

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_HEIN 5-1 PAD

Hein 6-1

Hein 6-1

Plan: Hein 6-1 (wp01)


Standard Planning Report

03 October, 2011

Project: COLORADO NORTHERN ZONE - 83
Site: WELD_HEIN 5-1 PAD
Well: Hein 6-1
Wellbore: Hein 6-1
Section:
SHL:
Design: Hein 6-1 (wp01)
Latitude: 40.082704
Longitude: -104.845097
GL: 4944.00
KB: 15' rkb + 4944' gl @ 4959.00ft

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
4059.00	4206.13	PK Depth
4521.00	4668.13	SX Depth
7217.00	7364.13	NIO Depth
7536.00	7683.13	CD Depth
7623.00	7770.13	GH Depth
7977.00	8124.13	J Depth
8149.00	8296.13	DK Depth

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



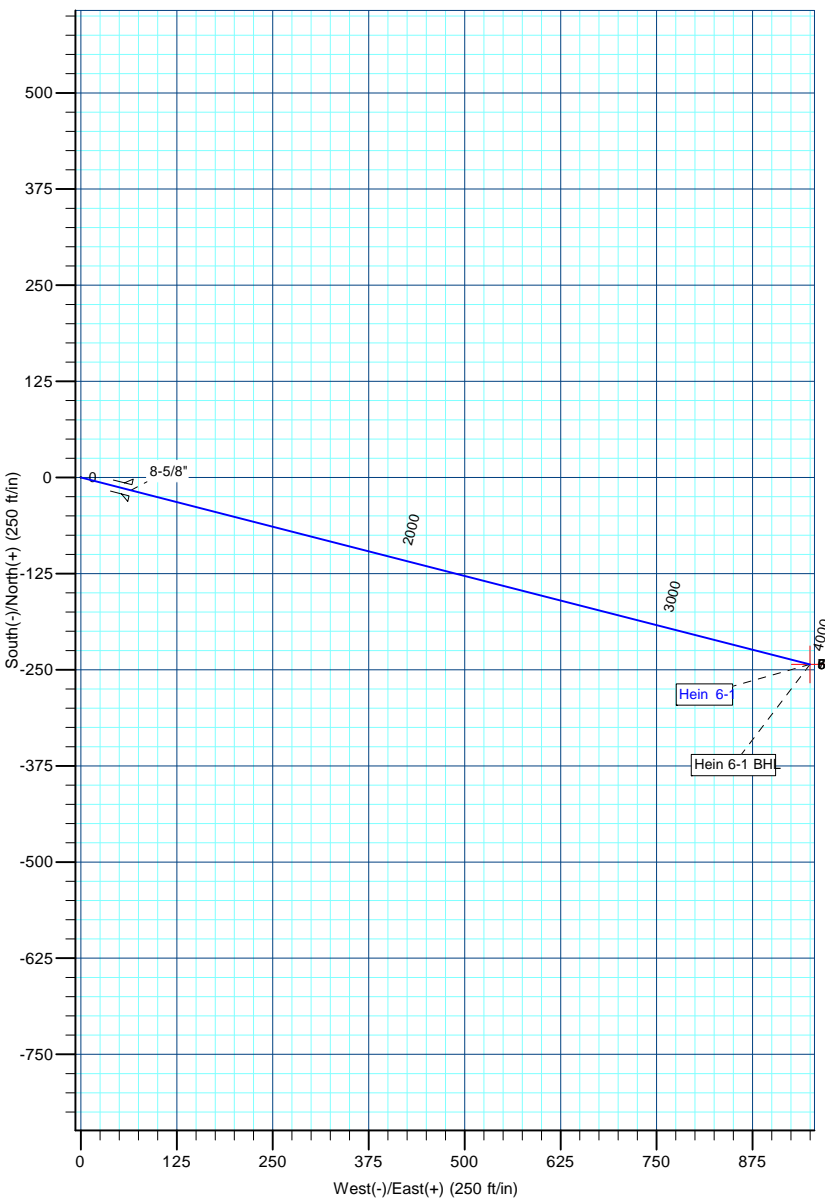
Azimuths to True North
Magnetic North: 8.84°

Magnetic Field
Strength: 52922.9snT
Dip Angle: 66.77°
Date: 10/3/2011
Model: IGRF2010

WELL DETAILS: Hein 6-1						
+N/-S	+E/-W	Northing	Ground Level: Easting	4944.00 Latitude	Longitude	Slot
0.00	0.00	1273650.54	3183249.26	40.082704	-104.845097	

DESIGN TARGET DETAILS								
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
Hein 6-1 BHL	8339.00	-242.94	949.70	1273414.63	3184200.73	40.082037	-104.841703	Point

