



US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_CARMA 3 PAD

P_CARMA 41-36

P_CARMA 41-36

Plan: PLAN #1 12-16-09 RHS

Standard Planning Report

15 January, 2010





P_CARMA 41-36
COLORADO NORTHERN ZONE - 83
SECTION 36 T3N R68W
842 FNL 1344 FEL
LAT: 40° 11' 15.468 N
LONG: 104° 56' 47.688 W



Azimuths to True North
Magnetic North: 9.11°
Magnetic Field
Strength: 53176.9snT
Dip Angle: 66.91°
Date: 12/16/2009
Model: IGRF200510

WELL DETAILS: P_CARMA 41-36

+N/-S	+E/-W	Northing	Ground Level: Easting	4831.00 Latitude	Longitude	Slot
0.00	0.00	1311678.75	3154615.03	40° 11' 15.468 N	104° 56' 47.688 W	

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
6898.00	7102.23	SHANNON
7155.00	7359.23	NIO A
7686.00	7890.23	CODELL

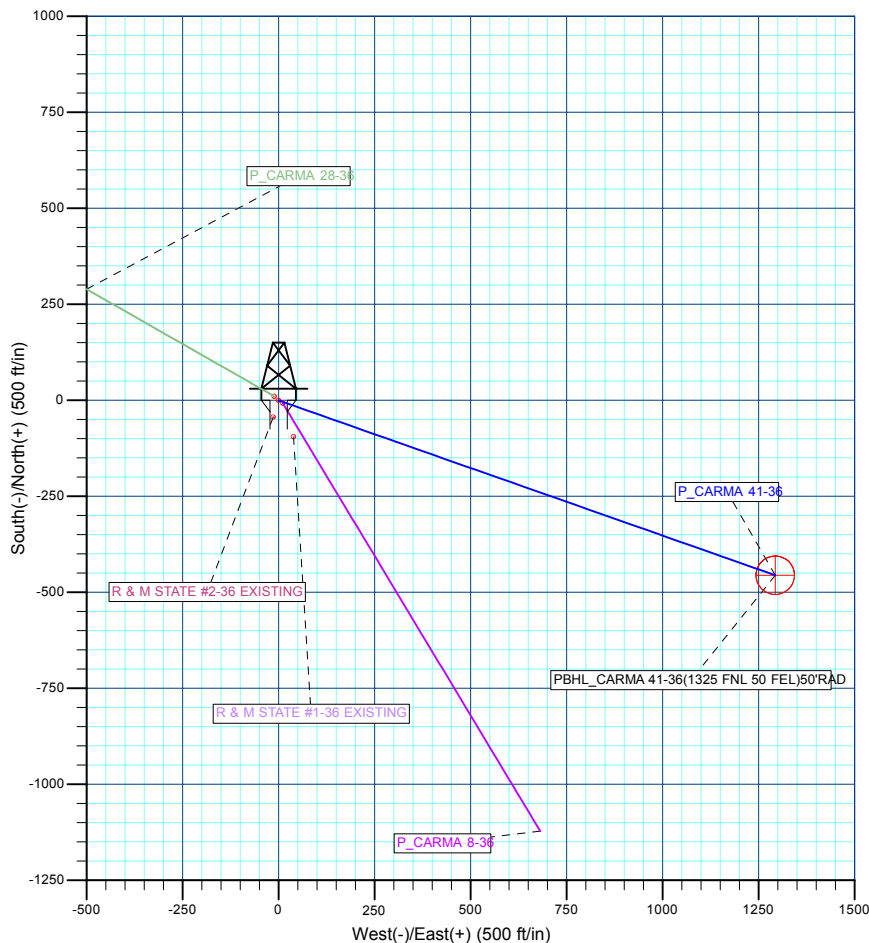
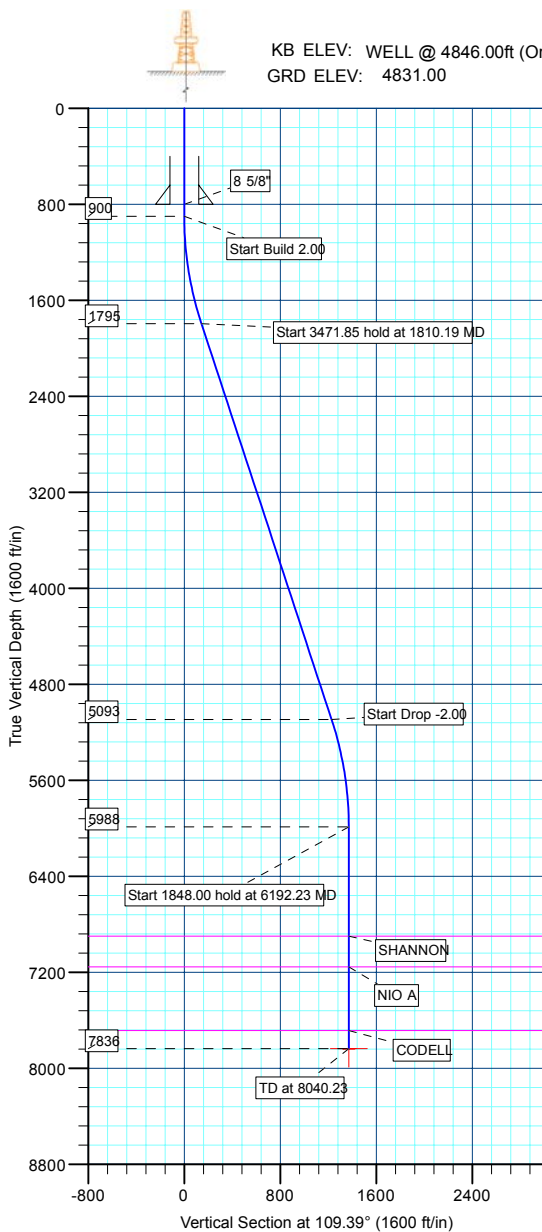
SECTION DETAILS

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	
1810.19	18.20	109.39	1794.96	-47.60	135.25	2.00	109.39	143.38	
5282.04	18.20	109.39	5093.04	-407.70	1158.32	0.00	0.00	1227.98	
6192.23	0.00	0.00	5988.00	-455.31	1293.57	2.00	180.00	1371.36	
8040.23	0.00	0.00	7836.00	-455.31	1293.57	0.00	0.00	1371.36	PBHL_CARMA 41-36(1325 FNL 50 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	7836.00	-455.31	1293.57	1311231.52	3155911.41	40° 11' 10.968 N	104° 56' 31.020 W	Circle (Radius: 50.00)

Plan: PLAN #1 12-16-09 RHS (P_CARMA 41-36/P_CARMA 41-36)

Created By: Robert H. Scott

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_CARMA 41-36
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4846.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4846.00ft (Original Well Elev)
Site:	WELD_CARMA 3 PAD	North Reference:	True
Well:	P_CARMA 41-36	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_CARMA 41-36		
Design:	PLAN #1 12-16-09 RHS		

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

Site						WELD_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 41-36					
Well Position	+N/-S	-10.94 ft	Northing:	1,311,678.75 ft	Latitude:	40° 11' 15.468 N
	+E/-W	11.18 ft	Easting:	3,154,615.03 ft	Longitude:	104° 56' 47.688 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,831.00 ft

Wellbore	P_CARMA 41-36				
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	109.39

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	
1,810.19	18.20	109.39	1,794.96	-47.60	135.25	2.00	2.00	0.00	109.39	
5,282.04	18.20	109.39	5,093.04	-407.70	1,158.32	0.00	0.00	0.00	0.00	
6,192.23	0.00	0.00	5,988.00	-455.31	1,293.57	2.00	-2.00	0.00	180.00	
8,040.23	0.00	0.00	7,836.00	-455.31	1,293.57	0.00	0.00	0.00	0.00	PBHL_CARMA 41-:

