



US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_VOGL 3 PAD

P_VOGL 31-5

P_VOGL 31-5

Plan: PLAN #1 12-28-09 RHS

Standard Planning Report

28 December, 2009





P_VOGL 31-5
 COLORADO NORTHERN ZONE - 83
 SECTION 5 T2N R67W
 315 FNL 349 FWL
 LAT: 40° 10' 27.948 N
 LONG: 104° 55' 19.488 W



Azimuths to True North
 Magnetic North: 9.13°
 Magnetic Field
 Strength: 53202.6nT
 Dip Angle: 66.91°
 Date: 9/1/2009
 Model: IGRF200510

WELL DETAILS: P_VOGL 31-5

+N/-S	+E/-W	Northing	Easting	Ground Level:	Latitude	Longitude	Slot
0.00	0.00	1306913.99	3161491.11	4830.00	40° 10' 27.948 N	104° 55' 19.488 W	

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3708.00	3794.15	PARKMAN
4146.00	4247.49	SUSSEX
4672.00	4791.90	SHANNON
7037.00	7187.27	NIO A
7292.00	7442.27	CODELL
7722.00	7872.27	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	
1497.29	14.95	195.67	1488.85	-93.32	-26.17	2.00	195.67	96.92	
5439.98	14.95	195.67	5298.15	-1072.38	-300.78	0.00	0.00	1113.76	
6187.27	0.00	0.00	6037.00	-1165.69	-326.96	2.00	180.00	1210.68	
8022.27	0.00	0.00	7872.00	-1165.69	-326.96	0.00	0.00	1210.68	PBHL_VOGL 31-5(1485 FNL 50 FWL)50' TGT RAD

CASING DETAILS

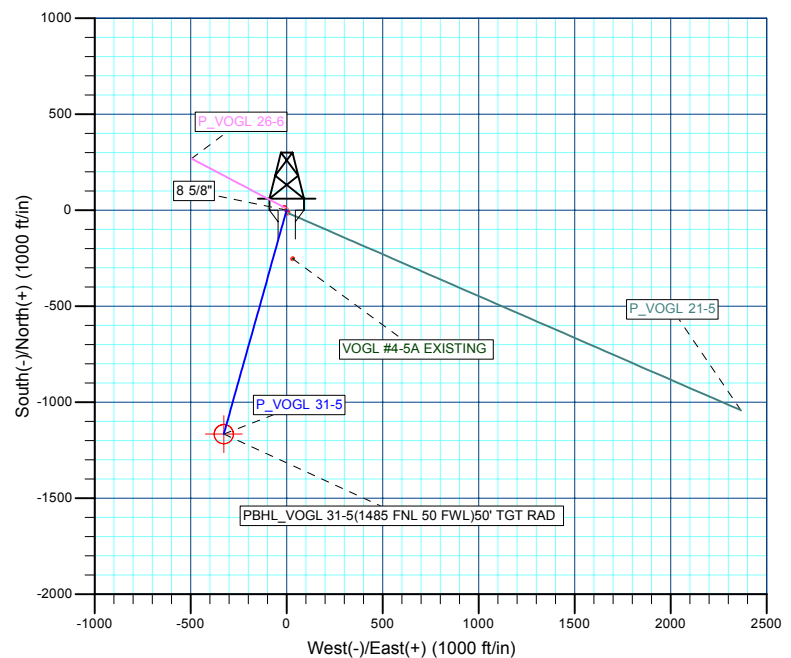
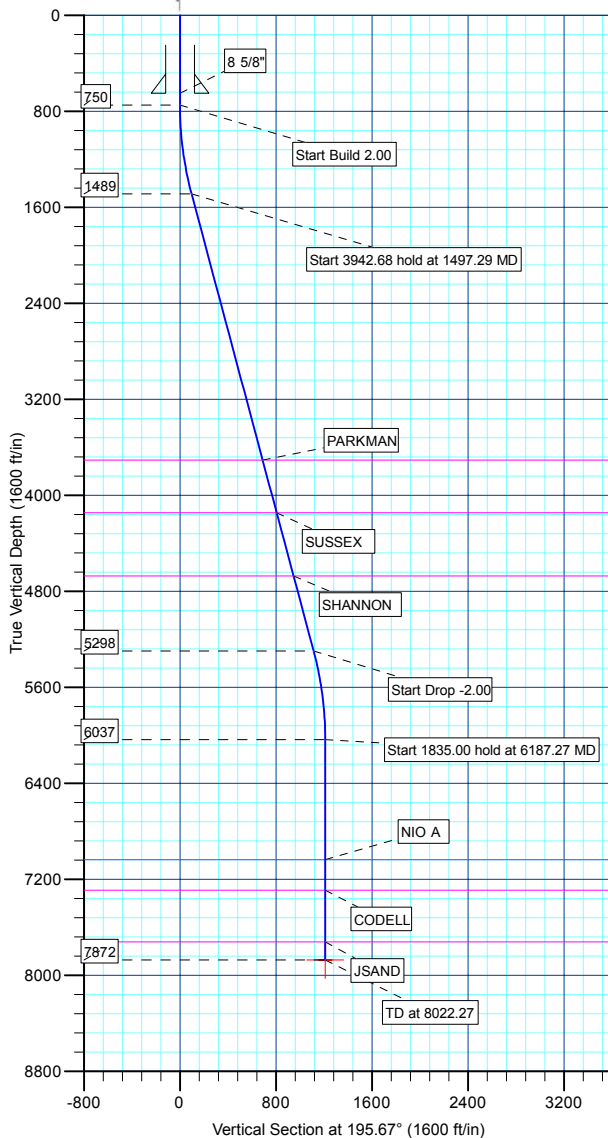
TVD	MD	Name	Size
650.00	650.00	8 5/8"	8.62

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL	7872.00	-1165.69	-326.96	1305746.20	3161171.7540	10° 16.428 N	104° 55' 23.700 W	Circle (Radius: 50.00)



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



Plan: PLAN #1 12-28-09 RHS (P_VOGL 31-5/P_VOGL 31-5)

Created By: Robert H. Scott

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_VOGL 31-5
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4845.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4845.00ft (Original Well Elev)
Site:	WELD_VOGL 3 PAD	North Reference:	True
Well:	P_VOGL 31-5	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_VOGL 31-5		
Design:	PLAN #1 12-28-09 RHS		

Project	COLORADO NORTHERN ZONE - 83, KERR MCGEE OIL & GAS ONSHORE LP		
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 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 31-5					
Well Position	+N/-S	14.56 ft	Northing:	1,306,913.99 ft	Latitude:	40° 10' 27.948 N
	+E/-W	-8.38 ft	Easting:	3,161,491.11 ft	Longitude:	104° 55' 19.488 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,830.00 ft

Wellbore	P_VOGL 31-5				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	9/1/2009	9.13	66.91	53,203

Design	PLAN #1 12-28-09 RHS			
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	195.67

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
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	
1,497.29	14.95	195.67	1,488.85	-93.32	-26.17	2.00	2.00	0.00	195.67	
5,439.98	14.95	195.67	5,298.15	-1,072.38	-300.78	0.00	0.00	0.00	0.00	
6,187.27	0.00	0.00	6,037.00	-1,165.69	-326.96	2.00	-2.00	0.00	180.00	
8,022.27	0.00	0.00	7,872.00	-1,165.69	-326.96	0.00	0.00	0.00	0.00	PBHL_VOGL 31-5(

