



# **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83**

**WELD\_CURTIS 4 PAD**

**P\_CURTIS 23-25**

**P\_CURTIS 23-25**

**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 23-25

+N/-S	+E/-W	Northing	Ground Level: Easting	4665.00 Latitude	Longitude	Slot
0.00	0.00	1376801.43	3216408.02	40° 21' 54.432 N	104° 43' 24.132 W	

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3585.00	3630.89	PARKMAN
4270.00	4328.90	SUSSEX
4750.00	4818.02	SHANNON
6823.00	6904.39	NIO A
7144.00	7225.39	CODELL
7220.00	7301.39	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	
1354.02	11.08	316.78	1350.57	38.92	-36.57	2.00	316.78	53.40	
5350.37	11.08	316.78	5272.43	598.62	-562.52	0.00	0.00	821.45	
5904.39	0.00	0.00	5823.00	637.54	-599.09	2.00	180.00	874.85	
7386.39	0.00	0.00	7305.00	637.54	-599.09	0.00	0.00	874.85	PBHL_CURTIS 23-25(1350 FSL 2620 FWL)50°TGT RAD

#### CASING DETAILS

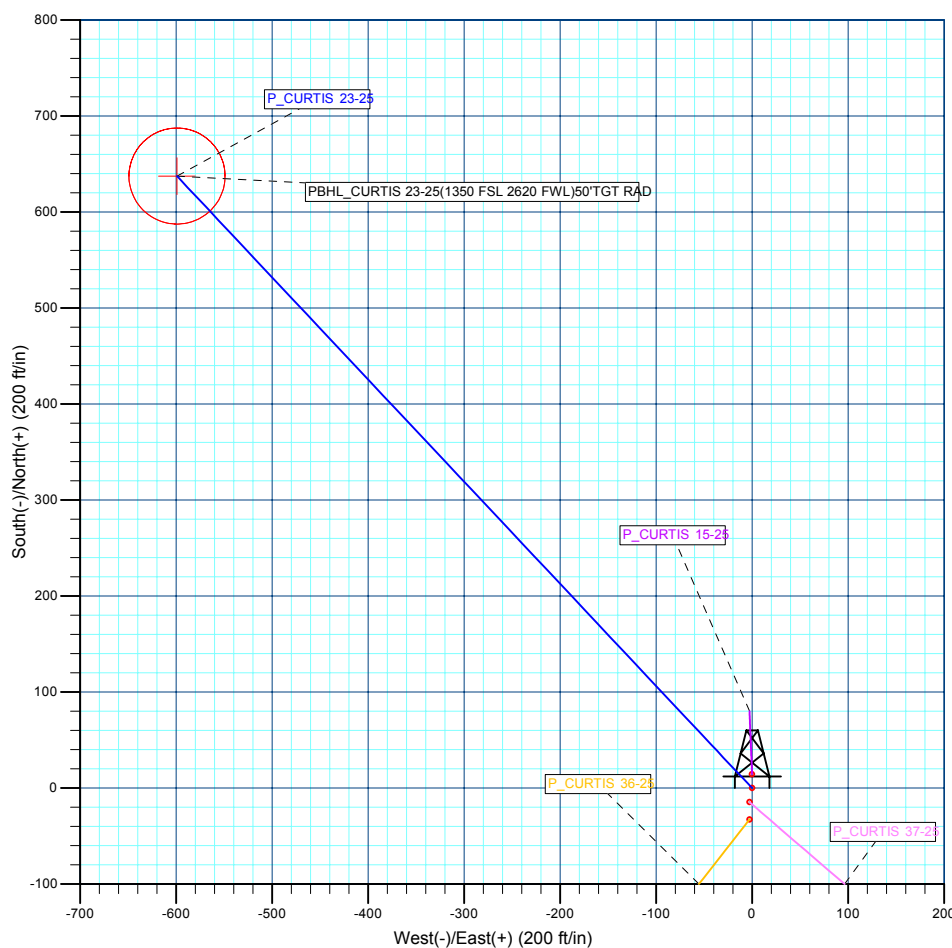
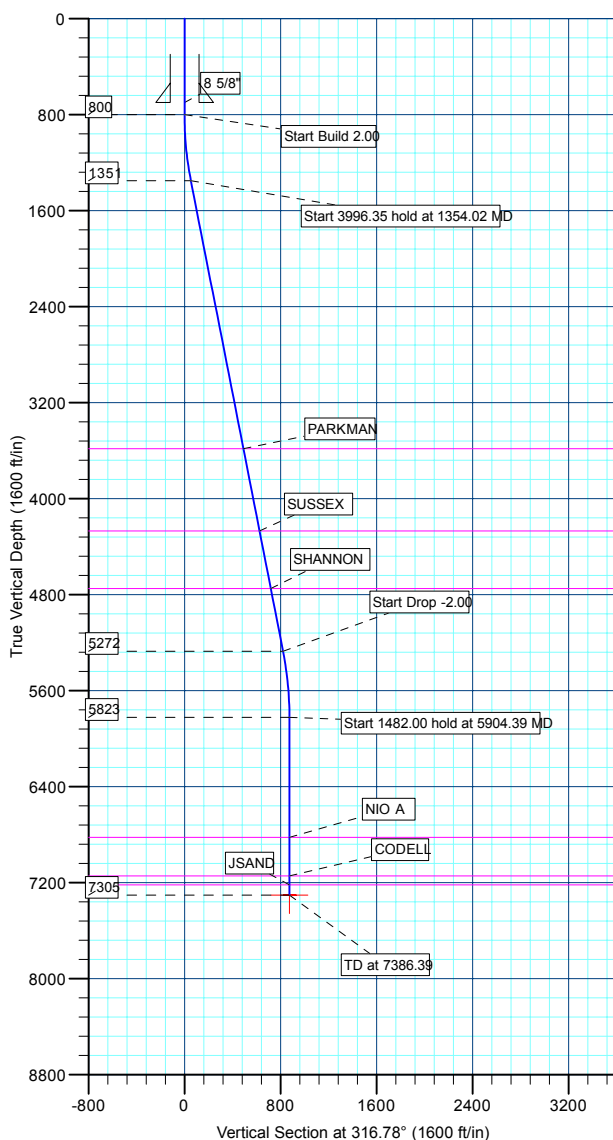
TVD	MD	Name	Size
700.00	700.00	8 5/8"	8.62

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL	7305.00	637.54	-599.09	1377433.69	3215803.37	40° 22' 0.732 N	104° 43' 31.872 W	Circle (Radius: 50.00)



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



<b>Database:</b>	EDM 2003.21 Single User Db	<b>Local Co-ordinate Reference:</b>	Well P_CURTIS 23-25
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	WELL @ 4680.00ft (Original Well Elev)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	WELL @ 4680.00ft (Original Well Elev)
<b>Site:</b>	WELD_CURTIS 4 PAD	<b>North Reference:</b>	True
<b>Well:</b>	P_CURTIS 23-25	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	P_CURTIS 23-25		
<b>Design:</b>	PLAN #1 12-29-09 RHS		

<b>Project</b>	COLORADO NORTHERN ZONE - 83, KERR MCGEE OIL & GAS ONSHORE LP		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		

Site		WELD_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 23-25					
Well Position	+N/-S	-14.58 ft	Northing:	1,376,801.43 ft	Latitude:	40° 21' 54.432 N
	+E/-W	0.00 ft	Easting:	3,216,408.02 ft	Longitude:	104° 43' 24.132 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,665.00 ft

<b>Wellbore</b>	P_CURTIS 23-25				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF200510	12/29/2009	9.00	67.09	53,292

<b>Design</b>	PLAN #1 12-29-09 RHS			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	316.78

<b>Plan Sections</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,354.02	11.08	316.78	1,350.57	38.92	-36.57	2.00	2.00	0.00	316.78	
5,350.37	11.08	316.78	5,272.43	598.62	-562.52	0.00	0.00	0.00	0.00	
5,904.39	0.00	0.00	5,823.00	637.54	-599.09	2.00	-2.00	0.00	180.00	
7,386.39	0.00	0.00	7,305.00	637.54	-599.09	0.00	0.00	0.00	0.00	PBHL_CURTIS 23-

