



Scientific Drilling
Rocky Mountain Operations

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



Well Details: CC 697-05-34A

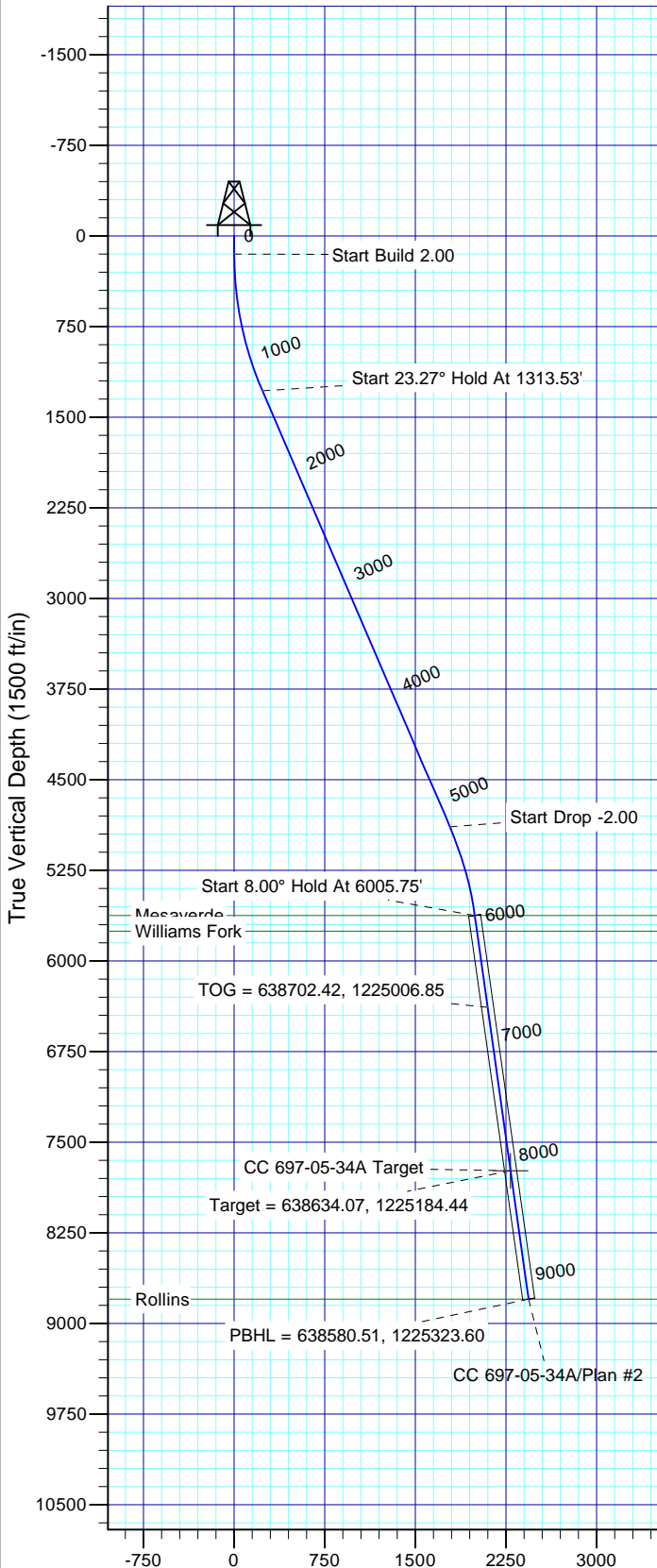
TVD Reference: GL 8184' & RKB 30' @ 8214.00ft (H&P) Ground Level: 8184.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot M
0.00	0.00	639455.70	1223049.65	39° 33' 24.380 N	108° 15' 21.298 W	

