



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 697-05-32B

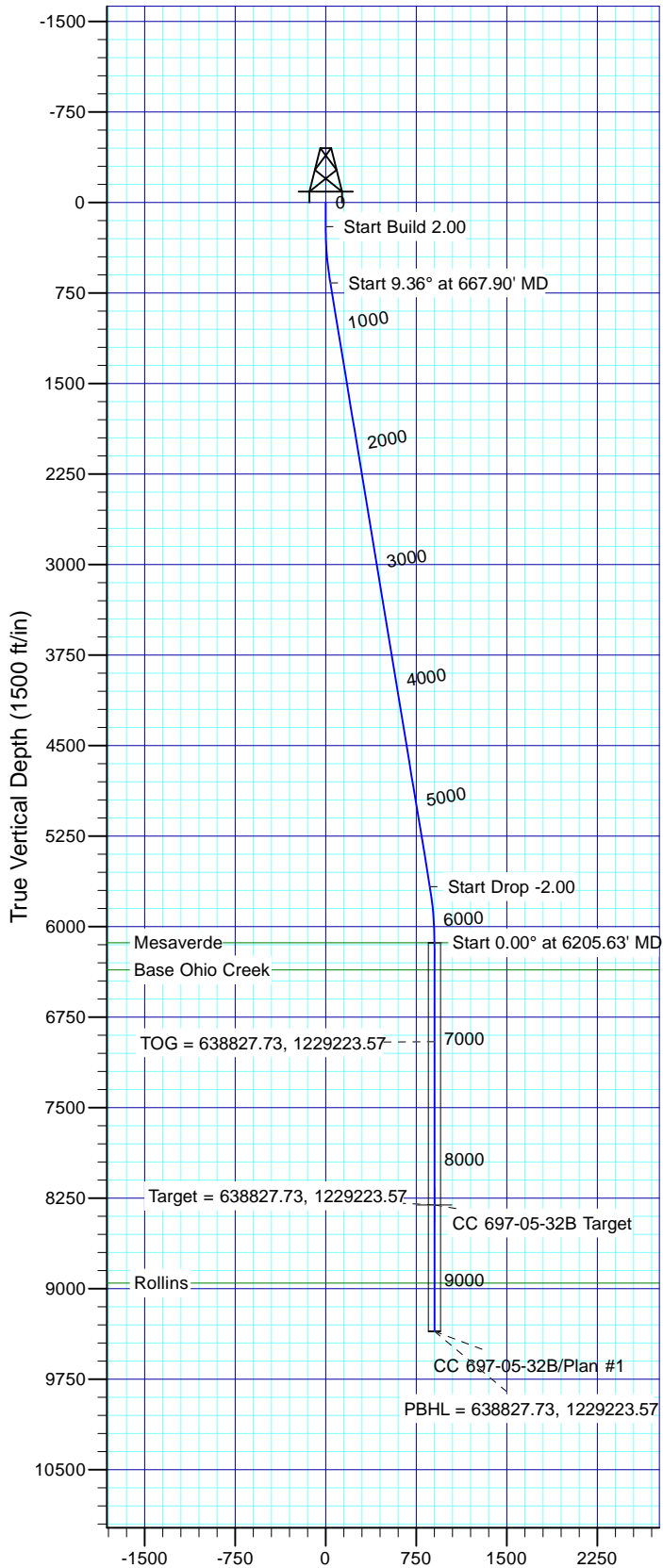
TVD Reference: GL 8529' & RKB 30' @ 8559.00ft (H&P Rig) Ground Level: 8529.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	637977.36	1229520.19	39° 33' 11.707 N	108° 13' 58.155 W	C

