



**Scientific Drilling**  
Rocky Mountain Operations

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



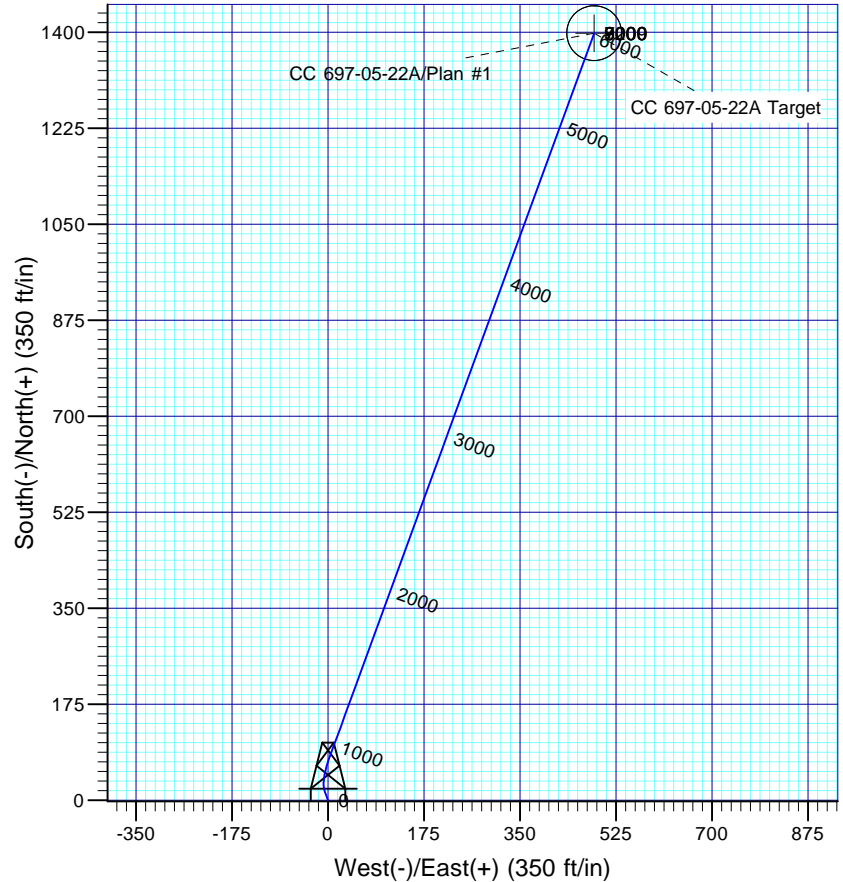
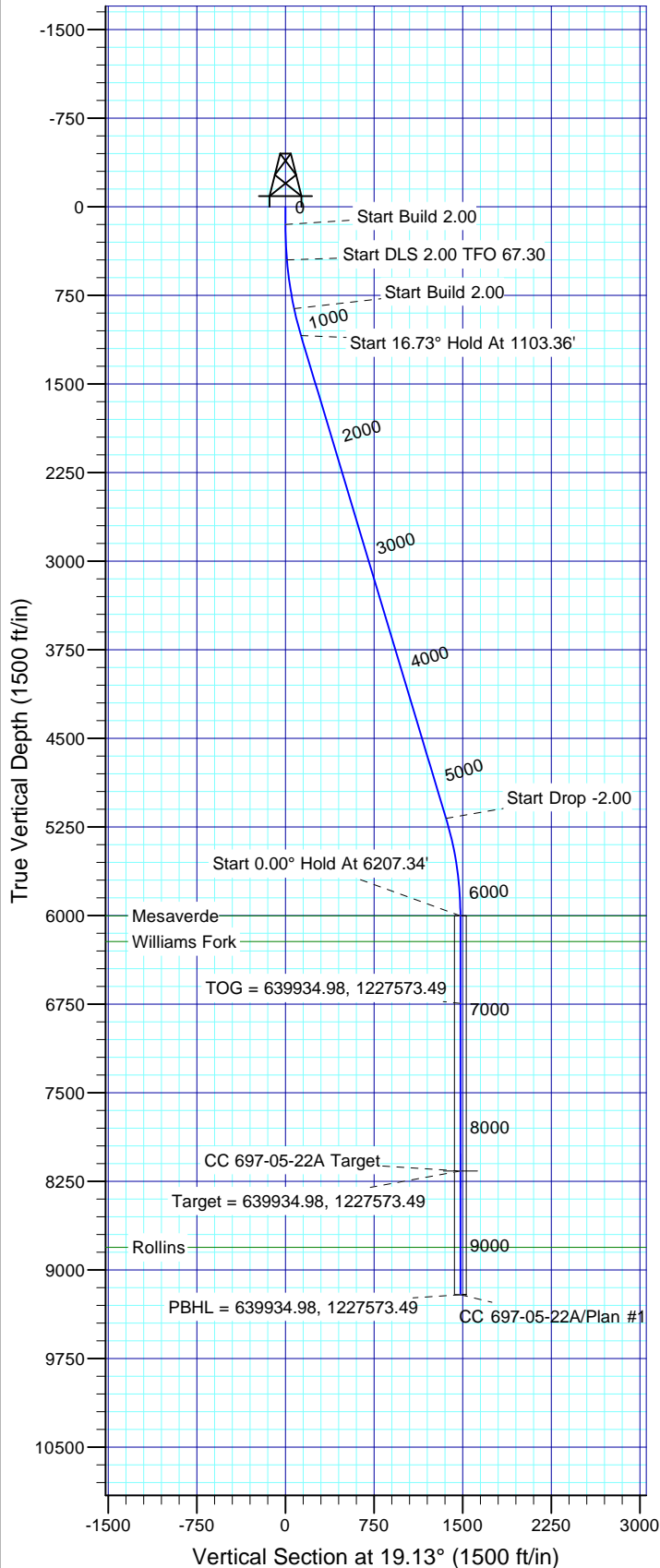
Well Details: CC 697-05-22A

