



US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_CARMA 6 PAD

P_CARMA 21-36

P_CARMA 21-36

Plan: PLAN #1 12-16-09 RHS

Standard Planning Report

16 December, 2009





P_CARMA 21-36
COLORADO NORTHERN ZONE - 83
SECTION 36 T3N R68W
1509 FNL 1454 FWL
LAT: 40° 11' 8.520 N
LONG: 104° 57' 19.620 W



Azimuths to True North
Magnetic North: 9.11°
Magnetic Field
Strength: 53174.7nT
Dip Angle: 66.90°
Date: 12/16/2009
Model: IGRF200510

WELL DETAILS: P_CARMA 21-36

+N/-S	+E/-W	Northing	Ground Level: Easting	4864.00 Latitude	Longitude	Slot
0.00	0.00	1310960.36	3152141.27	40° 11' 8.520 N	104° 57' 19.620 W	

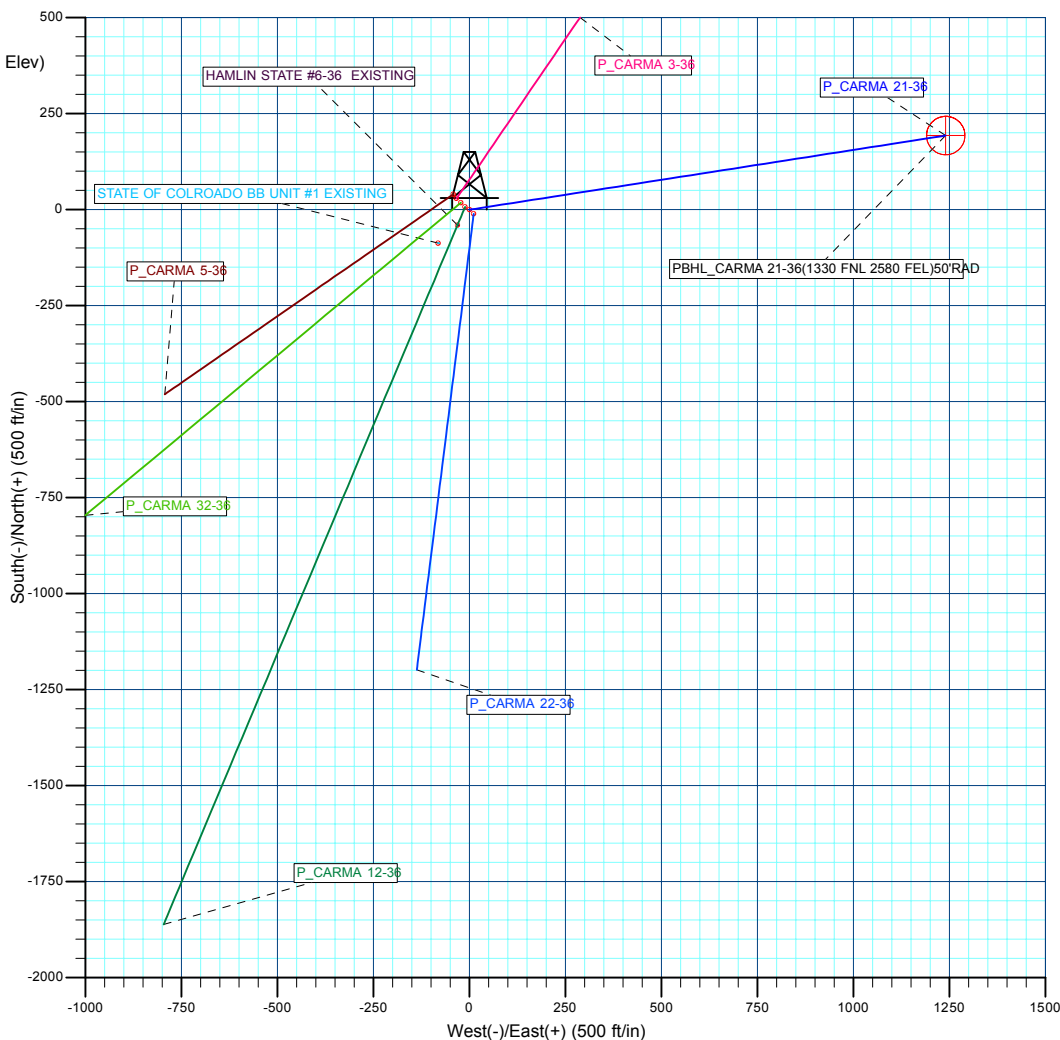
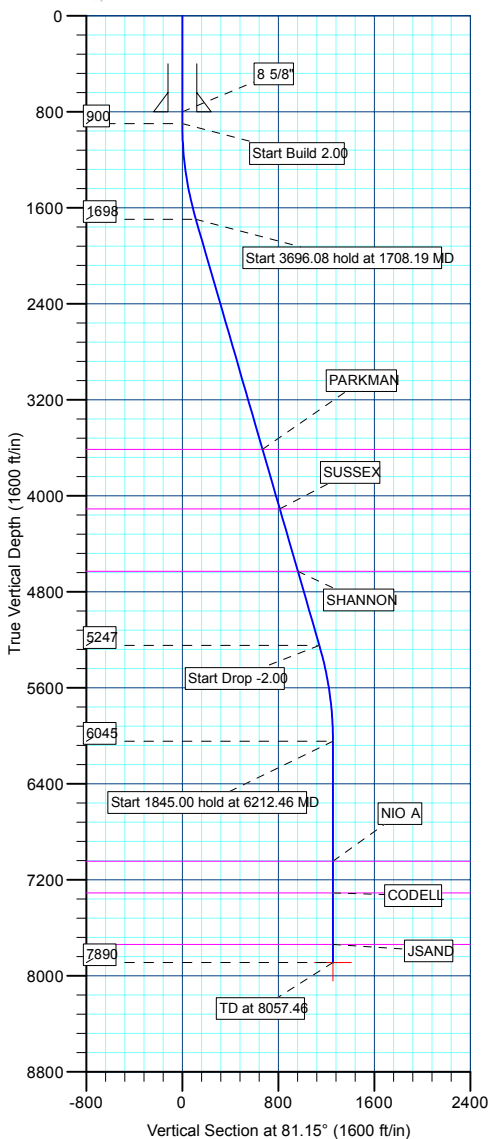
SECTION DETAILS

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	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	
1708.19	16.16	81.15	1697.52	17.42	111.90	2.00	81.15	113.25	
5404.27	16.16	81.15	5247.48	175.69	1128.59	0.00	0.00	1142.18	
6212.46	0.00	0.00	6045.00	193.11	1240.49	2.00	180.00	1255.43	
8057.46	0.00	0.00	7890.00	193.11	1240.49	0.00	0.00	1255.43	PBHL_CARMA 21-36(1330 FNL 2580 FEL)50°RAD

CASING DETAILS

TVD	MD	Name	Size
800.00	800.00	8 5/8"	8.62

KB ELEV: WELL @ 4879.00ft (Original Well Elev)
GRD ELEV: 4864.00



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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL	7890.00	193.11	1240.49	1311161.08	3153380.54	40° 11' 10.428 N	104° 57' 3.636 W	Circle (Radius: 50.00)

Plan: PLAN #1 12-16-09 RHS (P_CARMA 21-36/P_CARMA 21-36)

Created By: Robert H. Scott

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_CARMA 21-36
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4879.00ft (Original Well Elev)
Project:	COLORADO NOTHERN ZONE - 83	MD Reference:	WELL @ 4879.00ft (Original Well Elev)
Site:	WELD_CARMA 6 PAD	North Reference:	True
Well:	P_CARMA 21-36	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_CARMA 21-36		
Design:	PLAN #1 12-16-09 RHS		

Project	COLORADO NOTHERN 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_CARMA 6 PAD, SECTION 36 T3N R68W			
Site Position:		Northing:	1,310,967.58 ft	Latitude:	40° 11' 8.592 N
From:	Lat/Long	Easting:	3,152,130.05 ft	Longitude:	104° 57' 19.764 W
Position Uncertainty:	0.00 ft	Slot Radius:	in	Grid Convergence:	0.35 °

Well	P_CARMA 21-36					
Well Position	+N/-S	-7.29 ft	Northing:	1,310,960.36 ft	Latitude:	40° 11' 8.520 N
	+E/-W	11.18 ft	Easting:	3,152,141.27 ft	Longitude:	104° 57' 19.620 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,864.00 ft

Wellbore	P_CARMA 21-36				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/16/2009	9.11	66.90	53,175

Design	PLAN #1 12-16-09 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	81.15

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	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,708.19	16.16	81.15	1,697.52	17.42	111.90	2.00	2.00	0.00	81.15	
5,404.27	16.16	81.15	5,247.48	175.69	1,128.59	0.00	0.00	0.00	0.00	
6,212.46	0.00	0.00	6,045.00	193.11	1,240.49	2.00	-2.00	0.00	180.00	
8,057.46	0.00	0.00	7,890.00	193.11	1,240.49	0.00	0.00	0.00	0.00	PBHL_CARMA 21-36

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_CARMA 21-36
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4879.00ft (Original Well Elev)
Project:	COLORADO NOTHERN ZONE - 83	MD Reference:	WELL @ 4879.00ft (Original Well Elev)
Site:	WELD_CARMA 6 PAD	North Reference:	True
Well:	P_CARMA 21-36	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_CARMA 21-36		
Design:	PLAN #1 12-16-09 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									
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	2.00	81.15	999.98	0.27	1.72	1.75	2.00	2.00	0.00
1,100.00	4.00	81.15	1,099.84	1.07	6.90	6.98	2.00	2.00	0.00
1,200.00	6.00	81.15	1,199.45	2.41	15.51	15.69	2.00	2.00	0.00
1,300.00	8.00	81.15	1,298.70	4.29	27.55	27.88	2.00	2.00	0.00
1,400.00	10.00	81.15	1,397.47	6.69	43.00	43.52	2.00	2.00	0.00
1,500.00	12.00	81.15	1,495.62	9.63	61.86	62.60	2.00	2.00	0.00
1,600.00	14.00	81.15	1,593.06	13.09	84.08	85.10	2.00	2.00	0.00
1,700.00	16.00	81.15	1,689.64	17.07	109.66	110.98	2.00	2.00	0.00
Start 3696.08 hold at 1708.19 MD									
1,708.19	16.16	81.15	1,697.52	17.42	111.90	113.25	2.00	2.00	0.00
1,800.00	16.16	81.15	1,785.69	21.35	137.15	138.80	0.00	0.00	0.00
1,900.00	16.16	81.15	1,881.74	25.63	164.66	166.64	0.00	0.00	0.00
2,000.00	16.16	81.15	1,977.79	29.92	192.17	194.48	0.00	0.00	0.00
2,100.00	16.16	81.15	2,073.83	34.20	219.67	222.32	0.00	0.00	0.00
2,200.00	16.16	81.15	2,169.88	38.48	247.18	250.16	0.00	0.00	0.00
2,300.00	16.16	81.15	2,265.93	42.76	274.69	278.00	0.00	0.00	0.00
2,400.00	16.16	81.15	2,361.97	47.04	302.20	305.84	0.00	0.00	0.00
2,500.00	16.16	81.15	2,458.02	51.33	329.70	333.67	0.00	0.00	0.00
2,600.00	16.16	81.15	2,554.07	55.61	357.21	361.51	0.00	0.00	0.00
2,700.00	16.16	81.15	2,650.12	59.89	384.72	389.35	0.00	0.00	0.00
2,800.00	16.16	81.15	2,746.16	64.17	412.23	417.19	0.00	0.00	0.00
2,900.00	16.16	81.15	2,842.21	68.45	439.73	445.03	0.00	0.00	0.00
3,000.00	16.16	81.15	2,938.26	72.74	467.24	472.87	0.00	0.00	0.00
3,100.00	16.16	81.15	3,034.30	77.02	494.75	500.71	0.00	0.00	0.00
3,200.00	16.16	81.15	3,130.35	81.30	522.25	528.54	0.00	0.00	0.00
3,300.00	16.16	81.15	3,226.40	85.58	549.76	556.38	0.00	0.00	0.00
3,400.00	16.16	81.15	3,322.44	89.86	577.27	584.22	0.00	0.00	0.00
3,500.00	16.16	81.15	3,418.49	94.15	604.78	612.06	0.00	0.00	0.00
3,600.00	16.16	81.15	3,514.54	98.43	632.28	639.90	0.00	0.00	0.00
3,700.00	16.16	81.15	3,610.58	102.71	659.79	667.74	0.00	0.00	0.00
PARKMAN									
3,703.56	16.16	81.15	3,614.00	102.86	660.77	668.73	0.00	0.00	0.00
3,800.00	16.16	81.15	3,706.63	106.99	687.30	695.58	0.00	0.00	0.00
3,900.00	16.16	81.15	3,802.68	111.28	714.81	723.41	0.00	0.00	0.00
4,000.00	16.16	81.15	3,898.73	115.56	742.31	751.25	0.00	0.00	0.00
4,100.00	16.16	81.15	3,994.77	119.84	769.82	779.09	0.00	0.00	0.00
4,200.00	16.16	81.15	4,090.82	124.12	797.33	806.93	0.00	0.00	0.00
SUSSEX									
4,218.93	16.16	81.15	4,109.00	124.93	802.53	812.20	0.00	0.00	0.00
4,300.00	16.16	81.15	4,186.87	128.40	824.83	834.77	0.00	0.00	0.00
4,400.00	16.16	81.15	4,282.91	132.69	852.34	862.61	0.00	0.00	0.00
4,500.00	16.16	81.15	4,378.96	136.97	879.85	890.45	0.00	0.00	0.00
4,600.00	16.16	81.15	4,475.01	141.25	907.36	918.28	0.00	0.00	0.00
4,700.00	16.16	81.15	4,571.05	145.53	934.86	946.12	0.00	0.00	0.00
SHANNON									
4,760.33	16.16	81.15	4,629.00	148.12	951.46	962.92	0.00	0.00	0.00
4,800.00	16.16	81.15	4,667.10	149.81	962.37	973.96	0.00	0.00	0.00
4,900.00	16.16	81.15	4,763.15	154.10	989.88	1,001.80	0.00	0.00	0.00
5,000.00	16.16	81.15	4,859.19	158.38	1,017.38	1,029.64	0.00	0.00	0.00
5,100.00	16.16	81.15	4,955.24	162.66	1,044.89	1,057.48	0.00	0.00	0.00
5,200.00	16.16	81.15	5,051.29	166.94	1,072.40	1,085.32	0.00	0.00	0.00

