



US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_VOGL 4 PAD

P_VOGL 35-36

P_VOGL 35-36

Plan: PLAN #1 09-10-09 RHS

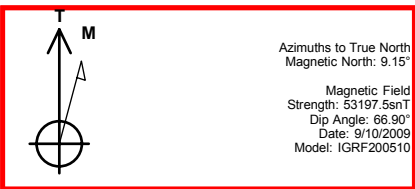
Standard Planning Report

15 January, 2010





P_VOGL 35-36
 COLORADO NORTHERN ZONE - 83
 SECTION 36 T6N R68W
 674 FSL 725 FWL
 LAT: 40° 10' 37.236 N
 LONG: 104° 57' 29.088 W



WELL DETAILS: P_VOGL 35-36							
+N/-S	+E/-W	Northing	Easting	Ground Level:	Latitude	Longitude	Slot
0.00	0.00	1307790.30	3151425.83	4817.00	40° 10' 37.236 N	104° 57' 29.088 W	

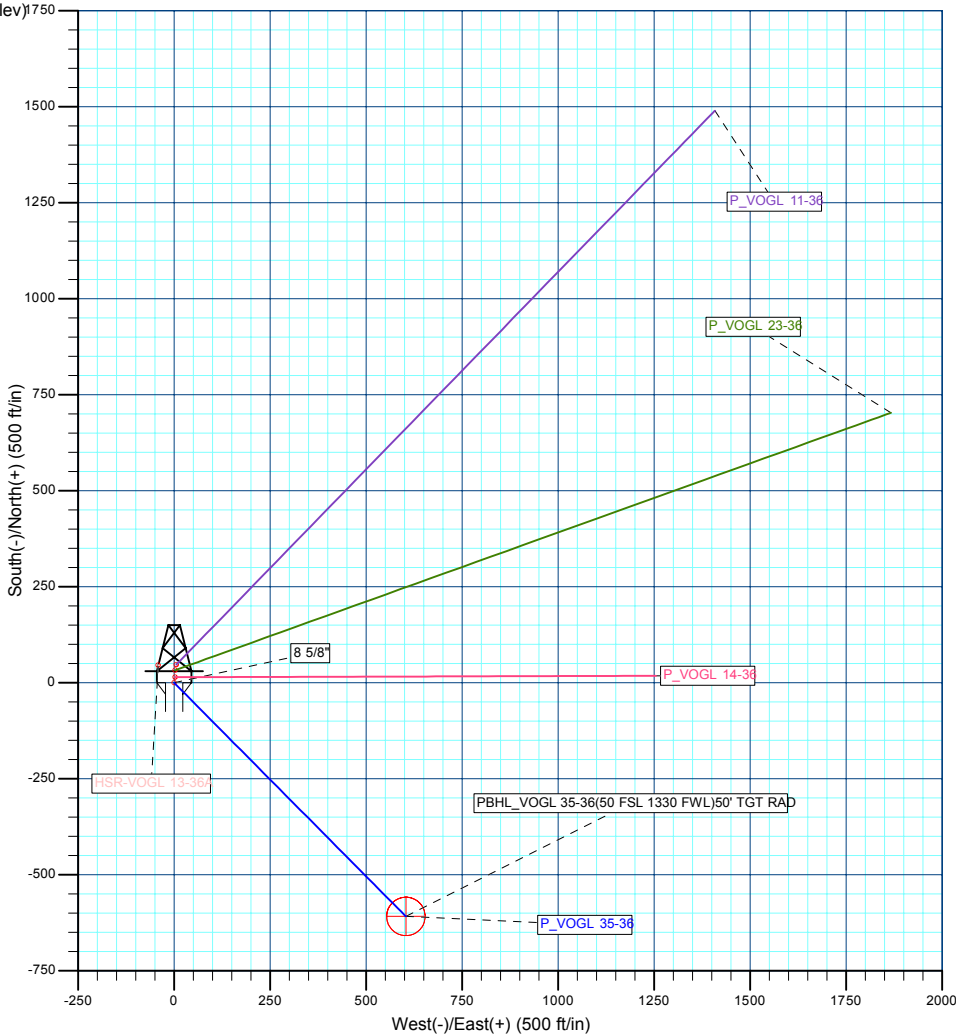
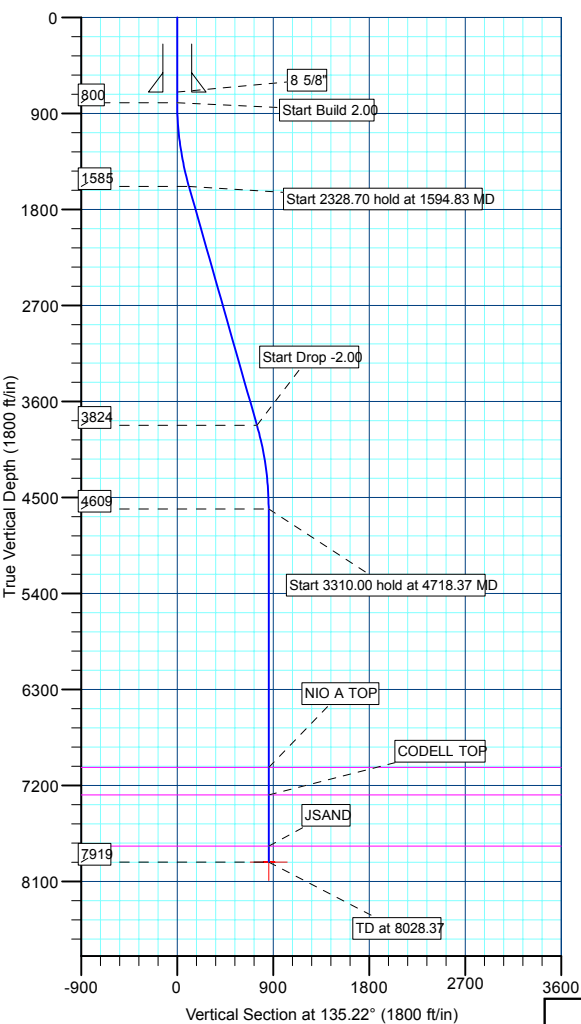
FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
7032.00	7141.37	NIO A TOP
7289.00	7398.37	CODELL TOP
7769.00	7878.37	JSAND

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		
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00		
1594.83	15.90	135.22	1584.68	-77.77	77.16	2.00	135.22	109.56		
3923.54	15.90	135.22	3824.32	-530.56	526.41	0.00	0.00	747.40		
4718.37	0.00	0.00	4609.00	-608.33	603.58	2.00	180.00	856.96		
8028.37	0.00	0.00	7919.00	-608.33	603.58	0.00	0.00	856.96		PBHL_VOGL 35-36(50 FSL 1330 FWL)50' TGT RAD

CASING DETAILS			
TVD	MD	Name	Size
700.00	700.00	8 5/8"	8.62



KB ELEV: WELL @ 4832.00ft (Original Well Elev) 1750
 GRD ELEV: 4817.00



WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)								
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL	7919.00	-608.33	603.58	1307185.67	3152033.11	40° 10' 31.224 N	104° 57' 21.312 W	Circle (Radius: 50.00)

Plan: PLAN #1 09-10-09 RHS (P_VOGL 35-36/P_VOGL 35-36)

Created By: Robert H. Scott



Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_VOGL 35-36
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4832.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4832.00ft (Original Well Elev)
Site:	WELD_VOGL 4 PAD	North Reference:	True
Well:	P_VOGL 35-36	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_VOGL 35-36		
Design:	PLAN #1 09-10-09 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 4 PAD, SECTION 36 T6N R68W				
Site Position:		Northing:	1,307,837.70ft	Latitude:	40° 10' 37.704 N
From:	Lat/Long	Easting:	3,151,431.13ft	Longitude:	104° 57' 29.016 W
Position Uncertainty:	0.00 ft	Slot Radius:	in	Grid Convergence:	0.35 °

Well	P_VOGL 35-36					
Well Position	+N/-S	-47.37 ft	Northing:	1,307,790.30 ft	Latitude:	40° 10' 37.236 N
	+E/-W	-5.59 ft	Easting:	3,151,425.83 ft	Longitude:	104° 57' 29.088 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,817.00 ft

Wellbore	P_VOGL 35-36				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	9/10/2009	9.15	66.90	53,198

Design	PLAN #1 09-10-09 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	135.22

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	
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,594.83	15.90	135.22	1,584.68	-77.77	77.16	2.00	2.00	0.00	135.22	
3,923.54	15.90	135.22	3,824.32	-530.56	526.41	0.00	0.00	0.00	0.00	
4,718.37	0.00	0.00	4,609.00	-608.33	603.58	2.00	-2.00	0.00	180.00	
8,028.37	0.00	0.00	7,919.00	-608.33	603.58	0.00	0.00	0.00	0.00	PBHL_VOGL 35-36