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
1267.01	19.34	104.35	1248.75	-40.06	156.62	2.00	104.35	161.66
3180.98	19.34	104.35	3054.72	-197.15	770.71	0.00	0.00	795.52
4286.13	0.00	0.00	4139.00	-242.94	949.70	1.75	180.00	980.28
8486.13	0.00	0.00	8339.00	-242.94	949.70	0.00	0.00	980.28



Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well Hein 6-1
Company:	US ROCKIES REGION PLANNING	TVD Reference:	15' rkb + 4944' gl @ 4959.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	15' rkb + 4944' gl @ 4959.00ft
Site:	WELD_HEIN 5-1 PAD	North Reference:	True
Well:	Hein 6-1	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hein 6-1		
Design:	Hein 6-1 (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_HEIN 5-1 PAD			
Site Position:		Northing:	1,273,690.62 usft	Latitude: 40.082814
From:	Lat/Long	Easting:	3,183,248.41 usft	Longitude: -104.845099
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence: 0.42 °

Well	Hein 6-1			
Well Position	+N/-S	-40.09 ft	Northing:	1,273,650.54 usft
	+E/-W	0.56 ft	Easting:	3,183,249.26 usft
Position Uncertainty		0.00 ft	Wellhead Elevation:	Ground Level: 4,944.00 ft

Wellbore	Hein 6-1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/3/2011	8.84	66.77	52,923

Design	Hein 6-1 (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	104.35

Plan Sections										
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	
1,267.01	19.34	104.35	1,248.75	-40.06	156.62	2.00	2.00	0.00	104.35	
3,180.98	19.34	104.35	3,054.72	-197.15	770.71	0.00	0.00	0.00	0.00	
4,286.13	0.00	0.00	4,139.00	-242.94	949.70	1.75	-1.75	0.00	180.00	
8,486.13	0.00	0.00	8,339.00	-242.94	949.70	0.00	0.00	0.00	0.00	Hein 6-1 BHL

