



Scientific Drilling
Rocky Mountain Operations

Company: OXY USA RMAT
Project: Garfield County, CO NAD27
Site: Cascade Creek 697-15B Pad



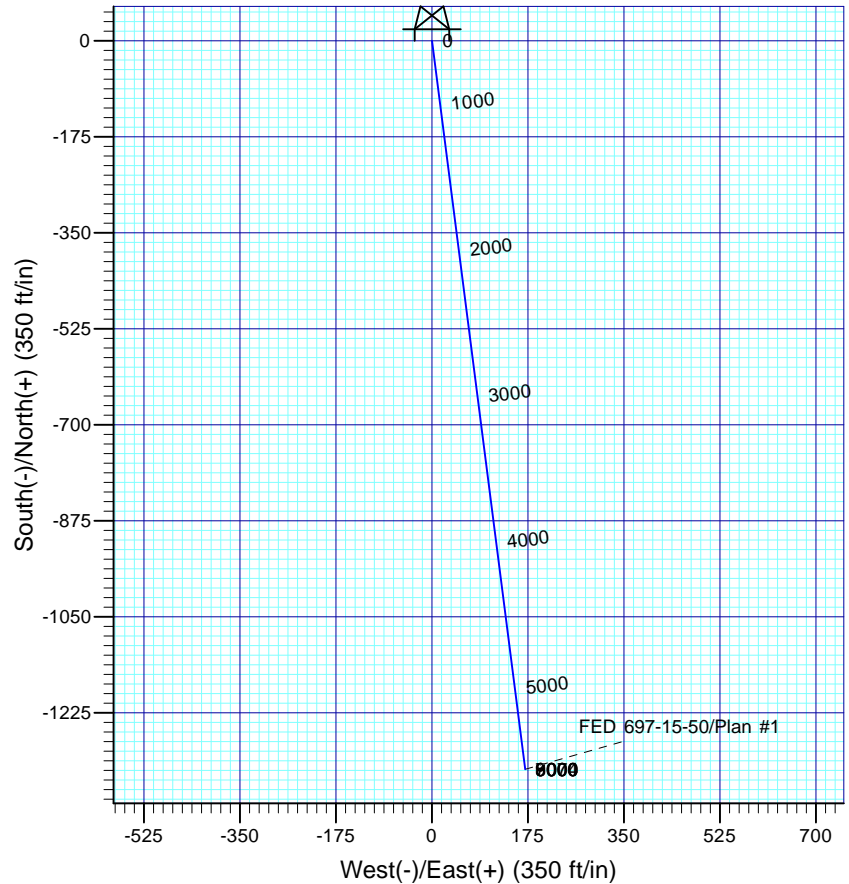
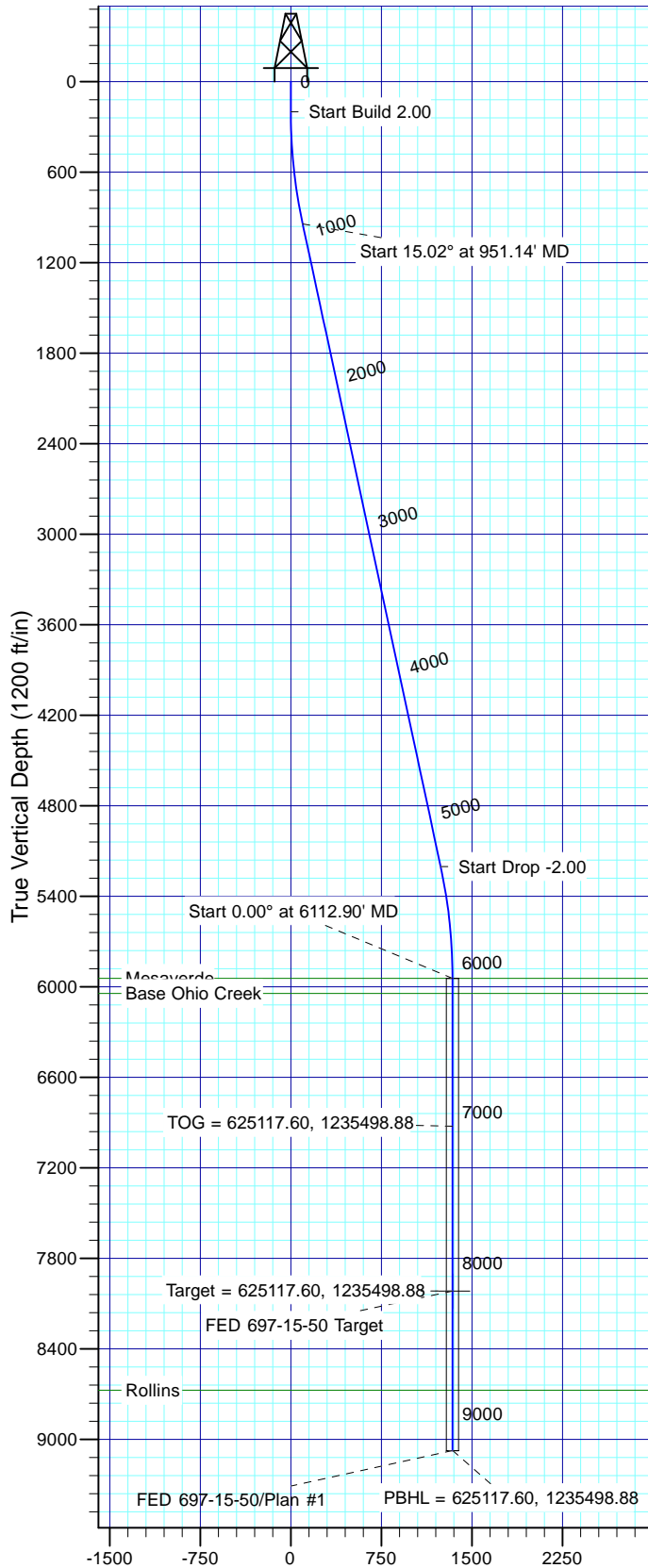
Well Details: FED 697-15-50

