

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_RIVERBEND 4-13 PAD

Riverbend 36-12

Riverbend 36-12

Plan: Riverbend 36-12 (wp01)

Standard Planning Report

11 July, 2011



Project: COLORADO NORTHERN ZONE - 83
 Site: WELD_RIVERBEND 4-13 PAD
 Well: Riverbend 36-12
 Wellbore: Riverbend 36-12
 Section:
 SHL:
 Design: Riverbend 36-12 (wp01)
 Latitude: 40.055989
 Longitude: -104.847381
 GL: 4952.00
 KB: 15' + 4952' GL @ 4967.00ft

FORMATION TOP DETAILS		
TVDPATH	MDPATH	FORMATION
4052.00	4350.15	PK Depth
4633.00	4990.33	SX Depth
7165.00	7662.28	NIO Depth
7512.00	8009.28	CD Depth
7597.00	8094.28	GH Depth
7947.00	8444.28	J Depth



Azimuths to True North
 Magnetic North: 8.87°

Magnetic Field
 Strength: 52932.6snT
 Dip Angle: 66.76°
 Date: 7/11/2011
 Model: IGRF2010

WELL DETAILS: Riverbend 36-12

+N/-S	+E/-W	Northing	Ground Level: Easting	4952.00 Latitude	Longitude	Slot
0.00	0.00	1263914.45	3182681.80	40.055989	-104.847381	

CASING DETAILS

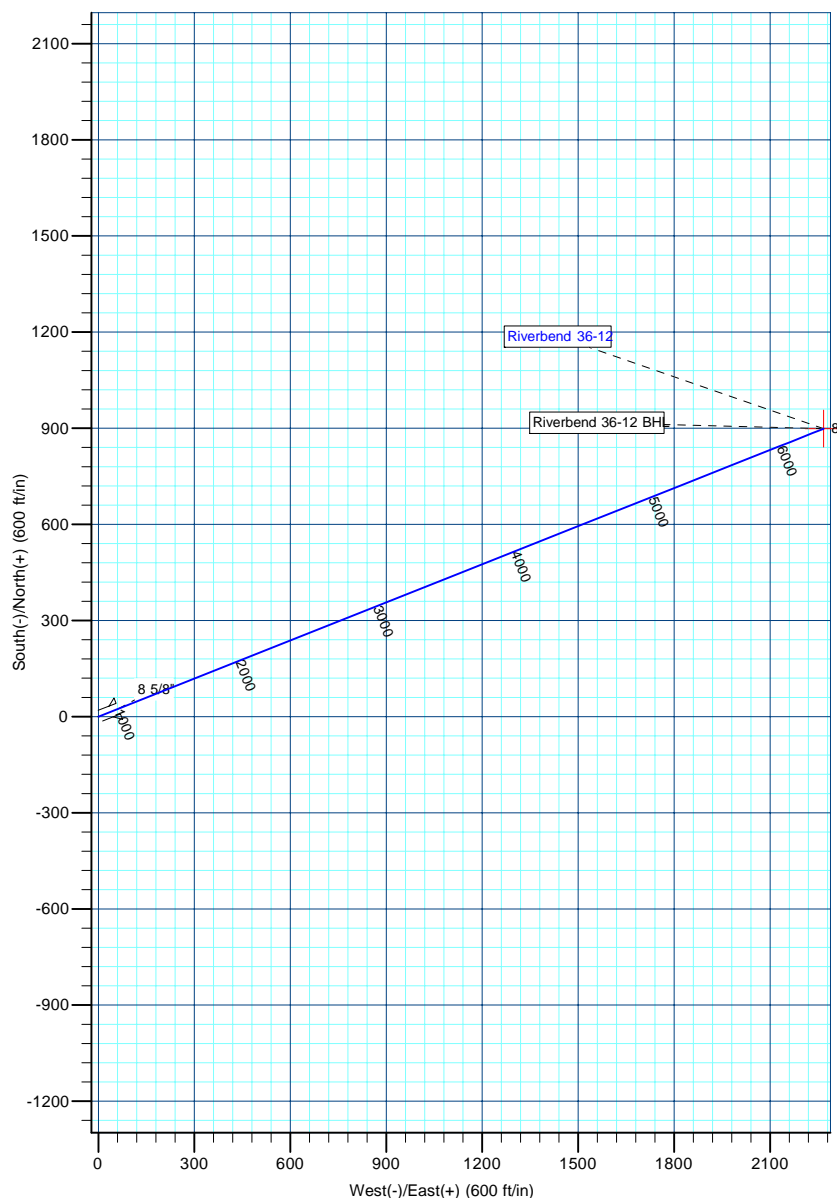
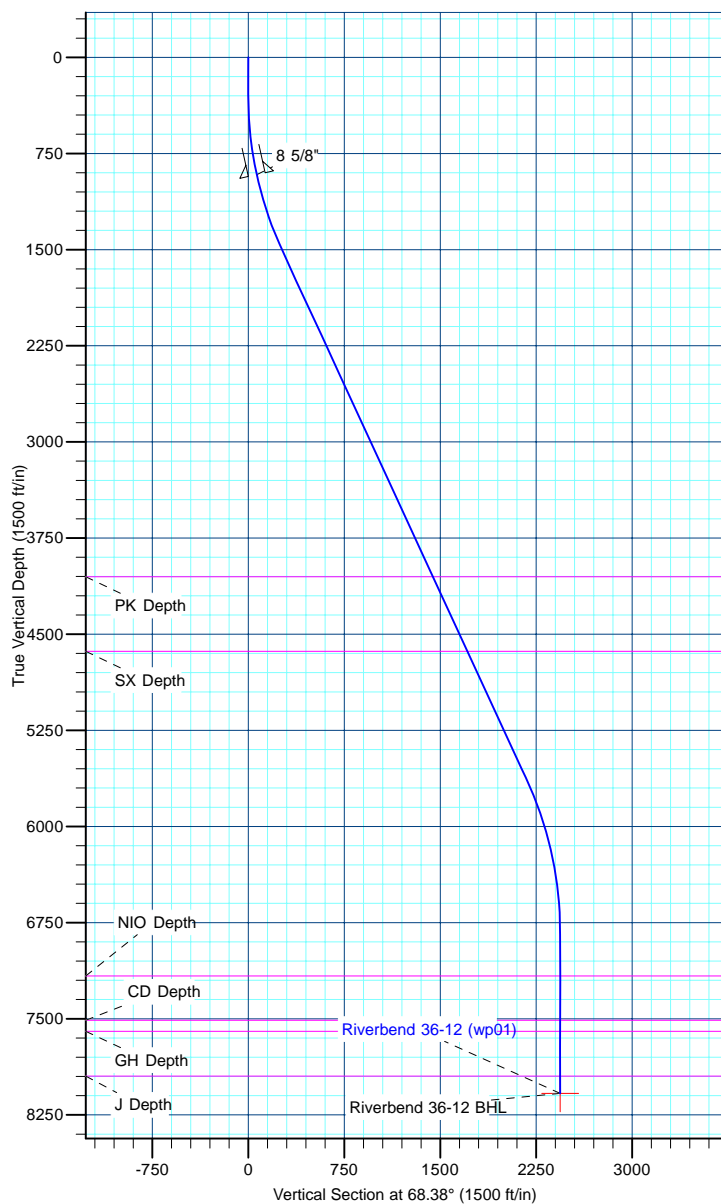
TVD	MD	Name	Size
915.00	919.82	8 5/8"	8-5/8