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_CARMA 41-36
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4846.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4846.00ft (Original Well Elev)
Site:	WELD_CARMA 3 PAD	North Reference:	True
Well:	P_CARMA 41-36	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_CARMA 41-36		
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	109.39	999.98	-0.58	1.65	1.75	2.00	2.00	0.00
1,100.00	4.00	109.39	1,099.84	-2.32	6.58	6.98	2.00	2.00	0.00
1,200.00	6.00	109.39	1,199.45	-5.21	14.80	15.69	2.00	2.00	0.00
1,300.00	8.00	109.39	1,298.70	-9.26	26.30	27.88	2.00	2.00	0.00
1,400.00	10.00	109.39	1,397.47	-14.45	41.05	43.52	2.00	2.00	0.00
1,500.00	12.00	109.39	1,495.62	-20.78	59.05	62.60	2.00	2.00	0.00
1,600.00	14.00	109.39	1,593.06	-28.25	80.27	85.10	2.00	2.00	0.00
1,700.00	16.00	109.39	1,689.64	-36.85	104.68	110.98	2.00	2.00	0.00
1,800.00	18.00	109.39	1,785.27	-46.55	132.26	140.21	2.00	2.00	0.00
Start 3471.85 hold at 1810.19 MD									
1,810.19	18.20	109.39	1,794.96	-47.60	135.25	143.38	2.00	2.00	0.00
1,900.00	18.20	109.39	1,880.27	-56.92	161.71	171.44	0.00	0.00	0.00
2,000.00	18.20	109.39	1,975.26	-67.29	191.18	202.68	0.00	0.00	0.00
2,100.00	18.20	109.39	2,070.26	-77.66	220.65	233.92	0.00	0.00	0.00
2,200.00	18.20	109.39	2,165.25	-88.03	250.11	265.15	0.00	0.00	0.00
2,300.00	18.20	109.39	2,260.25	-98.41	279.58	296.39	0.00	0.00	0.00
2,400.00	18.20	109.39	2,355.24	-108.78	309.05	327.63	0.00	0.00	0.00
2,500.00	18.20	109.39	2,450.24	-119.15	338.52	358.87	0.00	0.00	0.00
2,600.00	18.20	109.39	2,545.24	-129.52	367.98	390.11	0.00	0.00	0.00
2,700.00	18.20	109.39	2,640.23	-139.89	397.45	421.35	0.00	0.00	0.00
2,800.00	18.20	109.39	2,735.23	-150.27	426.92	452.59	0.00	0.00	0.00
2,900.00	18.20	109.39	2,830.22	-160.64	456.39	483.83	0.00	0.00	0.00
3,000.00	18.20	109.39	2,925.22	-171.01	485.86	515.07	0.00	0.00	0.00
3,100.00	18.20	109.39	3,020.21	-181.38	515.32	546.31	0.00	0.00	0.00
3,200.00	18.20	109.39	3,115.21	-191.75	544.79	577.55	0.00	0.00	0.00
3,300.00	18.20	109.39	3,210.20	-202.13	574.26	608.79	0.00	0.00	0.00
3,400.00	18.20	109.39	3,305.20	-212.50	603.73	640.03	0.00	0.00	0.00
3,500.00	18.20	109.39	3,400.19	-222.87	633.19	671.27	0.00	0.00	0.00
3,600.00	18.20	109.39	3,495.19	-233.24	662.66	702.51	0.00	0.00	0.00
3,700.00	18.20	109.39	3,590.18	-243.61	692.13	733.75	0.00	0.00	0.00
3,800.00	18.20	109.39	3,685.18	-253.99	721.60	764.99	0.00	0.00	0.00
3,900.00	18.20	109.39	3,780.17	-264.36	751.07	796.23	0.00	0.00	0.00
4,000.00	18.20	109.39	3,875.17	-274.73	780.53	827.47	0.00	0.00	0.00
4,100.00	18.20	109.39	3,970.16	-285.10	810.00	858.71	0.00	0.00	0.00
4,200.00	18.20	109.39	4,065.16	-295.47	839.47	889.95	0.00	0.00	0.00
4,300.00	18.20	109.39	4,160.15	-305.85	868.94	921.19	0.00	0.00	0.00
4,400.00	18.20	109.39	4,255.15	-316.22	898.40	952.43	0.00	0.00	0.00
4,500.00	18.20	109.39	4,350.14	-326.59	927.87	983.67	0.00	0.00	0.00
4,600.00	18.20	109.39	4,445.14	-336.96	957.34	1,014.91	0.00	0.00	0.00
4,700.00	18.20	109.39	4,540.13	-347.33	986.81	1,046.15	0.00	0.00	0.00
4,800.00	18.20	109.39	4,635.13	-357.71	1,016.28	1,077.39	0.00	0.00	0.00
4,900.00	18.20	109.39	4,730.12	-368.08	1,045.74	1,108.63	0.00	0.00	0.00
5,000.00	18.20	109.39	4,825.12	-378.45	1,075.21	1,139.87	0.00	0.00	0.00
5,100.00	18.20	109.39	4,920.11	-388.82	1,104.68	1,171.11	0.00	0.00	0.00
5,200.00	18.20	109.39	5,015.11	-399.19	1,134.15	1,202.35	0.00	0.00	0.00
Start Drop -2.00									
5,282.04	18.20	109.39	5,093.04	-407.70	1,158.32	1,227.98	0.00	0.00	0.00
5,300.00	17.84	109.39	5,110.12	-409.55	1,163.56	1,233.54	2.00	-2.00	0.00
5,400.00	15.84	109.39	5,205.83	-419.17	1,190.90	1,262.51	2.00	-2.00	0.00
5,500.00	13.84	109.39	5,302.48	-427.68	1,215.06	1,288.13	2.00	-2.00	0.00
5,600.00	11.84	109.39	5,399.98	-435.06	1,236.03	1,310.36	2.00	-2.00	0.00

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_CARMA 41-36
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4846.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4846.00ft (Original Well Elev)
Site:	WELD_CARMA 3 PAD	North Reference:	True
Well:	P_CARMA 41-36	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_CARMA 41-36		
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)
5,700.00	9.84	109.39	5,498.18	-441.30	1,253.78	1,329.17	2.00	-2.00	0.00
5,800.00	7.84	109.39	5,596.99	-446.41	1,268.28	1,344.55	2.00	-2.00	0.00
5,900.00	5.84	109.39	5,696.27	-450.36	1,279.52	1,356.47	2.00	-2.00	0.00
6,000.00	3.84	109.39	5,795.91	-453.17	1,287.49	1,364.91	2.00	-2.00	0.00
6,100.00	1.84	109.39	5,895.78	-454.81	1,292.17	1,369.87	2.00	-2.00	0.00
Start 1848.00 hold at 6192.23 MD									
6,192.23	0.00	0.00	5,988.00	-455.31	1,293.57	1,371.36	2.00	-2.00	0.00
6,200.00	0.00	0.00	5,995.77	-455.31	1,293.57	1,371.36	0.00	0.00	0.00
6,300.00	0.00	0.00	6,095.77	-455.31	1,293.57	1,371.36	0.00	0.00	0.00
6,400.00	0.00	0.00	6,195.77	-455.31	1,293.57	1,371.36	0.00	0.00	0.00
6,500.00	0.00	0.00	6,295.77	-455.31	1,293.57	1,371.36	0.00	0.00	0.00
6,600.00	0.00	0.00	6,395.77	-455.31	1,293.57	1,371.36	0.00	0.00	0.00
6,700.00	0.00	0.00	6,495.77	-455.31	1,293.57	1,371.36	0.00	0.00	0.00
6,800.00	0.00	0.00	6,595.77	-455.31	1,293.57	1,371.36	0.00	0.00	0.00
6,900.00	0.00	0.00	6,695.77	-455.31	1,293.57	1,371.36	0.00	0.00	0.00
7,000.00	0.00	0.00	6,795.77	-455.31	1,293.57	1,371.36	0.00	0.00	0.00
7,100.00	0.00	0.00	6,895.77	-455.31	1,293.57	1,371.36	0.00	0.00	0.00
SHANNON									
7,102.23	0.00	0.00	6,898.00	-455.31	1,293.57	1,371.36	0.00	0.00	0.00
7,200.00	0.00	0.00	6,995.77	-455.31	1,293.57	1,371.36	0.00	0.00	0.00
7,300.00	0.00	0.00	7,095.77	-455.31	1,293.57	1,371.36	0.00	0.00	0.00
NIO A									
7,359.23	0.00	0.00	7,155.00	-455.31	1,293.57	1,371.36	0.00	0.00	0.00
7,400.00	0.00	0.00	7,195.77	-455.31	1,293.57	1,371.36	0.00	0.00	0.00
7,500.00	0.00	0.00	7,295.77	-455.31	1,293.57	1,371.36	0.00	0.00	0.00
7,600.00	0.00	0.00	7,395.77	-455.31	1,293.57	1,371.36	0.00	0.00	0.00
7,700.00	0.00	0.00	7,495.77	-455.31	1,293.57	1,371.36	0.00	0.00	0.00
7,800.00	0.00	0.00	7,595.77	-455.31	1,293.57	1,371.36	0.00	0.00	0.00
CODELL									
7,890.23	0.00	0.00	7,686.00	-455.31	1,293.57	1,371.36	0.00	0.00	0.00
7,900.00	0.00	0.00	7,695.77	-455.31	1,293.57	1,371.36	0.00	0.00	0.00
8,000.00	0.00	0.00	7,795.77	-455.31	1,293.57	1,371.36	0.00	0.00	0.00
TD at 8040.23 - PBHL_CARMA 41-36(1325 FNL 50 FEL)50'RAD									
8,040.23	0.00	0.00	7,836.00	-455.31	1,293.57	1,371.36	0.00	0.00	0.00

Design Targets

Target Name

- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- Shape									
PBHL_CARMA 41-36	0.00	0.00	7,836.00	-455.31	1,293.57	1,311,231.52	3,155,911.41	40° 11' 10.968 N	104° 56' 31.020 W
- plan hits target center									
- Circle (radius 50.00)									

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

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_CARMA 41-36
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4846.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4846.00ft (Original Well Elev)
Site:	WELD_CARMA 3 PAD	North Reference:	True
Well:	P_CARMA 41-36	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_CARMA 41-36		
Design:	PLAN #1 12-16-09 RHS		

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,102.23	6,898.00	SHANNON		0.00	
7,359.23	7,155.00	NIO A		0.00	
7,890.23	7,686.00	CODELL		0.00	

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
900.00	900.00	0.00	0.00	Start Build 2.00
1,810.19	1,794.96	-47.60	135.25	Start 3471.85 hold at 1810.19 MD
5,282.04	5,093.04	-407.70	1,158.32	Start Drop -2.00
6,192.23	5,988.00	-455.31	1,293.57	Start 1848.00 hold at 6192.23 MD
8,040.23	7,836.00	-455.31	1,293.57	TD at 8040.23



US ROCKIES REGION PLANNING

**COLORADO NORTHERN ZONE - 83
WELD_CARMA 3 PAD
P_CARMA 41-36**

**P_CARMA 41-36
PLAN #1 12-16-09 RHS**

Anticollision Report

15 January, 2010



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CARMA 41-36
Project:	COLORADO NORTHERN 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 41-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 41-36	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 1/15/2010			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	8,040.23	PLAN #1 12-16-09 RHS (P_CARMA 41-36)	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 F	900.00	900.00	15.64	11.85	4.129	CC, ES, SF
P_CARMA 8-36 - P_CARMA 8-36 - PLAN #1 12-16-09 F	1,012.41	1,011.92	13.26	9.03	3.131	CC, ES
P_CARMA 8-36 - P_CARMA 8-36 - PLAN #1 12-16-09 F	1,100.00	1,099.06	13.65	9.09	2.993	SF
R & M STATE #1-36 EXISTING - R & M STATE #1-36 E	1,527.00	1,506.01	76.35	14.59	1.236	Level 2, CC
R & M STATE #1-36 EXISTING - R & M STATE #1-36 E	1,600.00	1,577.06	78.17	13.38	1.206	Level 2, ES, SF
R & M STATE #2-36 EXISTING - R & M STATE #2-36 E	987.52	971.51	45.87	41.73	11.063	CC
R & M STATE #2-36 EXISTING - R & M STATE #2-36 E	1,100.00	1,083.84	46.22	41.59	9.994	ES
R & M STATE #2-36 EXISTING - R & M STATE #2-36 E	1,200.00	1,183.45	48.07	43.00	9.495	SF

