



US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_CURTIS 4 PAD

P_CURTIS 37-25

P_CURTIS 37-25

Plan: PLAN #1 12-29-09 RHS

Standard Planning Report

29 December, 2009





Azimuths to True North
Magnetic North: 9.00°
Magnetic Field
Strength: 53292.1nT
Dip Angle: 67.09°
Date: 12/29/2009
Model: IGRF200510

WELL DETAILS: P_CURTIS 37-25

+N/-S	+E/-W	Northing	Ground Level: Easting	4665.00 Latitude	Longitude	Slot
0.00	0.00	1376786.83	3216405.36	40° 21' 54.288 N	104° 43' 24.168 W	

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3580.00	3644.86	PARKMAN
4270.00	4354.03	SUSSEX
4750.00	4847.36	SHANNON
6815.00	6929.59	NIO A
7136.00	7250.59	CODELL
7212.00	7326.59	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	
1467.51	13.35	130.82	1461.48	-50.60	58.59	2.00	130.82	77.41	
5262.08	13.35	130.82	5153.52	-623.32	721.67	0.00	0.00	953.59	
5929.59	0.00	0.00	5815.00	-673.92	780.25	2.00	180.00	1031.00	
7409.59	0.00	0.00	7295.00	-673.92	780.25	0.00	0.00	1031.00	PBHL_CURTIS 37-25(60 FSL 1350 FEL)50°TGT RAD

CASING DETAILS

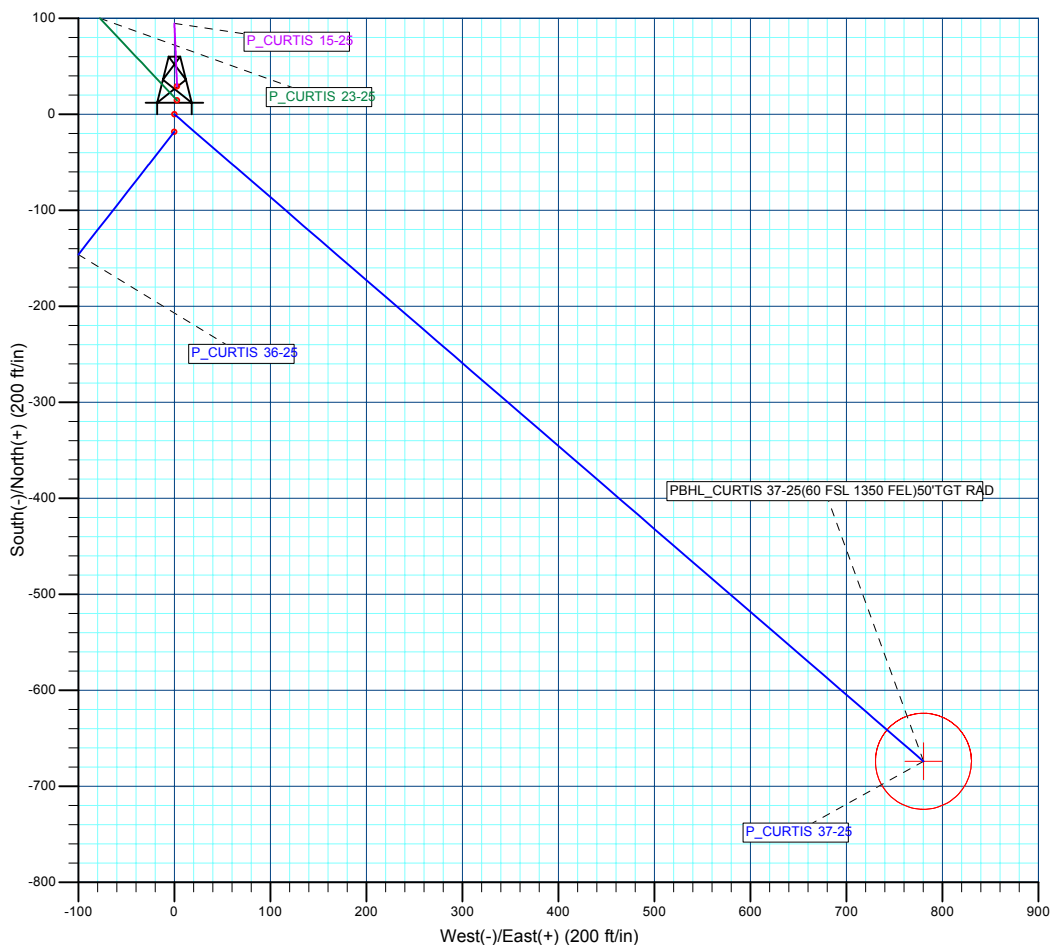
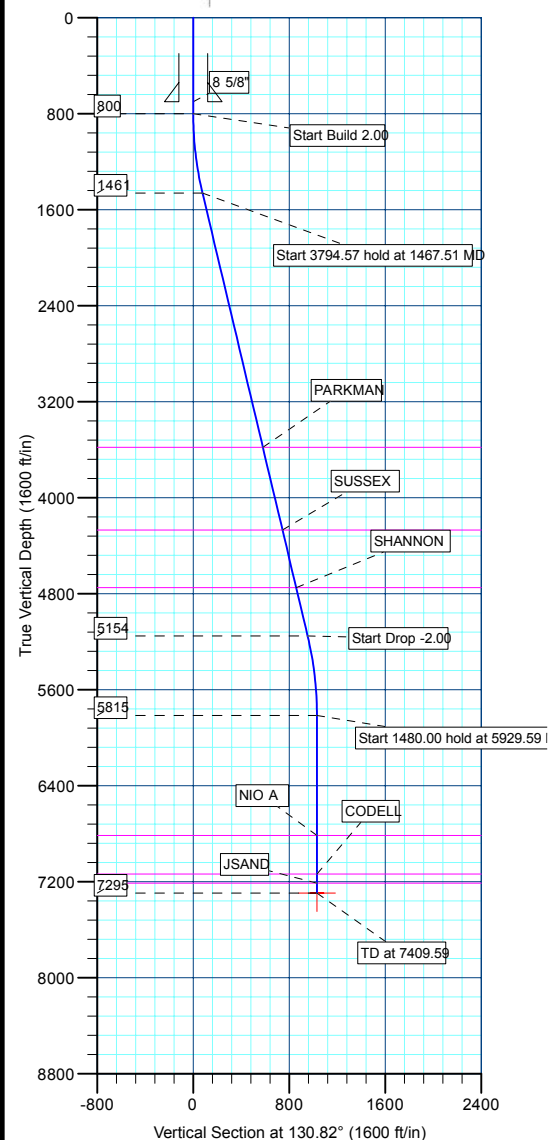
TVD	MD	Name	Size
700.00	700.00	8 5/8"	8.62

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL	7295.00	-673.92	780.25	1376119.77	3217191.48	40° 21' 47.628 N	104° 43' 14.088 W	Circle (Radius: 50.00)



KB ELEV: WELL @ 4680.00ft (Original Well Elev)
3RD ELEV: 4665.00



Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_CURTIS 37-25
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4680.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4680.00ft (Original Well Elev)
Site:	WELD_CURTIS 4 PAD	North Reference:	True
Well:	P_CURTIS 37-25	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_CURTIS 37-25		
Design:	PLAN #1 12-29-09 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_CURTIS 4 PAD, SECTION 25 T5N R66W											
Site Position:						Northing:			1,376,816.01 ft			Latitude:			40° 21' 54.576 N		
From:			Lat/Long			Easting:			3,216,407.89 ft			Longitude:			104° 43' 24.132 W		
Position Uncertainty:			0.00 ft			Slot Radius:			in			Grid Convergence:			0.50 °		

Well	P_CURTIS 37-25					
Well Position	+N/-S	-29.16 ft	Northing:	1,376,786.83 ft	Latitude:	40° 21' 54.288 N
	+E/-W	-2.79 ft	Easting:	3,216,405.36 ft	Longitude:	104° 43' 24.168 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,665.00 ft

Wellbore	P_CURTIS 37-25				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/29/2009	9.00	67.09	53,292

Design	PLAN #1 12-29-09 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	130.82

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	
1,467.51	13.35	130.82	1,461.48	-50.60	58.59	2.00	2.00	0.00	130.82	
5,262.08	13.35	130.82	5,153.52	-623.32	721.67	0.00	0.00	0.00	0.00	
5,929.59	0.00	0.00	5,815.00	-673.92	780.25	2.00	-2.00	0.00	180.00	
7,409.59	0.00	0.00	7,295.00	-673.92	780.25	0.00	0.00	0.00	0.00	PBHL_CURTIS 37-

