



US ROCKIES REGION PLANNING

COLORADO NOTHERN ZONE - 83

WELD_CARMA 3 PAD

P_CARMA 8-36

P_CARMA 8-36

Plan: PLAN #1 12-16-09 RHS

Standard Planning Report

16 December, 2009





Azimuths to True North
Magnetic North: 9.11°

Magnetic Field
Strength: 53176.9nT
Dip Angle: 66.91°
Date: 12/16/2009
Model: IGRF200510

WELL DETAILS: P_CARMA 8-36

+N/-S	+E/-W	Northing	Ground Level: Easting	Latitude	Longitude	Slot
0.00	0.00	1311671.52	3154626.25	40° 11' 15.396 N	104° 56' 47.544 W	

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3557.00	3653.65	PARKMAN
4052.00	4171.57	SUSSEX
4572.00	4715.65	SHANNON
6988.00	7170.84	NIO A
7253.00	7435.84	CODELL
7683.00	7865.84	JSAND

SECTION DETAILS

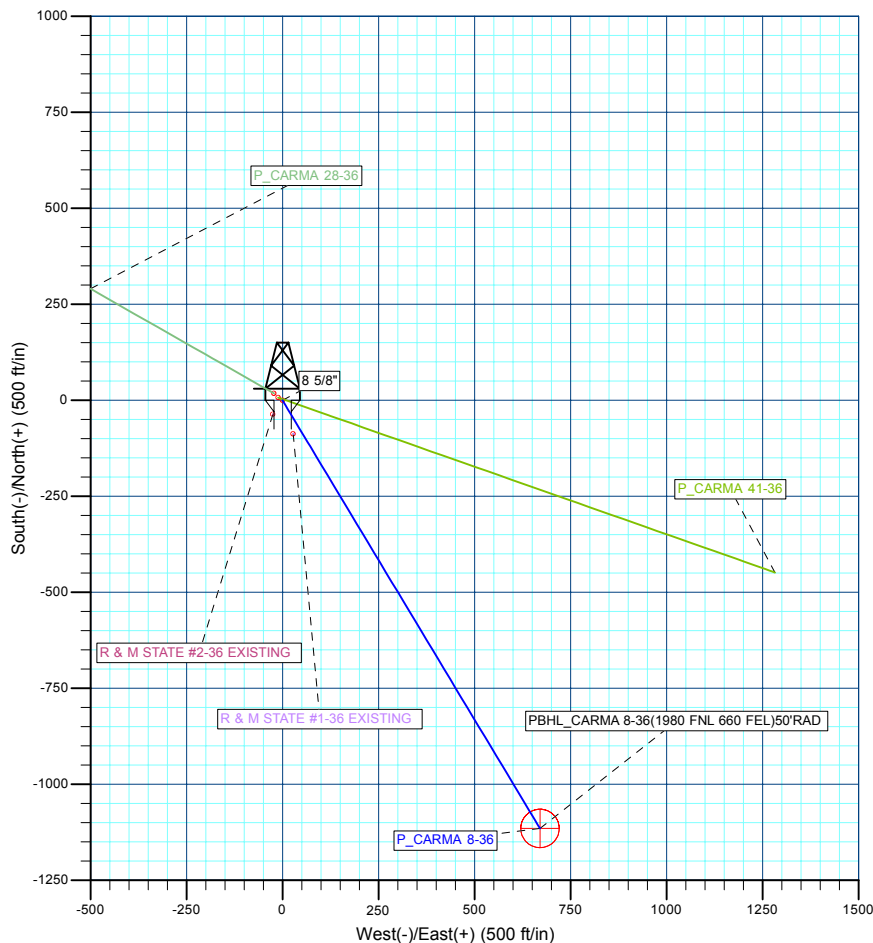
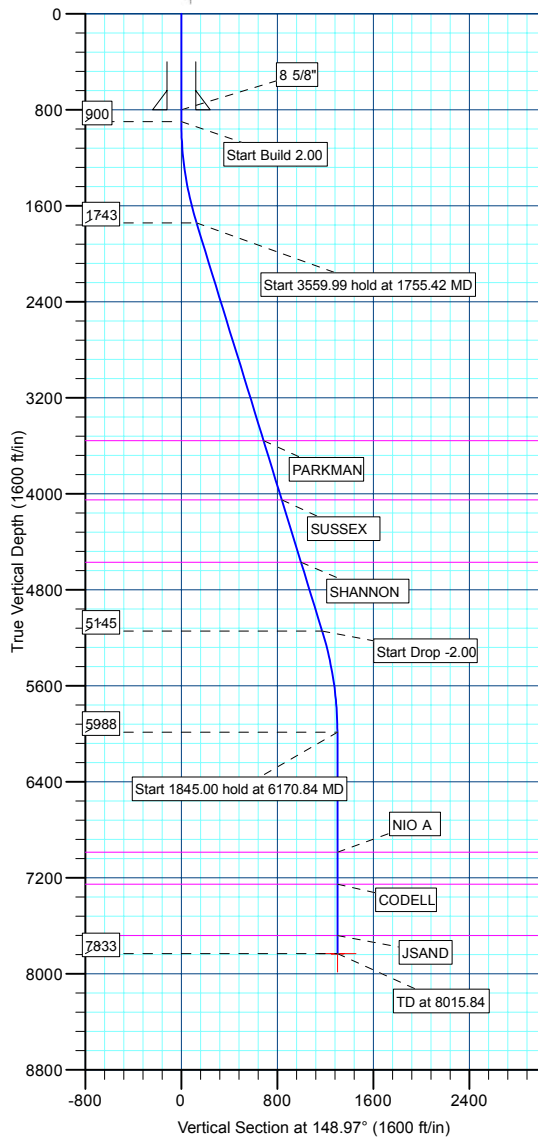
MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	
1755.42	17.11	148.97	1742.77	-108.63	65.35	2.00	148.97	126.77	
5315.42	17.11	148.97	5145.23	-1006.05	605.20	0.00	0.00	1174.05	
6170.84	0.00	0.00	5988.00	-1114.68	670.55	2.00	180.00	1300.82	
8015.84	0.00	0.00	7833.00	-1114.68	670.55	0.00	0.00	1300.82	PBHL_CARMA 8-36(1980 FNL 660 FEL)50°RAD

CASING DETAILS

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



KB ELEV: WELL @ 4846.00ft (Original Well Elev)
GRD ELEV: 4831.00



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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL	7833.00	-1114.68	670.55	1310561.06	3155303.74	40° 11' 4.380 N	104° 56' 38.904 W	Circle (Radius: 50.00)

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_CARMA 8-36
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4846.00ft (Original Well Elev)
Project:	COLORADO NOTHERN ZONE - 83	MD Reference:	WELL @ 4846.00ft (Original Well Elev)
Site:	WELD_CARMA 3 PAD	North Reference:	True
Well:	P_CARMA 8-36	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_CARMA 8-36		
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 3 PAD, SECTION 36 T3N R68W											
Site Position:			Northing:			1,311,689.62 ft			Latitude:			40° 11' 15.576 N					
From:			Lat/Long			Easting:			3,154,603.78 ft			Longitude:			104° 56' 47.832 W		
Position Uncertainty:			0.00 ft			Slot Radius:			in			Grid Convergence:			0.36 °		

Well	P_CARMA 8-36					
Well Position	+N/-S	-18.23 ft	Northing:	1,311,671.52 ft	Latitude:	40° 11' 15.396 N
	+E/-W	22.35 ft	Easting:	3,154,626.25 ft	Longitude:	104° 56' 47.544 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,831.00 ft

Wellbore	P_CARMA 8-36				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/16/2009	9.11	66.91	53,177

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	148.97

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	
1,755.42	17.11	148.97	1,742.77	-108.63	65.35	2.00	2.00	0.00	148.97	
5,315.42	17.11	148.97	5,145.23	-1,006.05	605.20	0.00	0.00	0.00	0.00	
6,170.84	0.00	0.00	5,988.00	-1,114.68	670.55	2.00	-2.00	0.00	180.00	
8,015.84	0.00	0.00	7,833.00	-1,114.68	670.55	0.00	0.00	0.00	0.00	PBHL_CARMA 8-36

