



US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_VOGL 21-5

P_VOGL 21-5

P_VOGL 21-5X

Plan: P_VOGL 21-5X

Standard Planning Report

13 July, 2010

Database:	edm5000p	Local Co-ordinate Reference:	Well P_VOGL 21-5
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4846.0ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4846.0ft (Original Well Elev)
Site:	WELD_VOGL 21-5	North Reference:	True
Well:	P_VOGL 21-5	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_VOGL 21-5X		
Design:	P_VOGL 21-5X		

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_VOGL 21-5, SECTION 5 T2N R67W			
Site Position:		Northing:	1,306,901.60 ft	Latitude:	40° 10' 27.82500 N
From:	Lat/Long	Easting:	3,161,497.16 ft	Longitude:	104° 55' 19.41100 W
Position Uncertainty:	0.0 ft	Slot Radius:	0.000 in	Grid Convergence:	0.37 °

Well	P_VOGL 21-5					
Well Position	+N/-S	0.0 ft	Northing:	1,306,901.60 ft	Latitude:	40° 10' 27.82496 N
	+E/-W	0.0 ft	Easting:	3,161,497.16 ft	Longitude:	104° 55' 19.41100 W
Position Uncertainty		0.0 ft	Wellhead Elevation:		Ground Level:	4,830.0 ft

Wellbore	P_VOGL 21-5X				
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	7/13/2010	9.01	66.88	53,114

Design	P_VOGL 21-5X				
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Audit Notes:					
Version:		Phase:	PLAN	Tie On Depth:	4,292.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.0	0.0	0.0	113.19	

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
4,292.0	25.10	110.10	4,016.4	-546.5	1,300.8	0.00	0.00	0.00	0.00	
4,300.0	25.10	110.10	4,023.7	-547.7	1,303.9	0.00	0.00	0.00	0.00	
4,677.1	15.77	114.12	4,376.7	-596.2	1,426.1	2.50	-2.47	1.07	173.33	
7,259.5	15.77	114.12	6,861.8	-883.0	2,066.7	0.00	0.00	0.00	0.00	
8,310.9	0.00	0.00	7,900.0	-941.8	2,197.9	1.50	-1.50	0.00	180.00	PBHL_VOGL 21-5X