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_CURTIS 37-25
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4680.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4680.00ft (Original Well Elev)
Site:	WELD_CURTIS 4 PAD	North Reference:	True
Well:	P_CURTIS 37-25	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_CURTIS 37-25		
Design:	PLAN #1 12-29-09 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
900.00	2.00	130.82	899.98	-1.14	1.32	1.75	2.00	2.00	0.00
1,000.00	4.00	130.82	999.84	-4.56	5.28	6.98	2.00	2.00	0.00
1,100.00	6.00	130.82	1,099.45	-10.26	11.88	15.69	2.00	2.00	0.00
1,200.00	8.00	130.82	1,198.70	-18.22	21.10	27.88	2.00	2.00	0.00
1,300.00	10.00	130.82	1,297.47	-28.45	32.94	43.52	2.00	2.00	0.00
1,400.00	12.00	130.82	1,395.62	-40.92	47.38	62.60	2.00	2.00	0.00
Start 3794.57 hold at 1467.51 MD									
1,467.51	13.35	130.82	1,461.48	-50.60	58.59	77.41	2.00	2.00	0.00
1,500.00	13.35	130.82	1,493.10	-55.51	64.26	84.92	0.00	0.00	0.00
1,600.00	13.35	130.82	1,590.40	-70.60	81.74	108.01	0.00	0.00	0.00
1,700.00	13.35	130.82	1,687.69	-85.69	99.21	131.10	0.00	0.00	0.00
1,800.00	13.35	130.82	1,784.99	-100.79	116.69	154.19	0.00	0.00	0.00
1,900.00	13.35	130.82	1,882.29	-115.88	134.16	177.28	0.00	0.00	0.00
2,000.00	13.35	130.82	1,979.59	-130.97	151.64	200.37	0.00	0.00	0.00
2,100.00	13.35	130.82	2,076.88	-146.06	169.11	223.46	0.00	0.00	0.00
2,200.00	13.35	130.82	2,174.18	-161.16	186.59	246.55	0.00	0.00	0.00
2,300.00	13.35	130.82	2,271.48	-176.25	204.06	269.64	0.00	0.00	0.00
2,400.00	13.35	130.82	2,368.78	-191.34	221.53	292.73	0.00	0.00	0.00
2,500.00	13.35	130.82	2,466.08	-206.44	239.01	315.82	0.00	0.00	0.00
2,600.00	13.35	130.82	2,563.37	-221.53	256.48	338.91	0.00	0.00	0.00
2,700.00	13.35	130.82	2,660.67	-236.62	273.96	362.00	0.00	0.00	0.00
2,800.00	13.35	130.82	2,757.97	-251.72	291.43	385.09	0.00	0.00	0.00
2,900.00	13.35	130.82	2,855.27	-266.81	308.91	408.18	0.00	0.00	0.00
3,000.00	13.35	130.82	2,952.56	-281.90	326.38	431.27	0.00	0.00	0.00
3,100.00	13.35	130.82	3,049.86	-297.00	343.86	454.36	0.00	0.00	0.00
3,200.00	13.35	130.82	3,147.16	-312.09	361.33	477.45	0.00	0.00	0.00
3,300.00	13.35	130.82	3,244.46	-327.18	378.80	500.54	0.00	0.00	0.00
3,400.00	13.35	130.82	3,341.75	-342.27	396.28	523.63	0.00	0.00	0.00
3,500.00	13.35	130.82	3,439.05	-357.37	413.75	546.72	0.00	0.00	0.00
3,600.00	13.35	130.82	3,536.35	-372.46	431.23	569.81	0.00	0.00	0.00
PARKMAN									
3,644.86	13.35	130.82	3,580.00	-379.23	439.07	580.17	0.00	0.00	0.00
3,700.00	13.35	130.82	3,633.65	-387.55	448.70	592.90	0.00	0.00	0.00
3,800.00	13.35	130.82	3,730.95	-402.65	466.18	615.99	0.00	0.00	0.00
3,900.00	13.35	130.82	3,828.24	-417.74	483.65	639.08	0.00	0.00	0.00
4,000.00	13.35	130.82	3,925.54	-432.83	501.13	662.17	0.00	0.00	0.00
4,100.00	13.35	130.82	4,022.84	-447.93	518.60	685.26	0.00	0.00	0.00
4,200.00	13.35	130.82	4,120.14	-463.02	536.07	708.35	0.00	0.00	0.00
4,300.00	13.35	130.82	4,217.43	-478.11	553.55	731.44	0.00	0.00	0.00
SUSSEX									
4,354.03	13.35	130.82	4,270.00	-486.27	562.99	743.92	0.00	0.00	0.00
4,400.00	13.35	130.82	4,314.73	-493.20	571.02	754.53	0.00	0.00	0.00
4,500.00	13.35	130.82	4,412.03	-508.30	588.50	777.62	0.00	0.00	0.00
4,600.00	13.35	130.82	4,509.33	-523.39	605.97	800.71	0.00	0.00	0.00
4,700.00	13.35	130.82	4,606.63	-538.48	623.45	823.80	0.00	0.00	0.00
4,800.00	13.35	130.82	4,703.92	-553.58	640.92	846.89	0.00	0.00	0.00
SHANNON									
4,847.36	13.35	130.82	4,750.00	-560.72	649.20	857.83	0.00	0.00	0.00
4,900.00	13.35	130.82	4,801.22	-568.67	658.40	869.98	0.00	0.00	0.00
5,000.00	13.35	130.82	4,898.52	-583.76	675.87	893.07	0.00	0.00	0.00
5,100.00	13.35	130.82	4,995.82	-598.86	693.34	916.16	0.00	0.00	0.00

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_CURTIS 37-25
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4680.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4680.00ft (Original Well Elev)
Site:	WELD_CURTIS 4 PAD	North Reference:	True
Well:	P_CURTIS 37-25	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_CURTIS 37-25		
Design:	PLAN #1 12-29-09 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)
5,200.00	13.35	130.82	5,093.11	-613.95	710.82	939.25	0.00	0.00	0.00
Start Drop -2.00									
5,262.08	13.35	130.82	5,153.52	-623.32	721.67	953.59	0.00	0.00	0.00
5,300.00	12.59	130.82	5,190.47	-628.88	728.11	962.10	2.00	-2.00	0.00
5,400.00	10.59	130.82	5,288.42	-642.02	743.31	982.19	2.00	-2.00	0.00
5,500.00	8.59	130.82	5,387.02	-652.91	755.92	998.85	2.00	-2.00	0.00
5,600.00	6.59	130.82	5,486.14	-661.54	765.92	1,012.06	2.00	-2.00	0.00
5,700.00	4.59	130.82	5,585.66	-667.91	773.30	1,021.81	2.00	-2.00	0.00
5,800.00	2.59	130.82	5,685.46	-672.01	778.04	1,028.07	2.00	-2.00	0.00
5,900.00	0.59	130.82	5,785.41	-673.82	780.14	1,030.85	2.00	-2.00	0.00
Start 1480.00 hold at 5929.59 MD									
5,929.59	0.00	0.00	5,815.00	-673.92	780.25	1,031.00	2.00	-2.00	0.00
6,000.00	0.00	0.00	5,885.41	-673.92	780.25	1,031.00	0.00	0.00	0.00
6,100.00	0.00	0.00	5,985.41	-673.92	780.25	1,031.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,085.41	-673.92	780.25	1,031.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,185.41	-673.92	780.25	1,031.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,285.41	-673.92	780.25	1,031.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,385.41	-673.92	780.25	1,031.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,485.41	-673.92	780.25	1,031.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,585.41	-673.92	780.25	1,031.00	0.00	0.00	0.00
6,800.00	0.00	0.00	6,685.41	-673.92	780.25	1,031.00	0.00	0.00	0.00
6,900.00	0.00	0.00	6,785.41	-673.92	780.25	1,031.00	0.00	0.00	0.00
NIO A									
6,929.59	0.00	0.00	6,815.00	-673.92	780.25	1,031.00	0.00	0.00	0.00
7,000.00	0.00	0.00	6,885.41	-673.92	780.25	1,031.00	0.00	0.00	0.00
7,100.00	0.00	0.00	6,985.41	-673.92	780.25	1,031.00	0.00	0.00	0.00
7,200.00	0.00	0.00	7,085.41	-673.92	780.25	1,031.00	0.00	0.00	0.00
CODELL									
7,250.59	0.00	0.00	7,136.00	-673.92	780.25	1,031.00	0.00	0.00	0.00
7,300.00	0.00	0.00	7,185.41	-673.92	780.25	1,031.00	0.00	0.00	0.00
JSAND									
7,326.59	0.00	0.00	7,212.00	-673.92	780.25	1,031.00	0.00	0.00	0.00
7,400.00	0.00	0.00	7,285.41	-673.92	780.25	1,031.00	0.00	0.00	0.00
PBHL_CURTIS 37-25(60 FSL 1350 FEL)50'TGT RAD									
7,409.59	0.00	0.00	7,295.00	-673.92	780.25	1,031.00	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_CURTIS 37-25	0.00	0.00	7,295.00	-673.92	780.25	1,376,119.77	3,217,191.48	40° 21' 47.628 N	104° 43' 14.088 W
- 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_CURTIS 37-25
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4680.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4680.00ft (Original Well Elev)
Site:	WELD_CURTIS 4 PAD	North Reference:	True
Well:	P_CURTIS 37-25	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_CURTIS 37-25		
Design:	PLAN #1 12-29-09 RHS		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,644.86	3,580.00	PARKMAN				
4,354.03	4,270.00	SUSSEX				
4,847.36	4,750.00	SHANNON				
6,929.59	6,815.00	NIO A				
7,250.59	7,136.00	CODELL				
7,326.59	7,212.00	JSAND				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
800.00	800.00	0.00	0.00	Start Build 2.00	
1,467.51	1,461.48	-50.60	58.59	Start 3794.57 hold at 1467.51 MD	
5,262.08	5,153.52	-623.32	721.67	Start Drop -2.00	
5,929.59	5,815.00	-673.92	780.25	Start 1480.00 hold at 5929.59 MD	
7,409.59	7,295.00	-673.92	780.25	TD at 7409.59	



