

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_WARDELL 5 PAD

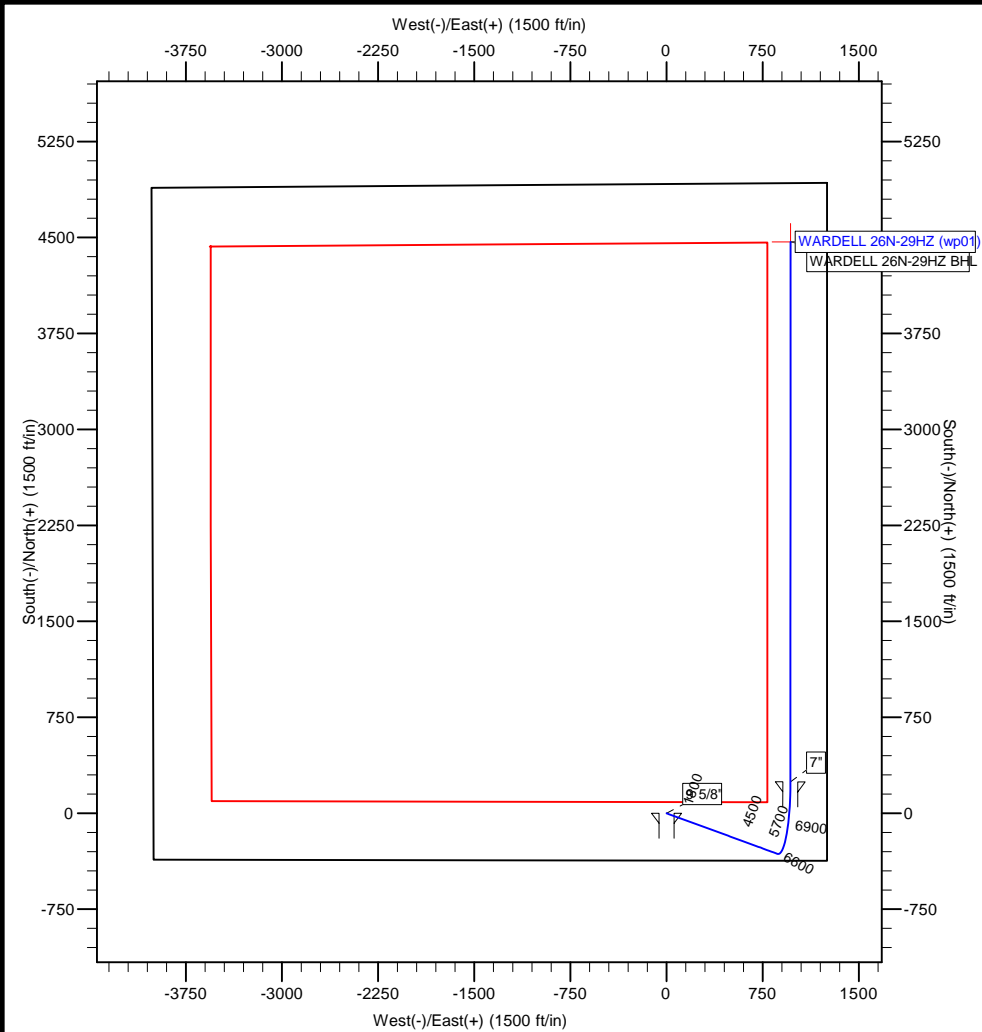
WARDELL 26N-29HZ

WARDELL 26N-29HZ

Plan: WARDELL 26N-29HZ (wp01)

Standard Planning Report

30 November, 2011



Azimuths to True North
Magnetic North: 8.74°

Magnetic Field
Strength: 52981.1snT
Dip Angle: 66.88°
Date: 11/30/2011
Model: IGRF2010



Project: COLORADO NORTHERN ZONE - 83

Site: WELD WARDELL 5 PAD

Well: WARDELL 26N-29HZ

Wellbore: WARDELL 26N-29HZ

Section:

