



US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_NRC 19-8 PAD

P_NRC 12-8

P_NRC 12-8

Plan: PLAN #1 1-20-10 RHS

Standard Planning Report

20 January, 2010





Azimuths to True North
Magnetic North: 9.10°

Magnetic Field
Strength: 53082.3nT
Dip Angle: 66.80°
Date: 1/20/2010
Model: IGRF2010

WELL DETAILS: P_NRC 12-8

+N/-S	+E/-W	Northing	Ground Level: Easting	5024.00 Latitude	Longitude	Slot
0.00	0.00	1266220.67	3162168.34	40° 3' 45.759 N	104° 55' 14.189 W	

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3231.00	3277.73	PARKMAN
4681.00	4754.20	SUSSEX
5156.00	5229.20	SHANNON
7371.00	7444.20	NIO A
7711.00	7784.20	CODELL

SECTION DETAILS

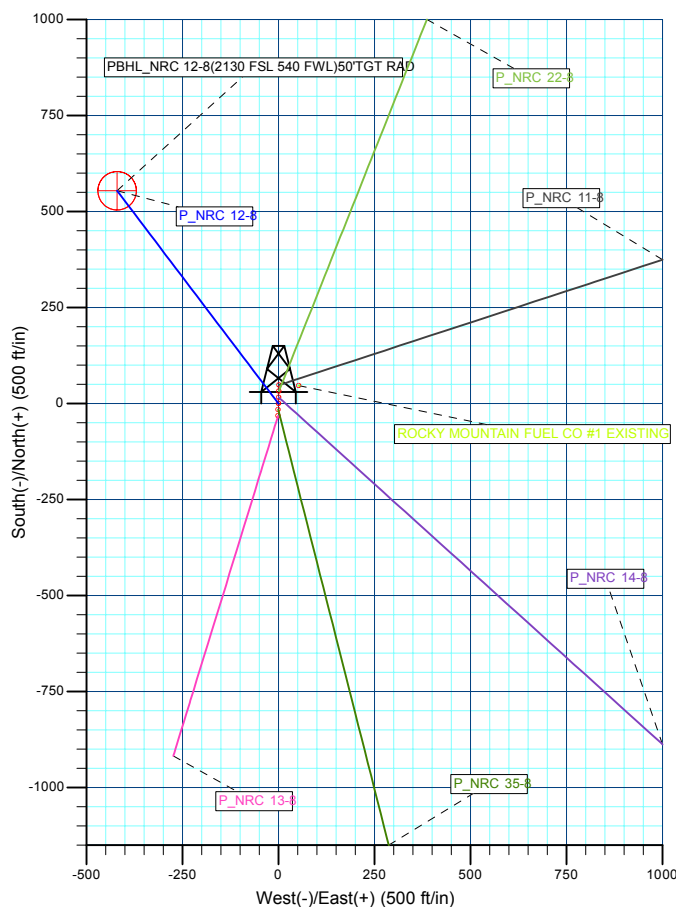
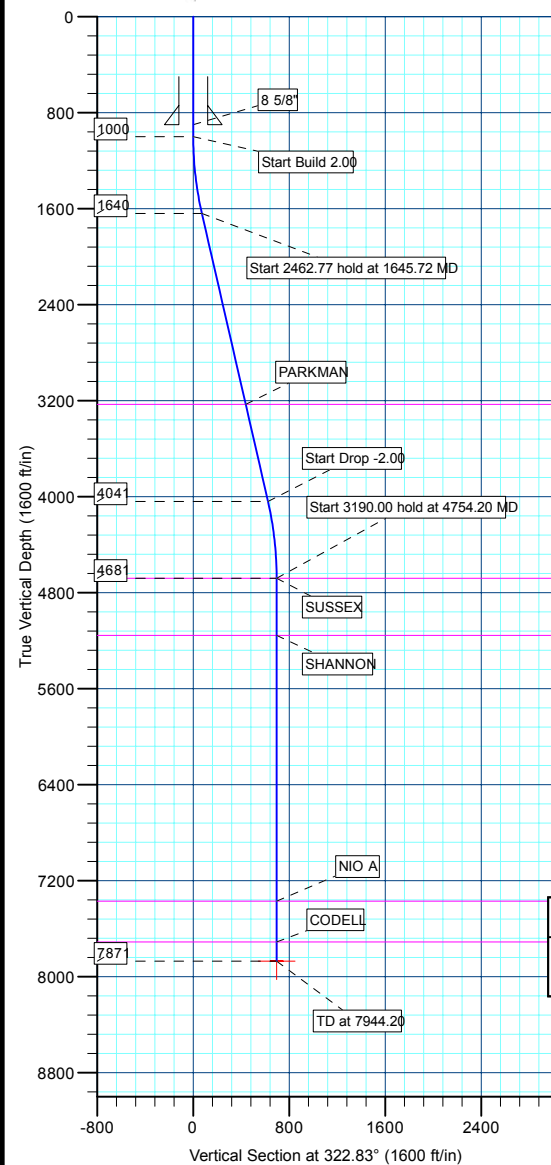
MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	0.00	
1645.72	12.91	322.83	1640.26	57.74	-43.78	2.00	322.83	72.46	
4108.49	12.91	322.83	4040.74	496.34	-376.33	0.00	0.00	622.88	
4754.20	0.00	0.00	4681.00	554.08	-420.12	2.00	180.00	695.34	
7944.20	0.00	0.00	7871.00	554.08	-420.12	0.00	0.00	695.34	PBHL_NRC 12-8(2130 FSL 540 FWL)50°TGT RAD

CASING DETAILS

TVD	MD	Name	Size
900.00	900.00	8 5/8"	8.62



KB ELEV: WELL @ 5039.00ft (Original Well Elev)
3RD ELEV: 5024.00



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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL	7871.00	554.08	-420.12	1266771.99	3161744.61	40° 3' 51.235 N	104° 55' 19.592 W	Circle (Radius: 50.00)

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_NRC 12-8
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 19-8 PAD	North Reference:	True
Well:	P_NRC 12-8	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_NRC 12-8		
Design:	PLAN #1 1-20-10 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 19-8 PAD, SECTION 8 T1N R67W			
Site Position:		Northing:	1,266,268.78 ft	Latitude:	40° 3' 46.235 N
From:	Lat/Long	Easting:	3,162,169.70 ft	Longitude:	104° 55' 14.167 W
Position Uncertainty:	0.00 ft	Slot Radius:	in	Grid Convergence:	0.37 °

Well	P_NRC 12-8,					
Well Position	+N/-S	-48.09 ft	Northing:	1,266,220.67 ft	Latitude:	40° 3' 45.759 N
	+E/-W	-1.68 ft	Easting:	3,162,168.34 ft	Longitude:	104° 55' 14.189 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	5,024.00 ft

Wellbore	P_NRC 12-8				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/20/2010	9.10	66.80	53,082

Design	PLAN #1 1-20-10 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	322.83	

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	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,645.72	12.91	322.83	1,640.26	57.74	-43.78	2.00	2.00	0.00	322.83	
4,108.49	12.91	322.83	4,040.74	496.34	-376.33	0.00	0.00	0.00	0.00	
4,754.20	0.00	0.00	4,681.00	554.08	-420.12	2.00	-2.00	0.00	180.00	
7,944.20	0.00	0.00	7,871.00	554.08	-420.12	0.00	0.00	0.00	0.00	PBHL_NRC 12-8(2)