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_CARMA 8-36
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4846.00ft (Original Well Elev)
Project:	COLORADO NOTHERN ZONE - 83	MD Reference:	WELL @ 4846.00ft (Original Well Elev)
Site:	WELD_CARMA 3 PAD	North Reference:	True
Well:	P_CARMA 8-36	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_CARMA 8-36		
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	148.97	999.98	-1.50	0.90	1.75	2.00	2.00	0.00	
1,100.00	4.00	148.97	1,099.84	-5.98	3.60	6.98	2.00	2.00	0.00	
1,200.00	6.00	148.97	1,199.45	-13.45	8.09	15.69	2.00	2.00	0.00	
1,300.00	8.00	148.97	1,298.70	-23.89	14.37	27.88	2.00	2.00	0.00	
1,400.00	10.00	148.97	1,397.47	-37.29	22.44	43.52	2.00	2.00	0.00	
1,500.00	12.00	148.97	1,495.62	-53.64	32.27	62.60	2.00	2.00	0.00	
1,600.00	14.00	148.97	1,593.06	-72.92	43.87	85.10	2.00	2.00	0.00	
1,700.00	16.00	148.97	1,689.64	-95.10	57.21	110.98	2.00	2.00	0.00	
Start 3559.99 hold at 1755.42 MD										
1,755.42	17.11	148.97	1,742.77	-108.63	65.35	126.77	2.00	2.00	0.00	
1,800.00	17.11	148.97	1,785.37	-119.86	72.11	139.88	0.00	0.00	0.00	
1,900.00	17.11	148.97	1,880.95	-145.07	87.27	169.30	0.00	0.00	0.00	
2,000.00	17.11	148.97	1,976.52	-170.28	102.44	198.72	0.00	0.00	0.00	
2,100.00	17.11	148.97	2,072.10	-195.49	117.60	228.14	0.00	0.00	0.00	
2,200.00	17.11	148.97	2,167.67	-220.70	132.76	257.55	0.00	0.00	0.00	
2,300.00	17.11	148.97	2,263.25	-245.91	147.93	286.97	0.00	0.00	0.00	
2,400.00	17.11	148.97	2,358.82	-271.12	163.09	316.39	0.00	0.00	0.00	
2,500.00	17.11	148.97	2,454.40	-296.32	178.26	345.81	0.00	0.00	0.00	
2,600.00	17.11	148.97	2,549.97	-321.53	193.42	375.23	0.00	0.00	0.00	
2,700.00	17.11	148.97	2,645.55	-346.74	208.59	404.65	0.00	0.00	0.00	
2,800.00	17.11	148.97	2,741.12	-371.95	223.75	434.06	0.00	0.00	0.00	
2,900.00	17.11	148.97	2,836.70	-397.16	238.92	463.48	0.00	0.00	0.00	
3,000.00	17.11	148.97	2,932.27	-422.37	254.08	492.90	0.00	0.00	0.00	
3,100.00	17.11	148.97	3,027.85	-447.58	269.25	522.32	0.00	0.00	0.00	
3,200.00	17.11	148.97	3,123.42	-472.78	284.41	551.74	0.00	0.00	0.00	
3,300.00	17.11	148.97	3,219.00	-497.99	299.57	581.15	0.00	0.00	0.00	
3,400.00	17.11	148.97	3,314.57	-523.20	314.74	610.57	0.00	0.00	0.00	
3,500.00	17.11	148.97	3,410.15	-548.41	329.90	639.99	0.00	0.00	0.00	
3,600.00	17.11	148.97	3,505.72	-573.62	345.07	669.41	0.00	0.00	0.00	
PARKMAN										
3,653.65	17.11	148.97	3,557.00	-587.14	353.20	685.19	0.00	0.00	0.00	
3,700.00	17.11	148.97	3,601.30	-598.83	360.23	698.83	0.00	0.00	0.00	
3,800.00	17.11	148.97	3,696.87	-624.03	375.40	728.25	0.00	0.00	0.00	
3,900.00	17.11	148.97	3,792.45	-649.24	390.56	757.66	0.00	0.00	0.00	
4,000.00	17.11	148.97	3,888.02	-674.45	405.73	787.08	0.00	0.00	0.00	
4,100.00	17.11	148.97	3,983.60	-699.66	420.89	816.50	0.00	0.00	0.00	
SUSSEX										
4,171.57	17.11	148.97	4,052.00	-717.70	431.74	837.56	0.00	0.00	0.00	
4,200.00	17.11	148.97	4,079.17	-724.87	436.06	845.92	0.00	0.00	0.00	
4,300.00	17.11	148.97	4,174.75	-750.08	451.22	875.34	0.00	0.00	0.00	
4,400.00	17.11	148.97	4,270.32	-775.29	466.38	904.76	0.00	0.00	0.00	
4,500.00	17.11	148.97	4,365.90	-800.49	481.55	934.17	0.00	0.00	0.00	
4,600.00	17.11	148.97	4,461.47	-825.70	496.71	963.59	0.00	0.00	0.00	
4,700.00	17.11	148.97	4,557.05	-850.91	511.88	993.01	0.00	0.00	0.00	
SHANNON										
4,715.65	17.11	148.97	4,572.00	-854.86	514.25	997.61	0.00	0.00	0.00	
4,800.00	17.11	148.97	4,652.62	-876.12	527.04	1,022.43	0.00	0.00	0.00	
4,900.00	17.11	148.97	4,748.20	-901.33	542.21	1,051.85	0.00	0.00	0.00	
5,000.00	17.11	148.97	4,843.77	-926.54	557.37	1,081.26	0.00	0.00	0.00	
5,100.00	17.11	148.97	4,939.35	-951.74	572.54	1,110.68	0.00	0.00	0.00	
5,200.00	17.11	148.97	5,034.92	-976.95	587.70	1,140.10	0.00	0.00	0.00	

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_CARMA 8-36
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4846.00ft (Original Well Elev)
Project:	COLORADO NOTHERN ZONE - 83	MD Reference:	WELL @ 4846.00ft (Original Well Elev)
Site:	WELD_CARMA 3 PAD	North Reference:	True
Well:	P_CARMA 8-36	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_CARMA 8-36		
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	17.11	148.97	5,130.50	-1,002.16	602.87	1,169.52	0.00	0.00	0.00
Start Drop -2.00									
5,315.42	17.11	148.97	5,145.23	-1,006.05	605.20	1,174.05	0.00	0.00	0.00
5,400.00	15.42	148.97	5,226.43	-1,026.34	617.41	1,197.74	2.00	-2.00	0.00
5,500.00	13.42	148.97	5,323.27	-1,047.68	630.25	1,222.64	2.00	-2.00	0.00
5,600.00	11.42	148.97	5,420.93	-1,066.10	641.33	1,244.14	2.00	-2.00	0.00
5,700.00	9.42	148.97	5,519.27	-1,081.60	650.65	1,262.22	2.00	-2.00	0.00
5,800.00	7.42	148.97	5,618.19	-1,094.14	658.19	1,276.85	2.00	-2.00	0.00
5,900.00	5.42	148.97	5,717.56	-1,103.71	663.96	1,288.03	2.00	-2.00	0.00
6,000.00	3.42	148.97	5,817.26	-1,110.31	667.93	1,295.73	2.00	-2.00	0.00
6,100.00	1.42	148.97	5,917.16	-1,113.93	670.10	1,299.95	2.00	-2.00	0.00
Start 1845.00 hold at 6170.84 MD									
6,170.84	0.00	0.00	5,988.00	-1,114.68	670.55	1,300.82	2.00	-2.00	-210.28
6,200.00	0.00	0.00	6,017.16	-1,114.68	670.55	1,300.82	0.00	0.00	0.00
6,300.00	0.00	0.00	6,117.16	-1,114.68	670.55	1,300.82	0.00	0.00	0.00
6,400.00	0.00	0.00	6,217.16	-1,114.68	670.55	1,300.82	0.00	0.00	0.00
6,500.00	0.00	0.00	6,317.16	-1,114.68	670.55	1,300.82	0.00	0.00	0.00
6,600.00	0.00	0.00	6,417.16	-1,114.68	670.55	1,300.82	0.00	0.00	0.00
6,700.00	0.00	0.00	6,517.16	-1,114.68	670.55	1,300.82	0.00	0.00	0.00
6,800.00	0.00	0.00	6,617.16	-1,114.68	670.55	1,300.82	0.00	0.00	0.00
6,900.00	0.00	0.00	6,717.16	-1,114.68	670.55	1,300.82	0.00	0.00	0.00
7,000.00	0.00	0.00	6,817.16	-1,114.68	670.55	1,300.82	0.00	0.00	0.00
7,100.00	0.00	0.00	6,917.16	-1,114.68	670.55	1,300.82	0.00	0.00	0.00
NIO A									
7,170.84	0.00	0.00	6,988.00	-1,114.68	670.55	1,300.82	0.00	0.00	0.00
7,200.00	0.00	0.00	7,017.16	-1,114.68	670.55	1,300.82	0.00	0.00	0.00
7,300.00	0.00	0.00	7,117.16	-1,114.68	670.55	1,300.82	0.00	0.00	0.00
7,400.00	0.00	0.00	7,217.16	-1,114.68	670.55	1,300.82	0.00	0.00	0.00
CODELL									
7,435.84	0.00	0.00	7,253.00	-1,114.68	670.55	1,300.82	0.00	0.00	0.00
7,500.00	0.00	0.00	7,317.16	-1,114.68	670.55	1,300.82	0.00	0.00	0.00
7,600.00	0.00	0.00	7,417.16	-1,114.68	670.55	1,300.82	0.00	0.00	0.00
7,700.00	0.00	0.00	7,517.16	-1,114.68	670.55	1,300.82	0.00	0.00	0.00
7,800.00	0.00	0.00	7,617.16	-1,114.68	670.55	1,300.82	0.00	0.00	0.00
JSAND									
7,865.84	0.00	0.00	7,683.00	-1,114.68	670.55	1,300.82	0.00	0.00	0.00
7,900.00	0.00	0.00	7,717.16	-1,114.68	670.55	1,300.82	0.00	0.00	0.00
8,000.00	0.00	0.00	7,817.16	-1,114.68	670.55	1,300.82	0.00	0.00	0.00
PBHL_CARMA 8-36(1980 FNL 660 FEL)50'RAD									
8,015.84	0.00	0.00	7,833.00	-1,114.68	670.55	1,300.82	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 8-36(0.00	0.00	7,833.00	-1,114.68	670.55	1,310,561.06	3,155,303.74	40° 11' 4.380 N	104° 56' 38.904 W
- plan hits target center									
- Circle (radius 50.00)									

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_CARMA 8-36
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4846.00ft (Original Well Elev)
Project:	COLORADO NOTHERN ZONE - 83	MD Reference:	WELL @ 4846.00ft (Original Well Elev)
Site:	WELD_CARMA 3 PAD	North Reference:	True
Well:	P_CARMA 8-36	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_CARMA 8-36		
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 (°)	
3,653.65	3,557.00	PARKMAN				
4,171.57	4,052.00	SUSSEX				
4,715.65	4,572.00	SHANNON				
7,170.84	6,988.00	NIO A				
7,435.84	7,253.00	CODELL				
7,865.84	7,683.00	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	
1,755.42	1,742.77	-108.63	65.35	Start 3559.99 hold at 1755.42 MD	
5,315.42	5,145.23	-1,006.05	605.20	Start Drop -2.00	
6,170.84	5,988.00	-1,114.68	670.55	Start 1845.00 hold at 6170.84 MD	
8,015.84	7,833.00	-1,114.68	670.55	TD at 8015.84	



US ROCKIES REGION PLANNING

**COLORADO NOTHERN ZONE - 83
WELD_CARMA 3 PAD
P_CARMA 8-36**

**P_CARMA 8-36
PLAN #1 12-16-09 RHS**

Anticollision Report

16 December, 2009



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CARMA 8-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4846.00ft (Original Well Elev)
Reference Site:	WELD_CARMA 3 PAD	MD Reference:	WELL @ 4846.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CARMA 8-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 8-36	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	8,015.84	PLAN #1 12-16-09 RHS (P_CARMA 8-36)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
WELD_CARMA 3 PAD						
P_CARMA 28-36 - P_CARMA 28-36 - PLAN #1 12-16-09	900.00	900.00	28.85	25.06	7.616	CC, ES, SF
P_CARMA 41-36 - P_CARMA 41-36 - PLAN #1 12-16-09	1,011.92	1,012.41	13.26	9.03	3.131	CC, ES
P_CARMA 41-36 - P_CARMA 41-36 - PLAN #1 12-16-09	1,100.00	1,100.80	13.66	9.10	2.995	SF
R & M STATE #1-36 EXISTING - R & M STATE #1-36 E	1,617.21	1,593.75	21.12	-44.41	0.322	Level 1, CC, ES, SF
R & M STATE #2-36 EXISTING - R & M STATE #2-36 E	1,223.51	1,206.82	40.32	35.18	7.849	CC, ES
R & M STATE #2-36 EXISTING - R & M STATE #2-36 E	1,300.00	1,282.70	41.46	35.98	7.575	SF