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_VOGL 31-5
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4845.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4845.00ft (Original Well Elev)
Site:	WELD_VOGL 3 PAD	North Reference:	True
Well:	P_VOGL 31-5	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_VOGL 31-5		
Design:	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)
Start Build 2.00									
750.00	0.00	0.00	750.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	1.00	195.67	800.00	-0.42	-0.12	0.44	2.00	2.00	0.00
900.00	3.00	195.67	899.93	-3.78	-1.06	3.93	2.00	2.00	0.00
1,000.00	5.00	195.67	999.68	-10.50	-2.94	10.90	2.00	2.00	0.00
1,100.00	7.00	195.67	1,099.13	-20.56	-5.77	21.35	2.00	2.00	0.00
1,200.00	9.00	195.67	1,198.15	-33.96	-9.53	35.27	2.00	2.00	0.00
1,300.00	11.00	195.67	1,296.63	-50.68	-14.21	52.63	2.00	2.00	0.00
1,400.00	13.00	195.67	1,394.44	-70.70	-19.83	73.42	2.00	2.00	0.00
Start 3942.68 hold at 1497.29 MD									
1,497.29	14.95	195.67	1,488.85	-93.32	-26.17	96.92	2.00	2.00	0.00
1,500.00	14.95	195.67	1,491.46	-93.99	-26.36	97.61	0.00	0.00	0.00
1,600.00	14.95	195.67	1,588.08	-118.82	-33.33	123.40	0.00	0.00	0.00
1,700.00	14.95	195.67	1,684.70	-143.65	-40.29	149.20	0.00	0.00	0.00
1,800.00	14.95	195.67	1,781.31	-168.48	-47.26	174.99	0.00	0.00	0.00
1,900.00	14.95	195.67	1,877.93	-193.32	-54.22	200.78	0.00	0.00	0.00
2,000.00	14.95	195.67	1,974.55	-218.15	-61.19	226.57	0.00	0.00	0.00
2,100.00	14.95	195.67	2,071.16	-242.98	-68.15	252.36	0.00	0.00	0.00
2,200.00	14.95	195.67	2,167.78	-267.81	-75.12	278.15	0.00	0.00	0.00
2,300.00	14.95	195.67	2,264.40	-292.65	-82.08	303.94	0.00	0.00	0.00
2,400.00	14.95	195.67	2,361.02	-317.48	-89.05	329.73	0.00	0.00	0.00
2,500.00	14.95	195.67	2,457.63	-342.31	-96.01	355.52	0.00	0.00	0.00
2,600.00	14.95	195.67	2,554.25	-367.14	-102.98	381.31	0.00	0.00	0.00
2,700.00	14.95	195.67	2,650.87	-391.98	-109.94	407.10	0.00	0.00	0.00
2,800.00	14.95	195.67	2,747.48	-416.81	-116.91	432.89	0.00	0.00	0.00
2,900.00	14.95	195.67	2,844.10	-441.64	-123.87	458.68	0.00	0.00	0.00
3,000.00	14.95	195.67	2,940.72	-466.47	-130.84	484.47	0.00	0.00	0.00
3,100.00	14.95	195.67	3,037.33	-491.31	-137.80	510.27	0.00	0.00	0.00
3,200.00	14.95	195.67	3,133.95	-516.14	-144.77	536.06	0.00	0.00	0.00
3,300.00	14.95	195.67	3,230.57	-540.97	-151.73	561.85	0.00	0.00	0.00
3,400.00	14.95	195.67	3,327.18	-565.80	-158.70	587.64	0.00	0.00	0.00
3,500.00	14.95	195.67	3,423.80	-590.63	-165.66	613.43	0.00	0.00	0.00
3,600.00	14.95	195.67	3,520.42	-615.47	-172.63	639.22	0.00	0.00	0.00
3,700.00	14.95	195.67	3,617.04	-640.30	-179.59	665.01	0.00	0.00	0.00
PARKMAN									
3,794.15	14.95	195.67	3,708.00	-663.68	-186.15	689.29	0.00	0.00	0.00
3,800.00	14.95	195.67	3,713.65	-665.13	-186.56	690.80	0.00	0.00	0.00
3,900.00	14.95	195.67	3,810.27	-689.96	-193.52	716.59	0.00	0.00	0.00
4,000.00	14.95	195.67	3,906.89	-714.80	-200.49	742.38	0.00	0.00	0.00
4,100.00	14.95	195.67	4,003.50	-739.63	-207.45	768.17	0.00	0.00	0.00
4,200.00	14.95	195.67	4,100.12	-764.46	-214.42	793.96	0.00	0.00	0.00
SUSSEX									
4,247.49	14.95	195.67	4,146.00	-776.25	-217.73	806.21	0.00	0.00	0.00
4,300.00	14.95	195.67	4,196.74	-789.29	-221.38	819.75	0.00	0.00	0.00
4,400.00	14.95	195.67	4,293.35	-814.13	-228.35	845.54	0.00	0.00	0.00
4,500.00	14.95	195.67	4,389.97	-838.96	-235.31	871.33	0.00	0.00	0.00
4,600.00	14.95	195.67	4,486.59	-863.79	-242.28	897.13	0.00	0.00	0.00
4,700.00	14.95	195.67	4,583.21	-888.62	-249.24	922.92	0.00	0.00	0.00
SHANNON									
4,791.90	14.95	195.67	4,672.00	-911.45	-255.65	946.62	0.00	0.00	0.00
4,800.00	14.95	195.67	4,679.82	-913.46	-256.21	948.71	0.00	0.00	0.00
4,900.00	14.95	195.67	4,776.44	-938.29	-263.17	974.50	0.00	0.00	0.00
5,000.00	14.95	195.67	4,873.06	-963.12	-270.14	1,000.29	0.00	0.00	0.00

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_VOGL 31-5
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4845.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4845.00ft (Original Well Elev)
Site:	WELD_VOGL 3 PAD	North Reference:	True
Well:	P_VOGL 31-5	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_VOGL 31-5		
Design:	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)
5,100.00	14.95	195.67	4,969.67	-987.95	-277.10	1,026.08	0.00	0.00	0.00
5,200.00	14.95	195.67	5,066.29	-1,012.79	-284.07	1,051.87	0.00	0.00	0.00
5,300.00	14.95	195.67	5,162.91	-1,037.62	-291.03	1,077.66	0.00	0.00	0.00
5,400.00	14.95	195.67	5,259.52	-1,062.45	-298.00	1,103.45	0.00	0.00	0.00
Start Drop -2.00									
5,439.98	14.95	195.67	5,298.15	-1,072.38	-300.78	1,113.76	0.00	0.00	0.00
5,500.00	13.75	195.67	5,356.30	-1,086.70	-304.80	1,128.63	2.00	-2.00	0.00
5,600.00	11.75	195.67	5,453.83	-1,107.94	-310.76	1,150.69	2.00	-2.00	0.00
5,700.00	9.75	195.67	5,552.07	-1,125.89	-315.79	1,169.34	2.00	-2.00	0.00
5,800.00	7.75	195.67	5,650.90	-1,140.53	-319.90	1,184.54	2.00	-2.00	0.00
5,900.00	5.75	195.67	5,750.21	-1,151.84	-323.07	1,196.29	2.00	-2.00	0.00
6,000.00	3.75	195.67	5,849.86	-1,159.80	-325.30	1,204.56	2.00	-2.00	0.00
6,100.00	1.75	195.67	5,949.74	-1,164.41	-326.60	1,209.35	2.00	-2.00	0.00
Start 1835.00 hold at 6187.27 MD									
6,187.27	0.00	0.00	6,037.00	-1,165.69	-326.96	1,210.68	2.00	-2.00	0.00
6,200.00	0.00	0.00	6,049.73	-1,165.69	-326.96	1,210.68	0.00	0.00	0.00
6,300.00	0.00	0.00	6,149.73	-1,165.69	-326.96	1,210.68	0.00	0.00	0.00
6,400.00	0.00	0.00	6,249.73	-1,165.69	-326.96	1,210.68	0.00	0.00	0.00
6,500.00	0.00	0.00	6,349.73	-1,165.69	-326.96	1,210.68	0.00	0.00	0.00
6,600.00	0.00	0.00	6,449.73	-1,165.69	-326.96	1,210.68	0.00	0.00	0.00
6,700.00	0.00	0.00	6,549.73	-1,165.69	-326.96	1,210.68	0.00	0.00	0.00
6,800.00	0.00	0.00	6,649.73	-1,165.69	-326.96	1,210.68	0.00	0.00	0.00
6,900.00	0.00	0.00	6,749.73	-1,165.69	-326.96	1,210.68	0.00	0.00	0.00
7,000.00	0.00	0.00	6,849.73	-1,165.69	-326.96	1,210.68	0.00	0.00	0.00
7,100.00	0.00	0.00	6,949.73	-1,165.69	-326.96	1,210.68	0.00	0.00	0.00
NIO A									
7,187.27	0.00	0.00	7,037.00	-1,165.69	-326.96	1,210.68	0.00	0.00	0.00
7,200.00	0.00	0.00	7,049.73	-1,165.69	-326.96	1,210.68	0.00	0.00	0.00
7,300.00	0.00	0.00	7,149.73	-1,165.69	-326.96	1,210.68	0.00	0.00	0.00
7,400.00	0.00	0.00	7,249.73	-1,165.69	-326.96	1,210.68	0.00	0.00	0.00
CODELL									
7,442.27	0.00	0.00	7,292.00	-1,165.69	-326.96	1,210.68	0.00	0.00	0.00
7,500.00	0.00	0.00	7,349.73	-1,165.69	-326.96	1,210.68	0.00	0.00	0.00
7,600.00	0.00	0.00	7,449.73	-1,165.69	-326.96	1,210.68	0.00	0.00	0.00
7,700.00	0.00	0.00	7,549.73	-1,165.69	-326.96	1,210.68	0.00	0.00	0.00
7,800.00	0.00	0.00	7,649.73	-1,165.69	-326.96	1,210.68	0.00	0.00	0.00
JSAND									
7,872.27	0.00	0.00	7,722.00	-1,165.69	-326.96	1,210.68	0.00	0.00	0.00
7,900.00	0.00	0.00	7,749.73	-1,165.69	-326.96	1,210.68	0.00	0.00	0.00
8,000.00	0.00	0.00	7,849.73	-1,165.69	-326.96	1,210.68	0.00	0.00	0.00
PBHL_VOGL 31-5(1485 FNL 50 FWL)50' TGT RAD									
8,022.27	0.00	0.00	7,872.00	-1,165.69	-326.96	1,210.68	0.00	0.00	0.00