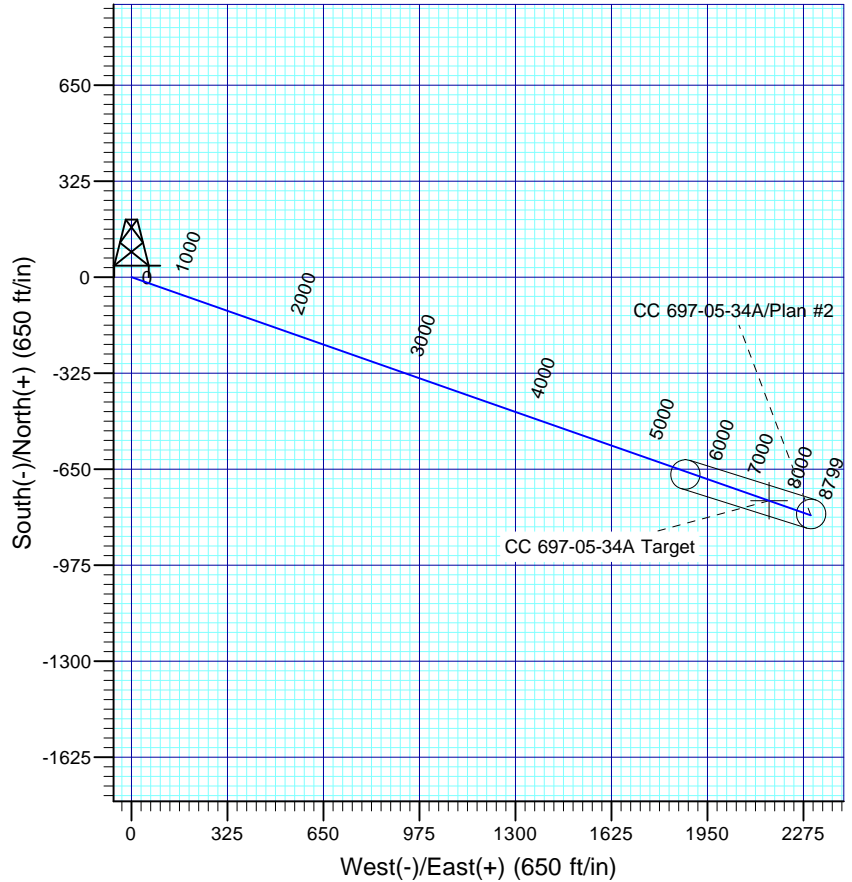


Azimuths to True North
Magnetic North: 10.51°

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



Vertical Section at 109.31° (1500 ft/in)



FORMATION TOP DETAILS

TVDPath	MDPath	Formation
5624.00	6005.75	Mesaverde
5754.00	6137.03	Williams Fork
8799.00	9211.96	Rollins

Plan: Plan #2

12:03, 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	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	1313.53	23.27	109.31	1281.80	-77.07	219.94	2.00	109.31	233.05	
4	5242.22	23.27	109.31	4890.90	-590.39	1684.72	0.00	0.00	1785.17	
5	6005.75	8.00	109.31	5624.00	-658.24	1878.35	2.00	180.00	1990.34	
6	8140.53	8.00	109.31	7738.00	-756.50	2158.73	0.00	0.00	2287.45	CC 697-05-34A Target
7	9211.96	8.00	109.31	8799.00	-805.81	2299.45	0.00	0.00	2436.56	

OXY USA RMAT

**Garfield County, CO NAD27
Cascade Creek 697-06A Pad
CC 697-05-34A - Slot M**

OH

Plan: Plan #2

Standard Planning Report

03 February, 2011

Scientific Drilling International

Planning Report

Database:	EDM-RexH-Local	Local Co-ordinate Reference:	Well CC 697-05-34A - Slot M
Company:	OXY USA RMAT	TVD Reference:	GL 8184' & RKB 30' @ 8214.00ft (H&P)
Project:	Garfield County, CO NAD27	MD Reference:	GL 8184' & RKB 30' @ 8214.00ft (H&P)
Site:	Cascade Creek 697-06A Pad	North Reference:	True
Well:	CC 697-05-34A	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

