

# **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83**

**WELD\_FEHRN 17-32 PAD**

**FEHRN 24-32**

**FEHRN 24-32**

**Plan: FEHRN 24-32 (wp01)**

## **Standard Planning Report**

**03 February, 2011**



Project: COLORADO NORTHERN ZONE - 83  
Site: WELD\_FEHRN 17-32 PAD  
Well: FEHRN 24-32  
Wellbore: FEHRN 24-32  
Section:  
SHL:  
Design: FEHRN 24-32 (wp01)  
Latitude: 40.097327  
Longitude: -104.795628  
GL: 4916.00  
KB: GL @ 4916.00ft

## FORMATION TOP DETAILS

TVDPath	MDPath	Formation
4116.00	4204.80	PK Depth
4486.00	4583.35	SX Depth
7131.00	7230.97	NIO Depth
7456.00	7555.97	CD Depth
7546.00	7645.97	GH Depth
7896.00	7995.97	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 24-32

+N/-S	+E/-W	Northing	Ground Level: Easting	4916.00 Latitude	Longitude	Slot
0.00	0.00	1279083.30	3197048.65	40.097327	-104.795628	

## CASING DETAILS

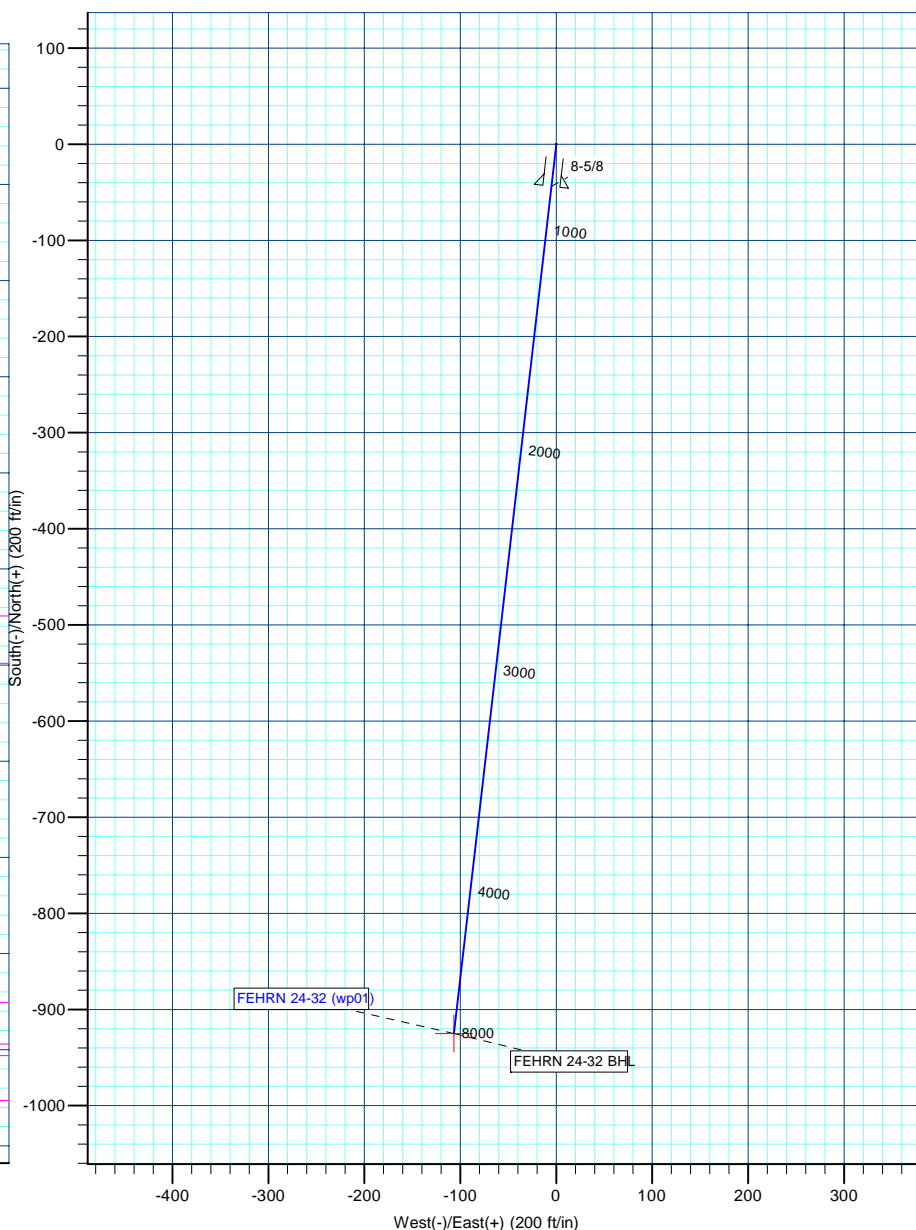
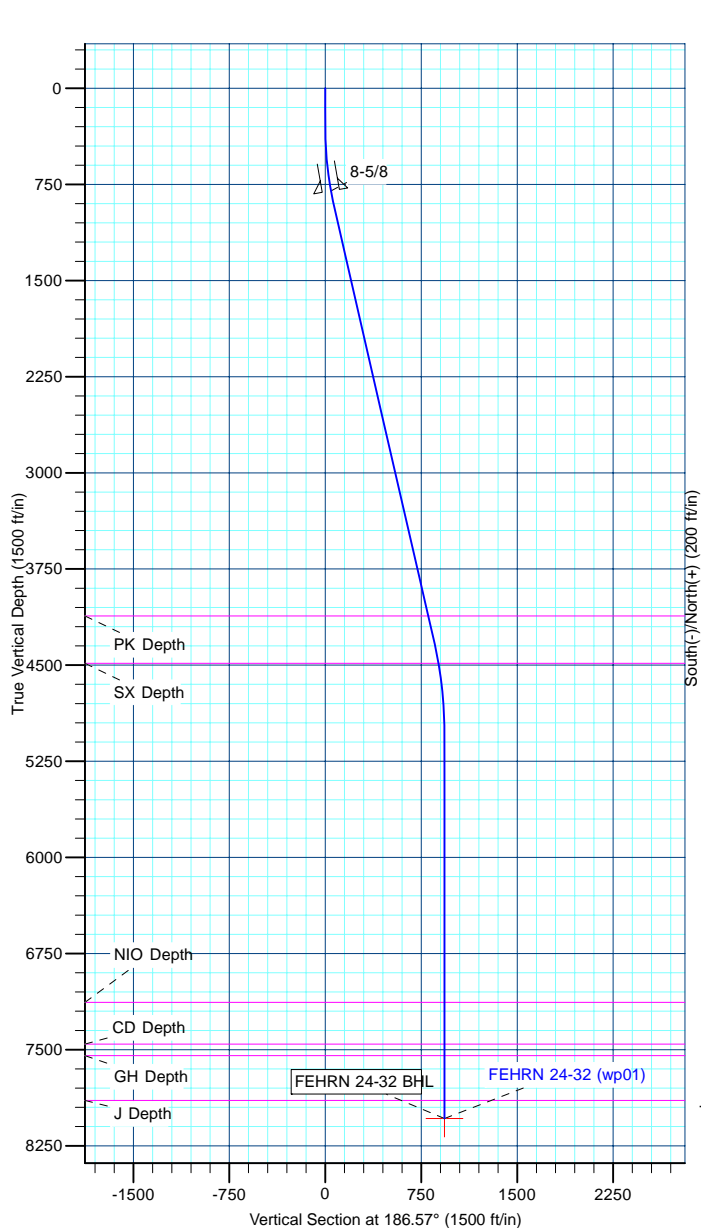
TVD	MD	Name	Size
800.00	802.57	8-5/8	8-5/8

## DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape Point
FEHRN 24-32 BHL	8036.00	-924.89	-106.59	1278157.59	3196949.41	40.094788	-104.796009	

## 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
949.27	12.99	186.57	943.72	-72.78	-8.39	2.00	186.57	73.26
4393.95	12.99	186.57	4300.32	-841.71	-97.00	0.00	0.00	847.29
5135.97	0.00	0.00	5036.00	-924.89	-106.59	1.75	180.00	931.01
8135.97	0.00	0.00	8036.00	-924.89	-106.59	0.00	0.00	931.01



