



Scientific Drilling
Rocky Mountain Operations

Company: OXY USA RMAT
Project: Garfield County, CO NAD27
Site: Cascade Creek 604-12-13 Annex Pad



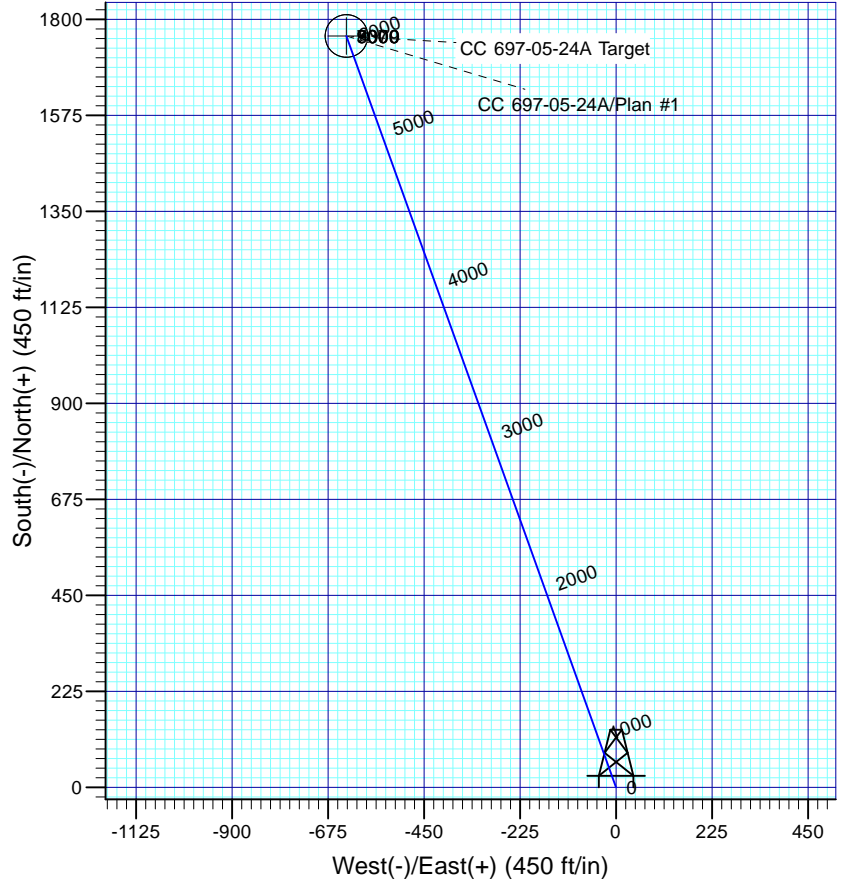
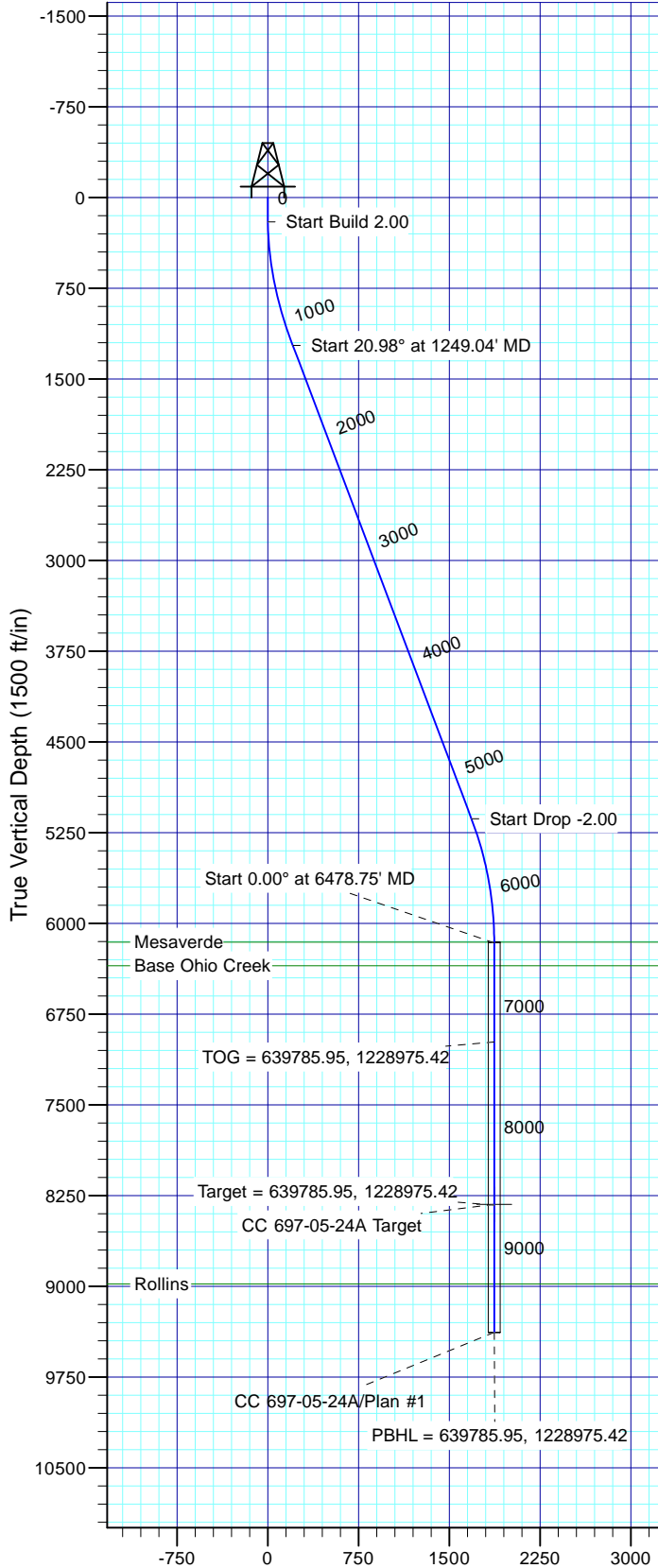
Well Details: CC 697-05-24A