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_CARMA 21-36
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4879.00ft (Original Well Elev)
Project:	COLORADO NOTHERN ZONE - 83	MD Reference:	WELL @ 4879.00ft (Original Well Elev)
Site:	WELD_CARMA 6 PAD	North Reference:	True
Well:	P_CARMA 21-36	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_CARMA 21-36		
Design:	PLAN #1 12-16-09 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)
5,300.00	16.16	81.15	5,147.34	171.22	1,099.91	1,113.15	0.00	0.00	0.00
5,400.00	16.16	81.15	5,243.38	175.51	1,127.41	1,140.99	0.00	0.00	0.00
Start Drop -2.00									
5,404.27	16.16	81.15	5,247.48	175.69	1,128.59	1,142.18	0.00	0.00	0.00
5,500.00	14.25	81.15	5,339.86	179.55	1,153.40	1,167.29	2.00	-2.00	0.00
5,600.00	12.25	81.15	5,437.19	183.08	1,176.04	1,190.21	2.00	-2.00	0.00
5,700.00	10.25	81.15	5,535.26	186.08	1,195.32	1,209.71	2.00	-2.00	0.00
5,800.00	8.25	81.15	5,633.96	188.55	1,211.20	1,225.79	2.00	-2.00	0.00
5,900.00	6.25	81.15	5,733.16	190.49	1,223.67	1,238.41	2.00	-2.00	0.00
6,000.00	4.25	81.15	5,832.73	191.90	1,232.71	1,247.55	2.00	-2.00	0.00
6,100.00	2.25	81.15	5,932.57	192.77	1,238.31	1,253.22	2.00	-2.00	0.00
6,200.00	0.25	81.15	6,032.54	193.11	1,240.46	1,255.40	2.00	-2.00	0.00
Start 1845.00 hold at 6212.46 MD									
6,212.46	0.00	0.00	6,045.00	193.11	1,240.49	1,255.43	2.00	-2.00	-651.10
6,300.00	0.00	0.00	6,132.54	193.11	1,240.49	1,255.43	0.00	0.00	0.00
6,400.00	0.00	0.00	6,232.54	193.11	1,240.49	1,255.43	0.00	0.00	0.00
6,500.00	0.00	0.00	6,332.54	193.11	1,240.49	1,255.43	0.00	0.00	0.00
6,600.00	0.00	0.00	6,432.54	193.11	1,240.49	1,255.43	0.00	0.00	0.00
6,700.00	0.00	0.00	6,532.54	193.11	1,240.49	1,255.43	0.00	0.00	0.00
6,800.00	0.00	0.00	6,632.54	193.11	1,240.49	1,255.43	0.00	0.00	0.00
6,900.00	0.00	0.00	6,732.54	193.11	1,240.49	1,255.43	0.00	0.00	0.00
7,000.00	0.00	0.00	6,832.54	193.11	1,240.49	1,255.43	0.00	0.00	0.00
7,100.00	0.00	0.00	6,932.54	193.11	1,240.49	1,255.43	0.00	0.00	0.00
7,200.00	0.00	0.00	7,032.54	193.11	1,240.49	1,255.43	0.00	0.00	0.00
NIO A									
7,212.46	0.00	0.00	7,045.00	193.11	1,240.49	1,255.43	0.00	0.00	0.00
7,300.00	0.00	0.00	7,132.54	193.11	1,240.49	1,255.43	0.00	0.00	0.00
7,400.00	0.00	0.00	7,232.54	193.11	1,240.49	1,255.43	0.00	0.00	0.00
CODELL									
7,477.46	0.00	0.00	7,310.00	193.11	1,240.49	1,255.43	0.00	0.00	0.00
7,500.00	0.00	0.00	7,332.54	193.11	1,240.49	1,255.43	0.00	0.00	0.00
7,600.00	0.00	0.00	7,432.54	193.11	1,240.49	1,255.43	0.00	0.00	0.00
7,700.00	0.00	0.00	7,532.54	193.11	1,240.49	1,255.43	0.00	0.00	0.00
7,800.00	0.00	0.00	7,632.54	193.11	1,240.49	1,255.43	0.00	0.00	0.00
7,900.00	0.00	0.00	7,732.54	193.11	1,240.49	1,255.43	0.00	0.00	0.00
JSAND									
7,907.46	0.00	0.00	7,740.00	193.11	1,240.49	1,255.43	0.00	0.00	0.00
8,000.00	0.00	0.00	7,832.54	193.11	1,240.49	1,255.43	0.00	0.00	0.00
PBHL_CARMA 21-36(1330 FNL 2580 FEL)50°RAD									
8,057.46	0.00	0.00	7,890.00	193.11	1,240.49	1,255.43	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_CARMA 21-36	0.00	0.00	7,890.00	193.11	1,240.49	1,311,161.08	3,153,380.54	40° 11' 10.428 N	104° 57' 3.636 W
- plan hits target center									
- Circle (radius 50.00)									

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_CARMA 21-36
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4879.00ft (Original Well Elev)
Project:	COLORADO NOTHERN ZONE - 83	MD Reference:	WELL @ 4879.00ft (Original Well Elev)
Site:	WELD_CARMA 6 PAD	North Reference:	True
Well:	P_CARMA 21-36	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_CARMA 21-36		
Design:	PLAN #1 12-16-09 RHS		

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
800.00	800.00	8 5/8"	8.62	11.00	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,703.56	3,614.00	PARKMAN				
4,218.93	4,109.00	SUSSEX				
4,760.33	4,629.00	SHANNON				
7,212.46	7,045.00	NIO A				
7,477.46	7,310.00	CODELL				
7,907.46	7,740.00	JSAND				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
900.00	900.00	0.00	0.00	Start Build 2.00	
1,708.19	1,697.52	17.42	111.90	Start 3696.08 hold at 1708.19 MD	
5,404.27	5,247.48	175.69	1,128.59	Start Drop -2.00	
6,212.46	6,045.00	193.11	1,240.49	Start 1845.00 hold at 6212.46 MD	
8,057.46	7,890.00	193.11	1,240.49	TD at 8057.46	



US ROCKIES REGION PLANNING

**COLORADO NOTHERN ZONE - 83
WELD_CARMA 6 PAD
P_CARMA 21-36**

**P_CARMA 21-36
PLAN #1 12-16-09 RHS**

Anticollision Report

16 December, 2009



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CARMA 21-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4879.00ft (Original Well Elev)
Reference Site:	WELD_CARMA 6 PAD	MD Reference:	WELL @ 4879.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CARMA 21-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 21-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-16-09 RHS	Offset TVD Reference:	Offset Datum

Reference	PLAN #1 12-16-09 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	12/16/2009		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	8,057.46	PLAN #1 12-16-09 RHS (P_CARMA 21-36)	UNKNOWN	Unknown survey

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_CARMA 6 PAD						
HAMLIN STATE #6-36 EXISTING - HAMLIN STATE #6-	900.00	881.00	50.51	-16.43	0.755	Level 1, CC
HAMLIN STATE #6-36 EXISTING - HAMLIN STATE #6-	1,000.00	980.98	51.78	-21.49	0.707	Level 1, SF
HAMLIN STATE #6-36 EXISTING - HAMLIN STATE #6-	1,100.00	1,080.84	55.76	-22.47	0.713	Level 1, ES
P_CARMA 12-36 - P_CARMA 12-36 - PLAN #1 12-16-09	900.00	900.00	13.35	-54.05	0.198	Level 1, CC, SF
P_CARMA 12-36 - P_CARMA 12-36 - PLAN #1 12-16-09	1,000.00	999.99	14.62	-55.28	0.209	Level 1, ES
P_CARMA 22-36 - P_CARMA 22-36 - PLAN #1 12-16-09	900.00	900.00	15.63	-51.77	0.232	Level 1, CC
P_CARMA 22-36 - P_CARMA 22-36 - PLAN #1 12-16-09	1,000.00	999.59	15.89	-53.88	0.228	Level 1, ES, SF
P_CARMA 32-36 - P_CARMA 32-36 - PLAN #1 12-16-09	900.00	900.00	28.83	-6.76	0.810	Level 1, CC
P_CARMA 32-36 - P_CARMA 32-36 - PLAN #1 12-16-09	1,000.00	999.69	30.48	-7.66	0.799	Level 1, ES, SF
P_CARMA 3-36 - P_CARMA 3-36 - PLAN #1 12-16-09 R	900.00	900.00	44.42	-22.98	0.659	Level 1, CC
P_CARMA 3-36 - P_CARMA 3-36 - PLAN #1 12-16-09 R	1,000.00	999.80	45.75	-27.65	0.623	Level 1, SF
P_CARMA 3-36 - P_CARMA 3-36 - PLAN #1 12-16-09 R	1,100.00	1,099.49	49.76	-28.05	0.640	Level 1, ES
P_CARMA 5-36 - P_CARMA 5-36 - PLAN #1 12-16-09 R	900.00	900.00	57.98	22.39	1.629	CC
P_CARMA 5-36 - P_CARMA 5-36 - PLAN #1 12-16-09 R	1,000.00	999.48	59.47	21.32	1.559	ES, SF
STATE OF COLROADO BB UNIT #1 EXISTING - STATE	900.00	879.00	119.21	52.35	1.783	CC
STATE OF COLROADO BB UNIT #1 EXISTING - STATE	1,100.00	1,078.84	124.75	46.61	1.597	ES
STATE OF COLROADO BB UNIT #1 EXISTING - STATE	1,200.00	1,178.45	131.88	48.48	1.581	SF

Offset Design	WELD_CARMA 6 PAD - HAMLIN STATE #6-36 EXISTING - HAMLIN STATE #6-36 EXISTING - HAML										Offset Site Error:	0.00 ft
Survey Program:	0-UNKNOWN										Offset Well Error:	0.00 ft
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		Warning				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-142.52	-40.08	-30.73	53.96			
100.00	100.00	81.00	81.00	1.70	1.62	-142.52	-40.08	-30.73	50.51	47.19	3.32	15.213
200.00	200.00	181.00	181.00	5.70	5.24	-142.52	-40.08	-30.73	50.51	39.57	10.94	4.617
300.00	300.00	281.00	281.00	9.70	9.24	-142.52	-40.08	-30.73	50.51	31.57	18.94	2.667
400.00	400.00	381.00	381.00	13.70	13.24	-142.52	-40.08	-30.73	50.51	23.57	26.94	1.875
500.00	500.00	481.00	481.00	17.70	17.24	-142.52	-40.08	-30.73	50.51	15.57	34.94	1.446 Level 3
600.00	600.00	581.00	581.00	21.70	21.24	-142.52	-40.08	-30.73	50.51	7.57	42.94	1.176 Level 2
700.00	700.00	681.00	681.00	25.70	25.24	-142.52	-40.08	-30.73	50.51	-0.43	50.94	0.991 Level 1
800.00	800.00	781.00	781.00	29.70	29.24	-142.52	-40.08	-30.73	50.51	-8.43	58.94	0.857 Level 1
900.00	900.00	881.00	881.00	33.70	33.24	-142.52	-40.08	-30.73	50.51	-16.43	66.94	0.755 Level 1, CC
1,000.00	999.98	980.98	980.98	36.06	37.24	137.65	-40.08	-30.73	51.78	-21.49	73.28	0.707 Level 1, SF

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_CARMA 21-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4879.00ft (Original Well Elev)
Reference Site:	WELD_CARMA 6 PAD	MD Reference:	WELL @ 4879.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CARMA 21-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 21-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-16-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_CARMA 6 PAD - HAMLIN STATE #6-36 EXISTING - HAMLIN STATE #6-36 EXISTING - HAML												Offset Site Error:	0.00 ft
Survey Program: 0-UNKNOWN												Offset Well Error:	0.00 ft
Reference	Offset	Semi Major Axis					Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
1,100.00	1,099.84	1,080.84	1,080.84	37.11	41.23	141.22	-40.08	-30.73	55.76	-22.47	78.23	0.713	Level 1, ES
1,200.00	1,199.45	1,180.45	1,180.45	38.56	45.22	146.12	-40.08	-30.73	62.80	-20.67	83.47	0.752	Level 1
1,300.00	1,298.70	1,279.70	1,279.70	40.41	49.19	151.33	-40.08	-30.73	73.25	-15.67	88.92	0.824	Level 1
1,400.00	1,397.47	1,378.47	1,378.47	42.63	53.14	156.14	-40.08	-30.73	87.32	-7.18	94.50	0.924	Level 1
1,500.00	1,495.62	1,476.62	1,476.62	45.21	57.06	160.22	-40.08	-30.73	105.09	4.94	100.15	1.049	Level 2
1,600.00	1,593.06	1,574.06	1,574.06	48.13	60.96	163.54	-40.08	-30.73	126.53	20.71	105.82	1.196	Level 2
1,708.19	1,697.52	1,678.52	1,678.52	51.67	65.14	166.37	-40.08	-30.73	153.79	41.89	111.90	1.374	Level 3
1,800.00	1,785.69	1,766.69	1,766.69	54.92	68.67	168.30	-40.08	-30.73	178.77	60.83	117.94	1.516	
1,900.00	1,881.74	1,862.74	1,862.74	58.67	72.51	169.87	-40.08	-30.73	206.15	81.47	124.67	1.654	
2,000.00	1,977.79	1,958.79	1,958.79	62.58	76.35	171.07	-40.08	-30.73	233.63	102.11	131.52	1.776	
2,100.00	2,073.83	2,054.83	2,054.83	66.63	80.19	172.01	-40.08	-30.73	261.19	122.72	138.48	1.886	
2,200.00	2,169.88	2,150.88	2,150.88	70.80	84.04	172.78	-40.08	-30.73	288.80	143.29	145.51	1.985	
2,300.00	2,265.93	2,246.93	2,246.93	75.06	87.88	173.41	-40.08	-30.73	316.46	163.84	152.62	2.073	
2,400.00	2,361.97	2,342.97	2,342.97	79.39	91.72	173.95	-40.08	-30.73	344.14	184.35	159.79	2.154	
2,500.00	2,458.02	2,439.02	2,439.02	83.80	95.56	174.40	-40.08	-30.73	371.85	204.83	167.01	2.226	
2,600.00	2,554.07	2,535.07	2,535.07	88.27	99.40	174.79	-40.08	-30.73	399.57	225.29	174.28	2.293	
2,700.00	2,650.12	2,631.12	2,631.12	92.78	103.24	175.13	-40.08	-30.73	427.31	245.72	181.59	2.353	
2,800.00	2,746.16	2,727.16	2,727.16	97.34	107.09	175.42	-40.08	-30.73	455.06	266.13	188.93	2.409	
2,900.00	2,842.21	2,823.21	2,823.21	101.93	110.93	175.69	-40.08	-30.73	482.82	286.52	196.30	2.460	
3,000.00	2,938.26	2,919.26	2,919.26	106.55	114.77	175.92	-40.08	-30.73	510.59	306.89	203.70	2.507	
3,100.00	3,034.30	3,015.30	3,015.30	111.21	118.61	176.13	-40.08	-30.73	538.37	327.25	211.12	2.550	
3,200.00	3,130.35	3,111.35	3,111.35	115.88	122.45	176.32	-40.08	-30.73	566.15	347.59	218.56	2.590	
3,300.00	3,226.40	3,207.40	3,207.40	120.58	126.30	176.50	-40.08	-30.73	593.94	367.92	226.02	2.628	
3,400.00	3,322.44	3,303.44	3,303.44	125.30	130.14	176.65	-40.08	-30.73	621.73	388.24	233.50	2.663	
3,500.00	3,418.49	3,399.49	3,399.49	130.04	133.98	176.80	-40.08	-30.73	649.53	408.54	240.99	2.695	
3,600.00	3,514.54	3,495.54	3,495.54	134.79	137.82	176.93	-40.08	-30.73	677.33	428.84	248.49	2.726	
3,700.00	3,610.58	3,591.58	3,591.58	139.55	141.66	177.05	-40.08	-30.73	705.13	449.12	256.01	2.754	
3,800.00	3,706.63	3,687.63	3,687.63	144.33	145.51	177.16	-40.08	-30.73	732.94	469.40	263.54	2.781	
3,900.00	3,802.68	3,783.68	3,783.68	149.12	149.35	177.26	-40.08	-30.73	760.75	489.67	271.07	2.806	
4,000.00	3,898.73	3,879.73	3,879.73	153.92	153.19	177.36	-40.08	-30.73	788.56	509.94	278.62	2.830	
4,100.00	3,994.77	3,975.77	3,975.77	158.72	157.03	177.45	-40.08	-30.73	816.37	530.19	286.18	2.853	
4,200.00	4,090.82	4,071.82	4,071.82	163.54	160.87	177.53	-40.08	-30.73	844.18	550.44	293.74	2.874	
4,300.00	4,186.87	4,167.87	4,167.87	168.36	164.71	177.61	-40.08	-30.73	872.00	570.69	301.31	2.894	
4,400.00	4,282.91	4,263.91	4,263.91	173.20	168.56	177.69	-40.08	-30.73	899.82	590.93	308.88	2.913	
4,500.00	4,378.96	4,359.96	4,359.96	178.03	172.40	177.76	-40.08	-30.73	927.63	611.17	316.47	2.931	
4,600.00	4,475.01	4,456.01	4,456.01	182.88	176.24	177.82	-40.08	-30.73	955.45	631.40	324.05	2.948	
4,700.00	4,571.05	4,552.05	4,552.05	187.73	180.08	177.88	-40.08	-30.73	983.27	651.63	331.65	2.965	
4,800.00	4,667.10	4,648.10	4,648.10	192.58	183.92	177.94	-40.08	-30.73	1,011.10	671.85	339.24	2.980	
4,900.00	4,763.15	4,744.15	4,744.15	197.44	187.77	178.00	-40.08	-30.73	1,038.92	692.07	346.85	2.995	
5,000.00	4,859.19	4,840.19	4,840.19	202.30	191.61	178.05	-40.08	-30.73	1,066.74	712.29	354.45	3.010	
5,100.00	4,955.24	4,936.24	4,936.24	207.17	195.45	178.10	-40.08	-30.73	1,094.57	732.50	362.06	3.023	
5,200.00	5,051.29	5,032.29	5,032.29	212.04	199.29	178.15	-40.08	-30.73	1,122.39	752.71	369.68	3.036	
5,300.00	5,147.34	5,128.34	5,128.34	216.92	203.13	178.19	-40.08	-30.73	1,150.22	772.92	377.29	3.049	
5,404.27	5,247.48	5,228.48	5,228.48	222.00	207.14	178.24	-40.08	-30.73	1,179.23	793.99	385.24	3.061	
5,500.00	5,339.86	5,320.86	5,320.86	226.59	210.83	178.29	-40.08	-30.73	1,204.33	809.81	394.52	3.053	
5,600.00	5,437.19	5,418.19	5,418.19	231.19	214.73	178.33	-40.08	-30.73	1,227.24	823.39	403.85	3.039	
5,700.00	5,535.26	5,516.26	5,516.26	235.61	218.65	178.37	-40.08	-30.73	1,246.74	833.96	412.78	3.020	
5,800.00	5,633.96	5,614.96	5,614.96	239.83	222.60	178.40	-40.08	-30.73	1,262.80	841.53	421.27	2.998	
5,900.00	5,733.16	5,714.16	5,714.16	243.87	226.57	178.42	-40.08	-30.73	1,275.41	846.10	429.32	2.971	
6,000.00	5,832.73	5,813.73	5,813.73	247.72	230.55	178.44	-40.08	-30.73	1,284.56	847.67	436.89	2.940	
6,100.00	5,932.57	5,913.57	5,913.57	251.39	234.54	178.45	-40.08	-30.73	1,290.23	846.27	443.96	2.906	
6,200.00	6,032.54	6,013.54	6,013.54	254.88	238.54	178.45	-40.08	-30.73	1,292.40	841.90	450.50	2.869	

