

US ROCKIES REGION PLANNING

COLORADO CENTRAL ZONE - 83

ARAPAHOE_WATKINS 6 PAD

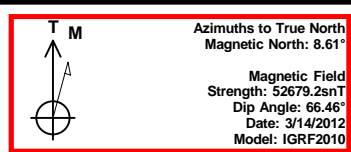
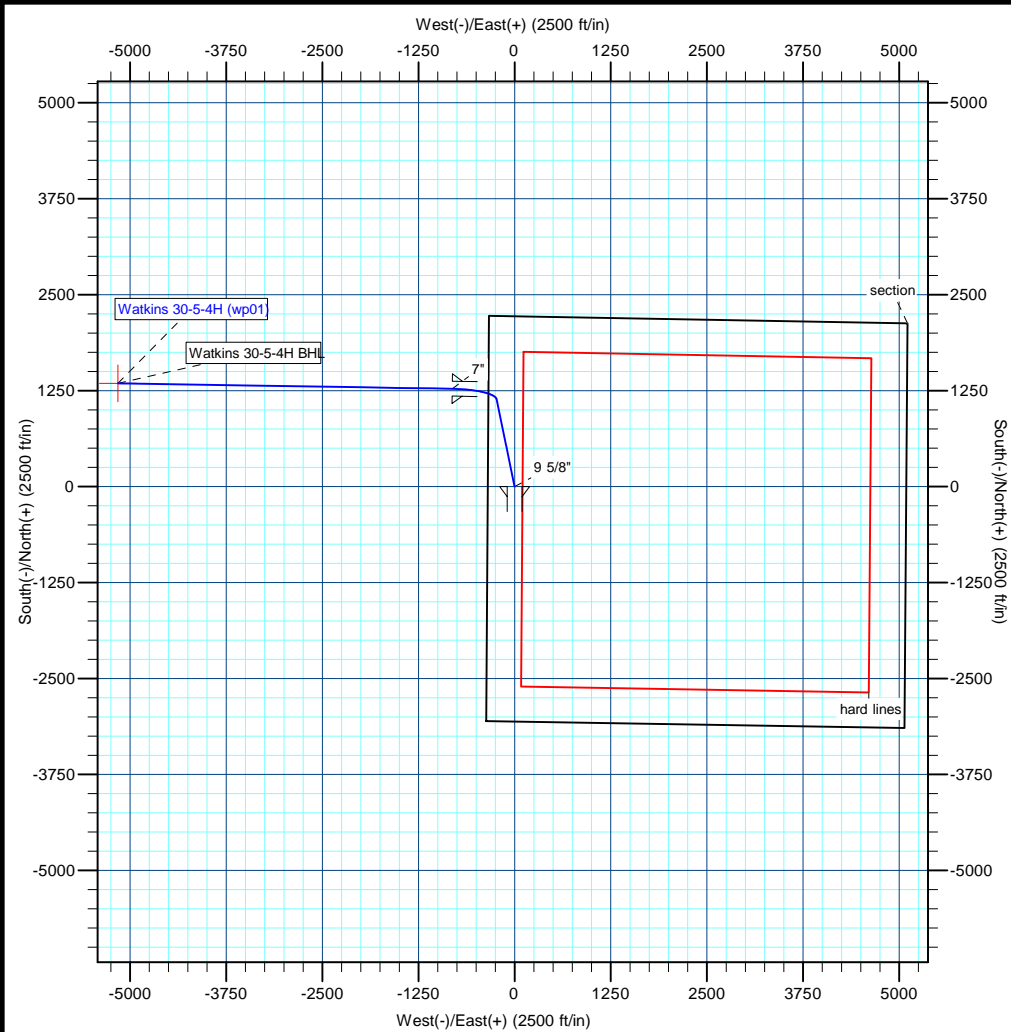
Watkins 30-5-4H

Watkins 30-5-4H

Plan: Watkins 30-5-4H (wp01)

