



**Scientific Drilling**  
Rocky Mountain Operations

Company: OXY USA RMAT  
Project: Garfield County, CO NAD27  
Site: Cascade Creek 697-16-28 Pad



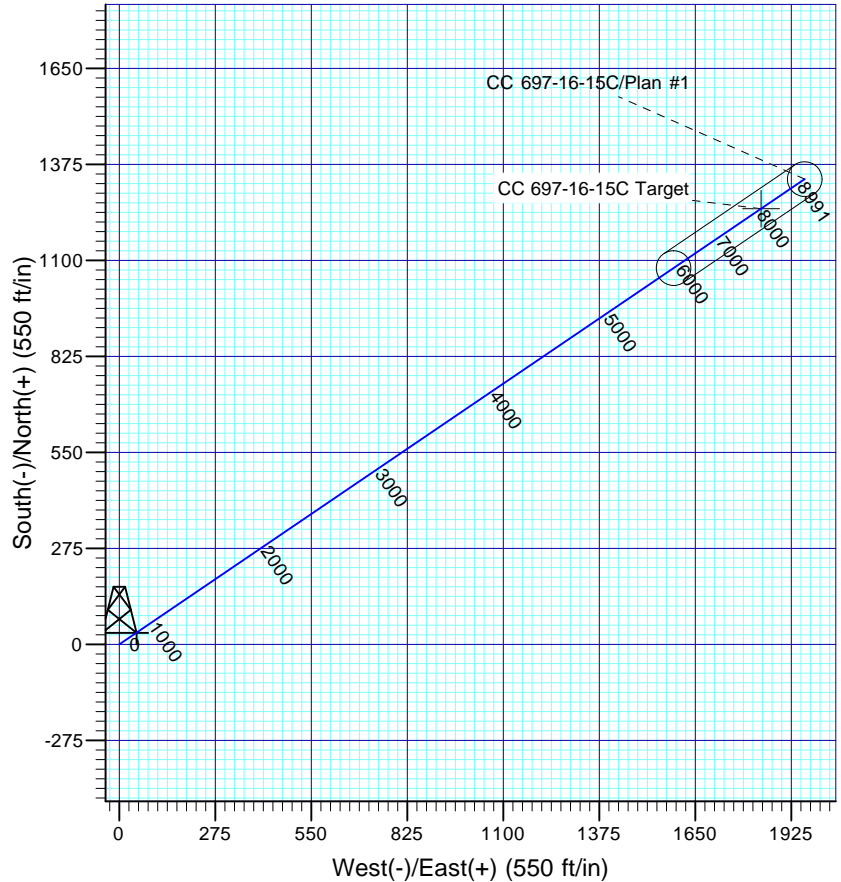
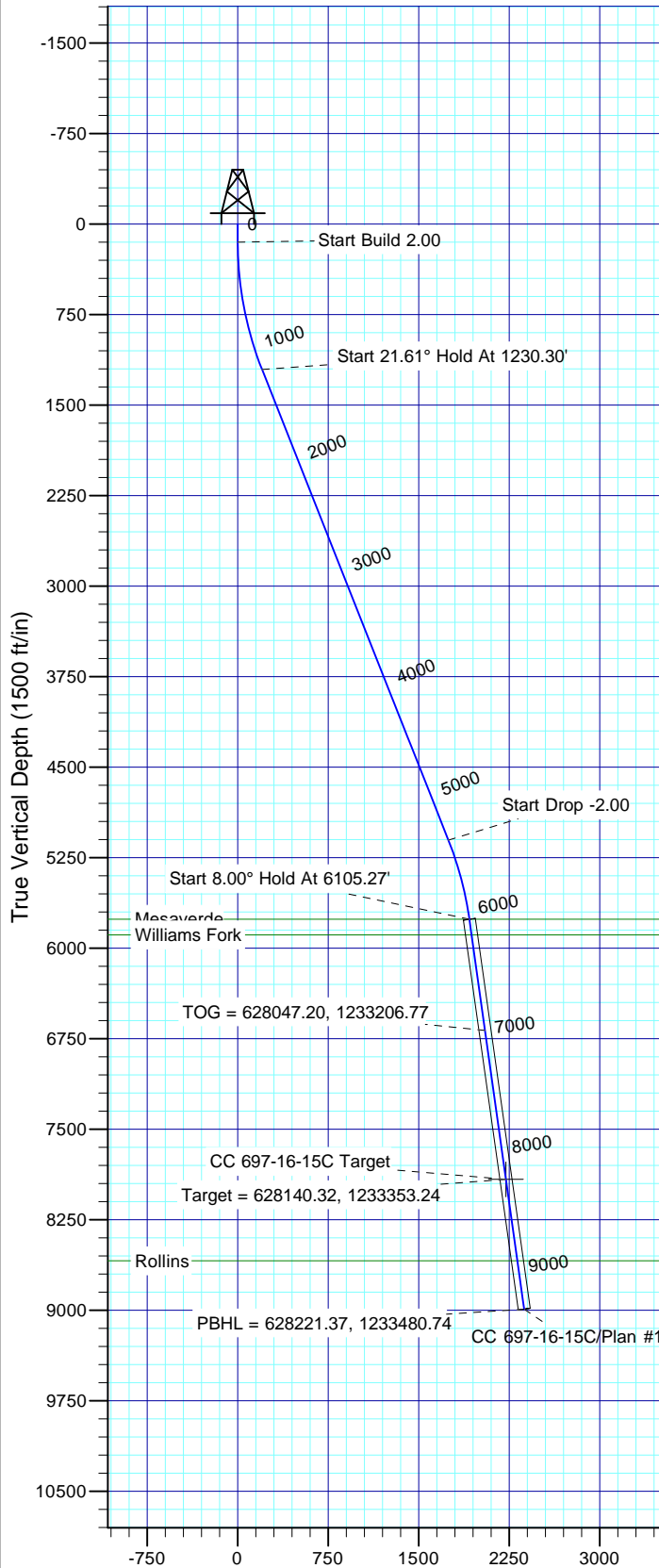
Well Details: CC 697-16-15C

