



Scientific Drilling
Rocky Mountain Operations

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



Well Details: FED 697-15-34

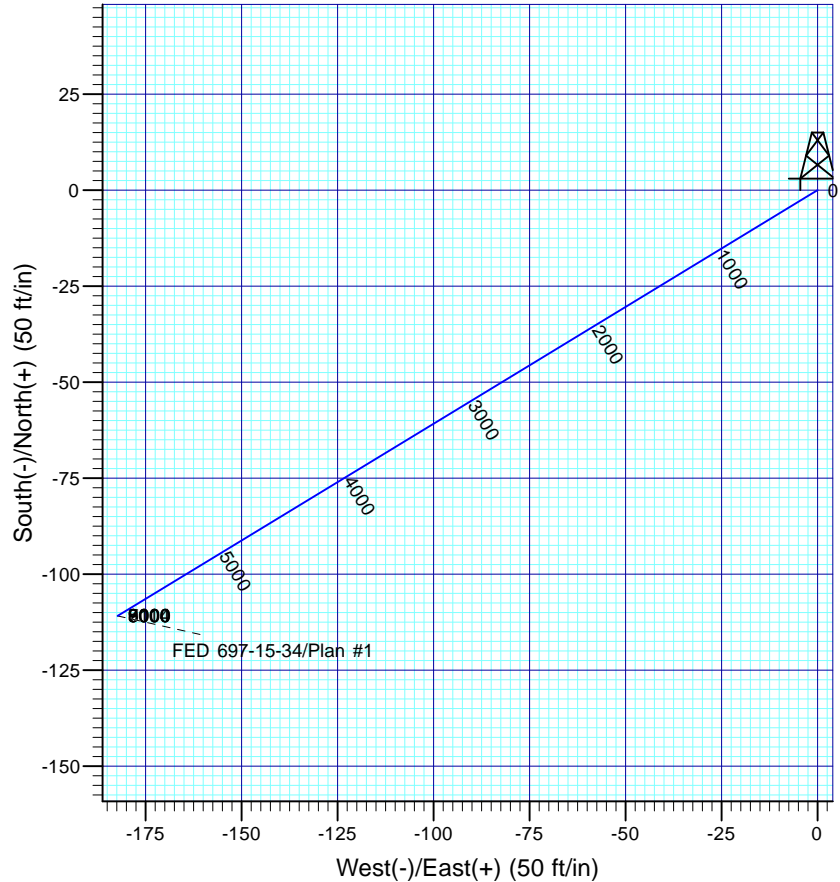
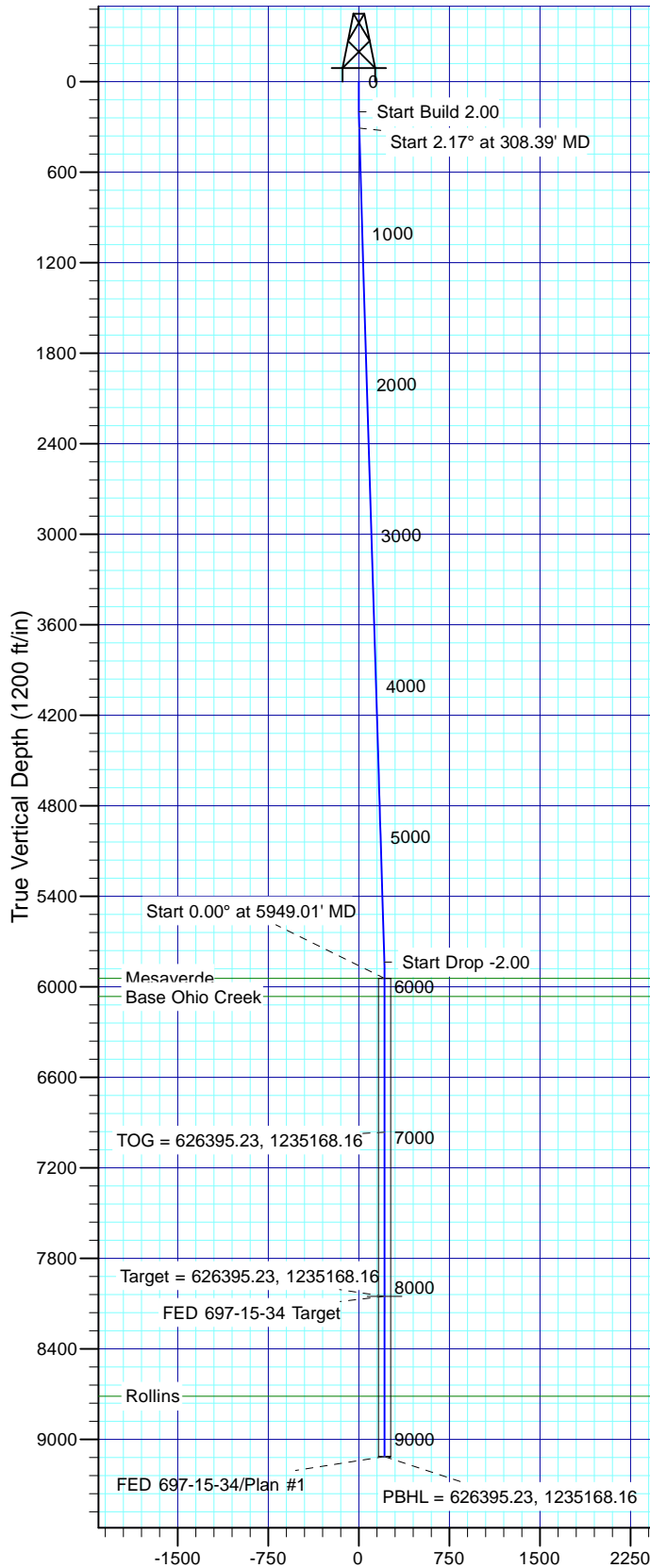
TVD Reference: GL 8426' & RKB 30' @ 8469.00ft (H&P) Ground Level: 8439.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot D
0.00	0.00	626500.64	1235353.67	39° 31' 20.053 N	108° 12' 39.341 W	