<b>Database:</b>	EDM 2003.21 Single User Db	<b>Local Co-ordinate Reference:</b>	Well P_CURTIS 23-25
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	WELL @ 4680.00ft (Original Well Elev)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	WELL @ 4680.00ft (Original Well Elev)
<b>Site:</b>	WELD_CURTIS 4 PAD	<b>North Reference:</b>	True
<b>Well:</b>	P_CURTIS 23-25	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	P_CURTIS 23-25		
<b>Design:</b>	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)
<b>Start Build 2.00</b>									
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	2.00	316.78	899.98	1.27	-1.20	1.75	2.00	2.00	0.00
1,000.00	4.00	316.78	999.84	5.09	-4.78	6.98	2.00	2.00	0.00
1,100.00	6.00	316.78	1,099.45	11.44	-10.75	15.69	2.00	2.00	0.00
1,200.00	8.00	316.78	1,198.70	20.32	-19.09	27.88	2.00	2.00	0.00
1,300.00	10.00	316.78	1,297.47	31.72	-29.80	43.52	2.00	2.00	0.00
<b>Start 3996.35 hold at 1354.02 MD</b>									
1,354.02	11.08	316.78	1,350.57	38.92	-36.57	53.40	2.00	2.00	0.00
1,400.00	11.08	316.78	1,395.70	45.36	-42.62	62.24	0.00	0.00	0.00
1,500.00	11.08	316.78	1,493.83	59.36	-55.78	81.46	0.00	0.00	0.00
1,600.00	11.08	316.78	1,591.97	73.37	-68.94	100.68	0.00	0.00	0.00
1,700.00	11.08	316.78	1,690.10	87.37	-82.10	119.90	0.00	0.00	0.00
1,800.00	11.08	316.78	1,788.24	101.38	-95.27	139.12	0.00	0.00	0.00
1,900.00	11.08	316.78	1,886.38	115.38	-108.43	158.33	0.00	0.00	0.00
2,000.00	11.08	316.78	1,984.51	129.39	-121.59	177.55	0.00	0.00	0.00
2,100.00	11.08	316.78	2,082.65	143.39	-134.75	196.77	0.00	0.00	0.00
2,200.00	11.08	316.78	2,180.78	157.40	-147.91	215.99	0.00	0.00	0.00
2,300.00	11.08	316.78	2,278.92	171.40	-161.07	235.21	0.00	0.00	0.00
2,400.00	11.08	316.78	2,377.05	185.41	-174.23	254.43	0.00	0.00	0.00
2,500.00	11.08	316.78	2,475.19	199.42	-187.39	273.65	0.00	0.00	0.00
2,600.00	11.08	316.78	2,573.33	213.42	-200.55	292.86	0.00	0.00	0.00
2,700.00	11.08	316.78	2,671.46	227.43	-213.71	312.08	0.00	0.00	0.00
2,800.00	11.08	316.78	2,769.60	241.43	-226.87	331.30	0.00	0.00	0.00
2,900.00	11.08	316.78	2,867.73	255.44	-240.03	350.52	0.00	0.00	0.00
3,000.00	11.08	316.78	2,965.87	269.44	-253.19	369.74	0.00	0.00	0.00
3,100.00	11.08	316.78	3,064.01	283.45	-266.35	388.96	0.00	0.00	0.00
3,200.00	11.08	316.78	3,162.14	297.45	-279.52	408.17	0.00	0.00	0.00
3,300.00	11.08	316.78	3,260.28	311.46	-292.68	427.39	0.00	0.00	0.00
3,400.00	11.08	316.78	3,358.41	325.46	-305.84	446.61	0.00	0.00	0.00
3,500.00	11.08	316.78	3,456.55	339.47	-319.00	465.83	0.00	0.00	0.00
3,600.00	11.08	316.78	3,554.68	353.47	-332.16	485.05	0.00	0.00	0.00
<b>PARKMAN</b>									
3,630.89	11.08	316.78	3,585.00	357.80	-336.22	490.99	0.00	0.00	0.00
3,700.00	11.08	316.78	3,652.82	367.48	-345.32	504.27	0.00	0.00	0.00
3,800.00	11.08	316.78	3,750.96	381.48	-358.48	523.49	0.00	0.00	0.00
3,900.00	11.08	316.78	3,849.09	395.49	-371.64	542.70	0.00	0.00	0.00
4,000.00	11.08	316.78	3,947.23	409.49	-384.80	561.92	0.00	0.00	0.00
4,100.00	11.08	316.78	4,045.36	423.50	-397.96	581.14	0.00	0.00	0.00
4,200.00	11.08	316.78	4,143.50	437.51	-411.12	600.36	0.00	0.00	0.00
4,300.00	11.08	316.78	4,241.64	451.51	-424.28	619.58	0.00	0.00	0.00
<b>SUSSEX</b>									
4,328.90	11.08	316.78	4,270.00	455.56	-428.09	625.13	0.00	0.00	0.00
4,400.00	11.08	316.78	4,339.77	465.52	-437.44	638.80	0.00	0.00	0.00
4,500.00	11.08	316.78	4,437.91	479.52	-450.61	658.02	0.00	0.00	0.00
4,600.00	11.08	316.78	4,536.04	493.53	-463.77	677.23	0.00	0.00	0.00
4,700.00	11.08	316.78	4,634.18	507.53	-476.93	696.45	0.00	0.00	0.00
4,800.00	11.08	316.78	4,732.32	521.54	-490.09	715.67	0.00	0.00	0.00
<b>SHANNON</b>									
4,818.02	11.08	316.78	4,750.00	524.06	-492.46	719.14	0.00	0.00	0.00
4,900.00	11.08	316.78	4,830.45	535.54	-503.25	734.89	0.00	0.00	0.00
5,000.00	11.08	316.78	4,928.59	549.55	-516.41	754.11	0.00	0.00	0.00
5,100.00	11.08	316.78	5,026.72	563.55	-529.57	773.33	0.00	0.00	0.00

<b>Database:</b>	EDM 2003.21 Single User Db	<b>Local Co-ordinate Reference:</b>	Well P_CURTIS 23-25
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	WELL @ 4680.00ft (Original Well Elev)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	WELL @ 4680.00ft (Original Well Elev)
<b>Site:</b>	WELD_CURTIS 4 PAD	<b>North Reference:</b>	True
<b>Well:</b>	P_CURTIS 23-25	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	P_CURTIS 23-25		
<b>Design:</b>	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	11.08	316.78	5,124.86	577.56	-542.73	792.55	0.00	0.00	0.00
5,300.00	11.08	316.78	5,222.99	591.56	-555.89	811.76	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
5,350.37	11.08	316.78	5,272.43	598.62	-562.52	821.45	0.00	0.00	0.00
5,400.00	10.09	316.78	5,321.21	605.26	-568.76	830.56	2.00	-2.00	0.00
5,500.00	8.09	316.78	5,419.95	616.77	-579.58	846.36	2.00	-2.00	0.00
5,600.00	6.09	316.78	5,519.18	625.76	-588.03	858.69	2.00	-2.00	0.00
5,700.00	4.09	316.78	5,618.78	632.22	-594.10	867.56	2.00	-2.00	0.00
5,800.00	2.09	316.78	5,718.63	636.15	-597.79	872.95	2.00	-2.00	0.00
5,900.00	0.09	316.78	5,818.61	637.53	-599.09	874.85	2.00	-2.00	0.00
<b>Start 1482.00 hold at 5904.39 MD</b>									
5,904.39	0.00	0.00	5,823.00	637.54	-599.09	874.85	2.00	-2.00	984.17
6,000.00	0.00	0.00	5,918.61	637.54	-599.09	874.85	0.00	0.00	0.00
6,100.00	0.00	0.00	6,018.61	637.54	-599.09	874.85	0.00	0.00	0.00
6,200.00	0.00	0.00	6,118.61	637.54	-599.09	874.85	0.00	0.00	0.00
6,300.00	0.00	0.00	6,218.61	637.54	-599.09	874.85	0.00	0.00	0.00
6,400.00	0.00	0.00	6,318.61	637.54	-599.09	874.85	0.00	0.00	0.00
6,500.00	0.00	0.00	6,418.61	637.54	-599.09	874.85	0.00	0.00	0.00
6,600.00	0.00	0.00	6,518.61	637.54	-599.09	874.85	0.00	0.00	0.00
6,700.00	0.00	0.00	6,618.61	637.54	-599.09	874.85	0.00	0.00	0.00
6,800.00	0.00	0.00	6,718.61	637.54	-599.09	874.85	0.00	0.00	0.00
6,900.00	0.00	0.00	6,818.61	637.54	-599.09	874.85	0.00	0.00	0.00
<b>NIO A</b>									
6,904.39	0.00	0.00	6,823.00	637.54	-599.09	874.85	0.00	0.00	0.00
7,000.00	0.00	0.00	6,918.61	637.54	-599.09	874.85	0.00	0.00	0.00
7,100.00	0.00	0.00	7,018.61	637.54	-599.09	874.85	0.00	0.00	0.00
7,200.00	0.00	0.00	7,118.61	637.54	-599.09	874.85	0.00	0.00	0.00
<b>CODELL</b>									
7,225.39	0.00	0.00	7,144.00	637.54	-599.09	874.85	0.00	0.00	0.00
7,300.00	0.00	0.00	7,218.61	637.54	-599.09	874.85	0.00	0.00	0.00
<b>JSAND</b>									
7,301.39	0.00	0.00	7,220.00	637.54	-599.09	874.85	0.00	0.00	0.00
<b>PBHL_CURTIS 23-25(1350 FSL 2620 FWL)50°TGT RAD</b>									
7,386.39	0.00	0.00	7,305.00	637.54	-599.09	874.85	0.00	0.00	0.00