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well Hein 6-1
Company:	US ROCKIES REGION PLANNING	TVD Reference:	15' rkb + 4944' gl @ 4959.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	15' rkb + 4944' gl @ 4959.00ft
Site:	WELD_HEIN 5-1 PAD	North Reference:	True
Well:	Hein 6-1	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hein 6-1		
Design:	Hein 6-1 (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	104.35	399.98	-0.43	1.69	1.75	2.00	2.00	0.00
500.00	4.00	104.35	499.84	-1.73	6.76	6.98	2.00	2.00	0.00
600.00	6.00	104.35	599.45	-3.89	15.20	15.69	2.00	2.00	0.00
700.00	8.00	104.35	698.70	-6.91	27.01	27.88	2.00	2.00	0.00
800.00	10.00	104.35	797.47	-10.79	42.16	43.52	2.00	2.00	0.00
900.00	12.00	104.35	895.62	-15.51	60.65	62.60	2.00	2.00	0.00
919.82	12.40	104.35	915.00	-16.55	64.71	66.79	2.00	2.00	0.00
8-5/8"									
1,000.00	14.00	104.35	993.06	-21.09	82.44	85.10	2.00	2.00	0.00
1,100.00	16.00	104.35	1,089.64	-27.50	107.51	110.98	2.00	2.00	0.00
1,200.00	18.00	104.35	1,185.27	-34.75	135.84	140.21	2.00	2.00	0.00
1,267.01	19.34	104.35	1,248.75	-40.06	156.62	161.66	2.00	2.00	0.00
1,300.00	19.34	104.35	1,279.88	-42.77	167.20	172.59	0.00	0.00	0.00
1,400.00	19.34	104.35	1,374.24	-50.98	199.29	205.71	0.00	0.00	0.00
1,500.00	19.34	104.35	1,468.59	-59.19	231.37	238.82	0.00	0.00	0.00
1,600.00	19.34	104.35	1,562.95	-67.39	263.46	271.94	0.00	0.00	0.00
1,700.00	19.34	104.35	1,657.31	-75.60	295.54	305.06	0.00	0.00	0.00
1,800.00	19.34	104.35	1,751.66	-83.81	327.63	338.18	0.00	0.00	0.00
1,900.00	19.34	104.35	1,846.02	-92.02	359.71	371.29	0.00	0.00	0.00
2,000.00	19.34	104.35	1,940.38	-100.22	391.80	404.41	0.00	0.00	0.00
2,100.00	19.34	104.35	2,034.73	-108.43	423.88	437.53	0.00	0.00	0.00
2,200.00	19.34	104.35	2,129.09	-116.64	455.96	470.65	0.00	0.00	0.00
2,300.00	19.34	104.35	2,223.45	-124.85	488.05	503.76	0.00	0.00	0.00
2,400.00	19.34	104.35	2,317.81	-133.05	520.13	536.88	0.00	0.00	0.00
2,500.00	19.34	104.35	2,412.16	-141.26	552.22	570.00	0.00	0.00	0.00
2,600.00	19.34	104.35	2,506.52	-149.47	584.30	603.12	0.00	0.00	0.00
2,700.00	19.34	104.35	2,600.88	-157.67	616.39	636.23	0.00	0.00	0.00
2,800.00	19.34	104.35	2,695.23	-165.88	648.47	669.35	0.00	0.00	0.00
2,900.00	19.34	104.35	2,789.59	-174.09	680.55	702.47	0.00	0.00	0.00
3,000.00	19.34	104.35	2,883.95	-182.30	712.64	735.59	0.00	0.00	0.00
3,100.00	19.34	104.35	2,978.30	-190.50	744.72	768.70	0.00	0.00	0.00
3,180.98	19.34	104.35	3,054.72	-197.15	770.71	795.52	0.00	0.00	0.00
3,200.00	19.01	104.35	3,072.68	-198.70	776.76	801.77	1.75	-1.75	0.00
3,300.00	17.26	104.35	3,167.71	-206.41	806.91	832.89	1.75	-1.75	0.00
3,400.00	15.51	104.35	3,263.65	-213.40	834.23	861.09	1.75	-1.75	0.00
3,500.00	13.76	104.35	3,360.40	-219.66	858.70	886.35	1.75	-1.75	0.00
3,600.00	12.01	104.35	3,457.88	-225.19	880.30	908.65	1.75	-1.75	0.00
3,700.00	10.26	104.35	3,555.99	-229.97	899.01	927.95	1.75	-1.75	0.00
3,800.00	8.51	104.35	3,654.65	-234.01	914.80	944.26	1.75	-1.75	0.00
3,900.00	6.76	104.35	3,753.76	-237.30	927.67	957.54	1.75	-1.75	0.00
4,000.00	5.01	104.35	3,853.23	-239.84	937.59	967.78	1.75	-1.75	0.00
4,100.00	3.26	104.35	3,952.97	-241.63	944.57	974.99	1.75	-1.75	0.00
4,200.00	1.51	104.35	4,052.88	-242.66	948.60	979.15	1.75	-1.75	0.00
4,206.13	1.40	104.35	4,059.00	-242.70	948.75	979.30	1.75	-1.75	0.00
PK Depth									
4,286.13	0.00	0.00	4,139.00	-242.94	949.70	980.28	1.75	-1.75	0.00
4,300.00	0.00	0.00	4,152.87	-242.94	949.70	980.28	0.00	0.00	0.00
4,400.00	0.00	0.00	4,252.87	-242.94	949.70	980.28	0.00	0.00	0.00
4,500.00	0.00	0.00	4,352.87	-242.94	949.70	980.28	0.00	0.00	0.00
4,600.00	0.00	0.00	4,452.87	-242.94	949.70	980.28	0.00	0.00	0.00

