



**Scientific Drilling**  
Rocky Mountain Operations

Company: OXY USA RMAT  
Project: Garfield County, CO NAD27  
Site: Cascade Creek 697-17B Pad



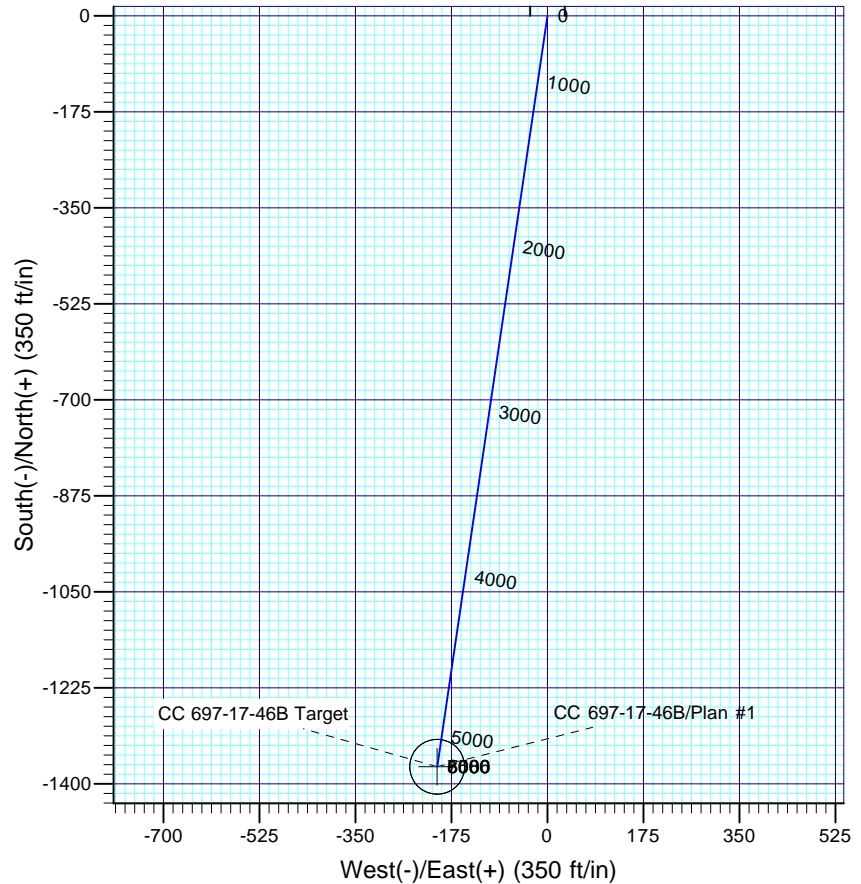
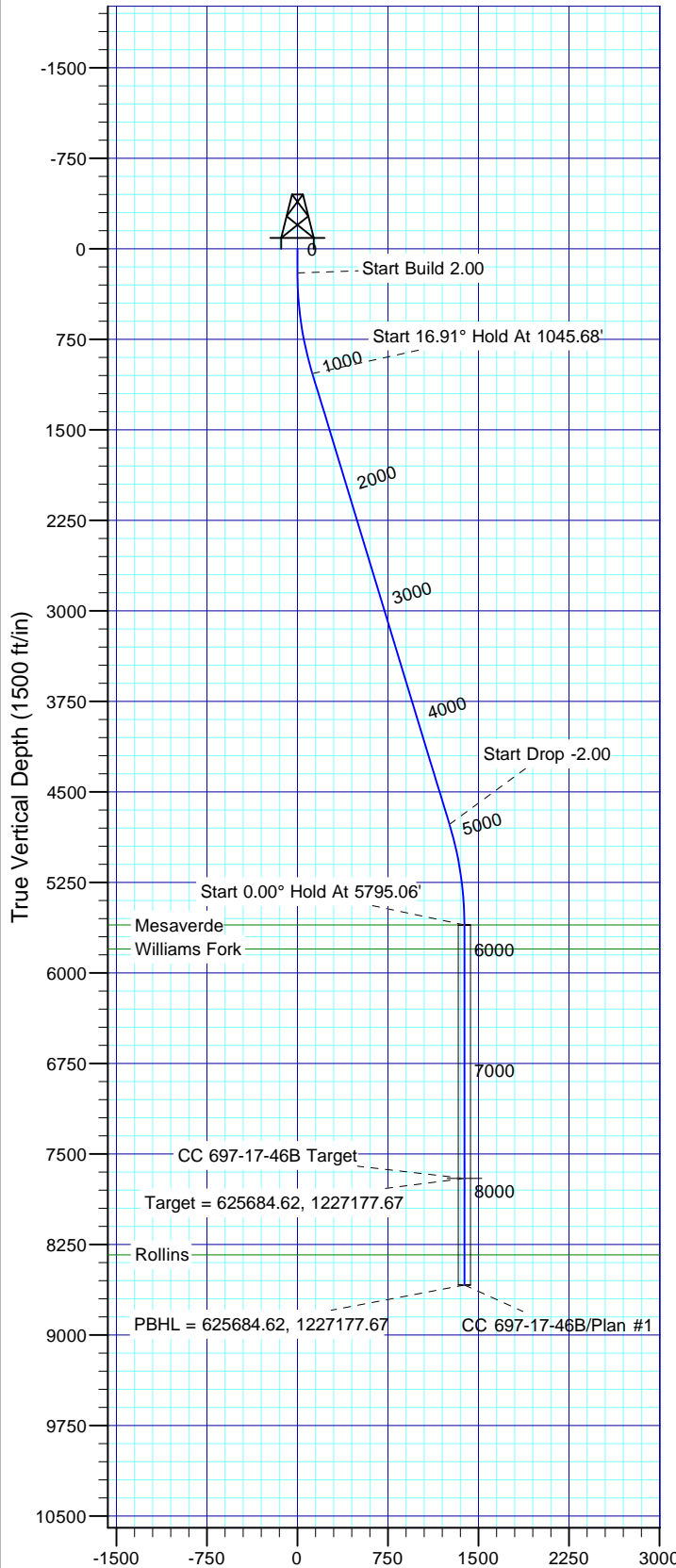
Well Details: CC 697-17-46B

