

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_RIVERBEND 4-13 PAD

Riverbend 2-14

Riverbend 2-14

Plan: Riverbend 2-14 (wp01)

Standard Planning Report

11 July, 2011



Project: COLORADO NORTHERN ZONE - 83
 Site: WELD_RIVERBEND 4-13 PAD
 Well: Riverbend 2-14
 Wellbore: Riverbend 2-14
 Section:
 SHL:
 Design: Riverbend 2-14 (wp01)
 Latitude: 40.055961
 Longitude: -104.847381
 GL: 4952.00
 KB: 15' RKB + 4952' GL @ 4967.00ft

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
4052.00	4342.12	PK Depth
4653.00	5002.46	SX Depth
7185.00	7644.98	NIO Depth
7532.00	7991.98	CD Depth
7617.00	8076.98	GH Depth
7967.00	8426.98	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 2-14

+N/-S	+E/-W	Northing	Ground Level: Easting	4952.00 Latitude	Longitude	Slot
0.00	0.00	1263904.25	3182681.88	40.055961	-104.847381	

CASING DETAILS

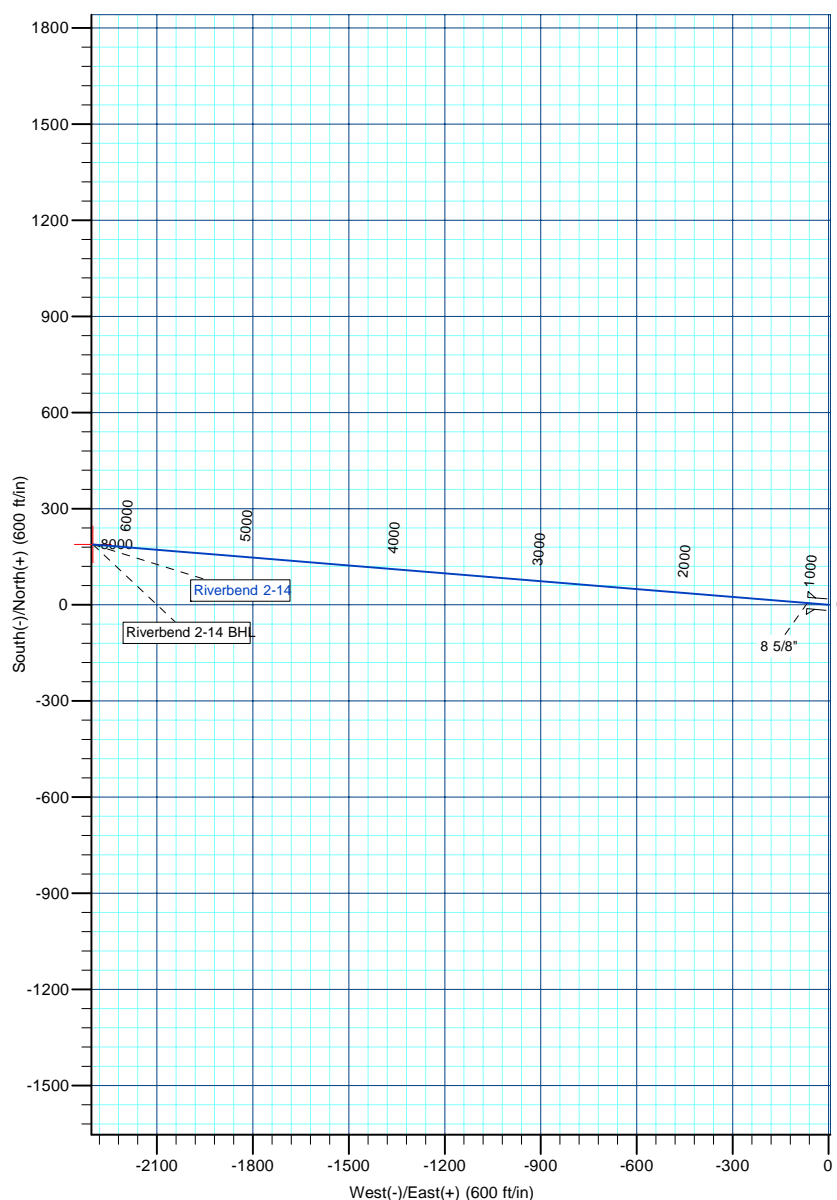
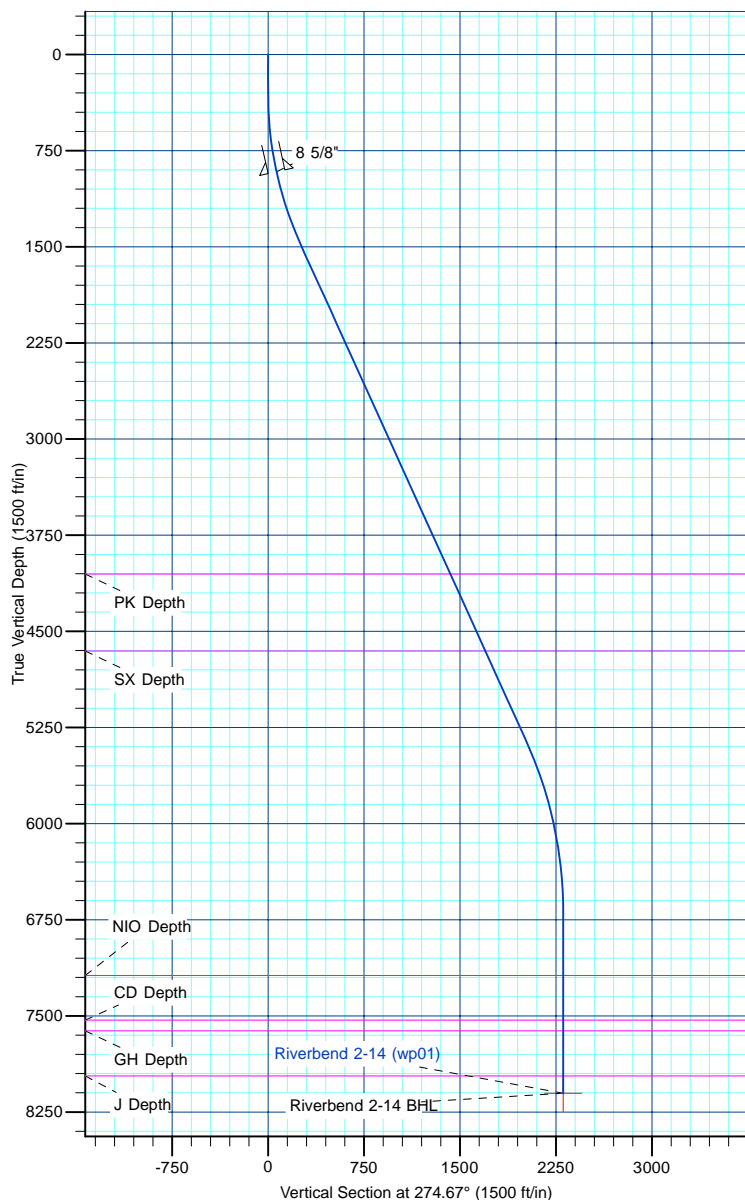
TVD	MD	Name	Size
915.00	919.82	8 5/8"	8-5/8

