

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_HEIN 2-1 PAD

HEIN 1-1

HEIN 1-1

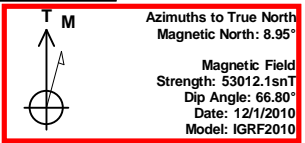
Plan: HEIN 1-1 (wp02)

Standard Planning Report

09 January, 2012

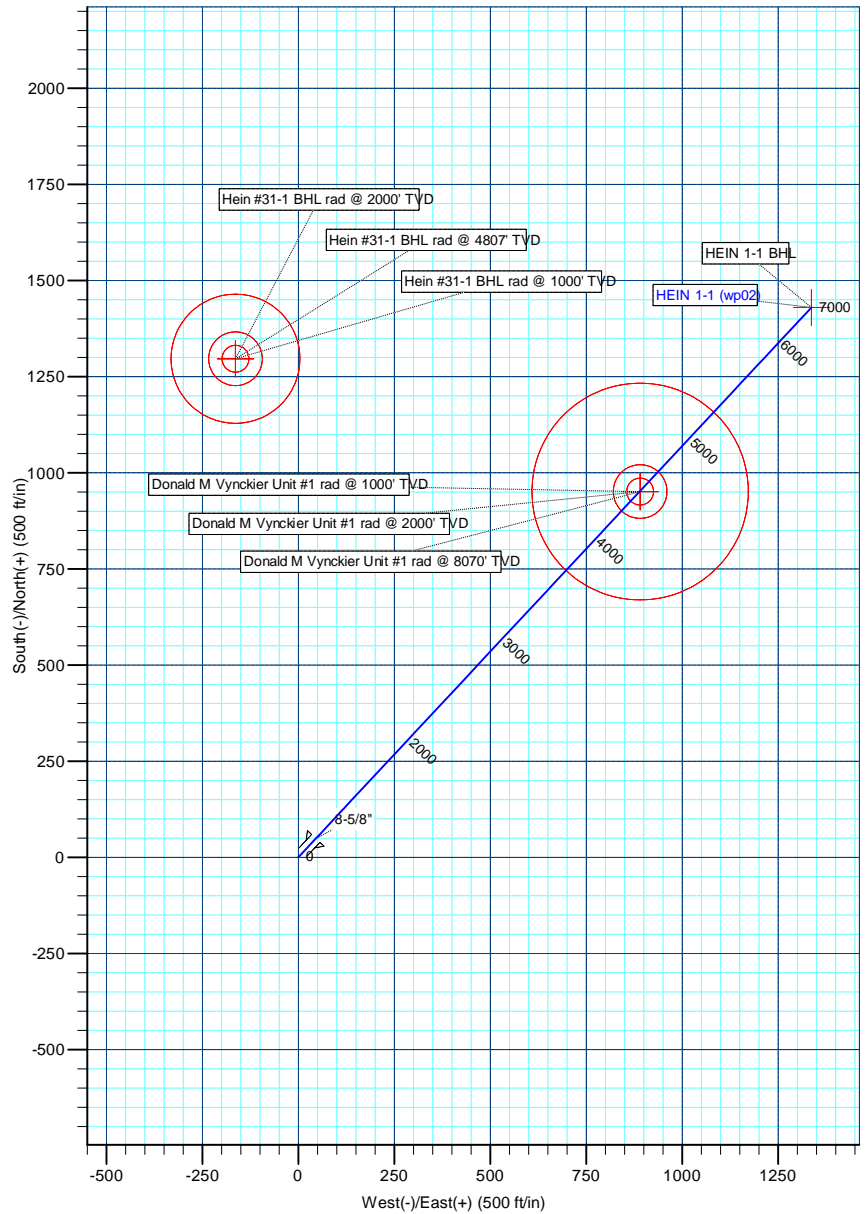
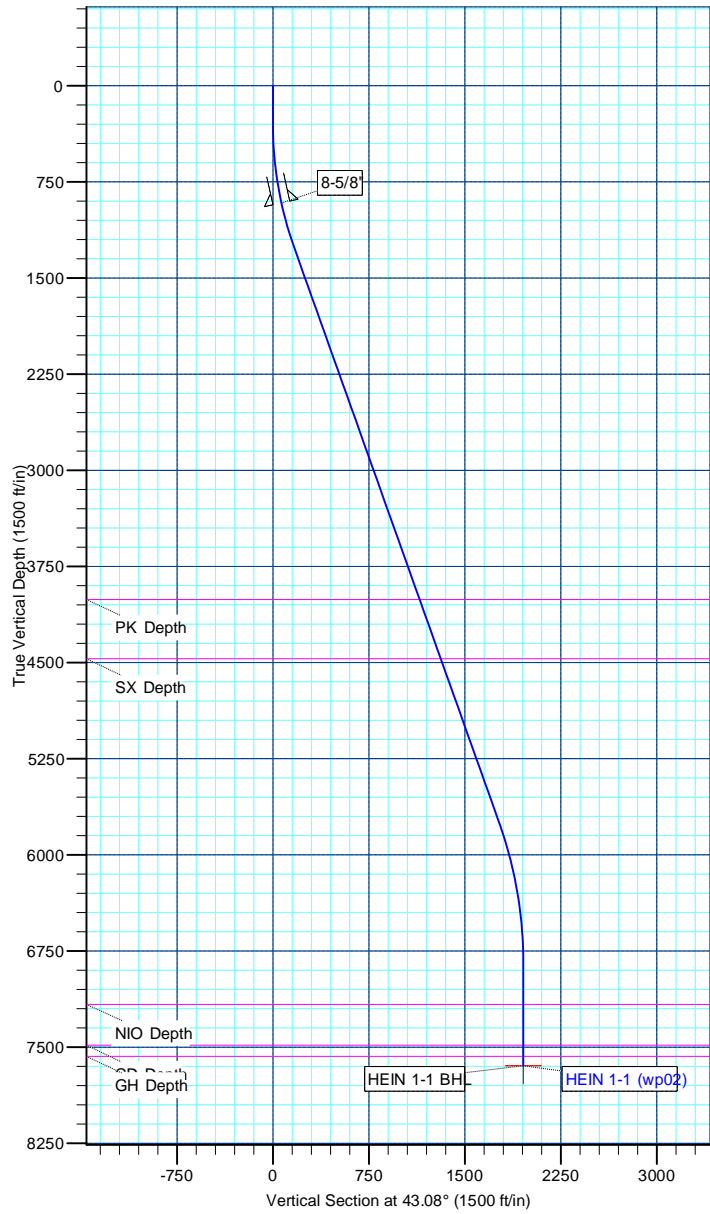
FORMATION TOP DETAILS			
	TVDPath	MDPath	Formation
	4008.00	4196.88	PK Depth
	4470.00	4687.45	SX Depth
	7166.00	7484.13	NIO Depth
	7485.00	7803.13	CD Depth
	7572.00	7890.13	GH Depth

