



**Scientific Drilling**  
Rocky Mountain Operations

Company: OXY USA RMAT  
Project: Garfield County, CO NAD27  
Site: Cascade Creek 697-06A Pad



Well Details: CC 697-06-03B

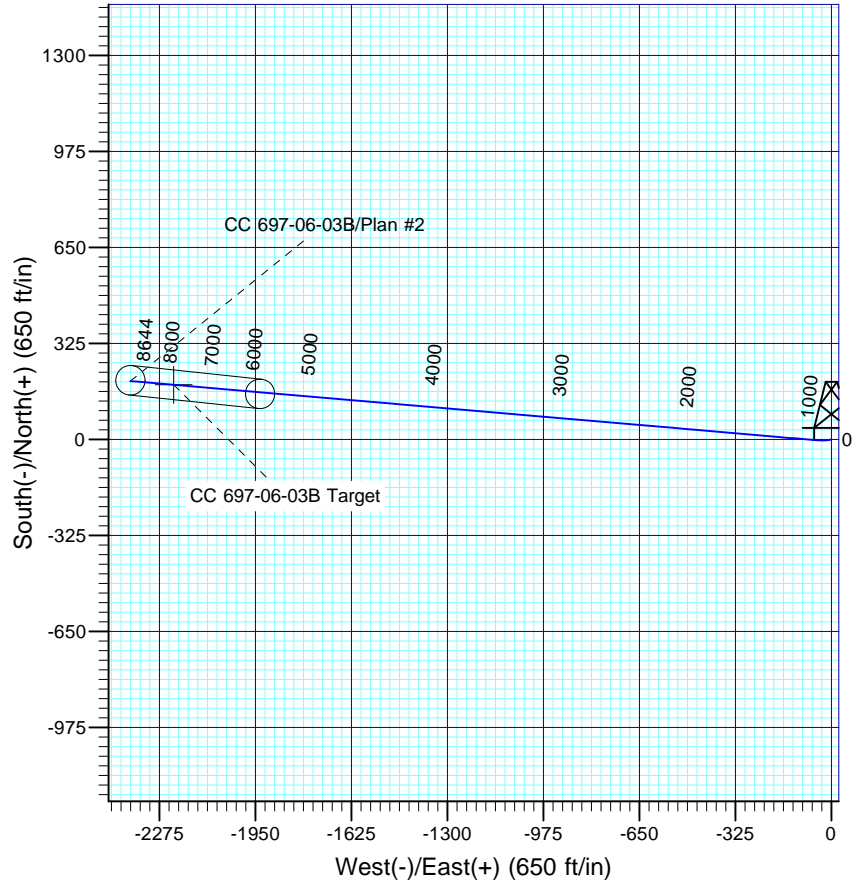
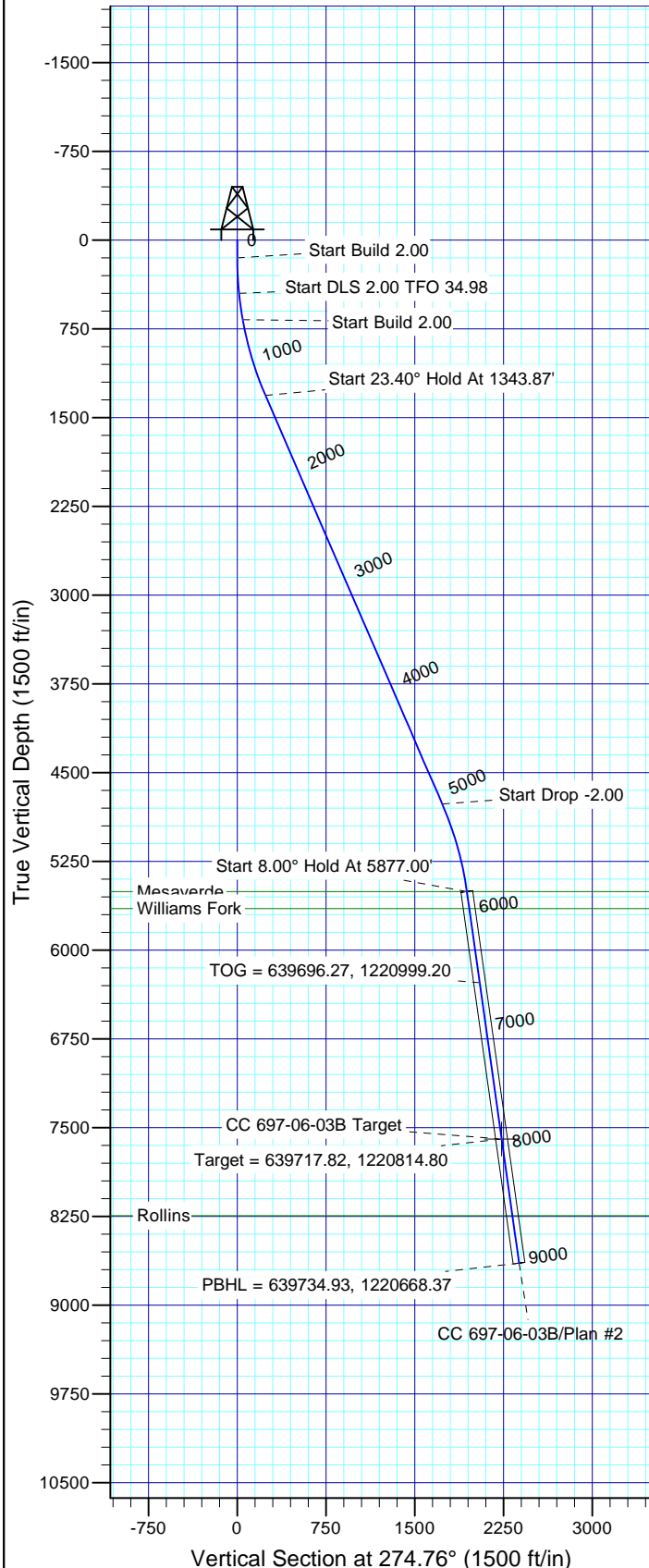
TVD Reference: GL 8184' & RKB 30' @ 8214.00ft (H&P) Ground Level: 8184.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	639465.49	1223034.84	39° 33' 24.472 N	108° 15' 21.491 W	J



