

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_RIVERBEND 4-13 PAD

Riverbend 27-14

Riverbend 27-14

Plan: Riverbend 27-14 (wp01)

Standard Planning Report

11 July, 2011



Project: COLORADO NORTHERN ZONE - 83
Site: WELD_RIVERBEND 4-13 PAD
Well: Riverbend 27-14
Wellbore: Riverbend 27-14
Section:
SHL:
Design: Riverbend 27-14 (wp01)
Latitude: 40.056016
Longitude: -104.847381
GL: 4952.00
KB: 15' RKB + 4952' GL @ 4967.00ft

FORMATION TOP DETAILS

TVDPATH	MDPATH	FORMATION
4052.00	4247.61	PK Depth
4658.00	4891.96	SX Depth
7190.00	7486.84	NIO Depth
7537.00	7833.84	CD Depth
7622.00	7918.84	GH Depth
7972.00	8268.84	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 27-14

+N/-S	+E/-W	Northing	Ground Level: Easting	4952.00 Latitude	Longitude	Slot
0.00	0.00	1263924.29	3182681.73	40.056016	-104.847381	

CASING DETAILS

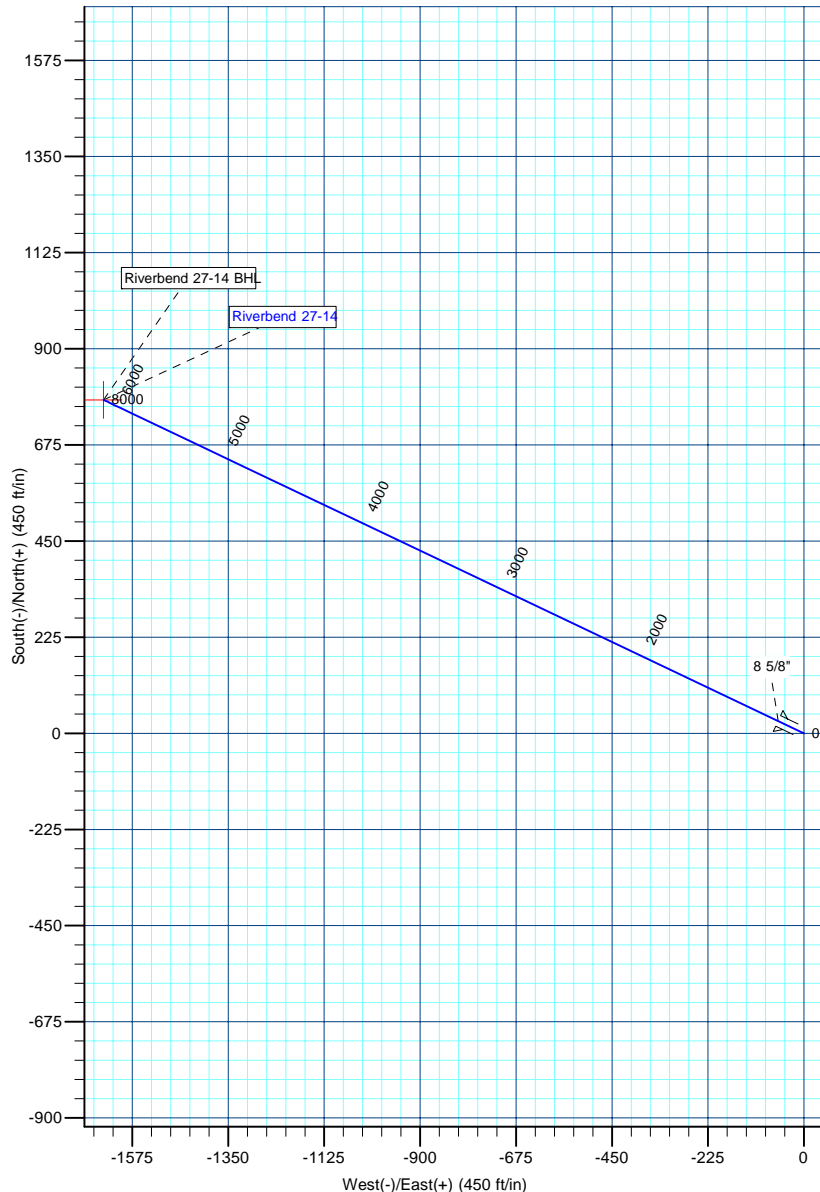
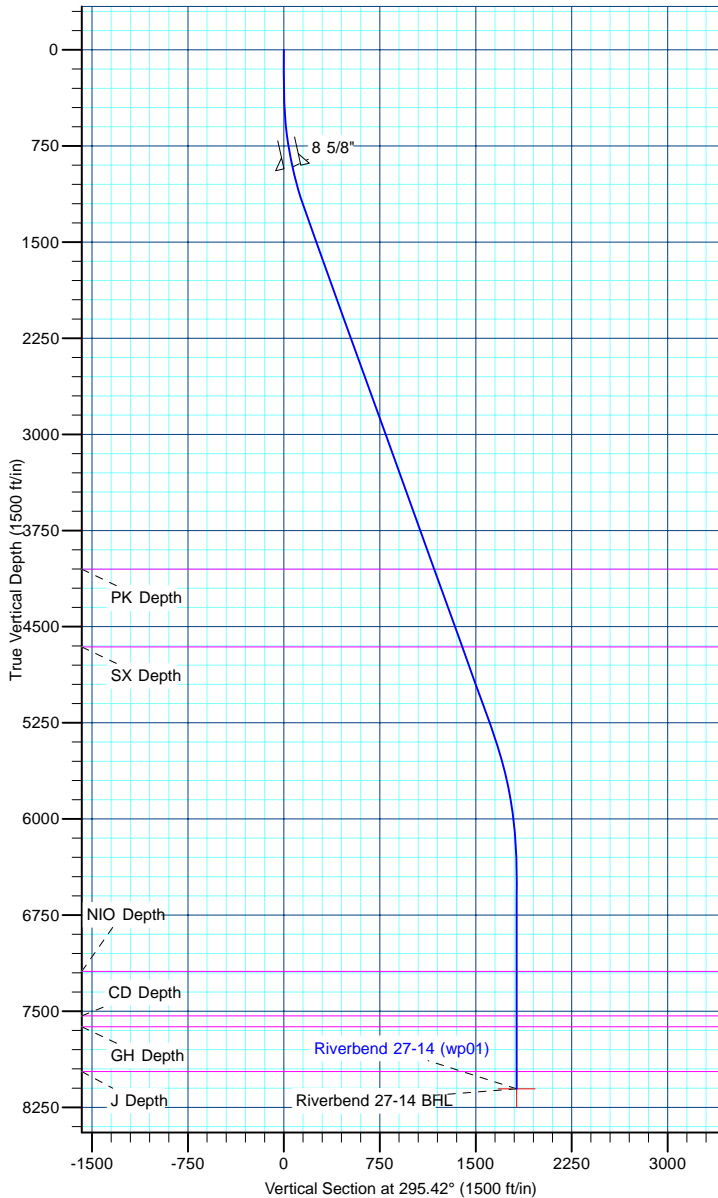
TVD	MD	Name	Size
915.00	919.82	8 5/8"	8-5/8

