

# **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83  
WELD\_VONDERLAGE 13-31HZ PAD  
VONDERLAGE 29N-W31HZ**

**VONDERLAGE 29N-W31HZ**

**Plan: VONDERLAGE 29N-W31HZ (wp01)**

## **Standard Planning Report**

**06 February, 2012**

PROJECT DETAILS: COLORADO NORTHERN ZONE - 83

Site: WELD\_VONDERLAGE 13-31HZ PAD  
 Well: VONDERLAGE 29N-W31HZ  
 Wellbore: VONDERLAGE 29N-W31HZ  
 Design: VONDERLAGE 29N-W31HZ (wp01)  
 Latitude: 40.175131  
 Longitude: -104.827794  
 GL: 4826.00  
 KB: 16' RKB + GL' @ 4842.00ft (Original Well Elev)



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	V Sect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1300.00	0.00	0.00	1300.00	0.00	0.00	0.00	0.00	0.00	
3	1601.18	6.02	131.16	1600.63	-10.41	11.91	2.00	131.16	-9.22	
4	6605.21	6.02	131.16	6577.02	-356.00	407.28	0.00	0.00	-315.43	
5	7548.07	90.29	359.53	7188.00	218.83	451.00	10.00	-131.45	260.95	
6	11671.71	90.29	359.53	7167.00	4342.27	417.12	0.00	-21.86	4362.26	VONDERLAGE 29N-W31HZ BHL

DESIGN TARGET DETAILS

Name	TVD	+N-S	+E-W	Latitude	Longitude	Shape Point
VONDERLAGE 29N-W31HZ BHL	7167.00	4342.27	417.12	40.187051	-104.826301	

WELL DETAILS: VONDERLAGE 29N-W31HZ

Ground Level: 4826.00		Latitude	Longitude
+N-S	+E-W	Northing	Easting
0.00	0.00	1307355.06	3187835.51
		40.175131	-104.827794

CASING DETAILS

TVD	MD	Name	Size
850.00	850.00	9 5/8"	9-5/8
7188.00	7548.07	7"	7

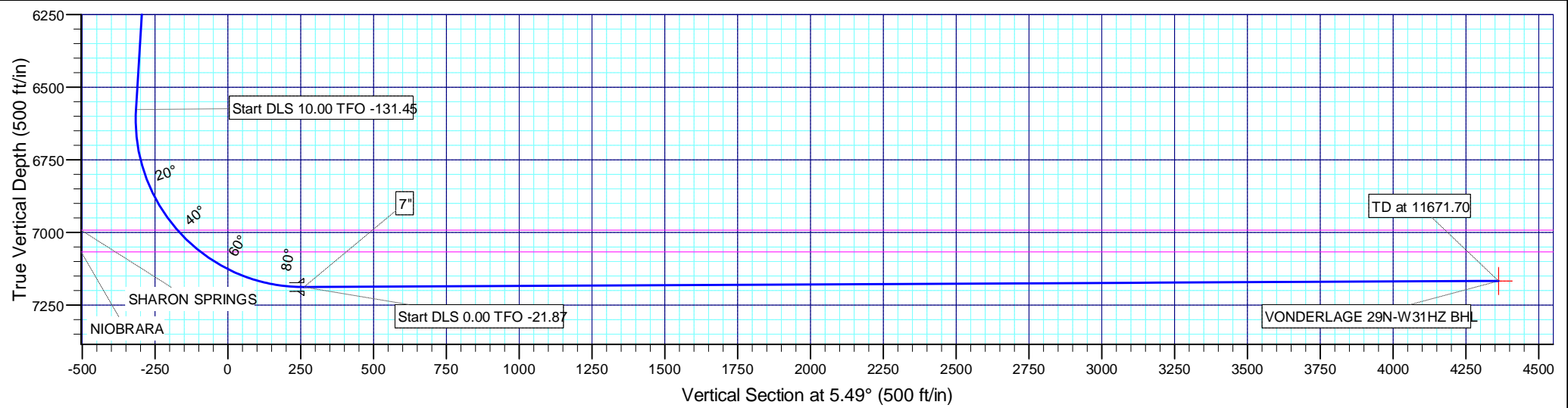
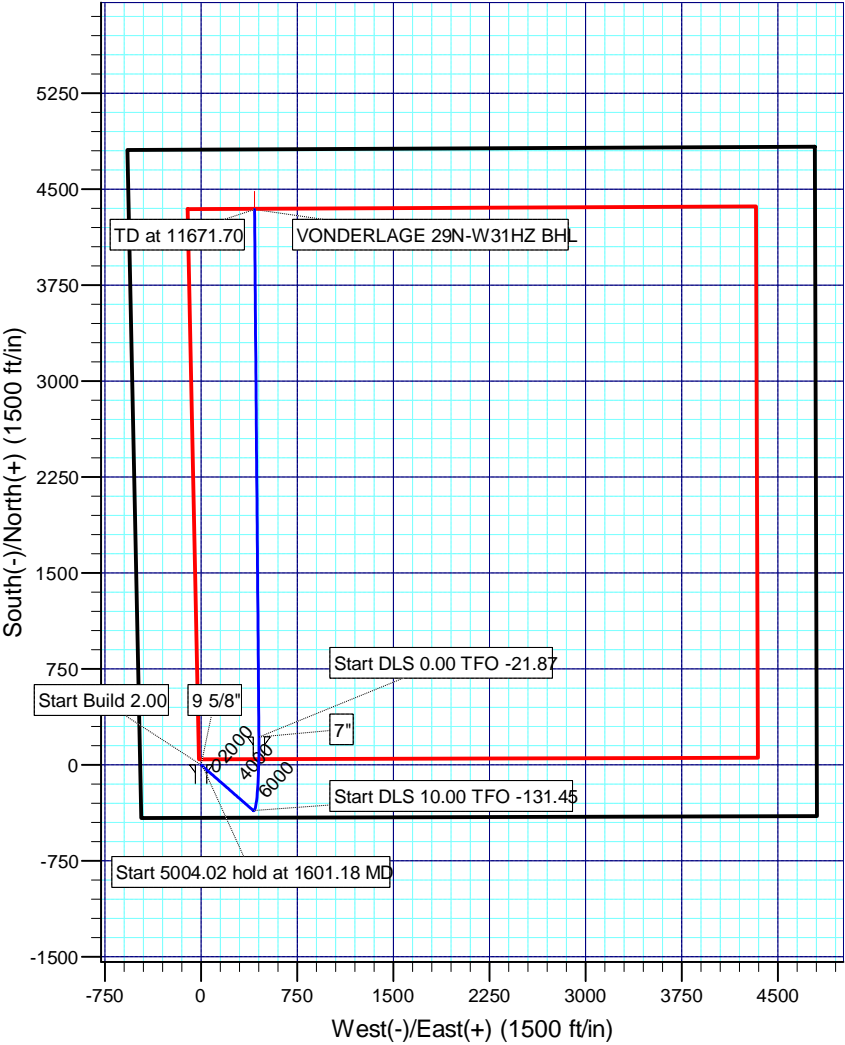
FORMATION TOP DETAILS

TVDPATH	MDPATH	Formation
3890.00	3903.27	PARKMAN
4245.00	4260.24	SUSSEX
6992.00	7055.76	SHARON SPRINGS
7067.00	7165.29	NIORBARA



Azimuths to True North  
 Magnetic North: 8.79°

Magnetic Field  
 Strength: 52939.7snT  
 Dip Angle: 66.84°  
 Date: 2/1/2012  
 Model: IGRF2010



