

# **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83**

**WELD\_FEHRN 17-32 PAD**

**FEHRN 7-32**

**FEHRN 7-32**

**Plan: FEHRN 7-32 (wp01)**

## **Standard Planning Report**

**03 February, 2011**



Project: COLORADO NORTHERN ZONE - 83  
 Site: WELD\_FEHRN 17-32 PAD  
 Well: FEHRN 7-32  
 Wellbore: FEHRN 7-32  
 Section:  
 SHL:  
 Design: FEHRN 7-32 (wp01)  
 Latitude: 40.097327  
 Longitude: -104.795735  
 GL: 4916.00  
 KB: GL @ 4916.00ft

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
4116.00	4178.29	PK Depth
4486.00	4554.96	SX Depth
7131.00	7211.47	NIO Depth
7456.00	7536.47	CD Depth
7546.00	7626.47	GH Depth
7896.00	7976.47	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 7-32

+N/-S	+E/-W	Northing	Ground Level: Easting	4916.00 Latitude	40.097327 Longitude	Slot
0.00	0.00	1279083.05	3197018.72	40.097327	-104.795735	

#### CASING DETAILS

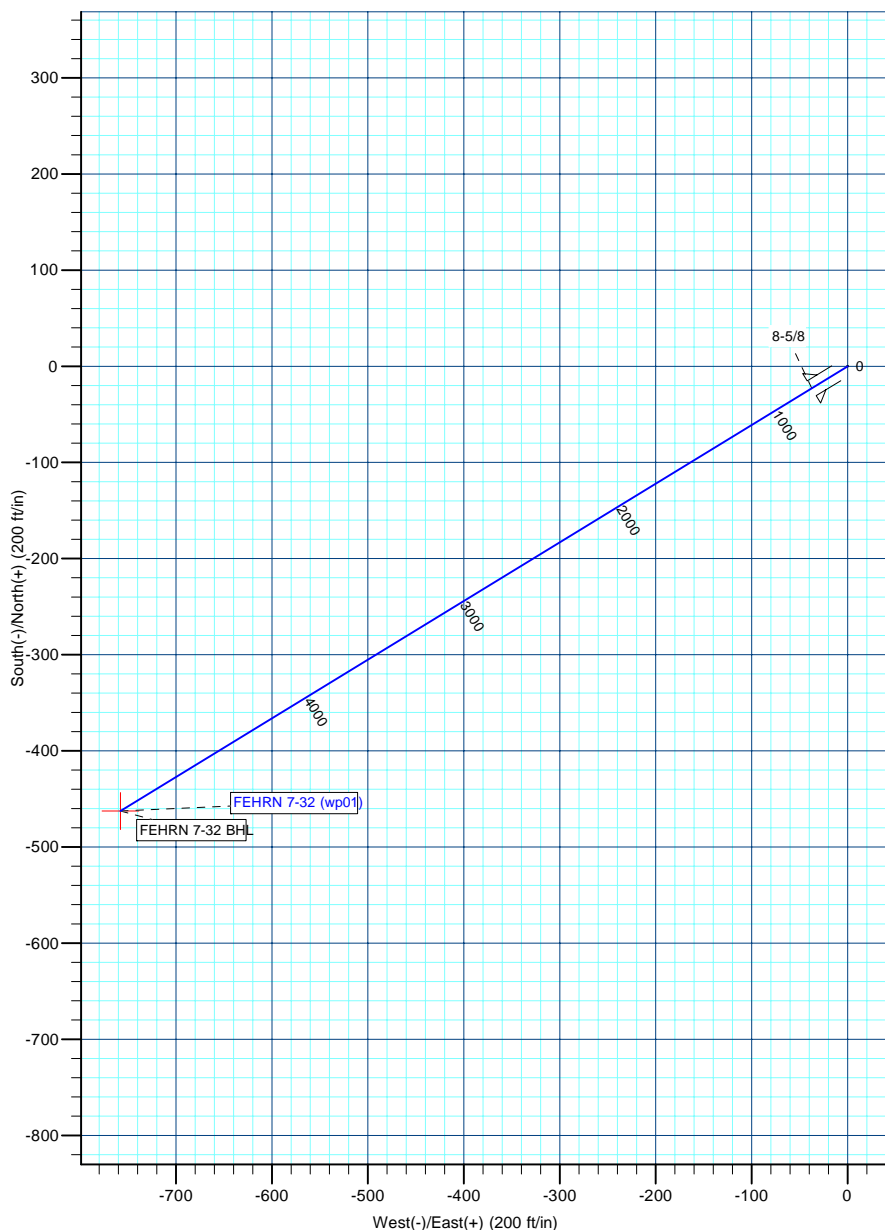
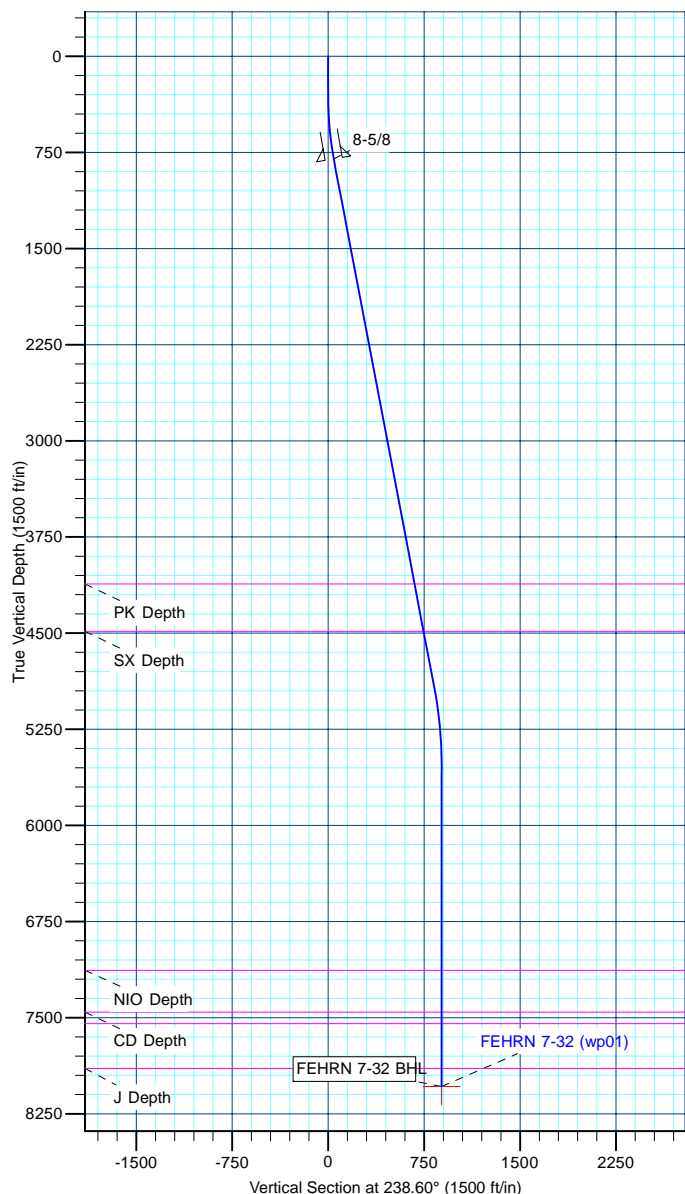
TVD	MD	Name	Size
800.00	802.57	8-5/8	8-5/8

#### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape Point
FEHRN 7-32 BHL	8036.00	-462.59	-757.87	1278614.45	3196264.55	40.096057	-104.798444	

#### 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
839.84	10.80	238.60	836.65	-26.42	-43.29	2.00	238.60	50.71
4999.51	10.80	238.60	4922.68	-432.40	-708.40	0.00	0.00	829.93
5616.47	0.00	0.00	5536.00	-462.59	-757.87	1.75	180.00	887.89
8116.47	0.00	0.00	8036.00	-462.59	-757.87	0.00	0.00	887.89



<b>Database:</b>	edm5000p	<b>Local Co-ordinate Reference:</b>	Well FEHRN 7-32
<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 7-32	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	FEHRN 7-32		
<b>Design:</b>	FEHRN 7-32 (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: From:	Lat/Long	Northing:	1,279,083.46 ft	Latitude:	40.097327
		Easting:	3,197,067.90 ft	Longitude:	-104.795559
	Position Uncertainty:	0.00 ft	Slot Radius:	0 "	Grid Convergence:

