



Scientific Drilling
Rocky Mountain Operations

Company: OXY USA RMAT
Project: Garfield County, CO NAD27
Site: Cascade Creek 697-08A Pad



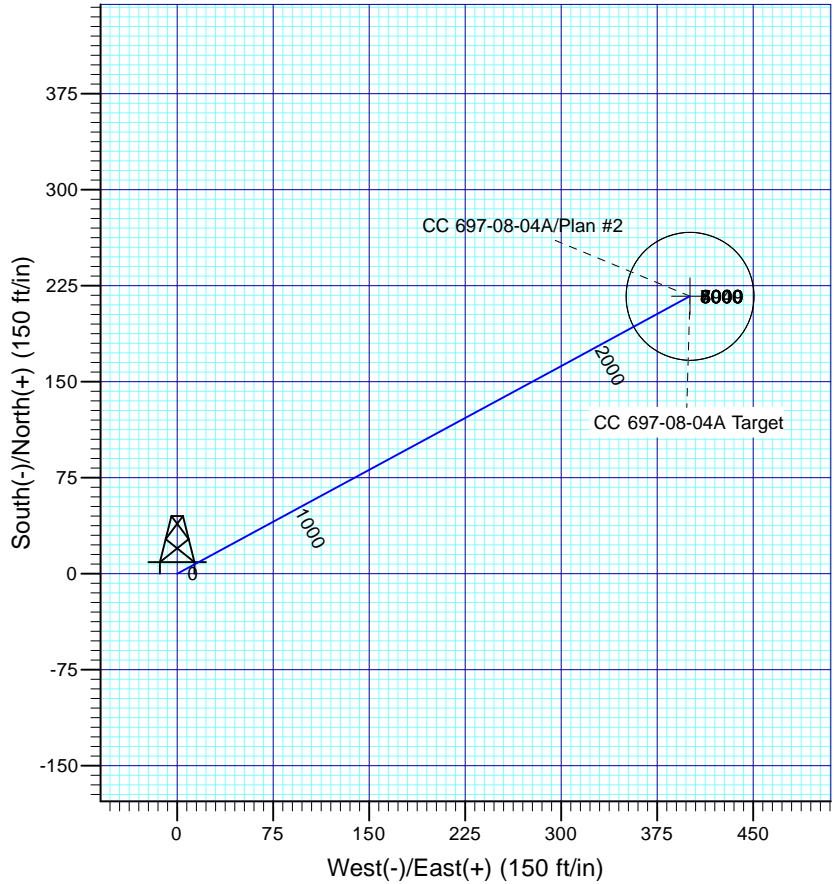
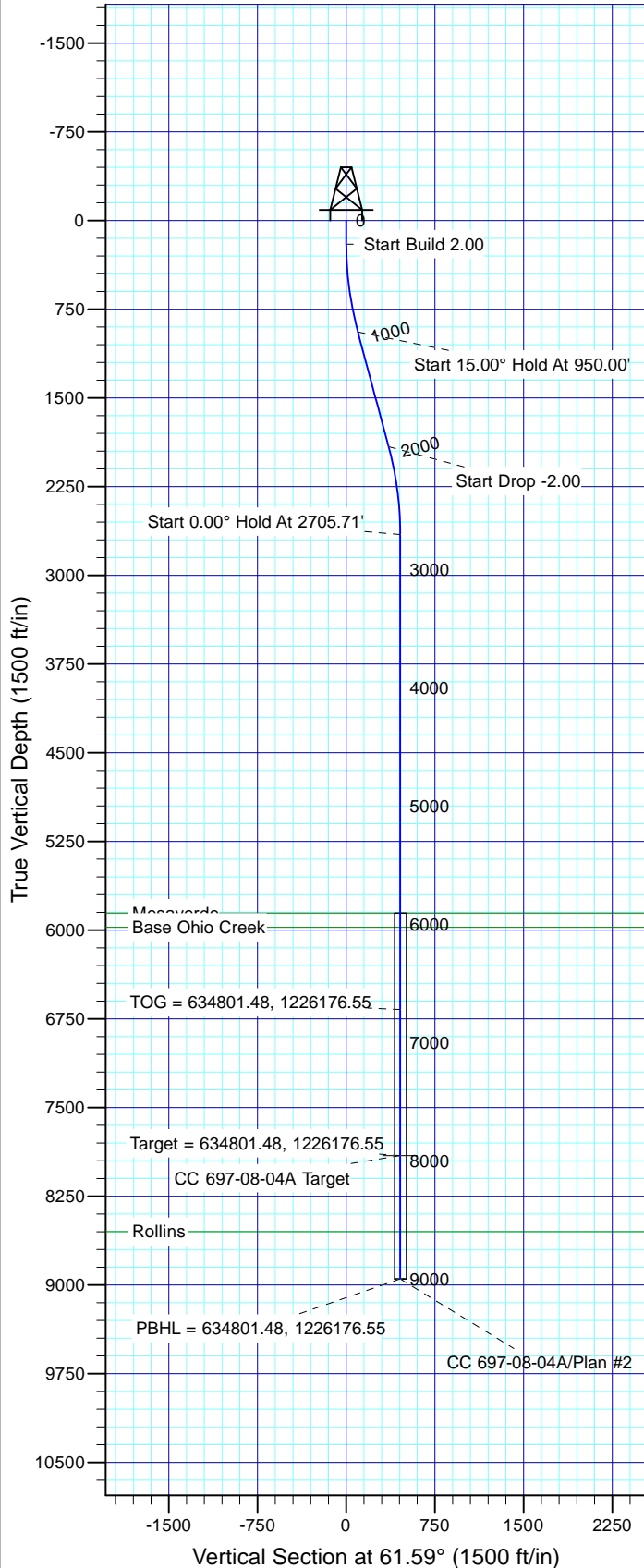
Well Details: CC 697-08-04A