TVD Reference: GL 8301' & RKB 30' @ 8331.00ft (H&P) Ground Level: 8301.00  
+N/-S 0.00 +E/-W 0.00 Northing 626948.14 Easting 1231477.99 Latitude 39° 31' 23.328 N Longitude 108° 13' 28.948 W Slot I



Azimuths to True North  
Magnetic North: 10.48°

Magnetic Field  
Strength: 52284.5nT  
Dip Angle: 65.74°  
Date: 2011/02/04  
Model: IGRF2005-10



#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
5761.00	6105.27	Mesaverde
5891.00	6236.55	Williams Fork
8591.00	8963.09	Rollins

Plan: Plan #1

6:57, February 07 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	VSec	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	1230.30	21.61	55.84	1204.88	113.04	166.55	2.00	55.84	201.29	
4	5424.97	21.61	55.84	5104.82	980.42	1444.58	0.00	0.00	1745.86	
5	6105.27	8.00	55.84	5761.00	1077.80	1588.06	2.00	180.00	1919.27	
6	8281.45	8.00	55.84	7916.00	1247.88	1838.66	0.00	0.00	2222.13	CC 697-16-15C Target
7	9367.02	8.00	55.84	8991.00	1332.72	1963.67	0.00	0.00	2373.21	

# **OXY USA RMAT**

**Garfield County, CO NAD27  
Cascade Creek 697-16-28 Pad  
CC 697-16-15C - Slot I**

**OH**

**Plan: Plan #1**

## **Standard Planning Report**

**07 February, 2011**

# Scientific Drilling International

## Planning Report

<b>Database:</b>	EDM-RexH-Local	<b>Local Co-ordinate Reference:</b>	Well CC 697-16-15C - Slot I
<b>Company:</b>	OXY USA RMAT	<b>TVD Reference:</b>	GL 8301' & RKB 30' @ 8331.00ft (H&P)
<b>Project:</b>	Garfield County, CO NAD27	<b>MD Reference:</b>	GL 8301' & RKB 30' @ 8331.00ft (H&P)
<b>Site:</b>	Cascade Creek 697-16-28 Pad	<b>North Reference:</b>	True
<b>Well:</b>	CC 697-16-15C	<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		