#### Design Targets

##### Target Name

- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- Shape									
PBHL_CURTIS 23-25	0.00	0.00	7,305.00	637.54	-599.09	1,377,433.69	3,215,803.37	40° 22' 0.732 N	104° 43' 31.872 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

<b>Database:</b>	EDM 2003.21 Single User Db	<b>Local Co-ordinate Reference:</b>	Well P_CURTIS 23-25
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	WELL @ 4680.00ft (Original Well Elev)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	WELL @ 4680.00ft (Original Well Elev)
<b>Site:</b>	WELD_CURTIS 4 PAD	<b>North Reference:</b>	True
<b>Well:</b>	P_CURTIS 23-25	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	P_CURTIS 23-25		
<b>Design:</b>	PLAN #1 12-29-09 RHS		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,630.89	3,585.00	PARKMAN				
4,328.90	4,270.00	SUSSEX				
4,818.02	4,750.00	SHANNON				
6,904.39	6,823.00	NIO A				
7,225.39	7,144.00	CODELL				
7,301.39	7,220.00	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	
1,354.02	1,350.57	38.92	-36.57	Start 3996.35 hold at 1354.02 MD	
5,350.37	5,272.43	598.62	-562.52	Start Drop -2.00	
5,904.39	5,823.00	637.54	-599.09	Start 1482.00 hold at 5904.39 MD	
7,386.39	7,305.00	637.54	-599.09	TD at 7386.39	



# **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83  
WELD\_CURTIS 4 PAD  
P\_CURTIS 23-25**

**P\_CURTIS 23-25  
PLAN #1 12-29-09 RHS**

## **Anticollision Report**

**29 December, 2009**



<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_CURTIS 23-25
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4680.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_CURTIS 4 PAD	<b>MD Reference:</b>	WELL @ 4680.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_CURTIS 23-25	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_CURTIS 23-25	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 12-29-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	PLAN #1 12-29-09 RHS		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	Stations	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	0.00 to 20,000.00ft	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 10,000.00ft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma		

<b>Survey Tool Program</b>	<b>Date</b>	12/29/2009		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.00	7,386.39	PLAN #1 12-29-09 RHS (P_CURTIS 23-25)	MWD	MWD - Standard

<b>Summary</b>							
<b>Site Name</b>	<b>Reference Measured Depth (ft)</b>	<b>Offset Measured Depth (ft)</b>	<b>Distance Between Centres (ft)</b>	<b>Distance Between Ellipses (ft)</b>	<b>Separation Factor</b>	<b>Warning</b>	
<b>Offset Well - Wellbore - Design</b>							
WELD_CURTIS 4 PAD							
P_CURTIS 15-25 - P_CURTIS 15-25 - PLAN #1 12-29-0	1,059.43	1,058.98	12.12	7.62	2.693	CC, ES	
P_CURTIS 15-25 - P_CURTIS 15-25 - PLAN #1 12-29-0	1,100.00	1,099.39	12.61	7.92	2.692	SF	
P_CURTIS 36-25 - P_CURTIS 36-25 - PLAN #1 12-29-0	800.00	800.00	32.91	29.57	9.860	CC, ES	
P_CURTIS 36-25 - P_CURTIS 36-25 - PLAN #1 12-29-0	900.00	898.98	35.52	31.77	9.456	SF	
P_CURTIS 37-25 - P_CURTIS 37-25 - PLAN #1 12-29-0	800.00	800.00	14.84	11.50	4.445	CC, ES, SF	

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							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
							+N/-S (ft)	+E/-W (ft)						
0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.58	0.00	14.58					
100.00	100.00	100.00	100.00	0.10	0.10	0.00	14.58	0.00	14.58	14.39	0.19	76.336		
200.00	200.00	200.00	200.00	0.32	0.32	0.00	14.58	0.00	14.58	13.94	0.64	22.767		
300.00	300.00	300.00	300.00	0.55	0.55	0.00	14.58	0.00	14.58	13.49	1.09	13.378		
400.00	400.00	400.00	400.00	0.77	0.77	0.00	14.58	0.00	14.58	13.04	1.54	9.472		
500.00	500.00	500.00	500.00	0.99	0.99	0.00	14.58	0.00	14.58	12.59	1.99	7.332		
600.00	600.00	600.00	600.00	1.22	1.22	0.00	14.58	0.00	14.58	12.15	2.44	5.980		
700.00	700.00	700.00	700.00	1.44	1.44	0.00	14.58	0.00	14.58	11.70	2.89	5.049		
800.00	800.00	800.00	800.00	1.67	1.67	0.00	14.58	0.00	14.58	11.25	3.34	4.369		
900.00	899.98	899.80	899.79	1.89	1.89	47.79	15.65	-0.05	14.42	10.64	3.78	3.813		
1,000.00	999.84	999.70	999.68	2.11	2.12	64.73	16.96	-0.10	12.77	8.54	4.23	3.019		
1,059.43	1,059.08	1,058.98	1,058.96	2.25	2.25	83.90	17.74	-0.13	12.12	7.62	4.50	2.693 CC, ES		
1,100.00	1,099.45	1,099.39	1,099.37	2.35	2.34	100.27	18.27	-0.16	12.61	7.92	4.68	2.692 SF		
1,200.00	1,198.70	1,198.75	1,198.72	2.60	2.57	135.18	19.58	-0.21	18.89	13.78	5.11	3.698		
1,300.00	1,297.47	1,297.67	1,297.62	2.88	2.79	153.03	20.88	-0.27	31.46	25.94	5.52	5.696		
1,354.02	1,350.57	1,350.87	1,350.82	3.05	2.91	158.42	21.58	-0.30	40.20	34.46	5.75	6.996		
1,400.00	1,395.70	1,396.07	1,396.02	3.20	3.01	161.65	22.18	-0.32	48.24	42.28	5.95	8.104		
1,500.00	1,493.83	1,494.39	1,494.34	3.55	3.23	165.92	23.47	-0.38	66.02	59.61	6.40	10.308		
1,600.00	1,591.97	1,592.71	1,592.65	3.91	3.45	168.38	24.76	-0.43	84.00	77.14	6.86	12.241		
1,700.00	1,690.10	1,691.03	1,690.96	4.28	3.67	169.97	26.06	-0.49	102.09	94.76	7.32	13.938		
1,800.00	1,788.24	1,789.35	1,789.27	4.67	3.89	171.08	27.35	-0.54	120.22	112.43	7.79	15.436		
1,900.00	1,886.38	1,887.67	1,887.58	5.06	4.11	171.90	28.64	-0.60	138.39	130.14	8.26	16.764		