Project	Garfield County, CO NAD27		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	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 697-05-34A - Slot M					
Well Position	+N/-S	17.86 ft	Northing:	639,455.70 usft	Latitude:	39° 33' 24.380 N
	+E/-W	145.25 ft	Easting:	1,223,049.65 usft	Longitude:	108° 15' 21.298 W
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	8,184.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2005-10	2010/12/20	10.51	65.77	52,312

Design	Plan #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	109.31

Plan Sections										
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	
1,313.53	23.27	109.31	1,281.80	-77.07	219.94	2.00	2.00	0.00	109.31	
5,242.22	23.27	109.31	4,890.90	-590.39	1,684.72	0.00	0.00	0.00	0.00	
6,005.75	8.00	109.31	5,624.00	-658.24	1,878.35	2.00	-2.00	0.00	180.00	
8,140.53	8.00	109.31	7,738.00	-756.50	2,158.73	0.00	0.00	0.00	0.00	CC 697-05-34A Target
9,211.96	8.00	109.31	8,799.00	-805.81	2,299.45	0.00	0.00	0.00	0.00	

Scientific Drilling International

Planning Report

Database:	EDM-RexH-Local	Local Co-ordinate Reference:	Well CC 697-05-34A - Slot M
Company:	OXY USA RMAT	TVD Reference:	GL 8184' & RKB 30' @ 8214.00ft (H&P)
Project:	Garfield County, CO NAD27	MD Reference:	GL 8184' & RKB 30' @ 8214.00ft (H&P)
Site:	Cascade Creek 697-06A Pad	North Reference:	True
Well:	CC 697-05-34A	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	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	109.31	200.00	-0.14	0.41	0.44	2.00	2.00	0.00
300.00	3.00	109.31	299.93	-1.30	3.71	3.93	2.00	2.00	0.00
400.00	5.00	109.31	399.68	-3.61	10.29	10.90	2.00	2.00	0.00
500.00	7.00	109.31	499.13	-7.06	20.15	21.35	2.00	2.00	0.00
600.00	9.00	109.31	598.15	-11.66	33.29	35.27	2.00	2.00	0.00
700.00	11.00	109.31	696.63	-17.41	49.67	52.63	2.00	2.00	0.00
800.00	13.00	109.31	794.44	-24.28	69.29	73.42	2.00	2.00	0.00
900.00	15.00	109.31	891.46	-32.28	92.12	97.62	2.00	2.00	0.00
1,000.00	17.00	109.31	987.58	-41.40	118.13	125.18	2.00	2.00	0.00
1,100.00	19.00	109.31	1,082.68	-51.62	147.30	156.08	2.00	2.00	0.00
1,200.00	21.00	109.31	1,176.65	-62.93	179.57	190.28	2.00	2.00	0.00
1,300.00	23.00	109.31	1,269.36	-75.32	214.92	227.74	2.00	2.00	0.00
1,313.53	23.27	109.31	1,281.80	-77.07	219.94	233.05	2.00	2.00	0.00
Start 23.27° Hold At 1313.53'									
1,400.00	23.27	109.31	1,361.24	-88.37	252.18	267.21	0.00	0.00	0.00
1,500.00	23.27	109.31	1,453.10	-101.44	289.46	306.72	0.00	0.00	0.00