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 31-5(1485 FNL 50 FWL)50' TGT RAD	0.00	0.00	7,872.00	-1,165.69	-326.96	1,305,746.20	3,161,171.75	40° 10' 16.428 N	104° 55' 23.700 W
- plan hits target center									
- Circle (radius 50.00)									

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_VOGL 31-5
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4845.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4845.00ft (Original Well Elev)
Site:	WELD_VOGL 3 PAD	North Reference:	True
Well:	P_VOGL 31-5	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_VOGL 31-5		
Design:	PLAN #1 12-28-09 RHS		

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

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,794.15	3,708.00	PARKMAN				
4,247.49	4,146.00	SUSSEX				
4,791.90	4,672.00	SHANNON				
7,187.27	7,037.00	NIO A				
7,442.27	7,292.00	CODELL				
7,872.27	7,722.00	JSAND				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
750.00	750.00	0.00	0.00	Start Build 2.00	
1,497.29	1,488.85	-93.32	-26.17	Start 3942.68 hold at 1497.29 MD	
5,439.98	5,298.15	-1,072.38	-300.78	Start Drop -2.00	
6,187.27	6,037.00	-1,165.69	-326.96	Start 1835.00 hold at 6187.27 MD	
8,022.27	7,872.00	-1,165.69	-326.96	TD at 8022.27	



US ROCKIES REGION PLANNING

**COLORADO NORTHERN ZONE - 83
WELD_VOGL 3 PAD
P_VOGL 31-5**

**P_VOGL 31-5
PLAN #1 12-28-09 RHS**

Anticollision Report

28 December, 2009



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_VOGL 31-5
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4845.00ft (Original Well Elev)
Reference Site:	WELD_VOGL 3 PAD	MD Reference:	WELL @ 4845.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_VOGL 31-5	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_VOGL 31-5	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-28-09 RHS	Offset TVD Reference:	Offset Datum

Reference	PLAN #1 12-28-09 RHS		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	0.00 to 20,000.00ft	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.00ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date 12/28/2009				
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.00	8,022.27	PLAN #1 12-28-09 RHS (P_VOGL 31-5)	MWD	MWD - Standard	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
WELD_VOGL 3 PAD						
P_VOGL 21-5 - P_VOGL 21-5 - PLAN #1 12-28-09 RHS	750.00	750.00	16.80	13.69	5.398 CC	
P_VOGL 21-5 - P_VOGL 21-5 - PLAN #1 12-28-09 RHS	800.00	799.76	16.86	13.54	5.088 ES	
P_VOGL 21-5 - P_VOGL 21-5 - PLAN #1 12-28-09 RHS	900.00	899.12	17.94	14.26	4.878 SF	
P_VOGL 26-6 - P_VOGL 26-6 - PLAN #1 12-28-09 RHS	750.00	750.00	18.36	15.25	5.897 CC, ES	
P_VOGL 26-6 - P_VOGL 26-6 - PLAN #1 12-28-09 RHS	800.00	799.70	19.01	15.70	5.729 SF	
VOGL #4-5A EXISTING - VOGL #4-5A EXISTING - VOG	2,031.42	1,989.91	99.49	15.77	1.188 Level 2, CC	
VOGL #4-5A EXISTING - VOGL #4-5A EXISTING - VOG	2,100.00	2,056.16	101.05	14.45	1.167 Level 2, ES, SF	

Offset Design WELD_VOGL 3 PAD - P_VOGL 21-5 - P_VOGL 21-5 - 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	150.07	-14.56	8.38	16.80				
100.00	100.00	100.00	100.00	0.10	0.10	150.07	-14.56	8.38	16.80	16.61	0.19	87.953	
200.00	200.00	200.00	200.00	0.32	0.32	150.07	-14.56	8.38	16.80	16.16	0.64	26.232	
300.00	300.00	300.00	300.00	0.55	0.55	150.07	-14.56	8.38	16.80	15.71	1.09	15.414	
400.00	400.00	400.00	400.00	0.77	0.77	150.07	-14.56	8.38	16.80	15.26	1.54	10.914	
500.00	500.00	500.00	500.00	0.99	0.99	150.07	-14.56	8.38	16.80	14.81	1.99	8.447	
600.00	600.00	600.00	600.00	1.22	1.22	150.07	-14.56	8.38	16.80	14.36	2.44	6.890	
700.00	700.00	700.00	700.00	1.44	1.44	150.07	-14.56	8.38	16.80	13.92	2.89	5.818	
750.00	750.00	750.00	750.00	1.56	1.56	150.07	-14.56	8.38	16.80	13.69	3.11	5.398 CC	
800.00	800.00	799.76	799.76	1.65	1.66	-47.52	-14.74	8.78	16.86	13.54	3.31	5.088 ES	
900.00	899.93	899.12	899.05	1.83	1.85	-62.08	-16.11	11.94	17.94	14.26	3.68	4.878 SF	
1,000.00	999.68	998.02	997.71	2.02	2.06	-83.73	-18.85	18.22	22.84	18.77	4.07	5.618	
1,100.00	1,099.13	1,096.15	1,095.31	2.24	2.28	-100.77	-22.90	27.53	33.60	29.12	4.48	7.497	
1,200.00	1,198.15	1,193.23	1,191.46	2.49	2.54	-110.93	-28.23	39.76	50.06	45.13	4.94	10.140	
1,300.00	1,296.63	1,288.98	1,285.80	2.78	2.83	-116.73	-34.75	54.73	71.58	66.14	5.44	13.150	
1,400.00	1,394.44	1,383.15	1,378.01	3.13	3.16	-120.17	-42.39	72.27	97.74	91.73	6.01	16.267	
1,497.29	1,488.85	1,473.03	1,465.38	3.52	3.52	-122.22	-50.80	91.59	127.39	120.76	6.62	19.239	
1,500.00	1,491.46	1,475.51	1,467.78	3.53	3.53	-122.28	-51.05	92.16	128.27	121.63	6.64	19.319	
1,600.00	1,588.08	1,566.24	1,555.24	3.98	3.95	-123.64	-60.68	114.28	162.00	154.66	7.35	22.051	
1,700.00	1,684.70	1,655.54	1,640.54	4.44	4.42	-123.92	-71.23	138.51	197.90	189.80	8.10	24.420	
1,800.00	1,781.31	1,743.27	1,723.49	4.93	4.93	-123.62	-82.63	164.68	235.86	226.96	8.90	26.489	

