

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_RIVERBEND 4-13 PAD

Riverbend 31-13

Riverbend 31-13

Plan: Riverbend 31-13 (wp01)

Standard Planning Report

11 July, 2011



Project: COLORADO NORTHERN ZONE - 83
 Site: WELD_RIVERBEND 4-13 PAD
 Well: Riverbend 31-13
 Wellbore: Riverbend 31-13
 Section:
 SHL:
 Design: Riverbend 31-13 (wp01)
 Latitude: 40.055824
 Longitude: -104.847381
 GL: 4952.00
 KB: 15' RKB + 4952' GL @ 4967.00ft

FORMATION TOP DETAILS		
TVDPPath	MDPath	Formation
4053.00	4105.27	PK Depth
4619.00	4671.27	SX Depth
7151.00	7203.27	NIO Depth
7498.00	7550.27	CD Depth
7583.00	7635.27	GH Depth
7933.00	7985.27	J Depth



Azimuths to True North
 Magnetic North: 8.87°

Magnetic Field
 Strength: 52932.5snT
 Dip Angle: 66.76°
 Date: 7/11/2011
 Model: IGRF2010

WELL DETAILS: Riverbend 31-13

+N/-S	+E/-W	Northing	Ground Level: Easting	4952.00 Latitude	Longitude	Slot
0.00	0.00	1263854.35	3182682.25	40.055824	-104.847381	

