

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_VONDERLAGE 14-31HZ

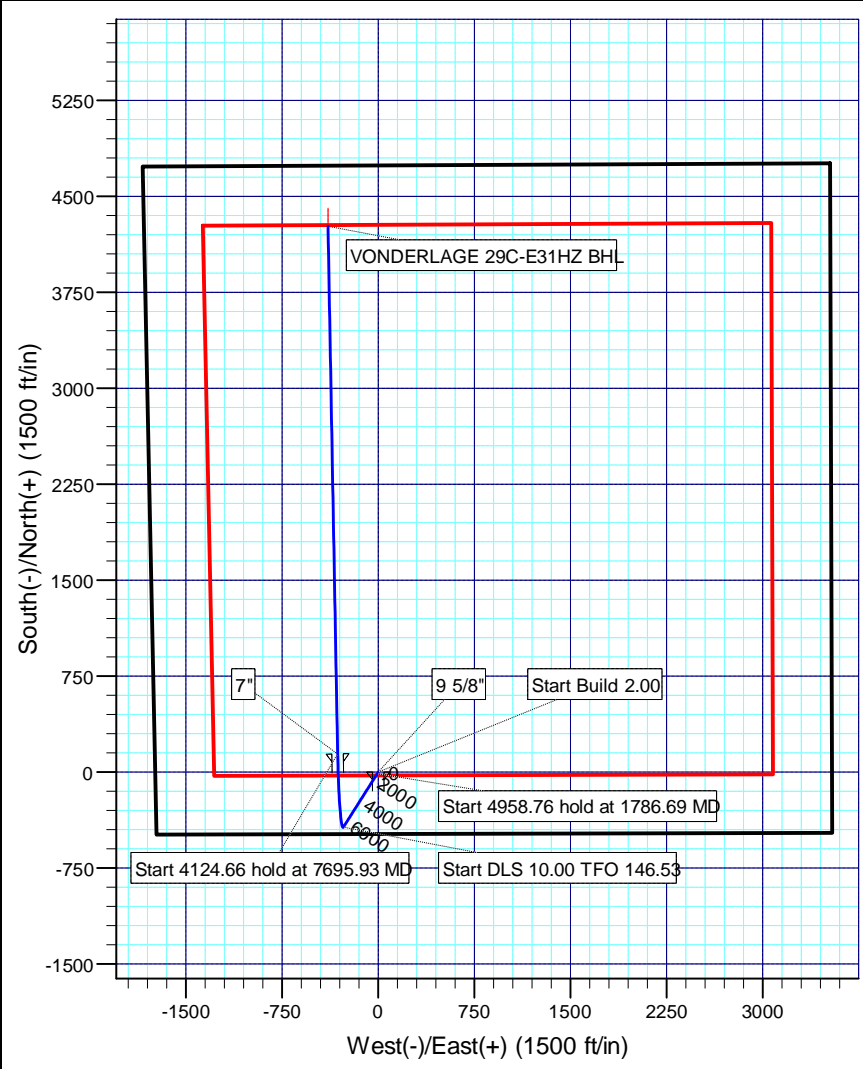
VONDERLAGE 29C-E31HZ

VONDERLAGE 29C-E31HZ

Plan: VONDERLAGE 29C-E31HZ (wp01)

Standard Planning Report

07 February, 2012



PROJECT DETAILS: COLORADO NORTHERN ZONE - 83

Site: WELD_VONDERLAGE 14-31HZ
 Well: VONDERLAGE 29C-E31HZ
 Wellbore: VONDERLAGE 29C-E31HZ
 Design: VONDERLAGE 29C-E31HZ (wp01)
 Latitude: 40.175335
 Longitude: -104.823272
 GL: 4843.00
 KB: 16' RKB + GL @ 4859.00ft (Original Well Elev)



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00	0.00	
3	1786.69	5.73	212.27	1786.22	-12.12	-7.65	2.00	212.27	-11.37	
4	6745.45	5.73	212.27	6720.16	-431.00	-272.19	0.00	0.00	-404.27	
5	7695.44	90.21	358.95	7340.00	141.33	-317.00	10.00	146.53	169.76	
6	7695.93	90.21	358.95	7340.00	141.82	-317.01	1.00	109.62	170.26	
7	11820.59	90.21	358.95	7325.00	4265.77	-392.26	0.00	0.00	4283.77	VONDERLAGE 29C-E31HZ BHL