Site		Cascade Creek 697-16-28 Pad, Sec. 16 T6N R97W			
Site Position:		Northing:	627,311.42 usft	Latitude:	39° 31' 26.935 N
From:	Map	Easting:	1,231,538.04 usft	Longitude:	108° 13' 28.321 W
Position Uncertainty:	0.00 ft	Slot Radius:	0.000 in	Grid Convergence:	-1.72 °

Well	CC 697-16-15C - Slot I					
Well Position	+N/-S	-364.92 ft	Northing:	626,948.14 usft	Latitude:	39° 31' 23.328 N
	+E/-W	-49.13 ft	Easting:	1,231,477.99 usft	Longitude:	108° 13' 28.948 W
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	8,301.00 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>
	IGRF2005-10	2011/02/04	10.48	65.74	52,284

<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	55.84

<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	
1,230.30	21.61	55.84	1,204.88	113.04	166.55	2.00	2.00	0.00	55.84	
5,424.97	21.61	55.84	5,104.82	980.42	1,444.58	0.00	0.00	0.00	0.00	
6,105.27	8.00	55.84	5,761.00	1,077.80	1,588.06	2.00	-2.00	0.00	180.00	
8,281.45	8.00	55.84	7,916.00	1,247.88	1,838.66	0.00	0.00	0.00	0.00	CC 697-16-15C Target
9,367.02	8.00	55.84	8,991.00	1,332.72	1,963.67	0.00	0.00	0.00	0.00	

