

# **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83**

**WELD\_FEHRN 17-32 PAD**

**FEHRN 26-32**

**FEHRN 26-32**

**Plan: FEHRN 26-32 (wp01)**

## **Standard Planning Report**

**03 February, 2011**



Project: COLORADO NORTHERN ZONE - 83  
Site: WELD\_FEHRN 17-32 PAD  
Well: FEHRN 26-32  
Wellbore: FEHRN 26-32  
Section:  
SHL:  
Design: FEHRN 26-32 (wp01)  
Latitude: 40.097328  
Longitude: -104.795521  
GL: 4916.00  
KB: GL @ 4916.00ft

## FORMATION TOP DETAILS

TVDPath	MDPath	Formation
4116.00	4367.05	PK Depth
4486.00	4764.32	SX Depth
7131.00	7463.75	NIO Depth
7456.00	7788.75	CD Depth
7546.00	7878.75	GH Depth
7896.00	8228.75	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 26-32

+N/-S	+E/-W	Northing	Ground Level: Easting	4916.00 Latitude	Longitude	Slot
0.00	0.00	1279083.89	3197078.58	40.097328	-104.795521	

## CASING DETAILS

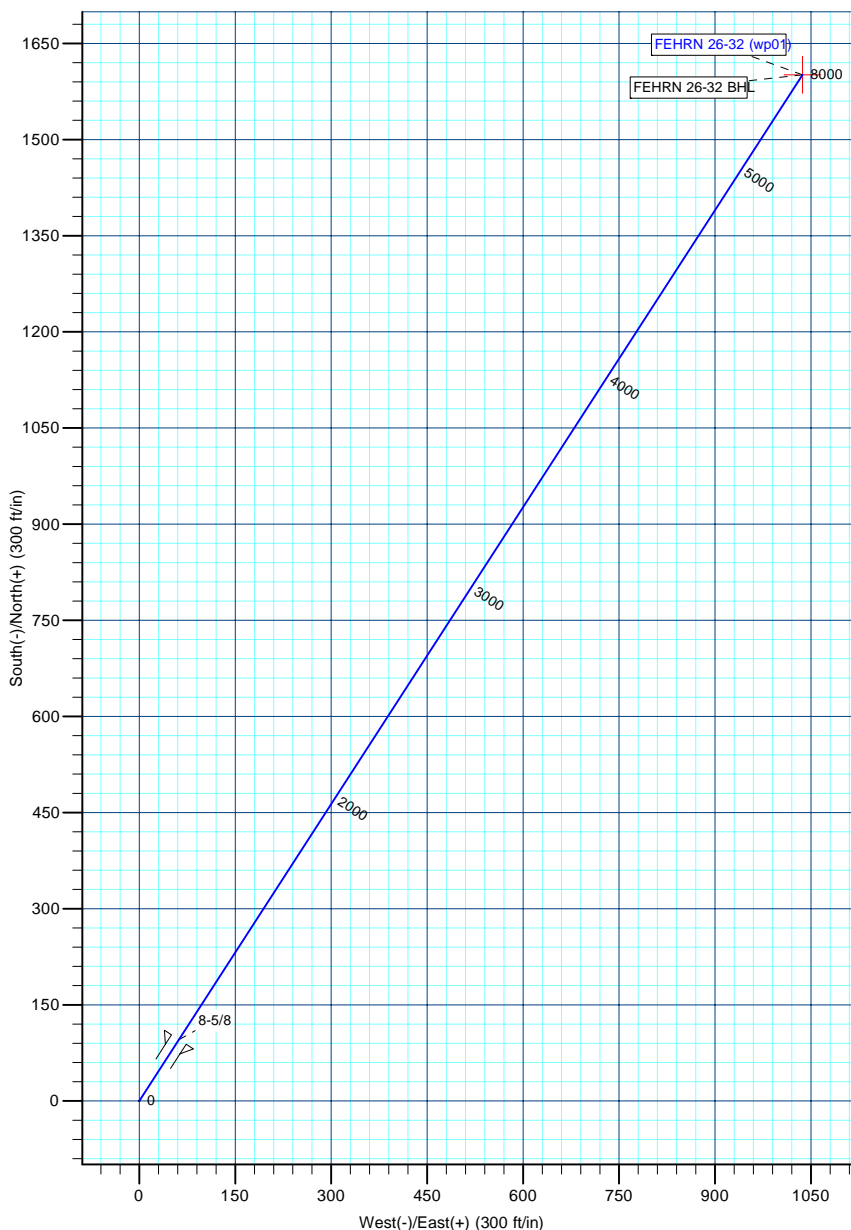
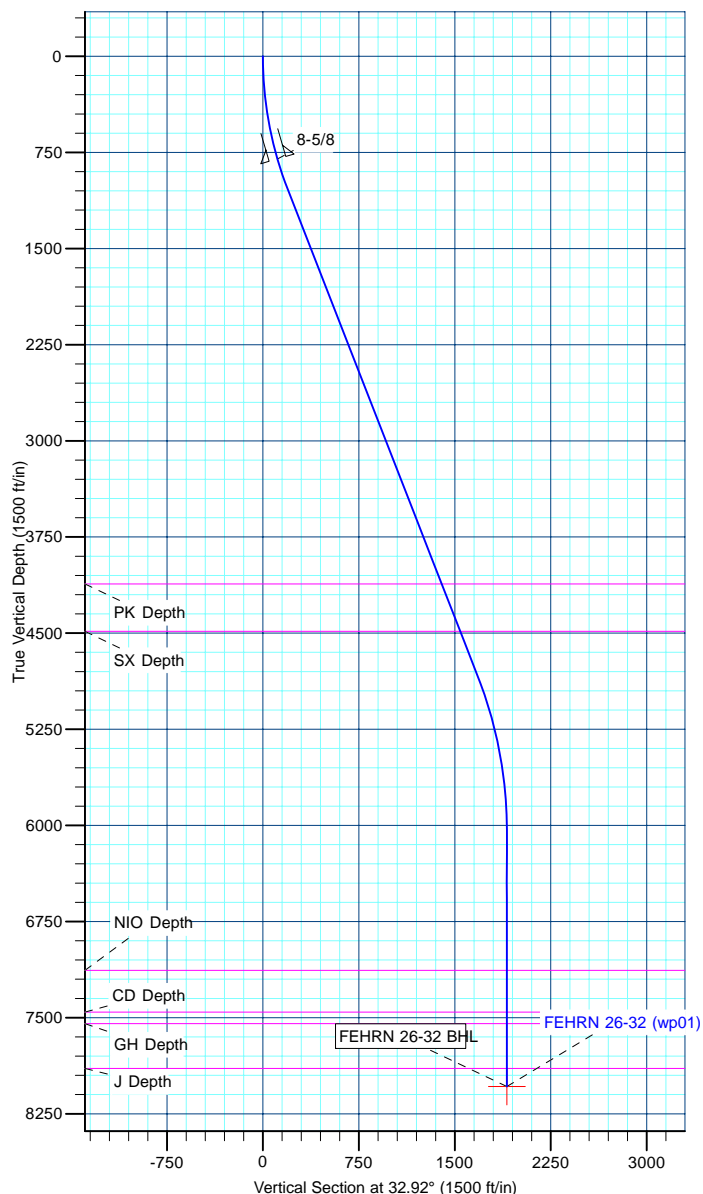
TVD	MD	Name	Size
800.00	810.78	8-5/8	8-5/8

## DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape Point
FEHRN 26-32 BHL	8036.00	1601.04	1036.70	1280693.12	3198102.53	40.101723	-104.791815	

## 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
1067.69	21.35	32.92	1043.15	165.08	106.89	2.00	32.92	196.67
5148.53	21.35	32.92	4843.83	1412.38	914.54	0.00	0.00	1682.61
6368.75	0.00	0.00	6036.00	1601.04	1036.70	1.75	180.00	1907.38
8368.75	0.00	0.00	8036.00	1601.04	1036.70	0.00	0.00	1907.38



<b>Database:</b>	edm5000p	<b>Local Co-ordinate Reference:</b>	Well FEHRN 26-32
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL @ 4916.00ft
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL @ 4916.00ft
<b>Site:</b>	WELD_FEHRN 17-32 PAD	<b>North Reference:</b>	True
<b>Well:</b>	FEHRN 26-32	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	FEHRN 26-32		
<b>Design:</b>	FEHRN 26-32 (wp01)		

<b>Project</b>	COLORADO NORTHERN ZONE - 83		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	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 26-32					
Well Position	+N-S	0.34 ft	Northing:	1,279,083.89 ft	Latitude:	40.097328
	+E-W	10.69 ft	Easting:	3,197,078.58 ft	Longitude:	-104.795521
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,916.00 ft

<b>Wellbore</b>	FEHRN 26-32				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	12/3/2010	8.92	66.82	53,024

<b>Design</b>	FEHRN 26-32 (wp01)			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	32.92