Azimuths to True North  
Magnetic North: 10.51°

Magnetic Field  
Strength: 52311.8snT  
Dip Angle: 65.77°  
Date: 2010/12/20  
Model: IGRF2005-10



#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
5504.00	5877.00	Mesaverde
5649.00	6023.43	Williams Fork
8244.00	8643.93	Rollins

Plan: Plan #2

17:30, February 03 2011

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	VSeet	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	260.00	449.45	-2.73	-15.46	2.00	260.00	15.18	
4	673.75	10.00	274.93	671.00	-3.09	-46.34	2.00	34.98	45.93	CC 697-06-03B Target
5	1343.87	23.40	274.93	1311.40	13.42	-237.78	2.00	0.00	238.07	
6	5106.87	23.40	274.93	4764.84	141.79	-1726.87	0.00	0.00	1732.68	
7	5877.00	8.00	274.93	5504.00	159.64	-1933.89	2.00	180.00	1940.47	
8	7988.55	8.00	274.93	7595.00	184.88	-2226.67	0.00	0.00	2234.34	CC 697-06-03B Target
9	9047.86	8.00	274.93	8644.00	197.54	-2373.56	0.00	0.00	2381.76	

# **OXY USA RMAT**

**Garfield County, CO NAD27  
Cascade Creek 697-06A Pad  
CC 697-06-03B - Slot J**

**OH**

**Plan: Plan #2**

## **Standard Planning Report**

**03 February, 2011**

# Scientific Drilling International

## Planning Report

<b>Database:</b>	EDM-RexH-Local	<b>Local Co-ordinate Reference:</b>	Well CC 697-06-03B - Slot J
<b>Company:</b>	OXY USA RMAT	<b>TVD Reference:</b>	GL 8184' & RKB 30' @ 8214.00ft (H&P)
<b>Project:</b>	Garfield County, CO NAD27	<b>MD Reference:</b>	GL 8184' & RKB 30' @ 8214.00ft (H&P)
<b>Site:</b>	Cascade Creek 697-06A Pad	<b>North Reference:</b>	True
<b>Well:</b>	CC 697-06-03B	<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		