Azimuths to True North
Magnetic North: 10.44°

Magnetic Field
Strength: 52208.9nT
Dip Angle: 65.72°
Date: 7/11/2011
Model: IGRF2010



FORMATION TOP DETAILS

TVDPath	MDPath	Formation
5944.00	5948.01	Mesaverde
6064.00	6068.01	Base Ohio Creek
8714.00	8718.01	Rollins

Plan: Plan #1

10:14, 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	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	308.39	2.17	238.68	308.37	-1.07	-1.75	2.00	238.68	2.05	
4	5840.62	2.17	238.68	5836.63	-109.84	-180.53	0.00	0.00	211.32	
5	5949.01	0.00	0.00	5945.00	-110.90	-182.28	2.00	180.00	213.37	
6	8056.01	0.00	0.00	8052.00	-110.90	-182.28	0.00	0.00	213.37	FED 697-15-34 Target
7	9118.01	0.00	0.00	9114.00	-110.90	-182.28	0.00	0.00	213.37	

OXY USA RMAT

**Garfield County, CO NAD27
Cascade Creek 697-15B Pad
FED 697-15-34 - Slot D**

OH

Plan: Plan #1

Standard Planning Report

15 July, 2011





Database:	Rockies Compass Server	Local Co-ordinate Reference:	Well FED 697-15-34 - Slot D
Company:	OXY USA RMAT	TVD Reference:	GL 8426' & RKB 30' @ 8469.00ft (H&P)
Project:	Garfield County, CO NAD27	MD Reference:	GL 8426' & RKB 30' @ 8469.00ft (H&P)
Site:	Cascade Creek 697-15B Pad	North Reference:	True
Well:	FED 697-15-34	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 697-15-34 - Slot D				
Well Position	+N/-S	-10.75 ft	Northing:	626,500.64 usft	Latitude:	39° 31' 20.053 N
	+E/-W	-6.15 ft	Easting:	1,235,353.67 usft	Longitude:	108° 12' 39.341 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)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.00	0.00	0.00	238.68

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	
308.39	2.17	238.68	308.37	-1.07	-1.75	2.00	2.00	0.00	238.68	
5,840.62	2.17	238.68	5,836.63	-109.84	-180.53	0.00	0.00	0.00	0.00	
5,949.01	0.00	0.00	5,945.00	-110.90	-182.28	2.00	-2.00	0.00	180.00	
8,056.01	0.00	0.00	8,052.00	-110.90	-182.28	0.00	0.00	0.00	0.00	FED 697-15-34 Targe
9,118.01	0.00	0.00	9,114.00	-110.90	-182.28	0.00	0.00	0.00	0.00	