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



DESIGN TARGET DETAILS								
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
HEIN 1-1 BHL	7645.00	1429.84	1336.89	1274873.74	3186947.68	40.085986	-104.831847	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
1282.54	19.65	43.08	1263.39	121.87	113.95	2.00	43.08	166.85
6040.22	19.65	43.08	5743.98	1290.56	1206.66	0.00	0.00	1766.79
7163.13	0.00	0.00	6845.00	1429.84	1336.89	1.75	180.00	1957.48
7963.13	0.00	0.00	7645.00	1429.84	1336.89	0.00	0.00	1957.48



Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well HEIN 1-1
Company:	US ROCKIES REGION PLANNING	TVD Reference:	15' rkb + 4893' gl @ 4908.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	15' rkb + 4893' gl @ 4908.00ft
Site:	WELD_HEIN 2-1 PAD	North Reference:	True
Well:	HEIN 1-1	Survey Calculation Method:	Minimum Curvature
Wellbore:	HEIN 1-1		
Design:	HEIN 1-1 (wp02)		

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 2-1 PAD			
Site Position:		Northing:	1,273,385.87 usft	Latitude: 40.081929
From:	Lat/Long	Easting:	3,185,622.17 usft	Longitude: -104.836624
Position Uncertainty:	0.00 ft	Slot Radius:	0 "	Grid Convergence: 0.43 °

Well	HEIN 1-1			
Well Position	+N/-S	48.07 ft	Northing:	1,273,433.94 usft
	+E/-W	-0.28 ft	Easting:	3,185,621.53 usft
Position Uncertainty		0.00 ft	Wellhead Elevation:	Ground Level: 4,893.00 ft

Wellbore	HEIN 1-1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/1/2010	8.95	66.80	53,012

Design	HEIN 1-1 (wp02)			
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	43.08

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	
1,282.54	19.65	43.08	1,263.39	121.87	113.95	2.00	2.00	0.00	43.08	
6,040.22	19.65	43.08	5,743.98	1,290.56	1,206.66	0.00	0.00	0.00	0.00	
7,163.13	0.00	0.00	6,845.00	1,429.84	1,336.89	1.75	-1.75	0.00	180.00	
7,963.13	0.00	0.00	7,645.00	1,429.84	1,336.89	0.00	0.00	0.00	0.00	HEIN 1-1 BHL