US ROCKIES REGION PLANNING

**COLORADO NORTHERN ZONE - 83
WELD_CURTIS 4 PAD
P_CURTIS 37-25**

**P_CURTIS 37-25
PLAN #1 12-29-09 RHS**

Anticollision Report

29 December, 2009



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CURTIS 37-25
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4680.00ft (Original Well Elev)
Reference Site:	WELD_CURTIS 4 PAD	MD Reference:	WELL @ 4680.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CURTIS 37-25	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CURTIS 37-25	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-29-09 RHS	Offset TVD Reference:	Offset Datum

Reference	PLAN #1 12-29-09 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	12/29/2009		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	7,409.59	PLAN #1 12-29-09 RHS (P_CURTIS 37-25)	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_CURTIS 4 PAD						
P_CURTIS 15-25 - P_CURTIS 15-25 - PLAN #1 12-29-0	800.00	800.00	29.29	25.95	8.775	CC, ES
P_CURTIS 15-25 - P_CURTIS 15-25 - PLAN #1 12-29-0	900.00	899.57	31.39	27.63	8.342	SF
P_CURTIS 23-25 - P_CURTIS 23-25 - PLAN #1 12-29-0	800.00	800.00	14.84	11.50	4.445	CC, ES, SF
P_CURTIS 36-25 - P_CURTIS 36-25 - PLAN #1 12-29-0	800.00	800.00	18.22	14.88	5.458	CC
P_CURTIS 36-25 - P_CURTIS 36-25 - PLAN #1 12-29-0	900.00	899.44	18.60	14.86	4.975	ES, SF

Offset Design												
WELD_CURTIS 4 PAD - P_CURTIS 15-25 - P_CURTIS 15-25 - PLAN #1 12-29-09 RHS												
Survey Program: 0-MWD												
Reference												
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor
0.00	0.00	0.00	0.00	0.00	0.00	5.46	29.16	2.79	29.29			
100.00	100.00	100.00	100.00	0.10	0.10	5.46	29.16	2.79	29.29	29.10	0.19	153.303
200.00	200.00	200.00	200.00	0.32	0.32	5.46	29.16	2.79	29.29	28.65	0.64	45.722
300.00	300.00	300.00	300.00	0.55	0.55	5.46	29.16	2.79	29.29	28.20	1.09	26.868
400.00	400.00	400.00	400.00	0.77	0.77	5.46	29.16	2.79	29.29	27.75	1.54	19.023
500.00	500.00	500.00	500.00	0.99	0.99	5.46	29.16	2.79	29.29	27.30	1.99	14.724
600.00	600.00	600.00	600.00	1.22	1.22	5.46	29.16	2.79	29.29	26.85	2.44	12.010
700.00	700.00	700.00	700.00	1.44	1.44	5.46	29.16	2.79	29.29	26.40	2.89	10.141
800.00	800.00	800.00	800.00	1.67	1.67	5.46	29.16	2.79	29.29	25.95	3.34	8.775 CC, ES
900.00	899.98	899.57	899.57	1.87	1.89	-128.19	30.22	2.74	31.39	27.63	3.76	8.342 SF
1,000.00	999.84	999.38	999.36	2.06	2.12	-134.82	31.53	2.69	36.19	32.02	4.17	8.673
1,100.00	1,099.45	1,098.90	1,098.88	2.27	2.34	-142.73	32.84	2.63	44.08	39.50	4.59	9.611
1,200.00	1,198.70	1,198.03	1,198.00	2.51	2.56	-150.01	34.14	2.57	55.55	50.55	5.00	11.109
1,300.00	1,297.47	1,296.65	1,296.61	2.78	2.79	-155.90	35.44	2.52	70.77	65.35	5.41	13.075
1,400.00	1,395.62	1,394.63	1,394.58	3.11	3.01	-160.42	36.73	2.46	89.71	83.89	5.82	15.411
1,467.51	1,461.48	1,460.35	1,460.29	3.36	3.15	-162.82	37.59	2.43	104.57	98.47	6.10	17.155
1,500.00	1,493.10	1,491.89	1,491.83	3.48	3.22	-163.84	38.01	2.41	112.13	105.89	6.24	17.970
1,600.00	1,590.40	1,588.97	1,588.91	3.89	3.44	-166.27	39.29	2.36	135.57	128.88	6.69	20.267
1,700.00	1,687.69	1,686.05	1,685.98	4.32	3.66	-167.98	40.56	2.30	159.17	152.03	7.14	22.279
1,800.00	1,784.99	1,783.13	1,783.05	4.77	3.88	-169.25	41.84	2.25	182.87	175.27	7.60	24.048
1,900.00	1,882.29	1,880.22	1,880.12	5.23	4.10	-170.23	43.12	2.19	206.64	198.57	8.07	25.611
2,000.00	1,979.59	1,977.30	1,977.20	5.69	4.32	-171.00	44.39	2.14	230.45	221.92	8.54	26.999