<b>Database:</b>	edm5000p	<b>Local Co-ordinate Reference:</b>	Well FEHRN 24-32
<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 24-32	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	FEHRN 24-32		
<b>Design:</b>	FEHRN 24-32 (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 24-32					
Well Position	+N-S	-0.01 ft	Northing:	1,279,083.30 ft	Latitude:	40.097327
	+E-W	-19.25 ft	Easting:	3,197,048.65 ft	Longitude:	-104.795628
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,916.00 ft

<b>Wellbore</b>	FEHRN 24-32				
<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	8.93	66.82	53,024

<b>Design</b>	FEHRN 24-32 (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	186.57

<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	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
949.27	12.99	186.57	943.72	-72.78	-8.39	2.00	2.00	0.00	186.57	
4,393.95	12.99	186.57	4,300.32	-841.71	-97.00	0.00	0.00	0.00	0.00	
5,135.97	0.00	0.00	5,036.00	-924.89	-106.59	1.75	-1.75	0.00	180.00	
8,135.97	0.00	0.00	8,036.00	-924.89	-106.59	0.00	0.00	0.00	0.00	FEHRN 24-32 BHL

<b>Database:</b>	edm5000p	<b>Local Co-ordinate Reference:</b>	Well FEHRN 24-32
<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 24-32	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	FEHRN 24-32		
<b>Design:</b>	FEHRN 24-32 (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	186.57	399.98	-1.73	-0.20	1.75	2.00	2.00	0.00
500.00	4.00	186.57	499.84	-6.93	-0.80	6.98	2.00	2.00	0.00
600.00	6.00	186.57	599.45	-15.59	-1.80	15.69	2.00	2.00	0.00
700.00	8.00	186.57	698.70	-27.70	-3.19	27.88	2.00	2.00	0.00
800.00	10.00	186.57	797.47	-43.24	-4.98	43.52	2.00	2.00	0.00
802.57	10.05	186.57	800.00	-43.68	-5.03	43.97	2.00	2.00	0.00
8-5/8									
900.00	12.00	186.57	895.62	-62.19	-7.17	62.60	2.00	2.00	0.00
949.27	12.99	186.57	943.72	-72.78	-8.39	73.26	2.00	2.00	0.00
1,000.00	12.99	186.57	993.16	-84.10	-9.69	84.66	0.00	0.00	0.00
1,100.00	12.99	186.57	1,090.60	-106.43	-12.27	107.13	0.00	0.00	0.00
1,200.00	12.99	186.57	1,188.04	-128.75	-14.84	129.60	0.00	0.00	0.00
1,300.00	12.99	186.57	1,285.49	-151.07	-17.41	152.07	0.00	0.00	0.00
1,400.00	12.99	186.57	1,382.93	-173.39	-19.98	174.54	0.00	0.00	0.00
1,500.00	12.99	186.57	1,480.37	-195.71	-22.56	197.01	0.00	0.00	0.00