1,600.00	23.27	109.31	1,544.97	-114.50	326.75	346.23	0.00	0.00	0.00
1,700.00	23.27	109.31	1,636.83	-127.57	364.03	385.74	0.00	0.00	0.00
1,800.00	23.27	109.31	1,728.70	-140.64	401.32	425.24	0.00	0.00	0.00
1,900.00	23.27	109.31	1,820.56	-153.70	438.60	464.75	0.00	0.00	0.00
2,000.00	23.27	109.31	1,912.43	-166.77	475.88	504.26	0.00	0.00	0.00
2,100.00	23.27	109.31	2,004.29	-179.83	513.17	543.77	0.00	0.00	0.00
2,200.00	23.27	109.31	2,096.16	-192.90	550.45	583.27	0.00	0.00	0.00
2,300.00	23.27	109.31	2,188.02	-205.96	587.74	622.78	0.00	0.00	0.00
2,400.00	23.27	109.31	2,279.89	-219.03	625.02	662.29	0.00	0.00	0.00
2,500.00	23.27	109.31	2,371.75	-232.10	662.30	701.79	0.00	0.00	0.00
2,600.00	23.27	109.31	2,463.62	-245.16	699.59	741.30	0.00	0.00	0.00
2,700.00	23.27	109.31	2,555.48	-258.23	736.87	780.81	0.00	0.00	0.00
2,800.00	23.27	109.31	2,647.35	-271.29	774.16	820.32	0.00	0.00	0.00
2,900.00	23.27	109.31	2,739.21	-284.36	811.44	859.82	0.00	0.00	0.00
3,000.00	23.27	109.31	2,831.08	-297.42	848.73	899.33	0.00	0.00	0.00
3,100.00	23.27	109.31	2,922.94	-310.49	886.01	938.84	0.00	0.00	0.00
3,200.00	23.27	109.31	3,014.81	-323.56	923.29	978.35	0.00	0.00	0.00
3,300.00	23.27	109.31	3,106.67	-336.62	960.58	1,017.85	0.00	0.00	0.00
3,400.00	23.27	109.31	3,198.54	-349.69	997.86	1,057.36	0.00	0.00	0.00
3,500.00	23.27	109.31	3,290.40	-362.75	1,035.15	1,096.87	0.00	0.00	0.00
3,600.00	23.27	109.31	3,382.27	-375.82	1,072.43	1,136.37	0.00	0.00	0.00
3,700.00	23.27	109.31	3,474.13	-388.89	1,109.71	1,175.88	0.00	0.00	0.00
3,800.00	23.27	109.31	3,566.00	-401.95	1,147.00	1,215.39	0.00	0.00	0.00
3,900.00	23.27	109.31	3,657.86	-415.02	1,184.28	1,254.90	0.00	0.00	0.00
4,000.00	23.27	109.31	3,749.73	-428.08	1,221.57	1,294.40	0.00	0.00	0.00
4,100.00	23.27	109.31	3,841.59	-441.15	1,258.85	1,333.91	0.00	0.00	0.00
4,200.00	23.27	109.31	3,933.46	-454.21	1,296.14	1,373.42	0.00	0.00	0.00
4,300.00	23.27	109.31	4,025.32	-467.28	1,333.42	1,412.93	0.00	0.00	0.00
4,400.00	23.27	109.31	4,117.19	-480.35	1,370.70	1,452.43	0.00	0.00	0.00
4,500.00	23.27	109.31	4,209.05	-493.41	1,407.99	1,491.94	0.00	0.00	0.00
4,600.00	23.27	109.31	4,300.92	-506.48	1,445.27	1,531.45	0.00	0.00	0.00
4,700.00	23.27	109.31	4,392.78	-519.54	1,482.56	1,570.95	0.00	0.00	0.00
4,800.00	23.27	109.31	4,484.65	-532.61	1,519.84	1,610.46	0.00	0.00	0.00
4,900.00	23.27	109.31	4,576.51	-545.67	1,557.12	1,649.97	0.00	0.00	0.00