Offset Design WELD_CARMA 3 PAD - P_CARMA 28-36 - P_CARMA 28-36 - PLAN #1 12-16-09 RHS													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference Measured Depth (ft)	Vertical Depth (ft)	Offset Measured Depth (ft)	Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.00	0.00	0.00	0.00	0.00	0.00	-50.79	18.23	-22.35	28.85					
100.00	100.00	100.00	100.00	0.10	0.10	-50.79	18.23	-22.35	28.85	28.65	0.19	150.983		
200.00	200.00	200.00	200.00	0.32	0.32	-50.79	18.23	-22.35	28.85	28.20	0.64	45.030		
300.00	300.00	300.00	300.00	0.55	0.55	-50.79	18.23	-22.35	28.85	27.76	1.09	26.461		
400.00	400.00	400.00	400.00	0.77	0.77	-50.79	18.23	-22.35	28.85	27.31	1.54	18.735		
500.00	500.00	500.00	500.00	0.99	0.99	-50.79	18.23	-22.35	28.85	26.86	1.99	14.501		
600.00	600.00	600.00	600.00	1.22	1.22	-50.79	18.23	-22.35	28.85	26.41	2.44	11.828		
700.00	700.00	700.00	700.00	1.44	1.44	-50.79	18.23	-22.35	28.85	25.96	2.89	9.987		
800.00	800.00	800.00	800.00	1.67	1.67	-50.79	18.23	-22.35	28.85	25.51	3.34	8.642		
900.00	900.00	900.00	900.00	1.89	1.89	-50.79	18.23	-22.35	28.85	25.06	3.79	7.616	CC, ES, SF	
1,000.00	999.98	998.91	998.89	2.09	2.11	160.75	19.08	-23.83	32.19	27.99	4.20	7.667		
1,100.00	1,099.84	1,097.15	1,096.99	2.28	2.32	161.80	21.59	-28.24	42.21	37.63	4.58	9.218		
1,200.00	1,199.45	1,194.07	1,193.56	2.48	2.55	162.72	25.70	-35.45	58.85	53.89	4.96	11.858		
1,300.00	1,298.70	1,289.08	1,287.89	2.70	2.78	163.35	31.30	-45.27	81.97	76.63	5.35	15.329		
1,400.00	1,397.47	1,381.61	1,379.34	2.96	3.04	163.73	38.23	-57.44	111.41	105.68	5.73	19.435		
1,500.00	1,495.62	1,471.15	1,467.38	3.27	3.32	163.94	46.33	-71.66	146.95	140.83	6.12	24.020		
1,600.00	1,593.06	1,557.30	1,551.54	3.64	3.62	164.03	55.40	-87.58	188.33	181.83	6.50	28.961		
1,700.00	1,689.64	1,639.68	1,631.49	4.06	3.95	164.02	65.25	-104.86	235.28	228.39	6.89	34.161		
1,755.42	1,742.77	1,683.62	1,673.89	4.32	4.13	163.99	70.96	-114.89	263.60	256.50	7.10	37.128		
1,800.00	1,785.37	1,718.20	1,707.12	4.55	4.29	164.08	75.69	-123.18	287.23	279.93	7.30	39.341		
1,900.00	1,880.95	1,793.95	1,779.51	5.07	4.66	164.17	86.73	-142.56	341.82	334.06	7.76	44.061		

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 8-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4846.00ft (Original Well Elev)
Reference Site:	WELD_CARMA 3 PAD	MD Reference:	WELL @ 4846.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CARMA 8-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 8-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-16-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_CARMA 3 PAD - P_CARMA 28-36 - P_CARMA 28-36 - PLAN #1 12-16-09 RHS												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
2,000.00	1,976.52	1,867.19	1,848.92	5.61	5.07	164.15	98.30	-162.86	398.50	390.27	8.23	48.444	
2,100.00	2,072.10	1,939.41	1,916.77	6.16	5.49	164.06	110.56	-184.38	457.15	448.45	8.70	52.545	
2,200.00	2,167.67	2,019.88	1,992.10	6.72	5.99	163.96	124.56	-208.94	516.52	507.31	9.21	56.092	
2,300.00	2,263.25	2,100.35	2,067.44	7.30	6.51	163.88	138.55	-233.51	575.89	566.16	9.72	59.225	
2,400.00	2,358.82	2,180.81	2,142.77	7.88	7.04	163.81	152.55	-258.07	635.26	625.01	10.25	61.980	
2,500.00	2,454.40	2,261.28	2,218.11	8.47	7.58	163.76	166.55	-282.64	694.63	683.85	10.78	64.430	
2,600.00	2,549.97	2,341.74	2,293.44	9.06	8.13	163.71	180.55	-307.20	754.00	742.68	11.32	66.618	
2,700.00	2,645.55	2,422.21	2,368.78	9.65	8.68	163.67	194.54	-331.77	813.37	801.51	11.86	68.580	
2,800.00	2,741.12	2,502.68	2,444.11	10.25	9.23	163.64	208.54	-356.33	872.74	860.34	12.41	70.347	
2,900.00	2,836.70	2,583.14	2,519.45	10.85	9.79	163.61	222.54	-380.90	932.11	919.16	12.96	71.938	
3,000.00	2,932.27	2,663.61	2,594.79	11.45	10.35	163.58	236.54	-405.46	991.49	977.98	13.51	73.382	
3,100.00	3,027.85	2,744.08	2,670.12	12.05	10.92	163.56	250.53	-430.03	1,050.86	1,036.79	14.07	74.698	
3,200.00	3,123.42	2,824.54	2,745.46	12.65	11.49	163.54	264.53	-454.59	1,110.23	1,095.60	14.63	75.900	
3,300.00	3,219.00	2,905.01	2,820.79	13.26	12.05	163.52	278.53	-479.16	1,169.60	1,154.42	15.19	77.003	
3,400.00	3,314.57	2,985.47	2,896.13	13.87	12.63	163.50	292.53	-503.72	1,228.98	1,213.22	15.75	78.014	
3,500.00	3,410.15	3,065.94	2,971.46	14.47	13.20	163.49	306.52	-528.29	1,288.35	1,272.03	16.32	78.947	
3,600.00	3,505.72	3,146.41	3,046.80	15.08	13.77	163.47	320.52	-552.85	1,347.72	1,330.84	16.89	79.809	
3,700.00	3,601.30	3,226.87	3,122.13	15.69	14.35	163.46	334.52	-577.42	1,407.09	1,389.64	17.46	80.609	
3,800.00	3,696.87	3,307.34	3,197.47	16.30	14.92	163.45	348.51	-601.98	1,466.47	1,448.44	18.03	81.352	
3,900.00	3,792.45	3,387.81	3,272.81	16.91	15.50	163.44	362.51	-626.55	1,525.84	1,507.24	18.60	82.043	
4,000.00	3,888.02	3,468.27	3,348.14	17.52	16.08	163.43	376.51	-651.11	1,585.21	1,566.04	19.17	82.687	
4,100.00	3,983.60	3,548.74	3,423.48	18.13	16.66	163.42	390.51	-675.68	1,644.59	1,624.84	19.75	83.291	
4,200.00	4,079.17	3,629.20	3,498.81	18.75	17.24	163.41	404.50	-700.24	1,703.96	1,683.64	20.32	83.856	
4,300.00	4,174.75	3,709.67	3,574.15	19.36	17.82	163.40	418.50	-724.81	1,763.33	1,742.44	20.90	84.387	
4,400.00	4,270.32	3,790.14	3,649.48	19.97	18.40	163.39	432.50	-749.37	1,822.70	1,801.23	21.47	84.885	
4,500.00	4,365.90	3,870.60	3,724.82	20.58	18.98	163.39	446.50	-773.94	1,882.08	1,860.03	22.05	85.355	
4,600.00	4,461.47	3,951.07	3,800.15	21.20	19.56	163.38	460.49	-798.50	1,941.45	1,918.82	22.63	85.798	
4,700.00	4,557.05	4,031.54	3,875.49	21.81	20.14	163.37	474.49	-823.07	2,000.82	1,977.62	23.21	86.216	
4,800.00	4,652.62	4,112.00	3,950.82	22.42	20.73	163.37	488.49	-847.63	2,060.20	2,036.41	23.79	86.613	
4,900.00	4,748.20	4,192.47	4,026.16	23.04	21.31	163.36	502.49	-872.20	2,119.57	2,095.20	24.37	86.988	
5,000.00	4,843.77	4,272.93	4,101.50	23.65	21.89	163.36	516.48	-896.77	2,178.94	2,154.00	24.95	87.344	
5,100.00	4,939.35	4,353.40	4,176.83	24.27	22.47	163.35	530.48	-921.33	2,238.32	2,212.79	25.53	87.682	
5,200.00	5,034.92	4,433.87	4,252.17	24.88	23.06	163.35	544.48	-945.90	2,297.69	2,271.58	26.11	88.003	
5,300.00	5,130.50	4,514.33	4,327.50	25.50	23.64	163.34	558.48	-970.46	2,357.06	2,330.37	26.69	88.309	
5,315.42	5,145.23	4,526.74	4,339.12	25.59	23.73	163.34	560.63	-974.25	2,366.22	2,339.44	26.78	88.355	
5,400.00	5,226.43	4,595.50	4,403.49	26.03	24.23	163.67	572.60	-995.24	2,415.47	2,388.02	27.45	87.994	
5,500.00	5,323.27	4,678.54	4,481.24	26.42	24.83	164.00	587.04	-1,020.59	2,471.15	2,442.96	28.19	87.650	
5,600.00	5,420.93	4,763.38	4,560.67	26.77	25.45	164.28	601.80	-1,046.49	2,524.02	2,495.11	28.91	87.305	
5,700.00	5,519.27	4,849.92	4,641.69	27.08	26.08	164.50	616.85	-1,072.91	2,574.01	2,544.41	29.60	86.967	
5,800.00	5,618.19	4,938.04	4,724.20	27.35	26.72	164.68	632.18	-1,099.81	2,621.07	2,590.82	30.25	86.641	
5,900.00	5,717.56	5,027.65	4,808.09	27.57	27.37	164.81	647.77	-1,127.17	2,665.14	2,634.27	30.87	86.331	
6,000.00	5,817.26	5,118.63	4,893.27	27.75	28.03	164.90	663.60	-1,154.94	2,706.17	2,674.72	31.45	86.041	
6,100.00	5,917.16	5,210.88	4,979.63	27.88	28.70	164.95	679.64	-1,183.10	2,744.12	2,712.13	31.99	85.773	
6,170.84	5,988.00	5,276.76	5,052.88	27.96	31.34	-46.72	754.72	-1,314.87	2,766.22	2,732.62	33.60	82.331	
6,200.00	6,017.16	6,259.28	6,003.91	27.99	32.27	-46.93	775.96	-1,352.14	2,768.75	2,734.28	34.47	80.326	
6,300.00	6,117.16	6,372.52	6,117.16	28.07	32.37	-46.93	775.98	-1,352.17	2,768.75	2,733.97	34.78	79.609	
6,400.00	6,217.16	6,472.52	6,217.16	28.16	32.46	-46.93	775.98	-1,352.17	2,768.75	2,733.68	35.08	78.932	
6,500.00	6,317.16	6,572.52	6,317.16	28.25	32.56	-46.93	775.98	-1,352.17	2,768.75	2,733.37	35.38	78.259	
6,600.00	6,417.16	6,672.52	6,417.16	28.34	32.65	-46.93	775.98	-1,352.17	2,768.75	2,733.07	35.68	77.591	
6,700.00	6,517.16	6,772.52	6,517.16	28.44	32.74	-46.93	775.98	-1,352.17	2,768.75	2,732.76	35.99	76.928	
6,800.00	6,617.16	6,872.52	6,617.16	28.53	32.84	-46.93	775.98	-1,352.17	2,768.75	2,732.45	36.30	76.269	
6,900.00	6,717.16	6,972.52	6,717.16	28.63	32.94	-46.93	775.98	-1,352.17	2,768.75	2,732.14	36.62	75.616	