Offset Design WELD_CARMA 3 PAD - P_CARMA 28-36 - P_CARMA 28-36 - PLAN #1 12-16-09 RHS											
Survey Program: 0-MWD											
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)
0.00	0.00	0.00	0.00	0.00	0.00	-45.61	10.94	-11.18	15.64		
100.00	100.00	100.00	100.00	0.10	0.10	-45.61	10.94	-11.18	15.64	15.45	0.19
200.00	200.00	200.00	200.00	0.32	0.32	-45.61	10.94	-11.18	15.64	15.00	0.64
300.00	300.00	300.00	300.00	0.55	0.55	-45.61	10.94	-11.18	15.64	14.55	1.09
400.00	400.00	400.00	400.00	0.77	0.77	-45.61	10.94	-11.18	15.64	14.10	1.54
500.00	500.00	500.00	500.00	0.99	0.99	-45.61	10.94	-11.18	15.64	13.65	1.99
600.00	600.00	600.00	600.00	1.22	1.22	-45.61	10.94	-11.18	15.64	13.20	2.44
700.00	700.00	700.00	700.00	1.44	1.44	-45.61	10.94	-11.18	15.64	12.75	2.89
800.00	800.00	800.00	800.00	1.67	1.67	-45.61	10.94	-11.18	15.64	12.30	3.34
900.00	900.00	900.00	900.00	1.89	1.89	-45.61	10.94	-11.18	15.64	11.85	3.79
1,000.00	999.98	999.36	999.34	2.10	2.11	-158.52	11.79	-12.67	18.93	14.73	4.21
1,100.00	1,099.84	1,098.00	1,097.84	2.30	2.33	-164.20	14.33	-17.12	29.03	24.43	4.60
1,200.00	1,199.45	1,195.24	1,194.72	2.51	2.55	-168.06	18.47	-24.38	46.03	41.03	5.00
1,300.00	1,298.70	1,290.43	1,289.22	2.75	2.79	-170.27	24.09	-34.26	69.78	64.39	5.38
1,400.00	1,397.47	1,382.97	1,380.69	3.03	3.04	-171.55	31.05	-46.46	100.06	94.29	5.77
1,500.00	1,495.62	1,472.35	1,468.55	3.35	3.32	-172.31	39.15	-60.69	136.61	130.47	6.14
1,600.00	1,593.06	1,558.11	1,552.34	3.72	3.62	-172.78	48.20	-76.56	179.16	172.66	6.51
1,700.00	1,689.64	1,639.90	1,631.70	4.15	3.95	-173.08	57.98	-93.73	227.42	220.55	6.87
1,800.00	1,785.27	1,717.43	1,706.38	4.64	4.29	-173.26	68.29	-111.82	281.04	273.82	7.22
1,810.19	1,794.96	1,725.08	1,713.72	4.70	4.33	-173.27	69.36	-113.70	286.79	279.54	7.25

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 41-36
Project:	COLORADO NORTHERN 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 41-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 41-36	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						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	
1,900.00	1,880.27	1,791.25	1,776.95	5.19	4.65	-173.48	79.03	-130.66	338.58	330.95	7.63	44.370	
2,000.00	1,975.26	1,862.43	1,844.43	5.77	5.04	-173.62	90.23	-150.32	398.19	390.13	8.06	49.417	
2,100.00	2,070.26	1,931.41	1,909.27	6.36	5.44	-173.70	101.87	-170.76	459.72	451.24	8.48	54.184	
2,200.00	2,165.25	2,009.55	1,982.43	6.96	5.93	-173.77	115.47	-194.61	522.13	513.19	8.94	58.394	
2,300.00	2,260.25	2,087.69	2,055.58	7.57	6.43	-173.82	129.06	-218.47	584.53	575.13	9.41	62.149	
2,400.00	2,355.24	2,165.82	2,128.74	8.19	6.94	-173.86	142.65	-242.32	646.94	637.06	9.88	65.506	
2,500.00	2,450.24	2,243.96	2,201.90	8.82	7.46	-173.89	156.24	-266.18	709.34	698.99	10.35	68.526	
2,600.00	2,545.24	2,322.10	2,275.05	9.45	7.99	-173.92	169.83	-290.03	771.75	760.92	10.83	71.253	
2,700.00	2,640.23	2,400.24	2,348.21	10.09	8.52	-173.94	183.43	-313.88	834.15	822.84	11.31	73.722	
2,800.00	2,735.23	2,478.38	2,421.36	10.73	9.06	-173.96	197.02	-337.74	896.56	884.76	11.80	75.957	
2,900.00	2,830.22	2,556.51	2,494.52	11.37	9.60	-173.98	210.61	-361.59	958.97	946.67	12.29	77.997	
3,000.00	2,925.22	2,634.65	2,567.67	12.01	10.15	-173.99	224.20	-385.45	1,021.37	1,008.58	12.79	79.864	
3,100.00	3,020.21	2,712.79	2,640.83	12.65	10.70	-174.01	237.80	-409.30	1,083.78	1,070.49	13.29	81.578	
3,200.00	3,115.21	2,790.93	2,713.98	13.30	11.25	-174.02	251.39	-433.16	1,146.18	1,132.40	13.78	83.152	
3,300.00	3,210.20	2,869.06	2,787.14	13.95	11.80	-174.03	264.98	-457.01	1,208.59	1,194.30	14.29	84.604	
3,400.00	3,305.20	2,947.20	2,860.30	14.60	12.35	-174.04	278.57	-480.86	1,270.99	1,256.21	14.79	85.947	
3,500.00	3,400.19	3,025.34	2,933.45	15.25	12.91	-174.05	292.17	-504.72	1,333.40	1,318.11	15.29	87.194	
3,600.00	3,495.19	3,103.48	3,006.61	15.90	13.47	-174.06	305.76	-528.57	1,395.81	1,380.01	15.80	88.353	
3,700.00	3,590.18	3,181.62	3,079.76	16.55	14.02	-174.06	319.35	-552.43	1,458.21	1,441.91	16.31	89.430	
3,800.00	3,685.18	3,259.75	3,152.92	17.20	14.58	-174.07	332.94	-576.28	1,520.62	1,503.80	16.81	90.437	
3,900.00	3,780.17	3,337.89	3,226.07	17.85	15.14	-174.08	346.54	-600.13	1,583.02	1,565.70	17.32	91.379	
4,000.00	3,875.17	3,416.03	3,299.23	18.51	15.70	-174.08	360.13	-623.99	1,645.43	1,627.59	17.83	92.262	
4,100.00	3,970.16	3,494.17	3,372.38	19.16	16.27	-174.09	373.72	-647.84	1,707.83	1,689.49	18.35	93.091	
4,200.00	4,065.16	3,572.30	3,445.54	19.82	16.83	-174.09	387.31	-671.70	1,770.24	1,751.38	18.86	93.869	
4,300.00	4,160.15	3,650.44	3,518.69	20.47	17.39	-174.10	400.90	-695.55	1,832.65	1,813.27	19.37	94.603	
4,400.00	4,255.15	3,728.58	3,591.85	21.13	17.95	-174.10	414.50	-719.41	1,895.05	1,875.17	19.89	95.296	
4,500.00	4,350.14	3,806.72	3,665.01	21.78	18.52	-174.11	428.09	-743.26	1,957.46	1,937.06	20.40	95.951	
4,600.00	4,445.14	3,884.85	3,738.16	22.44	19.08	-174.11	441.68	-767.11	2,019.86	1,998.95	20.92	96.570	
4,700.00	4,540.13	3,962.99	3,811.32	23.09	19.65	-174.11	455.27	-790.97	2,082.27	2,060.84	21.43	97.156	
4,800.00	4,635.13	4,041.13	3,884.47	23.75	20.21	-174.12	468.87	-814.82	2,144.67	2,122.73	21.95	97.713	
4,900.00	4,730.12	4,119.27	3,957.63	24.41	20.78	-174.12	482.46	-838.68	2,207.08	2,184.62	22.47	98.242	
5,000.00	4,825.12	4,197.41	4,030.78	25.06	21.34	-174.12	496.05	-862.53	2,269.49	2,246.50	22.98	98.746	
5,100.00	4,920.11	4,275.54	4,103.94	25.72	21.91	-174.13	509.64	-886.39	2,331.89	2,308.39	23.50	99.224	
5,200.00	5,015.11	4,353.68	4,177.09	26.38	22.48	-174.13	523.24	-910.24	2,394.30	2,370.28	24.02	99.681	
5,282.04	5,093.04	4,417.79	4,237.11	26.92	22.94	-174.13	534.39	-929.81	2,445.50	2,421.05	24.45	100.040	
5,300.00	5,110.12	4,431.85	4,250.28	27.02	23.04	-174.16	536.83	-934.11	2,456.66	2,432.08	24.58	99.946	
5,400.00	5,205.83	4,511.44	4,324.79	27.49	23.62	-174.31	550.68	-958.40	2,517.20	2,491.90	25.30	99.494	
5,500.00	5,302.48	4,593.08	4,401.22	27.92	24.21	-174.43	564.88	-983.32	2,574.94	2,548.95	25.99	99.058	
5,600.00	5,399.98	4,676.67	4,479.48	28.30	24.82	-174.54	579.42	-1,008.84	2,629.81	2,603.15	26.66	98.639	
5,700.00	5,498.18	4,762.11	4,559.48	28.63	25.44	-174.62	594.28	-1,034.93	2,681.75	2,654.45	27.30	98.239	
5,800.00	5,596.99	4,849.30	4,641.11	28.91	26.07	-174.69	609.45	-1,061.55	2,730.68	2,702.78	27.90	97.860	
5,900.00	5,696.27	4,938.13	4,724.28	29.14	26.72	-174.74	624.90	-1,088.66	2,776.56	2,748.08	28.48	97.501	
6,000.00	5,795.91	5,028.50	4,808.88	29.33	27.38	-174.78	640.62	-1,116.25	2,819.32	2,790.30	29.02	97.164	
6,100.00	5,895.78	5,120.28	4,894.82	29.47	28.04	-174.81	656.59	-1,144.27	2,858.92	2,829.40	29.52	96.848	
6,192.23	5,988.00	5,206.11	4,975.17	29.57	28.67	-65.42	671.52	-1,170.47	2,892.59	2,862.63	29.96	96.560	
6,200.00	5,995.77	5,213.38	4,981.98	29.58	28.72	-65.42	672.78	-1,172.69	2,895.31	2,865.32	29.99	96.538	
6,300.00	6,095.77	6,351.13	6,095.77	29.67	32.35	-65.08	768.69	-1,341.00	2,905.01	2,872.41	32.60	89.101	
6,400.00	6,195.77	6,451.13	6,195.77	29.76	32.44	-65.08	768.69	-1,341.00	2,905.01	2,872.09	32.93	88.225	
6,500.00	6,295.77	6,551.13	6,295.77	29.86	32.54	-65.08	768.69	-1,341.00	2,905.01	2,871.76	33.25	87.357	
6,600.00	6,395.77	6,651.13	6,395.77	29.96	32.63	-65.08	768.69	-1,341.00	2,905.01	2,871.43	33.58	86.499	
6,700.00	6,495.77	6,751.13	6,495.77	30.05	32.72	-65.08	768.69	-1,341.00	2,905.01	2,871.10	33.92	85.651	
6,800.00	6,595.77	6,851.13	6,595.77	30.15	32.82	-65.08	768.69	-1,341.00	2,905.01	2,870.76	34.25	84.813	