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape Point
Riverbend 36-12 BHL	8082.00	898.42	2267.30	1264829.53	3184942.43	40.058455	-104.839281	

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00
1541.53	24.83	68.38	1503.03	97.56	246.22	2.00	68.38	264.84
6087.75	24.83	68.38	5628.97	800.86	2021.08	0.00	0.00	2173.97
7329.28	0.00	0.00	6832.00	898.42	2267.30	2.00	180.00	2438.81
8579.28	0.00	0.00	8082.00	898.42	2267.30	0.00	0.00	2438.81



Database:	edm5000p	Local Co-ordinate Reference:	Well Riverbend 36-12
Company:	US ROCKIES REGION PLANNING	TVD Reference:	15' + 4952' GL @ 4967.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	15' + 4952' GL @ 4967.00ft
Site:	WELD_RIVERBEND 4-13 PAD	North Reference:	True
Well:	Riverbend 36-12	Survey Calculation Method:	Minimum Curvature
Wellbore:	Riverbend 36-12		
Design:	Riverbend 36-12 (wp01)		

Project	COLORADO NORTHERN ZONE - 83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site						WELD_RIVERBEND 4-13 PAD											
Site Position:			Northing:			1,263,964.36 ft			Latitude:			40.056126					
From:			Lat/Long			Easting:			3,182,681.16 ft			Longitude:			-104.847382		
Position Uncertainty:			0.00 ft			Slot Radius:			0 "			Grid Convergence:			0.42		

Well	Riverbend 36-12					
Well Position	+N-S	-49.92 ft	Northing:	1,263,914.45 ft	Latitude:	40.055989
	+E-W	0.28 ft	Easting:	3,182,681.81 ft	Longitude:	-104.847381
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,952.00 ft