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 8-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4846.00ft (Original Well Elev)
Reference Site:	WELD_CARMA 3 PAD	MD Reference:	WELL @ 4846.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CARMA 8-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 8-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-16-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_CARMA 3 PAD - P_CARMA 28-36 - P_CARMA 28-36 - 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
7,000.00	6,817.16	7,072.52	6,817.16	28.73	33.04	-46.93	775.98	-1,352.17	2,768.75	2,731.82	36.93	74.968	
7,100.00	6,917.16	7,172.52	6,917.16	28.82	33.14	-46.93	775.98	-1,352.17	2,768.75	2,731.50	37.25	74.326	
7,200.00	7,017.16	7,272.52	7,017.16	28.92	33.24	-46.93	775.98	-1,352.17	2,768.75	2,731.18	37.57	73.689	
7,300.00	7,117.16	7,372.52	7,117.16	29.03	33.34	-46.93	775.98	-1,352.17	2,768.75	2,730.86	37.90	73.059	
7,400.00	7,217.16	7,472.52	7,217.16	29.13	33.45	-46.93	775.98	-1,352.17	2,768.75	2,730.53	38.22	72.434	
7,500.00	7,317.16	7,572.52	7,317.16	29.23	33.55	-46.93	775.98	-1,352.17	2,768.75	2,730.20	38.55	71.815	
7,600.00	7,417.16	7,672.52	7,417.16	29.34	33.66	-46.93	775.98	-1,352.17	2,768.75	2,729.87	38.89	71.202	
7,700.00	7,517.16	7,772.52	7,517.16	29.45	33.76	-46.93	775.98	-1,352.17	2,768.75	2,729.53	39.22	70.595	
7,800.00	7,617.16	7,872.52	7,617.16	29.55	33.87	-46.93	775.98	-1,352.17	2,768.75	2,729.20	39.56	69.995	
7,900.00	7,717.16	7,972.52	7,717.16	29.66	33.98	-46.93	775.98	-1,352.17	2,768.75	2,728.86	39.90	69.400	
8,000.00	7,817.16	8,072.52	7,817.16	29.78	34.09	-46.93	775.98	-1,352.17	2,768.75	2,728.52	40.24	68.813	
8,015.84	7,833.00	8,088.36	7,833.00	29.79	34.11	-46.93	775.98	-1,352.17	2,768.75	2,728.46	40.29	68.720	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CARMA 8-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4846.00ft (Original Well Elev)
Reference Site:	WELD_CARMA 3 PAD	MD Reference:	WELL @ 4846.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CARMA 8-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 8-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-16-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_CARMA 3 PAD - P_CARMA 41-36 - P_CARMA 41-36 - 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	-56.87	7.29	-11.18	13.35				
100.00	100.00	100.00	100.00	0.10	0.10	-56.87	7.29	-11.18	13.35	13.15	0.19	69.851	
200.00	200.00	200.00	200.00	0.32	0.32	-56.87	7.29	-11.18	13.35	12.70	0.64	20.833	
300.00	300.00	300.00	300.00	0.55	0.55	-56.87	7.29	-11.18	13.35	12.25	1.09	12.242	
400.00	400.00	400.00	400.00	0.77	0.77	-56.87	7.29	-11.18	13.35	11.81	1.54	8.668	
500.00	500.00	500.00	500.00	0.99	0.99	-56.87	7.29	-11.18	13.35	11.36	1.99	6.709	
600.00	600.00	600.00	600.00	1.22	1.22	-56.87	7.29	-11.18	13.35	10.91	2.44	5.472	
700.00	700.00	700.00	700.00	1.44	1.44	-56.87	7.29	-11.18	13.35	10.46	2.89	4.620	
800.00	800.00	800.00	800.00	1.67	1.67	-56.87	7.29	-11.18	13.35	10.01	3.34	3.998	
900.00	900.00	900.00	900.00	1.89	1.89	-56.87	7.29	-11.18	13.35	9.56	3.79	3.524	
1,000.00	999.98	1,000.44	1,000.42	2.09	2.10	159.27	6.71	-9.51	13.27	9.07	4.19	3.165	
1,011.92	1,011.89	1,012.41	1,012.38	2.11	2.13	160.57	6.56	-9.10	13.26	9.03	4.24	3.131 CC, ES	
1,100.00	1,099.84	1,100.80	1,100.63	2.28	2.30	174.39	4.96	-4.54	13.66	9.10	4.56	2.995 SF	
1,200.00	1,199.45	1,200.98	1,200.43	2.48	2.52	-164.72	2.05	3.73	16.13	11.18	4.95	3.256	
1,300.00	1,298.70	1,300.92	1,299.61	2.70	2.76	-146.61	-2.00	15.24	21.92	16.52	5.40	4.059	
1,400.00	1,397.47	1,400.52	1,397.98	2.96	3.03	-134.61	-7.19	29.96	31.04	25.12	5.92	5.245	
1,500.00	1,495.62	1,499.71	1,495.34	3.27	3.34	-127.14	-13.47	47.82	43.08	36.56	6.52	6.609	
1,600.00	1,593.06	1,598.42	1,591.52	3.64	3.71	-122.35	-20.83	68.73	57.74	50.53	7.21	8.004	
1,700.00	1,689.64	1,696.57	1,686.35	4.06	4.13	-119.11	-29.24	92.62	74.85	66.83	8.02	9.337	
1,755.42	1,742.77	1,750.71	1,738.27	4.32	4.40	-117.74	-34.34	107.10	85.34	76.82	8.52	10.020	
1,800.00	1,785.37	1,794.13	1,779.68	4.55	4.61	-116.77	-38.66	119.38	94.14	85.20	8.94	10.531	
1,900.00	1,880.95	1,891.90	1,872.58	5.07	5.15	-114.50	-48.78	148.15	114.23	104.27	9.96	11.473	
2,000.00	1,976.52	1,989.78	1,965.55	5.61	5.71	-112.90	-58.94	176.99	134.45	123.44	11.01	12.210	
2,100.00	2,072.10	2,087.65	2,058.53	6.16	6.29	-111.72	-69.09	205.83	154.75	142.65	12.09	12.796	
2,200.00	2,167.67	2,185.53	2,151.50	6.72	6.87	-110.81	-79.24	234.67	175.09	161.90	13.20	13.269	
2,300.00	2,263.25	2,283.40	2,244.48	7.30	7.47	-110.09	-89.39	263.51	195.47	181.16	14.31	13.656	
2,400.00	2,358.82	2,381.28	2,337.46	7.88	8.08	-109.50	-99.54	292.36	215.88	200.43	15.44	13.978	
2,500.00	2,454.40	2,479.15	2,430.43	8.47	8.69	-109.02	-109.69	321.20	236.30	219.71	16.58	14.248	
2,600.00	2,549.97	2,577.02	2,523.41	9.06	9.31	-108.61	-119.85	350.04	256.73	239.00	17.73	14.479	
2,700.00	2,645.55	2,674.90	2,616.39	9.65	9.93	-108.26	-130.00	378.88	277.18	258.29	18.89	14.677	
2,800.00	2,741.12	2,772.77	2,709.36	10.25	10.55	-107.97	-140.15	407.72	297.63	277.59	20.04	14.848	
2,900.00	2,836.70	2,870.65	2,802.34	10.85	11.18	-107.70	-150.30	436.56	318.09	296.89	21.21	14.999	
3,000.00	2,932.27	2,968.52	2,895.32	11.45	11.81	-107.48	-160.45	465.41	338.56	316.19	22.37	15.131	
3,100.00	3,027.85	3,066.40	2,988.29	12.05	12.44	-107.27	-170.60	494.25	359.03	335.49	23.54	15.249	
3,200.00	3,123.42	3,164.27	3,081.27	12.65	13.07	-107.09	-180.76	523.09	379.51	354.79	24.72	15.355	
3,300.00	3,219.00	3,262.15	3,174.24	13.26	13.70	-106.93	-190.91	551.93	399.98	374.09	25.89	15.450	
3,400.00	3,314.57	3,360.02	3,267.22	13.87	14.34	-106.78	-201.06	580.77	420.47	393.40	27.07	15.535	
3,500.00	3,410.15	3,457.90	3,360.20	14.47	14.97	-106.65	-211.21	609.61	440.95	412.71	28.24	15.613	
3,600.00	3,505.72	3,555.77	3,453.17	15.08	15.61	-106.53	-221.36	638.45	461.43	432.01	29.42	15.684	
3,700.00	3,601.30	3,653.65	3,546.15	15.69	16.25	-106.42	-231.51	667.30	481.92	451.32	30.60	15.749	
3,800.00	3,696.87	3,751.52	3,639.13	16.30	16.88	-106.32	-241.66	696.14	502.41	470.63	31.78	15.809	
3,900.00	3,792.45	3,849.40	3,732.10	16.91	17.52	-106.22	-251.82	724.98	522.90	489.94	32.96	15.865	
4,000.00	3,888.02	3,947.27	3,825.08	17.52	18.16	-106.13	-261.97	753.82	543.39	509.25	34.14	15.916	
4,100.00	3,983.60	4,045.15	3,918.05	18.13	18.80	-106.05	-272.12	782.66	563.88	528.56	35.32	15.964	
4,200.00	4,079.17	4,143.02	4,011.03	18.75	19.44	-105.98	-282.27	811.50	584.38	547.87	36.50	16.008	
4,300.00	4,174.75	4,240.90	4,104.01	19.36	20.08	-105.91	-292.42	840.35	604.87	567.18	37.69	16.050	
4,400.00	4,270.32	4,338.77	4,196.98	19.97	20.72	-105.84	-302.57	869.19	625.37	586.50	38.87	16.089	
4,500.00	4,365.90	4,436.65	4,289.96	20.58	21.37	-105.78	-312.73	898.03	645.86	605.81	40.05	16.126	
4,600.00	4,461.47	4,534.52	4,382.94	21.20	22.01	-105.73	-322.88	926.87	666.36	625.12	41.23	16.160	
4,700.00	4,557.05	4,632.40	4,475.91	21.81	22.65	-105.67	-333.03	955.71	686.86	644.44	42.42	16.193	
4,800.00	4,652.62	4,730.27	4,568.89	22.42	23.29	-105.62	-343.18	984.55	707.35	663.75	43.60	16.224	
4,900.00	4,748.20	4,828.15	4,661.86	23.04	23.93	-105.57	-353.33	1,013.39	727.85	683.07	44.78	16.253	

