



# **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83**

**WELD\_VOGL 3 PAD**

**P\_VOGL 21-5**

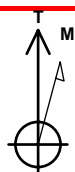
**P\_VOGL 21-5**

**Plan: PLAN #1 12-28-09 RHS**

## **Standard Planning Report**

**28 December, 2009**





Azimuths to True North  
Magnetic North: 9.13°  
Magnetic Field  
Strength: 53202.5nT  
Dip Angle: 66.91°  
Date: 9/1/2009  
Model: IGRF200510

#### WELL DETAILS: P\_VOGL 21-5

+N/-S	+E/-W	Northing	Easting	Ground Level:	Latitude	Longitude	Slot
0.00	0.00	1306899.49	3161499.58	4830.00	40° 10' 27.804 N	104° 55' 19.380 W	

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3846.00	4148.14	PARKMAN
4382.00	4759.82	SUSSEX
4809.00	5247.11	SHANNON
7062.00	7660.36	NIO A
7322.00	7920.36	CODELL
7750.00	8348.36	JSAND

#### SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
750.00	0.00	0.00	750.00	0.00	0.00	0.00	0.00	0.00	
2190.18	28.80	113.53	2130.28	-141.52	324.96	2.00	113.53	354.44	
6058.18	28.80	113.53	5519.72	-885.64	2033.59	0.00	0.00	2218.08	
7498.36	0.00	0.00	6900.00	-1027.16	2358.55	2.00	180.00	2572.52	
8498.36	0.00	0.00	7900.00	-1027.16	2358.55	0.00	0.00	2572.52	PBHL_VOGL 21-5(1330 FNL 2580 FEL)50' TGT RAD

#### CASING DETAILS

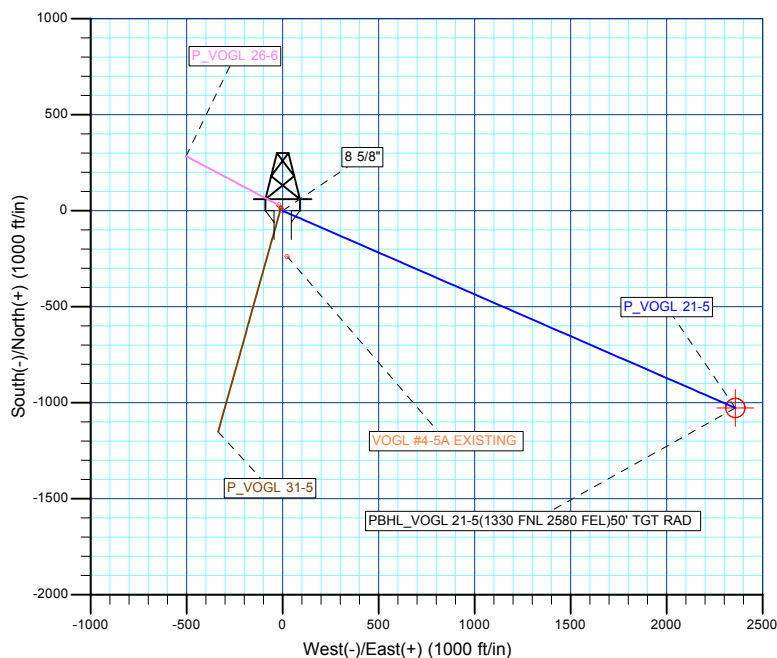
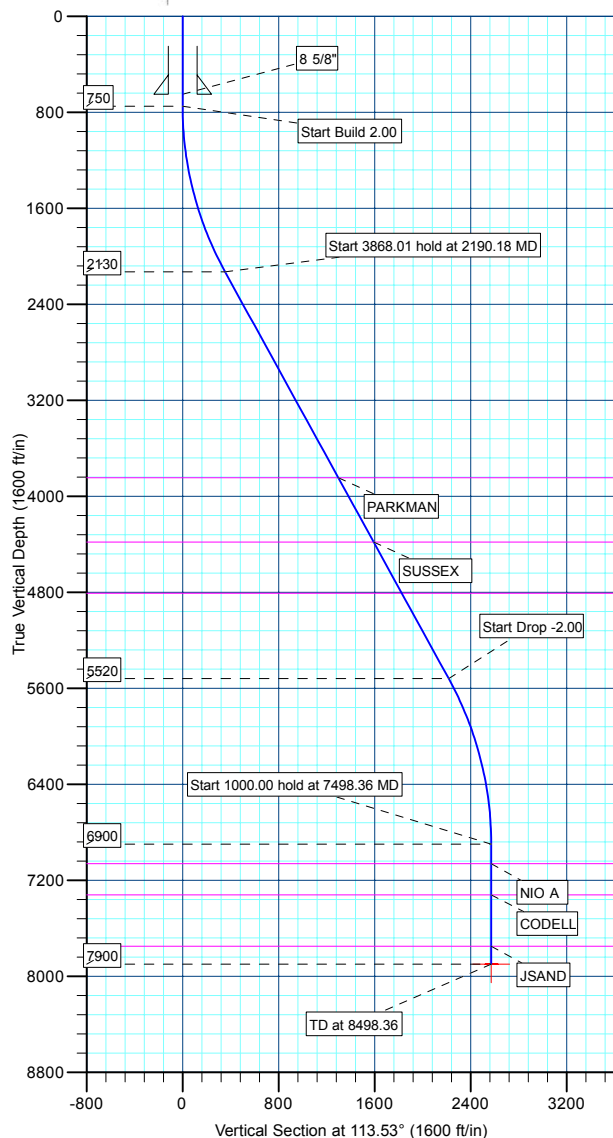
TVD	MD	Name	Size
650.00	650.00	8 5/8"	8.62

#### WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL	7900.00	-1027.16	2358.55	1305887.72	3163864.7840° 10'	17.652 104° 54'	48.996 W	Circle (Radius: 50.00)



KB ELEV: WELL @ 4845.00ft (Original Well Elev)  
GRD ELEV: 4830.00



<b>Database:</b>	EDM 2003.21 Single User Db	<b>Local Co-ordinate Reference:</b>	Well P_VOGL 21-5
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	WELL @ 4845.00ft (Original Well Elev)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	WELL @ 4845.00ft (Original Well Elev)
<b>Site:</b>	WELD_VOGL 3 PAD	<b>North Reference:</b>	True
<b>Well:</b>	P_VOGL 21-5	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	P_VOGL 21-5		
<b>Design:</b>	PLAN #1 12-28-09 RHS		

<b>Project</b>	COLORADO NORTHERN ZONE - 83, KERR MCGEE OIL & GAS ONSHORE LP		
<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		

Site		WELD_VOGL 3 PAD, SECTION 5 T2N R67W			
Site Position:		Northing:	1,306,899.49 ft	Latitude:	40° 10' 27.804 N
From:	Lat/Long	Easting:	3,161,499.58 ft	Longitude:	104° 55' 19.380 W
Position Uncertainty:	0.00 ft	Slot Radius:	in	Grid Convergence:	0.37 °

Well	P_VOGL 21-5,					
Well Position	+N/-S	0.00 ft	Northing:	1,306,899.49 ft	Latitude:	40° 10' 27.804 N
	+E/-W	0.00 ft	Easting:	3,161,499.58 ft	Longitude:	104° 55' 19.380 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,830.00 ft

<b>Wellbore</b>	P_VOGL 21-5				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF200510	9/1/2009	9.13	66.91	53,203

<b>Design</b>	PLAN #1 12-28-09 RHS			
<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	113.53

<b>Plan Sections</b>										
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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
750.00	0.00	0.00	750.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,190.18	28.80	113.53	2,130.28	-141.52	324.96	2.00	2.00	0.00	113.53	
6,058.18	28.80	113.53	5,519.72	-885.64	2,033.59	0.00	0.00	0.00	0.00	
7,498.36	0.00	0.00	6,900.00	-1,027.16	2,358.55	2.00	-2.00	0.00	180.00	
8,498.36	0.00	0.00	7,900.00	-1,027.16	2,358.55	0.00	0.00	0.00	0.00	PBHL_VOGL 21-5(

<b>Database:</b>	EDM 2003.21 Single User Db	<b>Local Co-ordinate Reference:</b>	Well P_VOGL 21-5
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	WELL @ 4845.00ft (Original Well Elev)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	WELL @ 4845.00ft (Original Well Elev)
<b>Site:</b>	WELD_VOGL 3 PAD	<b>North Reference:</b>	True
<b>Well:</b>	P_VOGL 21-5	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	P_VOGL 21-5		
<b>Design:</b>	PLAN #1 12-28-09 RHS		

