

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_NORTON 5 PAD

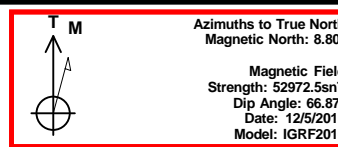
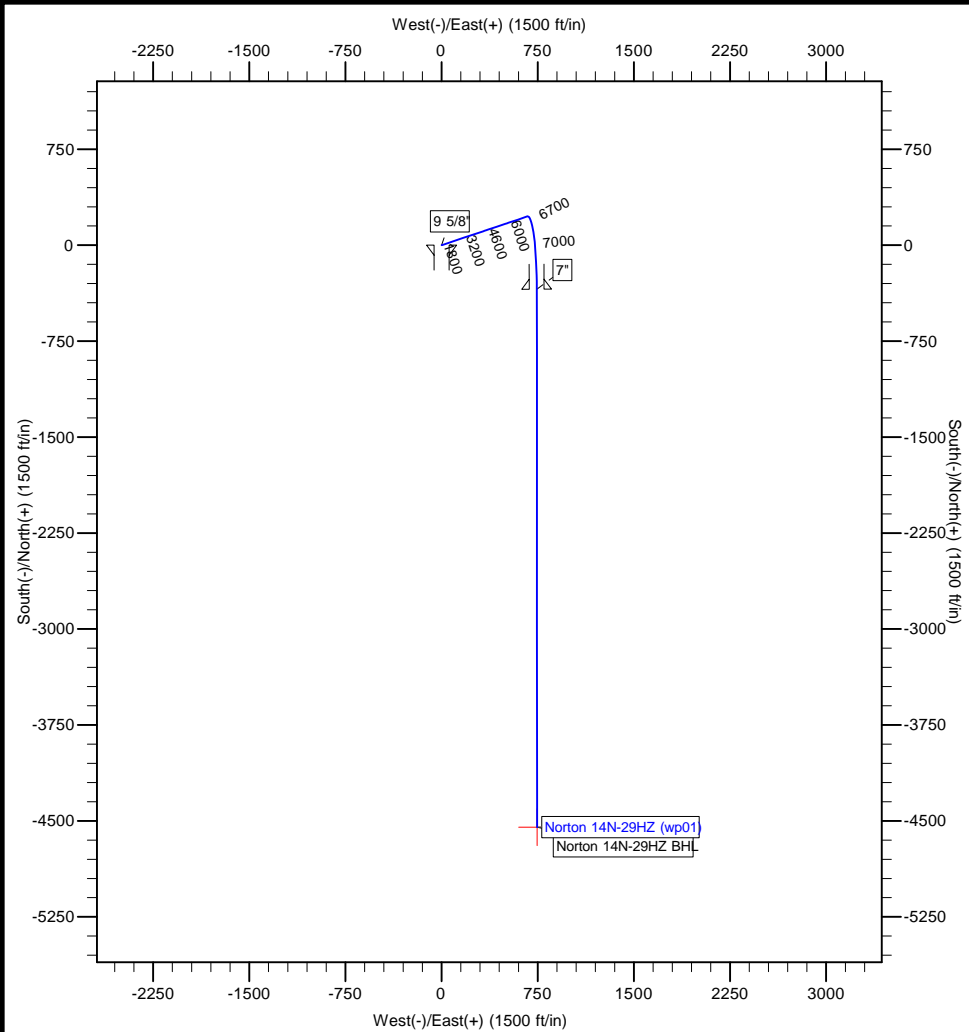
Norton 14N-29HZ

Norton 14N-29HZ

Plan: Norton 14N-29HZ (wp01)

Standard Planning Report

05 December, 2011



Project: COLORADO NORTHERN ZONE - 83
 Site: WELD, NORTON 5 PAD
 Well: Norton 14N-29HZ
 Wellbore: Norton 14N-29HZ
 Section:
 SHL:
 Design: Norton 14N-29HZ (wp01)
 Latitude: 40.202254
 Longitude: -104.805960
 GL: 4896.00
 KB: gl + rkb @ 4913.00ft