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_CARMA 21-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4879.00ft (Original Well Elev)
Reference Site:	WELD_CARMA 6 PAD	MD Reference:	WELL @ 4879.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CARMA 21-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 21-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-16-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_CARMA 6 PAD - HAMLIN STATE #6-36 EXISTING - HAMLIN STATE #6-36 EXISTING - HAML												Offset Site Error:	0.00 ft
Survey Program: 0-UNKNOWN												Offset Well Error:	0.00 ft
Reference	Offset	Semi Major Axis		Distance									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
6,212.46	6,045.00	6,026.00	6,026.00	255.16	239.04	-100.39	-40.08	-30.73	1,292.43	841.32	451.11	2.865	
6,300.00	6,132.54	6,113.54	6,113.54	256.12	242.54	-100.39	-40.08	-30.73	1,292.43	836.68	455.75	2.836	
6,400.00	6,232.54	6,213.54	6,213.54	257.28	246.54	-100.39	-40.08	-30.73	1,292.43	831.32	461.11	2.803	
6,500.00	6,332.54	6,313.54	6,313.54	258.48	250.54	-100.39	-40.08	-30.73	1,292.43	825.90	466.53	2.770	
6,600.00	6,432.54	6,413.54	6,413.54	259.75	254.54	-100.39	-40.08	-30.73	1,292.43	820.41	472.02	2.738	
6,700.00	6,532.54	6,513.54	6,513.54	261.07	258.54	-100.39	-40.08	-30.73	1,292.43	814.86	477.57	2.706	
6,800.00	6,632.54	6,613.54	6,613.54	262.44	262.54	-100.39	-40.08	-30.73	1,292.43	809.25	483.18	2.675	
6,900.00	6,732.54	6,713.54	6,713.54	263.87	266.54	-100.39	-40.08	-30.73	1,292.43	803.58	488.85	2.644	
7,000.00	6,832.54	6,813.54	6,813.54	265.35	270.54	-100.39	-40.08	-30.73	1,292.43	797.85	494.58	2.613	
7,100.00	6,932.54	6,913.54	6,913.54	266.88	274.54	-100.39	-40.08	-30.73	1,292.43	792.06	500.37	2.583	
7,200.00	7,032.54	7,013.54	7,013.54	268.46	278.54	-100.39	-40.08	-30.73	1,292.43	786.22	506.22	2.553	
7,300.00	7,132.54	7,113.54	7,113.54	270.10	282.54	-100.39	-40.08	-30.73	1,292.43	780.32	512.12	2.524	
7,400.00	7,232.54	7,213.54	7,213.54	271.78	286.54	-100.39	-40.08	-30.73	1,292.43	774.36	518.07	2.495	
7,500.00	7,332.54	7,313.54	7,313.54	273.51	290.54	-100.39	-40.08	-30.73	1,292.43	768.36	524.07	2.466	
7,600.00	7,432.54	7,413.54	7,413.54	275.29	294.54	-100.39	-40.08	-30.73	1,292.43	762.30	530.13	2.438	
7,700.00	7,532.54	7,513.54	7,513.54	277.11	298.54	-100.39	-40.08	-30.73	1,292.43	756.20	536.24	2.410	
7,749.08	7,581.62	7,562.62	7,562.62	278.03	300.50	-100.39	-40.08	-30.73	1,292.43	753.18	539.26	2.397	
7,800.00	7,632.54	7,579.00	7,579.00	278.98	301.16	-100.39	-40.08	-30.73	1,292.89	751.88	541.01	2.390	
7,900.00	7,732.54	7,579.00	7,579.00	280.90	301.16	-100.39	-40.08	-30.73	1,299.41	756.21	543.21	2.392	
8,000.00	7,832.54	7,579.00	7,579.00	282.86	301.16	-100.39	-40.08	-30.73	1,313.54	768.08	545.46	2.408	
8,057.46	7,890.00	7,579.00	7,579.00	284.00	301.16	-100.39	-40.08	-30.73	1,325.01	778.24	546.77	2.423	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CARMA 21-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4879.00ft (Original Well Elev)
Reference Site:	WELD_CARMA 6 PAD	MD Reference:	WELL @ 4879.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CARMA 21-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 21-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-16-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_CARMA 6 PAD - P_CARMA 12-36 - P_CARMA 12-36 - PLAN #1 12-16-09 RHS												Offset Site Error:	0.00 ft
Survey Program: 0-UNKNOWN												Offset Well Error:	0.00 ft
Reference	Offset	Semi Major Axis		Distance		Warning							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	-56.87	7.29	-11.18	13.35				
100.00	100.00	100.00	100.00	1.70	1.70	-56.87	7.29	-11.18	13.35	9.95	3.40	3.925	
200.00	200.00	200.00	200.00	5.70	5.70	-56.87	7.29	-11.18	13.35	1.95	11.40	1.171 Level 2	
300.00	300.00	300.00	300.00	9.70	9.70	-56.87	7.29	-11.18	13.35	-6.05	19.40	0.688 Level 1	
400.00	400.00	400.00	400.00	13.70	13.70	-56.87	7.29	-11.18	13.35	-14.05	27.40	0.487 Level 1	
500.00	500.00	500.00	500.00	17.70	17.70	-56.87	7.29	-11.18	13.35	-22.05	35.40	0.377 Level 1	
600.00	600.00	600.00	600.00	21.70	21.70	-56.87	7.29	-11.18	13.35	-30.05	43.40	0.307 Level 1	
700.00	700.00	700.00	700.00	25.70	25.70	-56.87	7.29	-11.18	13.35	-38.05	51.40	0.260 Level 1	
800.00	800.00	800.00	800.00	29.70	29.70	-56.87	7.29	-11.18	13.35	-46.05	59.40	0.225 Level 1	
900.00	900.00	900.00	900.00	33.70	33.70	-56.87	7.29	-11.18	13.35	-54.05	67.40	0.198 Level 1, CC, SF	
1,000.00	999.98	999.99	999.97	36.06	33.87	-149.38	5.69	-11.85	14.62	-55.28	69.89	0.209 Level 1, ES	
1,100.00	1,099.84	1,099.43	1,099.27	37.11	30.29	-171.60	0.90	-13.86	20.77	-46.46	67.23	0.309 Level 1	
1,200.00	1,199.45	1,197.77	1,197.23	38.56	26.89	172.75	-6.96	-17.16	34.06	-31.02	65.08	0.523 Level 1	
1,300.00	1,298.70	1,294.49	1,293.25	40.41	23.79	164.41	-17.71	-21.68	54.19	-9.34	63.53	0.853 Level 1	
1,400.00	1,397.47	1,389.13	1,386.76	42.63	21.14	159.84	-31.11	-27.31	80.55	17.91	62.63	1.286 Level 3	
1,500.00	1,495.62	1,481.25	1,477.27	45.21	19.17	157.09	-46.88	-33.94	112.73	50.27	62.45	1.805	
1,600.00	1,593.06	1,570.47	1,564.36	48.13	18.12	155.27	-64.71	-41.43	150.43	87.37	63.05	2.386	
1,708.19	1,697.52	1,663.36	1,654.36	51.67	18.12	153.86	-85.92	-50.34	197.13	132.53	64.61	3.051	
1,800.00	1,785.69	1,739.56	1,727.59	54.92	19.05	153.20	-105.31	-58.49	240.20	173.17	67.03	3.584	
1,900.00	1,881.74	1,820.41	1,804.66	58.67	20.84	152.43	-127.85	-67.96	289.15	218.76	70.39	4.108	
2,000.00	1,977.79	1,900.00	1,879.82	62.58	23.34	151.65	-151.99	-78.10	340.19	265.71	74.48	4.567	
2,100.00	2,073.83	1,975.31	1,950.24	66.63	26.40	150.91	-176.59	-88.43	393.24	313.94	79.30	4.959	
2,200.00	2,169.88	2,049.32	2,018.74	70.80	29.76	150.18	-202.42	-99.29	448.24	363.83	84.41	5.310	
2,300.00	2,265.93	2,121.06	2,084.42	75.06	33.26	149.49	-229.01	-110.46	505.11	415.36	89.75	5.628	
2,400.00	2,361.97	2,200.62	2,156.75	79.39	37.46	148.79	-259.57	-123.30	563.18	467.55	95.63	5.889	
2,500.00	2,458.02	2,281.84	2,230.57	83.80	41.87	148.20	-290.78	-136.41	621.31	519.52	101.79	6.104	
2,600.00	2,554.07	2,363.05	2,304.40	88.27	46.36	147.72	-321.99	-149.52	679.49	571.38	108.11	6.285	
2,700.00	2,650.12	2,444.27	2,378.22	92.78	50.90	147.31	-353.21	-162.64	737.68	623.13	114.56	6.439	
2,800.00	2,746.16	2,525.49	2,452.04	97.34	55.48	146.96	-384.42	-175.75	795.90	674.79	121.11	6.572	
2,900.00	2,842.21	2,606.70	2,525.86	101.93	60.10	146.66	-415.63	-188.87	854.14	726.39	127.75	6.686	
3,000.00	2,938.26	2,687.92	2,599.69	106.55	64.75	146.39	-446.85	-201.98	912.39	777.92	134.47	6.785	
3,100.00	3,034.30	2,769.13	2,673.51	111.21	69.42	146.16	-478.06	-215.09	970.65	829.41	141.24	6.872	
3,200.00	3,130.35	2,850.35	2,747.33	115.88	74.11	145.96	-509.27	-228.21	1,028.92	880.85	148.07	6.949	
3,300.00	3,226.40	2,931.57	2,821.16	120.58	78.81	145.77	-540.49	-241.32	1,087.20	932.26	154.93	7.017	
3,400.00	3,322.44	3,012.78	2,894.98	125.30	83.53	145.61	-571.70	-254.44	1,145.48	983.65	161.83	7.078	
3,500.00	3,418.49	3,094.00	2,968.80	130.04	88.25	145.46	-602.91	-267.55	1,203.77	1,035.01	168.77	7.133	
3,600.00	3,514.54	3,175.22	3,042.62	134.79	92.99	145.32	-634.13	-280.67	1,262.07	1,086.34	175.73	7.182	
3,700.00	3,610.58	3,256.43	3,116.45	139.55	97.73	145.20	-665.34	-293.78	1,320.37	1,137.65	182.72	7.226	
3,800.00	3,706.63	3,337.65	3,190.27	144.33	102.48	145.09	-696.55	-306.89	1,378.67	1,188.95	189.72	7.267	
3,900.00	3,802.68	3,418.86	3,264.09	149.12	107.23	144.98	-727.77	-320.01	1,436.98	1,240.23	196.75	7.304	
4,000.00	3,898.73	3,500.08	3,337.92	153.92	111.99	144.89	-758.98	-333.12	1,495.29	1,291.50	203.79	7.337	
4,100.00	3,994.77	3,581.30	3,411.74	158.72	116.75	144.80	-790.19	-346.24	1,553.60	1,342.75	210.85	7.368	
4,200.00	4,090.82	3,662.51	3,485.56	163.54	121.51	144.72	-821.41	-359.35	1,611.91	1,394.00	217.92	7.397	
4,300.00	4,186.87	3,743.73	3,559.38	168.36	126.28	144.64	-852.62	-372.46	1,670.23	1,445.23	225.00	7.423	
4,400.00	4,282.91	3,824.95	3,633.21	173.20	131.05	144.57	-883.83	-385.58	1,728.55	1,496.45	232.09	7.448	
4,500.00	4,378.96	3,906.16	3,707.03	178.03	135.83	144.50	-915.05	-398.69	1,786.87	1,547.67	239.20	7.470	
4,600.00	4,475.01	3,987.38	3,780.85	182.88	140.61	144.44	-946.26	-411.81	1,845.19	1,598.88	246.31	7.491	
4,700.00	4,571.05	4,068.59	3,854.68	187.73	145.38	144.38	-977.47	-424.92	1,903.51	1,650.08	253.43	7.511	
4,800.00	4,667.10	4,149.81	3,928.50	192.58	150.16	144.33	-1,008.69	-438.03	1,961.83	1,701.28	260.56	7.529	
4,900.00	4,763.15	4,231.03	4,002.32	197.44	154.95	144.28	-1,039.90	-451.15	2,020.16	1,752.46	267.69	7.546	
5,000.00	4,859.19	4,312.24	4,076.14	202.30	159.73	144.23	-1,071.11	-464.26	2,078.49	1,803.65	274.84	7.563	
5,100.00	4,955.24	4,393.46	4,149.97	207.17	164.52	144.18	-1,102.33	-477.38	2,136.81	1,854.83	281.99	7.578	