1,600.00	12.99	186.57	1,577.82	-218.04	-25.13	219.48	0.00	0.00	0.00
1,700.00	12.99	186.57	1,675.26	-240.36	-27.70	241.95	0.00	0.00	0.00
1,800.00	12.99	186.57	1,772.70	-262.68	-30.27	264.42	0.00	0.00	0.00
1,900.00	12.99	186.57	1,870.14	-285.00	-32.85	286.89	0.00	0.00	0.00
2,000.00	12.99	186.57	1,967.59	-307.33	-35.42	309.36	0.00	0.00	0.00
2,100.00	12.99	186.57	2,065.03	-329.65	-37.99	331.83	0.00	0.00	0.00
2,200.00	12.99	186.57	2,162.47	-351.97	-40.56	354.30	0.00	0.00	0.00
2,300.00	12.99	186.57	2,259.91	-374.29	-43.14	376.77	0.00	0.00	0.00
2,400.00	12.99	186.57	2,357.36	-396.62	-45.71	399.24	0.00	0.00	0.00
2,500.00	12.99	186.57	2,454.80	-418.94	-48.28	421.71	0.00	0.00	0.00
2,600.00	12.99	186.57	2,552.24	-441.26	-50.85	444.18	0.00	0.00	0.00
2,700.00	12.99	186.57	2,649.69	-463.58	-53.43	466.65	0.00	0.00	0.00
2,800.00	12.99	186.57	2,747.13	-485.91	-56.00	489.12	0.00	0.00	0.00
2,900.00	12.99	186.57	2,844.57	-508.23	-58.57	511.59	0.00	0.00	0.00
3,000.00	12.99	186.57	2,942.01	-530.55	-61.14	534.06	0.00	0.00	0.00
3,100.00	12.99	186.57	3,039.46	-552.87	-63.72	556.53	0.00	0.00	0.00
3,200.00	12.99	186.57	3,136.90	-575.20	-66.29	579.00	0.00	0.00	0.00
3,300.00	12.99	186.57	3,234.34	-597.52	-68.86	601.47	0.00	0.00	0.00
3,400.00	12.99	186.57	3,331.79	-619.84	-71.43	623.94	0.00	0.00	0.00
3,500.00	12.99	186.57	3,429.23	-642.16	-74.01	646.41	0.00	0.00	0.00
3,600.00	12.99	186.57	3,526.67	-664.49	-76.58	668.88	0.00	0.00	0.00
3,700.00	12.99	186.57	3,624.11	-686.81	-79.15	691.35	0.00	0.00	0.00
3,800.00	12.99	186.57	3,721.56	-709.13	-81.72	713.82	0.00	0.00	0.00
3,900.00	12.99	186.57	3,819.00	-731.45	-84.30	736.29	0.00	0.00	0.00
4,000.00	12.99	186.57	3,916.44	-753.77	-86.87	758.76	0.00	0.00	0.00
4,100.00	12.99	186.57	4,013.88	-776.10	-89.44	781.23	0.00	0.00	0.00
4,200.00	12.99	186.57	4,111.33	-798.42	-92.02	803.70	0.00	0.00	0.00
4,204.80	12.99	186.57	4,116.00	-799.49	-92.14	804.78	0.00	0.00	0.00
PK Depth									
4,300.00	12.99	186.57	4,208.77	-820.74	-94.59	826.17	0.00	0.00	0.00
4,393.95	12.99	186.57	4,300.32	-841.71	-97.00	847.29	0.00	0.00	0.00
4,400.00	12.88	186.57	4,306.21	-843.06	-97.16	848.64	1.75	-1.75	0.00
4,500.00	11.13	186.57	4,404.02	-863.72	-99.54	869.44	1.75	-1.75	0.00
4,583.35	9.67	186.57	4,486.00	-878.67	-101.26	884.48	1.75	-1.75	0.00

