



**Scientific Drilling**  
Rocky Mountain Operations

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



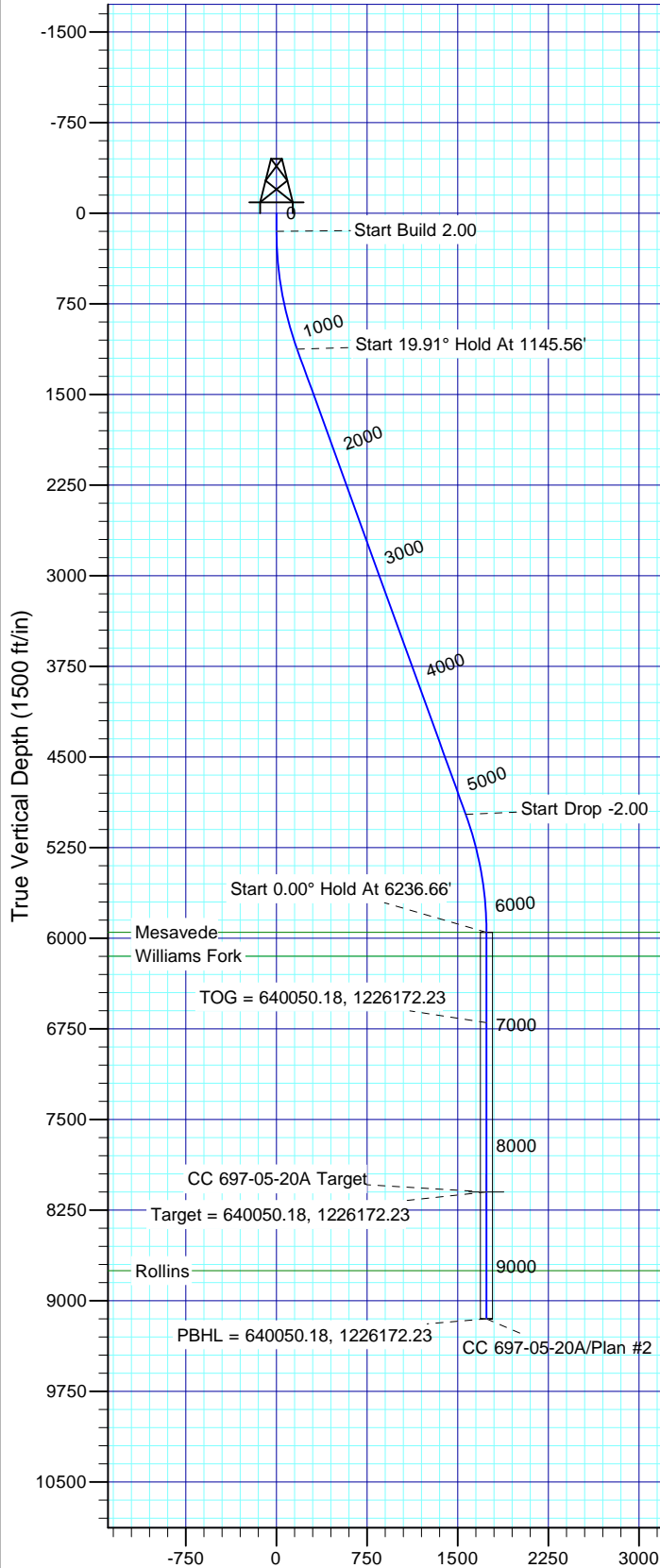
Well Details: CC 697-05-20A

TVD Reference: GL 8429' & RKB 30' @ 8459.00ft (H&P) Ground Level: 8429.00  
+N/-S 0.00 +E/-W 0.00 Northing 638545.98 Easting 1227041.45 Latitude 39° 33' 16.586 N Longitude 108° 14' 30.005 W Slot Q