TVD Reference: GL 8529' & RKB 30' @ 8559.00ft (H&P Rig)/Ground Level: 8529.00
+N/-S 0.00 +E/-W 0.00 Northing 638006.83 Easting 1229554.20 Latitude 39° 33' 12.008 N Longitude 108° 13' 57.732 W Slot O



Azimuths to True North
Magnetic North: 10.46°

Magnetic Field
Strength: 52229.4snT
Dip Angle: 65.74°
Date: 6/15/2011
Model: IGRF2010



FORMATION TOP DETAILS

TVDPath	MDPath	Formation
6154.00	6472.40	Mesaverde
6349.00	6667.40	Base Ohio Creek
8979.00	9297.40	Rollins

Plan: Plan #1

11:37, July 07 2011

Created By: Janie Cooke

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	V Sect	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	183.24	20.66	340.26	1160.98	173.48	-62.27	2.00	340.26	184.32	
4	440.16	20.66	340.26	5144.02	1587.43	-569.76	0.00	0.001686.58		
5	473.40	0.00	0.00	6155.00	1760.91	-632.03	2.00	180.001870.90		
6	640.40	0.00	0.00	8322.00	1760.91	-632.03	0.00	0.001870.90		
7	697.40	0.00	0.00	9379.00	1760.91	-632.03	0.00	0.001870.90		

CC 697-05-24A Target

OXY USA RMAT

Garfield County, CO NAD27

Cascade Creek 604-12-13 Annex Pad

CC 697-05-24A - Slot O

OH

Plan: Plan #1

Standard Planning Report

07 July, 2011





Database:	Rockies Compass Server	Local Co-ordinate Reference:	Well CC 697-05-24A - Slot O
Company:	OXY USA RMAT	TVD Reference:	GL 8529' & RKB 30' @ 8559.00ft (H&P Rig)
Project:	Garfield County, CO NAD27	MD Reference:	GL 8529' & RKB 30' @ 8559.00ft (H&P Rig)
Site:	Cascade Creek 604-12-13 Annex Pad	North Reference:	True
Well:	CC 697-05-24A	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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 604-12-13 Annex Pad			
Site Position:		Northing:	638,644.56 usft	Latitude:	39° 33' 18.364 N
From:	Lat/Long	Easting:	1,229,740.19 usft	Longitude:	108° 13' 55.603 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.72 °

Well	CC 697-05-24A - Slot O					
Well Position	+N/-S	-643.03 ft	Northing:	638,006.83 usft	Latitude:	39° 33' 12.008 N
	+E/-W	-166.74 ft	Easting:	1,229,554.20 usft	Longitude:	108° 13' 57.732 W
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	8,529.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/15/2011	10.46	65.74	52,229