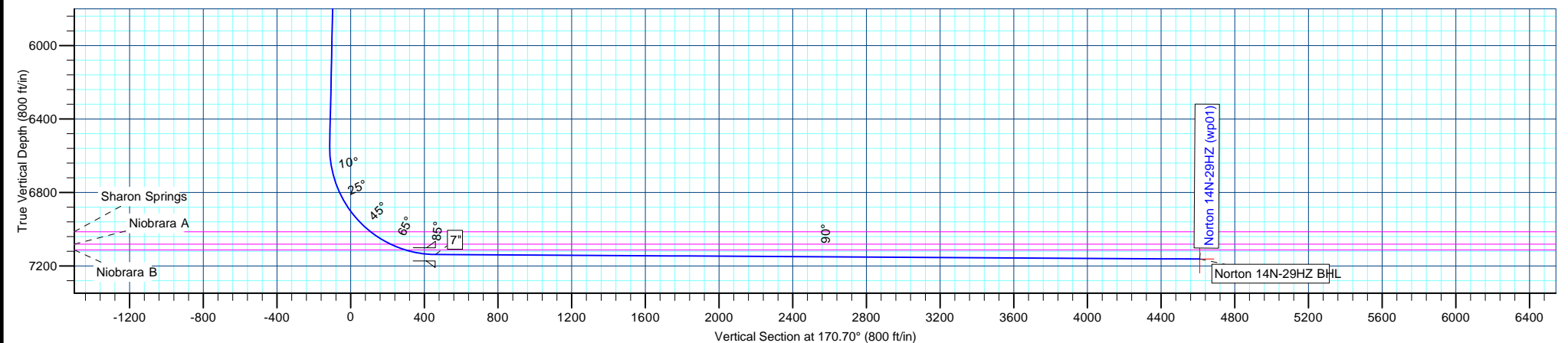
WELL DETAILS: Norton 14N-29HZ						
+N/-S	+E/-W	Northing	Ground Level: Easting	4896.00 Latitude 40.202254	Longitude	Slot
0.00	0.00	1317282.19	3193859.17		-104.805960	

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
1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	0.00
1375.18	7.50	71.47	1374.11	7.80	23.26	2.00	71.47	-3.94
6591.60	7.50	71.47	6545.86	224.30	669.15	0.00	0.00	-113.24
7512.23	89.69	179.97	7138.00	-345.00	743.00	10.00	108.39	460.52
7514.87	89.66	179.98	7138.02	-347.64	743.00	1.00	168.42	463.12
11716.45	89.66	179.98	7163.00	-4549.15	744.81	0.00	0.00	4609.72

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)							
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape	Point
Norton 14N-29HZ BHL	7163.00	-4549.15	744.81	40.189766	-104.803294	Point	

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
3367.00	3385.28	Parkman
4305.00	4331.39	Sussex
7015.00	7131.35	Sharon Springs
7082.00	7258.94	Niobrara A
7113.00	7344.83	Niobrara B

CASING DETAILS			
TVD	MD	Name	Size
900.00	900.00	9 5/8"	9-5/8
7138.00	7512.23	7"	7



Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well Norton 14N-29HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	gl + rkb @ 4913.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	gl + rkb @ 4913.00ft
Site:	WELD_NORTON 5 PAD	North Reference:	True
Well:	Norton 14N-29HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Norton 14N-29HZ		
Design:	Norton 14N-29HZ (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_NORTON 5 PAD			
Site Position:		Northing:	1,317,192.24 usft	Latitude: 40.202007
From:	Lat/Long	Easting:	3,193,861.27 usft	Longitude: -104.805955
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence: 0.45 °

Well	Norton 14N-29HZ			
Well Position	+N/-S	89.97 ft	Northing:	1,317,282.19 usft
	+E/-W	-1.40 ft	Easting:	3,193,859.17 usft
Position Uncertainty	0.00 ft	Wellhead Elevation:		Ground Level: 4,896.00 ft

Wellbore	Norton 14N-29HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/5/2011	8.81	66.87	52,972

