



**Scientific Drilling**  
Rocky Mountain Operations

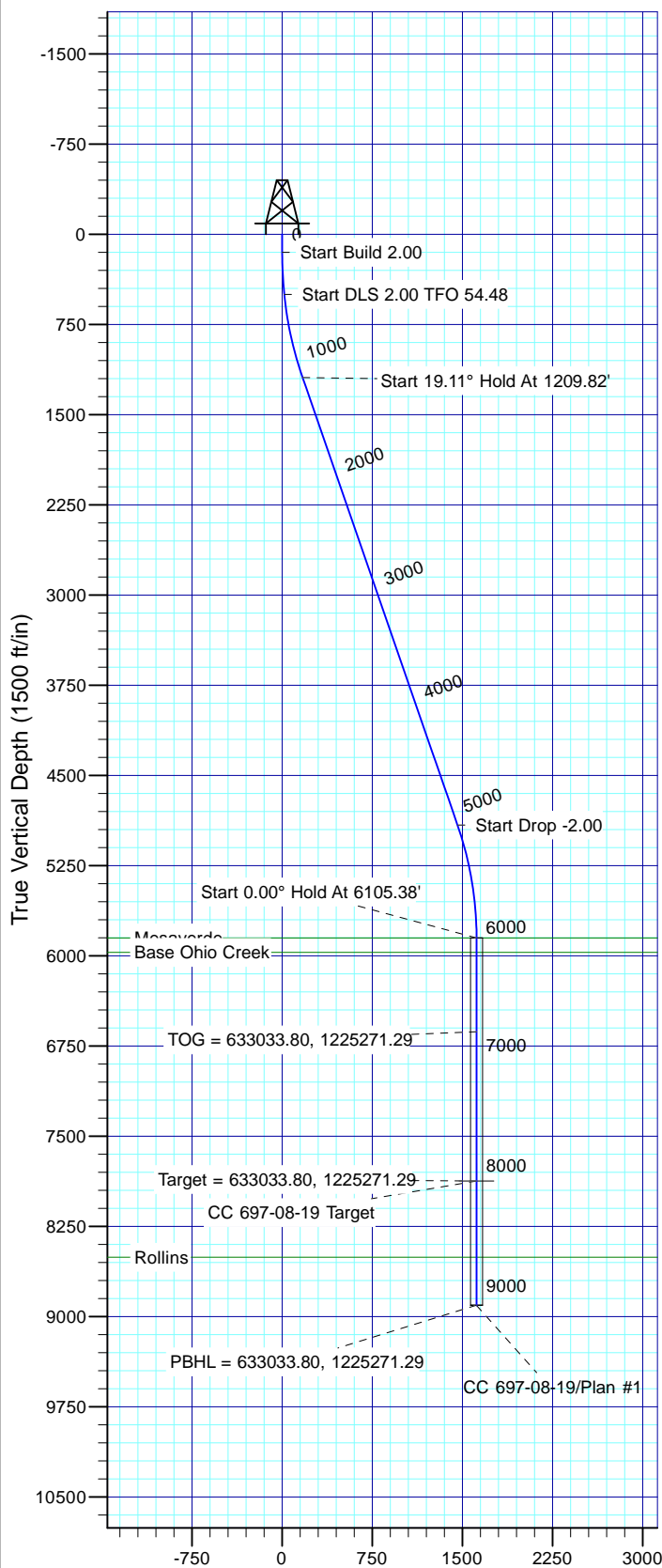
Company: OXY USA RMAT  
Project: Garfield County, CO NAD27  
Site: Cascade Creek 697-08A Pad