Site		Cascade Creek 697-06A Pad, Sec 6 T6S R97W			
Site Position:		Northing:	639,442.25 usft	Latitude:	39° 33' 24.203 N
From:	Map	Easting:	1,222,903.93 usft	Longitude:	108° 15' 23.153 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.74 °

Well	CC 697-06-03B - Slot J					
Well Position	+N/-S	27.20 ft	Northing:	639,465.49 usft	Latitude:	39° 33' 24.472 N
	+E/-W	130.14 ft	Easting:	1,223,034.84 usft	Longitude:	108° 15' 21.491 W
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	8,184.00 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	2010/12/20	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	274.76

<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	260.00	449.45	-2.73	-15.46	2.00	2.00	0.00	260.00	
673.75	10.00	274.93	671.00	-3.09	-46.34	2.00	1.79	6.67	34.98	CC 697-06-03B Target
1,343.87	23.40	274.93	1,311.40	13.42	-237.78	2.00	2.00	0.00	0.00	
5,106.87	23.40	274.93	4,764.84	141.79	-1,726.87	0.00	0.00	0.00	0.00	
5,877.00	8.00	274.93	5,504.00	159.64	-1,933.89	2.00	-2.00	0.00	180.00	
7,988.55	8.00	274.93	7,595.00	184.88	-2,226.67	0.00	0.00	0.00	0.00	CC 697-06-03B Target
9,047.86	8.00	274.93	8,644.00	197.54	-2,373.56	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 697-06-03B - Slot J
<b>Company:</b>	OXY USA RMAT	<b>TVD Reference:</b>	GL 8184' & RKB 30' @ 8214.00ft (H&P)
<b>Project:</b>	Garfield County, CO NAD27	<b>MD Reference:</b>	GL 8184' & RKB 30' @ 8214.00ft (H&P)
<b>Site:</b>	Cascade Creek 697-06A Pad	<b>North Reference:</b>	True
<b>Well:</b>	CC 697-06-03B	<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	260.00	200.00	-0.08	-0.43	0.42	2.00	2.00	0.00
300.00	3.00	260.00	299.93	-0.68	-3.87	3.80	2.00	2.00	0.00
400.00	5.00	260.00	399.68	-1.89	-10.74	10.54	2.00	2.00	0.00
450.00	6.00	260.00	449.45	-2.73	-15.46	15.18	2.00	2.00	0.00
Start DLS 2.00 TFO 34.98									
500.00	6.84	264.82	499.14	-3.45	-21.00	20.64	2.00	1.69	9.63
600.00	8.63	271.53	598.23	-3.79	-34.43	34.00	2.00	1.79	6.72
673.75	10.00	274.93	671.00	-3.09	-46.34	45.93	2.00	1.86	4.60
Start Build 2.00									
700.00	10.53	274.93	696.83	-2.69	-51.00	50.60	2.00	2.00	0.00
800.00	12.53	274.93	794.81	-0.97	-70.91	70.58	2.00	2.00	0.00
900.00	14.53	274.93	892.03	1.04	-94.21	93.97	2.00	2.00	0.00
1,000.00	16.53	274.93	988.38	3.34	-120.87	120.73	2.00	2.00	0.00
1,100.00	18.53	274.93	1,083.73	5.92	-150.87	150.84	2.00	2.00	0.00
1,200.00	20.53	274.93	1,177.98	8.79	-184.17	184.26	2.00	2.00	0.00
1,300.00	22.53	274.93	1,271.00	11.95	-220.72	220.95	2.00	2.00	0.00
1,343.87	23.40	274.93	1,311.40	13.42	-237.78	238.07	2.00	2.00	0.00
Start 23.40° Hold At 1343.87°									
