

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_WARDELL 5 PAD

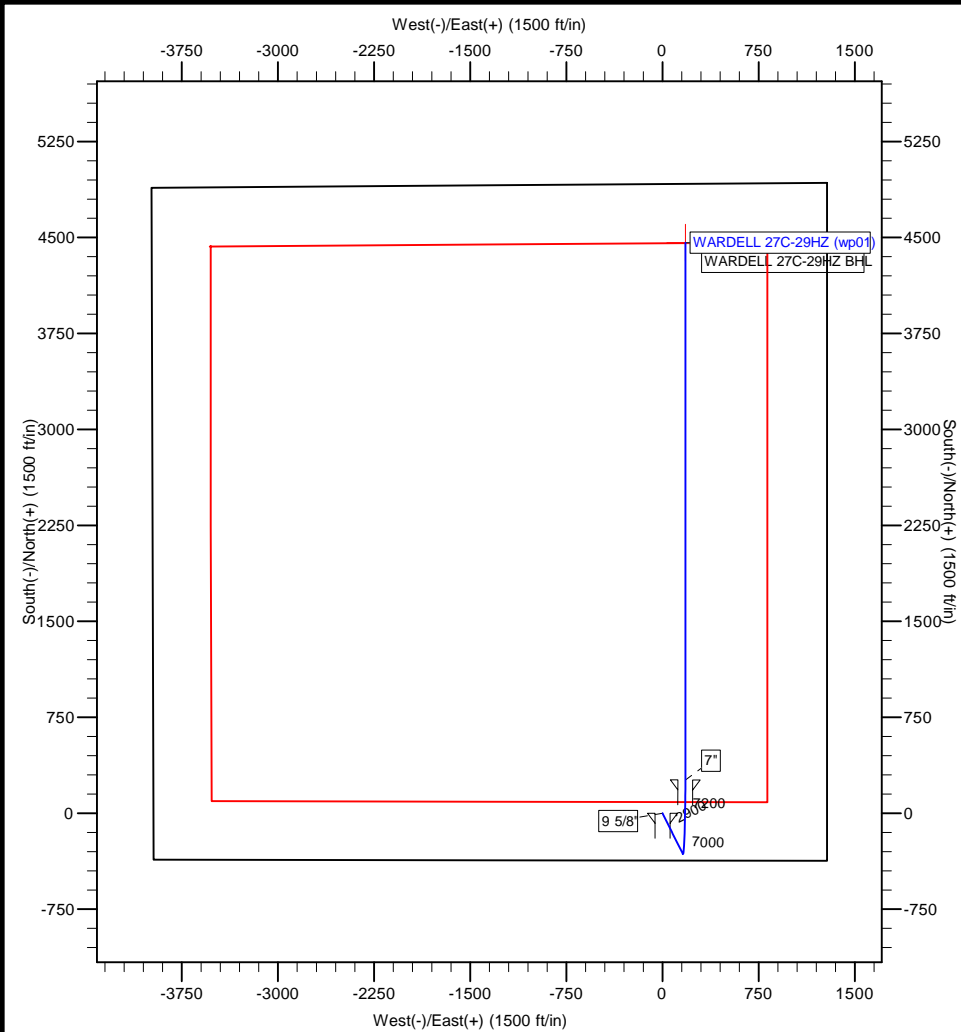
WARDELL 27C-29HZ

WARDELL 27C-29HZ

Plan: WARDELL 27C-29HZ (wp01)

Standard Planning Report

30 November, 2011



Project: COLORADO NORTHERN ZONE - 83
 Site: WELD WARDELL 5 PAD
 Well: WARDELL 27C-29HZ
 Wellbore: WARDELL 27C-29HZ
 Section:
 SHL:
 Design: WARDELL 27C-29HZ (wp01)
 Latitude: 40.190185
 Longitude: -104.682507
 GL: 4870.00
 KB: RKB + gl @ 4887.00ft