# Anadarko Petroleum Corp

## Planning Report

<b>Database:</b>	edmp	<b>Local Co-ordinate Reference:</b>	Well VONDERLAGE 29N-W31HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	16' RKB + GL' @ 4842.00ft (Original Well Elev)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	16' RKB + GL' @ 4842.00ft (Original Well Elev)
<b>Site:</b>	WELD_VONDERLAGE 13-31HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	VONDERLAGE 29N-W31HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	VONDERLAGE 29N-W31HZ		
<b>Design:</b>	VONDERLAGE 29N-W31HZ (wp01)		

<b>Project</b>	COLORADO NORTHERN ZONE - 83		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		

<b>Site</b>	WELD_VONDERLAGE 13-31HZ PAD				
<b>Site Position:</b>		<b>Northing:</b>	1,307,355.07 usft	<b>Latitude:</b>	40.175131
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,187,835.51 usft	<b>Longitude:</b>	-104.827794
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13-3/16 "	<b>Grid Convergence:</b>	0.43 °

<b>Well</b>	VONDERLAGE 29N-W31HZ					
<b>Well Position</b>	<b>+N/-S</b>	-0.02 ft	<b>Northing:</b>	1,307,355.06 usft	<b>Latitude:</b>	40.175131
	<b>+E/-W</b>	0.00 ft	<b>Easting:</b>	3,187,835.52 usft	<b>Longitude:</b>	-104.827794
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>		<b>Ground Level:</b>	4,826.00 ft

<b>Wellbore</b>	VONDERLAGE 29N-W31HZ				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	2/1/2012	8.79	66.84	52,940

<b>Design</b>	VONDERLAGE 29N-W31HZ (wp01)				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00	
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	5.49	

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	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,601.18	6.02	131.16	1,600.63	-10.41	11.91	2.00	2.00	0.00	131.16	
6,605.21	6.02	131.16	6,577.03	-356.00	407.28	0.00	0.00	0.00	0.00	
7,548.07	90.29	359.53	7,188.00	218.83	451.00	10.00	8.94	-13.96	-131.45	
11,671.71	90.29	359.53	7,167.00	4,342.27	417.12	0.00	0.00	0.00	-21.86	VONDERLAGE 29N-1

# Anadarko Petroleum Corp

## Planning Report

<b>Database:</b>	edmp	<b>Local Co-ordinate Reference:</b>	Well VONDERLAGE 29N-W31HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	16' RKB + GL' @ 4842.00ft (Original Well Elev)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	16' RKB + GL' @ 4842.00ft (Original Well Elev)
<b>Site:</b>	WELD_VONDERLAGE 13-31HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	VONDERLAGE 29N-W31HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	VONDERLAGE 29N-W31HZ		
<b>Design:</b>	VONDERLAGE 29N-W31HZ (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	0.00
100.00	0.00	0.00	100.00	0.00	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	0.00
300.00	0.00	0.00	300.00	0.00	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	0.00
500.00	0.00	0.00	500.00	0.00	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	0.00
700.00	0.00	0.00	700.00	0.00	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	0.00
850.00	0.00	0.00	850.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>9 5/8"</b>										
900.00	0.00	0.00	900.00	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	0.00
1,100.00	0.00	0.00	1,100.00	0.00	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	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Start Build 2.00</b>										
1,400.00	2.00	131.16	1,399.98	-1.15	1.31	-1.02	2.00	2.00	0.00	0.00
1,500.00	4.00	131.16	1,499.84	-4.59	5.25	-4.07	2.00	2.00	0.00	0.00
1,601.18	6.02	131.16	1,600.63	-10.41	11.91	-9.22	2.00	2.00	0.00	0.00
<b>Start 5004.02 hold at 1601.18 MD</b>										
1,700.00	6.02	131.16	1,698.90	-17.23	19.72	-15.27	0.00	0.00	0.00	0.00
1,800.00	6.02	131.16	1,798.35	-24.14	27.62	-21.39	0.00	0.00	0.00	0.00
1,900.00	6.02	131.16	1,897.80	-31.05	35.52	-27.51	0.00	0.00	0.00	0.00
2,000.00	6.02	131.16	1,997.24	-37.95	43.42	-33.63	0.00	0.00	0.00	0.00
2,100.00	6.02	131.16	2,096.69	-44.86	51.32	-39.75	0.00	0.00	0.00	0.00
2,200.00	6.02	131.16	2,196.14	-51.77	59.22	-45.87	0.00	0.00	0.00	0.00
2,300.00	6.02	131.16	2,295.59	-58.67	67.12	-51.99	0.00	0.00	0.00	0.00
2,400.00	6.02	131.16	2,395.03	-65.58	75.02	-58.10	0.00	0.00	0.00	0.00
2,500.00	6.02	131.16	2,494.48	-72.49	82.92	-64.22	0.00	0.00	0.00	0.00
2,600.00	6.02	131.16	2,593.93	-79.39	90.83	-70.34	0.00	0.00	0.00	0.00
2,700.00	6.02	131.16	2,693.38	-86.30	98.73	-76.46	0.00	0.00	0.00	0.00
2,800.00	6.02	131.16	2,792.83	-93.20	106.63	-82.58	0.00	0.00	0.00	0.00
2,900.00	6.02	131.16	2,892.27	-100.11	114.53	-88.70	0.00	0.00	0.00	0.00
3,000.00	6.02	131.16	2,991.72	-107.02	122.43	-94.82	0.00	0.00	0.00	0.00
3,100.00	6.02	131.16	3,091.17	-113.92	130.33	-100.94	0.00	0.00	0.00	0.00
3,200.00	6.02	131.16	3,190.62	-120.83	138.23	-107.06	0.00	0.00	0.00	0.00
3,300.00	6.02	131.16	3,290.07	-127.74	146.13	-113.18	0.00	0.00	0.00	0.00
3,400.00	6.02	131.16	3,389.51	-134.64	154.03	-119.30	0.00	0.00	0.00	0.00
3,500.00	6.02	131.16	3,488.96	-141.55	161.93	-125.42	0.00	0.00	0.00	0.00
3,600.00	6.02	131.16	3,588.41	-148.45	169.84	-131.53	0.00	0.00	0.00	0.00
3,700.00	6.02	131.16	3,687.86	-155.36	177.74	-137.65	0.00	0.00	0.00	0.00
3,800.00	6.02	131.16	3,787.31	-162.27	185.64	-143.77	0.00	0.00	0.00	0.00
3,900.00	6.02	131.16	3,886.75	-169.17	193.54	-149.89	0.00	0.00	0.00	0.00
3,903.27	6.02	131.16	3,890.00	-169.40	193.80	-150.09	0.00	0.00	0.00	0.00
<b>PARKMAN</b>										
4,000.00	6.02	131.16	3,986.20	-176.08	201.44	-156.01	0.00	0.00	0.00	0.00
4,100.00	6.02	131.16	4,085.65	-182.99	209.34	-162.13	0.00	0.00	0.00	0.00
4,200.00	6.02	131.16	4,185.10	-189.89	217.24	-168.25	0.00	0.00	0.00	0.00
4,260.24	6.02	131.16	4,245.00	-194.05	222.00	-171.94	0.00	0.00	0.00	0.00
<b>SUSSEX</b>										