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 8-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4846.00ft (Original Well Elev)
Reference Site:	WELD_CARMA 3 PAD	MD Reference:	WELL @ 4846.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CARMA 8-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 8-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-16-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_CARMA 3 PAD - P_CARMA 41-36 - P_CARMA 41-36 - 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
5,000.00	4,843.77	4,926.02	4,754.84	23.65	24.58	-105.53	-363.48	1,042.24	748.35	702.39	45.97	16.281	
5,100.00	4,939.35	5,023.90	4,847.82	24.27	25.22	-105.49	-373.64	1,071.08	768.85	721.70	47.15	16.307	
5,200.00	5,034.92	5,121.77	4,940.79	24.88	25.86	-105.44	-383.79	1,099.92	789.35	741.02	48.33	16.333	
5,300.00	5,130.50	5,219.64	5,033.77	25.50	26.51	-105.41	-393.94	1,128.76	809.85	760.34	49.51	16.357	
5,315.42	5,145.23	5,234.73	5,048.10	25.59	26.61	-105.40	-395.50	1,133.21	813.01	763.32	49.69	16.360	
5,400.00	5,226.43	5,322.02	5,131.10	26.03	27.12	-105.63	-404.47	1,158.68	829.93	779.28	50.65	16.387	
5,500.00	5,323.27	5,432.86	5,237.49	26.42	27.63	-105.82	-414.79	1,188.01	847.94	796.39	51.55	16.448	
5,600.00	5,420.93	5,544.54	5,345.81	26.77	28.09	-105.99	-423.81	1,213.62	863.54	811.17	52.37	16.490	
5,700.00	5,519.27	5,656.93	5,455.81	27.08	28.49	-106.13	-431.46	1,235.36	876.69	823.61	53.09	16.515	
5,800.00	5,618.19	5,769.94	5,567.23	27.35	28.82	-106.24	-437.70	1,253.09	887.36	833.66	53.70	16.524	
5,900.00	5,717.56	5,883.43	5,679.79	27.57	29.11	-106.33	-442.49	1,266.71	895.52	841.30	54.22	16.517	
6,000.00	5,817.26	5,997.28	5,793.19	27.75	29.33	-106.39	-445.81	1,276.14	901.15	846.52	54.63	16.496	
6,100.00	5,917.16	6,111.35	5,907.13	27.88	29.49	-106.42	-447.63	1,281.32	904.23	849.29	54.94	16.460	
6,170.84	5,988.00	6,192.23	5,988.00	27.96	29.57	42.54	-448.01	1,282.39	904.87	849.77	55.10	16.422	
6,200.00	6,017.16	6,221.39	6,017.16	27.99	29.60	42.54	-448.01	1,282.39	904.87	849.71	55.16	16.405	
6,300.00	6,117.16	6,321.39	6,117.16	28.07	29.69	42.54	-448.01	1,282.39	904.87	849.53	55.34	16.350	
6,400.00	6,217.16	6,421.39	6,217.16	28.16	29.78	42.54	-448.01	1,282.39	904.87	849.34	55.53	16.294	
6,500.00	6,317.16	6,521.39	6,317.16	28.25	29.88	42.54	-448.01	1,282.39	904.87	849.14	55.73	16.237	
6,600.00	6,417.16	6,621.39	6,417.16	28.34	29.98	42.54	-448.01	1,282.39	904.87	848.95	55.92	16.180	
6,700.00	6,517.16	6,721.39	6,517.16	28.44	30.08	42.54	-448.01	1,282.39	904.87	848.75	56.12	16.123	
6,800.00	6,617.16	6,821.39	6,617.16	28.53	30.18	42.54	-448.01	1,282.39	904.87	848.54	56.33	16.065	
6,900.00	6,717.16	6,921.39	6,717.16	28.63	30.28	42.54	-448.01	1,282.39	904.87	848.34	56.53	16.007	
7,000.00	6,817.16	7,021.39	6,817.16	28.73	30.38	42.54	-448.01	1,282.39	904.87	848.13	56.74	15.948	
7,100.00	6,917.16	7,121.39	6,917.16	28.82	30.48	42.54	-448.01	1,282.39	904.87	847.92	56.95	15.889	
7,200.00	7,017.16	7,221.39	7,017.16	28.92	30.59	42.54	-448.01	1,282.39	904.87	847.71	57.16	15.830	
7,300.00	7,117.16	7,321.39	7,117.16	29.03	30.70	42.54	-448.01	1,282.39	904.87	847.49	57.38	15.770	
7,400.00	7,217.16	7,421.39	7,217.16	29.13	30.80	42.54	-448.01	1,282.39	904.87	847.27	57.60	15.710	
7,500.00	7,317.16	7,521.39	7,317.16	29.23	30.91	42.54	-448.01	1,282.39	904.87	847.05	57.82	15.650	
7,565.22	7,382.38	7,586.61	7,382.38	29.30	30.98	42.54	-448.01	1,282.39	904.87	846.90	57.97	15.610	
7,600.00	7,417.16	7,617.23	7,413.00	29.34	31.02	42.54	-448.01	1,282.39	904.88	846.84	58.04	15.591	
7,700.00	7,517.16	7,617.23	7,413.00	29.45	31.02	42.54	-448.01	1,282.39	910.85	852.70	58.15	15.664	
7,800.00	7,617.16	7,617.23	7,413.00	29.55	31.02	42.54	-448.01	1,282.39	927.62	869.35	58.26	15.921	
7,900.00	7,717.16	7,617.23	7,413.00	29.66	31.02	42.54	-448.01	1,282.39	954.62	896.24	58.38	16.353	
8,000.00	7,817.16	7,617.23	7,413.00	29.78	31.02	42.54	-448.01	1,282.39	991.03	932.53	58.49	16.943	
8,015.84	7,833.00	7,617.23	7,413.00	29.79	31.02	42.54	-448.01	1,282.39	997.59	939.08	58.51	17.050	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CARMA 8-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4846.00ft (Original Well Elev)
Reference Site:	WELD_CARMA 3 PAD	MD Reference:	WELL @ 4846.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CARMA 8-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 8-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-16-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_CARMA 3 PAD - R & M STATE #1-36 EXISTING - R & M STATE #1-36 EXISTING - R & M STA													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	162.28	-87.42	27.94	93.16					
100.00	100.00	84.00	84.00	0.10	1.68	162.28	-87.42	27.94	91.78	90.00	1.78	51.688		
200.00	200.00	184.00	184.00	0.32	5.36	162.28	-87.42	27.94	91.78	86.10	5.68	16.157		
300.00	300.00	284.00	284.00	0.55	9.36	162.28	-87.42	27.94	91.78	81.87	9.91	9.266		
400.00	400.00	384.00	384.00	0.77	13.36	162.28	-87.42	27.94	91.78	77.65	14.13	6.495		
500.00	500.00	484.00	484.00	0.99	17.36	162.28	-87.42	27.94	91.78	73.42	18.35	5.000		
600.00	600.00	584.00	584.00	1.22	21.36	162.28	-87.42	27.94	91.78	69.20	22.58	4.065		
700.00	700.00	684.00	684.00	1.44	25.36	162.28	-87.42	27.94	91.78	64.97	26.80	3.424		
800.00	800.00	784.00	784.00	1.67	29.36	162.28	-87.42	27.94	91.78	60.75	31.03	2.958		
900.00	900.00	884.00	884.00	1.89	33.36	162.28	-87.42	27.94	91.78	56.52	35.25	2.603		
1,000.00	999.98	983.98	983.98	2.09	37.36	13.57	-87.42	27.94	90.08	50.65	39.43	2.285		
1,100.00	1,099.84	1,083.84	1,083.84	2.28	41.35	14.42	-87.42	27.94	85.00	41.47	43.53	1.953		
1,200.00	1,199.45	1,183.45	1,183.45	2.48	45.34	16.09	-87.42	27.94	76.59	29.03	47.56	1.610		
1,300.00	1,298.70	1,282.70	1,282.70	2.70	49.31	19.15	-87.42	27.94	64.96	13.44	51.53	1.261 Level 3		
1,400.00	1,397.47	1,381.47	1,381.47	2.96	53.26	25.10	-87.42	27.94	50.43	-5.03	55.46	0.909 Level 1		
1,500.00	1,495.62	1,479.62	1,479.62	3.27	57.18	38.96	-87.42	27.94	34.05	-25.51	59.57	0.572 Level 1		
1,600.00	1,593.06	1,577.06	1,577.06	3.64	61.08	79.04	-87.42	27.94	21.54	-43.14	64.68	0.333 Level 1		
1,617.21	1,609.75	1,593.75	1,593.75	3.71	61.75	90.00	-87.42	27.94	21.12	-44.41	65.53	0.322 Level 1, CC, ES, SF		
1,700.00	1,689.64	1,673.64	1,673.64	4.06	64.95	134.59	-87.42	27.94	30.26	-37.33	67.58	0.448 Level 1		
1,755.42	1,742.77	1,726.77	1,726.77	4.32	67.07	149.46	-87.42	27.94	43.00	-25.77	68.77	0.625 Level 1		
1,800.00	1,785.37	1,769.37	1,769.37	4.55	68.77	156.39	-87.42	27.94	54.80	-15.37	70.17	0.781 Level 1		
1,900.00	1,880.95	1,864.95	1,864.95	5.07	72.60	164.55	-87.42	27.94	82.73	8.97	73.76	1.122 Level 2		
2,000.00	1,976.52	1,960.52	1,960.52	5.61	76.42	168.58	-87.42	27.94	111.43	33.88	77.55	1.437 Level 3		
2,100.00	2,072.10	2,056.10	2,056.10	6.16	80.24	170.95	-87.42	27.94	140.42	59.01	81.42	1.725		
2,200.00	2,167.67	2,151.67	2,151.67	6.72	84.07	172.52	-87.42	27.94	169.56	84.25	85.31	1.988		
2,300.00	2,263.25	2,247.25	2,247.25	7.30	87.89	173.62	-87.42	27.94	198.79	109.57	89.22	2.228		
2,400.00	2,358.82	2,342.82	2,342.82	7.88	91.71	174.44	-87.42	27.94	228.06	134.92	93.14	2.449		
2,500.00	2,454.40	2,438.40	2,438.40	8.47	95.54	175.08	-87.42	27.94	257.37	160.30	97.07	2.651		
2,600.00	2,549.97	2,533.97	2,533.97	9.06	99.36	175.58	-87.42	27.94	286.70	185.70	101.00	2.839		
2,700.00	2,645.55	2,629.55	2,629.55	9.65	103.18	175.99	-87.42	27.94	316.04	211.10	104.94	3.012		
2,800.00	2,741.12	2,725.12	2,725.12	10.25	107.00	176.33	-87.42	27.94	345.40	236.52	108.88	3.172		
2,900.00	2,836.70	2,820.70	2,820.70	10.85	110.83	176.62	-87.42	27.94	374.77	261.95	112.82	3.322		
3,000.00	2,932.27	2,916.27	2,916.27	11.45	114.65	176.87	-87.42	27.94	404.14	287.38	116.76	3.461		
3,100.00	3,027.85	3,011.85	3,011.85	12.05	118.47	177.08	-87.42	27.94	433.52	312.82	120.71	3.592		
3,200.00	3,123.42	3,107.42	3,107.42	12.65	122.30	177.26	-87.42	27.94	462.91	338.25	124.65	3.714		
3,300.00	3,219.00	3,203.00	3,203.00	13.26	126.12	177.43	-87.42	27.94	492.30	363.70	128.60	3.828		
3,400.00	3,314.57	3,298.57	3,298.57	13.87	129.94	177.57	-87.42	27.94	521.69	389.14	132.55	3.936		
3,500.00	3,410.15	3,394.15	3,394.15	14.47	133.77	177.70	-87.42	27.94	551.08	414.59	136.50	4.037		
3,600.00	3,505.72	3,489.72	3,489.72	15.08	137.59	177.82	-87.42	27.94	580.48	440.03	140.45	4.133		
3,700.00	3,601.30	3,585.30	3,585.30	15.69	141.41	177.92	-87.42	27.94	609.88	465.48	144.40	4.224		
3,800.00	3,696.87	3,680.87	3,680.87	16.30	145.23	178.02	-87.42	27.94	639.28	490.93	148.35	4.309		
3,900.00	3,792.45	3,776.45	3,776.45	16.91	149.06	178.11	-87.42	27.94	668.69	516.38	152.31	4.390		
4,000.00	3,888.02	3,872.02	3,872.02	17.52	152.88	178.19	-87.42	27.94	698.09	541.83	156.26	4.468		
4,100.00	3,983.60	3,967.60	3,967.60	18.13	156.70	178.26	-87.42	27.94	727.50	567.28	160.21	4.541		
4,200.00	4,079.17	4,063.17	4,063.17	18.75	160.53	178.33	-87.42	27.94	756.90	592.73	164.17	4.611		
4,300.00	4,174.75	4,158.75	4,158.75	19.36	164.35	178.39	-87.42	27.94	786.31	618.19	168.12	4.677		
4,400.00	4,270.32	4,254.32	4,254.32	19.97	168.17	178.45	-87.42	27.94	815.72	643.64	172.08	4.740		
4,500.00	4,365.90	4,349.90	4,349.90	20.58	172.00	178.50	-87.42	27.94	845.13	669.09	176.03	4.801		
4,600.00	4,461.47	4,445.47	4,445.47	21.20	175.82	178.55	-87.42	27.94	874.54	694.55	179.99	4.859		
4,700.00	4,557.05	4,541.05	4,541.05	21.81	179.64	178.60	-87.42	27.94	903.95	720.00	183.94	4.914		
4,800.00	4,652.62	4,636.62	4,636.62	22.42	183.46	178.64	-87.42	27.94	933.36	745.46	187.90	4.967		
4,900.00	4,748.20	4,732.20	4,732.20	23.04	187.29	178.68	-87.42	27.94	962.77	770.91	191.86	5.018		

