



**Scientific Drilling**  
Rocky Mountain Operations

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



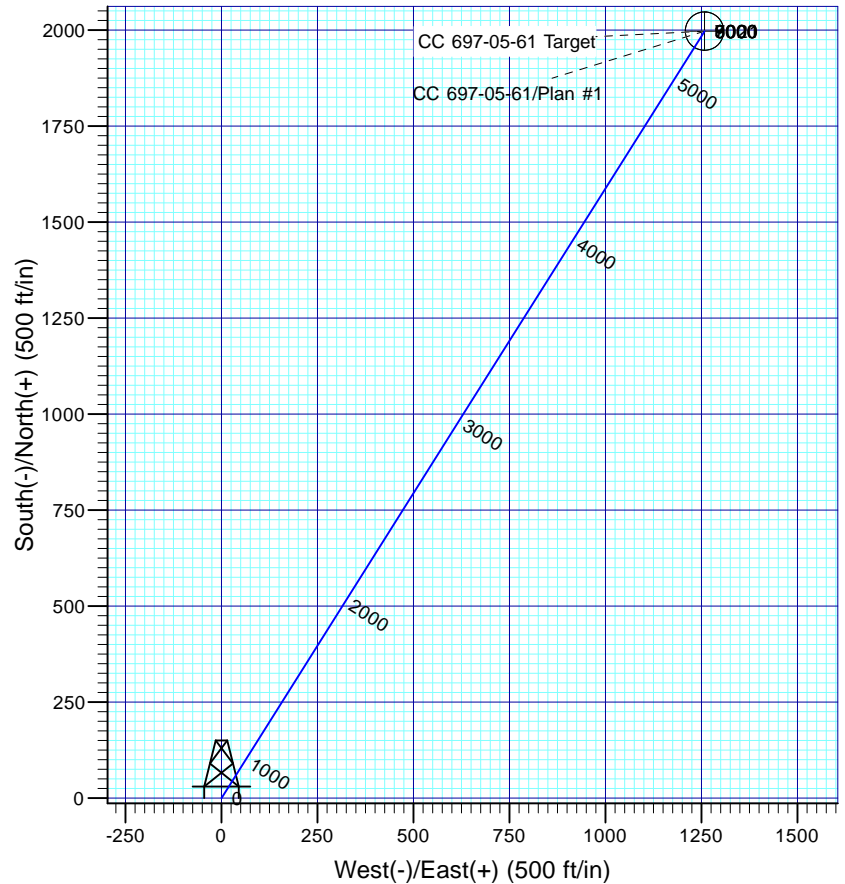
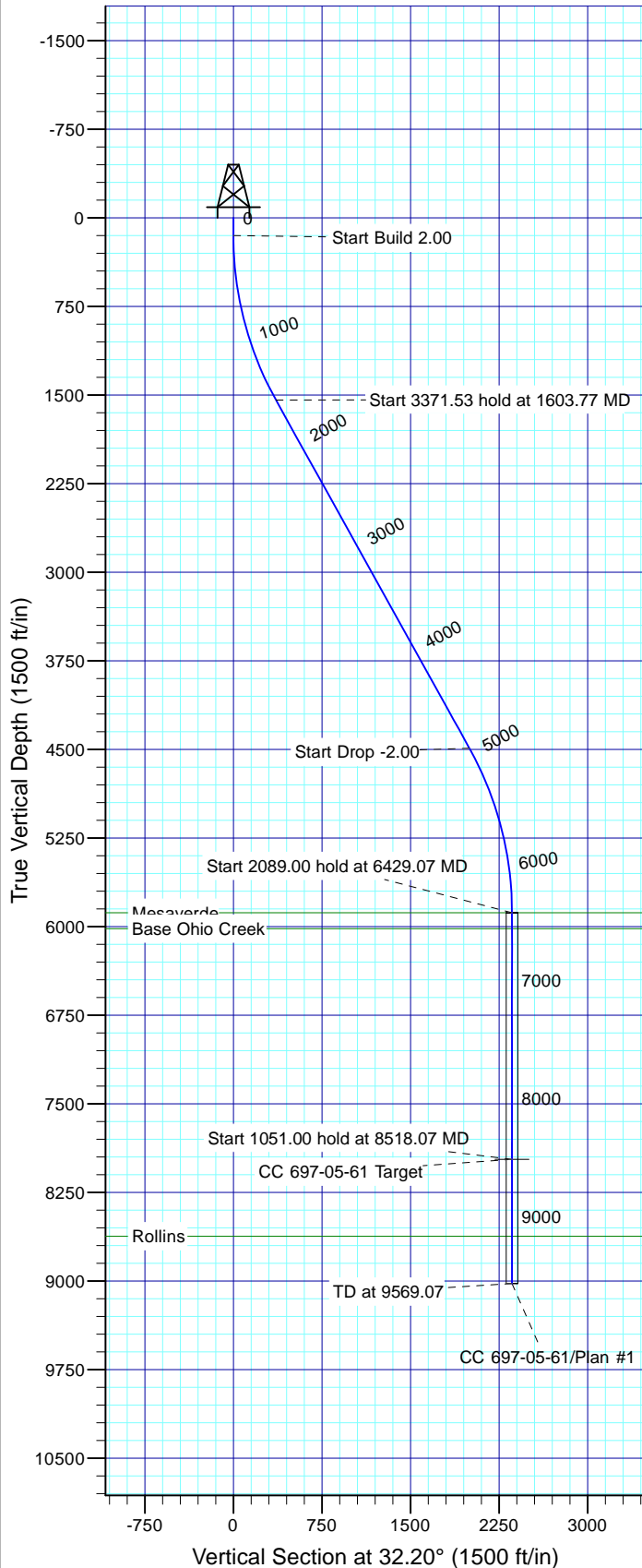
Well Details: CC 697-05-61