CASING DETAILS

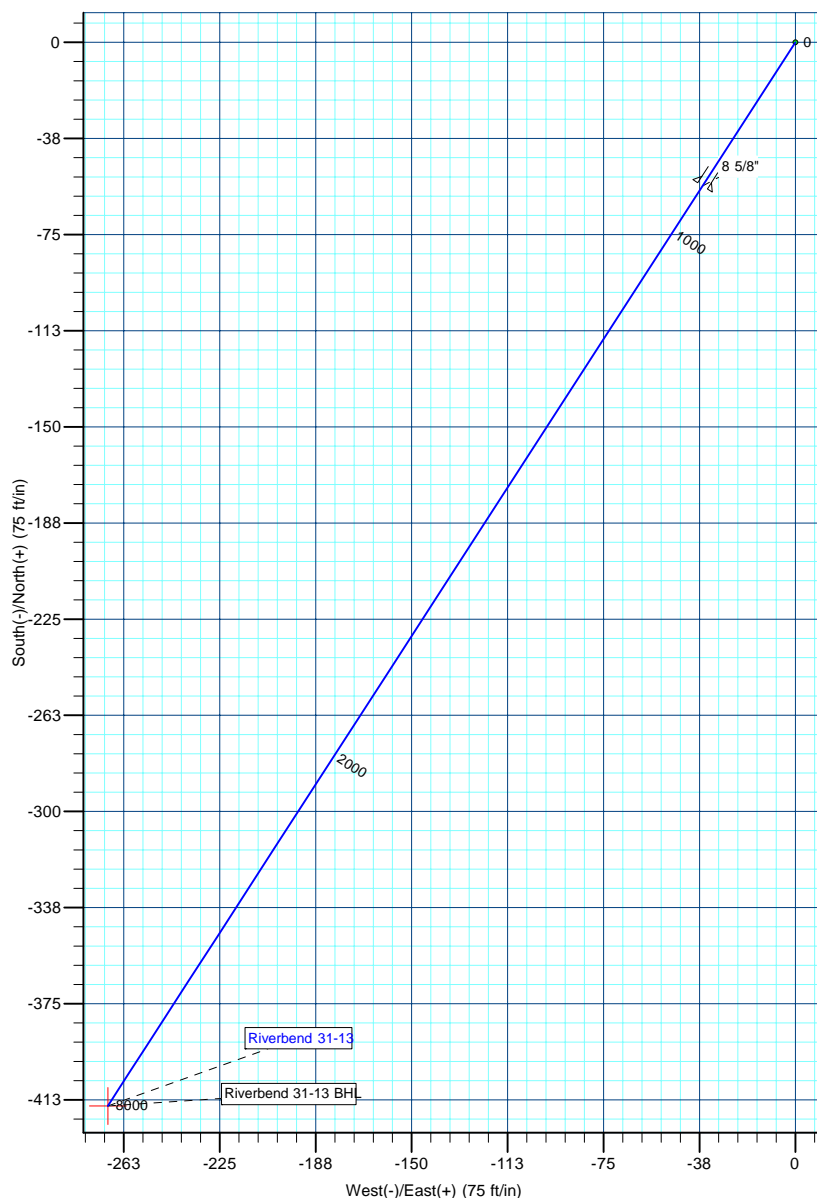
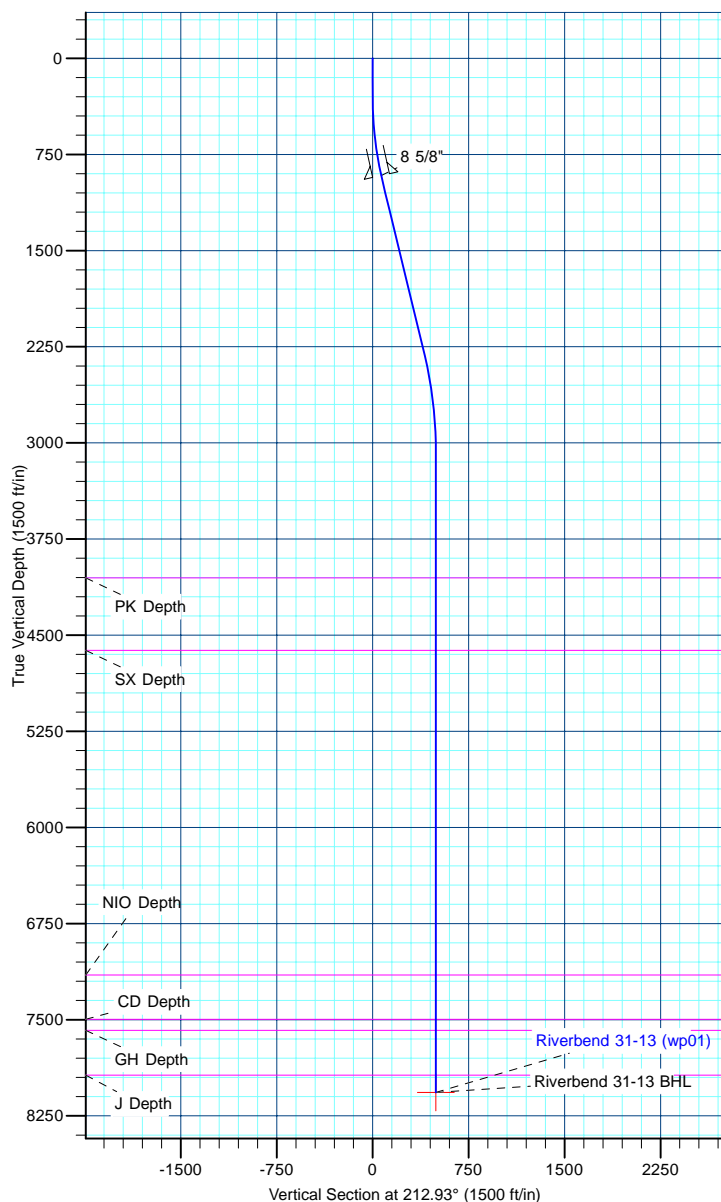
TVD	MD	Name	Size
915.00	919.82	8 5/8"	8-5/8

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape Point
Riverbend 31-13 BHL	8068.00	-414.90	-268.73	1263437.48	3182416.58	40.054685	-104.848341	

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
983.62	13.67	212.93	977.15	-68.14	-44.13	2.00	212.93	81.18
2338.99	13.67	212.93	2294.12	-337.03	-218.30	0.00	0.00	401.55
3120.27	0.00	0.00	3068.00	-414.90	-268.73	1.75	180.00	494.32
8120.27	0.00	0.00	8068.00	-414.90	-268.73	0.00	0.00	494.32



Database:	edm5000p	Local Co-ordinate Reference:	Well Riverbend 31-13
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 31-13	Survey Calculation Method:	Minimum Curvature
Wellbore:	Riverbend 31-13		
Design:	Riverbend 31-13 (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 31-13					
Well Position	+N-S	-110.02 ft	Northing:	1,263,854.34 ft	Latitude:	40.055824
	+E-W	0.28 ft	Easting:	3,182,682.25 ft	Longitude:	-104.847381
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,952.00 ft