Wellbore	Riverbend 36-12				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/11/2011	8.87	66.76	52,933

Design	Riverbend 36-12 (wp01)			
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	68.38

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	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,541.53	24.83	68.38	1,503.03	97.56	246.22	2.00	2.00	0.00	68.38	
6,087.75	24.83	68.38	5,628.97	800.86	2,021.08	0.00	0.00	0.00	0.00	
7,329.28	0.00	0.00	6,832.00	898.42	2,267.30	2.00	-2.00	0.00	180.00	
8,579.28	0.00	0.00	8,082.00	898.42	2,267.30	0.00	0.00	0.00	0.00	Riverbend 36-12 Bt

Database:	edm5000p	Local Co-ordinate Reference:	Well Riverbend 36-12
Company:	US ROCKIES REGION PLANNING	TVD Reference:	15' + 4952' GL @ 4967.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	15' + 4952' GL @ 4967.00ft
Site:	WELD_RIVERBEND 4-13 PAD	North Reference:	True
Well:	Riverbend 36-12	Survey Calculation Method:	Minimum Curvature
Wellbore:	Riverbend 36-12		
Design:	Riverbend 36-12 (wp01)		

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
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
400.00	2.00	68.38	399.98	0.64	1.62	1.75	2.00	2.00	0.00
500.00	4.00	68.38	499.84	2.57	6.49	6.98	2.00	2.00	0.00
600.00	6.00	68.38	599.45	5.78	14.59	15.69	2.00	2.00	0.00
700.00	8.00	68.38	698.70	10.27	25.92	27.88	2.00	2.00	0.00
800.00	10.00	68.38	797.47	16.03	40.46	43.52	2.00	2.00	0.00
900.00	12.00	68.38	895.62	23.06	58.20	62.60	2.00	2.00	0.00
919.82	12.40	68.38	915.00	24.60	62.09	66.79	2.00	2.00	0.00
8 5/8"									
1,000.00	14.00	68.38	993.06	31.35	79.11	85.10	2.00	2.00	0.00
1,100.00	16.00	68.38	1,089.64	40.88	103.17	110.98	2.00	2.00	0.00
1,200.00	18.00	68.38	1,185.27	51.65	130.35	140.21	2.00	2.00	0.00
1,300.00	20.00	68.38	1,279.82	63.65	160.62	172.77	2.00	2.00	0.00
1,400.00	22.00	68.38	1,373.17	76.85	193.93	208.60	2.00	2.00	0.00
1,500.00	24.00	68.38	1,465.21	91.24	230.26	247.67	2.00	2.00	0.00
1,541.53	24.83	68.38	1,503.03	97.56	246.22	264.84	2.00	2.00	0.00
Start 4546.22 hold at 1541.53 MD									
1,600.00	24.83	68.38	1,556.10	106.61	269.04	289.39	0.00	0.00	0.00
1,700.00	24.83	68.38	1,646.85	122.08	308.08	331.39	0.00	0.00	0.00
1,800.00	24.83	68.38	1,737.61	137.55	347.12	373.38	0.00	0.00	0.00
1,900.00	24.83	68.38	1,828.36	153.02	386.16	415.38	0.00	0.00	0.00
2,000.00	24.83	68.38	1,919.12	168.49	425.20	457.37	0.00	0.00	0.00
2,100.00	24.83	68.38	2,009.87	183.96	464.24	499.36	0.00	0.00	0.00
2,200.00	24.83	68.38	2,100.63	199.43	503.28	541.36	0.00	0.00	0.00
2,300.00	24.83	68.38	2,191.38	214.90	542.33	583.35	0.00	0.00	0.00
2,400.00	24.83	68.38	2,282.14	230.37	581.37	625.34	0.00	0.00	0.00
2,500.00	24.83	68.38	2,372.89	245.84	620.41	667.34	0.00	0.00	0.00
2,600.00	24.83	68.38	2,463.65	261.31	659.45	709.33	0.00	0.00	0.00
2,700.00	24.83	68.38	2,554.40	276.78	698.49	751.33	0.00	0.00	0.00
2,800.00	24.83	68.38	2,645.16	292.25	737.53	793.32	0.00	0.00	0.00
2,900.00	24.83	68.38	2,735.91	307.72	776.57	835.31	0.00	0.00	0.00
3,000.00	24.83	68.38	2,826.67	323.19	815.61	877.31	0.00	0.00	0.00
3,100.00	24.83	68.38	2,917.42	338.66	854.65	919.30	0.00	0.00	0.00
3,200.00	24.83	68.38	3,008.18	354.13	893.69	961.29	0.00	0.00	0.00
3,300.00	24.83	68.38	3,098.93	369.60	932.73	1,003.29	0.00	0.00	0.00
3,400.00	24.83	68.38	3,189.69	385.07	971.77	1,045.28	0.00	0.00	0.00
3,500.00	24.83	68.38	3,280.45	400.54	1,010.81	1,087.28	0.00	0.00	0.00
3,600.00	24.83	68.38	3,371.20	416.01	1,049.85	1,129.27	0.00	0.00	0.00
3,700.00	24.83	68.38	3,461.96	431.48	1,088.89	1,171.26	0.00	0.00	0.00
3,800.00	24.83	68.38	3,552.71	446.95	1,127.93	1,213.26	0.00	0.00	0.00
3,900.00	24.83	68.38	3,643.47	462.42	1,166.97	1,255.25	0.00	0.00	0.00
4,000.00	24.83	68.38	3,734.22	477.89	1,206.01	1,297.24	0.00	0.00	0.00
4,100.00	24.83	68.38	3,824.98	493.35	1,245.05	1,339.24	0.00	0.00	0.00
4,200.00	24.83	68.38	3,915.73	508.82	1,284.10	1,381.23	0.00	0.00	0.00
4,300.00	24.83	68.38	4,006.49	524.29	1,323.14	1,423.23	0.00	0.00	0.00
4,350.15	24.83	68.38	4,052.00	532.05	1,342.71	1,444.29	0.00	0.00	0.00
PK Depth									
4,400.00	24.83	68.38	4,097.24	539.76	1,362.18	1,465.22	0.00	0.00	0.00
4,500.00	24.83	68.38	4,188.00	555.23	1,401.22	1,507.21	0.00	0.00	0.00
4,600.00	24.83	68.38	4,278.75	570.70	1,440.26	1,549.21	0.00	0.00	0.00