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_VOGL 35-36
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4832.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4832.00ft (Original Well Elev)
Site:	WELD_VOGL 4 PAD	North Reference:	True
Well:	P_VOGL 35-36	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_VOGL 35-36		
Design:	PLAN #1 09-10-09 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										
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	2.00	135.22	899.98	-1.24	1.23	1.75	2.00	2.00	2.00	0.00
1,000.00	4.00	135.22	999.84	-4.95	4.92	6.98	2.00	2.00	2.00	0.00
1,100.00	6.00	135.22	1,099.45	-11.14	11.05	15.69	2.00	2.00	2.00	0.00
1,200.00	8.00	135.22	1,198.70	-19.79	19.64	27.88	2.00	2.00	2.00	0.00
1,300.00	10.00	135.22	1,297.47	-30.90	30.65	43.52	2.00	2.00	2.00	0.00
1,400.00	12.00	135.22	1,395.62	-44.44	44.09	62.60	2.00	2.00	2.00	0.00
1,500.00	14.00	135.22	1,493.06	-60.41	59.94	85.10	2.00	2.00	2.00	0.00
Start 2328.70 hold at 1594.83 MD										
1,594.83	15.90	135.22	1,584.68	-77.77	77.16	109.56	2.00	2.00	2.00	0.00
1,600.00	15.90	135.22	1,589.64	-78.78	78.16	110.97	0.00	0.00	0.00	0.00
1,700.00	15.90	135.22	1,685.82	-98.22	97.45	138.36	0.00	0.00	0.00	0.00
1,800.00	15.90	135.22	1,782.00	-117.66	116.74	165.75	0.00	0.00	0.00	0.00
1,900.00	15.90	135.22	1,878.17	-137.11	136.04	193.14	0.00	0.00	0.00	0.00
2,000.00	15.90	135.22	1,974.35	-156.55	155.33	220.53	0.00	0.00	0.00	0.00
2,100.00	15.90	135.22	2,070.52	-176.00	174.62	247.92	0.00	0.00	0.00	0.00
2,200.00	15.90	135.22	2,166.70	-195.44	193.91	275.31	0.00	0.00	0.00	0.00
2,300.00	15.90	135.22	2,262.87	-214.88	213.20	302.71	0.00	0.00	0.00	0.00
2,400.00	15.90	135.22	2,359.05	-234.33	232.50	330.10	0.00	0.00	0.00	0.00
2,500.00	15.90	135.22	2,455.23	-253.77	251.79	357.49	0.00	0.00	0.00	0.00
2,600.00	15.90	135.22	2,551.40	-273.21	271.08	384.88	0.00	0.00	0.00	0.00
2,700.00	15.90	135.22	2,647.58	-292.66	290.37	412.27	0.00	0.00	0.00	0.00
2,800.00	15.90	135.22	2,743.75	-312.10	309.66	439.66	0.00	0.00	0.00	0.00
2,900.00	15.90	135.22	2,839.93	-331.55	328.95	467.05	0.00	0.00	0.00	0.00
3,000.00	15.90	135.22	2,936.10	-350.99	348.25	494.44	0.00	0.00	0.00	0.00
3,100.00	15.90	135.22	3,032.28	-370.43	367.54	521.83	0.00	0.00	0.00	0.00
3,200.00	15.90	135.22	3,128.46	-389.88	386.83	549.22	0.00	0.00	0.00	0.00
3,300.00	15.90	135.22	3,224.63	-409.32	406.12	576.61	0.00	0.00	0.00	0.00
3,400.00	15.90	135.22	3,320.81	-428.76	425.41	604.00	0.00	0.00	0.00	0.00
3,500.00	15.90	135.22	3,416.98	-448.21	444.70	631.39	0.00	0.00	0.00	0.00
3,600.00	15.90	135.22	3,513.16	-467.65	464.00	658.78	0.00	0.00	0.00	0.00
3,700.00	15.90	135.22	3,609.33	-487.10	483.29	686.17	0.00	0.00	0.00	0.00
3,800.00	15.90	135.22	3,705.51	-506.54	502.58	713.56	0.00	0.00	0.00	0.00
3,900.00	15.90	135.22	3,801.69	-525.98	521.87	740.95	0.00	0.00	0.00	0.00
Start Drop -2.00										
3,923.54	15.90	135.22	3,824.32	-530.56	526.41	747.40	0.00	0.00	0.00	0.00
4,000.00	14.37	135.22	3,898.13	-544.73	540.47	767.36	2.00	-2.00	0.00	0.00
4,100.00	12.37	135.22	3,995.42	-561.14	556.75	790.48	2.00	-2.00	0.00	0.00
4,200.00	10.37	135.22	4,093.45	-575.13	570.64	810.18	2.00	-2.00	0.00	0.00
4,300.00	8.37	135.22	4,192.11	-586.68	582.10	826.46	2.00	-2.00	0.00	0.00
4,400.00	6.37	135.22	4,291.28	-595.79	591.13	839.28	2.00	-2.00	0.00	0.00
4,500.00	4.37	135.22	4,390.84	-602.43	597.72	848.64	2.00	-2.00	0.00	0.00
4,600.00	2.37	135.22	4,490.66	-606.60	601.85	854.51	2.00	-2.00	0.00	0.00
4,700.00	0.37	135.22	4,590.63	-608.29	603.54	856.90	2.00	-2.00	0.00	0.00
Start 3310.00 hold at 4718.37 MD										
4,718.37	0.00	0.00	4,609.00	-608.33	603.58	856.96	2.00	-2.00	-736.00	0.00
4,800.00	0.00	0.00	4,690.63	-608.33	603.58	856.96	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,790.63	-608.33	603.58	856.96	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	4,890.63	-608.33	603.58	856.96	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	4,990.63	-608.33	603.58	856.96	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,090.63	-608.33	603.58	856.96	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,190.63	-608.33	603.58	856.96	0.00	0.00	0.00	0.00



Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_VOGL 35-36
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4832.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4832.00ft (Original Well Elev)
Site:	WELD_VOGL 4 PAD	North Reference:	True
Well:	P_VOGL 35-36	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_VOGL 35-36		
Design:	PLAN #1 09-10-09 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)
5,400.00	0.00	0.00	5,290.63	-608.33	603.58	856.96	0.00	0.00	0.00
5,500.00	0.00	0.00	5,390.63	-608.33	603.58	856.96	0.00	0.00	0.00
5,600.00	0.00	0.00	5,490.63	-608.33	603.58	856.96	0.00	0.00	0.00
5,700.00	0.00	0.00	5,590.63	-608.33	603.58	856.96	0.00	0.00	0.00
5,800.00	0.00	0.00	5,690.63	-608.33	603.58	856.96	0.00	0.00	0.00
5,900.00	0.00	0.00	5,790.63	-608.33	603.58	856.96	0.00	0.00	0.00
6,000.00	0.00	0.00	5,890.63	-608.33	603.58	856.96	0.00	0.00	0.00
6,100.00	0.00	0.00	5,990.63	-608.33	603.58	856.96	0.00	0.00	0.00
6,200.00	0.00	0.00	6,090.63	-608.33	603.58	856.96	0.00	0.00	0.00
6,300.00	0.00	0.00	6,190.63	-608.33	603.58	856.96	0.00	0.00	0.00
6,400.00	0.00	0.00	6,290.63	-608.33	603.58	856.96	0.00	0.00	0.00
6,500.00	0.00	0.00	6,390.63	-608.33	603.58	856.96	0.00	0.00	0.00
6,600.00	0.00	0.00	6,490.63	-608.33	603.58	856.96	0.00	0.00	0.00
6,700.00	0.00	0.00	6,590.63	-608.33	603.58	856.96	0.00	0.00	0.00
6,800.00	0.00	0.00	6,690.63	-608.33	603.58	856.96	0.00	0.00	0.00
6,900.00	0.00	0.00	6,790.63	-608.33	603.58	856.96	0.00	0.00	0.00
7,000.00	0.00	0.00	6,890.63	-608.33	603.58	856.96	0.00	0.00	0.00
7,100.00	0.00	0.00	6,990.63	-608.33	603.58	856.96	0.00	0.00	0.00
NIO A TOP									
7,141.37	0.00	0.00	7,032.00	-608.33	603.58	856.96	0.00	0.00	0.00
7,200.00	0.00	0.00	7,090.63	-608.33	603.58	856.96	0.00	0.00	0.00
7,300.00	0.00	0.00	7,190.63	-608.33	603.58	856.96	0.00	0.00	0.00
CODELL TOP									
7,398.37	0.00	0.00	7,289.00	-608.33	603.58	856.96	0.00	0.00	0.00
7,400.00	0.00	0.00	7,290.63	-608.33	603.58	856.96	0.00	0.00	0.00
7,500.00	0.00	0.00	7,390.63	-608.33	603.58	856.96	0.00	0.00	0.00
7,600.00	0.00	0.00	7,490.63	-608.33	603.58	856.96	0.00	0.00	0.00
7,700.00	0.00	0.00	7,590.63	-608.33	603.58	856.96	0.00	0.00	0.00
7,800.00	0.00	0.00	7,690.63	-608.33	603.58	856.96	0.00	0.00	0.00
JSAND									
7,878.37	0.00	0.00	7,769.00	-608.33	603.58	856.96	0.00	0.00	0.00
7,900.00	0.00	0.00	7,790.63	-608.33	603.58	856.96	0.00	0.00	0.00
8,000.00	0.00	0.00	7,890.63	-608.33	603.58	856.96	0.00	0.00	0.00
PBHL_VOGL 35-36(50 FSL 1330 FWL)50' TGT RAD									
8,028.37	0.00	0.00	7,919.00	-608.33	603.58	856.96	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
PBHL_VOGL 35-36(50 FSL 1330 FWL)50' TGT RAD	0.00	0.00	7,919.00	-608.33	603.58	1,307,185.67	3,152,033.11	40° 10' 31.224 N	104° 57' 21.312 W
- hit/miss target									
- Shape									
- plan hits target center									
- Circle (radius 50.00)									