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)
<b>Start Build 2.00</b>									
750.00	0.00	0.00	750.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	1.00	113.53	800.00	-0.17	0.40	0.44	2.00	2.00	0.00
900.00	3.00	113.53	899.93	-1.57	3.60	3.93	2.00	2.00	0.00
1,000.00	5.00	113.53	999.68	-4.35	9.99	10.90	2.00	2.00	0.00
1,100.00	7.00	113.53	1,099.13	-8.53	19.58	21.35	2.00	2.00	0.00
1,200.00	9.00	113.53	1,198.15	-14.08	32.34	35.27	2.00	2.00	0.00
1,300.00	11.00	113.53	1,296.63	-21.02	48.26	52.63	2.00	2.00	0.00
1,400.00	13.00	113.53	1,394.44	-29.32	67.32	73.42	2.00	2.00	0.00
1,500.00	15.00	113.53	1,491.46	-38.98	89.50	97.62	2.00	2.00	0.00
1,600.00	17.00	113.53	1,587.58	-49.98	114.77	125.18	2.00	2.00	0.00
1,700.00	19.00	113.53	1,682.68	-62.32	143.10	156.08	2.00	2.00	0.00
1,800.00	21.00	113.53	1,776.65	-75.97	174.45	190.28	2.00	2.00	0.00
1,900.00	23.00	113.53	1,869.36	-90.93	208.80	227.74	2.00	2.00	0.00
2,000.00	25.00	113.53	1,960.71	-107.17	246.08	268.41	2.00	2.00	0.00
2,100.00	27.00	113.53	2,050.59	-124.67	286.27	312.24	2.00	2.00	0.00
<b>Start 3868.01 hold at 2190.18 MD</b>									
2,190.18	28.80	113.53	2,130.28	-141.52	324.96	354.44	2.00	2.00	0.00
2,200.00	28.80	113.53	2,138.89	-143.41	329.30	359.17	0.00	0.00	0.00
2,300.00	28.80	113.53	2,226.51	-162.65	373.47	407.35	0.00	0.00	0.00
2,400.00	28.80	113.53	2,314.14	-181.89	417.65	455.53	0.00	0.00	0.00
2,500.00	28.80	113.53	2,401.77	-201.13	461.82	503.72	0.00	0.00	0.00
2,600.00	28.80	113.53	2,489.40	-220.36	505.99	551.90	0.00	0.00	0.00
2,700.00	28.80	113.53	2,577.02	-239.60	550.17	600.08	0.00	0.00	0.00
2,800.00	28.80	113.53	2,664.65	-258.84	594.34	648.26	0.00	0.00	0.00
2,900.00	28.80	113.53	2,752.28	-278.08	638.51	696.44	0.00	0.00	0.00
3,000.00	28.80	113.53	2,839.91	-297.31	682.69	744.62	0.00	0.00	0.00
3,100.00	28.80	113.53	2,927.53	-316.55	726.86	792.80	0.00	0.00	0.00
3,200.00	28.80	113.53	3,015.16	-335.79	771.03	840.98	0.00	0.00	0.00
3,300.00	28.80	113.53	3,102.79	-355.03	815.21	889.16	0.00	0.00	0.00
3,400.00	28.80	113.53	3,190.42	-374.27	859.38	937.34	0.00	0.00	0.00
3,500.00	28.80	113.53	3,278.05	-393.50	903.55	985.52	0.00	0.00	0.00
3,600.00	28.80	113.53	3,365.67	-412.74	947.73	1,033.70	0.00	0.00	0.00
3,700.00	28.80	113.53	3,453.30	-431.98	991.90	1,081.88	0.00	0.00	0.00
3,800.00	28.80	113.53	3,540.93	-451.22	1,036.07	1,130.07	0.00	0.00	0.00
3,900.00	28.80	113.53	3,628.56	-470.45	1,080.25	1,178.25	0.00	0.00	0.00
4,000.00	28.80	113.53	3,716.18	-489.69	1,124.42	1,226.43	0.00	0.00	0.00
4,100.00	28.80	113.53	3,803.81	-508.93	1,168.60	1,274.61	0.00	0.00	0.00
<b>PARKMAN</b>									
4,148.14	28.80	113.53	3,846.00	-518.19	1,189.86	1,297.80	0.00	0.00	0.00
4,200.00	28.80	113.53	3,891.44	-528.17	1,212.77	1,322.79	0.00	0.00	0.00
4,300.00	28.80	113.53	3,979.07	-547.41	1,256.94	1,370.97	0.00	0.00	0.00
4,400.00	28.80	113.53	4,066.69	-566.64	1,301.12	1,419.15	0.00	0.00	0.00
4,500.00	28.80	113.53	4,154.32	-585.88	1,345.29	1,467.33	0.00	0.00	0.00
4,600.00	28.80	113.53	4,241.95	-605.12	1,389.46	1,515.51	0.00	0.00	0.00
4,700.00	28.80	113.53	4,329.58	-624.36	1,433.64	1,563.69	0.00	0.00	0.00
<b>SUSSEX</b>									
4,759.82	28.80	113.53	4,382.00	-635.87	1,460.06	1,592.52	0.00	0.00	0.00
4,800.00	28.80	113.53	4,417.21	-643.59	1,477.81	1,611.87	0.00	0.00	0.00
4,900.00	28.80	113.53	4,504.83	-662.83	1,521.98	1,660.05	0.00	0.00	0.00
5,000.00	28.80	113.53	4,592.46	-682.07	1,566.16	1,708.23	0.00	0.00	0.00
5,100.00	28.80	113.53	4,680.09	-701.31	1,610.33	1,756.42	0.00	0.00	0.00
5,200.00	28.80	113.53	4,767.72	-720.55	1,654.50	1,804.60	0.00	0.00	0.00

<b>Database:</b>	EDM 2003.21 Single User Db	<b>Local Co-ordinate Reference:</b>	Well P_VOGL 21-5
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	WELL @ 4845.00ft (Original Well Elev)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	WELL @ 4845.00ft (Original Well Elev)
<b>Site:</b>	WELD_VOGL 3 PAD	<b>North Reference:</b>	True
<b>Well:</b>	P_VOGL 21-5	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	P_VOGL 21-5		
<b>Design:</b>	PLAN #1 12-28-09 RHS		

**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)
<b>SHANNON</b>									
5,247.11	28.80	113.53	4,809.00	-729.61	1,675.31	1,827.30	0.00	0.00	0.00
5,300.00	28.80	113.53	4,855.34	-739.78	1,698.68	1,852.78	0.00	0.00	0.00
5,400.00	28.80	113.53	4,942.97	-759.02	1,742.85	1,900.96	0.00	0.00	0.00
5,500.00	28.80	113.53	5,030.60	-778.26	1,787.02	1,949.14	0.00	0.00	0.00
5,600.00	28.80	113.53	5,118.23	-797.50	1,831.20	1,997.32	0.00	0.00	0.00
5,700.00	28.80	113.53	5,205.86	-816.74	1,875.37	2,045.50	0.00	0.00	0.00
5,800.00	28.80	113.53	5,293.48	-835.97	1,919.54	2,093.68	0.00	0.00	0.00
5,900.00	28.80	113.53	5,381.11	-855.21	1,963.72	2,141.86	0.00	0.00	0.00
6,000.00	28.80	113.53	5,468.74	-874.45	2,007.89	2,190.04	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
6,058.18	28.80	113.53	5,519.72	-885.64	2,033.59	2,218.08	0.00	0.00	0.00
6,100.00	27.97	113.53	5,556.51	-893.58	2,051.82	2,237.95	2.00	-2.00	0.00
6,200.00	25.97	113.53	5,645.63	-911.69	2,093.39	2,283.30	2.00	-2.00	0.00
6,300.00	23.97	113.53	5,736.28	-928.54	2,132.09	2,325.51	2.00	-2.00	0.00
6,400.00	21.97	113.53	5,828.35	-944.12	2,167.86	2,364.53	2.00	-2.00	0.00
6,500.00	19.97	113.53	5,921.73	-958.40	2,200.67	2,400.31	2.00	-2.00	0.00
6,600.00	17.97	113.53	6,016.29	-971.38	2,230.47	2,432.81	2.00	-2.00	0.00
6,700.00	15.97	113.53	6,111.93	-983.03	2,257.22	2,461.99	2.00	-2.00	0.00
6,800.00	13.97	113.53	6,208.54	-993.34	2,280.90	2,487.82	2.00	-2.00	0.00
6,900.00	11.97	113.53	6,305.98	-1,002.30	2,301.47	2,510.25	2.00	-2.00	0.00
7,000.00	9.97	113.53	6,404.15	-1,009.90	2,318.91	2,529.28	2.00	-2.00	0.00
7,100.00	7.97	113.53	6,502.92	-1,016.12	2,333.20	2,544.86	2.00	-2.00	0.00
7,200.00	5.97	113.53	6,602.18	-1,020.97	2,344.32	2,556.99	2.00	-2.00	0.00
7,300.00	3.97	113.53	6,701.80	-1,024.42	2,352.26	2,565.65	2.00	-2.00	0.00
7,400.00	1.97	113.53	6,801.66	-1,026.49	2,357.00	2,570.83	2.00	-2.00	0.00
<b>Start 1000.00 hold at 7498.36 MD</b>									
7,498.36	0.00	0.00	6,900.00	-1,027.16	2,358.55	2,572.52	2.00	-2.00	-115.43
7,500.00	0.00	0.00	6,901.64	-1,027.16	2,358.55	2,572.52	0.00	0.00	0.00
7,600.00	0.00	0.00	7,001.64	-1,027.16	2,358.55	2,572.52	0.00	0.00	0.00
<b>NIO A</b>									
7,660.36	0.00	0.00	7,062.00	-1,027.16	2,358.55	2,572.52	0.00	0.00	0.00
7,700.00	0.00	0.00	7,101.64	-1,027.16	2,358.55	2,572.52	0.00	0.00	0.00
7,800.00	0.00	0.00	7,201.64	-1,027.16	2,358.55	2,572.52	0.00	0.00	0.00
7,900.00	0.00	0.00	7,301.64	-1,027.16	2,358.55	2,572.52	0.00	0.00	0.00
<b>CODELL</b>									
7,920.36	0.00	0.00	7,322.00	-1,027.16	2,358.55	2,572.52	0.00	0.00	0.00
8,000.00	0.00	0.00	7,401.64	-1,027.16	2,358.55	2,572.52	0.00	0.00	0.00
8,100.00	0.00	0.00	7,501.64	-1,027.16	2,358.55	2,572.52	0.00	0.00	0.00
8,200.00	0.00	0.00	7,601.64	-1,027.16	2,358.55	2,572.52	0.00	0.00	0.00
8,300.00	0.00	0.00	7,701.64	-1,027.16	2,358.55	2,572.52	0.00	0.00	0.00
<b>JSAND</b>									
8,348.36	0.00	0.00	7,750.00	-1,027.16	2,358.55	2,572.52	0.00	0.00	0.00
8,400.00	0.00	0.00	7,801.64	-1,027.16	2,358.55	2,572.52	0.00	0.00	0.00
<b>PBHL_VOGL 21-5(1330 FNL 2580 FEL)50' TGT RAD</b>									
8,498.36	0.00	0.00	7,900.00	-1,027.16	2,358.55	2,572.52	0.00	0.00	0.00

