



**Scientific Drilling**  
Rocky Mountain Operations

Company: OXY USA RMAT  
Project: Garfield County, CO NAD27  
Site: Cascade Creek 697-05C Pad



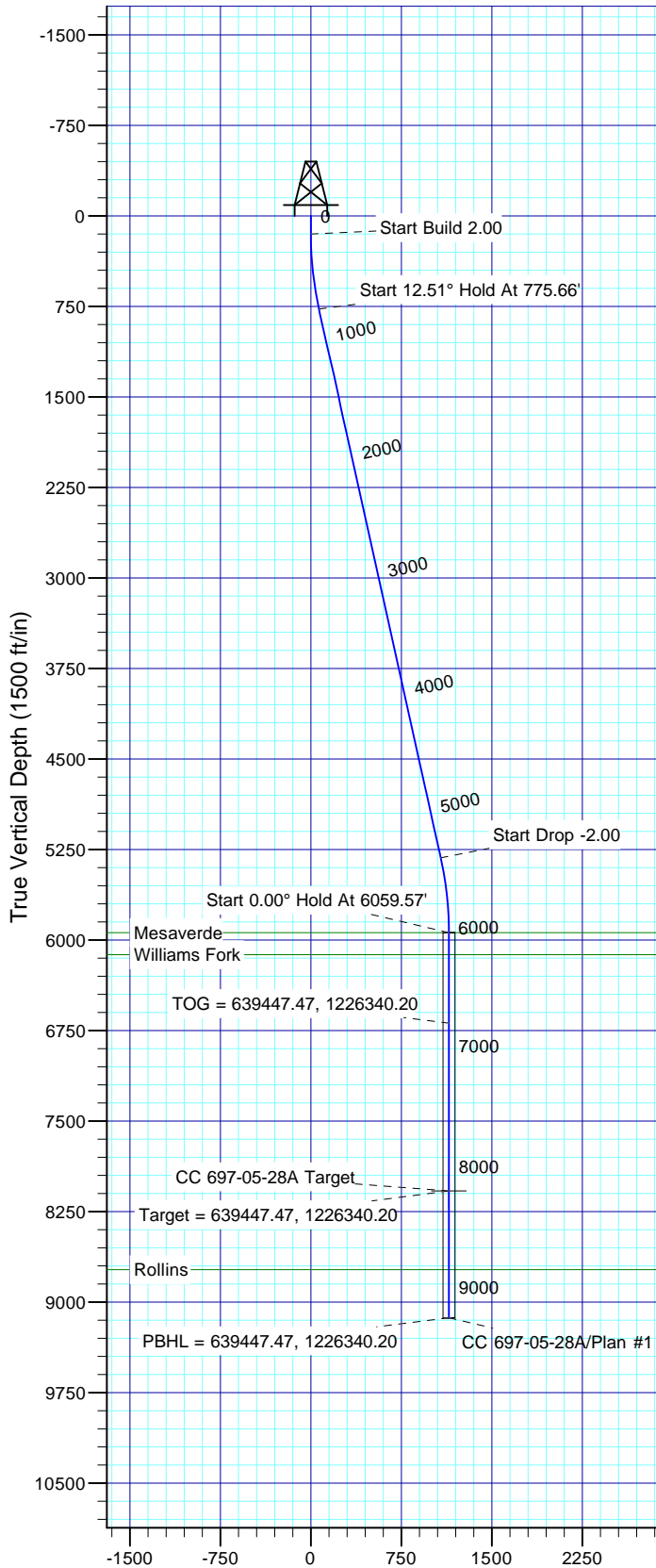
Well Details: CC 697-05-28A

TVD Reference: GL 8429' & RKB 30' @ 8459.00ft (H&P) Ground Level: 8429.00  
+N/-S 0.00 +E/-W 0.00 Northing 638534.49 Easting 1227031.81 Latitude 39° 33' 16.470 N Longitude 108° 14' 30.124 W Slot M