Standard Planning Report

15 March, 2012



Project: COLORADO CENTRAL ZONE - 83
Site: ARAPAHOE WATKINS 6 PAD
Well: Watkins 30-5-4H
Wellbore: Watkins 30-5-4H
Section:
SHL:
Design: Watkins 30-5-4H (wp01)
Latitude: 39.675633
Longitude: -104.602253
GL: 5772.00
KB: rkb + gl @ 5797.00ft

WELL DETAILS: Watkins 30-5-4H

+N/-S	+E/-W	Northing	Ground Level: Easting	5772.00 Latitude	39.675633 Longitude	Slot
0.00	0.00	1672226.70	3252693.92			

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
2150.00	0.00	0.00	2150.00	0.00	0.00	0.00	0.00	0.00
2829.96	13.60	348.40	2823.60	78.68	-16.15	2.00	348.40	35.48
7433.68	13.60	348.40	7298.24	1139.03	-233.80	0.00	0.00	513.68
8310.56	90.64	270.96	7827.00	1275.00	-810.00	10.00	-77.64	1105.54
8314.94	90.66	270.92	7826.95	1275.07	-814.38	1.00	-58.22	1109.79
2658.71	90.66	270.92	7777.00	1345.02	-5157.30	0.00	0.00	5329.81

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

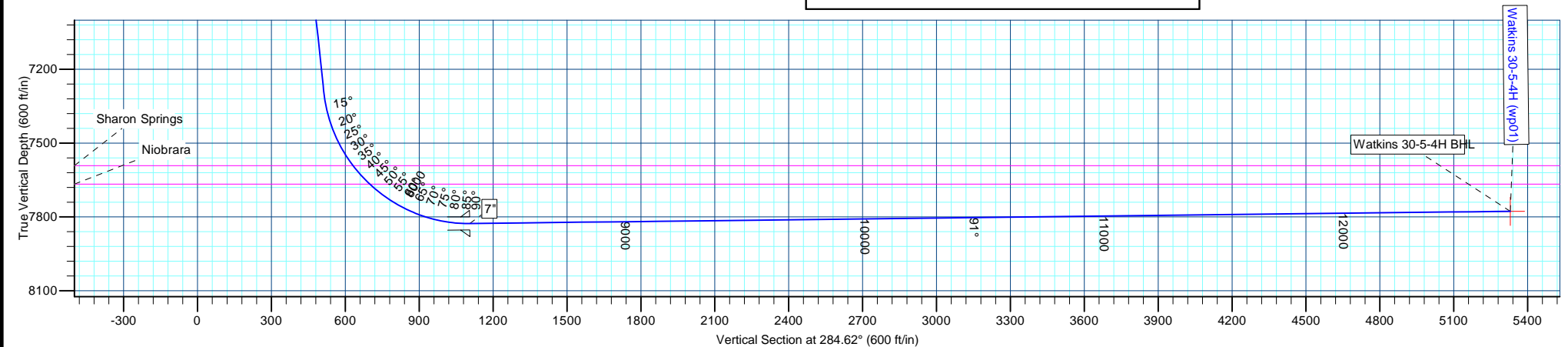
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Watkins 30-5-4H BHL	7777.00	1345.02	-5157.30	39.679324	-104.620576	Point

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1864.00	1864.00	Fox Hills
5133.00	5205.98	Sussex
6203.00	6306.84	Shannon
7592.00	7757.49	Sharon Springs
7667.00	7858.83	Niobrara

CASING DETAILS

TVD	MD	Name	Size
2010.00	2010.00	9 5/8"	9-5/8
7827.00	8310.56	7"	7



Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well Watkins 30-5-4H
Company:	US ROCKIES REGION PLANNING	TVD Reference:	rkb + gl @ 5797.00ft
Project:	COLORADO CENTRAL ZONE - 83	MD Reference:	rkb + gl @ 5797.00ft
Site:	ARAPAHOE_WATKINS 6 PAD	North Reference:	True
Well:	Watkins 30-5-4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Watkins 30-5-4H		
Design:	Watkins 30-5-4H (wp01)		