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

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_VOGL 31-5
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4845.00ft (Original Well Elev)
Reference Site:	WELD_VOGL 3 PAD	MD Reference:	WELL @ 4845.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_VOGL 31-5	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_VOGL 31-5	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-28-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_VOGL 3 PAD - P_VOGL 21-5 - P_VOGL 21-5 - 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						
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
1,900.00	1,877.93	1,829.32	1,803.96	5.42	5.49	-122.99	-94.79	192.60	275.86	266.12	9.74	28.322	
2,000.00	1,974.55	1,913.57	1,881.84	5.92	6.09	-122.18	-107.62	222.07	317.87	307.27	10.60	29.975	
2,100.00	2,071.16	2,000.00	1,960.71	6.43	6.76	-121.23	-121.73	254.47	361.92	350.40	11.51	31.431	
2,200.00	2,167.78	2,076.37	2,029.49	6.94	7.40	-120.33	-134.99	284.90	407.90	395.49	12.41	32.880	
2,300.00	2,264.40	2,154.80	2,099.17	7.46	8.11	-119.38	-149.36	317.89	455.86	442.53	13.33	34.202	
2,400.00	2,361.02	2,236.83	2,171.16	7.98	8.89	-118.40	-165.06	353.95	505.50	491.21	14.29	35.379	
2,500.00	2,457.63	2,323.19	2,246.84	8.50	9.73	-117.54	-181.67	392.10	555.42	540.14	15.28	36.348	
2,600.00	2,554.25	2,409.56	2,322.52	9.03	10.58	-116.81	-198.29	430.25	605.43	589.15	16.28	37.196	
2,700.00	2,650.87	2,495.92	2,398.19	9.55	11.44	-116.20	-214.90	468.40	655.50	638.22	17.28	37.945	
2,800.00	2,747.48	2,582.29	2,473.87	10.08	12.30	-115.67	-231.52	506.55	705.62	687.34	18.28	38.610	
2,900.00	2,844.10	2,668.65	2,549.55	10.61	13.17	-115.21	-248.13	544.70	755.77	736.50	19.28	39.205	
3,000.00	2,940.72	2,755.01	2,625.23	11.14	14.04	-114.81	-264.75	582.85	805.96	785.68	20.28	39.741	
3,100.00	3,037.33	2,841.38	2,700.91	11.67	14.92	-114.46	-281.36	621.00	856.18	834.89	21.28	40.225	
3,200.00	3,133.95	2,927.74	2,776.59	12.21	15.80	-114.14	-297.98	659.15	906.42	884.13	22.29	40.666	
3,300.00	3,230.57	3,014.10	2,852.27	12.74	16.68	-113.86	-314.59	697.30	956.67	933.38	23.29	41.069	
3,400.00	3,327.18	3,100.47	2,927.94	13.27	17.56	-113.61	-331.21	735.45	1,006.94	982.64	24.30	41.438	
3,500.00	3,423.80	3,186.83	3,003.62	13.81	18.44	-113.38	-347.82	773.60	1,057.23	1,031.92	25.31	41.778	
3,600.00	3,520.42	3,273.20	3,079.30	14.34	19.33	-113.17	-364.43	811.75	1,107.52	1,081.21	26.31	42.092	
3,700.00	3,617.04	3,359.56	3,154.98	14.88	20.21	-112.98	-381.05	849.90	1,157.83	1,130.51	27.32	42.383	
3,800.00	3,713.65	3,445.92	3,230.66	15.42	21.10	-112.80	-397.66	888.05	1,208.14	1,179.82	28.32	42.654	
3,900.00	3,810.27	3,532.29	3,306.34	15.95	21.99	-112.64	-414.28	926.20	1,258.46	1,229.13	29.33	42.907	
4,000.00	3,906.89	3,618.65	3,382.02	16.49	22.87	-112.49	-430.89	964.35	1,308.79	1,278.46	30.34	43.144	
4,100.00	4,003.50	3,705.01	3,457.69	17.02	23.76	-112.36	-447.51	1,002.50	1,359.13	1,327.79	31.34	43.366	
4,200.00	4,100.12	3,791.38	3,533.37	17.56	24.65	-112.23	-464.12	1,040.65	1,409.47	1,377.12	32.35	43.575	
4,300.00	4,196.74	3,877.74	3,609.05	18.10	25.54	-112.11	-480.74	1,078.80	1,459.81	1,426.46	33.35	43.772	
4,400.00	4,293.35	3,964.11	3,684.73	18.64	26.44	-112.00	-497.35	1,116.95	1,510.16	1,475.81	34.35	43.958	
4,500.00	4,389.97	4,050.47	3,760.41	19.17	27.33	-111.89	-513.96	1,155.10	1,560.52	1,525.16	35.36	44.134	
4,600.00	4,486.59	4,136.83	3,836.09	19.71	28.22	-111.80	-530.58	1,193.25	1,610.88	1,574.51	36.36	44.301	
4,700.00	4,583.21	4,223.20	3,911.77	20.25	29.11	-111.71	-547.19	1,231.40	1,661.24	1,623.87	37.36	44.460	
4,800.00	4,679.82	4,309.56	3,987.44	20.79	30.00	-111.62	-563.81	1,269.55	1,711.60	1,673.23	38.37	44.611	
4,900.00	4,776.44	4,395.92	4,063.12	21.33	30.90	-111.54	-580.42	1,307.70	1,761.97	1,722.60	39.37	44.756	
5,000.00	4,873.06	4,482.29	4,138.80	21.87	31.79	-111.46	-597.04	1,345.85	1,812.34	1,771.97	40.37	44.894	
5,100.00	4,969.67	4,568.65	4,214.48	22.40	32.68	-111.39	-613.65	1,384.00	1,862.71	1,821.34	41.37	45.026	
5,200.00	5,066.29	4,655.02	4,290.16	22.94	33.58	-111.32	-630.27	1,422.15	1,913.08	1,870.71	42.37	45.152	
5,300.00	5,162.91	4,741.38	4,365.84	23.48	34.47	-111.26	-646.88	1,460.30	1,963.46	1,920.09	43.37	45.273	
5,400.00	5,259.52	4,827.74	4,441.52	24.02	35.36	-111.19	-663.50	1,498.45	2,013.83	1,969.47	44.37	45.390	
5,439.98	5,298.15	4,862.27	4,471.77	24.24	35.72	-111.17	-670.14	1,513.70	2,033.97	1,989.21	44.77	45.435	
5,500.00	5,356.30	4,914.20	4,517.28	24.51	36.26	-111.76	-680.13	1,536.64	2,064.01	2,018.42	45.59	45.270	
5,600.00	5,453.83	5,001.12	4,593.45	24.84	37.16	-112.64	-696.85	1,575.04	2,113.17	2,066.32	46.85	45.105	
5,700.00	5,552.07	5,088.44	4,669.96	25.14	38.06	-113.39	-713.65	1,613.61	2,161.17	2,113.12	48.05	44.980	
5,800.00	5,650.90	5,176.05	4,746.73	25.41	38.97	-114.02	-730.50	1,652.30	2,208.00	2,158.82	49.18	44.899	
5,900.00	5,750.21	5,263.84	4,823.66	25.63	39.88	-114.55	-747.39	1,691.09	2,253.64	2,203.41	50.23	44.863	
6,000.00	5,849.86	5,351.71	4,900.65	25.82	40.79	-114.97	-764.29	1,729.90	2,298.10	2,246.89	51.21	44.872	
6,100.00	5,949.74	5,439.54	4,977.62	25.96	41.70	-115.30	-781.19	1,768.70	2,341.40	2,289.28	52.11	44.928	
6,187.27	6,037.00	5,516.10	5,044.70	26.06	42.50	80.15	-795.92	1,802.52	2,378.24	2,325.40	52.84	45.006	
6,200.00	6,049.73	5,527.25	5,054.48	26.07	42.61	80.23	-798.06	1,807.44	2,383.56	2,330.66	52.90	45.058	
6,300.00	6,149.73	5,614.88	5,131.26	26.16	43.52	80.83	-814.92	1,846.15	2,425.43	2,372.10	53.32	45.484	
6,400.00	6,249.73	5,702.50	5,208.05	26.25	44.43	81.42	-831.78	1,884.86	2,467.53	2,413.79	53.74	45.915	
6,500.00	6,349.73	5,790.13	5,284.83	26.34	45.34	81.98	-848.64	1,923.57	2,509.86	2,455.71	54.15	46.350	
6,600.00	6,449.73	5,877.76	5,361.62	26.44	46.25	82.53	-865.50	1,962.28	2,552.39	2,497.83	54.55	46.788	
6,700.00	6,549.73	5,965.39	5,438.41	26.53	47.16	83.06	-882.35	2,000.98	2,595.11	2,540.17	54.95	47.229	
6,800.00	6,649.73	6,053.01	5,515.19	26.63	48.07	83.58	-899.21	2,039.69	2,638.03	2,582.69	55.34	47.673	