TVD Reference: GL 8401' & RKB 30' @ 8431.00ft (H&P Rig) Ground Level: 8401.00  
+N/-S +E/-W Northing Easting Latitude Longitude Slot  
0.00 0.00 634611.07 1225764.38 39° 32' 37.332 N 108° 14' 44.784 W M



Azimuths to True North  
Magnetic North: 10.48°

Magnetic Field  
Strength: 52229.5nT  
Dip Angle: 65.73°  
Date: 5/24/2011  
Model: IGRF2010



#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
5881.00	6429.07	Mesaverde
6016.00	6564.07	Base Ohio Creek
8621.00	9169.07	Rollins

Plan: Plan #1

**15:46, May 25 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	VFace	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	1603.77	29.08	32.20	1542.17	305.49	192.38	2.00	32.20	361.02	
4	4975.30	29.08	32.20	4488.83	1691.92	1065.45	0.00	0.001999	45	
5	6429.07	0.00	0.00	5881.00	1997.42	1257.82	2.00	180.002360	46	
6	8518.07	0.00	0.00	7970.00	1997.42	1257.82	0.00	0.002360	46	CC 697-05-61 Target
7	9569.07	0.00	0.00	9021.00	1997.42	1257.82	0.00	0.002360	46	

# **OXY USA RMAT**

**Garfield County, CO NAD27  
Cascade Creek 697-08A Pad  
CC 697-05-61 - Slot M**

**OH**

**Plan: Plan #1**

## **Standard Planning Report**

**25 May, 2011**





<b>Database:</b>	Rockies Compass Server	<b>Local Co-ordinate Reference:</b>	Well CC 697-05-61 - Slot M
<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 697-05-61	<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 697-05-61 - Slot M			
<b>Well Position</b>	<b>+N/-S</b>	-1,153.08 ft	<b>Northing:</b>	634,611.07 usft
	<b>+E/-W</b>	50.92 ft	<b>Easting:</b>	1,225,764.38 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	52,230

<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	32.20

<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	
1,603.77	29.08	32.20	1,542.17	305.49	192.38	2.00	2.00	0.00	32.20	
4,975.30	29.08	32.20	4,488.83	1,691.92	1,065.45	0.00	0.00	0.00	0.00	
6,429.07	0.00	0.00	5,881.00	1,997.42	1,257.82	2.00	-2.00	0.00	180.00	
8,518.07	0.00	0.00	7,970.00	1,997.42	1,257.82	0.00	0.00	0.00	0.00	CC 697-05-61 Target
9,569.07	0.00	0.00	9,021.00	1,997.42	1,257.82	0.00	0.00	0.00	0.00	