Design	Plan #1			
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	340.26

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	
1,183.24	20.66	340.26	1,160.98	173.48	-62.27	2.00	2.00	0.00	340.26	
5,440.16	20.66	340.26	5,144.02	1,587.43	-569.76	0.00	0.00	0.00	0.00	
6,473.40	0.00	0.00	6,155.00	1,760.91	-632.03	2.00	-2.00	0.00	180.00	
8,640.40	0.00	0.00	8,322.00	1,760.91	-632.03	0.00	0.00	0.00	0.00	CC 697-05-24A Target
9,697.40	0.00	0.00	9,379.00	1,760.91	-632.03	0.00	0.00	0.00	0.00	



Database:	Rockies Compass Server	Local Co-ordinate Reference:	Well CC 697-05-24A - Slot O
Company:	OXY USA RMAT	TVD Reference:	GL 8529' & RKB 30' @ 8559.00ft (H&P Rig)
Project:	Garfield County, CO NAD27	MD Reference:	GL 8529' & RKB 30' @ 8559.00ft (H&P Rig)
Site:	Cascade Creek 604-12-13 Annex Pad	North Reference:	True
Well:	CC 697-05-24A	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	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
200.00	1.00	340.26	200.00	0.41	-0.15	0.44	2.00	2.00	0.00
Start Build 2.00									
300.00	3.00	340.26	299.93	3.70	-1.33	3.93	2.00	2.00	0.00
400.00	5.00	340.26	399.68	10.26	-3.68	10.90	2.00	2.00	0.00
500.00	7.00	340.26	499.13	20.10	-7.21	21.35	2.00	2.00	0.00
600.00	9.00	340.26	598.15	33.20	-11.92	35.27	2.00	2.00	0.00
700.00	11.00	340.26	696.63	49.54	-17.78	52.63	2.00	2.00	0.00
800.00	13.00	340.26	794.44	69.11	-24.80	73.42	2.00	2.00	0.00
900.00	15.00	340.26	891.46	91.88	-32.98	97.62	2.00	2.00	0.00
1,000.00	17.00	340.26	987.58	117.82	-42.29	125.18	2.00	2.00	0.00
1,100.00	19.00	340.26	1,082.68	146.90	-52.73	156.08	2.00	2.00	0.00
1,183.24	20.66	340.26	1,160.98	173.48	-62.27	184.32	2.00	2.00	0.00
1,200.00	20.66	340.26	1,176.67	179.05	-64.26	190.23	0.00	0.00	0.00
1,249.04	20.66	340.26	1,222.55	195.34	-70.11	207.54	0.00	0.00	0.00
Start 20.98° at 1249.04' MD									
1,300.00	20.66	340.26	1,270.23	212.26	-76.19	225.52	0.00	0.00	0.00
1,400.00	20.66	340.26	1,363.80	245.48	-88.11	260.81	0.00	0.00	0.00
1,500.00	20.66	340.26	1,457.36	278.69	-100.03	296.10	0.00	0.00	0.00
1,600.00	20.66	340.26	1,550.93	311.91	-111.95	331.39	0.00	0.00	0.00
1,700.00	20.66	340.26	1,644.50	345.13	-123.87	366.68	0.00	0.00	0.00
1,800.00	20.66	340.26	1,738.06	378.34	-135.79	401.97	0.00	0.00	0.00
1,900.00	20.66	340.26	1,831.63	411.56	-147.72	437.26	0.00	0.00	0.00
2,000.00	20.66	340.26	1,925.19	444.77	-159.64	472.55	0.00	0.00	0.00
2,100.00	20.66	340.26	2,018.76	477.99	-171.56	507.84	0.00	0.00	0.00
2,200.00	20.66	340.26	2,112.33	511.20	-183.48	543.13	0.00	0.00	0.00
2,300.00	20.66	340.26	2,205.89	544.42	-195.40	578.42	0.00	0.00	0.00
2,400.00	20.66	340.26	2,299.46	577.63	-207.32	613.71	0.00	0.00	0.00
2,500.00	20.66	340.26	2,393.03	610.85	-219.25	649.00	0.00	0.00	0.00
2,600.00	20.66	340.26	2,486.59	644.06	-231.17	684.29	0.00	0.00	0.00
2,700.00	20.66	340.26	2,580.16	677.28	-243.09	719.58	0.00	0.00	0.00
2,800.00	20.66	340.26	2,673.72	710.49	-255.01	754.87	0.00	0.00	0.00
2,900.00	20.66	340.26	2,767.29	743.71	-266.93	790.16	0.00	0.00	0.00
3,000.00	20.66	340.26	2,860.86	776.92	-278.85	825.45	0.00	0.00	0.00
3,100.00	20.66	340.26	2,954.42	810.14	-290.78	860.74	0.00	0.00	0.00
3,200.00	20.66	340.26	3,047.99	843.35	-302.70	896.03	0.00	0.00	0.00
3,300.00	20.66	340.26	3,141.55	876.57	-314.62	931.32	0.00	0.00	0.00
3,400.00	20.66	340.26	3,235.12	909.78	-326.54	966.61	0.00	0.00	0.00
3,500.00	20.66	340.26	3,328.69	943.00	-338.46	1,001.90	0.00	0.00	0.00
3,600.00	20.66	340.26	3,422.25	976.22	-350.38	1,037.19	0.00	0.00	0.00
3,700.00	20.66	340.26	3,515.82	1,009.43	-362.31	1,072.48	0.00	0.00	0.00
3,800.00	20.66	340.26	3,609.39	1,042.65	-374.23	1,107.77	0.00	0.00	0.00
3,900.00	20.66	340.26	3,702.95	1,075.86	-386.15	1,143.06	0.00	0.00	0.00
4,000.00	20.66	340.26	3,796.52	1,109.08	-398.07	1,178.35	0.00	0.00	0.00
4,100.00	20.66	340.26	3,890.08	1,142.29	-409.99	1,213.64	0.00	0.00	0.00
4,200.00	20.66	340.26	3,983.65	1,175.51	-421.91	1,248.93	0.00	0.00	0.00
4,300.00	20.66	340.26	4,077.22	1,208.72	-433.84	1,284.22	0.00	0.00	0.00
4,400.00	20.66	340.26	4,170.78	1,241.94	-445.76	1,319.51	0.00	0.00	0.00
4,500.00	20.66	340.26	4,264.35	1,275.15	-457.68	1,354.80	0.00	0.00	0.00
4,600.00	20.66	340.26	4,357.91	1,308.37	-469.60	1,390.09	0.00	0.00	0.00
4,700.00	20.66	340.26	4,451.48	1,341.58	-481.52	1,425.38	0.00	0.00	0.00
4,800.00	20.66	340.26	4,545.05	1,374.80	-493.44	1,460.67	0.00	0.00	0.00