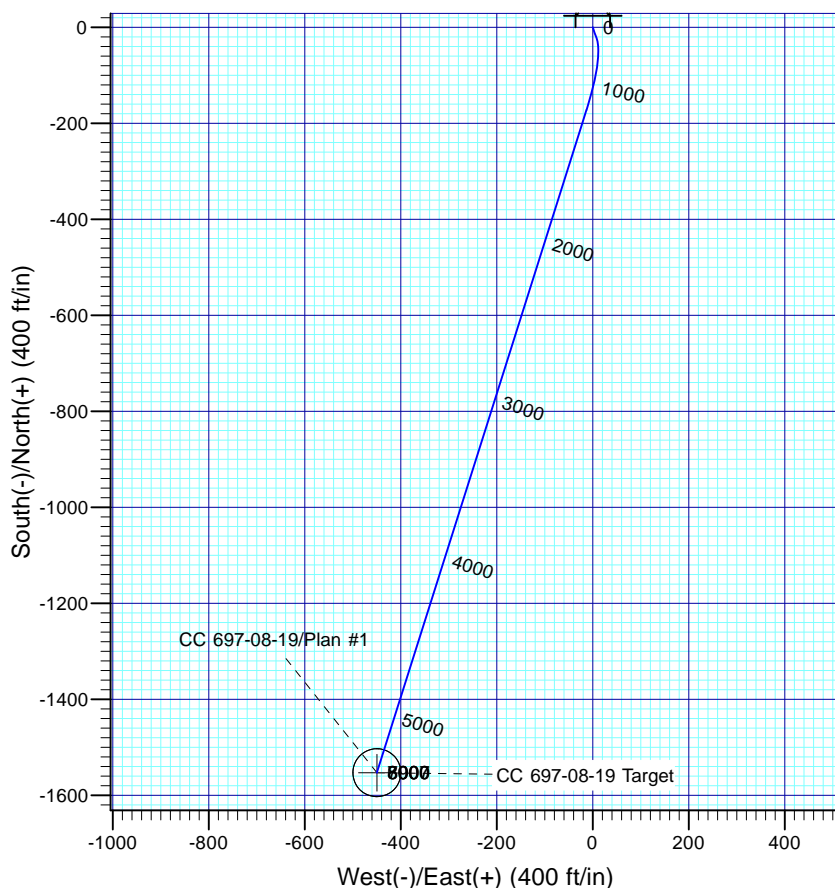
Well Details: CC 697-08-19

TVD Reference: GL 8401' & RKB 30' @ 8431.00ft (H&P Rig) Ground Level: 8401.00  
+N/-S 0.00 +E/-W 0.00 Northing 634572.41 Easting 1225767.80 Latitude 39° 32' 36.951 N Longitude 108° 14' 44.726 W Slot X

T M Azimuths to True North  
Magnetic North: 10.48°  
Magnetic Field  
Strength: 52229.5nT  
Dip Angle: 65.73°  
Date: 5/24/2011  
Model: IGRF2010



Vertical Section at 196.15° (1500 ft/in)



#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
5851.00	6105.38	Mesaverde
5971.00	6225.38	Base Ohio Creek
8506.00	8760.38	Rollins

Plan: Plan #1

8:51, May 26 2011  
Created By: Rex Hall

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	Vsect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	150.00	0.00	0.00	150.00	0.00	0.00	0.00	0.00	0.00	
3	500.00	7.00	160.00	499.13	-20.07	7.30	2.00	160.00	17.24	
4	1209.61	19.11	197.55	1190.07	-172.22	-13.04	2.00	54.48	169.05	CC 697-08-19 Target
5	1209.82	19.11	197.55	1190.27	-172.29	-13.07	2.00	0.00	169.12	
6	5149.67	19.11	197.55	4912.92	-1402.33	-402.16	0.00	0.001458.85		
7	6105.38	0.00	0.00	5851.00	-1552.92	-449.80	2.00	180.001616.75		
8	8126.38	0.00	0.00	7872.00	-1552.92	-449.80	0.00	0.001616.75		CC 697-08-19 Target
9	9160.38	0.00	0.00	8906.00	-1552.92	-449.80	0.00	0.001616.75		

# **OXY USA RMAT**

**Garfield County, CO NAD27  
Cascade Creek 697-08A Pad  
CC 697-08-19 - Slot X**

**OH**

**Plan: Plan #1**

## **Standard Planning Report**

**26 May, 2011**





<b>Database:</b>	Rockies Compass Server	<b>Local Co-ordinate Reference:</b>	Well CC 697-08-19 - Slot X
<b>Company:</b>	OXY USA RMAT	<b>TVD Reference:</b>	GL 8401' & RKB 30' @ 8431.00ft (H&P Rig)
<b>Project:</b>	Garfield County, CO NAD27	<b>MD Reference:</b>	GL 8401' & RKB 30' @ 8431.00ft (H&P Rig)
<b>Site:</b>	Cascade Creek 697-08A Pad	<b>North Reference:</b>	True
<b>Well:</b>	CC 697-08-19	<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 697-08A Pad, Sec 8 T6S R97W			
<b>Site Position:</b>		<b>Northing:</b>	635,765.16 usft	<b>Latitude:</b> 39° 32' 48.728 N
<b>From:</b>	Lat/Long	<b>Easting:</b>	1,225,748.33 usft	<b>Longitude:</b> 108° 14' 45.434 W
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b> -1.73 °

<b>Well</b>	CC 697-08-19 - Slot X			
<b>Well Position</b>	<b>+N/-S</b>	-1,191.62 ft	<b>Northing:</b>	634,572.41 usft
	<b>+E/-W</b>	55.51 ft	<b>Easting:</b>	1,225,767.80 usft
<b>Position Uncertainty</b>	0.00 ft	<b>Wellhead Elevation:</b>		<b>Ground Level:</b> 8,401.00 ft