1,400.00	23.40	274.93	1,362.90	15.33	-259.99	260.36	0.00	0.00	0.00
1,500.00	23.40	274.93	1,454.68	18.74	-299.56	300.08	0.00	0.00	0.00
1,600.00	23.40	274.93	1,546.45	22.15	-339.13	339.80	0.00	0.00	0.00
1,700.00	23.40	274.93	1,638.23	25.56	-378.70	379.52	0.00	0.00	0.00
1,800.00	23.40	274.93	1,730.00	28.98	-418.27	419.24	0.00	0.00	0.00
1,900.00	23.40	274.93	1,821.77	32.39	-457.85	458.95	0.00	0.00	0.00
2,000.00	23.40	274.93	1,913.55	35.80	-497.42	498.67	0.00	0.00	0.00
2,100.00	23.40	274.93	2,005.32	39.21	-536.99	538.39	0.00	0.00	0.00
2,200.00	23.40	274.93	2,097.09	42.62	-576.56	578.11	0.00	0.00	0.00
2,300.00	23.40	274.93	2,188.87	46.03	-616.13	617.83	0.00	0.00	0.00
2,400.00	23.40	274.93	2,280.64	49.45	-655.71	657.55	0.00	0.00	0.00
2,500.00	23.40	274.93	2,372.42	52.86	-695.28	697.27	0.00	0.00	0.00
2,600.00	23.40	274.93	2,464.19	56.27	-734.85	736.99	0.00	0.00	0.00
2,700.00	23.40	274.93	2,555.96	59.68	-774.42	776.70	0.00	0.00	0.00
2,800.00	23.40	274.93	2,647.74	63.09	-813.99	816.42	0.00	0.00	0.00
2,900.00	23.40	274.93	2,739.51	66.50	-853.57	856.14	0.00	0.00	0.00
3,000.00	23.40	274.93	2,831.28	69.91	-893.14	895.86	0.00	0.00	0.00
3,100.00	23.40	274.93	2,923.06	73.33	-932.71	935.58	0.00	0.00	0.00
3,200.00	23.40	274.93	3,014.83	76.74	-972.28	975.30	0.00	0.00	0.00
3,300.00	23.40	274.93	3,106.60	80.15	-1,011.85	1,015.02	0.00	0.00	0.00
3,400.00	23.40	274.93	3,198.38	83.56	-1,051.43	1,054.73	0.00	0.00	0.00
3,500.00	23.40	274.93	3,290.15	86.97	-1,091.00	1,094.45	0.00	0.00	0.00
3,600.00	23.40	274.93	3,381.93	90.38	-1,130.57	1,134.17	0.00	0.00	0.00
3,700.00	23.40	274.93	3,473.70	93.79	-1,170.14	1,173.89	0.00	0.00	0.00
3,800.00	23.40	274.93	3,565.47	97.21	-1,209.71	1,213.61	0.00	0.00	0.00
3,900.00	23.40	274.93	3,657.25	100.62	-1,249.29	1,253.33	0.00	0.00	0.00
4,000.00	23.40	274.93	3,749.02	104.03	-1,288.86	1,293.05	0.00	0.00	0.00
4,100.00	23.40	274.93	3,840.79	107.44	-1,328.43	1,332.76	0.00	0.00	0.00
4,200.00	23.40	274.93	3,932.57	110.85	-1,368.00	1,372.48	0.00	0.00	0.00
4,300.00	23.40	274.93	4,024.34	114.26	-1,407.57	1,412.20	0.00	0.00	0.00
4,400.00	23.40	274.93	4,116.12	117.67	-1,447.15	1,451.92	0.00	0.00	0.00
4,500.00	23.40	274.93	4,207.89	121.09	-1,486.72	1,491.64	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 697-06-03B - Slot J
<b>Company:</b>	OXY USA RMAT	<b>TVD Reference:</b>	GL 8184' & RKB 30' @ 8214.00ft (H&P)
<b>Project:</b>	Garfield County, CO NAD27	<b>MD Reference:</b>	GL 8184' & RKB 30' @ 8214.00ft (H&P)
<b>Site:</b>	Cascade Creek 697-06A Pad	<b>North Reference:</b>	True
<b>Well:</b>	CC 697-06-03B	<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)
