

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_RIVERBEND 1-13 PAD

RIVERBEND 31-18

RIVERBEND 31-18

Plan: RIVERBEND 31-18

Standard Planning Report

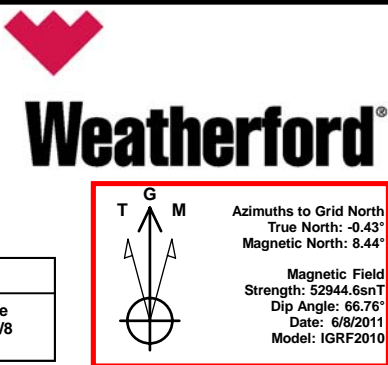
08 June, 2011



Weatherford®

Project: COLORADO NORTHERN ZONE - 83
 Site: WELD_RIVERBEND 1-13 PAD
 Well: RIVERBEND 31-18
 Wellbore: RIVERBEND 31-18
 Section:
 SHL:
 Design: RIVERBEND 31-18
 Latitude: 40.056794
 Longitude: -104.831596
 GL: 4913.00
 KB: 15' RKB + 4913' GL @ 4928.00ft

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
4028.00	4183.09	PK Depth
4569.00	4724.09	SX Depth
7101.00	7256.09	NIO Depth
7448.00	7603.09	CD Depth
7533.00	7688.09	GH Depth
7883.00	8038.09	J Depth



Weatherford

T G M
 Azimuths to Grid North
 True North: -0.43°
 Magnetic North: 8.44°
 Magnetic Field
 Strength: 52944.6snT
 Dip Angle: 66.76°
 Date: 6/8/2011
 Model: IGRF2010

WELL DETAILS: RIVERBEND 31-18

+N/-S	+E/-W	Northing	Ground Level: Easting	4913.00 Latitude	Longitude	Slot
0.00	0.00	1264240.59	3187098.06	40.056794	-104.831596	