TVD Reference: GL 8401' & RKB 30' @ 8431.00ft (H&P Rig) Ground Level: 8401.00
+N/-S +E/-W Northing Easting Latitude Longitude Slot
0.00 0.00 634596.97 1225769.51 39° 32' 37.194 N 108° 14' 44.714 W Q



Azimuths to True North
Magnetic North: 10.77°

Magnetic Field
Strength: 52497.5nT
Dip Angle: 65.81°
Date: 12/23/2008
Model: IGRF2005-10



FORMATION TOP DETAILS

TVDPath	MDPath	Formation
5856.00	5907.34	Mesaverde
5976.00	6027.34	Base Ohio Creek
8549.00	8600.34	Rollins

Plan: Plan #2

8:22, May 26 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	V Sect	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	950.00	15.00	61.59	941.46	46.44	85.86	2.00	61.59	97.62	
4	1955.71	15.00	61.59	1912.91	170.28	314.81	0.00	0.00	357.91	
5	2705.71	0.00	0.00	2654.37	216.72	400.68	2.00	180.00	455.53	
6	7957.34	0.00	0.00	7906.00	216.72	400.68	0.00	0.00	455.53	CC 697-08-04A Target
7	9000.34	0.00	0.00	8949.00	216.72	400.68	0.00	0.00	455.53	

OXY USA RMAT

**Garfield County, CO NAD27
Cascade Creek 697-08A Pad
CC 697-08-04A - Slot Q**

OH

Plan: Plan #2

Standard Planning Report

26 May, 2011





Database:	Rockies Compass Server	Local Co-ordinate Reference:	Well CC 697-08-04A - Slot Q
Company:	OXY USA RMAT	TVD Reference:	GL 8401' & RKB 30' @ 8431.00ft (H&P Rig)
Project:	Garfield County, CO NAD27	MD Reference:	GL 8401' & RKB 30' @ 8431.00ft (H&P Rig)
Site:	Cascade Creek 697-08A Pad	North Reference:	True
Well:	CC 697-08-04A	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 697-08A Pad, Sec 8 T6S R97W			
Site Position:		Northing:	635,765.16 usft	Latitude: 39° 32' 48.728 N
From:	Lat/Long	Easting:	1,225,748.33 usft	Longitude: 108° 14' 45.434 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence: -1.73 °

Well	CC 697-08-04A - Slot Q, 354' FNL & 1810' FWL			
Well Position	+N/-S	-1,167.01 ft	Northing:	634,596.98 usft
	+E/-W	56.47 ft	Easting:	1,225,769.51 usft
Position Uncertainty	0.00 ft	Wellhead Elevation:		Ground Level: 8,401.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2005-10	12/23/2008	10.77	65.81	52,498

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	61.59

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	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
950.00	15.00	61.59	941.46	46.44	85.86	2.00	2.00	0.00	61.59	
1,955.71	15.00	61.59	1,912.91	170.28	314.81	0.00	0.00	0.00	0.00	
2,705.71	0.00	0.00	2,654.37	216.72	400.68	2.00	-2.00	0.00	180.00	
7,957.35	0.00	0.00	7,906.00	216.72	400.68	0.00	0.00	0.00	0.00	CC 697-08-04A Target
9,000.35	0.00	0.00	8,949.00	216.72	400.68	0.00	0.00	0.00	0.00	