DESIGN TARGET DETAILS

Name	TVD	+N-S	+E-W	Latitude	Longitude	Shape
VONDERLAGE 29C-E31HZ BHL	7325.00	4265.77	-392.26	40.187045	-104.824676	Point

WELL DETAILS: VONDERLAGE 29C-E31HZ

Ground Level:		4843.00			
+N-S	+E-W	North	East	Latitude	Longitude
0.00	0.00	1307438.98	3189098.51	40.175335	-104.823272

CASING DETAILS

TVD	MD	Name	Size
850.00	850.00	9 5/8"	9-5/8
7340.00	7695.44	7"	7

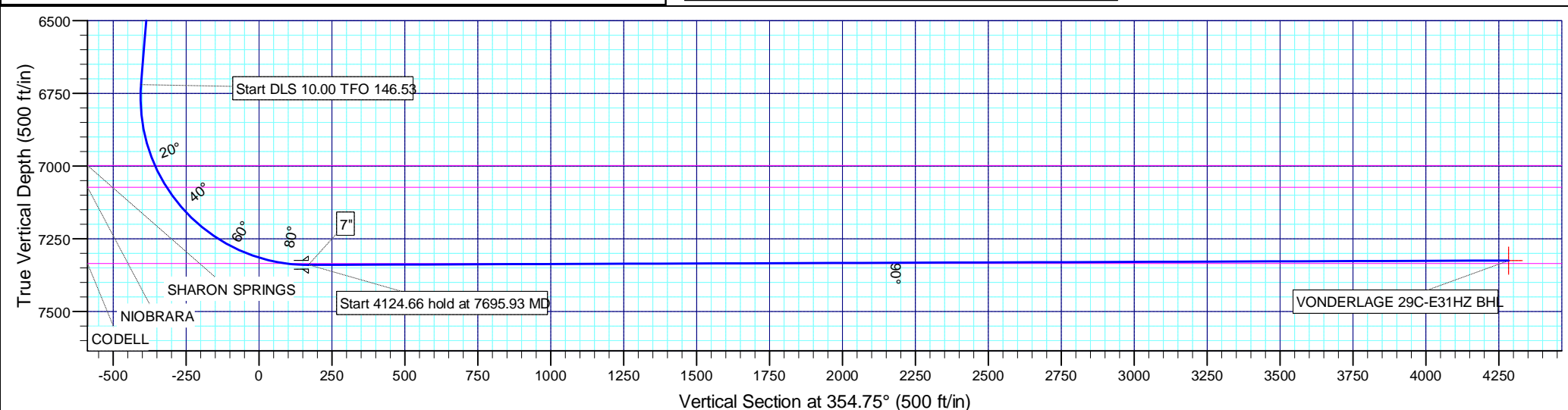
FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3918.00	3929.20	PARKMAN
4273.00	4285.98	SUSSEX
6998.00	7030.48	SHARON SPRINGS
7073.00	7115.61	NIORARA
7335.00	7617.50	CODELL



Azimuths to True North
 Magnetic North: 8.79°

Magnetic Field
 Strength: 52938.4snT
 Dip Angle: 66.84°
 Date: 2/7/2012
 Model: IGRF2010



Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well VONDERLAGE 29C-E31HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	16' RKB + GL @ 4859.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	16' RKB + GL @ 4859.00ft (Original Well Elev)
Site:	WELD_VONDERLAGE 14-31HZ	North Reference:	True
Well:	VONDERLAGE 29C-E31HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	VONDERLAGE 29C-E31HZ		
Design:	VONDERLAGE 29C-E31HZ (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_VONDERLAGE 14-31HZ			
Site Position:		Northing:	1,307,439.22 usft	Latitude:	40.175335
From:	Lat/Long	Easting:	3,189,128.41 usft	Longitude:	-104.823165
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.44 °

Well	VONDERLAGE 29C-E31HZ					
Well Position	+N/-S	-0.02 ft	Northing:	1,307,438.98 usft	Latitude:	40.175335
	+E/-W	-29.90 ft	Easting:	3,189,098.51 usft	Longitude:	-104.823272
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,843.00 ft

Wellbore	VONDERLAGE 29C-E31HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/7/2012	8.79	66.84	52,938

Design	VONDERLAGE 29C-E31HZ (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	354.75