TVD Reference: GL 8253' & RKB 30' @ 8283.00ft (H&P) Ground Level: 8253.00  
+N/-S 0.00 +E/-W 0.00 Northing 627046.77 Easting 1227419.94 Latitude 39° 31' 23.097 N Longitude 108° 14' 20.750 W Slot B



Azimuths to True North  
Magnetic North: 10.51°

Magnetic Field  
Strength: 52304.4snT  
Dip Angle: 65.74°  
Date: 11/15/2010  
Model: IGRF2005-10



#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
5602.00	5795.31	Mesaverde
5801.00	5994.31	Williams Fork
8336.00	8529.31	Rollins

#### Plan: Plan #1

21:57, November 15 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	1045.68	16.91	188.36	1033.45	-122.60	-18.01	2.00	188.36	123.92	
4	4949.39	16.91	188.36	4768.30	-1246.24	-183.08	0.00	0.00	1259.62	
5	5795.06	0.00	0.00	5601.75	-1368.84	-201.09	2.00	180.00	1383.53	
6	7895.31	0.00	0.00	7702.00	-1368.84	-201.09	0.00	0.00	1383.53	CC 697-17-46B Target
7	8779.31	0.00	0.00	8586.00	-1368.84	-201.09	0.00	0.00	1383.53	

# **OXY USA RMAT**

**Garfield County, CO NAD27  
Cascade Creek 697-17B Pad  
CC 697-17-46B - Slot B**

**OH**

**Plan: Plan #1**

## **Standard Planning Report**

**15 November, 2010**

# Scientific Drilling International

## Planning Report

<b>Database:</b>	Rockies-R5000.1	<b>Local Co-ordinate Reference:</b>	Well CC 697-17-46B - Slot B
<b>Company:</b>	OXY USA RMAT	<b>TVD Reference:</b>	GL 8253' & RKB 30' @ 8283.00ft (H&P)
<b>Project:</b>	Garfield County, CO NAD27	<b>MD Reference:</b>	GL 8253' & RKB 30' @ 8283.00ft (H&P)
<b>Site:</b>	Cascade Creek 697-17B Pad	<b>North Reference:</b>	True
<b>Well:</b>	CC 697-17-46B	<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 697-17B Pad, Sec 17 T6S R97W			
Site Position:		Northing:	627,039.73 usft	Latitude:	39° 31' 23.028 N
From:	Map	Easting:	1,227,422.51 usft	Longitude:	108° 14' 20.714 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.73 °