<b>Plan Sections</b>										
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	
1,067.69	21.35	32.92	1,043.15	165.08	106.89	2.00	2.00	0.00	32.92	
5,148.53	21.35	32.92	4,843.83	1,412.38	914.54	0.00	0.00	0.00	0.00	
6,368.75	0.00	0.00	6,036.00	1,601.04	1,036.70	1.75	-1.75	0.00	180.00	
8,368.75	0.00	0.00	8,036.00	1,601.04	1,036.70	0.00	0.00	0.00	0.00	FEHRN 26-32 BHL

<b>Database:</b>	edm5000p	<b>Local Co-ordinate Reference:</b>	Well FEHRN 26-32
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL @ 4916.00ft
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL @ 4916.00ft
<b>Site:</b>	WELD_FEHRN 17-32 PAD	<b>North Reference:</b>	True
<b>Well:</b>	FEHRN 26-32	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	FEHRN 26-32		
<b>Design:</b>	FEHRN 26-32 (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	2.00	32.92	99.98	1.46	0.95	1.75	2.00	2.00	0.00
200.00	4.00	32.92	199.84	5.86	3.79	6.98	2.00	2.00	0.00
300.00	6.00	32.92	299.45	13.17	8.53	15.69	2.00	2.00	0.00
400.00	8.00	32.92	398.70	23.40	15.15	27.88	2.00	2.00	0.00
500.00	10.00	32.92	497.47	36.53	23.66	43.52	2.00	2.00	0.00
600.00	12.00	32.92	595.62	52.55	34.03	62.60	2.00	2.00	0.00
700.00	14.00	32.92	693.06	71.43	46.25	85.10	2.00	2.00	0.00
800.00	16.00	32.92	789.64	93.15	60.32	110.98	2.00	2.00	0.00
810.78	16.22	32.92	800.00	95.66	61.94	113.97	2.00	2.00	0.00
8-5/8									
900.00	18.00	32.92	885.27	117.69	76.21	140.21	2.00	2.00	0.00
1,000.00	20.00	32.92	979.82	145.02	93.90	172.77	2.00	2.00	0.00
1,067.69	21.35	32.92	1,043.15	165.08	106.89	196.67	2.00	2.00	0.00
1,100.00	21.35	32.92	1,073.24	174.96	113.29	208.43	0.00	0.00	0.00
1,200.00	21.35	32.92	1,166.37	205.52	133.08	244.85	0.00	0.00	0.00
1,300.00	21.35	32.92	1,259.51	236.09	152.87	281.26	0.00	0.00	0.00
1,400.00	21.35	32.92	1,352.64	266.65	172.66	317.67	0.00	0.00	0.00
1,500.00	21.35	32.92	1,445.78	297.22	192.45	354.08	0.00	0.00	0.00
1,600.00	21.35	32.92	1,538.91	327.78	212.24	390.50	0.00	0.00	0.00
1,700.00	21.35	32.92	1,632.05	358.35	232.03	426.91	0.00	0.00	0.00
1,800.00	21.35	32.92	1,725.18	388.91	251.83	463.32	0.00	0.00	0.00
1,900.00	21.35	32.92	1,818.32	419.48	271.62	499.74	0.00	0.00	0.00
2,000.00	21.35	32.92	1,911.45	450.04	291.41	536.15	0.00	0.00	0.00
2,100.00	21.35	32.92	2,004.59	480.60	311.20	572.56	0.00	0.00	0.00
2,200.00	21.35	32.92	2,097.72	511.17	330.99	608.97	0.00	0.00	0.00
2,300.00	21.35	32.92	2,190.86	541.73	350.78	645.39	0.00	0.00	0.00
2,400.00	21.35	32.92	2,283.99	572.30	370.57	681.80	0.00	0.00	0.00
2,500.00	21.35	32.92	2,377.12	602.86	390.36	718.21	0.00	0.00	0.00
2,600.00	21.35	32.92	2,470.26	633.43	410.15	754.62	0.00	0.00	0.00
2,700.00	21.35	32.92	2,563.39	663.99	429.95	791.04	0.00	0.00	0.00
2,800.00	21.35	32.92	2,656.53	694.56	449.74	827.45	0.00	0.00	0.00
2,900.00	21.35	32.92	2,749.66	725.12	469.53	863.86	0.00	0.00	0.00
3,000.00	21.35	32.92	2,842.80	755.69	489.32	900.27	0.00	0.00	0.00
3,100.00	21.35	32.92	2,935.93	786.25	509.11	936.69	0.00	0.00	0.00
3,200.00	21.35	32.92	3,029.07	816.82	528.90	973.10	0.00	0.00	0.00
3,300.00	21.35	32.92	3,122.20	847.38	548.69	1,009.51	0.00	0.00	0.00
3,400.00	21.35	32.92	3,215.34	877.94	568.48	1,045.93	0.00	0.00	0.00
3,500.00	21.35	32.92	3,308.47	908.51	588.27	1,082.34	0.00	0.00	0.00
3,600.00	21.35	32.92	3,401.61	939.07	608.06	1,118.75	0.00	0.00	0.00
3,700.00	21.35	32.92	3,494.74	969.64	627.86	1,155.16	0.00	0.00	0.00
3,800.00	21.35	32.92	3,587.88	1,000.20	647.65	1,191.58	0.00	0.00	0.00
3,900.00	21.35	32.92	3,681.01	1,030.77	667.44	1,227.99	0.00	0.00	0.00
4,000.00	21.35	32.92	3,774.15	1,061.33	687.23	1,264.40	0.00	0.00	0.00
4,100.00	21.35	32.92	3,867.28	1,091.90	707.02	1,300.81	0.00	0.00	0.00
4,200.00	21.35	32.92	3,960.42	1,122.46	726.81	1,337.23	0.00	0.00	0.00
4,300.00	21.35	32.92	4,053.55	1,153.03	746.60	1,373.64	0.00	0.00	0.00
4,367.05	21.35	32.92	4,116.00	1,173.52	759.87	1,398.05	0.00	0.00	0.00
PK Depth									
4,400.00	21.35	32.92	4,146.69	1,183.59	766.39	1,410.05	0.00	0.00	0.00
4,500.00	21.35	32.92	4,239.82	1,214.16	786.18	1,446.47	0.00	0.00	0.00
4,600.00	21.35	32.92	4,332.96	1,244.72	805.98	1,482.88	0.00	0.00	0.00
4,700.00	21.35	32.92	4,426.09	1,275.29	825.77	1,519.29	0.00	0.00	0.00
4,764.32	21.35	32.92	4,486.00	1,294.95	838.50	1,542.71	0.00	0.00	0.00