TVD Reference: GL 8429' & RKB 30' @ 8459.00ft (H&P) Ground Level: 8429.00  
+N/-S 0.00 +E/-W 0.00 Northing 638551.73 Easting 1227046.27 Latitude 39° 33' 16.645 N Longitude 108° 14' 29.946 W Slot S



Azimuths to True North  
Magnetic North: 10.51°

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



#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
6002.00	6207.34	Mesaverde
6220.00	6425.34	Williams Fork
8809.00	9014.34	Rollins

Plan: Plan #1

14:10, 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	VSEct	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	450.00	6.00	340.00	449.45	14.75	-5.37	2.00	340.00	12.17	
4	867.09	12.00	20.07	861.57	76.07	2.07	2.00	67.30	72.54	CC 697-05-22A Target
5	1103.36	16.73	20.07	1090.39	131.10	22.18	2.00	0.00	131.13	
6	5371.07	16.73	20.07	5177.55	1284.70	443.65	0.00	0.00	1359.15	
7	6207.34	0.00	0.00	6002.00	1398.54	485.24	2.00	180.00	1480.33	
8	8367.34	0.00	0.00	8162.00	1398.54	485.24	0.00	0.00	1480.33	CC 697-05-22A Target
9	9414.34	0.00	0.00	9209.00	1398.54	485.24	0.00	0.00	1480.33	

# **OXY USA RMAT**

**Garfield County, CO NAD27  
Cascade Creek 697-05C Pad  
CC 697-05-22A - Slot S**

**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 697-05-22A - Slot S
<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 697-05-22A	<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 697-05-22A - Slot S					
Well Position	+N/-S	1,114.88 ft	Northing:	638,551.73 usft	Latitude:	39° 33' 16.645 N
	+E/-W	862.92 ft	Easting:	1,227,046.27 usft	Longitude:	108° 14' 29.946 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	19.13