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_CURTIS 37-25
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4680.00ft (Original Well Elev)
Reference Site:	WELD_CURTIS 4 PAD	MD Reference:	WELL @ 4680.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CURTIS 37-25	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CURTIS 37-25	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-29-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_CURTIS 4 PAD - P_CURTIS 15-25 - P_CURTIS 15-25 - PLAN #1 12-29-09 RHS												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
2,100.00	2,076.88	2,074.38	2,074.27	6.16	4.53	-171.63	45.67	2.08	254.30	245.29	9.01	28.238	
2,200.00	2,174.18	2,171.46	2,171.34	6.64	4.75	-172.16	46.95	2.03	278.17	268.69	9.48	29.349	
2,300.00	2,271.48	2,268.54	2,268.41	7.12	4.97	-172.60	48.23	1.98	302.06	292.10	9.95	30.351	
2,400.00	2,368.78	2,365.62	2,365.49	7.60	5.19	-172.97	49.50	1.92	325.96	315.53	10.43	31.259	
2,500.00	2,466.08	2,462.70	2,462.56	8.09	5.41	-173.30	50.78	1.87	349.87	338.97	10.90	32.084	
2,600.00	2,563.37	2,559.78	2,559.63	8.58	5.63	-173.58	52.06	1.81	373.79	362.41	11.38	32.837	
2,700.00	2,660.67	2,656.86	2,656.70	9.07	5.85	-173.83	53.33	1.76	397.72	385.86	11.86	33.527	
2,800.00	2,757.97	2,753.94	2,753.78	9.56	6.06	-174.05	54.61	1.70	421.66	409.32	12.34	34.161	
2,900.00	2,855.27	2,851.02	2,850.85	10.05	6.28	-174.25	55.89	1.65	445.60	432.78	12.82	34.746	
3,000.00	2,952.56	2,948.11	2,947.92	10.55	6.50	-174.42	57.17	1.60	469.55	456.24	13.31	35.287	
3,100.00	3,049.86	3,045.19	3,044.99	11.04	6.72	-174.58	58.44	1.54	493.50	479.71	13.79	35.788	
3,200.00	3,147.16	3,142.27	3,142.07	11.54	6.94	-174.73	59.72	1.49	517.45	503.18	14.27	36.255	
3,300.00	3,244.46	3,239.35	3,239.14	12.04	7.16	-174.86	61.00	1.43	541.41	526.65	14.76	36.690	
3,400.00	3,341.75	3,336.43	3,336.21	12.53	7.38	-174.98	62.27	1.38	565.36	550.12	15.24	37.096	
3,500.00	3,439.05	3,433.51	3,433.28	13.03	7.59	-175.09	63.55	1.32	589.32	573.60	15.73	37.476	
3,600.00	3,536.35	3,530.59	3,530.36	13.53	7.81	-175.19	64.83	1.27	613.29	597.08	16.21	37.833	
3,700.00	3,633.65	3,627.67	3,627.43	14.03	8.03	-175.29	66.11	1.22	637.25	620.55	16.70	38.168	
3,800.00	3,730.95	3,724.75	3,724.50	14.53	8.25	-175.38	67.38	1.16	661.22	644.03	17.18	38.484	
3,900.00	3,828.24	3,821.83	3,821.57	15.03	8.47	-175.46	68.66	1.11	685.18	667.52	17.67	38.782	
4,000.00	3,925.54	3,918.92	3,918.65	15.53	8.69	-175.53	69.94	1.05	709.15	691.00	18.15	39.063	
4,100.00	4,022.84	4,016.00	4,015.72	16.03	8.91	-175.60	71.21	1.00	733.12	714.48	18.64	39.330	
4,200.00	4,120.14	4,113.08	4,112.79	16.53	9.12	-175.67	72.49	0.95	757.09	737.96	19.13	39.582	
4,300.00	4,217.43	4,210.16	4,209.86	17.03	9.34	-175.73	73.77	0.89	781.06	761.45	19.61	39.821	
4,400.00	4,314.73	4,307.24	4,306.94	17.53	9.56	-175.79	75.04	0.84	805.03	784.93	20.10	40.049	
4,500.00	4,412.03	4,404.32	4,404.01	18.04	9.78	-175.85	76.32	0.78	829.01	808.42	20.59	40.265	
4,600.00	4,509.33	4,501.40	4,501.08	18.54	10.00	-175.90	77.60	0.73	852.98	831.90	21.08	40.471	
4,700.00	4,606.63	4,598.48	4,598.16	19.04	10.22	-175.95	78.88	0.67	876.96	855.39	21.56	40.668	
4,800.00	4,703.92	4,695.56	4,695.23	19.54	10.44	-176.00	80.15	0.62	900.93	878.88	22.05	40.855	
4,900.00	4,801.22	4,792.64	4,792.30	20.05	10.65	-176.04	81.43	0.57	924.91	902.37	22.54	41.035	
5,000.00	4,898.52	4,889.73	4,889.37	20.55	10.87	-176.08	82.71	0.51	948.88	925.85	23.03	41.206	
5,100.00	4,995.82	4,986.81	4,986.45	21.05	11.09	-176.12	83.98	0.46	972.86	949.34	23.52	41.370	
5,200.00	5,093.11	5,083.89	5,083.52	21.55	11.31	-176.16	85.26	0.40	996.83	972.83	24.00	41.527	
5,262.08	5,153.52	5,144.15	5,143.78	21.87	11.45	-176.18	86.05	0.37	1,011.72	987.41	24.31	41.622	
5,300.00	5,190.47	5,181.03	5,180.65	22.03	11.53	-176.21	86.54	0.35	1,020.57	996.04	24.52	41.617	
5,400.00	5,288.42	5,278.79	5,278.41	22.36	11.75	-176.26	87.83	0.29	1,041.56	1,016.51	25.05	41.581	
5,500.00	5,387.02	5,377.23	5,376.84	22.66	11.97	-176.29	89.12	0.24	1,059.14	1,033.60	25.54	41.472	
5,600.00	5,486.14	5,476.22	5,475.82	22.91	12.19	-176.31	90.42	0.18	1,073.27	1,047.28	25.99	41.294	
5,700.00	5,585.66	5,575.64	5,575.23	23.12	12.42	-176.31	91.73	0.13	1,083.95	1,057.55	26.40	41.052	
5,800.00	5,685.46	5,675.38	5,674.96	23.29	12.64	-176.29	93.04	0.07	1,091.16	1,064.39	26.78	40.751	
5,900.00	5,785.41	5,775.30	5,774.87	23.41	12.87	-176.26	94.36	0.02	1,094.90	1,067.79	27.11	40.391	
5,929.59	5,815.00	5,812.71	5,812.28	23.45	12.94	-45.43	94.71	0.00	1,095.26	1,068.06	27.21	40.258	
6,000.00	5,885.41	5,885.84	5,885.41	23.52	13.08	-45.43	94.73	0.00	1,095.27	1,067.80	27.47	39.874	
6,100.00	5,985.41	5,985.84	5,985.41	23.63	13.30	-45.43	94.73	0.00	1,095.27	1,067.41	27.86	39.318	
6,200.00	6,085.41	6,085.84	6,085.41	23.74	13.52	-45.43	94.73	0.00	1,095.27	1,067.02	28.25	38.769	
6,300.00	6,185.41	6,185.84	6,185.41	23.85	13.75	-45.43	94.73	0.00	1,095.27	1,066.62	28.65	38.234	
6,400.00	6,285.41	6,285.84	6,285.41	23.96	13.97	-45.43	94.73	0.00	1,095.27	1,066.23	29.04	37.712	
6,500.00	6,385.41	6,385.84	6,385.41	24.07	14.20	-45.43	94.73	0.00	1,095.27	1,065.83	29.44	37.202	
6,600.00	6,485.41	6,485.84	6,485.41	24.19	14.42	-45.43	94.73	0.00	1,095.27	1,065.43	29.84	36.703	
6,700.00	6,585.41	6,585.84	6,585.41	24.30	14.64	-45.43	94.73	0.00	1,095.27	1,065.03	30.24	36.217	
6,800.00	6,685.41	6,685.84	6,685.41	24.42	14.87	-45.43	94.73	0.00	1,095.27	1,064.63	30.64	35.742	
6,900.00	6,785.41	6,785.84	6,785.41	24.54	15.09	-45.43	94.73	0.00	1,095.27	1,064.22	31.05	35.277	
7,000.00	6,885.41	6,885.84	6,885.41	24.66	15.32	-45.43	94.73	0.00	1,095.27	1,063.82	31.45	34.824	

