	803.03	-1,408.18	1,621.05	2.00	-2.00	0.00
5,400.00	10.93	299.69	5,111.96	813.27	-1,426.13	1,641.72	2.00	-2.00	0.00
5,500.00	8.93	299.69	5,210.46	821.81	-1,441.10	1,658.96	2.00	-2.00	0.00
5,600.00	6.93	299.69	5,309.50	828.64	-1,453.08	1,672.75	2.00	-2.00	0.00
5,700.00	4.93	299.69	5,408.96	833.75	-1,462.05	1,683.07	2.00	-2.00	0.00
5,800.00	2.93	299.69	5,508.72	837.15	-1,468.00	1,689.92	2.00	-2.00	0.00
5,900.00	0.93	299.69	5,608.66	838.81	-1,470.92	1,693.28	2.00	-2.00	0.00
5,946.34	0.00	0.00	5,655.00	839.00	-1,471.25	1,693.66	2.00	-2.00	0.00
<b>Start 0.00° Hold At 5946.34' - Mesaverde</b>									
6,000.00	0.00	0.00	5,708.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
6,100.00	0.00	0.00	5,808.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
6,200.00	0.00	0.00	5,908.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
6,300.00	0.00	0.00	6,008.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
6,400.00	0.00	0.00	6,108.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
6,500.00	0.00	0.00	6,208.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
6,600.00	0.00	0.00	6,308.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
6,700.00	0.00	0.00	6,408.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
6,736.34	0.00	0.00	6,445.00	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
<b>TOG = 637162.85, 1221475.88</b>									
6,800.00	0.00	0.00	6,508.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
6,900.00	0.00	0.00	6,608.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
7,000.00	0.00	0.00	6,708.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
7,100.00	0.00	0.00	6,808.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
7,200.00	0.00	0.00	6,908.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
7,300.00	0.00	0.00	7,008.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
7,400.00	0.00	0.00	7,108.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
7,500.00	0.00	0.00	7,208.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
7,600.00	0.00	0.00	7,308.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
7,700.00	0.00	0.00	7,408.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
7,800.00	0.00	0.00	7,508.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
7,900.00	0.00	0.00	7,608.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
8,000.00	0.00	0.00	7,708.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
8,010.09	0.00	0.00	7,718.75	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
<b>Target = 637162.85, 1221475.88</b>									
8,100.00	0.00	0.00	7,808.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
8,200.00	0.00	0.00	7,908.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
8,300.00	0.00	0.00	8,008.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
8,400.00	0.00	0.00	8,108.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
8,500.00	0.00	0.00	8,208.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
8,600.00	0.00	0.00	8,308.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
8,651.34	0.00	0.00	8,360.00	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
<b>Rollins</b>									
8,700.00	0.00	0.00	8,408.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
8,800.00	0.00	0.00	8,508.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
8,900.00	0.00	0.00	8,608.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
9,000.00	0.00	0.00	8,708.66	839.00	-1,471.25	1,693.66	0.00	0.00	0.00
9,051.34	0.00	0.00	8,760.00	839.00	-1,471.25	1,693.66	0.00	0.00	0.00



<b>Database:</b>	EDM-R5000-JanieCooke-Local	<b>Local Co-ordinate Reference:</b>	Well CC 697-06-37 - Slot D
<b>Company:</b>	OXY USA RMAT	<b>TVD Reference:</b>	GL 8345' & RKB 30' @ 8375.00ft (H&P)
<b>Project:</b>	Garfield County, CO NAD27	<b>MD Reference:</b>	GL 8345' & RKB 30' @ 8375.00ft (H&P)
<b>Site:</b>	Cascade Creek 697-06D Pad	<b>North Reference:</b>	True
<b>Well:</b>	CC 697-06-37	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1		

Planned 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)
PBHL = 637162.85, 1221475.88									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
CC 697-06-37 Target	0.00	0.00	7,718.75	839.00	-1,471.25	637,162.85	1,221,475.88	39° 33' 1.257 N	108° 15' 40.493 W
- plan hits target center									
- Circle (radius 50.00)									

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,700.68	2,580.00	Base Ohio Creek		0.00		
5,946.34	5,655.00	Mesaverde		0.00		
8,651.34	8,360.00	Rollins		0.00		

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
200.00	200.00	0.00	0.00	Start Build 2.00	
1,255.37	1,231.66	95.21	-166.97	Start 21.11° Hold At 1255.37"	
4,890.97	4,623.34	743.78	-1,304.28	Start Drop -2.00	
5,946.34	5,655.00	839.00	-1,471.25	Start 0.00° Hold At 5946.34'	
6,736.34	6,445.00	839.00	-1,471.25	TOG = 637162.85, 1221475.88	
8,010.09	7,718.75	839.00	-1,471.25	Target = 637162.85, 1221475.88	
9,051.34	8,760.00	839.00	-1,471.25	PBHL = 637162.85, 1221475.88	