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<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	16' RKB + GL' @ 4842.00ft (Original Well Elev)
<b>Site:</b>	WELD_VONDERLAGE 13-31HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	VONDERLAGE 29N-W31HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	VONDERLAGE 29N-W31HZ		
<b>Design:</b>	VONDERLAGE 29N-W31HZ (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)	
4,300.00	6.02	131.16	4,284.54	-196.80	225.14	-174.37	0.00	0.00	0.00	
4,400.00	6.02	131.16	4,383.99	-203.71	233.04	-180.49	0.00	0.00	0.00	
4,500.00	6.02	131.16	4,483.44	-210.61	240.94	-186.61	0.00	0.00	0.00	
4,600.00	6.02	131.16	4,582.89	-217.52	248.84	-192.73	0.00	0.00	0.00	
4,700.00	6.02	131.16	4,682.34	-224.42	256.75	-198.85	0.00	0.00	0.00	
4,800.00	6.02	131.16	4,781.78	-231.33	264.65	-204.96	0.00	0.00	0.00	
4,900.00	6.02	131.16	4,881.23	-238.24	272.55	-211.08	0.00	0.00	0.00	
5,000.00	6.02	131.16	4,980.68	-245.14	280.45	-217.20	0.00	0.00	0.00	
5,100.00	6.02	131.16	5,080.13	-252.05	288.35	-223.32	0.00	0.00	0.00	
5,200.00	6.02	131.16	5,179.58	-258.96	296.25	-229.44	0.00	0.00	0.00	
5,300.00	6.02	131.16	5,279.02	-265.86	304.15	-235.56	0.00	0.00	0.00	
5,400.00	6.02	131.16	5,378.47	-272.77	312.05	-241.68	0.00	0.00	0.00	
5,500.00	6.02	131.16	5,477.92	-279.67	319.95	-247.80	0.00	0.00	0.00	
5,600.00	6.02	131.16	5,577.37	-286.58	327.85	-253.92	0.00	0.00	0.00	
5,700.00	6.02	131.16	5,676.81	-293.49	335.76	-260.04	0.00	0.00	0.00	
5,800.00	6.02	131.16	5,776.26	-300.39	343.66	-266.16	0.00	0.00	0.00	
5,900.00	6.02	131.16	5,875.71	-307.30	351.56	-272.28	0.00	0.00	0.00	
6,000.00	6.02	131.16	5,975.16	-314.21	359.46	-278.39	0.00	0.00	0.00	
6,100.00	6.02	131.16	6,074.61	-321.11	367.36	-284.51	0.00	0.00	0.00	
6,200.00	6.02	131.16	6,174.05	-328.02	375.26	-290.63	0.00	0.00	0.00	
6,300.00	6.02	131.16	6,273.50	-334.93	383.16	-296.75	0.00	0.00	0.00	
6,400.00	6.02	131.16	6,372.95	-341.83	391.06	-302.87	0.00	0.00	0.00	
6,500.00	6.02	131.16	6,472.40	-348.74	398.96	-308.99	0.00	0.00	0.00	
6,605.21	6.02	131.16	6,577.03	-356.00	407.28	-315.43	0.00	0.00	0.00	
<b>Start DLS 10.00 TFO -131.45</b>										
6,650.00	4.54	83.43	6,621.65	-357.35	410.81	-316.43	10.00	-3.32	-106.56	
6,700.00	7.10	38.88	6,671.41	-354.72	414.71	-313.44	10.00	5.12	-89.09	
6,750.00	11.40	22.58	6,720.75	-347.74	418.55	-306.13	10.00	8.61	-32.60	
6,800.00	16.11	15.40	6,769.31	-336.48	422.30	-294.56	10.00	9.42	-14.36	
6,850.00	20.95	11.44	6,816.70	-321.02	425.92	-278.83	10.00	9.68	-7.92	
6,900.00	25.85	8.92	6,862.58	-301.48	429.38	-259.04	10.00	9.80	-5.04	
6,950.00	30.78	7.16	6,906.58	-278.00	432.67	-235.35	10.00	9.86	-3.52	
7,000.00	35.73	5.85	6,948.38	-250.76	435.76	-207.95	10.00	9.90	-2.63	
7,050.00	40.69	4.82	6,987.65	-219.98	438.62	-177.03	10.00	9.92	-2.06	
7,055.76	41.26	4.71	6,992.00	-216.21	438.93	-173.25	10.00	9.93	-1.83	
<b>SHARON SPRINGS</b>										
7,100.00	45.66	3.98	7,024.11	-185.88	441.23	-142.83	10.00	9.93	-1.67	
7,150.00	50.63	3.27	7,057.46	-148.72	443.57	-105.63	10.00	9.94	-1.42	
7,165.29	52.15	3.07	7,067.00	-136.79	444.23	-93.69	10.00	9.95	-1.29	
<b>NIOBRARA</b>										
7,200.00	55.61	2.65	7,087.46	-108.79	445.62	-65.68	10.00	9.95	-1.21	
7,250.00	60.58	2.10	7,113.88	-66.40	447.38	-23.31	10.00	9.96	-1.09	
7,300.00	65.56	1.61	7,136.51	-21.86	448.82	21.16	10.00	9.96	-0.99	
7,350.00	70.55	1.15	7,155.19	24.49	449.93	67.40	10.00	9.96	-0.92	
7,400.00	75.53	0.72	7,169.77	72.30	450.71	115.06	10.00	9.97	-0.86	
7,450.00	80.51	0.31	7,180.15	121.19	451.14	163.77	10.00	9.97	-0.82	
7,500.00	85.50	359.91	7,186.23	170.80	451.24	213.17	10.00	9.97	-0.80	
7,548.07	90.29	359.53	7,188.00	218.83	451.00	260.95	10.00	9.97	-0.79	
<b>Start DLS 0.00 TFO -21.87 - 7"</b>										
7,600.00	90.29	359.53	7,187.74	270.75	450.57	312.60	0.00	0.00	0.00	
7,700.00	90.29	359.53	7,187.23	370.75	449.75	412.06	0.00	0.00	0.00	
7,800.00	90.29	359.53	7,186.72	470.74	448.93	511.51	0.00	0.00	0.00	