Well	FEHRN 7-32					
Well Position	+N/-S	-0.03 ft	Northing:	1,279,083.04 ft	Latitude:	40.097327
	+E/-W	-49.18 ft	Easting:	3,197,018.72 ft	Longitude:	-104.795735
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,916.00 ft

<b>Wellbore</b>	FEHRN 7-32				
<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 7-32 (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	238.60

<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	
839.84	10.80	238.60	836.65	-26.42	-43.29	2.00	2.00	0.00	238.60	
4,999.51	10.80	238.60	4,922.68	-432.40	-708.40	0.00	0.00	0.00	0.00	
5,616.47	0.00	0.00	5,536.00	-462.59	-757.87	1.75	-1.75	0.00	180.00	
8,116.47	0.00	0.00	8,036.00	-462.59	-757.87	0.00	0.00	0.00	0.00	FEHRN 7-32 BHL

<b>Database:</b>	edm5000p	<b>Local Co-ordinate Reference:</b>	Well FEHRN 7-32
<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 7-32	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	FEHRN 7-32		
<b>Design:</b>	FEHRN 7-32 (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	238.60	399.98	-0.91	-1.49	1.75	2.00	2.00	0.00
500.00	4.00	238.60	499.84	-3.64	-5.96	6.98	2.00	2.00	0.00
600.00	6.00	238.60	599.45	-8.18	-13.40	15.69	2.00	2.00	0.00
700.00	8.00	238.60	698.70	-14.53	-23.80	27.88	2.00	2.00	0.00
800.00	10.00	238.60	797.47	-22.68	-37.15	43.52	2.00	2.00	0.00
802.57	10.05	238.60	800.00	-22.91	-37.53	43.97	2.00	2.00	0.00
8-5/8									
839.84	10.80	238.60	836.65	-26.42	-43.29	50.71	2.00	2.00	0.00
900.00	10.80	238.60	895.75	-32.29	-52.91	61.98	0.00	0.00	0.00
1,000.00	10.80	238.60	993.98	-42.05	-68.90	80.72	0.00	0.00	0.00
1,100.00	10.80	238.60	1,092.21	-51.81	-84.88	99.45	0.00	0.00	0.00
1,200.00	10.80	238.60	1,190.44	-61.57	-100.87	118.18	0.00	0.00	0.00
1,300.00	10.80	238.60	1,288.66	-71.33	-116.86	136.91	0.00	0.00	0.00
1,400.00	10.80	238.60	1,386.89	-81.09	-132.85	155.65	0.00	0.00	0.00
1,500.00	10.80	238.60	1,485.12	-90.85	-148.84	174.38	0.00	0.00	0.00
1,600.00	10.80	238.60	1,583.35	-100.61	-164.83	193.11	0.00	0.00	0.00
1,700.00	10.80	238.60	1,681.58	-110.37	-180.82	211.85	0.00	0.00	0.00
1,800.00	10.80	238.60	1,779.81	-120.13	-196.81	230.58	0.00	0.00	0.00