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_NRC 12-8
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 19-8 PAD	North Reference:	True
Well:	P_NRC 12-8	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_NRC 12-8		
Design:	PLAN #1 1-20-10 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									
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	2.00	322.83	1,099.98	1.39	-1.05	1.75	2.00	2.00	0.00
1,200.00	4.00	322.83	1,199.84	5.56	-4.22	6.98	2.00	2.00	0.00
1,300.00	6.00	322.83	1,299.45	12.51	-9.48	15.69	2.00	2.00	0.00
1,400.00	8.00	322.83	1,398.70	22.22	-16.84	27.88	2.00	2.00	0.00
1,500.00	10.00	322.83	1,497.47	34.68	-26.30	43.52	2.00	2.00	0.00
1,600.00	12.00	322.83	1,595.62	49.88	-37.82	62.60	2.00	2.00	0.00
Start 2462.77 hold at 1645.72 MD									
1,645.72	12.91	322.83	1,640.26	57.74	-43.78	72.46	2.00	2.00	0.00
1,700.00	12.91	322.83	1,693.17	67.41	-51.11	84.60	0.00	0.00	0.00
1,800.00	12.91	322.83	1,790.64	85.22	-64.61	106.95	0.00	0.00	0.00
1,900.00	12.91	322.83	1,888.11	103.03	-78.12	129.29	0.00	0.00	0.00
2,000.00	12.91	322.83	1,985.58	120.84	-91.62	151.64	0.00	0.00	0.00
2,100.00	12.91	322.83	2,083.06	138.65	-105.12	173.99	0.00	0.00	0.00
2,200.00	12.91	322.83	2,180.53	156.45	-118.63	196.34	0.00	0.00	0.00
2,300.00	12.91	322.83	2,278.00	174.26	-132.13	218.69	0.00	0.00	0.00
2,400.00	12.91	322.83	2,375.47	192.07	-145.63	241.04	0.00	0.00	0.00
2,500.00	12.91	322.83	2,472.94	209.88	-159.14	263.39	0.00	0.00	0.00
2,600.00	12.91	322.83	2,570.41	227.69	-172.64	285.74	0.00	0.00	0.00
2,700.00	12.91	322.83	2,667.88	245.50	-186.14	308.09	0.00	0.00	0.00
2,800.00	12.91	322.83	2,765.35	263.31	-199.65	330.44	0.00	0.00	0.00
2,900.00	12.91	322.83	2,862.82	281.12	-213.15	352.79	0.00	0.00	0.00
3,000.00	12.91	322.83	2,960.29	298.93	-226.65	375.14	0.00	0.00	0.00
3,100.00	12.91	322.83	3,057.76	316.73	-240.16	397.49	0.00	0.00	0.00
3,200.00	12.91	322.83	3,155.23	334.54	-253.66	419.84	0.00	0.00	0.00
PARKMAN									
3,277.73	12.91	322.83	3,231.00	348.39	-264.16	437.21	0.00	0.00	0.00
3,300.00	12.91	322.83	3,252.70	352.35	-267.16	442.19	0.00	0.00	0.00
3,400.00	12.91	322.83	3,350.17	370.16	-280.67	464.53	0.00	0.00	0.00
3,500.00	12.91	322.83	3,447.64	387.97	-294.17	486.88	0.00	0.00	0.00
3,600.00	12.91	322.83	3,545.11	405.78	-307.67	509.23	0.00	0.00	0.00
3,700.00	12.91	322.83	3,642.58	423.59	-321.18	531.58	0.00	0.00	0.00
3,800.00	12.91	322.83	3,740.05	441.40	-334.68	553.93	0.00	0.00	0.00
3,900.00	12.91	322.83	3,837.53	459.21	-348.18	576.28	0.00	0.00	0.00
4,000.00	12.91	322.83	3,935.00	477.01	-361.68	598.63	0.00	0.00	0.00
4,100.00	12.91	322.83	4,032.47	494.82	-375.19	620.98	0.00	0.00	0.00
Start Drop -2.00									
4,108.49	12.91	322.83	4,040.74	496.34	-376.33	622.88	0.00	0.00	0.00
4,200.00	11.08	322.83	4,130.25	511.49	-387.83	641.90	2.00	-2.00	0.00
4,300.00	9.08	322.83	4,228.70	525.45	-398.41	659.41	2.00	-2.00	0.00
4,400.00	7.08	322.83	4,327.70	536.65	-406.90	673.47	2.00	-2.00	0.00
4,500.00	5.08	322.83	4,427.13	545.10	-413.31	684.07	2.00	-2.00	0.00
4,600.00	3.08	322.83	4,526.87	550.77	-417.61	691.19	2.00	-2.00	0.00
4,700.00	1.08	322.83	4,626.80	553.67	-419.81	694.83	2.00	-2.00	0.00
Start 3190.00 hold at 4754.20 MD - SUSSEX									
4,754.20	0.00	0.00	4,681.00	554.08	-420.12	695.34	2.00	-2.00	0.00
4,800.00	0.00	0.00	4,726.80	554.08	-420.12	695.34	0.00	0.00	0.00
4,900.00	0.00	0.00	4,826.80	554.08	-420.12	695.34	0.00	0.00	0.00
5,000.00	0.00	0.00	4,926.80	554.08	-420.12	695.34	0.00	0.00	0.00
5,100.00	0.00	0.00	5,026.80	554.08	-420.12	695.34	0.00	0.00	0.00
5,200.00	0.00	0.00	5,126.80	554.08	-420.12	695.34	0.00	0.00	0.00
SHANNON									

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_NRC 12-8
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 19-8 PAD	North Reference:	True
Well:	P_NRC 12-8	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_NRC 12-8		
Design:	PLAN #1 1-20-10 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)
5,229.20	0.00	0.00	5,156.00	554.08	-420.12	695.34	0.00	0.00	0.00
5,300.00	0.00	0.00	5,226.80	554.08	-420.12	695.34	0.00	0.00	0.00
5,400.00	0.00	0.00	5,326.80	554.08	-420.12	695.34	0.00	0.00	0.00
5,500.00	0.00	0.00	5,426.80	554.08	-420.12	695.34	0.00	0.00	0.00
5,600.00	0.00	0.00	5,526.80	554.08	-420.12	695.34	0.00	0.00	0.00
5,700.00	0.00	0.00	5,626.80	554.08	-420.12	695.34	0.00	0.00	0.00
5,800.00	0.00	0.00	5,726.80	554.08	-420.12	695.34	0.00	0.00	0.00
5,900.00	0.00	0.00	5,826.80	554.08	-420.12	695.34	0.00	0.00	0.00
6,000.00	0.00	0.00	5,926.80	554.08	-420.12	695.34	0.00	0.00	0.00
6,100.00	0.00	0.00	6,026.80	554.08	-420.12	695.34	0.00	0.00	0.00
6,200.00	0.00	0.00	6,126.80	554.08	-420.12	695.34	0.00	0.00	0.00
6,300.00	0.00	0.00	6,226.80	554.08	-420.12	695.34	0.00	0.00	0.00
6,400.00	0.00	0.00	6,326.80	554.08	-420.12	695.34	0.00	0.00	0.00
6,500.00	0.00	0.00	6,426.80	554.08	-420.12	695.34	0.00	0.00	0.00
6,600.00	0.00	0.00	6,526.80	554.08	-420.12	695.34	0.00	0.00	0.00
6,700.00	0.00	0.00	6,626.80	554.08	-420.12	695.34	0.00	0.00	0.00
6,800.00	0.00	0.00	6,726.80	554.08	-420.12	695.34	0.00	0.00	0.00
6,900.00	0.00	0.00	6,826.80	554.08	-420.12	695.34	0.00	0.00	0.00
7,000.00	0.00	0.00	6,926.80	554.08	-420.12	695.34	0.00	0.00	0.00
7,100.00	0.00	0.00	7,026.80	554.08	-420.12	695.34	0.00	0.00	0.00
7,200.00	0.00	0.00	7,126.80	554.08	-420.12	695.34	0.00	0.00	0.00
7,300.00	0.00	0.00	7,226.80	554.08	-420.12	695.34	0.00	0.00	0.00
7,400.00	0.00	0.00	7,326.80	554.08	-420.12	695.34	0.00	0.00	0.00
NIO A									
7,444.20	0.00	0.00	7,371.00	554.08	-420.12	695.34	0.00	0.00	0.00
7,500.00	0.00	0.00	7,426.80	554.08	-420.12	695.34	0.00	0.00	0.00
7,600.00	0.00	0.00	7,526.80	554.08	-420.12	695.34	0.00	0.00	0.00
7,700.00	0.00	0.00	7,626.80	554.08	-420.12	695.34	0.00	0.00	0.00
CODELL									
7,784.20	0.00	0.00	7,711.00	554.08	-420.12	695.34	0.00	0.00	0.00
7,800.00	0.00	0.00	7,726.80	554.08	-420.12	695.34	0.00	0.00	0.00
7,900.00	0.00	0.00	7,826.80	554.08	-420.12	695.34	0.00	0.00	0.00
PBHL_NRC 12-8(2130 FSL 540 FWL)50'TGT RAD									
7,944.20	0.00	0.00	7,871.00	554.08	-420.12	695.34	0.00	0.00	0.00