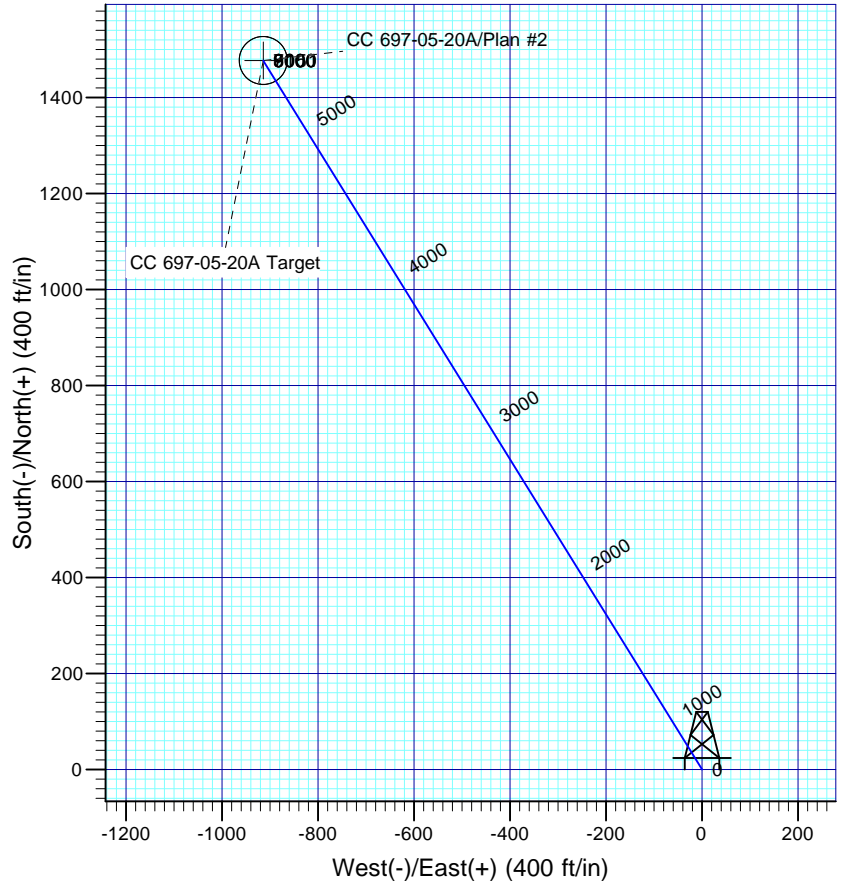


Azimuths to True North  
Magnetic North: 10.51°

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



Vertical Section at 328.25° (1500 ft/in)



#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
5952.00	6236.66	Mesavade
6149.00	6433.66	Williams Fork
8751.00	9035.66	Rollins

Plan: Plan #2

**14:05, 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	1145.56	19.91	328.25	1125.64	145.62	-90.12	2.00	328.25	171.25	
4	5241.10	19.91	328.25	4976.36	1331.67	-824.10	0.00	0.00	1566.04	
5	6236.66	0.00	0.00	5952.00	1477.29	-914.22	2.00	180.00	1737.29	
6	8385.66	0.00	0.00	8101.00	1477.29	-914.22	0.00	0.00	1737.29	CC 697-05-20A Target
7	9435.66	0.00	0.00	9151.00	1477.29	-914.22	0.00	0.00	1737.29	

# **OXY USA RMAT**

**Garfield County, CO NAD27  
Cascade Creek 697-05C Pad  
CC 697-05-20A - Slot Q**

**OH**

**Plan: Plan #2**

## **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 697-05-20A - Slot Q
<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 697-05-20A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #2		

<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 °

<b>Well</b>	CC 697-05-20A - Slot Q		
<b>Well Position</b>	<b>+N/-S</b>	1,108.99 ft	<b>Northing:</b> 638,545.98 usft
	<b>+E/-W</b>	858.28 ft	<b>Easting:</b> 1,227,041.45 usft
<b>Position Uncertainty</b>	0.00 ft	<b>Wellhead Elevation:</b>	<b>Latitude:</b> 39° 33' 16.586 N
			<b>Longitude:</b> 108° 14' 30.005 W
			<b>Ground Level:</b> 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 #2			
<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	328.25