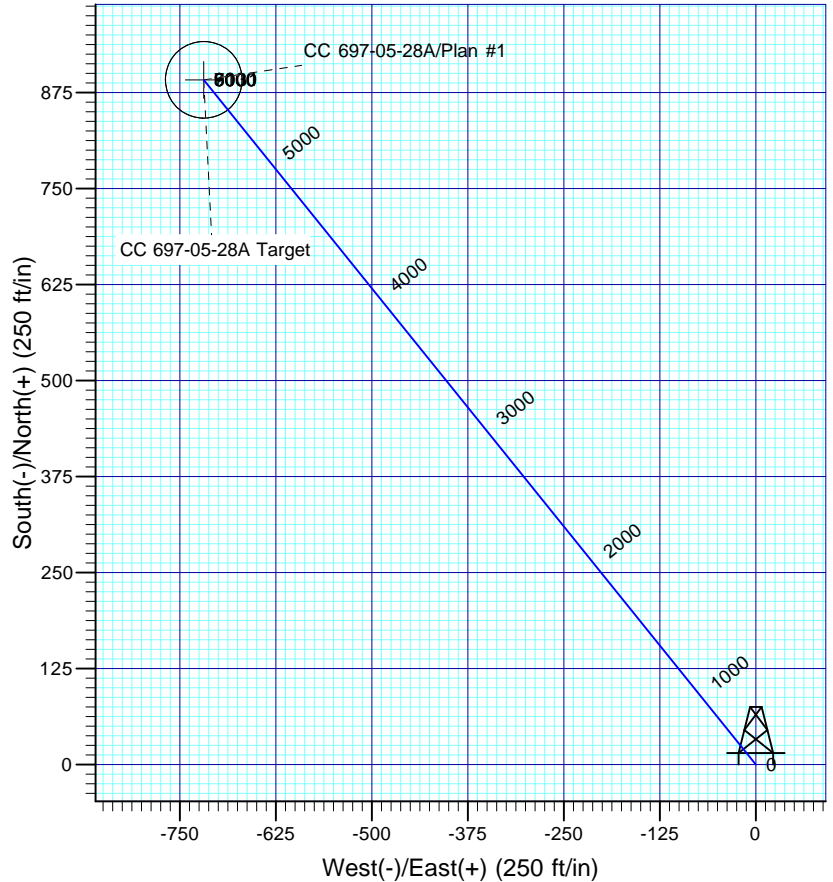


Azimuths to True North  
Magnetic North: 10.51°

Magnetic Field  
Strength: 52311.6snT  
Dip Angle: 65.77°  
Date: 2010/12/16  
Model: IGRF2005-10



Vertical Section at 321.13° (1500 ft/in)



#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
5938.00	6058.57	Mesaverde
6121.00	6241.57	Williams Fork
8731.00	8851.57	Rollins

Plan: Plan #1

14:15, December 28 2010  
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	775.66	12.51	321.13	770.69	52.98	-42.71	2.00	321.13	68.05	
4	5433.92	12.51	321.13	5318.31	838.72	-676.14	0.00	0.001077.32		
5	6059.57	0.00	0.00	5939.00	891.70	-718.85	2.00	180.001145.37		
6	8199.57	0.00	0.00	8079.00	891.70	-718.85	0.00	0.001145.37		CC 697-05-28A Target
7	9251.57	0.00	0.00	9131.00	891.70	-718.85	0.00	0.001145.37		

# **OXY USA RMAT**

**Garfield County, CO NAD27  
Cascade Creek 697-05C Pad  
CC 697-05-28A - Slot M**

**OH**

**Plan: Plan #1**

## **Standard Planning Report**

**28 December, 2010**

# Scientific Drilling International

## Planning Report

<b>Database:</b>	EDM-RexH-Local	<b>Local Co-ordinate Reference:</b>	Well CC 697-05-28A - Slot M
<b>Company:</b>	OXY USA RMAT	<b>TVD Reference:</b>	GL 8429' & RKB 30' @ 8459.00ft (H&P)
<b>Project:</b>	Garfield County, CO NAD27	<b>MD Reference:</b>	GL 8429' & RKB 30' @ 8459.00ft (H&P)
<b>Site:</b>	Cascade Creek 697-05C Pad	<b>North Reference:</b>	True
<b>Well:</b>	CC 697-05-28A	<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 697-05C Pad, Sec. 5 T6S R97W		
<b>Site Position:</b>		<b>Northing:</b>	637,463.43 usft
<b>From:</b>	Map	<b>Easting:</b>	1,226,150.07 usft
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	0.000 in
		<b>Latitude:</b>	39° 33' 5.626 N
		<b>Longitude:</b>	108° 14' 40.963 W
		<b>Grid Convergence:</b>	-1.73 °