<b>Database:</b>	edm5000p	<b>Local Co-ordinate Reference:</b>	Well FEHRN 24-32
<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 24-32	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	FEHRN 24-32		
<b>Design:</b>	FEHRN 24-32 (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>									
4,600.00	9.38	186.57	4,502.42	-881.40	-101.58	887.24	1.75	-1.75	0.00
4,700.00	7.63	186.57	4,601.32	-896.10	-103.27	902.03	1.75	-1.75	0.00
4,800.00	5.88	186.57	4,700.62	-907.78	-104.62	913.79	1.75	-1.75	0.00
4,900.00	4.13	186.57	4,800.24	-916.44	-105.62	922.51	1.75	-1.75	0.00
5,000.00	2.38	186.57	4,900.07	-922.08	-106.27	928.19	1.75	-1.75	0.00
5,100.00	0.63	186.57	5,000.03	-924.69	-106.57	930.81	1.75	-1.75	0.00
5,135.97	0.00	0.00	5,036.00	-924.89	-106.59	931.01	1.75	-1.75	0.00
5,200.00	0.00	0.00	5,100.03	-924.89	-106.59	931.01	0.00	0.00	0.00
5,300.00	0.00	0.00	5,200.03	-924.89	-106.59	931.01	0.00	0.00	0.00
5,400.00	0.00	0.00	5,300.03	-924.89	-106.59	931.01	0.00	0.00	0.00
5,500.00	0.00	0.00	5,400.03	-924.89	-106.59	931.01	0.00	0.00	0.00
5,600.00	0.00	0.00	5,500.03	-924.89	-106.59	931.01	0.00	0.00	0.00
5,700.00	0.00	0.00	5,600.03	-924.89	-106.59	931.01	0.00	0.00	0.00
5,800.00	0.00	0.00	5,700.03	-924.89	-106.59	931.01	0.00	0.00	0.00
5,900.00	0.00	0.00	5,800.03	-924.89	-106.59	931.01	0.00	0.00	0.00
6,000.00	0.00	0.00	5,900.03	-924.89	-106.59	931.01	0.00	0.00	0.00
6,100.00	0.00	0.00	6,000.03	-924.89	-106.59	931.01	0.00	0.00	0.00
6,200.00	0.00	0.00	6,100.03	-924.89	-106.59	931.01	0.00	0.00	0.00
6,300.00	0.00	0.00	6,200.03	-924.89	-106.59	931.01	0.00	0.00	0.00
6,400.00	0.00	0.00	6,300.03	-924.89	-106.59	931.01	0.00	0.00	0.00
6,500.00	0.00	0.00	6,400.03	-924.89	-106.59	931.01	0.00	0.00	0.00
6,600.00	0.00	0.00	6,500.03	-924.89	-106.59	931.01	0.00	0.00	0.00
6,700.00	0.00	0.00	6,600.03	-924.89	-106.59	931.01	0.00	0.00	0.00
6,800.00	0.00	0.00	6,700.03	-924.89	-106.59	931.01	0.00	0.00	0.00
6,900.00	0.00	0.00	6,800.03	-924.89	-106.59	931.01	0.00	0.00	0.00
7,000.00	0.00	0.00	6,900.03	-924.89	-106.59	931.01	0.00	0.00	0.00
7,100.00	0.00	0.00	7,000.03	-924.89	-106.59	931.01	0.00	0.00	0.00
7,200.00	0.00	0.00	7,100.03	-924.89	-106.59	931.01	0.00	0.00	0.00
7,230.97	0.00	0.00	7,131.00	-924.89	-106.59	931.01	0.00	0.00	0.00
<b>NIO Depth</b>									
7,300.00	0.00	0.00	7,200.03	-924.89	-106.59	931.01	0.00	0.00	0.00
7,400.00	0.00	0.00	7,300.03	-924.89	-106.59	931.01	0.00	0.00	0.00
7,500.00	0.00	0.00	7,400.03	-924.89	-106.59	931.01	0.00	0.00	0.00
7,555.97	0.00	0.00	7,456.00	-924.89	-106.59	931.01	0.00	0.00	0.00
<b>CD Depth</b>									
7,600.00	0.00	0.00	7,500.03	-924.89	-106.59	931.01	0.00	0.00	0.00
7,645.97	0.00	0.00	7,546.00	-924.89	-106.59	931.01	0.00	0.00	0.00
<b>GH Depth</b>									
7,700.00	0.00	0.00	7,600.03	-924.89	-106.59	931.01	0.00	0.00	0.00
7,800.00	0.00	0.00	7,700.03	-924.89	-106.59	931.01	0.00	0.00	0.00
7,900.00	0.00	0.00	7,800.03	-924.89	-106.59	931.01	0.00	0.00	0.00
7,995.97	0.00	0.00	7,896.00	-924.89	-106.59	931.01	0.00	0.00	0.00
<b>J Depth</b>									
8,000.00	0.00	0.00	7,900.03	-924.89	-106.59	931.01	0.00	0.00	0.00
8,100.00	0.00	0.00	8,000.03	-924.89	-106.59	931.01	0.00	0.00	0.00
8,135.97	0.00	0.00	8,036.00	-924.89	-106.59	931.01	0.00	0.00	0.00
<b>FEHRN 24-32 BHL</b>									

<b>Database:</b>	edm5000p	<b>Local Co-ordinate Reference:</b>	Well FEHRN 24-32
<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 24-32	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	FEHRN 24-32		
<b>Design:</b>	FEHRN 24-32 (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)		
FEHRN 24-32 BHL	0.00	0.00	8,036.00	-924.89	-106.59	1,278,157.59	3,196,949.41	40.094788	-104.796009
- plan hits target center									
- Point									

Casing Points					
Measured Depth	Vertical Depth			Casing Diameter	Hole Diameter
(ft)	(ft)			(")	(")
		Name			
802.57	800.00	8-5/8		8-5/8	11

Formations						
Measured Depth	Vertical Depth				Dip	Dip
(ft)	(ft)				(°)	Direction
		Name		Lithology		(°)
4,204.80	4,116.00	PK Depth				
4,583.35	4,486.00	SX Depth				
7,230.97	7,131.00	NIO Depth				
7,555.97	7,456.00	CD Depth				
7,645.97	7,546.00	GH Depth				
7,995.97	7,896.00	J Depth				