

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_BARCLAY 1-28HZ PAD

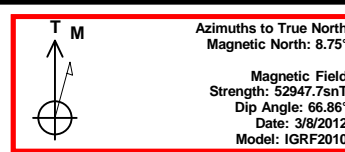
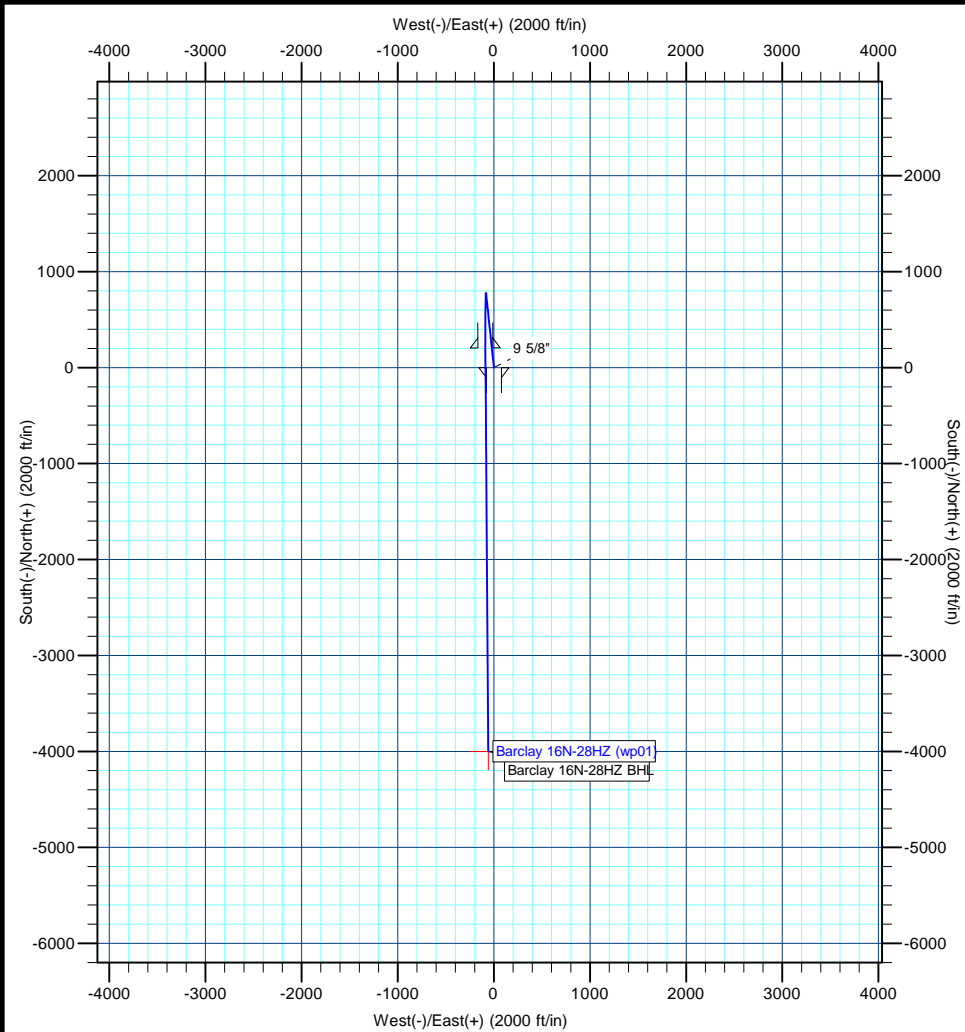
Barclay 16N-28HZ

Barclay 16N-28HZ

Plan: Barclay 16N-28HZ (wp01)

Standard Planning Report

08 March, 2012



Project: COLORADO NORTHERN ZONE - 83
 Site: WELD_BARCLAY 1-28HZ PAD
 Well: Barclay 16N-28HZ
 Wellbore: Barclay 16N-28HZ
 Section:
 SHL:
 Design: Barclay 16N-28HZ (wp01)
 Latitude: 40.201011
 Longitude: -104.774949
 GL: 4945.00
 KB: RKB + GL @ 4962.00ft