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 8-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4846.00ft (Original Well Elev)
Reference Site:	WELD_CARMA 3 PAD	MD Reference:	WELL @ 4846.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CARMA 8-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 8-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-16-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_CARMA 3 PAD - R & M STATE #1-36 EXISTING - R & M STATE #1-36 EXISTING - R & M STA												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
5,000.00	4,843.77	4,827.77	4,827.77	23.65	191.11	178.72	-87.42	27.94	992.18	796.37	195.81	5.067	
5,100.00	4,939.35	4,923.35	4,923.35	24.27	194.93	178.76	-87.42	27.94	1,021.59	821.82	199.77	5.114	
5,200.00	5,034.92	5,018.92	5,018.92	24.88	198.76	178.80	-87.42	27.94	1,051.00	847.28	203.73	5.159	
5,300.00	5,130.50	5,114.50	5,114.50	25.50	202.58	178.83	-87.42	27.94	1,080.41	872.73	207.68	5.202	
5,315.42	5,145.23	5,129.23	5,129.23	25.59	203.17	178.83	-87.42	27.94	1,084.95	876.66	208.29	5.209	
5,400.00	5,226.43	5,210.43	5,210.43	26.03	206.42	178.87	-87.42	27.94	1,108.63	895.37	213.26	5.199	
5,500.00	5,323.27	5,307.27	5,307.27	26.42	210.29	178.90	-87.42	27.94	1,133.52	914.45	219.07	5.174	
5,600.00	5,420.93	5,404.93	5,404.93	26.77	214.20	178.93	-87.42	27.94	1,155.02	930.32	224.70	5.140	
5,700.00	5,519.27	5,503.27	5,503.27	27.08	218.13	178.95	-87.42	27.94	1,173.10	942.98	230.12	5.098	
5,800.00	5,618.19	5,602.19	5,602.19	27.35	222.09	178.97	-87.42	27.94	1,187.73	952.42	235.32	5.047	
5,900.00	5,717.56	5,701.56	5,701.56	27.57	226.06	178.99	-87.42	27.94	1,198.90	958.64	240.27	4.990	
6,000.00	5,817.26	5,801.26	5,801.26	27.75	230.05	179.00	-87.42	27.94	1,206.60	961.65	244.95	4.926	
6,100.00	5,917.16	5,901.16	5,901.16	27.88	234.05	179.00	-87.42	27.94	1,210.82	961.47	249.35	4.856	
6,170.84	5,988.00	5,972.00	5,972.00	27.96	236.88	-32.03	-87.42	27.94	1,211.70	959.41	252.28	4.803	
6,200.00	6,017.16	6,001.16	6,001.16	27.99	238.05	-32.03	-87.42	27.94	1,211.70	958.20	253.50	4.780	
6,300.00	6,117.16	6,101.16	6,101.16	28.07	242.05	-32.03	-87.42	27.94	1,211.70	954.04	257.65	4.703	
6,400.00	6,217.16	6,201.16	6,201.16	28.16	246.05	-32.03	-87.42	27.94	1,211.70	949.88	261.81	4.628	
6,500.00	6,317.16	6,301.16	6,301.16	28.25	250.05	-32.03	-87.42	27.94	1,211.70	945.72	265.97	4.556	
6,600.00	6,417.16	6,401.16	6,401.16	28.34	254.05	-32.03	-87.42	27.94	1,211.70	941.56	270.13	4.486	
6,700.00	6,517.16	6,501.16	6,501.16	28.44	258.05	-32.03	-87.42	27.94	1,211.70	937.40	274.30	4.417	
6,800.00	6,617.16	6,601.16	6,601.16	28.53	262.05	-32.03	-87.42	27.94	1,211.70	933.24	278.46	4.351	
6,900.00	6,717.16	6,701.16	6,701.16	28.63	266.05	-32.03	-87.42	27.94	1,211.70	929.07	282.63	4.287	
7,000.00	6,817.16	6,801.16	6,801.16	28.73	270.05	-32.03	-87.42	27.94	1,211.70	924.90	286.79	4.225	
7,100.00	6,917.16	6,901.16	6,901.16	28.82	274.05	-32.03	-87.42	27.94	1,211.70	920.74	290.96	4.164	
7,200.00	7,017.16	7,001.16	7,001.16	28.92	278.05	-32.03	-87.42	27.94	1,211.70	916.57	295.13	4.106	
7,300.00	7,117.16	7,101.16	7,101.16	29.03	282.05	-32.03	-87.42	27.94	1,211.70	912.39	299.30	4.048	
7,400.00	7,217.16	7,201.16	7,201.16	29.13	286.05	-32.03	-87.42	27.94	1,211.70	908.22	303.47	3.993	
7,500.00	7,317.16	7,301.16	7,301.16	29.23	290.05	-32.03	-87.42	27.94	1,211.70	904.05	307.65	3.939	
7,600.00	7,417.16	7,401.16	7,401.16	29.34	294.05	-32.03	-87.42	27.94	1,211.70	899.88	311.82	3.886	
7,662.05	7,479.21	7,463.21	7,463.21	29.41	296.53	-32.03	-87.42	27.94	1,211.70	897.28	314.41	3.854	
7,700.00	7,517.16	7,489.00	7,489.00	29.45	297.56	-32.03	-87.42	27.94	1,211.76	896.25	315.51	3.841	
7,800.00	7,617.16	7,489.00	7,489.00	29.55	297.56	-32.03	-87.42	27.94	1,216.88	901.19	315.69	3.855	
7,900.00	7,717.16	7,489.00	7,489.00	29.66	297.56	-32.03	-87.42	27.94	1,230.13	914.26	315.86	3.894	
8,000.00	7,817.16	7,489.00	7,489.00	29.78	297.56	-32.03	-87.42	27.94	1,251.26	935.22	316.04	3.959	
8,015.84	7,833.00	7,489.00	7,489.00	29.79	297.56	-32.03	-87.42	27.94	1,255.31	939.23	316.07	3.972	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CARMA 8-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4846.00ft (Original Well Elev)
Reference Site:	WELD_CARMA 3 PAD	MD Reference:	WELL @ 4846.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CARMA 8-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 8-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-16-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_CARMA 3 PAD - R & M STATE #2-36 EXISTING - R & M STATE #2-36 EXISTING - R & M STA													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.00	0.00	0.00	0.00	0.00	0.00	-145.38	-36.42	-25.14	47.06					
100.00	100.00	84.00	84.00	0.10	0.09	-145.38	-36.42	-25.14	44.26	44.07	0.19	232.980		
200.00	200.00	184.00	184.00	0.32	0.30	-145.38	-36.42	-25.14	44.26	43.64	0.62	71.212		
300.00	300.00	284.00	284.00	0.55	0.53	-145.38	-36.42	-25.14	44.26	43.19	1.07	41.322		
400.00	400.00	384.00	384.00	0.77	0.75	-145.38	-36.42	-25.14	44.26	42.74	1.52	29.106		
500.00	500.00	484.00	484.00	0.99	0.98	-145.38	-36.42	-25.14	44.26	42.29	1.97	22.465		
600.00	600.00	584.00	584.00	1.22	1.20	-145.38	-36.42	-25.14	44.26	41.84	2.42	18.291		
700.00	700.00	684.00	684.00	1.44	1.43	-145.38	-36.42	-25.14	44.26	41.39	2.87	15.425		
800.00	800.00	784.00	784.00	1.67	1.65	-145.38	-36.42	-25.14	44.26	40.94	3.32	13.336		
900.00	900.00	884.00	884.00	1.89	1.87	-145.38	-36.42	-25.14	44.26	40.49	3.77	11.745		
1,000.00	999.98	983.98	983.98	2.09	2.10	67.75	-36.42	-25.14	43.57	39.37	4.19	10.393		
1,100.00	1,099.84	1,083.84	1,083.84	2.28	2.32	74.42	-36.42	-25.14	41.87	37.27	4.60	9.102		
1,200.00	1,199.45	1,183.45	1,183.45	2.48	2.55	86.40	-36.42	-25.14	40.40	35.37	5.03	8.037		
1,223.51	1,222.82	1,206.82	1,206.82	2.53	2.60	90.00	-36.42	-25.14	40.32	35.18	5.14	7.849 CC, ES		
1,300.00	1,298.70	1,282.70	1,282.70	2.70	2.77	103.31	-36.42	-25.14	41.46	35.98	5.47	7.575 SF		
1,400.00	1,397.47	1,381.47	1,381.47	2.96	2.99	121.69	-36.42	-25.14	47.59	41.68	5.91	8.049		
1,500.00	1,495.62	1,479.62	1,479.62	3.27	3.21	137.10	-36.42	-25.14	59.94	53.62	6.32	9.480		
1,600.00	1,593.06	1,577.06	1,577.06	3.64	3.43	148.13	-36.42	-25.14	78.07	71.36	6.71	11.631		
1,700.00	1,689.64	1,673.64	1,673.64	4.06	3.65	155.66	-36.42	-25.14	101.12	94.02	7.10	14.250		
1,755.42	1,742.77	1,726.77	1,726.77	4.32	3.77	158.76	-36.42	-25.14	115.77	108.46	7.31	15.839		
1,800.00	1,785.37	1,769.37	1,769.37	4.55	3.86	160.87	-36.42	-25.14	128.14	120.64	7.51	17.074		
1,900.00	1,880.95	1,864.95	1,864.95	5.07	4.08	164.40	-36.42	-25.14	156.34	148.39	7.96	19.653		
2,000.00	1,976.52	1,960.52	1,960.52	5.61	4.29	166.84	-36.42	-25.14	184.92	176.51	8.42	21.973		
2,100.00	2,072.10	2,056.10	2,056.10	6.16	4.51	168.64	-36.42	-25.14	213.73	204.84	8.88	24.058		
2,200.00	2,167.67	2,151.67	2,151.67	6.72	4.72	170.00	-36.42	-25.14	242.68	233.32	9.36	25.933		
2,300.00	2,263.25	2,247.25	2,247.25	7.30	4.94	171.08	-36.42	-25.14	271.73	261.90	9.84	27.623		
2,400.00	2,358.82	2,342.82	2,342.82	7.88	5.15	171.95	-36.42	-25.14	300.86	290.54	10.32	29.152		
2,500.00	2,454.40	2,438.40	2,438.40	8.47	5.37	172.66	-36.42	-25.14	330.03	319.23	10.81	30.540		
2,600.00	2,549.97	2,533.97	2,533.97	9.06	5.58	173.26	-36.42	-25.14	359.25	347.95	11.30	31.805		
2,700.00	2,645.55	2,629.55	2,629.55	9.65	5.80	173.77	-36.42	-25.14	388.50	376.71	11.79	32.960		
2,800.00	2,741.12	2,725.12	2,725.12	10.25	6.01	174.21	-36.42	-25.14	417.77	405.49	12.28	34.019		
2,900.00	2,836.70	2,820.70	2,820.70	10.85	6.23	174.59	-36.42	-25.14	447.06	434.28	12.78	34.993		
3,000.00	2,932.27	2,916.27	2,916.27	11.45	6.44	174.92	-36.42	-25.14	476.36	463.09	13.27	35.891		
3,100.00	3,027.85	3,011.85	3,011.85	12.05	6.66	175.22	-36.42	-25.14	505.68	491.91	13.77	36.722		
3,200.00	3,123.42	3,107.42	3,107.42	12.65	6.87	175.48	-36.42	-25.14	535.01	520.74	14.27	37.493		
3,300.00	3,219.00	3,203.00	3,203.00	13.26	7.09	175.71	-36.42	-25.14	564.35	549.58	14.77	38.209		
3,400.00	3,314.57	3,298.57	3,298.57	13.87	7.30	175.93	-36.42	-25.14	593.70	578.43	15.27	38.876		
3,500.00	3,410.15	3,394.15	3,394.15	14.47	7.52	176.12	-36.42	-25.14	623.05	607.28	15.77	39.500		
3,600.00	3,505.72	3,489.72	3,489.72	15.08	7.73	176.29	-36.42	-25.14	652.41	636.13	16.28	40.084		
3,700.00	3,601.30	3,585.30	3,585.30	15.69	7.95	176.45	-36.42	-25.14	681.77	664.99	16.78	40.631		
3,800.00	3,696.87	3,680.87	3,680.87	16.30	8.16	176.60	-36.42	-25.14	711.14	693.86	17.28	41.145		
3,900.00	3,792.45	3,776.45	3,776.45	16.91	8.38	176.73	-36.42	-25.14	740.52	722.73	17.79	41.629		
4,000.00	3,888.02	3,872.02	3,872.02	17.52	8.59	176.86	-36.42	-25.14	769.89	751.60	18.29	42.085		
4,100.00	3,983.60	3,967.60	3,967.60	18.13	8.81	176.97	-36.42	-25.14	799.27	780.47	18.80	42.516		
4,200.00	4,079.17	4,063.17	4,063.17	18.75	9.02	177.08	-36.42	-25.14	828.65	809.35	19.31	42.924		
4,300.00	4,174.75	4,158.75	4,158.75	19.36	9.24	177.18	-36.42	-25.14	858.04	838.23	19.81	43.310		
4,400.00	4,270.32	4,254.32	4,254.32	19.97	9.45	177.28	-36.42	-25.14	887.42	867.11	20.32	43.676		
4,500.00	4,365.90	4,349.90	4,349.90	20.58	9.66	177.36	-36.42	-25.14	916.81	895.99	20.83	44.024		
4,600.00	4,461.47	4,445.47	4,445.47	21.20	9.88	177.44	-36.42	-25.14	946.20	924.87	21.33	44.355		
4,700.00	4,557.05	4,541.05	4,541.05	21.81	10.09	177.52	-36.42	-25.14	975.60	953.76	21.84	44.670		
4,800.00	4,652.62	4,636.62	4,636.62	22.42	10.31	177.59	-36.42	-25.14	1,004.99	982.64	22.35	44.970		
4,900.00	4,748.20	4,732.20	4,732.20	23.04	10.52	177.66	-36.42	-25.14	1,034.39	1,011.53	22.86	45.256		