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape Point
Riverbend 2-14 BHL	8102.00	188.09	-2300.40	1264075.40	3180380.16	40.056477	-104.855599	

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
1523.73	24.47	274.67	1486.85	20.98	-256.56	2.00	274.67	257.42
5763.43	24.47	274.67	5345.60	164.11	-2007.18	0.00	0.00	2013.88
7161.98	0.00	0.00	6702.00	188.09	-2300.40	1.75	180.00	2308.07
8561.98	0.00	0.00	8102.00	188.09	-2300.40	0.00	0.00	2308.07



Database:	edm5000p	Local Co-ordinate Reference:	Well Riverbend 2-14
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 2-14	Survey Calculation Method:	Minimum Curvature
Wellbore:	Riverbend 2-14		
Design:	Riverbend 2-14 (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 2-14					
Well Position	+N-S	-60.12 ft	Northing:	1,263,904.25 ft	Latitude:	40.055961
	+E-W	0.28 ft	Easting:	3,182,681.88 ft	Longitude:	-104.847381
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,952.00 ft

Wellbore	Riverbend 2-14				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/11/2011	8.87	66.76	52,933

Design	Riverbend 2-14 (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	274.67

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	
1,523.73	24.47	274.67	1,486.85	20.98	-256.56	2.00	2.00	0.00	274.67	
5,763.43	24.47	274.67	5,345.60	164.11	-2,007.18	0.00	0.00	0.00	0.00	
7,161.98	0.00	0.00	6,702.00	188.09	-2,300.40	1.75	-1.75	0.00	180.00	
8,561.98	0.00	0.00	8,102.00	188.09	-2,300.40	0.00	0.00	0.00	0.00	Riverbend 2-14 BHI

Database:	edm5000p	Local Co-ordinate Reference:	Well Riverbend 2-14
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 2-14	Survey Calculation Method:	Minimum Curvature
Wellbore:	Riverbend 2-14		
Design:	Riverbend 2-14 (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	274.67	399.98	0.14	-1.74	1.75	2.00	2.00	0.00
500.00	4.00	274.67	499.84	0.57	-6.96	6.98	2.00	2.00	0.00
600.00	6.00	274.67	599.45	1.28	-15.64	15.69	2.00	2.00	0.00
700.00	8.00	274.67	698.70	2.27	-27.79	27.88	2.00	2.00	0.00
800.00	10.00	274.67	797.47	3.55	-43.38	43.52	2.00	2.00	0.00
900.00	12.00	274.67	895.62	5.10	-62.39	62.60	2.00	2.00	0.00
919.82	12.40	274.67	915.00	5.44	-66.57	66.79	2.00	2.00	0.00
8 5/8"									
1,000.00	14.00	274.67	993.06	6.93	-84.81	85.10	2.00	2.00	0.00
1,100.00	16.00	274.67	1,089.64	9.04	-110.61	110.98	2.00	2.00	0.00
1,200.00	18.00	274.67	1,185.27	11.43	-139.75	140.21	2.00	2.00	0.00
1,300.00	20.00	274.67	1,279.82	14.08	-172.19	172.77	2.00	2.00	0.00
1,400.00	22.00	274.67	1,373.17	17.00	-207.91	208.60	2.00	2.00	0.00
1,500.00	24.00	274.67	1,465.21	20.18	-246.85	247.67	2.00	2.00	0.00
1,523.73	24.47	274.67	1,486.85	20.98	-256.56	257.42	2.00	2.00	0.00
Start 4239.70 hold at 1523.73 MD									
1,600.00	24.47	274.67	1,556.27	23.55	-288.05	289.01	0.00	0.00	0.00
1,700.00	24.47	274.67	1,647.28	26.93	-329.34	330.44	0.00	0.00	0.00
1,800.00	24.47	274.67	1,738.30	30.30	-370.63	371.87	0.00	0.00	0.00
1,900.00	24.47	274.67	1,829.31	33.68	-411.93	413.30	0.00	0.00	0.00
2,000.00	24.47	274.67	1,920.33	37.06	-453.22	454.73	0.00	0.00	0.00
2,100.00	24.47	274.67	2,011.34	40.43	-494.51	496.16	0.00	0.00	0.00
2,200.00	24.47	274.67	2,102.36	43.81	-535.80	537.59	0.00	0.00	0.00
2,300.00	24.47	274.67	2,193.37	47.18	-577.09	579.02	0.00	0.00	0.00
2,400.00	24.47	274.67	2,284.39	50.56	-618.38	620.45	0.00	0.00	0.00
2,500.00	24.47	274.67	2,375.40	53.94	-659.67	661.87	0.00	0.00	0.00
2,600.00	24.47	274.67	2,466.41	57.31	-700.96	703.30	0.00	0.00	0.00
2,700.00	24.47	274.67	2,557.43	60.69	-742.26	744.73	0.00	0.00	0.00
2,800.00	24.47	274.67	2,648.44	64.06	-783.55	786.16	0.00	0.00	0.00
2,900.00	24.47	274.67	2,739.46	67.44	-824.84	827.59	0.00	0.00	0.00
3,000.00	24.47	274.67	2,830.47	70.82	-866.13	869.02	0.00	0.00	0.00
3,100.00	24.47	274.67	2,921.49	74.19	-907.42	910.45	0.00	0.00	0.00
3,200.00	24.47	274.67	3,012.50	77.57	-948.71	951.88	0.00	0.00	0.00
3,300.00	24.47	274.67	3,103.52	80.94	-990.00	993.31	0.00	0.00	0.00
3,400.00	24.47	274.67	3,194.53	84.32	-1,031.29	1,034.74	0.00	0.00	0.00
3,500.00	24.47	274.67	3,285.54	87.70	-1,072.59	1,076.16	0.00	0.00	0.00
3,600.00	24.47	274.67	3,376.56	91.07	-1,113.88	1,117.59	0.00	0.00	0.00
3,700.00	24.47	274.67	3,467.57	94.45	-1,155.17	1,159.02	0.00	0.00	0.00
3,800.00	24.47	274.67	3,558.59	97.83	-1,196.46	1,200.45	0.00	0.00	0.00
3,900.00	24.47	274.67	3,649.60	101.20	-1,237.75	1,241.88	0.00	0.00	0.00
4,000.00	24.47	274.67	3,740.62	104.58	-1,279.04	1,283.31	0.00	0.00	0.00
4,100.00	24.47	274.67	3,831.63	107.95	-1,320.33	1,324.74	0.00	0.00	0.00
4,200.00	24.47	274.67	3,922.65	111.33	-1,361.62	1,366.17	0.00	0.00	0.00
4,300.00	24.47	274.67	4,013.66	114.71	-1,402.92	1,407.60	0.00	0.00	0.00
4,342.12	24.47	274.67	4,052.00	116.13	-1,420.31	1,425.05	0.00	0.00	0.00
PK Depth									
4,400.00	24.47	274.67	4,104.68	118.08	-1,444.21	1,449.03	0.00	0.00	0.00
4,500.00	24.47	274.67	4,195.69	121.46	-1,485.50	1,490.45	0.00	0.00	0.00
4,600.00	24.47	274.67	4,286.70	124.83	-1,526.79	1,531.88	0.00	0.00	0.00