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## Planning Report

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<b>Company:</b>	OXY USA RMAT	<b>TVD Reference:</b>	GL 8301' & RKB 30' @ 8331.00ft (H&P)
<b>Project:</b>	Garfield County, CO NAD27	<b>MD Reference:</b>	GL 8301' & RKB 30' @ 8331.00ft (H&P)
<b>Site:</b>	Cascade Creek 697-16-28 Pad	<b>North Reference:</b>	True
<b>Well:</b>	CC 697-16-15C	<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
Start Build 2.00									
200.00	1.00	55.84	200.00	0.25	0.36	0.44	2.00	2.00	0.00
300.00	3.00	55.84	299.93	2.20	3.25	3.93	2.00	2.00	0.00
400.00	5.00	55.84	399.68	6.12	9.02	10.90	2.00	2.00	0.00
500.00	7.00	55.84	499.13	11.99	17.67	21.35	2.00	2.00	0.00
600.00	9.00	55.84	598.15	19.81	29.18	35.27	2.00	2.00	0.00
700.00	11.00	55.84	696.63	29.56	43.55	52.63	2.00	2.00	0.00
800.00	13.00	55.84	794.44	41.23	60.75	73.42	2.00	2.00	0.00
900.00	15.00	55.84	891.46	54.82	80.77	97.62	2.00	2.00	0.00
1,000.00	17.00	55.84	987.58	70.30	103.58	125.18	2.00	2.00	0.00
1,100.00	19.00	55.84	1,082.68	87.65	129.14	156.08	2.00	2.00	0.00
1,200.00	21.00	55.84	1,176.65	106.85	157.44	190.28	2.00	2.00	0.00
1,230.30	21.61	55.84	1,204.88	113.04	166.55	201.29	2.00	2.00	0.00
Start 21.61° Hold At 1230.30'									
1,300.00	21.61	55.84	1,269.68	127.45	187.79	226.95	0.00	0.00	0.00
1,400.00	21.61	55.84	1,362.65	148.13	218.25	263.77	0.00	0.00	0.00
1,500.00	21.61	55.84	1,455.63	168.81	248.72	300.60	0.00	0.00	0.00
1,600.00	21.61	55.84	1,548.60	189.48	279.19	337.42	0.00	0.00	0.00
1,700.00	21.61	55.84	1,641.58	210.16	309.66	374.24	0.00	0.00	0.00
1,800.00	21.61	55.84	1,734.55	230.84	340.13	411.06	0.00	0.00	0.00
1,900.00	21.61	55.84	1,827.52	251.52	370.59	447.89	0.00	0.00	0.00
2,000.00	21.61	55.84	1,920.50	272.20	401.06	484.71	0.00	0.00	0.00
2,100.00	21.61	55.84	2,013.47	292.87	431.53	521.53	0.00	0.00	0.00
2,200.00	21.61	55.84	2,106.44	313.55	462.00	558.35	0.00	0.00	0.00
2,300.00	21.61	55.84	2,199.42	334.23	492.47	595.17	0.00	0.00	0.00
2,400.00	21.61	55.84	2,292.39	354.91	522.93	632.00	0.00	0.00	0.00
2,500.00	21.61	55.84	2,385.37	375.59	553.40	668.82	0.00	0.00	0.00
2,600.00	21.61	55.84	2,478.34	396.27	583.87	705.64	0.00	0.00	0.00
2,700.00	21.61	55.84	2,571.31	416.94	614.34	742.46	0.00	0.00	0.00
2,800.00	21.61	55.84	2,664.29	437.62	644.80	779.29	0.00	0.00	0.00
2,900.00	21.61	55.84	2,757.26	458.30	675.27	816.11	0.00	0.00	0.00
3,000.00	21.61	55.84	2,850.23	478.98	705.74	852.93	0.00	0.00	0.00
3,100.00	21.61	55.84	2,943.21	499.66	736.21	889.75	0.00	0.00	0.00
3,200.00	21.61	55.84	3,036.18	520.34	766.68	926.58	0.00	0.00	0.00
3,300.00	21.61	55.84	3,129.16	541.01	797.14	963.40	0.00	0.00	0.00
3,400.00	21.61	55.84	3,222.13	561.69	827.61	1,000.22	0.00	0.00	0.00
3,500.00	21.61	55.84	3,315.10	582.37	858.08	1,037.04	0.00	0.00	0.00
3,600.00	21.61	55.84	3,408.08	603.05	888.55	1,073.86	0.00	0.00	0.00
3,700.00	21.61	55.84	3,501.05	623.73	919.02	1,110.69	0.00	0.00	0.00
3,800.00	21.61	55.84	3,594.02	644.41	949.48	1,147.51	0.00	0.00	0.00
3,900.00	21.61	55.84	3,687.00	665.08	979.95	1,184.33	0.00	0.00	0.00
4,000.00	21.61	55.84	3,779.97	685.76	1,010.42	1,221.15	0.00	0.00	0.00
4,100.00	21.61	55.84	3,872.95	706.44	1,040.89	1,257.98	0.00	0.00	0.00
4,200.00	21.61	55.84	3,965.92	727.12	1,071.36	1,294.80	0.00	0.00	0.00
4,300.00	21.61	55.84	4,058.89	747.80	1,101.82	1,331.62	0.00	0.00	0.00
4,400.00	21.61	55.84	4,151.87	768.47	1,132.29	1,368.44	0.00	0.00	0.00
4,500.00	21.61	55.84	4,244.84	789.15	1,162.76	1,405.27	0.00	0.00	0.00
4,600.00	21.61	55.84	4,337.81	809.83	1,193.23	1,442.09	0.00	0.00	0.00
4,700.00	21.61	55.84	4,430.79	830.51	1,223.70	1,478.91	0.00	0.00	0.00
4,800.00	21.61	55.84	4,523.76	851.19	1,254.16	1,515.73	0.00	0.00	0.00
4,900.00	21.61	55.84	4,616.74	871.87	1,284.63	1,552.55	0.00	0.00	0.00

