



US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_NRC 20-9 PAD

P_NRC 39-9

P_NRC 39-9

Plan: PLAN #1 1-6-10 RHS

Standard Planning Report

06 January, 2010



P_NRC 39-9
COLORADO NORTHERN ZONE - 83
SECTION 9 T1N R67W
1103 FSL 1502 FEL
LAT: 40° 3' 40.662 N
LONG: 104° 53' 30.052 W



Azimuths to True North
Magnetic North: 9.09°

Magnetic Field
Strength: 53088.8nT
Dip Angle: 66.80°
Date: 1/6/2010
Model: IGRF2010

WELL DETAILS: P_NRC 39-9

+N/-S	+E/-W	Northing	Ground Level: Easting	5024.00 Latitude	Longitude	Slot
0.00	0.00	1265759.10	3170268.24	40° 3' 40.662 N	104° 53' 30.052 W	

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3196.00	3281.07	PARKMAN
4671.00	4840.89	SUSSEX
5141.00	5337.92	SHANNON
7311.00	7538.88	NIO A
7651.00	7878.88	CODELL
8101.00	8328.88	JSAND

SECTION DETAILS

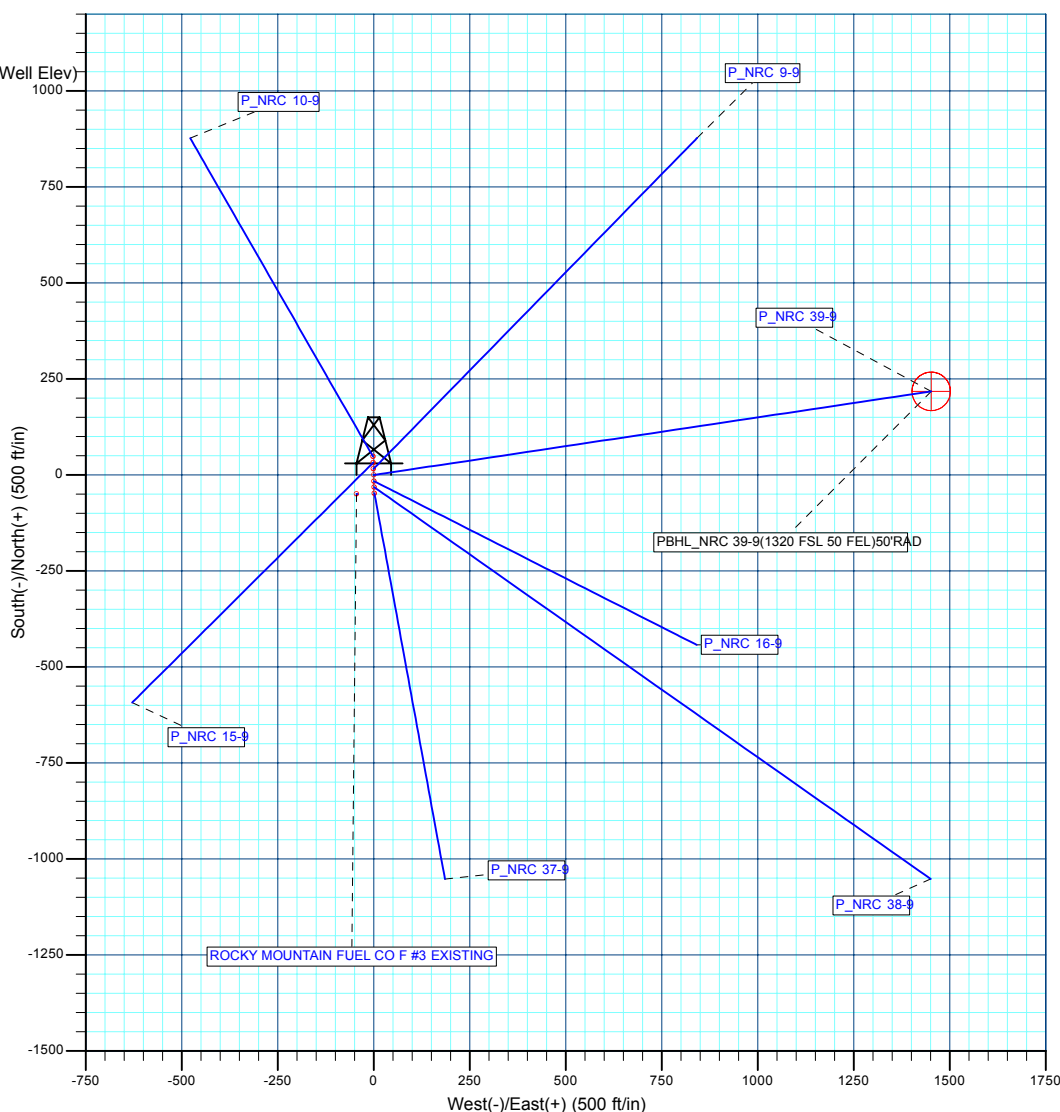
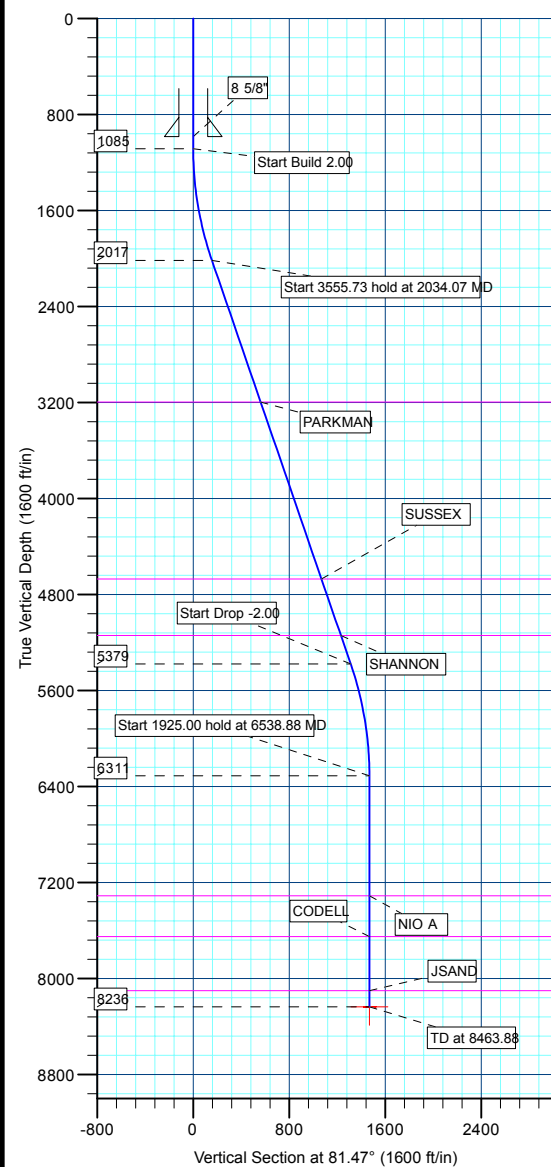
MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1085.00	0.00	0.00	1085.00	0.00	0.00	0.00	0.00	0.00	
2034.07	18.98	81.47	2016.81	23.12	154.05	2.00	81.47	155.78	
5589.80	18.98	81.47	5379.19	194.76	1297.79	0.00	0.00	1312.32	
6538.88	0.00	0.00	6311.00	217.88	1451.84	2.00	180.00	1468.10	
8463.88	0.00	0.00	8236.00	217.88	1451.84	0.00	0.00	1468.10	PBHL_NRC 39-9(1320 FSL 50 FEL)50°RAD

CASING DETAILS

TVD	MD	Name	Size
985.00	985.00	8 5/8"	8.62



KB ELEV:WELL @ 5039.00ft (Original Well Elev)
GRD ELEV: 5024.00



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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL	8236.00	217.88	1451.84	1265986.93	3171718.55	40° 3' 42.815 N 104° 53' 11.378 W		Circle (Radius: 50.00)

Plan: PLAN #1 1-6-10 RHS (P_NRC 39-9/P_NRC 39-9)

Created By: Robert H. Scott

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_NRC 39-9
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site:	WELD_NRC 20-9 PAD	North Reference:	True
Well:	P_NRC 39-9	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_NRC 39-9		
Design:	PLAN #1 1-6-10 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_NRC 20-9 PAD, SECTION 9 T1N R67W											
Site Position:						Northing:			1,265,759.10 ft			Latitude:			40° 3' 40.662 N		
From:			Lat/Long			Easting:			3,170,268.24 ft			Longitude:			104° 53' 30.052 W		
Position Uncertainty:			0.00 ft			Slot Radius:			in			Grid Convergence:			0.39 °		

Well	P_NRC 39-9					
Well Position	+N/-S	0.00 ft	Northing:	1,265,759.10 ft	Latitude:	40° 3' 40.662 N
	+E/-W	0.00 ft	Easting:	3,170,268.24 ft	Longitude:	104° 53' 30.052 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	5,024.00 ft

Wellbore	P_NRC 39-9				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/6/2010	9.09	66.80	53,089

Design	PLAN #1 1-6-10 RHS			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	81.47

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	
1,085.00	0.00	0.00	1,085.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,034.07	18.98	81.47	2,016.81	23.12	154.05	2.00	2.00	0.00	81.47	
5,589.80	18.98	81.47	5,379.19	194.76	1,297.79	0.00	0.00	0.00	0.00	
6,538.88	0.00	0.00	6,311.00	217.88	1,451.84	2.00	-2.00	0.00	180.00	
8,463.88	0.00	0.00	8,236.00	217.88	1,451.84	0.00	0.00	0.00	0.00	PBHL_NRC 39-9(1:

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_NRC 39-9
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site:	WELD_NRC 20-9 PAD	North Reference:	True
Well:	P_NRC 39-9	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_NRC 39-9		
Design:	PLAN #1 1-6-10 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									
1,085.00	0.00	0.00	1,085.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.30	81.47	1,100.00	0.01	0.04	0.04	2.00	2.00	0.00
1,200.00	2.30	81.47	1,199.97	0.34	2.28	2.31	2.00	2.00	0.00
1,300.00	4.30	81.47	1,299.80	1.20	7.97	8.06	2.00	2.00	0.00
1,400.00	6.30	81.47	1,399.37	2.57	17.11	17.30	2.00	2.00	0.00
1,500.00	8.30	81.47	1,498.55	4.45	29.67	30.01	2.00	2.00	0.00
1,600.00	10.30	81.47	1,597.23	6.85	45.65	46.17	2.00	2.00	0.00
1,700.00	12.30	81.47	1,695.29	9.76	65.03	65.76	2.00	2.00	0.00
1,800.00	14.30	81.47	1,792.60	13.17	87.78	88.76	2.00	2.00	0.00
1,900.00	16.30	81.47	1,889.05	17.09	113.87	115.15	2.00	2.00	0.00
2,000.00	18.30	81.47	1,984.52	21.50	143.28	144.89	2.00	2.00	0.00
Start 3555.73 hold at 2034.07 MD									
2,034.07	18.98	81.47	2,016.81	23.12	154.05	155.78	2.00	2.00	0.00
2,100.00	18.98	81.47	2,079.15	26.30	175.26	177.22	0.00	0.00	0.00
2,200.00	18.98	81.47	2,173.71	31.13	207.42	209.75	0.00	0.00	0.00
2,300.00	18.98	81.47	2,268.27	35.96	239.59	242.27	0.00	0.00	0.00
2,400.00	18.98	81.47	2,362.84	40.78	271.76	274.80	0.00	0.00	0.00
2,500.00	18.98	81.47	2,457.40	45.61	303.92	307.32	0.00	0.00	0.00
2,600.00	18.98	81.47	2,551.96	50.44	336.09	339.85	0.00	0.00	0.00
2,700.00	18.98	81.47	2,646.52	55.26	368.25	372.38	0.00	0.00	0.00
2,800.00	18.98	81.47	2,741.09	60.09	400.42	404.90	0.00	0.00	0.00
2,900.00	18.98	81.47	2,835.65	64.92	432.59	437.43	0.00	0.00	0.00
3,000.00	18.98	81.47	2,930.21	69.75	464.75	469.96	0.00	0.00	0.00
3,100.00	18.98	81.47	3,024.77	74.57	496.92	502.48	0.00	0.00	0.00
3,200.00	18.98	81.47	3,119.34	79.40	529.08	535.01	0.00	0.00	0.00
PARKMAN									
3,281.07	18.98	81.47	3,196.00	83.31	555.16	561.38	0.00	0.00	0.00
3,300.00	18.98	81.47	3,213.90	84.23	561.25	567.53	0.00	0.00	0.00
3,400.00	18.98	81.47	3,308.46	89.05	593.42	600.06	0.00	0.00	0.00
3,500.00	18.98	81.47	3,403.02	93.88	625.58	632.59	0.00	0.00	0.00
3,600.00	18.98	81.47	3,497.59	98.71	657.75	665.11	0.00	0.00	0.00
3,700.00	18.98	81.47	3,592.15	103.54	689.91	697.64	0.00	0.00	0.00
3,800.00	18.98	81.47	3,686.71	108.36	722.08	730.17	0.00	0.00	0.00
3,900.00	18.98	81.47	3,781.27	113.19	754.25	762.69	0.00	0.00	0.00
4,000.00	18.98	81.47	3,875.83	118.02	786.41	795.22	0.00	0.00	0.00
4,100.00	18.98	81.47	3,970.40	122.85	818.58	827.74	0.00	0.00	0.00
4,200.00	18.98	81.47	4,064.96	127.67	850.74	860.27	0.00	0.00	0.00
4,300.00	18.98	81.47	4,159.52	132.50	882.91	892.80	0.00	0.00	0.00
4,400.00	18.98	81.47	4,254.08	137.33	915.08	925.32	0.00	0.00	0.00
4,500.00	18.98	81.47	4,348.65	142.15	947.24	957.85	0.00	0.00	0.00
4,600.00	18.98	81.47	4,443.21	146.98	979.41	990.38	0.00	0.00	0.00
4,700.00	18.98	81.47	4,537.77	151.81	1,011.57	1,022.90	0.00	0.00	0.00
4,800.00	18.98	81.47	4,632.33	156.64	1,043.74	1,055.43	0.00	0.00	0.00
SUSSEX									
4,840.89	18.98	81.47	4,671.00	158.61	1,056.89	1,068.73	0.00	0.00	0.00
4,900.00	18.98	81.47	4,726.90	161.46	1,075.91	1,087.95	0.00	0.00	0.00
5,000.00	18.98	81.47	4,821.46	166.29	1,108.07	1,120.48	0.00	0.00	0.00
5,100.00	18.98	81.47	4,916.02	171.12	1,140.24	1,153.01	0.00	0.00	0.00
5,200.00	18.98	81.47	5,010.58	175.94	1,172.40	1,185.53	0.00	0.00	0.00
5,300.00	18.98	81.47	5,105.15	180.77	1,204.57	1,218.06	0.00	0.00	0.00
SHANNON									
5,337.92	18.98	81.47	5,141.00	182.60	1,216.77	1,230.39	0.00	0.00	0.00