Project	COLORADO CENTRAL ZONE - 83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site		ARAPAHOE_WATKINS 6 PAD			
Site Position:		Northing:	1,672,196.84 usft	Latitude:	39.675551
From:	Lat/Long	Easting:	3,252,694.22 usft	Longitude:	-104.602253
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.57 °

Well	Watkins 30-5-4H					
Well Position	+N/-S	29.86 ft	Northing:	1,672,226.69 usft	Latitude:	39.675633
	+E/-W	0.00 ft	Easting:	3,252,693.92 usft	Longitude:	-104.602253
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	5,772.00 ft

Wellbore	Watkins 30-5-4H				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/14/2012	8.61	66.46	52,679

Design	Watkins 30-5-4H (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	284.62	

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	
2,150.00	0.00	0.00	2,150.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,829.96	13.60	348.40	2,823.60	78.68	-16.15	2.00	2.00	0.00	348.40	
7,433.68	13.60	348.40	7,298.24	1,139.03	-233.80	0.00	0.00	0.00	0.00	
8,310.56	90.64	270.96	7,827.00	1,275.00	-810.00	10.00	8.79	-8.83	-77.64	
8,314.94	90.66	270.92	7,826.95	1,275.07	-814.38	1.00	0.53	-0.85	-58.22	
12,658.71	90.66	270.92	7,777.00	1,345.02	-5,157.30	0.00	0.00	0.00	0.00	Watkins 30-5-4H BHL

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well Watkins 30-5-4H
Company:	US ROCKIES REGION PLANNING	TVD Reference:	rkb + gl @ 5797.00ft
Project:	COLORADO CENTRAL ZONE - 83	MD Reference:	rkb + gl @ 5797.00ft
Site:	ARAPAHOE_WATKINS 6 PAD	North Reference:	True
Well:	Watkins 30-5-4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Watkins 30-5-4H		
Design:	Watkins 30-5-4H (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
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
1,864.00	0.00	0.00	1,864.00	0.00	0.00	0.00	0.00	0.00	0.00
Fox Hills									
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
2,010.00	0.00	0.00	2,010.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"									
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,150.00	0.00	0.00	2,150.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
2,200.00	1.00	348.40	2,200.00	0.43	-0.09	0.19	2.00	2.00	0.00
2,300.00	3.00	348.40	2,299.93	3.85	-0.79	1.73	2.00	2.00	0.00
2,400.00	5.00	348.40	2,399.68	10.68	-2.19	4.82	2.00	2.00	0.00
2,500.00	7.00	348.40	2,499.13	20.92	-4.29	9.43	2.00	2.00	0.00
2,600.00	9.00	348.40	2,598.15	34.55	-7.09	15.58	2.00	2.00	0.00
2,700.00	11.00	348.40	2,696.63	51.56	-10.58	23.25	2.00	2.00	0.00
2,800.00	13.00	348.40	2,794.44	71.92	-14.76	32.44	2.00	2.00	0.00
2,829.96	13.60	348.40	2,823.60	78.68	-16.15	35.48	2.00	2.00	0.00
Start 4603.71 hold at 2829.96 MD									
2,900.00	13.60	348.40	2,891.67	94.81	-19.46	42.76	0.00	0.00	0.00
3,000.00	13.60	348.40	2,988.87	117.84	-24.19	53.14	0.00	0.00	0.00
3,100.00	13.60	348.40	3,086.06	140.87	-28.92	63.53	0.00	0.00	0.00
3,200.00	13.60	348.40	3,183.26	163.91	-33.64	73.92	0.00	0.00	0.00
3,300.00	13.60	348.40	3,280.46	186.94	-38.37	84.31	0.00	0.00	0.00
3,400.00	13.60	348.40	3,377.65	209.97	-43.10	94.69	0.00	0.00	0.00
3,500.00	13.60	348.40	3,474.85	233.00	-47.83	105.08	0.00	0.00	0.00
3,600.00	13.60	348.40	3,572.05	256.04	-52.55	115.47	0.00	0.00	0.00
3,700.00	13.60	348.40	3,669.24	279.07	-57.28	125.85	0.00	0.00	0.00
3,800.00	13.60	348.40	3,766.44	302.10	-62.01	136.24	0.00	0.00	0.00
3,900.00	13.60	348.40	3,863.63	325.13	-66.74	146.63	0.00	0.00	0.00
4,000.00	13.60	348.40	3,960.83	348.17	-71.47	157.02	0.00	0.00	0.00
4,100.00	13.60	348.40	4,058.03	371.20	-76.19	167.40	0.00	0.00	0.00
4,200.00	13.60	348.40	4,155.22	394.23	-80.92	177.79	0.00	0.00	0.00
4,300.00	13.60	348.40	4,252.42	417.27	-85.65	188.18	0.00	0.00	0.00
4,400.00	13.60	348.40	4,349.62	440.30	-90.38	198.56	0.00	0.00	0.00
4,500.00	13.60	348.40	4,446.81	463.33	-95.10	208.95	0.00	0.00	0.00