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 41-36
Project:	COLORADO NORTHERN 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 41-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 41-36	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
6,900.00	6,695.77	6,951.13	6,695.77	30.25	32.92	-65.08	768.69	-1,341.00	2,905.01	2,870.42	34.59	83.984	
7,000.00	6,795.77	7,051.13	6,795.77	30.36	33.02	-65.08	768.69	-1,341.00	2,905.01	2,870.08	34.93	83.166	
7,100.00	6,895.77	7,151.13	6,895.77	30.46	33.12	-65.08	768.69	-1,341.00	2,905.01	2,869.74	35.27	82.358	
7,200.00	6,995.77	7,251.13	6,995.77	30.57	33.22	-65.08	768.69	-1,341.00	2,905.01	2,869.40	35.62	81.559	
7,300.00	7,095.77	7,351.13	7,095.77	30.67	33.32	-65.08	768.69	-1,341.00	2,905.01	2,869.05	35.97	80.771	
7,400.00	7,195.77	7,451.13	7,195.77	30.78	33.42	-65.08	768.69	-1,341.00	2,905.01	2,868.70	36.32	79.994	
7,500.00	7,295.77	7,551.13	7,295.77	30.89	33.53	-65.08	768.69	-1,341.00	2,905.01	2,868.35	36.67	79.226	
7,600.00	7,395.77	7,651.13	7,395.77	31.00	33.63	-65.08	768.69	-1,341.00	2,905.01	2,867.99	37.02	78.468	
7,700.00	7,495.77	7,751.13	7,495.77	31.11	33.74	-65.08	768.69	-1,341.00	2,905.01	2,867.64	37.38	77.721	
7,800.00	7,595.77	7,851.13	7,595.77	31.22	33.85	-65.08	768.69	-1,341.00	2,905.01	2,867.28	37.74	76.983	
7,900.00	7,695.77	7,951.13	7,695.77	31.34	33.96	-65.08	768.69	-1,341.00	2,905.01	2,866.92	38.10	76.256	
8,000.00	7,795.77	8,051.13	7,795.77	31.45	34.07	-65.08	768.69	-1,341.00	2,905.01	2,866.56	38.46	75.538	
8,040.23	7,836.00	8,091.36	7,836.00	31.50	34.11	-65.08	768.69	-1,341.00	2,905.01	2,866.41	38.60	75.253	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CARMA 41-36
Project:	COLORADO NORTHERN 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 41-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 41-36	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 8-36 - P_CARMA 8-36 - 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	123.13	-7.29	11.18	13.35				
100.00	100.00	100.00	100.00	0.10	0.10	123.13	-7.29	11.18	13.35	13.15	0.19	69.851	
200.00	200.00	200.00	200.00	0.32	0.32	123.13	-7.29	11.18	13.35	12.70	0.64	20.833	
300.00	300.00	300.00	300.00	0.55	0.55	123.13	-7.29	11.18	13.35	12.25	1.09	12.242	
400.00	400.00	400.00	400.00	0.77	0.77	123.13	-7.29	11.18	13.35	11.81	1.54	8.668	
500.00	500.00	500.00	500.00	0.99	0.99	123.13	-7.29	11.18	13.35	11.36	1.99	6.709	
600.00	600.00	600.00	600.00	1.22	1.22	123.13	-7.29	11.18	13.35	10.91	2.44	5.472	
700.00	700.00	700.00	700.00	1.44	1.44	123.13	-7.29	11.18	13.35	10.46	2.89	4.620	
800.00	800.00	800.00	800.00	1.67	1.67	123.13	-7.29	11.18	13.35	10.01	3.34	3.998	
900.00	900.00	900.00	900.00	1.89	1.89	123.13	-7.29	11.18	13.35	9.56	3.79	3.524	
1,000.00	999.98	999.57	999.55	2.10	2.09	18.79	-8.78	12.07	13.27	9.08	4.19	3.167	
1,012.41	1,012.38	1,011.92	1,011.89	2.13	2.11	20.12	-9.17	12.30	13.26	9.03	4.24	3.131 CC, ES	
1,100.00	1,099.84	1,099.06	1,098.89	2.30	2.27	33.71	-13.22	14.74	13.65	9.09	4.56	2.993 SF	
1,200.00	1,199.45	1,198.38	1,197.84	2.51	2.47	54.39	-20.60	19.18	16.08	11.12	4.96	3.240	
1,300.00	1,298.70	1,297.46	1,296.18	2.75	2.70	72.35	-30.88	25.36	21.79	16.37	5.42	4.022	
1,400.00	1,397.47	1,396.21	1,393.73	3.03	2.95	84.21	-44.03	33.27	30.81	24.87	5.94	5.186	
1,500.00	1,495.62	1,494.57	1,490.31	3.35	3.26	91.49	-59.97	42.87	42.73	36.19	6.54	6.530	
1,600.00	1,593.06	1,592.46	1,585.73	3.72	3.61	96.03	-78.66	54.11	57.26	50.02	7.24	7.909	
1,700.00	1,689.64	1,689.80	1,679.84	4.15	4.02	98.96	-100.00	66.94	74.22	66.18	8.04	9.229	
1,800.00	1,785.27	1,787.01	1,772.96	4.64	4.48	101.01	-123.88	81.31	93.42	84.46	8.96	10.427	
1,810.19	1,794.96	1,796.98	1,782.49	4.70	4.53	101.24	-126.40	82.82	95.46	86.40	9.06	10.537	
1,900.00	1,880.27	1,884.88	1,866.50	5.19	4.99	103.28	-148.56	96.15	113.51	103.54	9.97	11.383	
2,000.00	1,975.26	1,982.76	1,960.04	5.77	5.51	104.90	-173.23	111.00	133.73	122.71	11.02	12.131	
2,100.00	2,070.26	2,080.63	2,053.59	6.36	6.05	106.10	-197.90	125.84	154.03	141.92	12.10	12.725	
2,200.00	2,165.25	2,178.51	2,147.13	6.96	6.60	107.02	-222.58	140.68	174.37	161.16	13.21	13.203	
2,300.00	2,260.25	2,276.38	2,240.68	7.57	7.16	107.74	-247.25	155.52	194.75	180.42	14.33	13.594	
2,400.00	2,355.24	2,374.26	2,334.22	8.19	7.73	108.33	-271.92	170.37	215.15	199.69	15.46	13.918	
2,500.00	2,450.24	2,472.13	2,427.76	8.82	8.30	108.82	-296.59	185.21	235.57	218.97	16.60	14.190	
2,600.00	2,545.24	2,570.01	2,521.31	9.45	8.88	109.23	-321.27	200.05	256.01	238.26	17.75	14.422	
2,700.00	2,640.23	2,667.88	2,614.85	10.09	9.46	109.58	-345.94	214.89	276.45	257.55	18.91	14.621	
2,800.00	2,735.23	2,765.76	2,708.39	10.73	10.04	109.88	-370.61	229.73	296.91	276.84	20.07	14.793	
2,900.00	2,830.22	2,863.63	2,801.94	11.37	10.63	110.14	-395.28	244.58	317.37	296.13	21.24	14.944	
3,000.00	2,925.22	2,961.51	2,895.48	12.01	11.21	110.37	-419.96	259.42	337.83	315.43	22.41	15.077	
3,100.00	3,020.21	3,059.38	2,989.03	12.65	11.80	110.57	-444.63	274.26	358.31	334.73	23.58	15.195	
3,200.00	3,115.21	3,157.26	3,082.57	13.30	12.39	110.75	-469.30	289.10	378.78	354.02	24.76	15.301	
3,300.00	3,210.20	3,255.13	3,176.11	13.95	12.99	110.92	-493.98	303.95	399.26	373.32	25.93	15.396	
3,400.00	3,305.20	3,353.01	3,269.66	14.60	13.58	111.06	-518.65	318.79	419.74	392.63	27.11	15.481	
3,500.00	3,400.19	3,450.88	3,363.20	15.25	14.17	111.20	-543.32	333.63	440.22	411.93	28.29	15.559	
3,600.00	3,495.19	3,548.76	3,456.75	15.90	14.77	111.32	-567.99	348.47	460.71	431.23	29.48	15.630	
3,700.00	3,590.18	3,646.63	3,550.29	16.55	15.37	111.43	-592.67	363.32	481.19	450.54	30.66	15.695	
3,800.00	3,685.18	3,744.51	3,643.83	17.20	15.96	111.53	-617.34	378.16	501.68	469.84	31.84	15.755	
3,900.00	3,780.17	3,842.38	3,737.38	17.85	16.56	111.63	-642.01	393.00	522.17	489.15	33.03	15.811	
4,000.00	3,875.17	3,940.26	3,830.92	18.51	17.16	111.71	-666.68	407.84	542.66	508.45	34.21	15.862	
4,100.00	3,970.16	4,038.13	3,924.46	19.16	17.76	111.79	-691.36	422.68	563.16	527.76	35.40	15.909	
4,200.00	4,065.16	4,136.01	4,018.01	19.82	18.35	111.87	-716.03	437.53	583.65	547.07	36.58	15.954	
4,300.00	4,160.15	4,233.88	4,111.55	20.47	18.95	111.94	-740.70	452.37	604.14	566.38	37.77	15.995	
4,400.00	4,255.15	4,331.75	4,205.10	21.13	19.55	112.01	-765.38	467.21	624.64	585.68	38.96	16.034	
4,500.00	4,350.14	4,429.63	4,298.64	21.78	20.15	112.07	-790.05	482.05	645.14	604.99	40.14	16.071	
4,600.00	4,445.14	4,527.50	4,392.18	22.44	20.75	112.12	-814.72	496.90	665.63	624.30	41.33	16.106	
4,700.00	4,540.13	4,625.38	4,485.73	23.09	21.35	112.18	-839.39	511.74	686.13	643.61	42.52	16.138	
4,800.00	4,635.13	4,723.25	4,579.27	23.75	21.95	112.23	-864.07	526.58	706.63	662.92	43.70	16.169	
4,900.00	4,730.12	4,821.13	4,672.81	24.41	22.55	112.28	-888.74	541.42	727.13	682.24	44.89	16.198	