<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	
450.00	6.00	340.00	449.45	14.75	-5.37	2.00	2.00	0.00	340.00	
867.09	12.00	20.07	861.57	76.07	2.07	2.00	1.44	9.61	67.30	CC 697-05-22A Target
1,103.36	16.73	20.07	1,090.39	131.10	22.18	2.00	2.00	0.00	0.00	
5,371.07	16.73	20.07	5,177.56	1,284.70	443.65	0.00	0.00	0.00	0.00	
6,207.34	0.00	0.00	6,002.00	1,398.54	485.24	2.00	-2.00	0.00	180.00	
8,367.34	0.00	0.00	8,162.00	1,398.54	485.24	0.00	0.00	0.00	0.00	CC 697-05-22A Target
9,414.34	0.00	0.00	9,209.00	1,398.54	485.24	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 697-05-22A - Slot S
<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 697-05-22A	<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	340.00	200.00	0.41	-0.15	0.34	2.00	2.00	0.00
300.00	3.00	340.00	299.93	3.69	-1.34	3.05	2.00	2.00	0.00
400.00	5.00	340.00	399.68	10.24	-3.73	8.46	2.00	2.00	0.00
450.00	6.00	340.00	449.45	14.75	-5.37	12.17	2.00	2.00	0.00
Start DLS 2.00 TFO 67.30									
500.00	6.45	348.24	499.16	19.95	-6.83	16.61	2.00	0.90	16.48
600.00	7.67	1.20	598.40	32.13	-7.84	27.78	2.00	1.22	12.96
700.00	9.17	10.30	697.33	46.64	-6.27	42.01	2.00	1.50	9.10
800.00	10.83	16.76	795.81	63.48	-2.14	59.27	2.00	1.66	6.45
867.09	12.00	20.07	861.57	76.07	2.07	72.54	2.00	1.75	4.94
Start Build 2.00									
900.00	12.66	20.07	893.72	82.67	4.48	79.57	2.00	2.00	0.00
1,000.00	14.66	20.07	990.89	104.84	12.58	103.18	2.00	2.00	0.00
1,100.00	16.66	20.07	1,087.17	130.19	21.85	130.16	2.00	2.00	0.00
1,103.36	16.73	20.07	1,090.39	131.10	22.18	131.13	2.00	2.00	0.00
Start 16.73° Hold At 1103.36'									
1,200.00	16.73	20.07	1,182.94	157.22	31.72	158.93	0.00	0.00	0.00
1,300.00	16.73	20.07	1,278.71	184.25	41.60	187.71	0.00	0.00	0.00
1,400.00	16.73	20.07	1,374.48	211.28	51.47	216.48	0.00	0.00	0.00
1,500.00	16.73	20.07	1,470.25	238.32	61.35	245.26	0.00	0.00	0.00
1,600.00	16.73	20.07	1,566.02	265.35	71.22	274.03	0.00	0.00	0.00
1,700.00	16.73	20.07	1,661.79	292.38	81.10	302.81	0.00	0.00	0.00
1,800.00	16.73	20.07	1,757.56	319.41	90.98	331.58	0.00	0.00	0.00
1,900.00	16.73	20.07	1,853.33	346.44	100.85	360.36	0.00	0.00	0.00
2,000.00	16.73	20.07	1,949.10	373.47	110.73	389.13	0.00	0.00	0.00
2,100.00	16.73	20.07	2,044.87	400.50	120.60	417.91	0.00	0.00	0.00
2,200.00	16.73	20.07	2,140.64	427.53	130.48	446.68	0.00	0.00	0.00
2,300.00	16.73	20.07	2,236.41	454.56	140.36	475.46	0.00	0.00	0.00
2,400.00	16.73	20.07	2,332.18	481.59	150.23	504.23	0.00	0.00	0.00
2,500.00	16.73	20.07	2,427.95	508.63	160.11	533.01	0.00	0.00	0.00
2,600.00	16.73	20.07	2,523.72	535.66	169.98	561.78	0.00	0.00	0.00
2,700.00	16.73	20.07	2,619.48	562.69	179.86	590.55	0.00	0.00	0.00
2,800.00	16.73	20.07	2,715.25	589.72	189.74	619.33	0.00	0.00	0.00
2,900.00	16.73	20.07	2,811.02	616.75	199.61	648.10	0.00	0.00	0.00
3,000.00	16.73	20.07	2,906.79	643.78	209.49	676.88	0.00	0.00	0.00
3,100.00	16.73	20.07	3,002.56	670.81	219.36	705.65	0.00	0.00	0.00
3,200.00	16.73	20.07	3,098.33	697.84	229.24	734.43	0.00	0.00	0.00
3,300.00	16.73	20.07	3,194.10	724.87	239.12	763.20	0.00	0.00	0.00
3,400.00	16.73	20.07	3,289.87	751.90	248.99	791.98	0.00	0.00	0.00
3,500.00	16.73	20.07	3,385.64	778.93	258.87	820.75	0.00	0.00	0.00