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well Watkins 30-5-4H
Company:	US ROCKIES REGION PLANNING	TVD Reference:	rkb + gl @ 5797.00ft
Project:	COLORADO CENTRAL ZONE - 83	MD Reference:	rkb + gl @ 5797.00ft
Site:	ARAPAHOE_WATKINS 6 PAD	North Reference:	True
Well:	Watkins 30-5-4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Watkins 30-5-4H		
Design:	Watkins 30-5-4H (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)
4,600.00	13.60	348.40	4,544.01	486.36	-99.83	219.34	0.00	0.00	0.00
4,700.00	13.60	348.40	4,641.21	509.40	-104.56	229.73	0.00	0.00	0.00
4,800.00	13.60	348.40	4,738.40	532.43	-109.29	240.11	0.00	0.00	0.00
4,900.00	13.60	348.40	4,835.60	555.46	-114.02	250.50	0.00	0.00	0.00
5,000.00	13.60	348.40	4,932.80	578.49	-118.74	260.89	0.00	0.00	0.00
5,100.00	13.60	348.40	5,029.99	601.53	-123.47	271.28	0.00	0.00	0.00
5,200.00	13.60	348.40	5,127.19	624.56	-128.20	281.66	0.00	0.00	0.00
5,205.98	13.60	348.40	5,133.00	625.94	-128.48	282.28	0.00	0.00	0.00
Sussex									
5,300.00	13.60	348.40	5,224.38	647.59	-132.93	292.05	0.00	0.00	0.00
5,400.00	13.60	348.40	5,321.58	670.62	-137.65	302.44	0.00	0.00	0.00
5,500.00	13.60	348.40	5,418.78	693.66	-142.38	312.82	0.00	0.00	0.00
5,600.00	13.60	348.40	5,515.97	716.69	-147.11	323.21	0.00	0.00	0.00
5,700.00	13.60	348.40	5,613.17	739.72	-151.84	333.60	0.00	0.00	0.00
5,800.00	13.60	348.40	5,710.37	762.75	-156.57	343.99	0.00	0.00	0.00
5,900.00	13.60	348.40	5,807.56	785.79	-161.29	354.37	0.00	0.00	0.00
6,000.00	13.60	348.40	5,904.76	808.82	-166.02	364.76	0.00	0.00	0.00
6,100.00	13.60	348.40	6,001.96	831.85	-170.75	375.15	0.00	0.00	0.00
6,200.00	13.60	348.40	6,099.15	854.89	-175.48	385.53	0.00	0.00	0.00
6,300.00	13.60	348.40	6,196.35	877.92	-180.20	395.92	0.00	0.00	0.00
6,306.84	13.60	348.40	6,203.00	879.49	-180.53	396.63	0.00	0.00	0.00
Shannon									
6,400.00	13.60	348.40	6,293.55	900.95	-184.93	406.31	0.00	0.00	0.00