WELL DETAILS: Barclay 16N-28HZ

+N/-S	+E/-W	Northing	Ground Level: Easting	4945.00 Latitude	Longitude	Slot
0.00	0.00	1316898.72	3202524.67	40.201011	-104.774949	

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2000.00	0.00	0.00	2000.00	0.00	0.00	0.00	0.00	0.00
2516.96	10.34	353.97	2514.16	46.26	-4.89	2.00	353.97	-46.18
6565.34	10.34	353.97	6496.81	768.82	-81.22	0.00	0.00	-767.54
7568.24	90.00	179.57	7172.00	205.00	-89.00	10.00	-174.31	-203.67
7570.34	90.00	179.59	7172.00	202.90	-88.98	1.00	90.00	-201.57
1772.45	90.00	179.59	7172.00	-3999.10	-58.95	0.00	0.00	3999.54

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

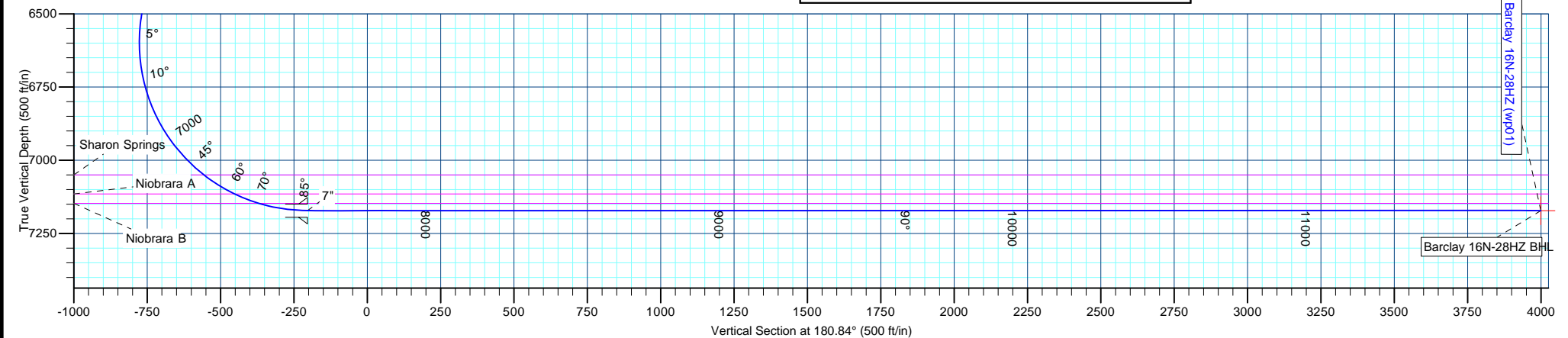
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Barclay 16N-28HZ BHL	7172.00	-3999.10	-58.95	40.190033	-104.775160	Point

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3982.00	4009.03	Parkman
4391.00	4424.78	Sussex
7050.00	7187.33	Sharon Springs
7115.00	7310.48	Niobrara A
7147.00	7398.35	Niobrara B

CASING DETAILS

TVD	MD	Name	Size
700.00	700.00	9 5/8"	9-5/8
7172.00	7568.24	7"	7



Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well Barclay 16N-28HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	RKB + GL @ 4962.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	RKB + GL @ 4962.00ft
Site:	WELD_BARCLAY 1-28HZ PAD	North Reference:	True
Well:	Barclay 16N-28HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Barclay 16N-28HZ		
Design:	Barclay 16N-28HZ (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_BARCLAY 1-28HZ PAD			
Site Position:		Northing:	1,316,898.73 usft	Latitude:	40.201011
From:	Lat/Long	Easting:	3,202,524.67 usft	Longitude:	-104.774949
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.47 °

