

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_FEHRN 17-32 PAD

FEHRN 8-32

FEHRN 8-32

Plan: FEHRN 8-32 (wp01)

Standard Planning Report

03 February, 2011



Project: COLORADO NORTHERN ZONE - 83
 Site: WELD_FEHRN 17-32 PAD
 Well: FEHRN 8-32
 Wellbore: FEHRN 8-32
 Section:
 SHL:
 Design: FEHRN 8-32 (wp01)
 Latitude: 40.097327
 Longitude: -104.795556
 GL: 4916.00
 KB: GL @ 4916.00ft

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
4116.00	4160.12	PK Depth
4486.00	4530.12	SX Depth
7131.00	7175.12	NIO Depth
7456.00	7500.12	CD Depth
7546.00	7590.12	GH Depth
7896.00	7940.12	J Depth



Azimuths to True North
 Magnetic North: 8.93°

Magnetic Field
 Strength: 53024.1snT
 Dip Angle: 66.82°
 Date: 12/3/2010
 Model: IGRF2010

WELL DETAILS: FEHRN 8-32

+N/-S	+E/-W	Northing	Ground Level: Easting	4916.00 Latitude	Longitude	Slot
0.00	0.00	1279083.41	3197068.79	40.097327	-104.795556	

CASING DETAILS

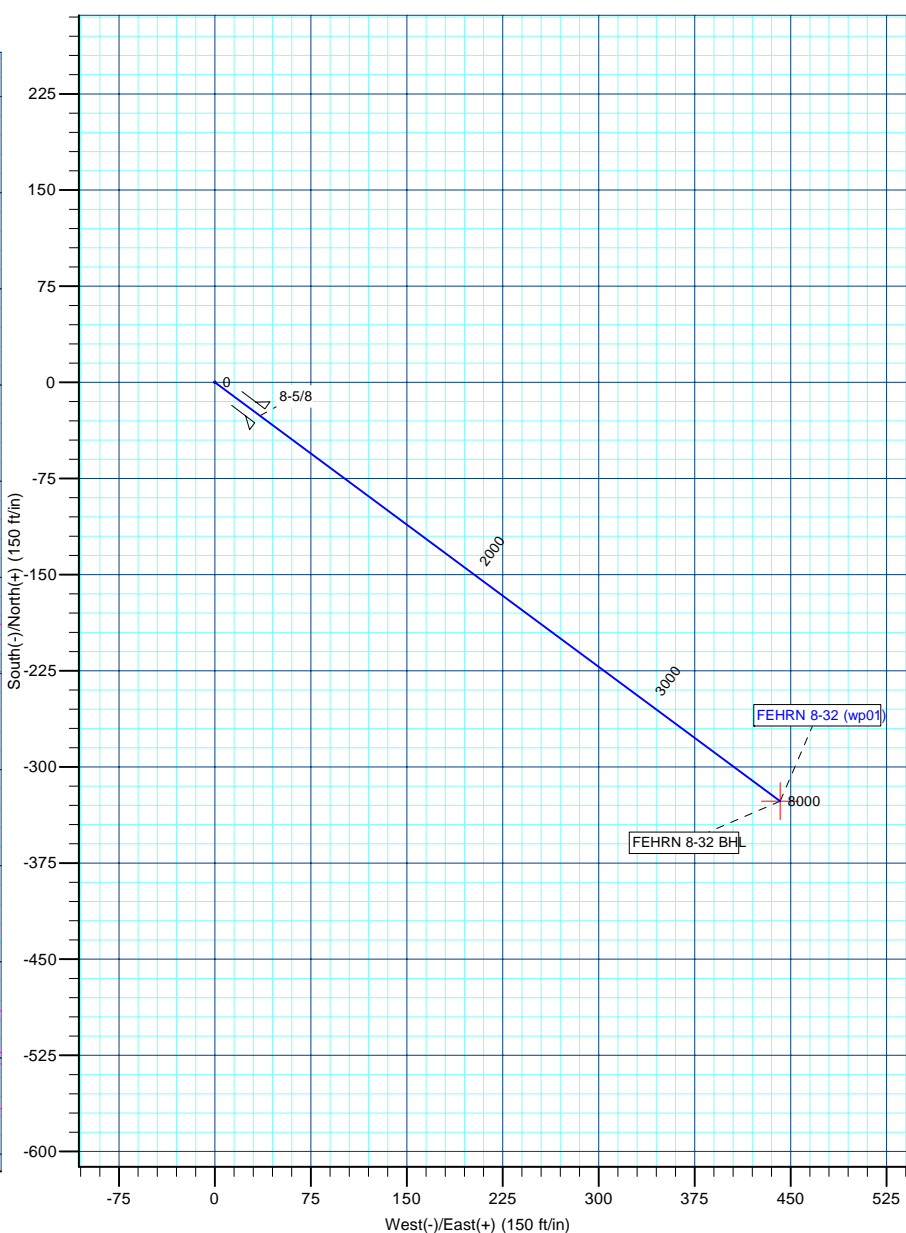
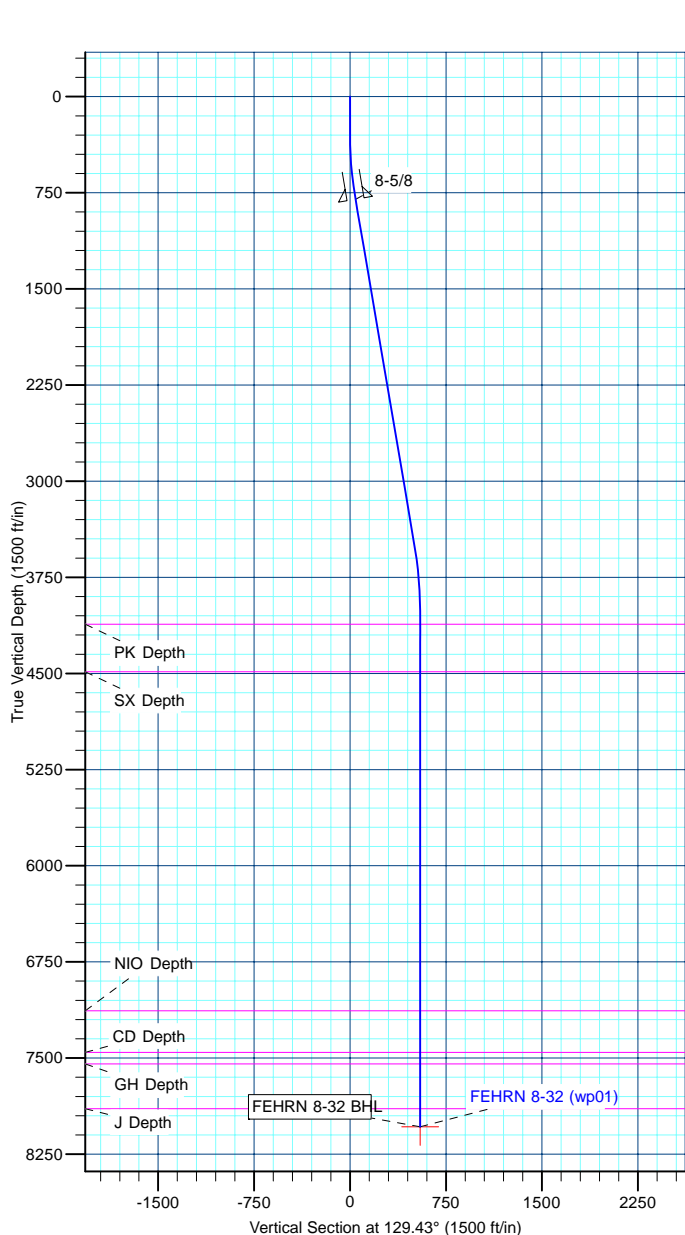
TVD	MD	Name	Size
800.00	802.56	8-5/8	8-5/8

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape Point
FEHRN 8-32 BHL	8036.00	-326.69	441.74	1278760.24	3197513.11	40.096430	-104.793977	

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
784.84	9.70	126.48	782.53	-24.34	32.91	2.00	126.48	40.88
3526.01	9.70	126.48	3484.54	-298.87	404.13	0.00	0.00	501.97
4080.12	0.00	0.00	4036.00	-326.69	441.74	1.75	180.00	548.69
8080.12	0.00	0.00	8036.00	-326.69	441.74	0.00	0.00	548.69