TVD Reference: GL 8439' & RKB 30' @ 8469.00ft (H&P Rig) Ground Level: 8439.00
+N/-S 0.00 +E/-W 0.00 Northing 626450.32 Easting 1235368.66 Latitude 39° 31' 19.560 N Longitude 108° 12' 39.130 W Slot R



Azimuths to True North
Magnetic North: 10.44°

Magnetic Field
Strength: 52208.8snT
Dip Angle: 65.72°
Date: 7/11/2011
Model: IGRF2010



FORMATION TOP DETAILS

TVDPath	MDPath	Formation
5944.00	6111.90	Mesaverde
6044.00	6211.90	Base Ohio Creek
8674.00	8841.90	Rollins

Plan: Plan #1

11:42, July 15 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	VSec	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	951.14	15.02	172.71	942.57	-97.12	12.42	2.00	172.71	97.91	
4	5361.75	15.02	172.71	5202.43	-1231.13	157.50	0.00	0.00	0.00	
5	6112.90	0.00	0.00	5945.00	-1328.25	169.92	2.00	180.00	1339.07	
6	8184.90	0.00	0.00	8017.00	-1328.25	169.92	0.00	0.00	0.00	FED 697-15-50 Target
7	9241.90	0.00	0.00	9074.00	-1328.25	169.92	0.00	0.00	0.00	

Vertical Section at 172.71° (1500 ft/in)

OXY USA RMAT

**Garfield County, CO NAD27
Cascade Creek 697-15B Pad
FED 697-15-50 - Slot R**

OH

Plan: Plan #1

Standard Planning Report

15 July, 2011





Database:	Rockies Compass Server	Local Co-ordinate Reference:	Well FED 697-15-50 - Slot R
Company:	OXY USA RMAT	TVD Reference:	GL 8439' & RKB 30' @ 8469.00ft (H&P Rig)
Project:	Garfield County, CO NAD27	MD Reference:	GL 8439' & RKB 30' @ 8469.00ft (H&P Rig)
Site:	Cascade Creek 697-15B Pad	North Reference:	True
Well:	FED 697-15-50	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 697-15B Pad			
Site Position:		Northing:	626,511.21 usft	Latitude:	39° 31' 20.159 N
From:	Lat/Long	Easting:	1,235,360.14 usft	Longitude:	108° 12' 39.262 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.71 °