Well		Barclay 16N-28HZ				
Well Position	+N/-S	0.00 ft	Northing:	1,316,898.72 usft	Latitude:	40.201011
	+E/-W	0.00 ft	Easting:	3,202,524.67 usft	Longitude:	-104.774949
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,945.00 ft

Wellbore	Barclay 16N-28HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/8/2012	8.75	66.86	52,948

Design	Barclay 16N-28HZ (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	180.84

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	
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,516.96	10.34	353.97	2,514.16	46.26	-4.89	2.00	2.00	0.00	353.97	
6,565.34	10.34	353.97	6,496.81	768.82	-81.22	0.00	0.00	0.00	0.00	
7,568.24	90.00	179.57	7,172.00	205.00	-89.00	10.00	7.94	-17.39	-174.31	
7,570.34	90.00	179.59	7,172.00	202.90	-88.98	1.00	0.00	1.00	90.00	
11,772.45	90.00	179.59	7,172.00	-3,999.10	-58.95	0.00	0.00	0.00	0.00	Barclay 16N-28HZ Bt

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well Barclay 16N-28HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	RKB + GL @ 4962.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	RKB + GL @ 4962.00ft
Site:	WELD_BARCLAY 1-28HZ PAD	North Reference:	True
Well:	Barclay 16N-28HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Barclay 16N-28HZ		
Design:	Barclay 16N-28HZ (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	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"									
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	2.00	353.97	2,099.98	1.74	-0.18	-1.73	2.00	2.00	0.00
2,200.00	4.00	353.97	2,199.84	6.94	-0.73	-6.93	2.00	2.00	0.00
2,300.00	6.00	353.97	2,299.45	15.61	-1.65	-15.58	2.00	2.00	0.00
2,400.00	8.00	353.97	2,398.70	27.73	-2.93	-27.68	2.00	2.00	0.00
2,500.00	10.00	353.97	2,497.47	43.28	-4.57	-43.21	2.00	2.00	0.00
2,516.96	10.34	353.97	2,514.16	46.26	-4.89	-46.18	2.00	2.00	0.00
2,600.00	10.34	353.97	2,595.85	61.08	-6.45	-60.98	0.00	0.00	0.00
2,700.00	10.34	353.97	2,694.23	78.93	-8.34	-78.80	0.00	0.00	0.00
2,800.00	10.34	353.97	2,792.60	96.78	-10.22	-96.62	0.00	0.00	0.00
2,900.00	10.34	353.97	2,890.98	114.62	-12.11	-114.43	0.00	0.00	0.00
3,000.00	10.34	353.97	2,989.36	132.47	-13.99	-132.25	0.00	0.00	0.00
3,100.00	10.34	353.97	3,087.73	150.32	-15.88	-150.07	0.00	0.00	0.00
3,200.00	10.34	353.97	3,186.11	168.17	-17.77	-167.89	0.00	0.00	0.00
3,300.00	10.34	353.97	3,284.48	186.02	-19.65	-185.71	0.00	0.00	0.00
3,400.00	10.34	353.97	3,382.86	203.87	-21.54	-203.53	0.00	0.00	0.00
3,500.00	10.34	353.97	3,481.24	221.71	-23.42	-221.34	0.00	0.00	0.00
3,600.00	10.34	353.97	3,579.61	239.56	-25.31	-239.16	0.00	0.00	0.00
3,700.00	10.34	353.97	3,677.99	257.41	-27.19	-256.98	0.00	0.00	0.00
3,800.00	10.34	353.97	3,776.37	275.26	-29.08	-274.80	0.00	0.00	0.00
3,900.00	10.34	353.97	3,874.74	293.11	-30.96	-292.62	0.00	0.00	0.00
4,000.00	10.34	353.97	3,973.12	310.95	-32.85	-310.44	0.00	0.00	0.00
4,009.03	10.34	353.97	3,982.00	312.57	-33.02	-312.04	0.00	0.00	0.00
Parkman									
4,100.00	10.34	353.97	4,071.49	328.80	-34.73	-328.25	0.00	0.00	0.00
4,200.00	10.34	353.97	4,169.87	346.65	-36.62	-346.07	0.00	0.00	0.00
4,300.00	10.34	353.97	4,268.25	364.50	-38.51	-363.89	0.00	0.00	0.00
4,400.00	10.34	353.97	4,366.62	382.35	-40.39	-381.71	0.00	0.00	0.00
4,424.78	10.34	353.97	4,391.00	386.77	-40.86	-386.12	0.00	0.00	0.00
Sussex									
4,500.00	10.34	353.97	4,465.00	400.19	-42.28	-399.53	0.00	0.00	0.00
4,600.00	10.34	353.97	4,563.38	418.04	-44.16	-417.35	0.00	0.00	0.00