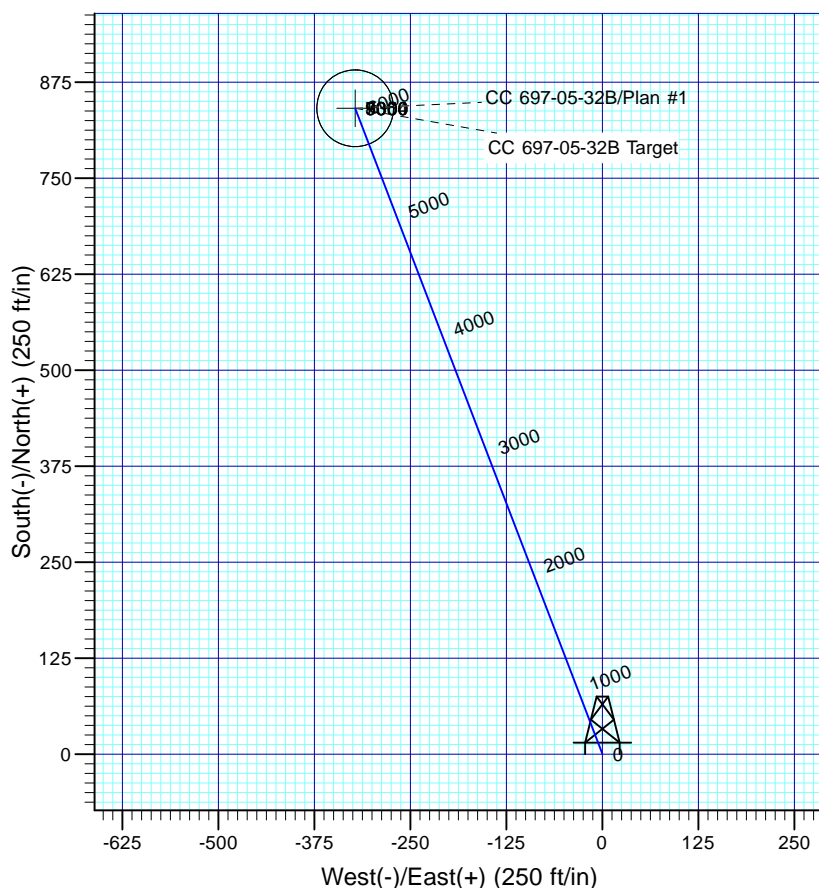


Azimuths to True North
Magnetic North: 10.46°

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



Vertical Section at 339.05° (1500 ft/in)



FORMATION TOP DETAILS

TVDPath	MDPath	Formation
6134.00	6205.63	Mesaverde
6359.00	6430.63	Base Ohio Creek
8954.00	9025.63	Rollins

Plan: Plan #1

13:41, June 16 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	VSect	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	667.90	9.36	339.05	665.82	35.60	-13.63	2.00	339.05	38.13	
4	5737.73	9.36	339.05	5668.18	805.46	-308.43	0.00	0.00	862.49	
5	6205.63	0.00	0.00	6134.00	841.07	-322.06	2.00	180.00	900.62	
6	8376.63	0.00	0.00	8305.00	841.07	-322.06	0.00	0.00	900.62	CC 697-05-32B Target
7	9425.63	0.00	0.00	9354.00	841.07	-322.06	0.00	0.00	900.62	

OXY USA RMAT

Garfield County, CO NAD27

Cascade Creek 604-12-13 Annex Pad

CC 697-05-32B - Slot C

OH

Plan: Plan #1

Standard Planning Report

16 June, 2011





Database:	Rockies Compass Server	Local Co-ordinate Reference:	Well CC 697-05-32B - Slot C
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 697-05-32B	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 697-05-32B - Slot C				
Well Position	+N/-S	-673.51 ft	Northing:	637,977.36 usft	Latitude:	39° 33' 11.707 N
	+E/-W	-199.85 ft	Easting:	1,229,520.19 usft	Longitude:	108° 13' 58.155 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	339.05

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	
667.90	9.36	339.05	665.82	35.60	-13.63	2.00	2.00	0.00	339.05	
5,737.73	9.36	339.05	5,668.18	805.46	-308.43	0.00	0.00	0.00	0.00	
6,205.63	0.00	0.00	6,134.00	841.07	-322.06	2.00	-2.00	0.00	180.00	
8,376.63	0.00	0.00	8,305.00	841.07	-322.06	0.00	0.00	0.00	0.00	CC 697-05-32B Target
9,425.63	0.00	0.00	9,354.00	841.07	-322.06	0.00	0.00	0.00	0.00	