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_NRC 39-9
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site:	WELD_NRC 20-9 PAD	North Reference:	True
Well:	P_NRC 39-9	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_NRC 39-9		
Design:	PLAN #1 1-6-10 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)
5,400.00	18.98	81.47	5,199.71	185.60	1,236.74	1,250.59	0.00	0.00	0.00
5,500.00	18.98	81.47	5,294.27	190.43	1,268.90	1,283.11	0.00	0.00	0.00
Start Drop -2.00									
5,589.80	18.98	81.47	5,379.19	194.76	1,297.79	1,312.32	0.00	0.00	0.00
5,600.00	18.78	81.47	5,388.84	195.25	1,301.05	1,315.62	2.00	-2.00	0.00
5,700.00	16.78	81.47	5,484.06	199.78	1,331.24	1,346.15	2.00	-2.00	0.00
5,800.00	14.78	81.47	5,580.29	203.82	1,358.13	1,373.34	2.00	-2.00	0.00
5,900.00	12.78	81.47	5,677.40	207.35	1,381.68	1,397.15	2.00	-2.00	0.00
6,000.00	10.78	81.47	5,775.29	210.38	1,401.87	1,417.57	2.00	-2.00	0.00
6,100.00	8.78	81.47	5,873.84	212.90	1,418.66	1,434.55	2.00	-2.00	0.00
6,200.00	6.78	81.47	5,972.91	214.91	1,432.04	1,448.08	2.00	-2.00	0.00
6,300.00	4.78	81.47	6,072.40	216.40	1,442.00	1,458.14	2.00	-2.00	0.00
6,400.00	2.78	81.47	6,172.18	217.38	1,448.51	1,464.73	2.00	-2.00	0.00
6,500.00	0.78	81.47	6,272.12	217.84	1,451.58	1,467.83	2.00	-2.00	0.00
Start 1925.00 hold at 6538.88 MD									
6,538.88	0.00	0.00	6,311.00	217.88	1,451.84	1,468.10	2.00	-2.00	0.00
6,600.00	0.00	0.00	6,372.12	217.88	1,451.84	1,468.10	0.00	0.00	0.00
6,700.00	0.00	0.00	6,472.12	217.88	1,451.84	1,468.10	0.00	0.00	0.00
6,800.00	0.00	0.00	6,572.12	217.88	1,451.84	1,468.10	0.00	0.00	0.00
6,900.00	0.00	0.00	6,672.12	217.88	1,451.84	1,468.10	0.00	0.00	0.00
7,000.00	0.00	0.00	6,772.12	217.88	1,451.84	1,468.10	0.00	0.00	0.00
7,100.00	0.00	0.00	6,872.12	217.88	1,451.84	1,468.10	0.00	0.00	0.00
7,200.00	0.00	0.00	6,972.12	217.88	1,451.84	1,468.10	0.00	0.00	0.00
7,300.00	0.00	0.00	7,072.12	217.88	1,451.84	1,468.10	0.00	0.00	0.00
7,400.00	0.00	0.00	7,172.12	217.88	1,451.84	1,468.10	0.00	0.00	0.00
7,500.00	0.00	0.00	7,272.12	217.88	1,451.84	1,468.10	0.00	0.00	0.00
NIO A									
7,538.88	0.00	0.00	7,311.00	217.88	1,451.84	1,468.10	0.00	0.00	0.00
7,600.00	0.00	0.00	7,372.12	217.88	1,451.84	1,468.10	0.00	0.00	0.00
7,700.00	0.00	0.00	7,472.12	217.88	1,451.84	1,468.10	0.00	0.00	0.00
7,800.00	0.00	0.00	7,572.12	217.88	1,451.84	1,468.10	0.00	0.00	0.00
CODELL									
7,878.88	0.00	0.00	7,651.00	217.88	1,451.84	1,468.10	0.00	0.00	0.00
7,900.00	0.00	0.00	7,672.12	217.88	1,451.84	1,468.10	0.00	0.00	0.00
8,000.00	0.00	0.00	7,772.12	217.88	1,451.84	1,468.10	0.00	0.00	0.00
8,100.00	0.00	0.00	7,872.12	217.88	1,451.84	1,468.10	0.00	0.00	0.00
8,200.00	0.00	0.00	7,972.12	217.88	1,451.84	1,468.10	0.00	0.00	0.00
8,300.00	0.00	0.00	8,072.12	217.88	1,451.84	1,468.10	0.00	0.00	0.00
JSAND									
8,328.88	0.00	0.00	8,101.00	217.88	1,451.84	1,468.10	0.00	0.00	0.00
8,400.00	0.00	0.00	8,172.12	217.88	1,451.84	1,468.10	0.00	0.00	0.00
PBHL_NRC 39-9(1320 FSL 50 FEL)50'RAD									
8,463.88	0.00	0.00	8,236.00	217.88	1,451.84	1,468.10	0.00	0.00	0.00



US ROCKIES REGION PLANNING

**COLORADO NORTHERN ZONE - 83
WELD_NRC 20-9 PAD
P_NRC 39-9**

**P_NRC 39-9
PLAN #1 1-6-10 RHS**

Anticollision Report

06 January, 2010



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_NRC 39-9
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 20-9 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 39-9	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 39-9	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-6-10 RHS	Offset TVD Reference:	Offset Datum

Reference	PLAN #1 1-6-10 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 1/6/2010			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	8,463.88	PLAN #1 1-6-10 RHS (P_NRC 39-9)	UNKNOWN	Unknown survey

Summary						
Site Name	Reference	Offset	Distance		Separation	Warning
Offset Well - Wellbore - Design	Measured Depth (ft)	Measured Depth (ft)	Between Centres (ft)	Between Ellipses (ft)	Factor	
WELD_NRC 20-9 PAD						
P_NRC 10-9 - P_NRC 10-9 - PLAN #1 1-6-10 RHS	1,085.00	1,085.00	48.11	4.70	1.108	Level 2, CC
P_NRC 10-9 - P_NRC 10-9 - PLAN #1 1-6-10 RHS	1,100.00	1,099.78	48.14	4.35	1.099	Level 2, ES, SF
P_NRC 15-9 - P_NRC 15-9 - PLAN #1 1-6-10 RHS	1,283.93	1,284.57	29.24	-16.66	0.637	Level 1, CC
P_NRC 15-9 - P_NRC 15-9 - PLAN #1 1-6-10 RHS	1,300.00	1,300.53	29.33	-16.78	0.636	Level 1, ES, SF
P_NRC 16-9 - P_NRC 16-9 - PLAN #1 1-6-10 RHS	1,085.00	1,085.00	16.06	-27.35	0.370	Level 1, CC
P_NRC 16-9 - P_NRC 16-9 - PLAN #1 1-6-10 RHS	1,100.00	1,099.96	16.08	-27.70	0.367	Level 1, ES, SF
P_NRC 37-9 - P_NRC 37-9 - PLAN #1 1-6-10 RHS	1,085.00	1,085.00	47.78	4.37	1.101	Level 2, CC
P_NRC 37-9 - P_NRC 37-9 - PLAN #1 1-6-10 RHS	1,100.00	1,099.76	47.82	4.04	1.092	Level 2, ES, SF
P_NRC 38-9 - P_NRC 38-9 - PLAN #1 1-6-10 RHS	1,085.00	1,085.00	31.74	-11.67	0.731	Level 1, CC
P_NRC 38-9 - P_NRC 38-9 - PLAN #1 1-6-10 RHS	1,100.00	1,099.90	31.77	-12.02	0.726	Level 1, ES, SF
P_NRC 9-9 - P_NRC 9-9 - PLAN #1 1-6-10 RHS	1,085.00	1,085.00	16.02	-27.39	0.369	Level 1, CC
P_NRC 9-9 - P_NRC 9-9 - PLAN #1 1-6-10 RHS	1,100.00	1,099.94	16.04	-27.74	0.366	Level 1, ES, SF
ROCKY MOUNTAIN FUEL CO F #3 EXISTING - ROCKY	1,085.00	1,066.00	66.33	22.95	1.529	CC
ROCKY MOUNTAIN FUEL CO F #3 EXISTING - ROCKY	1,100.00	1,081.00	66.37	22.60	1.516	ES, SF

Offset Design												WELD_NRC 20-9 PAD - P_NRC 10-9 - P_NRC 10-9 - PLAN #1 1-6-10 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	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning				
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)						
0.00	0.00	0.00	0.00	0.00	0.00	-2.33	48.07	-1.96	48.11								
100.00	100.00	100.00	100.00	1.70	0.10	-2.33	48.07	-1.96	48.11	46.32	1.80	26.795					
200.00	200.00	200.00	200.00	5.70	0.32	-2.33	48.07	-1.96	48.11	42.09	6.02	7.992					
300.00	300.00	300.00	300.00	9.70	0.55	-2.33	48.07	-1.96	48.11	37.87	10.25	4.696					
400.00	400.00	400.00	400.00	13.70	0.77	-2.33	48.07	-1.96	48.11	33.64	14.47	3.325					
500.00	500.00	500.00	500.00	17.70	0.99	-2.33	48.07	-1.96	48.11	29.42	18.69	2.574					
600.00	600.00	600.00	600.00	21.70	1.22	-2.33	48.07	-1.96	48.11	25.19	22.92	2.099					
700.00	700.00	700.00	700.00	25.70	1.44	-2.33	48.07	-1.96	48.11	20.97	27.14	1.772					
800.00	800.00	800.00	800.00	29.70	1.67	-2.33	48.07	-1.96	48.11	16.74	31.37	1.534					
900.00	900.00	900.00	900.00	33.70	1.89	-2.33	48.07	-1.96	48.11	12.52	35.59	1.352	Level 3				
1,000.00	1,000.00	1,000.00	1,000.00	37.70	2.12	-2.33	48.07	-1.96	48.11	8.29	39.82	1.208	Level 2				
1,085.00	1,085.00	1,085.00	1,085.00	41.10	2.31	-2.33	48.07	-1.96	48.11	4.70	43.41	1.108	Level 2, CC				
1,100.00	1,100.00	1,099.78	1,099.78	41.45	2.34	-83.87	48.11	-1.98	48.14	4.35	43.79	1.099	Level 2, ES, SF				
1,200.00	1,199.97	1,198.19	1,198.16	42.25	2.56	-87.54	50.01	-3.07	49.99	5.18	44.81	1.115	Level 2				

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_NRC 39-9
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 20-9 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 39-9	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 39-9	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-6-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_NRC 20-9 PAD - P_NRC 10-9 - P_NRC 10-9 - PLAN #1 1-6-10 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
1,300.00	1,299.80	1,296.05	1,295.86	43.42	2.78	-95.58	54.81	-5.83	55.50	9.30	46.20	1.201	Level 2
1,400.00	1,399.37	1,392.89	1,392.30	44.94	3.00	-105.24	62.41	-10.19	66.15	18.25	47.90	1.381	Level 3
1,500.00	1,498.55	1,488.27	1,486.94	46.80	3.24	-114.01	72.65	-16.06	82.93	33.06	49.87	1.663	
1,600.00	1,597.23	1,581.78	1,579.29	48.99	3.49	-120.85	85.34	-23.34	106.03	53.98	52.05	2.037	
1,700.00	1,695.29	1,673.58	1,669.46	51.49	3.77	-125.84	100.30	-31.93	135.16	80.71	54.45	2.482	
1,800.00	1,792.60	1,767.27	1,761.25	54.32	4.08	-129.78	116.53	-41.24	168.26	111.24	57.02	2.951	
1,900.00	1,889.05	1,859.86	1,851.99	57.46	4.39	-132.98	132.56	-50.44	204.22	144.47	59.76	3.418	
2,000.00	1,984.52	1,951.25	1,941.54	60.91	4.72	-135.63	148.38	-59.53	243.06	180.44	62.62	3.882	
2,034.07	2,016.81	1,982.10	1,971.76	62.16	4.83	-136.44	153.72	-62.59	256.94	193.32	63.62	4.039	
2,100.00	2,079.15	2,041.63	2,030.10	64.66	5.06	-138.18	164.03	-68.51	284.24	218.42	65.82	4.318	
2,200.00	2,173.71	2,131.93	2,118.58	68.60	5.40	-140.27	179.66	-77.48	325.99	256.70	69.29	4.704	
2,300.00	2,268.27	2,222.23	2,207.06	72.71	5.74	-141.89	195.30	-86.45	368.02	295.12	72.90	5.048	
2,400.00	2,362.84	2,312.53	2,295.54	76.97	6.10	-143.18	210.93	-95.42	410.24	333.62	76.62	5.354	
2,500.00	2,457.40	2,402.82	2,384.02	81.33	6.46	-144.24	226.57	-104.39	452.60	372.17	80.44	5.627	
2,600.00	2,551.96	2,493.12	2,472.50	85.80	6.82	-145.11	242.20	-113.37	495.07	410.74	84.33	5.871	
2,700.00	2,646.52	2,583.42	2,560.98	90.35	7.18	-145.84	257.83	-122.34	537.62	449.33	88.29	6.089	
2,800.00	2,741.09	2,673.72	2,649.46	94.97	7.55	-146.47	273.47	-131.31	580.23	487.92	92.30	6.286	
2,900.00	2,835.65	2,764.02	2,737.95	99.66	7.92	-147.01	289.10	-140.28	622.88	526.52	96.37	6.464	
3,000.00	2,930.21	2,854.32	2,826.43	104.40	8.29	-147.48	304.74	-149.26	665.58	565.10	100.48	6.624	
3,100.00	3,024.77	2,944.62	2,914.91	109.19	8.67	-147.90	320.37	-158.23	708.31	603.69	104.62	6.770	
3,200.00	3,119.34	3,034.92	3,003.39	114.02	9.04	-148.27	336.01	-167.20	751.07	642.26	108.81	6.903	
3,300.00	3,213.90	3,125.21	3,091.87	118.88	9.42	-148.59	351.64	-176.17	793.85	680.83	113.02	7.024	
3,400.00	3,308.46	3,215.51	3,180.35	123.78	9.80	-148.89	367.27	-185.15	836.65	719.39	117.25	7.135	
3,500.00	3,403.02	3,305.81	3,268.83	128.70	10.18	-149.16	382.91	-194.12	879.46	757.95	121.51	7.238	
3,600.00	3,497.59	3,396.11	3,357.31	133.65	10.56	-149.40	398.54	-203.09	922.29	796.50	125.79	7.332	
3,700.00	3,592.15	3,486.41	3,445.79	138.62	10.94	-149.62	414.18	-212.06	965.13	835.04	130.09	7.419	
3,800.00	3,686.71	3,576.71	3,534.28	143.61	11.32	-149.82	429.81	-221.03	1,007.98	873.57	134.41	7.499	
3,900.00	3,781.27	3,667.01	3,622.76	148.62	11.71	-150.00	445.45	-230.01	1,050.84	912.10	138.74	7.574	
4,000.00	3,875.83	3,757.31	3,711.24	153.65	12.09	-150.17	461.08	-238.98	1,093.71	950.62	143.09	7.643	
4,100.00	3,970.40	3,847.60	3,799.72	158.69	12.47	-150.33	476.71	-247.95	1,136.59	989.14	147.45	7.708	
4,200.00	4,064.96	3,937.90	3,888.20	163.75	12.86	-150.48	492.35	-256.92	1,179.47	1,027.65	151.82	7.769	
4,300.00	4,159.52	4,028.20	3,976.68	168.81	13.24	-150.61	507.98	-265.90	1,222.36	1,066.16	156.20	7.825	
4,400.00	4,254.08	4,118.50	4,065.16	173.89	13.63	-150.74	523.62	-274.87	1,265.26	1,104.66	160.60	7.879	
4,500.00	4,348.65	4,208.80	4,153.64	178.98	14.02	-150.86	539.25	-283.84	1,308.16	1,143.16	165.00	7.928	
4,600.00	4,443.21	4,299.10	4,242.13	184.07	14.40	-150.97	554.89	-292.81	1,351.06	1,181.66	169.40	7.975	
4,700.00	4,537.77	4,389.40	4,330.61	189.18	14.79	-151.08	570.52	-301.79	1,393.97	1,220.15	173.82	8.020	
4,800.00	4,632.33	4,479.70	4,419.09	194.29	15.18	-151.17	586.15	-310.76	1,436.88	1,258.64	178.24	8.061	
4,900.00	4,726.90	4,569.99	4,507.57	199.41	15.56	-151.27	601.79	-319.73	1,479.80	1,297.12	182.67	8.101	
5,000.00	4,821.46	4,660.29	4,596.05	204.54	15.95	-151.35	617.42	-328.70	1,522.71	1,335.60	187.11	8.138	
5,100.00	4,916.02	4,750.59	4,684.53	209.68	16.34	-151.43	633.06	-337.68	1,565.63	1,374.08	191.55	8.173	
5,200.00	5,010.58	4,840.89	4,773.01	214.81	16.73	-151.51	648.69	-346.65	1,608.55	1,412.56	196.00	8.207	
5,300.00	5,105.15	4,931.19	4,861.49	219.96	17.12	-151.59	664.33	-355.62	1,651.48	1,451.03	200.45	8.239	
5,400.00	5,199.71	5,021.49	4,949.98	225.11	17.50	-151.66	679.96	-364.59	1,694.41	1,489.50	204.91	8.269	
5,500.00	5,294.27	5,111.79	5,038.46	230.26	17.89	-151.72	695.59	-373.56	1,737.34	1,527.97	209.37	8.298	
5,589.80	5,379.19	5,192.88	5,117.92	234.90	18.24	-151.78	709.63	-381.62	1,775.89	1,562.51	213.38	8.323	
5,600.00	5,388.84	5,202.09	5,126.94	235.42	18.28	-151.83	711.23	-382.54	1,780.25	1,566.39	213.87	8.324	
5,700.00	5,484.06	5,293.18	5,216.20	240.46	18.67	-152.28	727.00	-391.59	1,821.50	1,602.92	218.58	8.333	
5,800.00	5,580.29	5,385.50	5,306.66	245.30	19.07	-152.64	742.98	-400.76	1,859.91	1,636.80	223.12	8.336	
5,900.00	5,677.40	5,478.93	5,398.21	249.93	19.48	-152.91	759.16	-410.05	1,895.45	1,667.99	227.46	8.333	
6,000.00	5,775.29	5,573.37	5,490.75	254.36	19.88	-153.09	775.51	-419.43	1,928.07	1,696.46	231.61	8.325	
6,100.00	5,873.84	5,668.70	5,584.16	258.59	20.29	-153.20	792.02	-428.90	1,957.75	1,722.19	235.56	8.311	
6,200.00	5,972.91	5,764.80	5,678.32	262.61	20.71	-153.24	808.66	-438.45	1,984.45	1,745.16	239.30	8.293	