Well		FED 697-15-50 - Slot R				
Well Position	+N/-S	-60.60 ft	Northing:	626,450.32 usft	Latitude:	39° 31' 19.560 N
	+E/-W	10.33 ft	Easting:	1,235,368.66 usft	Longitude:	108° 12' 39.130 W
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	8,439.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/11/2011	10.44	65.72	52,209

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	172.71

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	
951.14	15.02	172.71	942.57	-97.12	12.42	2.00	2.00	0.00	172.71	
5,361.75	15.02	172.71	5,202.43	-1,231.13	157.50	0.00	0.00	0.00	0.00	
6,112.90	0.00	0.00	5,945.00	-1,328.25	169.92	2.00	-2.00	0.00	180.00	
8,184.90	0.00	0.00	8,017.00	-1,328.25	169.92	0.00	0.00	0.00	0.00	FED 697-15-50 Targe
9,241.90	0.00	0.00	9,074.00	-1,328.25	169.92	0.00	0.00	0.00	0.00	



Database:	Rockies Compass Server	Local Co-ordinate Reference:	Well FED 697-15-50 - Slot R
Company:	OXY USA RMAT	TVD Reference:	GL 8439' & RKB 30' @ 8469.00ft (H&P Rig)
Project:	Garfield County, CO NAD27	MD Reference:	GL 8439' & RKB 30' @ 8469.00ft (H&P Rig)
Site:	Cascade Creek 697-15B Pad	North Reference:	True
Well:	FED 697-15-50	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	172.71	299.98	-1.73	0.22	1.75	2.00	2.00	0.00
400.00	4.00	172.71	399.84	-6.92	0.89	6.98	2.00	2.00	0.00
500.00	6.00	172.71	499.45	-15.57	1.99	15.69	2.00	2.00	0.00
600.00	8.00	172.71	598.70	-27.65	3.54	27.88	2.00	2.00	0.00
700.00	10.00	172.71	697.47	-43.17	5.52	43.52	2.00	2.00	0.00
800.00	12.00	172.71	795.62	-62.10	7.94	62.60	2.00	2.00	0.00
900.00	14.00	172.71	893.06	-84.41	10.80	85.10	2.00	2.00	0.00
951.14	15.02	172.71	942.57	-97.12	12.42	97.91	2.00	2.00	0.00
Start 15.02° at 951.14' MD									
1,000.00	15.02	172.71	989.75	-109.68	14.03	110.58	0.00	0.00	0.00
1,100.00	15.02	172.71	1,086.34	-135.39	17.32	136.50	0.00	0.00	0.00
1,200.00	15.02	172.71	1,182.92	-161.10	20.61	162.42	0.00	0.00	0.00
1,300.00	15.02	172.71	1,279.50	-186.81	23.90	188.34	0.00	0.00	0.00
1,400.00	15.02	172.71	1,376.08	-212.53	27.19	214.26	0.00	0.00	0.00
1,500.00	15.02	172.71	1,472.66	-238.24	30.48	240.18	0.00	0.00	0.00
1,600.00	15.02	172.71	1,569.25	-263.95	33.77	266.10	0.00	0.00	0.00
1,700.00	15.02	172.71	1,665.83	-289.66	37.06	292.02	0.00	0.00	0.00
1,800.00	15.02	172.71	1,762.41	-315.37	40.35	317.94	0.00	0.00	0.00
1,900.00	15.02	172.71	1,858.99	-341.08	43.63	343.86	0.00	0.00	0.00
2,000.00	15.02	172.71	1,955.58	-366.79	46.92	369.78	0.00	0.00	0.00
2,100.00	15.02	172.71	2,052.16	-392.50	50.21	395.70	0.00	0.00	0.00
2,200.00	15.02	172.71	2,148.74	-418.21	53.50	421.62	0.00	0.00	0.00
2,300.00	15.02	172.71	2,245.32	-443.92	56.79	447.54	0.00	0.00	0.00
2,400.00	15.02	172.71	2,341.90	-469.63	60.08	473.46	0.00	0.00	0.00
2,500.00	15.02	172.71	2,438.49	-495.34	63.37	499.38	0.00	0.00	0.00
2,600.00	15.02	172.71	2,535.07	-521.06	66.66	525.30	0.00	0.00	0.00
2,700.00	15.02	172.71	2,631.65	-546.77	69.95	551.22	0.00	0.00	0.00
2,800.00	15.02	172.71	2,728.23	-572.48	73.24	577.14	0.00	0.00	0.00
2,900.00	15.02	172.71	2,824.82	-598.19	76.53	603.06	0.00	0.00	0.00
3,000.00	15.02	172.71	2,921.40	-623.90	79.82	628.98	0.00	0.00	0.00
3,100.00	15.02	172.71	3,017.98	-649.61	83.11	654.90	0.00	0.00	0.00
3,200.00	15.02	172.71	3,114.56	-675.32	86.39	680.83	0.00	0.00	0.00
3,300.00	15.02	172.71	3,211.14	-701.03	89.68	706.75	0.00	0.00	0.00
3,400.00	15.02	172.71	3,307.73	-726.74	92.97	732.67	0.00	0.00	0.00
3,500.00	15.02	172.71	3,404.31	-752.45	96.26	758.59	0.00	0.00	0.00
3,600.00	15.02	172.71	3,500.89	-778.16	99.55	784.51	0.00	0.00	0.00
3,700.00	15.02	172.71	3,597.47	-803.88	102.84	810.43	0.00	0.00	0.00
3,800.00	15.02	172.71	3,694.06	-829.59	106.13	836.35	0.00	0.00	0.00
3,900.00	15.02	172.71	3,790.64	-855.30	109.42	862.27	0.00	0.00	0.00
4,000.00	15.02	172.71	3,887.22	-881.01	112.71	888.19	0.00	0.00	0.00
4,100.00	15.02	172.71	3,983.80	-906.72	116.00	914.11	0.00	0.00	0.00
4,200.00	15.02	172.71	4,080.39	-932.43	119.29	940.03	0.00	0.00	0.00
4,300.00	15.02	172.71	4,176.97	-958.14	122.58	965.95	0.00	0.00	0.00
4,400.00	15.02	172.71	4,273.55	-983.85	125.87	991.87	0.00	0.00	0.00
4,500.00	15.02	172.71	4,370.13	-1,009.56	129.15	1,017.79	0.00	0.00	0.00
4,600.00	15.02	172.71	4,466.71	-1,035.27	132.44	1,043.71	0.00	0.00	0.00
4,700.00	15.02	172.71	4,563.30	-1,060.98	135.73	1,069.63	0.00	0.00	0.00
4,800.00	15.02	172.71	4,659.88	-1,086.70	139.02	1,095.55	0.00	0.00	0.00
4,900.00	15.02	172.71	4,756.46	-1,112.41	142.31	1,121.47	0.00	0.00	0.00
5,000.00	15.02	172.71	4,853.04	-1,138.12	145.60	1,147.39	0.00	0.00	0.00