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

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_VOGL 31-5
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4845.00ft (Original Well Elev)
Reference Site:	WELD_VOGL 3 PAD	MD Reference:	WELL @ 4845.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_VOGL 31-5	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_VOGL 31-5	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-28-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_VOGL 3 PAD - P_VOGL 21-5 - P_VOGL 21-5 - 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									
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	6,749.73	6,564.31	5,982.41	26.72	51.69	85.88	-981.46	2,228.56	2,674.58	2,618.20	56.38	47.435	
7,000.00	6,849.73	7,175.68	6,578.00	26.82	53.98	87.19	-1,034.48	2,350.29	2,694.20	2,637.01	57.19	47.109	
7,100.00	6,949.73	7,548.09	6,949.73	26.92	54.43	87.37	-1,041.73	2,366.94	2,696.74	2,639.12	57.62	46.801	
7,200.00	7,049.73	7,648.09	7,049.73	27.03	54.48	87.37	-1,041.73	2,366.94	2,696.74	2,638.93	57.82	46.643	
7,300.00	7,149.73	7,748.09	7,149.73	27.13	54.54	87.37	-1,041.73	2,366.94	2,696.74	2,638.73	58.01	46.485	
7,400.00	7,249.73	7,848.09	7,249.73	27.24	54.60	87.37	-1,041.73	2,366.94	2,696.74	2,638.53	58.21	46.325	
7,500.00	7,349.73	7,948.09	7,349.73	27.34	54.67	87.37	-1,041.73	2,366.94	2,696.74	2,638.33	58.42	46.165	
7,600.00	7,449.73	8,048.09	7,449.73	27.45	54.73	87.37	-1,041.73	2,366.94	2,696.74	2,638.12	58.62	46.003	
7,700.00	7,549.73	8,148.09	7,549.73	27.56	54.79	87.37	-1,041.73	2,366.94	2,696.74	2,637.91	58.83	45.840	
7,800.00	7,649.73	8,248.09	7,649.73	27.67	54.85	87.37	-1,041.73	2,366.94	2,696.74	2,637.70	59.04	45.677	
7,900.00	7,749.73	8,348.09	7,749.73	27.78	54.92	87.37	-1,041.73	2,366.94	2,696.74	2,637.49	59.25	45.512	
8,000.00	7,849.73	8,448.09	7,849.73	27.90	54.99	87.37	-1,041.73	2,366.94	2,696.74	2,637.27	59.47	45.347	
8,022.27	7,872.00	8,470.36	7,872.00	27.92	55.00	87.37	-1,041.73	2,366.94	2,696.74	2,637.23	59.52	45.310	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_VOGL 31-5
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4845.00ft (Original Well Elev)
Reference Site:	WELD_VOGL 3 PAD	MD Reference:	WELL @ 4845.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_VOGL 31-5	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_VOGL 31-5	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-28-09 RHS	Offset TVD Reference:	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									
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
0.00	0.00	0.00	0.00	0.00	0.00	-37.51	14.56	-11.18	18.36				
100.00	100.00	100.00	100.00	0.10	0.10	-37.51	14.56	-11.18	18.36	18.17	0.19	96.089	
200.00	200.00	200.00	200.00	0.32	0.32	-37.51	14.56	-11.18	18.36	17.72	0.64	28.658	
300.00	300.00	300.00	300.00	0.55	0.55	-37.51	14.56	-11.18	18.36	17.27	1.09	16.840	
400.00	400.00	400.00	400.00	0.77	0.77	-37.51	14.56	-11.18	18.36	16.82	1.54	11.924	
500.00	500.00	500.00	500.00	0.99	0.99	-37.51	14.56	-11.18	18.36	16.37	1.99	9.229	
600.00	600.00	600.00	600.00	1.22	1.22	-37.51	14.56	-11.18	18.36	15.92	2.44	7.528	
700.00	700.00	700.00	700.00	1.44	1.44	-37.51	14.56	-11.18	18.36	15.47	2.89	6.356	
750.00	750.00	750.00	750.00	1.56	1.56	-37.51	14.56	-11.18	18.36	15.25	3.11	5.897 CC, ES	
800.00	800.00	799.70	799.70	1.65	1.66	127.32	14.76	-11.56	19.01	15.70	3.32	5.729 SF	
900.00	899.93	898.89	898.82	1.83	1.88	130.29	16.37	-14.60	24.30	20.59	3.70	6.559	
1,000.00	999.68	997.42	997.12	2.02	2.10	133.48	19.55	-20.62	34.95	30.85	4.11	8.514	
1,100.00	1,099.13	1,095.35	1,094.54	2.24	2.34	135.82	24.18	-29.41	50.81	46.29	4.52	11.231	
1,200.00	1,198.15	1,193.46	1,192.06	2.49	2.59	138.52	29.18	-38.89	69.90	64.94	4.97	14.078	
1,300.00	1,296.63	1,290.95	1,288.96	2.78	2.84	141.34	34.15	-48.31	91.75	86.32	5.42	16.915	
1,400.00	1,394.44	1,387.70	1,385.13	3.13	3.11	144.00	39.08	-57.66	116.49	110.59	5.90	19.751	
1,497.29	1,488.85	1,481.00	1,477.88	3.52	3.36	146.34	43.84	-66.68	143.43	137.06	6.37	22.514	
1,500.00	1,491.46	1,483.58	1,480.44	3.53	3.37	146.41	43.97	-66.93	144.22	137.83	6.38	22.588	
1,600.00	1,588.08	1,579.03	1,575.32	3.98	3.64	148.56	48.84	-76.15	173.51	166.59	6.92	25.088	
1,700.00	1,684.70	1,674.48	1,670.19	4.44	3.91	150.09	53.70	-85.37	202.96	195.50	7.46	27.213	
1,800.00	1,781.31	1,769.92	1,765.07	4.93	4.18	151.23	58.57	-94.59	232.50	224.49	8.01	29.034	
1,900.00	1,877.93	1,865.37	1,859.94	5.42	4.46	152.11	63.43	-103.82	262.11	253.55	8.56	30.605	
2,000.00	1,974.55	1,960.81	1,954.82	5.92	4.74	152.82	68.30	-113.04	291.77	282.64	9.13	31.971	
2,100.00	2,071.16	2,056.26	2,049.69	6.43	5.02	153.39	73.16	-122.26	321.46	311.77	9.69	33.167	
2,200.00	2,167.78	2,151.71	2,144.57	6.94	5.30	153.87	78.03	-131.48	351.17	340.91	10.26	34.223	
2,300.00	2,264.40	2,247.15	2,239.44	7.46	5.58	154.27	82.89	-140.71	380.91	370.07	10.83	35.159	
2,400.00	2,361.02	2,342.60	2,334.32	7.98	5.86	154.62	87.76	-149.93	410.65	399.24	11.41	35.995	
2,500.00	2,457.63	2,438.04	2,429.19	8.50	6.14	154.92	92.62	-159.15	440.41	428.43	11.99	36.746	
2,600.00	2,554.25	2,533.49	2,524.07	9.03	6.42	155.18	97.49	-168.37	470.18	457.62	12.56	37.422	
2,700.00	2,650.87	2,628.94	2,618.94	9.55	6.71	155.41	102.35	-177.60	499.96	486.81	13.14	38.036	
2,800.00	2,747.48	2,724.38	2,713.82	10.08	6.99	155.61	107.22	-186.82	529.74	516.01	13.73	38.594	
2,900.00	2,844.10	2,819.83	2,808.69	10.61	7.28	155.79	112.08	-196.04	559.53	545.22	14.31	39.103	
3,000.00	2,940.72	2,915.27	2,903.56	11.14	7.56	155.95	116.95	-205.26	589.32	574.43	14.89	39.571	
3,100.00	3,037.33	3,010.72	2,998.44	11.67	7.85	156.10	121.81	-214.49	619.12	603.64	15.48	40.001	
3,200.00	3,133.95	3,106.17	3,093.31	12.21	8.13	156.24	126.68	-223.71	648.92	632.86	16.06	40.398	
3,300.00	3,230.57	3,201.61	3,188.19	12.74	8.42	156.36	131.54	-232.93	678.72	662.07	16.65	40.765	
3,400.00	3,327.18	3,297.06	3,283.06	13.27	8.71	156.47	136.41	-242.15	708.53	691.29	17.24	41.106	
3,500.00	3,423.80	3,392.50	3,377.94	13.81	8.99	156.57	141.27	-251.38	738.34	720.51	17.82	41.423	
3,600.00	3,520.42	3,487.95	3,472.81	14.34	9.28	156.67	146.14	-260.60	768.15	749.73	18.41	41.718	
3,700.00	3,617.04	3,583.39	3,567.69	14.88	9.56	156.76	151.00	-269.82	797.96	778.96	19.00	41.995	
3,800.00	3,713.65	3,678.84	3,662.56	15.42	9.85	156.84	155.87	-279.04	827.77	808.18	19.59	42.254	
3,900.00	3,810.27	3,774.29	3,757.44	15.95	10.14	156.91	160.74	-288.27	857.59	837.41	20.18	42.497	
4,000.00	3,906.89	3,869.73	3,852.31	16.49	10.43	156.99	165.60	-297.49	887.40	866.63	20.77	42.725	
4,100.00	4,003.50	3,965.18	3,947.19	17.02	10.71	157.05	170.47	-306.71	917.22	895.86	21.36	42.941	
4,200.00	4,100.12	4,060.62	4,042.06	17.56	11.00	157.11	175.33	-315.93	947.04	925.09	21.95	43.144	
4,300.00	4,196.74	4,156.07	4,136.94	18.10	11.29	157.17	180.20	-325.16	976.86	954.32	22.54	43.336	
4,400.00	4,293.35	4,251.52	4,231.81	18.64	11.58	157.23	185.06	-334.38	1,006.68	983.55	23.13	43.517	
4,500.00	4,389.97	4,346.96	4,326.68	19.17	11.86	157.28	189.93	-343.60	1,036.50	1,012.78	23.72	43.690	
4,600.00	4,486.59	4,442.41	4,421.56	19.71	12.15	157.33	194.79	-352.82	1,066.32	1,042.01	24.32	43.853	
4,700.00	4,583.21	4,537.85	4,516.43	20.25	12.44	157.37	199.66	-362.05	1,096.15	1,071.24	24.91	44.009	
4,800.00	4,679.82	4,633.30	4,611.31	20.79	12.73	157.42	204.52	-371.27	1,125.97	1,100.47	25.50	44.156	
4,900.00	4,776.44	4,728.75	4,706.18	21.33	13.02	157.46	209.39	-380.49	1,155.79	1,129.70	26.09	44.297	