<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>
	IGRF2010	5/24/2011	10.48	65.73	52,229

<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) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	196.15

<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	
150.00	0.00	0.00	150.00	0.00	0.00	0.00	0.00	0.00	0.00	
500.00	7.00	160.00	499.13	-20.07	7.30	2.00	2.00	0.00	160.00	
1,209.61	19.11	197.55	1,190.07	-172.22	-13.04	2.00	1.71	5.29	54.48	CC 697-08-19 Target
1,209.82	19.11	197.55	1,190.27	-172.29	-13.07	2.00	2.00	0.00	0.00	
5,149.67	19.11	197.55	4,912.92	-1,402.33	-402.16	0.00	0.00	0.00	0.00	
6,105.38	0.00	0.00	5,851.00	-1,552.92	-449.80	2.00	-2.00	0.00	180.00	
8,126.38	0.00	0.00	7,872.00	-1,552.92	-449.80	0.00	0.00	0.00	0.00	CC 697-08-19 Target
9,160.38	0.00	0.00	8,906.00	-1,552.92	-449.80	0.00	0.00	0.00	0.00	



<b>Database:</b>	Rockies Compass Server	<b>Local Co-ordinate Reference:</b>	Well CC 697-08-19 - Slot X
<b>Company:</b>	OXY USA RMAT	<b>TVD Reference:</b>	GL 8401' & RKB 30' @ 8431.00ft (H&P Rig)
<b>Project:</b>	Garfield County, CO NAD27	<b>MD Reference:</b>	GL 8401' & RKB 30' @ 8431.00ft (H&P Rig)
<b>Site:</b>	Cascade Creek 697-08A Pad	<b>North Reference:</b>	True
<b>Well:</b>	CC 697-08-19	<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)
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
150.00	0.00	0.00	150.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Start Build 2.00</b>									
200.00	1.00	160.00	200.00	-0.41	0.15	0.35	2.00	2.00	0.00
300.00	3.00	160.00	299.93	-3.69	1.34	3.17	2.00	2.00	0.00
400.00	5.00	160.00	399.68	-10.24	3.73	8.80	2.00	2.00	0.00
500.00	7.00	160.00	499.13	-20.07	7.30	17.24	2.00	2.00	0.00
<b>Start DLS 2.00 TFO 54.48</b>									
600.00	8.32	171.32	598.24	-32.95	10.48	28.73	2.00	1.32	11.32
700.00	9.87	179.33	696.98	-48.68	11.67	43.51	2.00	1.55	8.02
800.00	11.56	185.12	795.24	-67.23	10.88	61.55	2.00	1.69	5.78
900.00	13.34	189.41	892.89	-88.59	8.10	82.84	2.00	1.77	4.29
1,000.00	15.17	192.70	989.81	-112.74	3.34	107.36	2.00	1.83	3.29
1,100.00	17.03	195.29	1,085.88	-139.63	-3.40	135.06	2.00	1.87	2.59
1,200.00	18.93	197.37	1,180.99	-169.24	-12.11	165.92	2.00	1.89	2.09
1,209.61	19.11	197.55	1,190.07	-172.22	-13.04	169.05	2.00	1.91	1.87
1,209.82	19.11	197.55	1,190.27	-172.29	-13.07	169.12	2.00	2.00	0.00
<b>Start 19.11° Hold At 1209.82'</b>									
1,300.00	19.11	197.55	1,275.49	-200.45	-21.97	198.64	0.00	0.00	0.00
1,400.00	19.11	197.55	1,369.97	-231.67	-31.85	231.38	0.00	0.00	0.00
1,500.00	19.11	197.55	1,464.46	-262.89	-41.72	264.12	0.00	0.00	0.00
1,600.00	19.11	197.55	1,558.95	-294.11	-51.60	296.85	0.00	0.00	0.00
1,700.00	19.11	197.55	1,653.43	-325.33	-61.48	329.59	0.00	0.00	0.00
1,800.00	19.11	197.55	1,747.92	-356.55	-71.35	362.32	0.00	0.00	0.00
1,900.00	19.11	197.55	1,842.41	-387.77	-81.23	395.06	0.00	0.00	0.00
2,000.00	19.11	197.55	1,936.89	-418.99	-91.10	427.79	0.00	0.00	0.00
2,100.00	19.11	197.55	2,031.38	-450.21	-100.98	460.53	0.00	0.00	0.00
2,200.00	19.11	197.55	2,125.87	-481.43	-110.85	493.26	0.00	0.00	0.00
2,300.00	19.11	197.55	2,220.35	-512.65	-120.73	526.00	0.00	0.00	0.00
2,400.00	19.11	197.55	2,314.84	-543.87	-130.61	558.73	0.00	0.00	0.00
2,500.00	19.11	197.55	2,409.33	-575.09	-140.48	591.47	0.00	0.00	0.00
2,600.00	19.11	197.55	2,503.81	-606.31	-150.36	624.21	0.00	0.00	0.00
2,700.00	19.11	197.55	2,598.30	-637.53	-160.23	656.94	0.00	0.00	0.00
2,800.00	19.11	197.55	2,692.79	-668.75	-170.11	689.68	0.00	0.00	0.00
2,900.00	19.11	197.55	2,787.27	-699.97	-179.99	722.41	0.00	0.00	0.00
3,000.00	19.11	197.55	2,881.76	-731.19	-189.86	755.15	0.00	0.00	0.00
3,100.00	19.11	197.55	2,976.25	-762.41	-199.74	787.88	0.00	0.00	0.00
3,200.00	19.11	197.55	3,070.73	-793.63	-209.61	820.62	0.00	0.00	0.00
3,300.00	19.11	197.55	3,165.22	-824.85	-219.49	853.35	0.00	0.00	0.00
3,400.00	19.11	197.55	3,259.71	-856.07	-229.36	886.09	0.00	0.00	0.00
3,500.00	19.11	197.55	3,354.19	-887.30	-239.24	918.82	0.00	0.00	0.00
3,600.00	19.11	197.55	3,448.68	-918.52	-249.12	951.56	0.00	0.00	0.00
3,700.00	19.11	197.55	3,543.17	-949.74	-258.99	984.30	0.00	0.00	0.00
3,800.00	19.11	197.55	3,637.66	-980.96	-268.87	1,017.03	0.00	0.00	0.00
3,900.00	19.11	197.55	3,732.14	-1,012.18	-278.74	1,049.77	0.00	0.00	0.00
4,000.00	19.11	197.55	3,826.63	-1,043.40	-288.62	1,082.50	0.00	0.00	0.00
4,100.00	19.11	197.55	3,921.12	-1,074.62	-298.50	1,115.24	0.00	0.00	0.00
4,200.00	19.11	197.55	4,015.60	-1,105.84	-308.37	1,147.97	0.00	0.00	0.00
4,300.00	19.11	197.55	4,110.09	-1,137.06	-318.25	1,180.71	0.00	0.00	0.00
4,400.00	19.11	197.55	4,204.58	-1,168.28	-328.12	1,213.44	0.00	0.00	0.00
4,500.00	19.11	197.55	4,299.06	-1,199.50	-338.00	1,246.18	0.00	0.00	0.00
4,600.00	19.11	197.55	4,393.55	-1,230.72	-347.88	1,278.91	0.00	0.00	0.00