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_CURTIS 37-25
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4680.00ft (Original Well Elev)
Reference Site:	WELD_CURTIS 4 PAD	MD Reference:	WELL @ 4680.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CURTIS 37-25	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CURTIS 37-25	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-29-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_CURTIS 4 PAD - P_CURTIS 15-25 - P_CURTIS 15-25 - PLAN #1 12-29-09 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
7,100.00	6,985.41	6,985.84	6,985.41	24.78	15.54	-45.43	94.73	0.00	1,095.27	1,063.41	31.86	34.380	
7,200.00	7,085.41	7,085.84	7,085.41	24.90	15.77	-45.43	94.73	0.00	1,095.27	1,063.01	32.26	33.947	
7,300.00	7,185.41	7,185.84	7,185.41	25.03	15.99	-45.43	94.73	0.00	1,095.27	1,062.60	32.67	33.523	
7,409.59	7,295.00	7,295.43	7,295.00	25.17	16.24	-45.43	94.73	0.00	1,095.27	1,062.15	33.12	33.070	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CURTIS 37-25
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4680.00ft (Original Well Elev)
Reference Site:	WELD_CURTIS 4 PAD	MD Reference:	WELL @ 4680.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CURTIS 37-25	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CURTIS 37-25	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-29-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_CURTIS 4 PAD - P_CURTIS 23-25 - P_CURTIS 23-25 - PLAN #1 12-29-09 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	10.83	14.57	2.79	14.84				
100.00	100.00	100.00	100.00	0.10	0.10	10.83	14.57	2.79	14.84	14.64	0.19	77.654	
200.00	200.00	200.00	200.00	0.32	0.32	10.83	14.57	2.79	14.84	14.20	0.64	23.160	
300.00	300.00	300.00	300.00	0.55	0.55	10.83	14.57	2.79	14.84	13.75	1.09	13.609	
400.00	400.00	400.00	400.00	0.77	0.77	10.83	14.57	2.79	14.84	13.30	1.54	9.636	
500.00	500.00	500.00	500.00	0.99	0.99	10.83	14.57	2.79	14.84	12.85	1.99	7.458	
600.00	600.00	600.00	600.00	1.22	1.22	10.83	14.57	2.79	14.84	12.40	2.44	6.083	
700.00	700.00	700.00	700.00	1.44	1.44	10.83	14.57	2.79	14.84	11.95	2.89	5.137	
800.00	800.00	800.00	800.00	1.67	1.67	10.83	14.57	2.79	14.84	11.50	3.34	4.445 CC, ES, SF	
900.00	899.98	899.58	899.56	1.87	1.89	-129.81	15.83	1.60	16.98	13.22	3.76	4.516	
1,000.00	999.84	998.43	998.28	2.06	2.11	-147.23	19.58	-1.92	25.24	21.08	4.16	6.068	
1,100.00	1,099.45	1,095.87	1,095.35	2.27	2.34	-159.03	25.70	-7.67	41.13	36.57	4.56	9.028	
1,200.00	1,198.70	1,191.24	1,190.03	2.51	2.58	-165.41	34.01	-15.48	64.36	59.41	4.95	13.009	
1,300.00	1,297.47	1,283.94	1,281.64	2.78	2.84	-168.93	44.29	-25.14	94.41	89.08	5.33	17.703	
1,400.00	1,395.62	1,374.33	1,370.50	3.11	3.12	-171.02	56.33	-36.46	130.83	125.12	5.71	22.896	
1,467.51	1,461.48	1,436.13	1,431.15	3.36	3.33	-172.00	64.99	-44.59	157.88	151.91	5.98	26.423	
1,500.00	1,493.10	1,465.72	1,460.19	3.48	3.43	-172.40	69.13	-48.48	171.26	165.15	6.12	28.005	
1,600.00	1,590.40	1,556.79	1,549.56	3.89	3.75	-173.34	81.89	-60.47	212.47	205.92	6.55	32.423	
1,700.00	1,687.69	1,647.86	1,638.94	4.32	4.09	-173.97	94.64	-72.46	253.71	246.71	7.00	36.248	
1,800.00	1,784.99	1,738.93	1,728.31	4.77	4.43	-174.43	107.40	-84.44	294.97	287.52	7.45	39.583	
1,900.00	1,882.29	1,830.00	1,817.68	5.23	4.78	-174.77	120.15	-96.43	336.24	328.33	7.91	42.506	
2,000.00	1,979.59	1,921.07	1,907.05	5.69	5.14	-175.04	132.91	-108.41	377.52	369.14	8.37	45.086	
2,100.00	2,076.88	2,012.14	1,996.43	6.16	5.50	-175.26	145.66	-120.40	418.80	409.96	8.84	47.376	
2,200.00	2,174.18	2,103.21	2,085.80	6.64	5.86	-175.43	158.42	-132.38	460.09	450.78	9.31	49.418	
2,300.00	2,271.48	2,194.28	2,175.17	7.12	6.23	-175.58	171.17	-144.37	501.38	491.59	9.78	51.250	
2,400.00	2,368.78	2,285.35	2,264.54	7.60	6.60	-175.71	183.93	-156.35	542.67	532.41	10.26	52.900	
2,500.00	2,466.08	2,376.42	2,353.92	8.09	6.97	-175.82	196.68	-168.34	583.97	573.23	10.74	54.394	
2,600.00	2,563.37	2,467.49	2,443.29	8.58	7.34	-175.91	209.43	-180.33	625.26	614.05	11.22	55.752	
2,700.00	2,660.67	2,558.56	2,532.66	9.07	7.72	-175.99	222.19	-192.31	666.56	654.86	11.70	56.991	
2,800.00	2,757.97	2,649.63	2,622.03	9.56	8.09	-176.06	234.94	-204.30	707.86	695.68	12.18	58.126	
2,900.00	2,855.27	2,740.70	2,711.41	10.05	8.47	-176.13	247.70	-216.28	749.16	736.50	12.66	59.169	
3,000.00	2,952.56	2,831.77	2,800.78	10.55	8.85	-176.18	260.45	-228.27	790.46	777.31	13.15	60.131	
3,100.00	3,049.86	2,922.84	2,890.15	11.04	9.23	-176.24	273.21	-240.25	831.76	818.13	13.63	61.019	
3,200.00	3,147.16	3,013.92	2,979.53	11.54	9.61	-176.28	285.96	-252.24	873.06	858.94	14.12	61.844	
3,300.00	3,244.46	3,104.99	3,068.90	12.04	9.99	-176.33	298.72	-264.22	914.36	899.76	14.60	62.609	
3,400.00	3,341.75	3,196.06	3,158.27	12.53	10.37	-176.37	311.47	-276.21	955.66	940.57	15.09	63.323	
3,500.00	3,439.05	3,287.13	3,247.64	13.03	10.75	-176.40	324.23	-288.20	996.97	981.38	15.58	63.989	
3,600.00	3,536.35	3,378.20	3,337.02	13.53	11.13	-176.43	336.98	-300.18	1,038.27	1,022.20	16.07	64.612	
3,700.00	3,633.65	3,469.27	3,426.39	14.03	11.51	-176.46	349.74	-312.17	1,079.57	1,063.01	16.56	65.197	
3,800.00	3,730.95	3,560.34	3,515.76	14.53	11.90	-176.49	362.49	-324.15	1,120.87	1,103.83	17.05	65.746	
3,900.00	3,828.24	3,651.41	3,605.13	15.03	12.28	-176.52	375.25	-336.14	1,162.18	1,144.64	17.54	66.263	
4,000.00	3,925.54	3,742.48	3,694.51	15.53	12.66	-176.54	388.00	-348.12	1,203.48	1,185.45	18.03	66.750	
4,100.00	4,022.84	3,833.55	3,783.88	16.03	13.05	-176.57	400.75	-360.11	1,244.78	1,226.26	18.52	67.210	
4,200.00	4,120.14	3,924.62	3,873.25	16.53	13.43	-176.59	413.51	-372.09	1,286.09	1,267.08	19.01	67.645	
4,300.00	4,217.43	4,015.69	3,962.63	17.03	13.81	-176.61	426.26	-384.08	1,327.39	1,307.89	19.50	68.057	
4,400.00	4,314.73	4,106.76	4,052.00	17.53	14.20	-176.63	439.02	-396.07	1,368.70	1,348.70	20.00	68.448	
4,500.00	4,412.03	4,197.83	4,141.37	18.04	14.58	-176.64	451.77	-408.05	1,410.00	1,389.51	20.49	68.819	
4,600.00	4,509.33	4,288.90	4,230.74	18.54	14.97	-176.66	464.53	-420.04	1,451.30	1,430.32	20.98	69.172	
4,700.00	4,606.63	4,379.97	4,320.12	19.04	15.35	-176.68	477.28	-432.02	1,492.61	1,471.14	21.47	69.508	
4,800.00	4,703.92	4,471.04	4,409.49	19.54	15.74	-176.69	490.04	-444.01	1,533.91	1,511.95	21.97	69.828	
4,900.00	4,801.22	4,562.11	4,498.86	20.05	16.12	-176.71	502.79	-455.99	1,575.22	1,552.76	22.46	70.134	
5,000.00	4,898.52	4,653.18	4,588.23	20.55	16.51	-176.72	515.55	-467.98	1,616.52	1,593.57	22.95	70.426	