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

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_VOGL 31-5
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4845.00ft (Original Well Elev)
Reference Site:	WELD_VOGL 3 PAD	MD Reference:	WELL @ 4845.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_VOGL 31-5	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_VOGL 31-5	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-28-09 RHS	Offset TVD Reference:	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									
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	4,873.06	4,824.19	4,801.06	21.87	13.30	157.50	214.25	-389.71	1,185.62	1,158.93	26.68	44.432	
5,100.00	4,969.67	4,919.64	4,895.93	22.40	13.59	157.54	219.12	-398.94	1,215.44	1,188.16	27.28	44.560	
5,200.00	5,066.29	5,015.08	4,990.81	22.94	13.88	157.57	223.98	-408.16	1,245.27	1,217.40	27.87	44.682	
5,300.00	5,162.91	5,110.53	5,085.68	23.48	14.17	157.61	228.85	-417.38	1,275.09	1,246.63	28.46	44.800	
5,400.00	5,259.52	5,205.98	5,180.56	24.02	14.46	157.64	233.71	-426.60	1,304.92	1,275.86	29.05	44.912	
5,439.98	5,298.15	5,244.13	5,218.49	24.24	14.57	157.65	235.66	-430.29	1,316.84	1,287.55	29.29	44.956	
5,500.00	5,356.30	5,301.59	5,275.60	24.51	14.75	157.80	238.59	-435.84	1,334.19	1,304.50	29.69	44.934	
5,600.00	5,453.83	5,398.03	5,371.46	24.84	15.04	157.97	243.50	-445.16	1,360.60	1,330.29	30.31	44.894	
5,700.00	5,552.07	5,495.26	5,468.11	25.14	15.33	158.06	248.46	-454.56	1,383.88	1,352.99	30.89	44.797	
5,800.00	5,650.90	5,593.15	5,565.41	25.41	15.63	158.07	253.45	-464.01	1,404.01	1,372.56	31.45	44.649	
5,900.00	5,750.21	5,691.59	5,663.26	25.63	15.93	158.01	258.47	-473.53	1,420.97	1,389.00	31.96	44.456	
6,000.00	5,849.86	5,805.28	5,776.32	25.82	16.24	157.85	264.04	-484.09	1,434.55	1,402.09	32.46	44.188	
6,100.00	5,949.74	5,944.28	5,915.00	25.96	16.51	157.71	268.37	-492.30	1,442.75	1,409.88	32.87	43.891	
6,187.27	6,037.00	6,066.32	6,037.00	26.06	16.71	-6.66	269.58	-494.60	1,445.03	1,411.87	33.16	43.576	
6,200.00	6,049.73	6,079.04	6,049.73	26.07	16.73	-6.66	269.58	-494.60	1,445.03	1,411.83	33.20	43.524	
6,300.00	6,149.73	6,179.04	6,149.73	26.16	16.90	-6.66	269.58	-494.60	1,445.03	1,411.52	33.52	43.113	
6,400.00	6,249.73	6,279.04	6,249.73	26.25	17.07	-6.66	269.58	-494.60	1,445.03	1,411.19	33.84	42.702	
6,500.00	6,349.73	6,379.04	6,349.73	26.34	17.24	-6.66	269.58	-494.60	1,445.03	1,410.87	34.17	42.295	
6,600.00	6,449.73	6,479.04	6,449.73	26.44	17.42	-6.66	269.58	-494.60	1,445.03	1,410.54	34.49	41.893	
6,700.00	6,549.73	6,579.04	6,549.73	26.53	17.60	-6.66	269.58	-494.60	1,445.03	1,410.21	34.82	41.495	
6,800.00	6,649.73	6,679.04	6,649.73	26.63	17.78	-6.66	269.58	-494.60	1,445.03	1,409.87	35.16	41.101	
6,900.00	6,749.73	6,779.04	6,749.73	26.72	17.96	-6.66	269.58	-494.60	1,445.03	1,409.54	35.49	40.712	
7,000.00	6,849.73	6,879.04	6,849.73	26.82	18.14	-6.66	269.58	-494.60	1,445.03	1,409.20	35.83	40.328	
7,100.00	6,949.73	6,979.04	6,949.73	26.92	18.32	-6.66	269.58	-494.60	1,445.03	1,408.86	36.17	39.948	
7,200.00	7,049.73	7,079.04	7,049.73	27.03	18.50	-6.66	269.58	-494.60	1,445.03	1,408.52	36.52	39.573	
7,300.00	7,149.73	7,179.04	7,149.73	27.13	18.68	-6.66	269.58	-494.60	1,445.03	1,408.17	36.86	39.202	
7,400.00	7,249.73	7,279.04	7,249.73	27.24	18.87	-6.66	269.58	-494.60	1,445.03	1,407.82	37.21	38.836	
7,500.00	7,349.73	7,379.04	7,349.73	27.34	19.05	-6.66	269.58	-494.60	1,445.03	1,407.47	37.56	38.475	
7,600.00	7,449.73	7,479.04	7,449.73	27.45	19.24	-6.66	269.58	-494.60	1,445.03	1,407.12	37.91	38.118	
7,700.00	7,549.73	7,579.04	7,549.73	27.56	19.42	-6.66	269.58	-494.60	1,445.03	1,406.77	38.26	37.766	
7,800.00	7,649.73	7,679.04	7,649.73	27.67	19.61	-6.66	269.58	-494.60	1,445.03	1,406.41	38.62	37.418	
7,900.00	7,749.73	7,779.04	7,749.73	27.78	19.80	-6.66	269.58	-494.60	1,445.03	1,406.06	38.98	37.075	
8,000.00	7,849.73	7,879.04	7,849.73	27.90	19.99	-6.66	269.58	-494.60	1,445.03	1,405.70	39.34	36.736	
8,022.27	7,872.00	7,901.32	7,872.00	27.92	20.03	-6.66	269.58	-494.60	1,445.03	1,405.62	39.42	36.662	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_VOGL 31-5
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4845.00ft (Original Well Elev)
Reference Site:	WELD_VOGL 3 PAD	MD Reference:	WELL @ 4845.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_VOGL 31-5	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_VOGL 31-5	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-28-09 RHS	Offset TVD Reference:	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							
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
0.00	0.00	0.00	0.00	0.00	0.00	172.69	-252.82	32.42	255.33				
100.00	100.00	85.00	85.00	0.10	1.70	172.69	-252.82	32.42	254.89	253.09	1.80	141.956	
200.00	200.00	185.00	185.00	0.32	5.40	172.69	-252.82	32.42	254.89	249.17	5.72	44.559	
300.00	300.00	285.00	285.00	0.55	9.40	172.69	-252.82	32.42	254.89	244.94	9.95	25.630	
400.00	400.00	385.00	385.00	0.77	13.40	172.69	-252.82	32.42	254.89	240.72	14.17	17.988	
500.00	500.00	485.00	485.00	0.99	17.40	172.69	-252.82	32.42	254.89	236.50	18.39	13.857	
600.00	600.00	585.00	585.00	1.22	21.40	172.69	-252.82	32.42	254.89	232.27	22.62	11.269	
700.00	700.00	685.00	685.00	1.44	25.40	172.69	-252.82	32.42	254.89	228.05	26.84	9.495	
750.00	750.00	735.00	735.00	1.56	27.40	172.69	-252.82	32.42	254.89	225.93	28.96	8.803	
800.00	800.00	785.00	785.00	1.65	29.40	-23.02	-252.82	32.42	254.49	223.44	31.05	8.196	
900.00	899.93	884.93	884.93	1.83	33.40	-23.35	-252.82	32.42	251.28	216.09	35.19	7.141	
1,000.00	999.68	984.68	984.68	2.02	37.39	-24.05	-252.82	32.42	244.89	205.61	39.28	6.234	
1,100.00	1,099.13	1,084.13	1,084.13	2.24	41.37	-25.17	-252.82	32.42	235.38	192.06	43.32	5.433	
1,200.00	1,198.15	1,183.15	1,183.15	2.49	45.33	-26.80	-252.82	32.42	222.84	175.54	47.30	4.711	
1,300.00	1,296.63	1,281.63	1,281.63	2.78	49.27	-29.11	-252.82	32.42	207.45	156.23	51.22	4.050	
1,400.00	1,394.44	1,379.44	1,379.44	3.13	53.18	-32.34	-252.82	32.42	189.47	134.35	55.12	3.438	
1,497.29	1,488.85	1,473.85	1,473.85	3.52	56.95	-36.78	-252.82	32.42	169.92	110.98	58.94	2.883	
1,500.00	1,491.46	1,476.46	1,476.46	3.53	57.06	-36.92	-252.82	32.42	169.36	110.30	59.06	2.868	
1,600.00	1,588.08	1,573.08	1,573.08	3.98	60.92	-42.78	-252.82	32.42	149.26	85.82	63.44	2.353	
1,700.00	1,684.70	1,669.70	1,669.70	4.44	64.79	-50.30	-252.82	32.42	131.16	63.16	68.00	1.929	
1,800.00	1,781.31	1,766.31	1,766.31	4.93	68.65	-59.90	-252.82	32.42	116.02	43.27	72.74	1.595	
1,900.00	1,877.93	1,862.93	1,862.93	5.42	72.52	-71.78	-252.82	32.42	105.10	27.51	77.60	1.354 Level 3	
2,000.00	1,974.55	1,959.55	1,959.55	5.92	76.38	-85.50	-252.82	32.42	99.82	17.51	82.31	1.213 Level 2	
2,031.42	2,004.91	1,989.91	1,989.91	6.08	77.60	-90.00	-252.82	32.42	99.49	15.77	83.71	1.188 Level 2, CC	
2,100.00	2,071.16	2,056.16	2,056.16	6.43	80.25	-99.75	-252.82	32.42	101.05	14.45	86.60	1.167 Level 2, ES, SF	
2,200.00	2,167.78	2,152.78	2,152.78	6.94	84.11	-112.89	-252.82	32.42	108.57	18.16	90.41	1.201 Level 2	
2,300.00	2,264.40	2,249.40	2,249.40	7.46	87.98	-123.93	-252.82	32.42	121.23	27.28	93.94	1.290 Level 3	
2,400.00	2,361.02	2,346.02	2,346.02	7.98	91.84	-132.71	-252.82	32.42	137.60	40.19	97.41	1.413 Level 3	
2,500.00	2,457.63	2,442.63	2,442.63	8.50	95.71	-139.57	-252.82	32.42	156.53	55.61	100.92	1.551	
2,600.00	2,554.25	2,539.25	2,539.25	9.03	99.57	-144.92	-252.82	32.42	177.20	72.68	104.52	1.695	
2,700.00	2,650.87	2,635.87	2,635.87	9.55	103.43	-149.16	-252.82	32.42	199.07	90.87	108.20	1.840	
2,800.00	2,747.48	2,732.48	2,732.48	10.08	107.30	-152.55	-252.82	32.42	221.79	109.84	111.95	1.981	
2,900.00	2,844.10	2,829.10	2,829.10	10.61	111.16	-155.31	-252.82	32.42	245.11	129.36	115.75	2.118	
3,000.00	2,940.72	2,925.72	2,925.72	11.14	115.03	-157.60	-252.82	32.42	268.88	149.29	119.59	2.248	
3,100.00	3,037.33	3,022.33	3,022.33	11.67	118.89	-159.51	-252.82	32.42	293.00	169.53	123.47	2.373	
3,200.00	3,133.95	3,118.95	3,118.95	12.21	122.76	-161.14	-252.82	32.42	317.38	190.01	127.37	2.492	
3,300.00	3,230.57	3,215.57	3,215.57	12.74	126.62	-162.53	-252.82	32.42	341.97	210.68	131.28	2.605	
3,400.00	3,327.18	3,312.18	3,312.18	13.27	130.49	-163.74	-252.82	32.42	366.72	231.50	135.22	2.712	
3,500.00	3,423.80	3,408.80	3,408.80	13.81	134.35	-164.79	-252.82	32.42	391.60	252.44	139.17	2.814	
3,600.00	3,520.42	3,505.42	3,505.42	14.34	138.22	-165.72	-252.82	32.42	416.60	273.47	143.13	2.911	
3,700.00	3,617.04	3,602.04	3,602.04	14.88	142.08	-166.54	-252.82	32.42	441.69	294.60	147.09	3.003	
3,800.00	3,713.65	3,698.65	3,698.65	15.42	145.95	-167.28	-252.82	32.42	466.85	315.79	151.06	3.090	
3,900.00	3,810.27	3,795.27	3,795.27	15.95	149.81	-167.94	-252.82	32.42	492.08	337.04	155.04	3.174	
4,000.00	3,906.89	3,891.89	3,891.89	16.49	153.68	-168.54	-252.82	32.42	517.36	358.34	159.03	3.253	
4,100.00	4,003.50	3,988.50	3,988.50	17.02	157.54	-169.08	-252.82	32.42	542.70	379.68	163.01	3.329	
4,200.00	4,100.12	4,085.12	4,085.12	17.56	161.40	-169.57	-252.82	32.42	568.07	401.06	167.01	3.401	
4,300.00	4,196.74	4,181.74	4,181.74	18.10	165.27	-170.02	-252.82	32.42	593.48	422.48	171.00	3.471	
4,400.00	4,293.35	4,278.35	4,278.35	18.64	169.13	-170.43	-252.82	32.42	618.92	443.92	175.00	3.537	
4,500.00	4,389.97	4,374.97	4,374.97	19.17	173.00	-170.81	-252.82	32.42	644.39	465.39	179.00	3.600	
4,600.00	4,486.59	4,471.59	4,471.59	19.71	176.86	-171.16	-252.82	32.42	669.88	486.88	183.00	3.661	
4,700.00	4,583.21	4,568.21	4,568.21	20.25	180.73	-171.49	-252.82	32.42	695.40	508.39	187.00	3.719	
4,800.00	4,679.82	4,664.82	4,664.82	20.79	184.59	-171.79	-252.82	32.42	720.93	529.92	191.01	3.774	