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Planning Report

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Company:	US ROCKIES REGION PLANNING	TVD Reference:	15' rkb + 4944' gl @ 4959.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	15' rkb + 4944' gl @ 4959.00ft
Site:	WELD_HEIN 5-1 PAD	North Reference:	True
Well:	Hein 6-1	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hein 6-1		
Design:	Hein 6-1 (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)
4,668.13	0.00	0.00	4,521.00	-242.94	949.70	980.28	0.00	0.00	0.00
SX Depth									
4,700.00	0.00	0.00	4,552.87	-242.94	949.70	980.28	0.00	0.00	0.00
4,800.00	0.00	0.00	4,652.87	-242.94	949.70	980.28	0.00	0.00	0.00
4,900.00	0.00	0.00	4,752.87	-242.94	949.70	980.28	0.00	0.00	0.00
5,000.00	0.00	0.00	4,852.87	-242.94	949.70	980.28	0.00	0.00	0.00
5,100.00	0.00	0.00	4,952.87	-242.94	949.70	980.28	0.00	0.00	0.00
5,200.00	0.00	0.00	5,052.87	-242.94	949.70	980.28	0.00	0.00	0.00
5,300.00	0.00	0.00	5,152.87	-242.94	949.70	980.28	0.00	0.00	0.00
5,400.00	0.00	0.00	5,252.87	-242.94	949.70	980.28	0.00	0.00	0.00
5,500.00	0.00	0.00	5,352.87	-242.94	949.70	980.28	0.00	0.00	0.00
5,600.00	0.00	0.00	5,452.87	-242.94	949.70	980.28	0.00	0.00	0.00
5,700.00	0.00	0.00	5,552.87	-242.94	949.70	980.28	0.00	0.00	0.00
5,800.00	0.00	0.00	5,652.87	-242.94	949.70	980.28	0.00	0.00	0.00
5,900.00	0.00	0.00	5,752.87	-242.94	949.70	980.28	0.00	0.00	0.00
6,000.00	0.00	0.00	5,852.87	-242.94	949.70	980.28	0.00	0.00	0.00
6,100.00	0.00	0.00	5,952.87	-242.94	949.70	980.28	0.00	0.00	0.00
6,200.00	0.00	0.00	6,052.87	-242.94	949.70	980.28	0.00	0.00	0.00
6,300.00	0.00	0.00	6,152.87	-242.94	949.70	980.28	0.00	0.00	0.00
6,400.00	0.00	0.00	6,252.87	-242.94	949.70	980.28	0.00	0.00	0.00
6,500.00	0.00	0.00	6,352.87	-242.94	949.70	980.28	0.00	0.00	0.00
6,600.00	0.00	0.00	6,452.87	-242.94	949.70	980.28	0.00	0.00	0.00
6,700.00	0.00	0.00	6,552.87	-242.94	949.70	980.28	0.00	0.00	0.00
6,800.00	0.00	0.00	6,652.87	-242.94	949.70	980.28	0.00	0.00	0.00
6,900.00	0.00	0.00	6,752.87	-242.94	949.70	980.28	0.00	0.00	0.00
7,000.00	0.00	0.00	6,852.87	-242.94	949.70	980.28	0.00	0.00	0.00
7,100.00	0.00	0.00	6,952.87	-242.94	949.70	980.28	0.00	0.00	0.00
7,200.00	0.00	0.00	7,052.87	-242.94	949.70	980.28	0.00	0.00	0.00
7,300.00	0.00	0.00	7,152.87	-242.94	949.70	980.28	0.00	0.00	0.00
7,364.13	0.00	0.00	7,217.00	-242.94	949.70	980.28	0.00	0.00	0.00
NIO Depth									
7,400.00	0.00	0.00	7,252.87	-242.94	949.70	980.28	0.00	0.00	0.00
7,500.00	0.00	0.00	7,352.87	-242.94	949.70	980.28	0.00	0.00	0.00
7,600.00	0.00	0.00	7,452.87	-242.94	949.70	980.28	0.00	0.00	0.00
7,683.13	0.00	0.00	7,536.00	-242.94	949.70	980.28	0.00	0.00	0.00
CD Depth									
7,700.00	0.00	0.00	7,552.87	-242.94	949.70	980.28	0.00	0.00	0.00
7,770.13	0.00	0.00	7,623.00	-242.94	949.70	980.28	0.00	0.00	0.00
GH Depth									
7,800.00	0.00	0.00	7,652.87	-242.94	949.70	980.28	0.00	0.00	0.00
7,900.00	0.00	0.00	7,752.87	-242.94	949.70	980.28	0.00	0.00	0.00
8,000.00	0.00	0.00	7,852.87	-242.94	949.70	980.28	0.00	0.00	0.00
8,100.00	0.00	0.00	7,952.87	-242.94	949.70	980.28	0.00	0.00	0.00
8,124.13	0.00	0.00	7,977.00	-242.94	949.70	980.28	0.00	0.00	0.00
J Depth									
8,200.00	0.00	0.00	8,052.87	-242.94	949.70	980.28	0.00	0.00	0.00
8,296.13	0.00	0.00	8,149.00	-242.94	949.70	980.28	0.00	0.00	0.00
DK Depth									
8,300.00	0.00	0.00	8,152.87	-242.94	949.70	980.28	0.00	0.00	0.00
8,400.00	0.00	0.00	8,252.87	-242.94	949.70	980.28	0.00	0.00	0.00
8,486.13	0.00	0.00	8,339.00	-242.94	949.70	980.28	0.00	0.00	0.00
Hein 6-1 BHL									

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Site:	WELD_HEIN 5-1 PAD	North Reference:	True
Well:	Hein 6-1	Survey Calculation Method:	Minimum Curvature
Wellbore:	Hein 6-1		
Design:	Hein 6-1 (wp01)		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)		
- Shape									
Hein 6-1 BHL	0.00	0.00	8,339.00	-242.94	949.70	1,273,414.62	3,184,200.73	40.082037	-104.841703
- plan hits target center									
- Point									

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

Formations						
Measured Depth	Vertical Depth	Name		Lithology	Dip	Dip Direction
(ft)	(ft)				(°)	(°)
4,206.13	4,059.00	PK Depth				
4,668.13	4,521.00	SX Depth				
7,364.13	7,217.00	NIO Depth				
7,683.13	7,536.00	CD Depth				
7,770.13	7,623.00	GH Depth				
8,124.13	7,977.00	J Depth				
8,296.13	8,149.00	DK Depth				