SHL:

Design: WARDELL 26N-29HZ (wp01)

Latitude: 40.190184

Longitude: -104.682393

GL: 4870.00

KB: RKB + GL @ 4887.00ft

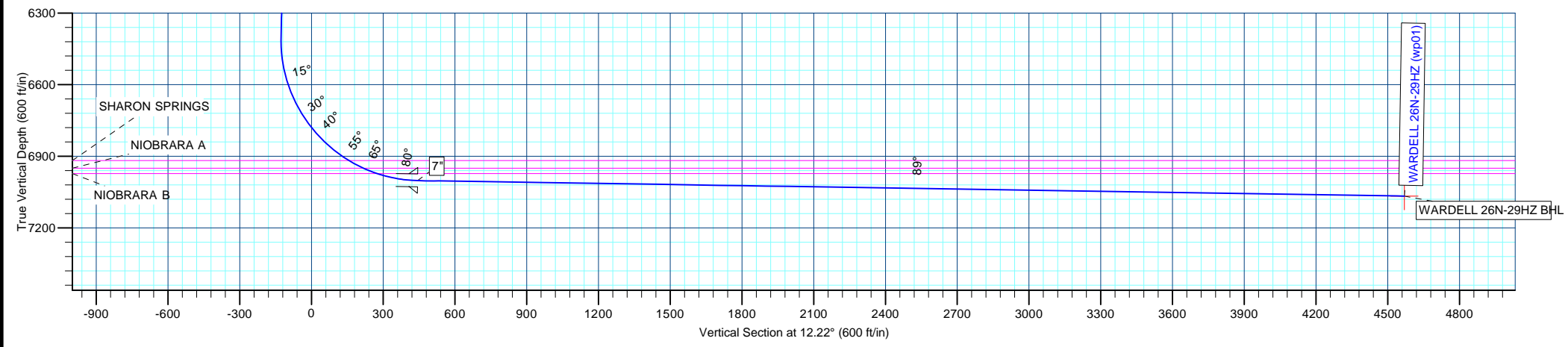
WELL DETAILS: WARDELL 26N-29HZ						
+N/-S	+E/-W	Northing	Ground Level: Easting	4870.00	Latitude	Longitude
0.00	0.00	1313179.67	3228413.52	40.190184	-104.682393	Slot

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
1100.00	0.00	0.00	1100.00	0.00	0.00	0.00	0.00	0.00
1617.69	10.35	110.17	1614.88	-16.08	43.79	2.00	110.17	-6.45
6484.14	10.35	110.17	6402.09	-317.60	864.80	0.00	0.00	-127.39
7410.41	89.06	360.00	7002.00	245.00	966.00	10.00	-110.02	443.89
7416.25	89.12	0.01	7002.09	250.84	966.00	1.00	13.65	449.60
11631.71	89.12	0.01	7067.00	4465.79	967.01	0.00	0.00	4569.29

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)							
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape	Point
WARDELL 26N-29HZ BHL	7067.00	4465.79	967.01	40.202443	-104.678931		

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
3991.00	4033.14	PARKMAN
4574.00	4625.79	SUSSEX
6918.00	7103.28	SHARON SPRINGS
6950.00	7171.95	NIORARA A
6973.00	7235.28	NIORARA B

CASING DETAILS			
TVD	MD	Name	Size
900.00	900.00	9 5/8"	9-5/8
7002.00	7410.41	7"	7



Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well WARDELL 26N-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 26N-29HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	WARDELL 26N-29HZ		
Design:	WARDELL 26N-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 26N-29HZ			
Well Position	+N/-S	-0.38 ft	Northing:	1,313,179.66 usft
	+E/-W	63.98 ft	Easting:	3,228,413.52 usft
Position Uncertainty		0.00 ft	Wellhead Elevation:	Ground Level: 4,870.00 ft

