

# **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83**

**WELD\_PCHR PAD**

**PEHR 12-1**

**PEHR 12-1**

**Plan: PEHR 12-1 (wp01)**

## **Standard Planning Report**

**09 November, 2011**

Project: COLORADO NORTHERN ZONE - 83  
Site: WELD\_PCHR PAD  
Well: PEHR 12-1  
Wellbore: PEHR 12-1  
Section:  
SHL:  
Design: PEHR 12-1 (wp01)  
Latitude: 40.076867  
Longitude: -104.847843  
GL: 4944.00  
KB: gl +rkb @ 4959.00ft

FORMATION TOP DETAILS  

TVDPath	MDPath	Formation
4124.00	4211.18	PRKM TOP
4521.00	4608.18	SX TOP
7217.00	7304.18	NI A TOP
7536.00	7623.18	CDL TOP
7623.00	7710.18	GH TOP
7977.00	8064.18	J TOP
8149.00	8236.18	DK TOP

WELL DETAILS: PEHR 12-1  

+N/-S	+E/-W	Northing	Ground Level: Easting	4944.00 Latitude	Longitude	Slot
0.00	0.00	1271518.65	3182496.55	40.076867	-104.847843	

CASING DETAILS  

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

T  
M  
A

Azimuths to True North  
Magnetic North: 8.95°  
  
Magnetic Field  
Strength: 53007.4snT  
Dip Angle: 66.79°  
Date: 12/2/2010  
Model: IGRF2010

DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PEHR 12-1 BHL	8349.00	481.23	407.44	1272002.87	3182900.44	40.078188	-104.846387

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
1259.99	19.20	40.25	1242.12	121.61	102.96	2.00	40.25	159.24
2139.05	19.20	40.25	2072.29	342.24	289.76	0.00	0.00	448.14
3236.18	0.00	0.00	3149.00	481.23	407.44	1.75	180.00	630.12
8436.18	0.00	0.00	8349.00	481.23	407.44	0.00	0.00	630.12

Vertical Section at 42.35° (1500 ft/in)

Horizontal Section (Plan View)

# Anadarko Petroleum Corp

## Planning Report

<b>Database:</b>	edmp	<b>Local Co-ordinate Reference:</b>	Well PEHR 12-1
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	gl +rkb @ 4959.00ft
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	gl +rkb @ 4959.00ft
<b>Site:</b>	WELD_PEHR PAD	<b>North Reference:</b>	True
<b>Well:</b>	PEHR 12-1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	PEHR 12-1		
<b>Design:</b>	PEHR 12-1 (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		

<b>Site</b>	WELD_PEHR PAD			
<b>Site Position:</b>		<b>Northing:</b>	1,271,518.67 usft	<b>Latitude:</b> 40.076867
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,182,496.55 usft	<b>Longitude:</b> -104.847843
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	0 "	<b>Grid Convergence:</b> 0.42 °

<b>Well</b>	PEHR 12-1			
<b>Well Position</b>	<b>+N/-S</b>	-0.02 ft	<b>Northing:</b>	1,271,518.65 usft
	<b>+E/-W</b>	0.00 ft	<b>Easting:</b>	3,182,496.55 usft
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>	<b>Ground Level:</b> 4,944.00 ft

<b>Wellbore</b>	PEHR 12-1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	12/2/2010	8.95	66.79	53,007

<b>Design</b>	PEHR 12-1 (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>
	73.99	0.00	0.00	42.35

<b>Plan Sections</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	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	
1,259.99	19.20	40.25	1,242.12	121.61	102.96	2.00	2.00	0.00	40.25	
2,139.05	19.20	40.25	2,072.29	342.24	289.76	0.00	0.00	0.00	0.00	
3,236.18	0.00	0.00	3,149.00	481.23	407.44	1.75	-1.75	0.00	180.00	
8,436.18	0.00	0.00	8,349.00	481.23	407.44	0.00	0.00	0.00	0.00	PEHR 12-1 BHL