Design	Norton 14N-29HZ (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	170.70

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	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,375.18	7.50	71.47	1,374.11	7.80	23.26	2.00	2.00	0.00	71.47	
6,591.60	7.50	71.47	6,545.86	224.30	669.15	0.00	0.00	0.00	0.00	
7,512.23	89.69	179.97	7,138.00	-345.00	743.00	10.00	8.93	11.79	108.39	
7,514.87	89.66	179.98	7,138.02	-347.64	743.00	1.00	-0.98	0.20	168.42	
11,716.45	89.66	179.98	7,163.00	-4,549.15	744.81	0.00	0.00	0.00	0.00	Norton 14N-29HZ BH

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well Norton 14N-29HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	gl + rkb @ 4913.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	gl + rkb @ 4913.00ft
Site:	WELD_NORTON 5 PAD	North Reference:	True
Well:	Norton 14N-29HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Norton 14N-29HZ		
Design:	Norton 14N-29HZ (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
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
9 5/8"									
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	2.00	71.47	1,099.98	0.55	1.65	-0.28	2.00	2.00	0.00
1,200.00	4.00	71.47	1,199.84	2.22	6.62	-1.12	2.00	2.00	0.00
1,300.00	6.00	71.47	1,299.45	4.99	14.88	-2.52	2.00	2.00	0.00
1,375.18	7.50	71.47	1,374.11	7.80	23.26	-3.94	2.00	2.00	0.00
1,400.00	7.50	71.47	1,398.72	8.83	26.33	-4.46	0.00	0.00	0.00
1,500.00	7.50	71.47	1,497.86	12.98	38.72	-6.55	0.00	0.00	0.00
1,600.00	7.50	71.47	1,597.00	17.13	51.10	-8.65	0.00	0.00	0.00
1,700.00	7.50	71.47	1,696.15	21.28	63.48	-10.74	0.00	0.00	0.00
1,800.00	7.50	71.47	1,795.29	25.43	75.86	-12.84	0.00	0.00	0.00
1,900.00	7.50	71.47	1,894.43	29.58	88.24	-14.93	0.00	0.00	0.00
2,000.00	7.50	71.47	1,993.58	33.73	100.62	-17.03	0.00	0.00	0.00
2,100.00	7.50	71.47	2,092.72	37.88	113.01	-19.12	0.00	0.00	0.00
2,200.00	7.50	71.47	2,191.87	42.03	125.39	-21.22	0.00	0.00	0.00
2,300.00	7.50	71.47	2,291.01	46.18	137.77	-23.31	0.00	0.00	0.00
2,400.00	7.50	71.47	2,390.15	50.33	150.15	-25.41	0.00	0.00	0.00
2,500.00	7.50	71.47	2,489.30	54.48	162.53	-27.51	0.00	0.00	0.00
2,600.00	7.50	71.47	2,588.44	58.63	174.91	-29.60	0.00	0.00	0.00
2,700.00	7.50	71.47	2,687.58	62.78	187.30	-31.70	0.00	0.00	0.00
2,800.00	7.50	71.47	2,786.73	66.93	199.68	-33.79	0.00	0.00	0.00
2,900.00	7.50	71.47	2,885.87	71.08	212.06	-35.89	0.00	0.00	0.00
3,000.00	7.50	71.47	2,985.01	75.23	224.44	-37.98	0.00	0.00	0.00
3,100.00	7.50	71.47	3,084.16	79.39	236.82	-40.08	0.00	0.00	0.00
3,200.00	7.50	71.47	3,183.30	83.54	249.21	-42.17	0.00	0.00	0.00
3,300.00	7.50	71.47	3,282.45	87.69	261.59	-44.27	0.00	0.00	0.00
3,385.28	7.50	71.47	3,367.00	91.23	272.15	-46.06	0.00	0.00	0.00
Parkman									
3,400.00	7.50	71.47	3,381.59	91.84	273.97	-46.36	0.00	0.00	0.00
3,500.00	7.50	71.47	3,480.73	95.99	286.35	-48.46	0.00	0.00	0.00
3,600.00	7.50	71.47	3,579.88	100.14	298.73	-50.55	0.00	0.00	0.00
3,700.00	7.50	71.47	3,679.02	104.29	311.11	-52.65	0.00	0.00	0.00
3,800.00	7.50	71.47	3,778.16	108.44	323.50	-54.75	0.00	0.00	0.00
3,900.00	7.50	71.47	3,877.31	112.59	335.88	-56.84	0.00	0.00	0.00
4,000.00	7.50	71.47	3,976.45	116.74	348.26	-58.94	0.00	0.00	0.00
4,100.00	7.50	71.47	4,075.59	120.89	360.64	-61.03	0.00	0.00	0.00
4,200.00	7.50	71.47	4,174.74	125.04	373.02	-63.13	0.00	0.00	0.00
4,300.00	7.50	71.47	4,273.88	129.19	385.40	-65.22	0.00	0.00	0.00
4,331.39	7.50	71.47	4,305.00	130.49	389.29	-65.88	0.00	0.00	0.00
Sussex									
4,400.00	7.50	71.47	4,373.03	133.34	397.79	-67.32	0.00	0.00	0.00
4,500.00	7.50	71.47	4,472.17	137.49	410.17	-69.41	0.00	0.00	0.00
4,600.00	7.50	71.47	4,571.31	141.64	422.55	-71.51	0.00	0.00	0.00