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape Point
Riverbend 27-14 BHL	8107.00	780.35	-1642.26	1264692.52	3181033.77	40.058158	-104.853248	

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
1293.34	19.87	295.42	1273.55	73.17	-154.00	2.00	295.42	170.50
5568.59	19.87	295.42	5294.37	696.72	-1466.26	0.00	0.00	1623.38
6703.84	0.00	0.00	6407.00	780.35	-1642.26	1.75	180.00	1818.23
8403.84	0.00	0.00	8107.00	780.35	-1642.26	0.00	0.00	1818.23



Database:	edm5000p	Local Co-ordinate Reference:	Well Riverbend 27-14
Company:	US ROCKIES REGION PLANNING	TVD Reference:	15' RKB + 4952' GL @ 4967.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	15' RKB + 4952' GL @ 4967.00ft
Site:	WELD_RIVERBEND 4-13 PAD	North Reference:	True
Well:	Riverbend 27-14	Survey Calculation Method:	Minimum Curvature
Wellbore:	Riverbend 27-14		
Design:	Riverbend 27-14 (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 27-14					
Well Position	+N-S	-40.08 ft	Northing:	1,263,924.28 ft	Latitude:	40.056016
	+E-W	0.28 ft	Easting:	3,182,681.73 ft	Longitude:	-104.847381
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,952.00 ft

Wellbore	Riverbend 27-14				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/11/2011	8.87	66.76	52,933

Design	Riverbend 27-14 (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	295.42