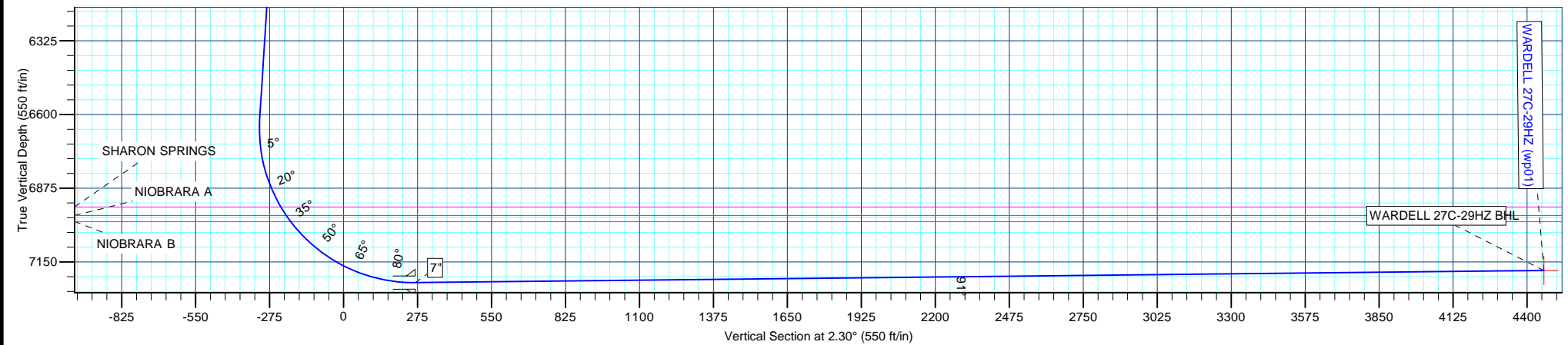
WELL DETAILS: WARDELL 27C-29HZ						
+N/-S	+E/-W	Northing	Ground Level: Easting	4870.00 Latitude	40.190185	Longitude
0.00	0.00	1313179.72	3228381.67			-104.682507
Slot						

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
1600.00	0.00	0.00	1600.00	0.00	0.00	0.00	0.00	0.00
1806.81	4.14	153.59	1806.63	-6.68	3.32	2.00	153.59	-6.54
6630.13	4.14	153.59	6617.39	-318.27	158.06	0.00	0.00	-311.67
7573.68	90.65	0.01	7227.00	260.00	178.00	10.00	-153.50	266.93
7577.43	90.61	0.01	7226.96	263.75	178.00	1.00	173.46	270.68
11773.15	90.61	0.01	7182.00	4459.23	179.05	0.00	0.00	4462.83

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)							
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape	Point
WARDELL 27C-29HZ BHL	7182.00	4459.23	179.05	40.202426	-104.681866		

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
3977.00	3982.85	PARKMAN
4557.00	4564.36	SUSSEX
6945.00	6972.14	SHARON SPRINGS
6977.00	7010.06	NIOBRARA A
7000.00	7038.40	NIOBRARA B

CASING DETAILS			
TVD	MD	Name	Size
900.00	900.00	9 5/8"	9-5/8
7227.00	7573.68	7"	7



Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well WARDELL 27C-29HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	RKB + gl @ 4887.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	RKB + gl @ 4887.00ft
Site:	WELD_WARDELL 5 PAD	North Reference:	True
Well:	WARDELL 27C-29HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	WARDELL 27C-29HZ		
Design:	WARDELL 27C-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_WARDELL 5 PAD			
Site Position:		Northing:	1,313,179.46 usft	Latitude: 40.190185
From:	Lat/Long	Easting:	3,228,349.55 usft	Longitude: -104.682622
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence: 0.53 °

Well	WARDELL 27C-29HZ			
Well Position	+N/-S	-0.04 ft	Northing:	1,313,179.72 usft
	+E/-W	32.13 ft	Easting:	3,228,381.67 usft
Position Uncertainty		0.00 ft	Wellhead Elevation:	Ground Level: 4,870.00 ft