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
700.00	700.00	8 5/8"	8.62	11.00

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_VOGL 35-36
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4832.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4832.00ft (Original Well Elev)
Site:	WELD_VOGL 4 PAD	North Reference:	True
Well:	P_VOGL 35-36	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_VOGL 35-36		
Design:	PLAN #1 09-10-09 RHS		

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,141.37	7,032.00	NIO A TOP		0.00	
7,398.37	7,289.00	CODELL TOP		0.00	
7,878.37	7,769.00	JSAND		0.00	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
800.00	800.00	0.00	0.00	Start Build 2.00	
1,594.83	1,584.68	-77.77	77.16	Start 2328.70 hold at 1594.83 MD	
3,923.54	3,824.32	-530.56	526.41	Start Drop -2.00	
4,718.37	4,609.00	-608.33	603.58	Start 3310.00 hold at 4718.37 MD	
8,028.37	7,919.00	-608.33	603.58	TD at 8028.37	



US ROCKIES REGION PLANNING

**COLORADO NORTHERN ZONE - 83
WELD_VOGL 4 PAD
P_VOGL 35-36**

**P_VOGL 35-36
PLAN #1 09-10-09 RHS**

Anticollision Report

15 January, 2010



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_VOGL 35-36
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4832.00ft (Original Well Elev)
Reference Site:	WELD_VOGL 4 PAD	MD Reference:	WELL @ 4832.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_VOGL 35-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_VOGL 35-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 09-10-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design													WELD_VOGL 4 PAD - HSR-VOGL 13-36A - HSR-VOGL 13-36A EXISTING - HSR-VOGL 13-36A EXIS	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 Tooface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
1,700.00	1,685.82	1,685.82	1,685.82	4.40	65.13	-179.12	45.91	-41.41	200.14	133.92	66.22	3.022			
1,800.00	1,782.00	1,782.00	1,782.00	4.90	68.98	-179.23	45.91	-41.41	227.52	157.35	70.18	3.242			
1,900.00	1,878.17	1,878.17	1,878.17	5.43	72.83	-179.31	45.91	-41.41	254.91	180.77	74.14	3.438			
2,000.00	1,974.35	1,974.35	1,974.35	5.96	76.67	-179.38	45.91	-41.41	282.30	204.19	78.11	3.614			
2,100.00	2,070.52	2,070.52	2,070.52	6.50	80.52	-179.43	45.91	-41.41	309.69	227.61	82.08	3.773			
2,200.00	2,166.70	2,166.70	2,166.70	7.05	84.37	-179.48	45.91	-41.41	337.08	251.03	86.05	3.917			
2,300.00	2,262.87	2,262.87	2,262.87	7.60	88.21	-179.52	45.91	-41.41	364.47	274.44	90.03	4.048			
2,400.00	2,359.05	2,359.05	2,359.05	8.16	92.06	-179.55	45.91	-41.41	391.86	297.85	94.01	4.168			
2,500.00	2,455.23	2,455.23	2,455.23	8.72	95.91	-179.58	45.91	-41.41	419.25	321.26	97.99	4.278			
2,600.00	2,551.40	2,551.40	2,551.40	9.29	99.76	-179.61	45.91	-41.41	446.64	344.67	101.97	4.380			
2,700.00	2,647.58	2,647.58	2,647.58	9.86	103.60	-179.63	45.91	-41.41	474.03	368.07	105.96	4.474			
2,800.00	2,743.75	2,743.75	2,743.75	10.42	107.45	-179.65	45.91	-41.41	501.42	391.48	109.94	4.561			
2,900.00	2,839.93	2,839.93	2,839.93	10.99	111.30	-179.67	45.91	-41.41	528.81	414.88	113.93	4.642			
3,000.00	2,936.10	2,936.10	2,936.10	11.57	115.14	-179.68	45.91	-41.41	556.20	438.28	117.91	4.717			
3,100.00	3,032.28	3,032.28	3,032.28	12.14	118.99	-179.70	45.91	-41.41	583.59	461.69	121.90	4.787			
3,200.00	3,128.46	3,128.46	3,128.46	12.71	122.84	-179.71	45.91	-41.41	610.98	485.09	125.89	4.853			
3,300.00	3,224.63	3,224.63	3,224.63	13.29	126.69	-179.73	45.91	-41.41	638.37	508.49	129.88	4.915			
3,400.00	3,320.81	3,320.81	3,320.81	13.86	130.53	-179.74	45.91	-41.41	665.76	531.89	133.87	4.973			
3,500.00	3,416.98	3,416.98	3,416.98	14.44	134.38	-179.75	45.91	-41.41	693.15	555.29	137.86	5.028			
3,600.00	3,513.16	3,513.16	3,513.16	15.02	138.23	-179.76	45.91	-41.41	720.54	578.69	141.85	5.080			
3,700.00	3,609.33	3,609.33	3,609.33	15.59	142.07	-179.77	45.91	-41.41	747.93	602.09	145.84	5.128			
3,800.00	3,705.51	3,705.51	3,705.51	16.17	145.92	-179.77	45.91	-41.41	775.32	625.48	149.83	5.175			
3,900.00	3,801.69	3,801.69	3,801.69	16.75	149.77	-179.78	45.91	-41.41	802.71	648.88	153.83	5.218			
3,923.54	3,824.32	3,824.32	3,824.32	16.89	150.67	-179.78	45.91	-41.41	809.16	654.39	154.77	5.228			
4,000.00	3,898.13	3,898.13	3,898.13	17.26	153.63	-179.79	45.91	-41.41	829.11	670.27	158.84	5.220			
4,100.00	3,995.42	3,995.42	3,995.42	17.64	157.52	-179.80	45.91	-41.41	852.23	688.10	164.13	5.192			
4,200.00	4,093.45	4,093.45	4,093.45	17.98	161.44	-179.80	45.91	-41.41	871.94	702.64	169.30	5.150			
4,300.00	4,192.11	4,192.11	4,192.11	18.27	165.38	-179.81	45.91	-41.41	888.22	713.89	174.32	5.095			
4,400.00	4,291.28	4,291.28	4,291.28	18.53	169.35	-179.81	45.91	-41.41	901.04	721.86	179.18	5.029			
4,500.00	4,390.84	4,390.84	4,390.84	18.74	173.33	-179.81	45.91	-41.41	910.39	726.54	183.86	4.952			
4,600.00	4,490.66	4,490.66	4,490.66	18.90	177.33	-179.82	45.91	-41.41	916.27	727.94	188.33	4.865			
4,700.00	4,590.63	4,590.63	4,590.63	19.03	181.33	-179.82	45.91	-41.41	918.65	726.08	192.57	4.770			
4,718.37	4,609.00	4,609.00	4,609.00	19.05	182.06	-44.59	45.91	-41.41	918.71	725.38	193.33	4.752			
4,800.00	4,690.63	4,690.63	4,690.63	19.13	185.33	-44.59	45.91	-41.41	918.71	721.98	196.74	4.670			
4,900.00	4,790.63	4,790.63	4,790.63	19.24	189.33	-44.59	45.91	-41.41	918.71	717.81	200.91	4.573			
5,000.00	4,890.63	4,890.63	4,890.63	19.35	193.33	-44.59	45.91	-41.41	918.71	713.63	205.08	4.480			
5,100.00	4,990.63	4,990.63	4,990.63	19.45	197.33	-44.59	45.91	-41.41	918.71	709.46	209.25	4.390			
5,200.00	5,090.63	5,090.63	5,090.63	19.57	201.33	-44.59	45.91	-41.41	918.71	705.28	213.43	4.305			
5,300.00	5,190.63	5,190.63	5,190.63	19.68	205.33	-44.59	45.91	-41.41	918.71	701.11	217.61	4.222			
5,400.00	5,290.63	5,290.63	5,290.63	19.79	209.33	-44.59	45.91	-41.41	918.71	696.93	221.79	4.142			
5,500.00	5,390.63	5,390.63	5,390.63	19.91	213.33	-44.59	45.91	-41.41	918.71	692.75	225.97	4.066			
5,600.00	5,490.63	5,490.63	5,490.63	20.03	217.33	-44.59	45.91	-41.41	918.71	688.56	230.15	3.992			
5,700.00	5,590.63	5,590.63	5,590.63	20.15	221.33	-44.59	45.91	-41.41	918.71	684.38	234.33	3.921			
5,800.00	5,690.63	5,690.63	5,690.63	20.27	225.33	-44.59	45.91	-41.41	918.71	680.20	238.52	3.852			
5,900.00	5,790.63	5,790.63	5,790.63	20.40	229.33	-44.59	45.91	-41.41	918.71	676.01	242.70	3.785			
6,000.00	5,890.63	5,890.63	5,890.63	20.52	233.33	-44.59	45.91	-41.41	918.71	671.83	246.89	3.721			
6,100.00	5,990.63	5,990.63	5,990.63	20.65	237.33	-44.59	45.91	-41.41	918.71	667.64	251.08	3.659			
6,200.00	6,090.63	6,090.63	6,090.63	20.78	241.33	-44.59	45.91	-41.41	918.71	663.45	255.26	3.599			
6,300.00	6,190.63	6,190.63	6,190.63	20.91	245.33	-44.59	45.91	-41.41	918.71	659.26	259.45	3.541			
6,400.00	6,290.63	6,290.63	6,290.63	21.04	249.33	-44.59	45.91	-41.41	918.71	655.07	263.65	3.485			
6,500.00	6,390.63	6,390.63	6,390.63	21.17	253.33	-44.59	45.91	-41.41	918.71	650.87	267.84	3.430			
6,600.00	6,490.63	6,490.63	6,490.63	21.31	257.33	-44.59	45.91	-41.41	918.71	646.68	272.03	3.377			