<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	
1,145.56	19.91	328.25	1,125.64	145.62	-90.12	2.00	2.00	0.00	328.25	
5,241.10	19.91	328.25	4,976.36	1,331.67	-824.10	0.00	0.00	0.00	0.00	
6,236.66	0.00	0.00	5,952.00	1,477.29	-914.22	2.00	-2.00	0.00	180.00	
8,385.66	0.00	0.00	8,101.00	1,477.29	-914.22	0.00	0.00	0.00	0.00	CC 697-05-20A Target
9,435.66	0.00	0.00	9,151.00	1,477.29	-914.22	0.00	0.00	0.00	0.00	

# Scientific Drilling International

## Planning Report

<b>Database:</b>	EDM-RexH-Local	<b>Local Co-ordinate Reference:</b>	Well CC 697-05-20A - Slot Q
<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 697-05-20A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #2		

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	328.25	200.00	0.37	-0.23	0.44	2.00	2.00	0.00
300.00	3.00	328.25	299.93	3.34	-2.07	3.93	2.00	2.00	0.00
400.00	5.00	328.25	399.68	9.27	-5.74	10.90	2.00	2.00	0.00
500.00	7.00	328.25	499.13	18.16	-11.24	21.35	2.00	2.00	0.00
600.00	9.00	328.25	598.15	29.99	-18.56	35.27	2.00	2.00	0.00
700.00	11.00	328.25	696.63	44.76	-27.70	52.63	2.00	2.00	0.00
800.00	13.00	328.25	794.44	62.44	-38.64	73.42	2.00	2.00	0.00
900.00	15.00	328.25	891.46	83.01	-51.37	97.62	2.00	2.00	0.00
1,000.00	17.00	328.25	987.58	106.44	-65.87	125.18	2.00	2.00	0.00
1,100.00	19.00	328.25	1,082.68	132.72	-82.13	156.08	2.00	2.00	0.00
1,145.56	19.91	328.25	1,125.64	145.62	-90.12	171.25	2.00	2.00	0.00
Start 19.91° Hold At 1145.56'									
1,200.00	19.91	328.25	1,176.83	161.39	-99.87	189.79	0.00	0.00	0.00
1,300.00	19.91	328.25	1,270.85	190.35	-117.80	223.85	0.00	0.00	0.00
1,400.00	19.91	328.25	1,364.87	219.31	-135.72	257.91	0.00	0.00	0.00
1,500.00	19.91	328.25	1,458.89	248.27	-153.64	291.96	0.00	0.00	0.00
1,600.00	19.91	328.25	1,552.92	277.23	-171.56	326.02	0.00	0.00	0.00
1,700.00	19.91	328.25	1,646.94	306.19	-189.48	360.07	0.00	0.00	0.00
1,800.00	19.91	328.25	1,740.96	335.15	-207.40	394.13	0.00	0.00	0.00
1,900.00	19.91	328.25	1,834.98	364.10	-225.32	428.19	0.00	0.00	0.00
2,000.00	19.91	328.25	1,929.01	393.06	-243.25	462.24	0.00	0.00	0.00
2,100.00	19.91	328.25	2,023.03	422.02	-261.17	496.30	0.00	0.00	0.00
2,200.00	19.91	328.25	2,117.05	450.98	-279.09	530.35	0.00	0.00	0.00
2,300.00	19.91	328.25	2,211.07	479.94	-297.01	564.41	0.00	0.00	0.00
2,400.00	19.91	328.25	2,305.09	508.90	-314.93	598.47	0.00	0.00	0.00
2,500.00	19.91	328.25	2,399.12	537.86	-332.85	632.52	0.00	0.00	0.00
2,600.00	19.91	328.25	2,493.14	566.82	-350.77	666.58	0.00	0.00	0.00
2,700.00	19.91	328.25	2,587.16	595.78	-368.70	700.64	0.00	0.00	0.00
2,800.00	19.91	328.25	2,681.18	624.74	-386.62	734.69	0.00	0.00	0.00
2,900.00	19.91	328.25	2,775.21	653.70	-404.54	768.75	0.00	0.00	0.00
3,000.00	19.91	328.25	2,869.23	682.66	-422.46	802.80	0.00	0.00	0.00
3,100.00	19.91	328.25	2,963.25	711.62	-440.38	836.86	0.00	0.00	0.00
3,200.00	19.91	328.25	3,057.27	740.58	-458.30	870.92	0.00	0.00	0.00
3,300.00	19.91	328.25	3,151.29	769.54	-476.22	904.97	0.00	0.00	0.00
3,400.00	19.91	328.25	3,245.32	798.50	-494.15	939.03	0.00	0.00	0.00
3,500.00	19.91	328.25	3,339.34	827.46	-512.07	973.09	0.00	0.00	0.00
3,600.00	19.91	328.25	3,433.36	856.41	-529.99	1,007.14	0.00	0.00	0.00
3,700.00	19.91	328.25	3,527.38	885.37	-547.91	1,041.20	0.00	0.00	0.00
3,800.00	19.91	328.25	3,621.41	914.33	-565.83	1,075.25	0.00	0.00	0.00
3,900.00	19.91	328.25	3,715.43	943.29	-583.75	1,109.31	0.00	0.00	0.00
4,000.00	19.91	328.25	3,809.45	972.25	-601.67	1,143.37	0.00	0.00	0.00
4,100.00	19.91	328.25	3,903.47	1,001.21	-619.60	1,177.42	0.00	0.00	0.00
4,200.00	19.91	328.25	3,997.49	1,030.17	-637.52	1,211.48	0.00	0.00	0.00
4,300.00	19.91	328.25	4,091.52	1,059.13	-655.44	1,245.54	0.00	0.00	0.00
4,400.00	19.91	328.25	4,185.54	1,088.09	-673.36	1,279.59	0.00	0.00	0.00
4,500.00	19.91	328.25	4,279.56	1,117.05	-691.28	1,313.65	0.00	0.00	0.00
4,600.00	19.91	328.25	4,373.58	1,146.01	-709.20	1,347.70	0.00	0.00	0.00
4,700.00	19.91	328.25	4,467.60	1,174.97	-727.12	1,381.76	0.00	0.00	0.00
4,800.00	19.91	328.25	4,561.63	1,203.93	-745.05	1,415.82	0.00	0.00	0.00
4,900.00	19.91	328.25	4,655.65	1,232.89	-762.97	1,449.87	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 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 697-05-20A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #2		