Wellbore	Riverbend 31-13				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/11/2011	8.87	66.76	52,933

Design	Riverbend 31-13 (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	212.93	

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	
983.62	13.67	212.93	977.15	-68.14	-44.13	2.00	2.00	0.00	212.93	
2,338.99	13.67	212.93	2,294.12	-337.03	-218.30	0.00	0.00	0.00	0.00	
3,120.27	0.00	0.00	3,068.00	-414.90	-268.73	1.75	-1.75	0.00	180.00	
8,120.27	0.00	0.00	8,068.00	-414.90	-268.73	0.00	0.00	0.00	0.00	Riverbend 31-13 Bt

Database:	edm5000p	Local Co-ordinate Reference:	Well Riverbend 31-13
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 31-13	Survey Calculation Method:	Minimum Curvature
Wellbore:	Riverbend 31-13		
Design:	Riverbend 31-13 (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	212.93	399.98	-1.46	-0.95	1.75	2.00	2.00	0.00
500.00	4.00	212.93	499.84	-5.86	-3.79	6.98	2.00	2.00	0.00
600.00	6.00	212.93	599.45	-13.17	-8.53	15.69	2.00	2.00	0.00
700.00	8.00	212.93	698.70	-23.40	-15.16	27.88	2.00	2.00	0.00
800.00	10.00	212.93	797.47	-36.53	-23.66	43.52	2.00	2.00	0.00
900.00	12.00	212.93	895.62	-52.54	-34.03	62.60	2.00	2.00	0.00
919.82	12.40	212.93	915.00	-56.06	-36.31	66.79	2.00	2.00	0.00
8 5/8"									
983.62	13.67	212.93	977.15	-68.14	-44.13	81.18	2.00	2.00	0.00
Start 1355.37 hold at 983.62 MD									
1,000.00	13.67	212.93	993.07	-71.39	-46.24	85.05	0.00	0.00	0.00
1,100.00	13.67	212.93	1,090.23	-91.22	-59.09	108.69	0.00	0.00	0.00
1,200.00	13.67	212.93	1,187.40	-111.06	-71.94	132.32	0.00	0.00	0.00
1,300.00	13.67	212.93	1,284.57	-130.90	-84.79	155.96	0.00	0.00	0.00
1,400.00	13.67	212.93	1,381.73	-150.74	-97.64	179.60	0.00	0.00	0.00
1,500.00	13.67	212.93	1,478.90	-170.58	-110.49	203.24	0.00	0.00	0.00
1,600.00	13.67	212.93	1,576.06	-190.42	-123.34	226.87	0.00	0.00	0.00
1,700.00	13.67	212.93	1,673.23	-210.26	-136.19	250.51	0.00	0.00	0.00
1,800.00	13.67	212.93	1,770.40	-230.10	-149.04	274.15	0.00	0.00	0.00
1,900.00	13.67	212.93	1,867.56	-249.94	-161.89	297.78	0.00	0.00	0.00
2,000.00	13.67	212.93	1,964.73	-269.77	-174.74	321.42	0.00	0.00	0.00
2,100.00	13.67	212.93	2,061.90	-289.61	-187.59	345.06	0.00	0.00	0.00
2,200.00	13.67	212.93	2,159.06	-309.45	-200.44	368.69	0.00	0.00	0.00
2,300.00	13.67	212.93	2,256.23	-329.29	-213.29	392.33	0.00	0.00	0.00
2,338.99	13.67	212.93	2,294.12	-337.03	-218.30	401.55	0.00	0.00	0.00
Start Drop -1.75									
2,400.00	12.60	212.93	2,353.53	-348.67	-225.83	415.41	1.75	-1.75	0.00
2,500.00	10.85	212.93	2,451.43	-365.73	-236.89	435.74	1.75	-1.75	0.00
2,600.00	9.10	212.93	2,549.92	-380.27	-246.31	453.07	1.75	-1.75	0.00
2,700.00	7.35	212.93	2,648.88	-392.29	-254.09	467.39	1.75	-1.75	0.00
2,800.00	5.60	212.93	2,748.24	-401.76	-260.22	478.67	1.75	-1.75	0.00
2,900.00	3.85	212.93	2,847.90	-408.68	-264.71	486.92	1.75	-1.75	0.00
3,000.00	2.10	212.93	2,947.76	-413.04	-267.53	492.11	1.75	-1.75	0.00
3,100.00	0.35	212.93	3,047.73	-414.84	-268.70	494.26	1.75	-1.75	0.00
3,120.27	0.00	0.00	3,068.00	-414.90	-268.73	494.32	1.75	-1.75	0.00
Start 5000.00 hold at 3120.27 MD									
3,200.00	0.00	0.00	3,147.73	-414.90	-268.73	494.32	0.00	0.00	0.00
3,300.00	0.00	0.00	3,247.73	-414.90	-268.73	494.32	0.00	0.00	0.00
3,400.00	0.00	0.00	3,347.73	-414.90	-268.73	494.32	0.00	0.00	0.00
3,500.00	0.00	0.00	3,447.73	-414.90	-268.73	494.32	0.00	0.00	0.00
3,600.00	0.00	0.00	3,547.73	-414.90	-268.73	494.32	0.00	0.00	0.00
3,700.00	0.00	0.00	3,647.73	-414.90	-268.73	494.32	0.00	0.00	0.00
3,800.00	0.00	0.00	3,747.73	-414.90	-268.73	494.32	0.00	0.00	0.00
3,900.00	0.00	0.00	3,847.73	-414.90	-268.73	494.32	0.00	0.00	0.00
4,000.00	0.00	0.00	3,947.73	-414.90	-268.73	494.32	0.00	0.00	0.00
4,100.00	0.00	0.00	4,047.73	-414.90	-268.73	494.32	0.00	0.00	0.00
4,105.27	0.00	0.00	4,053.00	-414.90	-268.73	494.32	0.00	0.00	0.00
PK Depth									