4,600.00	23.40	274.93	4,299.66	124.50	-1,526.29	1,531.36	0.00	0.00	0.00
4,700.00	23.40	274.93	4,391.44	127.91	-1,565.86	1,571.08	0.00	0.00	0.00
4,800.00	23.40	274.93	4,483.21	131.32	-1,605.44	1,610.80	0.00	0.00	0.00
4,900.00	23.40	274.93	4,574.98	134.73	-1,645.01	1,650.51	0.00	0.00	0.00
5,000.00	23.40	274.93	4,666.76	138.14	-1,684.58	1,690.23	0.00	0.00	0.00
5,100.00	23.40	274.93	4,758.53	141.56	-1,724.15	1,729.95	0.00	0.00	0.00
5,106.87	23.40	274.93	4,764.84	141.79	-1,726.87	1,732.68	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
5,200.00	21.54	274.93	4,850.89	144.85	-1,762.33	1,768.27	2.00	-2.00	0.00
5,300.00	19.54	274.93	4,944.53	147.86	-1,797.29	1,803.36	2.00	-2.00	0.00
5,400.00	17.54	274.93	5,039.33	150.59	-1,828.97	1,835.15	2.00	-2.00	0.00
5,500.00	15.54	274.93	5,135.19	153.04	-1,857.33	1,863.62	2.00	-2.00	0.00
5,600.00	13.54	274.93	5,231.98	155.19	-1,882.34	1,888.72	2.00	-2.00	0.00
5,700.00	11.54	274.93	5,329.59	157.06	-1,903.97	1,910.44	2.00	-2.00	0.00
5,800.00	9.54	274.93	5,427.90	158.63	-1,922.19	1,928.73	2.00	-2.00	0.00
5,877.00	8.00	274.93	5,504.00	159.64	-1,933.89	1,940.47	2.00	-2.00	0.00
<b>Start 8.00° Hold At 5877.00' - Mesaverde</b>									
5,900.00	8.00	274.93	5,526.78	159.91	-1,937.08	1,943.67	0.00	0.00	0.00
6,000.00	8.00	274.93	5,625.80	161.11	-1,950.94	1,957.58	0.00	0.00	0.00
6,023.43	8.00	274.93	5,649.00	161.39	-1,954.19	1,960.85	0.00	0.00	0.00
<b>Williams Fork</b>									
6,100.00	8.00	274.93	5,724.83	162.30	-1,964.81	1,971.50	0.00	0.00	0.00
6,200.00	8.00	274.93	5,823.86	163.50	-1,978.68	1,985.42	0.00	0.00	0.00
6,300.00	8.00	274.93	5,922.88	164.69	-1,992.54	1,999.34	0.00	0.00	0.00
6,400.00	8.00	274.93	6,021.91	165.89	-2,006.41	2,013.25	0.00	0.00	0.00
6,500.00	8.00	274.93	6,120.94	167.08	-2,020.27	2,027.17	0.00	0.00	0.00
6,600.00	8.00	274.93	6,219.96	168.28	-2,034.14	2,041.09	0.00	0.00	0.00
6,654.57	8.00	274.93	6,274.00	168.93	-2,041.71	2,048.68	0.00	0.00	0.00
<b>TOG = 639696.27, 1220999.20</b>									
6,700.00	8.00	274.93	6,318.99	169.47	-2,048.01	2,055.01	0.00	0.00	0.00
6,800.00	8.00	274.93	6,418.02	170.67	-2,061.87	2,068.92	0.00	0.00	0.00
6,900.00	8.00	274.93	6,517.04	171.86	-2,075.74	2,082.84	0.00	0.00	0.00
7,000.00	8.00	274.93	6,616.07	173.06	-2,089.60	2,096.76	0.00	0.00	0.00
7,100.00	8.00	274.93	6,715.10	174.26	-2,103.47	2,110.67	0.00	0.00	0.00
7,200.00	8.00	274.93	6,814.12	175.45	-2,117.34	2,124.59	0.00	0.00	0.00
7,300.00	8.00	274.93	6,913.15	176.65	-2,131.20	2,138.51	0.00	0.00	0.00
7,400.00	8.00	274.93	7,012.18	177.84	-2,145.07	2,152.43	0.00	0.00	0.00
7,500.00	8.00	274.93	7,111.20	179.04	-2,158.93	2,166.34	0.00	0.00	0.00