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	
1,293.34	19.87	295.42	1,273.55	73.17	-154.00	2.00	2.00	0.00	295.42	
5,568.59	19.87	295.42	5,294.37	696.72	-1,466.26	0.00	0.00	0.00	0.00	
6,703.84	0.00	0.00	6,407.00	780.35	-1,642.26	1.75	-1.75	0.00	180.00	
8,403.84	0.00	0.00	8,107.00	780.35	-1,642.26	0.00	0.00	0.00	0.00	Riverbend 27-14 Bt

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Company:	US ROCKIES REGION PLANNING	TVD Reference:	15' RKB + 4952' GL @ 4967.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	15' RKB + 4952' GL @ 4967.00ft
Site:	WELD_RIVERBEND 4-13 PAD	North Reference:	True
Well:	Riverbend 27-14	Survey Calculation Method:	Minimum Curvature
Wellbore:	Riverbend 27-14		
Design:	Riverbend 27-14 (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	295.42	399.98	0.75	-1.58	1.75	2.00	2.00	0.00
500.00	4.00	295.42	499.84	3.00	-6.30	6.98	2.00	2.00	0.00
600.00	6.00	295.42	599.45	6.74	-14.17	15.69	2.00	2.00	0.00
700.00	8.00	295.42	698.70	11.97	-25.18	27.88	2.00	2.00	0.00
800.00	10.00	295.42	797.47	18.68	-39.31	43.52	2.00	2.00	0.00
900.00	12.00	295.42	895.62	26.87	-56.54	62.60	2.00	2.00	0.00
919.82	12.40	295.42	915.00	28.67	-60.33	66.79	2.00	2.00	0.00
8 5/8"									
1,000.00	14.00	295.42	993.06	36.52	-76.86	85.10	2.00	2.00	0.00
1,100.00	16.00	295.42	1,089.64	47.63	-100.24	110.98	2.00	2.00	0.00
1,200.00	18.00	295.42	1,185.27	60.18	-126.64	140.21	2.00	2.00	0.00
1,293.34	19.87	295.42	1,273.55	73.17	-154.00	170.50	2.00	2.00	0.00
Start 4275.25 hold at 1293.34 MD									
1,300.00	19.87	295.42	1,279.82	74.15	-156.04	172.76	0.00	0.00	0.00
1,400.00	19.87	295.42	1,373.87	88.73	-186.74	206.74	0.00	0.00	0.00
1,500.00	19.87	295.42	1,467.92	103.32	-217.43	240.73	0.00	0.00	0.00
1,600.00	19.87	295.42	1,561.96	117.90	-248.12	274.71	0.00	0.00	0.00
1,700.00	19.87	295.42	1,656.01	132.49	-278.82	308.69	0.00	0.00	0.00
1,800.00	19.87	295.42	1,750.06	147.07	-309.51	342.68	0.00	0.00	0.00
1,900.00	19.87	295.42	1,844.11	161.66	-340.21	376.66	0.00	0.00	0.00
2,000.00	19.87	295.42	1,938.16	176.24	-370.90	410.64	0.00	0.00	0.00
2,100.00	19.87	295.42	2,032.21	190.83	-401.60	444.63	0.00	0.00	0.00
2,200.00	19.87	295.42	2,126.25	205.41	-432.29	478.61	0.00	0.00	0.00
2,300.00	19.87	295.42	2,220.30	220.00	-462.99	512.59	0.00	0.00	0.00
2,400.00	19.87	295.42	2,314.35	234.58	-493.68	546.58	0.00	0.00	0.00
2,500.00	19.87	295.42	2,408.40	249.17	-524.37	580.56	0.00	0.00	0.00
2,600.00	19.87	295.42	2,502.45	263.75	-555.07	614.55	0.00	0.00	0.00
2,700.00	19.87	295.42	2,596.50	278.34	-585.76	648.53	0.00	0.00	0.00
2,800.00	19.87	295.42	2,690.55	292.92	-616.46	682.51	0.00	0.00	0.00
2,900.00	19.87	295.42	2,784.59	307.51	-647.15	716.50	0.00	0.00	0.00
3,000.00	19.87	295.42	2,878.64	322.09	-677.85	750.48	0.00	0.00	0.00
3,100.00	19.87	295.42	2,972.69	336.68	-708.54	784.46	0.00	0.00	0.00
3,200.00	19.87	295.42	3,066.74	351.26	-739.24	818.45	0.00	0.00	0.00
3,300.00	19.87	295.42	3,160.79	365.85	-769.93	852.43	0.00	0.00	0.00
3,400.00	19.87	295.42	3,254.84	380.43	-800.63	886.41	0.00	0.00	0.00
3,500.00	19.87	295.42	3,348.89	395.02	-831.32	920.40	0.00	0.00	0.00
3,600.00	19.87	295.42	3,442.93	409.60	-862.01	954.38	0.00	0.00	0.00
3,700.00	19.87	295.42	3,536.98	424.19	-892.71	988.36	0.00	0.00	0.00
3,800.00	19.87	295.42	3,631.03	438.77	-923.40	1,022.35	0.00	0.00	0.00
3,900.00	19.87	295.42	3,725.08	453.35	-954.10	1,056.33	0.00	0.00	0.00
4,000.00	19.87	295.42	3,819.13	467.94	-984.79	1,090.31	0.00	0.00	0.00
4,100.00	19.87	295.42	3,913.18	482.52	-1,015.49	1,124.30	0.00	0.00	0.00
4,200.00	19.87	295.42	4,007.23	497.11	-1,046.18	1,158.28	0.00	0.00	0.00
4,247.61	19.87	295.42	4,052.00	504.05	-1,060.79	1,174.46	0.00	0.00	0.00
PK Depth									
4,300.00	19.87	295.42	4,101.27	511.69	-1,076.88	1,192.26	0.00	0.00	0.00
4,400.00	19.87	295.42	4,195.32	526.28	-1,107.57	1,226.25	0.00	0.00	0.00
4,500.00	19.87	295.42	4,289.37	540.86	-1,138.26	1,260.23	0.00	0.00	0.00
4,600.00	19.87	295.42	4,383.42	555.45	-1,168.96	1,294.21	0.00	0.00	0.00