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 35-36
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4832.00ft (Original Well Elev)
Reference Site:	WELD_VOGL 4 PAD	MD Reference:	WELL @ 4832.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_VOGL 35-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_VOGL 35-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 09-10-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design												WELD_VOGL 4 PAD - HSR-VOGL 13-36A - HSR-VOGL 13-36A EXISTING - HSR-VOGL 13-36A EXIS	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		
6,700.00	6,590.63	6,590.63	6,590.63	21.45	261.33	-44.59	45.91	-41.41	918.71	642.49	276.22	3.326		
6,800.00	6,690.63	6,690.63	6,690.63	21.58	265.33	-44.59	45.91	-41.41	918.71	638.29	280.42	3.276		
6,900.00	6,790.63	6,790.63	6,790.63	21.72	269.33	-44.59	45.91	-41.41	918.71	634.10	284.61	3.228		
7,000.00	6,890.63	6,890.63	6,890.63	21.87	273.33	-44.59	45.91	-41.41	918.71	629.90	288.81	3.181		
7,100.00	6,990.63	6,990.63	6,990.63	22.01	277.33	-44.59	45.91	-41.41	918.71	625.70	293.01	3.135		
7,200.00	7,090.63	7,090.63	7,090.63	22.15	281.33	-44.59	45.91	-41.41	918.71	621.51	297.21	3.091		
7,300.00	7,190.63	7,190.63	7,190.63	22.30	285.33	-44.59	45.91	-41.41	918.71	617.31	301.40	3.048		
7,400.00	7,290.63	7,290.63	7,290.63	22.44	289.33	-44.59	45.91	-41.41	918.71	613.11	305.60	3.006		
7,500.00	7,390.63	7,390.63	7,390.63	22.59	293.33	-44.59	45.91	-41.41	918.71	608.91	309.80	2.965		
7,600.00	7,490.63	7,490.63	7,490.63	22.74	297.33	-44.59	45.91	-41.41	918.71	604.71	314.00	2.926		
7,700.00	7,590.63	7,590.63	7,590.63	22.89	301.33	-44.59	45.91	-41.41	918.71	600.51	318.21	2.887		
7,800.00	7,690.63	7,690.63	7,690.63	23.04	305.33	-44.59	45.91	-41.41	918.71	596.31	322.41	2.850		
7,900.00	7,790.63	7,790.63	7,790.63	23.20	309.33	-44.59	45.91	-41.41	918.71	592.10	326.61	2.813		
8,000.00	7,890.63	7,890.63	7,890.63	23.35	313.33	-44.59	45.91	-41.41	918.71	587.90	330.81	2.777		
8,028.37	7,919.00	7,919.00	7,919.00	23.39	314.46	-44.59	45.91	-41.41	918.71	586.71	332.00	2.767		

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_VOGL 35-36
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4832.00ft (Original Well Elev)
Reference Site:	WELD_VOGL 4 PAD	MD Reference:	WELL @ 4832.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_VOGL 35-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_VOGL 35-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 09-10-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design												WELD_VOGL 4 PAD - P_VOGL 11-36 - P_VOGL 11-36 - PLAN #1 09-16-09 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	6.73	47.37	5.59	47.70					
100.00	100.00	100.00	100.00	0.10	0.10	6.73	47.37	5.59	47.70	47.51	0.19	249.659		
200.00	200.00	200.00	200.00	0.32	0.32	6.73	47.37	5.59	47.70	47.06	0.64	74.460		
300.00	300.00	300.00	300.00	0.55	0.55	6.73	47.37	5.59	47.70	46.61	1.09	43.755		
400.00	400.00	400.00	400.00	0.77	0.77	6.73	47.37	5.59	47.70	46.16	1.54	30.980		
500.00	500.00	500.00	500.00	0.99	0.99	6.73	47.37	5.59	47.70	45.71	1.99	23.979		
600.00	600.00	600.00	600.00	1.22	1.22	6.73	47.37	5.59	47.70	45.26	2.44	19.559		
700.00	700.00	700.00	700.00	1.44	1.44	6.73	47.37	5.59	47.70	44.81	2.89	16.514		
800.00	800.00	800.00	800.00	1.67	1.67	6.73	47.37	5.59	47.70	44.36	3.34	14.290 CC, ES		
900.00	899.98	898.64	898.62	1.87	1.89	-128.82	48.59	6.77	50.15	46.39	3.76	13.350 SF		
1,000.00	999.84	996.91	996.76	2.06	2.10	-129.61	52.22	10.30	57.51	53.35	4.16	13.830		
1,100.00	1,099.45	1,094.48	1,093.96	2.27	2.33	-130.52	58.21	16.13	69.75	65.18	4.58	15.245		
1,200.00	1,198.70	1,190.99	1,189.78	2.50	2.57	-131.32	66.47	24.16	86.84	81.82	5.02	17.316		
1,300.00	1,297.47	1,286.12	1,283.80	2.78	2.83	-131.92	76.87	34.27	108.69	103.20	5.48	19.818		
1,400.00	1,395.62	1,379.59	1,375.64	3.10	3.13	-132.31	89.26	46.32	135.20	129.21	5.99	22.568		
1,500.00	1,493.06	1,471.10	1,464.98	3.47	3.45	-132.51	103.47	60.14	166.27	159.72	6.54	25.416		
1,594.83	1,584.68	1,555.87	1,547.13	3.89	3.80	-132.57	118.45	74.70	199.80	192.69	7.11	28.101		
1,600.00	1,589.64	1,560.43	1,551.53	3.91	3.81	-132.60	119.31	75.53	201.73	194.59	7.14	28.240		
1,700.00	1,685.82	1,647.86	1,635.54	4.40	4.21	-132.82	136.67	92.42	240.26	232.45	7.82	30.736		
1,800.00	1,782.00	1,733.67	1,717.23	4.90	4.65	-132.58	155.49	110.72	280.79	272.26	8.53	32.922		
1,900.00	1,878.17	1,817.74	1,796.47	5.43	5.12	-132.05	175.63	130.29	323.28	314.01	9.27	34.858		
2,000.00	1,974.35	1,900.00	1,873.17	5.96	5.63	-131.37	196.93	151.01	367.70	357.66	10.05	36.600		
2,100.00	2,070.52	1,980.37	1,947.25	6.50	6.18	-130.59	219.26	172.72	414.04	403.19	10.85	38.163		
2,200.00	2,166.70	2,060.47	2,020.21	7.05	6.76	-129.75	242.97	195.77	462.24	450.56	11.67	39.599		
2,300.00	2,262.87	2,147.50	2,099.15	7.60	7.42	-128.94	269.24	221.31	511.12	498.57	12.55	40.725		
2,400.00	2,359.05	2,234.53	2,178.09	8.16	8.09	-128.27	295.50	246.85	560.06	546.63	13.44	41.684		
2,500.00	2,455.23	2,321.56	2,257.04	8.72	8.78	-127.71	321.77	272.39	609.06	594.73	14.33	42.504		
2,600.00	2,551.40	2,408.59	2,335.98	9.29	9.47	-127.23	348.04	297.93	658.10	642.87	15.23	43.213		
2,700.00	2,647.58	2,495.62	2,414.92	9.86	10.16	-126.81	374.31	323.48	707.16	691.03	16.13	43.828		
2,800.00	2,743.75	2,582.65	2,493.86	10.42	10.86	-126.46	400.58	349.02	756.25	739.20	17.05	44.366		
2,900.00	2,839.93	2,669.68	2,572.80	10.99	11.57	-126.14	426.85	374.56	805.36	787.40	17.96	44.842		
3,000.00	2,936.10	2,756.71	2,651.75	11.57	12.28	-125.86	453.12	400.10	854.48	835.61	18.88	45.264		
3,100.00	3,032.28	2,843.74	2,730.69	12.14	12.99	-125.61	479.39	425.64	903.62	883.82	19.80	45.642		
3,200.00	3,128.46	2,930.77	2,809.63	12.71	13.70	-125.39	505.66	451.18	952.77	932.05	20.72	45.981		
3,300.00	3,224.63	3,017.80	2,888.57	13.29	14.41	-125.19	531.93	476.73	1,001.93	980.29	21.65	46.287		
3,400.00	3,320.81	3,104.83	2,967.51	13.86	15.13	-125.00	558.20	502.27	1,051.10	1,028.53	22.57	46.565		
3,500.00	3,416.98	3,191.86	3,046.45	14.44	15.85	-124.84	584.47	527.81	1,100.28	1,076.78	23.50	46.817		
3,600.00	3,513.16	3,278.89	3,125.40	15.02	16.57	-124.68	610.74	553.35	1,149.46	1,125.03	24.43	47.047		
3,700.00	3,609.33	3,365.92	3,204.34	15.59	17.29	-124.54	637.01	578.89	1,198.65	1,173.29	25.36	47.259		
3,800.00	3,705.51	3,452.95	3,283.28	16.17	18.01	-124.42	663.27	604.43	1,247.84	1,221.55	26.30	47.453		
3,900.00	3,801.69	3,539.98	3,362.22	16.75	18.73	-124.30	689.54	629.97	1,297.04	1,269.81	27.23	47.633		
3,923.54	3,824.32	3,560.47	3,380.80	16.89	18.90	-124.27	695.73	635.99	1,308.62	1,281.17	27.45	47.673		
4,000.00	3,898.13	3,627.27	3,441.39	17.26	19.46	-124.84	715.89	655.59	1,345.74	1,317.50	28.24	47.654		
4,100.00	3,995.42	3,715.34	3,521.28	17.64	20.19	-125.44	742.47	681.44	1,392.75	1,363.56	29.19	47.714		
4,200.00	4,093.45	3,804.11	3,601.80	17.98	20.93	-125.89	769.27	707.49	1,438.00	1,407.90	30.10	47.768		
4,300.00	4,192.11	3,893.48	3,682.86	18.27	21.67	-126.19	796.24	733.72	1,481.49	1,450.51	30.98	47.826		
4,400.00	4,291.28	3,983.33	3,764.37	18.53	22.42	-126.37	823.37	760.09	1,523.21	1,491.41	31.80	47.895		
4,500.00	4,390.84	4,073.57	3,846.21	18.74	23.17	-126.43	850.60	786.57	1,563.19	1,530.61	32.58	47.982		
4,600.00	4,490.66	4,164.07	3,928.30	18.90	23.93	-126.39	877.92	813.13	1,601.46	1,568.16	33.30	48.091		
4,700.00	4,590.63	4,254.72	4,010.54	19.03	24.68	-126.24	905.28	839.74	1,638.05	1,604.08	33.96	48.229		
4,718.37	4,609.00	4,271.39	4,025.65	19.05	24.82	9.02	910.31	844.63	1,644.59	1,610.51	34.08	48.257		
4,800.00	4,690.63	4,345.43	4,092.81	19.13	25.44	9.68	932.66	866.36	1,673.65	1,639.14	34.51	48.497		