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<b>Site:</b>	WELD_VOGL 3 PAD	<b>North Reference:</b>	True
<b>Well:</b>	P_VOGL 21-5	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	P_VOGL 21-5		
<b>Design:</b>	PLAN #1 12-28-09 RHS		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
PBHL_VOGL 21-5(13 - plan hits target center - Circle (radius 50.00)	0.00	0.00	7,900.00	-1,027.16	2,358.55	1,305,887.72	3,163,864.78	40° 10' 17.652 N	104° 54' 48.996 W

Casing Points					
	Measured Depth	Vertical Depth		Casing Diameter	Hole Diameter
	(ft)	(ft)	Name	(in)	(in)
	650.00	650.00	8 5/8"	8.62	11.00

Formations						
	Measured Depth	Vertical Depth			Dip	Dip Direction
	(ft)	(ft)	Name	Lithology	(°)	(°)
	4,148.14	3,846.00	PARKMAN			
	4,759.82	4,382.00	SUSSEX			
	5,247.11	4,809.00	SHANNON			
	7,660.36	7,062.00	NIO A			
	7,920.36	7,322.00	CODELL			
	8,348.36	7,750.00	JSAND			

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	
750.00	750.00	0.00	0.00	Start Build 2.00
2,190.18	2,130.28	-141.52	324.96	Start 3868.01 hold at 2190.18 MD
6,058.18	5,519.72	-885.64	2,033.59	Start Drop -2.00
7,498.36	6,900.00	-1,027.16	2,358.55	Start 1000.00 hold at 7498.36 MD
8,498.36	7,900.00	-1,027.16	2,358.55	TD at 8498.36



# **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83  
WELD\_VOGL 3 PAD  
P\_VOGL 21-5**

**P\_VOGL 21-5  
PLAN #1 12-28-09 RHS**

## **Anticollision Report**

**28 December, 2009**



<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_VOGL 21-5
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4845.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_VOGL 3 PAD	<b>MD Reference:</b>	WELL @ 4845.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_VOGL 21-5	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_VOGL 21-5	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 12-28-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	PLAN #1 12-28-09 RHS		
<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>	0.00 to 20,000.00ft	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 10,000.00ft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma		

<b>Survey Tool Program</b>	<b>Date</b> 12/28/2009			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.00	8,498.36	PLAN #1 12-28-09 RHS (P_VOGL 21-5)	MWD	MWD - Standard

<b>Summary</b>						
<b>Site Name</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>Offset Well - Wellbore - Design</b>						
WELD_VOGL 3 PAD						
P_VOGL 26-6 - P_VOGL 26-6 - PLAN #1 12-28-09 RHS	750.00	750.00	35.08	31.97	11.270	CC, ES
P_VOGL 26-6 - P_VOGL 26-6 - PLAN #1 12-28-09 RHS	800.00	799.45	35.84	32.51	10.785	SF
P_VOGL 31-5 - P_VOGL 31-5 - PLAN #1 12-28-09 RHS	750.00	750.00	16.80	13.69	5.398	CC
P_VOGL 31-5 - P_VOGL 31-5 - PLAN #1 12-28-09 RHS	800.00	800.20	16.86	13.54	5.087	ES
P_VOGL 31-5 - P_VOGL 31-5 - PLAN #1 12-28-09 RHS	900.00	900.44	17.96	14.28	4.883	SF
VOGL #4-5A EXISTING - VOGL #4-5A EXISTING - VOG	1,572.15	1,545.91	208.85	144.89	3.266	CC
VOGL #4-5A EXISTING - VOGL #4-5A EXISTING - VOG	1,700.00	1,667.68	212.44	143.00	3.059	ES
VOGL #4-5A EXISTING - VOGL #4-5A EXISTING - VOG	1,800.00	1,761.65	221.27	147.79	3.011	SF

Offset Design												WELD_VOGL 3 PAD - P_VOGL 26-6 - P_VOGL 26-6 - PLAN #1 12-28-09 RHS		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		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor					
							+N/-S (ft)	+E/-W (ft)									
0.00	0.00	0.00	0.00	0.00	0.00	-33.88	29.13	-19.56	35.08								
100.00	100.00	100.00	100.00	0.10	0.10	-33.88	29.13	-19.56	35.08	34.89	0.19	183.640					
200.00	200.00	200.00	200.00	0.32	0.32	-33.88	29.13	-19.56	35.08	34.44	0.64	54.770					
300.00	300.00	300.00	300.00	0.55	0.55	-33.88	29.13	-19.56	35.08	33.99	1.09	32.184					
400.00	400.00	400.00	400.00	0.77	0.77	-33.88	29.13	-19.56	35.08	33.55	1.54	22.788					
500.00	500.00	500.00	500.00	0.99	0.99	-33.88	29.13	-19.56	35.08	33.10	1.99	17.638					
600.00	600.00	600.00	600.00	1.22	1.22	-33.88	29.13	-19.56	35.08	32.65	2.44	14.387					
700.00	700.00	700.00	700.00	1.44	1.44	-33.88	29.13	-19.56	35.08	32.20	2.89	12.147					
750.00	750.00	750.00	750.00	1.56	1.56	-33.88	29.13	-19.56	35.08	31.97	3.11	11.270	CC, ES				
800.00	800.00	799.45	799.45	1.66	1.66	-148.11	29.33	-19.94	35.84	32.51	3.32	10.785	SF				
900.00	899.93	898.00	897.93	1.85	1.88	-152.69	30.91	-22.94	41.99	38.27	3.72	11.288					
1,000.00	999.68	995.49	995.19	2.06	2.09	-158.66	34.03	-28.86	54.80	50.68	4.12	13.300					
1,100.00	1,099.13	1,091.97	1,091.17	2.29	2.33	-163.66	38.57	-37.47	74.40	69.88	4.52	16.461					
1,200.00	1,198.15	1,188.88	1,187.50	2.56	2.57	-167.13	43.51	-46.83	98.48	93.56	4.92	20.010					
1,300.00	1,296.63	1,284.87	1,282.92	2.86	2.83	-169.50	48.41	-56.11	126.09	120.77	5.32	23.696					
1,400.00	1,394.44	1,379.83	1,377.31	3.22	3.09	-171.19	53.25	-65.28	157.14	151.42	5.72	27.477					
1,500.00	1,491.46	1,473.64	1,470.56	3.63	3.34	-172.44	58.03	-74.35	191.55	185.44	6.11	31.326					
1,600.00	1,587.58	1,566.18	1,562.55	4.11	3.60	-173.39	62.74	-83.29	229.26	222.75	6.51	35.224					
1,700.00	1,682.68	1,657.35	1,653.17	4.66	3.86	-174.13	67.39	-92.10	270.21	263.31	6.90	39.158					
1,800.00	1,776.65	1,747.03	1,742.31	5.28	4.12	-174.72	71.96	-100.76	314.34	307.05	7.29	43.116					