<b>Database:</b>	edm5000p	<b>Local Co-ordinate Reference:</b>	Well FEHRN 26-32
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL @ 4916.00ft
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL @ 4916.00ft
<b>Site:</b>	WELD_FEHRN 17-32 PAD	<b>North Reference:</b>	True
<b>Well:</b>	FEHRN 26-32	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	FEHRN 26-32		
<b>Design:</b>	FEHRN 26-32 (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)
<b>SX Depth</b>									
4,800.00	21.35	32.92	4,519.23	1,305.85	845.56	1,555.70	0.00	0.00	0.00
4,900.00	21.35	32.92	4,612.36	1,336.41	865.35	1,592.12	0.00	0.00	0.00
5,000.00	21.35	32.92	4,705.50	1,366.98	885.14	1,628.53	0.00	0.00	0.00
5,100.00	21.35	32.92	4,798.63	1,397.54	904.93	1,664.94	0.00	0.00	0.00
5,148.53	21.35	32.92	4,843.83	1,412.38	914.54	1,682.61	0.00	0.00	0.00
5,200.00	20.45	32.92	4,891.91	1,427.79	924.52	1,700.98	1.75	-1.75	0.00
5,300.00	18.70	32.92	4,986.13	1,455.92	942.73	1,734.48	1.75	-1.75	0.00
5,400.00	16.95	32.92	5,081.32	1,481.62	959.37	1,765.10	1.75	-1.75	0.00
5,500.00	15.20	32.92	5,177.41	1,504.86	974.42	1,792.79	1.75	-1.75	0.00
5,600.00	13.45	32.92	5,274.29	1,525.63	987.87	1,817.54	1.75	-1.75	0.00
5,700.00	11.70	32.92	5,371.89	1,543.91	999.71	1,839.32	1.75	-1.75	0.00
5,800.00	9.95	32.92	5,470.10	1,559.68	1,009.92	1,858.10	1.75	-1.75	0.00
5,900.00	8.20	32.92	5,568.85	1,572.93	1,018.49	1,873.88	1.75	-1.75	0.00
6,000.00	6.45	32.92	5,668.03	1,583.63	1,025.43	1,886.63	1.75	-1.75	0.00
6,100.00	4.70	32.92	5,767.55	1,591.79	1,030.71	1,896.35	1.75	-1.75	0.00
6,200.00	2.95	32.92	5,867.32	1,597.39	1,034.34	1,903.03	1.75	-1.75	0.00
6,300.00	1.20	32.92	5,967.25	1,600.44	1,036.31	1,906.66	1.75	-1.75	0.00
6,368.75	0.00	0.00	6,036.00	1,601.04	1,036.70	1,907.38	1.75	-1.75	0.00
6,400.00	0.00	0.00	6,067.25	1,601.04	1,036.70	1,907.38	0.00	0.00	0.00
6,500.00	0.00	0.00	6,167.25	1,601.04	1,036.70	1,907.38	0.00	0.00	0.00
6,600.00	0.00	0.00	6,267.25	1,601.04	1,036.70	1,907.38	0.00	0.00	0.00
6,700.00	0.00	0.00	6,367.25	1,601.04	1,036.70	1,907.38	0.00	0.00	0.00
6,800.00	0.00	0.00	6,467.25	1,601.04	1,036.70	1,907.38	0.00	0.00	0.00
6,900.00	0.00	0.00	6,567.25	1,601.04	1,036.70	1,907.38	0.00	0.00	0.00
7,000.00	0.00	0.00	6,667.25	1,601.04	1,036.70	1,907.38	0.00	0.00	0.00
7,100.00	0.00	0.00	6,767.25	1,601.04	1,036.70	1,907.38	0.00	0.00	0.00
7,200.00	0.00	0.00	6,867.25	1,601.04	1,036.70	1,907.38	0.00	0.00	0.00
7,300.00	0.00	0.00	6,967.25	1,601.04	1,036.70	1,907.38	0.00	0.00	0.00
7,400.00	0.00	0.00	7,067.25	1,601.04	1,036.70	1,907.38	0.00	0.00	0.00
7,463.75	0.00	0.00	7,131.00	1,601.04	1,036.70	1,907.38	0.00	0.00	0.00
<b>NIO Depth</b>									
7,500.00	0.00	0.00	7,167.25	1,601.04	1,036.70	1,907.38	0.00	0.00	0.00
7,600.00	0.00	0.00	7,267.25	1,601.04	1,036.70	1,907.38	0.00	0.00	0.00
7,700.00	0.00	0.00	7,367.25	1,601.04	1,036.70	1,907.38	0.00	0.00	0.00
7,788.75	0.00	0.00	7,456.00	1,601.04	1,036.70	1,907.38	0.00	0.00	0.00
<b>CD Depth</b>									
7,800.00	0.00	0.00	7,467.25	1,601.04	1,036.70	1,907.38	0.00	0.00	0.00
7,878.75	0.00	0.00	7,546.00	1,601.04	1,036.70	1,907.38	0.00	0.00	0.00
<b>GH Depth</b>									
7,900.00	0.00	0.00	7,567.25	1,601.04	1,036.70	1,907.38	0.00	0.00	0.00
8,000.00	0.00	0.00	7,667.25	1,601.04	1,036.70	1,907.38	0.00	0.00	0.00
8,100.00	0.00	0.00	7,767.25	1,601.04	1,036.70	1,907.38	0.00	0.00	0.00
8,200.00	0.00	0.00	7,867.25	1,601.04	1,036.70	1,907.38	0.00	0.00	0.00
8,228.75	0.00	0.00	7,896.00	1,601.04	1,036.70	1,907.38	0.00	0.00	0.00
<b>J Depth</b>									
8,300.00	0.00	0.00	7,967.25	1,601.04	1,036.70	1,907.38	0.00	0.00	0.00
8,368.75	0.00	0.00	8,036.00	1,601.04	1,036.70	1,907.38	0.00	0.00	0.00
<b>FEHRN 26-32 BHL</b>									

<b>Database:</b>	edm5000p	<b>Local Co-ordinate Reference:</b>	Well FEHRN 26-32
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	GL @ 4916.00ft
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	GL @ 4916.00ft
<b>Site:</b>	WELD_FEHRN 17-32 PAD	<b>North Reference:</b>	True
<b>Well:</b>	FEHRN 26-32	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	FEHRN 26-32		
<b>Design:</b>	FEHRN 26-32 (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 26-32 BHL	0.00	0.00	8,036.00	1,601.04	1,036.70	1,280,693.12	3,198,102.53	40.101723	-104.791815
- plan hits target center									
- Point									

#### Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
810.78	800.00	8-5/8	8-5/8	11

#### Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,367.05	4,116.00	PK Depth			
4,764.32	4,486.00	SX Depth			
7,463.75	7,131.00	NIO Depth			
7,788.75	7,456.00	CD Depth			
7,878.75	7,546.00	GH Depth			
8,228.75	7,896.00	J Depth			