Wellbore	WARDELL 26N-29HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/30/2011	8.74	66.88	52,981

Design	WARDELL 26N-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	12.22

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	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,617.69	10.35	110.17	1,614.88	-16.08	43.79	2.00	2.00	0.00	110.17	
6,484.14	10.35	110.17	6,402.09	-317.60	864.80	0.00	0.00	0.00	0.00	
7,410.41	89.06	360.00	7,002.00	245.00	966.00	10.00	8.50	-11.89	-110.02	
7,416.25	89.12	0.01	7,002.09	250.84	966.00	1.00	0.97	0.24	13.65	
11,631.71	89.12	0.01	7,067.00	4,465.79	967.01	0.00	0.00	0.00	0.00	WARDELL 26N-29HZ

Anadarko Petroleum Corp

Planning Report

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Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	RKB + GL @ 4887.00ft
Site:	WELD_WARDELL 5 PAD	North Reference:	True
Well:	WARDELL 26N-29HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	WARDELL 26N-29HZ		
Design:	WARDELL 26N-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	2.00	110.17	1,199.98	-0.60	1.64	-0.24	2.00	2.00	0.00
1,300.00	4.00	110.17	1,299.84	-2.41	6.55	-0.96	2.00	2.00	0.00
1,400.00	6.00	110.17	1,399.45	-5.41	14.73	-2.17	2.00	2.00	0.00
1,500.00	8.00	110.17	1,498.70	-9.61	26.17	-3.86	2.00	2.00	0.00
1,600.00	10.00	110.17	1,597.47	-15.00	40.85	-6.02	2.00	2.00	0.00
1,617.69	10.35	110.17	1,614.88	-16.08	43.79	-6.45	2.00	2.00	0.00
1,700.00	10.35	110.17	1,695.85	-21.18	57.67	-8.50	0.00	0.00	0.00
1,800.00	10.35	110.17	1,794.22	-27.38	74.55	-10.98	0.00	0.00	0.00
1,900.00	10.35	110.17	1,892.59	-33.57	91.42	-13.47	0.00	0.00	0.00
2,000.00	10.35	110.17	1,990.96	-39.77	108.29	-15.95	0.00	0.00	0.00
2,100.00	10.35	110.17	2,089.33	-45.96	125.16	-18.44	0.00	0.00	0.00
2,200.00	10.35	110.17	2,187.71	-52.16	142.03	-20.92	0.00	0.00	0.00
2,300.00	10.35	110.17	2,286.08	-58.36	158.90	-23.41	0.00	0.00	0.00
2,400.00	10.35	110.17	2,384.45	-64.55	175.77	-25.89	0.00	0.00	0.00
2,500.00	10.35	110.17	2,482.82	-70.75	192.64	-28.38	0.00	0.00	0.00
2,600.00	10.35	110.17	2,581.19	-76.94	209.51	-30.86	0.00	0.00	0.00
2,700.00	10.35	110.17	2,679.56	-83.14	226.38	-33.35	0.00	0.00	0.00
2,800.00	10.35	110.17	2,777.94	-89.34	243.25	-35.83	0.00	0.00	0.00
2,900.00	10.35	110.17	2,876.31	-95.53	260.13	-38.32	0.00	0.00	0.00
3,000.00	10.35	110.17	2,974.68	-101.73	277.00	-40.80	0.00	0.00	0.00
3,100.00	10.35	110.17	3,073.05	-107.92	293.87	-43.29	0.00	0.00	0.00
3,200.00	10.35	110.17	3,171.42	-114.12	310.74	-45.77	0.00	0.00	0.00
3,300.00	10.35	110.17	3,269.79	-120.32	327.61	-48.26	0.00	0.00	0.00
3,400.00	10.35	110.17	3,368.17	-126.51	344.48	-50.74	0.00	0.00	0.00
3,500.00	10.35	110.17	3,466.54	-132.71	361.35	-53.23	0.00	0.00	0.00
3,600.00	10.35	110.17	3,564.91	-138.90	378.22	-55.71	0.00	0.00	0.00
3,700.00	10.35	110.17	3,663.28	-145.10	395.09	-58.20	0.00	0.00	0.00
3,800.00	10.35	110.17	3,761.65	-151.29	411.96	-60.68	0.00	0.00	0.00
3,900.00	10.35	110.17	3,860.02	-157.49	428.83	-63.17	0.00	0.00	0.00
4,000.00	10.35	110.17	3,958.40	-163.69	445.70	-65.65	0.00	0.00	0.00
4,033.14	10.35	110.17	3,991.00	-165.74	451.30	-66.48	0.00	0.00	0.00
PARKMAN									
4,100.00	10.35	110.17	4,056.77	-169.88	462.58	-68.14	0.00	0.00	0.00
4,200.00	10.35	110.17	4,155.14	-176.08	479.45	-70.62	0.00	0.00	0.00
4,300.00	10.35	110.17	4,253.51	-182.27	496.32	-73.11	0.00	0.00	0.00
4,400.00	10.35	110.17	4,351.88	-188.47	513.19	-75.59	0.00	0.00	0.00
4,500.00	10.35	110.17	4,450.25	-194.67	530.06	-78.08	0.00	0.00	0.00
4,600.00	10.35	110.17	4,548.63	-200.86	546.93	-80.56	0.00	0.00	0.00
4,625.79	10.35	110.17	4,574.00	-202.46	551.28	-81.20	0.00	0.00	0.00
SUSSEX									