CASING DETAILS

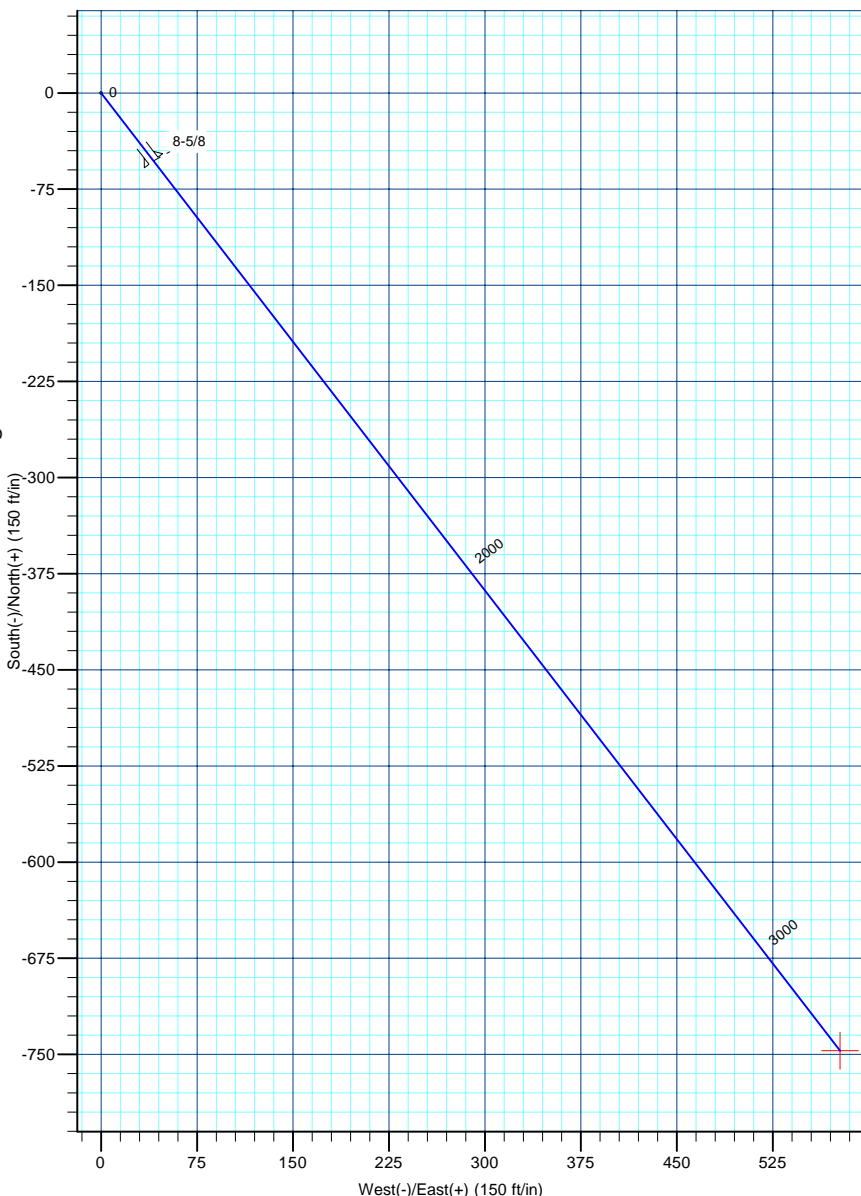
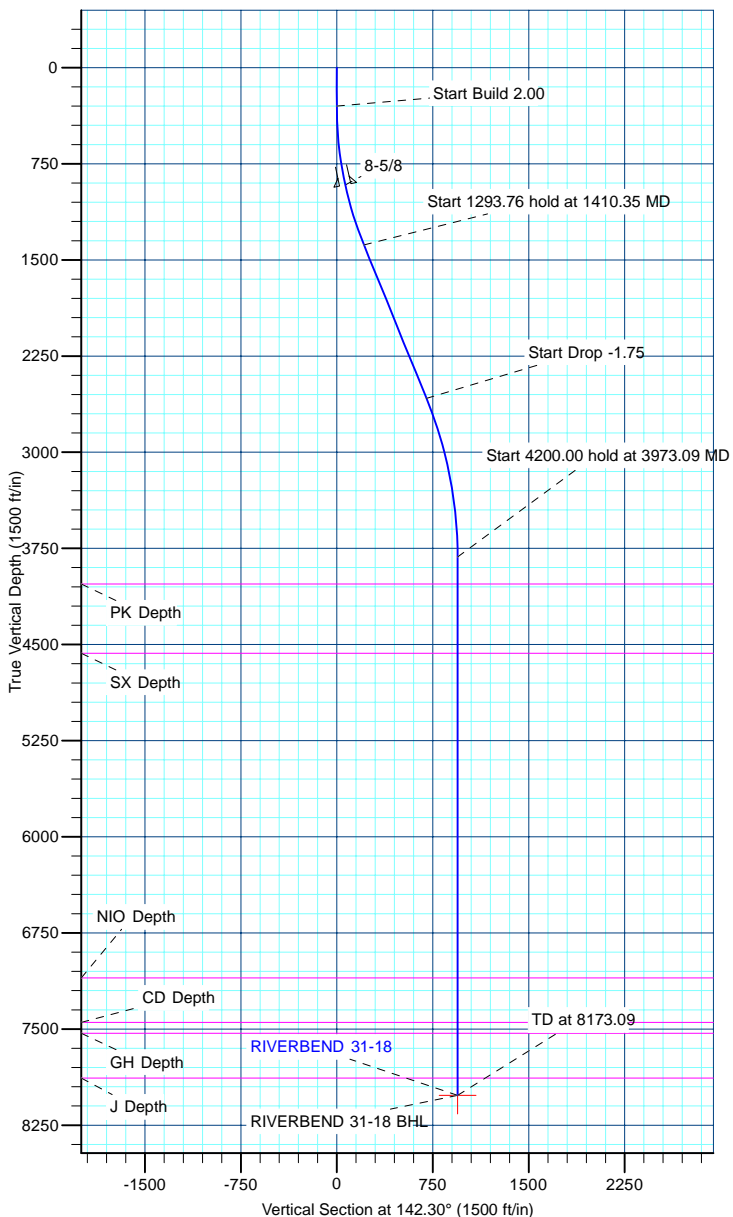
TVD	MD	Name	Size
915.00	919.82	8-5/8	8-5/8