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well HEIN 1-1
Company:	US ROCKIES REGION PLANNING	TVD Reference:	15' rkb + 4893' gl @ 4908.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	15' rkb + 4893' gl @ 4908.00ft
Site:	WELD_HEIN 2-1 PAD	North Reference:	True
Well:	HEIN 1-1	Survey Calculation Method:	Minimum Curvature
Wellbore:	HEIN 1-1		
Design:	HEIN 1-1 (wp02)		

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
Start Build 2.00									
400.00	2.00	43.08	399.98	1.27	1.19	1.75	2.00	2.00	0.00
500.00	4.00	43.08	499.84	5.10	4.77	6.98	2.00	2.00	0.00
600.00	6.00	43.08	599.45	11.46	10.72	15.69	2.00	2.00	0.00
700.00	8.00	43.08	698.70	20.36	19.04	27.88	2.00	2.00	0.00
800.00	10.00	43.08	797.47	31.79	29.72	43.52	2.00	2.00	0.00
900.00	12.00	43.08	895.62	45.73	42.76	62.60	2.00	2.00	0.00
919.82	12.40	43.08	915.00	48.79	45.62	66.79	2.00	2.00	0.00
8-5/8"									
1,000.00	14.00	43.08	993.06	62.16	58.12	85.10	2.00	2.00	0.00
1,100.00	16.00	43.08	1,089.64	81.06	75.79	110.98	2.00	2.00	0.00
1,200.00	18.00	43.08	1,185.27	102.42	95.76	140.21	2.00	2.00	0.00
1,264.06	19.28	43.08	1,245.97	117.37	109.74	160.69	2.00	2.00	0.00
Hein #31-1 BHL rad @ 1000' TVD									
1,282.54	19.65	43.08	1,263.39	121.87	113.95	166.85	2.00	2.00	0.00
Start 4757.67 hold at 1282.54 MD									
1,300.00	19.65	43.08	1,279.83	126.16	117.96	172.72	0.00	0.00	0.00
1,400.00	19.65	43.08	1,374.01	150.73	140.93	206.35	0.00	0.00	0.00
1,433.53	19.65	43.08	1,405.59	158.96	148.63	217.62	0.00	0.00	0.00
Donald M Vynckier Unit #1 rad @ 1000' TVD									
1,500.00	19.65	43.08	1,468.19	175.29	163.89	239.98	0.00	0.00	0.00
1,600.00	19.65	43.08	1,562.36	199.85	186.86	273.60	0.00	0.00	0.00
1,700.00	19.65	43.08	1,656.54	224.42	209.83	307.23	0.00	0.00	0.00
1,800.00	19.65	43.08	1,750.71	248.98	232.80	340.86	0.00	0.00	0.00
1,900.00	19.65	43.08	1,844.89	273.55	255.76	374.49	0.00	0.00	0.00
2,000.00	19.65	43.08	1,939.07	298.11	278.73	408.12	0.00	0.00	0.00
2,100.00	19.65	43.08	2,033.24	322.67	301.70	441.75	0.00	0.00	0.00
2,200.00	19.65	43.08	2,127.42	347.24	324.67	475.38	0.00	0.00	0.00
2,216.08	19.65	43.08	2,142.56	351.19	328.36	480.79	0.00	0.00	0.00
Hein #31-1 BHL rad @ 2000' TVD									
2,300.00	19.65	43.08	2,221.59	371.80	347.63	509.01	0.00	0.00	0.00
2,375.29	19.65	43.08	2,292.50	390.30	364.92	534.32	0.00	0.00	0.00
Donald M Vynckier Unit #1 rad @ 2000' TVD									
2,400.00	19.65	43.08	2,315.77	396.37	370.60	542.63	0.00	0.00	0.00
2,500.00	19.65	43.08	2,409.94	420.93	393.57	576.26	0.00	0.00	0.00
2,600.00	19.65	43.08	2,504.12	445.50	416.53	609.89	0.00	0.00	0.00
2,700.00	19.65	43.08	2,598.30	470.06	439.50	643.52	0.00	0.00	0.00
2,800.00	19.65	43.08	2,692.47	494.62	462.47	677.15	0.00	0.00	0.00
2,900.00	19.65	43.08	2,786.65	519.19	485.44	710.78	0.00	0.00	0.00
3,000.00	19.65	43.08	2,880.82	543.75	508.40	744.41	0.00	0.00	0.00
3,100.00	19.65	43.08	2,975.00	568.32	531.37	778.04	0.00	0.00	0.00
3,200.00	19.65	43.08	3,069.18	592.88	554.34	811.66	0.00	0.00	0.00
3,300.00	19.65	43.08	3,163.35	617.44	577.31	845.29	0.00	0.00	0.00
3,400.00	19.65	43.08	3,257.53	642.01	600.27	878.92	0.00	0.00	0.00
3,500.00	19.65	43.08	3,351.70	666.57	623.24	912.55	0.00	0.00	0.00
3,600.00	19.65	43.08	3,445.88	691.14	646.21	946.18	0.00	0.00	0.00
3,700.00	19.65	43.08	3,540.06	715.70	669.17	979.81	0.00	0.00	0.00
3,800.00	19.65	43.08	3,634.23	740.27	692.14	1,013.44	0.00	0.00	0.00
3,900.00	19.65	43.08	3,728.41	764.83	715.11	1,047.07	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 + 4893' gl @ 4908.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	15' rkb + 4893' gl @ 4908.00ft
Site:	WELD_HEIN 2-1 PAD	North Reference:	True
Well:	HEIN 1-1	Survey Calculation Method:	Minimum Curvature
Wellbore:	HEIN 1-1		
Design:	HEIN 1-1 (wp02)		