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_CARMA 21-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4879.00ft (Original Well Elev)
Reference Site:	WELD_CARMA 6 PAD	MD Reference:	WELL @ 4879.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CARMA 21-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 21-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-16-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_CARMA 6 PAD - P_CARMA 12-36 - P_CARMA 12-36 - PLAN #1 12-16-09 RHS												Offset Site Error:	0.00 ft
Survey Program: 0-UNKNOWN												Offset Well Error:	0.00 ft
Reference	Offset	Semi Major Axis					Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,200.00	5,051.29	4,474.67	4,223.79	212.04	169.30	144.14	-1,133.54	-490.49	2,195.14	1,906.00	289.14	7.592	
5,300.00	5,147.34	4,555.89	4,297.61	216.92	174.09	144.10	-1,164.75	-503.61	2,253.47	1,957.17	296.30	7.605	
5,404.27	5,247.48	4,640.57	4,374.59	222.00	179.08	144.05	-1,197.30	-517.28	2,314.29	2,010.52	303.77	7.619	
5,500.00	5,339.86	4,719.05	4,445.92	226.59	183.71	144.77	-1,227.46	-529.95	2,369.07	2,056.02	313.05	7.568	
5,600.00	5,437.19	4,802.51	4,521.78	231.19	188.64	145.40	-1,259.54	-543.43	2,423.98	2,101.38	322.60	7.514	
5,700.00	5,535.26	4,887.39	4,598.94	235.61	193.64	145.93	-1,292.16	-557.13	2,476.49	2,144.51	331.97	7.460	
5,800.00	5,633.96	4,973.59	4,677.29	239.83	198.73	146.36	-1,325.29	-571.05	2,526.53	2,185.40	341.12	7.406	
5,900.00	5,733.16	5,060.99	4,756.73	243.87	203.89	146.70	-1,358.88	-585.16	2,574.07	2,224.03	350.03	7.354	
6,000.00	5,832.73	5,149.50	4,837.19	247.72	209.12	146.97	-1,392.89	-599.46	2,619.06	2,260.40	358.67	7.302	
6,100.00	5,932.57	5,239.01	4,918.55	251.39	214.40	147.15	-1,427.29	-613.91	2,661.49	2,294.49	367.00	7.252	
6,200.00	6,032.54	5,329.40	5,000.71	254.88	219.74	147.26	-1,462.03	-628.51	2,701.33	2,326.30	375.03	7.203	
6,212.46	6,045.00	5,340.73	5,011.00	255.16	220.41	-131.57	-1,466.39	-630.33	2,706.11	2,330.27	375.84	7.200	
6,300.00	6,132.54	5,420.30	5,083.33	256.12	225.11	-131.90	-1,496.97	-643.18	2,739.60	2,359.67	379.93	7.211	
6,400.00	6,232.54	5,511.19	5,165.95	257.28	230.47	-132.26	-1,531.90	-657.86	2,777.95	2,393.31	384.64	7.222	
6,500.00	6,332.54	5,602.09	5,248.57	258.48	235.84	-132.61	-1,566.83	-672.54	2,816.39	2,426.98	389.40	7.233	
6,600.00	6,432.54	5,692.99	5,331.19	259.75	241.21	-132.96	-1,601.77	-687.21	2,854.92	2,460.70	394.22	7.242	
6,700.00	6,532.54	5,777.20	5,414.57	261.07	246.47	-133.26	-1,636.88	-701.88	2,893.07	2,494.41	400.00	7.250	
6,800.00	6,632.54	5,866.50	5,500.00	262.44	251.62	-133.55	-1,672.03	-716.55	2,931.14	2,527.92	405.77	7.257	
6,900.00	6,732.54	5,955.81	5,585.41	263.87	256.73	-133.84	-1,707.18	-731.22	2,969.21	2,561.43	411.54	7.264	
7,000.00	6,832.54	6,045.12	5,670.32	265.35	261.84	-134.13	-1,742.33	-745.89	3,007.28	2,594.94	417.31	7.271	
7,100.00	6,932.54	6,134.43	5,755.23	266.88	266.95	-134.42	-1,777.48	-760.56	3,045.35	2,628.45	423.08	7.278	
7,200.00	7,032.54	6,223.74	5,840.14	268.46	272.06	-134.71	-1,812.63	-775.23	3,083.42	2,661.96	428.85	7.285	
7,300.00	7,132.54	6,313.05	5,925.05	270.10	277.17	-135.00	-1,847.78	-789.90	3,121.49	2,695.47	434.62	7.292	
7,400.00	7,232.54	6,402.36	6,009.96	271.78	282.28	-135.29	-1,882.93	-804.57	3,159.56	2,728.98	440.39	7.299	
7,500.00	7,332.54	6,491.67	6,094.87	273.51	287.39	-135.58	-1,918.08	-819.24	3,197.63	2,762.49	446.16	7.306	
7,600.00	7,432.54	6,580.98	6,179.78	275.29	292.50	-135.87	-1,953.23	-833.91	3,235.70	2,796.00	451.93	7.313	
7,700.00	7,532.54	6,670.29	6,264.69	277.11	297.61	-136.16	-1,988.38	-848.58	3,273.77	2,829.51	457.70	7.320	
7,800.00	7,632.54	6,759.60	6,349.60	278.98	302.72	-136.45	-2,023.53	-863.25	3,311.84	2,863.02	463.47	7.327	
7,900.00	7,732.54	6,848.91	6,434.51	280.90	307.83	-136.74	-2,058.68	-877.92	3,349.91	2,896.53	469.24	7.334	
8,000.00	7,832.54	6,938.22	6,519.42	282.86	312.94	-137.03	-2,093.83	-892.59	3,387.98	2,930.04	475.01	7.341	
8,057.46	7,890.00	8,293.97	7,890.00	284.00	318.05	-137.32	-2,128.98	-907.26	3,426.05	2,963.55	480.78	7.348	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CARMA 21-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4879.00ft (Original Well Elev)
Reference Site:	WELD_CARMA 6 PAD	MD Reference:	WELL @ 4879.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CARMA 21-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 21-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-16-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_CARMA 6 PAD - P_CARMA 22-36 - P_CARMA 22-36 - PLAN #1 12-16-09 RHS												Offset Site Error:	0.00 ft
Survey Program: 0-UNKNOWN												Offset Well Error:	0.00 ft
Reference	Offset	Semi Major Axis		Distance		Warning							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	134.37	-10.93	11.18	15.63				
100.00	100.00	100.00	100.00	1.70	1.70	134.37	-10.93	11.18	15.63	12.23	3.40	4.598	
200.00	200.00	200.00	200.00	5.70	5.70	134.37	-10.93	11.18	15.63	4.23	11.40	1.371 Level 3	
300.00	300.00	300.00	300.00	9.70	9.70	134.37	-10.93	11.18	15.63	-3.77	19.40	0.806 Level 1	
400.00	400.00	400.00	400.00	13.70	13.70	134.37	-10.93	11.18	15.63	-11.77	27.40	0.571 Level 1	
500.00	500.00	500.00	500.00	17.70	17.70	134.37	-10.93	11.18	15.63	-19.77	35.40	0.442 Level 1	
600.00	600.00	600.00	600.00	21.70	21.70	134.37	-10.93	11.18	15.63	-27.77	43.40	0.360 Level 1	
700.00	700.00	700.00	700.00	25.70	25.70	134.37	-10.93	11.18	15.63	-35.77	51.40	0.304 Level 1	
800.00	800.00	800.00	800.00	29.70	29.70	134.37	-10.93	11.18	15.63	-43.77	59.40	0.263 Level 1	
900.00	900.00	900.00	900.00	33.70	33.70	134.37	-10.93	11.18	15.63	-51.77	67.40	0.232 Level 1, CC	
926.07	926.07	925.99	925.99	34.32	33.70	53.91	-11.05	11.16	15.64	-52.38	68.02	0.230 Level 1	
1,000.00	999.98	999.59	999.57	36.06	33.72	63.25	-12.65	10.96	15.89	-53.88	69.77	0.228 Level 1, ES, SF	
1,100.00	1,099.84	1,098.73	1,098.57	37.11	29.81	88.28	-17.77	10.32	19.19	-47.72	66.92	0.287 Level 1	
1,200.00	1,199.45	1,196.95	1,196.42	38.56	25.98	110.46	-26.19	9.27	29.43	-35.07	64.50	0.456 Level 1	
1,300.00	1,298.70	1,293.83	1,292.59	40.41	22.30	122.83	-37.75	7.83	46.84	-15.67	62.50	0.749 Level 1	
1,400.00	1,397.47	1,388.97	1,386.60	42.63	18.93	129.31	-52.24	6.02	70.42	9.43	60.99	1.155 Level 2	
1,500.00	1,495.62	1,481.99	1,477.99	45.21	16.11	132.89	-69.39	3.89	99.58	39.53	60.05	1.658	
1,600.00	1,593.06	1,572.56	1,566.40	48.13	14.21	134.97	-88.91	1.45	133.95	74.15	59.80	2.240	
1,708.19	1,697.52	1,667.86	1,658.70	51.67	13.41	136.29	-112.43	-1.48	176.70	116.28	60.42	2.924	
1,800.00	1,785.69	1,751.11	1,739.04	54.92	14.32	137.54	-134.08	-4.18	215.20	152.91	62.29	3.455	
1,900.00	1,881.74	1,841.80	1,826.56	58.67	16.22	138.48	-157.67	-7.12	257.21	191.58	65.62	3.920	
2,000.00	1,977.79	1,932.48	1,914.07	62.58	18.97	139.16	-181.26	-10.06	299.25	228.74	70.51	4.244	
2,100.00	2,073.83	2,023.16	2,001.58	66.63	22.27	139.66	-204.85	-13.01	341.33	264.99	76.34	4.471	
2,200.00	2,169.88	2,113.84	2,089.09	70.80	25.90	140.06	-228.44	-15.95	383.42	300.60	82.82	4.630	
2,300.00	2,265.93	2,204.52	2,176.60	75.06	29.74	140.38	-252.03	-18.89	425.52	335.85	89.67	4.746	
2,400.00	2,361.97	2,295.21	2,264.11	79.39	33.73	140.64	-275.62	-21.83	467.63	370.89	96.74	4.834	
2,500.00	2,458.02	2,385.89	2,351.62	83.80	37.81	140.86	-299.20	-24.77	509.75	405.77	103.98	4.903	
2,600.00	2,554.07	2,476.57	2,439.13	88.27	41.96	141.04	-322.79	-27.71	551.87	440.56	111.31	4.958	
2,700.00	2,650.12	2,567.25	2,526.64	92.78	46.15	141.20	-346.38	-30.65	594.00	475.27	118.73	5.003	
2,800.00	2,746.16	2,657.94	2,614.15	97.34	50.37	141.34	-369.97	-33.60	636.13	509.91	126.22	5.040	
2,900.00	2,842.21	2,748.62	2,701.66	101.93	54.63	141.46	-393.56	-36.54	678.26	544.51	133.75	5.071	
3,000.00	2,938.26	2,839.30	2,789.18	106.55	58.90	141.57	-417.15	-39.48	720.40	579.07	141.33	5.097	
3,100.00	3,034.30	2,929.98	2,876.69	111.21	63.19	141.66	-440.74	-42.42	762.54	613.59	148.95	5.120	
3,200.00	3,130.35	3,020.66	2,964.20	115.88	67.50	141.75	-464.32	-45.36	804.67	648.08	156.59	5.139	
3,300.00	3,226.40	3,111.35	3,051.71	120.58	71.81	141.82	-487.91	-48.30	846.81	682.55	164.27	5.155	
3,400.00	3,322.44	3,202.03	3,139.22	125.30	76.14	141.89	-511.50	-51.24	888.96	716.99	171.96	5.169	
3,500.00	3,418.49	3,292.71	3,226.73	130.04	80.47	141.95	-535.09	-54.19	931.10	751.42	179.68	5.182	
3,600.00	3,514.54	3,383.39	3,314.24	134.79	84.82	142.01	-558.68	-57.13	973.24	785.82	187.42	5.193	
3,700.00	3,610.58	3,474.07	3,401.75	139.55	89.16	142.06	-582.27	-60.07	1,015.38	820.22	195.17	5.203	
3,800.00	3,706.63	3,564.76	3,489.26	144.33	93.51	142.11	-605.86	-63.01	1,057.53	854.60	202.93	5.211	
3,900.00	3,802.68	3,655.44	3,576.77	149.12	97.87	142.16	-629.45	-65.95	1,099.67	888.96	210.71	5.219	
4,000.00	3,898.73	3,746.12	3,664.28	153.92	102.23	142.20	-653.03	-68.89	1,141.82	923.32	218.50	5.226	
4,100.00	3,994.77	3,836.80	3,751.80	158.72	106.59	142.24	-676.62	-71.83	1,183.96	957.67	226.30	5.232	
4,200.00	4,090.82	3,927.48	3,839.31	163.54	110.96	142.27	-700.21	-74.78	1,226.11	992.00	234.11	5.237	
4,300.00	4,186.87	4,018.17	3,926.82	168.36	115.33	142.31	-723.80	-77.72	1,268.26	1,026.33	241.92	5.242	
4,400.00	4,282.91	4,108.85	4,014.33	173.20	119.70	142.34	-747.39	-80.66	1,310.40	1,060.66	249.75	5.247	
4,500.00	4,378.96	4,199.53	4,101.84	178.03	124.07	142.37	-770.98	-83.60	1,352.55	1,094.97	257.58	5.251	
4,600.00	4,475.01	4,290.21	4,189.35	182.88	128.45	142.39	-794.57	-86.54	1,394.70	1,129.28	265.42	5.255	
4,700.00	4,571.05	4,380.89	4,276.86	187.73	132.82	142.42	-818.15	-89.48	1,436.85	1,163.58	273.26	5.258	
4,800.00	4,667.10	4,471.58	4,364.37	192.58	137.20	142.44	-841.74	-92.42	1,478.99	1,197.88	281.11	5.261	
4,900.00	4,763.15	4,562.26	4,451.88	197.44	141.58	142.47	-865.33	-95.37	1,521.14	1,232.17	288.97	5.264	
5,000.00	4,859.19	4,652.94	4,539.39	202.30	145.96	142.49	-888.92	-98.31	1,563.29	1,266.46	296.83	5.267	