# Anadarko Petroleum Corp

## Planning Report

<b>Database:</b>	edmp	<b>Local Co-ordinate Reference:</b>	Well PEHR 12-1
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	gl +rkb @ 4959.00ft
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	gl +rkb @ 4959.00ft
<b>Site:</b>	WELD_PEHR PAD	<b>North Reference:</b>	True
<b>Well:</b>	PEHR 12-1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	PEHR 12-1		
<b>Design:</b>	PEHR 12-1 (wp01)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
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	40.25	399.98	1.33	1.13	1.74	2.00	2.00	0.00
500.00	4.00	40.25	499.84	5.32	4.51	6.97	2.00	2.00	0.00
600.00	6.00	40.25	599.45	11.97	10.14	15.68	2.00	2.00	0.00
700.00	8.00	40.25	698.70	21.27	18.02	27.86	2.00	2.00	0.00
800.00	10.00	40.25	797.47	33.21	28.12	43.49	2.00	2.00	0.00
900.00	12.00	40.25	895.62	47.77	40.45	62.56	2.00	2.00	0.00
919.82	12.40	40.25	915.00	50.97	43.16	66.75	2.00	2.00	0.00
8-5/8"									
1,000.00	14.00	40.25	993.06	64.94	54.99	85.04	2.00	2.00	0.00
1,100.00	16.00	40.25	1,089.64	84.69	71.71	110.90	2.00	2.00	0.00
1,200.00	18.00	40.25	1,185.27	107.01	90.60	140.12	2.00	2.00	0.00
1,259.99	19.20	40.25	1,242.12	121.61	102.96	159.24	2.00	2.00	0.00
1,300.00	19.20	40.25	1,279.91	131.65	111.47	172.39	0.00	0.00	0.00
1,400.00	19.20	40.25	1,374.35	156.75	132.72	205.25	0.00	0.00	0.00
1,500.00	19.20	40.25	1,468.78	181.85	153.97	238.12	0.00	0.00	0.00
1,600.00	19.20	40.25	1,563.22	206.95	175.22	270.98	0.00	0.00	0.00
1,700.00	19.20	40.25	1,657.66	232.05	196.47	303.85	0.00	0.00	0.00
1,800.00	19.20	40.25	1,752.10	257.14	217.72	336.71	0.00	0.00	0.00
1,900.00	19.20	40.25	1,846.54	282.24	238.97	369.57	0.00	0.00	0.00
2,000.00	19.20	40.25	1,940.97	307.34	260.22	402.44	0.00	0.00	0.00
2,100.00	19.20	40.25	2,035.41	332.44	281.47	435.30	0.00	0.00	0.00
2,139.05	19.20	40.25	2,072.29	342.24	289.76	448.14	0.00	0.00	0.00
2,200.00	18.13	40.25	2,130.03	357.13	302.37	467.63	1.75	-1.75	0.00
2,300.00	16.38	40.25	2,225.53	379.77	321.54	497.28	1.75	-1.75	0.00
2,400.00	14.63	40.25	2,321.88	400.18	338.81	524.00	1.75	-1.75	0.00
2,500.00	12.88	40.25	2,419.01	418.33	354.18	547.76	1.75	-1.75	0.00
2,600.00	11.13	40.25	2,516.82	434.20	367.62	568.55	1.75	-1.75	0.00
2,700.00	9.38	40.25	2,615.21	447.79	379.13	586.35	1.75	-1.75	0.00
2,800.00	7.63	40.25	2,714.11	459.09	388.69	601.13	1.75	-1.75	0.00
2,900.00	5.88	40.25	2,813.41	468.07	396.29	612.89	1.75	-1.75	0.00
3,000.00	4.13	40.25	2,913.03	474.73	401.93	621.62	1.75	-1.75	0.00
3,100.00	2.38	40.25	3,012.86	479.07	405.61	627.30	1.75	-1.75	0.00
3,200.00	0.63	40.25	3,112.82	481.07	407.31	629.93	1.75	-1.75	0.00
3,236.18	0.00	0.00	3,149.00	481.23	407.44	630.12	1.75	-1.75	0.00
3,300.00	0.00	0.00	3,212.82	481.23	407.44	630.12	0.00	0.00	0.00
3,400.00	0.00	0.00	3,312.82	481.23	407.44	630.12	0.00	0.00	0.00
3,500.00	0.00	0.00	3,412.82	481.23	407.44	630.12	0.00	0.00	0.00
3,600.00	0.00	0.00	3,512.82	481.23	407.44	630.12	0.00	0.00	0.00
3,700.00	0.00	0.00	3,612.82	481.23	407.44	630.12	0.00	0.00	0.00
3,800.00	0.00	0.00	3,712.82	481.23	407.44	630.12	0.00	0.00	0.00
3,900.00	0.00	0.00	3,812.82	481.23	407.44	630.12	0.00	0.00	0.00
4,000.00	0.00	0.00	3,912.82	481.23	407.44	630.12	0.00	0.00	0.00
4,100.00	0.00	0.00	4,012.82	481.23	407.44	630.12	0.00	0.00	0.00
4,200.00	0.00	0.00	4,112.82	481.23	407.44	630.12	0.00	0.00	0.00
4,211.18	0.00	0.00	4,124.00	481.23	407.44	630.12	0.00	0.00	0.00
PRKM TOP									
4,300.00	0.00	0.00	4,212.82	481.23	407.44	630.12	0.00	0.00	0.00
4,400.00	0.00	0.00	4,312.82	481.23	407.44	630.12	0.00	0.00	0.00
4,500.00	0.00	0.00	4,412.82	481.23	407.44	630.12	0.00	0.00	0.00
4,600.00	0.00	0.00	4,512.82	481.23	407.44	630.12	0.00	0.00	0.00