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well WARDELL 26N-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 26N-29HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	WARDELL 26N-29HZ		
Design:	WARDELL 26N-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	10.35	110.17	4,647.00	-207.06	563.80	-83.05	0.00	0.00	0.00
4,800.00	10.35	110.17	4,745.37	-213.25	580.67	-85.53	0.00	0.00	0.00
4,900.00	10.35	110.17	4,843.74	-219.45	597.54	-88.02	0.00	0.00	0.00
5,000.00	10.35	110.17	4,942.11	-225.65	614.41	-90.50	0.00	0.00	0.00
5,100.00	10.35	110.17	5,040.48	-231.84	631.28	-92.99	0.00	0.00	0.00
5,200.00	10.35	110.17	5,138.86	-238.04	648.15	-95.47	0.00	0.00	0.00
5,300.00	10.35	110.17	5,237.23	-244.23	665.03	-97.96	0.00	0.00	0.00
5,400.00	10.35	110.17	5,335.60	-250.43	681.90	-100.44	0.00	0.00	0.00
5,500.00	10.35	110.17	5,433.97	-256.62	698.77	-102.93	0.00	0.00	0.00
5,600.00	10.35	110.17	5,532.34	-262.82	715.64	-105.41	0.00	0.00	0.00
5,700.00	10.35	110.17	5,630.71	-269.02	732.51	-107.90	0.00	0.00	0.00
5,800.00	10.35	110.17	5,729.09	-275.21	749.38	-110.38	0.00	0.00	0.00
5,900.00	10.35	110.17	5,827.46	-281.41	766.25	-112.87	0.00	0.00	0.00
6,000.00	10.35	110.17	5,925.83	-287.60	783.12	-115.36	0.00	0.00	0.00
6,100.00	10.35	110.17	6,024.20	-293.80	799.99	-117.84	0.00	0.00	0.00
6,200.00	10.35	110.17	6,122.57	-300.00	816.86	-120.33	0.00	0.00	0.00
6,300.00	10.35	110.17	6,220.94	-306.19	833.73	-122.81	0.00	0.00	0.00
6,400.00	10.35	110.17	6,319.32	-312.39	850.60	-125.30	0.00	0.00	0.00
6,484.14	10.35	110.17	6,402.09	-317.60	864.80	-127.39	0.00	0.00	0.00
6,500.00	9.92	101.49	6,417.70	-318.36	867.48	-127.57	10.00	-2.72	-54.73
6,600.00	12.57	50.05	6,516.00	-313.08	884.30	-118.84	10.00	2.65	-51.44
6,700.00	20.39	27.29	6,611.92	-290.56	900.67	-93.36	10.00	7.82	-22.76
6,800.00	29.52	17.45	6,702.53	-251.48	916.09	-51.91	10.00	9.13	-9.84