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	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,786.69	5.73	212.27	1,786.22	-12.12	-7.65	2.00	2.00	0.00	212.27	
6,745.45	5.73	212.27	6,720.16	-431.00	-272.19	0.00	0.00	0.00	0.00	
7,695.44	90.21	358.95	7,340.00	141.33	-317.00	10.00	8.89	15.44	146.53	
7,695.93	90.21	358.95	7,340.00	141.82	-317.01	1.00	-0.34	0.94	109.62	
11,820.59	90.21	358.95	7,325.00	4,265.77	-392.26	0.00	0.00	0.00	0.00	VONDERLAGE 29C-I

Anadarko Petroleum Corp

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Company:	US ROCKIES REGION PLANNING	TVD Reference:	16' RKB + GL @ 4859.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	16' RKB + GL @ 4859.00ft (Original Well Elev)
Site:	WELD_VONDERLAGE 14-31HZ	North Reference:	True
Well:	VONDERLAGE 29C-E31HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	VONDERLAGE 29C-E31HZ		
Design:	VONDERLAGE 29C-E31HZ (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	
850.00	0.00	0.00	850.00	0.00	0.00	0.00	0.00	0.00	0.00	
9 5/8"										
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	
Start Build 2.00										
1,600.00	2.00	212.27	1,599.98	-1.48	-0.93	-1.38	2.00	2.00	0.00	
1,700.00	4.00	212.27	1,699.84	-5.90	-3.73	-5.53	2.00	2.00	0.00	
1,786.69	5.73	212.27	1,786.22	-12.12	-7.65	-11.37	2.00	2.00	0.00	
Start 4958.76 hold at 1786.69 MD										
1,800.00	5.73	212.27	1,799.46	-13.24	-8.36	-12.42	0.00	0.00	0.00	
1,900.00	5.73	212.27	1,898.95	-21.69	-13.70	-20.34	0.00	0.00	0.00	
2,000.00	5.73	212.27	1,998.45	-30.14	-19.03	-28.27	0.00	0.00	0.00	
2,100.00	5.73	212.27	2,097.95	-38.59	-24.37	-36.19	0.00	0.00	0.00	
2,200.00	5.73	212.27	2,197.45	-47.03	-29.70	-44.11	0.00	0.00	0.00	
2,300.00	5.73	212.27	2,296.95	-55.48	-35.04	-52.04	0.00	0.00	0.00	
2,400.00	5.73	212.27	2,396.45	-63.93	-40.37	-59.96	0.00	0.00	0.00	
2,500.00	5.73	212.27	2,495.95	-72.37	-45.71	-67.88	0.00	0.00	0.00	
2,600.00	5.73	212.27	2,595.45	-80.82	-51.04	-75.81	0.00	0.00	0.00	
2,700.00	5.73	212.27	2,694.95	-89.27	-56.38	-83.73	0.00	0.00	0.00	
2,800.00	5.73	212.27	2,794.45	-97.72	-61.71	-91.65	0.00	0.00	0.00	
2,900.00	5.73	212.27	2,893.95	-106.16	-67.04	-99.58	0.00	0.00	0.00	
3,000.00	5.73	212.27	2,993.45	-114.61	-72.38	-107.50	0.00	0.00	0.00	
3,100.00	5.73	212.27	3,092.95	-123.06	-77.71	-115.42	0.00	0.00	0.00	
3,200.00	5.73	212.27	3,192.45	-131.51	-83.05	-123.35	0.00	0.00	0.00	
3,300.00	5.73	212.27	3,291.95	-139.95	-88.38	-131.27	0.00	0.00	0.00	
3,400.00	5.73	212.27	3,391.45	-148.40	-93.72	-139.19	0.00	0.00	0.00	
3,500.00	5.73	212.27	3,490.95	-156.85	-99.05	-147.12	0.00	0.00	0.00	
3,600.00	5.73	212.27	3,590.45	-165.29	-104.39	-155.04	0.00	0.00	0.00	
3,700.00	5.73	212.27	3,689.95	-173.74	-109.72	-162.96	0.00	0.00	0.00	
3,800.00	5.73	212.27	3,789.45	-182.19	-115.06	-170.89	0.00	0.00	0.00	
3,900.00	5.73	212.27	3,888.95	-190.64	-120.39	-178.81	0.00	0.00	0.00	
3,929.20	5.73	212.27	3,918.00	-193.10	-121.95	-181.13	0.00	0.00	0.00	
PARKMAN										
4,000.00	5.73	212.27	3,988.45	-199.08	-125.73	-186.73	0.00	0.00	0.00	
4,100.00	5.73	212.27	4,087.95	-207.53	-131.06	-194.66	0.00	0.00	0.00	
4,200.00	5.73	212.27	4,187.45	-215.98	-136.40	-202.58	0.00	0.00	0.00	
4,285.98	5.73	212.27	4,273.00	-223.24	-140.98	-209.39	0.00	0.00	0.00	