Database:	edm5000p	Local Co-ordinate Reference:	Well FEHRN 8-32
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL @ 4916.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL @ 4916.00ft
Site:	WELD_FEHRN 17-32 PAD	North Reference:	True
Well:	FEHRN 8-32	Survey Calculation Method:	Minimum Curvature
Wellbore:	FEHRN 8-32		
Design:	FEHRN 8-32 (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_FEHRN 17-32 PAD			
Site Position:		Northing:	1,279,083.46 ft	Latitude:	40.097327
From:	Lat/Long	Easting:	3,197,067.90 ft	Longitude:	-104.795559
Position Uncertainty:	0.00 ft	Slot Radius:	0 "	Grid Convergence:	0.46

Well	FEHRN 8-32					
Well Position	+N-S	-0.07 ft	Northing:	1,279,083.40 ft	Latitude:	40.097327
	+E-W	0.90 ft	Easting:	3,197,068.80 ft	Longitude:	-104.795556
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,916.00 ft

Wellbore	FEHRN 8-32				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/3/2010	8.92	66.82	53,024

Design	FEHRN 8-32 (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	129.43

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	
784.84	9.70	126.48	782.53	-24.34	32.91	2.00	2.00	0.00	126.48	
3,526.01	9.70	126.48	3,484.54	-298.87	404.13	0.00	0.00	0.00	0.00	
4,080.12	0.00	0.00	4,036.00	-326.69	441.74	1.75	-1.75	0.00	180.00	
8,080.12	0.00	0.00	8,036.00	-326.69	441.74	0.00	0.00	0.00	0.00	FEHRN 8-32 BHL