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



<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_VOGL 21-5
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4845.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_VOGL 3 PAD	<b>MD Reference:</b>	WELL @ 4845.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_VOGL 21-5	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_VOGL 21-5	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 12-28-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design WELD_VOGL 3 PAD - P_VOGL 26-6 - P_VOGL 26-6 - PLAN #1 12-28-09 RHS												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	
1,900.00	1,869.36	1,835.10	1,829.86	5.98	4.37	-175.19	76.45	-109.27	361.59	353.91	7.68	47.089	
2,000.00	1,960.71	1,921.48	1,915.72	6.76	4.62	-175.58	80.86	-117.62	411.90	403.83	8.07	51.070	
2,100.00	2,050.59	2,006.04	1,999.77	7.61	4.87	-175.90	85.17	-125.79	465.20	456.75	8.45	55.054	
2,190.18	2,130.28	2,080.65	2,073.94	8.44	5.09	-176.14	88.97	-133.00	515.78	506.98	8.80	58.643	
2,200.00	2,138.89	2,088.69	2,081.93	8.53	5.11	-176.17	89.38	-133.78	521.42	512.57	8.85	58.949	
2,300.00	2,226.51	2,170.55	2,163.30	9.50	5.35	-176.47	93.55	-141.69	578.81	569.45	9.36	61.842	
2,400.00	2,314.14	2,252.40	2,244.66	10.49	5.59	-176.71	97.72	-149.60	636.22	626.34	9.88	64.388	
2,500.00	2,401.77	2,334.26	2,326.03	11.48	5.83	-176.92	101.90	-157.51	693.63	683.22	10.41	66.640	
2,600.00	2,489.40	2,416.11	2,407.39	12.48	6.08	-177.09	106.07	-165.41	751.05	740.11	10.94	68.645	
2,700.00	2,577.02	2,497.97	2,488.76	13.49	6.32	-177.24	110.24	-173.32	808.47	796.99	11.48	70.438	
2,800.00	2,664.65	2,579.82	2,570.12	14.50	6.56	-177.37	114.41	-181.23	865.89	853.87	12.02	72.050	
2,900.00	2,752.28	2,661.68	2,651.48	15.51	6.81	-177.48	118.59	-189.14	923.32	910.76	12.56	73.506	
3,000.00	2,839.91	2,743.53	2,732.85	16.53	7.05	-177.58	122.76	-197.05	980.75	967.64	13.11	74.827	
3,100.00	2,927.53	2,825.38	2,814.21	17.55	7.29	-177.67	126.93	-204.96	1,038.18	1,024.52	13.65	76.031	
3,200.00	3,015.16	2,907.24	2,895.58	18.58	7.54	-177.75	131.10	-212.87	1,095.61	1,081.40	14.20	77.131	
3,300.00	3,102.79	2,989.09	2,976.94	19.60	7.78	-177.82	135.27	-220.78	1,153.04	1,138.28	14.76	78.140	
3,400.00	3,190.42	3,070.95	3,058.31	20.63	8.03	-177.89	139.45	-228.69	1,210.47	1,195.17	15.31	79.069	
3,500.00	3,278.05	3,152.80	3,139.67	21.65	8.27	-177.95	143.62	-236.60	1,267.91	1,252.05	15.86	79.927	
3,600.00	3,365.67	3,234.66	3,221.04	22.68	8.52	-178.00	147.79	-244.51	1,325.35	1,308.93	16.42	80.721	
3,700.00	3,453.30	3,316.51	3,302.40	23.71	8.76	-178.05	151.96	-252.42	1,382.78	1,365.81	16.98	81.458	
3,800.00	3,540.93	3,398.36	3,383.76	24.74	9.01	-178.09	156.14	-260.33	1,440.22	1,422.69	17.53	82.145	
3,900.00	3,628.56	3,480.22	3,465.13	25.77	9.25	-178.14	160.31	-268.23	1,497.66	1,479.57	18.09	82.785	
4,000.00	3,716.18	3,562.07	3,546.49	26.81	9.50	-178.17	164.48	-276.14	1,555.10	1,536.45	18.65	83.383	
4,100.00	3,803.81	3,643.93	3,627.86	27.84	9.75	-178.21	168.65	-284.05	1,612.53	1,593.32	19.21	83.944	
4,200.00	3,891.44	3,725.78	3,709.22	28.87	9.99	-178.24	172.83	-291.96	1,669.97	1,650.20	19.77	84.470	
4,300.00	3,979.07	3,807.64	3,790.59	29.90	10.24	-178.28	177.00	-299.87	1,727.41	1,707.08	20.33	84.965	
4,400.00	4,066.69	3,889.49	3,871.95	30.94	10.49	-178.31	181.17	-307.78	1,784.85	1,763.96	20.89	85.432	
4,500.00	4,154.32	3,971.34	3,953.31	31.97	10.73	-178.33	185.34	-315.69	1,842.29	1,820.84	21.45	85.872	
4,600.00	4,241.95	4,053.20	4,034.68	33.01	10.98	-178.36	189.52	-323.60	1,899.73	1,877.72	22.02	86.288	
4,700.00	4,329.58	4,135.05	4,116.04	34.04	11.23	-178.38	193.69	-331.51	1,957.17	1,934.59	22.58	86.682	
4,800.00	4,417.21	4,216.91	4,197.41	35.08	11.47	-178.41	197.86	-339.42	2,014.61	1,991.47	23.14	87.055	
4,900.00	4,504.83	4,298.76	4,278.77	36.11	11.72	-178.43	202.03	-347.33	2,072.05	2,048.35	23.71	87.409	
5,000.00	4,592.46	4,380.62	4,360.14	37.15	11.97	-178.45	206.20	-355.24	2,129.50	2,105.23	24.27	87.746	
5,100.00	4,680.09	4,462.47	4,441.50	38.18	12.21	-178.47	210.38	-363.15	2,186.94	2,162.10	24.83	88.066	
5,200.00	4,767.72	4,544.32	4,522.87	39.22	12.46	-178.49	214.55	-371.05	2,244.38	2,218.98	25.40	88.372	
5,300.00	4,855.34	4,626.18	4,604.23	40.26	12.71	-178.50	218.72	-378.96	2,301.82	2,275.86	25.96	88.663	
5,400.00	4,942.97	4,708.03	4,685.59	41.29	12.95	-178.52	222.89	-386.87	2,359.26	2,332.74	26.53	88.941	
5,500.00	5,030.60	4,789.89	4,766.96	42.33	13.20	-178.54	227.07	-394.78	2,416.70	2,389.61	27.09	89.207	
5,600.00	5,118.23	4,871.74	4,848.32	43.37	13.45	-178.55	231.24	-402.69	2,474.15	2,446.49	27.66	89.461	
5,700.00	5,205.86	4,953.60	4,929.69	44.40	13.70	-178.57	235.41	-410.60	2,531.59	2,503.37	28.22	89.704	
5,800.00	5,293.48	5,035.45	5,011.05	45.44	13.94	-178.58	239.58	-418.51	2,589.03	2,560.24	28.79	89.937	
5,900.00	5,381.11	5,117.31	5,092.42	46.48	14.19	-178.59	243.76	-426.42	2,646.47	2,617.12	29.35	90.161	
6,000.00	5,468.74	5,199.16	5,173.78	47.52	14.44	-178.60	247.93	-434.33	2,703.92	2,674.00	29.92	90.376	
6,058.18	5,519.72	5,246.79	5,221.12	48.12	14.58	-178.61	250.36	-438.93	2,737.34	2,707.09	30.25	90.497	
6,100.00	5,556.51	5,281.19	5,255.32	48.51	14.69	-178.63	252.11	-442.25	2,761.11	2,730.52	30.59	90.276	
6,200.00	5,645.63	5,364.84	5,338.47	49.30	14.94	-178.67	256.37	-450.34	2,815.90	2,784.54	31.35	89.819	
6,300.00	5,736.28	5,450.35	5,423.46	50.04	15.20	-178.71	260.73	-458.60	2,867.73	2,835.66	32.07	89.408	
6,400.00	5,828.35	5,537.61	5,510.21	50.71	15.46	-178.74	265.18	-467.03	2,916.55	2,883.80	32.75	89.044	
6,500.00	5,921.73	5,626.53	5,598.59	51.33	15.73	-178.76	269.71	-475.62	2,962.30	2,928.91	33.39	88.723	
6,600.00	6,016.29	5,716.99	5,688.51	51.89	16.00	-178.78	274.32	-484.36	3,004.92	2,970.94	33.97	88.446	
6,700.00	6,111.93	6,141.25	6,111.93	52.39	16.83	-178.83	284.15	-502.98	3,037.18	3,002.11	35.07	86.606	
6,800.00	6,208.54	6,237.85	6,208.54	52.83	17.00	-178.85	284.15	-502.98	3,063.00	3,027.45	35.55	86.171	