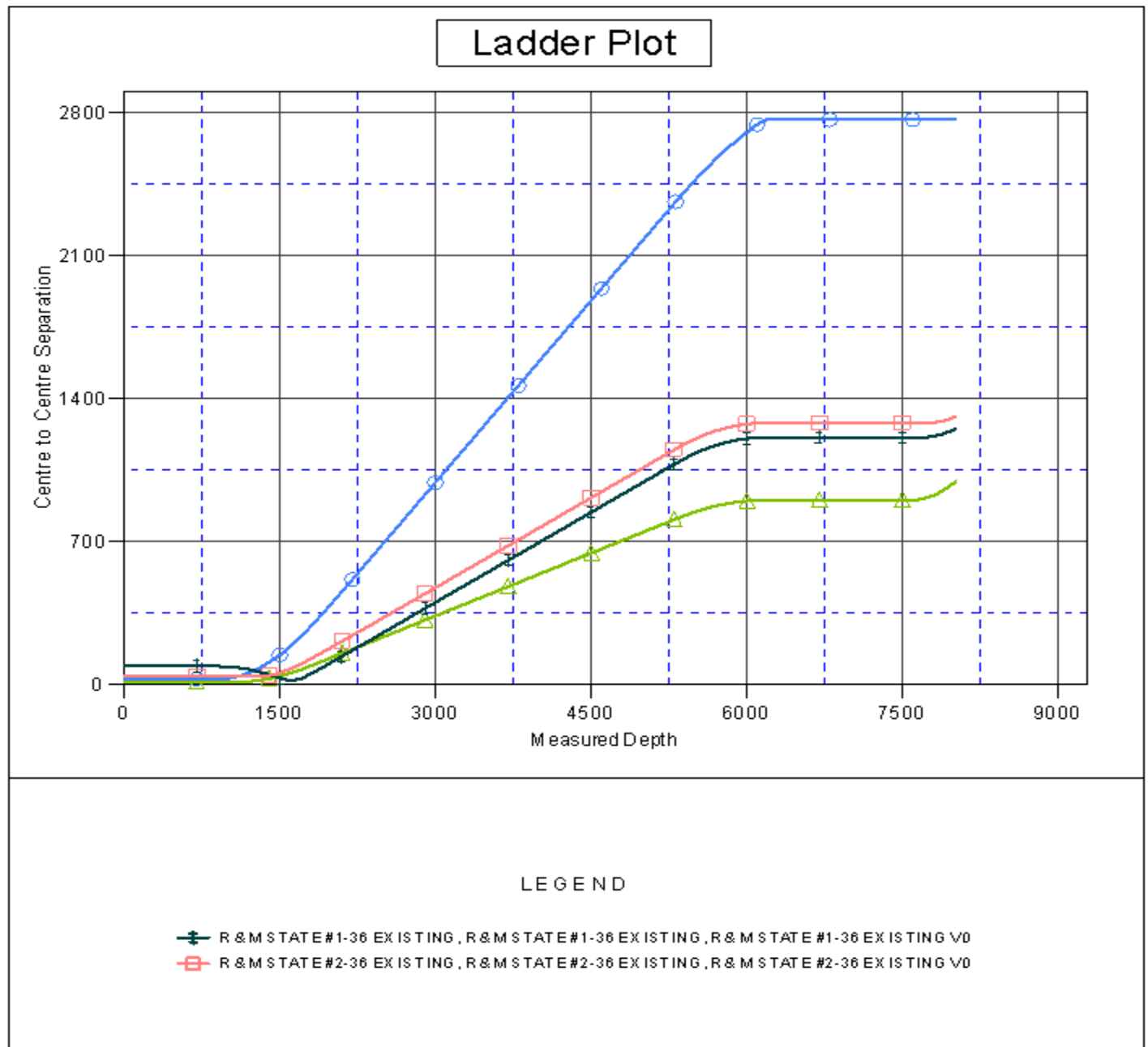
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CARMA 8-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4846.00ft (Original Well Elev)
Reference Site:	WELD_CARMA 3 PAD	MD Reference:	WELL @ 4846.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CARMA 8-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 8-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-16-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_CARMA 3 PAD - R & M STATE #2-36 EXISTING - R & M STATE #2-36 EXISTING - R & M STA												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.00	4,843.77	4,827.77	4,827.77	23.65	10.74	177.73	-36.42	-25.14	1,063.78	1,040.42	23.36	45.529	
5,100.00	4,939.35	4,923.35	4,923.35	24.27	10.95	177.79	-36.42	-25.14	1,093.18	1,069.31	23.87	45.791	
5,200.00	5,034.92	5,018.92	5,018.92	24.88	11.17	177.85	-36.42	-25.14	1,122.58	1,098.20	24.38	46.041	
5,300.00	5,130.50	5,114.50	5,114.50	25.50	11.38	177.90	-36.42	-25.14	1,151.98	1,127.09	24.89	46.281	
5,315.42	5,145.23	5,129.23	5,129.23	25.59	11.42	177.91	-36.42	-25.14	1,156.51	1,131.54	24.97	46.317	
5,400.00	5,226.43	5,210.43	5,210.43	26.03	11.60	177.97	-36.42	-25.14	1,180.18	1,154.70	25.48	46.310	
5,500.00	5,323.27	5,307.27	5,307.27	26.42	11.82	178.03	-36.42	-25.14	1,205.06	1,179.02	26.04	46.273	
5,600.00	5,420.93	5,404.93	5,404.93	26.77	12.04	178.08	-36.42	-25.14	1,226.55	1,199.99	26.56	46.175	
5,700.00	5,519.27	5,503.27	5,503.27	27.08	12.26	178.12	-36.42	-25.14	1,244.62	1,217.58	27.04	46.024	
5,800.00	5,618.19	5,602.19	5,602.19	27.35	12.48	178.15	-36.42	-25.14	1,259.25	1,231.77	27.48	45.821	
5,900.00	5,717.56	5,701.56	5,701.56	27.57	12.70	178.17	-36.42	-25.14	1,270.42	1,242.55	27.88	45.572	
6,000.00	5,817.26	5,801.26	5,801.26	27.75	12.93	178.19	-36.42	-25.14	1,278.12	1,249.89	28.23	45.278	
6,100.00	5,917.16	5,901.16	5,901.16	27.88	13.15	178.20	-36.42	-25.14	1,282.33	1,253.80	28.53	44.940	
6,170.84	5,988.00	5,972.00	5,972.00	27.96	13.31	-32.83	-36.42	-25.14	1,283.21	1,254.48	28.73	44.664	
6,200.00	6,017.16	6,001.16	6,001.16	27.99	13.38	-32.83	-36.42	-25.14	1,283.21	1,254.37	28.84	44.489	
6,300.00	6,117.16	6,101.16	6,101.16	28.07	13.60	-32.83	-36.42	-25.14	1,283.21	1,253.99	29.22	43.909	
6,400.00	6,217.16	6,201.16	6,201.16	28.16	13.83	-32.83	-36.42	-25.14	1,283.21	1,253.60	29.61	43.342	
6,500.00	6,317.16	6,301.16	6,301.16	28.25	14.05	-32.83	-36.42	-25.14	1,283.21	1,253.22	29.99	42.787	
6,600.00	6,417.16	6,401.16	6,401.16	28.34	14.28	-32.83	-36.42	-25.14	1,283.21	1,252.83	30.38	42.244	
6,700.00	6,517.16	6,501.16	6,501.16	28.44	14.50	-32.83	-36.42	-25.14	1,283.21	1,252.45	30.76	41.712	
6,800.00	6,617.16	6,601.16	6,601.16	28.53	14.72	-32.83	-36.42	-25.14	1,283.21	1,252.06	31.15	41.192	
6,900.00	6,717.16	6,701.16	6,701.16	28.63	14.95	-32.83	-36.42	-25.14	1,283.21	1,251.67	31.54	40.682	
7,000.00	6,817.16	6,801.16	6,801.16	28.73	15.17	-32.83	-36.42	-25.14	1,283.21	1,251.28	31.93	40.184	
7,100.00	6,917.16	6,901.16	6,901.16	28.82	15.40	-32.83	-36.42	-25.14	1,283.21	1,250.88	32.33	39.695	
7,200.00	7,017.16	7,001.16	7,001.16	28.92	15.62	-32.83	-36.42	-25.14	1,283.21	1,250.49	32.72	39.217	
7,300.00	7,117.16	7,101.16	7,101.16	29.03	15.85	-32.83	-36.42	-25.14	1,283.21	1,250.09	33.12	38.749	
7,400.00	7,217.16	7,201.16	7,201.16	29.13	16.07	-32.83	-36.42	-25.14	1,283.21	1,249.70	33.51	38.291	
7,500.00	7,317.16	7,301.16	7,301.16	29.23	16.30	-32.83	-36.42	-25.14	1,283.21	1,249.30	33.91	37.842	
7,600.00	7,417.16	7,401.16	7,401.16	29.34	16.52	-32.83	-36.42	-25.14	1,283.21	1,248.90	34.31	37.402	
7,700.00	7,517.16	7,501.16	7,501.16	29.45	16.75	-32.83	-36.42	-25.14	1,283.21	1,248.50	34.71	36.970	
7,800.00	7,617.16	7,533.00	7,533.00	29.55	16.82	-32.83	-36.42	-25.14	1,285.02	1,250.06	34.96	36.760	
7,900.00	7,717.16	7,533.00	7,533.00	29.66	16.82	-32.83	-36.42	-25.14	1,294.18	1,259.05	35.13	36.835	
8,000.00	7,817.16	7,533.00	7,533.00	29.78	16.82	-32.83	-36.42	-25.14	1,310.93	1,275.62	35.31	37.123	
8,015.84	7,833.00	7,533.00	7,533.00	29.79	16.82	-32.83	-36.42	-25.14	1,314.26	1,278.92	35.34	37.188	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CARMA 8-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4846.00ft (Original Well Elev)
Reference Site:	WELD_CARMA 3 PAD	MD Reference:	WELL @ 4846.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CARMA 8-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 8-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-16-09 RHS	Offset TVD Reference:	Offset Datum