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_CURTIS 37-25
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4680.00ft (Original Well Elev)
Reference Site:	WELD_CURTIS 4 PAD	MD Reference:	WELL @ 4680.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CURTIS 37-25	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CURTIS 37-25	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-29-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_CURTIS 4 PAD - P_CURTIS 23-25 - P_CURTIS 23-25 - PLAN #1 12-29-09 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
5,100.00	4,995.82	4,744.25	4,677.61	21.05	16.89	-176.73	528.30	-479.96	1,657.83	1,634.38	23.45	70.705	
5,200.00	5,093.11	4,835.32	4,766.98	21.55	17.28	-176.74	541.06	-491.95	1,699.13	1,675.19	23.94	70.972	
5,262.08	5,153.52	4,891.86	4,822.46	21.87	17.52	-176.75	548.97	-499.39	1,724.77	1,700.53	24.25	71.132	
5,300.00	5,190.47	4,926.50	4,856.45	22.03	17.66	-176.77	553.82	-503.95	1,740.21	1,715.72	24.49	71.060	
5,400.00	5,288.42	5,018.78	4,947.02	22.36	18.05	-176.83	566.75	-516.09	1,778.70	1,753.61	25.09	70.901	
5,500.00	5,387.02	5,112.36	5,038.85	22.66	18.45	-176.86	579.86	-528.41	1,813.96	1,788.30	25.65	70.709	
5,600.00	5,486.14	5,207.10	5,131.83	22.91	18.85	-176.89	593.12	-540.88	1,845.93	1,819.74	26.19	70.489	
5,700.00	5,585.66	5,302.91	5,225.85	23.12	19.26	-176.91	606.54	-553.49	1,874.58	1,847.89	26.69	70.245	
5,800.00	5,685.46	5,496.18	5,416.17	23.29	19.92	-176.90	630.95	-576.42	1,898.62	1,871.29	27.33	69.472	
5,900.00	5,785.41	5,791.81	5,710.45	23.41	20.55	-176.89	650.50	-594.79	1,910.46	1,882.41	28.05	68.117	
5,929.59	5,815.00	5,880.41	5,799.02	23.45	20.67	-46.07	652.03	-596.24	1,911.32	1,883.08	28.24	67.680	
6,000.00	5,885.41	5,966.80	5,885.41	23.52	20.78	-46.07	652.11	-596.30	1,911.35	1,882.84	28.51	67.032	
6,100.00	5,985.41	6,066.80	5,985.41	23.63	20.91	-46.07	652.11	-596.30	1,911.35	1,882.48	28.87	66.201	
6,200.00	6,085.41	6,166.80	6,085.41	23.74	21.05	-46.07	652.11	-596.30	1,911.35	1,882.11	29.24	65.372	
6,300.00	6,185.41	6,266.80	6,185.41	23.85	21.19	-46.07	652.11	-596.30	1,911.35	1,881.74	29.61	64.559	
6,400.00	6,285.41	6,366.80	6,285.41	23.96	21.33	-46.07	652.11	-596.30	1,911.35	1,881.37	29.98	63.761	
6,500.00	6,385.41	6,466.80	6,385.41	24.07	21.47	-46.07	652.11	-596.30	1,911.35	1,881.00	30.35	62.979	
6,600.00	6,485.41	6,566.80	6,485.41	24.19	21.61	-46.07	652.11	-596.30	1,911.35	1,880.63	30.72	62.211	
6,700.00	6,585.41	6,666.80	6,585.41	24.30	21.76	-46.07	652.11	-596.30	1,911.35	1,880.25	31.10	61.458	
6,800.00	6,685.41	6,766.80	6,685.41	24.42	21.90	-46.07	652.11	-596.30	1,911.35	1,879.87	31.48	60.719	
6,900.00	6,785.41	6,866.80	6,785.41	24.54	22.05	-46.07	652.11	-596.30	1,911.35	1,879.49	31.86	59.994	
7,000.00	6,885.41	6,966.80	6,885.41	24.66	22.20	-46.07	652.11	-596.30	1,911.35	1,879.11	32.24	59.283	
7,100.00	6,985.41	7,066.80	6,985.41	24.78	22.35	-46.07	652.11	-596.30	1,911.35	1,878.73	32.62	58.586	
7,200.00	7,085.41	7,166.80	7,085.41	24.90	22.50	-46.07	652.11	-596.30	1,911.35	1,878.34	33.01	57.902	
7,300.00	7,185.41	7,266.80	7,185.41	25.03	22.65	-46.07	652.11	-596.30	1,911.35	1,877.95	33.40	57.231	
7,409.59	7,295.00	7,376.39	7,295.00	25.17	22.82	-46.07	652.11	-596.30	1,911.35	1,877.53	33.82	56.510	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CURTIS 37-25
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4680.00ft (Original Well Elev)
Reference Site:	WELD_CURTIS 4 PAD	MD Reference:	WELL @ 4680.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CURTIS 37-25	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CURTIS 37-25	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-29-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_CURTIS 4 PAD - P_CURTIS 36-25 - P_CURTIS 36-25 - PLAN #1 12-29-09 RHS												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis 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	-180.00	-18.22	0.00	18.22				
100.00	100.00	100.00	100.00	0.10	0.10	-180.00	-18.22	0.00	18.22	18.03	0.19	95.361	
200.00	200.00	200.00	200.00	0.32	0.32	-180.00	-18.22	0.00	18.22	17.58	0.64	28.441	
300.00	300.00	300.00	300.00	0.55	0.55	-180.00	-18.22	0.00	18.22	17.13	1.09	16.713	
400.00	400.00	400.00	400.00	0.77	0.77	-180.00	-18.22	0.00	18.22	16.68	1.54	11.833	
500.00	500.00	500.00	500.00	0.99	0.99	-180.00	-18.22	0.00	18.22	16.23	1.99	9.159	
600.00	600.00	600.00	600.00	1.22	1.22	-180.00	-18.22	0.00	18.22	15.78	2.44	7.471	
700.00	700.00	700.00	700.00	1.44	1.44	-180.00	-18.22	0.00	18.22	15.33	2.89	6.308	
800.00	800.00	800.00	800.00	1.67	1.67	-180.00	-18.22	0.00	18.22	14.88	3.34	5.458 CC	
900.00	899.98	899.44	899.42	1.87	1.87	56.52	-19.58	-1.06	18.60	14.86	3.74	4.975 ES, SF	
1,000.00	999.84	998.55	998.39	2.06	2.05	75.48	-23.63	-4.24	21.37	17.26	4.11	5.198	
1,100.00	1,099.45	1,096.97	1,096.44	2.27	2.25	95.32	-30.33	-9.48	29.46	24.96	4.51	6.538	
1,200.00	1,198.70	1,194.39	1,193.15	2.51	2.48	108.60	-39.56	-16.71	43.77	38.84	4.93	8.875	
1,300.00	1,297.47	1,290.50	1,288.10	2.78	2.74	116.32	-51.20	-25.82	63.70	58.30	5.40	11.802	
1,400.00	1,395.62	1,387.23	1,383.39	3.11	3.03	121.49	-64.33	-36.10	87.56	81.64	5.92	14.799	
1,467.51	1,461.48	1,452.22	1,447.41	3.36	3.24	124.42	-73.16	-43.01	105.02	98.73	6.29	16.686	
1,500.00	1,493.10	1,483.43	1,478.14	3.48	3.34	125.79	-77.40	-46.33	113.73	107.24	6.49	17.536	
1,600.00	1,590.40	1,579.46	1,572.74	3.89	3.66	128.93	-90.44	-56.54	140.80	133.71	7.09	19.846	
1,700.00	1,687.69	1,675.49	1,667.33	4.32	4.00	131.05	-103.48	-66.75	168.15	160.42	7.73	21.764	
1,800.00	1,784.99	1,771.52	1,761.92	4.77	4.34	132.58	-116.52	-76.96	195.65	187.27	8.37	23.365	
1,900.00	1,882.29	1,867.55	1,856.51	5.23	4.69	133.73	-129.56	-87.17	223.24	214.21	9.03	24.712	
2,000.00	1,979.59	1,963.58	1,951.11	5.69	5.05	134.63	-142.61	-97.38	250.91	241.20	9.70	25.857	
2,100.00	2,076.88	2,059.62	2,045.70	6.16	5.41	135.35	-155.65	-107.59	278.61	268.23	10.38	26.838	
2,200.00	2,174.18	2,155.65	2,140.29	6.64	5.77	135.94	-168.69	-117.80	306.35	295.29	11.07	27.686	
2,300.00	2,271.48	2,251.68	2,234.88	7.12	6.14	136.44	-181.73	-128.01	334.12	322.37	11.75	28.426	
2,400.00	2,368.78	2,347.71	2,329.48	7.60	6.51	136.85	-194.77	-138.21	361.91	349.46	12.45	29.076	
2,500.00	2,466.08	2,443.74	2,424.07	8.09	6.88	137.21	-207.81	-148.42	389.71	376.56	13.14	29.651	
2,600.00	2,563.37	2,539.77	2,518.66	8.58	7.26	137.52	-220.85	-158.63	417.52	403.68	13.84	30.164	
2,700.00	2,660.67	2,635.81	2,613.25	9.07	7.63	137.79	-233.90	-168.84	445.34	430.80	14.54	30.623	
2,800.00	2,757.97	2,731.84	2,707.85	9.56	8.01	138.03	-246.94	-179.05	473.17	457.93	15.25	31.037	
2,900.00	2,855.27	2,827.87	2,802.44	10.05	8.38	138.24	-259.98	-189.26	501.01	485.06	15.95	31.412	
3,000.00	2,952.56	2,923.90	2,897.03	10.55	8.76	138.43	-273.02	-199.47	528.85	512.20	16.65	31.754	
3,100.00	3,049.86	3,019.93	2,991.62	11.04	9.14	138.61	-286.06	-209.68	556.70	539.34	17.36	32.066	
3,200.00	3,147.16	3,115.96	3,086.22	11.54	9.52	138.76	-299.10	-219.89	584.55	566.48	18.07	32.353	
3,300.00	3,244.46	3,212.00	3,180.81	12.04	9.90	138.90	-312.14	-230.10	612.41	593.63	18.78	32.617	
3,400.00	3,341.75	3,308.03	3,275.40	12.53	10.28	139.03	-325.19	-240.31	640.27	620.78	19.48	32.862	
3,500.00	3,439.05	3,404.06	3,369.99	13.03	10.66	139.15	-338.23	-250.52	668.13	647.94	20.19	33.089	
3,600.00	3,536.35	3,500.09	3,464.59	13.53	11.04	139.26	-351.27	-260.73	695.99	675.09	20.90	33.300	
3,700.00	3,633.65	3,596.12	3,559.18	14.03	11.42	139.36	-364.31	-270.94	723.86	702.25	21.61	33.497	
3,800.00	3,730.95	3,692.15	3,653.77	14.53	11.80	139.45	-377.35	-281.15	751.73	729.41	22.32	33.682	
3,900.00	3,828.24	3,788.19	3,748.37	15.03	12.19	139.54	-390.39	-291.36	779.59	756.57	23.03	33.856	
4,000.00	3,925.54	3,884.22	3,842.96	15.53	12.57	139.62	-403.44	-301.57	807.47	783.73	23.74	34.019	
4,100.00	4,022.84	3,980.25	3,937.55	16.03	12.95	139.69	-416.48	-311.78	835.34	810.89	24.44	34.173	
4,200.00	4,120.14	4,076.28	4,032.14	16.53	13.34	139.76	-429.52	-321.99	863.21	838.06	25.15	34.319	
4,300.00	4,217.43	4,172.31	4,126.74	17.03	13.72	139.83	-442.56	-332.20	891.09	865.23	25.86	34.457	
4,400.00	4,314.73	4,268.34	4,221.33	17.53	14.10	139.89	-455.60	-342.41	918.96	892.39	26.57	34.588	
4,500.00	4,412.03	4,364.37	4,315.92	18.04	14.49	139.95	-468.64	-352.62	946.84	919.56	27.28	34.712	
4,600.00	4,509.33	4,460.41	4,410.51	18.54	14.87	140.00	-481.68	-362.83	974.72	946.73	27.98	34.831	
4,700.00	4,606.63	4,556.44	4,505.11	19.04	15.26	140.05	-494.73	-373.04	1,002.60	973.90	28.69	34.945	
4,800.00	4,703.92	4,652.47	4,599.70	19.54	15.64	140.10	-507.77	-383.24	1,030.47	1,001.08	29.40	35.053	
4,900.00	4,801.22	4,748.50	4,694.29	20.05	16.03	140.15	-520.81	-393.45	1,058.35	1,028.25	30.10	35.157	
5,000.00	4,898.52	4,844.53	4,788.88	20.55	16.41	140.19	-533.85	-403.66	1,086.23	1,055.42	30.81	35.256	