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_NRC 39-9
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 20-9 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 39-9	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 39-9	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-6-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_NRC 20-9 PAD - P_NRC 10-9 - P_NRC 10-9 - PLAN #1 1-6-10 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
6,300.00	6,072.40	5,861.55	5,773.13	266.43	21.13	-153.20	825.41	-448.06	2,008.18	1,765.35	242.83	8.270	
6,400.00	6,172.18	6,057.23	5,965.94	270.05	21.74	-152.90	854.16	-464.57	2,026.79	1,780.32	246.47	8.223	
6,500.00	6,272.12	6,269.56	6,177.18	273.48	22.22	-152.68	872.39	-475.03	2,036.97	1,787.25	249.73	8.157	
6,538.88	6,311.00	6,352.93	6,260.45	274.33	22.36	-71.16	875.83	-477.00	2,038.60	1,788.19	250.40	8.141	
6,600.00	6,372.12	6,464.62	6,372.12	275.01	22.51	-71.14	877.18	-477.78	2,039.14	1,787.73	251.41	8.111	
6,700.00	6,472.12	6,564.62	6,472.12	276.15	22.64	-71.14	877.18	-477.78	2,039.14	1,786.18	252.97	8.061	
6,800.00	6,572.12	6,664.62	6,572.12	277.35	22.77	-71.14	877.18	-477.78	2,039.14	1,784.56	254.58	8.010	
6,900.00	6,672.12	6,764.62	6,672.12	278.61	22.91	-71.14	877.18	-477.78	2,039.14	1,782.88	256.26	7.957	
7,000.00	6,772.12	6,864.62	6,772.12	279.91	23.05	-71.14	877.18	-477.78	2,039.14	1,781.15	257.99	7.904	
7,100.00	6,872.12	6,964.62	6,872.12	281.26	23.19	-71.14	877.18	-477.78	2,039.14	1,779.36	259.79	7.849	
7,200.00	6,972.12	7,064.62	6,972.12	282.67	23.34	-71.14	877.18	-477.78	2,039.14	1,777.51	261.64	7.794	
7,300.00	7,072.12	7,164.62	7,072.12	284.12	23.48	-71.14	877.18	-477.78	2,039.14	1,775.60	263.54	7.738	
7,400.00	7,172.12	7,264.62	7,172.12	285.63	23.62	-71.14	877.18	-477.78	2,039.14	1,773.64	265.50	7.680	
7,500.00	7,272.12	7,364.62	7,272.12	287.18	23.77	-71.14	877.18	-477.78	2,039.14	1,771.63	267.51	7.623	
7,600.00	7,372.12	7,464.62	7,372.12	288.78	23.92	-71.14	877.18	-477.78	2,039.14	1,769.57	269.57	7.564	
7,700.00	7,472.12	7,564.62	7,472.12	290.42	24.07	-71.14	877.18	-477.78	2,039.14	1,767.46	271.68	7.506	
7,800.00	7,572.12	7,664.62	7,572.12	292.11	24.22	-71.14	877.18	-477.78	2,039.14	1,765.30	273.85	7.446	
7,900.00	7,672.12	7,764.62	7,672.12	293.85	24.37	-71.14	877.18	-477.78	2,039.14	1,763.08	276.06	7.387	
8,000.00	7,772.12	7,864.62	7,772.12	295.63	24.52	-71.14	877.18	-477.78	2,039.14	1,760.83	278.32	7.327	
8,100.00	7,872.12	7,964.62	7,872.12	297.45	24.67	-71.14	877.18	-477.78	2,039.14	1,758.52	280.62	7.267	
8,200.00	7,972.12	8,064.62	7,972.12	299.32	24.82	-71.14	877.18	-477.78	2,039.14	1,756.18	282.97	7.206	
8,300.00	8,072.12	8,164.62	8,072.12	301.22	24.98	-71.14	877.18	-477.78	2,039.14	1,753.78	285.36	7.146	
8,400.00	8,172.12	8,264.62	8,172.12	303.17	25.14	-71.14	877.18	-477.78	2,039.14	1,751.35	287.79	7.085	
8,463.88	8,236.00	8,328.49	8,236.00	304.44	25.24	-71.14	877.18	-477.78	2,039.14	1,749.77	289.37	7.047	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_NRC 39-9
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 20-9 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 39-9	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 39-9	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-6-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_NRC 20-9 PAD - P_NRC 15-9 - P_NRC 15-9 - PLAN #1 1-6-10 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 Tooface (°)	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	-2.50	32.04	-1.40	32.07				
100.00	100.00	100.00	100.00	1.70	0.10	-2.50	32.04	-1.40	32.07	30.27	1.80	17.861	
200.00	200.00	200.00	200.00	5.70	0.32	-2.50	32.04	-1.40	32.07	26.05	6.02	5.327	
300.00	300.00	300.00	300.00	9.70	0.55	-2.50	32.04	-1.40	32.07	21.83	10.25	3.130	
400.00	400.00	400.00	400.00	13.70	0.77	-2.50	32.04	-1.40	32.07	17.60	14.47	2.216	
500.00	500.00	500.00	500.00	17.70	0.99	-2.50	32.04	-1.40	32.07	13.38	18.69	1.715	
600.00	600.00	600.00	600.00	21.70	1.22	-2.50	32.04	-1.40	32.07	9.15	22.92	1.399	Level 3
700.00	700.00	700.00	700.00	25.70	1.44	-2.50	32.04	-1.40	32.07	4.93	27.14	1.181	Level 2
800.00	800.00	800.00	800.00	29.70	1.67	-2.50	32.04	-1.40	32.07	0.70	31.37	1.022	Level 2
900.00	900.00	900.00	900.00	33.70	1.89	-2.50	32.04	-1.40	32.07	-3.52	35.59	0.901	Level 1
1,000.00	1,000.00	1,000.00	1,000.00	37.70	2.12	-2.50	32.04	-1.40	32.07	-7.75	39.82	0.805	Level 1
1,085.00	1,085.00	1,085.00	1,085.00	41.10	2.31	-2.50	32.04	-1.40	32.07	-11.34	43.41	0.739	Level 1
1,100.00	1,100.00	1,100.11	1,100.11	41.45	2.34	-84.09	32.01	-1.43	32.04	-11.75	43.79	0.732	Level 1
1,200.00	1,199.97	1,200.70	1,200.67	42.25	2.52	-91.59	30.39	-3.06	30.53	-14.25	44.77	0.682	Level 1
1,283.93	1,283.77	1,284.57	1,284.41	43.24	2.68	-108.24	27.14	-6.32	29.24	-16.66	45.90	0.637	Level 1, CC
1,300.00	1,299.80	1,300.53	1,300.33	43.42	2.71	-112.51	26.32	-7.14	29.33	-16.78	46.11	0.636	Level 1, ES, SF
1,400.00	1,399.37	1,398.95	1,398.32	44.94	2.91	-141.70	19.92	-13.58	35.27	-12.37	47.64	0.740	Level 1
1,500.00	1,498.55	1,495.35	1,493.95	46.80	3.13	-163.53	11.34	-22.19	52.52	3.18	49.35	1.064	Level 2
1,600.00	1,597.23	1,589.19	1,586.59	48.99	3.38	-175.69	0.82	-32.76	79.37	28.05	51.31	1.547	
1,700.00	1,695.29	1,682.11	1,677.94	51.49	3.65	-177.61	-11.17	-44.80	113.15	59.64	53.51	2.115	
1,800.00	1,792.60	1,774.35	1,768.61	54.32	3.94	-174.02	-23.14	-56.83	151.02	95.14	55.88	2.702	
1,900.00	1,889.05	1,865.24	1,857.94	57.46	4.25	-171.94	-34.95	-68.69	192.37	133.97	58.40	3.294	
2,000.00	1,984.52	1,954.67	1,945.85	60.91	4.56	-170.66	-46.56	-80.36	236.95	175.92	61.03	3.882	
2,034.07	2,016.81	1,984.79	1,975.45	62.16	4.66	-170.34	-50.47	-84.29	252.85	190.90	61.95	4.082	
2,100.00	2,079.15	2,042.88	2,032.55	64.66	4.87	-169.94	-58.02	-91.87	283.97	219.86	64.11	4.430	
2,200.00	2,173.71	2,131.01	2,119.17	68.60	5.19	-169.47	-69.46	-103.36	331.18	263.71	67.47	4.908	
2,300.00	2,268.27	2,219.13	2,205.79	72.71	5.52	-169.12	-80.91	-114.86	378.41	307.47	70.94	5.334	
2,400.00	2,362.84	2,307.25	2,292.40	76.97	5.85	-168.85	-92.35	-126.36	425.65	351.15	74.50	5.714	
2,500.00	2,457.40	2,395.38	2,379.02	81.33	6.19	-168.63	-103.80	-137.85	472.90	394.77	78.13	6.053	
2,600.00	2,551.96	2,483.50	2,465.64	85.80	6.53	-168.45	-115.24	-149.35	520.15	438.32	81.83	6.357	
2,700.00	2,646.52	2,571.62	2,552.26	90.35	6.88	-168.30	-126.69	-160.85	567.40	481.82	85.58	6.630	
2,800.00	2,741.09	2,659.75	2,638.87	94.97	7.23	-168.17	-138.13	-172.34	614.65	525.27	89.38	6.877	
2,900.00	2,835.65	2,747.87	2,725.49	99.66	7.58	-168.07	-149.57	-183.84	661.91	568.68	93.23	7.100	
3,000.00	2,930.21	2,835.99	2,812.11	104.40	7.93	-167.97	-161.02	-195.34	709.17	612.05	97.11	7.302	
3,100.00	3,024.77	2,924.11	2,898.72	109.19	8.28	-167.89	-172.46	-206.83	756.43	655.39	101.03	7.487	
3,200.00	3,119.34	3,012.24	2,985.34	114.02	8.64	-167.82	-183.91	-218.33	803.69	698.70	104.98	7.655	
3,300.00	3,213.90	3,100.36	3,071.96	118.88	8.99	-167.75	-195.35	-229.83	850.95	741.99	108.96	7.810	
3,400.00	3,308.46	3,188.48	3,158.58	123.78	9.35	-167.70	-206.80	-241.32	898.21	785.25	112.96	7.951	
3,500.00	3,403.02	3,276.61	3,245.19	128.70	9.71	-167.64	-218.24	-252.82	945.47	828.49	116.99	8.082	
3,600.00	3,497.59	3,364.73	3,331.81	133.65	10.07	-167.60	-229.69	-264.32	992.74	871.71	121.03	8.203	
3,700.00	3,592.15	3,452.85	3,418.43	138.62	10.43	-167.55	-241.13	-275.81	1,040.00	914.91	125.09	8.314	
3,800.00	3,686.71	3,540.98	3,505.04	143.61	10.79	-167.52	-252.57	-287.31	1,087.27	958.10	129.16	8.418	
3,900.00	3,781.27	3,629.10	3,591.66	148.62	11.15	-167.48	-264.02	-298.81	1,134.53	1,001.28	133.26	8.514	
4,000.00	3,875.83	3,717.22	3,678.28	153.65	11.52	-167.45	-275.46	-310.30	1,181.80	1,044.44	137.36	8.604	
4,100.00	3,970.40	3,805.35	3,764.90	158.69	11.88	-167.42	-286.91	-321.80	1,229.06	1,087.59	141.48	8.687	
4,200.00	4,064.96	3,893.47	3,851.51	163.75	12.24	-167.39	-298.35	-333.30	1,276.33	1,130.72	145.60	8.766	
4,300.00	4,159.52	3,981.59	3,938.13	168.81	12.61	-167.36	-309.80	-344.79	1,323.59	1,173.85	149.74	8.839	
4,400.00	4,254.08	4,069.71	4,024.75	173.89	12.97	-167.34	-321.24	-356.29	1,370.86	1,216.97	153.89	8.908	
4,500.00	4,348.65	4,157.84	4,111.36	178.98	13.34	-167.32	-332.69	-367.79	1,418.12	1,260.08	158.04	8.973	
4,600.00	4,443.21	4,245.96	4,197.98	184.07	13.70	-167.29	-344.13	-379.28	1,465.39	1,303.19	162.21	9.034	
4,700.00	4,537.77	4,334.08	4,284.60	189.18	14.07	-167.27	-355.58	-390.78	1,512.66	1,346.28	166.38	9.092	
4,800.00	4,632.33	4,422.21	4,371.22	194.29	14.44	-167.26	-367.02	-402.28	1,559.92	1,389.37	170.55	9.146	

