



**Scientific Drilling**  
Rocky Mountain Operations

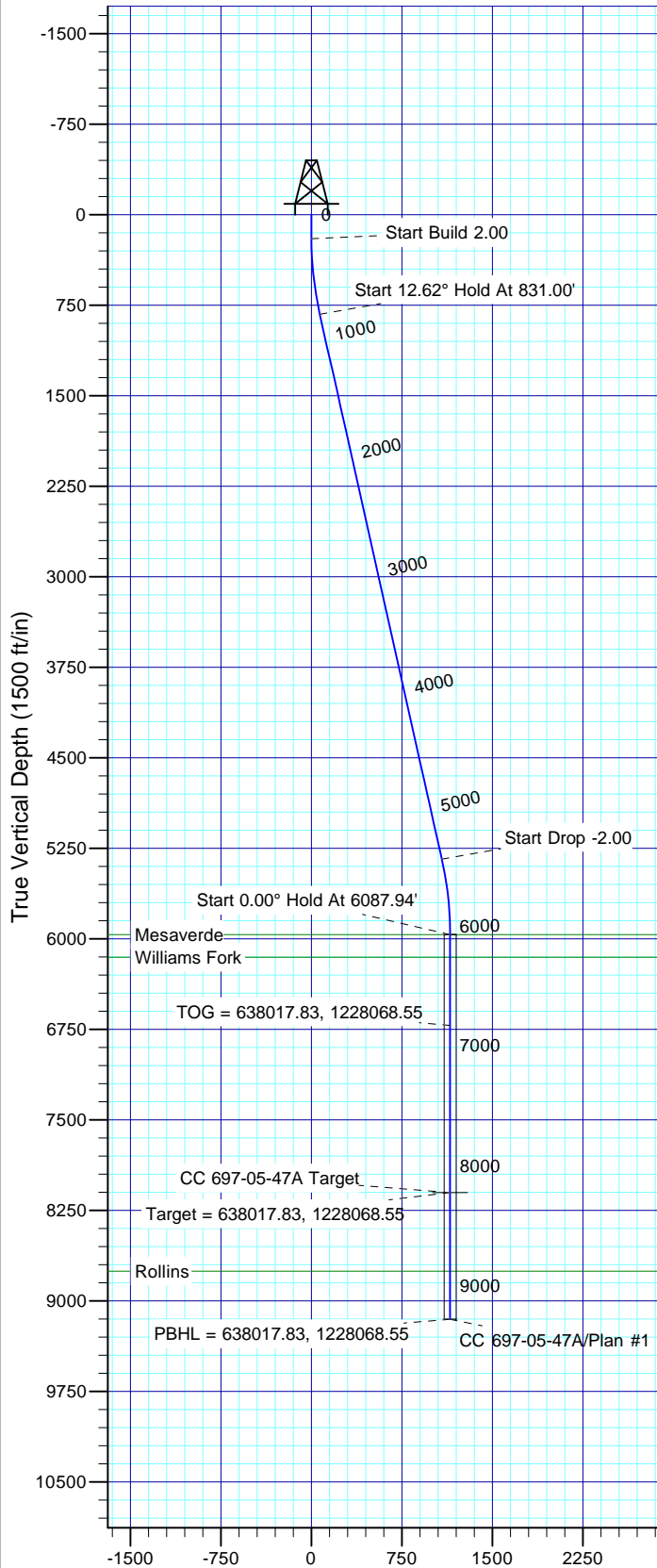
Company: OXY USA RMAT  
Project: Garfield County, CO NAD27  
Site: Cascade Creek 697-05C Pad