3,600.00	16.73	20.07	3,481.41	805.97	268.74	849.53	0.00	0.00	0.00
3,700.00	16.73	20.07	3,577.18	833.00	278.62	878.30	0.00	0.00	0.00
3,800.00	16.73	20.07	3,672.95	860.03	288.50	907.08	0.00	0.00	0.00
3,900.00	16.73	20.07	3,768.72	887.06	298.37	935.85	0.00	0.00	0.00
4,000.00	16.73	20.07	3,864.49	914.09	308.25	964.63	0.00	0.00	0.00
4,100.00	16.73	20.07	3,960.26	941.12	318.12	993.40	0.00	0.00	0.00
4,200.00	16.73	20.07	4,056.03	968.15	328.00	1,022.18	0.00	0.00	0.00
4,300.00	16.73	20.07	4,151.80	995.18	337.87	1,050.95	0.00	0.00	0.00
4,400.00	16.73	20.07	4,247.57	1,022.21	347.75	1,079.73	0.00	0.00	0.00
4,500.00	16.73	20.07	4,343.34	1,049.24	357.63	1,108.50	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 697-05-22A	<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)
4,600.00	16.73	20.07	4,439.11	1,076.27	367.50	1,137.27	0.00	0.00	0.00
4,700.00	16.73	20.07	4,534.87	1,103.31	377.38	1,166.05	0.00	0.00	0.00
4,800.00	16.73	20.07	4,630.64	1,130.34	387.25	1,194.82	0.00	0.00	0.00
4,900.00	16.73	20.07	4,726.41	1,157.37	397.13	1,223.60	0.00	0.00	0.00
5,000.00	16.73	20.07	4,822.18	1,184.40	407.01	1,252.37	0.00	0.00	0.00
5,100.00	16.73	20.07	4,917.95	1,211.43	416.88	1,281.15	0.00	0.00	0.00
5,200.00	16.73	20.07	5,013.72	1,238.46	426.76	1,309.92	0.00	0.00	0.00
5,300.00	16.73	20.07	5,109.49	1,265.49	436.63	1,338.70	0.00	0.00	0.00
5,371.07	16.73	20.07	5,177.56	1,284.70	443.65	1,359.15	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
5,400.00	16.15	20.07	5,205.30	1,292.39	446.46	1,367.33	2.00	-2.00	0.00
5,500.00	14.15	20.07	5,301.82	1,316.93	455.43	1,393.46	2.00	-2.00	0.00
5,600.00	12.15	20.07	5,399.20	1,338.29	463.23	1,416.20	2.00	-2.00	0.00
5,700.00	10.15	20.07	5,497.31	1,356.45	469.87	1,435.53	2.00	-2.00	0.00
5,800.00	8.15	20.07	5,596.03	1,371.38	475.32	1,451.42	2.00	-2.00	0.00
5,900.00	6.15	20.07	5,695.25	1,383.07	479.59	1,463.86	2.00	-2.00	0.00
6,000.00	4.15	20.07	5,794.84	1,391.49	482.67	1,472.83	2.00	-2.00	0.00
6,100.00	2.15	20.07	5,894.68	1,396.65	484.55	1,478.32	2.00	-2.00	0.00
6,200.00	0.15	20.07	5,994.66	1,398.53	485.24	1,480.32	2.00	-2.00	0.00
6,207.34	0.00	0.00	6,002.00	1,398.54	485.24	1,480.33	2.00	-2.00	0.00
<b>Start 0.00° Hold At 6207.34' - Mesaverde</b>									
6,300.00	0.00	0.00	6,094.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
6,400.00	0.00	0.00	6,194.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
6,425.34	0.00	0.00	6,220.00	1,398.54	485.24	1,480.33	0.00	0.00	0.00
<b>Williams Fork</b>									
6,500.00	0.00	0.00	6,294.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
6,600.00	0.00	0.00	6,394.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
6,700.00	0.00	0.00	6,494.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
6,800.00	0.00	0.00	6,594.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
6,900.00	0.00	0.00	6,694.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
6,949.34	0.00	0.00	6,744.00	1,398.54	485.24	1,480.33	0.00	0.00	0.00
<b>TOG = 639934.98, 1227573.49</b>									
7,000.00	0.00	0.00	6,794.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
7,100.00	0.00	0.00	6,894.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