6,900.00	39.05	12.03	6,785.08	-197.04	930.08	4.26	10.00	9.53	-5.42
7,000.00	48.74	8.48	6,857.06	-128.88	942.22	73.44	10.00	9.70	-3.55
7,100.00	58.52	5.86	6,916.30	-49.08	952.14	153.53	10.00	9.78	-2.62
7,103.28	58.84	5.79	6,918.00	-46.30	952.43	156.31	10.00	9.80	-2.31
SHARON SPRINGS									
7,171.95	65.58	4.30	6,950.00	14.18	957.74	216.55	10.00	9.82	-2.16
NIOBRARA A									
7,200.00	68.34	3.74	6,960.98	39.93	959.55	242.10	10.00	9.83	-1.99
7,235.28	71.81	3.07	6,973.00	73.03	961.51	274.86	10.00	9.84	-1.91
NIOBRARA B									
7,300.00	78.18	1.89	6,989.75	135.45	964.21	336.44	10.00	9.85	-1.81
7,400.00	88.03	0.18	7,001.74	234.59	965.98	433.71	10.00	9.85	-1.72
7,410.41	89.06	0.00	7,002.00	245.00	966.00	443.88	10.00	9.86	-1.69
7"									
7,416.25	89.12	0.01	7,002.09	250.84	966.00	449.60	1.01	0.98	0.23
7,500.00	89.12	0.01	7,003.38	334.58	966.02	531.44	0.00	0.00	0.00
7,600.00	89.12	0.01	7,004.92	434.56	966.04	629.17	0.00	0.00	0.00
7,700.00	89.12	0.01	7,006.46	534.55	966.07	726.90	0.00	0.00	0.00
7,800.00	89.12	0.01	7,008.00	634.54	966.09	824.62	0.00	0.00	0.00
7,900.00	89.12	0.01	7,009.54	734.53	966.12	922.35	0.00	0.00	0.00
8,000.00	89.12	0.01	7,011.08	834.52	966.14	1,020.08	0.00	0.00	0.00
8,100.00	89.12	0.01	7,012.62	934.50	966.17	1,117.81	0.00	0.00	0.00
8,200.00	89.12	0.01	7,014.16	1,034.49	966.19	1,215.54	0.00	0.00	0.00
8,300.00	89.12	0.01	7,015.70	1,134.48	966.21	1,313.27	0.00	0.00	0.00
8,400.00	89.12	0.01	7,017.24	1,234.47	966.24	1,411.00	0.00	0.00	0.00
8,500.00	89.12	0.01	7,018.78	1,334.46	966.26	1,508.72	0.00	0.00	0.00
8,600.00	89.12	0.01	7,020.32	1,434.45	966.29	1,606.45	0.00	0.00	0.00
8,700.00	89.12	0.01	7,021.86	1,534.43	966.31	1,704.18	0.00	0.00	0.00
8,800.00	89.12	0.01	7,023.40	1,634.42	966.33	1,801.91	0.00	0.00	0.00
8,900.00	89.12	0.01	7,024.94	1,734.41	966.36	1,899.64	0.00	0.00	0.00
9,000.00	89.12	0.01	7,026.48	1,834.40	966.38	1,997.37	0.00	0.00	0.00