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	19.91	328.25	4,749.67	1,261.85	-780.89	1,483.93	0.00	0.00	0.00
5,100.00	19.91	328.25	4,843.69	1,290.81	-798.81	1,517.99	0.00	0.00	0.00
5,200.00	19.91	328.25	4,937.72	1,319.77	-816.73	1,552.04	0.00	0.00	0.00
5,241.10	19.91	328.25	4,976.36	1,331.67	-824.10	1,566.04	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
5,300.00	18.73	328.25	5,031.94	1,348.24	-834.35	1,585.53	2.00	-2.00	0.00
5,400.00	16.73	328.25	5,127.18	1,374.14	-850.38	1,615.98	2.00	-2.00	0.00
5,500.00	14.73	328.25	5,223.43	1,397.20	-864.65	1,643.10	2.00	-2.00	0.00
5,600.00	12.73	328.25	5,320.57	1,417.38	-877.14	1,666.84	2.00	-2.00	0.00
5,700.00	10.73	328.25	5,418.47	1,434.67	-887.84	1,687.17	2.00	-2.00	0.00
5,800.00	8.73	328.25	5,517.03	1,449.05	-896.74	1,704.08	2.00	-2.00	0.00
5,900.00	6.73	328.25	5,616.12	1,460.49	-903.82	1,717.53	2.00	-2.00	0.00
6,000.00	4.73	328.25	5,715.61	1,468.98	-909.07	1,727.52	2.00	-2.00	0.00
6,100.00	2.73	328.25	5,815.39	1,474.52	-912.50	1,734.03	2.00	-2.00	0.00
6,200.00	0.73	328.25	5,915.34	1,477.09	-914.09	1,737.06	2.00	-2.00	0.00
6,236.66	0.00	0.00	5,952.00	1,477.29	-914.22	1,737.29	2.00	-2.00	86.61
<b>Start 0.00° Hold At 6236.66' - Mesavade</b>									
6,300.00	0.00	0.00	6,015.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
6,400.00	0.00	0.00	6,115.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
6,433.66	0.00	0.00	6,149.00	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
<b>Williams Fork</b>									
6,500.00	0.00	0.00	6,215.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
6,600.00	0.00	0.00	6,315.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
6,700.00	0.00	0.00	6,415.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
6,800.00	0.00	0.00	6,515.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
6,900.00	0.00	0.00	6,615.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
6,983.66	0.00	0.00	6,699.00	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
<b>TOG = 640050.18, 1226172.23</b>									
7,000.00	0.00	0.00	6,715.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
7,100.00	0.00	0.00	6,815.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
7,200.00	0.00	0.00	6,915.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
7,300.00	0.00	0.00	7,015.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
7,400.00	0.00	0.00	7,115.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
7,500.00	0.00	0.00	7,215.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
7,600.00	0.00	0.00	7,315.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
7,700.00	0.00	0.00	7,415.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
7,800.00	0.00	0.00	7,515.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
7,900.00	0.00	0.00	7,615.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
8,000.00	0.00	0.00	7,715.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
8,100.00	0.00	0.00	7,815.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
8,200.00	0.00	0.00	7,915.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
8,300.00	0.00	0.00	8,015.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
8,385.66	0.00	0.00	8,101.00	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
<b>Target = 640050.18, 1226172.23</b>									
8,400.00	0.00	0.00	8,115.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
8,500.00	0.00	0.00	8,215.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
8,600.00	0.00	0.00	8,315.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
8,700.00	0.00	0.00	8,415.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
8,800.00	0.00	0.00	8,515.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
8,900.00	0.00	0.00	8,615.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
9,000.00	0.00	0.00	8,715.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
9,035.66	0.00	0.00	8,751.00	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
<b>Rollins</b>									