Database:	edm5000p	Local Co-ordinate Reference:	Well FEHRN 8-32
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL @ 4916.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL @ 4916.00ft
Site:	WELD_FEHRN 17-32 PAD	North Reference:	True
Well:	FEHRN 8-32	Survey Calculation Method:	Minimum Curvature
Wellbore:	FEHRN 8-32		
Design:	FEHRN 8-32 (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
400.00	2.00	126.48	399.98	-1.04	1.40	1.74	2.00	2.00	0.00
500.00	4.00	126.48	499.84	-4.15	5.61	6.97	2.00	2.00	0.00
600.00	6.00	126.48	599.45	-9.33	12.62	15.67	2.00	2.00	0.00
700.00	8.00	126.48	698.70	-16.58	22.42	27.84	2.00	2.00	0.00
784.84	9.70	126.48	782.53	-24.34	32.91	40.88	2.00	2.00	0.00
800.00	9.70	126.48	797.47	-25.86	34.96	43.43	0.00	0.00	0.00
802.56	9.70	126.48	800.00	-26.11	35.31	43.86	0.00	0.00	0.00
8-5/8									
900.00	9.70	126.48	896.04	-35.87	48.50	60.25	0.00	0.00	0.00
1,000.00	9.70	126.48	994.61	-45.89	62.05	77.07	0.00	0.00	0.00
1,100.00	9.70	126.48	1,093.19	-55.90	75.59	93.89	0.00	0.00	0.00
1,200.00	9.70	126.48	1,191.76	-65.92	89.13	110.71	0.00	0.00	0.00
1,300.00	9.70	126.48	1,290.33	-75.93	102.67	127.53	0.00	0.00	0.00
1,400.00	9.70	126.48	1,388.90	-85.95	116.22	144.35	0.00	0.00	0.00
1,500.00	9.70	126.48	1,487.47	-95.96	129.76	161.17	0.00	0.00	0.00
1,600.00	9.70	126.48	1,586.04	-105.98	143.30	178.00	0.00	0.00	0.00
1,700.00	9.70	126.48	1,684.61	-115.99	156.84	194.82	0.00	0.00	0.00
1,800.00	9.70	126.48	1,783.19	-126.01	170.38	211.64	0.00	0.00	0.00
1,900.00	9.70	126.48	1,881.76	-136.02	183.93	228.46	0.00	0.00	0.00
2,000.00	9.70	126.48	1,980.33	-146.04	197.47	245.28	0.00	0.00	0.00
2,100.00	9.70	126.48	2,078.90	-156.05	211.01	262.10	0.00	0.00	0.00
2,200.00	9.70	126.48	2,177.47	-166.07	224.55	278.92	0.00	0.00	0.00
2,300.00	9.70	126.48	2,276.04	-176.08	238.10	295.74	0.00	0.00	0.00
2,400.00	9.70	126.48	2,374.61	-186.10	251.64	312.56	0.00	0.00	0.00
2,500.00	9.70	126.48	2,473.18	-196.11	265.18	329.39	0.00	0.00	0.00
2,600.00	9.70	126.48	2,571.76	-206.13	278.72	346.21	0.00	0.00	0.00
2,700.00	9.70	126.48	2,670.33	-216.15	292.27	363.03	0.00	0.00	0.00
2,800.00	9.70	126.48	2,768.90	-226.16	305.81	379.85	0.00	0.00	0.00
2,900.00	9.70	126.48	2,867.47	-236.18	319.35	396.67	0.00	0.00	0.00
3,000.00	9.70	126.48	2,966.04	-246.19	332.89	413.49	0.00	0.00	0.00
3,100.00	9.70	126.48	3,064.61	-256.21	346.44	430.31	0.00	0.00	0.00
3,200.00	9.70	126.48	3,163.18	-266.22	359.98	447.13	0.00	0.00	0.00
3,300.00	9.70	126.48	3,261.75	-276.24	373.52	463.96	0.00	0.00	0.00
3,400.00	9.70	126.48	3,360.33	-286.25	387.06	480.78	0.00	0.00	0.00
3,500.00	9.70	126.48	3,458.90	-296.27	400.61	497.60	0.00	0.00	0.00
3,526.01	9.70	126.48	3,484.54	-298.87	404.13	501.97	0.00	0.00	0.00
3,600.00	8.40	126.48	3,557.60	-305.79	413.48	513.59	1.75	-1.75	0.00
3,700.00	6.65	126.48	3,656.74	-313.58	424.02	526.68	1.75	-1.75	0.00
3,800.00	4.90	126.48	3,756.23	-319.57	432.11	536.73	1.75	-1.75	0.00
3,900.00	3.15	126.48	3,855.97	-323.74	437.75	543.74	1.75	-1.75	0.00
4,000.00	1.40	126.48	3,955.89	-326.10	440.95	547.71	1.75	-1.75	0.00
4,080.12	0.00	0.00	4,036.00	-326.69	441.74	548.69	1.75	-1.75	0.00
4,100.00	0.00	0.00	4,055.88	-326.69	441.74	548.69	0.00	0.00	0.00
4,160.12	0.00	0.00	4,116.00	-326.69	441.74	548.69	0.00	0.00	0.00
PK Depth									
4,200.00	0.00	0.00	4,155.88	-326.69	441.74	548.69	0.00	0.00	0.00
4,300.00	0.00	0.00	4,255.88	-326.69	441.74	548.69	0.00	0.00	0.00
4,400.00	0.00	0.00	4,355.88	-326.69	441.74	548.69	0.00	0.00	0.00
4,500.00	0.00	0.00	4,455.88	-326.69	441.74	548.69	0.00	0.00	0.00
4,530.12	0.00	0.00	4,486.00	-326.69	441.74	548.69	0.00	0.00	0.00