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 41-36
Project:	COLORADO NORTHERN 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 41-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 41-36	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 8-36 - P_CARMA 8-36 - 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	4,825.12	4,919.00	4,766.36	25.06	23.15	112.32	-913.41	556.26	747.62	701.55	46.08	16.226	
5,100.00	4,920.11	5,016.88	4,859.90	25.72	23.76	112.37	-938.09	571.11	768.12	720.86	47.26	16.252	
5,200.00	5,015.11	5,114.75	4,953.45	26.38	24.36	112.41	-962.76	585.95	788.62	740.17	48.45	16.277	
5,282.04	5,093.04	5,195.05	5,030.19	26.92	24.85	112.44	-983.00	598.13	805.44	756.02	49.42	16.297	
5,300.00	5,110.12	5,212.63	5,046.99	27.02	24.96	112.51	-987.43	600.79	809.10	759.47	49.63	16.303	
5,400.00	5,205.83	5,310.67	5,140.69	27.49	25.56	112.76	-1,012.15	615.66	828.71	778.04	50.68	16.353	
5,500.00	5,302.48	5,417.01	5,242.84	27.92	26.09	112.85	-1,037.47	630.89	846.56	794.95	51.61	16.403	
5,600.00	5,399.98	5,524.49	5,347.12	28.30	26.51	112.93	-1,059.75	644.30	862.08	809.70	52.39	16.456	
5,700.00	5,498.18	5,632.62	5,452.94	28.63	26.87	113.00	-1,078.77	655.74	875.25	822.18	53.07	16.491	
5,800.00	5,596.99	5,741.30	5,560.07	28.91	27.19	113.06	-1,094.43	665.16	886.03	832.37	53.66	16.511	
5,900.00	5,696.27	5,850.43	5,668.26	29.14	27.46	113.10	-1,106.63	672.50	894.40	840.23	54.16	16.513	
6,000.00	5,795.91	5,959.89	5,777.24	29.33	27.68	113.13	-1,115.32	677.72	900.34	845.76	54.58	16.497	
6,100.00	5,895.78	6,069.58	5,886.76	29.47	27.84	113.15	-1,120.44	680.80	903.83	848.94	54.89	16.466	
6,192.23	5,988.00	6,170.84	5,988.00	29.57	27.96	-137.46	-1,121.97	681.73	904.87	849.77	55.10	16.422	
6,200.00	5,995.77	6,178.61	5,995.77	29.58	27.97	-137.46	-1,121.97	681.73	904.87	849.75	55.12	16.418	
6,300.00	6,095.77	6,278.61	6,095.77	29.67	28.06	-137.46	-1,121.97	681.73	904.87	849.57	55.30	16.362	
6,400.00	6,195.77	6,378.61	6,195.77	29.76	28.14	-137.46	-1,121.97	681.73	904.87	849.38	55.49	16.306	
6,500.00	6,295.77	6,478.61	6,295.77	29.86	28.23	-137.46	-1,121.97	681.73	904.87	849.18	55.69	16.249	
6,600.00	6,395.77	6,578.61	6,395.77	29.96	28.32	-137.46	-1,121.97	681.73	904.87	848.99	55.88	16.192	
6,700.00	6,495.77	6,678.61	6,495.77	30.05	28.42	-137.46	-1,121.97	681.73	904.87	848.79	56.08	16.135	
6,800.00	6,595.77	6,778.61	6,595.77	30.15	28.51	-137.46	-1,121.97	681.73	904.87	848.59	56.28	16.077	
6,900.00	6,695.77	6,878.61	6,695.77	30.25	28.61	-137.46	-1,121.97	681.73	904.87	848.38	56.49	16.019	
7,000.00	6,795.77	6,978.61	6,795.77	30.36	28.70	-137.46	-1,121.97	681.73	904.87	848.18	56.69	15.960	
7,100.00	6,895.77	7,078.61	6,895.77	30.46	28.80	-137.46	-1,121.97	681.73	904.87	847.97	56.90	15.902	
7,200.00	6,995.77	7,178.61	6,995.77	30.57	28.90	-137.46	-1,121.97	681.73	904.87	847.75	57.12	15.842	
7,300.00	7,095.77	7,278.61	7,095.77	30.67	29.00	-137.46	-1,121.97	681.73	904.87	847.54	57.33	15.783	
7,400.00	7,195.77	7,378.61	7,195.77	30.78	29.11	-137.46	-1,121.97	681.73	904.87	847.32	57.55	15.723	
7,500.00	7,295.77	7,478.61	7,295.77	30.89	29.21	-137.46	-1,121.97	681.73	904.87	847.10	57.77	15.663	
7,600.00	7,395.77	7,578.61	7,395.77	31.00	29.32	-137.46	-1,121.97	681.73	904.87	846.87	58.00	15.602	
7,700.00	7,495.77	7,678.61	7,495.77	31.11	29.42	-137.46	-1,121.97	681.73	904.87	846.65	58.22	15.542	
7,800.00	7,595.77	7,778.61	7,595.77	31.22	29.53	-137.46	-1,121.97	681.73	904.87	846.42	58.45	15.481	
7,900.00	7,695.77	7,878.61	7,695.77	31.34	29.64	-137.46	-1,121.97	681.73	904.87	846.19	58.68	15.420	
8,000.00	7,795.77	7,978.61	7,795.77	31.45	29.75	-137.46	-1,121.97	681.73	904.87	845.95	58.92	15.359	
8,025.74	7,821.51	8,004.35	7,821.51	31.48	29.78	-137.46	-1,121.97	681.73	904.87	845.89	58.98	15.343	
8,040.23	7,836.00	8,015.84	7,833.00	31.50	29.79	-137.46	-1,121.97	681.73	904.88	845.87	59.01	15.335	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CARMA 41-36
Project:	COLORADO NORTHERN 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 41-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 41-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-16-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design												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
0.00	0.00	0.00	0.00	0.00	0.00	157.56	-94.71	39.11	103.71				
100.00	100.00	84.00	84.00	0.10	1.68	157.56	-94.71	39.11	102.47	100.70	1.78	57.713	
200.00	200.00	184.00	184.00	0.32	5.36	157.56	-94.71	39.11	102.47	96.79	5.68	18.040	
300.00	300.00	284.00	284.00	0.55	9.36	157.56	-94.71	39.11	102.47	92.57	9.91	10.345	
400.00	400.00	384.00	384.00	0.77	13.36	157.56	-94.71	39.11	102.47	88.34	14.13	7.252	
500.00	500.00	484.00	484.00	0.99	17.36	157.56	-94.71	39.11	102.47	84.12	18.35	5.583	
600.00	600.00	584.00	584.00	1.22	21.36	157.56	-94.71	39.11	102.47	79.89	22.58	4.538	
700.00	700.00	684.00	684.00	1.44	25.36	157.56	-94.71	39.11	102.47	75.67	26.80	3.823	
800.00	800.00	784.00	784.00	1.67	29.36	157.56	-94.71	39.11	102.47	71.44	31.03	3.302	
900.00	900.00	884.00	884.00	1.89	33.36	157.56	-94.71	39.11	102.47	67.22	35.25	2.907	
1,000.00	999.98	983.98	983.98	2.10	37.36	48.92	-94.71	39.11	101.32	61.87	39.45	2.568	
1,100.00	1,099.84	1,083.84	1,083.84	2.30	41.35	51.28	-94.71	39.11	97.96	54.35	43.61	2.246	
1,200.00	1,199.45	1,183.45	1,183.45	2.51	45.34	55.56	-94.71	39.11	92.75	44.98	47.76	1.942	
1,300.00	1,298.70	1,282.70	1,282.70	2.75	49.31	62.31	-94.71	39.11	86.41	34.47	51.95	1.664	
1,400.00	1,397.47	1,381.47	1,381.47	3.03	53.26	72.25	-94.71	39.11	80.29	24.07	56.22	1.428 Level 3	
1,500.00	1,495.62	1,479.62	1,479.62	3.35	57.18	85.80	-94.71	39.11	76.57	16.00	60.57	1.264 Level 3	
1,527.00	1,522.01	1,506.01	1,506.01	3.44	58.24	90.00	-94.71	39.11	76.35	14.59	61.76	1.236 Level 2, CC	
1,600.00	1,593.06	1,577.06	1,577.06	3.72	61.08	102.02	-94.71	39.11	78.17	13.38	64.79	1.206 Level 2, ES, SF	
1,700.00	1,689.64	1,673.64	1,673.64	4.15	64.95	118.23	-94.71	39.11	87.45	18.91	68.55	1.276 Level 3	
1,800.00	1,785.27	1,769.27	1,769.27	4.64	68.77	131.84	-94.71	39.11	104.86	33.11	71.75	1.461 Level 3	
1,810.19	1,794.96	1,778.96	1,778.96	4.70	69.16	133.03	-94.71	39.11	107.05	35.00	72.05	1.486 Level 3	
1,900.00	1,880.27	1,864.27	1,864.27	5.19	72.57	142.06	-94.71	39.11	128.29	53.25	75.04	1.710	
2,000.00	1,975.26	1,959.26	1,959.26	5.77	76.37	149.11	-94.71	39.11	154.52	75.99	78.52	1.968	
2,100.00	2,070.26	2,054.26	2,054.26	6.36	80.17	154.11	-94.71	39.11	182.33	100.20	82.13	2.220	
2,200.00	2,165.25	2,149.25	2,149.25	6.96	83.97	157.79	-94.71	39.11	211.11	125.28	85.82	2.460	
2,300.00	2,260.25	2,244.25	2,244.25	7.57	87.77	160.58	-94.71	39.11	240.50	150.93	89.57	2.685	
2,400.00	2,355.24	2,339.24	2,339.24	8.19	91.57	162.78	-94.71	39.11	270.30	176.94	93.36	2.895	
2,500.00	2,450.24	2,434.24	2,434.24	8.82	95.37	164.54	-94.71	39.11	300.40	203.22	97.18	3.091	
2,600.00	2,545.24	2,529.24	2,529.24	9.45	99.17	165.97	-94.71	39.11	330.71	229.69	101.01	3.274	
2,700.00	2,640.23	2,624.23	2,624.23	10.09	102.97	167.17	-94.71	39.11	361.18	256.31	104.87	3.444	
2,800.00	2,735.23	2,719.23	2,719.23	10.73	106.77	168.19	-94.71	39.11	391.77	283.04	108.73	3.603	
2,900.00	2,830.22	2,814.22	2,814.22	11.37	110.57	169.05	-94.71	39.11	422.45	309.85	112.60	3.752	
3,000.00	2,925.22	2,909.22	2,909.22	12.01	114.37	169.80	-94.71	39.11	453.21	336.73	116.48	3.891	
3,100.00	3,020.21	3,004.21	3,004.21	12.65	118.17	170.45	-94.71	39.11	484.03	363.67	120.37	4.021	
3,200.00	3,115.21	3,099.21	3,099.21	13.30	121.97	171.03	-94.71	39.11	514.90	390.65	124.25	4.144	
3,300.00	3,210.20	3,194.20	3,194.20	13.95	125.77	171.54	-94.71	39.11	545.82	417.67	128.15	4.259	
3,400.00	3,305.20	3,289.20	3,289.20	14.60	129.57	172.00	-94.71	39.11	576.77	444.72	132.05	4.368	
3,500.00	3,400.19	3,384.19	3,384.19	15.25	133.37	172.41	-94.71	39.11	607.75	471.80	135.94	4.471	
3,600.00	3,495.19	3,479.19	3,479.19	15.90	137.17	172.78	-94.71	39.11	638.75	498.90	139.85	4.568	
3,700.00	3,590.18	3,574.18	3,574.18	16.55	140.97	173.11	-94.71	39.11	669.78	526.03	143.75	4.659	
3,800.00	3,685.18	3,669.18	3,669.18	17.20	144.77	173.42	-94.71	39.11	700.82	553.17	147.66	4.746	
3,900.00	3,780.17	3,764.17	3,764.17	17.85	148.57	173.70	-94.71	39.11	731.88	580.32	151.56	4.829	
4,000.00	3,875.17	3,859.17	3,859.17	18.51	152.37	173.96	-94.71	39.11	762.96	607.49	155.47	4.907	
4,100.00	3,970.16	3,954.16	3,954.16	19.16	156.17	174.19	-94.71	39.11	794.05	634.67	159.38	4.982	
4,200.00	4,065.16	4,049.16	4,049.16	19.82	159.97	174.41	-94.71	39.11	825.15	661.86	163.29	5.053	
4,300.00	4,160.15	4,144.15	4,144.15	20.47	163.77	174.62	-94.71	39.11	856.26	689.05	167.21	5.121	
4,400.00	4,255.15	4,239.15	4,239.15	21.13	167.57	174.81	-94.71	39.11	887.38	716.26	171.12	5.186	
4,500.00	4,350.14	4,334.14	4,334.14	21.78	171.37	174.98	-94.71	39.11	918.51	743.48	175.03	5.248	
4,600.00	4,445.14	4,429.14	4,429.14	22.44	175.17	175.15	-94.71	39.11	949.64	770.70	178.95	5.307	
4,700.00	4,540.13	4,524.13	4,524.13	23.09	178.97	175.30	-94.71	39.11	980.79	797.92	182.86	5.364	
4,800.00	4,635.13	4,619.13	4,619.13	23.75	182.77	175.45	-94.71	39.11	1,011.93	825.16	186.78	5.418	
4,900.00	4,730.12	4,714.12	4,714.12	24.41	186.56	175.58	-94.71	39.11	1,043.09	852.39	190.70	5.470	