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 35-36
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4832.00ft (Original Well Elev)
Reference Site:	WELD_VOGL 4 PAD	MD Reference:	WELL @ 4832.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_VOGL 35-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_VOGL 35-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 09-10-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design													WELD_VOGL 4 PAD - P_VOGL 11-36 - P_VOGL 11-36 - PLAN #1 09-16-09 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			
4,900.00	4,790.63	4,436.14	4,175.09	19.24	26.20	10.45	960.04	892.98	1,709.51	1,674.48	35.03	48.801			
5,000.00	4,890.63	4,526.84	4,257.36	19.35	26.96	11.20	987.42	919.60	1,745.65	1,710.11	35.54	49.116			
5,100.00	4,990.63	4,617.55	4,339.64	19.45	27.72	11.92	1,014.80	946.22	1,782.06	1,746.01	36.04	49.440			
5,200.00	5,090.63	4,708.26	4,421.92	19.57	28.48	12.61	1,042.18	972.84	1,818.71	1,782.17	36.54	49.770			
5,300.00	5,190.63	4,798.96	4,504.19	19.68	29.23	13.28	1,069.55	999.46	1,855.59	1,818.56	37.03	50.107			
5,400.00	5,290.63	4,889.67	4,586.47	19.79	29.99	13.92	1,096.93	1,026.08	1,892.69	1,855.17	37.52	50.448			
5,500.00	5,390.63	4,980.37	4,668.75	19.91	30.75	14.53	1,124.31	1,052.70	1,930.00	1,892.00	38.00	50.792			
5,600.00	5,490.63	5,071.08	4,751.02	20.03	31.51	15.13	1,151.69	1,079.32	1,967.49	1,929.02	38.47	51.139			
5,700.00	5,590.63	5,161.79	4,833.30	20.15	32.27	15.70	1,179.07	1,105.94	2,005.17	1,966.23	38.95	51.487			
5,800.00	5,690.63	5,252.49	4,915.57	20.27	33.03	16.25	1,206.45	1,132.56	2,043.03	2,003.61	39.41	51.836			
5,900.00	5,790.63	5,343.20	4,997.85	20.40	33.79	16.78	1,233.83	1,159.18	2,081.04	2,041.17	39.88	52.185			
6,000.00	5,890.63	5,433.91	5,080.13	20.52	34.55	17.30	1,261.21	1,185.80	2,119.22	2,078.88	40.34	52.534			
6,100.00	5,990.63	5,524.61	5,162.40	20.65	35.31	17.79	1,288.59	1,212.42	2,157.53	2,116.73	40.80	52.882			
6,200.00	6,090.63	5,746.47	5,366.09	20.78	36.79	18.87	1,351.54	1,273.63	2,194.32	2,152.77	41.55	52.813			
6,300.00	6,190.63	6,070.45	5,674.20	20.91	38.41	20.00	1,422.96	1,343.07	2,222.54	2,180.12	42.42	52.397			
6,400.00	6,290.63	6,414.73	6,011.68	21.04	39.59	20.71	1,471.01	1,389.80	2,240.45	2,197.26	43.19	51.879			
6,500.00	6,390.63	6,770.66	6,366.42	21.17	40.19	20.98	1,489.83	1,408.09	2,247.24	2,203.44	43.80	51.309			
6,600.00	6,490.63	6,894.88	6,490.63	21.31	40.28	20.98	1,489.97	1,408.23	2,247.29	2,203.21	44.08	50.981			
6,700.00	6,590.63	6,994.88	6,590.63	21.45	40.36	20.98	1,489.97	1,408.23	2,247.29	2,202.94	44.35	50.672			
6,800.00	6,690.63	7,094.88	6,690.63	21.58	40.43	20.98	1,489.97	1,408.23	2,247.29	2,202.67	44.62	50.363			
6,900.00	6,790.63	7,194.88	6,790.63	21.72	40.51	20.98	1,489.97	1,408.23	2,247.29	2,202.40	44.90	50.054			
7,000.00	6,890.63	7,294.88	6,890.63	21.87	40.59	20.98	1,489.97	1,408.23	2,247.29	2,202.12	45.18	49.746			
7,100.00	6,990.63	7,394.88	6,990.63	22.01	40.67	20.98	1,489.97	1,408.23	2,247.29	2,201.84	45.46	49.439			
7,200.00	7,090.63	7,494.88	7,090.63	22.15	40.75	20.98	1,489.97	1,408.23	2,247.29	2,201.55	45.74	49.133			
7,300.00	7,190.63	7,594.88	7,190.63	22.30	40.83	20.98	1,489.97	1,408.23	2,247.29	2,201.27	46.03	48.828			
7,400.00	7,290.63	7,694.88	7,290.63	22.44	40.91	20.98	1,489.97	1,408.23	2,247.29	2,200.98	46.31	48.523			
7,500.00	7,390.63	7,794.88	7,390.63	22.59	40.99	20.98	1,489.97	1,408.23	2,247.29	2,200.69	46.60	48.220			
7,600.00	7,490.63	7,894.88	7,490.63	22.74	41.08	20.98	1,489.97	1,408.23	2,247.29	2,200.40	46.90	47.918			
7,700.00	7,590.63	7,994.88	7,590.63	22.89	41.16	20.98	1,489.97	1,408.23	2,247.29	2,200.10	47.19	47.618			
7,800.00	7,690.63	8,094.88	7,690.63	23.04	41.25	20.98	1,489.97	1,408.23	2,247.29	2,199.80	47.49	47.319			
7,900.00	7,790.63	8,194.88	7,790.63	23.20	41.33	20.98	1,489.97	1,408.23	2,247.29	2,199.50	47.79	47.021			
7,960.02	7,850.65	8,254.90	7,850.65	23.29	41.39	20.98	1,489.97	1,408.23	2,247.29	2,199.32	47.98	46.843			
8,000.00	7,890.63	8,278.25	7,874.00	23.35	41.41	20.98	1,489.97	1,408.23	2,247.35	2,199.28	48.07	46.749			
8,028.37	7,919.00	8,278.25	7,874.00	23.39	41.41	20.98	1,489.97	1,408.23	2,247.74	2,199.63	48.12	46.712			