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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 31-13	Survey Calculation Method:	Minimum Curvature
Wellbore:	Riverbend 31-13		
Design:	Riverbend 31-13 (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)
4,200.00	0.00	0.00	4,147.73	-414.90	-268.73	494.32	0.00	0.00	0.00
4,300.00	0.00	0.00	4,247.73	-414.90	-268.73	494.32	0.00	0.00	0.00
4,400.00	0.00	0.00	4,347.73	-414.90	-268.73	494.32	0.00	0.00	0.00
4,500.00	0.00	0.00	4,447.73	-414.90	-268.73	494.32	0.00	0.00	0.00
4,600.00	0.00	0.00	4,547.73	-414.90	-268.73	494.32	0.00	0.00	0.00
4,671.27	0.00	0.00	4,619.00	-414.90	-268.73	494.32	0.00	0.00	0.00
SX Depth									
4,700.00	0.00	0.00	4,647.73	-414.90	-268.73	494.32	0.00	0.00	0.00
4,800.00	0.00	0.00	4,747.73	-414.90	-268.73	494.32	0.00	0.00	0.00
4,900.00	0.00	0.00	4,847.73	-414.90	-268.73	494.32	0.00	0.00	0.00
5,000.00	0.00	0.00	4,947.73	-414.90	-268.73	494.32	0.00	0.00	0.00
5,100.00	0.00	0.00	5,047.73	-414.90	-268.73	494.32	0.00	0.00	0.00
5,200.00	0.00	0.00	5,147.73	-414.90	-268.73	494.32	0.00	0.00	0.00
5,300.00	0.00	0.00	5,247.73	-414.90	-268.73	494.32	0.00	0.00	0.00
5,400.00	0.00	0.00	5,347.73	-414.90	-268.73	494.32	0.00	0.00	0.00
5,500.00	0.00	0.00	5,447.73	-414.90	-268.73	494.32	0.00	0.00	0.00
5,600.00	0.00	0.00	5,547.73	-414.90	-268.73	494.32	0.00	0.00	0.00
5,700.00	0.00	0.00	5,647.73	-414.90	-268.73	494.32	0.00	0.00	0.00
5,800.00	0.00	0.00	5,747.73	-414.90	-268.73	494.32	0.00	0.00	0.00
5,900.00	0.00	0.00	5,847.73	-414.90	-268.73	494.32	0.00	0.00	0.00
6,000.00	0.00	0.00	5,947.73	-414.90	-268.73	494.32	0.00	0.00	0.00
6,100.00	0.00	0.00	6,047.73	-414.90	-268.73	494.32	0.00	0.00	0.00
6,200.00	0.00	0.00	6,147.73	-414.90	-268.73	494.32	0.00	0.00	0.00
6,300.00	0.00	0.00	6,247.73	-414.90	-268.73	494.32	0.00	0.00	0.00
6,400.00	0.00	0.00	6,347.73	-414.90	-268.73	494.32	0.00	0.00	0.00
6,500.00	0.00	0.00	6,447.73	-414.90	-268.73	494.32	0.00	0.00	0.00
6,600.00	0.00	0.00	6,547.73	-414.90	-268.73	494.32	0.00	0.00	0.00
6,700.00	0.00	0.00	6,647.73	-414.90	-268.73	494.32	0.00	0.00	0.00
6,800.00	0.00	0.00	6,747.73	-414.90	-268.73	494.32	0.00	0.00	0.00
6,900.00	0.00	0.00	6,847.73	-414.90	-268.73	494.32	0.00	0.00	0.00
7,000.00	0.00	0.00	6,947.73	-414.90	-268.73	494.32	0.00	0.00	0.00
7,100.00	0.00	0.00	7,047.73	-414.90	-268.73	494.32	0.00	0.00	0.00
7,200.00	0.00	0.00	7,147.73	-414.90	-268.73	494.32	0.00	0.00	0.00
7,203.27	0.00	0.00	7,151.00	-414.90	-268.73	494.32	0.00	0.00	0.00
NIO Depth									
7,300.00	0.00	0.00	7,247.73	-414.90	-268.73	494.32	0.00	0.00	0.00
7,400.00	0.00	0.00	7,347.73	-414.90	-268.73	494.32	0.00	0.00	0.00
7,500.00	0.00	0.00	7,447.73	-414.90	-268.73	494.32	0.00	0.00	0.00
7,550.27	0.00	0.00	7,498.00	-414.90	-268.73	494.32	0.00	0.00	0.00
CD Depth									
7,600.00	0.00	0.00	7,547.73	-414.90	-268.73	494.32	0.00	0.00	0.00
7,635.27	0.00	0.00	7,583.00	-414.90	-268.73	494.32	0.00	0.00	0.00
GH Depth									
7,700.00	0.00	0.00	7,647.73	-414.90	-268.73	494.32	0.00	0.00	0.00
7,800.00	0.00	0.00	7,747.73	-414.90	-268.73	494.32	0.00	0.00	0.00
7,900.00	0.00	0.00	7,847.73	-414.90	-268.73	494.32	0.00	0.00	0.00
7,985.27	0.00	0.00	7,933.00	-414.90	-268.73	494.32	0.00	0.00	0.00
J Depth									
8,000.00	0.00	0.00	7,947.73	-414.90	-268.73	494.32	0.00	0.00	0.00
8,100.00	0.00	0.00	8,047.73	-414.90	-268.73	494.32	0.00	0.00	0.00
8,120.27	0.00	0.00	8,068.00	-414.90	-268.73	494.32	0.00	0.00	0.00
Riverbend 31-13 BHL									

Database:	edm5000p	Local Co-ordinate Reference:	Well Riverbend 31-13
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 31-13	Survey Calculation Method:	Minimum Curvature
Wellbore:	Riverbend 31-13		
Design:	Riverbend 31-13 (wp01)		

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 31-13 BHL	0.00	0.00	8,068.00	-414.90	-268.73	1,263,437.48	3,182,416.58	40.054685	-104.848341
- 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	(°)	(°)
4,105.27	4,053.00	PK Depth				
4,671.27	4,619.00	SX Depth				
7,203.27	7,151.00	NIO Depth				
7,550.27	7,498.00	CD Depth				
7,635.27	7,583.00	GH Depth				
7,985.27	7,933.00	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	
983.62	977.15	-68.14	-44.13	Start 1355.37 hold at 983.62 MD	
2,338.99	2,294.12	-337.03	-218.30	Start Drop -1.75	
3,120.27	3,068.00	-414.90	-268.73	Start 5000.00 hold at 3120.27 MD	
8,120.27	8,068.00	-414.90	-268.73	TD at 8120.27	