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 41-36
Project:	COLORADO NORTHERN 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 41-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 41-36	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	4,825.12	4,809.12	4,809.12	25.06	190.36	175.71	-94.71	39.11	1,074.25	879.63	194.61	5.520	
5,100.00	4,920.11	4,904.11	4,904.11	25.72	194.16	175.83	-94.71	39.11	1,105.41	906.88	198.53	5.568	
5,200.00	5,015.11	4,999.11	4,999.11	26.38	197.96	175.95	-94.71	39.11	1,136.58	934.13	202.45	5.614	
5,282.04	5,093.04	5,077.04	5,077.04	26.92	201.08	176.04	-94.71	39.11	1,162.15	956.49	205.66	5.651	
5,300.00	5,110.12	5,094.12	5,094.12	27.02	201.76	176.06	-94.71	39.11	1,167.69	960.96	206.73	5.648	
5,400.00	5,205.83	5,189.83	5,189.83	27.49	205.59	176.20	-94.71	39.11	1,196.61	984.02	212.59	5.629	
5,500.00	5,302.48	5,286.48	5,286.48	27.92	209.46	176.31	-94.71	39.11	1,222.18	1,003.84	218.34	5.598	
5,600.00	5,399.98	5,383.98	5,383.98	28.30	213.36	176.41	-94.71	39.11	1,244.36	1,020.37	223.99	5.555	
5,700.00	5,498.18	5,482.18	5,482.18	28.63	217.29	176.48	-94.71	39.11	1,263.14	1,033.70	229.44	5.505	
5,800.00	5,596.99	5,580.99	5,580.99	28.91	221.24	176.54	-94.71	39.11	1,278.49	1,043.82	234.67	5.448	
5,900.00	5,696.27	5,680.27	5,680.27	29.14	225.21	176.59	-94.71	39.11	1,290.39	1,050.73	239.65	5.384	
6,000.00	5,795.91	5,779.91	5,779.91	29.33	229.20	176.62	-94.71	39.11	1,298.82	1,054.44	244.38	5.315	
6,100.00	5,895.78	5,879.78	5,879.78	29.47	233.19	176.64	-94.71	39.11	1,303.77	1,054.95	248.82	5.240	
6,192.23	5,988.00	5,972.00	5,972.00	29.57	236.88	-73.96	-94.71	39.11	1,305.25	1,052.59	252.66	5.166	
6,200.00	5,995.77	5,979.77	5,979.77	29.58	237.19	-73.96	-94.71	39.11	1,305.25	1,052.27	252.98	5.159	
6,300.00	6,095.77	6,079.77	6,079.77	29.67	241.19	-73.96	-94.71	39.11	1,305.25	1,048.11	257.14	5.076	
6,400.00	6,195.77	6,179.77	6,179.77	29.76	245.19	-73.96	-94.71	39.11	1,305.25	1,043.95	261.30	4.995	
6,500.00	6,295.77	6,279.77	6,279.77	29.86	249.19	-73.96	-94.71	39.11	1,305.25	1,039.79	265.47	4.917	
6,600.00	6,395.77	6,379.77	6,379.77	29.96	253.19	-73.96	-94.71	39.11	1,305.25	1,035.62	269.63	4.841	
6,700.00	6,495.77	6,479.77	6,479.77	30.05	257.19	-73.96	-94.71	39.11	1,305.25	1,031.46	273.79	4.767	
6,800.00	6,595.77	6,579.77	6,579.77	30.15	261.19	-73.96	-94.71	39.11	1,305.25	1,027.29	277.96	4.696	
6,900.00	6,695.77	6,679.77	6,679.77	30.25	265.19	-73.96	-94.71	39.11	1,305.25	1,023.12	282.13	4.626	
7,000.00	6,795.77	6,779.77	6,779.77	30.36	269.19	-73.96	-94.71	39.11	1,305.25	1,018.95	286.30	4.559	
7,100.00	6,895.77	6,879.77	6,879.77	30.46	273.19	-73.96	-94.71	39.11	1,305.25	1,014.78	290.47	4.494	
7,200.00	6,995.77	6,979.77	6,979.77	30.57	277.19	-73.96	-94.71	39.11	1,305.25	1,010.61	294.64	4.430	
7,300.00	7,095.77	7,079.77	7,079.77	30.67	281.19	-73.96	-94.71	39.11	1,305.25	1,006.44	298.81	4.368	
7,400.00	7,195.77	7,179.77	7,179.77	30.78	285.19	-73.96	-94.71	39.11	1,305.25	1,002.27	302.99	4.308	
7,500.00	7,295.77	7,279.77	7,279.77	30.89	289.19	-73.96	-94.71	39.11	1,305.25	998.09	307.16	4.249	
7,600.00	7,395.77	7,379.77	7,379.77	31.00	293.19	-73.96	-94.71	39.11	1,305.25	993.91	311.34	4.192	
7,700.00	7,495.77	7,479.77	7,479.77	31.11	297.19	-73.96	-94.71	39.11	1,305.25	989.74	315.52	4.137	
7,800.00	7,595.77	7,489.00	7,489.00	31.22	297.56	-73.96	-94.71	39.11	1,308.41	992.34	316.06	4.140	
7,900.00	7,695.77	7,489.00	7,489.00	31.34	297.56	-73.96	-94.71	39.11	1,319.12	1,002.88	316.24	4.171	
8,000.00	7,795.77	7,489.00	7,489.00	31.45	297.56	-73.96	-94.71	39.11	1,337.25	1,020.82	316.42	4.226	
8,040.23	7,836.00	7,489.00	7,489.00	31.50	297.56	-73.96	-94.71	39.11	1,346.57	1,030.07	316.50	4.255	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CARMA 41-36
Project:	COLORADO NORTHERN 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 41-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 41-36	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
0.00	0.00	0.00	0.00	0.00	0.00	-162.28	-43.71	-13.97	48.60				
100.00	100.00	84.00	84.00	0.10	0.09	-162.28	-43.71	-13.97	45.89	45.70	0.19	241.587	
200.00	200.00	184.00	184.00	0.32	0.30	-162.28	-43.71	-13.97	45.89	45.27	0.62	73.843	
300.00	300.00	284.00	284.00	0.55	0.53	-162.28	-43.71	-13.97	45.89	44.82	1.07	42.849	
400.00	400.00	384.00	384.00	0.77	0.75	-162.28	-43.71	-13.97	45.89	44.37	1.52	30.181	
500.00	500.00	484.00	484.00	0.99	0.98	-162.28	-43.71	-13.97	45.89	43.92	1.97	23.294	
600.00	600.00	584.00	584.00	1.22	1.20	-162.28	-43.71	-13.97	45.89	43.47	2.42	18.967	
700.00	700.00	684.00	684.00	1.44	1.43	-162.28	-43.71	-13.97	45.89	43.02	2.87	15.995	
800.00	800.00	784.00	784.00	1.67	1.65	-162.28	-43.71	-13.97	45.89	42.57	3.32	13.828	
900.00	900.00	884.00	884.00	1.89	1.87	-162.28	-43.71	-13.97	45.89	42.12	3.77	12.179	
987.52	987.51	971.51	971.51	2.08	2.07	90.00	-43.71	-13.97	45.87	41.73	4.15	11.063 CC	
1,000.00	999.98	983.98	983.98	2.10	2.10	90.51	-43.71	-13.97	45.87	41.67	4.20	10.921	
1,100.00	1,099.84	1,083.84	1,083.84	2.30	2.32	96.99	-43.71	-13.97	46.22	41.59	4.62	9.994 ES	
1,200.00	1,199.45	1,183.45	1,183.45	2.51	2.55	107.29	-43.71	-13.97	48.07	43.00	5.06	9.495 SF	
1,300.00	1,298.70	1,282.70	1,282.70	2.75	2.77	119.81	-43.71	-13.97	53.00	47.49	5.51	9.621	
1,400.00	1,397.47	1,381.47	1,381.47	3.03	2.99	132.17	-43.71	-13.97	62.32	56.37	5.95	10.478	
1,500.00	1,495.62	1,479.62	1,479.62	3.35	3.21	142.57	-43.71	-13.97	76.54	70.16	6.37	12.012	
1,600.00	1,593.06	1,577.06	1,577.06	3.72	3.43	150.56	-43.71	-13.97	95.50	88.72	6.78	14.086	
1,700.00	1,689.64	1,673.64	1,673.64	4.15	3.65	156.48	-43.71	-13.97	118.85	111.67	7.18	16.559	
1,800.00	1,785.27	1,769.27	1,769.27	4.64	3.86	160.85	-43.71	-13.97	146.26	138.69	7.57	19.324	
1,810.19	1,794.96	1,778.96	1,778.96	4.70	3.89	161.22	-43.71	-13.97	149.27	141.66	7.61	19.619	
1,900.00	1,880.27	1,864.27	1,864.27	5.19	4.08	164.15	-43.71	-13.97	176.18	168.16	8.01	21.985	
2,000.00	1,975.26	1,959.26	1,959.26	5.77	4.29	166.51	-43.71	-13.97	206.50	198.02	8.48	24.353	
2,100.00	2,070.26	2,054.26	2,054.26	6.36	4.50	168.27	-43.71	-13.97	237.06	228.11	8.95	26.478	
2,200.00	2,165.25	2,149.25	2,149.25	6.96	4.72	169.63	-43.71	-13.97	267.78	258.34	9.43	28.389	
2,300.00	2,260.25	2,244.25	2,244.25	7.57	4.93	170.71	-43.71	-13.97	298.60	288.69	9.92	30.112	
2,400.00	2,355.24	2,339.24	2,339.24	8.19	5.15	171.58	-43.71	-13.97	329.51	319.10	10.40	31.669	
2,500.00	2,450.24	2,434.24	2,434.24	8.82	5.36	172.31	-43.71	-13.97	360.47	349.57	10.90	33.083	
2,600.00	2,545.24	2,529.24	2,529.24	9.45	5.57	172.92	-43.71	-13.97	391.47	380.08	11.39	34.369	
2,700.00	2,640.23	2,624.23	2,624.23	10.09	5.79	173.44	-43.71	-13.97	422.51	410.63	11.89	35.544	
2,800.00	2,735.23	2,719.23	2,719.23	10.73	6.00	173.89	-43.71	-13.97	453.58	441.20	12.39	36.621	
2,900.00	2,830.22	2,814.22	2,814.22	11.37	6.21	174.28	-43.71	-13.97	484.67	471.79	12.89	37.610	
3,000.00	2,925.22	2,909.22	2,909.22	12.01	6.43	174.63	-43.71	-13.97	515.78	502.39	13.39	38.523	
3,100.00	3,020.21	3,004.21	3,004.21	12.65	6.64	174.94	-43.71	-13.97	546.90	533.01	13.89	39.366	
3,200.00	3,115.21	3,099.21	3,099.21	13.30	6.85	175.21	-43.71	-13.97	578.04	563.64	14.40	40.148	
3,300.00	3,210.20	3,194.20	3,194.20	13.95	7.07	175.45	-43.71	-13.97	609.19	594.28	14.90	40.875	
3,400.00	3,305.20	3,289.20	3,289.20	14.60	7.28	175.68	-43.71	-13.97	640.34	624.93	15.41	41.552	
3,500.00	3,400.19	3,384.19	3,384.19	15.25	7.49	175.88	-43.71	-13.97	671.50	655.59	15.92	42.184	
3,600.00	3,495.19	3,479.19	3,479.19	15.90	7.71	176.06	-43.71	-13.97	702.67	686.25	16.43	42.775	
3,700.00	3,590.18	3,574.18	3,574.18	16.55	7.92	176.23	-43.71	-13.97	733.85	716.91	16.94	43.329	
3,800.00	3,685.18	3,669.18	3,669.18	17.20	8.13	176.38	-43.71	-13.97	765.03	747.59	17.45	43.850	
3,900.00	3,780.17	3,764.17	3,764.17	17.85	8.35	176.52	-43.71	-13.97	796.22	778.26	17.96	44.340	
4,000.00	3,875.17	3,859.17	3,859.17	18.51	8.56	176.65	-43.71	-13.97	827.41	808.94	18.47	44.801	
4,100.00	3,970.16	3,954.16	3,954.16	19.16	8.78	176.78	-43.71	-13.97	858.60	839.62	18.98	45.237	
4,200.00	4,065.16	4,049.16	4,049.16	19.82	8.99	176.89	-43.71	-13.97	889.80	870.31	19.49	45.649	
4,300.00	4,160.15	4,144.15	4,144.15	20.47	9.20	176.99	-43.71	-13.97	921.00	900.99	20.00	46.039	
4,400.00	4,255.15	4,239.15	4,239.15	21.13	9.42	177.09	-43.71	-13.97	952.20	931.68	20.52	46.410	
4,500.00	4,350.14	4,334.14	4,334.14	21.78	9.63	177.19	-43.71	-13.97	983.40	962.37	21.03	46.761	
4,600.00	4,445.14	4,429.14	4,429.14	22.44	9.84	177.27	-43.71	-13.97	1,014.61	993.07	21.54	47.095	
4,700.00	4,540.13	4,524.13	4,524.13	23.09	10.06	177.35	-43.71	-13.97	1,045.82	1,023.76	22.06	47.413	
4,800.00	4,635.13	4,619.13	4,619.13	23.75	10.27	177.43	-43.71	-13.97	1,077.03	1,054.46	22.57	47.716	
4,900.00	4,730.12	4,714.12	4,714.12	24.41	10.48	177.50	-43.71	-13.97	1,108.24	1,085.16	23.09	48.005	