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_CARMA 21-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4879.00ft (Original Well Elev)
Reference Site:	WELD_CARMA 6 PAD	MD Reference:	WELL @ 4879.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CARMA 21-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 21-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-16-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_CARMA 6 PAD - P_CARMA 22-36 - P_CARMA 22-36 - PLAN #1 12-16-09 RHS												Offset Site Error:	0.00 ft
Survey Program: 0-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.00	4,955.24	4,743.62	4,626.90	207.17	150.34	142.51	-912.51	-101.25	1,605.44	1,300.75	304.69	5.269	
5,200.00	5,051.29	4,834.30	4,714.42	212.04	154.72	142.53	-936.10	-104.19	1,647.59	1,335.03	312.56	5.271	
5,300.00	5,147.34	4,924.99	4,801.93	216.92	159.11	142.55	-959.69	-107.13	1,689.74	1,369.30	320.43	5.273	
5,404.27	5,247.48	5,019.54	4,893.17	222.00	163.68	142.57	-984.28	-110.20	1,733.68	1,405.04	328.64	5.275	
5,500.00	5,339.86	5,106.87	4,977.45	226.59	167.90	143.07	-1,007.00	-113.03	1,772.88	1,435.03	337.85	5.248	
5,600.00	5,437.19	5,199.15	5,066.51	231.19	172.36	143.48	-1,031.00	-116.02	1,811.31	1,464.03	347.28	5.216	
5,700.00	5,535.26	5,292.39	5,156.48	235.61	176.87	143.78	-1,055.26	-119.05	1,847.15	1,490.66	356.49	5.182	
5,800.00	5,633.96	5,386.48	5,247.28	239.83	181.42	143.98	-1,079.73	-122.10	1,880.36	1,514.91	365.45	5.145	
5,900.00	5,733.16	5,503.93	5,360.71	243.87	187.08	144.02	-1,109.97	-125.87	1,910.81	1,535.73	375.07	5.095	
6,000.00	5,832.73	5,709.51	5,561.54	247.72	196.37	143.81	-1,153.35	-131.28	1,934.86	1,547.01	387.86	4.989	
6,100.00	5,932.57	5,922.14	5,772.00	251.39	205.02	143.66	-1,183.06	-134.99	1,950.54	1,550.22	400.32	4.872	
6,200.00	6,032.54	6,138.99	5,988.32	254.88	212.87	143.57	-1,197.33	-136.76	1,957.55	1,545.26	412.29	4.748	
6,212.46	6,045.00	6,166.15	6,015.48	255.16	213.79	-135.28	-1,197.97	-136.84	1,957.81	1,544.23	413.58	4.734	
6,300.00	6,132.54	6,283.21	6,132.54	256.12	212.95	-135.29	-1,198.48	-136.91	1,958.00	1,544.40	413.60	4.734	
6,400.00	6,232.54	6,383.21	6,232.54	257.28	209.76	-135.29	-1,198.48	-136.91	1,958.00	1,546.78	411.22	4.761	
6,500.00	6,332.54	6,483.21	6,332.54	258.48	206.61	-135.29	-1,198.48	-136.91	1,958.00	1,549.08	408.92	4.788	
6,600.00	6,432.54	6,583.21	6,432.54	259.75	203.48	-135.29	-1,198.48	-136.91	1,958.00	1,551.30	406.69	4.814	
6,700.00	6,532.54	6,683.21	6,532.54	261.07	200.39	-135.29	-1,198.48	-136.91	1,958.00	1,553.44	404.55	4.840	
6,800.00	6,632.54	6,783.21	6,632.54	262.44	197.33	-135.29	-1,198.48	-136.91	1,958.00	1,555.50	402.49	4.865	
6,900.00	6,732.54	6,883.21	6,732.54	263.87	194.30	-135.29	-1,198.48	-136.91	1,958.00	1,557.48	400.51	4.889	
7,000.00	6,832.54	6,983.21	6,832.54	265.35	191.31	-135.29	-1,198.48	-136.91	1,958.00	1,559.38	398.61	4.912	
7,100.00	6,932.54	7,083.21	6,932.54	266.88	188.36	-135.29	-1,198.48	-136.91	1,958.00	1,561.20	396.80	4.935	
7,200.00	7,032.54	7,183.21	7,032.54	268.46	185.44	-135.29	-1,198.48	-136.91	1,958.00	1,562.94	395.06	4.956	
7,300.00	7,132.54	7,283.21	7,132.54	270.10	182.57	-135.29	-1,198.48	-136.91	1,958.00	1,564.59	393.40	4.977	
7,400.00	7,232.54	7,383.21	7,232.54	271.78	179.74	-135.29	-1,198.48	-136.91	1,958.00	1,566.16	391.83	4.997	
7,500.00	7,332.54	7,483.21	7,332.54	273.51	176.95	-135.29	-1,198.48	-136.91	1,958.00	1,567.65	390.35	5.016	
7,600.00	7,432.54	7,583.21	7,432.54	275.29	174.22	-135.29	-1,198.48	-136.91	1,958.00	1,569.05	388.94	5.034	
7,700.00	7,532.54	7,683.21	7,532.54	277.11	171.53	-135.29	-1,198.48	-136.91	1,958.00	1,570.37	387.63	5.051	
7,800.00	7,632.54	7,783.21	7,632.54	278.98	168.89	-135.29	-1,198.48	-136.91	1,958.00	1,571.60	386.40	5.067	
7,900.00	7,732.54	7,883.21	7,732.54	280.90	166.31	-135.29	-1,198.48	-136.91	1,958.00	1,572.73	385.26	5.082	
8,000.00	7,832.54	7,983.21	7,832.54	282.86	163.79	-135.29	-1,198.48	-136.91	1,958.00	1,573.78	384.22	5.096	
8,057.46	7,890.00	8,040.68	7,890.00	284.00	162.36	-135.29	-1,198.48	-136.91	1,958.00	1,574.34	383.66	5.103	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CARMA 21-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4879.00ft (Original Well Elev)
Reference Site:	WELD_CARMA 6 PAD	MD Reference:	WELL @ 4879.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CARMA 21-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 21-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-16-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_CARMA 6 PAD - P_CARMA 32-36 - P_CARMA 32-36 - PLAN #1 12-16-09 RHS												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Reference	Offset	Semi Major Axis		Distance									
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	-50.82	18.21	-22.35	28.83				
100.00	100.00	100.00	100.00	1.70	0.10	-50.82	18.21	-22.35	28.83	27.04	1.80	16.058	
200.00	200.00	200.00	200.00	5.70	0.32	-50.82	18.21	-22.35	28.83	22.81	6.02	4.789	
300.00	300.00	300.00	300.00	9.70	0.55	-50.82	18.21	-22.35	28.83	18.59	10.25	2.814	
400.00	400.00	400.00	400.00	13.70	0.77	-50.82	18.21	-22.35	28.83	14.36	14.47	1.993	
500.00	500.00	500.00	500.00	17.70	0.99	-50.82	18.21	-22.35	28.83	10.14	18.69	1.542	
600.00	600.00	600.00	600.00	21.70	1.22	-50.82	18.21	-22.35	28.83	5.91	22.92	1.258	Level 3
700.00	700.00	700.00	700.00	25.70	1.44	-50.82	18.21	-22.35	28.83	1.69	27.14	1.062	Level 2
800.00	800.00	800.00	800.00	29.70	1.67	-50.82	18.21	-22.35	28.83	-2.54	31.37	0.919	Level 1
900.00	900.00	900.00	900.00	33.70	1.89	-50.82	18.21	-22.35	28.83	-6.76	35.59	0.810	Level 1, CC
1,000.00	999.98	999.69	999.67	36.06	2.10	-137.59	17.10	-23.68	30.48	-7.66	38.14	0.799	Level 1, ES, SF
1,100.00	1,099.84	1,098.72	1,098.56	37.11	2.28	-150.79	13.81	-27.65	36.84	-2.47	39.31	0.937	Level 1
1,200.00	1,199.45	1,196.42	1,195.89	38.56	2.48	-164.06	8.41	-34.13	50.12	9.33	40.80	1.229	Level 2
1,300.00	1,298.70	1,292.18	1,290.95	40.41	2.70	-173.61	1.07	-42.95	71.00	28.40	42.59	1.667	
1,400.00	1,397.47	1,385.43	1,383.11	42.63	2.95	-179.79	-8.03	-53.89	99.05	54.39	44.66	2.218	
1,500.00	1,495.62	1,475.68	1,471.81	45.21	3.23	176.21	-18.66	-66.66	133.73	86.76	46.97	2.847	
1,600.00	1,593.06	1,562.50	1,556.61	48.13	3.53	173.51	-30.57	-80.97	174.58	125.10	49.47	3.529	
1,708.19	1,697.52	1,652.15	1,643.54	51.67	3.89	171.46	-44.59	-97.81	225.25	172.89	52.36	4.302	
1,800.00	1,785.69	1,725.17	1,713.81	54.92	4.22	170.29	-57.29	-113.06	271.96	216.66	55.29	4.919	
1,900.00	1,881.74	1,800.00	1,785.27	58.67	4.59	169.28	-71.48	-130.12	325.01	266.40	58.61	5.545	
2,000.00	1,977.79	1,876.90	1,858.08	62.58	5.02	168.38	-87.31	-149.14	380.21	318.14	62.07	6.125	
2,100.00	2,073.83	1,949.03	1,925.74	66.63	5.46	167.63	-103.29	-168.34	437.47	371.85	65.62	6.666	
2,200.00	2,169.88	2,018.70	1,990.49	70.80	5.91	166.98	-119.75	-188.12	496.69	427.43	69.26	7.172	
2,300.00	2,265.93	2,085.97	2,052.39	75.06	6.39	166.40	-136.59	-208.36	557.77	484.80	72.96	7.644	
2,400.00	2,361.97	2,151.65	2,112.21	79.39	6.88	165.88	-153.93	-229.19	620.60	543.87	76.73	8.088	
2,500.00	2,458.02	2,228.67	2,182.04	83.80	7.48	165.35	-174.71	-254.15	684.21	603.61	80.60	8.489	
2,600.00	2,554.07	2,305.68	2,251.87	88.27	8.09	164.90	-195.49	-279.12	747.85	663.34	84.52	8.849	
2,700.00	2,650.12	2,382.70	2,321.71	92.78	8.71	164.53	-216.27	-304.08	811.52	723.05	88.47	9.173	
2,800.00	2,746.16	2,459.72	2,391.54	97.34	9.34	164.21	-237.04	-329.05	875.20	782.73	92.47	9.465	
2,900.00	2,842.21	2,536.73	2,461.37	101.93	9.98	163.93	-257.82	-354.01	938.90	842.40	96.49	9.730	
3,000.00	2,938.26	2,613.75	2,531.20	106.55	10.61	163.69	-278.60	-378.98	1,002.60	902.06	100.55	9.972	
3,100.00	3,034.30	2,690.76	2,601.04	111.21	11.25	163.48	-299.38	-403.94	1,066.32	961.69	104.62	10.192	
3,200.00	3,130.35	2,767.78	2,670.87	115.88	11.90	163.29	-320.15	-428.91	1,130.04	1,021.32	108.73	10.393	
3,300.00	3,226.40	2,844.80	2,740.70	120.58	12.55	163.12	-340.93	-453.87	1,193.77	1,080.93	112.85	10.579	
3,400.00	3,322.44	2,921.81	2,810.53	125.30	13.20	162.97	-361.71	-478.84	1,257.51	1,140.52	116.99	10.749	
3,500.00	3,418.49	2,998.83	2,880.37	130.04	13.85	162.84	-382.49	-503.80	1,321.25	1,200.11	121.14	10.907	
3,600.00	3,514.54	3,075.85	2,950.20	134.79	14.50	162.71	-403.26	-528.77	1,384.99	1,259.68	125.31	11.052	
3,700.00	3,610.58	3,152.86	3,020.03	139.55	15.15	162.60	-424.04	-553.73	1,448.74	1,319.25	129.50	11.188	
3,800.00	3,706.63	3,229.88	3,089.86	144.33	15.81	162.49	-444.82	-578.69	1,512.49	1,378.80	133.69	11.313	
3,900.00	3,802.68	3,306.89	3,159.70	149.12	16.47	162.40	-465.60	-603.66	1,576.25	1,438.35	137.90	11.431	
4,000.00	3,898.73	3,383.91	3,229.53	153.92	17.12	162.31	-486.38	-628.62	1,640.00	1,497.89	142.11	11.540	
4,100.00	3,994.77	3,460.93	3,299.36	158.72	17.78	162.23	-507.15	-653.59	1,703.76	1,557.43	146.33	11.643	
4,200.00	4,090.82	3,537.94	3,369.19	163.54	18.44	162.15	-527.93	-678.55	1,767.52	1,616.96	150.57	11.739	
4,300.00	4,186.87	3,614.96	3,439.02	168.36	19.10	162.08	-548.71	-703.52	1,831.29	1,676.48	154.81	11.829	
4,400.00	4,282.91	3,691.98	3,508.86	173.20	19.76	162.02	-569.49	-728.48	1,895.05	1,735.99	159.05	11.914	
4,500.00	4,378.96	3,768.99	3,578.69	178.03	20.43	161.96	-590.26	-753.45	1,958.81	1,795.51	163.31	11.995	
4,600.00	4,475.01	3,846.01	3,648.52	182.88	21.09	161.90	-611.04	-778.41	2,022.58	1,855.01	167.57	12.070	
4,700.00	4,571.05	3,923.02	3,718.35	187.73	21.75	161.85	-631.82	-803.38	2,086.35	1,914.52	171.83	12.142	
4,800.00	4,667.10	4,000.04	3,788.19	192.58	22.41	161.80	-652.60	-828.34	2,150.12	1,974.01	176.10	12.209	
4,900.00	4,763.15	4,077.06	3,858.02	197.44	23.08	161.75	-673.37	-853.31	2,213.89	2,033.51	180.38	12.274	
5,000.00	4,859.19	4,154.07	3,927.85	202.30	23.74	161.70	-694.15	-878.27	2,277.66	2,093.00	184.66	12.335	
5,100.00	4,955.24	4,231.09	3,997.68	207.17	24.40	161.66	-714.93	-903.24	2,341.43	2,152.49	188.94	12.392	