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_NRC 39-9
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 20-9 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 39-9	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 39-9	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-6-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_NRC 20-9 PAD - P_NRC 15-9 - P_NRC 15-9 - PLAN #1 1-6-10 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
4,900.00	4,726.90	4,510.33	4,457.83	199.41	14.80	167.24	-378.46	-413.77	1,607.19	1,432.45	174.74	9.198	
5,000.00	4,821.46	4,598.45	4,544.45	204.54	15.17	167.22	-389.91	-425.27	1,654.46	1,475.53	178.93	9.247	
5,100.00	4,916.02	4,686.58	4,631.07	209.68	15.54	167.21	-401.35	-436.77	1,701.72	1,518.60	183.12	9.293	
5,200.00	5,010.58	4,774.70	4,717.68	214.81	15.90	167.19	-412.80	-448.26	1,748.99	1,561.67	187.32	9.337	
5,300.00	5,105.15	4,862.82	4,804.30	219.96	16.27	167.18	-424.24	-459.76	1,796.26	1,604.73	191.53	9.379	
5,400.00	5,199.71	4,950.95	4,890.92	225.11	16.64	167.16	-435.69	-471.26	1,843.53	1,647.79	195.73	9.419	
5,500.00	5,294.27	5,039.07	4,977.54	230.26	17.01	167.15	-447.13	-482.75	1,890.79	1,690.85	199.95	9.456	
5,589.80	5,379.19	5,118.21	5,055.32	234.90	17.34	167.14	-457.41	-493.08	1,933.24	1,729.51	203.73	9.489	
5,600.00	5,388.84	5,127.20	5,064.16	235.42	17.37	167.16	-458.58	-494.25	1,938.04	1,733.84	204.20	9.491	
5,700.00	5,484.06	5,216.27	5,151.71	240.46	17.75	167.36	-470.14	-505.87	1,983.49	1,774.83	208.67	9.506	
5,800.00	5,580.29	5,306.82	5,240.71	245.30	18.12	167.52	-481.90	-517.68	2,025.88	1,812.97	212.91	9.515	
5,900.00	5,677.40	5,398.74	5,331.06	249.93	18.51	167.63	-493.84	-529.68	2,065.17	1,848.24	216.93	9.520	
6,000.00	5,775.29	5,491.93	5,422.66	254.36	18.90	167.70	-505.94	-541.83	2,101.30	1,880.58	220.71	9.520	
6,100.00	5,873.84	5,586.27	5,515.39	258.59	19.29	167.75	-518.20	-554.14	2,134.23	1,909.97	224.26	9.517	
6,200.00	5,972.91	5,681.65	5,609.14	262.61	19.69	167.75	-530.58	-566.58	2,163.93	1,936.38	227.55	9.510	
6,300.00	6,072.40	5,777.94	5,703.78	266.43	20.10	167.73	-543.09	-579.15	2,190.37	1,959.78	230.60	9.499	
6,400.00	6,172.18	5,875.04	5,799.22	270.05	20.50	167.67	-555.70	-591.81	2,213.52	1,980.14	233.38	9.484	
6,500.00	6,272.12	5,975.75	5,900.92	273.48	21.28	167.35	-568.71	-602.95	2,229.87	1,993.53	236.34	9.435	
6,538.88	6,311.00	6,305.20	6,226.07	274.33	21.53	-111.26	-590.93	-627.21	2,232.45	1,995.55	236.89	9.424	
6,600.00	6,372.12	6,451.28	6,372.12	275.01	21.73	-111.28	-592.67	-628.96	2,233.09	1,995.15	237.94	9.385	
6,700.00	6,472.12	6,551.28	6,472.12	276.15	21.85	-111.28	-592.67	-628.96	2,233.09	1,993.63	239.47	9.325	
6,800.00	6,572.12	6,651.28	6,572.12	277.35	21.97	-111.28	-592.67	-628.96	2,233.09	1,992.04	241.05	9.264	
6,900.00	6,672.12	6,751.28	6,672.12	278.61	22.10	-111.28	-592.67	-628.96	2,233.09	1,990.40	242.70	9.201	
7,000.00	6,772.12	6,851.28	6,772.12	279.91	22.22	-111.28	-592.67	-628.96	2,233.09	1,988.69	244.41	9.137	
7,100.00	6,872.12	6,951.28	6,872.12	281.26	22.35	-111.28	-592.67	-628.96	2,233.09	1,986.92	246.18	9.071	
7,200.00	6,972.12	7,051.28	6,972.12	282.67	22.48	-111.28	-592.67	-628.96	2,233.09	1,985.09	248.00	9.004	
7,300.00	7,072.12	7,151.28	7,072.12	284.12	22.61	-111.28	-592.67	-628.96	2,233.09	1,983.20	249.89	8.936	
7,400.00	7,172.12	7,251.28	7,172.12	285.63	22.74	-111.28	-592.67	-628.96	2,233.09	1,981.26	251.84	8.867	
7,500.00	7,272.12	7,351.28	7,272.12	287.18	22.88	-111.28	-592.67	-628.96	2,233.09	1,979.26	253.84	8.797	
7,600.00	7,372.12	7,451.28	7,372.12	288.78	23.01	-111.28	-592.67	-628.96	2,233.09	1,977.20	255.89	8.727	
7,700.00	7,472.12	7,551.28	7,472.12	290.42	23.15	-111.28	-592.67	-628.96	2,233.09	1,975.10	258.00	8.656	
7,800.00	7,572.12	7,651.28	7,572.12	292.11	23.29	-111.28	-592.67	-628.96	2,233.09	1,972.94	260.16	8.584	
7,900.00	7,672.12	7,751.28	7,672.12	293.85	23.42	-111.28	-592.67	-628.96	2,233.09	1,970.73	262.37	8.511	
8,000.00	7,772.12	7,851.28	7,772.12	295.63	23.56	-111.28	-592.67	-628.96	2,233.09	1,968.47	264.62	8.439	
8,100.00	7,872.12	7,951.28	7,872.12	297.45	23.71	-111.28	-592.67	-628.96	2,233.09	1,966.16	266.93	8.366	
8,200.00	7,972.12	8,051.28	7,972.12	299.32	23.85	-111.28	-592.67	-628.96	2,233.09	1,963.81	269.28	8.293	
8,300.00	8,072.12	8,151.28	8,072.12	301.22	23.99	-111.28	-592.67	-628.96	2,233.09	1,961.41	271.68	8.219	
8,400.00	8,172.12	8,251.28	8,172.12	303.17	24.14	-111.28	-592.67	-628.96	2,233.09	1,958.97	274.13	8.146	
8,463.88	8,236.00	8,315.16	8,236.00	304.44	24.23	-111.28	-592.67	-628.96	2,233.09	1,957.38	275.71	8.099	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_NRC 39-9
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 20-9 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 39-9	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 39-9	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-6-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_NRC 20-9 PAD - P_NRC 16-9 - P_NRC 16-9 - PLAN #1 1-6-10 RHS												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	177.00	-16.04	0.84	16.06				
100.00	100.00	100.00	100.00	1.70	0.10	177.00	-16.04	0.84	16.06	14.26	1.80	8.944	
200.00	200.00	200.00	200.00	5.70	0.32	177.00	-16.04	0.84	16.06	10.04	6.02	2.667	
300.00	300.00	300.00	300.00	9.70	0.55	177.00	-16.04	0.84	16.06	5.81	10.25	1.567	
400.00	400.00	400.00	400.00	13.70	0.77	177.00	-16.04	0.84	16.06	1.59	14.47	1.110 Level 2	
500.00	500.00	500.00	500.00	17.70	0.99	177.00	-16.04	0.84	16.06	-2.64	18.69	0.859 Level 1	
600.00	600.00	600.00	600.00	21.70	1.22	177.00	-16.04	0.84	16.06	-6.86	22.92	0.701 Level 1	
700.00	700.00	700.00	700.00	25.70	1.44	177.00	-16.04	0.84	16.06	-11.09	27.14	0.592 Level 1	
800.00	800.00	800.00	800.00	29.70	1.67	177.00	-16.04	0.84	16.06	-15.31	31.37	0.512 Level 1	
900.00	900.00	900.00	900.00	33.70	1.89	177.00	-16.04	0.84	16.06	-19.54	35.59	0.451 Level 1	
1,000.00	1,000.00	1,000.00	1,000.00	37.70	2.12	177.00	-16.04	0.84	16.06	-23.76	39.82	0.403 Level 1	
1,085.00	1,085.00	1,085.00	1,085.00	41.10	2.31	177.00	-16.04	0.84	16.06	-27.35	43.41	0.370 Level 1, CC	
1,100.00	1,100.00	1,099.96	1,099.96	41.45	2.34	95.56	-16.05	0.87	16.08	-27.70	43.79	0.367 Level 1, ES, SF	
1,200.00	1,199.97	1,199.66	1,199.63	42.25	2.53	96.50	-17.07	2.89	17.43	-27.35	44.78	0.389 Level 1	
1,300.00	1,299.80	1,299.29	1,299.09	43.42	2.72	98.34	-19.66	7.98	20.87	-25.28	46.15	0.452 Level 1	
1,400.00	1,399.37	1,398.78	1,398.15	44.94	2.94	100.27	-23.80	16.15	26.41	-21.46	47.87	0.552 Level 1	
1,500.00	1,498.55	1,498.05	1,496.62	46.80	3.17	101.87	-29.48	27.35	34.07	-15.88	49.95	0.682 Level 1	
1,600.00	1,597.23	1,597.06	1,594.34	48.99	3.44	103.05	-36.68	41.54	43.82	-8.57	52.39	0.836 Level 1	
1,700.00	1,695.29	1,696.03	1,691.47	51.49	3.74	104.21	-45.25	58.45	55.54	0.36	55.18	1.007 Level 2	
1,800.00	1,792.60	1,795.12	1,788.63	54.32	4.07	107.27	-54.08	75.85	68.42	10.14	58.28	1.174 Level 2	
1,900.00	1,889.05	1,893.92	1,885.49	57.46	4.42	111.55	-62.88	93.19	82.67	21.04	61.64	1.341 Level 3	
2,000.00	1,984.52	1,992.29	1,981.94	60.91	4.79	116.31	-71.64	110.46	98.78	33.61	65.18	1.516	
2,034.07	2,016.81	2,025.69	2,014.69	62.16	4.91	117.95	-74.61	116.33	104.78	38.37	66.41	1.578	
2,100.00	2,079.15	2,090.26	2,077.99	64.66	5.16	120.99	-80.36	127.66	116.80	47.93	68.87	1.696	
2,200.00	2,173.71	2,188.19	2,174.00	68.60	5.54	124.56	-89.08	144.85	135.52	62.80	72.72	1.864	
2,300.00	2,268.27	2,286.11	2,270.01	72.71	5.93	127.26	-97.80	162.05	154.62	77.94	76.67	2.017	
2,400.00	2,362.84	2,384.04	2,366.03	76.97	6.32	129.36	-106.52	179.24	173.97	93.24	80.74	2.155	
2,500.00	2,457.40	2,481.97	2,462.04	81.33	6.72	131.04	-115.24	196.43	193.51	108.63	84.88	2.280	
2,600.00	2,551.96	2,579.90	2,558.05	85.80	7.12	132.42	-123.96	213.63	213.19	124.09	89.10	2.393	
2,700.00	2,646.52	2,677.83	2,654.06	90.35	7.53	133.56	-132.68	230.82	232.95	139.57	93.38	2.495	
2,800.00	2,741.09	2,775.76	2,750.08	94.97	7.94	134.52	-141.40	248.01	252.80	155.08	97.72	2.587	
2,900.00	2,835.65	2,873.69	2,846.09	99.66	8.35	135.35	-150.12	265.21	272.70	170.60	102.10	2.671	
3,000.00	2,930.21	2,971.62	2,942.10	104.40	8.77	136.06	-158.84	282.40	292.65	186.13	106.52	2.747	
3,100.00	3,024.77	3,069.55	3,038.12	109.19	9.18	136.68	-167.56	299.59	312.64	201.66	110.98	2.817	
3,200.00	3,119.34	3,167.48	3,134.13	114.02	9.60	137.22	-176.28	316.79	332.66	217.19	115.47	2.881	
3,300.00	3,213.90	3,265.41	3,230.14	118.88	10.02	137.71	-185.00	333.98	352.70	232.71	119.99	2.939	
3,400.00	3,308.46	3,363.34	3,326.16	123.78	10.44	138.14	-193.72	351.17	372.77	248.23	124.54	2.993	
3,500.00	3,403.02	3,461.27	3,422.17	128.70	10.86	138.53	-202.44	368.36	392.85	263.75	129.10	3.043	
3,600.00	3,497.59	3,559.20	3,518.18	133.65	11.28	138.88	-211.16	385.56	412.95	279.27	133.69	3.089	
3,700.00	3,592.15	3,657.13	3,614.20	138.62	11.70	139.19	-219.88	402.75	433.07	294.78	138.29	3.132	
3,800.00	3,686.71	3,755.06	3,710.21	143.61	12.13	139.48	-228.60	419.94	453.19	310.28	142.91	3.171	
3,900.00	3,781.27	3,852.99	3,806.22	148.62	12.55	139.75	-237.32	437.14	473.33	325.78	147.55	3.208	
4,000.00	3,875.83	3,950.92	3,902.24	153.65	12.98	139.99	-246.04	454.33	493.47	341.28	152.20	3.242	
4,100.00	3,970.40	4,048.84	3,998.25	158.69	13.40	140.22	-254.76	471.52	513.62	356.77	156.86	3.274	
4,200.00	4,064.96	4,146.77	4,094.26	163.75	13.83	140.42	-263.48	488.72	533.78	372.26	161.53	3.305	
4,300.00	4,159.52	4,244.70	4,190.28	168.81	14.25	140.62	-272.20	505.91	553.95	387.74	166.21	3.333	
4,400.00	4,254.08	4,342.63	4,286.29	173.89	14.68	140.79	-280.92	523.10	574.12	403.22	170.90	3.359	
4,500.00	4,348.65	4,440.56	4,382.30	178.98	15.11	140.96	-289.64	540.30	594.30	418.70	175.60	3.384	
4,600.00	4,443.21	4,538.49	4,478.32	184.07	15.53	141.12	-298.36	557.49	614.48	434.17	180.30	3.408	
4,700.00	4,537.77	4,636.42	4,574.33	189.18	15.96	141.26	-307.08	574.68	634.66	449.64	185.02	3.430	
4,800.00	4,632.33	4,734.35	4,670.34	194.29	16.39	141.40	-315.80	591.87	654.85	465.11	189.74	3.451	
4,900.00	4,726.90	4,832.28	4,766.35	199.41	16.82	141.53	-324.52	609.07	675.04	480.57	194.47	3.471	