# Scientific Drilling International

## Planning Report

<b>Database:</b>	EDM-RexH-Local	<b>Local Co-ordinate Reference:</b>	Well CC 697-05-20A - Slot Q
<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 697-05-20A	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #2		

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	0.00	0.00	8,815.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
9,200.00	0.00	0.00	8,915.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
9,300.00	0.00	0.00	9,015.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
9,400.00	0.00	0.00	9,115.34	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
9,435.66	0.00	0.00	9,151.00	1,477.29	-914.22	1,737.29	0.00	0.00	0.00
PBHL = 640050.18, 1226172.23									

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 697-05-20A Target	0.00	330.09	8,101.00	1,477.29	-914.22	640,050.19	1,226,172.23	39° 33' 31.187 N	108° 14' 41.678 W
- plan hits target center									
- Circle (radius 50.00)									

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
6,236.66	5,952.00	Mesavede		0.00		
6,433.66	6,149.00	Williams Fork		0.00		
9,035.66	8,751.00	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
1,145.56	1,125.64	145.62	-90.12	Start 19.91° Hold At 1145.56'
5,241.10	4,976.36	1,331.67	-824.10	Start Drop -2.00
6,236.66	5,952.00	1,477.29	-914.22	Start 0.00° Hold At 6236.66'
6,983.66	6,699.00	1,477.29	-914.22	TOG = 640050.18, 1226172.23
8,385.66	8,101.00	1,477.29	-914.22	Target = 640050.18, 1226172.23
9,435.66	9,151.00	1,477.29	-914.22	PBHL = 640050.18, 1226172.23