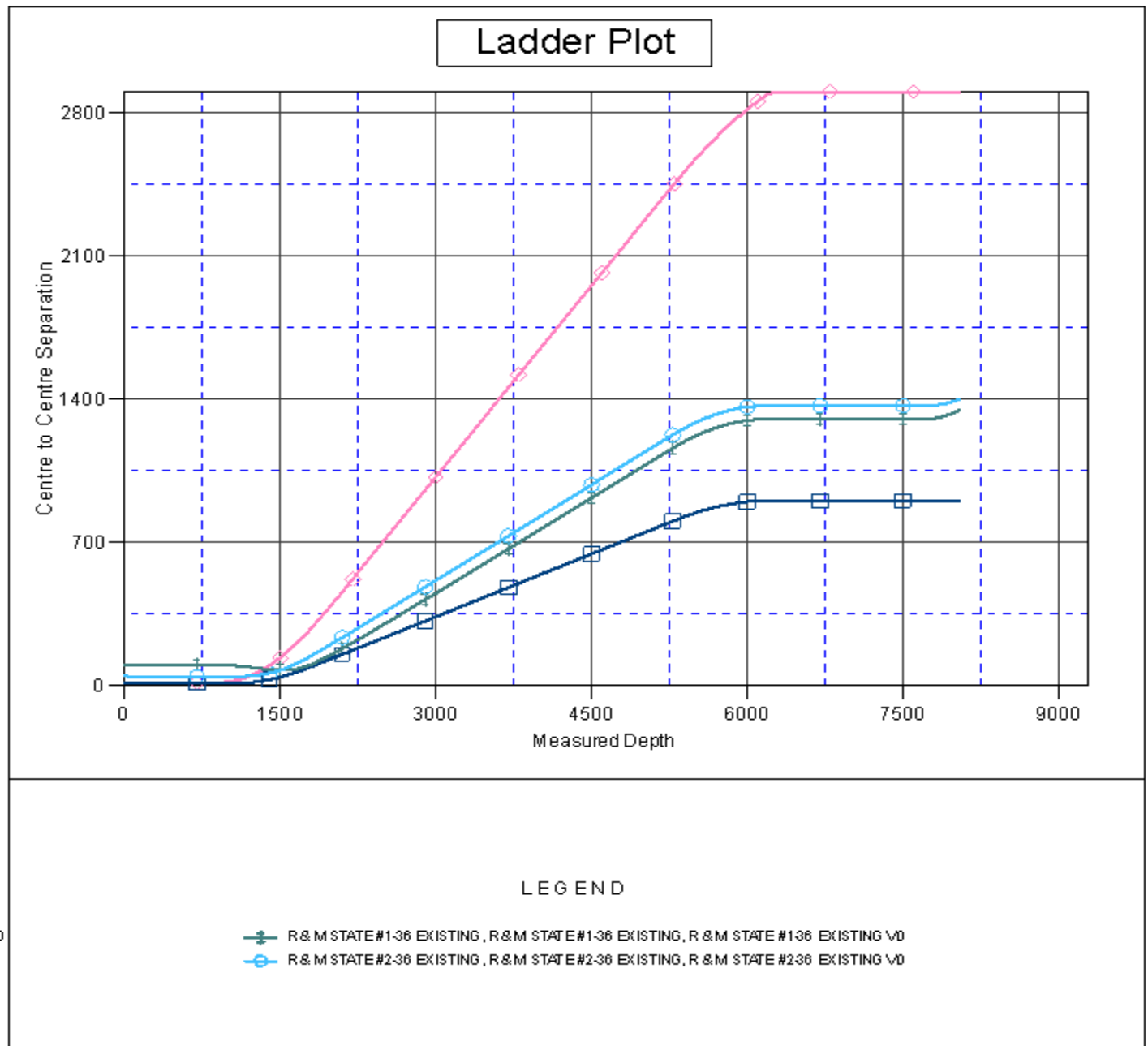
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CARMA 41-36
Project:	COLORADO NORTHERN 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 41-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 41-36	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	4,825.12	4,809.12	4,809.12	25.06	10.70	177.57	-43.71	-13.97	1,139.46	1,115.86	23.60	48.281	
5,100.00	4,920.11	4,904.11	4,904.11	25.72	10.91	177.64	-43.71	-13.97	1,170.67	1,146.56	24.12	48.544	
5,200.00	5,015.11	4,999.11	4,999.11	26.38	11.12	177.70	-43.71	-13.97	1,201.89	1,177.26	24.63	48.797	
5,282.04	5,093.04	5,077.04	5,077.04	26.92	11.30	177.75	-43.71	-13.97	1,227.50	1,202.45	25.05	48.996	
5,300.00	5,110.12	5,094.12	5,094.12	27.02	11.34	177.76	-43.71	-13.97	1,233.05	1,207.89	25.17	48.995	
5,400.00	5,205.83	5,189.83	5,189.83	27.49	11.55	177.83	-43.71	-13.97	1,262.01	1,236.25	25.76	48.989	
5,500.00	5,302.48	5,286.48	5,286.48	27.92	11.77	177.90	-43.71	-13.97	1,287.61	1,261.29	26.32	48.925	
5,600.00	5,399.98	5,383.98	5,383.98	28.30	11.99	177.95	-43.71	-13.97	1,309.83	1,282.99	26.84	48.808	
5,700.00	5,498.18	5,482.18	5,482.18	28.63	12.21	177.99	-43.71	-13.97	1,328.63	1,301.32	27.31	48.642	
5,800.00	5,596.99	5,580.99	5,580.99	28.91	12.43	178.03	-43.71	-13.97	1,344.00	1,316.25	27.75	48.432	
5,900.00	5,696.27	5,680.27	5,680.27	29.14	12.65	178.05	-43.71	-13.97	1,355.91	1,327.76	28.14	48.181	
6,000.00	5,795.91	5,779.91	5,779.91	29.33	12.88	178.07	-43.71	-13.97	1,364.35	1,335.86	28.49	47.889	
6,100.00	5,895.78	5,879.78	5,879.78	29.47	13.10	178.08	-43.71	-13.97	1,369.31	1,340.52	28.79	47.560	
6,192.23	5,988.00	5,972.00	5,972.00	29.57	13.31	-72.53	-43.71	-13.97	1,370.79	1,341.76	29.03	47.214	
6,200.00	5,995.77	5,979.77	5,979.77	29.58	13.33	-72.53	-43.71	-13.97	1,370.79	1,341.73	29.06	47.165	
6,300.00	6,095.77	6,079.77	6,079.77	29.67	13.55	-72.53	-43.71	-13.97	1,370.79	1,341.34	29.45	46.549	
6,400.00	6,195.77	6,179.77	6,179.77	29.76	13.78	-72.53	-43.71	-13.97	1,370.79	1,340.96	29.83	45.947	
6,500.00	6,295.77	6,279.77	6,279.77	29.86	14.00	-72.53	-43.71	-13.97	1,370.79	1,340.57	30.22	45.357	
6,600.00	6,395.77	6,379.77	6,379.77	29.96	14.23	-72.53	-43.71	-13.97	1,370.79	1,340.18	30.61	44.780	
6,700.00	6,495.77	6,479.77	6,479.77	30.05	14.45	-72.53	-43.71	-13.97	1,370.79	1,339.79	31.00	44.216	
6,800.00	6,595.77	6,579.77	6,579.77	30.15	14.68	-72.53	-43.71	-13.97	1,370.79	1,339.40	31.39	43.664	
6,900.00	6,695.77	6,679.77	6,679.77	30.25	14.90	-72.53	-43.71	-13.97	1,370.79	1,339.00	31.79	43.124	
7,000.00	6,795.77	6,779.77	6,779.77	30.36	15.13	-72.53	-43.71	-13.97	1,370.79	1,338.61	32.18	42.595	
7,100.00	6,895.77	6,879.77	6,879.77	30.46	15.35	-72.53	-43.71	-13.97	1,370.79	1,338.21	32.58	42.078	
7,200.00	6,995.77	6,979.77	6,979.77	30.57	15.58	-72.53	-43.71	-13.97	1,370.79	1,337.82	32.97	41.571	
7,300.00	7,095.77	7,079.77	7,079.77	30.67	15.80	-72.53	-43.71	-13.97	1,370.79	1,337.42	33.37	41.075	
7,400.00	7,195.77	7,179.77	7,179.77	30.78	16.03	-72.53	-43.71	-13.97	1,370.79	1,337.02	33.77	40.589	
7,500.00	7,295.77	7,279.77	7,279.77	30.89	16.25	-72.53	-43.71	-13.97	1,370.79	1,336.62	34.17	40.113	
7,600.00	7,395.77	7,379.77	7,379.77	31.00	16.47	-72.53	-43.71	-13.97	1,370.79	1,336.22	34.57	39.647	
7,700.00	7,495.77	7,479.77	7,479.77	31.11	16.70	-72.53	-43.71	-13.97	1,370.79	1,335.81	34.98	39.191	
7,737.38	7,533.14	7,517.14	7,517.14	31.15	16.78	-72.53	-43.71	-13.97	1,370.79	1,335.66	35.13	39.023	
7,800.00	7,595.77	7,533.00	7,533.00	31.22	16.82	-72.53	-43.71	-13.97	1,371.59	1,336.31	35.28	38.882	
7,900.00	7,695.77	7,533.00	7,533.00	31.34	16.82	-72.53	-43.71	-13.97	1,378.62	1,343.17	35.46	38.883	
8,000.00	7,795.77	7,533.00	7,533.00	31.45	16.82	-72.53	-43.71	-13.97	1,392.82	1,357.19	35.64	39.084	
8,040.23	7,836.00	7,533.00	7,533.00	31.50	16.82	-72.53	-43.71	-13.97	1,400.51	1,364.80	35.71	39.219	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CARMA 41-36
Project:	COLORADO NORTHERN 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 41-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 41-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 12-16-09 RHS	Offset TVD Reference:	Offset Datum