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_NRC 39-9
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 20-9 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 39-9	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 39-9	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-6-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_NRC 20-9 PAD - P_NRC 16-9 - P_NRC 16-9 - PLAN #1 1-6-10 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	4,821.46	4,930.21	4,862.37	204.54	17.25	141.65	-333.24	626.26	695.23	496.03	199.20	3.490	
5,100.00	4,916.02	5,028.14	4,958.38	209.68	17.68	141.76	-341.96	643.45	715.43	511.49	203.94	3.508	
5,200.00	5,010.58	5,126.07	5,054.39	214.81	18.10	141.87	-350.68	660.65	735.63	526.95	208.68	3.525	
5,300.00	5,105.15	5,224.00	5,150.41	219.96	18.53	141.97	-359.40	677.84	755.83	542.41	213.43	3.541	
5,400.00	5,199.71	5,321.93	5,246.42	225.11	18.96	142.07	-368.12	695.03	776.04	557.86	218.18	3.557	
5,500.00	5,294.27	5,419.86	5,342.43	230.26	19.39	142.16	-376.84	712.23	796.24	573.31	222.94	3.572	
5,589.80	5,379.19	5,507.80	5,428.66	234.90	19.78	142.24	-384.67	727.67	814.39	587.18	227.21	3.584	
5,600.00	5,388.84	5,517.79	5,438.45	235.42	19.82	142.27	-385.56	729.42	816.44	588.75	227.69	3.586	
5,700.00	5,484.06	5,616.04	5,534.78	240.46	20.25	142.50	-394.31	746.67	835.01	602.68	232.34	3.594	
5,800.00	5,580.29	5,714.75	5,631.56	245.30	20.69	142.54	-403.10	764.00	850.87	613.96	236.91	3.592	
5,900.00	5,677.40	5,813.79	5,728.66	249.93	21.12	142.41	-411.92	781.39	863.99	622.59	241.40	3.579	
6,000.00	5,775.29	5,909.42	5,822.48	254.36	21.51	142.16	-420.31	797.93	874.49	628.75	245.74	3.559	
6,100.00	5,873.84	6,000.00	5,911.77	258.59	21.78	141.93	-427.18	811.46	883.08	633.38	249.70	3.537	
6,200.00	5,972.91	6,092.28	6,003.19	262.61	22.02	141.73	-432.85	822.66	889.87	636.50	253.36	3.512	
6,300.00	6,072.40	6,184.04	6,094.45	266.43	22.22	141.57	-437.17	831.17	894.85	638.12	256.73	3.486	
6,400.00	6,172.18	6,275.96	6,186.12	270.05	22.39	141.45	-440.17	837.09	898.00	638.21	259.80	3.457	
6,500.00	6,272.12	6,367.98	6,278.06	273.48	22.53	141.35	-441.84	840.38	899.32	636.76	262.57	3.425	
6,538.88	6,311.00	6,403.77	6,313.85	274.33	22.58	-137.21	-442.13	840.95	899.34	636.25	263.09	3.418	
6,588.42	6,360.54	6,450.47	6,360.54	274.88	22.64	-137.23	-442.22	841.12	899.28	635.55	263.74	3.410	
6,600.00	6,372.12	6,462.05	6,372.12	275.01	22.65	-137.23	-442.22	841.12	899.28	635.40	263.88	3.408	
6,700.00	6,472.12	6,562.05	6,472.12	276.15	22.78	-137.23	-442.22	841.12	899.28	634.06	265.23	3.391	
6,800.00	6,572.12	6,662.05	6,572.12	277.35	22.90	-137.23	-442.22	841.12	899.28	632.65	266.63	3.373	
6,900.00	6,672.12	6,762.05	6,672.12	278.61	23.03	-137.23	-442.22	841.12	899.28	631.19	268.09	3.354	
7,000.00	6,772.12	6,862.05	6,772.12	279.91	23.16	-137.23	-442.22	841.12	899.28	629.67	269.61	3.335	
7,100.00	6,872.12	6,962.05	6,872.12	281.26	23.29	-137.23	-442.22	841.12	899.28	628.09	271.19	3.316	
7,200.00	6,972.12	7,062.05	6,972.12	282.67	23.42	-137.23	-442.22	841.12	899.28	626.46	272.82	3.296	
7,300.00	7,072.12	7,162.05	7,072.12	284.12	23.55	-137.23	-442.22	841.12	899.28	624.77	274.52	3.276	
7,400.00	7,172.12	7,262.05	7,172.12	285.63	23.69	-137.23	-442.22	841.12	899.28	623.02	276.26	3.255	
7,500.00	7,272.12	7,362.05	7,272.12	287.18	23.82	-137.23	-442.22	841.12	899.28	621.22	278.06	3.234	
7,600.00	7,372.12	7,462.05	7,372.12	288.78	23.96	-137.23	-442.22	841.12	899.28	619.36	279.92	3.213	
7,700.00	7,472.12	7,562.05	7,472.12	290.42	24.10	-137.23	-442.22	841.12	899.28	617.46	281.83	3.191	
7,800.00	7,572.12	7,662.05	7,572.12	292.11	24.24	-137.23	-442.22	841.12	899.28	615.50	283.78	3.169	
7,900.00	7,672.12	7,762.05	7,672.12	293.85	24.38	-137.23	-442.22	841.12	899.28	613.49	285.79	3.147	
8,000.00	7,772.12	7,862.05	7,772.12	295.63	24.52	-137.23	-442.22	841.12	899.28	611.44	287.84	3.124	
8,100.00	7,872.12	7,962.05	7,872.12	297.45	24.67	-137.23	-442.22	841.12	899.28	609.33	289.95	3.102	
8,200.00	7,972.12	8,062.05	7,972.12	299.32	24.81	-137.23	-442.22	841.12	899.28	607.18	292.10	3.079	
8,300.00	8,072.12	8,162.05	8,072.12	301.22	24.96	-137.23	-442.22	841.12	899.28	604.99	294.29	3.056	
8,400.00	8,172.12	8,262.05	8,172.12	303.17	25.10	-137.23	-442.22	841.12	899.28	602.75	296.53	3.033	
8,463.88	8,236.00	8,325.92	8,236.00	304.44	25.20	-137.23	-442.22	841.12	899.28	601.30	297.99	3.018	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_NRC 39-9
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 20-9 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 39-9	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 39-9	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-6-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_NRC 20-9 PAD - P_NRC 37-9 - P_NRC 37-9 - PLAN #1 1-6-10 RHS												Offset Site Error:	0.00 ft
Survey Program: 0-MWMD												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	177.65	-47.74	1.96	47.78				
100.00	100.00	100.00	100.00	1.70	0.10	177.65	-47.74	1.96	47.78	45.99	1.80	26.611	
200.00	200.00	200.00	200.00	5.70	0.32	177.65	-47.74	1.96	47.78	41.76	6.02	7.937	
300.00	300.00	300.00	300.00	9.70	0.55	177.65	-47.74	1.96	47.78	37.54	10.25	4.664	
400.00	400.00	400.00	400.00	13.70	0.77	177.65	-47.74	1.96	47.78	33.31	14.47	3.302	
500.00	500.00	500.00	500.00	17.70	0.99	177.65	-47.74	1.96	47.78	29.09	18.69	2.556	
600.00	600.00	600.00	600.00	21.70	1.22	177.65	-47.74	1.96	47.78	24.86	22.92	2.085	
700.00	700.00	700.00	700.00	25.70	1.44	177.65	-47.74	1.96	47.78	20.64	27.14	1.760	
800.00	800.00	800.00	800.00	29.70	1.67	177.65	-47.74	1.96	47.78	16.41	31.37	1.523	
900.00	900.00	900.00	900.00	33.70	1.89	177.65	-47.74	1.96	47.78	12.19	35.59	1.342 Level 3	
1,000.00	1,000.00	1,000.00	1,000.00	37.70	2.12	177.65	-47.74	1.96	47.78	7.96	39.82	1.200 Level 2	
1,085.00	1,085.00	1,085.00	1,085.00	41.10	2.31	177.65	-47.74	1.96	47.78	4.37	43.41	1.101 Level 2, CC	
1,100.00	1,100.00	1,099.76	1,099.76	41.45	2.34	96.22	-47.78	1.97	47.82	4.04	43.78	1.092 Level 2, ES, SF	
1,200.00	1,199.97	1,198.05	1,198.02	42.25	2.51	98.35	-49.94	2.36	50.32	5.56	44.76	1.124 Level 2	
1,300.00	1,299.80	1,295.94	1,295.75	43.42	2.68	102.87	-55.38	3.36	56.91	10.80	46.10	1.234 Level 2	
1,400.00	1,399.37	1,393.12	1,392.53	44.94	2.87	108.18	-64.03	4.94	68.04	20.25	47.79	1.424 Level 3	
1,500.00	1,498.55	1,489.26	1,487.92	46.80	3.08	113.07	-75.75	7.08	84.00	34.21	49.80	1.687	
1,600.00	1,597.23	1,584.05	1,581.53	48.99	3.32	117.02	-90.39	9.75	104.84	52.73	52.11	2.012	
1,700.00	1,695.29	1,677.22	1,673.01	51.49	3.59	120.01	-107.74	12.93	130.45	75.74	54.71	2.384	
1,800.00	1,792.60	1,771.73	1,765.39	54.32	3.90	122.49	-127.38	16.52	159.92	102.34	57.58	2.777	
1,900.00	1,889.05	1,866.17	1,857.68	57.46	4.23	124.91	-147.08	20.11	191.64	130.94	60.69	3.157	
2,000.00	1,984.52	1,959.67	1,949.06	60.91	4.58	127.19	-166.57	23.68	225.69	161.68	64.01	3.526	
2,034.07	2,016.81	1,991.30	1,979.97	62.16	4.70	127.93	-173.17	24.88	237.84	172.66	65.18	3.649	
2,100.00	2,079.15	2,052.37	2,039.65	64.66	4.94	129.59	-185.90	27.21	261.74	194.17	67.57	3.874	
2,200.00	2,173.71	2,145.00	2,130.18	68.60	5.31	131.60	-205.21	30.74	298.28	226.95	71.32	4.182	
2,300.00	2,268.27	2,237.63	2,220.70	72.71	5.68	133.17	-224.53	34.27	335.07	259.86	75.20	4.455	
2,400.00	2,362.84	2,330.27	2,311.23	76.97	6.07	134.44	-243.84	37.80	372.03	292.84	79.19	4.698	
2,500.00	2,457.40	2,422.90	2,401.76	81.33	6.46	135.47	-263.16	41.33	409.13	325.86	83.27	4.913	
2,600.00	2,551.96	2,515.53	2,492.29	85.80	6.86	136.33	-282.47	44.86	446.32	358.89	87.43	5.105	
2,700.00	2,646.52	2,608.17	2,582.82	90.35	7.26	137.07	-301.79	48.39	483.59	391.94	91.65	5.277	
2,800.00	2,741.09	2,700.80	2,673.35	94.97	7.66	137.69	-321.10	51.92	520.91	424.99	95.92	5.430	
2,900.00	2,835.65	2,793.43	2,763.87	99.66	8.06	138.24	-340.42	55.45	558.28	458.03	100.25	5.569	
3,000.00	2,930.21	2,886.06	2,854.40	104.40	8.47	138.71	-359.73	58.98	595.69	491.07	104.62	5.694	
3,100.00	3,024.77	2,978.70	2,944.93	109.19	8.88	139.13	-379.05	62.51	633.13	524.11	109.02	5.807	
3,200.00	3,119.34	3,071.33	3,035.46	114.02	9.30	139.50	-398.36	66.04	670.60	557.14	113.46	5.910	
3,300.00	3,213.90	3,163.96	3,125.99	118.88	9.71	139.84	-417.68	69.57	708.08	590.16	117.92	6.005	
3,400.00	3,308.46	3,256.60	3,216.51	123.78	10.13	140.14	-436.99	73.10	745.59	623.17	122.42	6.091	
3,500.00	3,403.02	3,349.23	3,307.04	128.70	10.54	140.41	-456.31	76.63	783.11	656.18	126.93	6.170	
3,600.00	3,497.59	3,441.86	3,397.57	133.65	10.96	140.65	-475.62	80.16	820.65	689.18	131.47	6.242	
3,700.00	3,592.15	3,534.50	3,488.10	138.62	11.38	140.88	-494.94	83.69	858.19	722.18	136.02	6.309	
3,800.00	3,686.71	3,627.13	3,578.63	143.61	11.80	141.08	-514.25	87.22	895.75	755.16	140.59	6.371	
3,900.00	3,781.27	3,719.76	3,669.16	148.62	12.22	141.27	-533.57	90.76	933.32	788.15	145.17	6.429	
4,000.00	3,875.83	3,812.39	3,759.68	153.65	12.64	141.45	-552.88	94.29	970.89	821.12	149.77	6.483	
4,100.00	3,970.40	3,905.03	3,850.21	158.69	13.06	141.61	-572.20	97.82	1,008.48	854.10	154.38	6.532	
4,200.00	4,064.96	3,997.66	3,940.74	163.75	13.49	141.76	-591.51	101.35	1,046.07	887.06	159.00	6.579	
4,300.00	4,159.52	4,090.29	4,031.27	168.81	13.91	141.90	-610.83	104.88	1,083.66	920.02	163.64	6.622	
4,400.00	4,254.08	4,182.93	4,121.80	173.89	14.33	142.03	-630.14	108.41	1,121.26	952.98	168.28	6.663	
4,500.00	4,348.65	4,275.56	4,212.32	178.98	14.76	142.15	-649.46	111.94	1,158.86	985.94	172.93	6.701	
4,600.00	4,443.21	4,368.19	4,302.85	184.07	15.18	142.26	-668.77	115.47	1,196.47	1,018.89	177.58	6.737	
4,700.00	4,537.77	4,460.83	4,393.38	189.18	15.61	142.37	-688.08	119.00	1,234.08	1,051.83	182.25	6.771	
4,800.00	4,632.33	4,553.46	4,483.91	194.29	16.03	142.47	-707.40	122.53	1,271.70	1,084.78	186.92	6.803	
4,900.00	4,726.90	4,646.09	4,574.44	199.41	16.46	142.57	-726.71	126.06	1,309.32	1,117.72	191.60	6.834	

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_NRC 39-9
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 20-9 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 39-9	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 39-9	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-6-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_NRC 20-9 PAD - P_NRC 37-9 - P_NRC 37-9 - PLAN #1 1-6-10 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	
5,000.00	4,821.46	4,738.73	4,664.97	204.54	16.88	142.66	-746.03	129.59	1,346.94	1,150.66	196.28	6.862	
5,100.00	4,916.02	4,831.36	4,755.49	209.68	17.31	142.74	-765.34	133.12	1,384.57	1,183.59	200.97	6.889	
5,200.00	5,010.58	4,923.99	4,846.02	214.81	17.74	142.82	-784.66	136.65	1,422.19	1,216.52	205.67	6.915	
5,300.00	5,105.15	5,016.62	4,936.55	219.96	18.16	142.90	-803.97	140.18	1,459.82	1,249.45	210.37	6.939	
5,400.00	5,199.71	5,109.26	5,027.08	225.11	18.59	142.97	-823.29	143.71	1,497.45	1,282.38	215.07	6.963	
5,500.00	5,294.27	5,201.89	5,117.61	230.26	19.02	143.04	-842.60	147.24	1,535.09	1,315.31	219.78	6.985	
5,589.80	5,379.19	5,285.08	5,198.90	234.90	19.40	143.10	-859.95	150.41	1,568.88	1,344.87	224.01	7.004	
5,600.00	5,388.84	5,294.53	5,208.14	235.42	19.44	143.15	-861.92	150.77	1,572.71	1,348.23	224.48	7.006	
5,700.00	5,484.06	5,387.79	5,299.28	240.46	19.87	143.63	-881.37	154.32	1,608.78	1,379.79	228.99	7.026	
5,800.00	5,580.29	5,482.02	5,391.37	245.30	20.31	143.99	-901.01	157.91	1,642.21	1,408.86	233.35	7.038	
5,900.00	5,677.40	5,577.09	5,484.28	249.93	20.75	144.23	-920.84	161.54	1,672.98	1,435.43	237.55	7.043	
6,000.00	5,775.29	5,672.89	5,577.90	254.36	21.19	144.37	-940.81	165.19	1,701.05	1,459.46	241.59	7.041	
6,100.00	5,873.84	5,769.31	5,672.13	258.59	21.63	144.41	-960.92	168.86	1,726.42	1,480.95	245.46	7.033	
6,200.00	5,972.91	5,866.22	5,766.84	262.61	22.08	144.36	-981.12	172.56	1,749.07	1,499.91	249.16	7.020	
6,300.00	6,072.40	5,966.68	5,864.66	266.43	22.60	144.11	-1,006.78	177.25	1,768.44	1,515.60	252.84	6.994	
6,400.00	6,172.18	6,148.18	6,044.35	270.05	23.01	143.84	-1,029.60	181.42	1,782.37	1,526.16	256.21	6.957	
6,500.00	6,272.12	6,301.97	6,197.35	273.48	23.34	143.62	-1,044.77	184.19	1,790.54	1,531.31	259.24	6.907	
6,538.88	6,311.00	6,362.16	6,257.42	274.33	23.44	-134.99	-1,048.50	184.87	1,792.15	1,532.31	259.84	6.897	
6,600.00	6,372.12	6,457.04	6,352.24	275.01	23.58	-135.08	-1,051.86	185.49	1,793.40	1,532.63	260.77	6.877	
6,700.00	6,472.12	6,576.93	6,472.12	276.15	23.72	-135.09	-1,052.40	185.58	1,793.60	1,531.43	262.17	6.841	
6,800.00	6,572.12	6,676.93	6,572.12	277.35	23.83	-135.09	-1,052.40	185.58	1,793.60	1,530.02	263.58	6.805	
6,900.00	6,672.12	6,776.93	6,672.12	278.61	23.94	-135.09	-1,052.40	185.58	1,793.60	1,528.56	265.05	6.767	
7,000.00	6,772.12	6,876.93	6,772.12	279.91	24.05	-135.09	-1,052.40	185.58	1,793.60	1,527.03	266.57	6.728	
7,100.00	6,872.12	6,976.93	6,872.12	281.26	24.16	-135.09	-1,052.40	185.58	1,793.60	1,525.45	268.16	6.689	
7,200.00	6,972.12	7,076.93	6,972.12	282.67	24.27	-135.09	-1,052.40	185.58	1,793.60	1,523.80	269.80	6.648	
7,300.00	7,072.12	7,176.93	7,072.12	284.12	24.38	-135.09	-1,052.40	185.58	1,793.60	1,522.10	271.50	6.606	
7,400.00	7,172.12	7,276.93	7,172.12	285.63	24.50	-135.09	-1,052.40	185.58	1,793.60	1,520.35	273.25	6.564	
7,500.00	7,272.12	7,376.93	7,272.12	287.18	24.61	-135.09	-1,052.40	185.58	1,793.60	1,518.54	275.06	6.521	
7,600.00	7,372.12	7,476.93	7,372.12	288.78	24.73	-135.09	-1,052.40	185.58	1,793.60	1,516.68	276.92	6.477	
7,700.00	7,472.12	7,576.93	7,472.12	290.42	24.85	-135.09	-1,052.40	185.58	1,793.60	1,514.76	278.84	6.432	
7,800.00	7,572.12	7,676.93	7,572.12	292.11	24.97	-135.09	-1,052.40	185.58	1,793.60	1,512.80	280.80	6.387	
7,900.00	7,672.12	7,776.93	7,672.12	293.85	25.09	-135.09	-1,052.40	185.58	1,793.60	1,510.78	282.82	6.342	
8,000.00	7,772.12	7,876.93	7,772.12	295.63	25.22	-135.09	-1,052.40	185.58	1,793.60	1,508.72	284.88	6.296	
8,100.00	7,872.12	7,976.93	7,872.12	297.45	25.34	-135.09	-1,052.40	185.58	1,793.60	1,506.61	287.00	6.250	
8,200.00	7,972.12	8,076.93	7,972.12	299.32	25.47	-135.09	-1,052.40	185.58	1,793.60	1,504.45	289.16	6.203	
8,300.00	8,072.12	8,176.93	8,072.12	301.22	25.60	-135.09	-1,052.40	185.58	1,793.60	1,502.24	291.36	6.156	
8,400.00	8,172.12	8,276.93	8,172.12	303.17	25.73	-135.09	-1,052.40	185.58	1,793.60	1,499.99	293.61	6.109	
8,463.88	8,236.00	8,340.81	8,236.00	304.44	25.81	-135.09	-1,052.40	185.58	1,793.60	1,498.53	295.07	6.079	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_NRC 39-9
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 20-9 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 39-9	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 39-9	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-6-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_NRC 20-9 PAD - P_NRC 38-9 - P_NRC 38-9 - PLAN #1 1-6-10 RHS												Offset Site Error:	0.00 ft
Survey Program: 0-MWMD												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	177.47	-31.71	1.40	31.74				
100.00	100.00	100.00	100.00	1.70	0.10	177.47	-31.71	1.40	31.74	29.94	1.80	17.677	
200.00	200.00	200.00	200.00	5.70	0.32	177.47	-31.71	1.40	31.74	25.72	6.02	5.272	
300.00	300.00	300.00	300.00	9.70	0.55	177.47	-31.71	1.40	31.74	21.49	10.25	3.098	
400.00	400.00	400.00	400.00	13.70	0.77	177.47	-31.71	1.40	31.74	17.27	14.47	2.194	
500.00	500.00	500.00	500.00	17.70	0.99	177.47	-31.71	1.40	31.74	13.05	18.69	1.698	
600.00	600.00	600.00	600.00	21.70	1.22	177.47	-31.71	1.40	31.74	8.82	22.92	1.385 Level 3	
700.00	700.00	700.00	700.00	25.70	1.44	177.47	-31.71	1.40	31.74	4.60	27.14	1.169 Level 2	
800.00	800.00	800.00	800.00	29.70	1.67	177.47	-31.71	1.40	31.74	0.37	31.37	1.012 Level 2	
900.00	900.00	900.00	900.00	33.70	1.89	177.47	-31.71	1.40	31.74	-3.85	35.59	0.892 Level 1	
1,000.00	1,000.00	1,000.00	1,000.00	37.70	2.12	177.47	-31.71	1.40	31.74	-8.08	39.82	0.797 Level 1	
1,085.00	1,085.00	1,085.00	1,085.00	41.10	2.31	177.47	-31.71	1.40	31.74	-11.67	43.41	0.731 Level 1, CC	
1,100.00	1,100.00	1,099.90	1,099.90	41.45	2.34	96.02	-31.73	1.43	31.77	-12.02	43.79	0.726 Level 1, ES, SF	
1,200.00	1,199.97	1,199.20	1,199.17	42.25	2.52	96.80	-33.02	3.26	33.39	-11.39	44.77	0.746 Level 1	
1,300.00	1,299.80	1,298.39	1,298.19	43.42	2.71	98.45	-36.28	7.89	37.51	-8.62	46.14	0.813 Level 1	
1,400.00	1,399.37	1,397.37	1,396.75	44.94	2.92	100.44	-41.50	15.31	44.18	-3.67	47.86	0.923 Level 1	
1,500.00	1,498.55	1,496.04	1,494.63	46.80	3.15	102.33	-48.66	25.47	53.42	3.49	49.93	1.070 Level 2	
1,600.00	1,597.23	1,594.31	1,591.63	48.99	3.41	103.93	-57.70	38.32	65.21	12.86	52.35	1.246 Level 2	
1,700.00	1,695.29	1,692.09	1,687.56	51.49	3.72	105.18	-68.60	53.80	79.54	24.41	55.13	1.443 Level 3	
1,800.00	1,792.60	1,789.30	1,782.23	54.32	4.06	106.11	-81.30	71.83	96.37	38.12	58.25	1.655	
1,900.00	1,889.05	1,885.85	1,875.46	57.46	4.47	106.79	-95.73	92.33	115.66	53.95	61.71	1.874	
2,000.00	1,984.52	1,981.68	1,967.11	60.91	4.92	107.26	-111.84	115.21	137.37	71.84	65.53	2.096	
2,034.07	2,016.81	2,014.15	1,997.94	62.16	5.09	107.38	-117.70	123.53	145.31	78.40	66.91	2.172	
2,100.00	2,079.15	2,076.77	2,057.07	64.66	5.44	107.62	-129.56	140.37	161.23	91.55	69.68	2.314	
2,200.00	2,173.71	2,171.19	2,145.35	68.60	6.02	107.15	-148.84	167.76	186.46	112.35	74.10	2.516	
2,300.00	2,268.27	2,264.78	2,231.71	72.71	6.66	106.02	-169.60	197.24	213.03	134.28	78.75	2.705	
2,400.00	2,362.84	2,360.55	2,319.38	76.97	7.37	104.71	-191.80	228.78	240.48	156.89	83.59	2.877	
2,500.00	2,457.40	2,456.58	2,407.27	81.33	8.10	103.66	-214.07	260.41	268.03	179.47	88.55	3.027	
2,600.00	2,551.96	2,552.60	2,495.16	85.80	8.84	102.80	-236.34	292.03	295.65	202.02	93.63	3.158	
2,700.00	2,646.52	2,648.63	2,583.05	90.35	9.60	102.10	-258.60	323.66	323.31	224.52	98.79	3.273	
2,800.00	2,741.09	2,744.66	2,670.94	94.97	10.36	101.50	-280.87	355.29	351.02	246.99	104.03	3.374	
2,900.00	2,835.65	2,840.68	2,758.83	99.66	11.13	100.99	-303.14	386.92	378.75	269.42	109.34	3.464	
3,000.00	2,930.21	2,936.71	2,846.72	104.40	11.91	100.55	-325.41	418.54	406.51	291.81	114.70	3.544	
3,100.00	3,024.77	3,032.73	2,934.61	109.19	12.70	100.17	-347.68	450.17	434.29	314.18	120.12	3.616	
3,200.00	3,119.34	3,128.76	3,022.50	114.02	13.48	99.83	-369.94	481.80	462.09	336.51	125.57	3.680	
3,300.00	3,213.90	3,224.79	3,110.40	118.88	14.27	99.53	-392.21	513.43	489.89	358.83	131.07	3.738	
3,400.00	3,308.46	3,320.81	3,198.29	123.78	15.07	99.26	-414.48	545.06	517.71	381.12	136.60	3.790	
3,500.00	3,403.02	3,416.84	3,286.18	128.70	15.86	99.02	-436.75	576.68	545.54	403.38	142.16	3.838	
3,600.00	3,497.59	3,512.87	3,374.07	133.65	16.66	98.81	-459.02	608.31	573.38	425.63	147.74	3.881	
3,700.00	3,592.15	3,608.89	3,461.96	138.62	17.46	98.61	-481.29	639.94	601.22	447.87	153.35	3.921	
3,800.00	3,686.71	3,704.92	3,549.85	143.61	18.26	98.43	-503.55	671.57	629.07	470.09	158.98	3.957	
3,900.00	3,781.27	3,800.94	3,637.74	148.62	19.07	98.27	-525.82	703.19	656.92	492.29	164.63	3.990	
4,000.00	3,875.83	3,896.97	3,725.63	153.65	19.87	98.12	-548.09	734.82	684.78	514.48	170.29	4.021	
4,100.00	3,970.40	3,993.00	3,813.52	158.69	20.67	97.98	-570.36	766.45	712.64	536.67	175.98	4.050	
4,200.00	4,064.96	4,089.02	3,901.42	163.75	21.48	97.85	-592.63	798.08	740.51	558.84	181.67	4.076	
4,300.00	4,159.52	4,185.05	3,989.31	168.81	22.29	97.73	-614.89	829.71	768.38	581.00	187.38	4.101	
4,400.00	4,254.08	4,281.08	4,077.20	173.89	23.09	97.62	-637.16	861.33	796.25	603.15	193.10	4.124	
4,500.00	4,348.65	4,377.10	4,165.09	178.98	23.90	97.52	-659.43	892.96	824.12	625.29	198.83	4.145	
4,600.00	4,443.21	4,473.13	4,252.98	184.07	24.71	97.42	-681.70	924.59	852.00	647.43	204.57	4.165	
4,700.00	4,537.77	4,569.15	4,340.87	189.18	25.52	97.33	-703.97	956.22	879.88	669.56	210.32	4.184	
4,800.00	4,632.33	4,665.18	4,428.76	194.29	26.33	97.25	-726.24	987.84	907.76	691.68	216.08	4.201	
4,900.00	4,726.90	4,761.21	4,516.65	199.41	27.14	97.17	-748.50	1,019.47	935.64	713.80	221.84	4.218	