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



<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_CURTIS 23-25
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4680.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_CURTIS 4 PAD	<b>MD Reference:</b>	WELL @ 4680.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_CURTIS 23-25	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_CURTIS 23-25	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 12-29-09 RHS	<b>Offset TVD Reference:</b>	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
2,000.00	1,984.51	1,985.99	1,985.89	5.45	4.34	172.53	29.94	-0.65	156.58	147.86	8.72	17.949	
2,100.00	2,082.65	2,084.31	2,084.20	5.85	4.56	173.02	31.23	-0.71	174.78	165.59	9.19	19.012	
2,200.00	2,180.78	2,182.63	2,182.51	6.25	4.78	173.43	32.52	-0.76	193.00	183.33	9.66	19.970	
2,300.00	2,278.92	2,280.94	2,280.82	6.66	5.00	173.76	33.82	-0.82	211.22	201.08	10.14	20.838	
2,400.00	2,377.05	2,379.26	2,379.13	7.07	5.22	174.04	35.11	-0.87	229.45	218.84	10.61	21.628	
2,500.00	2,475.19	2,477.58	2,477.44	7.48	5.44	174.28	36.40	-0.93	247.68	236.60	11.08	22.349	
2,600.00	2,573.33	2,575.90	2,575.75	7.89	5.66	174.49	37.70	-0.98	265.92	254.36	11.56	23.010	
2,700.00	2,671.46	2,674.22	2,674.06	8.30	5.88	174.67	38.99	-1.04	284.16	272.12	12.03	23.618	
2,800.00	2,769.60	2,772.54	2,772.37	8.72	6.11	174.83	40.28	-1.09	302.40	289.89	12.51	24.179	
2,900.00	2,867.73	2,870.86	2,870.68	9.13	6.33	174.97	41.58	-1.15	320.64	307.66	12.98	24.698	
3,000.00	2,965.87	2,969.18	2,968.99	9.55	6.55	175.10	42.87	-1.20	338.89	325.43	13.46	25.180	
3,100.00	3,064.01	3,067.50	3,067.30	9.97	6.77	175.21	44.16	-1.26	357.13	343.20	13.93	25.629	
3,200.00	3,162.14	3,165.82	3,165.61	10.38	6.99	175.31	45.46	-1.31	375.38	360.97	14.41	26.047	
3,300.00	3,260.28	3,264.13	3,263.92	10.80	7.21	175.40	46.75	-1.37	393.63	378.74	14.89	26.439	
3,400.00	3,358.41	3,362.45	3,362.23	11.22	7.43	175.49	48.04	-1.42	411.88	396.51	15.37	26.805	
3,500.00	3,456.55	3,460.77	3,460.54	11.64	7.66	175.56	49.34	-1.48	430.13	414.29	15.84	27.149	
3,600.00	3,554.68	3,559.09	3,558.85	12.06	7.88	175.63	50.63	-1.53	448.38	432.06	16.32	27.473	
3,700.00	3,652.82	3,657.41	3,657.16	12.48	8.10	175.70	51.92	-1.59	466.63	449.83	16.80	27.778	
3,800.00	3,750.96	3,755.73	3,755.47	12.90	8.32	175.76	53.22	-1.64	484.88	467.61	17.28	28.066	
3,900.00	3,849.09	3,854.05	3,853.79	13.33	8.54	175.82	54.51	-1.70	503.14	485.38	17.75	28.338	
4,000.00	3,947.23	3,952.37	3,952.10	13.75	8.76	175.87	55.80	-1.75	521.39	503.16	18.23	28.596	
4,100.00	4,045.36	4,050.69	4,050.41	14.17	8.98	175.92	57.10	-1.81	539.64	520.93	18.71	28.840	
4,200.00	4,143.50	4,149.00	4,148.72	14.59	9.21	175.96	58.39	-1.86	557.90	538.71	19.19	29.072	
4,300.00	4,241.64	4,247.32	4,247.03	15.01	9.43	176.00	59.68	-1.92	576.15	556.48	19.67	29.293	
4,400.00	4,339.77	4,345.64	4,345.34	15.44	9.65	176.04	60.98	-1.97	594.41	574.26	20.15	29.503	
4,500.00	4,437.91	4,443.96	4,443.65	15.86	9.87	176.08	62.27	-2.03	612.66	592.03	20.63	29.703	
4,600.00	4,536.04	4,542.28	4,541.96	16.28	10.09	176.12	63.57	-2.08	630.92	609.81	21.11	29.894	
4,700.00	4,634.18	4,640.60	4,640.27	16.70	10.31	176.15	64.86	-2.14	649.17	627.59	21.58	30.076	
4,800.00	4,732.32	4,738.92	4,738.58	17.13	10.53	176.18	66.15	-2.19	667.43	645.36	22.06	30.250	
4,900.00	4,830.45	4,837.24	4,836.89	17.55	10.76	176.21	67.45	-2.25	685.68	663.14	22.54	30.417	
5,000.00	4,928.59	4,935.56	4,935.20	17.97	10.98	176.24	68.74	-2.30	703.94	680.92	23.02	30.577	
5,100.00	5,026.72	5,033.88	5,033.51	18.40	11.20	176.27	70.03	-2.36	722.19	698.69	23.50	30.730	
5,200.00	5,124.86	5,132.19	5,131.82	18.82	11.42	176.29	71.33	-2.41	740.45	716.47	23.98	30.877	
5,300.00	5,222.99	5,230.51	5,230.13	19.25	11.64	176.32	72.62	-2.47	758.71	734.25	24.46	31.018	
5,350.37	5,272.43	5,280.04	5,279.65	19.46	11.75	176.33	73.27	-2.49	767.90	743.20	24.70	31.087	
5,400.00	5,321.21	5,328.91	5,328.52	19.64	11.86	176.35	73.91	-2.52	776.54	751.57	24.97	31.105	
5,500.00	5,419.95	5,427.80	5,427.40	19.93	12.09	176.37	75.21	-2.58	791.37	765.93	25.45	31.100	
5,600.00	5,519.18	5,527.14	5,526.73	20.18	12.31	176.38	76.52	-2.63	802.75	776.86	25.89	31.005	
5,700.00	5,618.78	5,626.82	5,626.41	20.39	12.53	176.36	77.83	-2.69	810.67	784.37	26.30	30.826	
5,800.00	5,718.63	5,726.72	5,726.29	20.56	12.76	176.33	79.15	-2.74	815.10	788.44	26.67	30.568	
5,904.39	5,823.00	5,823.43	5,823.00	20.70	12.96	133.07	80.16	-2.79	816.24	789.27	26.97	30.262	
6,000.00	5,918.61	5,919.04	5,918.61	20.82	13.15	133.07	80.16	-2.79	816.24	788.91	27.34	29.860	
6,100.00	6,018.61	6,019.04	6,018.61	20.95	13.37	133.07	80.16	-2.79	816.24	788.49	27.76	29.409	
6,200.00	6,118.61	6,119.04	6,118.61	21.09	13.60	133.07	80.16	-2.79	816.24	788.07	28.18	28.970	
6,300.00	6,218.61	6,219.04	6,218.61	21.23	13.82	133.07	80.16	-2.79	816.24	787.64	28.60	28.543	
6,400.00	6,318.61	6,319.04	6,318.61	21.37	14.05	133.07	80.16	-2.79	816.24	787.22	29.02	28.128	
6,500.00	6,418.61	6,419.04	6,418.61	21.51	14.27	133.07	80.16	-2.79	816.24	786.80	29.44	27.724	
6,600.00	6,518.61	6,519.04	6,518.61	21.66	14.49	133.07	80.16	-2.79	816.24	786.38	29.86	27.331	
6,700.00	6,618.61	6,619.04	6,618.61	21.80	14.72	133.07	80.16	-2.79	816.24	785.95	30.29	26.948	
6,800.00	6,718.61	6,719.04	6,718.61	21.95	14.94	133.07	80.16	-2.79	816.24	785.53	30.71	26.575	
6,900.00	6,818.61	6,819.04	6,818.61	22.10	15.17	133.07	80.16	-2.79	816.24	785.10	31.14	26.212	
7,000.00	6,918.61	6,919.04	6,918.61	22.25	15.39	133.07	80.16	-2.79	816.24	784.68	31.57	25.858	