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)
4,000.00	19.65	43.08	3,822.58	789.39	738.08	1,080.69	0.00	0.00	0.00
4,100.00	19.65	43.08	3,916.76	813.96	761.04	1,114.32	0.00	0.00	0.00
4,196.88	19.65	43.08	4,008.00	837.76	783.30	1,146.90	0.00	0.00	0.00
PK Depth									
4,200.00	19.65	43.08	4,010.94	838.52	784.01	1,147.95	0.00	0.00	0.00
4,300.00	19.65	43.08	4,105.11	863.09	806.98	1,181.58	0.00	0.00	0.00
4,400.00	19.65	43.08	4,199.29	887.65	829.95	1,215.21	0.00	0.00	0.00
4,500.00	19.65	43.08	4,293.46	912.21	852.91	1,248.84	0.00	0.00	0.00
4,600.00	19.65	43.08	4,387.64	936.78	875.88	1,282.47	0.00	0.00	0.00
4,687.45	19.65	43.08	4,470.00	958.26	895.97	1,311.88	0.00	0.00	0.00
SX Depth									
4,700.00	19.65	43.08	4,481.82	961.34	898.85	1,316.10	0.00	0.00	0.00
4,800.00	19.65	43.08	4,575.99	985.91	921.81	1,349.72	0.00	0.00	0.00
4,859.60	19.65	43.08	4,632.12	1,000.55	935.50	1,369.77	0.00	0.00	0.00
Hein #31-1 BHL rad @ 4807' TVD									
4,900.00	19.65	43.08	4,670.17	1,010.47	944.78	1,383.35	0.00	0.00	0.00
5,000.00	19.65	43.08	4,764.34	1,035.03	967.75	1,416.98	0.00	0.00	0.00
5,100.00	19.65	43.08	4,858.52	1,059.60	990.72	1,450.61	0.00	0.00	0.00
5,200.00	19.65	43.08	4,952.70	1,084.16	1,013.68	1,484.24	0.00	0.00	0.00
5,300.00	19.65	43.08	5,046.87	1,108.73	1,036.65	1,517.87	0.00	0.00	0.00
5,400.00	19.65	43.08	5,141.05	1,133.29	1,059.62	1,551.50	0.00	0.00	0.00
5,500.00	19.65	43.08	5,235.22	1,157.86	1,082.59	1,585.13	0.00	0.00	0.00
5,600.00	19.65	43.08	5,329.40	1,182.42	1,105.55	1,618.75	0.00	0.00	0.00
5,700.00	19.65	43.08	5,423.57	1,206.98	1,128.52	1,652.38	0.00	0.00	0.00
5,800.00	19.65	43.08	5,517.75	1,231.55	1,151.49	1,686.01	0.00	0.00	0.00
5,900.00	19.65	43.08	5,611.93	1,256.11	1,174.45	1,719.64	0.00	0.00	0.00
6,000.00	19.65	43.08	5,706.10	1,280.68	1,197.42	1,753.27	0.00	0.00	0.00
6,040.22	19.65	43.08	5,743.98	1,290.56	1,206.66	1,766.79	0.00	0.00	0.00
Start Drop -1.75									
6,100.00	18.60	43.08	5,800.46	1,304.86	1,220.04	1,786.38	1.75	-1.75	0.00
6,200.00	16.85	43.08	5,895.71	1,327.11	1,240.83	1,816.83	1.75	-1.75	0.00
6,300.00	15.10	43.08	5,991.84	1,347.22	1,259.64	1,844.36	1.75	-1.75	0.00
6,400.00	13.35	43.08	6,088.77	1,365.17	1,276.42	1,868.94	1.75	-1.75	0.00
6,500.00	11.60	43.08	6,186.40	1,380.95	1,291.18	1,890.55	1.75	-1.75	0.00
6,600.00	9.85	43.08	6,284.65	1,394.55	1,303.90	1,909.17	1.75	-1.75	0.00
6,700.00	8.10	43.08	6,383.42	1,405.95	1,314.56	1,924.78	1.75	-1.75	0.00
6,800.00	6.35	43.08	6,482.62	1,415.15	1,323.15	1,937.36	1.75	-1.75	0.00
6,900.00	4.60	43.08	6,582.16	1,422.12	1,329.67	1,946.91	1.75	-1.75	0.00
7,000.00	2.85	43.08	6,681.94	1,426.87	1,334.11	1,953.41	1.75	-1.75	0.00
7,100.00	1.10	43.08	6,781.88	1,429.40	1,336.47	1,956.87	1.75	-1.75	0.00
7,163.13	0.00	0.00	6,845.00	1,429.84	1,336.89	1,957.48	1.75	-1.75	0.00
Start 800.00 hold at 7163.13 MD									
7,200.00	0.00	0.00	6,881.88	1,429.84	1,336.89	1,957.48	0.00	0.00	0.00
7,300.00	0.00	0.00	6,981.88	1,429.84	1,336.89	1,957.48	0.00	0.00	0.00
7,400.00	0.00	0.00	7,081.88	1,429.84	1,336.89	1,957.48	0.00	0.00	0.00
7,484.13	0.00	0.00	7,166.00	1,429.84	1,336.89	1,957.48	0.00	0.00	0.00
NIO Depth									
7,500.00	0.00	0.00	7,181.88	1,429.84	1,336.89	1,957.48	0.00	0.00	0.00
7,600.00	0.00	0.00	7,281.88	1,429.84	1,336.89	1,957.48	0.00	0.00	0.00
7,700.00	0.00	0.00	7,381.88	1,429.84	1,336.89	1,957.48	0.00	0.00	0.00
7,800.00	0.00	0.00	7,481.88	1,429.84	1,336.89	1,957.48	0.00	0.00	0.00
7,803.13	0.00	0.00	7,485.00	1,429.84	1,336.89	1,957.48	0.00	0.00	0.00
CD Depth									