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well Barclay 16N-28HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	RKB + GL @ 4962.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	RKB + GL @ 4962.00ft
Site:	WELD_BARCLAY 1-28HZ PAD	North Reference:	True
Well:	Barclay 16N-28HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Barclay 16N-28HZ		
Design:	Barclay 16N-28HZ (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)
4,700.00	10.34	353.97	4,661.75	435.89	-46.05	-435.16	0.00	0.00	0.00
4,800.00	10.34	353.97	4,760.13	453.74	-47.93	-452.98	0.00	0.00	0.00
4,900.00	10.34	353.97	4,858.50	471.59	-49.82	-470.80	0.00	0.00	0.00
5,000.00	10.34	353.97	4,956.88	489.44	-51.70	-488.62	0.00	0.00	0.00
5,100.00	10.34	353.97	5,055.26	507.28	-53.59	-506.44	0.00	0.00	0.00
5,200.00	10.34	353.97	5,153.63	525.13	-55.47	-524.26	0.00	0.00	0.00
5,300.00	10.34	353.97	5,252.01	542.98	-57.36	-542.08	0.00	0.00	0.00
5,400.00	10.34	353.97	5,350.39	560.83	-59.25	-559.89	0.00	0.00	0.00
5,500.00	10.34	353.97	5,448.76	578.68	-61.13	-577.71	0.00	0.00	0.00
5,600.00	10.34	353.97	5,547.14	596.52	-63.02	-595.53	0.00	0.00	0.00
5,700.00	10.34	353.97	5,645.52	614.37	-64.90	-613.35	0.00	0.00	0.00
5,800.00	10.34	353.97	5,743.89	632.22	-66.79	-631.17	0.00	0.00	0.00
5,900.00	10.34	353.97	5,842.27	650.07	-68.67	-648.99	0.00	0.00	0.00
6,000.00	10.34	353.97	5,940.64	667.92	-70.56	-666.80	0.00	0.00	0.00
6,100.00	10.34	353.97	6,039.02	685.76	-72.44	-684.62	0.00	0.00	0.00
6,200.00	10.34	353.97	6,137.40	703.61	-74.33	-702.44	0.00	0.00	0.00
6,300.00	10.34	353.97	6,235.77	721.46	-76.21	-720.26	0.00	0.00	0.00
6,400.00	10.34	353.97	6,334.15	739.31	-78.10	-738.08	0.00	0.00	0.00
6,500.00	10.34	353.97	6,432.53	757.16	-79.98	-755.90	0.00	0.00	0.00
6,565.34	10.34	353.97	6,496.81	768.82	-81.22	-767.54	0.00	0.00	0.00
6,600.00	6.90	351.11	6,531.07	773.97	-81.87	-772.68	10.00	-9.93	-8.25
6,700.00	3.34	197.35	6,630.87	777.13	-83.67	-775.82	10.00	-3.56	-153.76
6,800.00	13.22	183.92	6,729.72	762.92	-85.32	-761.58	10.00	9.88	-13.43