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Site:	Cascade Creek 604-12-13 Annex Pad	North Reference:	True
Well:	CC 697-05-24A	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	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)
4,900.00	20.66	340.26	4,638.61	1,408.01	-505.37	1,495.96	0.00	0.00	0.00
5,000.00	20.66	340.26	4,732.18	1,441.23	-517.29	1,531.25	0.00	0.00	0.00
5,100.00	20.66	340.26	4,825.74	1,474.44	-529.21	1,566.54	0.00	0.00	0.00
5,200.00	20.66	340.26	4,919.31	1,507.66	-541.13	1,601.83	0.00	0.00	0.00
5,300.00	20.66	340.26	5,012.88	1,540.88	-553.05	1,637.12	0.00	0.00	0.00
5,400.00	20.66	340.26	5,106.44	1,574.09	-564.97	1,672.41	0.00	0.00	0.00
5,429.71	20.66	340.26	5,134.24	1,583.96	-568.52	1,682.90	0.00	0.00	0.00
Start Drop -2.00									
5,440.16	20.66	340.26	5,144.02	1,587.43	-569.76	1,686.58	0.00	0.00	0.00
5,500.00	19.47	340.26	5,200.23	1,606.75	-576.70	1,707.11	2.00	-2.00	0.00
5,600.00	17.47	340.26	5,295.07	1,636.57	-587.40	1,738.79	2.00	-2.00	0.00
5,700.00	15.47	340.26	5,390.96	1,663.25	-596.97	1,767.14	2.00	-2.00	0.00
5,800.00	13.47	340.26	5,487.79	1,686.76	-605.41	1,792.12	2.00	-2.00	0.00
5,900.00	11.47	340.26	5,585.42	1,707.08	-612.71	1,813.71	2.00	-2.00	0.00
6,000.00	9.47	340.26	5,683.76	1,724.18	-618.84	1,831.87	2.00	-2.00	0.00
6,100.00	7.47	340.26	5,782.66	1,738.04	-623.82	1,846.60	2.00	-2.00	0.00
6,200.00	5.47	340.26	5,882.02	1,748.64	-627.62	1,857.86	2.00	-2.00	0.00
6,300.00	3.47	340.26	5,981.71	1,755.97	-630.25	1,865.65	2.00	-2.00	0.00
6,400.00	1.47	340.26	6,081.61	1,760.03	-631.71	1,869.96	2.00	-2.00	0.00
6,472.40	0.02	340.26	6,154.00	1,760.91	-632.03	1,870.90	2.00	-2.00	0.00
Mesaverde									
6,473.40	0.00	0.00	6,155.00	1,760.91	-632.03	1,870.90	2.00	-2.00	0.00
6,478.75	0.00	0.00	6,160.36	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
Start 0.00° at 6478.75' MD									
6,500.00	0.00	0.00	6,181.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
6,600.00	0.00	0.00	6,281.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
6,667.40	0.00	0.00	6,349.00	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
Base Ohio Creek									
6,700.00	0.00	0.00	6,381.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
6,800.00	0.00	0.00	6,481.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
6,900.00	0.00	0.00	6,581.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
7,000.00	0.00	0.00	6,681.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
7,100.00	0.00	0.00	6,781.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
7,200.00	0.00	0.00	6,881.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
7,297.40	0.00	0.00	6,979.00	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
TOG = 639785.95, 1228975.42									
7,300.00	0.00	0.00	6,981.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
7,400.00	0.00	0.00	7,081.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
7,500.00	0.00	0.00	7,181.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
7,600.00	0.00	0.00	7,281.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
7,700.00	0.00	0.00	7,381.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
7,800.00	0.00	0.00	7,481.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
7,900.00	0.00	0.00	7,581.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
8,000.00	0.00	0.00	7,681.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
8,100.00	0.00	0.00	7,781.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
8,200.00	0.00	0.00	7,881.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
8,300.00	0.00	0.00	7,981.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
8,400.00	0.00	0.00	8,081.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
8,500.00	0.00	0.00	8,181.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
8,600.00	0.00	0.00	8,281.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
8,640.40	0.00	0.00	8,322.00	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
8,645.75	0.00	0.00	8,327.36	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
Target = 639785.95, 1228975.42									