# Anadarko Petroleum Corp

## Planning Report

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<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	16' RKB + GL' @ 4842.00ft (Original Well Elev)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	16' RKB + GL' @ 4842.00ft (Original Well Elev)
<b>Site:</b>	WELD_VONDERLAGE 13-31HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	VONDERLAGE 29N-W31HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	VONDERLAGE 29N-W31HZ		
<b>Design:</b>	VONDERLAGE 29N-W31HZ (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)	
7,900.00	90.29	359.53	7,186.22	570.74	448.11	610.97	0.00	0.00	0.00	
8,000.00	90.29	359.53	7,185.71	670.73	447.29	710.43	0.00	0.00	0.00	
8,100.00	90.29	359.53	7,185.20	770.73	446.47	809.89	0.00	0.00	0.00	
8,200.00	90.29	359.53	7,184.70	870.73	445.65	909.35	0.00	0.00	0.00	
8,300.00	90.29	359.53	7,184.19	970.72	444.83	1,008.81	0.00	0.00	0.00	
8,400.00	90.29	359.53	7,183.68	1,070.72	444.01	1,108.27	0.00	0.00	0.00	
8,500.00	90.29	359.53	7,183.18	1,170.71	443.19	1,207.73	0.00	0.00	0.00	
8,600.00	90.29	359.53	7,182.67	1,270.71	442.37	1,307.18	0.00	0.00	0.00	
8,700.00	90.29	359.53	7,182.16	1,370.70	441.55	1,406.64	0.00	0.00	0.00	
8,800.00	90.29	359.53	7,181.65	1,470.70	440.73	1,506.10	0.00	0.00	0.00	
8,900.00	90.29	359.53	7,181.14	1,570.69	439.90	1,605.56	0.00	0.00	0.00	
9,000.00	90.29	359.53	7,180.64	1,670.69	439.08	1,705.02	0.00	0.00	0.00	
9,100.00	90.29	359.53	7,180.13	1,770.68	438.26	1,804.48	0.00	0.00	0.00	
9,200.00	90.29	359.53	7,179.62	1,870.68	437.44	1,903.94	0.00	0.00	0.00	
9,300.00	90.29	359.53	7,179.11	1,970.67	436.62	2,003.39	0.00	0.00	0.00	
9,400.00	90.29	359.53	7,178.60	2,070.67	435.80	2,102.85	0.00	0.00	0.00	
9,500.00	90.29	359.53	7,178.09	2,170.66	434.98	2,202.31	0.00	0.00	0.00	
9,600.00	90.29	359.53	7,177.58	2,270.66	434.16	2,301.77	0.00	0.00	0.00	
9,700.00	90.29	359.53	7,177.07	2,370.66	433.33	2,401.23	0.00	0.00	0.00	
9,800.00	90.29	359.53	7,176.56	2,470.65	432.51	2,500.69	0.00	0.00	0.00	
9,900.00	90.29	359.53	7,176.05	2,570.65	431.69	2,600.15	0.00	0.00	0.00	
10,000.00	90.29	359.53	7,175.54	2,670.64	430.87	2,699.60	0.00	0.00	0.00	
10,100.00	90.29	359.53	7,175.03	2,770.64	430.05	2,799.06	0.00	0.00	0.00	
10,200.00	90.29	359.53	7,174.52	2,870.63	429.23	2,898.52	0.00	0.00	0.00	
10,300.00	90.29	359.53	7,174.01	2,970.63	428.40	2,997.98	0.00	0.00	0.00	
10,400.00	90.29	359.53	7,173.50	3,070.62	427.58	3,097.44	0.00	0.00	0.00	
10,500.00	90.29	359.53	7,172.99	3,170.62	426.76	3,196.90	0.00	0.00	0.00	
10,600.00	90.29	359.53	7,172.48	3,270.61	425.94	3,296.36	0.00	0.00	0.00	
10,700.00	90.29	359.53	7,171.97	3,370.61	425.12	3,395.81	0.00	0.00	0.00	
10,800.00	90.29	359.53	7,171.46	3,470.60	424.29	3,495.27	0.00	0.00	0.00	
10,900.00	90.29	359.53	7,170.95	3,570.60	423.47	3,594.73	0.00	0.00	0.00	
11,000.00	90.29	359.53	7,170.44	3,670.59	422.65	3,694.19	0.00	0.00	0.00	
11,100.00	90.29	359.53	7,169.93	3,770.59	421.83	3,793.65	0.00	0.00	0.00	
11,200.00	90.29	359.53	7,169.42	3,870.59	421.00	3,893.11	0.00	0.00	0.00	
11,300.00	90.29	359.53	7,168.90	3,970.58	420.18	3,992.56	0.00	0.00	0.00	
11,400.00	90.29	359.53	7,168.39	4,070.58	419.36	4,092.02	0.00	0.00	0.00	
11,500.00	90.29	359.53	7,167.88	4,170.57	418.54	4,191.48	0.00	0.00	0.00	
11,600.00	90.29	359.53	7,167.37	4,270.57	417.71	4,290.94	0.00	0.00	0.00	
11,671.70	90.29	359.53	7,167.00	4,342.27	417.12	4,362.26	0.00	0.00	0.00	
<b>TD at 11671.70 - VONDERLAGE 29N-W31HZ BHL</b>										

Design Targets										
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
VONDERLAGE 29N-W3 - plan hits target center - Point	0.00	0.00	7,167.00	4,342.27	417.12	1,311,700.36	3,188,219.71	40.187051	-104.826301	

# Anadarko Petroleum Corp

## Planning Report

<b>Database:</b>	edmp	<b>Local Co-ordinate Reference:</b>	Well VONDERLAGE 29N-W31HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	16' RKB + GL' @ 4842.00ft (Original Well Elev)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	16' RKB + GL' @ 4842.00ft (Original Well Elev)
<b>Site:</b>	WELD_VONDERLAGE 13-31HZ PAD	<b>North Reference:</b>	True
<b>Well:</b>	VONDERLAGE 29N-W31HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	VONDERLAGE 29N-W31HZ		
<b>Design:</b>	VONDERLAGE 29N-W31HZ (wp01)		

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
850.00	850.00	9 5/8"	9-5/8	13-1/2	
7,548.07	7,188.00	7"	7	8-3/4	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,903.27	3,890.00	PARKMAN		0.00	
4,260.24	4,245.00	SUSSEX		0.00	
7,055.76	6,992.00	SHARON SPRINGS		0.00	
7,165.29	7,067.00	NIOBRARA		0.00	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
1,300.00	1,300.00	0.00	0.00	Start Build 2.00	
1,601.18	1,600.63	-10.41	11.91	Start 5004.02 hold at 1601.18 MD	
6,605.21	6,577.03	-356.00	407.28	Start DLS 10.00 TFO -131.45	
7,548.07	7,188.00	218.83	451.00	Start DLS 0.00 TFO -21.87	
11,671.70	7,167.00	4,342.27	417.12	TD at 11671.70	

# **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83  
WELD\_VONDERLAGE 13-31HZ PAD  
VONDERLAGE 29N-W31HZ**

**VONDERLAGE 29N-W31HZ  
VONDERLAGE 29N-W31HZ (wp01)**

## **Anticollision Report**

**06 February, 2012**

# Anadarko Petroleum Corp

## Anticollision Report

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well VONDERLAGE 29N-W31HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	16' RKB + GL' @ 4842.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_VONDERLAGE 13-31HZ PAD	<b>MD Reference:</b>	16' RKB + GL' @ 4842.00ft (Original Well Elev)
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	VONDERLAGE 29N-W31HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	VONDERLAGE 29N-W31HZ	<b>Database:</b>	edmp
<b>Reference Design:</b>	VONDERLAGE 29N-W31HZ (wp01)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	VONDERLAGE 29N-W31HZ (wp01)		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	Stations	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 10,000.00 ft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma	<b>Casing Method:</b>	Not applied

<b>Survey Tool Program</b>	Date	2/6/2012		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.00	11,671.70	VONDERLAGE 29N-W31HZ (wp01) (VON	MWD	MWD - Standard

<b>Summary</b>						
	<b>Reference Measured Depth (ft)</b>	<b>Offset Measured Depth (ft)</b>	<b>Distance Between Centres (ft)</b>	<b>Distance Between Ellipses (ft)</b>	<b>Separation Factor</b>	<b>Warning</b>
<b>Site Name</b>						
<b>Offset Well - Wellbore - Design</b>						
WELD_VONDERLAGE 13-31HZ PAD						
VONDERLAGE 30N-31HZ - VONDERLAGE 30N-31HZ -	1,100.00	1,099.00	29.87	25.19	6.381	CC, ES
VONDERLAGE 30N-31HZ - VONDERLAGE 30N-31HZ -	11,671.71	11,554.39	697.69	525.31	4.048	SF