Database:	Rockies Compass Server	Local Co-ordinate Reference:	Well CC 697-08-04A - Slot Q
Company:	OXY USA RMAT	TVD Reference:	GL 8401' & RKB 30' @ 8431.00ft (H&P Rig)
Project:	Garfield County, CO NAD27	MD Reference:	GL 8401' & RKB 30' @ 8431.00ft (H&P Rig)
Site:	Cascade Creek 697-08A Pad	North Reference:	True
Well:	CC 697-08-04A	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
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	61.59	299.98	0.83	1.54	1.75	2.00	2.00	0.00
400.00	4.00	61.59	399.84	3.32	6.14	6.98	2.00	2.00	0.00
500.00	6.00	61.59	499.45	7.47	13.80	15.69	2.00	2.00	0.00
600.00	8.00	61.59	598.70	13.26	24.52	27.88	2.00	2.00	0.00
700.00	10.00	61.59	697.47	20.71	38.28	43.52	2.00	2.00	0.00
800.00	12.00	61.59	795.62	29.78	55.06	62.60	2.00	2.00	0.00
900.00	14.00	61.59	893.06	40.48	74.85	85.10	2.00	2.00	0.00
950.00	15.00	61.59	941.46	46.44	85.86	97.62	2.00	2.00	0.00
Start 15.00° Hold At 950.00'									
1,000.00	15.00	61.59	989.76	52.60	97.24	110.56	0.00	0.00	0.00
1,100.00	15.00	61.59	1,086.35	64.91	120.01	136.44	0.00	0.00	0.00
1,200.00	15.00	61.59	1,182.94	77.22	142.77	162.32	0.00	0.00	0.00
1,300.00	15.00	61.59	1,279.54	89.54	165.54	188.20	0.00	0.00	0.00
1,400.00	15.00	61.59	1,376.13	101.85	188.30	214.08	0.00	0.00	0.00
1,500.00	15.00	61.59	1,472.72	114.16	211.07	239.97	0.00	0.00	0.00
1,600.00	15.00	61.59	1,569.31	126.48	233.84	265.85	0.00	0.00	0.00
1,700.00	15.00	61.59	1,665.91	138.79	256.60	291.73	0.00	0.00	0.00
1,800.00	15.00	61.59	1,762.50	151.10	279.37	317.61	0.00	0.00	0.00
1,900.00	15.00	61.59	1,859.09	163.42	302.13	343.49	0.00	0.00	0.00
1,955.71	15.00	61.59	1,912.91	170.28	314.81	357.91	0.00	0.00	0.00
Start Drop -2.00									
2,000.00	14.11	61.59	1,955.77	175.57	324.60	369.04	2.00	-2.00	0.00
2,100.00	12.11	61.59	2,053.16	186.37	344.56	391.73	2.00	-2.00	0.00
2,200.00	10.11	61.59	2,151.28	195.54	361.52	411.01	2.00	-2.00	0.00
2,300.00	8.11	61.59	2,250.01	203.07	375.45	426.85	2.00	-2.00	0.00
2,400.00	6.11	61.59	2,349.23	208.96	386.34	439.23	2.00	-2.00	0.00
2,500.00	4.11	61.59	2,448.83	213.20	394.18	448.15	2.00	-2.00	0.00
2,600.00	2.11	61.59	2,548.68	215.79	398.96	453.58	2.00	-2.00	0.00
2,700.00	0.11	61.59	2,648.66	216.71	400.67	455.52	2.00	-2.00	0.00
2,705.71	0.00	0.00	2,654.37	216.72	400.68	455.53	2.00	-2.00	0.00
Start 0.00° Hold At 2705.71'									
2,800.00	0.00	0.00	2,748.66	216.72	400.68	455.53	0.00	0.00	0.00
2,900.00	0.00	0.00	2,848.66	216.72	400.68	455.53	0.00	0.00	0.00
3,000.00	0.00	0.00	2,948.66	216.72	400.68	455.53	0.00	0.00	0.00
3,100.00	0.00	0.00	3,048.66	216.72	400.68	455.53	0.00	0.00	0.00
3,200.00	0.00	0.00	3,148.66	216.72	400.68	455.53	0.00	0.00	0.00
3,300.00	0.00	0.00	3,248.66	216.72	400.68	455.53	0.00	0.00	0.00
3,400.00	0.00	0.00	3,348.66	216.72	400.68	455.53	0.00	0.00	0.00
3,500.00	0.00	0.00	3,448.66	216.72	400.68	455.53	0.00	0.00	0.00
3,600.00	0.00	0.00	3,548.66	216.72	400.68	455.53	0.00	0.00	0.00
3,700.00	0.00	0.00	3,648.66	216.72	400.68	455.53	0.00	0.00	0.00
3,800.00	0.00	0.00	3,748.66	216.72	400.68	455.53	0.00	0.00	0.00
3,900.00	0.00	0.00	3,848.66	216.72	400.68	455.53	0.00	0.00	0.00
4,000.00	0.00	0.00	3,948.66	216.72	400.68	455.53	0.00	0.00	0.00
4,100.00	0.00	0.00	4,048.66	216.72	400.68	455.53	0.00	0.00	0.00
4,200.00	0.00	0.00	4,148.66	216.72	400.68	455.53	0.00	0.00	0.00
4,300.00	0.00	0.00	4,248.66	216.72	400.68	455.53	0.00	0.00	0.00
4,400.00	0.00	0.00	4,348.66	216.72	400.68	455.53	0.00	0.00	0.00
4,500.00	0.00	0.00	4,448.66	216.72	400.68	455.53	0.00	0.00	0.00
4,600.00	0.00	0.00	4,548.66	216.72	400.68	455.53	0.00	0.00	0.00