1,900.00	10.80	238.60	1,878.04	-129.89	-212.80	249.31	0.00	0.00	0.00
2,000.00	10.80	238.60	1,976.27	-139.65	-228.79	268.04	0.00	0.00	0.00
2,100.00	10.80	238.60	2,074.50	-149.41	-244.78	286.78	0.00	0.00	0.00
2,200.00	10.80	238.60	2,172.73	-159.17	-260.77	305.51	0.00	0.00	0.00
2,300.00	10.80	238.60	2,270.96	-168.93	-276.76	324.24	0.00	0.00	0.00
2,400.00	10.80	238.60	2,369.19	-178.69	-292.75	342.97	0.00	0.00	0.00
2,500.00	10.80	238.60	2,467.42	-188.45	-308.74	361.71	0.00	0.00	0.00
2,600.00	10.80	238.60	2,565.65	-198.21	-324.73	380.44	0.00	0.00	0.00
2,700.00	10.80	238.60	2,663.88	-207.97	-340.72	399.17	0.00	0.00	0.00
2,800.00	10.80	238.60	2,762.11	-217.73	-356.71	417.91	0.00	0.00	0.00
2,900.00	10.80	238.60	2,860.34	-227.49	-372.70	436.64	0.00	0.00	0.00
3,000.00	10.80	238.60	2,958.57	-237.25	-388.69	455.37	0.00	0.00	0.00
3,100.00	10.80	238.60	3,056.80	-247.01	-404.67	474.10	0.00	0.00	0.00
3,200.00	10.80	238.60	3,155.03	-256.77	-420.66	492.84	0.00	0.00	0.00
3,300.00	10.80	238.60	3,253.26	-266.53	-436.65	511.57	0.00	0.00	0.00
3,400.00	10.80	238.60	3,351.49	-276.29	-452.64	530.30	0.00	0.00	0.00
3,500.00	10.80	238.60	3,449.72	-286.05	-468.63	549.03	0.00	0.00	0.00
3,600.00	10.80	238.60	3,547.95	-295.81	-484.62	567.77	0.00	0.00	0.00
3,700.00	10.80	238.60	3,646.18	-305.57	-500.61	586.50	0.00	0.00	0.00
3,800.00	10.80	238.60	3,744.41	-315.33	-516.60	605.23	0.00	0.00	0.00
3,900.00	10.80	238.60	3,842.64	-325.09	-532.59	623.97	0.00	0.00	0.00
4,000.00	10.80	238.60	3,940.87	-334.85	-548.58	642.70	0.00	0.00	0.00
4,100.00	10.80	238.60	4,039.10	-344.61	-564.57	661.43	0.00	0.00	0.00
4,178.29	10.80	238.60	4,116.00	-352.25	-577.09	676.10	0.00	0.00	0.00
PK Depth									
4,200.00	10.80	238.60	4,137.33	-354.37	-580.56	680.16	0.00	0.00	0.00
4,300.00	10.80	238.60	4,235.56	-364.13	-596.55	698.90	0.00	0.00	0.00
4,400.00	10.80	238.60	4,333.79	-373.88	-612.54	717.63	0.00	0.00	0.00
4,500.00	10.80	238.60	4,432.02	-383.64	-628.53	736.36	0.00	0.00	0.00
4,554.96	10.80	238.60	4,486.00	-389.01	-637.31	746.66	0.00	0.00	0.00
SX Depth									