Wellbore	WARDELL 27C-29HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/30/2011	8.74	66.88	52,981

Design	WARDELL 27C-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	2.30

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	
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,806.81	4.14	153.59	1,806.63	-6.68	3.32	2.00	2.00	0.00	153.59	
6,630.13	4.14	153.59	6,617.39	-318.27	158.06	0.00	0.00	0.00	0.00	
7,573.68	90.65	0.01	7,227.00	260.00	178.00	10.00	9.17	-16.28	-153.50	
7,577.43	90.61	0.01	7,226.96	263.75	178.00	1.00	-0.99	0.11	173.46	
11,773.16	90.61	0.01	7,182.00	4,459.23	179.05	0.00	0.00	0.00	0.00	WARDELL 27C-29HZ

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well WARDELL 27C-29HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	RKB + gl @ 4887.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	RKB + gl @ 4887.00ft
Site:	WELD_WARDELL 5 PAD	North Reference:	True
Well:	WARDELL 27C-29HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	WARDELL 27C-29HZ		
Design:	WARDELL 27C-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	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	2.00	153.59	1,699.98	-1.56	0.78	-1.53	2.00	2.00	0.00
1,800.00	4.00	153.59	1,799.84	-6.25	3.10	-6.12	2.00	2.00	0.00
1,806.81	4.14	153.59	1,806.63	-6.68	3.32	-6.54	2.00	2.00	0.00
1,900.00	4.14	153.59	1,899.58	-12.70	6.31	-12.44	0.00	0.00	0.00
2,000.00	4.14	153.59	1,999.32	-19.16	9.52	-18.77	0.00	0.00	0.00
2,100.00	4.14	153.59	2,099.06	-25.62	12.72	-25.09	0.00	0.00	0.00
2,200.00	4.14	153.59	2,198.80	-32.08	15.93	-31.42	0.00	0.00	0.00
2,300.00	4.14	153.59	2,298.54	-38.54	19.14	-37.74	0.00	0.00	0.00
2,400.00	4.14	153.59	2,398.28	-45.00	22.35	-44.07	0.00	0.00	0.00
2,500.00	4.14	153.59	2,498.02	-51.46	25.56	-50.40	0.00	0.00	0.00
2,600.00	4.14	153.59	2,597.75	-57.92	28.77	-56.72	0.00	0.00	0.00
2,700.00	4.14	153.59	2,697.49	-64.38	31.97	-63.05	0.00	0.00	0.00
2,800.00	4.14	153.59	2,797.23	-70.84	35.18	-69.37	0.00	0.00	0.00
2,900.00	4.14	153.59	2,896.97	-77.30	38.39	-75.70	0.00	0.00	0.00
3,000.00	4.14	153.59	2,996.71	-83.76	41.60	-82.03	0.00	0.00	0.00
3,100.00	4.14	153.59	3,096.45	-90.22	44.81	-88.35	0.00	0.00	0.00
3,200.00	4.14	153.59	3,196.19	-96.68	48.01	-94.68	0.00	0.00	0.00
3,300.00	4.14	153.59	3,295.93	-103.14	51.22	-101.00	0.00	0.00	0.00
3,400.00	4.14	153.59	3,395.67	-109.60	54.43	-107.33	0.00	0.00	0.00
3,500.00	4.14	153.59	3,495.41	-116.06	57.64	-113.66	0.00	0.00	0.00
3,600.00	4.14	153.59	3,595.15	-122.52	60.85	-119.98	0.00	0.00	0.00
3,700.00	4.14	153.59	3,694.89	-128.98	64.06	-126.31	0.00	0.00	0.00
3,800.00	4.14	153.59	3,794.63	-135.44	67.26	-132.63	0.00	0.00	0.00
3,900.00	4.14	153.59	3,894.37	-141.90	70.47	-138.96	0.00	0.00	0.00
3,982.85	4.14	153.59	3,977.00	-147.25	73.13	-144.20	0.00	0.00	0.00
PARKMAN									
4,000.00	4.14	153.59	3,994.11	-148.36	73.68	-145.29	0.00	0.00	0.00
4,100.00	4.14	153.59	4,093.85	-154.82	76.89	-151.61	0.00	0.00	0.00
4,200.00	4.14	153.59	4,193.59	-161.28	80.10	-157.94	0.00	0.00	0.00
4,300.00	4.14	153.59	4,293.33	-167.74	83.30	-164.26	0.00	0.00	0.00
4,400.00	4.14	153.59	4,393.07	-174.20	86.51	-170.59	0.00	0.00	0.00
4,500.00	4.14	153.59	4,492.81	-180.66	89.72	-176.92	0.00	0.00	0.00
4,564.36	4.14	153.59	4,557.00	-184.82	91.79	-180.99	0.00	0.00	0.00
SUSSEX									
4,600.00	4.14	153.59	4,592.55	-187.12	92.93	-183.24	0.00	0.00	0.00