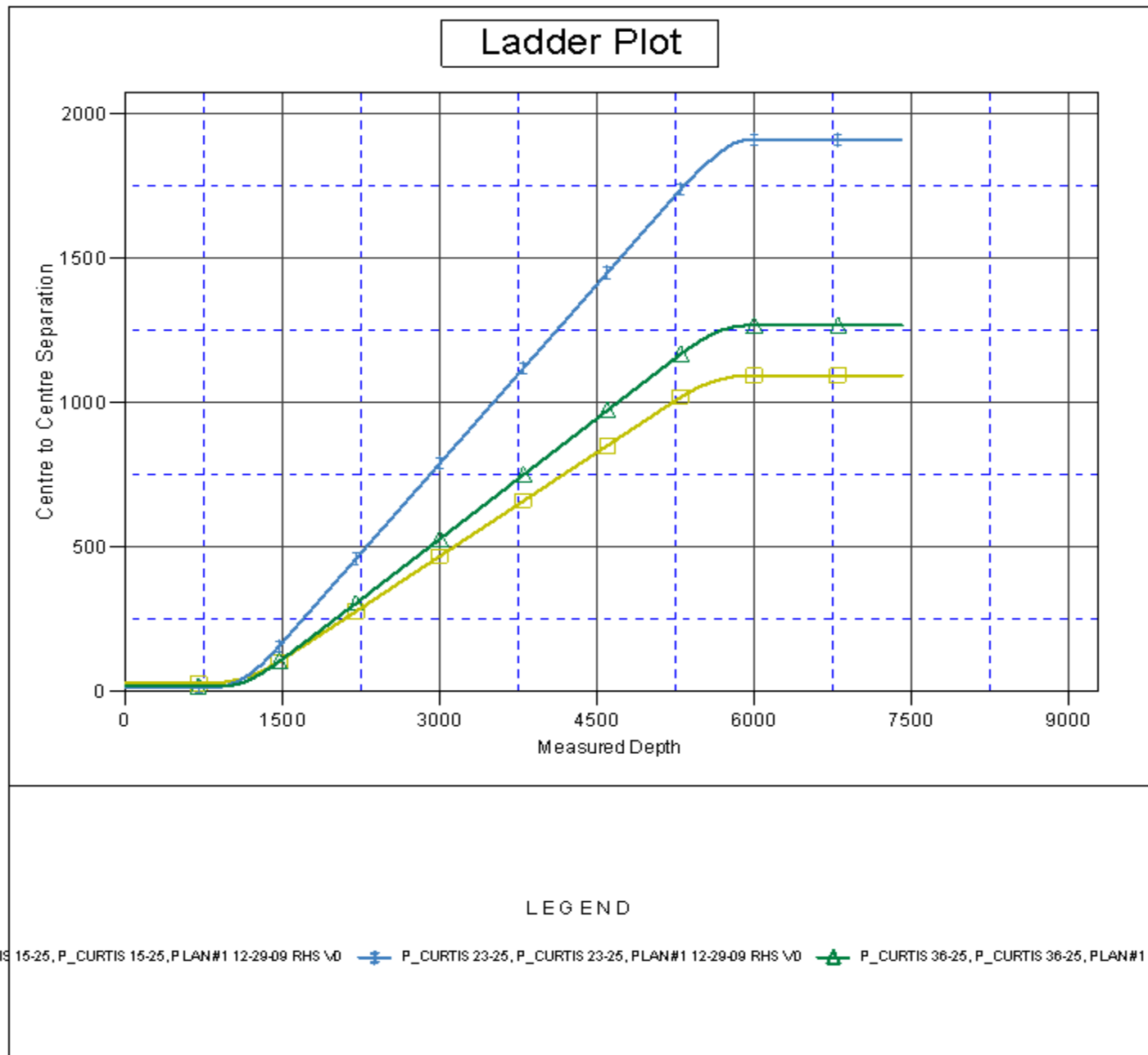
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CURTIS 37-25
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4680.00ft (Original Well Elev)
Reference Site:	WELD_CURTIS 4 PAD	MD Reference:	WELL @ 4680.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CURTIS 37-25	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CURTIS 37-25	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-29-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_CURTIS 4 PAD - P_CURTIS 36-25 - P_CURTIS 36-25 - PLAN #1 12-29-09 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
5,100.00	4,995.82	4,940.56	4,883.48	21.05	16.80	140.23	-546.89	-413.87	1,114.11	1,082.60	31.52	35.352	
5,200.00	5,093.11	5,036.60	4,978.07	21.55	17.18	140.27	-559.93	-424.08	1,142.00	1,109.78	32.22	35.444	
5,262.08	5,153.52	5,096.21	5,036.79	21.87	17.42	140.30	-568.03	-430.42	1,159.31	1,126.65	32.66	35.499	
5,300.00	5,190.47	5,132.68	5,072.71	22.03	17.57	140.44	-572.98	-434.30	1,169.69	1,136.76	32.94	35.515	
5,400.00	5,288.42	5,229.34	5,167.92	22.36	17.95	140.71	-586.11	-444.57	1,195.29	1,161.67	33.62	35.553	
5,500.00	5,387.02	5,326.59	5,263.72	22.66	18.34	140.85	-599.32	-454.91	1,218.28	1,184.00	34.28	35.539	
5,600.00	5,486.14	5,437.59	5,373.13	22.91	18.73	140.82	-614.02	-466.43	1,238.43	1,203.53	34.90	35.480	
5,700.00	5,585.66	5,570.53	5,504.90	23.12	19.05	140.74	-627.80	-477.21	1,253.76	1,218.31	35.44	35.372	
5,800.00	5,685.46	5,705.13	5,639.00	23.29	19.33	140.69	-636.83	-484.28	1,263.66	1,227.77	35.89	35.206	
5,900.00	5,785.41	5,840.70	5,774.46	23.41	19.53	140.66	-640.90	-487.47	1,268.08	1,231.84	36.25	34.985	
5,929.59	5,815.00	5,880.88	5,814.64	23.45	19.59	-88.52	-641.14	-487.66	1,268.33	1,231.99	36.34	34.900	
6,000.00	5,885.41	5,951.65	5,885.41	23.52	19.68	-88.52	-641.14	-487.66	1,268.33	1,231.80	36.53	34.719	
6,100.00	5,985.41	6,051.65	5,985.41	23.63	19.80	-88.52	-641.14	-487.66	1,268.33	1,231.55	36.79	34.476	
6,200.00	6,085.41	6,151.65	6,085.41	23.74	19.92	-88.52	-641.14	-487.66	1,268.33	1,231.28	37.05	34.232	
6,300.00	6,185.41	6,251.65	6,185.41	23.85	20.04	-88.52	-641.14	-487.66	1,268.33	1,231.02	37.32	33.988	
6,400.00	6,285.41	6,351.65	6,285.41	23.96	20.17	-88.52	-641.14	-487.66	1,268.33	1,230.75	37.59	33.745	
6,500.00	6,385.41	6,451.65	6,385.41	24.07	20.30	-88.52	-641.14	-487.66	1,268.33	1,230.48	37.86	33.502	
6,600.00	6,485.41	6,551.65	6,485.41	24.19	20.43	-88.52	-641.14	-487.66	1,268.33	1,230.20	38.13	33.260	
6,700.00	6,585.41	6,651.65	6,585.41	24.30	20.56	-88.52	-641.14	-487.66	1,268.33	1,229.92	38.41	33.019	
6,800.00	6,685.41	6,751.65	6,685.41	24.42	20.69	-88.52	-641.14	-487.66	1,268.33	1,229.64	38.69	32.778	
6,900.00	6,785.41	6,851.65	6,785.41	24.54	20.82	-88.52	-641.14	-487.66	1,268.33	1,229.35	38.98	32.538	
7,000.00	6,885.41	6,951.65	6,885.41	24.66	20.96	-88.52	-641.14	-487.66	1,268.33	1,229.07	39.27	32.299	
7,100.00	6,985.41	7,051.65	6,985.41	24.78	21.10	-88.52	-641.14	-487.66	1,268.33	1,228.77	39.56	32.061	
7,200.00	7,085.41	7,151.65	7,085.41	24.90	21.24	-88.52	-641.14	-487.66	1,268.33	1,228.48	39.85	31.824	
7,300.00	7,185.41	7,251.65	7,185.41	25.03	21.38	-88.52	-641.14	-487.66	1,268.33	1,228.18	40.15	31.589	
7,409.59	7,295.00	7,361.24	7,295.00	25.17	21.53	-88.52	-641.14	-487.66	1,268.33	1,227.85	40.48	31.332	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CURTIS 37-25
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4680.00ft (Original Well Elev)
Reference Site:	WELD_CURTIS 4 PAD	MD Reference:	WELL @ 4680.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CURTIS 37-25	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CURTIS 37-25	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-29-09 RHS	Offset TVD Reference:	Offset Datum