Database:	Rockies Compass Server	Local Co-ordinate Reference:	Well CC 697-05-32B - Slot C
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 697-05-32B	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
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	339.05	299.98	1.63	-0.62	1.75	2.00	2.00	0.00
400.00	4.00	339.05	399.84	6.52	-2.50	6.98	2.00	2.00	0.00
500.00	6.00	339.05	499.45	14.66	-5.61	15.69	2.00	2.00	0.00
600.00	8.00	339.05	598.70	26.04	-9.97	27.88	2.00	2.00	0.00
667.90	9.36	339.05	665.82	35.60	-13.63	38.13	2.00	2.00	0.00
Start 9.36° at 667.90' MD									
700.00	9.36	339.05	697.50	40.48	-15.50	43.35	0.00	0.00	0.00
800.00	9.36	339.05	796.16	55.66	-21.32	59.61	0.00	0.00	0.00
900.00	9.36	339.05	894.83	70.85	-27.13	75.87	0.00	0.00	0.00
1,000.00	9.36	339.05	993.50	86.03	-32.94	92.13	0.00	0.00	0.00
1,100.00	9.36	339.05	1,092.17	101.22	-38.76	108.39	0.00	0.00	0.00
1,200.00	9.36	339.05	1,190.84	116.40	-44.57	124.65	0.00	0.00	0.00
1,300.00	9.36	339.05	1,289.51	131.59	-50.39	140.91	0.00	0.00	0.00
1,400.00	9.36	339.05	1,388.18	146.77	-56.20	157.17	0.00	0.00	0.00
1,500.00	9.36	339.05	1,486.85	161.96	-62.02	173.43	0.00	0.00	0.00
1,600.00	9.36	339.05	1,585.52	177.14	-67.83	189.69	0.00	0.00	0.00
1,700.00	9.36	339.05	1,684.19	192.33	-73.65	205.95	0.00	0.00	0.00
1,800.00	9.36	339.05	1,782.86	207.51	-79.46	222.21	0.00	0.00	0.00
1,900.00	9.36	339.05	1,881.53	222.70	-85.28	238.47	0.00	0.00	0.00
2,000.00	9.36	339.05	1,980.19	237.88	-91.09	254.73	0.00	0.00	0.00
2,100.00	9.36	339.05	2,078.86	253.07	-96.91	270.99	0.00	0.00	0.00
2,200.00	9.36	339.05	2,177.53	268.25	-102.72	287.25	0.00	0.00	0.00
2,300.00	9.36	339.05	2,276.20	283.44	-108.54	303.51	0.00	0.00	0.00
2,400.00	9.36	339.05	2,374.87	298.63	-114.35	319.77	0.00	0.00	0.00
2,500.00	9.36	339.05	2,473.54	313.81	-120.17	336.03	0.00	0.00	0.00
2,600.00	9.36	339.05	2,572.21	329.00	-125.98	352.29	0.00	0.00	0.00
2,700.00	9.36	339.05	2,670.88	344.18	-131.79	368.55	0.00	0.00	0.00
2,800.00	9.36	339.05	2,769.55	359.37	-137.61	384.81	0.00	0.00	0.00
2,900.00	9.36	339.05	2,868.22	374.55	-143.42	401.07	0.00	0.00	0.00
3,000.00	9.36	339.05	2,966.89	389.74	-149.24	417.33	0.00	0.00	0.00
3,100.00	9.36	339.05	3,065.56	404.92	-155.05	433.59	0.00	0.00	0.00
3,200.00	9.36	339.05	3,164.22	420.11	-160.87	449.85	0.00	0.00	0.00
3,300.00	9.36	339.05	3,262.89	435.29	-166.68	466.11	0.00	0.00	0.00
3,400.00	9.36	339.05	3,361.56	450.48	-172.50	482.37	0.00	0.00	0.00
3,500.00	9.36	339.05	3,460.23	465.66	-178.31	498.63	0.00	0.00	0.00
3,600.00	9.36	339.05	3,558.90	480.85	-184.13	514.89	0.00	0.00	0.00
3,700.00	9.36	339.05	3,657.57	496.03	-189.94	531.15	0.00	0.00	0.00
3,800.00	9.36	339.05	3,756.24	511.22	-195.76	547.41	0.00	0.00	0.00
3,900.00	9.36	339.05	3,854.91	526.40	-201.57	563.67	0.00	0.00	0.00
4,000.00	9.36	339.05	3,953.58	541.59	-207.39	579.94	0.00	0.00	0.00
4,100.00	9.36	339.05	4,052.25	556.77	-213.20	596.20	0.00	0.00	0.00
4,200.00	9.36	339.05	4,150.92	571.96	-219.02	612.46	0.00	0.00	0.00
4,300.00	9.36	339.05	4,249.59	587.14	-224.83	628.72	0.00	0.00	0.00
4,400.00	9.36	339.05	4,348.25	602.33	-230.65	644.98	0.00	0.00	0.00
4,500.00	9.36	339.05	4,446.92	617.51	-236.46	661.24	0.00	0.00	0.00
4,600.00	9.36	339.05	4,545.59	632.70	-242.27	677.50	0.00	0.00	0.00
4,700.00	9.36	339.05	4,644.26	647.88	-248.09	693.76	0.00	0.00	0.00
4,800.00	9.36	339.05	4,742.93	663.07	-253.90	710.02	0.00	0.00	0.00
4,900.00	9.36	339.05	4,841.60	678.25	-259.72	726.28	0.00	0.00	0.00
5,000.00	9.36	339.05	4,940.27	693.44	-265.53	742.54	0.00	0.00	0.00