Database:	Rockies Compass Server	Local Co-ordinate Reference:	Well CC 697-08-04A - Slot Q
Company:	OXY USA RMAT	TVD Reference:	GL 8401' & RKB 30' @ 8431.00ft (H&P Rig)
Project:	Garfield County, CO NAD27	MD Reference:	GL 8401' & RKB 30' @ 8431.00ft (H&P Rig)
Site:	Cascade Creek 697-08A Pad	North Reference:	True
Well:	CC 697-08-04A	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)
4,700.00	0.00	0.00	4,648.66	216.72	400.68	455.53	0.00	0.00	0.00
4,800.00	0.00	0.00	4,748.66	216.72	400.68	455.53	0.00	0.00	0.00
4,900.00	0.00	0.00	4,848.66	216.72	400.68	455.53	0.00	0.00	0.00
5,000.00	0.00	0.00	4,948.66	216.72	400.68	455.53	0.00	0.00	0.00
5,100.00	0.00	0.00	5,048.66	216.72	400.68	455.53	0.00	0.00	0.00
5,200.00	0.00	0.00	5,148.66	216.72	400.68	455.53	0.00	0.00	0.00
5,300.00	0.00	0.00	5,248.66	216.72	400.68	455.53	0.00	0.00	0.00
5,400.00	0.00	0.00	5,348.66	216.72	400.68	455.53	0.00	0.00	0.00
5,500.00	0.00	0.00	5,448.66	216.72	400.68	455.53	0.00	0.00	0.00
5,600.00	0.00	0.00	5,548.66	216.72	400.68	455.53	0.00	0.00	0.00
5,700.00	0.00	0.00	5,648.66	216.72	400.68	455.53	0.00	0.00	0.00
5,800.00	0.00	0.00	5,748.66	216.72	400.68	455.53	0.00	0.00	0.00
5,900.00	0.00	0.00	5,848.66	216.72	400.68	455.53	0.00	0.00	0.00
5,907.35	0.00	0.00	5,856.00	216.72	400.68	455.53	0.00	0.00	0.00
Mesaverde									
6,000.00	0.00	0.00	5,948.66	216.72	400.68	455.53	0.00	0.00	0.00
6,027.35	0.00	0.00	5,976.00	216.72	400.68	455.53	0.00	0.00	0.00
Base Ohio Creek									
6,100.00	0.00	0.00	6,048.66	216.72	400.68	455.53	0.00	0.00	0.00
6,200.00	0.00	0.00	6,148.66	216.72	400.68	455.53	0.00	0.00	0.00
6,300.00	0.00	0.00	6,248.66	216.72	400.68	455.53	0.00	0.00	0.00
6,400.00	0.00	0.00	6,348.66	216.72	400.68	455.53	0.00	0.00	0.00
6,500.00	0.00	0.00	6,448.66	216.72	400.68	455.53	0.00	0.00	0.00
6,600.00	0.00	0.00	6,548.66	216.72	400.68	455.53	0.00	0.00	0.00
6,700.00	0.00	0.00	6,648.66	216.72	400.68	455.53	0.00	0.00	0.00
6,722.35	0.00	0.00	6,671.00	216.72	400.68	455.53	0.00	0.00	0.00
TOG = 634801.48, 1226176.55									
6,800.00	0.00	0.00	6,748.66	216.72	400.68	455.53	0.00	0.00	0.00
6,900.00	0.00	0.00	6,848.66	216.72	400.68	455.53	0.00	0.00	0.00
7,000.00	0.00	0.00	6,948.66	216.72	400.68	455.53	0.00	0.00	0.00
7,100.00	0.00	0.00	7,048.66	216.72	400.68	455.53	0.00	0.00	0.00
7,200.00	0.00	0.00	7,148.66	216.72	400.68	455.53	0.00	0.00	0.00
7,300.00	0.00	0.00	7,248.66	216.72	400.68	455.53	0.00	0.00	0.00
7,400.00	0.00	0.00	7,348.66	216.72	400.68	455.53	0.00	0.00	0.00
7,500.00	0.00	0.00	7,448.66	216.72	400.68	455.53	0.00	0.00	0.00
7,600.00	0.00	0.00	7,548.66	216.72	400.68	455.53	0.00	0.00	0.00
7,700.00	0.00	0.00	7,648.66	216.72	400.68	455.53	0.00	0.00	0.00
7,800.00	0.00	0.00	7,748.66	216.72	400.68	455.53	0.00	0.00	0.00
7,900.00	0.00	0.00	7,848.66	216.72	400.68	455.53	0.00	0.00	0.00
7,957.35	0.00	0.00	7,906.00	216.72	400.68	455.53	0.00	0.00	0.00
Target = 634801.48, 1226176.55									
8,000.00	0.00	0.00	7,948.66	216.72	400.68	455.53	0.00	0.00	0.00
8,100.00	0.00	0.00	8,048.66	216.72	400.68	455.53	0.00	0.00	0.00
8,200.00	0.00	0.00	8,148.66	216.72	400.68	455.53	0.00	0.00	0.00
8,300.00	0.00	0.00	8,248.66	216.72	400.68	455.53	0.00	0.00	0.00
8,400.00	0.00	0.00	8,348.66	216.72	400.68	455.53	0.00	0.00	0.00
8,500.00	0.00	0.00	8,448.66	216.72	400.68	455.53	0.00	0.00	0.00
8,600.00	0.00	0.00	8,548.66	216.72	400.68	455.53	0.00	0.00	0.00
8,600.35	0.00	0.00	8,549.00	216.72	400.68	455.53	0.00	0.00	0.00
Rollins									
8,700.00	0.00	0.00	8,648.66	216.72	400.68	455.53	0.00	0.00	0.00
8,800.00	0.00	0.00	8,748.66	216.72	400.68	455.53	0.00	0.00	0.00
8,900.00	0.00	0.00	8,848.66	216.72	400.68	455.53	0.00	0.00	0.00