<b>Offset Design</b>												<b>Offset Site Error:</b>	0.00 ft
Survey Program: 0-MWD												<b>Offset Well Error:</b>	0.00 ft
Reference: WELD_VONDERLAGE 13-31HZ PAD - VONDERLAGE 30N-31HZ - VONDERLAGE 30N-31HZ - VOND													
<b>Measured Depth (ft)</b>	<b>Vertical Depth (ft)</b>	<b>Measured Depth (ft)</b>	<b>Vertical Depth (ft)</b>	<b>Semi Major Axis</b>			<b>Distance</b>			<b>Minimum Separation</b>		<b>Separation Factor</b>	<b>Warning</b>
				<b>Reference (ft)</b>	<b>Offset (ft)</b>	<b>Highside Toolface (°)</b>	<b>Offset Wellbore Centre +N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Between Centres (ft)</b>	<b>Between Ellipses (ft)</b>	<b>(ft)</b>	<b>(ft)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	178.39	-29.86	0.84	29.89				
100.00	100.00	99.00	99.00	0.09	0.09	178.39	-29.86	0.84	29.87	29.69	0.19	159.026	
200.00	200.00	199.00	199.00	0.32	0.32	178.39	-29.86	0.84	29.87	29.24	0.64	46.966	
300.00	300.00	299.00	299.00	0.54	0.54	178.39	-29.86	0.84	29.87	28.79	1.09	27.518	
400.00	400.00	399.00	399.00	0.77	0.77	178.39	-29.86	0.84	29.87	28.34	1.54	19.460	
500.00	500.00	499.00	499.00	0.99	0.99	178.39	-29.86	0.84	29.87	27.89	1.98	15.053	
600.00	600.00	599.00	599.00	1.22	1.22	178.39	-29.86	0.84	29.87	27.44	2.43	12.273	
700.00	700.00	699.00	699.00	1.44	1.44	178.39	-29.86	0.84	29.87	26.99	2.88	10.360	
800.00	800.00	799.00	799.00	1.67	1.67	178.39	-29.86	0.84	29.87	26.54	3.33	8.963	
900.00	900.00	899.00	899.00	1.89	1.89	178.39	-29.86	0.84	29.87	26.09	3.78	7.897	
1,000.00	1,000.00	999.00	999.00	2.12	2.12	178.39	-29.86	0.84	29.87	25.64	4.23	7.059	
1,100.00	1,100.00	1,099.00	1,099.00	2.34	2.34	178.39	-29.86	0.84	29.87	25.19	4.68	6.381	CC, ES
1,200.00	1,200.00	1,198.06	1,198.04	2.57	2.54	179.85	-31.36	0.08	31.38	26.27	5.10	6.149	
1,300.00	1,300.00	1,297.11	1,296.96	2.79	2.71	-176.48	-35.92	-2.21	36.04	30.54	5.50	6.549	
1,400.00	1,399.98	1,396.65	1,396.26	2.99	2.90	57.91	-42.03	-5.28	41.50	35.61	5.89	7.047	
1,500.00	1,499.84	1,496.36	1,495.73	3.18	3.10	66.00	-48.16	-8.36	45.75	39.48	6.26	7.305	
1,601.18	1,600.63	1,597.07	1,596.20	3.38	3.31	76.53	-54.34	-11.47	49.88	43.23	6.66	7.491	
1,700.00	1,698.90	1,695.28	1,694.18	3.59	3.52	86.88	-60.38	-14.50	55.19	48.12	7.07	7.808	
1,800.00	1,798.35	1,794.67	1,793.34	3.82	3.75	95.29	-66.48	-17.57	62.06	54.56	7.50	8.276	
1,900.00	1,897.80	1,894.07	1,892.50	4.06	3.97	101.93	-72.59	-20.64	69.99	62.05	7.94	8.812	
2,000.00	1,997.24	1,993.46	1,991.66	4.30	4.20	107.17	-78.69	-23.71	78.66	70.27	8.40	9.370	
2,100.00	2,096.69	2,092.85	2,090.81	4.55	4.44	111.34	-84.80	-26.78	87.86	79.00	8.86	9.920	
2,200.00	2,196.14	2,192.25	2,189.97	4.81	4.67	114.71	-90.90	-29.85	97.43	88.11	9.32	10.448	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

# Anadarko Petroleum Corp

## Anticollision Report

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well VONDERLAGE 29N-W31HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	16' RKB + GL' @ 4842.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_VONDERLAGE 13-31HZ PAD	<b>MD Reference:</b>	16' RKB + GL' @ 4842.00ft (Original Well Elev)
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	VONDERLAGE 29N-W31HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	VONDERLAGE 29N-W31HZ	<b>Database:</b>	edmp
<b>Reference Design:</b>	VONDERLAGE 29N-W31HZ (wp01)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 ft
WELD_VONDERLAGE 13-31HZ PAD - VONDERLAGE 30N-31HZ - VONDERLAGE 30N-31HZ - VOND													Offset Well Error:	0.00 ft
Survey Program: 0-MWD														
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
2,300.00	2,295.59	2,291.64	2,289.13	5.07	4.91	117.48	-97.01	-32.92	107.28	97.48	9.80	10.947		
2,400.00	2,395.03	2,391.03	2,388.29	5.34	5.15	119.77	-103.11	-35.99	117.33	107.05	10.28	11.414		
2,500.00	2,494.48	2,490.42	2,487.44	5.61	5.40	121.70	-109.22	-39.06	127.54	116.78	10.76	11.850		
2,600.00	2,593.93	2,589.82	2,586.60	5.89	5.64	123.34	-115.32	-42.13	137.87	126.62	11.25	12.255		
2,700.00	2,693.38	2,689.21	2,685.76	6.16	5.89	124.76	-121.43	-45.20	148.30	136.56	11.74	12.631		
2,800.00	2,792.83	2,788.60	2,784.92	6.44	6.13	125.98	-127.53	-48.27	158.81	146.58	12.23	12.981		
2,900.00	2,892.27	2,887.99	2,884.07	6.73	6.38	127.06	-133.63	-51.34	169.38	156.65	12.73	13.307		
3,000.00	2,991.72	2,987.39	2,983.23	7.01	6.63	128.01	-139.74	-54.41	180.00	166.77	13.23	13.609		