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

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_CURTIS 23-25
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4680.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_CURTIS 4 PAD	<b>MD Reference:</b>	WELL @ 4680.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_CURTIS 23-25	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_CURTIS 23-25	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 12-29-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> WELD_CURTIS 4 PAD - P_CURTIS 15-25 - P_CURTIS 15-25 - PLAN #1 12-29-09 RHS												<b>Offset Site Error:</b>	0.00 ft
Survey Program: 0-MWD												<b>Offset Well Error:</b>	0.00 ft
Reference	Offset	Semi Major Axis		Distance									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,100.00	7,018.61	7,019.04	7,018.61	22.40	15.62	133.07	80.16	-2.79	816.24	784.25	31.99	25.513	
7,200.00	7,118.61	7,119.04	7,118.61	22.55	15.84	133.07	80.16	-2.79	816.24	783.82	32.42	25.177	
7,300.00	7,218.61	7,219.04	7,218.61	22.70	16.07	133.07	80.16	-2.79	816.24	783.39	32.85	24.849	
7,386.39	7,305.00	7,305.43	7,305.00	22.84	16.26	133.07	80.16	-2.79	816.24	783.02	33.22	24.572	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_CURTIS 23-25
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4680.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_CURTIS 4 PAD	<b>MD Reference:</b>	WELL @ 4680.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_CURTIS 23-25	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_CURTIS 23-25	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 12-29-09 RHS	<b>Offset TVD Reference:</b>	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)	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	-175.14	-32.79	-2.79	32.91				
100.00	100.00	100.00	100.00	0.10	0.10	-175.14	-32.79	-2.79	32.91	32.72	0.19	172.251	
200.00	200.00	200.00	200.00	0.32	0.32	-175.14	-32.79	-2.79	32.91	32.27	0.64	51.373	
300.00	300.00	300.00	300.00	0.55	0.55	-175.14	-32.79	-2.79	32.91	31.82	1.09	30.188	
400.00	400.00	400.00	400.00	0.77	0.77	-175.14	-32.79	-2.79	32.91	31.37	1.54	21.374	
500.00	500.00	500.00	500.00	0.99	0.99	-175.14	-32.79	-2.79	32.91	30.92	1.99	16.544	
600.00	600.00	600.00	600.00	1.22	1.22	-175.14	-32.79	-2.79	32.91	30.47	2.44	13.494	
700.00	700.00	700.00	700.00	1.44	1.44	-175.14	-32.79	-2.79	32.91	30.02	2.89	11.394	
800.00	800.00	800.00	800.00	1.67	1.67	-175.14	-32.79	-2.79	32.91	29.57	3.34	9.860 CC, ES	
900.00	899.98	898.98	898.96	1.89	1.87	-132.45	-34.14	-3.84	35.52	31.77	3.76	9.456 SF	
1,000.00	999.84	997.55	997.39	2.11	2.05	-133.63	-38.15	-6.98	43.36	39.21	4.16	10.432	
1,100.00	1,099.45	1,095.31	1,094.78	2.35	2.25	-134.83	-44.76	-12.16	56.41	51.84	4.57	12.340	
1,200.00	1,198.70	1,191.87	1,190.65	2.60	2.47	-135.75	-53.86	-19.28	74.61	69.61	5.01	14.906	
1,300.00	1,297.47	1,286.86	1,284.52	2.88	2.73	-136.35	-65.29	-28.23	97.88	92.41	5.47	17.907	
1,354.02	1,350.57	1,338.66	1,335.54	3.05	2.88	-136.68	-72.31	-33.72	112.27	106.54	5.73	19.594	
1,400.00	1,395.70	1,382.87	1,379.10	3.20	3.01	-137.17	-78.31	-38.42	124.85	118.88	5.97	20.916	
1,500.00	1,493.83	1,479.04	1,473.82	3.55	3.32	-137.97	-91.37	-48.65	152.23	145.72	6.51	23.394	
1,600.00	1,591.97	1,575.20	1,568.54	3.91	3.65	-138.52	-104.43	-58.87	179.62	172.56	7.06	25.430	
1,700.00	1,690.10	1,671.36	1,663.26	4.28	3.98	-138.93	-117.49	-69.10	207.02	199.39	7.63	27.118	
1,800.00	1,788.24	1,767.52	1,757.98	4.67	4.33	-139.24	-130.55	-79.32	234.44	226.22	8.22	28.533	
1,900.00	1,886.38	1,863.69	1,852.71	5.06	4.68	-139.48	-143.61	-89.54	261.86	253.05	8.81	29.730	
2,000.00	1,984.51	1,959.85	1,947.43	5.45	5.04	-139.68	-156.67	-99.77	289.28	279.87	9.41	30.752	
2,100.00	2,082.65	2,056.01	2,042.15	5.85	5.40	-139.85	-169.73	-109.99	316.70	306.69	10.01	31.634	
2,200.00	2,180.78	2,152.17	2,136.87	6.25	5.76	-139.99	-182.79	-120.21	344.13	333.51	10.62	32.400	
2,300.00	2,278.92	2,248.34	2,231.59	6.66	6.13	-140.11	-195.85	-130.44	371.55	360.32	11.24	33.070	
2,400.00	2,377.05	2,344.50	2,326.31	7.07	6.50	-140.21	-208.91	-140.66	398.98	387.13	11.85	33.661	
2,500.00	2,475.19	2,440.66	2,421.03	7.48	6.87	-140.30	-221.97	-150.88	426.41	413.94	12.47	34.185	
2,600.00	2,573.33	2,536.82	2,515.76	7.89	7.24	-140.37	-235.03	-161.11	453.84	440.75	13.10	34.653	
2,700.00	2,671.46	2,632.99	2,610.48	8.30	7.62	-140.44	-248.08	-171.33	481.27	467.55	13.72	35.072	
2,800.00	2,769.60	2,729.15	2,705.20	8.72	8.00	-140.50	-261.14	-181.55	508.71	494.36	14.35	35.450	
2,900.00	2,867.73	2,825.31	2,799.92	9.13	8.37	-140.56	-274.20	-191.78	536.14	521.16	14.98	35.793	
3,000.00	2,965.87	2,921.47	2,894.64	9.55	8.75	-140.61	-287.26	-202.00	563.57	547.96	15.61	36.104	
3,100.00	3,064.01	3,017.64	2,989.36	9.97	9.13	-140.66	-300.32	-212.22	591.01	574.76	16.24	36.389	
3,200.00	3,162.14	3,113.80	3,084.09	10.38	9.51	-140.70	-313.38	-222.45	618.44	601.56	16.87	36.649	
3,300.00	3,260.28	3,209.96	3,178.81	10.80	9.89	-140.73	-326.44	-232.67	645.87	628.36	17.51	36.889	
3,400.00	3,358.41	3,306.12	3,273.53	11.22	10.27	-140.77	-339.50	-242.89	673.31	655.16	18.14	37.109	
3,500.00	3,456.55	3,402.29	3,368.25	11.64	10.65	-140.80	-352.56	-253.12	700.74	681.96	18.78	37.314	
3,600.00	3,554.68	3,498.45	3,462.97	12.06	11.03	-140.83	-365.62	-263.34	728.18	708.76	19.42	37.503	
3,700.00	3,652.82	3,594.61	3,557.69	12.48	11.42	-140.86	-378.68	-273.57	755.61	735.56	20.05	37.679	
3,800.00	3,750.96	3,690.77	3,652.41	12.90	11.80	-140.88	-391.74	-283.79	783.05	762.35	20.69	37.843	
3,900.00	3,849.09	3,786.94	3,747.14	13.33	12.18	-140.91	-404.80	-294.01	810.48	789.15	21.33	37.996	
4,000.00	3,947.23	3,883.10	3,841.86	13.75	12.57	-140.93	-417.86	-304.24	837.92	815.95	21.97	38.140	
4,100.00	4,045.36	3,979.26	3,936.58	14.17	12.95	-140.95	-430.91	-314.46	865.35	842.74	22.61	38.274	
4,200.00	4,143.50	4,075.42	4,031.30	14.59	13.33	-140.97	-443.97	-324.68	892.79	869.54	23.25	38.401	
4,300.00	4,241.64	4,171.59	4,126.02	15.01	13.72	-140.99	-457.03	-334.91	920.22	896.33	23.89	38.520	
4,400.00	4,339.77	4,267.75	4,220.74	15.44	14.10	-141.01	-470.09	-345.13	947.66	923.13	24.53	38.632	
4,500.00	4,437.91	4,363.91	4,315.46	15.86	14.49	-141.02	-483.15	-355.35	975.09	949.92	25.17	38.738	
4,600.00	4,536.04	4,460.07	4,410.19	16.28	14.87	-141.04	-496.21	-365.58	1,002.53	976.71	25.81	38.839	
4,700.00	4,634.18	4,556.24	4,504.91	16.70	15.26	-141.05	-509.27	-375.80	1,029.96	1,003.51	26.45	38.934	
4,800.00	4,732.32	4,652.40	4,599.63	17.13	15.64	-141.07	-522.33	-386.02	1,057.40	1,030.30	27.10	39.024	
4,900.00	4,830.45	4,748.56	4,694.35	17.55	16.03	-141.08	-535.39	-396.25	1,084.83	1,057.10	27.74	39.109	
5,000.00	4,928.59	4,844.72	4,789.07	17.97	16.41	-141.09	-548.45	-406.47	1,112.27	1,083.89	28.38	39.191	