Database:	Rockies Compass Server	Local Co-ordinate Reference:	Well FED 697-15-34 - Slot D
Company:	OXY USA RMAT	TVD Reference:	GL 8426' & RKB 30' @ 8469.00ft (H&P)
Project:	Garfield County, CO NAD27	MD Reference:	GL 8426' & RKB 30' @ 8469.00ft (H&P)
Site:	Cascade Creek 697-15B Pad	North Reference:	True
Well:	FED 697-15-34	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	238.68	299.98	-0.91	-1.49	1.75	2.00	2.00	0.00
308.39	2.17	238.68	308.37	-1.07	-1.75	2.05	2.00	2.00	0.00
Start 2.17° at 308.39' MD									
400.00	2.17	238.68	399.91	-2.87	-4.71	5.52	0.00	0.00	0.00
500.00	2.17	238.68	499.84	-4.83	-7.94	9.30	0.00	0.00	0.00
600.00	2.17	238.68	599.77	-6.80	-11.18	13.08	0.00	0.00	0.00
700.00	2.17	238.68	699.69	-8.77	-14.41	16.86	0.00	0.00	0.00
800.00	2.17	238.68	799.62	-10.73	-17.64	20.65	0.00	0.00	0.00
900.00	2.17	238.68	899.55	-12.70	-20.87	24.43	0.00	0.00	0.00
1,000.00	2.17	238.68	999.48	-14.66	-24.10	28.21	0.00	0.00	0.00
1,100.00	2.17	238.68	1,099.41	-16.63	-27.33	31.99	0.00	0.00	0.00
1,200.00	2.17	238.68	1,199.34	-18.60	-30.56	35.78	0.00	0.00	0.00
1,300.00	2.17	238.68	1,299.26	-20.56	-33.80	39.56	0.00	0.00	0.00
1,400.00	2.17	238.68	1,399.19	-22.53	-37.03	43.34	0.00	0.00	0.00
1,500.00	2.17	238.68	1,499.12	-24.49	-40.26	47.13	0.00	0.00	0.00
1,600.00	2.17	238.68	1,599.05	-26.46	-43.49	50.91	0.00	0.00	0.00
1,700.00	2.17	238.68	1,698.98	-28.43	-46.72	54.69	0.00	0.00	0.00
1,800.00	2.17	238.68	1,798.91	-30.39	-49.95	58.47	0.00	0.00	0.00
1,900.00	2.17	238.68	1,898.84	-32.36	-53.19	62.26	0.00	0.00	0.00
2,000.00	2.17	238.68	1,998.76	-34.32	-56.42	66.04	0.00	0.00	0.00
2,100.00	2.17	238.68	2,098.69	-36.29	-59.65	69.82	0.00	0.00	0.00
2,200.00	2.17	238.68	2,198.62	-38.26	-62.88	73.60	0.00	0.00	0.00
2,300.00	2.17	238.68	2,298.55	-40.22	-66.11	77.39	0.00	0.00	0.00
2,400.00	2.17	238.68	2,398.48	-42.19	-69.34	81.17	0.00	0.00	0.00
2,500.00	2.17	238.68	2,498.41	-44.16	-72.58	84.95	0.00	0.00	0.00
2,600.00	2.17	238.68	2,598.33	-46.12	-75.81	88.73	0.00	0.00	0.00
2,700.00	2.17	238.68	2,698.26	-48.09	-79.04	92.52	0.00	0.00	0.00
2,800.00	2.17	238.68	2,798.19	-50.05	-82.27	96.30	0.00	0.00	0.00
2,900.00	2.17	238.68	2,898.12	-52.02	-85.50	100.08	0.00	0.00	0.00
3,000.00	2.17	238.68	2,998.05	-53.99	-88.73	103.87	0.00	0.00	0.00
3,100.00	2.17	238.68	3,097.98	-55.95	-91.96	107.65	0.00	0.00	0.00
3,200.00	2.17	238.68	3,197.90	-57.92	-95.20	111.43	0.00	0.00	0.00
3,300.00	2.17	238.68	3,297.83	-59.88	-98.43	115.21	0.00	0.00	0.00
3,400.00	2.17	238.68	3,397.76	-61.85	-101.66	119.00	0.00	0.00	0.00
3,500.00	2.17	238.68	3,497.69	-63.82	-104.89	122.78	0.00	0.00	0.00
3,600.00	2.17	238.68	3,597.62	-65.78	-108.12	126.56	0.00	0.00	0.00
3,700.00	2.17	238.68	3,697.55	-67.75	-111.35	130.34	0.00	0.00	0.00
3,800.00	2.17	238.68	3,797.48	-69.72	-114.59	134.13	0.00	0.00	0.00
3,900.00	2.17	238.68	3,897.40	-71.68	-117.82	137.91	0.00	0.00	0.00
4,000.00	2.17	238.68	3,997.33	-73.65	-121.05	141.69	0.00	0.00	0.00
4,100.00	2.17	238.68	4,097.26	-75.61	-124.28	145.48	0.00	0.00	0.00
4,200.00	2.17	238.68	4,197.19	-77.58	-127.51	149.26	0.00	0.00	0.00
4,300.00	2.17	238.68	4,297.12	-79.55	-130.74	153.04	0.00	0.00	0.00
4,400.00	2.17	238.68	4,397.05	-81.51	-133.98	156.82	0.00	0.00	0.00
4,500.00	2.17	238.68	4,496.97	-83.48	-137.21	160.61	0.00	0.00	0.00
4,600.00	2.17	238.68	4,596.90	-85.44	-140.44	164.39	0.00	0.00	0.00
4,700.00	2.17	238.68	4,696.83	-87.41	-143.67	168.17	0.00	0.00	0.00
4,800.00	2.17	238.68	4,796.76	-89.38	-146.90	171.95	0.00	0.00	0.00
4,900.00	2.17	238.68	4,896.69	-91.34	-150.13	175.74	0.00	0.00	0.00
5,000.00	2.17	238.68	4,996.62	-93.31	-153.36	179.52	0.00	0.00	0.00