3,100.00	3,091.17	3,086.78	3,082.39	7.29	6.88	128.85	-145.84	-57.48	190.67	176.94	13.73	13.891		
3,200.00	3,190.62	3,186.17	3,181.55	7.58	7.14	129.60	-151.95	-60.55	201.37	187.14	14.23	14.155		
3,300.00	3,290.07	3,285.57	3,280.71	7.87	7.39	130.28	-158.05	-63.62	212.10	197.37	14.73	14.401		
3,400.00	3,389.51	3,384.96	3,379.86	8.16	7.64	130.89	-164.16	-66.69	222.86	207.63	15.23	14.631		
3,500.00	3,488.96	3,484.35	3,479.02	8.45	7.89	131.45	-170.26	-69.76	233.64	217.90	15.74	14.847		
3,600.00	3,588.41	3,583.74	3,578.18	8.74	8.15	131.95	-176.37	-72.83	244.44	228.20	16.24	15.049		
3,700.00	3,687.86	3,683.14	3,677.34	9.03	8.40	132.42	-182.47	-75.90	255.26	238.51	16.75	15.240		
3,800.00	3,787.31	3,782.53	3,776.49	9.32	8.66	132.84	-188.58	-78.97	266.10	248.84	17.26	15.419		
3,900.00	3,886.75	3,881.92	3,875.65	9.61	8.91	133.24	-194.68	-82.04	276.94	259.18	17.77	15.588		
4,000.00	3,986.20	3,981.31	3,974.81	9.91	9.17	133.60	-200.79	-85.11	287.80	269.53	18.28	15.748		
4,100.00	4,085.65	4,080.71	4,073.97	10.20	9.42	133.93	-206.89	-88.18	298.67	279.89	18.79	15.899		
4,200.00	4,185.10	4,180.10	4,173.12	10.50	9.68	134.25	-213.00	-91.25	309.55	290.26	19.30	16.042		
4,300.00	4,284.54	4,279.49	4,272.28	10.79	9.94	134.54	-219.10	-94.32	320.44	300.63	19.81	16.178		
4,400.00	4,383.99	4,378.89	4,371.44	11.09	10.19	134.81	-225.21	-97.39	331.34	311.02	20.32	16.307		
4,500.00	4,483.44	4,478.28	4,470.60	11.38	10.45	135.07	-231.31	-100.46	342.24	321.41	20.83	16.429		
4,600.00	4,582.89	4,577.67	4,569.75	11.68	10.71	135.31	-237.42	-103.53	353.15	331.80	21.34	16.546		
4,700.00	4,682.34	4,677.06	4,668.91	11.98	10.96	135.53	-243.52	-106.60	364.06	342.20	21.86	16.657		
4,800.00	4,781.78	4,776.46	4,768.07	12.28	11.22	135.74	-249.63	-109.67	374.98	352.61	22.37	16.762		
4,900.00	4,881.23	4,875.85	4,867.23	12.57	11.48	135.94	-255.73	-112.74	385.91	363.02	22.88	16.863		
5,000.00	4,980.68	4,975.24	4,966.38	12.87	11.74	136.13	-261.84	-115.81	396.83	373.44	23.40	16.960		
5,100.00	5,080.13	5,074.63	5,065.54	13.17	12.00	136.31	-267.94	-118.88	407.77	383.85	23.91	17.052		
5,200.00	5,179.58	5,174.03	5,164.70	13.47	12.25	136.48	-274.05	-121.95	418.70	394.28	24.43	17.140		
5,300.00	5,279.02	5,273.42	5,263.86	13.77	12.51	136.64	-280.15	-125.02	429.64	404.70	24.94	17.225		
5,400.00	5,378.47	5,372.81	5,363.01	14.06	12.77	136.79	-286.26	-128.09	440.59	415.13	25.46	17.306		
5,500.00	5,477.92	5,472.21	5,462.17	14.36	13.03	136.94	-292.36	-131.16	451.53	425.56	25.97	17.384		
5,600.00	5,577.37	5,571.60	5,561.33	14.66	13.29	137.08	-298.47	-134.23	462.48	435.99	26.49	17.458		
5,700.00	5,676.81	5,670.99	5,660.49	14.96	13.55	137.21	-304.57	-137.30	473.43	446.43	27.01	17.530		
5,800.00	5,776.26	5,770.38	5,759.64	15.26	13.81	137.34	-310.68	-140.37	484.39	456.86	27.52	17.599		
5,900.00	5,875.71	5,869.78	5,858.80	15.56	14.07	137.46	-316.78	-143.44	495.34	467.30	28.04	17.666		
6,000.00	5,975.16	5,969.17	5,957.96	15.86	14.32	137.57	-322.89	-146.51	506.30	477.75	28.56	17.730		
6,100.00	6,074.61	6,068.56	6,057.12	16.16	14.58	137.68	-328.99	-149.58	517.26	488.19	29.07	17.792		
6,200.00	6,174.05	6,167.95	6,156.27	16.46	14.84	137.79	-335.10	-152.65	528.22	498.63	29.59	17.851		
6,300.00	6,273.50	6,267.35	6,255.43	16.76	15.10	137.89	-341.20	-155.72	539.19	509.08	30.11	17.909		
6,400.00	6,372.95	6,366.74	6,354.59	17.06	15.36	137.99	-347.31	-158.79	550.15	519.53	30.63	17.964		
6,500.00	6,472.40	6,466.13	6,453.75	17.36	15.62	138.08	-353.41	-161.86	561.12	529.98	31.14	18.018		
6,605.21	6,571.85	6,565.58	6,552.94	17.68	15.85	138.53	-359.54	-165.13	572.72	541.09	31.63	18.108		
6,650.00	6,621.65	6,612.73	6,599.99	17.79	15.90	137.90	-352.49	-166.59	577.78	546.04	31.75	18.199		
6,700.00	6,671.41	6,660.47	6,647.02	17.88	15.94	137.89	-344.59	-168.26	583.53	551.70	31.83	18.331		
6,750.00	6,720.75	6,707.78	6,692.82	17.94	15.97	137.90	-332.91	-169.97	589.32	557.44	31.88	18.486		
6,800.00	6,769.31	6,754.70	6,737.14	17.98	15.98	137.90	-317.64	-171.70	595.12	563.22	31.90	18.657		
6,850.00	6,816.70	6,800.00	6,778.61	17.99	15.97	137.90	-299.51	-173.40	600.85	568.96	31.89	18.842		
6,900.00	6,862.58	6,847.52	6,820.42	17.99	15.96	137.90	-277.02	-175.20	606.48	574.62	31.86	19.035		
6,950.00	6,906.58	6,893.48	6,858.95	17.96	15.93	137.90	-252.05	-176.95	611.95	580.12	31.82	19.229		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