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Project:	Garfield County, CO NAD27	MD Reference:	GL 8439' & RKB 30' @ 8469.00ft (H&P Rig)
Site:	Cascade Creek 697-15B Pad	North Reference:	True
Well:	FED 697-15-50	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	15.02	172.71	4,949.63	-1,163.83	148.89	1,173.31	0.00	0.00	0.00
5,200.00	15.02	172.71	5,046.21	-1,189.54	152.18	1,199.23	0.00	0.00	0.00
5,300.00	15.02	172.71	5,142.79	-1,215.25	155.47	1,225.15	0.00	0.00	0.00
5,361.75	15.02	172.71	5,202.43	-1,231.13	157.50	1,241.16	0.00	0.00	0.00
Start Drop -2.00									
5,400.00	14.26	172.71	5,239.44	-1,240.72	158.73	1,250.83	2.00	-2.00	0.00
5,500.00	12.26	172.71	5,336.77	-1,263.46	161.64	1,273.76	2.00	-2.00	0.00
5,600.00	10.26	172.71	5,434.84	-1,282.83	164.11	1,293.28	2.00	-2.00	0.00
5,700.00	8.26	172.71	5,533.53	-1,298.78	166.16	1,309.37	2.00	-2.00	0.00
5,800.00	6.26	172.71	5,632.72	-1,311.32	167.76	1,322.00	2.00	-2.00	0.00
5,900.00	4.26	172.71	5,732.30	-1,320.40	168.92	1,331.17	2.00	-2.00	0.00
6,000.00	2.26	172.71	5,832.13	-1,326.04	169.64	1,336.85	2.00	-2.00	0.00
6,100.00	0.26	172.71	5,932.10	-1,328.22	169.92	1,339.04	2.00	-2.00	0.00
6,111.90	0.02	172.71	5,944.00	-1,328.25	169.92	1,339.07	2.00	-2.00	0.00
Mesaverde									
6,112.90	0.00	0.00	5,945.00	-1,328.25	169.92	1,339.07	2.00	-2.00	0.00
Start 0.00° at 6112.90' MD									
6,200.00	0.00	0.00	6,032.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
6,211.90	0.00	0.00	6,044.00	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
Base Ohio Creek									
6,300.00	0.00	0.00	6,132.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
6,400.00	0.00	0.00	6,232.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
6,500.00	0.00	0.00	6,332.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
6,600.00	0.00	0.00	6,432.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
6,700.00	0.00	0.00	6,532.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
6,800.00	0.00	0.00	6,632.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
6,900.00	0.00	0.00	6,732.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
7,000.00	0.00	0.00	6,832.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
7,091.90	0.00	0.00	6,924.00	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
TOG = 625117.60, 1235498.88									
7,100.00	0.00	0.00	6,932.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
7,200.00	0.00	0.00	7,032.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
7,300.00	0.00	0.00	7,132.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
7,400.00	0.00	0.00	7,232.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
7,500.00	0.00	0.00	7,332.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
7,600.00	0.00	0.00	7,432.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
7,700.00	0.00	0.00	7,532.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
7,800.00	0.00	0.00	7,632.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
7,900.00	0.00	0.00	7,732.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
8,000.00	0.00	0.00	7,832.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
8,100.00	0.00	0.00	7,932.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
8,184.90	0.00	0.00	8,017.00	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
Target = 625117.60, 1235498.88									
8,200.00	0.00	0.00	8,032.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
8,300.00	0.00	0.00	8,132.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
8,400.00	0.00	0.00	8,232.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
8,500.00	0.00	0.00	8,332.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
8,600.00	0.00	0.00	8,432.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
8,700.00	0.00	0.00	8,532.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
8,800.00	0.00	0.00	8,632.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
8,841.90	0.00	0.00	8,674.00	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
Rollins									
8,900.00	0.00	0.00	8,732.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00