7,600.00	8.00	274.93	7,210.23	180.23	-2,172.80	2,180.26	0.00	0.00	0.00
7,700.00	8.00	274.93	7,309.26	181.43	-2,186.66	2,194.18	0.00	0.00	0.00
7,800.00	8.00	274.93	7,408.28	182.62	-2,200.53	2,208.10	0.00	0.00	0.00
7,900.00	8.00	274.93	7,507.31	183.82	-2,214.40	2,222.01	0.00	0.00	0.00
7,988.55	8.00	274.93	7,595.00	184.88	-2,226.67	2,234.34	0.00	0.00	0.00
<b>Target = 639717.82, 1220814.80</b>									
8,000.00	8.00	274.93	7,606.34	185.01	-2,228.26	2,235.93	0.00	0.00	0.00
8,100.00	8.00	274.93	7,705.37	186.21	-2,242.13	2,249.85	0.00	0.00	0.00
8,200.00	8.00	274.93	7,804.39	187.40	-2,255.99	2,263.76	0.00	0.00	0.00
8,300.00	8.00	274.93	7,903.42	188.60	-2,269.86	2,277.68	0.00	0.00	0.00
8,400.00	8.00	274.93	8,002.45	189.80	-2,283.73	2,291.60	0.00	0.00	0.00
8,500.00	8.00	274.93	8,101.47	190.99	-2,297.59	2,305.52	0.00	0.00	0.00
8,600.00	8.00	274.93	8,200.50	192.19	-2,311.46	2,319.43	0.00	0.00	0.00
8,643.93	8.00	274.93	8,244.00	192.71	-2,317.55	2,325.55	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 697-06-03B - Slot J
<b>Company:</b>	OXY USA RMAT	<b>TVD Reference:</b>	GL 8184' & RKB 30' @ 8214.00ft (H&P)
<b>Project:</b>	Garfield County, CO NAD27	<b>MD Reference:</b>	GL 8184' & RKB 30' @ 8214.00ft (H&P)
<b>Site:</b>	Cascade Creek 697-06A Pad	<b>North Reference:</b>	True
<b>Well:</b>	CC 697-06-03B	<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)
8,700.00	8.00	274.93	8,299.53	193.38	-2,325.32	2,333.35	0.00	0.00	0.00
8,800.00	8.00	274.93	8,398.55	194.58	-2,339.19	2,347.27	0.00	0.00	0.00
8,900.00	8.00	274.93	8,497.58	195.77	-2,353.06	2,361.19	0.00	0.00	0.00
9,000.00	8.00	274.93	8,596.61	196.97	-2,366.92	2,375.10	0.00	0.00	0.00
9,047.86	8.00	274.93	8,644.00	197.54	-2,373.56	2,381.76	0.00	0.00	0.00
PBHL = 639734.93, 1220668.37									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
CC 697-06-03B Target	-8.00	276.01	7,595.00	184.88	-2,226.67	639,717.83	1,220,814.80	39° 33' 26.299 N	108° 15' 49.921 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 (°)	
5,877.00	5,504.00	Mesaverde		0.00		
6,023.43	5,649.00	Williams Fork		0.00		
8,643.93	8,244.00	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	-2.73	-15.46	Start DLS 2.00 TFO 34.98
673.75	671.00	-3.09	-46.34	Start Build 2.00
1,343.87	1,311.40	13.42	-237.78	Start 23.40° Hold At 1343.87'
5,106.87	4,764.84	141.79	-1,726.87	Start Drop -2.00
5,877.00	5,504.00	159.64	-1,933.89	Start 8.00° Hold At 5877.00'
6,654.57	6,274.00	168.93	-2,041.71	TOG = 639696.27, 1220999.20
7,988.55	7,595.00	184.88	-2,226.67	Target = 639717.82, 1220814.80
9,047.86	8,644.00	197.54	-2,373.56	PBHL = 639734.93, 1220668.37