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_VOGL 35-36
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4832.00ft (Original Well Elev)
Reference Site:	WELD_VOGL 4 PAD	MD Reference:	WELL @ 4832.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_VOGL 35-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_VOGL 35-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 09-10-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft	
Survey Program: 0-MWD												Offset Well Error:		0.00 ft
Reference				Offset			Semi Major Axis			Distance				Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	10.85	14.58	2.79	14.84					
100.00	100.00	100.00	100.00	0.10	0.10	10.85	14.58	2.79	14.84	14.65	0.19	77.680		
200.00	200.00	200.00	200.00	0.32	0.32	10.85	14.58	2.79	14.84	14.20	0.64	23.168		
300.00	300.00	300.00	300.00	0.55	0.55	10.85	14.58	2.79	14.84	13.75	1.09	13.614		
400.00	400.00	400.00	400.00	0.77	0.77	10.85	14.58	2.79	14.84	13.30	1.54	9.639		
500.00	500.00	500.00	500.00	0.99	0.99	10.85	14.58	2.79	14.84	12.85	1.99	7.461		
600.00	600.00	600.00	600.00	1.22	1.22	10.85	14.58	2.79	14.84	12.40	2.44	6.086		
700.00	700.00	700.00	700.00	1.44	1.44	10.85	14.58	2.79	14.84	11.95	2.89	5.138		
800.00	800.00	800.00	800.00	1.67	1.67	10.85	14.58	2.79	14.84	11.50	3.34	4.446 CC, ES		
900.00	899.98	899.88	899.86	1.87	1.88	-123.39	14.58	4.54	16.16	12.41	3.75	4.309 SF		
1,000.00	999.84	999.66	999.50	2.06	2.09	-121.22	14.60	9.75	20.14	16.00	4.14	4.860		
1,100.00	1,099.45	1,099.22	1,098.67	2.27	2.31	-119.01	14.62	18.41	26.80	22.23	4.57	5.867		
1,200.00	1,198.70	1,198.46	1,197.17	2.50	2.56	-117.25	14.66	30.46	36.14	31.10	5.04	7.175		
1,300.00	1,297.47	1,297.27	1,294.78	2.78	2.83	-115.95	14.70	45.84	48.14	42.57	5.57	8.648		
1,400.00	1,395.62	1,395.57	1,391.29	3.10	3.15	-114.97	14.76	64.48	62.76	56.59	6.17	10.169		
1,500.00	1,493.06	1,493.25	1,486.50	3.47	3.52	-114.22	14.82	86.26	79.97	73.11	6.87	11.647		
1,594.83	1,584.68	1,585.24	1,575.44	3.89	3.92	-113.63	14.89	109.74	98.65	91.04	7.62	12.954		
1,600.00	1,589.64	1,590.28	1,580.30	3.91	3.94	-113.62	14.89	111.10	99.73	92.07	7.66	13.020		
1,700.00	1,685.82	1,688.07	1,674.43	4.40	4.40	-113.46	14.97	137.60	120.64	112.09	8.54	14.119		
1,800.00	1,782.00	1,785.86	1,768.56	4.90	4.89	-113.35	15.05	164.09	141.54	132.08	9.47	14.951		
1,900.00	1,878.17	1,883.65	1,862.70	5.43	5.39	-113.27	15.13	190.58	162.45	152.03	10.42	15.592		
2,000.00	1,974.35	1,981.44	1,956.83	5.96	5.90	-113.20	15.21	217.07	183.36	171.97	11.39	16.095		
2,100.00	2,070.52	2,079.23	2,050.96	6.50	6.42	-113.15	15.28	243.56	204.26	191.88	12.38	16.497		
2,200.00	2,166.70	2,177.02	2,145.09	7.05	6.94	-113.11	15.36	270.06	225.17	211.79	13.38	16.824		
2,300.00	2,262.87	2,274.81	2,239.23	7.60	7.47	-113.07	15.44	296.55	246.08	231.68	14.40	17.093		
2,400.00	2,359.05	2,372.60	2,333.36	8.16	8.01	-113.05	15.52	323.04	266.98	251.57	15.42	17.317		
2,500.00	2,455.23	2,470.39	2,427.49	8.72	8.54	-113.02	15.60	349.53	287.89	271.45	16.44	17.507		
2,600.00	2,551.40	2,568.18	2,521.63	9.29	9.08	-113.00	15.67	376.02	308.80	291.32	17.48	17.669		
2,700.00	2,647.58	2,665.97	2,615.76	9.86	9.63	-112.98	15.75	402.51	329.70	311.19	18.51	17.808		
2,800.00	2,743.75	2,763.76	2,709.89	10.42	10.17	-112.96	15.83	429.01	350.61	331.06	19.56	17.929		
2,900.00	2,839.93	2,861.55	2,804.03	10.99	10.72	-112.95	15.91	455.50	371.52	350.92	20.60	18.035		
3,000.00	2,936.10	2,959.34	2,898.16	11.57	11.27	-112.94	15.99	481.99	392.43	370.78	21.65	18.128		
3,100.00	3,032.28	3,057.13	2,992.29	12.14	11.82	-112.92	16.06	508.48	413.33	390.64	22.70	18.211		
3,200.00	3,128.46	3,154.92	3,086.43	12.71	12.37	-112.91	16.14	534.97	434.24	410.49	23.75	18.285		
3,300.00	3,224.63	3,252.71	3,180.56	13.29	12.92	-112.90	16.22	561.47	455.15	430.34	24.80	18.352		
3,400.00	3,320.81	3,350.50	3,274.69	13.86	13.47	-112.90	16.30	587.96	476.05	450.20	25.86	18.411		
3,500.00	3,416.98	3,448.29	3,368.83	14.44	14.02	-112.89	16.37	614.45	496.96	470.05	26.91	18.466		
3,600.00	3,513.16	3,546.08	3,462.96	15.02	14.57	-112.88	16.45	640.94	517.87	489.90	27.97	18.515		
3,700.00	3,609.33	3,643.87	3,557.09	15.59	15.13	-112.87	16.53	667.43	538.77	509.75	29.03	18.560		
3,800.00	3,705.51	3,741.66	3,651.23	16.17	15.68	-112.87	16.61	693.92	559.68	529.59	30.09	18.601		
3,900.00	3,801.69	3,839.45	3,745.36	16.75	16.24	-112.86	16.69	720.42	580.59	549.44	31.15	18.639		
3,923.54	3,824.32	3,862.47	3,767.52	16.89	16.37	-112.86	16.70	726.65	585.51	554.11	31.40	18.647		
4,000.00	3,898.13	3,937.31	3,839.56	17.26	16.79	-113.06	16.76	746.93	601.11	568.93	32.18	18.679		
4,100.00	3,995.42	4,035.36	3,933.94	17.64	17.35	-113.03	16.84	773.49	620.34	587.23	33.11	18.736		
4,200.00	4,093.45	4,133.48	4,028.39	17.98	17.91	-112.72	16.92	800.07	638.28	604.28	34.00	18.773		
4,300.00	4,192.11	4,231.55	4,122.79	18.27	18.46	-112.13	17.00	826.64	655.01	620.16	34.85	18.798		
4,400.00	4,291.28	4,329.45	4,217.03	18.53	19.02	-111.29	17.08	853.16	670.65	635.01	35.64	18.818		
4,500.00	4,390.84	4,427.06	4,310.99	18.74	19.58	-110.23	17.15	879.60	685.36	648.98	36.37	18.842		
4,600.00	4,490.66	4,524.27	4,404.57	18.90	20.13	-108.95	17.23	905.94	699.31	662.27	37.04	18.880		
4,700.00	4,590.63	4,620.95	4,497.63	19.03	20.68	-107.47	17.31	932.13	712.74	675.10	37.63	18.939		
4,718.37	4,609.00	4,638.64	4,514.67	19.05	20.78	28.05	17.32	936.92	715.17	677.43	37.73	18.953		
4,800.00	4,690.63	4,717.22	4,590.31	19.13	21.23	29.54	17.39	958.21	726.19	688.03	38.16	19.032		