Well	CC 697-17-46B - Slot B					
Well Position	+N/-S	6.96 ft	Northing:	627,046.77 usft	Latitude:	39° 31' 23.097 N
	+E/-W	-2.78 ft	Easting:	1,227,419.94 usft	Longitude:	108° 14' 20.750 W
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	8,253.00 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	11/15/2010	10.51	65.74	52,304

<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	188.36

<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	
1,045.68	16.91	188.36	1,033.45	-122.60	-18.01	2.00	2.00	0.00	188.36	
4,949.39	16.91	188.36	4,768.30	-1,246.24	-183.08	0.00	0.00	0.00	0.00	
5,795.06	0.00	0.00	5,601.75	-1,368.84	-201.09	2.00	-2.00	0.00	180.00	
7,895.31	0.00	0.00	7,702.00	-1,368.84	-201.09	0.00	0.00	0.00	0.00	CC 697-17-46B Target
8,779.31	0.00	0.00	8,586.00	-1,368.84	-201.09	0.00	0.00	0.00	0.00	

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## Planning Report

<b>Database:</b>	Rockies-R5000.1	<b>Local Co-ordinate Reference:</b>	Well CC 697-17-46B - Slot B
<b>Company:</b>	OXY USA RMAT	<b>TVD Reference:</b>	GL 8253' & RKB 30' @ 8283.00ft (H&P)
<b>Project:</b>	Garfield County, CO NAD27	<b>MD Reference:</b>	GL 8253' & RKB 30' @ 8283.00ft (H&P)
<b>Site:</b>	Cascade Creek 697-17B Pad	<b>North Reference:</b>	True
<b>Well:</b>	CC 697-17-46B	<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	188.36	299.98	-1.73	-0.25	1.75	2.00	2.00	0.00
400.00	4.00	188.36	399.84	-6.90	-1.01	6.98	2.00	2.00	0.00
500.00	6.00	188.36	499.45	-15.53	-2.28	15.69	2.00	2.00	0.00
600.00	8.00	188.36	598.70	-27.58	-4.05	27.88	2.00	2.00	0.00
700.00	10.00	188.36	697.47	-43.06	-6.33	43.52	2.00	2.00	0.00
800.00	12.00	188.36	795.62	-61.94	-9.10	62.60	2.00	2.00	0.00
900.00	14.00	188.36	893.06	-84.19	-12.37	85.10	2.00	2.00	0.00
1,000.00	16.00	188.36	989.64	-109.80	-16.13	110.98	2.00	2.00	0.00
1,045.68	16.91	188.36	1,033.45	-122.60	-18.01	123.92	2.00	2.00	0.00
Start 16.91° Hold At 1045.68'									
1,100.00	16.91	188.36	1,085.42	-138.24	-20.31	139.72	0.00	0.00	0.00
1,200.00	16.91	188.36	1,181.10	-167.02	-24.54	168.81	0.00	0.00	0.00
1,300.00	16.91	188.36	1,276.77	-195.80	-28.77	197.91	0.00	0.00	0.00
1,400.00	16.91	188.36	1,372.44	-224.59	-32.99	227.00	0.00	0.00	0.00
1,500.00	16.91	188.36	1,468.12	-253.37	-37.22	256.09	0.00	0.00	0.00
1,600.00	16.91	188.36	1,563.79	-282.16	-41.45	285.19	0.00	0.00	0.00
1,700.00	16.91	188.36	1,659.47	-310.94	-45.68	314.28	0.00	0.00	0.00
1,800.00	16.91	188.36	1,755.14	-339.72	-49.91	343.37	0.00	0.00	0.00
1,900.00	16.91	188.36	1,850.82	-368.51	-54.14	372.46	0.00	0.00	0.00
2,000.00	16.91	188.36	1,946.49	-397.29	-58.37	401.56	0.00	0.00	0.00
2,100.00	16.91	188.36	2,042.17	-426.08	-62.59	430.65	0.00	0.00	0.00
2,200.00	16.91	188.36	2,137.84	-454.86	-66.82	459.74	0.00	0.00	0.00
2,300.00	16.91	188.36	2,233.52	-483.64	-71.05	488.83	0.00	0.00	0.00
2,400.00	16.91	188.36	2,329.19	-512.43	-75.28	517.93	0.00	0.00	0.00
2,500.00	16.91	188.36	2,424.86	-541.21	-79.51	547.02	0.00	0.00	0.00
2,600.00	16.91	188.36	2,520.54	-570.00	-83.74	576.11	0.00	0.00	0.00
2,700.00	16.91	188.36	2,616.21	-598.78	-87.97	605.21	0.00	0.00	0.00
2,800.00	16.91	188.36	2,711.89	-627.56	-92.19	634.30	0.00	0.00	0.00
2,900.00	16.91	188.36	2,807.56	-656.35	-96.42	663.39	0.00	0.00	0.00
3,000.00	16.91	188.36	2,903.24	-685.13	-100.65	692.48	0.00	0.00	0.00
3,100.00	16.91	188.36	2,998.91	-713.91	-104.88	721.58	0.00	0.00	0.00
3,200.00	16.91	188.36	3,094.59	-742.70	-109.11	750.67	0.00	0.00	0.00
3,300.00	16.91	188.36	3,190.26	-771.48	-113.34	779.76	0.00	0.00	0.00
3,400.00	16.91	188.36	3,285.93	-800.27	-117.57	808.86	0.00	0.00	0.00
3,500.00	16.91	188.36	3,381.61	-829.05	-121.79	837.95	0.00	0.00	0.00
3,600.00	16.91	188.36	3,477.28	-857.83	-126.02	867.04	0.00	0.00	0.00
3,700.00	16.91	188.36	3,572.96	-886.62	-130.25	896.13	0.00	0.00	0.00
3,800.00	16.91	188.36	3,668.63	-915.40	-134.48	925.23	0.00	0.00	0.00
3,900.00	16.91	188.36	3,764.31	-944.19	-138.71	954.32	0.00	0.00	0.00
4,000.00	16.91	188.36	3,859.98	-972.97	-142.94	983.41	0.00	0.00	0.00
4,100.00	16.91	188.36	3,955.66	-1,001.75	-147.17	1,012.51	0.00	0.00	0.00
4,200.00	16.91	188.36	4,051.33	-1,030.54	-151.39	1,041.60	0.00	0.00	0.00
4,300.00	16.91	188.36	4,147.01	-1,059.32	-155.62	1,070.69	0.00	0.00	0.00
4,400.00	16.91	188.36	4,242.68	-1,088.11	-159.85	1,099.78	0.00	0.00	0.00
4,500.00	16.91	188.36	4,338.35	-1,116.89	-164.08	1,128.88	0.00	0.00	0.00