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

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_CURTIS 23-25
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4680.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_CURTIS 4 PAD	<b>MD Reference:</b>	WELL @ 4680.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_CURTIS 23-25	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_CURTIS 23-25	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 12-29-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> WELD_CURTIS 4 PAD - P_CURTIS 36-25 - P_CURTIS 36-25 - PLAN #1 12-29-09 RHS												<b>Offset Site Error:</b>	0.00 ft
Survey Program: 0-MWD												<b>Offset Well Error:</b>	0.00 ft
Reference	Offset	Semi Major Axis		Distance									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.00	5,026.72	4,940.89	4,883.79	18.40	16.80	-141.10	-561.51	-416.69	1,139.71	1,110.68	29.02	39.268	
5,200.00	5,124.86	5,037.05	4,978.51	18.82	17.18	-141.11	-574.57	-426.92	1,167.14	1,137.48	29.67	39.342	
5,300.00	5,222.99	5,133.21	5,073.24	19.25	17.57	-141.13	-587.63	-437.14	1,194.58	1,164.27	30.31	39.413	
5,350.37	5,272.43	5,181.65	5,120.95	19.46	17.76	-141.13	-594.20	-442.29	1,208.40	1,177.76	30.63	39.447	
5,400.00	5,321.21	5,229.46	5,168.05	19.64	17.95	-141.30	-600.70	-447.37	1,221.69	1,190.71	30.98	39.435	
5,500.00	5,419.95	5,326.31	5,263.44	19.93	18.34	-141.52	-613.85	-457.67	1,246.51	1,214.90	31.61	39.433	
5,600.00	5,519.18	5,441.92	5,377.41	20.18	18.74	-141.59	-629.12	-469.63	1,268.40	1,236.18	32.22	39.366	
5,700.00	5,618.78	5,588.18	5,522.45	20.39	19.10	-141.58	-643.84	-481.15	1,284.67	1,251.89	32.78	39.188	
5,800.00	5,718.63	5,736.61	5,670.43	20.56	19.38	-141.58	-652.80	-488.16	1,294.50	1,261.25	33.25	38.931	
5,904.39	5,823.00	5,889.24	5,823.00	20.70	19.60	175.20	-655.71	-490.44	1,297.81	1,264.16	33.65	38.569	
6,000.00	5,918.61	5,984.85	5,918.61	20.82	19.72	175.20	-655.71	-490.44	1,297.81	1,263.88	33.93	38.250	
6,100.00	6,018.61	6,084.85	6,018.61	20.95	19.84	175.20	-655.71	-490.44	1,297.81	1,263.56	34.24	37.901	
6,200.00	6,118.61	6,184.85	6,118.61	21.09	19.96	175.20	-655.71	-490.44	1,297.81	1,263.25	34.56	37.555	
6,300.00	6,218.61	6,284.85	6,218.61	21.23	20.09	175.20	-655.71	-490.44	1,297.81	1,262.93	34.88	37.212	
6,400.00	6,318.61	6,384.85	6,318.61	21.37	20.21	175.20	-655.71	-490.44	1,297.81	1,262.61	35.20	36.872	
6,500.00	6,418.61	6,484.85	6,418.61	21.51	20.34	175.20	-655.71	-490.44	1,297.81	1,262.28	35.52	36.535	
6,600.00	6,518.61	6,584.85	6,518.61	21.66	20.47	175.20	-655.71	-490.44	1,297.81	1,261.96	35.85	36.202	
6,700.00	6,618.61	6,684.85	6,618.61	21.80	20.60	175.20	-655.71	-490.44	1,297.81	1,261.63	36.18	35.872	
6,800.00	6,718.61	6,784.85	6,718.61	21.95	20.73	175.20	-655.71	-490.44	1,297.81	1,261.29	36.51	35.546	
6,900.00	6,818.61	6,884.85	6,818.61	22.10	20.87	175.20	-655.71	-490.44	1,297.81	1,260.96	36.85	35.223	
7,000.00	6,918.61	6,984.85	6,918.61	22.25	21.01	175.20	-655.71	-490.44	1,297.81	1,260.62	37.18	34.904	
7,100.00	7,018.61	7,084.85	7,018.61	22.40	21.14	175.20	-655.71	-490.44	1,297.81	1,260.28	37.52	34.588	
7,200.00	7,118.61	7,184.85	7,118.61	22.55	21.28	175.20	-655.71	-490.44	1,297.81	1,259.94	37.86	34.276	
7,300.00	7,218.61	7,284.85	7,218.61	22.70	21.42	175.20	-655.71	-490.44	1,297.81	1,259.60	38.21	33.967	
7,355.83	7,274.43	7,340.68	7,274.43	22.79	21.50	175.20	-655.71	-490.44	1,297.81	1,259.40	38.40	33.797	
7,386.39	7,305.00	7,366.24	7,300.00	22.84	21.54	175.20	-655.71	-490.44	1,297.81	1,259.32	38.50	33.711	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_CURTIS 23-25
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4680.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_CURTIS 4 PAD	<b>MD Reference:</b>	WELL @ 4680.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_CURTIS 23-25	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_CURTIS 23-25	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 12-29-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design WELD_CURTIS 4 PAD - P_CURTIS 37-25 - P_CURTIS 37-25 - 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)	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	-169.17	-14.57	-2.79	14.84				
100.00	100.00	100.00	100.00	0.10	0.10	-169.17	-14.57	-2.79	14.84	14.64	0.19	77.654	
200.00	200.00	200.00	200.00	0.32	0.32	-169.17	-14.57	-2.79	14.84	14.20	0.64	23.160	
300.00	300.00	300.00	300.00	0.55	0.55	-169.17	-14.57	-2.79	14.84	13.75	1.09	13.609	
400.00	400.00	400.00	400.00	0.77	0.77	-169.17	-14.57	-2.79	14.84	13.30	1.54	9.636	
500.00	500.00	500.00	500.00	0.99	0.99	-169.17	-14.57	-2.79	14.84	12.85	1.99	7.458	
600.00	600.00	600.00	600.00	1.22	1.22	-169.17	-14.57	-2.79	14.84	12.40	2.44	6.083	
700.00	700.00	700.00	700.00	1.44	1.44	-169.17	-14.57	-2.79	14.84	11.95	2.89	5.137	
800.00	800.00	800.00	800.00	1.67	1.67	-169.17	-14.57	-2.79	14.84	11.50	3.34	4.445 CC, ES, SF	
900.00	899.98	899.62	899.60	1.89	1.87	-135.78	-15.70	-1.48	16.98	13.22	3.76	4.516	
1,000.00	999.84	998.52	998.36	2.11	2.06	-153.21	-19.07	2.42	25.24	21.08	4.16	6.069	
1,100.00	1,099.45	1,096.01	1,095.48	2.35	2.26	-165.03	-24.56	8.78	41.14	36.58	4.56	9.029	
1,200.00	1,198.70	1,191.42	1,190.20	2.60	2.49	-171.44	-32.02	17.42	64.38	59.43	4.95	13.007	
1,300.00	1,297.47	1,284.15	1,281.85	2.88	2.74	-174.99	-41.25	28.10	94.45	89.11	5.34	17.696	
1,354.02	1,350.57	1,332.94	1,329.88	3.05	2.89	-176.26	-46.88	34.62	113.39	107.85	5.55	20.449	
1,400.00	1,395.70	1,373.82	1,369.99	3.20	3.02	-177.12	-52.01	40.56	130.62	124.88	5.74	22.769	
1,500.00	1,493.83	1,461.07	1,455.21	3.55	3.33	-178.48	-64.21	54.68	170.18	164.03	6.16	27.649	
1,600.00	1,591.97	1,551.76	1,543.46	3.91	3.69	-179.42	-77.89	70.52	211.38	204.79	6.59	32.062	
1,700.00	1,690.10	1,642.83	1,632.07	4.28	4.08	179.94	-91.64	86.44	252.62	245.59	7.04	35.900	
1,800.00	1,788.24	1,733.90	1,720.68	4.67	4.48	179.48	-105.38	102.35	293.88	286.39	7.49	39.252	
1,900.00	1,886.38	1,824.97	1,809.28	5.06	4.88	179.14	-119.13	118.26	335.15	327.21	7.94	42.197	
2,000.00	1,984.51	1,916.04	1,897.89	5.45	5.30	178.86	-132.87	134.18	376.43	368.03	8.40	44.800	
2,100.00	2,082.65	2,007.11	1,986.50	5.85	5.72	178.65	-146.62	150.09	417.71	408.85	8.87	47.113	
2,200.00	2,180.78	2,098.18	2,075.11	6.25	6.15	178.47	-160.36	166.01	459.00	449.67	9.33	49.179	
2,300.00	2,278.92	2,189.25	2,163.72	6.66	6.59	178.32	-174.11	181.92	500.29	490.49	9.80	51.033	
2,400.00	2,377.05	2,280.32	2,252.33	7.07	7.02	178.20	-187.85	197.83	541.58	531.31	10.28	52.706	
2,500.00	2,475.19	2,371.39	2,340.94	7.48	7.46	178.09	-201.60	213.75	582.88	572.13	10.75	54.221	
2,600.00	2,573.33	2,462.46	2,429.55	7.89	7.91	177.99	-215.34	229.66	624.17	612.95	11.23	55.601	
2,700.00	2,671.46	2,553.53	2,518.16	8.30	8.35	177.91	-229.09	245.58	665.47	653.77	11.70	56.860	
2,800.00	2,769.60	2,644.60	2,606.77	8.72	8.80	177.84	-242.83	261.49	706.77	694.59	12.18	58.015	
2,900.00	2,867.73	2,735.67	2,695.38	9.13	9.24	177.77	-256.58	277.40	748.07	735.41	12.66	59.076	
3,000.00	2,965.87	2,826.74	2,783.99	9.55	9.69	177.72	-270.32	293.32	789.37	776.23	13.14	60.055	
3,100.00	3,064.01	2,917.81	2,872.60	9.97	10.14	177.67	-284.07	309.23	830.67	817.04	13.63	60.960	
3,200.00	3,162.14	3,008.88	2,961.21	10.38	10.59	177.62	-297.81	325.15	871.97	857.86	14.11	61.800	
3,300.00	3,260.28	3,099.95	3,049.82	10.80	11.04	177.58	-311.56	341.06	913.27	898.68	14.59	62.581	
3,400.00	3,358.41	3,191.02	3,138.43	11.22	11.49	177.54	-325.31	356.97	954.57	939.50	15.08	63.308	
3,500.00	3,456.55	3,282.09	3,227.03	11.64	11.95	177.50	-339.05	372.89	995.88	980.31	15.56	63.988	
3,600.00	3,554.68	3,373.16	3,315.64	12.06	12.40	177.47	-352.80	388.80	1,037.18	1,021.13	16.05	64.624	
3,700.00	3,652.82	3,464.23	3,404.25	12.48	12.85	177.44	-366.54	404.72	1,078.48	1,061.95	16.54	65.220	
3,800.00	3,750.96	3,555.30	3,492.86	12.90	13.31	177.41	-380.29	420.63	1,119.79	1,102.76	17.02	65.781	
3,900.00	3,849.09	3,646.38	3,581.47	13.33	13.76	177.38	-394.03	436.54	1,161.09	1,143.58	17.51	66.309	
4,000.00	3,947.23	3,737.45	3,670.08	13.75	14.22	177.36	-407.78	452.46	1,202.39	1,184.39	18.00	66.806	
4,100.00	4,045.36	3,828.52	3,758.69	14.17	14.67	177.33	-421.52	468.37	1,243.70	1,225.21	18.49	67.276	
4,200.00	4,143.50	3,919.59	3,847.30	14.59	15.13	177.31	-435.27	484.29	1,285.00	1,266.03	18.97	67.721	
4,300.00	4,241.64	4,010.66	3,935.91	15.01	15.58	177.29	-449.01	500.20	1,326.30	1,306.84	19.46	68.142	
4,400.00	4,339.77	4,101.73	4,024.52	15.44	16.04	177.27	-462.76	516.12	1,367.61	1,347.66	19.95	68.542	
4,500.00	4,437.91	4,192.80	4,113.13	15.86	16.50	177.26	-476.50	532.03	1,408.91	1,388.47	20.44	68.921	
4,600.00	4,536.04	4,283.87	4,201.74	16.28	16.95	177.24	-490.25	547.94	1,450.22	1,429.28	20.93	69.282	
4,700.00	4,634.18	4,374.94	4,290.35	16.70	17.41	177.22	-503.99	563.86	1,491.52	1,470.10	21.42	69.625	
4,800.00	4,732.32	4,466.01	4,378.96	17.13	17.87	177.21	-517.74	579.77	1,532.83	1,510.91	21.91	69.953	
4,900.00	4,830.45	4,557.08	4,467.57	17.55	18.32	177.20	-531.48	595.69	1,574.13	1,551.73	22.40	70.265	
5,000.00	4,928.59	4,648.15	4,556.18	17.97	18.78	177.18	-545.23	611.60	1,615.43	1,592.54	22.89	70.564	