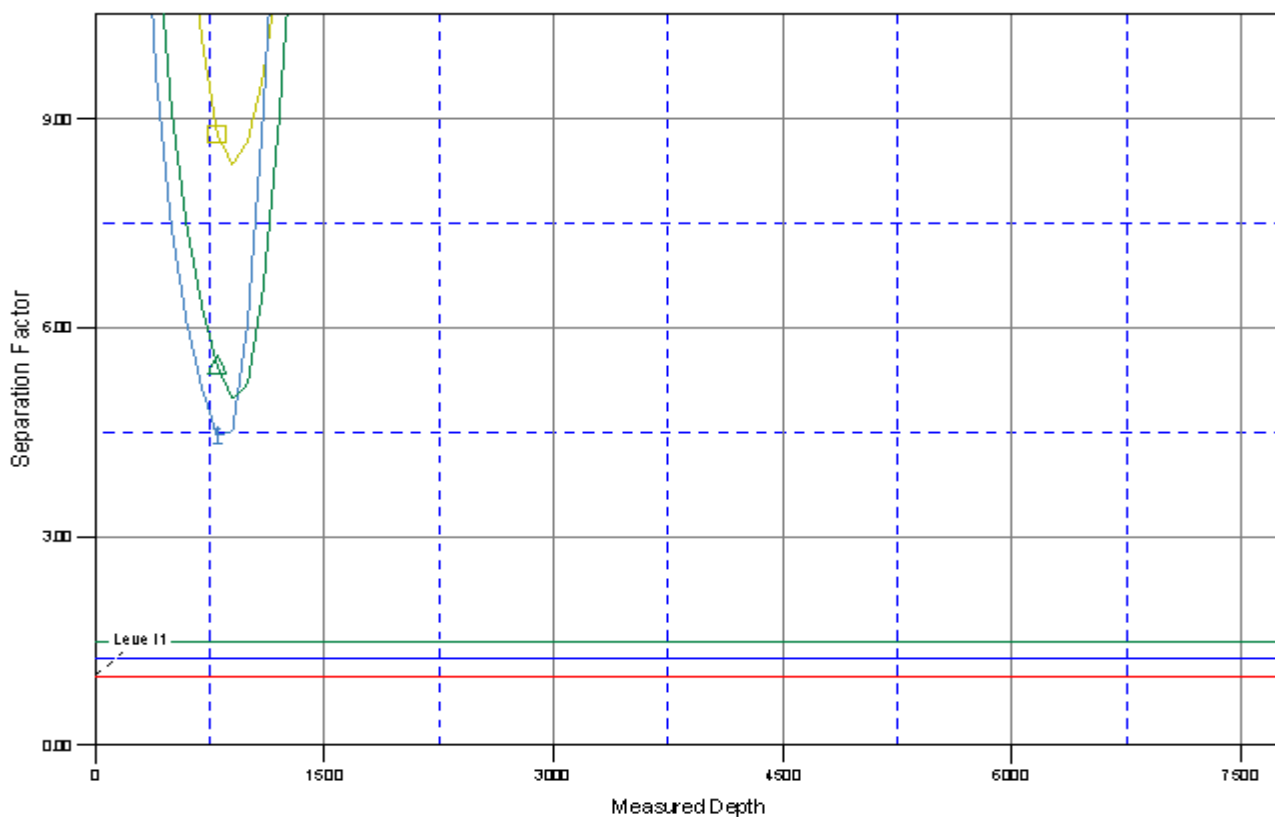
Reference Depths are relative to WELL @ 4680.00ft (Original Well Elev) Coordinates are relative to: P_CURTIS 37-25
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is 105° 30' 0.000 W ° Grid Convergence at Surface is: 0.50°





Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CURTIS 37-25
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4680.00ft (Original Well Elev)
Reference Site:	WELD_CURTIS 4 PAD	MD Reference:	WELL @ 4680.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CURTIS 37-25	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CURTIS 37-25	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-29-09 RHS	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4680.00ft (Original Well Elev) Coordinates are relative to: P_CURTIS 37-25
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: 0.50°

Separation Factor Plot



LEGEND

TIS 15-25, P_CURTIS 15-25, PLAN#1 12-29-09 RHS V0  P_CURTIS 23-25, P_CURTIS 23-25, PLAN#1 12-29-09 RHS V0  P_CURTIS 36-25, P_CURTIS 36-25, PLAN#1 12-