# Anadarko Petroleum Corp

## Planning Report

<b>Database:</b>	edmp	<b>Local Co-ordinate Reference:</b>	Well PEHR 12-1
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	gl +rkb @ 4959.00ft
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	gl +rkb @ 4959.00ft
<b>Site:</b>	WELD_PEHR PAD	<b>North Reference:</b>	True
<b>Well:</b>	PEHR 12-1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	PEHR 12-1		
<b>Design:</b>	PEHR 12-1 (wp01)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,608.18	0.00	0.00	4,521.00	481.23	407.44	630.12	0.00	0.00	0.00
SX TOP									
4,700.00	0.00	0.00	4,612.82	481.23	407.44	630.12	0.00	0.00	0.00
4,800.00	0.00	0.00	4,712.82	481.23	407.44	630.12	0.00	0.00	0.00
4,900.00	0.00	0.00	4,812.82	481.23	407.44	630.12	0.00	0.00	0.00
5,000.00	0.00	0.00	4,912.82	481.23	407.44	630.12	0.00	0.00	0.00
5,100.00	0.00	0.00	5,012.82	481.23	407.44	630.12	0.00	0.00	0.00
5,200.00	0.00	0.00	5,112.82	481.23	407.44	630.12	0.00	0.00	0.00
5,300.00	0.00	0.00	5,212.82	481.23	407.44	630.12	0.00	0.00	0.00
5,400.00	0.00	0.00	5,312.82	481.23	407.44	630.12	0.00	0.00	0.00
5,500.00	0.00	0.00	5,412.82	481.23	407.44	630.12	0.00	0.00	0.00
5,600.00	0.00	0.00	5,512.82	481.23	407.44	630.12	0.00	0.00	0.00
5,700.00	0.00	0.00	5,612.82	481.23	407.44	630.12	0.00	0.00	0.00
5,800.00	0.00	0.00	5,712.82	481.23	407.44	630.12	0.00	0.00	0.00
5,900.00	0.00	0.00	5,812.82	481.23	407.44	630.12	0.00	0.00	0.00
6,000.00	0.00	0.00	5,912.82	481.23	407.44	630.12	0.00	0.00	0.00
6,100.00	0.00	0.00	6,012.82	481.23	407.44	630.12	0.00	0.00	0.00
6,200.00	0.00	0.00	6,112.82	481.23	407.44	630.12	0.00	0.00	0.00
6,300.00	0.00	0.00	6,212.82	481.23	407.44	630.12	0.00	0.00	0.00
6,400.00	0.00	0.00	6,312.82	481.23	407.44	630.12	0.00	0.00	0.00
6,500.00	0.00	0.00	6,412.82	481.23	407.44	630.12	0.00	0.00	0.00
6,600.00	0.00	0.00	6,512.82	481.23	407.44	630.12	0.00	0.00	0.00
6,700.00	0.00	0.00	6,612.82	481.23	407.44	630.12	0.00	0.00	0.00
6,800.00	0.00	0.00	6,712.82	481.23	407.44	630.12	0.00	0.00	0.00
6,900.00	0.00	0.00	6,812.82	481.23	407.44	630.12	0.00	0.00	0.00
7,000.00	0.00	0.00	6,912.82	481.23	407.44	630.12	0.00	0.00	0.00
7,100.00	0.00	0.00	7,012.82	481.23	407.44	630.12	0.00	0.00	0.00
7,200.00	0.00	0.00	7,112.82	481.23	407.44	630.12	0.00	0.00	0.00