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape Point
RIVERBEND 31-18 BHL	8018.00	-747.14	577.54	1263493.45	3187675.61	40.054731	-104.829553	

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
1410.35	22.21	142.30	1382.76	-168.12	129.96	2.00	142.30	212.50
2704.12	22.21	142.30	2580.56	-555.00	429.02	0.00	0.00	701.48
3973.09	0.00	0.00	3818.00	-747.14	577.54	1.75	180.00	944.34
8173.09	0.00	0.00	8018.00	-747.14	577.54	0.00	0.00	944.34



Database:	edm5000p	Local Co-ordinate Reference:	Well RIVERBEND 31-18
Company:	US ROCKIES REGION PLANNING	TVD Reference:	15' RKB + 4913' GL @ 4928.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	15' RKB + 4913' GL @ 4928.00ft
Site:	WELD_RIVERBEND 1-13 PAD	North Reference:	Grid
Well:	RIVERBEND 31-18	Survey Calculation Method:	Minimum Curvature
Wellbore:	RIVERBEND 31-18		
Design:	RIVERBEND 31-18		

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 1-13 PAD											
Site Position:						Northing:			1,264,240.73 ft			Latitude:			40.056794		
From:			Lat/Long			Easting:			3,187,114.02 ft			Longitude:			-104.831539		
Position Uncertainty:			0.00 ft			Slot Radius:			0 "			Grid Convergence:			0.43		

Well	RIVERBEND 31-18					
Well Position	+N-S	-0.14 ft	Northing:	1,264,240.59 ft	Latitude:	40.056794
	+E-W	-15.95 ft	Easting:	3,187,098.07 ft	Longitude:	-104.831596
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,913.00 ft

Wellbore	RIVERBEND 31-18				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/8/2011	8.87	66.76	52,945

Design	RIVERBEND 31-18			
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	142.30

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	0.01	300.00	0.00	0.00	0.00	0.00	0.00	0.01	
1,410.35	22.21	142.30	1,382.76	-168.12	129.96	2.00	2.00	0.00	142.30	
2,704.12	22.21	142.30	2,580.56	-555.00	429.02	0.00	0.00	0.00	0.00	
3,973.09	0.00	0.01	3,818.00	-747.14	577.54	1.75	-1.75	0.00	180.00	
8,173.09	0.00	0.01	8,018.00	-747.14	577.54	0.00	0.00	0.00	0.00	RIVERBEND 31-18

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Company:	US ROCKIES REGION PLANNING	TVD Reference:	15' RKB + 4913' GL @ 4928.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	15' RKB + 4913' GL @ 4928.00ft
Site:	WELD_RIVERBEND 1-13 PAD	North Reference:	Grid
Well:	RIVERBEND 31-18	Survey Calculation Method:	Minimum Curvature
Wellbore:	RIVERBEND 31-18		
Design:	RIVERBEND 31-18		