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Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well WARDELL 27C-29HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	RKB + gl @ 4887.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	RKB + gl @ 4887.00ft
Site:	WELD_WARDELL 5 PAD	North Reference:	True
Well:	WARDELL 27C-29HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	WARDELL 27C-29HZ		
Design:	WARDELL 27C-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	4.14	153.59	4,692.29	-193.58	96.14	-189.57	0.00	0.00	0.00
4,800.00	4.14	153.59	4,792.02	-200.04	99.34	-195.89	0.00	0.00	0.00
4,900.00	4.14	153.59	4,891.76	-206.50	102.55	-202.22	0.00	0.00	0.00
5,000.00	4.14	153.59	4,991.50	-212.96	105.76	-208.55	0.00	0.00	0.00
5,100.00	4.14	153.59	5,091.24	-219.42	108.97	-214.87	0.00	0.00	0.00
5,200.00	4.14	153.59	5,190.98	-225.88	112.18	-221.20	0.00	0.00	0.00
5,300.00	4.14	153.59	5,290.72	-232.34	115.39	-227.53	0.00	0.00	0.00
5,400.00	4.14	153.59	5,390.46	-238.80	118.59	-233.85	0.00	0.00	0.00
5,500.00	4.14	153.59	5,490.20	-245.26	121.80	-240.18	0.00	0.00	0.00
5,600.00	4.14	153.59	5,589.94	-251.72	125.01	-246.50	0.00	0.00	0.00
5,700.00	4.14	153.59	5,689.68	-258.18	128.22	-252.83	0.00	0.00	0.00
5,800.00	4.14	153.59	5,789.42	-264.64	131.43	-259.16	0.00	0.00	0.00
5,900.00	4.14	153.59	5,889.16	-271.10	134.63	-265.48	0.00	0.00	0.00
6,000.00	4.14	153.59	5,988.90	-277.56	137.84	-271.81	0.00	0.00	0.00
6,100.00	4.14	153.59	6,088.64	-284.02	141.05	-278.13	0.00	0.00	0.00
6,200.00	4.14	153.59	6,188.38	-290.48	144.26	-284.46	0.00	0.00	0.00
6,300.00	4.14	153.59	6,288.12	-296.94	147.47	-290.79	0.00	0.00	0.00
6,400.00	4.14	153.59	6,387.86	-303.40	150.67	-297.11	0.00	0.00	0.00
6,500.00	4.14	153.59	6,487.60	-309.86	153.88	-303.44	0.00	0.00	0.00
6,600.00	4.14	153.59	6,587.34	-316.32	157.09	-309.76	0.00	0.00	0.00
6,630.13	4.14	153.59	6,617.39	-318.27	158.06	-311.67	0.00	0.00	0.00
6,700.00	3.77	29.32	6,687.18	-318.52	160.30	-311.84	10.00	-0.53	-177.87