Database:	Rockies Compass Server	Local Co-ordinate Reference:	Well CC 697-08-04A - Slot Q
Company:	OXY USA RMAT	TVD Reference:	GL 8401' & RKB 30' @ 8431.00ft (H&P Rig)
Project:	Garfield County, CO NAD27	MD Reference:	GL 8401' & RKB 30' @ 8431.00ft (H&P Rig)
Site:	Cascade Creek 697-08A Pad	North Reference:	True
Well:	CC 697-08-04A	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)
9,000.00	0.00	0.00	8,948.66	216.72	400.68	455.53	0.00	0.00	0.00
9,000.35	0.00	0.00	8,949.00	216.72	400.68	455.53	0.00	0.00	0.00
PBHL = 634801.48, 1226176.55									

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 697-08-04A Target	0.00	0.00	7,906.00	216.72	400.68	634,801.49	1,226,176.55	39° 32' 39.336 N	108° 14' 39.599 W
- plan hits target center									
- Circle (radius 50.00)									

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,907.35	5,856.00	Mesaverde		0.00	
6,027.35	5,976.00	Base Ohio Creek		0.00	
8,600.35	8,549.00	Rollins		0.00	

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
200.00	200.00	0.00	0.00	Start Build 2.00
950.00	941.46	46.44	85.86	Start 15.00° Hold At 950.00'
1,955.71	1,912.91	170.28	314.81	Start Drop -2.00
2,705.71	2,654.37	216.72	400.68	Start 0.00° Hold At 2705.71'
6,722.35	6,671.00	216.72	400.68	TOG = 634801.48, 1226176.55
7,957.35	7,906.00	216.72	400.68	Target = 634801.48, 1226176.55
9,000.35	8,949.00	216.72	400.68	PBHL = 634801.48, 1226176.55