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	0.01	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.01	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.01	300.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
400.00	2.00	142.30	399.98	-1.38	1.07	1.75	2.00	2.00	0.00
500.00	4.00	142.30	499.84	-5.52	4.27	6.98	2.00	2.00	0.00
600.00	6.00	142.30	599.45	-12.42	9.60	15.69	2.00	2.00	0.00
700.00	8.00	142.30	698.70	-22.06	17.05	27.88	2.00	2.00	0.00
800.00	10.00	142.30	797.47	-34.43	26.62	43.52	2.00	2.00	0.00
900.00	12.00	142.30	895.62	-49.53	38.29	62.60	2.00	2.00	0.00
919.82	12.40	142.30	915.00	-52.84	40.85	66.79	2.00	2.00	0.00
8-5/8									
1,000.00	14.00	142.30	993.06	-67.33	52.04	85.10	2.00	2.00	0.00
1,100.00	16.00	142.30	1,089.64	-87.80	67.87	110.98	2.00	2.00	0.00
1,200.00	18.00	142.30	1,185.27	-110.93	85.75	140.21	2.00	2.00	0.00
1,300.00	20.00	142.30	1,279.82	-136.69	105.66	172.77	2.00	2.00	0.00
1,400.00	22.00	142.30	1,373.17	-165.04	127.58	208.60	2.00	2.00	0.00
1,410.35	22.21	142.30	1,382.76	-168.12	129.96	212.50	2.00	2.00	0.00
Start 1293.76 hold at 1410.35 MD									
1,500.00	22.21	142.30	1,465.76	-194.93	150.68	246.38	0.00	0.00	0.00
1,600.00	22.21	142.30	1,558.34	-224.83	173.80	284.18	0.00	0.00	0.00
1,700.00	22.21	142.30	1,650.92	-254.74	196.91	321.97	0.00	0.00	0.00
1,800.00	22.21	142.30	1,743.51	-284.64	220.03	359.77	0.00	0.00	0.00
1,900.00	22.21	142.30	1,836.09	-314.54	243.14	397.56	0.00	0.00	0.00
2,000.00	22.21	142.30	1,928.67	-344.45	266.26	435.36	0.00	0.00	0.00
2,100.00	22.21	142.30	2,021.25	-374.35	289.37	473.15	0.00	0.00	0.00
2,200.00	22.21	142.30	2,113.84	-404.25	312.49	510.95	0.00	0.00	0.00
2,300.00	22.21	142.30	2,206.42	-434.16	335.60	548.75	0.00	0.00	0.00
2,400.00	22.21	142.30	2,299.00	-464.06	358.72	586.54	0.00	0.00	0.00
2,500.00	22.21	142.30	2,391.58	-493.96	381.83	624.34	0.00	0.00	0.00
2,600.00	22.21	142.30	2,484.16	-523.87	404.95	662.13	0.00	0.00	0.00
2,700.00	22.21	142.30	2,576.75	-553.77	428.06	699.93	0.00	0.00	0.00
2,704.12	22.21	142.30	2,580.56	-555.00	429.02	701.48	0.00	0.00	0.00
Start Drop -1.75									
2,800.00	20.53	142.30	2,669.85	-582.64	450.38	736.42	1.75	-1.75	0.00
2,900.00	18.78	142.30	2,764.02	-609.25	470.95	770.05	1.75	-1.75	0.00
3,000.00	17.03	142.30	2,859.17	-633.57	489.75	800.79	1.75	-1.75	0.00
3,100.00	15.28	142.30	2,955.22	-655.58	506.77	828.61	1.75	-1.75	0.00
3,200.00	13.53	142.30	3,052.07	-675.26	521.98	853.49	1.75	-1.75	0.00
3,300.00	11.78	142.30	3,149.64	-692.59	535.38	875.39	1.75	-1.75	0.00
3,400.00	10.03	142.30	3,247.83	-707.56	546.95	894.31	1.75	-1.75	0.00
3,500.00	8.28	142.30	3,346.55	-720.15	556.67	910.22	1.75	-1.75	0.00
3,600.00	6.53	142.30	3,445.71	-730.34	564.56	923.10	1.75	-1.75	0.00
3,700.00	4.78	142.30	3,545.22	-738.14	570.58	932.96	1.75	-1.75	0.00
3,800.00	3.03	142.30	3,644.99	-743.52	574.74	939.76	1.75	-1.75	0.00
3,900.00	1.28	142.30	3,744.91	-746.50	577.04	943.52	1.75	-1.75	0.00
3,973.09	0.00	0.01	3,818.00	-747.14	577.54	944.34	1.75	-1.75	0.00
Start 4200.00 hold at 3973.09 MD									
4,000.00	0.00	0.01	3,844.91	-747.14	577.54	944.34	0.00	0.00	0.00
4,100.00	0.00	0.01	3,944.91	-747.14	577.54	944.34	0.00	0.00	0.00
4,183.09	0.00	0.01	4,028.00	-747.14	577.54	944.34	0.00	0.00	0.00
PK Depth									