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL_NRC 12-8(213	0.00	0.00	7,871.00	554.08	-420.12	1,266,771.99	3,161,744.61	40° 3' 51.235 N	104° 55' 19.592 W
- plan hits target center									
- Circle (radius 50.00)									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
900.00	900.00	8 5/8"	8.62	11.00	

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_NRC 12-8
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 19-8 PAD	North Reference:	True
Well:	P_NRC 12-8	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_NRC 12-8		
Design:	PLAN #1 1-20-10 RHS		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,277.73	3,231.00	PARKMAN				
4,754.20	4,681.00	SUSSEX				
5,229.20	5,156.00	SHANNON				
7,444.20	7,371.00	NIO A				
7,784.20	7,711.00	CODELL				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
1,000.00	1,000.00	0.00	0.00	Start Build 2.00	
1,645.72	1,640.26	57.74	-43.78	Start 2462.77 hold at 1645.72 MD	
4,108.49	4,040.74	496.34	-376.33	Start Drop -2.00	
4,754.20	4,681.00	554.08	-420.12	Start 3190.00 hold at 4754.20 MD	
7,944.20	7,871.00	554.08	-420.12	TD at 7944.20	



US ROCKIES REGION PLANNING

**COLORADO NORTHERN ZONE - 83
WELD_NRC 19-8 PAD
P_NRC 12-8**

**P_NRC 12-8
PLAN #1 1-20-10 RHS**

Anticollision Report

20 January, 2010



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_NRC 12-8
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 19-8 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 12-8	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 12-8	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-20-10 RHS	Offset TVD Reference:	Offset Datum

Reference	PLAN #1 1-20-10 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	1/20/2010		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	7,944.20	PLAN #1 1-20-10 RHS (P_NRC 12-8)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
WELD_NRC 19-8 PAD						
P_NRC 11-8 - P_NRC 11-8 - PLAN #1 1-20-10 RHS	1,214.11	1,212.10	46.36	41.19	8.974	CC, ES
P_NRC 11-8 - P_NRC 11-8 - PLAN #1 1-20-10 RHS	1,300.00	1,296.14	47.98	42.43	8.649	SF
P_NRC 13-8 - P_NRC 13-8 - PLAN #1 1-20-10 RHS	1,000.00	1,000.00	31.70	27.47	7.483	CC, ES
P_NRC 13-8 - P_NRC 13-8 - PLAN #1 1-20-10 RHS	1,100.00	1,098.85	34.73	30.08	7.466	SF
P_NRC 14-8 - P_NRC 14-8 - PLAN #1 1-20-10 RHS	443.07	443.36	12.26	10.56	7.184	CC, ES
P_NRC 14-8 - P_NRC 14-8 - PLAN #1 1-20-10 RHS	500.00	500.00	13.40	11.44	6.866	SF
P_NRC 22-8 - P_NRC 22-8 - PLAN #1 1-20-10 RHS	1,000.00	1,000.00	32.07	27.83	7.570	CC
P_NRC 22-8 - P_NRC 22-8 - PLAN #1 1-20-10 RHS	1,100.00	1,098.93	32.39	27.71	6.921	ES
P_NRC 22-8 - P_NRC 22-8 - PLAN #1 1-20-10 RHS	1,200.00	1,197.69	33.83	28.71	6.608	SF
P_NRC 35-8 - P_NRC 35-8 - PLAN #1 1-20-10 RHS	1,000.00	1,000.00	15.67	11.44	3.699	CC, ES, SF
ROCKY MOUNTAIN FUEL CO #1 EXISTING - ROCKY MOUNTAIN FUEL CO #1 EXISTING	1,179.99	1,162.87	70.32	23.29	1.495	Level 3, CC
ROCKY MOUNTAIN FUEL CO #1 EXISTING - ROCKY MOUNTAIN FUEL CO #1 EXISTING	1,400.00	1,381.70	73.75	17.50	1.311	Level 3, ES, SF

Offset Design WELD_NRC 19-8 PAD - P_NRC 11-8 - P_NRC 11-8 - PLAN #1 1-20-10 RHS											
Survey Program: 0-MWD											
Reference Offset Semi Major Axis Distance											
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)
0.00	0.00	0.00	0.00	0.00	0.00	2.00	48.09	1.68	48.12		
100.00	100.00	100.00	100.00	0.10	0.10	2.00	48.09	1.68	48.12	47.93	0.19
200.00	200.00	200.00	200.00	0.32	0.32	2.00	48.09	1.68	48.12	47.48	0.64
300.00	300.00	300.00	300.00	0.55	0.55	2.00	48.09	1.68	48.12	47.03	1.09
400.00	400.00	400.00	400.00	0.77	0.77	2.00	48.09	1.68	48.12	46.58	1.54
500.00	500.00	500.00	500.00	0.99	0.99	2.00	48.09	1.68	48.12	46.13	1.99
600.00	600.00	600.00	600.00	1.22	1.22	2.00	48.09	1.68	48.12	45.68	2.44
700.00	700.00	700.00	700.00	1.44	1.44	2.00	48.09	1.68	48.12	45.23	2.89
800.00	800.00	800.00	800.00	1.67	1.67	2.00	48.09	1.68	48.12	44.78	3.34
900.00	900.00	900.00	900.00	1.89	1.89	2.00	48.09	1.68	48.12	44.33	3.79
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	2.00	48.09	1.68	48.12	43.89	4.24
1,100.00	1,099.98	1,099.35	1,099.33	2.34	2.33	42.46	48.63	3.32	47.44	42.77	4.67
1,200.00	1,199.84	1,198.22	1,198.06	2.56	2.54	52.65	50.22	8.19	46.39	41.29	5.10
1,214.11	1,213.91	1,212.10	1,211.91	2.60	2.57	54.65	50.53	9.14	46.36	41.19	5.17
1,300.00	1,299.45	1,296.14	1,295.62	2.79	2.76	69.32	52.84	16.22	47.98	42.43	5.55
1,400.00	1,398.70	1,392.69	1,391.46	3.04	3.00	88.31	56.44	27.22	56.26	50.26	6.00