6,500.00	13.60	348.40	6,390.74	923.98	-189.66	416.70	0.00	0.00	0.00
6,600.00	13.60	348.40	6,487.94	947.02	-194.39	427.08	0.00	0.00	0.00
6,700.00	13.60	348.40	6,585.13	970.05	-199.12	437.47	0.00	0.00	0.00
6,800.00	13.60	348.40	6,682.33	993.08	-203.84	447.86	0.00	0.00	0.00
6,900.00	13.60	348.40	6,779.53	1,016.11	-208.57	458.25	0.00	0.00	0.00
7,000.00	13.60	348.40	6,876.72	1,039.15	-213.30	468.63	0.00	0.00	0.00
7,100.00	13.60	348.40	6,973.92	1,062.18	-218.03	479.02	0.00	0.00	0.00
7,200.00	13.60	348.40	7,071.12	1,085.21	-222.75	489.41	0.00	0.00	0.00
7,300.00	13.60	348.40	7,168.31	1,108.24	-227.48	499.79	0.00	0.00	0.00
7,400.00	13.60	348.40	7,265.51	1,131.28	-232.21	510.18	0.00	0.00	0.00
7,433.68	13.60	348.40	7,298.24	1,139.03	-233.80	513.68	0.00	0.00	0.00
Start DLS 10.00 TFO -77.64									
7,500.00	16.33	324.75	7,362.37	1,154.30	-240.76	524.27	10.00	4.12	-35.66
7,600.00	23.52	303.94	7,456.43	1,176.99	-265.50	553.93	10.00	7.19	-20.81
7,700.00	32.19	293.13	7,544.82	1,198.64	-306.66	599.22	10.00	8.67	-10.81
7,757.49	37.45	289.05	7,592.00	1,210.37	-337.29	631.82	10.00	9.15	-7.08
Sharon Springs									
7,800.00	41.41	286.63	7,624.83	1,218.62	-362.99	658.77	10.00	9.32	-5.71
7,858.83	46.97	283.84	7,667.00	1,229.34	-402.54	699.75	10.00	9.44	-4.74
Niobrara									
7,900.00	50.89	282.17	7,694.04	1,236.31	-432.78	730.77	10.00	9.52	-4.05
8,000.00	60.49	278.79	7,750.36	1,251.17	-513.92	813.03	10.00	9.60	-3.39
8,100.00	70.17	275.99	7,792.05	1,262.76	-603.93	903.05	10.00	9.67	-2.79
8,200.00	79.88	273.52	7,817.87	1,270.72	-700.08	998.09	10.00	9.71	-2.47
8,300.00	89.61	271.20	7,827.02	1,274.80	-799.44	1,095.28	10.00	9.73	-2.32
8,310.56	90.64	270.96	7,827.00	1,275.00	-810.00	1,105.54	10.00	9.73	-2.30
Start DLS 1.00 TFO -58.22 - 7"									
8,314.94	90.66	270.92	7,826.95	1,275.07	-814.38	1,109.79	1.00	0.53	-0.85
Start 4343.77 hold at 8314.94 MD									
8,400.00	90.66	270.92	7,825.97	1,276.44	-899.42	1,192.43	0.00	0.00	0.00