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_NRC 39-9
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 20-9 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 39-9	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 39-9	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-6-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_NRC 20-9 PAD - P_NRC 38-9 - P_NRC 38-9 - PLAN #1 1-6-10 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	4,821.46	4,857.23	4,604.55	204.54	27.95	97.09	-770.77	1,051.10	963.53	735.91	227.62	4.233	
5,100.00	4,916.02	4,953.26	4,692.44	209.68	28.76	97.02	-793.04	1,082.73	991.41	758.02	233.40	4.248	
5,200.00	5,010.58	5,049.29	4,780.33	214.81	29.57	96.95	-815.31	1,114.36	1,019.30	780.12	239.18	4.262	
5,300.00	5,105.15	5,145.31	4,868.22	219.96	30.38	96.89	-837.58	1,145.98	1,047.19	802.22	244.97	4.275	
5,400.00	5,199.71	5,241.34	4,956.11	225.11	31.19	96.83	-859.85	1,177.61	1,075.08	824.31	250.77	4.287	
5,500.00	5,294.27	5,337.36	5,044.00	230.26	32.01	96.77	-882.11	1,209.24	1,102.97	846.40	256.57	4.299	
5,589.80	5,379.19	5,423.60	5,122.93	234.90	32.74	96.72	-902.11	1,237.64	1,128.01	866.23	261.78	4.309	
5,600.00	5,388.84	5,433.39	5,131.89	235.42	32.82	96.78	-904.38	1,240.87	1,130.86	868.48	262.38	4.310	
5,700.00	5,484.06	5,547.84	5,237.09	240.46	33.65	97.19	-930.32	1,277.71	1,158.02	889.89	268.13	4.319	
5,800.00	5,580.29	5,673.96	5,354.91	245.30	34.39	97.53	-956.20	1,314.47	1,182.52	908.91	273.61	4.322	
5,900.00	5,677.40	5,801.84	5,476.29	249.93	35.07	97.81	-979.37	1,347.38	1,204.13	925.31	278.82	4.319	
6,000.00	5,775.29	5,931.32	5,600.88	254.36	35.66	98.05	-999.63	1,376.15	1,222.79	939.04	283.75	4.309	
6,100.00	5,873.84	6,062.19	5,728.30	258.59	36.17	98.25	-1,016.79	1,400.52	1,238.41	950.01	288.40	4.294	
6,200.00	5,972.91	6,194.23	5,858.11	262.61	36.60	98.40	-1,030.69	1,420.27	1,250.94	958.16	292.77	4.273	
6,300.00	6,072.40	6,327.20	5,989.80	266.43	36.94	98.50	-1,041.20	1,435.19	1,260.33	963.46	296.86	4.245	
6,400.00	6,172.18	6,460.85	6,122.88	270.05	37.19	98.57	-1,048.20	1,445.13	1,266.54	965.87	300.68	4.212	
6,500.00	6,272.12	6,594.89	6,256.79	273.48	37.36	98.60	-1,051.63	1,450.00	1,269.56	965.33	304.23	4.173	
6,538.88	6,311.00	6,647.06	6,308.95	274.33	37.41	-179.94	-1,051.98	1,450.51	1,269.87	964.76	305.11	4.162	
6,600.00	6,372.12	6,710.24	6,372.12	275.01	37.45	-179.94	-1,051.99	1,450.52	1,269.87	964.05	305.82	4.152	
6,700.00	6,472.12	6,810.24	6,472.12	276.15	37.53	-179.94	-1,051.99	1,450.52	1,269.87	962.83	307.04	4.136	
6,800.00	6,572.12	6,910.24	6,572.12	277.35	37.61	-179.94	-1,051.99	1,450.52	1,269.87	961.55	308.32	4.119	
6,900.00	6,672.12	7,010.24	6,672.12	278.61	37.68	-179.94	-1,051.99	1,450.52	1,269.87	960.23	309.64	4.101	
7,000.00	6,772.12	7,110.24	6,772.12	279.91	37.76	-179.94	-1,051.99	1,450.52	1,269.87	958.85	311.02	4.083	
7,100.00	6,872.12	7,210.24	6,872.12	281.26	37.84	-179.94	-1,051.99	1,450.52	1,269.87	957.41	312.46	4.064	
7,200.00	6,972.12	7,310.24	6,972.12	282.67	37.93	-179.94	-1,051.99	1,450.52	1,269.87	955.93	313.94	4.045	
7,300.00	7,072.12	7,410.24	7,072.12	284.12	38.01	-179.94	-1,051.99	1,450.52	1,269.87	954.39	315.48	4.025	
7,400.00	7,172.12	7,510.24	7,172.12	285.63	38.09	-179.94	-1,051.99	1,450.52	1,269.87	952.81	317.06	4.005	
7,500.00	7,272.12	7,610.24	7,272.12	287.18	38.18	-179.94	-1,051.99	1,450.52	1,269.87	951.17	318.70	3.985	
7,600.00	7,372.12	7,710.24	7,372.12	288.78	38.26	-179.94	-1,051.99	1,450.52	1,269.87	949.49	320.38	3.964	
7,700.00	7,472.12	7,810.24	7,472.12	290.42	38.35	-179.94	-1,051.99	1,450.52	1,269.87	947.75	322.12	3.942	
7,800.00	7,572.12	7,910.24	7,572.12	292.11	38.44	-179.94	-1,051.99	1,450.52	1,269.87	945.97	323.90	3.921	
7,900.00	7,672.12	8,010.24	7,672.12	293.85	38.53	-179.94	-1,051.99	1,450.52	1,269.87	944.15	325.72	3.899	
8,000.00	7,772.12	8,110.24	7,772.12	295.63	38.62	-179.94	-1,051.99	1,450.52	1,269.87	942.28	327.59	3.876	
8,100.00	7,872.12	8,210.24	7,872.12	297.45	38.71	-179.94	-1,051.99	1,450.52	1,269.87	940.36	329.51	3.854	
8,200.00	7,972.12	8,310.24	7,972.12	299.32	38.80	-179.94	-1,051.99	1,450.52	1,269.87	938.40	331.47	3.831	
8,300.00	8,072.12	8,410.24	8,072.12	301.22	38.90	-179.94	-1,051.99	1,450.52	1,269.87	936.40	333.47	3.808	
8,400.00	8,172.12	8,510.24	8,172.12	303.17	38.99	-179.94	-1,051.99	1,450.52	1,269.87	934.35	335.52	3.785	
8,463.88	8,236.00	8,574.11	8,236.00	304.44	39.05	-179.94	-1,051.99	1,450.52	1,269.87	933.03	336.84	3.770	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_NRC 39-9
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 20-9 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 39-9	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 39-9	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-6-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_NRC 20-9 PAD - P_NRC 9-9 - P_NRC 9-9 - PLAN #1 1-6-10 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	-2.00	16.01	-0.56	16.02				
100.00	100.00	100.00	100.00	1.70	0.10	-2.00	16.01	-0.56	16.02	14.23	1.80	8.923	
200.00	200.00	200.00	200.00	5.70	0.32	-2.00	16.01	-0.56	16.02	10.00	6.02	2.661	
300.00	300.00	300.00	300.00	9.70	0.55	-2.00	16.01	-0.56	16.02	5.78	10.25	1.564	
400.00	400.00	400.00	400.00	13.70	0.77	-2.00	16.01	-0.56	16.02	1.55	14.47	1.107	Level 2
500.00	500.00	500.00	500.00	17.70	0.99	-2.00	16.01	-0.56	16.02	-2.67	18.69	0.857	Level 1
600.00	600.00	600.00	600.00	21.70	1.22	-2.00	16.01	-0.56	16.02	-6.90	22.92	0.699	Level 1
700.00	700.00	700.00	700.00	25.70	1.44	-2.00	16.01	-0.56	16.02	-11.12	27.14	0.590	Level 1
800.00	800.00	800.00	800.00	29.70	1.67	-2.00	16.01	-0.56	16.02	-15.35	31.37	0.511	Level 1
900.00	900.00	900.00	900.00	33.70	1.89	-2.00	16.01	-0.56	16.02	-19.57	35.59	0.450	Level 1
1,000.00	1,000.00	1,000.00	1,000.00	37.70	2.12	-2.00	16.01	-0.56	16.02	-23.80	39.82	0.402	Level 1
1,085.00	1,085.00	1,085.00	1,085.00	41.10	2.31	-2.00	16.01	-0.56	16.02	-27.39	43.41	0.369	Level 1, CC
1,100.00	1,100.00	1,099.94	1,099.94	41.45	2.34	-83.51	16.04	-0.53	16.04	-27.74	43.79	0.366	Level 1, ES, SF
1,200.00	1,199.97	1,199.54	1,199.51	42.25	2.56	-85.51	17.65	1.04	17.36	-27.46	44.81	0.387	Level 1
1,300.00	1,299.80	1,299.05	1,298.85	43.42	2.78	-89.44	21.73	5.03	20.76	-25.44	46.20	0.449	Level 1
1,400.00	1,399.37	1,398.41	1,397.79	44.94	3.01	-93.56	28.26	11.42	26.36	-21.59	47.94	0.550	Level 1
1,500.00	1,498.55	1,497.54	1,496.12	46.80	3.25	-96.97	37.21	20.17	34.19	-15.83	50.02	0.684	Level 1
1,600.00	1,597.23	1,596.38	1,593.67	48.99	3.52	-99.51	48.55	31.27	44.26	-8.18	52.43	0.844	Level 1
1,700.00	1,695.29	1,694.85	1,690.26	51.49	3.83	-101.33	62.24	44.66	56.52	1.35	55.17	1.024	Level 2
1,800.00	1,792.60	1,792.90	1,785.72	54.32	4.17	-102.60	78.22	60.29	70.95	12.71	58.24	1.218	Level 2
1,900.00	1,889.05	1,891.11	1,880.66	57.46	4.56	-103.84	96.17	77.84	87.31	25.67	61.64	1.416	Level 3
2,000.00	1,984.52	1,989.46	1,975.67	60.91	4.98	-106.27	114.36	95.64	104.74	39.47	65.27	1.605	
2,034.07	2,016.81	2,022.90	2,007.96	62.16	5.12	-107.30	120.54	101.68	110.96	44.41	66.55	1.667	
2,100.00	2,079.15	2,087.54	2,070.41	64.66	5.41	-109.36	132.50	113.38	123.22	54.08	69.14	1.782	
2,200.00	2,173.71	2,185.59	2,165.12	68.60	5.86	-111.80	150.63	131.11	142.05	68.82	73.23	1.940	
2,300.00	2,268.27	2,283.65	2,259.84	72.71	6.32	-113.67	168.76	148.85	161.07	83.59	77.48	2.079	
2,400.00	2,362.84	2,381.70	2,354.56	76.97	6.79	-115.14	186.90	166.58	180.22	98.35	81.87	2.201	
2,500.00	2,457.40	2,479.76	2,449.27	81.33	7.27	-116.34	205.03	184.32	199.46	113.09	86.37	2.309	
2,600.00	2,551.96	2,577.81	2,543.99	85.80	7.76	-117.32	223.16	202.06	218.77	127.81	90.97	2.405	
2,700.00	2,646.52	2,675.87	2,638.71	90.35	8.25	-118.14	241.30	219.79	238.14	142.50	95.64	2.490	
2,800.00	2,741.09	2,773.92	2,733.43	94.97	8.74	-118.84	259.43	237.53	257.54	157.15	100.39	2.565	
2,900.00	2,835.65	2,871.98	2,828.14	99.66	9.24	-119.44	277.56	255.27	276.98	171.79	105.19	2.633	
3,000.00	2,930.21	2,970.03	2,922.86	104.40	9.74	-119.96	295.70	273.00	296.44	186.39	110.05	2.694	
3,100.00	3,024.77	3,068.09	3,017.58	109.19	10.24	-120.42	313.83	290.74	315.92	200.97	114.95	2.748	
3,200.00	3,119.34	3,166.14	3,112.29	114.02	10.74	-120.82	331.96	308.47	335.42	215.53	119.89	2.798	
3,300.00	3,213.90	3,264.20	3,207.01	118.88	11.25	-121.18	350.10	326.21	354.93	230.07	124.86	2.843	
3,400.00	3,308.46	3,362.25	3,301.73	123.78	11.76	-121.51	368.23	343.95	374.46	244.60	129.86	2.884	
3,500.00	3,403.02	3,460.30	3,396.44	128.70	12.27	-121.80	386.36	361.68	393.99	259.10	134.89	2.921	
3,600.00	3,497.59	3,558.36	3,491.16	133.65	12.78	-122.06	404.50	379.42	413.54	273.59	139.94	2.955	
3,700.00	3,592.15	3,656.41	3,585.88	138.62	13.29	-122.30	422.63	397.15	433.09	288.07	145.02	2.986	
3,800.00	3,686.71	3,754.47	3,680.60	143.61	13.80	-122.52	440.76	414.89	452.65	302.54	150.11	3.015	
3,900.00	3,781.27	3,852.52	3,775.31	148.62	14.31	-122.72	458.90	432.63	472.21	316.99	155.22	3.042	
4,000.00	3,875.83	3,950.58	3,870.03	153.65	14.83	-122.90	477.03	450.36	491.78	331.44	160.34	3.067	
4,100.00	3,970.40	4,048.63	3,964.75	158.69	15.34	-123.07	495.16	468.10	511.36	345.88	165.48	3.090	
4,200.00	4,064.96	4,146.69	4,059.46	163.75	15.86	-123.23	513.30	485.84	530.94	360.30	170.63	3.112	
4,300.00	4,159.52	4,244.74	4,154.18	168.81	16.38	-123.38	531.43	503.57	550.52	374.72	175.79	3.132	
4,400.00	4,254.08	4,342.80	4,248.90	173.89	16.89	-123.52	549.56	521.31	570.10	389.14	180.97	3.150	
4,500.00	4,348.65	4,440.85	4,343.62	178.98	17.41	-123.64	567.70	539.04	589.69	403.54	186.15	3.168	
4,600.00	4,443.21	4,538.90	4,438.33	184.07	17.93	-123.76	585.83	556.78	609.28	417.94	191.34	3.184	
4,700.00	4,537.77	4,636.96	4,533.05	189.18	18.45	-123.87	603.96	574.52	628.88	432.34	196.54	3.200	
4,800.00	4,632.33	4,735.01	4,627.77	194.29	18.97	-123.98	622.10	592.25	648.47	446.73	201.74	3.214	
4,900.00	4,726.90	4,833.07	4,722.48	199.41	19.48	-124.08	640.23	609.99	668.07	461.12	206.95	3.228	