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Site:	WELD_FEHRN 17-32 PAD	North Reference:	True
Well:	FEHRN 8-32	Survey Calculation Method:	Minimum Curvature
Wellbore:	FEHRN 8-32		
Design:	FEHRN 8-32 (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)
SX Depth									
4,600.00	0.00	0.00	4,555.88	-326.69	441.74	548.69	0.00	0.00	0.00
4,700.00	0.00	0.00	4,655.88	-326.69	441.74	548.69	0.00	0.00	0.00
4,800.00	0.00	0.00	4,755.88	-326.69	441.74	548.69	0.00	0.00	0.00
4,900.00	0.00	0.00	4,855.88	-326.69	441.74	548.69	0.00	0.00	0.00
5,000.00	0.00	0.00	4,955.88	-326.69	441.74	548.69	0.00	0.00	0.00
5,100.00	0.00	0.00	5,055.88	-326.69	441.74	548.69	0.00	0.00	0.00
5,200.00	0.00	0.00	5,155.88	-326.69	441.74	548.69	0.00	0.00	0.00
5,300.00	0.00	0.00	5,255.88	-326.69	441.74	548.69	0.00	0.00	0.00
5,400.00	0.00	0.00	5,355.88	-326.69	441.74	548.69	0.00	0.00	0.00
5,500.00	0.00	0.00	5,455.88	-326.69	441.74	548.69	0.00	0.00	0.00
5,600.00	0.00	0.00	5,555.88	-326.69	441.74	548.69	0.00	0.00	0.00
5,700.00	0.00	0.00	5,655.88	-326.69	441.74	548.69	0.00	0.00	0.00
5,800.00	0.00	0.00	5,755.88	-326.69	441.74	548.69	0.00	0.00	0.00
5,900.00	0.00	0.00	5,855.88	-326.69	441.74	548.69	0.00	0.00	0.00
6,000.00	0.00	0.00	5,955.88	-326.69	441.74	548.69	0.00	0.00	0.00
6,100.00	0.00	0.00	6,055.88	-326.69	441.74	548.69	0.00	0.00	0.00
6,200.00	0.00	0.00	6,155.88	-326.69	441.74	548.69	0.00	0.00	0.00
6,300.00	0.00	0.00	6,255.88	-326.69	441.74	548.69	0.00	0.00	0.00
6,400.00	0.00	0.00	6,355.88	-326.69	441.74	548.69	0.00	0.00	0.00
6,500.00	0.00	0.00	6,455.88	-326.69	441.74	548.69	0.00	0.00	0.00
6,600.00	0.00	0.00	6,555.88	-326.69	441.74	548.69	0.00	0.00	0.00
6,700.00	0.00	0.00	6,655.88	-326.69	441.74	548.69	0.00	0.00	0.00
6,800.00	0.00	0.00	6,755.88	-326.69	441.74	548.69	0.00	0.00	0.00
6,900.00	0.00	0.00	6,855.88	-326.69	441.74	548.69	0.00	0.00	0.00
7,000.00	0.00	0.00	6,955.88	-326.69	441.74	548.69	0.00	0.00	0.00
7,100.00	0.00	0.00	7,055.88	-326.69	441.74	548.69	0.00	0.00	0.00
7,175.12	0.00	0.00	7,131.00	-326.69	441.74	548.69	0.00	0.00	0.00
NIO Depth									
7,200.00	0.00	0.00	7,155.88	-326.69	441.74	548.69	0.00	0.00	0.00
7,300.00	0.00	0.00	7,255.88	-326.69	441.74	548.69	0.00	0.00	0.00
7,400.00	0.00	0.00	7,355.88	-326.69	441.74	548.69	0.00	0.00	0.00
7,500.00	0.00	0.00	7,455.88	-326.69	441.74	548.69	0.00	0.00	0.00
7,500.12	0.00	0.00	7,456.00	-326.69	441.74	548.69	0.00	0.00	0.00
CD Depth									
7,590.12	0.00	0.00	7,546.00	-326.69	441.74	548.69	0.00	0.00	0.00
GH Depth									
7,600.00	0.00	0.00	7,555.88	-326.69	441.74	548.69	0.00	0.00	0.00
7,700.00	0.00	0.00	7,655.88	-326.69	441.74	548.69	0.00	0.00	0.00
7,800.00	0.00	0.00	7,755.88	-326.69	441.74	548.69	0.00	0.00	0.00
7,900.00	0.00	0.00	7,855.88	-326.69	441.74	548.69	0.00	0.00	0.00
7,940.12	0.00	0.00	7,896.00	-326.69	441.74	548.69	0.00	0.00	0.00
J Depth									
8,000.00	0.00	0.00	7,955.88	-326.69	441.74	548.69	0.00	0.00	0.00
8,080.12	0.00	0.00	8,036.00	-326.69	441.74	548.69	0.00	0.00	0.00
FEHRN 8-32 BHL									

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Well:	FEHRN 8-32	Survey Calculation Method:	Minimum Curvature
Wellbore:	FEHRN 8-32		
Design:	FEHRN 8-32 (wp01)		

Design Targets

Target Name

- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- Shape									
FEHRN 8-32 BHL	0.00	0.00	8,036.00	-326.69	441.74	1,278,760.24	3,197,513.11	40.096430	-104.793977
- plan hits target center									
- Point									

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
802.56	800.00	8-5/8	8-5/8	11

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,160.12	4,116.00	PK Depth			
4,530.12	4,486.00	SX Depth			
7,175.12	7,131.00	NIO Depth			
7,500.12	7,456.00	CD Depth			
7,590.12	7,546.00	GH Depth			
7,940.12	7,896.00	J Depth			