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Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4846.0ft (Original Well Elev)
Site:	WELD_VOGL 21-5	North Reference:	True
Well:	P_VOGL 21-5	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_VOGL 21-5X		
Design:	P_VOGL 21-5X		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
4,292.0	25.10	110.10	4,016.4	-546.5	1,300.8	1,410.9	0.00	0.00	0.00	
Start 8.0 hold at 4292.0 MD										
4,300.0	25.10	110.10	4,023.7	-547.7	1,303.9	1,414.3	0.00	0.00	0.00	
Start DLS 2.00 TFO 175.28										
4,400.0	22.62	110.86	4,115.1	-561.8	1,341.8	1,454.7	2.50	-2.48	0.76	
4,500.0	20.14	111.79	4,208.2	-575.1	1,375.8	1,491.1	2.50	-2.48	0.93	
4,600.0	17.67	112.96	4,302.8	-587.4	1,405.8	1,523.5	2.50	-2.47	1.18	
4,677.1	15.77	114.12	4,376.7	-596.2	1,426.1	1,545.7	2.50	-2.46	1.49	
4,682.7	15.77	114.12	4,382.0	-596.9	1,427.5	1,547.2	0.00	0.00	0.00	
SUSSEX										
4,700.0	15.77	114.12	4,398.7	-598.8	1,431.8	1,551.9	0.00	0.00	0.00	
4,800.0	15.77	114.12	4,494.9	-609.9	1,456.6	1,579.1	0.00	0.00	0.00	
4,895.0	15.77	114.12	4,586.4	-620.4	1,480.2	1,604.9	0.00	0.00	0.00	
Start 3406.3 hold at 4895.0 MD										
4,900.0	15.77	114.12	4,591.2	-621.0	1,481.4	1,606.2	0.00	0.00	0.00	
5,000.0	15.77	114.12	4,687.4	-632.1	1,506.2	1,633.4	0.00	0.00	0.00	
5,100.0	15.77	114.12	4,783.6	-643.2	1,531.0	1,660.6	0.00	0.00	0.00	
5,126.4	15.77	114.12	4,809.0	-646.1	1,537.5	1,667.8	0.00	0.00	0.00	
SHANNON										
5,200.0	15.77	114.12	4,879.9	-654.3	1,555.8	1,687.8	0.00	0.00	0.00	
5,300.0	15.77	114.12	4,976.1	-665.4	1,580.6	1,714.9	0.00	0.00	0.00	
5,400.0	15.77	114.12	5,072.3	-676.5	1,605.4	1,742.1	0.00	0.00	0.00	
5,500.0	15.77	114.12	5,168.6	-687.6	1,630.2	1,769.3	0.00	0.00	0.00	
5,600.0	15.77	114.12	5,264.8	-698.7	1,655.0	1,796.5	0.00	0.00	0.00	
5,700.0	15.77	114.12	5,361.0	-709.8	1,679.8	1,823.6	0.00	0.00	0.00	
5,800.0	15.77	114.12	5,457.3	-720.9	1,704.7	1,850.8	0.00	0.00	0.00	
5,900.0	15.77	114.12	5,553.5	-732.0	1,729.5	1,878.0	0.00	0.00	0.00	
6,000.0	15.77	114.12	5,649.8	-743.1	1,754.3	1,905.2	0.00	0.00	0.00	
6,100.0	15.77	114.12	5,746.0	-754.3	1,779.1	1,932.3	0.00	0.00	0.00	
6,200.0	15.77	114.12	5,842.2	-765.4	1,803.9	1,959.5	0.00	0.00	0.00	
6,300.0	15.77	114.12	5,938.5	-776.5	1,828.7	1,986.7	0.00	0.00	0.00	
6,400.0	15.77	114.12	6,034.7	-787.6	1,853.5	2,013.9	0.00	0.00	0.00	
6,500.0	15.77	114.12	6,130.9	-798.7	1,878.3	2,041.0	0.00	0.00	0.00	
6,600.0	15.77	114.12	6,227.2	-809.8	1,903.1	2,068.2	0.00	0.00	0.00	
6,700.0	15.77	114.12	6,323.4	-820.9	1,927.9	2,095.4	0.00	0.00	0.00	
6,800.0	15.77	114.12	6,419.6	-832.0	1,952.7	2,122.6	0.00	0.00	0.00	
6,900.0	15.77	114.12	6,515.9	-843.1	1,977.5	2,149.7	0.00	0.00	0.00	
7,000.0	15.77	114.12	6,612.1	-854.2	2,002.3	2,176.9	0.00	0.00	0.00	
7,100.0	15.77	114.12	6,708.3	-865.3	2,027.1	2,204.1	0.00	0.00	0.00	
7,200.0	15.77	114.12	6,804.6	-876.4	2,051.9	2,231.3	0.00	0.00	0.00	
7,259.5	15.77	114.12	6,861.8	-883.0	2,066.7	2,247.4	0.00	0.00	0.00	
7,300.0	15.16	114.12	6,900.9	-887.4	2,076.6	2,258.2	1.50	-1.50	0.00	
7,400.0	13.66	114.12	6,997.7	-897.6	2,099.3	2,283.1	1.50	-1.50	0.00	
7,466.0	12.67	114.12	7,062.0	-903.8	2,113.0	2,298.2	1.50	-1.50	0.00	
NIOBRARA										
7,500.0	12.16	114.12	7,095.2	-906.7	2,119.7	2,305.5	1.50	-1.50	0.00	
7,600.0	10.66	114.12	7,193.2	-914.8	2,137.7	2,325.3	1.50	-1.50	0.00	
7,700.0	9.16	114.12	7,291.7	-921.9	2,153.5	2,342.5	1.50	-1.50	0.00	
7,730.7	8.70	114.12	7,322.0	-923.8	2,157.8	2,347.2	1.50	-1.50	0.00	
CODELL										
7,800.0	7.66	114.12	7,390.6	-927.8	2,166.8	2,357.1	1.50	-1.50	0.00	
7,900.0	6.16	114.12	7,489.9	-932.8	2,177.8	2,369.1	1.50	-1.50	0.00	
8,000.0	4.66	114.12	7,589.5	-936.6	2,186.4	2,378.6	1.50	-1.50	0.00	

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Well:	P_VOGL 21-5	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_VOGL 21-5X		
Design:	P_VOGL 21-5X		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
8,100.0	3.16	114.12	7,689.2	-939.4	2,192.6	2,385.4	1.50	-1.50	0.00	
8,160.8	2.25	114.12	7,750.0	-940.6	2,195.3	2,388.3	1.50	-1.50	0.00	
J SAND										
8,200.0	1.66	114.12	7,789.1	-941.1	2,196.5	2,389.6	1.50	-1.50	0.00	
8,300.0	0.16	114.12	7,889.1	-941.8	2,197.9	2,391.2	1.50	-1.50	0.00	
8,301.4	0.14	114.12	7,890.5	-941.8	2,197.9	2,391.2	1.50	-1.50	0.00	
TD at 8301.4										
8,310.9	0.00	0.00	7,900.0	-941.8	2,197.9	2,391.2	1.50	-1.50	0.00	
PBHL_VOGL 21-5X										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude	
- hit/miss target										
- Shape										
PBHL_VOGL 21-5X	0.00	0.00	7,900.0	-941.8	2,197.9	1,305,974.16	3,163,701.20	40° 10' 18.51693 N	04° 54' 51.09586 W	
- plan hits target center										
- Circle (radius 50.0)										

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,682.7	4,382.0	SUSSEX		0.00		
5,126.4	4,809.0	SHANNON		0.00		
7,466.0	7,062.0	NIOBRARA		0.00		
7,730.7	7,322.0	CODELL		0.00		
8,160.8	7,750.0	J SAND		0.00		

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment	
4,292.0	4,016.4	-546.5	1,300.8	Start 8.0 hold at 4292.0 MD	
4,300.0	4,023.7	-547.7	1,303.9	Start DLS 2.00 TFO 175.28	
4,895.0	4,584.7	-619.5	1,485.4	Start 3406.3 hold at 4895.0 MD	
8,301.4	7,900.0	-941.8	2,197.9	TD at 8301.4	