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

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_VOGL 21-5
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4845.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_VOGL 3 PAD	<b>MD Reference:</b>	WELL @ 4845.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_VOGL 21-5	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_VOGL 21-5	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 12-28-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> WELD_VOGL 3 PAD - P_VOGL 26-6 - P_VOGL 26-6 - PLAN #1 12-28-09 RHS												<b>Offset Site Error:</b>	0.00 ft
Survey Program: 0-MWD												<b>Offset Well Error:</b>	0.00 ft
Reference	Offset	Semi Major Axis		Distance									
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	Warning
6,900.00	6,305.98	6,335.30	6,305.98	53.21	17.17	-178.87	284.15	-502.98	3,085.43	3,049.47	35.97	85.785	
7,000.00	6,404.15	6,433.47	6,404.15	53.54	17.34	-178.88	284.15	-502.98	3,104.45	3,068.12	36.33	85.446	
7,100.00	6,502.92	6,532.24	6,502.92	53.81	17.51	-178.89	284.15	-502.98	3,120.04	3,083.40	36.64	85.153	
7,200.00	6,602.18	6,631.50	6,602.18	54.03	17.69	-178.90	284.15	-502.98	3,132.16	3,095.27	36.89	84.905	
7,300.00	6,701.80	6,731.12	6,701.80	54.20	17.87	-178.91	284.15	-502.98	3,140.82	3,103.74	37.08	84.703	
7,400.00	6,801.66	6,830.98	6,801.66	54.32	18.05	-178.91	284.15	-502.98	3,146.00	3,108.79	37.21	84.546	
7,498.36	6,900.00	6,929.32	6,900.00	54.40	18.23	-65.38	284.15	-502.98	3,147.68	3,110.40	37.28	84.424	
7,500.00	6,901.64	6,930.96	6,901.64	54.40	18.23	-65.38	284.15	-502.98	3,147.68	3,110.39	37.29	84.412	
7,600.00	7,001.64	7,030.96	7,001.64	54.46	18.41	-65.38	284.15	-502.98	3,147.68	3,110.06	37.62	83.660	
7,700.00	7,101.64	7,130.96	7,101.64	54.51	18.59	-65.38	284.15	-502.98	3,147.68	3,109.72	37.96	82.917	
7,800.00	7,201.64	7,230.96	7,201.64	54.57	18.78	-65.38	284.15	-502.98	3,147.68	3,109.38	38.30	82.183	
7,900.00	7,301.64	7,330.96	7,301.64	54.64	18.96	-65.38	284.15	-502.98	3,147.68	3,109.04	38.64	81.458	
8,000.00	7,401.64	7,430.96	7,401.64	54.70	19.15	-65.38	284.15	-502.98	3,147.68	3,108.70	38.98	80.741	
8,100.00	7,501.64	7,530.96	7,501.64	54.76	19.33	-65.38	284.15	-502.98	3,147.68	3,108.35	39.33	80.034	
8,200.00	7,601.64	7,630.96	7,601.64	54.82	19.52	-65.38	284.15	-502.98	3,147.68	3,108.01	39.68	79.335	
8,300.00	7,701.64	7,730.96	7,701.64	54.89	19.71	-65.38	284.15	-502.98	3,147.68	3,107.66	40.02	78.644	
8,400.00	7,801.64	7,830.96	7,801.64	54.95	19.90	-65.38	284.15	-502.98	3,147.68	3,107.31	40.37	77.963	
8,452.53	7,854.17	7,883.48	7,854.17	54.99	20.00	-65.38	284.15	-502.98	3,147.68	3,107.12	40.56	77.607	
8,498.36	7,900.00	7,901.32	7,872.00	55.02	20.03	-65.38	284.15	-502.98	3,147.81	3,107.15	40.66	77.416	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_VOGL 21-5
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4845.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_VOGL 3 PAD	<b>MD Reference:</b>	WELL @ 4845.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_VOGL 21-5	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_VOGL 21-5	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 12-28-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design WELD_VOGL 3 PAD - P_VOGL 31-5 - P_VOGL 31-5 - PLAN #1 12-28-09 RHS												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	
0.00	0.00	0.00	0.00	0.00	0.00	-29.93	14.56	-8.38	16.80				
100.00	100.00	100.00	100.00	0.10	0.10	-29.93	14.56	-8.38	16.80	16.61	0.19	87.953	
200.00	200.00	200.00	200.00	0.32	0.32	-29.93	14.56	-8.38	16.80	16.16	0.64	26.232	
300.00	300.00	300.00	300.00	0.55	0.55	-29.93	14.56	-8.38	16.80	15.71	1.09	15.414	
400.00	400.00	400.00	400.00	0.77	0.77	-29.93	14.56	-8.38	16.80	15.26	1.54	10.914	
500.00	500.00	500.00	500.00	0.99	0.99	-29.93	14.56	-8.38	16.80	14.81	1.99	8.447	
600.00	600.00	600.00	600.00	1.22	1.22	-29.93	14.56	-8.38	16.80	14.36	2.44	6.890	
700.00	700.00	700.00	700.00	1.44	1.44	-29.93	14.56	-8.38	16.80	13.92	2.89	5.818	
750.00	750.00	750.00	750.00	1.56	1.56	-29.93	14.56	-8.38	16.80	13.69	3.11	5.398 CC	
800.00	800.00	800.20	800.20	1.66	1.66	-145.41	14.14	-8.50	16.86	13.54	3.31	5.087 ES	
900.00	899.93	900.44	900.37	1.85	1.83	-160.16	10.76	-9.45	17.96	14.28	3.68	4.883 SF	
1,000.00	999.68	1,000.20	999.89	2.06	2.02	177.96	4.05	-11.33	22.92	18.87	4.06	5.650	
1,100.00	1,099.13	1,099.19	1,098.32	2.29	2.24	160.73	-5.90	-14.12	33.81	29.35	4.47	7.572	
1,200.00	1,198.15	1,197.10	1,195.28	2.56	2.48	150.35	-18.96	-17.79	50.44	45.52	4.92	10.258	
1,300.00	1,296.63	1,293.65	1,290.39	2.86	2.76	144.23	-34.96	-22.27	72.16	66.74	5.42	13.305	
1,400.00	1,394.44	1,388.59	1,383.31	3.22	3.09	140.39	-53.68	-27.52	98.55	92.56	5.99	16.451	
1,500.00	1,491.46	1,481.68	1,473.75	3.63	3.46	137.79	-74.92	-33.48	129.34	122.71	6.63	19.523	
1,600.00	1,587.58	1,575.14	1,564.06	4.11	3.87	136.20	-98.08	-39.98	163.75	156.42	7.33	22.339	
1,700.00	1,682.68	1,668.12	1,653.89	4.66	4.29	135.67	-121.17	-46.45	200.55	192.47	8.09	24.793	
1,800.00	1,776.65	1,760.11	1,742.77	5.28	4.73	135.72	-144.02	-52.86	239.68	230.79	8.90	26.940	
1,900.00	1,869.36	1,851.01	1,830.60	5.98	5.18	136.09	-166.59	-59.19	281.15	271.40	9.75	28.839	
2,000.00	1,960.71	1,940.71	1,917.26	6.76	5.62	136.63	-188.86	-65.44	324.98	314.33	10.64	30.541	
2,100.00	2,050.59	2,029.09	2,002.65	7.61	6.07	137.24	-210.81	-71.60	371.20	359.63	11.57	32.087	
2,190.18	2,130.28	2,107.57	2,078.48	8.44	6.47	137.82	-230.30	-77.06	414.95	402.52	12.43	33.375	
2,200.00	2,138.89	2,116.05	2,086.68	8.53	6.51	137.96	-232.41	-77.65	419.83	407.30	12.53	33.496	
2,300.00	2,226.51	2,202.42	2,170.12	9.50	6.95	139.19	-253.85	-83.67	469.55	455.99	13.56	34.623	
2,400.00	2,314.14	2,288.78	2,253.56	10.49	7.40	140.18	-275.30	-89.68	519.40	504.81	14.60	35.586	
2,500.00	2,401.77	2,375.15	2,337.00	11.48	7.85	141.01	-296.74	-95.70	569.36	553.72	15.63	36.417	
2,600.00	2,489.40	2,461.51	2,420.44	12.48	8.30	141.70	-318.19	-101.71	619.38	602.71	16.68	37.142	
2,700.00	2,577.02	2,547.87	2,503.89	13.49	8.75	142.29	-339.64	-107.73	669.47	651.75	17.72	37.779	
2,800.00	2,664.65	2,634.24	2,587.33	14.50	9.21	142.79	-361.08	-113.75	719.60	700.83	18.77	38.344	
2,900.00	2,752.28	2,720.60	2,670.77	15.51	9.66	143.23	-382.53	-119.76	769.76	749.95	19.81	38.848	
3,000.00	2,839.91	2,806.96	2,754.21	16.53	10.12	143.62	-403.97	-125.78	819.96	799.10	20.86	39.300	
3,100.00	2,927.53	2,893.33	2,837.65	17.55	10.58	143.96	-425.42	-131.79	870.18	848.27	21.91	39.709	
3,200.00	3,015.16	2,979.69	2,921.10	18.58	11.03	144.27	-446.87	-137.81	920.42	897.46	22.96	40.080	
3,300.00	3,102.79	3,066.06	3,004.54	19.60	11.49	144.54	-468.31	-143.82	970.68	946.67	24.02	40.419	
3,400.00	3,190.42	3,152.42	3,087.98	20.63	11.95	144.79	-489.76	-149.84	1,020.96	995.89	25.07	40.730	
3,500.00	3,278.05	3,238.78	3,171.42	21.65	12.41	145.01	-511.21	-155.85	1,071.24	1,045.13	26.12	41.016	
3,600.00	3,365.67	3,325.15	3,254.86	22.68	12.87	145.22	-532.65	-161.87	1,121.54	1,094.37	27.17	41.280	
3,700.00	3,453.30	3,411.51	3,338.31	23.71	13.34	145.40	-554.10	-167.88	1,171.85	1,143.63	28.22	41.526	
3,800.00	3,540.93	3,497.87	3,421.75	24.74	13.80	145.57	-575.54	-173.90	1,222.17	1,192.90	29.27	41.754	
3,900.00	3,628.56	3,584.24	3,505.19	25.77	14.26	145.73	-596.99	-179.91	1,272.49	1,242.17	30.32	41.967	
4,000.00	3,716.18	3,670.60	3,588.63	26.81	14.72	145.88	-618.44	-185.93	1,322.82	1,291.45	31.37	42.167	
4,100.00	3,803.81	3,756.97	3,672.07	27.84	15.18	146.01	-639.88	-191.94	1,373.16	1,340.74	32.42	42.354	
4,200.00	3,891.44	3,843.33	3,755.52	28.87	15.65	146.14	-661.33	-197.96	1,423.50	1,390.03	33.47	42.531	
4,300.00	3,979.07	3,929.69	3,838.96	29.90	16.11	146.25	-682.77	-203.97	1,473.85	1,439.33	34.52	42.697	
4,400.00	4,066.69	4,016.06	3,922.40	30.94	16.57	146.36	-704.22	-209.99	1,524.20	1,488.63	35.57	42.855	
4,500.00	4,154.32	4,102.42	4,005.84	31.97	17.04	146.46	-725.67	-216.01	1,574.56	1,537.94	36.61	43.004	
4,600.00	4,241.95	4,188.78	4,089.28	33.01	17.50	146.56	-747.11	-222.02	1,624.91	1,587.25	37.66	43.146	
4,700.00	4,329.58	4,275.15	4,172.73	34.04	17.97	146.65	-768.56	-228.04	1,675.28	1,636.57	38.71	43.281	
4,800.00	4,417.21	4,361.51	4,256.17	35.08	18.43	146.73	-790.01	-234.05	1,725.64	1,685.89	39.75	43.409	
4,900.00	4,504.83	4,447.88	4,339.61	36.11	18.89	146.81	-811.45	-240.07	1,776.01	1,735.21	40.80	43.532	