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<b>Site:</b>	Cascade Creek 697-08A Pad	<b>North Reference:</b>	True
<b>Well:</b>	CC 697-08-19	<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)
4,700.00	19.11	197.55	4,488.04	-1,261.94	-357.75	1,311.65	0.00	0.00	0.00
4,800.00	19.11	197.55	4,582.52	-1,293.16	-367.63	1,344.38	0.00	0.00	0.00
4,900.00	19.11	197.55	4,677.01	-1,324.38	-377.50	1,377.12	0.00	0.00	0.00
5,000.00	19.11	197.55	4,771.50	-1,355.60	-387.38	1,409.86	0.00	0.00	0.00
5,100.00	19.11	197.55	4,865.98	-1,386.82	-397.25	1,442.59	0.00	0.00	0.00
5,149.67	19.11	197.55	4,912.92	-1,402.33	-402.16	1,458.85	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
5,200.00	18.11	197.55	4,960.61	-1,417.64	-407.00	1,474.91	2.00	-2.00	0.00
5,300.00	16.11	197.55	5,056.18	-1,445.69	-415.88	1,504.31	2.00	-2.00	0.00
5,400.00	14.11	197.55	5,152.72	-1,470.54	-423.74	1,530.37	2.00	-2.00	0.00
5,500.00	12.11	197.55	5,250.11	-1,492.16	-430.58	1,553.04	2.00	-2.00	0.00
5,600.00	10.11	197.55	5,348.23	-1,510.53	-436.39	1,572.30	2.00	-2.00	0.00
5,700.00	8.11	197.55	5,446.97	-1,525.62	-441.16	1,588.12	2.00	-2.00	0.00
5,800.00	6.11	197.55	5,546.19	-1,537.41	-444.89	1,600.49	2.00	-2.00	0.00
5,900.00	4.11	197.55	5,645.79	-1,545.90	-447.58	1,609.39	2.00	-2.00	0.00
6,000.00	2.11	197.55	5,745.64	-1,551.07	-449.21	1,614.81	2.00	-2.00	0.00
6,100.00	0.11	197.55	5,845.62	-1,552.91	-449.79	1,616.74	2.00	-2.00	0.00
6,105.38	0.00	0.00	5,851.00	-1,552.92	-449.80	1,616.75	2.00	-2.00	0.00
<b>Start 0.00° Hold At 6105.38' - Mesaverde</b>									
6,200.00	0.00	0.00	5,945.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
6,225.38	0.00	0.00	5,971.00	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
<b>Base Ohio Creek</b>									
6,300.00	0.00	0.00	6,045.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
6,400.00	0.00	0.00	6,145.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
6,500.00	0.00	0.00	6,245.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
6,600.00	0.00	0.00	6,345.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
6,700.00	0.00	0.00	6,445.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
6,800.00	0.00	0.00	6,545.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
6,885.38	0.00	0.00	6,631.00	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
<b>TOG = 633033.80, 1225271.29</b>									
6,900.00	0.00	0.00	6,645.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
7,000.00	0.00	0.00	6,745.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
7,100.00	0.00	0.00	6,845.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
7,200.00	0.00	0.00	6,945.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
7,300.00	0.00	0.00	7,045.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
7,400.00	0.00	0.00	7,145.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
7,500.00	0.00	0.00	7,245.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
7,600.00	0.00	0.00	7,345.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
7,700.00	0.00	0.00	7,445.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
7,800.00	0.00	0.00	7,545.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
7,900.00	0.00	0.00	7,645.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
8,000.00	0.00	0.00	7,745.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
8,100.00	0.00	0.00	7,845.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
8,126.38	0.00	0.00	7,872.00	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
<b>Target = 633033.80, 1225271.29</b>									
8,200.00	0.00	0.00	7,945.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
8,300.00	0.00	0.00	8,045.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
8,400.00	0.00	0.00	8,145.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
8,500.00	0.00	0.00	8,245.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
8,600.00	0.00	0.00	8,345.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
8,700.00	0.00	0.00	8,445.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
8,760.38	0.00	0.00	8,506.00	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
<b>Rollins</b>									