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Planning Report

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Company:	OXY USA RMAT	TVD Reference:	GL 8184' & RKB 30' @ 8214.00ft (H&P)
Project:	Garfield County, CO NAD27	MD Reference:	GL 8184' & RKB 30' @ 8214.00ft (H&P)
Site:	Cascade Creek 697-06A Pad	North Reference:	True
Well:	CC 697-05-34A	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	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	23.27	109.31	4,668.38	-558.74	1,594.41	1,689.48	0.00	0.00	0.00
5,100.00	23.27	109.31	4,760.24	-571.81	1,631.69	1,728.98	0.00	0.00	0.00
5,200.00	23.27	109.31	4,852.11	-584.87	1,668.98	1,768.49	0.00	0.00	0.00
5,242.22	23.27	109.31	4,890.90	-590.39	1,684.72	1,785.17	0.00	0.00	0.00
Start Drop -2.00									
5,300.00	22.11	109.31	4,944.20	-597.76	1,705.76	1,807.46	2.00	-2.00	0.00
5,400.00	20.11	109.31	5,037.48	-609.67	1,739.75	1,843.48	2.00	-2.00	0.00
5,500.00	18.11	109.31	5,131.96	-620.50	1,770.65	1,876.23	2.00	-2.00	0.00
5,600.00	16.11	109.31	5,227.53	-630.23	1,798.42	1,905.66	2.00	-2.00	0.00
5,700.00	14.11	109.31	5,324.07	-638.86	1,823.03	1,931.73	2.00	-2.00	0.00
5,800.00	12.11	109.31	5,421.45	-646.36	1,844.44	1,954.42	2.00	-2.00	0.00
5,900.00	10.11	109.31	5,519.57	-652.74	1,862.64	1,973.70	2.00	-2.00	0.00
6,000.00	8.11	109.31	5,618.30	-657.98	1,877.59	1,989.54	2.00	-2.00	0.00
6,005.75	8.00	109.31	5,624.00	-658.24	1,878.35	1,990.34	2.00	-2.00	0.00
Start 8.00° Hold At 6005.75' - Mesaverde									
6,100.00	8.00	109.31	5,717.33	-662.58	1,890.73	2,003.46	0.00	0.00	0.00
6,137.03	8.00	109.31	5,754.00	-664.28	1,895.59	2,008.61	0.00	0.00	0.00
Williams Fork									
6,200.00	8.00	109.31	5,816.36	-667.18	1,903.86	2,017.38	0.00	0.00	0.00
6,300.00	8.00	109.31	5,915.38	-671.79	1,916.99	2,031.30	0.00	0.00	0.00
6,400.00	8.00	109.31	6,014.41	-676.39	1,930.13	2,045.21	0.00	0.00	0.00
6,500.00	8.00	109.31	6,113.44	-680.99	1,943.26	2,059.13	0.00	0.00	0.00
6,600.00	8.00	109.31	6,212.46	-685.59	1,956.40	2,073.05	0.00	0.00	0.00
6,700.00	8.00	109.31	6,311.49	-690.20	1,969.53	2,086.96	0.00	0.00	0.00
6,773.22	8.00	109.31	6,384.00	-693.57	1,979.15	2,097.15	0.00	0.00	0.00
TOG = 638702.42, 1225006.85									
6,800.00	8.00	109.31	6,410.52	-694.80	1,982.66	2,100.88	0.00	0.00	0.00
6,900.00	8.00	109.31	6,509.54	-699.40	1,995.80	2,114.80	0.00	0.00	0.00
7,000.00	8.00	109.31	6,608.57	-704.00	2,008.93	2,128.72	0.00	0.00	0.00
7,100.00	8.00	109.31	6,707.60	-708.61	2,022.07	2,142.63	0.00	0.00	0.00
7,200.00	8.00	109.31	6,806.63	-713.21	2,035.20	2,156.55	0.00	0.00	0.00
7,300.00	8.00	109.31	6,905.65	-717.81	2,048.34	2,170.47	0.00	0.00	0.00
7,400.00	8.00	109.31	7,004.68	-722.42	2,061.47	2,184.39	0.00	0.00	0.00
7,500.00	8.00	109.31	7,103.71	-727.02	2,074.60	2,198.30	0.00	0.00	0.00
7,600.00	8.00	109.31	7,202.73	-731.62	2,087.74	2,212.22	0.00	0.00	0.00
7,700.00	8.00	109.31	7,301.76	-736.22	2,100.87	2,226.14	0.00	0.00	0.00
7,800.00	8.00	109.31	7,400.79	-740.83	2,114.01	2,240.05	0.00	0.00	0.00
7,900.00	8.00	109.31	7,499.81	-745.43	2,127.14	2,253.97	0.00	0.00	0.00
8,000.00	8.00	109.31	7,598.84	-750.03	2,140.27	2,267.89	0.00	0.00	0.00
8,100.00	8.00	109.31	7,697.87	-754.63	2,153.41	2,281.81	0.00	0.00	0.00
8,140.53	8.00	109.31	7,738.00	-756.50	2,158.73	2,287.45	0.00	0.00	0.00
Target = 638634.07, 1225184.44									
8,200.00	8.00	109.31	7,796.89	-759.24	2,166.54	2,295.72	0.00	0.00	0.00
8,300.00	8.00	109.31	7,895.92	-763.84	2,179.68	2,309.64	0.00	0.00	0.00
8,400.00	8.00	109.31	7,994.95	-768.44	2,192.81	2,323.56	0.00	0.00	0.00
8,500.00	8.00	109.31	8,093.97	-773.04	2,205.95	2,337.48	0.00	0.00	0.00
8,600.00	8.00	109.31	8,193.00	-777.65	2,219.08	2,351.39	0.00	0.00	0.00
8,700.00	8.00	109.31	8,292.03	-782.25	2,232.21	2,365.31	0.00	0.00	0.00
8,800.00	8.00	109.31	8,391.05	-786.85	2,245.35	2,379.23	0.00	0.00	0.00
8,900.00	8.00	109.31	8,490.08	-791.46	2,258.48	2,393.15	0.00	0.00	0.00
9,000.00	8.00	109.31	8,589.11	-796.06	2,271.62	2,407.06	0.00	0.00	0.00
9,100.00	8.00	109.31	8,688.13	-800.66	2,284.75	2,420.98	0.00	0.00	0.00
9,200.00	8.00	109.31	8,787.16	-805.26	2,297.88	2,434.90	0.00	0.00	0.00