Database:	Rockies Compass Server	Local Co-ordinate Reference:	Well CC 697-05-32B - Slot C
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 697-05-32B	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)
5,100.00	9.36	339.05	5,038.94	708.62	-271.35	758.80	0.00	0.00	0.00
5,200.00	9.36	339.05	5,137.61	723.81	-277.16	775.06	0.00	0.00	0.00
5,300.00	9.36	339.05	5,236.28	738.99	-282.98	791.32	0.00	0.00	0.00
5,400.00	9.36	339.05	5,334.95	754.18	-288.79	807.58	0.00	0.00	0.00
5,500.00	9.36	339.05	5,433.62	769.36	-294.61	823.84	0.00	0.00	0.00
5,600.00	9.36	339.05	5,532.28	784.55	-300.42	840.10	0.00	0.00	0.00
5,700.00	9.36	339.05	5,630.95	799.73	-306.24	856.36	0.00	0.00	0.00
5,737.73	9.36	339.05	5,668.18	805.46	-308.43	862.49	0.00	0.00	0.00
Start Drop -2.00									
5,800.00	8.11	339.05	5,729.73	814.29	-311.81	871.95	2.00	-2.00	0.00
5,900.00	6.11	339.05	5,828.95	825.86	-316.24	884.33	2.00	-2.00	0.00
6,000.00	4.11	339.05	5,928.55	834.18	-319.43	893.24	2.00	-2.00	0.00
6,100.00	2.11	339.05	6,028.40	839.25	-321.37	898.67	2.00	-2.00	0.00
6,200.00	0.11	339.05	6,128.37	841.06	-322.06	900.61	2.00	-2.00	0.00
6,205.63	0.00	0.00	6,134.00	841.07	-322.06	900.62	2.00	-2.00	372.41
Start 0.00° at 6205.63' MD - Mesaverde									
6,300.00	0.00	0.00	6,228.37	841.07	-322.06	900.62	0.00	0.00	0.00
6,400.00	0.00	0.00	6,328.37	841.07	-322.06	900.62	0.00	0.00	0.00
6,430.63	0.00	0.00	6,359.00	841.07	-322.06	900.62	0.00	0.00	0.00
Base Ohio Creek									
6,500.00	0.00	0.00	6,428.37	841.07	-322.06	900.62	0.00	0.00	0.00
6,600.00	0.00	0.00	6,528.37	841.07	-322.06	900.62	0.00	0.00	0.00
6,700.00	0.00	0.00	6,628.37	841.07	-322.06	900.62	0.00	0.00	0.00
6,800.00	0.00	0.00	6,728.37	841.07	-322.06	900.62	0.00	0.00	0.00
6,900.00	0.00	0.00	6,828.37	841.07	-322.06	900.62	0.00	0.00	0.00
7,000.00	0.00	0.00	6,928.37	841.07	-322.06	900.62	0.00	0.00	0.00
7,025.63	0.00	0.00	6,954.00	841.07	-322.06	900.62	0.00	0.00	0.00
TOG = 638827.73, 1229223.57									
7,100.00	0.00	0.00	7,028.37	841.07	-322.06	900.62	0.00	0.00	0.00
7,200.00	0.00	0.00	7,128.37	841.07	-322.06	900.62	0.00	0.00	0.00
7,300.00	0.00	0.00	7,228.37	841.07	-322.06	900.62	0.00	0.00	0.00
7,400.00	0.00	0.00	7,328.37	841.07	-322.06	900.62	0.00	0.00	0.00
7,500.00	0.00	0.00	7,428.37	841.07	-322.06	900.62	0.00	0.00	0.00
7,600.00	0.00	0.00	7,528.37	841.07	-322.06	900.62	0.00	0.00	0.00
7,700.00	0.00	0.00	7,628.37	841.07	-322.06	900.62	0.00	0.00	0.00
7,800.00	0.00	0.00	7,728.37	841.07	-322.06	900.62	0.00	0.00	0.00
7,900.00	0.00	0.00	7,828.37	841.07	-322.06	900.62	0.00	0.00	0.00
8,000.00	0.00	0.00	7,928.37	841.07	-322.06	900.62	0.00	0.00	0.00
8,100.00	0.00	0.00	8,028.37	841.07	-322.06	900.62	0.00	0.00	0.00
8,200.00	0.00	0.00	8,128.37	841.07	-322.06	900.62	0.00	0.00	0.00
8,300.00	0.00	0.00	8,228.37	841.07	-322.06	900.62	0.00	0.00	0.00
8,376.63	0.00	0.00	8,305.00	841.07	-322.06	900.62	0.00	0.00	0.00
Target = 638827.73, 1229223.57									
8,400.00	0.00	0.00	8,328.37	841.07	-322.06	900.62	0.00	0.00	0.00
8,500.00	0.00	0.00	8,428.37	841.07	-322.06	900.62	0.00	0.00	0.00
8,600.00	0.00	0.00	8,528.37	841.07	-322.06	900.62	0.00	0.00	0.00
8,700.00	0.00	0.00	8,628.37	841.07	-322.06	900.62	0.00	0.00	0.00
8,800.00	0.00	0.00	8,728.37	841.07	-322.06	900.62	0.00	0.00	0.00
8,900.00	0.00	0.00	8,828.37	841.07	-322.06	900.62	0.00	0.00	0.00
9,000.00	0.00	0.00	8,928.37	841.07	-322.06	900.62	0.00	0.00	0.00
9,025.63	0.00	0.00	8,954.00	841.07	-322.06	900.62	0.00	0.00	0.00
Rollins									
9,100.00	0.00	0.00	9,028.37	841.07	-322.06	900.62	0.00	0.00	0.00