6,800.00	13.41	7.79	6,785.96	-304.14	163.49	-297.33	10.00	9.64	-21.53
6,900.00	23.35	4.31	6,880.74	-272.81	166.56	-265.90	10.00	9.94	-3.49
6,972.14	30.55	3.16	6,945.00	-240.20	168.65	-233.24	10.00	9.97	-1.59
SHARON SPRINGS									
7,000.00	33.33	2.84	6,968.64	-225.48	169.42	-218.50	10.00	9.98	-1.15
7,010.06	34.33	2.73	6,977.00	-219.89	169.69	-212.90	10.00	9.98	-1.04
NIOBRARA A									
7,038.40	37.16	2.47	7,000.00	-203.35	170.44	-196.35	10.00	9.98	-0.94
NIOBRARA B									
7,100.00	43.32	1.99	7,047.00	-163.61	171.97	-156.58	10.00	9.99	-0.78
7,200.00	53.31	1.41	7,113.42	-89.06	174.15	-82.00	10.00	9.99	-0.58
7,300.00	63.30	0.96	7,165.90	-4.10	175.89	2.96	10.00	9.99	-0.45
7,400.00	73.29	0.58	7,202.84	88.68	177.13	95.72	10.00	9.99	-0.37
7,500.00	83.29	0.25	7,223.11	186.47	177.83	193.46	10.00	9.99	-0.34
7,573.68	90.65	0.01	7,227.00	260.00	178.00	266.93	10.00	9.99	-0.32
7"									
7,577.43	90.61	0.01	7,226.96	263.75	178.00	270.68	1.00	-0.99	0.11
7,600.00	90.61	0.01	7,226.72	286.32	178.01	293.23	0.00	0.00	0.00
7,700.00	90.61	0.01	7,225.65	386.31	178.03	393.15	0.00	0.00	0.00
7,800.00	90.61	0.01	7,224.57	486.31	178.06	493.06	0.00	0.00	0.00
7,900.00	90.61	0.01	7,223.50	586.30	178.08	592.97	0.00	0.00	0.00
8,000.00	90.61	0.01	7,222.43	686.30	178.11	692.89	0.00	0.00	0.00
8,100.00	90.61	0.01	7,221.36	786.29	178.13	792.80	0.00	0.00	0.00
8,200.00	90.61	0.01	7,220.29	886.28	178.16	892.72	0.00	0.00	0.00
8,300.00	90.61	0.01	7,219.22	986.28	178.18	992.63	0.00	0.00	0.00
8,400.00	90.61	0.01	7,218.14	1,086.27	178.21	1,092.55	0.00	0.00	0.00
8,500.00	90.61	0.01	7,217.07	1,186.27	178.23	1,192.46	0.00	0.00	0.00
8,600.00	90.61	0.01	7,216.00	1,286.26	178.26	1,292.38	0.00	0.00	0.00
8,700.00	90.61	0.01	7,214.93	1,386.26	178.28	1,392.29	0.00	0.00	0.00
8,800.00	90.61	0.01	7,213.86	1,486.25	178.31	1,492.21	0.00	0.00	0.00
8,900.00	90.61	0.01	7,212.79	1,586.24	178.33	1,592.12	0.00	0.00	0.00
9,000.00	90.61	0.01	7,211.72	1,686.24	178.36	1,692.04	0.00	0.00	0.00