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Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	15' RKB + 4913' GL @ 4928.00ft
Site:	WELD_RIVERBEND 1-13 PAD	North Reference:	Grid
Well:	RIVERBEND 31-18	Survey Calculation Method:	Minimum Curvature
Wellbore:	RIVERBEND 31-18		
Design:	RIVERBEND 31-18		

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)
4,200.00	0.00	0.01	4,044.91	-747.14	577.54	944.34	0.00	0.00	0.00
4,300.00	0.00	0.01	4,144.91	-747.14	577.54	944.34	0.00	0.00	0.00
4,400.00	0.00	0.01	4,244.91	-747.14	577.54	944.34	0.00	0.00	0.00
4,500.00	0.00	0.01	4,344.91	-747.14	577.54	944.34	0.00	0.00	0.00
4,600.00	0.00	0.01	4,444.91	-747.14	577.54	944.34	0.00	0.00	0.00
4,700.00	0.00	0.01	4,544.91	-747.14	577.54	944.34	0.00	0.00	0.00
4,724.09	0.00	0.01	4,569.00	-747.14	577.54	944.34	0.00	0.00	0.00
SX Depth									
4,800.00	0.00	0.01	4,644.91	-747.14	577.54	944.34	0.00	0.00	0.00
4,900.00	0.00	0.01	4,744.91	-747.14	577.54	944.34	0.00	0.00	0.00
5,000.00	0.00	0.01	4,844.91	-747.14	577.54	944.34	0.00	0.00	0.00
5,100.00	0.00	0.01	4,944.91	-747.14	577.54	944.34	0.00	0.00	0.00
5,200.00	0.00	0.01	5,044.91	-747.14	577.54	944.34	0.00	0.00	0.00
5,300.00	0.00	0.01	5,144.91	-747.14	577.54	944.34	0.00	0.00	0.00
5,400.00	0.00	0.01	5,244.91	-747.14	577.54	944.34	0.00	0.00	0.00
5,500.00	0.00	0.01	5,344.91	-747.14	577.54	944.34	0.00	0.00	0.00
5,600.00	0.00	0.01	5,444.91	-747.14	577.54	944.34	0.00	0.00	0.00
5,700.00	0.00	0.01	5,544.91	-747.14	577.54	944.34	0.00	0.00	0.00
5,800.00	0.00	0.01	5,644.91	-747.14	577.54	944.34	0.00	0.00	0.00
5,900.00	0.00	0.01	5,744.91	-747.14	577.54	944.34	0.00	0.00	0.00
6,000.00	0.00	0.01	5,844.91	-747.14	577.54	944.34	0.00	0.00	0.00
6,100.00	0.00	0.01	5,944.91	-747.14	577.54	944.34	0.00	0.00	0.00
6,200.00	0.00	0.01	6,044.91	-747.14	577.54	944.34	0.00	0.00	0.00
6,300.00	0.00	0.01	6,144.91	-747.14	577.54	944.34	0.00	0.00	0.00
6,400.00	0.00	0.01	6,244.91	-747.14	577.54	944.34	0.00	0.00	0.00
6,500.00	0.00	0.01	6,344.91	-747.14	577.54	944.34	0.00	0.00	0.00
6,600.00	0.00	0.01	6,444.91	-747.14	577.54	944.34	0.00	0.00	0.00
6,700.00	0.00	0.01	6,544.91	-747.14	577.54	944.34	0.00	0.00	0.00
6,800.00	0.00	0.01	6,644.91	-747.14	577.54	944.34	0.00	0.00	0.00
6,900.00	0.00	0.01	6,744.91	-747.14	577.54	944.34	0.00	0.00	0.00
7,000.00	0.00	0.01	6,844.91	-747.14	577.54	944.34	0.00	0.00	0.00
7,100.00	0.00	0.01	6,944.91	-747.14	577.54	944.34	0.00	0.00	0.00
7,200.00	0.00	0.01	7,044.91	-747.14	577.54	944.34	0.00	0.00	0.00
7,256.09	0.00	0.01	7,101.00	-747.14	577.54	944.34	0.00	0.00	0.00
NIO Depth									
7,300.00	0.00	0.01	7,144.91	-747.14	577.54	944.34	0.00	0.00	0.00
7,400.00	0.00	0.01	7,244.91	-747.14	577.54	944.34	0.00	0.00	0.00
7,500.00	0.00	0.01	7,344.91	-747.14	577.54	944.34	0.00	0.00	0.00
7,600.00	0.00	0.01	7,444.91	-747.14	577.54	944.34	0.00	0.00	0.00
7,603.09	0.00	0.01	7,448.00	-747.14	577.54	944.34	0.00	0.00	0.00
CD Depth									
7,688.09	0.00	0.01	7,533.00	-747.14	577.54	944.34	0.00	0.00	0.00
GH Depth									
7,700.00	0.00	0.01	7,544.91	-747.14	577.54	944.34	0.00	0.00	0.00
7,800.00	0.00	0.01	7,644.91	-747.14	577.54	944.34	0.00	0.00	0.00
7,900.00	0.00	0.01	7,744.91	-747.14	577.54	944.34	0.00	0.00	0.00
8,000.00	0.00	0.01	7,844.91	-747.14	577.54	944.34	0.00	0.00	0.00
8,038.09	0.00	0.01	7,883.00	-747.14	577.54	944.34	0.00	0.00	0.00
J Depth									
8,100.00	0.00	0.01	7,944.91	-747.14	577.54	944.34	0.00	0.00	0.00
8,173.09	0.00	0.01	8,018.00	-747.14	577.54	944.34	0.00	0.00	0.00
TD at 8173.09 - RIVERBEND 31-18 BHL									