6,900.00	23.20	181.95	6,824.59	731.75	-86.77	-730.39	10.00	9.98	-1.97
7,000.00	33.19	181.13	6,912.62	684.58	-87.99	-683.21	10.00	9.99	-0.82
7,100.00	43.19	180.66	6,991.11	622.84	-88.92	-621.47	10.00	10.00	-0.47
7,187.33	51.92	180.37	7,050.00	558.47	-89.48	-557.09	10.00	10.00	-0.33
Sharon Springs									
7,200.00	53.18	180.33	7,057.70	548.41	-89.55	-547.03	10.00	10.00	-0.28
7,300.00	63.18	180.09	7,110.36	463.55	-89.85	-462.17	10.00	10.00	-0.25
7,310.48	64.23	180.06	7,115.00	454.15	-89.86	-452.78	10.00	10.00	-0.22
Niobrara A									
7,398.35	73.01	179.88	7,147.00	372.41	-89.81	-371.05	10.00	10.00	-0.21
Niobrara B									
7,400.00	73.18	179.88	7,147.48	370.83	-89.81	-369.47	10.00	10.00	-0.19
7,500.00	83.18	179.69	7,167.94	273.08	-89.44	-271.73	10.00	10.00	-0.19
7,568.24	90.00	179.57	7,172.00	205.00	-89.00	-203.66	10.00	10.00	-0.18
7"									
7,570.34	90.00	179.59	7,172.00	202.90	-88.98	-201.57	1.00	0.00	1.00
7,600.00	90.00	179.59	7,172.00	173.24	-88.77	-171.91	0.00	0.00	0.00
7,700.00	90.00	179.59	7,172.00	73.24	-88.06	-71.94	0.00	0.00	0.00
7,800.00	90.00	179.59	7,172.00	-26.76	-87.34	28.04	0.00	0.00	0.00
7,900.00	90.00	179.59	7,172.00	-126.75	-86.63	128.02	0.00	0.00	0.00
8,000.00	90.00	179.59	7,172.00	-226.75	-85.91	227.99	0.00	0.00	0.00
8,100.00	90.00	179.59	7,172.00	-326.75	-85.20	327.97	0.00	0.00	0.00
8,200.00	90.00	179.59	7,172.00	-426.75	-84.48	427.94	0.00	0.00	0.00
8,300.00	90.00	179.59	7,172.00	-526.74	-83.77	527.92	0.00	0.00	0.00
8,400.00	90.00	179.59	7,172.00	-626.74	-83.05	627.90	0.00	0.00	0.00
8,500.00	90.00	179.59	7,172.00	-726.74	-82.34	727.87	0.00	0.00	0.00
8,600.00	90.00	179.59	7,172.00	-826.74	-81.62	827.85	0.00	0.00	0.00
8,700.00	90.00	179.59	7,172.00	-926.73	-80.91	927.82	0.00	0.00	0.00
8,800.00	90.00	179.59	7,172.00	-1,026.73	-80.19	1,027.80	0.00	0.00	0.00
8,900.00	90.00	179.59	7,172.00	-1,126.73	-79.48	1,127.78	0.00	0.00	0.00
9,000.00	90.00	179.59	7,172.00	-1,226.73	-78.77	1,227.75	0.00	0.00	0.00