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Site:	WELD_RIVERBEND 4-13 PAD	North Reference:	True
Well:	Riverbend 27-14	Survey Calculation Method:	Minimum Curvature
Wellbore:	Riverbend 27-14		
Design:	Riverbend 27-14 (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	19.87	295.42	4,477.47	570.03	-1,199.65	1,328.20	0.00	0.00	0.00
4,800.00	19.87	295.42	4,571.52	584.62	-1,230.35	1,362.18	0.00	0.00	0.00
4,891.96	19.87	295.42	4,658.00	598.03	-1,258.57	1,393.43	0.00	0.00	0.00
SX Depth									
4,900.00	19.87	295.42	4,665.57	599.20	-1,261.04	1,396.16	0.00	0.00	0.00
5,000.00	19.87	295.42	4,759.61	613.79	-1,291.74	1,430.15	0.00	0.00	0.00
5,100.00	19.87	295.42	4,853.66	628.37	-1,322.43	1,464.13	0.00	0.00	0.00
5,200.00	19.87	295.42	4,947.71	642.96	-1,353.13	1,498.11	0.00	0.00	0.00
5,300.00	19.87	295.42	5,041.76	657.54	-1,383.82	1,532.10	0.00	0.00	0.00
5,400.00	19.87	295.42	5,135.81	672.13	-1,414.52	1,566.08	0.00	0.00	0.00
5,500.00	19.87	295.42	5,229.86	686.71	-1,445.21	1,600.06	0.00	0.00	0.00
5,568.59	19.87	295.42	5,294.37	696.72	-1,466.26	1,623.38	0.00	0.00	0.00
Start Drop -1.75									
5,600.00	19.32	295.42	5,323.96	701.24	-1,475.78	1,633.91	1.75	-1.75	0.00
5,700.00	17.57	295.42	5,418.82	714.82	-1,504.35	1,665.54	1.75	-1.75	0.00
5,800.00	15.82	295.42	5,514.60	727.14	-1,530.29	1,694.26	1.75	-1.75	0.00
5,900.00	14.07	295.42	5,611.21	738.21	-1,553.58	1,720.05	1.75	-1.75	0.00
6,000.00	12.32	295.42	5,708.57	748.00	-1,574.19	1,742.87	1.75	-1.75	0.00
6,100.00	10.57	295.42	5,806.58	756.52	-1,592.11	1,762.70	1.75	-1.75	0.00
6,200.00	8.82	295.42	5,905.15	763.74	-1,607.31	1,779.54	1.75	-1.75	0.00
6,300.00	7.07	295.42	6,004.19	769.67	-1,619.79	1,793.35	1.75	-1.75	0.00
6,400.00	5.32	295.42	6,103.60	774.30	-1,629.53	1,804.14	1.75	-1.75	0.00
6,500.00	3.57	295.42	6,203.29	777.62	-1,636.53	1,811.89	1.75	-1.75	0.00
6,600.00	1.82	295.42	6,303.18	779.64	-1,640.77	1,816.58	1.75	-1.75	0.00
6,700.00	0.07	295.42	6,403.16	780.35	-1,642.26	1,818.23	1.75	-1.75	0.00
6,703.84	0.00	0.00	6,407.00	780.35	-1,642.26	1,818.23	1.75	-1.75	0.00
Start 1700.00 hold at 6703.84 MD									
6,800.00	0.00	0.00	6,503.16	780.35	-1,642.26	1,818.23	0.00	0.00	0.00
6,900.00	0.00	0.00	6,603.16	780.35	-1,642.26	1,818.23	0.00	0.00	0.00
7,000.00	0.00	0.00	6,703.16	780.35	-1,642.26	1,818.23	0.00	0.00	0.00
7,100.00	0.00	0.00	6,803.16	780.35	-1,642.26	1,818.23	0.00	0.00	0.00
7,200.00	0.00	0.00	6,903.16	780.35	-1,642.26	1,818.23	0.00	0.00	0.00
7,300.00	0.00	0.00	7,003.16	780.35	-1,642.26	1,818.23	0.00	0.00	0.00
7,400.00	0.00	0.00	7,103.16	780.35	-1,642.26	1,818.23	0.00	0.00	0.00
7,486.84	0.00	0.00	7,190.00	780.35	-1,642.26	1,818.23	0.00	0.00	0.00
NIO Depth									
7,500.00	0.00	0.00	7,203.16	780.35	-1,642.26	1,818.23	0.00	0.00	0.00
7,600.00	0.00	0.00	7,303.16	780.35	-1,642.26	1,818.23	0.00	0.00	0.00
7,700.00	0.00	0.00	7,403.16	780.35	-1,642.26	1,818.23	0.00	0.00	0.00
7,800.00	0.00	0.00	7,503.16	780.35	-1,642.26	1,818.23	0.00	0.00	0.00
7,833.84	0.00	0.00	7,537.00	780.35	-1,642.26	1,818.23	0.00	0.00	0.00
CD Depth									
7,900.00	0.00	0.00	7,603.16	780.35	-1,642.26	1,818.23	0.00	0.00	0.00
7,918.84	0.00	0.00	7,622.00	780.35	-1,642.26	1,818.23	0.00	0.00	0.00
GH Depth									
8,000.00	0.00	0.00	7,703.16	780.35	-1,642.26	1,818.23	0.00	0.00	0.00
8,100.00	0.00	0.00	7,803.16	780.35	-1,642.26	1,818.23	0.00	0.00	0.00
8,200.00	0.00	0.00	7,903.16	780.35	-1,642.26	1,818.23	0.00	0.00	0.00
8,268.84	0.00	0.00	7,972.00	780.35	-1,642.26	1,818.23	0.00	0.00	0.00
J Depth									
8,300.00	0.00	0.00	8,003.16	780.35	-1,642.26	1,818.23	0.00	0.00	0.00
8,400.00	0.00	0.00	8,103.16	780.35	-1,642.26	1,818.23	0.00	0.00	0.00
8,403.84	0.00	0.00	8,107.00	780.35	-1,642.26	1,818.23	0.00	0.00	0.00

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Site:	WELD_RIVERBEND 4-13 PAD	North Reference:	True
Well:	Riverbend 27-14	Survey Calculation Method:	Minimum Curvature
Wellbore:	Riverbend 27-14		
Design:	Riverbend 27-14 (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)
TD at 8403.84 - Riverbend 27-14 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 27-14 BHL	0.00	0.00	8,107.00	780.35	-1,642.26	1,264,692.52	3,181,033.77	40.058158	-104.853248
- 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 (°)	
4,247.61	4,052.00	PK Depth				
4,891.96	4,658.00	SX Depth				
7,486.84	7,190.00	NIO Depth				
7,833.84	7,537.00	CD Depth				
7,918.84	7,622.00	GH Depth				
8,268.84	7,972.00	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
1,293.34	1,273.55	73.17	-154.00	Start 4275.25 hold at 1293.34 MD
5,568.59	5,294.37	696.72	-1,466.26	Start Drop -1.75
6,703.84	6,407.00	780.35	-1,642.26	Start 1700.00 hold at 6703.84 MD
8,403.84	8,107.00	780.35	-1,642.26	TD at 8403.84