7,200.00	0.00	0.00	6,994.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
7,300.00	0.00	0.00	7,094.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
7,400.00	0.00	0.00	7,194.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
7,500.00	0.00	0.00	7,294.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
7,600.00	0.00	0.00	7,394.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
7,700.00	0.00	0.00	7,494.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
7,800.00	0.00	0.00	7,594.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
7,900.00	0.00	0.00	7,694.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
8,000.00	0.00	0.00	7,794.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
8,100.00	0.00	0.00	7,894.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
8,200.00	0.00	0.00	7,994.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
8,300.00	0.00	0.00	8,094.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
8,367.34	0.00	0.00	8,162.00	1,398.54	485.24	1,480.33	0.00	0.00	0.00
<b>Target = 639934.98, 1227573.49</b>									
8,400.00	0.00	0.00	8,194.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
8,500.00	0.00	0.00	8,294.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
8,600.00	0.00	0.00	8,394.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
8,700.00	0.00	0.00	8,494.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
8,800.00	0.00	0.00	8,594.66	1,398.54	485.24	1,480.33	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 697-05-22A - Slot S
<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 697-05-22A	<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	8,694.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
9,000.00	0.00	0.00	8,794.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
9,014.34	0.00	0.00	8,809.00	1,398.54	485.24	1,480.33	0.00	0.00	0.00
<b>Rollins</b>									
9,100.00	0.00	0.00	8,894.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
9,200.00	0.00	0.00	8,994.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
9,300.00	0.00	0.00	9,094.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
9,400.00	0.00	0.00	9,194.66	1,398.54	485.24	1,480.33	0.00	0.00	0.00
9,414.34	0.00	0.00	9,209.00	1,398.54	485.24	1,480.33	0.00	0.00	0.00
<b>PBHL = 639934.98, 1227573.49</b>									

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 697-05-22A Target - plan hits target center - Circle (radius 50.00)	0.00	0.00	8,162.00	1,398.54	485.24	639,934.99	1,227,573.49	39° 33' 30.467 N	108° 14' 23.751 W

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,207.34	6,002.00	Mesaverde		0.00	
6,425.34	6,220.00	Williams Fork		0.00	
9,014.34	8,809.00	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
450.00	449.45	14.75	-5.37	Start DLS 2.00 TFO 67.30
867.09	861.57	76.07	2.07	Start Build 2.00
1,103.36	1,090.39	131.10	22.18	Start 16.73° Hold At 1103.36'
5,371.07	5,177.56	1,284.70	443.65	Start Drop -2.00
6,207.34	6,002.00	1,398.54	485.24	Start 0.00° Hold At 6207.34'
6,949.34	6,744.00	1,398.54	485.24	TOG = 639934.98, 1227573.49
8,367.34	8,162.00	1,398.54	485.24	Target = 639934.98, 1227573.49
9,414.34	9,209.00	1,398.54	485.24	PBHL = 639934.98, 1227573.49