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Planning Report

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Company:	US ROCKIES REGION PLANNING	TVD Reference:	15' rkb + 4893' gl @ 4908.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	15' rkb + 4893' gl @ 4908.00ft
Site:	WELD_HEIN 2-1 PAD	North Reference:	True
Well:	HEIN 1-1	Survey Calculation Method:	Minimum Curvature
Wellbore:	HEIN 1-1		
Design:	HEIN 1-1 (wp02)		

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)
7,890.13	0.00	0.00	7,572.00	1,429.84	1,336.89	1,957.48	0.00	0.00	0.00
GH Depth									
7,900.00	0.00	0.00	7,581.88	1,429.84	1,336.89	1,957.48	0.00	0.00	0.00
7,963.13	0.00	0.00	7,645.00	1,429.84	1,336.89	1,957.48	0.00	0.00	0.00
TD at 7963.13 - HEIN 1-1 BHL - Donald M Vynckier Unit #1 rad @ 8070' TVD									

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
HEIN 1-1 BHL - plan hits target center - Point	0.00	0.00	7,645.00	1,429.84	1,336.89	1,274,873.74	3,186,947.68	40.085986	-104.831847

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 (°)	
4,196.88	3,993.00	PK Depth				
4,687.45	4,455.00	SX Depth				
7,484.13	7,151.00	NIO Depth				
7,803.13	7,470.00	CD Depth				
7,890.13	7,557.00	GH Depth				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
300.00	300.00	0.00	0.00	Start Build 2.00	
1,282.54	1,263.39	121.87	113.95	Start 4757.67 hold at 1282.54 MD	
6,040.22	5,743.98	1,290.56	1,206.66	Start Drop -1.75	
7,163.13	6,845.00	1,429.84	1,336.89	Start 800.00 hold at 7163.13 MD	
7,963.13	7,645.00	1,429.84	1,336.89	TD at 7963.13	