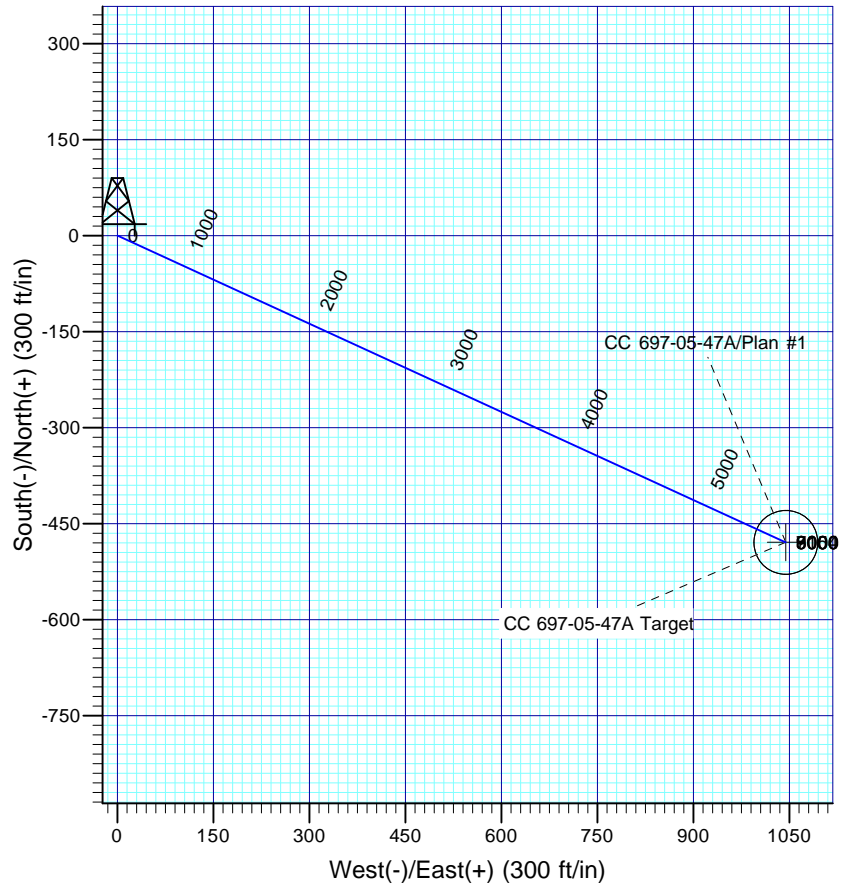
Well Details: CC 697-05-47A

TVD Reference: GL 8429' & RKB 30' @ 8459.00ft (H&P) Ground Level: 8429.00  
+N/-S 0.00 +E/-W 0.00 Northing 638528.38 Easting 1227039.08 Latitude 39° 33' 16.412 N Longitude 108° 14' 30.029 W Slot N

**T 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 114.65° (1500 ft/in)



#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
5966.00	6087.94	Mesaverde
6154.00	6275.94	Williams Fork
8754.00	8875.94	Rollins

Plan: Plan #1

**14:40, 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	200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
3	831.00	12.62	114.65	825.91	-28.87	62.91	2.00	114.65	69.21	
4	5456.94	12.62	114.65	5340.09	-450.40	981.50	0.00	0.00	0.00	
5	6087.94	0.00	0.00	5966.00	-479.26	1044.41	2.00	180.00	1149.12	
6	8225.94	0.00	0.00	8104.00	-479.26	1044.41	0.00	0.00	1149.12	CC 697-05-47A Target
7	9275.94	0.00	0.00	9154.00	-479.26	1044.41	0.00	0.00	1149.12	

# **OXY USA RMAT**

**Garfield County, CO NAD27  
Cascade Creek 697-05C Pad  
CC 697-05-47A - Slot N**

**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 697-05-47A - Slot N
<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 697-05-47A	<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 697-05C Pad, Sec. 5 T6S R97W			
Site Position:		Northing:	637,463.43 usft	Latitude:	39° 33' 5.626 N
From:	Map	Easting:	1,226,150.07 usft	Longitude:	108° 14' 40.963 W
Position Uncertainty:	0.00 ft	Slot Radius:	0.000 in	Grid Convergence:	-1.73 °

Well	CC 697-05-47A - Slot N					
Well Position	+N/-S	1,091.33 ft	Northing:	638,528.39 usft	Latitude:	39° 33' 16.412 N
	+E/-W	856.44 ft	Easting:	1,227,039.08 usft	Longitude:	108° 14' 30.029 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	114.65