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 12-8
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 19-8 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 12-8	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 12-8	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-20-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_NRC 19-8 PAD - P_NRC 11-8 - P_NRC 11-8 - PLAN #1 1-20-10 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	
1,500.00	1,497.47	1,487.42	1,485.07	3.32	3.26	103.96	60.95	41.00	73.29	66.84	6.45	11.356	
1,600.00	1,595.62	1,579.97	1,576.02	3.63	3.54	114.67	66.27	57.29	98.49	91.57	6.91	14.249	
1,645.72	1,640.26	1,621.46	1,616.60	3.78	3.68	118.22	68.95	65.50	112.37	105.25	7.13	15.769	
1,700.00	1,693.17	1,670.15	1,664.05	3.98	3.85	121.74	72.34	75.84	130.35	122.95	7.39	17.632	
1,800.00	1,790.64	1,758.46	1,749.63	4.35	4.20	125.96	79.11	96.56	166.42	158.52	7.90	21.057	
1,900.00	1,888.11	1,844.88	1,832.69	4.75	4.59	128.38	86.52	119.24	205.66	197.22	8.44	24.373	
2,000.00	1,985.58	1,929.33	1,913.12	5.16	5.01	129.77	94.52	143.70	247.63	238.64	8.99	27.536	
2,100.00	2,083.06	2,011.73	1,990.83	5.58	5.47	130.54	103.02	169.73	292.10	282.53	9.57	30.537	
2,200.00	2,180.53	2,092.03	2,065.77	6.01	5.96	130.93	111.98	197.13	338.89	328.74	10.15	33.378	
2,300.00	2,278.00	2,170.18	2,137.91	6.44	6.49	131.06	121.32	225.70	387.91	377.15	10.76	36.066	
2,400.00	2,375.47	2,250.65	2,211.40	6.88	7.08	131.05	131.50	256.86	438.85	427.47	11.38	38.562	
2,500.00	2,472.94	2,336.50	2,289.65	7.33	7.72	131.01	142.47	290.41	490.13	478.10	12.04	40.719	
2,600.00	2,570.41	2,422.35	2,367.91	7.78	8.39	130.99	153.44	323.96	541.42	528.71	12.70	42.618	
2,700.00	2,667.88	2,508.19	2,446.17	8.23	9.06	130.97	164.40	357.51	592.70	579.32	13.38	44.297	
2,800.00	2,765.35	2,594.04	2,524.42	8.68	9.74	130.95	175.37	391.06	643.98	629.92	14.06	45.787	
2,900.00	2,862.82	2,679.89	2,602.68	9.14	10.43	130.93	186.34	424.61	695.27	680.51	14.76	47.115	
3,000.00	2,960.29	2,765.74	2,680.94	9.60	11.12	130.92	197.30	458.16	746.55	731.10	15.45	48.307	
3,100.00	3,057.76	2,851.59	2,759.19	10.06	11.82	130.91	208.27	491.71	797.83	781.68	16.16	49.380	
3,200.00	3,155.23	2,937.44	2,837.45	10.52	12.53	130.90	219.24	525.26	849.12	832.25	16.86	50.351	
3,300.00	3,252.70	3,023.29	2,915.71	10.99	13.23	130.89	230.20	558.81	900.40	882.82	17.58	51.232	
3,400.00	3,350.17	3,109.13	2,993.96	11.45	13.94	130.88	241.17	592.36	951.68	933.39	18.29	52.034	
3,500.00	3,447.64	3,194.98	3,072.22	11.92	14.65	130.87	252.14	625.91	1,002.97	983.96	19.01	52.767	
3,600.00	3,545.11	3,280.83	3,150.48	12.38	15.37	130.87	263.10	659.46	1,054.25	1,034.52	19.73	53.439	
3,700.00	3,642.58	3,366.68	3,228.73	12.85	16.08	130.86	274.07	693.01	1,105.53	1,085.08	20.45	54.057	
3,800.00	3,740.05	3,452.53	3,306.99	13.32	16.80	130.85	285.04	726.56	1,156.82	1,135.64	21.18	54.628	
3,900.00	3,837.53	3,538.38	3,385.25	13.79	17.52	130.85	296.00	760.11	1,208.10	1,186.20	21.90	55.155	
4,000.00	3,935.00	3,624.23	3,463.50	14.26	18.23	130.84	306.97	793.66	1,259.38	1,236.75	22.63	55.645	
4,108.49	4,040.74	3,756.93	3,585.10	14.77	19.19	130.87	323.48	844.16	1,314.19	1,290.65	23.54	55.824	
4,200.00	4,130.25	3,898.26	3,717.06	15.13	20.04	131.64	339.19	892.23	1,356.09	1,331.60	24.48	55.391	
4,300.00	4,228.70	4,061.57	3,872.42	15.45	20.90	132.30	354.80	940.00	1,395.48	1,370.05	25.43	54.873	
4,400.00	4,327.70	4,233.24	4,038.54	15.72	21.66	132.79	368.22	981.05	1,427.72	1,401.41	26.32	54.255	
4,500.00	4,427.13	4,411.93	4,213.88	15.96	22.29	133.15	378.88	1,013.65	1,452.35	1,425.24	27.11	53.576	
4,600.00	4,526.87	4,595.96	4,396.32	16.15	22.78	133.38	386.28	1,036.31	1,469.00	1,441.22	27.79	52.863	
4,700.00	4,626.80	4,783.33	4,583.26	16.31	23.10	133.50	390.07	1,047.89	1,477.43	1,449.09	28.34	52.131	
4,754.20	4,681.00	4,881.08	4,681.00	16.37	23.20	96.35	390.54	1,049.32	1,478.50	1,449.92	28.58	51.732	
4,800.00	4,726.80	4,926.88	4,726.80	16.43	23.25	96.35	390.54	1,049.32	1,478.50	1,449.79	28.71	51.498	
4,900.00	4,826.80	5,026.88	4,826.80	16.57	23.34	96.35	390.54	1,049.32	1,478.50	1,449.50	29.01	50.970	
5,000.00	4,926.80	5,126.88	4,926.80	16.71	23.44	96.35	390.54	1,049.32	1,478.50	1,449.20	29.31	50.446	
5,100.00	5,026.80	5,226.88	5,026.80	16.85	23.54	96.35	390.54	1,049.32	1,478.50	1,448.89	29.61	49.926	
5,200.00	5,126.80	5,326.88	5,126.80	16.99	23.64	96.35	390.54	1,049.32	1,478.50	1,448.58	29.92	49.411	
5,300.00	5,226.80	5,426.88	5,226.80	17.13	23.74	96.35	390.54	1,049.32	1,478.50	1,448.27	30.23	48.901	
5,400.00	5,326.80	5,526.88	5,326.80	17.28	23.85	96.35	390.54	1,049.32	1,478.50	1,447.95	30.55	48.395	
5,500.00	5,426.80	5,626.88	5,426.80	17.43	23.95	96.35	390.54	1,049.32	1,478.50	1,447.63	30.87	47.895	
5,600.00	5,526.80	5,726.88	5,526.80	17.58	24.06	96.35	390.54	1,049.32	1,478.50	1,447.31	31.19	47.400	
5,700.00	5,626.80	5,826.88	5,626.80	17.73	24.17	96.35	390.54	1,049.32	1,478.50	1,446.99	31.52	46.911	
5,800.00	5,726.80	5,926.88	5,726.80	17.88	24.28	96.35	390.54	1,049.32	1,478.50	1,446.66	31.85	46.427	
5,900.00	5,826.80	6,026.88	5,826.80	18.03	24.39	96.35	390.54	1,049.32	1,478.50	1,446.33	32.18	45.949	
6,000.00	5,926.80	6,126.88	5,926.80	18.19	24.50	96.35	390.54	1,049.32	1,478.50	1,445.99	32.51	45.477	
6,100.00	6,026.80	6,226.88	6,026.80	18.35	24.62	96.35	390.54	1,049.32	1,478.50	1,445.66	32.85	45.011	
6,200.00	6,126.80	6,326.88	6,126.80	18.50	24.74	96.35	390.54	1,049.32	1,478.50	1,445.32	33.19	44.550	
6,300.00	6,226.80	6,426.88	6,226.80	18.66	24.86	96.35	390.54	1,049.32	1,478.50	1,444.97	33.53	44.096	
6,400.00	6,326.80	6,526.88	6,326.80	18.82	24.98	96.35	390.54	1,049.32	1,478.50	1,444.63	33.87	43.647	