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Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well Norton 14N-29HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	gl + rkb @ 4913.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	gl + rkb @ 4913.00ft
Site:	WELD_NORTON 5 PAD	North Reference:	True
Well:	Norton 14N-29HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Norton 14N-29HZ		
Design:	Norton 14N-29HZ (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	7.50	71.47	4,670.46	145.79	434.93	-73.60	0.00	0.00	0.00
4,800.00	7.50	71.47	4,769.60	149.94	447.31	-75.70	0.00	0.00	0.00
4,900.00	7.50	71.47	4,868.74	154.09	459.70	-77.79	0.00	0.00	0.00
5,000.00	7.50	71.47	4,967.89	158.24	472.08	-79.89	0.00	0.00	0.00
5,100.00	7.50	71.47	5,067.03	162.40	484.46	-81.99	0.00	0.00	0.00
5,200.00	7.50	71.47	5,166.18	166.55	496.84	-84.08	0.00	0.00	0.00
5,300.00	7.50	71.47	5,265.32	170.70	509.22	-86.18	0.00	0.00	0.00
5,400.00	7.50	71.47	5,364.46	174.85	521.60	-88.27	0.00	0.00	0.00
5,500.00	7.50	71.47	5,463.61	179.00	533.99	-90.37	0.00	0.00	0.00
5,600.00	7.50	71.47	5,562.75	183.15	546.37	-92.46	0.00	0.00	0.00
5,700.00	7.50	71.47	5,661.89	187.30	558.75	-94.56	0.00	0.00	0.00
5,800.00	7.50	71.47	5,761.04	191.45	571.13	-96.65	0.00	0.00	0.00
5,900.00	7.50	71.47	5,860.18	195.60	583.51	-98.75	0.00	0.00	0.00
6,000.00	7.50	71.47	5,959.32	199.75	595.90	-100.84	0.00	0.00	0.00
6,100.00	7.50	71.47	6,058.47	203.90	608.28	-102.94	0.00	0.00	0.00
6,200.00	7.50	71.47	6,157.61	208.05	620.66	-105.03	0.00	0.00	0.00
6,300.00	7.50	71.47	6,256.76	212.20	633.04	-107.13	0.00	0.00	0.00
6,400.00	7.50	71.47	6,355.90	216.35	645.42	-109.22	0.00	0.00	0.00
6,500.00	7.50	71.47	6,455.04	220.50	657.80	-111.32	0.00	0.00	0.00
6,591.60	7.50	71.47	6,545.86	224.30	669.15	-113.24	0.00	0.00	0.00
6,600.00	7.28	77.77	6,554.19	224.59	670.19	-113.35	10.00	-2.64	75.01
6,700.00	11.04	140.21	6,653.11	218.56	682.54	-105.41	10.00	3.76	62.44
6,800.00	19.74	159.64	6,749.49	195.31	694.57	-80.52	10.00	8.70	19.43