4,600.00	16.91	188.36	4,434.03	-1,145.67	-168.31	1,157.97	0.00	0.00	0.00
4,700.00	16.91	188.36	4,529.70	-1,174.46	-172.54	1,187.06	0.00	0.00	0.00
4,800.00	16.91	188.36	4,625.38	-1,203.24	-176.77	1,216.16	0.00	0.00	0.00
4,900.00	16.91	188.36	4,721.05	-1,232.02	-180.99	1,245.25	0.00	0.00	0.00
4,949.39	16.91	188.36	4,768.30	-1,246.24	-183.08	1,259.62	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 8253' & RKB 30' @ 8283.00ft (H&P)
<b>Project:</b>	Garfield County, CO NAD27	<b>MD Reference:</b>	GL 8253' & RKB 30' @ 8283.00ft (H&P)
<b>Site:</b>	Cascade Creek 697-17B Pad	<b>North Reference:</b>	True
<b>Well:</b>	CC 697-17-46B	<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)
<b>Start Drop -2.00</b>									
5,000.00	15.90	188.36	4,816.85	-1,260.38	-185.16	1,273.91	2.00	-2.00	0.00
5,100.00	13.90	188.36	4,913.49	-1,285.83	-188.90	1,299.63	2.00	-2.00	0.00
5,200.00	11.90	188.36	5,010.96	-1,307.91	-192.14	1,321.95	2.00	-2.00	0.00
5,300.00	9.90	188.36	5,109.15	-1,326.62	-194.89	1,340.86	2.00	-2.00	0.00
5,400.00	7.90	188.36	5,207.94	-1,341.93	-197.14	1,356.34	2.00	-2.00	0.00
5,500.00	5.90	188.36	5,307.21	-1,353.82	-198.89	1,368.35	2.00	-2.00	0.00
5,600.00	3.90	188.36	5,406.84	-1,362.27	-200.13	1,376.89	2.00	-2.00	0.00
5,700.00	1.90	188.36	5,506.70	-1,367.28	-200.86	1,381.96	2.00	-2.00	0.00
5,795.06	0.00	0.00	5,601.75	-1,368.84	-201.09	1,383.53	2.00	-2.00	0.00
<b>Start 0.00° Hold At 5795.06'</b>									
5,795.31	0.00	0.00	5,602.00	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
<b>Mesaverde</b>									
5,800.00	0.00	0.00	5,606.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
5,900.00	0.00	0.00	5,706.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
5,994.31	0.00	0.00	5,801.00	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
<b>Williams Fork</b>									
6,000.00	0.00	0.00	5,806.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
6,100.00	0.00	0.00	5,906.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
6,200.00	0.00	0.00	6,006.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
6,300.00	0.00	0.00	6,106.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
6,400.00	0.00	0.00	6,206.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
6,500.00	0.00	0.00	6,306.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
6,600.00	0.00	0.00	6,406.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
6,700.00	0.00	0.00	6,506.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
6,800.00	0.00	0.00	6,606.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
6,900.00	0.00	0.00	6,706.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
7,000.00	0.00	0.00	6,806.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
7,100.00	0.00	0.00	6,906.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
7,200.00	0.00	0.00	7,006.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
7,300.00	0.00	0.00	7,106.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
7,400.00	0.00	0.00	7,206.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
7,500.00	0.00	0.00	7,306.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
7,600.00	0.00	0.00	7,406.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
7,700.00	0.00	0.00	7,506.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
7,800.00	0.00	0.00	7,606.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
7,895.31	0.00	0.00	7,702.00	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
<b>Target = 625684.62, 1227177.67</b>									
7,900.00	0.00	0.00	7,706.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
8,000.00	0.00	0.00	7,806.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
8,100.00	0.00	0.00	7,906.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
8,200.00	0.00	0.00	8,006.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
8,300.00	0.00	0.00	8,106.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
8,400.00	0.00	0.00	8,206.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
8,500.00	0.00	0.00	8,306.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
8,529.31	0.00	0.00	8,336.00	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
<b>Rollins</b>									
8,600.00	0.00	0.00	8,406.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
8,700.00	0.00	0.00	8,506.69	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
8,779.31	0.00	0.00	8,586.00	-1,368.84	-201.09	1,383.53	0.00	0.00	0.00
<b>PBHL = 625684.62, 1227177.67</b>									