# Anadarko Petroleum Corp

## Anticollision Report

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well VONDERLAGE 29N-W31HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	16' RKB + GL' @ 4842.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_VONDERLAGE 13-31HZ PAD	<b>MD Reference:</b>	16' RKB + GL' @ 4842.00ft (Original Well Elev)
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	VONDERLAGE 29N-W31HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	VONDERLAGE 29N-W31HZ	<b>Database:</b>	edmp
<b>Reference Design:</b>	VONDERLAGE 29N-W31HZ (wp01)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design														Offset Site Error:	0.00 ft	
Survey Program: 0-MWD														Offset Well Error:		0.00 ft
Reference																
Offset				Semi Major Axis			Distance									
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)					
7,000.00	6,948.38	6,939.20	6,895.16	17.92	15.91	-89.90	-224.23	-178.67	617.21	585.43	31.79	19.418				
7,050.00	6,987.65	6,984.69	6,928.89	17.87	15.89	-88.33	-193.76	-180.37	622.23	590.47	31.76	19.594				
7,100.00	7,024.11	7,030.00	6,959.97	17.81	15.88	-87.02	-160.85	-182.03	626.95	595.20	31.75	19.748				
7,150.00	7,057.46	7,075.14	6,988.25	17.74	15.88	-85.93	-125.71	-183.65	631.34	599.56	31.77	19.871				
7,200.00	7,087.46	7,120.16	7,013.61	17.67	15.90	-85.01	-88.57	-185.21	635.35	603.51	31.84	19.954				
7,250.00	7,113.88	7,165.08	7,035.94	17.59	15.95	-84.25	-49.63	-186.72	638.96	607.00	31.96	19.990				
7,300.00	7,136.51	7,209.92	7,055.11	17.51	16.04	-83.63	-9.13	-188.15	642.14	609.99	32.16	19.970				
7,350.00	7,155.19	7,254.72	7,071.04	17.43	16.18	-83.15	32.70	-189.50	644.87	612.44	32.42	19.890				
7,400.00	7,169.77	7,300.00	7,083.78	17.35	16.38	-82.78	76.12	-190.79	647.11	614.34	32.77	19.745				
7,450.00	7,180.15	7,344.26	7,092.88	17.30	16.62	-82.54	119.41	-191.95	648.86	615.65	33.21	19.538				
7,500.00	7,186.23	7,389.06	7,098.66	17.41	16.90	-82.41	163.81	-193.03	650.09	616.36	33.73	19.271				
7,548.07	7,188.00	7,432.17	7,100.93	17.74	17.21	-82.40	206.84	-193.97	650.80	616.48	34.32	18.965				
7,600.00	7,187.74	7,483.00	7,100.94	18.15	17.61	-82.43	257.65	-194.99	651.37	616.32	35.06	18.581				
7,700.00	7,187.23	7,582.99	7,100.79	19.05	18.53	-82.47	357.63	-197.00	652.51	615.75	36.75	17.754				
7,800.00	7,186.72	7,682.98	7,100.65	20.07	19.59	-82.52	457.60	-199.01	653.64	614.89	38.75	16.870				
7,900.00	7,186.22	7,782.97	7,100.50	21.21	20.77	-82.56	557.57	-201.02	654.77	613.77	41.00	15.971				
8,000.00	7,185.71	7,882.96	7,100.36	22.44	22.05	-82.61	657.54	-203.03	655.90	612.44	43.47	15.090				
8,100.00	7,185.20	7,982.96	7,100.21	23.75	23.42	-82.65	757.51	-205.04	657.03	610.92	46.12	14.247				
8,200.00	7,184.70	8,082.95	7,100.07	25.13	24.86	-82.70	857.49	-207.05	658.17	609.25	48.92	13.454				
8,300.00	7,184.19	8,182.94	7,099.92	26.58	26.36	-82.74	957.46	-209.06	659.30	607.45	51.85	12.715				
8,400.00	7,183.68	8,282.93	7,099.78	28.08	27.91	-82.78	1,057.43	-211.07	660.43	605.54	54.89	12.031				
8,500.00	7,183.18	8,382.93	7,099.63	29.62	29.50	-82.83	1,157.40	-213.08	661.57	603.55	58.02	11.402				
8,600.00	7,182.67	8,482.92	7,099.49	31.20	31.13	-82.87	1,257.37	-215.08	662.70	601.47	61.23	10.823				
8,700.00	7,182.16	8,582.91	7,099.34	32.82	32.79	-82.92	1,357.35	-217.09	663.84	599.33	64.51	10.291				
8,800.00	7,181.65	8,682.90	7,099.20	34.46	34.48	-82.96	1,457.32	-219.10	664.97	597.14	67.84	9.803				
8,900.00	7,181.14	8,782.90	7,099.05	36.13	36.19	-83.00	1,557.29	-221.11	666.11	594.89	71.22	9.353				
9,000.00	7,180.64	8,882.89	7,098.91	37.83	37.92	-83.05	1,657.26	-223.12	667.24	592.61	74.64	8.940				
9,100.00	7,180.13	8,982.88	7,098.76	39.54	39.66	-83.09	1,757.23	-225.13	668.38	590.28	78.09	8.559				
9,200.00	7,179.62	9,082.87	7,098.62	41.27	41.42	-83.13	1,857.21	-227.14	669.52	587.93	81.58	8.206				
9,300.00	7,179.11	9,182.86	7,098.47	43.01	43.20	-83.18	1,957.18	-229.15	670.65	585.55	85.10	7.881				
9,400.00	7,178.60	9,282.86	7,098.33	44.77	44.98	-83.22	2,057.15	-231.16	671.79	583.14	88.64	7.579				
9,500.00	7,178.09	9,382.85	7,098.18	46.54	46.78	-83.26	2,157.12	-233.17	672.93	580.72	92.21	7.298				
9,600.00	7,177.58	9,482.84	7,098.03	48.32	48.58	-83.30	2,257.09	-235.18	674.06	578.27	95.79	7.037				
9,700.00	7,177.07	9,582.83	7,097.89	50.11	50.40	-83.35	2,357.07	-237.19	675.20	575.81	99.39	6.793				
9,800.00	7,176.56	9,682.83	7,097.74	51.91	52.22	-83.39	2,457.04	-239.20	676.34	573.33	103.01	6.566				
9,900.00	7,176.05	9,782.82	7,097.60	53.72	54.04	-83.43	2,557.01	-241.20	677.48	570.83	106.64	6.353				
10,000.00	7,175.54	9,882.81	7,097.45	55.53	55.88	-83.47	2,656.98	-243.21	678.61	568.33	110.29	6.153				
10,100.00	7,175.03	9,982.80	7,097.31	57.35	57.72	-83.52	2,756.95	-245.22	679.75	565.81	113.94	5.966				
10,200.00	7,174.52	10,082.79	7,097.16	59.17	59.56	-83.56	2,856.93	-247.23	680.89	563.28	117.61	5.789				
10,300.00	7,174.01	10,182.79	7,097.02	61.00	61.41	-83.60	2,956.90	-249.24	682.03	560.75	121.29	5.623				
10,400.00	7,173.50	10,282.78	7,096.87	62.84	63.26	-83.64	3,056.87	-251.25	683.17	558.20	124.97	5.467				
10,500.00	7,172.99	10,382.77	7,096.73	64.68	65.11	-83.68	3,156.84	-253.26	684.31	555.65	128.66	5.319				
10,600.00	7,172.48	10,482.76	7,096.58	66.52	66.97	-83.72	3,256.81	-255.27	685.45	553.09	132.37	5.178				
10,700.00	7,171.97	10,582.76	7,096.44	68.37	68.83	-83.76	3,356.79	-257.28	686.59	550.52	136.07	5.046				
10,800.00	7,171.46	10,682.75	7,096.29	70.22	70.70	-83.80	3,456.76	-259.29	687.73	547.95	139.79	4.920				
10,900.00	7,170.95	10,782.74	7,096.15	72.08	72.57	-83.85	3,556.73	-261.30	688.87	545.37	143.51	4.800				
11,000.00	7,170.44	10,882.73	7,096.00	73.93	74.44	-83.89	3,656.70	-263.31	690.01	542.78	147.23	4.687				
11,100.00	7,169.93	10,982.73	7,095.86	75.79	76.31	-83.93	3,756.67	-265.32	691.16	540.19	150.96	4.578				
11,200.00	7,169.42	11,082.72	7,095.71	77.66	78.18	-83.97	3,856.65	-267.32	692.30	537.60	154.70	4.475				
11,300.00	7,168.90	11,182.71	7,095.57	79.52	80.06	-84.01	3,956.62	-269.33	693.44	535.00	158.44	4.377				

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

# Anadarko Petroleum Corp

## Anticollision Report

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well VONDERLAGE 29N-W31HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	16' RKB + GL' @ 4842.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_VONDERLAGE 13-31HZ PAD	<b>MD Reference:</b>	16' RKB + GL' @ 4842.00ft (Original Well Elev)
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	VONDERLAGE 29N-W31HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	VONDERLAGE 29N-W31HZ	<b>Database:</b>	edmp
<b>Reference Design:</b>	VONDERLAGE 29N-W31HZ (wp01)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.00 ft	
Survey Program: 0-MWD													Offset Well Error:		0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
11,400.00	7,168.39	11,282.70	7,095.42	81.39	81.94	-84.05	4,056.59	-271.34	694.58	532.40	162.18	4.283			
11,500.00	7,167.88	11,382.69	7,095.27	83.26	83.82	-84.09	4,156.56	-273.35	695.72	529.80	165.93	4.193			
11,600.00	7,167.37	11,482.69	7,095.13	85.13	85.70	-84.13	4,256.53	-275.36	696.87	527.19	169.68	4.107			
11,671.71	7,167.00	11,554.39	7,095.03	86.47	87.05	-84.16	4,328.22	-276.80	697.69	525.31	172.37	4.048 SF			