Well	CC 697-05-28A - Slot M					
Well Position	+N/-S	1,097.21 ft	Northing:	638,534.49 usft	Latitude:	39° 33' 16.470 N
	+E/-W	848.99 ft	Easting:	1,227,031.81 usft	Longitude:	108° 14' 30.124 W
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	8,429.00 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	2010/12/16	10.51	65.77	52,312

<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	321.13

<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	
775.66	12.51	321.13	770.69	52.98	-42.71	2.00	2.00	0.00	321.13	
5,433.92	12.51	321.13	5,318.31	838.72	-676.14	0.00	0.00	0.00	0.00	
6,059.57	0.00	0.00	5,939.00	891.70	-718.85	2.00	-2.00	0.00	180.00	
8,199.57	0.00	0.00	8,079.00	891.70	-718.85	0.00	0.00	0.00	0.00	CC 697-05-28A Target
9,251.57	0.00	0.00	9,131.00	891.70	-718.85	0.00	0.00	0.00	0.00	

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## Planning Report

<b>Database:</b>	EDM-RexH-Local	<b>Local Co-ordinate Reference:</b>	Well CC 697-05-28A - Slot M
<b>Company:</b>	OXY USA RMAT	<b>TVD Reference:</b>	GL 8429' & RKB 30' @ 8459.00ft (H&P)
<b>Project:</b>	Garfield County, CO NAD27	<b>MD Reference:</b>	GL 8429' & RKB 30' @ 8459.00ft (H&P)
<b>Site:</b>	Cascade Creek 697-05C Pad	<b>North Reference:</b>	True
<b>Well:</b>	CC 697-05-28A	<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	321.13	200.00	0.34	-0.27	0.44	2.00	2.00	0.00
300.00	3.00	321.13	299.93	3.06	-2.46	3.93	2.00	2.00	0.00
400.00	5.00	321.13	399.68	8.49	-6.84	10.90	2.00	2.00	0.00
500.00	7.00	321.13	499.13	16.62	-13.40	21.35	2.00	2.00	0.00
600.00	9.00	321.13	598.15	27.46	-22.14	35.27	2.00	2.00	0.00
700.00	11.00	321.13	696.63	40.98	-33.03	52.63	2.00	2.00	0.00
775.66	12.51	321.13	770.69	52.98	-42.71	68.05	2.00	2.00	0.00
Start 12.51° Hold At 775.66'									
800.00	12.51	321.13	794.46	57.08	-46.02	73.32	0.00	0.00	0.00
900.00	12.51	321.13	892.08	73.95	-59.62	94.99	0.00	0.00	0.00
1,000.00	12.51	321.13	989.71	90.82	-73.22	116.66	0.00	0.00	0.00
1,100.00	12.51	321.13	1,087.33	107.69	-86.81	138.32	0.00	0.00	0.00
1,200.00	12.51	321.13	1,184.96	124.56	-100.41	159.99	0.00	0.00	0.00
1,300.00	12.51	321.13	1,282.58	141.42	-114.01	181.65	0.00	0.00	0.00
1,400.00	12.51	321.13	1,380.21	158.29	-127.61	203.32	0.00	0.00	0.00
1,500.00	12.51	321.13	1,477.83	175.16	-141.21	224.99	0.00	0.00	0.00
1,600.00	12.51	321.13	1,575.46	192.03	-154.80	246.65	0.00	0.00	0.00
1,700.00	12.51	321.13	1,673.08	208.89	-168.40	268.32	0.00	0.00	0.00
1,800.00	12.51	321.13	1,770.71	225.76	-182.00	289.99	0.00	0.00	0.00
1,900.00	12.51	321.13	1,868.33	242.63	-195.60	311.65	0.00	0.00	0.00
2,000.00	12.51	321.13	1,965.96	259.50	-209.20	333.32	0.00	0.00	0.00
2,100.00	12.51	321.13	2,063.58	276.36	-222.79	354.99	0.00	0.00	0.00
2,200.00	12.51	321.13	2,161.21	293.23	-236.39	376.65	0.00	0.00	0.00
2,300.00	12.51	321.13	2,258.83	310.10	-249.99	398.32	0.00	0.00	0.00
2,400.00	12.51	321.13	2,356.45	326.97	-263.59	419.98	0.00	0.00	0.00
2,500.00	12.51	321.13	2,454.08	343.84	-277.19	441.65	0.00	0.00	0.00
2,600.00	12.51	321.13	2,551.70	360.70	-290.78	463.32	0.00	0.00	0.00
2,700.00	12.51	321.13	2,649.33	377.57	-304.38	484.98	0.00	0.00	0.00
2,800.00	12.51	321.13	2,746.95	394.44	-317.98	506.65	0.00	0.00	0.00
2,900.00	12.51	321.13	2,844.58	411.31	-331.58	528.32	0.00	0.00	0.00
3,000.00	12.51	321.13	2,942.20	428.17	-345.18	549.98	0.00	0.00	0.00
3,100.00	12.51	321.13	3,039.83	445.04	-358.77	571.65	0.00	0.00	0.00
3,200.00	12.51	321.13	3,137.45	461.91	-372.37	593.31	0.00	0.00	0.00
3,300.00	12.51	321.13	3,235.08	478.78	-385.97	614.98	0.00	0.00	0.00
3,400.00	12.51	321.13	3,332.70	495.65	-399.57	636.65	0.00	0.00	0.00
3,500.00	12.51	321.13	3,430.33	512.51	-413.17	658.31	0.00	0.00	0.00
3,600.00	12.51	321.13	3,527.95	529.38	-426.77	679.98	0.00	0.00	0.00
3,700.00	12.51	321.13	3,625.57	546.25	-440.36	701.65	0.00	0.00	0.00
3,800.00	12.51	321.13	3,723.20	563.12	-453.96	723.31	0.00	0.00	0.00
3,900.00	12.51	321.13	3,820.82	579.98	-467.56	744.98	0.00	0.00	0.00
4,000.00	12.51	321.13	3,918.45	596.85	-481.16	766.65	0.00	0.00	0.00
4,100.00	12.51	321.13	4,016.07	613.72	-494.76	788.31	0.00	0.00	0.00
4,200.00	12.51	321.13	4,113.70	630.59	-508.35	809.98	0.00	0.00	0.00
4,300.00	12.51	321.13	4,211.32	647.46	-521.95	831.64	0.00	0.00	0.00
4,400.00	12.51	321.13	4,308.95	664.32	-535.55	853.31	0.00	0.00	0.00
4,500.00	12.51	321.13	4,406.57	681.19	-549.15	874.98	0.00	0.00	0.00