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Planning Report

Database:	EDM-RexH-Local	Local Co-ordinate Reference:	Well CC 697-05-34A - Slot M
Company:	OXY USA RMAT	TVD Reference:	GL 8184' & RKB 30' @ 8214.00ft (H&P)
Project:	Garfield County, CO NAD27	MD Reference:	GL 8184' & RKB 30' @ 8214.00ft (H&P)
Site:	Cascade Creek 697-06A Pad	North Reference:	True
Well:	CC 697-05-34A	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	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)
9,211.96	8.00	109.31	8,799.00	-805.81	2,299.45	2,436.56	0.00	0.00	0.00
PBHL = 638580.51, 1225323.60 - Rollins									

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 697-05-34A Target - plan hits target center - Circle (radius 50.00)	-8.00	107.44	7,738.00	-756.50	2,158.73	638,634.08	1,225,184.44	39° 33' 16.902 N	108° 14' 53.737 W

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,005.75	5,624.00	Mesaverde		0.00	
6,137.03	5,754.00	Williams Fork		0.00	
9,211.96	8,799.00	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
1,313.53	1,281.80	-77.07	219.94	Start 23.27° Hold At 1313.53'
5,242.22	4,890.90	-590.39	1,684.72	Start Drop -2.00
6,005.75	5,624.00	-658.24	1,878.35	Start 8.00° Hold At 6005.75'
6,773.22	6,384.00	-693.57	1,979.15	TOG = 638702.42, 1225006.85
8,140.53	7,738.00	-756.50	2,158.73	Target = 638634.07, 1225184.44
9,211.96	8,799.00	-805.81	2,299.45	PBHL = 638580.51, 1225323.60