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well Watkins 30-5-4H
Company:	US ROCKIES REGION PLANNING	TVD Reference:	rkb + gl @ 5797.00ft
Project:	COLORADO CENTRAL ZONE - 83	MD Reference:	rkb + gl @ 5797.00ft
Site:	ARAPAHOE_WATKINS 6 PAD	North Reference:	True
Well:	Watkins 30-5-4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Watkins 30-5-4H		
Design:	Watkins 30-5-4H (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)
8,500.00	90.66	270.92	7,824.82	1,278.05	-999.41	1,289.59	0.00	0.00	0.00
8,600.00	90.66	270.92	7,823.67	1,279.66	-1,099.39	1,386.74	0.00	0.00	0.00
8,700.00	90.66	270.92	7,822.52	1,281.27	-1,199.37	1,483.89	0.00	0.00	0.00
8,800.00	90.66	270.92	7,821.37	1,282.88	-1,299.35	1,581.04	0.00	0.00	0.00
8,900.00	90.66	270.92	7,820.22	1,284.49	-1,399.33	1,678.19	0.00	0.00	0.00
9,000.00	90.66	270.92	7,819.07	1,286.10	-1,499.31	1,775.34	0.00	0.00	0.00
9,100.00	90.66	270.92	7,817.92	1,287.71	-1,599.29	1,872.49	0.00	0.00	0.00
9,200.00	90.66	270.92	7,816.77	1,289.32	-1,699.27	1,969.64	0.00	0.00	0.00
9,300.00	90.66	270.92	7,815.62	1,290.94	-1,799.25	2,066.79	0.00	0.00	0.00
9,400.00	90.66	270.92	7,814.47	1,292.55	-1,899.23	2,163.94	0.00	0.00	0.00
9,500.00	90.66	270.92	7,813.32	1,294.16	-1,999.21	2,261.09	0.00	0.00	0.00
9,600.00	90.66	270.92	7,812.17	1,295.77	-2,099.19	2,358.24	0.00	0.00	0.00
9,700.00	90.66	270.92	7,811.02	1,297.38	-2,199.17	2,455.40	0.00	0.00	0.00
9,800.00	90.66	270.92	7,809.87	1,298.99	-2,299.15	2,552.55	0.00	0.00	0.00
9,900.00	90.66	270.92	7,808.72	1,300.60	-2,399.13	2,649.70	0.00	0.00	0.00
10,000.00	90.66	270.92	7,807.57	1,302.21	-2,499.11	2,746.85	0.00	0.00	0.00
10,100.00	90.66	270.92	7,806.42	1,303.82	-2,599.09	2,844.00	0.00	0.00	0.00
10,200.00	90.66	270.92	7,805.27	1,305.43	-2,699.07	2,941.15	0.00	0.00	0.00
10,300.00	90.66	270.92	7,804.12	1,307.04	-2,799.05	3,038.30	0.00	0.00	0.00
10,400.00	90.66	270.92	7,802.97	1,308.65	-2,899.03	3,135.45	0.00	0.00	0.00
10,500.00	90.66	270.92	7,801.82	1,310.26	-2,999.01	3,232.60	0.00	0.00	0.00
10,600.00	90.66	270.92	7,800.67	1,311.87	-3,098.99	3,329.75	0.00	0.00	0.00
10,700.00	90.66	270.92	7,799.52	1,313.48	-3,198.97	3,426.90	0.00	0.00	0.00
10,800.00	90.66	270.92	7,798.37	1,315.09	-3,298.95	3,524.05	0.00	0.00	0.00
10,900.00	90.66	270.92	7,797.22	1,316.70	-3,398.94	3,621.21	0.00	0.00	0.00
11,000.00	90.66	270.92	7,796.07	1,318.31	-3,498.92	3,718.36	0.00	0.00	0.00
11,100.00	90.66	270.92	7,794.92	1,319.92	-3,598.90	3,815.51	0.00	0.00	0.00
11,200.00	90.66	270.92	7,793.77	1,321.53	-3,698.88	3,912.66	0.00	0.00	0.00
11,300.00	90.66	270.92	7,792.62	1,323.14	-3,798.86	4,009.81	0.00	0.00	0.00
11,400.00	90.66	270.92	7,791.47	1,324.75	-3,898.84	4,106.96	0.00	0.00	0.00
11,500.00	90.66	270.92	7,790.32	1,326.36	-3,998.82	4,204.11	0.00	0.00	0.00
11,600.00	90.66	270.92	7,789.17	1,327.97	-4,098.80	4,301.26	0.00	0.00	0.00
11,700.00	90.66	270.92	7,788.02	1,329.58	-4,198.78	4,398.41	0.00	0.00	0.00
11,800.00	90.66	270.92	7,786.87	1,331.19	-4,298.76	4,495.56	0.00	0.00	0.00
11,900.00	90.66	270.92	7,785.72	1,332.80	-4,398.74	4,592.71	0.00	0.00	0.00
12,000.00	90.66	270.92	7,784.57	1,334.42	-4,498.72	4,689.86	0.00	0.00	0.00
12,100.00	90.66	270.92	7,783.42	1,336.03	-4,598.70	4,787.02	0.00	0.00	0.00
12,200.00	90.66	270.92	7,782.28	1,337.64	-4,698.68	4,884.17	0.00	0.00	0.00
12,300.00	90.66	270.92	7,781.13	1,339.25	-4,798.66	4,981.32	0.00	0.00	0.00
12,400.00	90.66	270.92	7,779.98	1,340.86	-4,898.64	5,078.47	0.00	0.00	0.00
12,500.00	90.66	270.92	7,778.83	1,342.47	-4,998.62	5,175.62	0.00	0.00	0.00
12,600.00	90.66	270.92	7,777.68	1,344.08	-5,098.60	5,272.77	0.00	0.00	0.00
12,658.71	90.66	270.92	7,777.00	1,345.02	-5,157.30	5,329.81	0.00	0.00	0.00
TD at 12658.71 - Watkins 30-5-4H BHL									