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_NRC 39-9
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 20-9 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 39-9	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 39-9	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-6-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_NRC 20-9 PAD - P_NRC 9-9 - P_NRC 9-9 - PLAN #1 1-6-10 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	4,821.46	4,931.12	4,817.20	204.54	20.00	-124.17	658.36	627.72	687.67	475.50	212.17	3.241	
5,100.00	4,916.02	5,029.18	4,911.92	209.68	20.52	-124.26	676.50	645.46	707.27	489.88	217.39	3.253	
5,200.00	5,010.58	5,127.23	5,006.63	214.81	21.04	-124.34	694.63	663.20	726.87	504.25	222.62	3.265	
5,300.00	5,105.15	5,225.29	5,101.35	219.96	21.56	-124.42	712.76	680.93	746.47	518.62	227.85	3.276	
5,400.00	5,199.71	5,323.34	5,196.07	225.11	22.08	-124.50	730.89	698.67	766.08	532.99	233.09	3.287	
5,500.00	5,294.27	5,421.40	5,290.79	230.26	22.60	-124.57	749.03	716.40	785.69	547.35	238.33	3.297	
5,589.80	5,379.19	5,509.45	5,375.85	234.90	23.07	-124.63	765.31	732.33	803.29	560.25	243.04	3.305	
5,600.00	5,388.84	5,519.45	5,385.50	235.42	23.13	-124.67	767.16	734.14	805.28	561.68	243.60	3.306	
5,700.00	5,484.06	5,617.73	5,480.44	240.46	23.65	-124.92	785.34	751.92	823.71	574.70	249.01	3.308	
5,800.00	5,580.29	5,716.29	5,575.64	245.30	24.17	-124.94	803.56	769.75	840.19	585.80	254.39	3.303	
5,900.00	5,677.40	5,815.64	5,671.85	249.93	24.63	-124.81	821.27	787.07	854.69	595.08	259.61	3.292	
6,000.00	5,775.29	5,915.66	5,769.49	254.36	25.00	-124.68	836.76	802.21	867.16	602.66	264.50	3.278	
6,100.00	5,873.84	6,016.13	5,868.27	258.59	25.32	-124.57	849.85	815.02	877.56	608.44	269.13	3.261	
6,200.00	5,972.91	6,116.97	5,968.01	262.61	25.61	-124.46	860.49	825.43	885.88	612.40	273.48	3.239	
6,300.00	6,072.40	6,218.12	6,068.51	266.43	25.85	-124.37	868.64	833.39	892.09	614.54	277.55	3.214	
6,400.00	6,172.18	6,319.51	6,169.58	270.05	26.04	-124.29	874.25	838.89	896.18	614.82	281.36	3.185	
6,500.00	6,272.12	6,421.04	6,271.02	273.48	26.19	-124.22	877.31	841.88	898.13	613.23	284.90	3.152	
6,538.88	6,311.00	6,460.54	6,310.51	274.33	26.24	-42.72	877.81	842.36	898.31	612.54	285.77	3.143	
6,600.00	6,372.12	6,522.15	6,372.12	275.01	26.31	-42.71	877.92	842.48	898.32	611.72	286.60	3.134	
6,700.00	6,472.12	6,622.15	6,472.12	276.15	26.43	-42.71	877.92	842.48	898.32	610.34	287.98	3.119	
6,800.00	6,572.12	6,722.15	6,572.12	277.35	26.54	-42.71	877.92	842.48	898.32	608.90	289.43	3.104	
6,900.00	6,672.12	6,822.15	6,672.12	278.61	26.66	-42.71	877.92	842.48	898.32	607.40	290.92	3.088	
7,000.00	6,772.12	6,922.15	6,772.12	279.91	26.78	-42.71	877.92	842.48	898.32	605.85	292.47	3.071	
7,100.00	6,872.12	7,022.15	6,872.12	281.26	26.90	-42.71	877.92	842.48	898.32	604.24	294.08	3.055	
7,200.00	6,972.12	7,122.15	6,972.12	282.67	27.02	-42.71	877.92	842.48	898.32	602.58	295.74	3.038	
7,300.00	7,072.12	7,222.15	7,072.12	284.12	27.14	-42.71	877.92	842.48	898.32	600.87	297.45	3.020	
7,400.00	7,172.12	7,322.15	7,172.12	285.63	27.27	-42.71	877.92	842.48	898.32	599.11	299.21	3.002	
7,500.00	7,272.12	7,422.15	7,272.12	287.18	27.39	-42.71	877.92	842.48	898.32	597.30	301.02	2.984	
7,600.00	7,372.12	7,522.15	7,372.12	288.78	27.52	-42.71	877.92	842.48	898.32	595.44	302.88	2.966	
7,700.00	7,472.12	7,622.15	7,472.12	290.42	27.64	-42.71	877.92	842.48	898.32	593.53	304.79	2.947	
7,800.00	7,572.12	7,722.15	7,572.12	292.11	27.77	-42.71	877.92	842.48	898.32	591.57	306.75	2.929	
7,900.00	7,672.12	7,822.15	7,672.12	293.85	27.90	-42.71	877.92	842.48	898.32	589.57	308.75	2.910	
8,000.00	7,772.12	7,922.15	7,772.12	295.63	28.04	-42.71	877.92	842.48	898.32	587.52	310.80	2.890	
8,100.00	7,872.12	8,022.15	7,872.12	297.45	28.17	-42.71	877.92	842.48	898.32	585.43	312.89	2.871	
8,200.00	7,972.12	8,122.15	7,972.12	299.32	28.30	-42.71	877.92	842.48	898.32	583.29	315.03	2.852	
8,300.00	8,072.12	8,222.15	8,072.12	301.22	28.44	-42.71	877.92	842.48	898.32	581.11	317.21	2.832	
8,400.00	8,172.12	8,322.15	8,172.12	303.17	28.57	-42.71	877.92	842.48	898.32	578.89	319.43	2.812	
8,463.88	8,236.00	8,386.03	8,236.00	304.44	28.66	-42.71	877.92	842.48	898.32	577.45	320.87	2.800	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_NRC 39-9
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 20-9 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 39-9	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 39-9	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-6-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design												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	
0.00	0.00	0.00	0.00	0.00	0.00	-137.86	-49.19	-44.50	69.00				
100.00	100.00	81.00	81.00	1.70	0.09	-137.86	-49.19	-44.50	66.33	64.54	1.79	37.036	
200.00	200.00	181.00	181.00	5.70	0.29	-137.86	-49.19	-44.50	66.33	60.34	5.99	11.066	
300.00	300.00	281.00	281.00	9.70	0.52	-137.86	-49.19	-44.50	66.33	56.12	10.22	6.491	
400.00	400.00	381.00	381.00	13.70	0.74	-137.86	-49.19	-44.50	66.33	51.89	14.44	4.593	
500.00	500.00	481.00	481.00	17.70	0.97	-137.86	-49.19	-44.50	66.33	47.67	18.67	3.553	
600.00	600.00	581.00	581.00	21.70	1.19	-137.86	-49.19	-44.50	66.33	43.44	22.89	2.898	
700.00	700.00	681.00	681.00	25.70	1.42	-137.86	-49.19	-44.50	66.33	39.22	27.12	2.446	
800.00	800.00	781.00	781.00	29.70	1.64	-137.86	-49.19	-44.50	66.33	34.99	31.34	2.116	
900.00	900.00	881.00	881.00	33.70	1.87	-137.86	-49.19	-44.50	66.33	30.77	35.57	1.865	
1,000.00	1,000.00	981.00	981.00	37.70	2.09	-137.86	-49.19	-44.50	66.33	26.54	39.79	1.667	
1,085.00	1,085.00	1,066.00	1,066.00	41.10	2.28	-137.86	-49.19	-44.50	66.33	22.95	43.38	1.529 CC	
1,100.00	1,100.00	1,081.00	1,081.00	41.45	2.32	140.69	-49.19	-44.50	66.37	22.60	43.76	1.516 ES, SF	
1,200.00	1,199.97	1,180.97	1,180.97	42.25	2.54	141.88	-49.19	-44.50	68.14	23.36	44.77	1.522	
1,300.00	1,299.80	1,280.80	1,280.80	43.42	2.77	144.62	-49.19	-44.50	72.75	26.64	46.11	1.578	
1,400.00	1,399.37	1,380.37	1,380.37	44.94	2.99	148.35	-49.19	-44.50	80.47	32.74	47.73	1.686	
1,500.00	1,498.55	1,479.55	1,479.55	46.80	3.21	152.41	-49.19	-44.50	91.54	41.94	49.60	1.846	
1,600.00	1,597.23	1,578.23	1,578.23	48.99	3.43	156.33	-49.19	-44.50	106.16	54.48	51.68	2.054	
1,700.00	1,695.29	1,676.29	1,676.29	51.49	3.66	159.82	-49.19	-44.50	124.39	70.46	53.93	2.307	
1,800.00	1,792.60	1,773.60	1,773.60	54.32	3.87	162.79	-49.19	-44.50	146.25	89.94	56.31	2.597	
1,900.00	1,889.05	1,870.05	1,870.05	57.46	4.09	165.26	-49.19	-44.50	171.69	112.89	58.80	2.920	
2,000.00	1,984.52	1,965.52	1,965.52	60.91	4.31	167.28	-49.19	-44.50	200.65	139.27	61.38	3.269	
2,034.07	2,016.81	1,997.81	1,997.81	62.16	4.38	167.88	-49.19	-44.50	211.31	149.04	62.27	3.393	
2,100.00	2,079.15	2,060.15	2,060.15	64.66	4.52	168.99	-49.19	-44.50	232.37	168.00	64.36	3.610	
2,200.00	2,173.71	2,154.71	2,154.71	68.60	4.73	170.34	-49.19	-44.50	264.42	196.78	67.64	3.909	
2,300.00	2,268.27	2,249.27	2,249.27	72.71	4.94	171.39	-49.19	-44.50	296.58	225.57	71.01	4.176	
2,400.00	2,362.84	2,343.84	2,343.84	76.97	5.16	172.24	-49.19	-44.50	328.81	254.33	74.48	4.415	
2,500.00	2,457.40	2,438.40	2,438.40	81.33	5.37	172.93	-49.19	-44.50	361.09	283.08	78.01	4.629	
2,600.00	2,551.96	2,532.96	2,532.96	85.80	5.58	173.52	-49.19	-44.50	393.42	311.80	81.61	4.821	
2,700.00	2,646.52	2,627.52	2,627.52	90.35	5.79	174.01	-49.19	-44.50	425.77	340.50	85.27	4.993	
2,800.00	2,741.09	2,722.09	2,722.09	94.97	6.01	174.43	-49.19	-44.50	458.15	369.17	88.98	5.149	
2,900.00	2,835.65	2,816.65	2,816.65	99.66	6.22	174.80	-49.19	-44.50	490.55	397.82	92.72	5.290	
3,000.00	2,930.21	2,911.21	2,911.21	104.40	6.43	175.13	-49.19	-44.50	522.96	426.45	96.51	5.419	
3,100.00	3,024.77	3,005.77	3,005.77	109.19	6.64	175.41	-49.19	-44.50	555.39	455.06	100.33	5.536	
3,200.00	3,119.34	3,100.34	3,100.34	114.02	6.86	175.66	-49.19	-44.50	587.83	483.64	104.18	5.642	
3,300.00	3,213.90	3,194.90	3,194.90	118.88	7.07	175.89	-49.19	-44.50	620.27	512.21	108.06	5.740	
3,400.00	3,308.46	3,289.46	3,289.46	123.78	7.28	176.10	-49.19	-44.50	652.73	540.77	111.96	5.830	
3,500.00	3,403.02	3,384.02	3,384.02	128.70	7.49	176.28	-49.19	-44.50	685.19	569.31	115.88	5.913	
3,600.00	3,497.59	3,478.59	3,478.59	133.65	7.71	176.45	-49.19	-44.50	717.66	597.84	119.82	5.989	
3,700.00	3,592.15	3,573.15	3,573.15	138.62	7.92	176.60	-49.19	-44.50	750.13	626.35	123.78	6.060	
3,800.00	3,686.71	3,667.71	3,667.71	143.61	8.13	176.74	-49.19	-44.50	782.61	654.85	127.75	6.126	
3,900.00	3,781.27	3,762.27	3,762.27	148.62	8.34	176.87	-49.19	-44.50	815.09	683.35	131.74	6.187	
4,000.00	3,875.83	3,856.83	3,856.83	153.65	8.56	176.99	-49.19	-44.50	847.57	711.83	135.74	6.244	
4,100.00	3,970.40	3,951.40	3,951.40	158.69	8.77	177.10	-49.19	-44.50	880.06	740.30	139.76	6.297	
4,200.00	4,064.96	4,045.96	4,045.96	163.75	8.98	177.21	-49.19	-44.50	912.55	768.77	143.78	6.347	
4,300.00	4,159.52	4,140.52	4,140.52	168.81	9.19	177.30	-49.19	-44.50	945.04	797.23	147.81	6.393	
4,400.00	4,254.08	4,235.08	4,235.08	173.89	9.41	177.39	-49.19	-44.50	977.54	825.68	151.86	6.437	
4,500.00	4,348.65	4,329.65	4,329.65	178.98	9.62	177.48	-49.19	-44.50	1,010.04	854.13	155.91	6.478	
4,600.00	4,443.21	4,424.21	4,424.21	184.07	9.83	177.56	-49.19	-44.50	1,042.54	882.57	159.97	6.517	
4,700.00	4,537.77	4,518.77	4,518.77	189.18	10.04	177.63	-49.19	-44.50	1,075.04	911.00	164.04	6.554	
4,800.00	4,632.33	4,613.33	4,613.33	194.29	10.26	177.70	-49.19	-44.50	1,107.54	939.43	168.11	6.588	
4,900.00	4,726.90	4,707.90	4,707.90	199.41	10.47	177.77	-49.19	-44.50	1,140.04	967.85	172.19	6.621	