7,300.00	0.00	0.00	7,212.82	481.23	407.44	630.12	0.00	0.00	0.00
7,304.18	0.00	0.00	7,217.00	481.23	407.44	630.12	0.00	0.00	0.00
NI A TOP									
7,400.00	0.00	0.00	7,312.82	481.23	407.44	630.12	0.00	0.00	0.00
7,500.00	0.00	0.00	7,412.82	481.23	407.44	630.12	0.00	0.00	0.00
7,600.00	0.00	0.00	7,512.82	481.23	407.44	630.12	0.00	0.00	0.00
7,623.18	0.00	0.00	7,536.00	481.23	407.44	630.12	0.00	0.00	0.00
CDL TOP									
7,700.00	0.00	0.00	7,612.82	481.23	407.44	630.12	0.00	0.00	0.00
7,710.18	0.00	0.00	7,623.00	481.23	407.44	630.12	0.00	0.00	0.00
GH TOP									
7,800.00	0.00	0.00	7,712.82	481.23	407.44	630.12	0.00	0.00	0.00
7,900.00	0.00	0.00	7,812.82	481.23	407.44	630.12	0.00	0.00	0.00
8,000.00	0.00	0.00	7,912.82	481.23	407.44	630.12	0.00	0.00	0.00
8,064.18	0.00	0.00	7,977.00	481.23	407.44	630.12	0.00	0.00	0.00
J TOP									
8,100.00	0.00	0.00	8,012.82	481.23	407.44	630.12	0.00	0.00	0.00
8,200.00	0.00	0.00	8,112.82	481.23	407.44	630.12	0.00	0.00	0.00
8,236.18	0.00	0.00	8,149.00	481.23	407.44	630.12	0.00	0.00	0.00
DK TOP									
8,300.00	0.00	0.00	8,212.82	481.23	407.44	630.12	0.00	0.00	0.00
8,400.00	0.00	0.00	8,312.82	481.23	407.44	630.12	0.00	0.00	0.00
8,436.18	0.00	0.00	8,349.00	481.23	407.44	630.12	0.00	0.00	0.00
PEHR 12-1 BHL									

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## Planning Report

<b>Database:</b>	edmp	<b>Local Co-ordinate Reference:</b>	Well PEHR 12-1
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	gl +rkb @ 4959.00ft
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	gl +rkb @ 4959.00ft
<b>Site:</b>	WELD_PEHR PAD	<b>North Reference:</b>	True
<b>Well:</b>	PEHR 12-1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	PEHR 12-1		
<b>Design:</b>	PEHR 12-1 (wp01)		

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PEHR 12-1 BHL - plan hits target center - Point	0.00	0.00	8,349.00	481.23	407.44	1,272,002.86	3,182,900.44	40.078188	-104.846387

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
919.82	915.00	8-5/8"	8-5/8	11

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,211.18	4,124.00	PRKM TOP				
4,608.18	4,521.00	SX TOP				
7,304.18	7,217.00	NI A TOP				
7,623.18	7,536.00	CDL TOP				
7,710.18	7,623.00	GH TOP				
8,064.18	7,977.00	J TOP				
8,236.18	8,149.00	DK TOP				