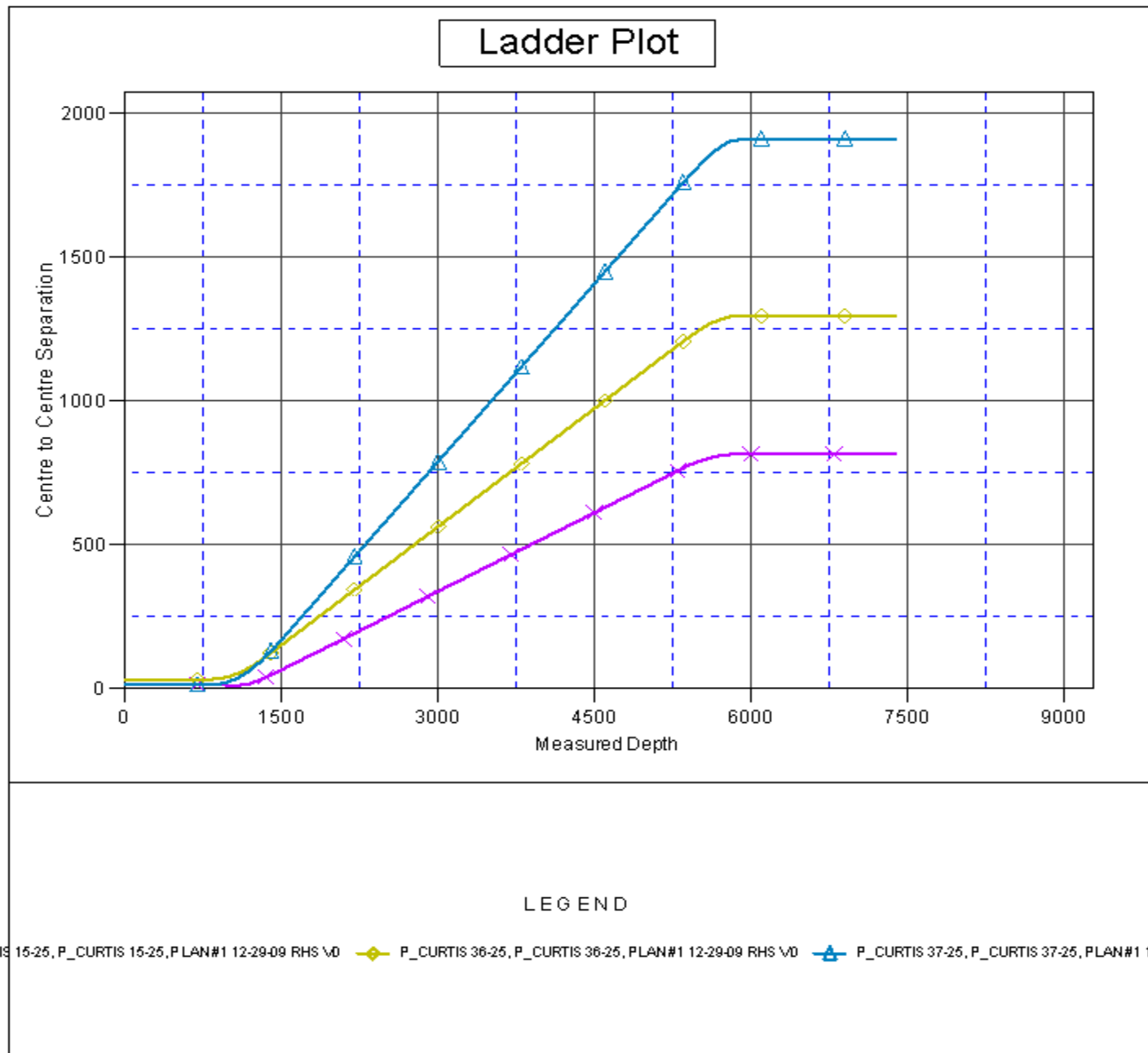
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_CURTIS 23-25
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4680.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_CURTIS 4 PAD	<b>MD Reference:</b>	WELL @ 4680.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_CURTIS 23-25	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_CURTIS 23-25	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 12-29-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> WELD_CURTIS 4 PAD - P_CURTIS 37-25 - P_CURTIS 37-25 - PLAN #1 12-29-09 RHS												<b>Offset Site Error:</b>	0.00 ft
Survey Program: 0-MWD												<b>Offset Well Error:</b>	0.00 ft
Reference	Offset	Semi Major Axis		Distance									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.00	5,026.72	4,739.22	4,644.78	18.40	19.24	177.17	-558.97	627.51	1,656.74	1,633.36	23.38	70.849	
5,200.00	5,124.86	4,830.29	4,733.39	18.82	19.69	177.16	-572.72	643.43	1,698.04	1,674.17	23.88	71.122	
5,300.00	5,222.99	4,921.36	4,822.00	19.25	20.15	177.15	-586.47	659.34	1,739.35	1,714.98	24.37	71.384	
5,350.37	5,272.43	4,967.24	4,866.64	19.46	20.38	177.14	-593.39	667.36	1,760.16	1,735.54	24.61	71.512	
5,400.00	5,321.21	5,012.61	4,910.78	19.64	20.61	177.16	-600.24	675.29	1,780.26	1,755.34	24.93	71.420	
5,500.00	5,419.95	5,105.05	5,000.73	19.93	21.08	177.18	-614.19	691.44	1,818.38	1,792.87	25.51	71.275	
5,600.00	5,519.18	5,198.77	5,091.91	20.18	21.55	177.20	-628.33	707.82	1,853.25	1,827.18	26.07	71.094	
5,700.00	5,618.78	5,354.04	5,243.32	20.39	22.21	177.19	-650.83	733.86	1,884.32	1,857.60	26.72	70.518	
5,800.00	5,718.63	5,642.42	5,528.31	20.56	23.00	177.16	-679.09	766.58	1,904.62	1,877.07	27.56	69.109	
5,904.39	5,823.00	5,937.59	5,823.00	20.70	23.45	133.93	-688.49	777.47	1,911.35	1,883.06	28.29	67.554	
6,000.00	5,918.61	6,033.20	5,918.61	20.82	23.56	133.93	-688.49	777.47	1,911.35	1,882.72	28.63	66.763	
6,100.00	6,018.61	6,133.20	6,018.61	20.95	23.66	133.93	-688.49	777.47	1,911.35	1,882.36	28.99	65.924	
6,200.00	6,118.61	6,233.20	6,118.61	21.09	23.77	133.93	-688.49	777.47	1,911.35	1,881.99	29.36	65.100	
6,300.00	6,218.61	6,333.20	6,218.61	21.23	23.88	133.93	-688.49	777.47	1,911.35	1,881.62	29.73	64.292	
6,400.00	6,318.61	6,433.20	6,318.61	21.37	24.00	133.93	-688.49	777.47	1,911.35	1,881.25	30.10	63.500	
6,500.00	6,418.61	6,533.20	6,418.61	21.51	24.11	133.93	-688.49	777.47	1,911.35	1,880.88	30.47	62.722	
6,600.00	6,518.61	6,633.20	6,518.61	21.66	24.22	133.93	-688.49	777.47	1,911.35	1,880.50	30.85	61.959	
6,700.00	6,618.61	6,733.20	6,618.61	21.80	24.34	133.93	-688.49	777.47	1,911.35	1,880.13	31.23	61.211	
6,800.00	6,718.61	6,833.20	6,718.61	21.95	24.46	133.93	-688.49	777.47	1,911.35	1,879.75	31.60	60.476	
6,900.00	6,818.61	6,933.20	6,818.61	22.10	24.58	133.93	-688.49	777.47	1,911.35	1,879.37	31.99	59.756	
7,000.00	6,918.61	7,033.20	6,918.61	22.25	24.70	133.93	-688.49	777.47	1,911.35	1,878.98	32.37	59.050	
7,100.00	7,018.61	7,133.20	7,018.61	22.40	24.82	133.93	-688.49	777.47	1,911.35	1,878.60	32.75	58.357	
7,200.00	7,118.61	7,233.20	7,118.61	22.55	24.95	133.93	-688.49	777.47	1,911.35	1,878.21	33.14	57.677	
7,300.00	7,218.61	7,333.20	7,218.61	22.70	25.07	133.93	-688.49	777.47	1,911.35	1,877.83	33.53	57.011	
7,353.82	7,272.43	7,387.02	7,272.43	22.79	25.14	133.93	-688.49	777.47	1,911.35	1,877.62	33.74	56.657	
7,386.39	7,305.00	7,409.59	7,295.00	22.84	25.17	133.93	-688.49	777.47	1,911.38	1,877.53	33.84	56.477	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_CURTIS 23-25
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4680.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_CURTIS 4 PAD	<b>MD Reference:</b>	WELL @ 4680.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_CURTIS 23-25	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_CURTIS 23-25	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 12-29-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