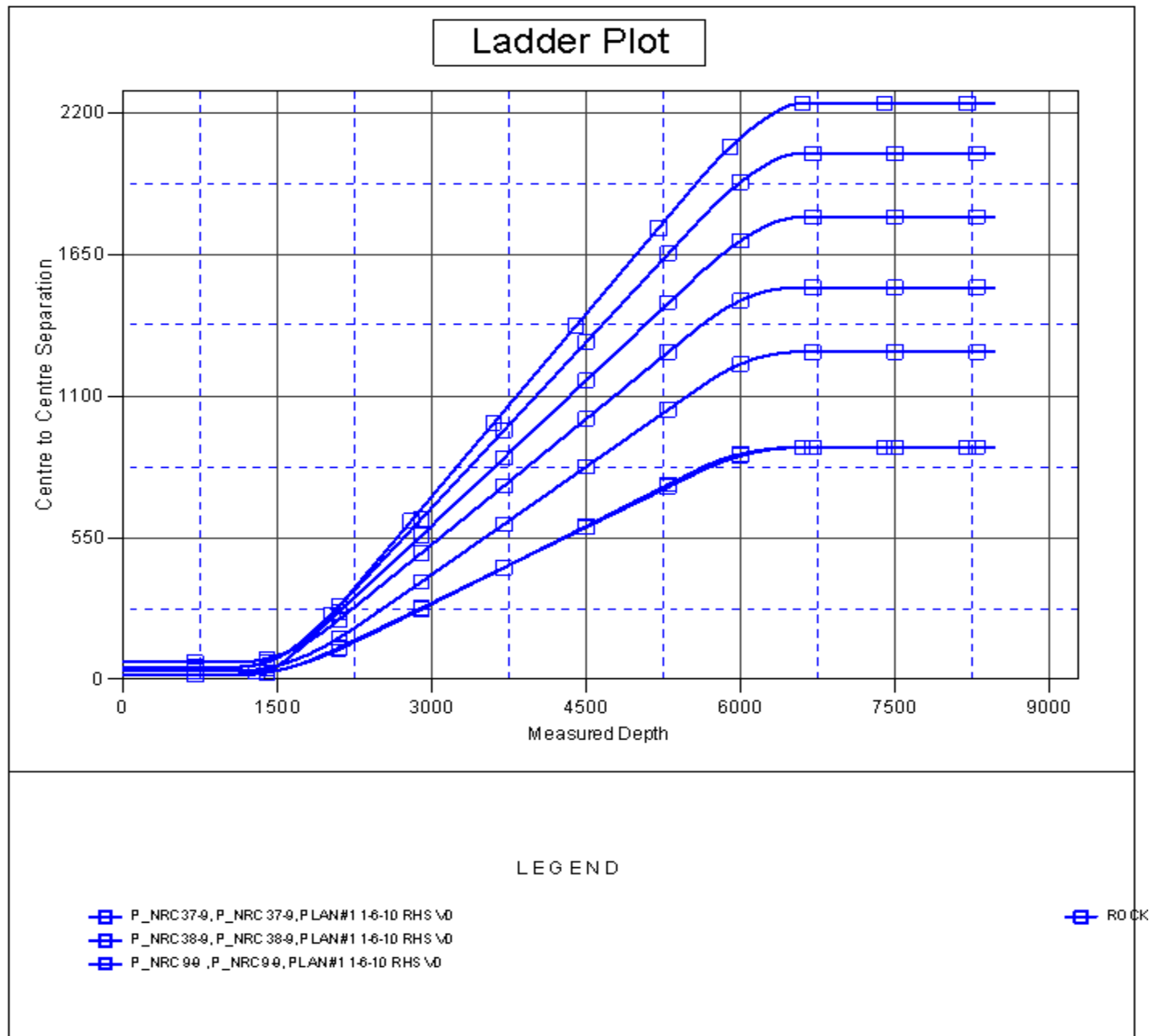
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_NRC 39-9
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 20-9 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 39-9	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 39-9	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-6-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_NRC 20-9 PAD - ROCKY MOUNTAIN FUEL CO F #3 EXISTING - ROCKY MOUNTAIN FUEL C													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		
5,000.00	4,821.46	4,802.46	4,802.46	204.54	10.68	177.83	-49.19	-44.50	1,172.55	996.27	176.27	6.652		
5,100.00	4,916.02	4,897.02	4,897.02	209.68	10.89	177.89	-49.19	-44.50	1,205.05	1,024.69	180.36	6.681		
5,200.00	5,010.58	4,991.58	4,991.58	214.81	11.11	177.94	-49.19	-44.50	1,237.56	1,053.10	184.46	6.709		
5,300.00	5,105.15	5,086.15	5,086.15	219.96	11.32	177.99	-49.19	-44.50	1,270.07	1,081.51	188.56	6.736		
5,400.00	5,199.71	5,180.71	5,180.71	225.11	11.53	178.04	-49.19	-44.50	1,302.58	1,109.91	192.67	6.761		
5,500.00	5,294.27	5,275.27	5,275.27	230.26	11.74	178.09	-49.19	-44.50	1,335.09	1,138.31	196.78	6.785		
5,589.80	5,379.19	5,360.19	5,360.19	234.90	11.94	178.13	-49.19	-44.50	1,364.28	1,163.81	200.47	6.805		
5,600.00	5,388.84	5,369.84	5,369.84	235.42	11.96	178.14	-49.19	-44.50	1,367.58	1,166.64	200.94	6.806		
5,700.00	5,484.06	5,465.06	5,465.06	240.46	12.17	178.20	-49.19	-44.50	1,398.10	1,192.70	205.39	6.807		
5,800.00	5,580.29	5,561.29	5,561.29	245.30	12.39	178.25	-49.19	-44.50	1,425.27	1,215.66	209.61	6.800		
5,900.00	5,677.40	5,658.40	5,658.40	249.93	12.61	178.30	-49.19	-44.50	1,449.08	1,235.49	213.58	6.785		
6,000.00	5,775.29	5,756.29	5,756.29	254.36	12.83	178.33	-49.19	-44.50	1,469.48	1,252.18	217.30	6.762		
6,100.00	5,873.84	5,854.84	5,854.84	258.59	13.05	178.36	-49.19	-44.50	1,486.45	1,265.69	220.76	6.733		
6,200.00	5,972.91	5,953.91	5,953.91	262.61	13.27	178.38	-49.19	-44.50	1,499.98	1,276.02	223.96	6.698		
6,300.00	6,072.40	6,053.40	6,053.40	266.43	13.49	178.40	-49.19	-44.50	1,510.04	1,283.16	226.89	6.655		
6,400.00	6,172.18	6,153.18	6,153.18	270.05	13.72	178.41	-49.19	-44.50	1,516.63	1,287.08	229.54	6.607		
6,500.00	6,272.12	6,253.12	6,253.12	273.48	13.94	178.41	-49.19	-44.50	1,519.73	1,287.80	231.92	6.553		
6,538.88	6,311.00	6,292.00	6,292.00	274.33	14.03	-100.12	-49.19	-44.50	1,519.99	1,287.72	232.27	6.544		
6,600.00	6,372.12	6,353.12	6,353.12	275.01	14.17	-100.12	-49.19	-44.50	1,519.99	1,286.76	233.23	6.517		
6,700.00	6,472.12	6,453.12	6,453.12	276.15	14.39	-100.12	-49.19	-44.50	1,519.99	1,285.13	234.86	6.472		
6,800.00	6,572.12	6,553.12	6,553.12	277.35	14.62	-100.12	-49.19	-44.50	1,519.99	1,283.43	236.56	6.425		
6,900.00	6,672.12	6,653.12	6,653.12	278.61	14.84	-100.12	-49.19	-44.50	1,519.99	1,281.68	238.31	6.378		
7,000.00	6,772.12	6,753.12	6,753.12	279.91	15.07	-100.12	-49.19	-44.50	1,519.99	1,279.86	240.13	6.330		
7,100.00	6,872.12	6,853.12	6,853.12	281.26	15.29	-100.12	-49.19	-44.50	1,519.99	1,277.99	242.01	6.281		
7,200.00	6,972.12	6,953.12	6,953.12	282.67	15.52	-100.12	-49.19	-44.50	1,519.99	1,276.05	243.94	6.231		
7,300.00	7,072.12	7,053.12	7,053.12	284.12	15.74	-100.12	-49.19	-44.50	1,519.99	1,274.06	245.93	6.181		
7,400.00	7,172.12	7,153.12	7,153.12	285.63	15.97	-100.12	-49.19	-44.50	1,519.99	1,272.02	247.98	6.130		
7,500.00	7,272.12	7,253.12	7,253.12	287.18	16.19	-100.12	-49.19	-44.50	1,519.99	1,269.92	250.08	6.078		
7,600.00	7,372.12	7,353.12	7,353.12	288.78	16.41	-100.12	-49.19	-44.50	1,519.99	1,267.76	252.23	6.026		
7,700.00	7,472.12	7,453.12	7,453.12	290.42	16.64	-100.12	-49.19	-44.50	1,519.99	1,265.56	254.43	5.974		
7,800.00	7,572.12	7,553.12	7,553.12	292.11	16.86	-100.12	-49.19	-44.50	1,519.99	1,263.30	256.69	5.922		
7,900.00	7,672.12	7,653.12	7,653.12	293.85	17.09	-100.12	-49.19	-44.50	1,519.99	1,261.00	258.99	5.869		
8,000.00	7,772.12	7,753.12	7,753.12	295.63	17.31	-100.12	-49.19	-44.50	1,519.99	1,258.64	261.35	5.816		
8,100.00	7,872.12	7,853.12	7,853.12	297.45	17.54	-100.12	-49.19	-44.50	1,519.99	1,256.25	263.75	5.763		
8,200.00	7,972.12	7,953.12	7,953.12	299.32	17.76	-100.12	-49.19	-44.50	1,519.99	1,253.80	266.19	5.710		
8,300.00	8,072.12	8,053.12	8,053.12	301.22	17.99	-100.12	-49.19	-44.50	1,519.99	1,251.31	268.68	5.657		
8,400.00	8,172.12	8,153.12	8,153.12	303.17	18.21	-100.12	-49.19	-44.50	1,519.99	1,248.78	271.21	5.604		
8,463.88	8,236.00	8,217.00	8,217.00	304.44	18.36	-100.12	-49.19	-44.50	1,519.99	1,247.14	272.85	5.571		

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_NRC 39-9
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 20-9 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 39-9	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 39-9	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-6-10 RHS	Offset TVD Reference:	Offset Datum

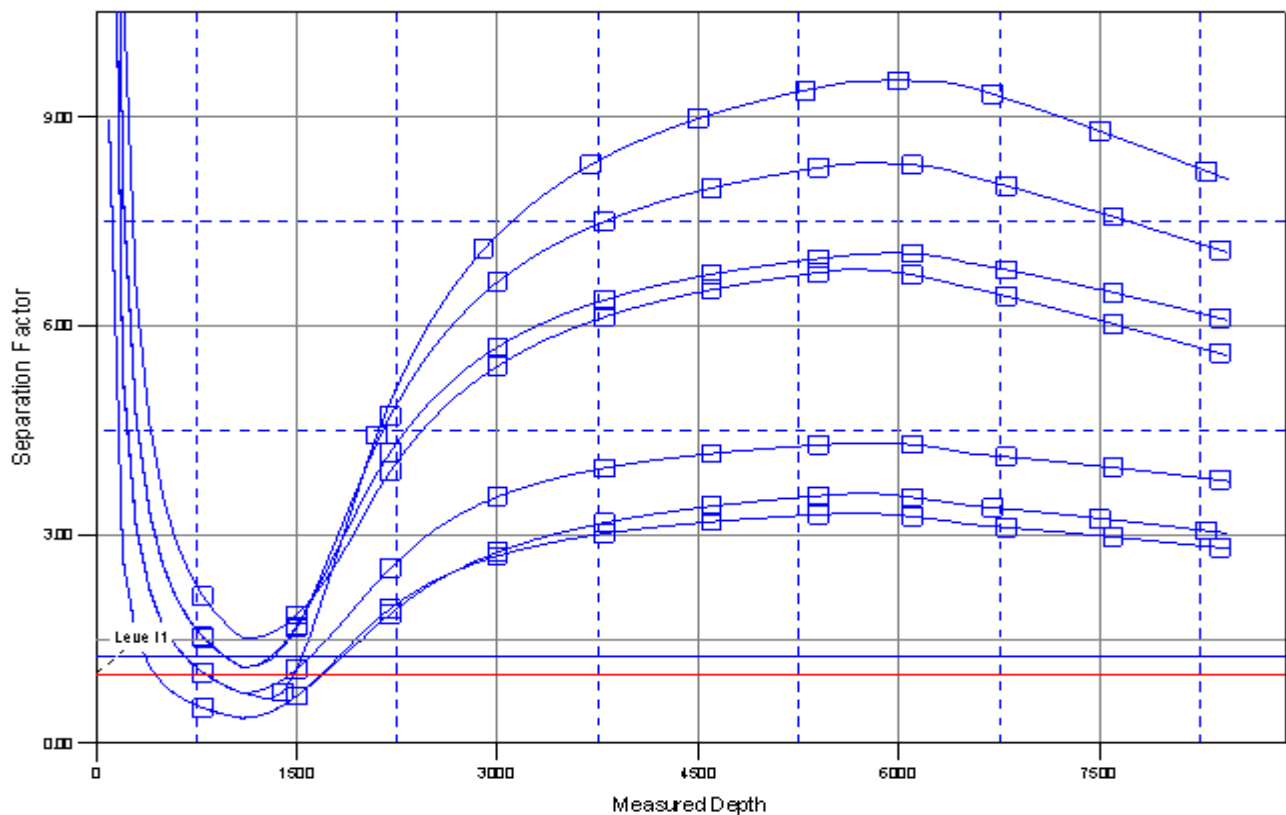
Reference Depths are relative to WELL @ 5039.00ft (Original Well Elev) Coordinates are relative to: P_NRC 39-9
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is 105° 30' 0.000 W ° Grid Convergence at Surface is: 0.39°






Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_NRC 39-9
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 20-9 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 39-9	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 39-9	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-6-10 RHS	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 5039.00ft (Original Well Elev) Coordinates are relative to: P_NRC 39-9
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: 0.39°

Separation Factor Plot



LEGEND

-  P_NRC37-9, P_NRC 37-9, PLAN#1 1-6-10 RHS \0
-  P_NRC38-9, P_NRC 38-9, PLAN#1 1-6-10 RHS \0
-  P_NRC 99 , P_NRC 99, PLAN#1 1-6-10 RHS \0

 ROCK

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_NRC 39-9
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site:	WELD_NRC 20-9 PAD	North Reference:	True
Well:	P_NRC 39-9	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_NRC 39-9		
Design:	PLAN #1 1-6-10 RHS		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
PBHL_NRC 39-9(132 - plan hits target center - Circle (radius 50.00)	0.00	0.00	8,236.00	217.88	1,451.84	1,265,986.93	3,171,718.55	40° 3' 42.815 N	104° 53' 11.378 W

Casing Points					
Measured Depth	Vertical Depth		Name	Casing Diameter	Hole Diameter
(ft)	(ft)			(in)	(in)
985.00	985.00	8 5/8"		8.62	11.00

Formations						
Measured Depth	Vertical Depth		Name	Lithology	Dip	Dip Direction
(ft)	(ft)				(°)	(°)
3,281.07	3,196.00		PARKMAN			
4,840.89	4,671.00		SUSSEX			
5,337.92	5,141.00		SHANNON			
7,538.88	7,311.00		NIO A			
7,878.88	7,651.00		CODELL			
8,328.88	8,101.00		JSAND			

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S	+E/-W	Comment	
(ft)	(ft)	(ft)	(ft)		
1,085.00	1,085.00	0.00	0.00	Start Build 2.00	
2,034.07	2,016.81	23.12	154.05	Start 3555.73 hold at 2034.07 MD	
5,589.80	5,379.19	194.76	1,297.79	Start Drop -2.00	
6,538.88	6,311.00	217.88	1,451.84	Start 1925.00 hold at 6538.88 MD	
8,463.88	8,236.00	217.88	1,451.84	TD at 8463.88	