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 12-8
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 19-8 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 12-8	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 12-8	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-20-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_NRC 19-8 PAD - P_NRC 11-8 - P_NRC 11-8 - PLAN #1 1-20-10 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
6,500.00	6,426.80	6,626.88	6,426.80	18.99	25.10	96.35	390.54	1,049.32	1,478.50	1,444.28	34.22	43.205	
6,600.00	6,526.80	6,726.88	6,526.80	19.15	25.22	96.35	390.54	1,049.32	1,478.50	1,443.93	34.57	42.768	
6,700.00	6,626.80	6,826.88	6,626.80	19.32	25.34	96.35	390.54	1,049.32	1,478.50	1,443.58	34.92	42.337	
6,800.00	6,726.80	6,926.88	6,726.80	19.48	25.47	96.35	390.54	1,049.32	1,478.50	1,443.23	35.28	41.912	
6,900.00	6,826.80	7,026.88	6,826.80	19.65	25.60	96.35	390.54	1,049.32	1,478.50	1,442.87	35.63	41.494	
7,000.00	6,926.80	7,126.88	6,926.80	19.82	25.72	96.35	390.54	1,049.32	1,478.50	1,442.51	35.99	41.081	
7,100.00	7,026.80	7,226.88	7,026.80	19.99	25.85	96.35	390.54	1,049.32	1,478.50	1,442.15	36.35	40.674	
7,200.00	7,126.80	7,326.88	7,126.80	20.16	25.98	96.35	390.54	1,049.32	1,478.50	1,441.79	36.71	40.272	
7,300.00	7,226.80	7,426.88	7,226.80	20.33	26.12	96.35	390.54	1,049.32	1,478.50	1,441.43	37.08	39.877	
7,400.00	7,326.80	7,526.88	7,326.80	20.50	26.25	96.35	390.54	1,049.32	1,478.50	1,441.06	37.44	39.487	
7,500.00	7,426.80	7,626.88	7,426.80	20.67	26.38	96.35	390.54	1,049.32	1,478.50	1,440.69	37.81	39.103	
7,600.00	7,526.80	7,726.88	7,526.80	20.85	26.52	96.35	390.54	1,049.32	1,478.50	1,440.32	38.18	38.725	
7,700.00	7,626.80	7,826.88	7,626.80	21.02	26.66	96.35	390.54	1,049.32	1,478.50	1,439.95	38.55	38.352	
7,800.00	7,726.80	7,926.88	7,726.80	21.20	26.79	96.35	390.54	1,049.32	1,478.50	1,439.58	38.92	37.985	
7,900.00	7,826.80	8,026.88	7,826.80	21.38	26.93	96.35	390.54	1,049.32	1,478.50	1,439.21	39.30	37.623	
7,944.20	7,871.00	8,071.08	7,871.00	21.46	27.00	96.35	390.54	1,049.32	1,478.50	1,439.04	39.46	37.465	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_NRC 12-8
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 19-8 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 12-8	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 12-8	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-20-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_NRC 19-8 PAD - P_NRC 13-8 - P_NRC 13-8 - PLAN #1 1-20-10 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	-178.48	-31.69	-0.84	31.70				
100.00	100.00	100.00	100.00	0.10	0.10	-178.48	-31.69	-0.84	31.70	31.51	0.19	165.941	
200.00	200.00	200.00	200.00	0.32	0.32	-178.48	-31.69	-0.84	31.70	31.06	0.64	49.491	
300.00	300.00	300.00	300.00	0.55	0.55	-178.48	-31.69	-0.84	31.70	30.61	1.09	29.082	
400.00	400.00	400.00	400.00	0.77	0.77	-178.48	-31.69	-0.84	31.70	30.16	1.54	20.591	
500.00	500.00	500.00	500.00	0.99	0.99	-178.48	-31.69	-0.84	31.70	29.71	1.99	15.938	
600.00	600.00	600.00	600.00	1.22	1.22	-178.48	-31.69	-0.84	31.70	29.26	2.44	13.000	
700.00	700.00	700.00	700.00	1.44	1.44	-178.48	-31.69	-0.84	31.70	28.81	2.89	10.977	
800.00	800.00	800.00	800.00	1.67	1.67	-178.48	-31.69	-0.84	31.70	28.37	3.34	9.498	
900.00	900.00	900.00	900.00	1.89	1.89	-178.48	-31.69	-0.84	31.70	27.92	3.79	8.371	
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	-178.48	-31.69	-0.84	31.70	27.47	4.24	7.483 CC, ES	
1,100.00	1,099.98	1,098.85	1,098.83	2.34	2.31	-142.30	-33.32	-1.34	34.73	30.08	4.65	7.466 SF	
1,200.00	1,199.84	1,197.14	1,196.98	2.56	2.49	-144.42	-38.17	-2.84	43.85	38.81	5.04	8.697	
1,300.00	1,299.45	1,294.32	1,293.80	2.79	2.67	-146.46	-46.13	-5.29	59.05	53.62	5.44	10.863	
1,400.00	1,398.70	1,389.87	1,388.66	3.04	2.88	-147.96	-57.01	-8.64	80.28	74.44	5.84	13.753	
1,500.00	1,497.47	1,483.30	1,481.01	3.32	3.11	-148.94	-70.56	-12.81	107.37	101.12	6.25	17.192	
1,600.00	1,595.62	1,574.18	1,570.35	3.63	3.37	-149.55	-86.50	-17.72	140.15	133.49	6.66	21.032	
1,645.72	1,640.26	1,614.77	1,610.07	3.78	3.50	-149.73	-94.49	-20.19	156.98	150.12	6.86	22.888	
1,700.00	1,693.17	1,662.31	1,656.42	3.98	3.66	-150.04	-104.53	-23.28	178.02	170.90	7.12	25.019	
1,800.00	1,790.64	1,748.30	1,739.82	4.35	3.99	-150.19	-124.56	-29.45	218.69	211.09	7.60	28.773	
1,900.00	1,888.11	1,832.20	1,820.54	4.75	4.34	-150.02	-146.40	-36.18	261.80	253.70	8.10	32.313	
2,000.00	1,985.58	1,913.94	1,898.52	5.16	4.73	-149.69	-169.84	-43.40	307.24	298.63	8.62	35.661	
2,100.00	2,083.06	1,999.99	1,980.04	5.58	5.18	-149.29	-196.14	-51.50	354.36	345.20	9.16	38.686	
2,200.00	2,180.53	2,088.12	2,063.52	6.01	5.67	-148.97	-223.16	-59.82	401.57	391.85	9.72	41.300	
2,300.00	2,278.00	2,176.26	2,147.00	6.44	6.17	-148.71	-250.18	-68.15	448.79	438.49	10.30	43.585	
2,400.00	2,375.47	2,264.39	2,230.47	6.88	6.68	-148.50	-277.20	-76.47	496.01	485.13	10.88	45.592	
2,500.00	2,472.94	2,352.53	2,313.95	7.33	7.20	-148.33	-304.22	-84.79	543.23	531.77	11.47	47.364	
2,600.00	2,570.41	2,440.66	2,397.43	7.78	7.73	-148.19	-331.24	-93.12	590.46	578.40	12.07	48.937	
2,700.00	2,667.88	2,528.80	2,480.91	8.23	8.26	-148.07	-358.26	-101.44	637.70	625.03	12.67	50.340	
2,800.00	2,765.35	2,616.93	2,564.38	8.68	8.80	-147.96	-385.28	-109.76	684.93	671.66	13.27	51.597	
2,900.00	2,862.82	2,705.07	2,647.86	9.14	9.35	-147.87	-412.30	-118.09	732.17	718.28	13.89	52.728	
3,000.00	2,960.29	2,793.20	2,731.34	9.60	9.89	-147.79	-439.32	-126.41	779.40	764.90	14.50	53.749	
3,100.00	3,057.76	2,881.34	2,814.82	10.06	10.44	-147.72	-466.34	-134.73	826.64	811.52	15.12	54.675	
3,200.00	3,155.23	2,969.47	2,898.29	10.52	10.99	-147.66	-493.35	-143.06	873.88	858.14	15.74	55.519	
3,300.00	3,252.70	3,057.61	2,981.77	10.99	11.55	-147.60	-520.37	-151.38	921.12	904.75	16.36	56.290	
3,400.00	3,350.17	3,145.74	3,065.25	11.45	12.10	-147.55	-547.39	-159.70	968.36	951.37	16.99	56.997	
3,500.00	3,447.64	3,233.88	3,148.73	11.92	12.66	-147.50	-574.41	-168.03	1,015.60	997.98	17.62	57.647	
3,600.00	3,545.11	3,322.01	3,232.20	12.38	13.22	-147.46	-601.43	-176.35	1,062.84	1,044.59	18.25	58.247	
3,700.00	3,642.58	3,410.15	3,315.68	12.85	13.78	-147.42	-628.45	-184.67	1,110.08	1,091.20	18.88	58.802	
3,800.00	3,740.05	3,498.29	3,399.16	13.32	14.34	-147.38	-655.47	-193.00	1,157.32	1,137.81	19.51	59.316	
3,900.00	3,837.53	3,586.42	3,482.64	13.79	14.90	-147.35	-682.49	-201.32	1,204.57	1,184.42	20.15	59.794	
4,000.00	3,935.00	3,674.56	3,566.11	14.26	15.47	-147.32	-709.51	-209.64	1,251.81	1,231.03	20.78	60.239	
4,108.49	4,040.74	3,770.17	3,656.68	14.77	16.08	-147.29	-738.82	-218.67	1,303.06	1,281.59	21.47	60.689	
4,200.00	4,130.25	3,851.39	3,733.60	15.13	16.60	-147.74	-763.72	-226.34	1,345.20	1,323.06	22.14	60.755	
4,300.00	4,228.70	3,989.58	3,865.12	15.45	17.28	-148.05	-804.23	-238.82	1,387.69	1,364.77	22.92	60.550	
4,400.00	4,327.70	4,160.23	4,030.05	15.72	17.96	-148.24	-845.99	-251.69	1,422.81	1,399.10	23.71	60.017	
4,500.00	4,427.13	4,339.11	4,205.41	15.96	18.56	-148.38	-879.61	-262.05	1,449.77	1,425.33	24.44	59.320	
4,600.00	4,526.87	4,524.32	4,388.92	16.15	19.05	-148.46	-903.34	-269.35	1,468.14	1,443.05	25.09	58.505	
4,700.00	4,626.80	4,713.56	4,577.67	16.31	19.40	-148.50	-915.82	-273.20	1,477.60	1,451.95	25.65	57.603	
4,754.20	4,681.00	4,816.91	4,681.00	16.37	19.52	174.32	-917.60	-273.75	1,478.94	1,453.03	25.91	57.081	
4,800.00	4,726.80	4,862.71	4,726.80	16.43	19.57	174.32	-917.60	-273.75	1,478.94	1,452.89	26.05	56.772	
4,900.00	4,826.80	4,962.71	4,826.80	16.57	19.67	174.32	-917.60	-273.75	1,478.94	1,452.56	26.38	56.069	