Database:	edm5000p	Local Co-ordinate Reference:	Well Riverbend 2-14
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 2-14	Survey Calculation Method:	Minimum Curvature
Wellbore:	Riverbend 2-14		
Design:	Riverbend 2-14 (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	24.47	274.67	4,377.72	128.21	-1,568.08	1,573.31	0.00	0.00	0.00
4,800.00	24.47	274.67	4,468.73	131.59	-1,609.37	1,614.74	0.00	0.00	0.00
4,900.00	24.47	274.67	4,559.75	134.96	-1,650.66	1,656.17	0.00	0.00	0.00
5,000.00	24.47	274.67	4,650.76	138.34	-1,691.95	1,697.60	0.00	0.00	0.00
5,002.46	24.47	274.67	4,653.00	138.42	-1,692.97	1,698.62	0.00	0.00	0.00
SX Depth									
5,100.00	24.47	274.67	4,741.78	141.71	-1,733.25	1,739.03	0.00	0.00	0.00
5,200.00	24.47	274.67	4,832.79	145.09	-1,774.54	1,780.46	0.00	0.00	0.00
5,300.00	24.47	274.67	4,923.81	148.47	-1,815.83	1,821.89	0.00	0.00	0.00
5,400.00	24.47	274.67	5,014.82	151.84	-1,857.12	1,863.32	0.00	0.00	0.00
5,500.00	24.47	274.67	5,105.83	155.22	-1,898.41	1,904.75	0.00	0.00	0.00
5,600.00	24.47	274.67	5,196.85	158.59	-1,939.70	1,946.17	0.00	0.00	0.00
5,700.00	24.47	274.67	5,287.86	161.97	-1,980.99	1,987.60	0.00	0.00	0.00
5,763.43	24.47	274.67	5,345.60	164.11	-2,007.18	2,013.88	0.00	0.00	0.00
Start Drop -1.75									
5,800.00	23.83	274.67	5,378.96	165.33	-2,022.10	2,028.85	1.75	-1.75	0.00
5,900.00	22.08	274.67	5,471.04	168.51	-2,060.98	2,067.85	1.75	-1.75	0.00
6,000.00	20.33	274.67	5,564.26	171.46	-2,097.03	2,104.03	1.75	-1.75	0.00
6,100.00	18.58	274.67	5,658.54	174.17	-2,130.23	2,137.34	1.75	-1.75	0.00
6,200.00	16.83	274.67	5,753.80	176.65	-2,160.55	2,167.76	1.75	-1.75	0.00
6,300.00	15.08	274.67	5,849.94	178.89	-2,187.95	2,195.26	1.75	-1.75	0.00
6,400.00	13.33	274.67	5,946.88	180.89	-2,212.42	2,219.80	1.75	-1.75	0.00
6,500.00	11.58	274.67	6,044.52	182.65	-2,233.92	2,241.38	1.75	-1.75	0.00
6,600.00	9.83	274.67	6,142.77	184.16	-2,252.44	2,259.96	1.75	-1.75	0.00
6,700.00	8.08	274.67	6,241.55	185.43	-2,267.96	2,275.53	1.75	-1.75	0.00
6,800.00	6.33	274.67	6,340.76	186.46	-2,280.47	2,288.08	1.75	-1.75	0.00
6,900.00	4.58	274.67	6,440.30	187.23	-2,289.95	2,297.60	1.75	-1.75	0.00
7,000.00	2.83	274.67	6,540.08	187.76	-2,296.40	2,304.07	1.75	-1.75	0.00
7,100.00	1.08	274.67	6,640.02	188.04	-2,299.81	2,307.49	1.75	-1.75	0.00
7,161.98	0.00	0.00	6,702.00	188.09	-2,300.40	2,308.07	1.75	-1.75	0.00
Start 1400.00 hold at 7161.98 MD									