4,600.00	12.51	321.13	4,504.20	698.06	-562.75	896.64	0.00	0.00	0.00
4,700.00	12.51	321.13	4,601.82	714.93	-576.34	918.31	0.00	0.00	0.00
4,800.00	12.51	321.13	4,699.45	731.79	-589.94	939.98	0.00	0.00	0.00
4,900.00	12.51	321.13	4,797.07	748.66	-603.54	961.64	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 8429' & RKB 30' @ 8459.00ft (H&P)
<b>Project:</b>	Garfield County, CO NAD27	<b>MD Reference:</b>	GL 8429' & RKB 30' @ 8459.00ft (H&P)
<b>Site:</b>	Cascade Creek 697-05C Pad	<b>North Reference:</b>	True
<b>Well:</b>	CC 697-05-28A	<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	12.51	321.13	4,894.70	765.53	-617.14	983.31	0.00	0.00	0.00
5,100.00	12.51	321.13	4,992.32	782.40	-630.74	1,004.97	0.00	0.00	0.00
5,200.00	12.51	321.13	5,089.94	799.26	-644.33	1,026.64	0.00	0.00	0.00
5,300.00	12.51	321.13	5,187.57	816.13	-657.93	1,048.31	0.00	0.00	0.00
5,400.00	12.51	321.13	5,285.19	833.00	-671.53	1,069.97	0.00	0.00	0.00
5,433.92	12.51	321.13	5,318.31	838.72	-676.14	1,077.32	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
5,500.00	11.19	321.13	5,382.98	849.29	-684.66	1,090.89	2.00	-2.00	0.00
5,600.00	9.19	321.13	5,481.40	863.06	-695.77	1,108.59	2.00	-2.00	0.00
5,700.00	7.19	321.13	5,580.37	874.15	-704.71	1,122.83	2.00	-2.00	0.00
5,800.00	5.19	321.13	5,679.78	882.55	-711.48	1,133.62	2.00	-2.00	0.00
5,900.00	3.19	321.13	5,779.51	888.24	-716.06	1,140.93	2.00	-2.00	0.00
6,000.00	1.19	321.13	5,879.43	891.22	-718.46	1,144.75	2.00	-2.00	0.00
6,058.57	0.02	321.13	5,938.00	891.70	-718.85	1,145.37	2.00	-2.00	0.00
<b>Mesaverde</b>									
6,059.57	0.00	0.00	5,939.00	891.70	-718.85	1,145.37	2.00	-2.00	0.00
<b>Start 0.00° Hold At 6059.57'</b>									
6,100.00	0.00	0.00	5,979.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
6,200.00	0.00	0.00	6,079.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
6,241.57	0.00	0.00	6,121.00	891.70	-718.85	1,145.37	0.00	0.00	0.00
<b>Williams Fork</b>									
6,300.00	0.00	0.00	6,179.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
6,400.00	0.00	0.00	6,279.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
6,500.00	0.00	0.00	6,379.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
6,600.00	0.00	0.00	6,479.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
6,700.00	0.00	0.00	6,579.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
6,800.00	0.00	0.00	6,679.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
6,809.57	0.00	0.00	6,689.00	891.70	-718.85	1,145.37	0.00	0.00	0.00
<b>TOG = 639447.47, 1226340.20</b>									
6,900.00	0.00	0.00	6,779.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
7,000.00	0.00	0.00	6,879.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
7,100.00	0.00	0.00	6,979.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
7,200.00	0.00	0.00	7,079.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
7,300.00	0.00	0.00	7,179.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
7,400.00	0.00	0.00	7,279.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
7,500.00	0.00	0.00	7,379.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
7,600.00	0.00	0.00	7,479.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
7,700.00	0.00	0.00	7,579.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
7,800.00	0.00	0.00	7,679.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
7,900.00	0.00	0.00	7,779.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
8,000.00	0.00	0.00	7,879.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
8,100.00	0.00	0.00	7,979.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
8,199.57	0.00	0.00	8,079.00	891.70	-718.85	1,145.37	0.00	0.00	0.00
<b>Target = 639447.47, 1226340.20</b>									
8,200.00	0.00	0.00	8,079.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
8,300.00	0.00	0.00	8,179.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
8,400.00	0.00	0.00	8,279.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
8,500.00	0.00	0.00	8,379.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
8,600.00	0.00	0.00	8,479.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
8,700.00	0.00	0.00	8,579.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
8,800.00	0.00	0.00	8,679.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
8,851.57	0.00	0.00	8,731.00	891.70	-718.85	1,145.37	0.00	0.00	0.00
<b>Rollins</b>									