Database:	Rockies Compass Server	Local Co-ordinate Reference:	Well FED 697-15-34 - Slot D
Company:	OXY USA RMAT	TVD Reference:	GL 8426' & RKB 30' @ 8469.00ft (H&P)
Project:	Garfield County, CO NAD27	MD Reference:	GL 8426' & RKB 30' @ 8469.00ft (H&P)
Site:	Cascade Creek 697-15B Pad	North Reference:	True
Well:	FED 697-15-34	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	2.17	238.68	5,096.54	-95.27	-156.60	183.30	0.00	0.00	0.00
5,200.00	2.17	238.68	5,196.47	-97.24	-159.83	187.08	0.00	0.00	0.00
5,300.00	2.17	238.68	5,296.40	-99.21	-163.06	190.87	0.00	0.00	0.00
5,400.00	2.17	238.68	5,396.33	-101.17	-166.29	194.65	0.00	0.00	0.00
5,500.00	2.17	238.68	5,496.26	-103.14	-169.52	198.43	0.00	0.00	0.00
5,600.00	2.17	238.68	5,596.19	-105.11	-172.75	202.22	0.00	0.00	0.00
5,700.00	2.17	238.68	5,696.12	-107.07	-175.99	206.00	0.00	0.00	0.00
5,800.00	2.17	238.68	5,796.04	-109.04	-179.22	209.78	0.00	0.00	0.00
5,840.62	2.17	238.68	5,836.63	-109.84	-180.53	211.32	0.00	0.00	0.00
Start Drop -2.00									
5,900.00	0.98	238.68	5,895.99	-110.68	-181.92	212.95	2.00	-2.00	0.00
5,948.01	0.02	238.68	5,944.00	-110.90	-182.28	213.37	2.00	-2.00	0.00
Mesaverde									
5,949.01	0.00	0.00	5,945.00	-110.90	-182.28	213.37	2.00	-2.00	0.00
Start 0.00° at 5949.01' MD									
6,000.00	0.00	0.00	5,995.99	-110.90	-182.28	213.37	0.00	0.00	0.00
6,068.01	0.00	0.00	6,064.00	-110.90	-182.28	213.37	0.00	0.00	0.00
Base Ohio Creek									
6,100.00	0.00	0.00	6,095.99	-110.90	-182.28	213.37	0.00	0.00	0.00
6,200.00	0.00	0.00	6,195.99	-110.90	-182.28	213.37	0.00	0.00	0.00
6,300.00	0.00	0.00	6,295.99	-110.90	-182.28	213.37	0.00	0.00	0.00
6,400.00	0.00	0.00	6,395.99	-110.90	-182.28	213.37	0.00	0.00	0.00
6,500.00	0.00	0.00	6,495.99	-110.90	-182.28	213.37	0.00	0.00	0.00
6,600.00	0.00	0.00	6,595.99	-110.90	-182.28	213.37	0.00	0.00	0.00
6,700.00	0.00	0.00	6,695.99	-110.90	-182.28	213.37	0.00	0.00	0.00
6,800.00	0.00	0.00	6,795.99	-110.90	-182.28	213.37	0.00	0.00	0.00
6,900.00	0.00	0.00	6,895.99	-110.90	-182.28	213.37	0.00	0.00	0.00
6,968.01	0.00	0.00	6,964.00	-110.90	-182.28	213.37	0.00	0.00	0.00
TOG = 626395.23, 1235168.16									
7,000.00	0.00	0.00	6,995.99	-110.90	-182.28	213.37	0.00	0.00	0.00
7,100.00	0.00	0.00	7,095.99	-110.90	-182.28	213.37	0.00	0.00	0.00
7,200.00	0.00	0.00	7,195.99	-110.90	-182.28	213.37	0.00	0.00	0.00
7,300.00	0.00	0.00	7,295.99	-110.90	-182.28	213.37	0.00	0.00	0.00
7,400.00	0.00	0.00	7,395.99	-110.90	-182.28	213.37	0.00	0.00	0.00
7,500.00	0.00	0.00	7,495.99	-110.90	-182.28	213.37	0.00	0.00	0.00
7,600.00	0.00	0.00	7,595.99	-110.90	-182.28	213.37	0.00	0.00	0.00
7,700.00	0.00	0.00	7,695.99	-110.90	-182.28	213.37	0.00	0.00	0.00
7,800.00	0.00	0.00	7,795.99	-110.90	-182.28	213.37	0.00	0.00	0.00
7,900.00	0.00	0.00	7,895.99	-110.90	-182.28	213.37	0.00	0.00	0.00
8,000.00	0.00	0.00	7,995.99	-110.90	-182.28	213.37	0.00	0.00	0.00
8,056.01	0.00	0.00	8,052.00	-110.90	-182.28	213.37	0.00	0.00	0.00
Target = 626395.23, 1235168.16									
8,100.00	0.00	0.00	8,095.99	-110.90	-182.28	213.37	0.00	0.00	0.00
8,200.00	0.00	0.00	8,195.99	-110.90	-182.28	213.37	0.00	0.00	0.00
8,300.00	0.00	0.00	8,295.99	-110.90	-182.28	213.37	0.00	0.00	0.00
8,400.00	0.00	0.00	8,395.99	-110.90	-182.28	213.37	0.00	0.00	0.00
8,500.00	0.00	0.00	8,495.99	-110.90	-182.28	213.37	0.00	0.00	0.00
8,600.00	0.00	0.00	8,595.99	-110.90	-182.28	213.37	0.00	0.00	0.00
8,700.00	0.00	0.00	8,695.99	-110.90	-182.28	213.37	0.00	0.00	0.00
8,718.01	0.00	0.00	8,714.00	-110.90	-182.28	213.37	0.00	0.00	0.00
Rollins									
8,800.00	0.00	0.00	8,795.99	-110.90	-182.28	213.37	0.00	0.00	0.00
8,900.00	0.00	0.00	8,895.99	-110.90	-182.28	213.37	0.00	0.00	0.00