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## Planning Report

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<b>Company:</b>	OXY USA RMAT	<b>TVD Reference:</b>	GL 8301' & RKB 30' @ 8331.00ft (H&P)
<b>Project:</b>	Garfield County, CO NAD27	<b>MD Reference:</b>	GL 8301' & RKB 30' @ 8331.00ft (H&P)
<b>Site:</b>	Cascade Creek 697-16-28 Pad	<b>North Reference:</b>	True
<b>Well:</b>	CC 697-16-15C	<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)	
5,000.00	21.61	55.84	4,709.71	892.54	1,315.10	1,589.38	0.00	0.00	0.00	
5,100.00	21.61	55.84	4,802.68	913.22	1,345.57	1,626.20	0.00	0.00	0.00	
5,200.00	21.61	55.84	4,895.66	933.90	1,376.03	1,663.02	0.00	0.00	0.00	
5,300.00	21.61	55.84	4,988.63	954.58	1,406.50	1,699.84	0.00	0.00	0.00	
5,400.00	21.61	55.84	5,081.60	975.26	1,436.97	1,736.67	0.00	0.00	0.00	
5,424.97	21.61	55.84	5,104.82	980.42	1,444.58	1,745.86	0.00	0.00	0.00	
<b>Start Drop -2.00</b>										
5,500.00	20.11	55.84	5,174.93	995.42	1,466.68	1,772.57	2.00	-2.00	0.00	
5,600.00	18.11	55.84	5,269.42	1,013.80	1,493.76	1,805.30	2.00	-2.00	0.00	
5,700.00	16.11	55.84	5,364.99	1,030.32	1,518.10	1,834.71	2.00	-2.00	0.00	
5,800.00	14.11	55.84	5,461.53	1,044.95	1,539.66	1,860.77	2.00	-2.00	0.00	
5,900.00	12.11	55.84	5,558.92	1,057.68	1,558.42	1,883.44	2.00	-2.00	0.00	
6,000.00	10.11	55.84	5,657.04	1,068.50	1,574.36	1,902.70	2.00	-2.00	0.00	
6,100.00	8.11	55.84	5,755.78	1,077.39	1,587.45	1,918.53	2.00	-2.00	0.00	
6,105.27	8.00	55.84	5,761.00	1,077.80	1,588.06	1,919.27	2.00	-2.00	0.00	
<b>Start 8.00° Hold At 6105.27' - Mesaverde</b>										
6,200.00	8.00	55.84	5,854.80	1,085.20	1,598.97	1,932.45	0.00	0.00	0.00	
6,236.55	8.00	55.84	5,891.00	1,088.06	1,603.18	1,937.54	0.00	0.00	0.00	
<b>Williams Fork</b>										
6,300.00	8.00	55.84	5,953.83	1,093.02	1,610.48	1,946.37	0.00	0.00	0.00	
6,400.00	8.00	55.84	6,052.86	1,100.83	1,622.00	1,960.29	0.00	0.00	0.00	
6,500.00	8.00	55.84	6,151.88	1,108.65	1,633.52	1,974.20	0.00	0.00	0.00	
6,600.00	8.00	55.84	6,250.91	1,116.47	1,645.03	1,988.12	0.00	0.00	0.00	
6,700.00	8.00	55.84	6,349.94	1,124.28	1,656.55	2,002.04	0.00	0.00	0.00	
6,800.00	8.00	55.84	6,448.97	1,132.10	1,668.06	2,015.96	0.00	0.00	0.00	
6,900.00	8.00	55.84	6,547.99	1,139.91	1,679.58	2,029.87	0.00	0.00	0.00	
7,000.00	8.00	55.84	6,647.02	1,147.73	1,691.09	2,043.79	0.00	0.00	0.00	
7,034.32	8.00	55.84	6,681.00	1,150.41	1,695.05	2,048.57	0.00	0.00	0.00	
<b>TOG = 628047.20, 1233206.77</b>										
7,100.00	8.00	55.84	6,746.05	1,155.54	1,702.61	2,057.71	0.00	0.00	0.00	
7,200.00	8.00	55.84	6,845.07	1,163.36	1,714.12	2,071.62	0.00	0.00	0.00	
7,300.00	8.00	55.84	6,944.10	1,171.17	1,725.64	2,085.54	0.00	0.00	0.00	
7,400.00	8.00	55.84	7,043.13	1,178.99	1,737.16	2,099.46	0.00	0.00	0.00	
7,500.00	8.00	55.84	7,142.15	1,186.81	1,748.67	2,113.38	0.00	0.00	0.00	
7,600.00	8.00	55.84	7,241.18	1,194.62	1,760.19	2,127.29	0.00	0.00	0.00	
7,700.00	8.00	55.84	7,340.21	1,202.44	1,771.70	2,141.21	0.00	0.00	0.00	
7,800.00	8.00	55.84	7,439.23	1,210.25	1,783.22	2,155.13	0.00	0.00	0.00	
7,900.00	8.00	55.84	7,538.26	1,218.07	1,794.73	2,169.05	0.00	0.00	0.00	
8,000.00	8.00	55.84	7,637.29	1,225.88	1,806.25	2,182.96	0.00	0.00	0.00	
8,100.00	8.00	55.84	7,736.31	1,233.70	1,817.77	2,196.88	0.00	0.00	0.00	
8,200.00	8.00	55.84	7,835.34	1,241.51	1,829.28	2,210.80	0.00	0.00	0.00	
8,281.45	8.00	55.84	7,916.00	1,247.88	1,838.66	2,222.13	0.00	0.00	0.00	
<b>Target = 628140.32, 1233353.24</b>										
8,300.00	8.00	55.84	7,934.37	1,249.33	1,840.80	2,224.71	0.00	0.00	0.00	
8,400.00	8.00	55.84	8,033.39	1,257.15	1,852.31	2,238.63	0.00	0.00	0.00	
8,500.00	8.00	55.84	8,132.42	1,264.96	1,863.83	2,252.55	0.00	0.00	0.00	
8,600.00	8.00	55.84	8,231.45	1,272.78	1,875.34	2,266.47	0.00	0.00	0.00	
8,700.00	8.00	55.84	8,330.47	1,280.59	1,886.86	2,280.38	0.00	0.00	0.00	
8,800.00	8.00	55.84	8,429.50	1,288.41	1,898.37	2,294.30	0.00	0.00	0.00	
8,900.00	8.00	55.84	8,528.53	1,296.22	1,909.89	2,308.22	0.00	0.00	0.00	
8,963.09	8.00	55.84	8,591.00	1,301.15	1,917.15	2,317.00	0.00	0.00	0.00	
<b>Rollins</b>										
9,000.00	8.00	55.84	8,627.55	1,304.04	1,921.41	2,322.14	0.00	0.00	0.00	