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 35-36
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4832.00ft (Original Well Elev)
Reference Site:	WELD_VOGL 4 PAD	MD Reference:	WELL @ 4832.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_VOGL 35-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_VOGL 35-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 09-10-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design													WELD_VOGL 4 PAD - P_VOGL 14-36 - P_VOGL 14-36 - PLAN #1 09-16-09 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			
4,900.00	4,790.63	4,813.48	4,682.97	19.24	21.78	31.31	17.46	984.29	740.37	701.73	38.65	19.158			
5,000.00	4,890.63	4,909.74	4,775.63	19.35	22.33	33.02	17.54	1,010.36	755.26	716.15	39.11	19.312			
5,100.00	4,990.63	5,006.00	4,868.29	19.45	22.88	34.67	17.62	1,036.44	770.81	731.27	39.55	19.492			
5,200.00	5,090.63	5,102.26	4,960.95	19.57	23.43	36.25	17.69	1,062.52	786.99	747.03	39.96	19.694			
5,300.00	5,190.63	5,198.52	5,053.61	19.68	23.97	37.76	17.77	1,088.60	803.75	763.40	40.36	19.916			
5,400.00	5,290.63	5,294.78	5,146.27	19.79	24.52	39.22	17.85	1,114.67	821.07	780.33	40.74	20.156			
5,500.00	5,390.63	5,391.04	5,238.93	19.91	25.07	40.62	17.92	1,140.75	838.91	797.81	41.10	20.411			
5,600.00	5,490.63	5,505.66	5,349.63	20.03	25.64	42.15	18.01	1,170.45	856.46	815.02	41.44	20.669			
5,700.00	5,590.63	5,628.91	5,469.86	20.15	26.10	43.48	18.09	1,197.52	871.64	829.95	41.69	20.907			
5,800.00	5,690.63	5,754.34	5,593.29	20.27	26.49	44.52	18.16	1,219.74	884.09	842.15	41.94	21.078			
5,900.00	5,790.63	5,881.52	5,719.32	20.40	26.81	45.30	18.21	1,236.73	893.60	851.40	42.20	21.177			
6,000.00	5,890.63	6,009.98	5,847.26	20.52	27.07	45.81	18.24	1,248.20	900.01	857.56	42.45	21.201			
6,100.00	5,990.63	6,139.22	5,976.36	20.65	27.25	46.07	18.26	1,253.94	903.21	860.50	42.71	21.148			
6,200.00	6,090.63	6,253.49	6,090.63	20.78	27.37	46.10	18.26	1,254.63	903.59	860.62	42.97	21.029			
6,300.00	6,190.63	6,353.49	6,190.63	20.91	27.47	46.10	18.26	1,254.63	903.59	860.37	43.22	20.907			
6,400.00	6,290.63	6,453.49	6,290.63	21.04	27.58	46.10	18.26	1,254.63	903.59	860.11	43.48	20.782			
6,500.00	6,390.63	6,553.49	6,390.63	21.17	27.68	46.10	18.26	1,254.63	903.59	859.85	43.74	20.658			
6,600.00	6,490.63	6,653.49	6,490.63	21.31	27.79	46.10	18.26	1,254.63	903.59	859.59	44.00	20.534			
6,700.00	6,590.63	6,753.49	6,590.63	21.45	27.90	46.10	18.26	1,254.63	903.59	859.32	44.27	20.410			
6,800.00	6,690.63	6,853.49	6,690.63	21.58	28.02	46.10	18.26	1,254.63	903.59	859.05	44.54	20.287			
6,900.00	6,790.63	6,953.49	6,790.63	21.72	28.13	46.10	18.26	1,254.63	903.59	858.78	44.81	20.163			
7,000.00	6,890.63	7,053.49	6,890.63	21.87	28.24	46.10	18.26	1,254.63	903.59	858.50	45.09	20.040			
7,100.00	6,990.63	7,153.49	6,990.63	22.01	28.36	46.10	18.26	1,254.63	903.59	858.22	45.37	19.917			
7,200.00	7,090.63	7,253.49	7,090.63	22.15	28.48	46.10	18.26	1,254.63	903.59	857.94	45.65	19.794			
7,300.00	7,190.63	7,353.49	7,190.63	22.30	28.59	46.10	18.26	1,254.63	903.59	857.66	45.93	19.672			
7,400.00	7,290.63	7,453.49	7,290.63	22.44	28.71	46.10	18.26	1,254.63	903.59	857.37	46.22	19.550			
7,500.00	7,390.63	7,553.49	7,390.63	22.59	28.84	46.10	18.26	1,254.63	903.59	857.08	46.51	19.428			
7,600.00	7,490.63	7,653.49	7,490.63	22.74	28.96	46.10	18.26	1,254.63	903.59	856.79	46.80	19.307			
7,700.00	7,590.63	7,753.49	7,590.63	22.89	29.08	46.10	18.26	1,254.63	903.59	856.50	47.10	19.186			
7,800.00	7,690.63	7,853.49	7,690.63	23.04	29.21	46.10	18.26	1,254.63	903.59	856.20	47.39	19.066			
7,900.00	7,790.63	7,953.49	7,790.63	23.20	29.33	46.10	18.26	1,254.63	903.59	855.90	47.69	18.947			
7,964.30	7,854.93	8,017.79	7,854.93	23.29	29.41	46.10	18.26	1,254.63	903.59	855.71	47.89	18.870			
8,000.00	7,890.63	8,046.86	7,884.00	23.35	29.45	46.10	18.26	1,254.63	903.62	855.63	47.98	18.832			
8,028.37	7,919.00	8,046.86	7,884.00	23.39	29.45	46.10	18.26	1,254.63	904.27	856.24	48.03	18.828			

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_VOGL 35-36
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4832.00ft (Original Well Elev)
Reference Site:	WELD_VOGL 4 PAD	MD Reference:	WELL @ 4832.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_VOGL 35-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_VOGL 35-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 09-10-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design													WELD_VOGL 4 PAD - P_VOGL 23-36 - P_VOGL 23-36 - PLAN #1 09-16-09 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	4.87	32.79	2.79	32.91						
100.00	100.00	100.00	100.00	0.10	0.10	4.87	32.79	2.79	32.91	32.72	0.19	172.249			
200.00	200.00	200.00	200.00	0.32	0.32	4.87	32.79	2.79	32.91	32.27	0.64	51.373			
300.00	300.00	300.00	300.00	0.55	0.55	4.87	32.79	2.79	32.91	31.82	1.09	30.188			
400.00	400.00	400.00	400.00	0.77	0.77	4.87	32.79	2.79	32.91	31.37	1.54	21.374			
500.00	500.00	500.00	500.00	0.99	0.99	4.87	32.79	2.79	32.91	30.92	1.99	16.544			
600.00	600.00	600.00	600.00	1.22	1.22	4.87	32.79	2.79	32.91	30.47	2.44	13.494			
700.00	700.00	700.00	700.00	1.44	1.44	4.87	32.79	2.79	32.91	30.02	2.89	11.394			
800.00	800.00	800.00	800.00	1.67	1.67	4.87	32.79	2.79	32.91	29.57	3.34	9.859 CC, ES			
900.00	899.98	899.49	899.47	1.87	1.88	-129.92	33.37	4.42	34.76	31.01	3.75	9.260 SF			
1,000.00	999.84	998.77	998.61	2.06	2.10	-128.85	35.12	9.28	40.33	36.18	4.15	9.714			
1,100.00	1,099.45	1,097.64	1,097.10	2.27	2.32	-127.57	38.02	17.33	49.61	45.04	4.57	10.846			
1,200.00	1,198.70	1,195.89	1,194.63	2.50	2.57	-126.38	42.03	28.49	62.59	57.56	5.03	12.438			
1,300.00	1,297.47	1,293.34	1,290.91	2.78	2.84	-125.38	47.13	42.67	79.22	73.68	5.54	14.305			
1,400.00	1,395.62	1,389.80	1,385.65	3.10	3.15	-124.54	53.27	59.72	99.45	93.35	6.10	16.294			
1,500.00	1,493.06	1,485.11	1,478.60	3.47	3.50	-123.83	60.38	79.51	123.22	116.48	6.74	18.282			
1,594.83	1,584.68	1,574.28	1,564.88	3.89	3.88	-123.23	67.99	100.65	148.96	141.54	7.42	20.081			
1,600.00	1,589.64	1,579.10	1,569.53	3.91	3.90	-123.22	68.43	101.87	150.45	142.99	7.46	20.175			
1,700.00	1,685.82	1,671.91	1,658.51	4.40	4.35	-122.66	77.35	126.69	180.07	171.81	8.27	21.786			
1,800.00	1,782.00	1,763.62	1,745.55	4.90	4.85	-121.54	87.13	153.86	211.29	202.16	9.14	23.130			
1,900.00	1,878.17	1,854.05	1,830.43	5.43	5.40	-120.10	97.68	183.21	244.20	234.14	10.06	24.282			
2,000.00	1,974.35	1,943.06	1,912.97	5.96	5.99	-118.50	108.95	214.54	278.87	267.85	11.02	25.304			
2,100.00	2,070.52	2,030.51	1,993.02	6.50	6.63	-116.83	120.87	247.67	315.39	303.38	12.01	26.254			
2,200.00	2,166.70	2,122.15	2,076.23	7.05	7.34	-115.20	133.86	283.79	353.13	340.07	13.06	27.030			
2,300.00	2,262.87	2,214.32	2,159.92	7.60	8.08	-113.87	146.93	320.14	391.08	376.96	14.13	27.685			
2,400.00	2,359.05	2,306.50	2,243.61	8.16	8.83	-112.78	160.01	356.48	429.18	413.99	15.19	28.246			
2,500.00	2,455.23	2,398.67	2,327.30	8.72	9.58	-111.87	173.08	392.82	467.39	451.12	16.27	28.729			
2,600.00	2,551.40	2,490.84	2,411.00	9.29	10.35	-111.09	186.15	429.17	505.69	488.34	17.35	29.149			
2,700.00	2,647.58	2,583.02	2,494.69	9.86	11.11	-110.42	199.22	465.51	544.06	525.63	18.43	29.518			
2,800.00	2,743.75	2,675.19	2,578.38	10.42	11.89	-109.84	212.30	501.86	582.48	562.96	19.52	29.844			
2,900.00	2,839.93	2,767.37	2,662.07	10.99	12.66	-109.34	225.37	538.20	620.94	600.34	20.61	30.134			
3,000.00	2,936.10	2,859.54	2,745.76	11.57	13.44	-108.89	238.44	574.55	659.45	637.75	21.70	30.394			
3,100.00	3,032.28	2,951.71	2,829.45	12.14	14.22	-108.49	251.51	610.89	697.98	675.19	22.79	30.627			
3,200.00	3,128.46	3,043.89	2,913.14	12.71	15.01	-108.13	264.59	647.23	736.54	712.66	23.88	30.838			
3,300.00	3,224.63	3,136.06	2,996.83	13.29	15.79	-107.81	277.66	683.58	775.12	750.14	24.98	31.030			
3,400.00	3,320.81	3,228.24	3,080.53	13.86	16.58	-107.52	290.73	719.92	813.72	787.65	26.08	31.205			
3,500.00	3,416.98	3,320.41	3,164.22	14.44	17.37	-107.25	303.80	756.27	852.34	825.17	27.18	31.365			
3,600.00	3,513.16	3,412.58	3,247.91	15.02	18.16	-107.01	316.88	792.61	890.97	862.70	28.27	31.512			
3,700.00	3,609.33	3,504.76	3,331.60	15.59	18.95	-106.79	329.95	828.96	929.62	900.24	29.37	31.647			
3,800.00	3,705.51	3,596.93	3,415.29	16.17	19.74	-106.58	343.02	865.30	968.27	937.80	30.48	31.772			
3,900.00	3,801.69	3,689.11	3,498.98	16.75	20.54	-106.39	356.09	901.64	1,006.94	975.36	31.58	31.888			
3,923.54	3,824.32	3,710.80	3,518.68	16.89	20.72	-106.35	359.17	910.20	1,016.04	984.20	31.84	31.914			
4,000.00	3,898.13	3,781.35	3,582.74	17.26	21.33	-106.77	369.18	938.02	1,045.34	1,012.62	32.72	31.946			
4,100.00	3,995.42	3,873.78	3,666.66	17.64	22.13	-107.14	382.29	974.46	1,082.87	1,049.11	33.77	32.071			
4,200.00	4,093.45	3,966.28	3,750.65	17.98	22.92	-107.34	395.40	1,010.93	1,119.52	1,084.77	34.75	32.215			
4,300.00	4,192.11	4,058.74	3,834.60	18.27	23.72	-107.38	408.52	1,047.39	1,155.31	1,119.64	35.68	32.384			
4,400.00	4,291.28	4,151.05	3,918.42	18.53	24.52	-107.27	421.61	1,083.79	1,190.31	1,153.78	36.53	32.582			
4,500.00	4,390.84	4,243.10	4,002.00	18.74	25.31	-107.04	434.67	1,120.09	1,224.59	1,187.27	37.32	32.812			
4,600.00	4,490.66	4,334.78	4,085.24	18.90	26.10	-106.70	447.67	1,156.24	1,258.24	1,220.21	38.04	33.079			
4,700.00	4,590.63	4,425.97	4,168.03	19.03	26.89	-106.26	460.60	1,192.19	1,291.37	1,252.69	38.68	33.387			
4,718.37	4,609.00	4,442.66	4,183.19	19.05	27.04	29.06	462.97	1,198.77	1,297.40	1,258.61	38.79	33.447			
4,800.00	4,690.63	4,516.78	4,250.48	19.13	27.68	29.99	473.48	1,228.00	1,324.37	1,285.21	39.16	33.822			