<b>Database:</b>	Rockies Compass Server	<b>Local Co-ordinate Reference:</b>	Well CC 697-08-19 - Slot X
<b>Company:</b>	OXY USA RMAT	<b>TVD Reference:</b>	GL 8401' & RKB 30' @ 8431.00ft (H&P Rig)
<b>Project:</b>	Garfield County, CO NAD27	<b>MD Reference:</b>	GL 8401' & RKB 30' @ 8431.00ft (H&P Rig)
<b>Site:</b>	Cascade Creek 697-08A Pad	<b>North Reference:</b>	True
<b>Well:</b>	CC 697-08-19	<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)
8,800.00	0.00	0.00	8,545.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
8,900.00	0.00	0.00	8,645.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
9,000.00	0.00	0.00	8,745.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
9,100.00	0.00	0.00	8,845.62	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
9,160.38	0.00	0.00	8,906.00	-1,552.92	-449.80	1,616.75	0.00	0.00	0.00
PBHL = 633033.80, 1225271.29									

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 697-08-19 Target	0.00	0.00	7,872.00	-1,552.92	-449.80	633,033.80	1,225,271.28	39° 32' 21.602 N	108° 14' 50.467 W
- plan hits target center									
- Circle (radius 50.00)									

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,105.38	5,851.00	Mesaverde		0.00	
6,225.38	5,971.00	Base Ohio Creek		0.00	
8,760.38	8,506.00	Rollins		0.00	

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
150.00	150.00	0.00	0.00	Start Build 2.00
500.00	499.13	-20.07	7.30	Start DLS 2.00 TFO 54.48
1,209.82	1,190.27	-172.29	-13.07	Start 19.11° Hold At 1209.82'
5,149.67	4,912.92	-1,402.33	-402.16	Start Drop -2.00
6,105.38	5,851.00	-1,552.92	-449.80	Start 0.00° Hold At 6105.38'
6,885.38	6,631.00	-1,552.92	-449.80	TOG = 633033.80, 1225271.29
8,126.38	7,872.00	-1,552.92	-449.80	Target = 633033.80, 1225271.29
9,160.38	8,906.00	-1,552.92	-449.80	PBHL = 633033.80, 1225271.29