# Scientific Drilling International

## Planning Report

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<b>Company:</b>	OXY USA RMAT	<b>TVD Reference:</b>	GL 8301' & RKB 30' @ 8331.00ft (H&P)
<b>Project:</b>	Garfield County, CO NAD27	<b>MD Reference:</b>	GL 8301' & RKB 30' @ 8331.00ft (H&P)
<b>Site:</b>	Cascade Creek 697-16-28 Pad	<b>North Reference:</b>	True
<b>Well:</b>	CC 697-16-15C	<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)	
9,100.00	8.00	55.84	8,726.58	1,311.85	1,932.92	2,336.05	0.00	0.00	0.00	
9,200.00	8.00	55.84	8,825.61	1,319.67	1,944.44	2,349.97	0.00	0.00	0.00	
9,300.00	8.00	55.84	8,924.64	1,327.49	1,955.95	2,363.89	0.00	0.00	0.00	
9,367.02	8.00	55.84	8,991.00	1,332.72	1,963.67	2,373.22	0.00	0.00	0.00	
PBHL = 628221.37, 1233480.74										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
CC 697-16-15C Target	-8.00	55.84	7,916.00	1,247.88	1,838.66	628,140.32	1,233,353.24	39° 31' 35.661 N	108° 13' 5.483 W	
- hit/miss target										
- Shape										
- plan hits target center										
- Circle (radius 50.00)										

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
6,105.27	5,761.00	Mesaverde		0.00		
6,236.55	5,891.00	Williams Fork		0.00		
8,963.09	8,591.00	Rollins		0.00		

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
150.00	150.00	0.00	0.00	Start Build 2.00	
1,230.30	1,204.88	113.04	166.55	Start 21.61° Hold At 1230.30'	
5,424.97	5,104.82	980.42	1,444.58	Start Drop -2.00	
6,105.27	5,761.00	1,077.80	1,588.06	Start 8.00° Hold At 6105.27'	
7,034.32	6,681.00	1,150.41	1,695.05	TOG = 628047.20, 1233206.77	
8,281.45	7,916.00	1,247.88	1,838.66	Target = 628140.32, 1233353.24	
9,367.02	8,991.00	1,332.72	1,963.67	PBHL = 628221.37, 1233480.74	