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well Watkins 30-5-4H
Company:	US ROCKIES REGION PLANNING	TVD Reference:	rkb + gl @ 5797.00ft
Project:	COLORADO CENTRAL ZONE - 83	MD Reference:	rkb + gl @ 5797.00ft
Site:	ARAPAHOE_WATKINS 6 PAD	North Reference:	True
Well:	Watkins 30-5-4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Watkins 30-5-4H		
Design:	Watkins 30-5-4H (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									
Watkins 30-5-4H BHL	0.00	0.00	7,777.00	1,345.02	-5,157.30	1,673,520.69	3,247,523.59	39.679324	-104.620576
- plan hits target center									
- Point									

Casing Points					
Measured Depth	Vertical Depth	Name		Casing Diameter	Hole Diameter
(ft)	(ft)			(")	(")
2,010.00	2,010.00	9 5/8"		9-5/8	12-1/4
8,310.56	7,827.00	7"		7	8-3/4

Formations						
Measured Depth	Vertical Depth	Name		Lithology	Dip	Dip Direction
(ft)	(ft)				(°)	(°)
1,864.00	1,864.00	Fox Hills				
5,205.98	5,133.00	Sussex				
6,306.84	6,203.00	Shannon				
7,757.49	7,592.00	Sharon Springs				
7,858.83	7,667.00	Niobrara				

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates		Comment	
(ft)	(ft)	+N/-S	+E/-W		
(ft)	(ft)	(ft)	(ft)		
2,150.00	2,150.00	0.00	0.00	Start Build 2.00	
2,829.96	2,823.60	78.68	-16.15	Start 4603.71 hold at 2829.96 MD	
7,433.68	7,298.24	1,139.03	-233.80	Start DLS 10.00 TFO -77.64	
8,310.56	7,827.00	1,275.00	-810.00	Start DLS 1.00 TFO -58.22	
8,314.94	7,826.95	1,275.07	-814.38	Start 4343.77 hold at 8314.94 MD	
12,658.71	7,777.00	1,345.02	-5,157.30	TD at 12658.71	