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## Planning Report

<b>Database:</b>	EDM-RexH-Local	<b>Local Co-ordinate Reference:</b>	Well CC 697-05-28A - Slot M
<b>Company:</b>	OXY USA RMAT	<b>TVD Reference:</b>	GL 8429' & RKB 30' @ 8459.00ft (H&P)
<b>Project:</b>	Garfield County, CO NAD27	<b>MD Reference:</b>	GL 8429' & RKB 30' @ 8459.00ft (H&P)
<b>Site:</b>	Cascade Creek 697-05C Pad	<b>North Reference:</b>	True
<b>Well:</b>	CC 697-05-28A	<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)
8,900.00	0.00	0.00	8,779.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
9,000.00	0.00	0.00	8,879.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
9,100.00	0.00	0.00	8,979.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
9,200.00	0.00	0.00	9,079.43	891.70	-718.85	1,145.37	0.00	0.00	0.00
9,251.57	0.00	0.00	9,131.00	891.70	-718.85	1,145.37	0.00	0.00	0.00
PBHL = 639447.47, 1226340.20									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
CC 697-05-28A Target	0.00	0.00	8,079.00	891.70	-718.85	639,447.47	1,226,340.19	39° 33' 25.283 N	108° 14' 39.302 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 (°)	
6,058.57	5,938.00	Mesaverde		0.00		
6,241.57	6,121.00	Williams Fork		0.00		
8,851.57	8,731.00	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	
775.66	770.69	52.98	-42.71	Start 12.51° Hold At 775.66'	
5,433.92	5,318.31	838.72	-676.14	Start Drop -2.00	
6,059.57	5,939.00	891.70	-718.85	Start 0.00° Hold At 6059.57'	
6,809.57	6,689.00	891.70	-718.85	TOG = 639447.47, 1226340.20	
8,199.57	8,079.00	891.70	-718.85	Target = 639447.47, 1226340.20	
9,251.57	9,131.00	891.70	-718.85	PBHL = 639447.47, 1226340.20	