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 12-8
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 19-8 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 12-8	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 12-8	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-20-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_NRC 19-8 PAD - P_NRC 13-8 - P_NRC 13-8 - PLAN #1 1-20-10 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	4,926.80	5,062.71	4,926.80	16.71	19.77	174.32	-917.60	-273.75	1,478.94	1,452.24	26.71	55.380	
5,100.00	5,026.80	5,162.71	5,026.80	16.85	19.88	174.32	-917.60	-273.75	1,478.94	1,451.90	27.04	54.700	
5,200.00	5,126.80	5,262.71	5,126.80	16.99	19.98	174.32	-917.60	-273.75	1,478.94	1,451.57	27.37	54.029	
5,300.00	5,226.80	5,362.71	5,226.80	17.13	20.09	174.32	-917.60	-273.75	1,478.94	1,451.23	27.71	53.369	
5,400.00	5,326.80	5,462.71	5,326.80	17.28	20.20	174.32	-917.60	-273.75	1,478.94	1,450.89	28.05	52.719	
5,500.00	5,426.80	5,562.71	5,426.80	17.43	20.31	174.32	-917.60	-273.75	1,478.94	1,450.54	28.40	52.080	
5,600.00	5,526.80	5,662.71	5,526.80	17.58	20.42	174.32	-917.60	-273.75	1,478.94	1,450.20	28.75	51.450	
5,700.00	5,626.80	5,762.71	5,626.80	17.73	20.53	174.32	-917.60	-273.75	1,478.94	1,449.85	29.10	50.830	
5,800.00	5,726.80	5,862.71	5,726.80	17.88	20.65	174.32	-917.60	-273.75	1,478.94	1,449.49	29.45	50.221	
5,900.00	5,826.80	5,962.71	5,826.80	18.03	20.77	174.32	-917.60	-273.75	1,478.94	1,449.14	29.80	49.622	
6,000.00	5,926.80	6,062.71	5,926.80	18.19	20.89	174.32	-917.60	-273.75	1,478.94	1,448.78	30.16	49.033	
6,100.00	6,026.80	6,162.71	6,026.80	18.35	21.01	174.32	-917.60	-273.75	1,478.94	1,448.42	30.52	48.454	
6,200.00	6,126.80	6,262.71	6,126.80	18.50	21.13	174.32	-917.60	-273.75	1,478.94	1,448.06	30.89	47.885	
6,300.00	6,226.80	6,362.71	6,226.80	18.66	21.25	174.32	-917.60	-273.75	1,478.94	1,447.69	31.25	47.325	
6,400.00	6,326.80	6,462.71	6,326.80	18.82	21.38	174.32	-917.60	-273.75	1,478.94	1,447.32	31.62	46.776	
6,500.00	6,426.80	6,562.71	6,426.80	18.99	21.51	174.32	-917.60	-273.75	1,478.94	1,446.95	31.99	46.236	
6,600.00	6,526.80	6,662.71	6,526.80	19.15	21.64	174.32	-917.60	-273.75	1,478.94	1,446.58	32.36	45.705	
6,700.00	6,626.80	6,762.71	6,626.80	19.32	21.77	174.32	-917.60	-273.75	1,478.94	1,446.21	32.73	45.184	
6,800.00	6,726.80	6,862.71	6,726.80	19.48	21.90	174.32	-917.60	-273.75	1,478.94	1,445.83	33.11	44.672	
6,900.00	6,826.80	6,962.71	6,826.80	19.65	22.03	174.32	-917.60	-273.75	1,478.94	1,445.46	33.48	44.169	
7,000.00	6,926.80	7,062.71	6,926.80	19.82	22.17	174.32	-917.60	-273.75	1,478.94	1,445.08	33.86	43.675	
7,100.00	7,026.80	7,162.71	7,026.80	19.99	22.31	174.32	-917.60	-273.75	1,478.94	1,444.70	34.24	43.189	
7,200.00	7,126.80	7,262.71	7,126.80	20.16	22.44	174.32	-917.60	-273.75	1,478.94	1,444.32	34.63	42.713	
7,300.00	7,226.80	7,362.71	7,226.80	20.33	22.58	174.32	-917.60	-273.75	1,478.94	1,443.93	35.01	42.245	
7,400.00	7,326.80	7,462.71	7,326.80	20.50	22.73	174.32	-917.60	-273.75	1,478.94	1,443.55	35.39	41.785	
7,500.00	7,426.80	7,562.71	7,426.80	20.67	22.87	174.32	-917.60	-273.75	1,478.94	1,443.16	35.78	41.333	
7,600.00	7,526.80	7,662.71	7,526.80	20.85	23.01	174.32	-917.60	-273.75	1,478.94	1,442.77	36.17	40.889	
7,700.00	7,626.80	7,762.71	7,626.80	21.02	23.16	174.32	-917.60	-273.75	1,478.94	1,442.38	36.56	40.454	
7,800.00	7,726.80	7,862.71	7,726.80	21.20	23.30	174.32	-917.60	-273.75	1,478.94	1,441.99	36.95	40.026	
7,900.00	7,826.80	7,962.71	7,826.80	21.38	23.45	174.32	-917.60	-273.75	1,478.94	1,441.60	37.34	39.605	
7,944.20	7,871.00	8,006.91	7,871.00	21.46	23.52	174.32	-917.60	-273.75	1,478.94	1,441.43	37.52	39.422	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_NRC 12-8
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 19-8 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 12-8	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 12-8	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-20-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_NRC 19-8 PAD - P_NRC 14-8 - P_NRC 14-8 - PLAN #1 1-20-10 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	
0.00	0.00	0.00	0.00	0.00	0.00	2.00	16.02	0.56	16.03				
100.00	100.00	100.00	100.00	0.10	0.10	2.00	16.02	0.56	16.03	15.84	0.19	83.924	
200.00	200.00	200.00	200.00	0.32	0.32	2.00	16.02	0.56	16.03	15.39	0.64	25.030	
300.00	300.00	300.32	300.30	0.55	0.53	7.15	14.85	1.86	14.97	13.89	1.07	13.955	
400.00	400.00	400.40	400.23	0.77	0.74	26.95	11.33	5.76	12.71	11.20	1.51	8.412	