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well Barclay 16N-28HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	RKB + GL @ 4962.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	RKB + GL @ 4962.00ft
Site:	WELD_BARCLAY 1-28HZ PAD	North Reference:	True
Well:	Barclay 16N-28HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Barclay 16N-28HZ		
Design:	Barclay 16N-28HZ (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)
9,100.00	90.00	179.59	7,172.00	-1,326.72	-78.05	1,327.73	0.00	0.00	0.00
9,200.00	90.00	179.59	7,172.00	-1,426.72	-77.34	1,427.71	0.00	0.00	0.00
9,300.00	90.00	179.59	7,172.00	-1,526.72	-76.62	1,527.68	0.00	0.00	0.00
9,400.00	90.00	179.59	7,172.00	-1,626.72	-75.91	1,627.66	0.00	0.00	0.00
9,500.00	90.00	179.59	7,172.00	-1,726.71	-75.19	1,727.63	0.00	0.00	0.00
9,600.00	90.00	179.59	7,172.00	-1,826.71	-74.48	1,827.61	0.00	0.00	0.00
9,700.00	90.00	179.59	7,172.00	-1,926.71	-73.76	1,927.59	0.00	0.00	0.00
9,800.00	90.00	179.59	7,172.00	-2,026.71	-73.05	2,027.56	0.00	0.00	0.00
9,900.00	90.00	179.59	7,172.00	-2,126.70	-72.33	2,127.54	0.00	0.00	0.00
10,000.00	90.00	179.59	7,172.00	-2,226.70	-71.62	2,227.51	0.00	0.00	0.00
10,100.00	90.00	179.59	7,172.00	-2,326.70	-70.90	2,327.49	0.00	0.00	0.00
10,200.00	90.00	179.59	7,172.00	-2,426.69	-70.19	2,427.47	0.00	0.00	0.00
10,300.00	90.00	179.59	7,172.00	-2,526.69	-69.47	2,527.44	0.00	0.00	0.00
10,400.00	90.00	179.59	7,172.00	-2,626.69	-68.76	2,627.42	0.00	0.00	0.00
10,500.00	90.00	179.59	7,172.00	-2,726.69	-68.04	2,727.39	0.00	0.00	0.00
10,600.00	90.00	179.59	7,172.00	-2,826.68	-67.33	2,827.37	0.00	0.00	0.00
10,700.00	90.00	179.59	7,172.00	-2,926.68	-66.61	2,927.35	0.00	0.00	0.00
10,800.00	90.00	179.59	7,172.00	-3,026.68	-65.90	3,027.32	0.00	0.00	0.00
10,900.00	90.00	179.59	7,172.00	-3,126.68	-65.18	3,127.30	0.00	0.00	0.00
11,000.00	90.00	179.59	7,172.00	-3,226.67	-64.47	3,227.27	0.00	0.00	0.00
11,100.00	90.00	179.59	7,172.00	-3,326.67	-63.75	3,327.25	0.00	0.00	0.00
11,200.00	90.00	179.59	7,172.00	-3,426.67	-63.04	3,427.23	0.00	0.00	0.00
11,300.00	90.00	179.59	7,172.00	-3,526.67	-62.32	3,527.20	0.00	0.00	0.00
11,400.00	90.00	179.59	7,172.00	-3,626.66	-61.61	3,627.18	0.00	0.00	0.00
11,500.00	90.00	179.59	7,172.00	-3,726.66	-60.90	3,727.15	0.00	0.00	0.00
11,600.00	90.00	179.59	7,172.00	-3,826.66	-60.18	3,827.13	0.00	0.00	0.00
11,700.00	90.00	179.59	7,172.00	-3,926.66	-59.47	3,927.11	0.00	0.00	0.00
11,772.45	90.00	179.59	7,172.00	-3,999.10	-58.95	3,999.54	0.00	0.00	0.00
Barclay 16N-28HZ BHL									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Barclay 16N-28HZ BHL	0.00	0.00	7,172.00	-3,999.10	-58.95	1,312,899.28	3,202,498.42	40.190033	-104.775160
- hit/miss target									
- Shape									
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
700.00	700.00	9 5/8"	9-5/8	12-1/4	
7,568.24	7,172.00	7"	7	8-3/4	

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well Barclay 16N-28HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	RKB + GL @ 4962.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	RKB + GL @ 4962.00ft
Site:	WELD_BARCLAY 1-28HZ PAD	North Reference:	True
Well:	Barclay 16N-28HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Barclay 16N-28HZ		
Design:	Barclay 16N-28HZ (wp01)		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,009.03	3,982.00	Parkman				
4,424.78	4,391.00	Sussex				
7,187.33	7,050.00	Sharon Springs				
7,310.48	7,115.00	Niobrara A				
7,398.35	7,147.00	Niobrara B				