# Scientific Drilling International

## Planning Report

<b>Database:</b>	Rockies-R5000.1	<b>Local Co-ordinate Reference:</b>	Well CC 697-17-46B - Slot B
<b>Company:</b>	OXY USA RMAT	<b>TVD Reference:</b>	GL 8253' & RKB 30' @ 8283.00ft (H&P)
<b>Project:</b>	Garfield County, CO NAD27	<b>MD Reference:</b>	GL 8253' & RKB 30' @ 8283.00ft (H&P)
<b>Site:</b>	Cascade Creek 697-17B Pad	<b>North Reference:</b>	True
<b>Well:</b>	CC 697-17-46B	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)		
- Shape									
CC 697-17-46B Target	0.00	0.00	7,702.00	-1,368.84	-201.09	625,684.62	1,227,177.67	39° 31' 9.567 N	108° 14' 23.316 W
- plan hits target center									
- Circle (radius 50.00)									

Formations					
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction
(ft)	(ft)			(°)	(°)
5,795.31	5,602.00	Mesaverde		0.00	
5,994.31	5,801.00	Williams Fork		0.00	
8,529.31	8,336.00	Rollins		0.00	

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	
200.00	200.00	0.00	0.00	Start Build 2.00
1,045.68	1,033.45	-122.60	-18.01	Start 16.91° Hold At 1045.68'
4,949.39	4,768.30	-1,246.24	-183.08	Start Drop -2.00
5,795.06	5,601.75	-1,368.84	-201.09	Start 0.00° Hold At 5795.06'
7,895.31	7,702.00	-1,368.84	-201.09	Target = 625684.62, 1227177.67
8,779.31	8,586.00	-1,368.84	-201.09	PBHL = 625684.62, 1227177.67