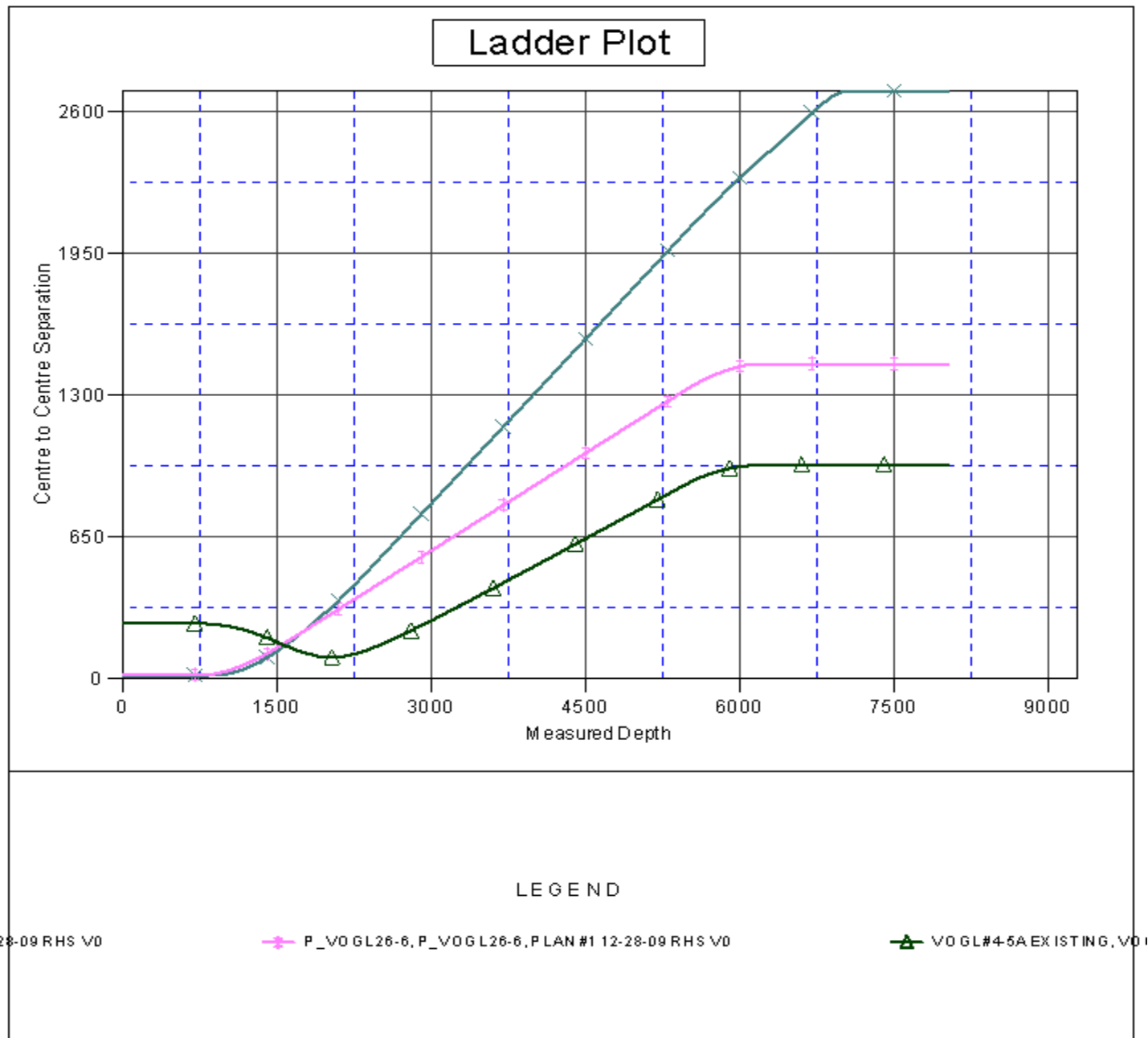
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_VOGL 31-5
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4845.00ft (Original Well Elev)
Reference Site:	WELD_VOGL 3 PAD	MD Reference:	WELL @ 4845.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_VOGL 31-5	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_VOGL 31-5	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-28-09 RHS	Offset TVD Reference:	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									
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	4,776.44	4,761.44	4,761.44	21.33	188.46	-172.08	-252.82	32.42	746.48	551.47	195.01	3.828	
5,000.00	4,873.06	4,858.06	4,858.06	21.87	192.32	-172.34	-252.82	32.42	772.05	573.03	199.02	3.879	
5,100.00	4,969.67	4,954.67	4,954.67	22.40	196.19	-172.59	-252.82	32.42	797.64	594.60	203.03	3.929	
5,200.00	5,066.29	5,051.29	5,051.29	22.94	200.05	-172.82	-252.82	32.42	823.23	616.19	207.04	3.976	
5,300.00	5,162.91	5,147.91	5,147.91	23.48	203.92	-173.04	-252.82	32.42	848.84	637.79	211.05	4.022	
5,400.00	5,259.52	5,244.52	5,244.52	24.02	207.78	-173.24	-252.82	32.42	874.46	659.39	215.06	4.066	
5,439.98	5,298.15	5,283.15	5,283.15	24.24	209.33	-173.32	-252.82	32.42	884.70	668.03	216.67	4.083	
5,500.00	5,356.30	5,341.30	5,341.30	24.51	211.65	-173.46	-252.82	32.42	899.48	679.39	220.09	4.087	
5,600.00	5,453.83	5,438.83	5,438.83	24.84	215.55	-173.67	-252.82	32.42	921.41	695.67	225.74	4.082	
5,700.00	5,552.07	5,537.07	5,537.07	25.14	219.48	-173.84	-252.82	32.42	939.95	708.75	231.19	4.066	
5,800.00	5,650.90	5,635.90	5,635.90	25.41	223.44	-173.97	-252.82	32.42	955.06	718.63	236.43	4.039	
5,900.00	5,750.21	5,735.21	5,735.21	25.63	227.41	-174.06	-252.82	32.42	966.75	725.32	241.43	4.004	
6,000.00	5,849.86	5,834.86	5,834.86	25.82	231.39	-174.13	-252.82	32.42	974.98	728.81	246.17	3.961	
6,100.00	5,949.74	5,934.74	5,934.74	25.96	235.39	-174.17	-252.82	32.42	979.74	729.11	250.63	3.909	
6,187.27	6,037.00	6,022.00	6,022.00	26.06	238.88	21.49	-252.82	32.42	981.06	726.78	254.29	3.858	
6,200.00	6,049.73	6,034.73	6,034.73	26.07	239.39	21.49	-252.82	32.42	981.06	726.25	254.82	3.850	
6,300.00	6,149.73	6,134.73	6,134.73	26.16	243.39	21.49	-252.82	32.42	981.06	722.09	258.97	3.788	
6,400.00	6,249.73	6,234.73	6,234.73	26.25	247.39	21.49	-252.82	32.42	981.06	717.94	263.13	3.728	
6,500.00	6,349.73	6,334.73	6,334.73	26.34	251.39	21.49	-252.82	32.42	981.06	713.78	267.28	3.671	
6,600.00	6,449.73	6,434.73	6,434.73	26.44	255.39	21.49	-252.82	32.42	981.06	709.62	271.44	3.614	
6,700.00	6,549.73	6,534.73	6,534.73	26.53	259.39	21.49	-252.82	32.42	981.06	705.46	275.60	3.560	
6,800.00	6,649.73	6,634.73	6,634.73	26.63	263.39	21.49	-252.82	32.42	981.06	701.30	279.76	3.507	
6,900.00	6,749.73	6,734.73	6,734.73	26.72	267.39	21.49	-252.82	32.42	981.06	697.14	283.93	3.455	
7,000.00	6,849.73	6,834.73	6,834.73	26.82	271.39	21.49	-252.82	32.42	981.06	692.97	288.09	3.405	
7,100.00	6,949.73	6,934.73	6,934.73	26.92	275.39	21.49	-252.82	32.42	981.06	688.80	292.26	3.357	
7,200.00	7,049.73	7,034.73	7,034.73	27.03	279.39	21.49	-252.82	32.42	981.06	684.64	296.43	3.310	
7,300.00	7,149.73	7,134.73	7,134.73	27.13	283.39	21.49	-252.82	32.42	981.06	680.47	300.60	3.264	
7,400.00	7,249.73	7,234.73	7,234.73	27.24	287.39	21.49	-252.82	32.42	981.06	676.30	304.77	3.219	
7,500.00	7,349.73	7,334.73	7,334.73	27.34	291.39	21.49	-252.82	32.42	981.06	672.13	308.94	3.176	
7,600.00	7,449.73	7,434.73	7,434.73	27.45	295.39	21.49	-252.82	32.42	981.06	667.95	313.11	3.133	
7,700.00	7,549.73	7,534.73	7,534.73	27.56	299.39	21.49	-252.82	32.42	981.06	663.78	317.28	3.092	
7,800.00	7,649.73	7,634.73	7,634.73	27.67	303.39	21.49	-252.82	32.42	981.06	659.61	321.46	3.052	
7,900.00	7,749.73	7,734.73	7,734.73	27.78	307.39	21.49	-252.82	32.42	981.06	655.43	325.63	3.013	
8,000.00	7,849.73	7,834.73	7,834.73	27.90	311.39	21.49	-252.82	32.42	981.06	651.25	329.81	2.975	
8,022.27	7,872.00	7,857.00	7,857.00	27.92	312.28	21.49	-252.82	32.42	981.06	650.32	330.74	2.966	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_VOGL 31-5
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4845.00ft (Original Well Elev)
Reference Site:	WELD_VOGL 3 PAD	MD Reference:	WELL @ 4845.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_VOGL 31-5	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_VOGL 31-5	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-28-09 RHS	Offset TVD Reference:	Offset Datum