Anadarko Petroleum Corp

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Company:	US ROCKIES REGION PLANNING	TVD Reference:	16' RKB + GL @ 4859.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	16' RKB + GL @ 4859.00ft (Original Well Elev)
Site:	WELD_VONDERLAGE 14-31HZ	North Reference:	True
Well:	VONDERLAGE 29C-E31HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	VONDERLAGE 29C-E31HZ		
Design:	VONDERLAGE 29C-E31HZ (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)
SUSSEX									
4,300.00	5.73	212.27	4,286.95	-224.43	-141.73	-210.50	0.00	0.00	0.00
4,400.00	5.73	212.27	4,386.45	-232.87	-147.06	-218.43	0.00	0.00	0.00
4,500.00	5.73	212.27	4,485.95	-241.32	-152.40	-226.35	0.00	0.00	0.00
4,600.00	5.73	212.27	4,585.45	-249.77	-157.73	-234.27	0.00	0.00	0.00
4,700.00	5.73	212.27	4,684.95	-258.22	-163.07	-242.20	0.00	0.00	0.00
4,800.00	5.73	212.27	4,784.45	-266.66	-168.40	-250.12	0.00	0.00	0.00
4,900.00	5.73	212.27	4,883.94	-275.11	-173.74	-258.04	0.00	0.00	0.00
5,000.00	5.73	212.27	4,983.44	-283.56	-179.07	-265.97	0.00	0.00	0.00
5,100.00	5.73	212.27	5,082.94	-292.00	-184.41	-273.89	0.00	0.00	0.00
5,200.00	5.73	212.27	5,182.44	-300.45	-189.74	-281.81	0.00	0.00	0.00
5,300.00	5.73	212.27	5,281.94	-308.90	-195.08	-289.74	0.00	0.00	0.00
5,400.00	5.73	212.27	5,381.44	-317.35	-200.41	-297.66	0.00	0.00	0.00
5,500.00	5.73	212.27	5,480.94	-325.79	-205.75	-305.58	0.00	0.00	0.00
5,600.00	5.73	212.27	5,580.44	-334.24	-211.08	-313.51	0.00	0.00	0.00
5,700.00	5.73	212.27	5,679.94	-342.69	-216.42	-321.43	0.00	0.00	0.00
5,800.00	5.73	212.27	5,779.44	-351.14	-221.75	-329.35	0.00	0.00	0.00
5,900.00	5.73	212.27	5,878.94	-359.58	-227.08	-337.28	0.00	0.00	0.00
6,000.00	5.73	212.27	5,978.44	-368.03	-232.42	-345.20	0.00	0.00	0.00
6,100.00	5.73	212.27	6,077.94	-376.48	-237.75	-353.12	0.00	0.00	0.00
6,200.00	5.73	212.27	6,177.44	-384.92	-243.09	-361.05	0.00	0.00	0.00
6,300.00	5.73	212.27	6,276.94	-393.37	-248.42	-368.97	0.00	0.00	0.00
6,400.00	5.73	212.27	6,376.44	-401.82	-253.76	-376.89	0.00	0.00	0.00
6,500.00	5.73	212.27	6,475.94	-410.27	-259.09	-384.82	0.00	0.00	0.00
6,600.00	5.73	212.27	6,575.44	-418.71	-264.43	-392.74	0.00	0.00	0.00
6,700.00	5.73	212.27	6,674.94	-427.16	-269.76	-400.66	0.00	0.00	0.00
6,745.45	5.73	212.27	6,720.16	-431.00	-272.19	-404.27	0.00	0.00	0.00
Start DLS 10.00 TFO 146.53									
6,800.00	3.23	280.87	6,774.57	-433.02	-275.15	-406.00	10.00	-4.59	125.75
6,900.00	11.12	342.63	6,873.81	-423.26	-280.81	-395.77	10.00	7.89	61.77
7,000.00	20.90	350.63	6,969.82	-396.39	-286.61	-368.48	10.00	9.78	7.99
7,030.48	23.91	351.79	6,998.00	-384.91	-288.37	-356.89	10.00	9.89	3.81
SHARON SPRINGS									
7,100.00	30.81	353.63	7,059.71	-353.23	-292.37	-324.98	10.00	9.93	2.65
7,115.61	32.37	353.94	7,073.00	-345.10	-293.25	-316.80	10.00	9.94	2.01
NIOBRARA									
7,200.00	40.77	355.27	7,140.72	-295.09	-297.92	-266.57	10.00	9.96	1.57
7,300.00	50.74	356.35	7,210.41	-223.74	-303.08	-195.04	10.00	9.97	1.08
7,400.00	60.72	357.17	7,266.65	-141.34	-307.71	-112.57	10.00	9.98	0.81
7,500.00	70.70	357.83	7,307.74	-50.39	-311.67	-21.64	10.00	9.98	0.67
7,600.00	80.68	358.42	7,332.43	46.33	-314.82	74.96	10.00	9.98	0.59
7,617.50	82.43	358.52	7,335.00	63.63	-315.28	92.23	10.00	9.98	0.56
CODELL									
7,695.44	90.21	358.95	7,340.00	141.33	-317.00	169.77	10.00	9.98	0.55
7"									
7,695.93	90.21	358.95	7,340.00	141.82	-317.01	170.26	1.01	-0.34	0.95
Start 4124.66 hold at 7695.93 MD									
7,700.00	90.21	358.95	7,339.98	145.89	-317.08	174.31	0.00	0.00	0.00
7,800.00	90.21	358.95	7,339.62	245.87	-318.91	274.04	0.00	0.00	0.00
7,900.00	90.21	358.95	7,339.26	345.86	-320.73	373.77	0.00	0.00	0.00
8,000.00	90.21	358.95	7,338.89	445.84	-322.56	473.50	0.00	0.00	0.00