<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	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
831.00	12.62	114.65	825.91	-28.87	62.91	2.00	2.00	0.00	114.65	
5,456.94	12.62	114.65	5,340.09	-450.40	981.50	0.00	0.00	0.00	0.00	
6,087.94	0.00	0.00	5,966.00	-479.26	1,044.41	2.00	-2.00	0.00	180.00	
8,225.94	0.00	0.00	8,104.00	-479.26	1,044.41	0.00	0.00	0.00	0.00	CC 697-05-47A Target
9,275.94	0.00	0.00	9,154.00	-479.26	1,044.41	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 697-05-47A - Slot N
<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 697-05-47A	<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
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
300.00	2.00	114.65	299.98	-0.73	1.59	1.75	2.00	2.00	0.00
400.00	4.00	114.65	399.84	-2.91	6.34	6.98	2.00	2.00	0.00
500.00	6.00	114.65	499.45	-6.55	14.26	15.69	2.00	2.00	0.00
600.00	8.00	114.65	598.70	-11.63	25.34	27.88	2.00	2.00	0.00
700.00	10.00	114.65	697.47	-18.15	39.56	43.52	2.00	2.00	0.00
800.00	12.00	114.65	795.62	-26.11	56.90	62.60	2.00	2.00	0.00
831.00	12.62	114.65	825.91	-28.87	62.91	69.21	2.00	2.00	0.00
Start 12.62° Hold At 831.00'									
900.00	12.62	114.65	893.24	-35.15	76.61	84.29	0.00	0.00	0.00
1,000.00	12.62	114.65	990.83	-44.27	96.46	106.14	0.00	0.00	0.00
1,100.00	12.62	114.65	1,088.41	-53.38	116.32	127.98	0.00	0.00	0.00
1,200.00	12.62	114.65	1,186.00	-62.49	136.18	149.83	0.00	0.00	0.00
1,300.00	12.62	114.65	1,283.58	-71.60	156.04	171.68	0.00	0.00	0.00
1,400.00	12.62	114.65	1,381.16	-80.72	175.89	193.53	0.00	0.00	0.00
1,500.00	12.62	114.65	1,478.75	-89.83	195.75	215.38	0.00	0.00	0.00
1,600.00	12.62	114.65	1,576.33	-98.94	215.61	237.23	0.00	0.00	0.00
1,700.00	12.62	114.65	1,673.92	-108.05	235.47	259.08	0.00	0.00	0.00
1,800.00	12.62	114.65	1,771.50	-117.16	255.32	280.92	0.00	0.00	0.00
1,900.00	12.62	114.65	1,869.08	-126.28	275.18	302.77	0.00	0.00	0.00
2,000.00	12.62	114.65	1,966.67	-135.39	295.04	324.62	0.00	0.00	0.00
2,100.00	12.62	114.65	2,064.25	-144.50	314.90	346.47	0.00	0.00	0.00
2,200.00	12.62	114.65	2,161.84	-153.61	334.75	368.32	0.00	0.00	0.00
2,300.00	12.62	114.65	2,259.42	-162.73	354.61	390.17	0.00	0.00	0.00
2,400.00	12.62	114.65	2,357.00	-171.84	374.47	412.01	0.00	0.00	0.00
2,500.00	12.62	114.65	2,454.59	-180.95	394.33	433.86	0.00	0.00	0.00
2,600.00	12.62	114.65	2,552.17	-190.06	414.18	455.71	0.00	0.00	0.00
2,700.00	12.62	114.65	2,649.76	-199.18	434.04	477.56	0.00	0.00	0.00
2,800.00	12.62	114.65	2,747.34	-208.29	453.90	499.41	0.00	0.00	0.00
2,900.00	12.62	114.65	2,844.92	-217.40	473.76	521.26	0.00	0.00	0.00
3,000.00	12.62	114.65	2,942.51	-226.51	493.61	543.11	0.00	0.00	0.00
3,100.00	12.62	114.65	3,040.09	-235.62	513.47	564.95	0.00	0.00	0.00
3,200.00	12.62	114.65	3,137.68	-244.74	533.33	586.80	0.00	0.00	0.00
3,300.00	12.62	114.65	3,235.26	-253.85	553.19	608.65	0.00	0.00	0.00
3,400.00	12.62	114.65	3,332.84	-262.96	573.05	630.50	0.00	0.00	0.00
3,500.00	12.62	114.65	3,430.43	-272.07	592.90	652.35	0.00	0.00	0.00
3,600.00	12.62	114.65	3,528.01	-281.19	612.76	674.20	0.00	0.00	0.00
3,700.00	12.62	114.65	3,625.60	-290.30	632.62	696.04	0.00	0.00	0.00
3,800.00	12.62	114.65	3,723.18	-299.41	652.48	717.89	0.00	0.00	0.00
3,900.00	12.62	114.65	3,820.76	-308.52	672.33	739.74	0.00	0.00	0.00
4,000.00	12.62	114.65	3,918.35	-317.64	692.19	761.59	0.00	0.00	0.00
4,100.00	12.62	114.65	4,015.93	-326.75	712.05	783.44	0.00	0.00	0.00
4,200.00	12.62	114.65	4,113.52	-335.86	731.91	805.29	0.00	0.00	0.00
4,300.00	12.62	114.65	4,211.10	-344.97	751.76	827.14	0.00	0.00	0.00
4,400.00	12.62	114.65	4,308.68	-354.08	771.62	848.98	0.00	0.00	0.00
4,500.00	12.62	114.65	4,406.27	-363.20	791.48	870.83	0.00	0.00	0.00
4,600.00	12.62	114.65	4,503.85	-372.31	811.34	892.68	0.00	0.00	0.00
4,700.00	12.62	114.65	4,601.44	-381.42	831.19	914.53	0.00	0.00	0.00
4,800.00	12.62	114.65	4,699.02	-390.53	851.05	936.38	0.00	0.00	0.00
4,900.00	12.62	114.65	4,796.60	-399.65	870.91	958.23	0.00	0.00	0.00
5,000.00	12.62	114.65	4,894.19	-408.76	890.77	980.08	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 697-05-47A - Slot N
<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 697-05-47A	<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	12.62	114.65	4,991.77	-417.87	910.62	1,001.92	0.00	0.00	0.00
5,200.00	12.62	114.65	5,089.36	-426.98	930.48	1,023.77	0.00	0.00	0.00
5,300.00	12.62	114.65	5,186.94	-436.10	950.34	1,045.62	0.00	0.00	0.00
5,400.00	12.62	114.65	5,284.52	-445.21	970.20	1,067.47	0.00	0.00	0.00
5,456.94	12.62	114.65	5,340.09	-450.40	981.50	1,079.91	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
5,500.00	11.76	114.65	5,382.18	-454.19	989.77	1,089.00	2.00	-2.00	0.00