443.07	443.07	443.36	443.07	0.87	0.85	42.11	9.10	8.22	12.26	10.56	1.71	7.184 CC, ES	
500.00	500.00	500.00	499.45	0.99	0.99	65.74	5.50	12.20	13.40	11.44	1.95	6.866 SF	
600.00	600.00	598.85	597.56	1.22	1.28	96.92	-2.56	21.12	21.42	19.03	2.39	8.977	
700.00	700.00	696.77	694.28	1.44	1.61	111.52	-12.79	32.43	35.33	32.47	2.85	12.375	
800.00	800.00	793.53	789.29	1.67	1.98	118.57	-25.06	46.01	53.47	50.12	3.35	15.946	
900.00	900.00	888.94	882.32	1.89	2.41	122.46	-39.26	61.72	75.25	71.37	3.88	19.400	
1,000.00	1,000.00	982.81	973.11	2.12	2.88	124.83	-55.25	79.41	100.41	95.98	4.43	22.661	
1,100.00	1,099.98	1,074.48	1,060.96	2.34	3.40	163.59	-72.78	98.81	130.37	125.67	4.70	27.733	
1,200.00	1,199.84	1,163.05	1,145.02	2.56	3.96	164.89	-91.51	119.52	166.55	161.41	5.14	32.408	
1,300.00	1,299.45	1,248.09	1,224.87	2.79	4.54	165.90	-111.11	141.21	208.69	203.13	5.56	37.515	
1,400.00	1,398.70	1,329.24	1,300.22	3.04	5.13	166.68	-131.30	163.54	256.52	250.55	5.97	42.972	
1,500.00	1,497.47	1,411.26	1,375.68	3.32	5.77	167.32	-152.86	187.39	309.30	302.92	6.37	48.530	
1,600.00	1,595.62	1,494.10	1,451.83	3.63	6.43	167.84	-174.73	211.59	365.16	358.38	6.77	53.925	
1,645.72	1,640.26	1,531.32	1,486.03	3.78	6.73	168.04	-184.56	222.46	391.64	384.69	6.95	56.353	
1,700.00	1,693.17	1,575.26	1,526.43	3.98	7.08	168.40	-196.16	235.30	423.45	416.25	7.20	58.816	
1,800.00	1,790.64	1,656.21	1,600.83	4.35	7.74	168.94	-217.54	258.95	482.06	474.40	7.67	62.884	
1,900.00	1,888.11	1,737.15	1,675.24	4.75	8.39	169.36	-238.92	282.60	540.70	532.56	8.14	66.435	
2,000.00	1,985.58	1,818.10	1,749.64	5.16	9.05	169.70	-260.29	306.24	599.35	590.74	8.62	69.556	
2,100.00	2,083.06	1,899.05	1,824.05	5.58	9.71	169.98	-281.67	329.89	658.02	648.92	9.10	72.315	
2,200.00	2,180.53	1,979.99	1,898.46	6.01	10.37	170.22	-303.04	353.54	716.69	707.10	9.59	74.764	
2,300.00	2,278.00	2,060.94	1,972.86	6.44	11.03	170.41	-324.42	377.19	775.37	765.29	10.08	76.954	
2,400.00	2,375.47	2,141.89	2,047.27	6.88	11.69	170.58	-345.79	400.83	834.05	823.48	10.57	78.923	
2,500.00	2,472.94	2,222.84	2,121.68	7.33	12.35	170.73	-367.17	424.48	892.74	881.68	11.06	80.702	
2,600.00	2,570.41	2,303.78	2,196.08	7.78	13.02	170.86	-388.55	448.13	951.43	939.87	11.56	82.314	
2,700.00	2,667.88	2,384.73	2,270.49	8.23	13.68	170.98	-409.92	471.78	1,010.13	998.07	12.06	83.781	
2,800.00	2,765.35	2,465.68	2,344.89	8.68	14.35	171.08	-431.30	495.42	1,068.82	1,056.27	12.56	85.122	
2,900.00	2,862.82	2,546.62	2,419.30	9.14	15.01	171.17	-452.67	519.07	1,127.52	1,114.46	13.06	86.351	
3,000.00	2,960.29	2,627.57	2,493.71	9.60	15.68	171.25	-474.05	542.72	1,186.22	1,172.66	13.56	87.483	
3,100.00	3,057.76	2,708.52	2,568.11	10.06	16.34	171.33	-495.42	566.37	1,244.92	1,230.86	14.06	88.528	
3,200.00	3,155.23	2,789.46	2,642.52	10.52	17.01	171.39	-516.80	590.02	1,303.63	1,289.06	14.57	89.494	
3,300.00	3,252.70	2,870.41	2,716.93	10.99	17.68	171.46	-538.18	613.66	1,362.33	1,347.26	15.07	90.391	
3,400.00	3,350.17	2,951.36	2,791.33	11.45	18.34	171.51	-559.55	637.31	1,421.04	1,405.46	15.58	91.225	
3,500.00	3,447.64	3,032.31	2,865.74	11.92	19.01	171.57	-580.93	660.96	1,479.74	1,463.66	16.08	92.003	
3,600.00	3,545.11	3,113.25	2,940.14	12.38	19.68	171.61	-602.30	684.61	1,538.45	1,521.86	16.59	92.731	
3,700.00	3,642.58	3,194.20	3,014.55	12.85	20.34	171.66	-623.68	708.25	1,597.16	1,580.06	17.10	93.412	
3,800.00	3,740.05	3,275.15	3,088.96	13.32	21.01	171.70	-645.05	731.90	1,655.87	1,638.26	17.61	94.051	
3,900.00	3,837.53	3,356.09	3,163.36	13.79	21.68	171.74	-666.43	755.55	1,714.58	1,696.46	18.11	94.652	
4,000.00	3,935.00	3,437.04	3,237.77	14.26	22.35	171.78	-687.81	779.20	1,773.28	1,754.66	18.62	95.218	
4,108.49	4,040.74	3,524.86	3,318.49	14.77	23.07	171.81	-710.99	804.85	1,836.98	1,817.80	19.18	95.795	
4,200.00	4,130.25	3,599.77	3,387.35	15.13	23.69	172.01	-730.78	826.74	1,889.52	1,869.71	19.81	95.370	
4,300.00	4,228.70	3,683.49	3,464.31	15.45	24.38	172.20	-752.89	851.19	1,944.20	1,923.73	20.47	94.972	
4,400.00	4,327.70	3,781.75	3,554.65	15.72	25.17	172.35	-778.80	879.86	1,995.94	1,974.79	21.15	94.371	
4,500.00	4,427.13	4,085.23	3,840.07	15.96	26.86	172.43	-847.67	956.05	2,039.51	2,017.18	22.33	91.346	
4,600.00	4,526.87	4,421.38	4,166.89	16.15	28.18	172.47	-899.86	1,013.79	2,069.50	2,046.05	23.45	88.253	
4,700.00	4,626.80	4,779.71	4,522.72	16.31	28.97	172.49	-926.84	1,043.63	2,084.32	2,059.91	24.41	85.387	
4,754.20	4,681.00	4,938.05	4,681.00	16.37	29.12	135.33	-929.24	1,046.29	2,085.81	2,061.02	24.79	84.150	
4,800.00	4,726.80	4,983.85	4,726.80	16.43	29.15	135.33	-929.24	1,046.29	2,085.81	2,060.87	24.93	83.654	