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Planning Report

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Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	16' RKB + GL @ 4859.00ft (Original Well Elev)
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Wellbore:	VONDERLAGE 29C-E31HZ		
Design:	VONDERLAGE 29C-E31HZ (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)
8,100.00	90.21	358.95	7,338.53	545.82	-324.38	573.23	0.00	0.00	0.00
8,200.00	90.21	358.95	7,338.17	645.81	-326.21	672.96	0.00	0.00	0.00
8,300.00	90.21	358.95	7,337.80	745.79	-328.03	772.69	0.00	0.00	0.00
8,400.00	90.21	358.95	7,337.44	845.77	-329.85	872.42	0.00	0.00	0.00
8,500.00	90.21	358.95	7,337.07	945.75	-331.68	972.15	0.00	0.00	0.00
8,600.00	90.21	358.95	7,336.71	1,045.74	-333.50	1,071.88	0.00	0.00	0.00
8,700.00	90.21	358.95	7,336.35	1,145.72	-335.33	1,171.61	0.00	0.00	0.00
8,800.00	90.21	358.95	7,335.98	1,245.70	-337.15	1,271.34	0.00	0.00	0.00
8,900.00	90.21	358.95	7,335.62	1,345.68	-338.98	1,371.07	0.00	0.00	0.00
9,000.00	90.21	358.95	7,335.26	1,445.67	-340.80	1,470.80	0.00	0.00	0.00
9,100.00	90.21	358.95	7,334.89	1,545.65	-342.62	1,570.53	0.00	0.00	0.00
9,200.00	90.21	358.95	7,334.53	1,645.63	-344.45	1,670.26	0.00	0.00	0.00
9,300.00	90.21	358.95	7,334.17	1,745.62	-346.27	1,769.99	0.00	0.00	0.00
9,400.00	90.21	358.95	7,333.80	1,845.60	-348.10	1,869.72	0.00	0.00	0.00
9,500.00	90.21	358.95	7,333.44	1,945.58	-349.92	1,969.45	0.00	0.00	0.00
9,600.00	90.21	358.95	7,333.07	2,045.56	-351.75	2,069.18	0.00	0.00	0.00
9,700.00	90.21	358.95	7,332.71	2,145.55	-353.57	2,168.91	0.00	0.00	0.00
9,800.00	90.21	358.95	7,332.35	2,245.53	-355.39	2,268.64	0.00	0.00	0.00
9,900.00	90.21	358.95	7,331.98	2,345.51	-357.22	2,368.37	0.00	0.00	0.00
10,000.00	90.21	358.95	7,331.62	2,445.49	-359.04	2,468.10	0.00	0.00	0.00
10,100.00	90.21	358.95	7,331.26	2,545.48	-360.87	2,567.83	0.00	0.00	0.00
10,200.00	90.21	358.95	7,330.89	2,645.46	-362.69	2,667.56	0.00	0.00	0.00
10,300.00	90.21	358.95	7,330.53	2,745.44	-364.52	2,767.29	0.00	0.00	0.00
10,400.00	90.21	358.95	7,330.17	2,845.43	-366.34	2,867.02	0.00	0.00	0.00
10,500.00	90.21	358.95	7,329.80	2,945.41	-368.17	2,966.75	0.00	0.00	0.00
10,600.00	90.21	358.95	7,329.44	3,045.39	-369.99	3,066.48	0.00	0.00	0.00