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Site:	WELD_RIVERBEND 4-13 PAD	North Reference:	True
Well:	Riverbend 36-12	Survey Calculation Method:	Minimum Curvature
Wellbore:	Riverbend 36-12		
Design:	Riverbend 36-12 (wp01)		

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	24.83	68.38	4,369.51	586.17	1,479.30	1,591.20	0.00	0.00	0.00
4,800.00	24.83	68.38	4,460.26	601.64	1,518.34	1,633.20	0.00	0.00	0.00
4,900.00	24.83	68.38	4,551.02	617.11	1,557.38	1,675.19	0.00	0.00	0.00
4,990.33	24.83	68.38	4,633.00	631.09	1,592.64	1,713.12	0.00	0.00	0.00
SX Depth									
5,000.00	24.83	68.38	4,641.77	632.58	1,596.42	1,717.18	0.00	0.00	0.00
5,100.00	24.83	68.38	4,732.53	648.05	1,635.46	1,759.18	0.00	0.00	0.00
5,200.00	24.83	68.38	4,823.29	663.52	1,674.50	1,801.17	0.00	0.00	0.00
5,300.00	24.83	68.38	4,914.04	678.99	1,713.54	1,843.16	0.00	0.00	0.00
5,400.00	24.83	68.38	5,004.80	694.46	1,752.58	1,885.16	0.00	0.00	0.00
5,500.00	24.83	68.38	5,095.55	709.93	1,791.62	1,927.15	0.00	0.00	0.00
5,600.00	24.83	68.38	5,186.31	725.40	1,830.66	1,969.15	0.00	0.00	0.00
5,700.00	24.83	68.38	5,277.06	740.87	1,869.70	2,011.14	0.00	0.00	0.00
5,800.00	24.83	68.38	5,367.82	756.34	1,908.74	2,053.13	0.00	0.00	0.00
5,900.00	24.83	68.38	5,458.57	771.81	1,947.78	2,095.13	0.00	0.00	0.00
6,000.00	24.83	68.38	5,549.33	787.28	1,986.82	2,137.12	0.00	0.00	0.00
6,087.75	24.83	68.38	5,628.97	800.86	2,021.08	2,173.97	0.00	0.00	0.00
Start Drop -2.00									
6,100.00	24.59	68.38	5,640.09	802.74	2,025.84	2,179.09	2.00	-2.00	0.00
6,200.00	22.59	68.38	5,731.74	817.48	2,063.04	2,219.10	2.00	-2.00	0.00
6,300.00	20.59	68.38	5,824.72	831.03	2,097.24	2,255.89	2.00	-2.00	0.00
6,400.00	18.59	68.38	5,918.93	843.38	2,128.40	2,289.41	2.00	-2.00	0.00
6,500.00	16.59	68.38	6,014.25	854.51	2,156.49	2,319.62	2.00	-2.00	0.00
6,600.00	14.59	68.38	6,110.57	864.41	2,181.47	2,346.49	2.00	-2.00	0.00
6,700.00	12.59	68.38	6,207.76	873.06	2,203.30	2,369.97	2.00	-2.00	0.00
6,800.00	10.59	68.38	6,305.72	880.46	2,221.97	2,390.06	2.00	-2.00	0.00
6,900.00	8.59	68.38	6,404.32	886.59	2,237.45	2,406.71	2.00	-2.00	0.00
7,000.00	6.59	68.38	6,503.44	891.46	2,249.72	2,419.91	2.00	-2.00	0.00
7,100.00	4.59	68.38	6,602.96	895.04	2,258.77	2,429.64	2.00	-2.00	0.00
7,200.00	2.59	68.38	6,702.76	897.35	2,264.59	2,435.90	2.00	-2.00	0.00
7,300.00	0.59	68.38	6,802.72	898.37	2,267.16	2,438.66	2.00	-2.00	0.00
7,329.28	0.00	0.00	6,832.00	898.42	2,267.30	2,438.81	2.00	-2.00	0.00
Start 1250.00 hold at 7329.28 MD									
7,400.00	0.00	0.00	6,902.72	898.42	2,267.30	2,438.81	0.00	0.00	0.00
7,500.00	0.00	0.00	7,002.72	898.42	2,267.30	2,438.81	0.00	0.00	0.00
7,600.00	0.00	0.00	7,102.72	898.42	2,267.30	2,438.81	0.00	0.00	0.00
7,662.28	0.00	0.00	7,165.00	898.42	2,267.30	2,438.81	0.00	0.00	0.00
NIO Depth									
7,700.00	0.00	0.00	7,202.72	898.42	2,267.30	2,438.81	0.00	0.00	0.00
7,800.00	0.00	0.00	7,302.72	898.42	2,267.30	2,438.81	0.00	0.00	0.00
7,900.00	0.00	0.00	7,402.72	898.42	2,267.30	2,438.81	0.00	0.00	0.00
8,000.00	0.00	0.00	7,502.72	898.42	2,267.30	2,438.81	0.00	0.00	0.00
8,009.28	0.00	0.00	7,512.00	898.42	2,267.30	2,438.81	0.00	0.00	0.00
CD Depth									
8,094.28	0.00	0.00	7,597.00	898.42	2,267.30	2,438.81	0.00	0.00	0.00
GH Depth									
8,100.00	0.00	0.00	7,602.72	898.42	2,267.30	2,438.81	0.00	0.00	0.00
8,200.00	0.00	0.00	7,702.72	898.42	2,267.30	2,438.81	0.00	0.00	0.00
8,300.00	0.00	0.00	7,802.72	898.42	2,267.30	2,438.81	0.00	0.00	0.00
8,400.00	0.00	0.00	7,902.72	898.42	2,267.30	2,438.81	0.00	0.00	0.00
8,444.28	0.00	0.00	7,947.00	898.42	2,267.30	2,438.81	0.00	0.00	0.00
J Depth									
8,500.00	0.00	0.00	8,002.72	898.42	2,267.30	2,438.81	0.00	0.00	0.00

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Site:	WELD_RIVERBEND 4-13 PAD	North Reference:	True
Well:	Riverbend 36-12	Survey Calculation Method:	Minimum Curvature
Wellbore:	Riverbend 36-12		
Design:	Riverbend 36-12 (wp01)		

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)
8,579.28	0.00	0.00	8,082.00	898.42	2,267.30	2,438.81	0.00	0.00	0.00
TD at 8579.28 - Riverbend 36-12 BHL									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
Riverbend 36-12 BHL	0.00	0.00	8,082.00	898.42	2,267.30	1,264,829.53	3,184,942.43	40.058455	-104.839281
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
919.82	915.00	8 5/8"	8-5/8	11	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,350.15	4,052.00	PK Depth		0.00		
4,990.33	4,633.00	SX Depth				
7,662.28	7,165.00	NIO Depth				
8,009.28	7,512.00	CD Depth				
8,094.28	7,597.00	GH Depth				
8,444.28	7,947.00	J Depth				

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
300.00	300.00	0.00	0.00	Start Build 2.00
1,541.53	1,503.03	97.56	246.22	Start 4546.22 hold at 1541.53 MD
6,087.75	5,628.97	800.86	2,021.08	Start Drop -2.00
7,329.28	6,832.00	898.42	2,267.30	Start 1250.00 hold at 7329.28 MD
8,579.28	8,082.00	898.42	2,267.30	TD at 8579.28