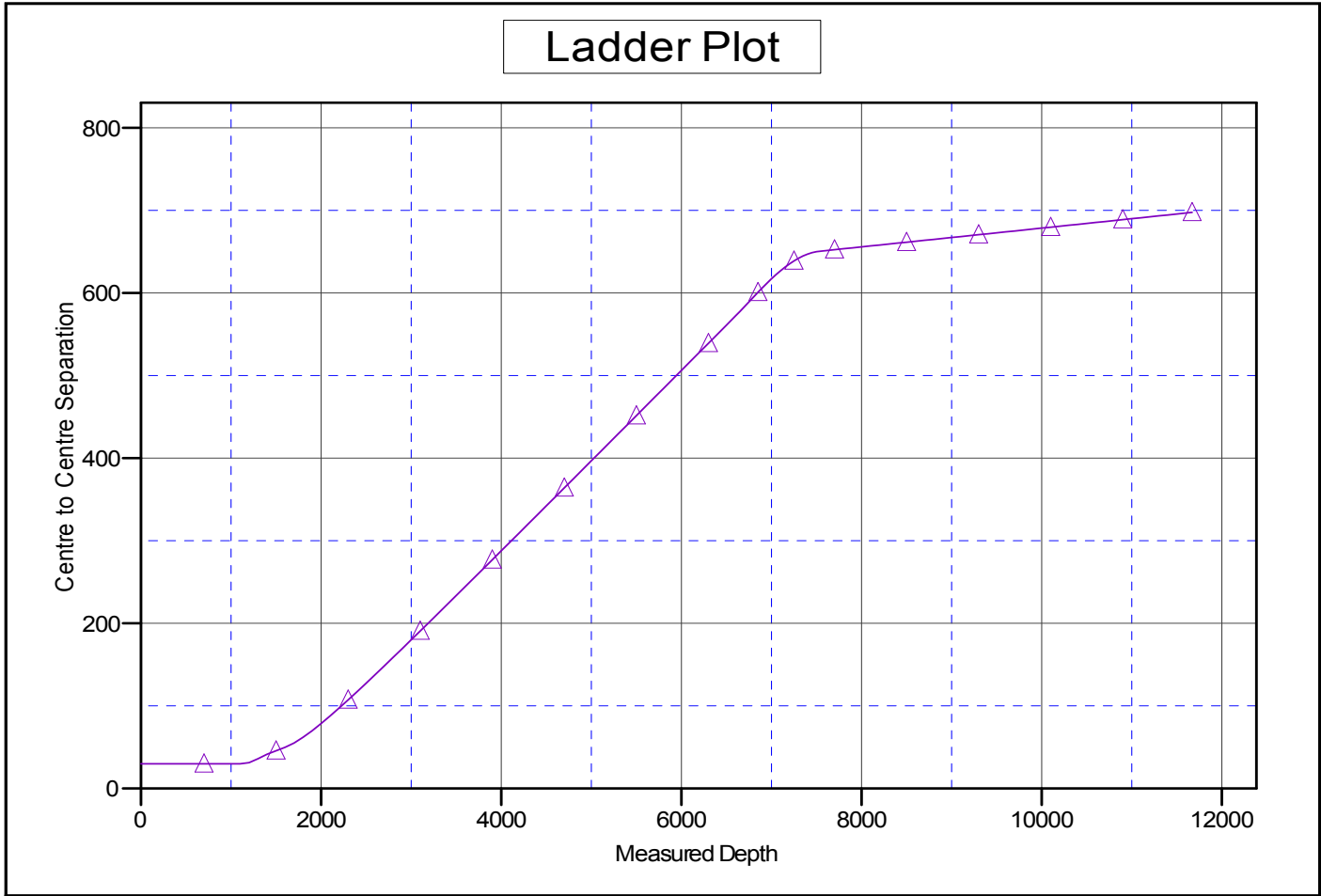
# Anadarko Petroleum Corp

## Anticollision Report

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well VONDERLAGE 29N-W31HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	16' RKB + GL' @ 4842.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_VONDERLAGE 13-31HZ PAD	<b>MD Reference:</b>	16' RKB + GL' @ 4842.00ft (Original Well Elev)
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	VONDERLAGE 29N-W31HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	VONDERLAGE 29N-W31HZ	<b>Database:</b>	edmp
<b>Reference Design:</b>	VONDERLAGE 29N-W31HZ (wp01)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to 16' RKB + GL' @ 4842.00ft (Original W  
 Offset Depths are relative to Offset Datum  
 Central Meridian is -105.500000

Coordinates are relative to: VONDERLAGE 29N-W31HZ  
 Coordinate System is US State Plane 1983, Colorado Northern Zone  
 Grid Convergence at Surface is: 0.43°



### LEGEND

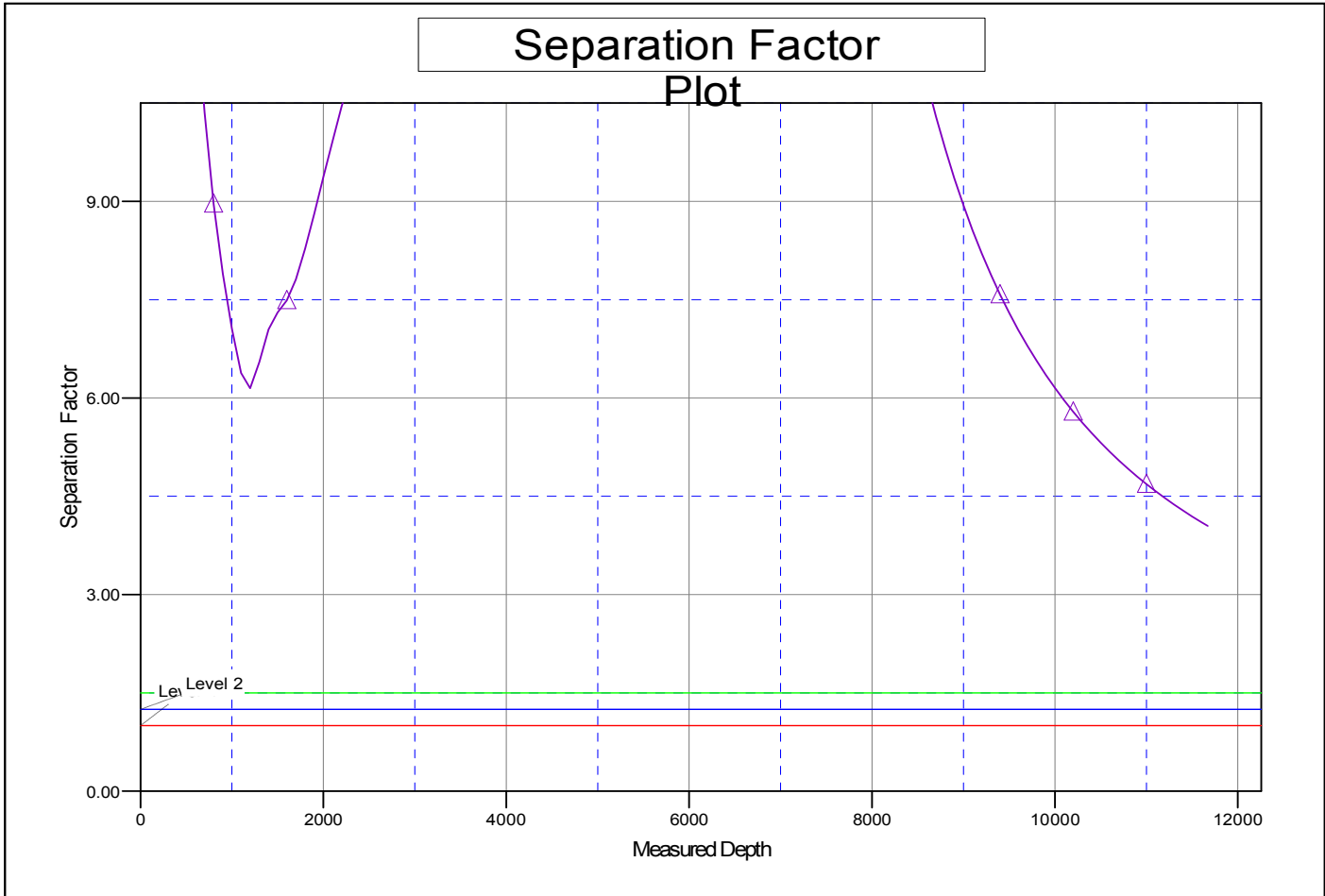
VONDERLAGE 30N-31HZ(wp01)V0

**Anadarko Petroleum Corp**  
Anticollision Report

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well VONDERLAGE 29N-W31HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	16' RKB + GL' @ 4842.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_VONDERLAGE 13-31HZ PAD	<b>MD Reference:</b>	16' RKB + GL' @ 4842.00ft (Original Well Elev)
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	VONDERLAGE 29N-W31HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	VONDERLAGE 29N-W31HZ	<b>Database:</b>	edmp
<b>Reference Design:</b>	VONDERLAGE 29N-W31HZ (wp01)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to 16' RKB + GL' @ 4842.00ft (Original W  
 Offset Depths are relative to Offset Datum  
 Central Meridian is -105.500000

Coordinates are relative to: VONDERLAGE 29N-W31HZ  
 Coordinate System is US State Plane 1983, Colorado Northern Zone  
 Grid Convergence at Surface is: 0.43°



LEGEND

VONDERLAGE 30N-31HZ(wp01) V0