10,700.00	90.21	358.95	7,329.07	3,145.37	-371.81	3,166.21	0.00	0.00	0.00
10,800.00	90.21	358.95	7,328.71	3,245.36	-373.64	3,265.93	0.00	0.00	0.00
10,900.00	90.21	358.95	7,328.35	3,345.34	-375.46	3,365.66	0.00	0.00	0.00
11,000.00	90.21	358.95	7,327.98	3,445.32	-377.29	3,465.39	0.00	0.00	0.00
11,100.00	90.21	358.95	7,327.62	3,545.30	-379.11	3,565.12	0.00	0.00	0.00
11,200.00	90.21	358.95	7,327.26	3,645.29	-380.94	3,664.85	0.00	0.00	0.00
11,300.00	90.21	358.95	7,326.89	3,745.27	-382.76	3,764.58	0.00	0.00	0.00
11,400.00	90.21	358.95	7,326.53	3,845.25	-384.58	3,864.31	0.00	0.00	0.00
11,500.00	90.21	358.95	7,326.17	3,945.23	-386.41	3,964.04	0.00	0.00	0.00
11,600.00	90.21	358.95	7,325.80	4,045.22	-388.23	4,063.77	0.00	0.00	0.00
11,700.00	90.21	358.95	7,325.44	4,145.20	-390.06	4,163.50	0.00	0.00	0.00
11,800.00	90.21	358.95	7,325.08	4,245.18	-391.88	4,263.23	0.00	0.00	0.00
11,820.59	90.21	358.95	7,325.00	4,265.77	-392.26	4,283.77	0.00	0.00	0.00
TD at 11820.59 - VONDERLAGE 29C-E31HZ BHL									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
VONDERLAGE 29C-E3	0.00	0.00	7,325.00	4,265.77	-392.26	1,311,701.62	3,188,673.71	40.187045	-104.824676
- plan hits target center									
- Point									

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well VONDERLAGE 29C-E31HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	16' RKB + GL @ 4859.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	16' RKB + GL @ 4859.00ft (Original Well Elev)
Site:	WELD_VONDERLAGE 14-31HZ	North Reference:	True
Well:	VONDERLAGE 29C-E31HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	VONDERLAGE 29C-E31HZ		
Design:	VONDERLAGE 29C-E31HZ (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	
7,695.44	7,340.00	7"	7	8-3/4	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,929.20	3,918.00	PARKMAN		0.00	
4,285.98	4,273.00	SUSSEX		0.00	
7,030.48	6,998.00	SHARON SPRINGS		0.00	
7,115.61	7,073.00	NIOBRARA		0.00	
7,617.50	7,335.00	CODELL		0.00	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
1,500.00	1,500.00	0.00	0.00	Start Build 2.00	
1,786.69	1,786.22	-12.12	-7.65	Start 4958.76 hold at 1786.69 MD	
6,745.45	6,720.16	-431.00	-272.19	Start DLS 10.00 TFO 146.53	
7,695.93	7,340.00	141.82	-317.01	Start 4124.66 hold at 7695.93 MD	
11,820.59	7,325.00	4,265.77	-392.26	TD at 11820.59	