6,900.00	29.26	167.13	6,840.40	155.55	705.92	-39.45	10.00	9.52	7.49
7,000.00	39.01	171.14	6,923.08	100.48	716.23	16.56	10.00	9.75	4.01
7,100.00	48.85	173.74	6,995.02	31.78	725.21	85.81	10.00	9.84	2.60
7,131.35	51.94	174.40	7,015.00	7.76	727.70	109.92	10.00	9.87	2.09
Sharon Springs									
7,200.00	58.73	175.66	7,054.02	-48.46	732.56	166.19	10.00	9.89	1.84
7,258.94	64.57	176.60	7,082.00	-100.19	736.05	217.80	10.00	9.90	1.60
Niobrara A									
7,300.00	68.63	177.21	7,098.30	-137.81	738.08	255.25	10.00	9.91	1.47
7,344.83	73.08	177.83	7,113.00	-180.11	739.90	297.29	10.00	9.91	1.39
Niobrara B									
7,400.00	78.55	178.56	7,126.52	-233.55	741.58	350.30	10.00	9.92	1.32
7,500.00	88.47	179.82	7,137.80	-332.78	742.98	448.45	10.00	9.92	1.26
7,512.23	89.69	179.97	7,138.00	-345.00	743.00	460.52	10.00	9.92	1.24
7"									
7,514.87	89.66	179.98	7,138.02	-347.64	743.00	463.12	1.00	-0.98	0.20
7,600.00	89.66	179.98	7,138.52	-432.77	743.04	547.14	0.00	0.00	0.00
7,700.00	89.66	179.98	7,139.12	-532.77	743.08	645.83	0.00	0.00	0.00
7,800.00	89.66	179.98	7,139.71	-632.77	743.12	744.52	0.00	0.00	0.00
7,900.00	89.66	179.98	7,140.31	-732.77	743.17	843.22	0.00	0.00	0.00
8,000.00	89.66	179.98	7,140.90	-832.76	743.21	941.91	0.00	0.00	0.00
8,100.00	89.66	179.98	7,141.49	-932.76	743.25	1,040.60	0.00	0.00	0.00
8,200.00	89.66	179.98	7,142.09	-1,032.76	743.30	1,139.29	0.00	0.00	0.00
8,300.00	89.66	179.98	7,142.68	-1,132.76	743.34	1,237.98	0.00	0.00	0.00
8,400.00	89.66	179.98	7,143.28	-1,232.76	743.38	1,336.67	0.00	0.00	0.00
8,500.00	89.66	179.98	7,143.87	-1,332.76	743.43	1,435.36	0.00	0.00	0.00
8,600.00	89.66	179.98	7,144.47	-1,432.75	743.47	1,534.05	0.00	0.00	0.00
8,700.00	89.66	179.98	7,145.06	-1,532.75	743.51	1,632.75	0.00	0.00	0.00
8,800.00	89.66	179.98	7,145.66	-1,632.75	743.56	1,731.44	0.00	0.00	0.00
8,900.00	89.66	179.98	7,146.25	-1,732.75	743.60	1,830.13	0.00	0.00	0.00
9,000.00	89.66	179.98	7,146.85	-1,832.75	743.64	1,928.82	0.00	0.00	0.00