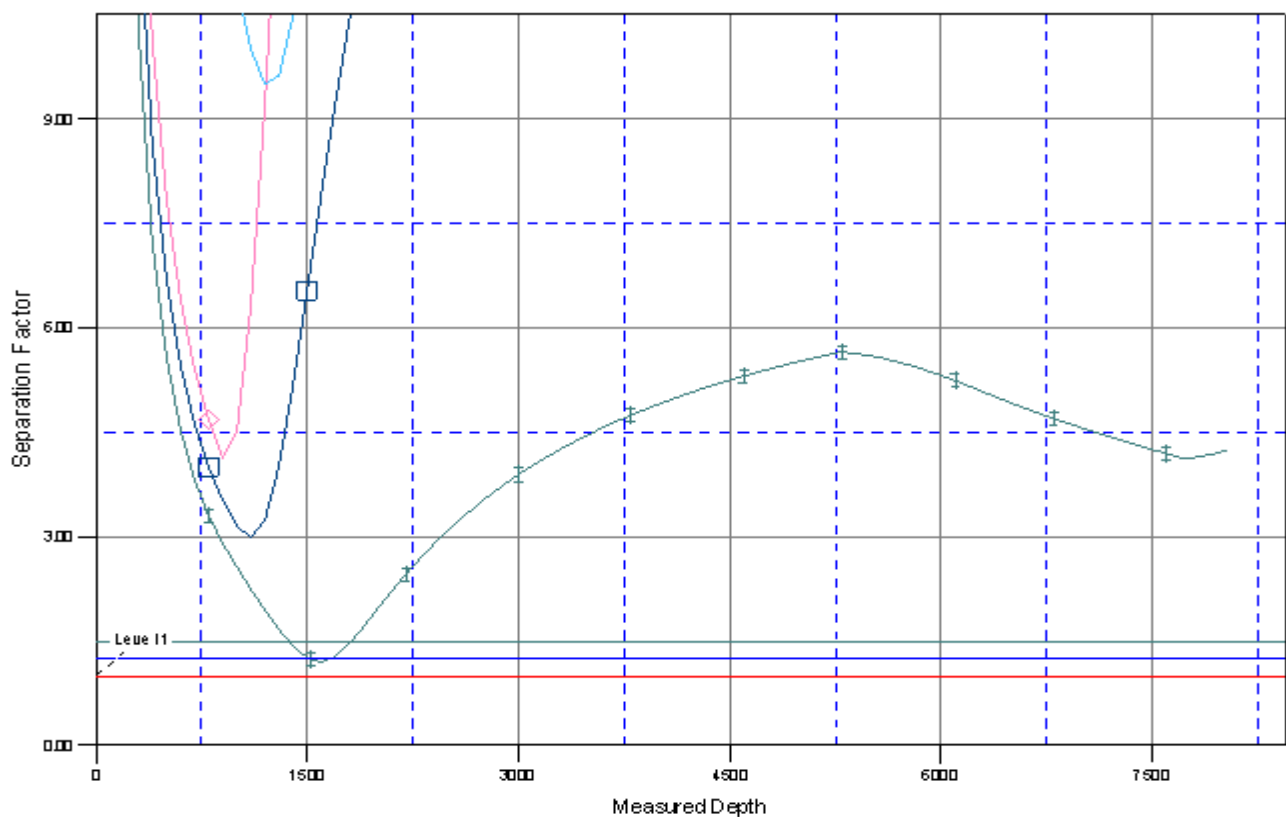
Reference Depths are relative to WELL @ 4846.00ft (Original Well Elev) Coordinates are relative to: P_CARMA 41-36
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is 105° 30' 0.000 W ° Grid Convergence at Surface is: 0.36°



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_CARMA 41-36
Project:	COLORADO NORTHERN 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 41-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_CARMA 41-36	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 41-36
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 #136 EXISTING V/D
- R & M STATE#2-36 EXISTING, R & M STATE#2-36 EXISTING, R & M STATE #236 EXISTING V/D