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

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_VOGL 21-5
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4845.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_VOGL 3 PAD	<b>MD Reference:</b>	WELL @ 4845.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_VOGL 21-5	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_VOGL 21-5	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 12-28-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> WELD_VOGL 3 PAD - P_VOGL 31-5 - P_VOGL 31-5 - PLAN #1 12-28-09 RHS												<b>Offset Site Error:</b>	0.00 ft
Survey Program: 0-MWD												<b>Offset Well Error:</b>	0.00 ft
Reference	Offset	Semi Major Axis		Distance									
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	Warning
5,000.00	4,592.46	4,534.24	4,423.05	37.15	19.36	146.89	-832.90	-246.08	1,826.38	1,784.54	41.84	43.650	
5,100.00	4,680.09	4,620.60	4,506.49	38.18	19.82	146.96	-854.34	-252.10	1,876.75	1,833.86	42.88	43.762	
5,200.00	4,767.72	4,706.97	4,589.94	39.22	20.29	147.03	-875.79	-258.11	1,927.12	1,883.20	43.93	43.871	
5,300.00	4,855.34	4,793.33	4,673.38	40.26	20.75	147.09	-897.24	-264.13	1,977.50	1,932.53	44.97	43.974	
5,400.00	4,942.97	4,879.69	4,756.82	41.29	21.22	147.15	-918.68	-270.14	2,027.88	1,981.87	46.01	44.075	
5,500.00	5,030.60	4,966.06	4,840.26	42.33	21.68	147.21	-940.13	-276.16	2,078.26	2,031.21	47.05	44.171	
5,600.00	5,118.23	5,052.42	4,923.70	43.37	22.15	147.27	-961.57	-282.17	2,128.64	2,080.55	48.09	44.264	
5,700.00	5,205.86	5,138.79	5,007.15	44.40	22.61	147.32	-983.02	-288.19	2,179.02	2,129.89	49.13	44.354	
5,800.00	5,293.48	5,225.15	5,090.59	45.44	23.08	147.37	-1,004.47	-294.20	2,229.40	2,179.24	50.17	44.441	
5,900.00	5,381.11	5,311.51	5,174.03	46.48	23.54	147.42	-1,025.91	-300.22	2,279.79	2,228.58	51.20	44.525	
6,000.00	5,468.74	5,397.88	5,257.47	47.52	24.01	147.46	-1,047.36	-306.23	2,330.17	2,277.93	52.24	44.606	
6,058.18	5,519.72	5,451.44	5,309.23	48.12	24.29	147.49	-1,060.64	-309.96	2,359.48	2,306.64	52.84	44.650	
6,100.00	5,556.51	5,502.64	5,358.86	48.51	24.51	147.78	-1,072.74	-313.35	2,380.17	2,326.89	53.27	44.680	
6,200.00	5,645.63	5,627.77	5,481.04	49.30	24.93	148.47	-1,098.69	-320.63	2,426.84	2,372.75	54.09	44.864	
6,300.00	5,736.28	5,756.36	5,607.71	50.04	25.29	149.15	-1,119.98	-326.60	2,469.49	2,414.67	54.81	45.053	
6,400.00	5,828.35	5,887.92	5,738.19	50.71	25.61	149.84	-1,136.08	-331.12	2,507.97	2,452.55	55.42	45.256	
6,500.00	5,921.73	6,021.87	5,871.69	51.33	25.85	150.53	-1,146.53	-334.05	2,542.18	2,486.30	55.89	45.487	
6,600.00	6,016.29	6,157.60	6,007.32	51.89	26.03	151.24	-1,150.98	-335.30	2,572.06	2,515.83	56.23	45.743	
6,700.00	6,111.93	6,262.21	6,111.93	52.39	26.13	151.83	-1,151.13	-335.34	2,598.00	2,541.50	56.50	45.983	
6,800.00	6,208.54	6,358.81	6,208.54	52.83	26.22	152.31	-1,151.13	-335.34	2,620.99	2,564.25	56.74	46.196	
6,900.00	6,305.98	6,456.26	6,305.98	53.21	26.30	152.73	-1,151.13	-335.34	2,641.01	2,584.07	56.94	46.381	
7,000.00	6,404.15	6,554.42	6,404.15	53.54	26.39	153.07	-1,151.13	-335.34	2,658.01	2,600.89	57.11	46.540	
7,100.00	6,502.92	6,653.20	6,502.92	53.81	26.49	153.35	-1,151.13	-335.34	2,671.95	2,614.70	57.25	46.669	
7,200.00	6,602.18	6,752.45	6,602.18	54.03	26.58	153.56	-1,151.13	-335.34	2,682.82	2,625.46	57.36	46.770	
7,300.00	6,701.80	6,852.07	6,701.80	54.20	26.68	153.71	-1,151.13	-335.34	2,690.58	2,633.14	57.44	46.840	
7,400.00	6,801.66	6,951.93	6,801.66	54.32	26.78	153.80	-1,151.13	-335.34	2,695.23	2,637.73	57.49	46.879	
7,498.36	6,900.00	7,050.27	6,900.00	54.40	26.87	-92.63	-1,151.13	-335.34	2,696.74	2,639.22	57.53	46.878	
7,500.00	6,901.64	7,051.91	6,901.64	54.40	26.88	-92.63	-1,151.13	-335.34	2,696.74	2,639.21	57.53	46.876	
7,600.00	7,001.64	7,151.91	7,001.64	54.46	26.98	-92.63	-1,151.13	-335.34	2,696.74	2,639.02	57.72	46.719	
7,700.00	7,101.64	7,251.91	7,101.64	54.51	27.08	-92.63	-1,151.13	-335.34	2,696.74	2,638.83	57.92	46.561	
7,800.00	7,201.64	7,351.91	7,201.64	54.57	27.18	-92.63	-1,151.13	-335.34	2,696.74	2,638.63	58.12	46.402	
7,900.00	7,301.64	7,451.91	7,301.64	54.64	27.29	-92.63	-1,151.13	-335.34	2,696.74	2,638.43	58.32	46.242	
8,000.00	7,401.64	7,551.91	7,401.64	54.70	27.40	-92.63	-1,151.13	-335.34	2,696.74	2,638.22	58.52	46.081	
8,100.00	7,501.64	7,651.91	7,501.64	54.76	27.51	-92.63	-1,151.13	-335.34	2,696.74	2,638.01	58.73	45.919	
8,200.00	7,601.64	7,751.91	7,601.64	54.82	27.62	-92.63	-1,151.13	-335.34	2,696.74	2,637.81	58.94	45.755	
8,300.00	7,701.64	7,851.91	7,701.64	54.89	27.73	-92.63	-1,151.13	-335.34	2,696.74	2,637.59	59.15	45.591	
8,400.00	7,801.64	7,951.91	7,801.64	54.95	27.84	-92.63	-1,151.13	-335.34	2,696.74	2,637.38	59.37	45.426	
8,452.53	7,854.17	8,004.44	7,854.17	54.99	27.90	-92.63	-1,151.13	-335.34	2,696.74	2,637.26	59.48	45.339	
8,498.36	7,900.00	8,022.27	7,872.00	55.02	27.92	-92.63	-1,151.13	-335.34	2,696.89	2,637.34	59.55	45.291	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_VOGL 21-5
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4845.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_VOGL 3 PAD	<b>MD Reference:</b>	WELL @ 4845.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_VOGL 21-5	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_VOGL 21-5	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 12-28-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design WELD_VOGL 3 PAD - VOGL #4-5A EXISTING - VOGL #4-5A EXISTING - VOGL #4-5A EXISTING													Offset Site Error:	0.00 ft