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Project:	Garfield County, CO NAD27	MD Reference:	GL 8529' & RKB 30' @ 8559.00ft (H&P Rig)
Site:	Cascade Creek 604-12-13 Annex Pad	North Reference:	True
Well:	CC 697-05-24A	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	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)
8,700.00	0.00	0.00	8,381.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
8,800.00	0.00	0.00	8,481.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
8,900.00	0.00	0.00	8,581.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
9,000.00	0.00	0.00	8,681.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
9,100.00	0.00	0.00	8,781.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
9,200.00	0.00	0.00	8,881.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
9,297.40	0.00	0.00	8,979.00	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
Rollins									
9,300.00	0.00	0.00	8,981.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
9,400.00	0.00	0.00	9,081.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
9,500.00	0.00	0.00	9,181.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
9,600.00	0.00	0.00	9,281.60	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
9,697.40	0.00	0.00	9,379.00	1,760.91	-632.03	1,870.90	0.00	0.00	0.00
PBHL = 639785.95, 1228975.42									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
CC 697-05-24A Target	0.00	0.00	8,322.00	1,760.91	-632.03	639,785.95	1,228,975.42	39° 33' 29.412 N	108° 14' 5.802 W
- plan hits target center									
- Circle (radius 50.00)									

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,472.40	6,154.00	Mesaverde		0.00	
6,667.40	6,349.00	Base Ohio Creek		0.00	
9,297.40	8,979.00	Rollins		0.00	

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
200.00	200.00	0.41	-0.15	Start Build 2.00
1,249.04	1,222.55	195.34	-70.11	Start 20.98° at 1249.04' MD
5,429.71	5,134.24	1,583.96	-568.52	Start Drop -2.00
6,478.75	6,160.36	1,760.91	-632.03	Start 0.00° at 6478.75' MD
7,297.40	6,979.00	1,760.91	-632.03	TOG = 639785.95, 1228975.42
8,645.75	8,327.36	1,760.91	-632.03	Target = 639785.95, 1228975.42
9,697.40	9,379.00	1,760.91	-632.03	PBHL = 639785.95, 1228975.42