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 35-36
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4832.00ft (Original Well Elev)
Reference Site:	WELD_VOGL 4 PAD	MD Reference:	WELL @ 4832.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_VOGL 35-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_VOGL 35-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 09-10-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 ft	
Survey Program: 0-MWD													Offset Well Error:		0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
4,900.00	4,790.63	4,607.57	4,332.92	19.24	28.46	31.09	486.36	1,263.80	1,357.84	1,318.25	39.59	34.294			
5,000.00	4,890.63	4,698.37	4,415.37	19.35	29.25	32.15	499.23	1,299.60	1,391.77	1,351.75	40.02	34.778			
5,100.00	4,990.63	4,789.17	4,497.81	19.45	30.03	33.15	512.11	1,335.40	1,426.12	1,385.69	40.43	35.270			
5,200.00	5,090.63	4,879.96	4,580.25	19.57	30.82	34.11	524.99	1,371.20	1,460.87	1,420.03	40.84	35.769			
5,300.00	5,190.63	4,970.76	4,662.69	19.68	31.60	35.03	537.87	1,407.00	1,495.99	1,454.75	41.24	36.275			
5,400.00	5,290.63	5,061.56	4,745.13	19.79	32.39	35.91	550.74	1,442.81	1,531.45	1,489.81	41.63	36.784			
5,500.00	5,390.63	5,152.36	4,827.57	19.91	33.18	36.75	563.62	1,478.61	1,567.22	1,525.20	42.02	37.295			
5,600.00	5,490.63	5,243.15	4,910.01	20.03	33.96	37.55	576.50	1,514.41	1,603.29	1,560.89	42.41	37.809			
5,700.00	5,590.63	5,333.95	4,992.45	20.15	34.75	38.32	589.38	1,550.21	1,639.64	1,596.86	42.79	38.323			
5,800.00	5,690.63	5,424.75	5,074.89	20.27	35.54	39.06	602.25	1,586.01	1,676.25	1,633.09	43.16	38.836			
5,900.00	5,790.63	5,525.11	5,166.04	20.40	36.39	39.84	616.47	1,625.53	1,713.08	1,669.53	43.55	39.334			
6,000.00	5,890.63	5,723.60	5,349.48	20.52	37.71	41.16	642.09	1,696.77	1,746.85	1,702.80	44.04	39.661			
6,100.00	5,990.63	5,932.88	5,548.08	20.65	38.81	42.23	664.39	1,758.75	1,774.85	1,730.35	44.50	39.885			
6,200.00	6,090.63	6,151.45	5,760.04	20.78	39.72	43.04	682.37	1,808.74	1,796.55	1,751.61	44.94	39.975			
6,300.00	6,190.63	6,377.26	5,982.62	20.91	40.39	43.59	695.14	1,844.26	1,811.52	1,766.16	45.37	39.932			
6,400.00	6,290.63	6,607.76	6,212.16	21.04	40.82	43.87	702.03	1,863.40	1,819.43	1,773.67	45.76	39.760			
6,500.00	6,390.63	6,786.28	6,390.63	21.17	40.98	43.92	703.15	1,866.52	1,820.72	1,774.64	46.08	39.515			
6,600.00	6,490.63	6,886.28	6,490.63	21.31	41.06	43.92	703.15	1,866.52	1,820.72	1,774.39	46.33	39.302			
6,700.00	6,590.63	6,986.28	6,590.63	21.45	41.13	43.92	703.15	1,866.52	1,820.72	1,774.14	46.58	39.088			
6,800.00	6,690.63	7,086.28	6,690.63	21.58	41.21	43.92	703.15	1,866.52	1,820.72	1,773.88	46.84	38.874			
6,900.00	6,790.63	7,186.28	6,790.63	21.72	41.29	43.92	703.15	1,866.52	1,820.72	1,773.62	47.10	38.660			
7,000.00	6,890.63	7,286.28	6,890.63	21.87	41.37	43.92	703.15	1,866.52	1,820.72	1,773.36	47.36	38.445			
7,100.00	6,990.63	7,386.28	6,990.63	22.01	41.45	43.92	703.15	1,866.52	1,820.72	1,773.09	47.62	38.231			
7,200.00	7,090.63	7,486.28	7,090.63	22.15	41.53	43.92	703.15	1,866.52	1,820.72	1,772.82	47.89	38.017			
7,300.00	7,190.63	7,586.28	7,190.63	22.30	41.61	43.92	703.15	1,866.52	1,820.72	1,772.55	48.16	37.804			
7,400.00	7,290.63	7,686.28	7,290.63	22.44	41.69	43.92	703.15	1,866.52	1,820.72	1,772.28	48.44	37.590			
7,500.00	7,390.63	7,786.28	7,390.63	22.59	41.78	43.92	703.15	1,866.52	1,820.72	1,772.00	48.71	37.378			
7,600.00	7,490.63	7,886.28	7,490.63	22.74	41.86	43.92	703.15	1,866.52	1,820.72	1,771.73	48.99	37.165			
7,700.00	7,590.63	7,986.28	7,590.63	22.89	41.95	43.92	703.15	1,866.52	1,820.72	1,771.44	49.27	36.953			
7,800.00	7,690.63	8,086.28	7,690.63	23.04	42.04	43.92	703.15	1,866.52	1,820.72	1,771.16	49.55	36.742			
7,900.00	7,790.63	8,186.28	7,790.63	23.20	42.12	43.92	703.15	1,866.52	1,820.72	1,770.87	49.84	36.531			
8,000.00	7,890.63	8,286.28	7,890.63	23.35	42.21	43.92	703.15	1,866.52	1,820.72	1,770.59	50.13	36.321			
8,028.37	7,919.00	8,294.66	7,899.00	23.39	42.22	43.92	703.15	1,866.52	1,820.82	1,770.64	50.18	36.283			

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_VOGL 35-36
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4832.00ft (Original Well Elev)
Reference Site:	WELD_VOGL 4 PAD	MD Reference:	WELL @ 4832.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_VOGL 35-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_VOGL 35-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 09-10-09 RHS	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4832.00ft (Original Well Elev) Coordinates are relative to: P_VOGL 35-36
 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: 0.35°