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well Norton 14N-29HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	gl + rkb @ 4913.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	gl + rkb @ 4913.00ft
Site:	WELD_NORTON 5 PAD	North Reference:	True
Well:	Norton 14N-29HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Norton 14N-29HZ		
Design:	Norton 14N-29HZ (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	89.66	179.98	7,147.44	-1,932.75	743.68	2,027.51	0.00	0.00	0.00
9,200.00	89.66	179.98	7,148.04	-2,032.74	743.73	2,126.20	0.00	0.00	0.00
9,300.00	89.66	179.98	7,148.63	-2,132.74	743.77	2,224.89	0.00	0.00	0.00
9,400.00	89.66	179.98	7,149.23	-2,232.74	743.81	2,323.58	0.00	0.00	0.00
9,500.00	89.66	179.98	7,149.82	-2,332.74	743.86	2,422.28	0.00	0.00	0.00
9,600.00	89.66	179.98	7,150.41	-2,432.74	743.90	2,520.97	0.00	0.00	0.00
9,700.00	89.66	179.98	7,151.01	-2,532.73	743.94	2,619.66	0.00	0.00	0.00
9,800.00	89.66	179.98	7,151.60	-2,632.73	743.99	2,718.35	0.00	0.00	0.00
9,900.00	89.66	179.98	7,152.20	-2,732.73	744.03	2,817.04	0.00	0.00	0.00
10,000.00	89.66	179.98	7,152.79	-2,832.73	744.07	2,915.73	0.00	0.00	0.00
10,100.00	89.66	179.98	7,153.39	-2,932.73	744.12	3,014.42	0.00	0.00	0.00
10,200.00	89.66	179.98	7,153.98	-3,032.73	744.16	3,113.11	0.00	0.00	0.00
10,300.00	89.66	179.98	7,154.58	-3,132.72	744.20	3,211.81	0.00	0.00	0.00
10,400.00	89.66	179.98	7,155.17	-3,232.72	744.25	3,310.50	0.00	0.00	0.00
10,500.00	89.66	179.98	7,155.77	-3,332.72	744.29	3,409.19	0.00	0.00	0.00
10,600.00	89.66	179.98	7,156.36	-3,432.72	744.33	3,507.88	0.00	0.00	0.00
10,700.00	89.66	179.98	7,156.96	-3,532.72	744.37	3,606.57	0.00	0.00	0.00
10,800.00	89.66	179.98	7,157.55	-3,632.71	744.42	3,705.26	0.00	0.00	0.00
10,900.00	89.66	179.98	7,158.15	-3,732.71	744.46	3,803.95	0.00	0.00	0.00
11,000.00	89.66	179.98	7,158.74	-3,832.71	744.50	3,902.64	0.00	0.00	0.00
11,100.00	89.66	179.98	7,159.33	-3,932.71	744.55	4,001.34	0.00	0.00	0.00
11,200.00	89.66	179.98	7,159.93	-4,032.71	744.59	4,100.03	0.00	0.00	0.00
11,300.00	89.66	179.98	7,160.52	-4,132.71	744.63	4,198.72	0.00	0.00	0.00
11,400.00	89.66	179.98	7,161.12	-4,232.70	744.68	4,297.41	0.00	0.00	0.00
11,500.00	89.66	179.98	7,161.71	-4,332.70	744.72	4,396.10	0.00	0.00	0.00
11,600.00	89.66	179.98	7,162.31	-4,432.70	744.76	4,494.79	0.00	0.00	0.00
11,700.00	89.66	179.98	7,162.90	-4,532.70	744.81	4,593.48	0.00	0.00	0.00
11,716.45	89.66	179.98	7,163.00	-4,549.15	744.81	4,609.72	0.00	0.00	0.00
Norton 14N-29HZ BHL									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Norton 14N-29HZ BHL	0.00	0.00	7,163.00	-4,549.15	744.81	1,312,739.02	3,194,639.56	40.189766	-104.803294
- hit/miss target									
- Shape									
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
900.00	900.00	9 5/8"	9-5/8	12-1/4	
7,512.23	7,138.00	7"	7	8-3/4	

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well Norton 14N-29HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	gl + rkb @ 4913.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	gl + rkb @ 4913.00ft
Site:	WELD_NORTON 5 PAD	North Reference:	True
Well:	Norton 14N-29HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Norton 14N-29HZ		
Design:	Norton 14N-29HZ (wp01)		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,385.28	3,367.00	Parkman				
4,331.39	4,305.00	Sussex				
7,131.35	7,015.00	Sharon Springs				
7,258.94	7,082.00	Niobrara A				
7,344.83	7,113.00	Niobrara B				