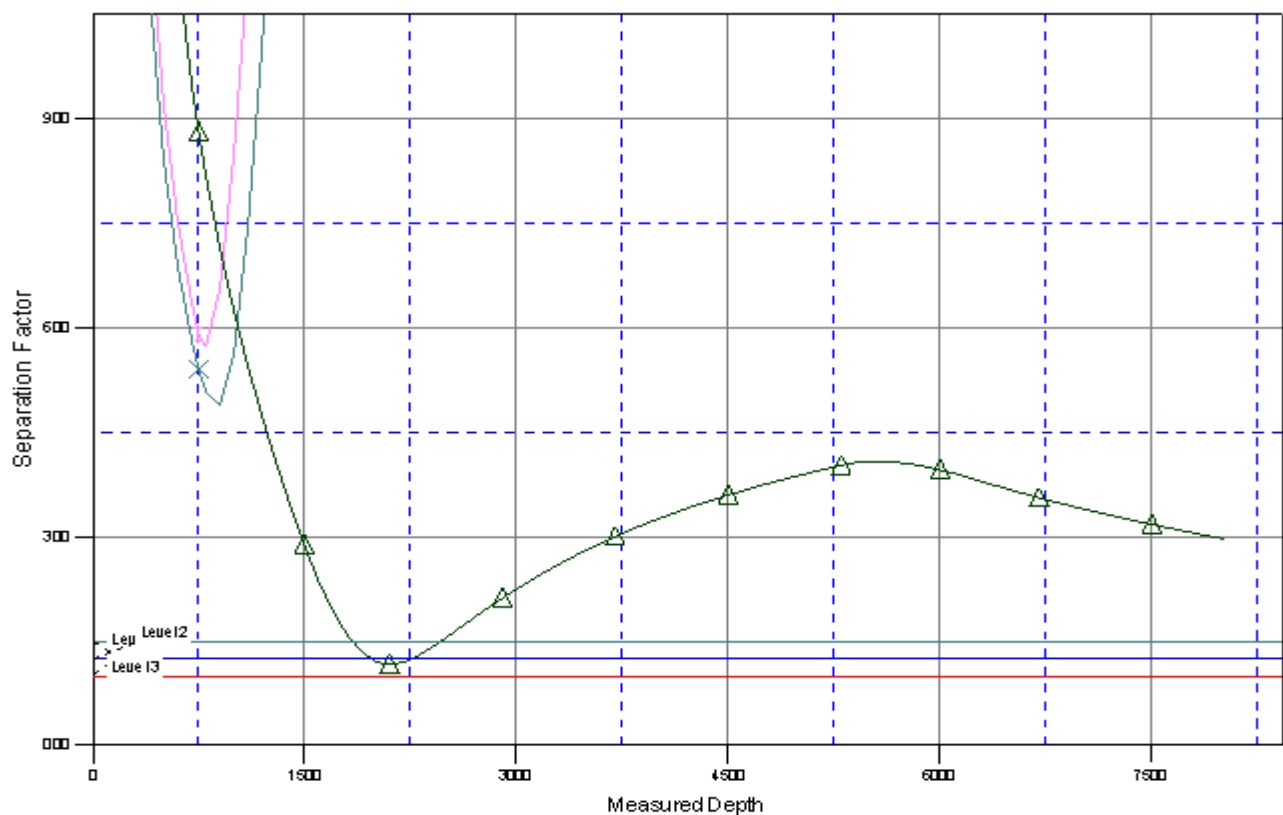
Reference Depths are relative to WELL @ 4845.00ft (Original Well Elev) Coordinates are relative to: P_VOGL 31-5
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is 105° 30' 0.000 W ° Grid Convergence at Surface is: 0.37°



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_VOGL 31-5
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4845.00ft (Original Well Elev)
Reference Site:	WELD_VOGL 3 PAD	MD Reference:	WELL @ 4845.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_VOGL 31-5	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_VOGL 31-5	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-28-09 RHS	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4845.00ft (Original Well Elev) Coordinates are relative to: P_VOGL 31-5
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°

Separation Factor Plot



LEGEND

-28-09 RHS VO

P_VO GL26-6, P_VOGL26-6, PLAN #1 12-28-09 RHS VO

VO GL#4-5A EXISTING, VO