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well WARDELL 27C-29HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	RKB + gl @ 4887.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	RKB + gl @ 4887.00ft
Site:	WELD_WARDELL 5 PAD	North Reference:	True
Well:	WARDELL 27C-29HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	WARDELL 27C-29HZ		
Design:	WARDELL 27C-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	90.61	0.01	7,210.64	1,786.23	178.38	1,791.95	0.00	0.00	0.00
9,200.00	90.61	0.01	7,209.57	1,886.23	178.40	1,891.87	0.00	0.00	0.00
9,300.00	90.61	0.01	7,208.50	1,986.22	178.43	1,991.78	0.00	0.00	0.00
9,400.00	90.61	0.01	7,207.43	2,086.22	178.45	2,091.70	0.00	0.00	0.00
9,500.00	90.61	0.01	7,206.36	2,186.21	178.48	2,191.61	0.00	0.00	0.00
9,600.00	90.61	0.01	7,205.29	2,286.20	178.50	2,291.53	0.00	0.00	0.00
9,700.00	90.61	0.01	7,204.21	2,386.20	178.53	2,391.44	0.00	0.00	0.00
9,800.00	90.61	0.01	7,203.14	2,486.19	178.55	2,491.35	0.00	0.00	0.00
9,900.00	90.61	0.01	7,202.07	2,586.19	178.58	2,591.27	0.00	0.00	0.00
10,000.00	90.61	0.01	7,201.00	2,686.18	178.60	2,691.18	0.00	0.00	0.00
10,100.00	90.61	0.01	7,199.93	2,786.18	178.63	2,791.10	0.00	0.00	0.00
10,200.00	90.61	0.01	7,198.86	2,886.17	178.65	2,891.01	0.00	0.00	0.00
10,300.00	90.61	0.01	7,197.79	2,986.16	178.68	2,990.93	0.00	0.00	0.00
10,400.00	90.61	0.01	7,196.71	3,086.16	178.70	3,090.84	0.00	0.00	0.00
10,500.00	90.61	0.01	7,195.64	3,186.15	178.73	3,190.76	0.00	0.00	0.00
10,600.00	90.61	0.01	7,194.57	3,286.15	178.75	3,290.67	0.00	0.00	0.00
10,700.00	90.61	0.01	7,193.50	3,386.14	178.78	3,390.59	0.00	0.00	0.00
10,800.00	90.61	0.01	7,192.43	3,486.14	178.80	3,490.50	0.00	0.00	0.00
10,900.00	90.61	0.01	7,191.36	3,586.13	178.83	3,590.42	0.00	0.00	0.00
11,000.00	90.61	0.01	7,190.28	3,686.12	178.85	3,690.33	0.00	0.00	0.00
11,100.00	90.61	0.01	7,189.21	3,786.12	178.88	3,790.25	0.00	0.00	0.00
11,200.00	90.61	0.01	7,188.14	3,886.11	178.90	3,890.16	0.00	0.00	0.00
11,300.00	90.61	0.01	7,187.07	3,986.11	178.93	3,990.08	0.00	0.00	0.00
11,400.00	90.61	0.01	7,186.00	4,086.10	178.95	4,089.99	0.00	0.00	0.00
11,500.00	90.61	0.01	7,184.93	4,186.10	178.98	4,189.91	0.00	0.00	0.00
11,600.00	90.61	0.01	7,183.86	4,286.09	179.00	4,289.82	0.00	0.00	0.00
11,700.00	90.61	0.01	7,182.78	4,386.08	179.03	4,389.74	0.00	0.00	0.00
11,773.16	90.61	0.01	7,182.00	4,459.23	179.05	4,462.83	0.00	0.00	0.00
WARDELL 27C-29HZ BHL									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
WARDELL 27C-29HZ B	0.00	0.00	7,182.00	4,459.23	179.05	1,317,640.41	3,228,519.60	40.202426	-104.681866
- 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	
7,573.68	7,227.00	7"	7	8-3/4	

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well WARDELL 27C-29HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	RKB + gl @ 4887.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	RKB + gl @ 4887.00ft
Site:	WELD_ WARDELL 5 PAD	North Reference:	True
Well:	WARDELL 27C-29HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	WARDELL 27C-29HZ		
Design:	WARDELL 27C-29HZ (wp01)		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,982.85	3,977.00	PARKMAN		0.00		
4,564.36	4,557.00	SUSSEX		0.00		
6,972.14	6,945.00	SHARON SPRINGS		0.00		
7,010.06	6,977.00	NIOBRARA A		0.00		
7,038.40	7,000.00	NIOBRARA B		0.00		