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_CARMA 21-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4879.00ft (Original Well Elev)
Reference Site:	WELD_CARMA 6 PAD	MD Reference:	WELL @ 4879.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CARMA 21-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 21-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-16-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_CARMA 6 PAD - P_CARMA 32-36 - P_CARMA 32-36 - PLAN #1 12-16-09 RHS												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Reference	Offset	Semi Major Axis		Distance									
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
5,200.00	5,051.29	4,308.11	4,067.52	212.04	25.07	161.62	-735.71	-928.20	2,405.20	2,211.97	193.23	12.448	
5,300.00	5,147.34	4,385.12	4,137.35	216.92	25.73	161.58	-756.48	-953.16	2,468.97	2,271.45	197.52	12.500	
5,404.27	5,247.48	4,465.43	4,210.16	222.00	26.43	161.54	-778.15	-979.19	2,535.47	2,333.47	201.99	12.552	
5,500.00	5,339.86	4,540.10	4,277.87	226.59	27.07	161.98	-798.29	-1,003.40	2,595.34	2,389.07	206.26	12.583	
5,600.00	5,437.19	4,620.06	4,350.37	231.19	27.76	162.36	-819.87	-1,029.32	2,655.31	2,444.78	210.53	12.612	
5,700.00	5,535.26	4,701.93	4,424.61	235.61	28.47	162.68	-841.95	-1,055.86	2,712.60	2,498.01	214.59	12.641	
5,800.00	5,633.96	4,785.61	4,500.48	239.83	29.19	162.94	-864.53	-1,082.98	2,767.13	2,548.70	218.43	12.668	
5,900.00	5,733.16	4,870.98	4,577.89	243.87	29.93	163.15	-887.56	-1,110.66	2,818.85	2,596.80	222.05	12.695	
6,000.00	5,832.73	4,957.96	4,656.75	247.72	30.68	163.32	-911.03	-1,138.85	2,867.69	2,642.26	225.43	12.721	
6,100.00	5,932.57	5,046.43	4,736.97	251.39	31.45	163.43	-934.89	-1,167.53	2,913.61	2,685.03	228.58	12.747	
6,200.00	6,032.54	5,136.29	4,818.45	254.88	32.22	163.51	-959.14	-1,196.65	2,956.55	2,725.07	231.48	12.773	
6,212.46	6,045.00	6,402.83	6,045.00	255.16	36.90	-116.62	-1,132.87	-1,405.40	2,959.55	2,724.62	234.94	12.597	
6,300.00	6,132.54	6,490.37	6,132.54	256.12	36.96	-116.62	-1,132.87	-1,405.40	2,959.55	2,723.42	236.13	12.533	
6,400.00	6,232.54	6,590.37	6,232.54	257.28	37.03	-116.62	-1,132.87	-1,405.40	2,959.55	2,721.99	237.57	12.458	
6,500.00	6,332.54	6,690.37	6,332.54	258.48	37.11	-116.62	-1,132.87	-1,405.40	2,959.55	2,720.49	239.07	12.380	
6,600.00	6,432.54	6,790.37	6,432.54	259.75	37.18	-116.62	-1,132.87	-1,405.40	2,959.55	2,718.92	240.63	12.299	
6,700.00	6,532.54	6,890.37	6,532.54	261.07	37.25	-116.62	-1,132.87	-1,405.40	2,959.55	2,717.30	242.26	12.217	
6,800.00	6,632.54	6,990.37	6,632.54	262.44	37.33	-116.62	-1,132.87	-1,405.40	2,959.55	2,715.60	243.95	12.132	
6,900.00	6,732.54	7,090.37	6,732.54	263.87	37.41	-116.62	-1,132.87	-1,405.40	2,959.55	2,713.85	245.70	12.045	
7,000.00	6,832.54	7,190.37	6,832.54	265.35	37.49	-116.62	-1,132.87	-1,405.40	2,959.55	2,712.04	247.52	11.957	
7,100.00	6,932.54	7,290.37	6,932.54	266.88	37.56	-116.62	-1,132.87	-1,405.40	2,959.55	2,710.16	249.39	11.867	
7,200.00	7,032.54	7,390.37	7,032.54	268.46	37.65	-116.62	-1,132.87	-1,405.40	2,959.55	2,708.23	251.32	11.776	
7,300.00	7,132.54	7,490.37	7,132.54	270.10	37.73	-116.62	-1,132.87	-1,405.40	2,959.55	2,706.25	253.31	11.684	
7,400.00	7,232.54	7,590.37	7,232.54	271.78	37.81	-116.62	-1,132.87	-1,405.40	2,959.55	2,704.20	255.35	11.590	
7,500.00	7,332.54	7,690.37	7,332.54	273.51	37.89	-116.62	-1,132.87	-1,405.40	2,959.55	2,702.11	257.45	11.496	
7,600.00	7,432.54	7,790.37	7,432.54	275.29	37.98	-116.62	-1,132.87	-1,405.40	2,959.55	2,699.96	259.60	11.401	
7,700.00	7,532.54	7,890.37	7,532.54	277.11	38.07	-116.62	-1,132.87	-1,405.40	2,959.55	2,697.76	261.80	11.305	
7,800.00	7,632.54	7,990.37	7,632.54	278.98	38.15	-116.62	-1,132.87	-1,405.40	2,959.55	2,695.51	264.04	11.209	
7,900.00	7,732.54	8,090.37	7,732.54	280.90	38.24	-116.62	-1,132.87	-1,405.40	2,959.55	2,693.21	266.34	11.112	
8,000.00	7,832.54	8,190.37	7,832.54	282.86	38.33	-116.62	-1,132.87	-1,405.40	2,959.55	2,690.87	268.69	11.015	
8,034.75	7,867.29	8,225.12	7,867.29	283.55	38.36	-116.62	-1,132.87	-1,405.40	2,959.55	2,690.04	269.52	10.981	
8,057.46	7,890.00	8,238.83	7,881.00	284.00	38.38	-116.62	-1,132.87	-1,405.40	2,959.57	2,689.52	270.04	10.960	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CARMA 21-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4879.00ft (Original Well Elev)
Reference Site:	WELD_CARMA 6 PAD	MD Reference:	WELL @ 4879.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CARMA 21-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 21-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-16-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_CARMA 6 PAD - P_CARMA 3-36 - P_CARMA 3-36 - PLAN #1 12-16-09 RHS												Offset Site Error:	0.00 ft
Survey Program: 0-UNKNOWN												Offset Well Error:	0.00 ft
Reference	Offset	Semi Major Axis					Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	-49.01	29.14	-33.53	44.42				
100.00	100.00	100.00	100.00	1.70	1.70	-49.01	29.14	-33.53	44.42	41.02	3.40	13.065	
200.00	200.00	200.00	200.00	5.70	5.70	-49.01	29.14	-33.53	44.42	33.02	11.40	3.896	
300.00	300.00	300.00	300.00	9.70	9.70	-49.01	29.14	-33.53	44.42	25.02	19.40	2.290	
400.00	400.00	400.00	400.00	13.70	13.70	-49.01	29.14	-33.53	44.42	17.02	27.40	1.621	
500.00	500.00	500.00	500.00	17.70	17.70	-49.01	29.14	-33.53	44.42	9.02	35.40	1.255	Level 3
600.00	600.00	600.00	600.00	21.70	21.70	-49.01	29.14	-33.53	44.42	1.02	43.40	1.023	Level 2
700.00	700.00	700.00	700.00	25.70	25.70	-49.01	29.14	-33.53	44.42	-6.98	51.40	0.864	Level 1
800.00	800.00	800.00	800.00	29.70	29.70	-49.01	29.14	-33.53	44.42	-14.98	59.40	0.748	Level 1
900.00	900.00	900.00	900.00	33.70	33.70	-49.01	29.14	-33.53	44.42	-22.98	67.40	0.659	Level 1, CC
1,000.00	999.98	999.80	999.78	36.06	37.36	-129.64	30.57	-32.55	45.75	-27.65	73.40	0.623	Level 1, SF
1,100.00	1,099.84	1,099.49	1,099.32	37.11	40.79	-128.26	34.87	-29.61	49.76	-28.05	77.80	0.640	Level 1, ES
1,200.00	1,199.45	1,198.94	1,198.40	38.56	44.31	-126.38	42.01	-24.75	56.47	-26.19	82.66	0.683	Level 1
1,300.00	1,298.70	1,298.06	1,296.78	40.41	47.94	-124.38	51.95	-17.97	65.93	-22.02	87.95	0.750	Level 1
1,400.00	1,397.47	1,396.73	1,394.25	42.63	51.66	-122.49	64.63	-9.32	78.13	-15.50	93.63	0.834	Level 1
1,500.00	1,495.62	1,494.85	1,490.59	45.21	55.47	-120.82	79.98	1.15	93.06	-6.63	99.69	0.933	Level 1
1,600.00	1,593.06	1,593.06	1,586.51	48.13	59.40	-119.80	97.38	13.02	110.44	4.33	106.11	1.041	Level 2
1,708.19	1,697.52	1,699.22	1,690.16	51.67	63.74	-120.34	116.32	25.94	131.24	17.92	113.32	1.158	Level 2
1,800.00	1,785.69	1,789.09	1,777.91	54.92	67.47	-121.48	132.35	36.87	149.79	29.87	119.93	1.249	Level 2
1,900.00	1,881.74	1,886.98	1,873.49	58.67	71.59	-122.44	149.82	48.78	170.05	42.69	127.36	1.335	Level 3
2,000.00	1,977.79	1,984.87	1,969.07	62.58	75.74	-123.20	167.28	60.70	190.34	55.34	135.00	1.410	Level 3
2,100.00	2,073.83	2,082.76	2,064.66	66.63	79.94	-123.81	184.74	72.61	210.66	67.85	142.81	1.475	Level 3
2,200.00	2,169.88	2,180.65	2,160.24	70.80	84.16	-124.31	202.21	84.52	230.99	80.24	150.76	1.532	
2,300.00	2,265.93	2,278.55	2,255.82	75.06	88.41	-124.74	219.67	96.43	251.35	92.52	158.82	1.583	
2,400.00	2,361.97	2,376.44	2,351.40	79.39	92.69	-125.10	237.14	108.34	271.71	104.72	166.99	1.627	
2,500.00	2,458.02	2,474.33	2,446.98	83.80	96.99	-125.41	254.60	120.26	292.08	116.84	175.24	1.667	
2,600.00	2,554.07	2,572.22	2,542.57	88.27	101.30	-125.67	272.06	132.17	312.46	128.89	183.56	1.702	
2,700.00	2,650.12	2,670.11	2,638.15	92.78	105.63	-125.91	289.53	144.08	332.84	140.89	191.95	1.734	
2,800.00	2,746.16	2,768.00	2,733.73	97.34	109.97	-126.12	306.99	155.99	353.23	152.84	200.39	1.763	
2,900.00	2,842.21	2,865.90	2,829.31	101.93	114.32	-126.30	324.46	167.90	373.62	164.74	208.88	1.789	
3,000.00	2,938.26	2,963.79	2,924.89	106.55	118.69	-126.47	341.92	179.82	394.02	176.61	217.41	1.812	
3,100.00	3,034.30	3,061.68	3,020.48	111.21	123.06	-126.62	359.38	191.73	414.42	188.44	225.98	1.834	
3,200.00	3,130.35	3,159.57	3,116.06	115.88	127.45	-126.76	376.85	203.64	434.82	200.24	234.58	1.854	
3,300.00	3,226.40	3,257.46	3,211.64	120.58	131.84	-126.88	394.31	215.55	455.22	212.02	243.21	1.872	
3,400.00	3,322.44	3,355.36	3,307.22	125.30	136.24	-126.99	411.78	227.46	475.63	223.77	251.86	1.888	
3,500.00	3,418.49	3,453.25	3,402.80	130.04	140.64	-127.10	429.24	239.38	496.04	235.50	260.54	1.904	
3,600.00	3,514.54	3,551.14	3,498.38	134.79	145.05	-127.19	446.71	251.29	516.44	247.20	269.24	1.918	
3,700.00	3,610.58	3,649.03	3,593.97	139.55	149.46	-127.28	464.17	263.20	536.85	258.90	277.96	1.931	
3,800.00	3,706.63	3,746.92	3,689.55	144.33	153.89	-127.36	481.63	275.11	557.27	270.57	286.69	1.944	
3,900.00	3,802.68	3,844.81	3,785.13	149.12	158.31	-127.44	499.10	287.02	577.68	282.23	295.44	1.955	
4,000.00	3,898.73	3,942.71	3,880.71	153.92	162.74	-127.51	516.56	298.94	598.09	293.88	304.21	1.966	
4,100.00	3,994.77	4,040.60	3,976.29	158.72	167.17	-127.58	534.03	310.85	618.50	305.52	312.99	1.976	
4,200.00	4,090.82	4,138.49	4,071.88	163.54	171.61	-127.64	551.49	322.76	638.92	317.14	321.77	1.986	
4,300.00	4,186.87	4,236.38	4,167.46	168.36	176.04	-127.70	568.95	334.67	659.33	328.76	330.57	1.995	
4,400.00	4,282.91	4,334.27	4,263.04	173.20	180.49	-127.75	586.42	346.58	679.75	340.36	339.38	2.003	
4,500.00	4,378.96	4,432.17	4,358.62	178.03	184.93	-127.80	603.88	358.50	700.17	351.96	348.20	2.011	
4,600.00	4,475.01	4,530.06	4,454.20	182.88	189.38	-127.85	621.35	370.41	720.58	363.55	357.03	2.018	
4,700.00	4,571.05	4,627.95	4,549.79	187.73	193.83	-127.90	638.81	382.32	741.00	375.13	365.87	2.025	
4,800.00	4,667.10	4,725.84	4,645.37	192.58	198.28	-127.94	656.27	394.23	761.42	386.71	374.71	2.032	
4,900.00	4,763.15	4,823.73	4,740.95	197.44	202.73	-127.98	673.74	406.14	781.84	398.27	383.56	2.038	
5,000.00	4,859.19	4,921.62	4,836.53	202.30	207.19	-128.02	691.20	418.05	802.25	409.84	392.42	2.044	
5,100.00	4,955.24	5,019.52	4,932.11	207.17	211.65	-128.06	708.67	429.97	822.67	421.39	401.28	2.050	

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_CARMA 21-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4879.00ft (Original Well Elev)
Reference Site:	WELD_CARMA 6 PAD	MD Reference:	WELL @ 4879.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CARMA 21-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 21-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-16-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_CARMA 6 PAD - P_CARMA 3-36 - P_CARMA 3-36 - PLAN #1 12-16-09 RHS												Offset Site Error:	0.00 ft
Survey Program: 0-UNKNOWN												Offset Well Error:	0.00 ft
Reference	Offset	Semi Major Axis			Distance								Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,200.00	5,051.29	5,117.41	5,027.70	212.04	216.10	-128.10	726.13	441.88	843.09	432.95	410.15	2.056	
5,300.00	5,147.34	5,215.30	5,123.28	216.92	220.57	-128.13	743.59	453.79	863.51	444.49	419.02	2.061	
5,404.27	5,247.48	5,317.37	5,222.94	222.00	225.22	-128.16	761.80	466.21	884.80	456.53	428.28	2.066	
5,500.00	5,339.86	5,411.27	5,314.63	226.59	229.50	-128.41	778.56	477.64	903.38	465.63	437.75	2.064	
5,600.00	5,437.19	5,509.69	5,410.73	231.19	233.99	-128.46	796.12	489.61	920.71	473.21	447.50	2.057	
5,700.00	5,535.26	5,612.88	5,511.84	235.61	238.61	-128.41	813.10	501.20	935.68	478.53	457.16	2.047	
5,800.00	5,633.96	5,716.83	5,614.38	239.83	243.12	-128.37	827.15	510.79	948.04	481.64	466.40	2.033	
5,900.00	5,733.16	5,821.29	5,717.98	243.87	247.48	-128.35	838.18	518.30	957.74	482.54	475.20	2.015	
6,000.00	5,832.73	5,926.15	5,822.39	247.72	251.70	-128.34	846.09	523.70	964.76	481.22	483.54	1.995	
6,100.00	5,932.57	6,031.26	5,927.34	251.39	255.77	-128.35	850.86	526.95	969.09	477.68	491.41	1.972	
6,200.00	6,032.54	6,136.48	6,032.54	254.88	259.61	-128.37	852.44	528.03	970.71	471.99	498.72	1.946	
6,212.46	6,045.00	6,148.94	6,045.00	255.16	260.01	-47.22	852.44	528.03	970.73	471.34	499.38	1.944	
6,300.00	6,132.54	6,236.48	6,132.54	256.12	262.82	-47.22	852.44	528.03	970.73	467.48	503.25	1.929	
6,400.00	6,232.54	6,336.48	6,232.54	257.28	266.04	-47.22	852.44	528.03	970.73	462.98	507.74	1.912	
6,500.00	6,332.54	6,436.48	6,332.54	258.48	269.29	-47.22	852.44	528.03	970.73	458.41	512.32	1.895	
6,600.00	6,432.54	6,536.48	6,432.54	259.75	272.56	-47.22	852.44	528.03	970.73	453.75	516.97	1.878	
6,700.00	6,532.54	6,636.48	6,532.54	261.07	275.84	-47.22	852.44	528.03	970.73	449.03	521.70	1.861	
6,800.00	6,632.54	6,736.48	6,632.54	262.44	279.15	-47.22	852.44	528.03	970.73	444.22	526.50	1.844	
6,900.00	6,732.54	6,836.48	6,732.54	263.87	282.47	-47.22	852.44	528.03	970.73	439.35	531.38	1.827	
7,000.00	6,832.54	6,936.48	6,832.54	265.35	285.81	-47.22	852.44	528.03	970.73	434.40	536.33	1.810	
7,100.00	6,932.54	7,036.48	6,932.54	266.88	289.17	-47.22	852.44	528.03	970.73	429.38	541.35	1.793	
7,200.00	7,032.54	7,136.48	7,032.54	268.46	292.54	-47.22	852.44	528.03	970.73	424.29	546.43	1.776	
7,300.00	7,132.54	7,236.48	7,132.54	270.10	295.93	-47.22	852.44	528.03	970.73	419.14	551.59	1.760	
7,400.00	7,232.54	7,336.48	7,232.54	271.78	299.33	-47.22	852.44	528.03	970.73	413.92	556.81	1.743	
7,500.00	7,332.54	7,436.48	7,332.54	273.51	302.75	-47.22	852.44	528.03	970.73	408.64	562.09	1.727	
7,600.00	7,432.54	7,536.48	7,432.54	275.29	306.18	-47.22	852.44	528.03	970.73	403.30	567.43	1.711	
7,700.00	7,532.54	7,636.48	7,532.54	277.11	309.63	-47.22	852.44	528.03	970.73	397.89	572.83	1.695	
7,800.00	7,632.54	7,736.48	7,632.54	278.98	313.09	-47.22	852.44	528.03	970.73	392.43	578.30	1.679	
7,900.00	7,732.54	7,836.48	7,732.54	280.90	316.56	-47.22	852.44	528.03	970.73	386.91	583.82	1.663	
8,000.00	7,832.54	7,936.48	7,832.54	282.86	320.04	-47.22	852.44	528.03	970.73	381.33	589.39	1.647	
8,032.71	7,865.24	7,969.19	7,865.24	283.51	321.18	-47.22	852.44	528.03	970.73	379.49	591.23	1.642	
8,057.46	7,890.00	7,980.94	7,877.00	284.00	321.59	-47.22	852.44	528.03	970.81	378.64	592.17	1.639	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CARMA 21-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4879.00ft (Original Well Elev)
Reference Site:	WELD_CARMA 6 PAD	MD Reference:	WELL @ 4879.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CARMA 21-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 21-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-16-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_CARMA 6 PAD - P_CARMA 5-36 - P_CARMA 5-36 - PLAN #1 12-16-09 RHS												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Reference	Offset	Semi Major Axis		Distance									
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	-46.29	40.07	-41.91	57.98				
100.00	100.00	100.00	100.00	1.70	0.10	-46.29	40.07	-41.91	57.98	56.18	1.80	32.291	
200.00	200.00	200.00	200.00	5.70	0.32	-46.29	40.07	-41.91	57.98	51.96	6.02	9.631	
300.00	300.00	300.00	300.00	9.70	0.55	-46.29	40.07	-41.91	57.98	47.74	10.25	5.659	
400.00	400.00	400.00	400.00	13.70	0.77	-46.29	40.07	-41.91	57.98	43.51	14.47	4.007	
500.00	500.00	500.00	500.00	17.70	0.99	-46.29	40.07	-41.91	57.98	39.29	18.69	3.101	
600.00	600.00	600.00	600.00	21.70	1.22	-46.29	40.07	-41.91	57.98	35.06	22.92	2.530	
700.00	700.00	700.00	700.00	25.70	1.44	-46.29	40.07	-41.91	57.98	30.84	27.14	2.136	
800.00	800.00	800.00	800.00	29.70	1.67	-46.29	40.07	-41.91	57.98	26.61	31.37	1.848	
900.00	900.00	900.00	900.00	33.70	1.89	-46.29	40.07	-41.91	57.98	22.39	35.59	1.629 CC	
1,000.00	999.98	999.48	999.46	36.06	2.10	-130.37	39.08	-43.33	59.47	21.32	38.15	1.559 ES, SF	
1,100.00	1,099.84	1,098.28	1,098.12	37.11	2.28	-138.21	36.16	-47.55	64.79	25.46	39.33	1.647	
1,200.00	1,199.45	1,195.73	1,195.21	38.56	2.49	-148.34	31.38	-54.44	75.83	34.98	40.85	1.856	
1,300.00	1,298.70	1,291.21	1,289.99	40.41	2.71	-157.98	24.87	-63.83	94.07	51.42	42.65	2.206	
1,400.00	1,397.47	1,384.14	1,381.84	42.63	2.96	-165.74	16.82	-75.45	119.91	75.22	44.70	2.683	
1,500.00	1,495.62	1,474.29	1,470.45	45.21	3.23	-171.53	7.39	-89.05	153.01	106.05	46.96	3.258	
1,600.00	1,593.06	1,565.83	1,560.20	48.13	3.54	-175.70	-2.88	-103.87	191.47	142.06	49.42	3.875	
1,708.19	1,697.52	1,663.25	1,655.72	51.67	3.89	-178.72	-13.81	-119.64	237.35	185.10	52.24	4.543	
1,800.00	1,785.69	1,745.17	1,736.03	54.92	4.19	-179.47	-23.00	-132.90	278.14	222.99	55.16	5.043	
1,900.00	1,881.74	1,834.41	1,823.52	58.67	4.53	-178.02	-33.01	-147.35	322.76	264.30	58.46	5.521	
2,000.00	1,977.79	1,923.64	1,911.00	62.58	4.88	-176.93	-43.02	-161.79	367.51	305.63	61.88	5.939	
2,100.00	2,073.83	2,012.87	1,998.49	66.63	5.24	-176.06	-53.03	-176.23	412.35	346.94	65.41	6.304	
2,200.00	2,169.88	2,102.11	2,085.97	70.80	5.60	-175.37	-63.04	-190.68	457.24	388.23	69.01	6.625	
2,300.00	2,265.93	2,191.34	2,173.46	75.06	5.97	-174.80	-73.05	-205.12	502.18	429.49	72.69	6.908	
2,400.00	2,361.97	2,280.57	2,260.94	79.39	6.34	-174.33	-83.06	-219.57	547.15	470.72	76.43	7.159	
2,500.00	2,458.02	2,369.80	2,348.43	83.80	6.71	-173.92	-93.07	-234.01	592.14	511.92	80.22	7.381	
2,600.00	2,554.07	2,459.04	2,435.91	88.27	7.09	-173.58	-103.08	-248.45	637.16	553.10	84.06	7.580	
2,700.00	2,650.12	2,548.27	2,523.40	92.78	7.47	-173.28	-113.10	-262.90	682.19	594.26	87.93	7.758	
2,800.00	2,746.16	2,637.50	2,610.88	97.34	7.85	-173.01	-123.11	-277.34	727.24	635.39	91.85	7.918	
2,900.00	2,842.21	2,726.74	2,698.37	101.93	8.23	-172.78	-133.12	-291.79	772.30	676.51	95.79	8.063	
3,000.00	2,938.26	2,815.97	2,785.85	106.55	8.61	-172.57	-143.13	-306.23	817.36	717.61	99.75	8.194	
3,100.00	3,034.30	2,905.20	2,873.34	111.21	9.00	-172.39	-153.14	-320.67	862.43	758.69	103.75	8.313	
3,200.00	3,130.35	2,994.43	2,960.82	115.88	9.38	-172.22	-163.15	-335.12	907.51	799.76	107.76	8.422	
3,300.00	3,226.40	3,083.67	3,048.31	120.58	9.77	-172.07	-173.16	-349.56	952.60	840.81	111.79	8.521	
3,400.00	3,322.44	3,172.90	3,135.80	125.30	10.15	-171.93	-183.17	-364.01	997.69	881.85	115.84	8.613	
3,500.00	3,418.49	3,262.13	3,223.28	130.04	10.54	-171.80	-193.18	-378.45	1,042.78	922.88	119.90	8.697	
3,600.00	3,514.54	3,351.37	3,310.77	134.79	10.93	-171.69	-203.19	-392.89	1,087.88	963.90	123.98	8.775	
3,700.00	3,610.58	3,440.60	3,398.25	139.55	11.32	-171.58	-213.20	-407.34	1,132.98	1,004.92	128.07	8.847	
3,800.00	3,706.63	3,529.83	3,485.74	144.33	11.71	-171.49	-223.21	-421.78	1,178.09	1,045.92	132.17	8.914	
3,900.00	3,802.68	3,619.07	3,573.22	149.12	12.10	-171.39	-233.22	-436.23	1,223.19	1,086.92	136.28	8.976	
4,000.00	3,898.73	3,708.30	3,660.71	153.92	12.49	-171.31	-243.24	-450.67	1,268.30	1,127.91	140.40	9.034	
4,100.00	3,994.77	3,797.53	3,748.19	158.72	12.88	-171.23	-253.25	-465.11	1,313.41	1,168.89	144.52	9.088	
4,200.00	4,090.82	3,886.76	3,835.68	163.54	13.27	-171.16	-263.26	-479.56	1,358.53	1,209.87	148.66	9.139	
4,300.00	4,186.87	3,976.00	3,923.16	168.36	13.66	-171.09	-273.27	-494.00	1,403.64	1,250.84	152.80	9.186	
4,400.00	4,282.91	4,065.23	4,010.65	173.20	14.05	-171.03	-283.28	-508.44	1,448.76	1,291.81	156.95	9.231	
4,500.00	4,378.96	4,154.46	4,098.13	178.03	14.45	-170.96	-293.29	-522.89	1,493.87	1,332.77	161.11	9.273	
4,600.00	4,475.01	4,243.70	4,185.62	182.88	14.84	-170.91	-303.30	-537.33	1,538.99	1,373.72	165.27	9.312	
4,700.00	4,571.05	4,332.93	4,273.10	187.73	15.23	-170.85	-313.31	-551.78	1,584.11	1,414.68	169.43	9.349	
4,800.00	4,667.10	4,422.16	4,360.59	192.58	15.62	-170.80	-323.32	-566.22	1,629.23	1,455.63	173.60	9.385	
4,900.00	4,763.15	4,511.39	4,448.07	197.44	16.02	-170.76	-333.33	-580.66	1,674.35	1,496.57	177.78	9.418	
5,000.00	4,859.19	4,600.63	4,535.56	202.30	16.41	-170.71	-343.34	-595.11	1,719.48	1,537.52	181.96	9.450	
5,100.00	4,955.24	4,689.86	4,623.04	207.17	16.80	-170.67	-353.35	-609.55	1,764.60	1,578.46	186.14	9.480	