Survey Program: 0-UNKNOWN													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		
0.00	0.00	0.00	0.00	0.00	0.00	174.24	-238.26	24.03	239.94					
100.00	100.00	85.00	85.00	0.10	1.70	174.24	-238.26	24.03	239.47	237.67	1.80	133.366		
200.00	200.00	185.00	185.00	0.32	5.40	174.24	-238.26	24.03	239.47	233.75	5.72	41.863		
300.00	300.00	285.00	285.00	0.55	9.40	174.24	-238.26	24.03	239.47	229.52	9.95	24.079		
400.00	400.00	385.00	385.00	0.77	13.40	174.24	-238.26	24.03	239.47	225.30	14.17	16.900		
500.00	500.00	485.00	485.00	0.99	17.40	174.24	-238.26	24.03	239.47	221.07	18.39	13.018		
600.00	600.00	585.00	585.00	1.22	21.40	174.24	-238.26	24.03	239.47	216.85	22.62	10.587		
700.00	700.00	685.00	685.00	1.44	25.40	174.24	-238.26	24.03	239.47	212.62	26.84	8.921		
750.00	750.00	735.00	735.00	1.56	27.40	174.24	-238.26	24.03	239.47	210.51	28.96	8.270		
800.00	800.00	785.00	785.00	1.66	29.40	60.80	-238.26	24.03	239.25	208.20	31.06	7.703		
900.00	899.93	884.93	884.93	1.85	33.40	61.57	-238.26	24.03	237.57	202.33	35.24	6.742		
1,000.00	999.68	984.68	984.68	2.06	37.39	63.12	-238.26	24.03	234.33	194.91	39.42	5.945		
1,100.00	1,099.13	1,084.13	1,084.13	2.29	41.37	65.52	-238.26	24.03	229.77	186.17	43.60	5.270		
1,200.00	1,198.15	1,183.15	1,183.15	2.56	45.33	68.83	-238.26	24.03	224.33	176.52	47.81	4.692		
1,300.00	1,296.63	1,281.63	1,281.63	2.86	49.27	73.13	-238.26	24.03	218.59	166.53	52.06	4.199		
1,400.00	1,394.44	1,379.44	1,379.44	3.22	53.18	78.47	-238.26	24.03	213.38	157.00	56.38	3.785		
1,500.00	1,491.46	1,476.46	1,476.46	3.63	57.06	84.83	-238.26	24.03	209.76	149.00	60.76	3.452		
1,572.15	1,560.91	1,545.91	1,545.91	3.98	59.84	90.00	-238.26	24.03	208.85	144.89	63.95	3.266 CC		
1,600.00	1,587.58	1,572.58	1,572.58	4.11	60.90	92.10	-238.26	24.03	209.00	143.85	65.15	3.208		
1,700.00	1,682.68	1,667.68	1,667.68	4.66	64.71	99.99	-238.26	24.03	212.44	143.00	69.44	3.059 ES		
1,800.00	1,776.65	1,761.65	1,761.65	5.28	68.47	108.10	-238.26	24.03	221.27	147.79	73.48	3.011 SF		
1,900.00	1,869.36	1,854.36	1,854.36	5.98	72.17	115.98	-238.26	24.03	236.31	159.17	77.14	3.063		
2,000.00	1,960.71	1,945.71	1,945.71	6.76	75.83	123.28	-238.26	24.03	257.86	177.51	80.34	3.209		
2,100.00	2,050.59	2,035.59	2,035.59	7.61	79.42	129.77	-238.26	24.03	285.78	202.69	83.09	3.439		
2,190.18	2,130.28	2,115.28	2,115.28	8.44	82.61	134.87	-238.26	24.03	316.09	230.88	85.22	3.709		
2,200.00	2,138.89	2,123.89	2,123.89	8.53	82.96	135.44	-238.26	24.03	319.66	234.18	85.48	3.740		
2,300.00	2,226.51	2,211.51	2,211.51	9.50	86.46	140.60	-238.26	24.03	357.53	269.32	88.21	4.053		
2,400.00	2,314.14	2,299.14	2,299.14	10.49	89.97	144.84	-238.26	24.03	397.63	306.61	91.02	4.369		
2,500.00	2,401.77	2,386.77	2,386.77	11.48	93.47	148.34	-238.26	24.03	439.36	345.44	93.92	4.678		
2,600.00	2,489.40	2,474.40	2,474.40	12.48	96.98	151.27	-238.26	24.03	482.29	385.40	96.90	4.977		
2,700.00	2,577.02	2,562.02	2,562.02	13.49	100.48	153.73	-238.26	24.03	526.14	426.19	99.94	5.264		
2,800.00	2,664.65	2,649.65	2,649.65	14.50	103.99	155.83	-238.26	24.03	570.68	467.63	103.05	5.538		
2,900.00	2,752.28	2,737.28	2,737.28	15.51	107.49	157.64	-238.26	24.03	615.77	509.56	106.21	5.798		
3,000.00	2,839.91	2,824.91	2,824.91	16.53	111.00	159.20	-238.26	24.03	661.30	551.89	109.41	6.044		
3,100.00	2,927.53	2,912.53	2,912.53	17.55	114.50	160.57	-238.26	24.03	707.18	594.54	112.64	6.278		
3,200.00	3,015.16	3,000.16	3,000.16	18.58	118.01	161.77	-238.26	24.03	753.34	637.44	115.90	6.500		
3,300.00	3,102.79	3,087.79	3,087.79	19.60	121.51	162.84	-238.26	24.03	799.75	680.56	119.19	6.710		
3,400.00	3,190.42	3,175.42	3,175.42	20.63	125.02	163.80	-238.26	24.03	846.35	723.85	122.50	6.909		
3,500.00	3,278.05	3,263.05	3,263.05	21.65	128.52	164.65	-238.26	24.03	893.12	767.30	125.82	7.098		
3,600.00	3,365.67	3,350.67	3,350.67	22.68	132.03	165.42	-238.26	24.03	940.03	810.87	129.16	7.278		
3,700.00	3,453.30	3,438.30	3,438.30	23.71	135.53	166.12	-238.26	24.03	987.07	854.55	132.52	7.449		
3,800.00	3,540.93	3,525.93	3,525.93	24.74	139.04	166.76	-238.26	24.03	1,034.21	898.32	135.88	7.611		
3,900.00	3,628.56	3,613.56	3,613.56	25.77	142.54	167.34	-238.26	24.03	1,081.44	942.18	139.26	7.766		
4,000.00	3,716.18	3,701.18	3,701.18	26.81	146.05	167.87	-238.26	24.03	1,128.75	986.11	142.64	7.913		
4,100.00	3,803.81	3,788.81	3,788.81	27.84	149.55	168.36	-238.26	24.03	1,176.13	1,030.10	146.03	8.054		
4,200.00	3,891.44	3,876.44	3,876.44	28.87	153.06	168.82	-238.26	24.03	1,223.58	1,074.14	149.43	8.188		
4,300.00	3,979.07	3,964.07	3,964.07	29.90	156.56	169.24	-238.26	24.03	1,271.08	1,118.24	152.84	8.316		
4,400.00	4,066.69	4,051.69	4,051.69	30.94	160.07	169.63	-238.26	24.03	1,318.63	1,162.38	156.25	8.439		
4,500.00	4,154.32	4,139.32	4,139.32	31.97	163.57	169.99	-238.26	24.03	1,366.22	1,206.56	159.67	8.557		
4,600.00	4,241.95	4,226.95	4,226.95	33.01	167.08	170.33	-238.26	24.03	1,413.86	1,250.77	163.09	8.669		
4,700.00	4,329.58	4,314.58	4,314.58	34.04	170.58	170.64	-238.26	24.03	1,461.53	1,295.02	166.51	8.777		
4,800.00	4,417.21	4,402.21	4,402.21	35.08	174.09	170.94	-238.26	24.03	1,509.23	1,339.29	169.94	8.881		