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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 697-05-32B	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)
9,200.00	0.00	0.00	9,128.37	841.07	-322.06	900.62	0.00	0.00	0.00
9,300.00	0.00	0.00	9,228.37	841.07	-322.06	900.62	0.00	0.00	0.00
9,400.00	0.00	0.00	9,328.37	841.07	-322.06	900.62	0.00	0.00	0.00
9,425.63	0.00	0.00	9,354.00	841.07	-322.06	900.62	0.00	0.00	0.00
PBHL = 638827.73, 1229223.57									

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 697-05-32B Target - plan hits target center - Circle (radius 50.00)	0.00	0.00	8,305.00	841.07	-322.06	638,827.73	1,229,223.57	39° 33' 20.020 N	108° 14' 2.267 W

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
6,205.63	6,134.00	Mesaverde		0.00	
6,430.63	6,359.00	Base Ohio Creek		0.00	
9,025.63	8,954.00	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
667.90	665.82	35.60	-13.63	Start 9.36° at 667.90' MD
5,737.73	5,668.18	805.46	-308.43	Start Drop -2.00
6,205.63	6,134.00	841.07	-322.06	Start 0.00° at 6205.63' MD
7,025.63	6,954.00	841.07	-322.06	TOG = 638827.73, 1229223.57
8,376.63	8,305.00	841.07	-322.06	Target = 638827.73, 1229223.57
9,425.63	9,354.00	841.07	-322.06	PBHL = 638827.73, 1229223.57