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Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	15' RKB + 4913' GL @ 4928.00ft
Site:	WELD_RIVERBEND 1-13 PAD	North Reference:	Grid
Well:	RIVERBEND 31-18	Survey Calculation Method:	Minimum Curvature
Wellbore:	RIVERBEND 31-18		
Design:	RIVERBEND 31-18		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
RIVERBEND 31-18 B	0.00	0.00	8,018.00	-747.14	577.54	1,263,493.44	3,187,675.61	40.054731	-104.829553
- plan hits target center									
- Point									

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

Formations						
Measured Depth	Vertical Depth				Dip	Dip Direction
(ft)	(ft)		Name	Lithology	(°)	(°)
4,183.09	4,028.00	PK Depth				
4,724.09	4,569.00	SX Depth				
7,256.09	7,101.00	NIO Depth				
7,603.09	7,448.00	CD Depth				
7,688.09	7,533.00	GH Depth				
8,038.09	7,883.00	J Depth				

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S	+E/-W	Comment	
(ft)	(ft)	(ft)	(ft)		
300.00	300.00	0.00	0.00	Start Build 2.00	
1,410.35	1,382.76	-168.12	129.96	Start 1293.76 hold at 1410.35 MD	
2,704.12	2,580.56	-555.00	429.02	Start Drop -1.75	
3,973.09	3,818.00	-747.14	577.54	Start 4200.00 hold at 3973.09 MD	
8,173.09	8,018.00	-747.14	577.54	TD at 8173.09	