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Project:	Garfield County, CO NAD27	MD Reference:	GL 8439' & RKB 30' @ 8469.00ft (H&P Rig)
Site:	Cascade Creek 697-15B Pad	North Reference:	True
Well:	FED 697-15-50	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)
9,000.00	0.00	0.00	8,832.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
9,100.00	0.00	0.00	8,932.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
9,200.00	0.00	0.00	9,032.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
9,241.00	0.00	0.00	9,073.10	-1,328.25	169.92	1,339.07	0.00	0.00	0.00
PBHL = 625117.60, 1235498.88									
9,241.90	0.00	0.00	9,074.00	-1,328.25	169.92	1,339.07	0.00	0.00	0.00

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									
FED 697-15-50 Target	0.00	0.00	8,017.00	-1,328.25	169.92	625,117.60	1,235,498.88	39° 31' 6.432 N	108° 12' 36.962 W
- plan hits target center									
- Circle (radius 50.00)									

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
6,111.90	5,944.00	Mesaverde		0.00		
6,211.90	6,044.00	Base Ohio Creek		0.00		
8,841.90	8,674.00	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
951.14	942.57	-97.12	12.42	Start 15.02° at 951.14' MD
5,361.75	5,202.43	-1,231.13	157.50	Start Drop -2.00
6,112.90	5,945.00	-1,328.25	169.92	Start 0.00° at 6112.90' MD
7,091.90	6,924.00	-1,328.25	169.92	TOG = 625117.60, 1235498.88
8,184.90	8,017.00	-1,328.25	169.92	Target = 625117.60, 1235498.88
9,241.00	9,073.10	-1,328.25	169.92	PBHL = 625117.60, 1235498.88