<b>Database:</b>	Rockies Compass Server	<b>Local Co-ordinate Reference:</b>	Well CC 697-05-61 - Slot M
<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 697-05-61	<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
200.00	1.00	32.20	200.00	0.37	0.23	0.44	2.00	2.00	0.00
300.00	3.00	32.20	299.93	3.32	2.09	3.93	2.00	2.00	0.00
400.00	5.00	32.20	399.68	9.22	5.81	10.90	2.00	2.00	0.00
500.00	7.00	32.20	499.13	18.07	11.38	21.35	2.00	2.00	0.00
600.00	9.00	32.20	598.15	29.85	18.79	35.27	2.00	2.00	0.00
700.00	11.00	32.20	696.63	44.54	28.05	52.63	2.00	2.00	0.00
800.00	13.00	32.20	794.44	62.13	39.13	73.42	2.00	2.00	0.00
900.00	15.00	32.20	891.46	82.60	52.02	97.62	2.00	2.00	0.00
1,000.00	17.00	32.20	987.58	105.92	66.70	125.18	2.00	2.00	0.00
1,100.00	19.00	32.20	1,082.68	132.07	83.17	156.08	2.00	2.00	0.00
1,200.00	21.00	32.20	1,176.65	161.01	101.39	190.28	2.00	2.00	0.00
1,300.00	23.00	32.20	1,269.36	192.71	121.35	227.74	2.00	2.00	0.00
1,400.00	25.00	32.20	1,360.71	227.13	143.03	268.41	2.00	2.00	0.00
1,500.00	27.00	32.20	1,450.59	264.22	166.39	312.24	2.00	2.00	0.00
1,600.00	29.00	32.20	1,538.88	303.94	191.40	359.19	2.00	2.00	0.00
1,603.77	29.08	32.20	1,542.17	305.49	192.38	361.02	2.00	2.00	0.00
1,700.00	29.08	32.20	1,626.28	345.06	217.30	407.78	0.00	0.00	0.00
1,800.00	29.08	32.20	1,713.67	386.19	243.19	456.38	0.00	0.00	0.00
1,900.00	29.08	32.20	1,801.07	427.31	269.09	504.97	0.00	0.00	0.00
2,000.00	29.08	32.20	1,888.47	468.43	294.98	553.57	0.00	0.00	0.00
2,100.00	29.08	32.20	1,975.87	509.55	320.88	602.17	0.00	0.00	0.00
2,200.00	29.08	32.20	2,063.27	550.67	346.77	650.76	0.00	0.00	0.00
2,300.00	29.08	32.20	2,150.67	591.79	372.67	699.36	0.00	0.00	0.00
2,400.00	29.08	32.20	2,238.06	632.92	398.56	747.95	0.00	0.00	0.00
2,500.00	29.08	32.20	2,325.46	674.04	424.46	796.55	0.00	0.00	0.00
2,600.00	29.08	32.20	2,412.86	715.16	450.35	845.15	0.00	0.00	0.00
2,700.00	29.08	32.20	2,500.26	756.28	476.25	893.74	0.00	0.00	0.00
2,800.00	29.08	32.20	2,587.66	797.40	502.14	942.34	0.00	0.00	0.00
2,900.00	29.08	32.20	2,675.05	838.52	528.04	990.93	0.00	0.00	0.00
3,000.00	29.08	32.20	2,762.45	879.65	553.94	1,039.53	0.00	0.00	0.00
3,100.00	29.08	32.20	2,849.85	920.77	579.83	1,088.13	0.00	0.00	0.00
3,200.00	29.08	32.20	2,937.25	961.89	605.73	1,136.72	0.00	0.00	0.00
3,300.00	29.08	32.20	3,024.65	1,003.01	631.62	1,185.32	0.00	0.00	0.00
3,400.00	29.08	32.20	3,112.04	1,044.13	657.52	1,233.91	0.00	0.00	0.00
3,500.00	29.08	32.20	3,199.44	1,085.25	683.41	1,282.51	0.00	0.00	0.00
3,600.00	29.08	32.20	3,286.84	1,126.38	709.31	1,331.11	0.00	0.00	0.00
3,700.00	29.08	32.20	3,374.24	1,167.50	735.20	1,379.70	0.00	0.00	0.00
3,800.00	29.08	32.20	3,461.64	1,208.62	761.10	1,428.30	0.00	0.00	0.00
3,900.00	29.08	32.20	3,549.04	1,249.74	786.99	1,476.89	0.00	0.00	0.00
4,000.00	29.08	32.20	3,636.43	1,290.86	812.89	1,525.49	0.00	0.00	0.00
4,100.00	29.08	32.20	3,723.83	1,331.99	838.78	1,574.09	0.00	0.00	0.00
4,200.00	29.08	32.20	3,811.23	1,373.11	864.68	1,622.68	0.00	0.00	0.00
4,300.00	29.08	32.20	3,898.63	1,414.23	890.58	1,671.28	0.00	0.00	0.00
4,400.00	29.08	32.20	3,986.03	1,455.35	916.47	1,719.87	0.00	0.00	0.00
4,500.00	29.08	32.20	4,073.42	1,496.47	942.37	1,768.47	0.00	0.00	0.00
4,600.00	29.08	32.20	4,160.82	1,537.59	968.26	1,817.07	0.00	0.00	0.00
4,700.00	29.08	32.20	4,248.22	1,578.72	994.16	1,865.66	0.00	0.00	0.00
4,800.00	29.08	32.20	4,335.62	1,619.84	1,020.05	1,914.26	0.00	0.00	0.00
4,900.00	29.08	32.20	4,423.02	1,660.96	1,045.95	1,962.85	0.00	0.00	0.00
4,975.30	29.08	32.20	4,488.83	1,691.92	1,065.45	1,999.45	0.00	0.00	0.00
5,000.00	28.58	32.20	4,510.47	1,702.00	1,071.79	2,011.36	2.00	-2.00	0.00