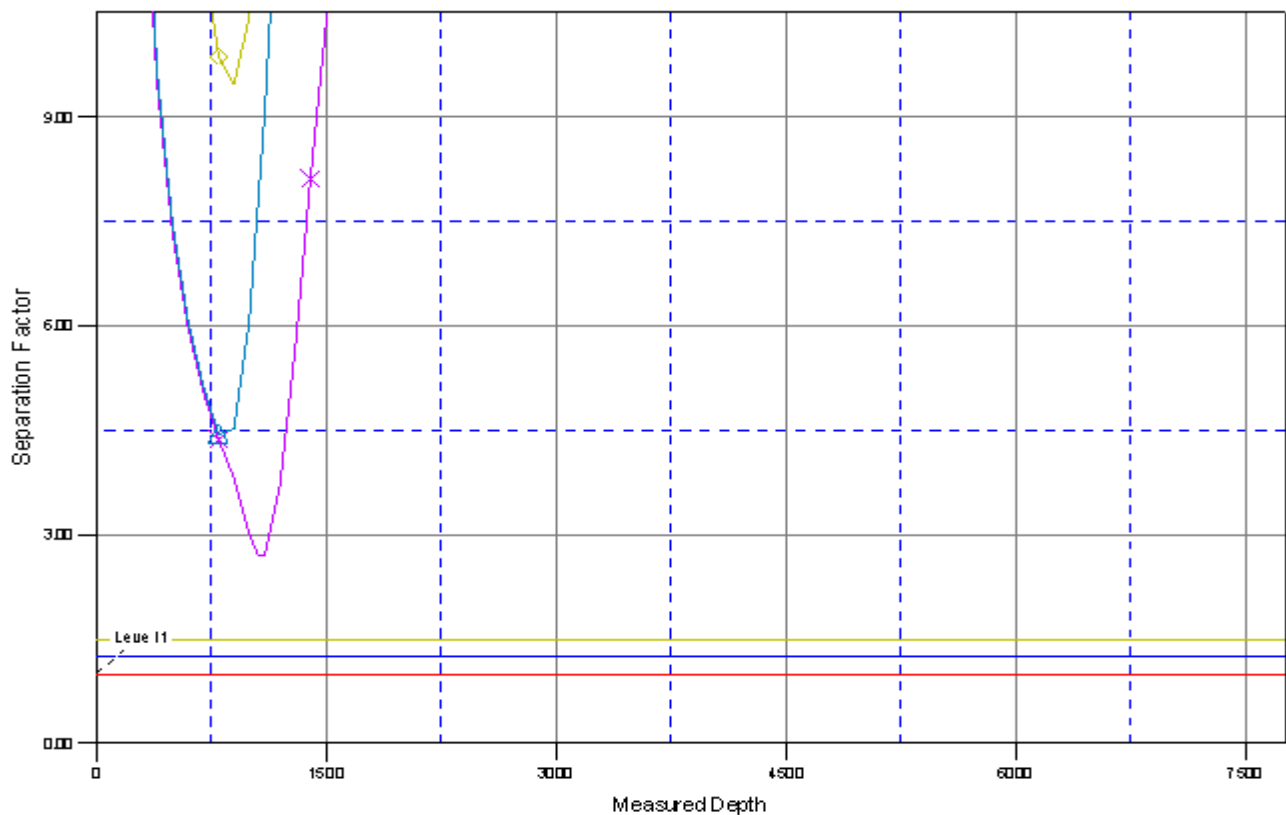
Reference Depths are relative to WELL @ 4680.00ft (Original Well Elev) Coordinates are relative to: P\_CURTIS 23-25  
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone  
Central Meridian is 105° 30' 0.000 W ° Grid Convergence at Surface is: 0.50°





<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_CURTIS 23-25
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4680.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_CURTIS 4 PAD	<b>MD Reference:</b>	WELL @ 4680.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_CURTIS 23-25	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_CURTIS 23-25	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 12-29-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4680.00ft (Original Well Elev) Coordinates are relative to: P\_CURTIS 23-25  
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 V/D     P\_CURTIS 36-25, P\_CURTIS 36-25, PLAN#1 12-29-09 RHS V/D     P\_CURTIS 37-25, P\_CURTIS 37-25, PLAN#1 12-