5,600.00	9.76	114.65	5,480.42	-461.97	1,006.73	1,107.67	2.00	-2.00	0.00
5,700.00	7.76	114.65	5,579.24	-468.32	1,020.57	1,122.89	2.00	-2.00	0.00
5,800.00	5.76	114.65	5,678.54	-473.23	1,031.27	1,134.66	2.00	-2.00	0.00
5,900.00	3.76	114.65	5,778.19	-476.69	1,038.81	1,142.96	2.00	-2.00	0.00
6,000.00	1.76	114.65	5,878.07	-478.70	1,043.18	1,147.77	2.00	-2.00	0.00
6,087.94	0.00	0.00	5,966.00	-479.26	1,044.41	1,149.12	2.00	-2.00	-130.37
<b>Start 0.00° Hold At 6087.94' - Mesaverde</b>									
6,100.00	0.00	0.00	5,978.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
6,200.00	0.00	0.00	6,078.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
6,275.94	0.00	0.00	6,154.00	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
<b>Williams Fork</b>									
6,300.00	0.00	0.00	6,178.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
6,400.00	0.00	0.00	6,278.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
6,500.00	0.00	0.00	6,378.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
6,600.00	0.00	0.00	6,478.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
6,700.00	0.00	0.00	6,578.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
6,800.00	0.00	0.00	6,678.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
6,840.94	0.00	0.00	6,719.00	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
<b>TOG = 638017.83, 1228068.55</b>									
6,900.00	0.00	0.00	6,778.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
7,000.00	0.00	0.00	6,878.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
7,100.00	0.00	0.00	6,978.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
7,200.00	0.00	0.00	7,078.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
7,300.00	0.00	0.00	7,178.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
7,400.00	0.00	0.00	7,278.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
7,500.00	0.00	0.00	7,378.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
7,600.00	0.00	0.00	7,478.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
7,700.00	0.00	0.00	7,578.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
7,800.00	0.00	0.00	7,678.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
7,900.00	0.00	0.00	7,778.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
8,000.00	0.00	0.00	7,878.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
8,100.00	0.00	0.00	7,978.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
8,200.00	0.00	0.00	8,078.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
8,225.94	0.00	0.00	8,104.00	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
<b>Target = 638017.83, 1228068.55</b>									
8,300.00	0.00	0.00	8,178.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
8,400.00	0.00	0.00	8,278.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
8,500.00	0.00	0.00	8,378.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
8,600.00	0.00	0.00	8,478.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
8,700.00	0.00	0.00	8,578.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
8,800.00	0.00	0.00	8,678.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
8,875.94	0.00	0.00	8,754.00	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
<b>Rollins</b>									
8,900.00	0.00	0.00	8,778.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
9,000.00	0.00	0.00	8,878.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
9,100.00	0.00	0.00	8,978.06	-479.26	1,044.41	1,149.12	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 697-05-47A - Slot N
<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 697-05-47A	<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)
9,200.00	0.00	0.00	9,078.06	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
9,275.94	0.00	0.00	9,154.00	-479.26	1,044.41	1,149.12	0.00	0.00	0.00
PBHL = 638017.83, 1228068.55									

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 697-05-47A Target - plan hits target center - Circle (radius 50.00)	0.00	0.00	8,104.00	-479.26	1,044.41	638,017.83	1,228,068.55	39° 33' 11.675 N	108° 14' 16.695 W

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,087.94	5,966.00	Mesaverde		0.00	
6,275.94	6,154.00	Williams Fork		0.00	
8,875.94	8,754.00	Rollins		0.00	

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
200.00	200.00	0.00	0.00	Start Build 2.00
831.00	825.91	-28.87	62.91	Start 12.62° Hold At 831.00'
5,456.94	5,340.09	-450.40	981.50	Start Drop -2.00
6,087.94	5,966.00	-479.26	1,044.41	Start 0.00° Hold At 6087.94'
6,840.94	6,719.00	-479.26	1,044.41	TOG = 638017.83, 1228068.55
8,225.94	8,104.00	-479.26	1,044.41	Target = 638017.83, 1228068.55
9,275.94	9,154.00	-479.26	1,044.41	PBHL = 638017.83, 1228068.55