Anadarko Petroleum Corp

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Well:	WARDELL 26N-29HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	WARDELL 26N-29HZ		
Design:	WARDELL 26N-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	89.12	0.01	7,028.02	1,934.39	966.41	2,095.09	0.00	0.00	0.00
9,200.00	89.12	0.01	7,029.56	2,034.37	966.43	2,192.82	0.00	0.00	0.00
9,300.00	89.12	0.01	7,031.10	2,134.36	966.45	2,290.55	0.00	0.00	0.00
9,400.00	89.12	0.01	7,032.64	2,234.35	966.48	2,388.28	0.00	0.00	0.00
9,500.00	89.12	0.01	7,034.18	2,334.34	966.50	2,486.01	0.00	0.00	0.00
9,600.00	89.12	0.01	7,035.72	2,434.33	966.53	2,583.74	0.00	0.00	0.00
9,700.00	89.12	0.01	7,037.26	2,534.31	966.55	2,681.46	0.00	0.00	0.00
9,800.00	89.12	0.01	7,038.80	2,634.30	966.57	2,779.19	0.00	0.00	0.00
9,900.00	89.12	0.01	7,040.34	2,734.29	966.60	2,876.92	0.00	0.00	0.00
10,000.00	89.12	0.01	7,041.88	2,834.28	966.62	2,974.65	0.00	0.00	0.00
10,100.00	89.12	0.01	7,043.42	2,934.27	966.65	3,072.38	0.00	0.00	0.00
10,200.00	89.12	0.01	7,044.96	3,034.26	966.67	3,170.11	0.00	0.00	0.00
10,300.00	89.12	0.01	7,046.50	3,134.24	966.69	3,267.83	0.00	0.00	0.00
10,400.00	89.12	0.01	7,048.04	3,234.23	966.72	3,365.56	0.00	0.00	0.00
10,500.00	89.12	0.01	7,049.57	3,334.22	966.74	3,463.29	0.00	0.00	0.00
10,600.00	89.12	0.01	7,051.11	3,434.21	966.77	3,561.02	0.00	0.00	0.00
10,700.00	89.12	0.01	7,052.65	3,534.20	966.79	3,658.75	0.00	0.00	0.00
10,800.00	89.12	0.01	7,054.19	3,634.18	966.81	3,756.48	0.00	0.00	0.00
10,900.00	89.12	0.01	7,055.73	3,734.17	966.84	3,854.21	0.00	0.00	0.00
11,000.00	89.12	0.01	7,057.27	3,834.16	966.86	3,951.93	0.00	0.00	0.00
11,100.00	89.12	0.01	7,058.81	3,934.15	966.89	4,049.66	0.00	0.00	0.00
11,200.00	89.12	0.01	7,060.35	4,034.14	966.91	4,147.39	0.00	0.00	0.00
11,300.00	89.12	0.01	7,061.89	4,134.12	966.93	4,245.12	0.00	0.00	0.00
11,400.00	89.12	0.01	7,063.43	4,234.11	966.96	4,342.85	0.00	0.00	0.00
11,500.00	89.12	0.01	7,064.97	4,334.10	966.98	4,440.58	0.00	0.00	0.00
11,600.00	89.12	0.01	7,066.51	4,434.09	967.01	4,538.30	0.00	0.00	0.00
11,631.71	89.12	0.01	7,067.00	4,465.79	967.01	4,569.29	0.00	0.00	0.00
WARDELL 26N-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 26N-29HZ B	0.00	0.00	7,067.00	4,465.79	967.01	1,317,654.18	3,229,339.32	40.202443	-104.678931
- 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	
7,410.41	7,002.00	7"	7	8-3/4	

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well WARDELL 26N-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 26N-29HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	WARDELL 26N-29HZ		
Design:	WARDELL 26N-29HZ (wp01)		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,033.14	3,991.00	PARKMAN		0.00		
4,625.79	4,574.00	SUSSEX		0.00		
7,103.28	6,918.00	SHARON SPRINGS		0.00		
7,171.95	6,950.00	NIOBRARA A		0.00		
7,235.28	6,973.00	NIOBRARA B		0.00		