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_CARMA 21-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4879.00ft (Original Well Elev)
Reference Site:	WELD_CARMA 6 PAD	MD Reference:	WELL @ 4879.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CARMA 21-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 21-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-16-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_CARMA 6 PAD - P_CARMA 5-36 - P_CARMA 5-36 - PLAN #1 12-16-09 RHS												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Reference	Offset	Semi Major Axis		Distance									
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
5,200.00	5,051.29	4,779.09	4,710.53	212.04	17.20	170.63	-363.36	-624.00	1,809.72	1,619.39	190.33	9.508	
5,300.00	5,147.34	4,868.33	4,798.01	216.92	17.59	170.59	-373.38	-638.44	1,854.85	1,660.33	194.52	9.535	
5,404.27	5,247.48	4,961.37	4,889.24	222.00	18.00	170.55	-383.81	-653.50	1,901.90	1,703.01	198.89	9.562	
5,500.00	5,339.86	5,047.48	4,973.66	226.59	18.38	170.66	-393.47	-667.44	1,943.68	1,740.55	203.14	9.568	
5,600.00	5,437.19	5,138.85	5,063.24	231.19	18.78	170.74	-403.72	-682.23	1,984.28	1,776.93	207.34	9.570	
5,700.00	5,535.26	5,231.55	5,154.12	235.61	19.19	170.79	-414.12	-697.23	2,021.70	1,810.38	211.32	9.567	
5,800.00	5,633.96	5,325.46	5,246.20	239.83	19.61	170.82	-424.66	-712.44	2,055.91	1,840.85	215.06	9.560	
5,900.00	5,733.16	5,420.48	5,339.35	243.87	20.03	170.82	-435.32	-727.82	2,086.86	1,868.32	218.55	9.549	
6,000.00	5,832.73	5,516.48	5,433.48	247.72	20.45	170.80	-446.09	-743.36	2,114.53	1,892.74	221.79	9.534	
6,100.00	5,932.57	5,794.61	5,708.04	251.39	21.29	170.59	-471.00	-779.30	2,135.83	1,910.68	225.15	9.486	
6,200.00	6,032.54	6,119.74	6,032.54	254.88	21.83	170.52	-480.83	-793.49	2,142.69	1,914.51	228.19	9.390	
6,212.46	6,045.00	6,132.20	6,045.00	255.16	21.84	-108.33	-480.83	-793.49	2,142.72	1,914.39	228.33	9.384	
6,300.00	6,132.54	6,219.74	6,132.54	256.12	21.95	-108.33	-480.83	-793.49	2,142.72	1,913.13	229.59	9.333	
6,400.00	6,232.54	6,319.74	6,232.54	257.28	22.07	-108.33	-480.83	-793.49	2,142.72	1,911.63	231.09	9.272	
6,500.00	6,332.54	6,419.74	6,332.54	258.48	22.19	-108.33	-480.83	-793.49	2,142.72	1,910.07	232.65	9.210	
6,600.00	6,432.54	6,519.74	6,432.54	259.75	22.31	-108.33	-480.83	-793.49	2,142.72	1,908.43	234.28	9.146	
6,700.00	6,532.54	6,619.74	6,532.54	261.07	22.43	-108.33	-480.83	-793.49	2,142.72	1,906.74	235.98	9.080	
6,800.00	6,632.54	6,719.74	6,632.54	262.44	22.56	-108.33	-480.83	-793.49	2,142.72	1,904.98	237.74	9.013	
6,900.00	6,732.54	6,819.74	6,732.54	263.87	22.69	-108.33	-480.83	-793.49	2,142.72	1,903.16	239.56	8.944	
7,000.00	6,832.54	6,919.74	6,832.54	265.35	22.81	-108.33	-480.83	-793.49	2,142.72	1,901.28	241.44	8.875	
7,100.00	6,932.54	7,019.74	6,932.54	266.88	22.94	-108.33	-480.83	-793.49	2,142.72	1,899.34	243.38	8.804	
7,200.00	7,032.54	7,119.74	7,032.54	268.46	23.08	-108.33	-480.83	-793.49	2,142.72	1,897.34	245.38	8.732	
7,300.00	7,132.54	7,219.74	7,132.54	270.10	23.21	-108.33	-480.83	-793.49	2,142.72	1,895.29	247.43	8.660	
7,400.00	7,232.54	7,319.74	7,232.54	271.78	23.34	-108.33	-480.83	-793.49	2,142.72	1,893.18	249.54	8.587	
7,500.00	7,332.54	7,419.74	7,332.54	273.51	23.48	-108.33	-480.83	-793.49	2,142.72	1,891.02	251.70	8.513	
7,600.00	7,432.54	7,519.74	7,432.54	275.29	23.61	-108.33	-480.83	-793.49	2,142.72	1,888.80	253.92	8.439	
7,700.00	7,532.54	7,619.74	7,532.54	277.11	23.75	-108.33	-480.83	-793.49	2,142.72	1,886.54	256.18	8.364	
7,800.00	7,632.54	7,719.74	7,632.54	278.98	23.89	-108.33	-480.83	-793.49	2,142.72	1,884.22	258.50	8.289	
7,900.00	7,732.54	7,819.74	7,732.54	280.90	24.03	-108.33	-480.83	-793.49	2,142.72	1,881.86	260.86	8.214	
8,000.00	7,832.54	7,919.74	7,832.54	282.86	24.18	-108.33	-480.83	-793.49	2,142.72	1,879.45	263.27	8.139	
8,025.53	7,858.06	7,945.27	7,858.06	283.37	24.21	-108.33	-480.83	-793.49	2,142.72	1,878.83	263.89	8.120	
8,057.46	7,890.00	7,954.20	7,867.00	284.00	24.22	-108.33	-480.83	-793.49	2,142.84	1,878.21	264.63	8.097	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CARMA 21-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4879.00ft (Original Well Elev)
Reference Site:	WELD_CARMA 6 PAD	MD Reference:	WELL @ 4879.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CARMA 21-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 21-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-16-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_CARMA 6 PAD - STATE OF COLROADO BB UNIT #1 EXISTING - STATE OF COLROADO BB												Offset Site Error:	0.00 ft
Survey Program: 0-UNKNOWN												Offset Well Error:	0.00 ft
Reference	Offset	Semi Major Axis					Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	-137.18	-87.44	-81.02	121.04				
100.00	100.00	79.00	79.00	1.70	1.58	-137.18	-87.44	-81.02	119.21	115.93	3.28	36.343	
200.00	200.00	179.00	179.00	5.70	5.16	-137.18	-87.44	-81.02	119.21	108.35	10.86	10.977	
300.00	300.00	279.00	279.00	9.70	9.16	-137.18	-87.44	-81.02	119.21	100.35	18.86	6.321	
400.00	400.00	379.00	379.00	13.70	13.16	-137.18	-87.44	-81.02	119.21	92.35	26.86	4.438	
500.00	500.00	479.00	479.00	17.70	17.16	-137.18	-87.44	-81.02	119.21	84.35	34.86	3.420	
600.00	600.00	579.00	579.00	21.70	21.16	-137.18	-87.44	-81.02	119.21	76.35	42.86	2.781	
700.00	700.00	679.00	679.00	25.70	25.16	-137.18	-87.44	-81.02	119.21	68.35	50.86	2.344	
800.00	800.00	779.00	779.00	29.70	29.16	-137.18	-87.44	-81.02	119.21	60.35	58.86	2.025	
900.00	900.00	879.00	879.00	33.70	33.16	-137.18	-87.44	-81.02	119.21	52.35	66.86	1.783 CC	
1,000.00	999.98	978.98	978.98	36.06	37.16	142.17	-87.44	-81.02	120.58	47.39	73.19	1.647	
1,100.00	1,099.84	1,078.84	1,078.84	37.11	41.15	143.59	-87.44	-81.02	124.75	46.61	78.14	1.597 ES	
1,200.00	1,199.45	1,178.45	1,178.45	38.56	45.14	145.75	-87.44	-81.02	131.88	48.48	83.39	1.581 SF	
1,300.00	1,298.70	1,277.70	1,277.70	40.41	49.11	148.41	-87.44	-81.02	142.13	53.25	88.88	1.599	
1,400.00	1,397.47	1,376.47	1,376.47	42.63	53.06	151.28	-87.44	-81.02	155.70	61.16	94.54	1.647	
1,500.00	1,495.62	1,474.62	1,474.62	45.21	56.98	154.17	-87.44	-81.02	172.73	72.45	100.28	1.722	
1,600.00	1,593.06	1,572.06	1,572.06	48.13	60.88	156.90	-87.44	-81.02	193.30	87.25	106.05	1.823	
1,708.19	1,697.52	1,676.52	1,676.52	51.67	65.06	159.58	-87.44	-81.02	219.58	107.33	112.24	1.956	
1,800.00	1,785.69	1,764.69	1,764.69	54.92	68.59	161.67	-87.44	-81.02	243.79	125.50	118.29	2.061	
1,900.00	1,881.74	1,860.74	1,860.74	58.67	72.43	163.52	-87.44	-81.02	270.45	145.44	125.02	2.163	
2,000.00	1,977.79	1,956.79	1,956.79	62.58	76.27	165.04	-87.44	-81.02	297.33	165.47	131.86	2.255	
2,100.00	2,073.83	2,052.83	2,052.83	66.63	80.11	166.30	-87.44	-81.02	324.37	185.56	138.80	2.337	
2,200.00	2,169.88	2,148.88	2,148.88	70.80	83.96	167.38	-87.44	-81.02	351.53	205.70	145.83	2.411	
2,300.00	2,265.93	2,244.93	2,244.93	75.06	87.80	168.29	-87.44	-81.02	378.79	225.86	152.93	2.477	
2,400.00	2,361.97	2,340.97	2,340.97	79.39	91.64	169.09	-87.44	-81.02	406.13	246.04	160.09	2.537	
2,500.00	2,458.02	2,437.02	2,437.02	83.80	95.48	169.79	-87.44	-81.02	433.53	266.23	167.30	2.591	
2,600.00	2,554.07	2,533.07	2,533.07	88.27	99.32	170.40	-87.44	-81.02	460.99	286.43	174.56	2.641	
2,700.00	2,650.12	2,629.12	2,629.12	92.78	103.16	170.94	-87.44	-81.02	488.49	306.63	181.85	2.686	
2,800.00	2,746.16	2,725.16	2,725.16	97.34	107.01	171.43	-87.44	-81.02	516.02	326.84	189.19	2.728	
2,900.00	2,842.21	2,821.21	2,821.21	101.93	110.85	171.87	-87.44	-81.02	543.59	347.04	196.55	2.766	
3,000.00	2,938.26	2,917.26	2,917.26	106.55	114.69	172.26	-87.44	-81.02	571.18	367.25	203.94	2.801	
3,100.00	3,034.30	3,013.30	3,013.30	111.21	118.53	172.62	-87.44	-81.02	598.80	387.45	211.35	2.833	
3,200.00	3,130.35	3,109.35	3,109.35	115.88	122.37	172.95	-87.44	-81.02	626.43	407.65	218.78	2.863	
3,300.00	3,226.40	3,205.40	3,205.40	120.58	126.22	173.25	-87.44	-81.02	654.08	427.85	226.23	2.891	
3,400.00	3,322.44	3,301.44	3,301.44	125.30	130.06	173.52	-87.44	-81.02	681.75	448.05	233.70	2.917	
3,500.00	3,418.49	3,397.49	3,397.49	130.04	133.90	173.77	-87.44	-81.02	709.43	468.25	241.18	2.941	
3,600.00	3,514.54	3,493.54	3,493.54	134.79	137.74	174.01	-87.44	-81.02	737.12	488.44	248.68	2.964	
3,700.00	3,610.58	3,589.58	3,589.58	139.55	141.58	174.23	-87.44	-81.02	764.83	508.64	256.19	2.985	
3,800.00	3,706.63	3,685.63	3,685.63	144.33	145.43	174.43	-87.44	-81.02	792.54	528.83	263.71	3.005	
3,900.00	3,802.68	3,781.68	3,781.68	149.12	149.27	174.62	-87.44	-81.02	820.26	549.02	271.24	3.024	
4,000.00	3,898.73	3,877.73	3,877.73	153.92	153.11	174.79	-87.44	-81.02	847.99	569.21	278.78	3.042	
4,100.00	3,994.77	3,973.77	3,973.77	158.72	156.95	174.96	-87.44	-81.02	875.73	589.39	286.33	3.058	
4,200.00	4,090.82	4,069.82	4,069.82	163.54	160.79	175.11	-87.44	-81.02	903.47	609.58	293.89	3.074	
4,300.00	4,186.87	4,165.87	4,165.87	168.36	164.63	175.26	-87.44	-81.02	931.22	629.76	301.46	3.089	
4,400.00	4,282.91	4,261.91	4,261.91	173.20	168.48	175.40	-87.44	-81.02	958.97	649.94	309.03	3.103	
4,500.00	4,378.96	4,357.96	4,357.96	178.03	172.32	175.53	-87.44	-81.02	986.73	670.12	316.60	3.117	
4,600.00	4,475.01	4,454.01	4,454.01	182.88	176.16	175.65	-87.44	-81.02	1,014.49	690.30	324.19	3.129	
4,700.00	4,571.05	4,550.05	4,550.05	187.73	180.00	175.77	-87.44	-81.02	1,042.26	710.48	331.78	3.141	
4,800.00	4,667.10	4,646.10	4,646.10	192.58	183.84	175.88	-87.44	-81.02	1,070.03	730.66	339.37	3.153	
4,900.00	4,763.15	4,742.15	4,742.15	197.44	187.69	175.98	-87.44	-81.02	1,097.80	750.84	346.97	3.164	
5,000.00	4,859.19	4,838.19	4,838.19	202.30	191.53	176.08	-87.44	-81.02	1,125.58	771.01	354.57	3.175	
5,100.00	4,955.24	4,934.24	4,934.24	207.17	195.37	176.17	-87.44	-81.02	1,153.36	791.18	362.17	3.185	