7,200.00	0.00	0.00	6,740.02	188.09	-2,300.40	2,308.07	0.00	0.00	0.00
7,300.00	0.00	0.00	6,840.02	188.09	-2,300.40	2,308.07	0.00	0.00	0.00
7,400.00	0.00	0.00	6,940.02	188.09	-2,300.40	2,308.07	0.00	0.00	0.00
7,500.00	0.00	0.00	7,040.02	188.09	-2,300.40	2,308.07	0.00	0.00	0.00
7,600.00	0.00	0.00	7,140.02	188.09	-2,300.40	2,308.07	0.00	0.00	0.00
7,644.98	0.00	0.00	7,185.00	188.09	-2,300.40	2,308.07	0.00	0.00	0.00
NIO Depth									
7,700.00	0.00	0.00	7,240.02	188.09	-2,300.40	2,308.07	0.00	0.00	0.00
7,800.00	0.00	0.00	7,340.02	188.09	-2,300.40	2,308.07	0.00	0.00	0.00
7,900.00	0.00	0.00	7,440.02	188.09	-2,300.40	2,308.07	0.00	0.00	0.00
7,991.98	0.00	0.00	7,532.00	188.09	-2,300.40	2,308.07	0.00	0.00	0.00
CD Depth									
8,000.00	0.00	0.00	7,540.02	188.09	-2,300.40	2,308.07	0.00	0.00	0.00
8,076.98	0.00	0.00	7,617.00	188.09	-2,300.40	2,308.07	0.00	0.00	0.00
GH Depth									
8,100.00	0.00	0.00	7,640.02	188.09	-2,300.40	2,308.07	0.00	0.00	0.00
8,200.00	0.00	0.00	7,740.02	188.09	-2,300.40	2,308.07	0.00	0.00	0.00
8,300.00	0.00	0.00	7,840.02	188.09	-2,300.40	2,308.07	0.00	0.00	0.00
8,400.00	0.00	0.00	7,940.02	188.09	-2,300.40	2,308.07	0.00	0.00	0.00
8,426.98	0.00	0.00	7,967.00	188.09	-2,300.40	2,308.07	0.00	0.00	0.00
J Depth									
8,500.00	0.00	0.00	8,040.02	188.09	-2,300.40	2,308.07	0.00	0.00	0.00

Database:	edm5000p	Local Co-ordinate Reference:	Well Riverbend 2-14
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 2-14	Survey Calculation Method:	Minimum Curvature
Wellbore:	Riverbend 2-14		
Design:	Riverbend 2-14 (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)
8,561.98	0.00	0.00	8,102.00	188.09	-2,300.40	2,308.07	0.00	0.00	0.00
TD at 8561.98 - Riverbend 2-14 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 2-14 BHL	0.00	0.00	8,102.00	188.09	-2,300.40	1,264,075.40	3,180,380.16	40.056477	-104.855599
- 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 (°)	
4,342.12	4,052.00	PK Depth				
5,002.46	4,653.00	SX Depth				
7,644.98	7,185.00	NIO Depth				
7,991.98	7,532.00	CD Depth				
8,076.98	7,617.00	GH Depth				
8,426.98	7,967.00	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
1,523.73	1,486.85	20.98	-256.56	Start 4239.70 hold at 1523.73 MD
5,763.43	5,345.60	164.11	-2,007.18	Start Drop -1.75
7,161.98	6,702.00	188.09	-2,300.40	Start 1400.00 hold at 7161.98 MD
8,561.98	8,102.00	188.09	-2,300.40	TD at 8561.98