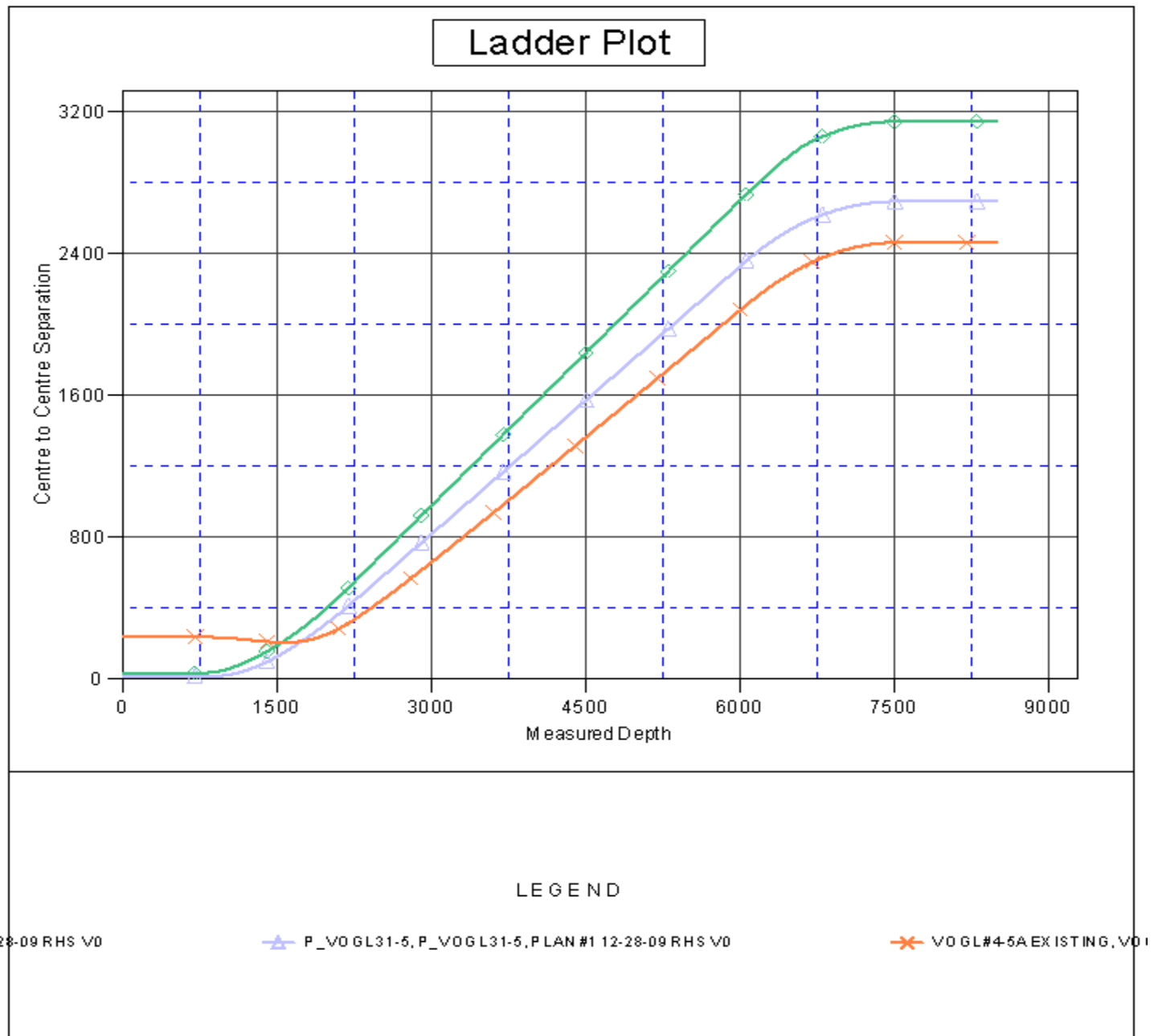
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_VOGL 21-5
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4845.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_VOGL 3 PAD	<b>MD Reference:</b>	WELL @ 4845.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_VOGL 21-5	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_VOGL 21-5	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 12-28-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 0-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						
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	Warning
4,900.00	4,504.83	4,489.83	4,489.83	36.11	177.59	171.22	-238.26	24.03	1,556.96	1,383.59	173.37	8.981	
5,000.00	4,592.46	4,577.46	4,577.46	37.15	181.10	171.48	-238.26	24.03	1,604.72	1,427.92	176.80	9.076	
5,100.00	4,680.09	4,665.09	4,665.09	38.18	184.60	171.73	-238.26	24.03	1,652.50	1,472.26	180.24	9.168	
5,200.00	4,767.72	4,752.72	4,752.72	39.22	188.11	171.96	-238.26	24.03	1,700.31	1,516.63	183.68	9.257	
5,300.00	4,855.34	4,840.34	4,840.34	40.26	191.61	172.18	-238.26	24.03	1,748.13	1,561.01	187.12	9.342	
5,400.00	4,942.97	4,927.97	4,927.97	41.29	195.12	172.39	-238.26	24.03	1,795.98	1,605.41	190.56	9.425	
5,500.00	5,030.60	5,015.60	5,015.60	42.33	198.62	172.59	-238.26	24.03	1,843.84	1,649.83	194.01	9.504	
5,600.00	5,118.23	5,103.23	5,103.23	43.37	202.13	172.78	-238.26	24.03	1,891.72	1,694.26	197.45	9.581	
5,700.00	5,205.86	5,190.86	5,190.86	44.40	205.63	172.95	-238.26	24.03	1,939.61	1,738.71	200.90	9.654	
5,800.00	5,293.48	5,278.48	5,278.48	45.44	209.14	173.12	-238.26	24.03	1,987.52	1,783.16	204.35	9.726	
5,900.00	5,381.11	5,366.11	5,366.11	46.48	212.64	173.29	-238.26	24.03	2,035.44	1,827.63	207.81	9.795	
6,000.00	5,468.74	5,453.74	5,453.74	47.52	216.15	173.44	-238.26	24.03	2,083.37	1,872.11	211.26	9.862	
6,058.18	5,519.72	5,504.72	5,504.72	48.12	218.19	173.53	-238.26	24.03	2,111.26	1,898.00	213.27	9.900	
6,100.00	5,556.51	5,541.51	5,541.51	48.51	219.66	173.64	-238.26	24.03	2,131.05	1,914.91	216.14	9.860	
6,200.00	5,645.63	5,630.63	5,630.63	49.30	223.23	173.88	-238.26	24.03	2,176.18	1,953.25	222.93	9.762	
6,300.00	5,736.28	5,721.28	5,721.28	50.04	226.85	174.09	-238.26	24.03	2,218.20	1,988.59	229.60	9.661	
6,400.00	5,828.35	5,813.35	5,813.35	50.71	230.53	174.28	-238.26	24.03	2,257.04	2,020.89	236.15	9.558	
6,500.00	5,921.73	5,906.73	5,906.73	51.33	234.27	174.44	-238.26	24.03	2,292.67	2,050.12	242.55	9.452	
6,600.00	6,016.29	6,001.29	6,001.29	51.89	238.05	174.58	-238.26	24.03	2,325.04	2,076.08	248.96	9.339	
6,700.00	6,111.93	6,096.93	6,096.93	52.39	241.88	174.71	-238.26	24.03	2,354.11	2,098.92	255.19	9.225	
6,800.00	6,208.54	6,193.54	6,193.54	52.83	245.74	174.81	-238.26	24.03	2,379.83	2,118.62	261.21	9.111	
6,900.00	6,305.98	6,290.98	6,290.98	53.21	249.64	174.90	-238.26	24.03	2,402.18	2,135.19	266.99	8.997	
7,000.00	6,404.15	6,389.15	6,389.15	53.54	253.57	174.98	-238.26	24.03	2,421.14	2,148.61	272.53	8.884	
7,100.00	6,502.92	6,487.92	6,487.92	53.81	257.52	175.04	-238.26	24.03	2,436.66	2,158.87	277.79	8.772	
7,200.00	6,602.18	6,587.18	6,587.18	54.03	261.49	175.08	-238.26	24.03	2,448.75	2,165.99	282.76	8.660	
7,300.00	6,701.80	6,686.80	6,686.80	54.20	265.47	175.11	-238.26	24.03	2,457.38	2,169.96	287.42	8.550	
7,400.00	6,801.66	6,786.66	6,786.66	54.32	269.47	175.13	-238.26	24.03	2,462.53	2,170.79	291.74	8.441	
7,498.36	6,900.00	6,885.00	6,885.00	54.40	273.40	-71.33	-238.26	24.03	2,464.22	2,168.56	295.65	8.335	
7,500.00	6,901.64	6,886.64	6,886.64	54.40	273.47	-71.33	-238.26	24.03	2,464.22	2,168.49	295.72	8.333	
7,600.00	7,001.64	6,986.64	6,986.64	54.46	277.47	-71.33	-238.26	24.03	2,464.22	2,164.37	299.84	8.218	
7,700.00	7,101.64	7,086.64	7,086.64	54.51	281.47	-71.33	-238.26	24.03	2,464.22	2,160.25	303.97	8.107	
7,800.00	7,201.64	7,186.64	7,186.64	54.57	285.47	-71.33	-238.26	24.03	2,464.22	2,156.12	308.09	7.998	
7,900.00	7,301.64	7,286.64	7,286.64	54.64	289.47	-71.33	-238.26	24.03	2,464.22	2,151.99	312.22	7.893	
8,000.00	7,401.64	7,386.64	7,386.64	54.70	293.47	-71.33	-238.26	24.03	2,464.22	2,147.86	316.35	7.789	
8,100.00	7,501.64	7,486.64	7,486.64	54.76	297.47	-71.33	-238.26	24.03	2,464.22	2,143.73	320.48	7.689	
8,200.00	7,601.64	7,586.64	7,586.64	54.82	301.47	-71.33	-238.26	24.03	2,464.22	2,139.60	324.61	7.591	
8,300.00	7,701.64	7,686.64	7,686.64	54.89	305.47	-71.33	-238.26	24.03	2,464.22	2,135.47	328.75	7.496	
8,400.00	7,801.64	7,786.64	7,786.64	54.95	309.47	-71.33	-238.26	24.03	2,464.22	2,131.33	332.88	7.403	
8,498.36	7,900.00	7,885.00	7,885.00	55.02	313.40	-71.33	-238.26	24.03	2,464.22	2,127.26	336.95	7.313	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_VOGL 21-5
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4845.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_VOGL 3 PAD	<b>MD Reference:</b>	WELL @ 4845.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_VOGL 21-5	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_VOGL 21-5	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 12-28-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4845.00ft (Original Well Elev) Coordinates are relative to: P\_VOGL 21-5  
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone  
Central Meridian is 105° 30' 0.000 W ° Grid Convergence at Surface is: 0.37°





<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_VOGL 21-5
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4845.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_VOGL 3 PAD	<b>MD Reference:</b>	WELL @ 4845.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_VOGL 21-5	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_VOGL 21-5	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 12-28-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4845.00ft (Original Well Elev) Coordinates are relative to: P\_VOGL 21-5  
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone  
Central Meridian is 105° 30' 0.000 W ° Grid Convergence at Surface is: 0.37°