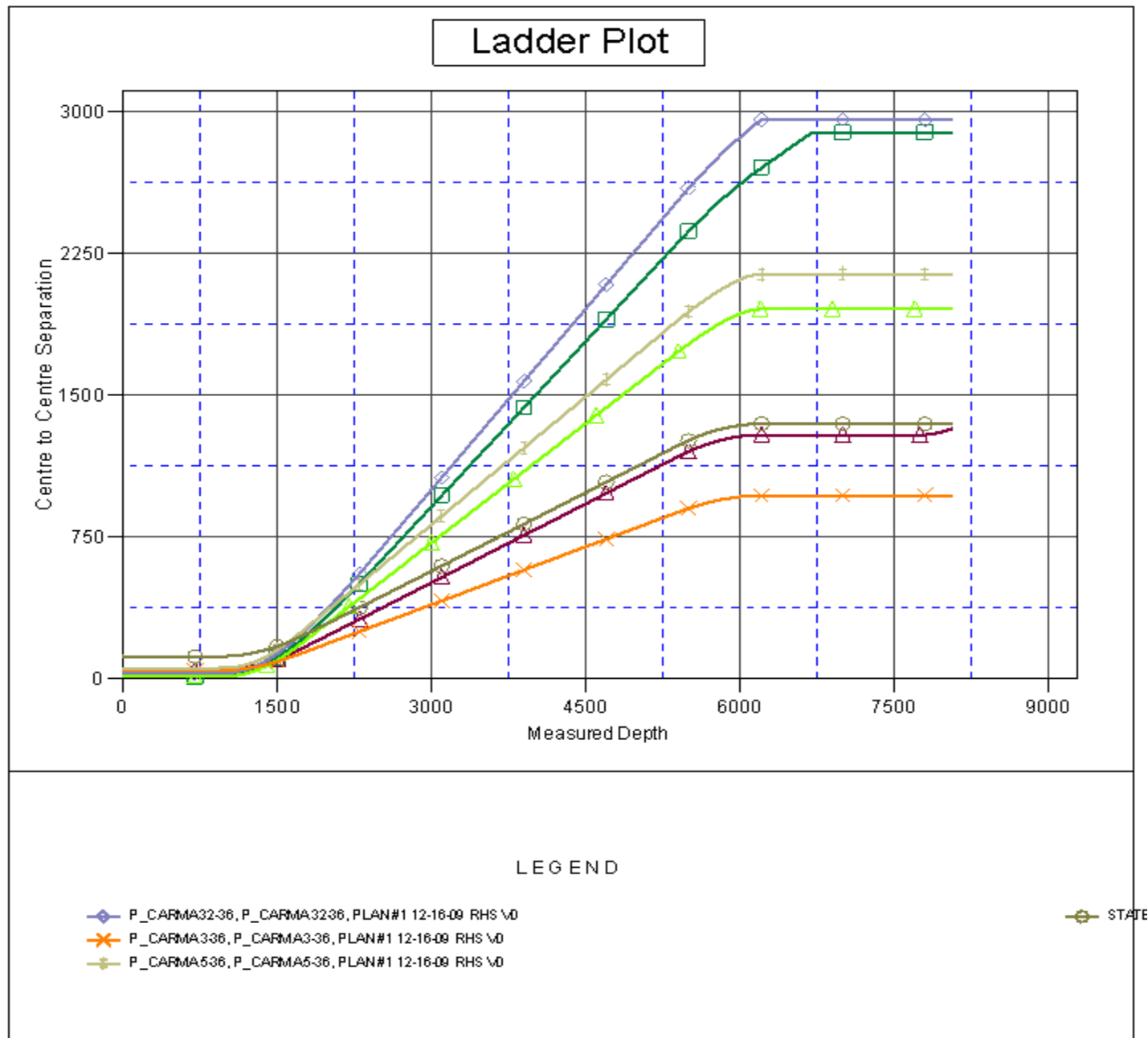
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CARMA 21-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4879.00ft (Original Well Elev)
Reference Site:	WELD_CARMA 6 PAD	MD Reference:	WELL @ 4879.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CARMA 21-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 21-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-16-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_CARMA 6 PAD - STATE OF COLROADO BB UNIT #1 EXISTING - STATE OF COLROADO BB												Offset Site Error:	0.00 ft
Survey Program: 0-UNKNOWN												Offset Well Error:	0.00 ft
Reference	Offset	Semi Major Axis		Distance									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,200.00	5,051.29	5,030.29	5,030.29	212.04	199.21	176.26	-87.44	-81.02	1,181.14	811.36	369.78	3.194	
5,300.00	5,147.34	5,126.34	5,126.34	216.92	203.05	176.35	-87.44	-81.02	1,208.93	831.53	377.40	3.203	
5,404.27	5,247.48	5,226.48	5,226.48	222.00	207.06	176.44	-87.44	-81.02	1,237.90	852.56	385.34	3.212	
5,500.00	5,339.86	5,318.86	5,318.86	226.59	210.75	176.54	-87.44	-81.02	1,262.97	868.36	394.60	3.201	
5,600.00	5,437.19	5,416.19	5,416.19	231.19	214.65	176.63	-87.44	-81.02	1,285.84	881.93	403.91	3.183	
5,700.00	5,535.26	5,514.26	5,514.26	235.61	218.57	176.70	-87.44	-81.02	1,305.32	892.50	412.82	3.162	
5,800.00	5,633.96	5,612.96	5,612.96	239.83	222.52	176.76	-87.44	-81.02	1,321.37	900.06	421.30	3.136	
5,900.00	5,733.16	5,712.16	5,712.16	243.87	226.49	176.80	-87.44	-81.02	1,333.96	904.63	429.34	3.107	
6,000.00	5,832.73	5,811.73	5,811.73	247.72	230.47	176.84	-87.44	-81.02	1,343.10	906.20	436.90	3.074	
6,100.00	5,932.57	5,911.57	5,911.57	251.39	234.46	176.86	-87.44	-81.02	1,348.76	904.80	443.96	3.038	
6,200.00	6,032.54	6,011.54	6,011.54	254.88	238.46	176.86	-87.44	-81.02	1,350.93	900.43	450.50	2.999	
6,212.46	6,045.00	6,024.00	6,024.00	255.16	238.96	-101.99	-87.44	-81.02	1,350.96	899.85	451.11	2.995	
6,300.00	6,132.54	6,111.54	6,111.54	256.12	242.46	-101.99	-87.44	-81.02	1,350.96	895.22	455.74	2.964	
6,400.00	6,232.54	6,211.54	6,211.54	257.28	246.46	-101.99	-87.44	-81.02	1,350.96	889.87	461.10	2.930	
6,500.00	6,332.54	6,311.54	6,311.54	258.48	250.46	-101.99	-87.44	-81.02	1,350.96	884.45	466.51	2.896	
6,600.00	6,432.54	6,411.54	6,411.54	259.75	254.46	-101.99	-87.44	-81.02	1,350.96	878.96	472.00	2.862	
6,700.00	6,532.54	6,511.54	6,511.54	261.07	258.46	-101.99	-87.44	-81.02	1,350.96	873.42	477.54	2.829	
6,800.00	6,632.54	6,611.54	6,611.54	262.44	262.46	-101.99	-87.44	-81.02	1,350.96	867.81	483.15	2.796	
6,900.00	6,732.54	6,711.54	6,711.54	263.87	266.46	-101.99	-87.44	-81.02	1,350.96	862.14	488.82	2.764	
7,000.00	6,832.54	6,811.54	6,811.54	265.35	270.46	-101.99	-87.44	-81.02	1,350.96	856.41	494.55	2.732	
7,100.00	6,932.54	6,911.54	6,911.54	266.88	274.46	-101.99	-87.44	-81.02	1,350.96	850.63	500.33	2.700	
7,200.00	7,032.54	7,011.54	7,011.54	268.46	278.46	-101.99	-87.44	-81.02	1,350.96	844.79	506.18	2.669	
7,300.00	7,132.54	7,111.54	7,111.54	270.10	282.46	-101.99	-87.44	-81.02	1,350.96	838.89	512.07	2.638	
7,400.00	7,232.54	7,211.54	7,211.54	271.78	286.46	-101.99	-87.44	-81.02	1,350.96	832.94	518.02	2.608	
7,500.00	7,332.54	7,311.54	7,311.54	273.51	290.46	-101.99	-87.44	-81.02	1,350.96	826.94	524.02	2.578	
7,600.00	7,432.54	7,411.54	7,411.54	275.29	294.46	-101.99	-87.44	-81.02	1,350.96	820.89	530.08	2.549	
7,700.00	7,532.54	7,511.54	7,511.54	277.11	298.46	-101.99	-87.44	-81.02	1,350.96	814.78	536.18	2.520	
7,800.00	7,632.54	7,611.54	7,611.54	278.98	302.46	-101.99	-87.44	-81.02	1,350.96	808.63	542.33	2.491	
7,900.00	7,732.54	7,711.54	7,711.54	280.90	306.46	-101.99	-87.44	-81.02	1,350.96	802.43	548.53	2.463	
8,000.00	7,832.54	7,811.54	7,811.54	282.86	310.46	-101.99	-87.44	-81.02	1,350.96	796.19	554.77	2.435	
8,057.46	7,890.00	7,869.00	7,869.00	284.00	312.76	-101.99	-87.44	-81.02	1,350.96	792.58	558.38	2.419	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CARMA 21-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4879.00ft (Original Well Elev)
Reference Site:	WELD_CARMA 6 PAD	MD Reference:	WELL @ 4879.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CARMA 21-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 21-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-16-09 RHS	Offset TVD Reference:	Offset Datum

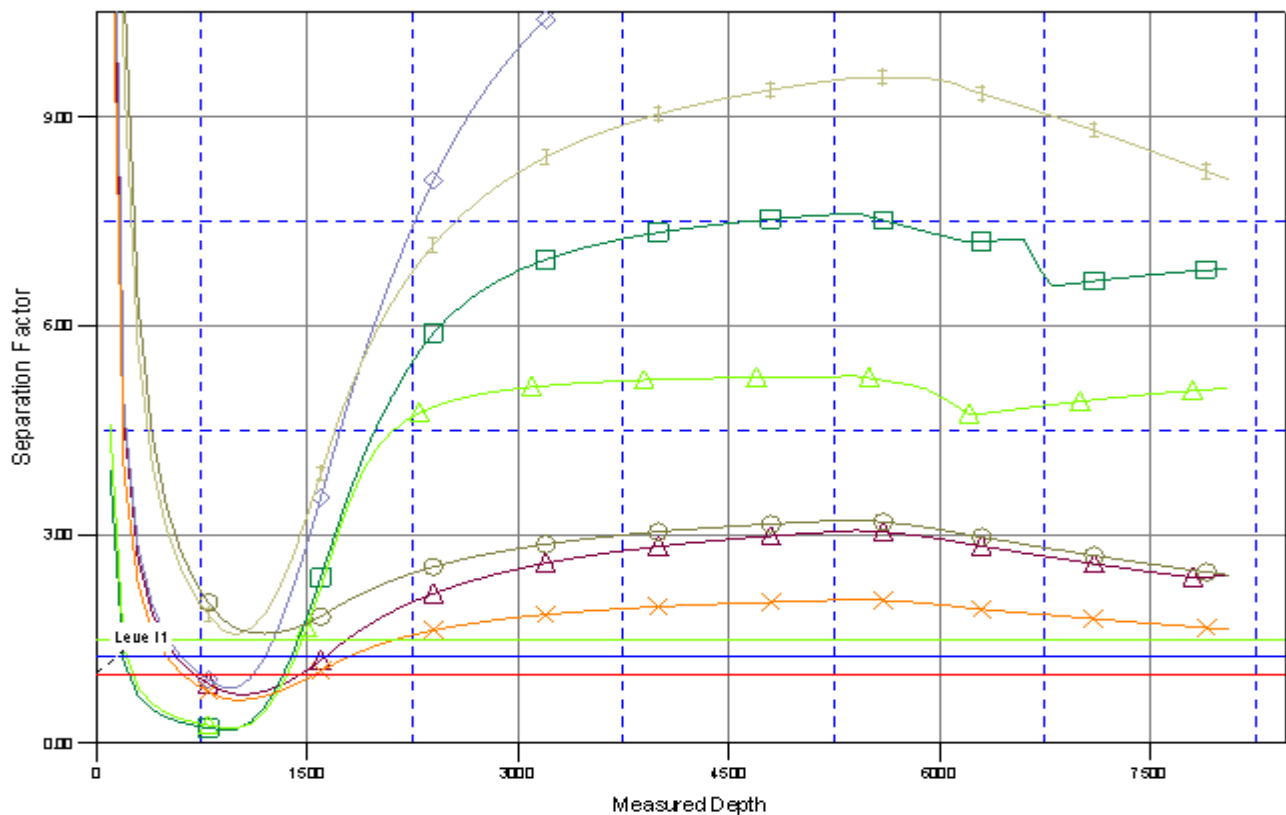
Reference Depths are relative to WELL @ 4879.00ft (Original Well Elev) Coordinates are relative to: P_CARMA 21-36
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is 105° 30' 0.000 W ° Grid Convergence at Surface is: 0.35°



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CARMA 21-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4879.00ft (Original Well Elev)
Reference Site:	WELD_CARMA 6 PAD	MD Reference:	WELL @ 4879.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CARMA 21-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 21-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-16-09 RHS	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4879.00ft (Original Well Elev) Coordinates are relative to: P_CARMA 21-36
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is 105° 30' 0.000 W ° Grid Convergence at Surface is: 0.35°

Separation Factor Plot



LEGEND

- ◆ P_CARMA32-36, P_CARMA32-36, PLAN#1 12-16-09 RHS \0
- ✕ P_CARMA336, P_CARMA3-36, PLAN#1 12-16-09 RHS \0
- ◆ P_CARMA536, P_CARMA5-36, PLAN#1 12-16-09 RHS \0

STATE