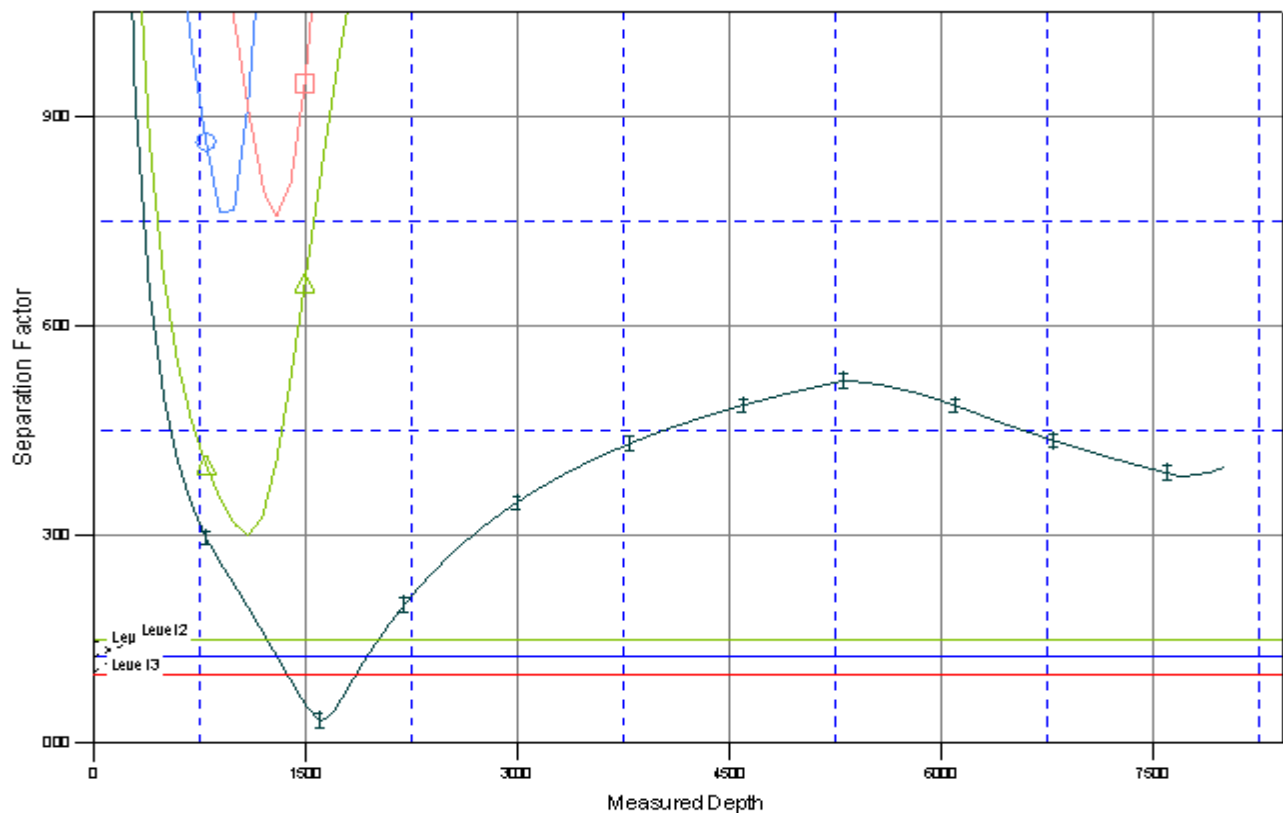
Reference Depths are relative to WELL @ 4846.00ft (Original Well Elev) Coordinates are relative to: P_CARMA 8-36
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is 105° 30' 0.000 W ° Grid Convergence at Surface is: 0.36°



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CARMA 8-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4846.00ft (Original Well Elev)
Reference Site:	WELD_CARMA 3 PAD	MD Reference:	WELL @ 4846.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_CARMA 8-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 8-36	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 @ 4846.00ft (Original Well Elev) Coordinates are relative to: P_CARMA 8-36
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: 0.36°

Separation Factor Plot



LEGEND

- R & M STATE #1-36 EXISTING, R & M STATE #1-36 EXISTING, R & M STATE #1-36 EXISTING VD
- R & M STATE #2-36 EXISTING, R & M STATE #2-36 EXISTING, R & M STATE #2-36 EXISTING VD