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<b>Site:</b>	Cascade Creek 697-08A Pad	<b>North Reference:</b>	True
<b>Well:</b>	CC 697-05-61	<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)
5,100.00	26.58	32.20	4,599.10	1,741.18	1,096.47	2,057.65	2.00	-2.00	0.00
5,200.00	24.58	32.20	4,689.29	1,777.72	1,119.47	2,100.83	2.00	-2.00	0.00
5,300.00	22.58	32.20	4,780.93	1,811.57	1,140.79	2,140.83	2.00	-2.00	0.00
5,400.00	20.58	32.20	4,873.92	1,842.69	1,160.39	2,177.61	2.00	-2.00	0.00
5,500.00	18.58	32.20	4,968.13	1,871.05	1,178.25	2,211.13	2.00	-2.00	0.00
5,600.00	16.58	32.20	5,063.46	1,896.61	1,194.34	2,241.33	2.00	-2.00	0.00
5,700.00	14.58	32.20	5,159.78	1,919.34	1,208.65	2,268.19	2.00	-2.00	0.00
5,800.00	12.58	32.20	5,256.97	1,939.21	1,221.17	2,291.67	2.00	-2.00	0.00
5,900.00	10.58	32.20	5,354.93	1,956.19	1,231.86	2,311.75	2.00	-2.00	0.00
6,000.00	8.58	32.20	5,453.53	1,970.28	1,240.73	2,328.39	2.00	-2.00	0.00
6,100.00	6.58	32.20	5,552.65	1,981.44	1,247.76	2,341.58	2.00	-2.00	0.00
6,200.00	4.58	32.20	5,652.17	1,989.67	1,252.95	2,351.31	2.00	-2.00	0.00
6,300.00	2.58	32.20	5,751.97	1,994.96	1,256.27	2,357.56	2.00	-2.00	0.00
6,400.00	0.58	32.20	5,851.93	1,997.29	1,257.74	2,360.32	2.00	-2.00	0.00
6,429.07	0.00	0.00	5,881.00	1,997.42	1,257.82	2,360.46	2.00	-2.00	-110.77
<b>Mesaverde</b>									
6,500.00	0.00	0.00	5,951.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
6,564.07	0.00	0.00	6,016.00	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
<b>Base Ohio Creek</b>									
6,600.00	0.00	0.00	6,051.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
6,700.00	0.00	0.00	6,151.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
6,800.00	0.00	0.00	6,251.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
6,900.00	0.00	0.00	6,351.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
7,000.00	0.00	0.00	6,451.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
7,100.00	0.00	0.00	6,551.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
7,200.00	0.00	0.00	6,651.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
7,300.00	0.00	0.00	6,751.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
7,400.00	0.00	0.00	6,851.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
7,500.00	0.00	0.00	6,951.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
7,600.00	0.00	0.00	7,051.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
7,700.00	0.00	0.00	7,151.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
7,800.00	0.00	0.00	7,251.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
7,900.00	0.00	0.00	7,351.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
8,000.00	0.00	0.00	7,451.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
8,100.00	0.00	0.00	7,551.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
8,200.00	0.00	0.00	7,651.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
8,300.00	0.00	0.00	7,751.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
8,400.00	0.00	0.00	7,851.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
8,500.00	0.00	0.00	7,951.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
8,518.07	0.00	0.00	7,970.00	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
8,600.00	0.00	0.00	8,051.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
8,700.00	0.00	0.00	8,151.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
8,800.00	0.00	0.00	8,251.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
8,900.00	0.00	0.00	8,351.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
9,000.00	0.00	0.00	8,451.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
9,100.00	0.00	0.00	8,551.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
9,169.07	0.00	0.00	8,621.00	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
<b>Rollins</b>									
9,200.00	0.00	0.00	8,651.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
9,300.00	0.00	0.00	8,751.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
9,400.00	0.00	0.00	8,851.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
9,500.00	0.00	0.00	8,951.93	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00
9,569.07	0.00	0.00	9,021.00	1,997.42	1,257.82	2,360.46	0.00	0.00	0.00



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<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 697-05-61	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1		

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
CC 697-05-61 Target - plan hits target center - Circle (radius 50.00)	0.00	0.00	7,970.00	1,997.42	1,257.82	636,569.56	1,227,081.99	39° 32' 57.073 N	108° 14' 28.727 W

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
6,429.07	5,881.00	Mesaverde		0.00		
6,564.07	6,016.00	Base Ohio Creek		0.00		
9,169.07	8,621.00	Rollins		0.00		