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Company:	OXY USA RMAT	TVD Reference:	GL 8426' & RKB 30' @ 8469.00ft (H&P)
Project:	Garfield County, CO NAD27	MD Reference:	GL 8426' & RKB 30' @ 8469.00ft (H&P)
Site:	Cascade Creek 697-15B Pad	North Reference:	True
Well:	FED 697-15-34	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	8,995.99	-110.90	-182.28	213.37	0.00	0.00	0.00
9,100.00	0.00	0.00	9,095.99	-110.90	-182.28	213.37	0.00	0.00	0.00
9,118.00	0.00	0.00	9,113.99	-110.90	-182.28	213.37	0.00	0.00	0.00
PBHL = 626395.23, 1235168.16									
9,118.01	0.00	0.00	9,114.00	-110.90	-182.28	213.37	0.00	0.00	0.00

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
FED 697-15-34 Target - plan hits target center - Circle (radius 50.00)	0.00	0.00	8,052.00	-110.90	-182.28	626,395.23	1,235,168.16	39° 31' 18.957 N	108° 12' 41.667 W

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,948.01	5,944.00	Mesaverde		0.00	
6,068.01	6,064.00	Base Ohio Creek		0.00	
8,718.01	8,714.00	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
308.39	308.37	-1.07	-1.75	Start 2.17° at 308.39' MD
5,840.62	5,836.63	-109.84	-180.53	Start Drop -2.00
5,949.01	5,945.00	-110.90	-182.28	Start 0.00° at 5949.01' MD
6,968.01	6,964.00	-110.90	-182.28	TOG = 626395.23, 1235168.16
8,056.01	8,052.00	-110.90	-182.28	Target = 626395.23, 1235168.16
9,118.00	9,113.99	-110.90	-182.28	PBHL = 626395.23, 1235168.16