<b>Database:</b>	edm5000p	<b>Local Co-ordinate Reference:</b>	Well FEHRN 7-32
<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 7-32	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	FEHRN 7-32		
<b>Design:</b>	FEHRN 7-32 (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)
4,600.00	10.80	238.60	4,530.25	-393.40	-644.52	755.10	0.00	0.00	0.00
4,700.00	10.80	238.60	4,628.48	-403.16	-660.51	773.83	0.00	0.00	0.00
4,800.00	10.80	238.60	4,726.71	-412.92	-676.50	792.56	0.00	0.00	0.00
4,900.00	10.80	238.60	4,824.94	-422.68	-692.49	811.29	0.00	0.00	0.00
4,999.51	10.80	238.60	4,922.68	-432.40	-708.40	829.93	0.00	0.00	0.00
5,000.00	10.79	238.60	4,923.17	-432.44	-708.47	830.03	1.75	-1.75	0.00
5,100.00	9.04	238.60	5,021.67	-441.41	-723.17	847.24	1.75	-1.75	0.00
5,200.00	7.29	238.60	5,120.65	-448.81	-735.29	861.44	1.75	-1.75	0.00
5,300.00	5.54	238.60	5,220.02	-454.63	-744.82	872.61	1.75	-1.75	0.00
5,400.00	3.79	238.60	5,319.69	-458.86	-751.76	880.74	1.75	-1.75	0.00
5,500.00	2.04	238.60	5,419.55	-461.51	-756.10	885.82	1.75	-1.75	0.00
5,600.00	0.29	238.60	5,519.53	-462.57	-757.83	887.85	1.75	-1.75	0.00
5,616.47	0.00	0.00	5,536.00	-462.59	-757.87	887.89	1.75	-1.75	0.00
5,700.00	0.00	0.00	5,619.53	-462.59	-757.87	887.89	0.00	0.00	0.00
5,800.00	0.00	0.00	5,719.53	-462.59	-757.87	887.89	0.00	0.00	0.00
5,900.00	0.00	0.00	5,819.53	-462.59	-757.87	887.89	0.00	0.00	0.00
6,000.00	0.00	0.00	5,919.53	-462.59	-757.87	887.89	0.00	0.00	0.00
6,100.00	0.00	0.00	6,019.53	-462.59	-757.87	887.89	0.00	0.00	0.00
6,200.00	0.00	0.00	6,119.53	-462.59	-757.87	887.89	0.00	0.00	0.00
6,300.00	0.00	0.00	6,219.53	-462.59	-757.87	887.89	0.00	0.00	0.00
6,400.00	0.00	0.00	6,319.53	-462.59	-757.87	887.89	0.00	0.00	0.00
6,500.00	0.00	0.00	6,419.53	-462.59	-757.87	887.89	0.00	0.00	0.00
6,600.00	0.00	0.00	6,519.53	-462.59	-757.87	887.89	0.00	0.00	0.00
6,700.00	0.00	0.00	6,619.53	-462.59	-757.87	887.89	0.00	0.00	0.00
6,800.00	0.00	0.00	6,719.53	-462.59	-757.87	887.89	0.00	0.00	0.00
6,900.00	0.00	0.00	6,819.53	-462.59	-757.87	887.89	0.00	0.00	0.00
7,000.00	0.00	0.00	6,919.53	-462.59	-757.87	887.89	0.00	0.00	0.00
7,100.00	0.00	0.00	7,019.53	-462.59	-757.87	887.89	0.00	0.00	0.00
7,200.00	0.00	0.00	7,119.53	-462.59	-757.87	887.89	0.00	0.00	0.00
7,211.47	0.00	0.00	7,131.00	-462.59	-757.87	887.89	0.00	0.00	0.00
NIO Depth									
7,300.00	0.00	0.00	7,219.53	-462.59	-757.87	887.89	0.00	0.00	0.00
7,400.00	0.00	0.00	7,319.53	-462.59	-757.87	887.89	0.00	0.00	0.00
7,500.00	0.00	0.00	7,419.53	-462.59	-757.87	887.89	0.00	0.00	0.00
7,536.47	0.00	0.00	7,456.00	-462.59	-757.87	887.89	0.00	0.00	0.00
CD Depth									
7,600.00	0.00	0.00	7,519.53	-462.59	-757.87	887.89	0.00	0.00	0.00
7,626.47	0.00	0.00	7,546.00	-462.59	-757.87	887.89	0.00	0.00	0.00
GH Depth									
7,700.00	0.00	0.00	7,619.53	-462.59	-757.87	887.89	0.00	0.00	0.00
7,800.00	0.00	0.00	7,719.53	-462.59	-757.87	887.89	0.00	0.00	0.00
7,900.00	0.00	0.00	7,819.53	-462.59	-757.87	887.89	0.00	0.00	0.00
7,976.47	0.00	0.00	7,896.00	-462.59	-757.87	887.89	0.00	0.00	0.00
J Depth									
8,000.00	0.00	0.00	7,919.53	-462.59	-757.87	887.89	0.00	0.00	0.00
8,100.00	0.00	0.00	8,019.53	-462.59	-757.87	887.89	0.00	0.00	0.00
8,116.47	0.00	0.00	8,036.00	-462.59	-757.87	887.89	0.00	0.00	0.00
FEHRN 7-32 BHL									

<b>Database:</b>	edm5000p	<b>Local Co-ordinate Reference:</b>	Well FEHRN 7-32
<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 7-32	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	FEHRN 7-32		
<b>Design:</b>	FEHRN 7-32 (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 7-32 BHL	0.00	0.00	8,036.00	-462.59	-757.87	1,278,614.45	3,196,264.55	40.096057	-104.798444
- 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 Direction
(ft)	(ft)		Name	Lithology	(°)	(°)
4,178.29	4,116.00	PK Depth				
4,554.96	4,486.00	SX Depth				
7,211.47	7,131.00	NIO Depth				
7,536.47	7,456.00	CD Depth				
7,626.47	7,546.00	GH Depth				
7,976.47	7,896.00	J Depth				