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 12-8
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 19-8 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 12-8	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 12-8	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-20-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_NRC 19-8 PAD - P_NRC 14-8 - P_NRC 14-8 - PLAN #1 1-20-10 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	4,826.80	5,083.85	4,826.80	16.57	29.22	135.33	-929.24	1,046.29	2,085.81	2,060.54	25.27	82.547	
5,000.00	4,926.80	5,183.85	4,926.80	16.71	29.29	135.33	-929.24	1,046.29	2,085.81	2,060.20	25.61	81.460	
5,100.00	5,026.80	5,283.85	5,026.80	16.85	29.36	135.33	-929.24	1,046.29	2,085.81	2,059.86	25.95	80.392	
5,200.00	5,126.80	5,383.85	5,126.80	16.99	29.44	135.33	-929.24	1,046.29	2,085.81	2,059.52	26.29	79.342	
5,300.00	5,226.80	5,483.85	5,226.80	17.13	29.51	135.33	-929.24	1,046.29	2,085.81	2,059.17	26.63	78.311	
5,400.00	5,326.80	5,583.85	5,326.80	17.28	29.59	135.33	-929.24	1,046.29	2,085.81	2,058.82	26.98	77.298	
5,500.00	5,426.80	5,683.85	5,426.80	17.43	29.67	135.33	-929.24	1,046.29	2,085.81	2,058.47	27.34	76.303	
5,600.00	5,526.80	5,783.85	5,526.80	17.58	29.75	135.33	-929.24	1,046.29	2,085.81	2,058.11	27.69	75.326	
5,700.00	5,626.80	5,883.85	5,626.80	17.73	29.83	135.33	-929.24	1,046.29	2,085.81	2,057.76	28.05	74.367	
5,800.00	5,726.80	5,983.85	5,726.80	17.88	29.91	135.33	-929.24	1,046.29	2,085.81	2,057.40	28.41	73.425	
5,900.00	5,826.80	6,083.85	5,826.80	18.03	30.00	135.33	-929.24	1,046.29	2,085.81	2,057.04	28.77	72.502	
6,000.00	5,926.80	6,183.85	5,926.80	18.19	30.08	135.33	-929.24	1,046.29	2,085.81	2,056.67	29.13	71.595	
6,100.00	6,026.80	6,283.85	6,026.80	18.35	30.17	135.33	-929.24	1,046.29	2,085.81	2,056.31	29.50	70.706	
6,200.00	6,126.80	6,383.85	6,126.80	18.50	30.26	135.33	-929.24	1,046.29	2,085.81	2,055.94	29.87	69.833	
6,300.00	6,226.80	6,483.85	6,226.80	18.66	30.35	135.33	-929.24	1,046.29	2,085.81	2,055.57	30.24	68.977	
6,400.00	6,326.80	6,583.85	6,326.80	18.82	30.44	135.33	-929.24	1,046.29	2,085.81	2,055.19	30.61	68.137	
6,500.00	6,426.80	6,683.85	6,426.80	18.99	30.53	135.33	-929.24	1,046.29	2,085.81	2,054.82	30.99	67.313	
6,600.00	6,526.80	6,783.85	6,526.80	19.15	30.62	135.33	-929.24	1,046.29	2,085.81	2,054.44	31.36	66.505	
6,700.00	6,626.80	6,883.85	6,626.80	19.32	30.72	135.33	-929.24	1,046.29	2,085.81	2,054.06	31.74	65.713	
6,800.00	6,726.80	6,983.85	6,726.80	19.48	30.82	135.33	-929.24	1,046.29	2,085.81	2,053.68	32.12	64.935	
6,900.00	6,826.80	7,083.85	6,826.80	19.65	30.91	135.33	-929.24	1,046.29	2,085.81	2,053.30	32.50	64.172	
7,000.00	6,926.80	7,183.85	6,926.80	19.82	31.01	135.33	-929.24	1,046.29	2,085.81	2,052.92	32.89	63.424	
7,100.00	7,026.80	7,283.85	7,026.80	19.99	31.11	135.33	-929.24	1,046.29	2,085.81	2,052.53	33.27	62.690	
7,200.00	7,126.80	7,383.85	7,126.80	20.16	31.22	135.33	-929.24	1,046.29	2,085.81	2,052.15	33.66	61.970	
7,300.00	7,226.80	7,483.85	7,226.80	20.33	31.32	135.33	-929.24	1,046.29	2,085.81	2,051.76	34.05	61.264	
7,400.00	7,326.80	7,583.85	7,326.80	20.50	31.42	135.33	-929.24	1,046.29	2,085.81	2,051.37	34.44	60.571	
7,500.00	7,426.80	7,683.85	7,426.80	20.67	31.53	135.33	-929.24	1,046.29	2,085.81	2,050.98	34.83	59.891	
7,600.00	7,526.80	7,783.85	7,526.80	20.85	31.64	135.33	-929.24	1,046.29	2,085.81	2,050.59	35.22	59.224	
7,700.00	7,626.80	7,883.85	7,626.80	21.02	31.75	135.33	-929.24	1,046.29	2,085.81	2,050.19	35.61	58.570	
7,800.00	7,726.80	7,983.85	7,726.80	21.20	31.86	135.33	-929.24	1,046.29	2,085.81	2,049.80	36.01	57.928	
7,900.00	7,826.80	8,083.85	7,826.80	21.38	31.97	135.33	-929.24	1,046.29	2,085.81	2,049.40	36.40	57.298	
7,944.20	7,871.00	8,128.05	7,871.00	21.46	32.02	135.33	-929.24	1,046.29	2,085.81	2,049.23	36.58	57.023	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_NRC 12-8
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 19-8 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 12-8	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 12-8	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-20-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_NRC 19-8 PAD - P_NRC 22-8 - P_NRC 22-8 - PLAN #1 1-20-10 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	2.00	32.05	1.12	32.07					
100.00	100.00	100.00	100.00	0.10	0.10	2.00	32.05	1.12	32.07	31.88	0.19	167.870		
200.00	200.00	200.00	200.00	0.32	0.32	2.00	32.05	1.12	32.07	31.43	0.64	50.066		
300.00	300.00	300.00	300.00	0.55	0.55	2.00	32.05	1.12	32.07	30.98	1.09	29.420		
400.00	400.00	400.00	400.00	0.77	0.77	2.00	32.05	1.12	32.07	30.53	1.54	20.831		
500.00	500.00	500.00	500.00	0.99	0.99	2.00	32.05	1.12	32.07	30.08	1.99	16.123		
600.00	600.00	600.00	600.00	1.22	1.22	2.00	32.05	1.12	32.07	29.63	2.44	13.151		
700.00	700.00	700.00	700.00	1.44	1.44	2.00	32.05	1.12	32.07	29.18	2.89	11.104		
800.00	800.00	800.00	800.00	1.67	1.67	2.00	32.05	1.12	32.07	28.73	3.34	9.609		
900.00	900.00	900.00	900.00	1.89	1.89	2.00	32.05	1.12	32.07	28.28	3.79	8.468		
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	2.00	32.05	1.12	32.07	27.83	4.24	7.570 CC		
1,100.00	1,099.98	1,098.93	1,098.91	2.34	2.34	42.12	33.64	1.75	32.39	27.71	4.68	6.921 ES		
1,200.00	1,199.84	1,197.69	1,197.53	2.56	2.56	50.49	38.39	3.64	33.83	28.71	5.12	6.608 SF		
1,300.00	1,299.45	1,296.10	1,295.58	2.79	2.79	62.46	46.26	6.77	37.66	32.09	5.57	6.762		
1,400.00	1,398.70	1,394.01	1,392.77	3.04	3.02	74.93	57.19	11.12	45.17	39.13	6.04	7.478		
1,500.00	1,497.47	1,491.26	1,488.86	3.32	3.28	85.41	71.09	16.66	56.96	50.42	6.54	8.704		
1,600.00	1,595.62	1,587.69	1,583.58	3.63	3.57	93.22	87.86	23.33	72.99	65.89	7.10	10.286		
1,645.72	1,640.26	1,631.53	1,626.43	3.78	3.72	96.01	96.46	26.76	81.65	74.28	7.37	11.083		
1,700.00	1,693.17	1,684.54	1,678.17	3.98	3.90	98.97	107.18	31.02	92.48	84.77	7.71	11.999		
1,800.00	1,790.64	1,782.19	1,773.48	4.35	4.25	102.93	126.92	38.88	112.89	104.53	8.36	13.498		
1,900.00	1,888.11	1,879.84	1,868.79	4.75	4.62	105.68	146.65	46.73	133.66	124.61	9.05	14.769		
2,000.00	1,985.58	1,977.49	1,964.10	5.16	5.00	107.68	166.39	54.59	154.64	144.88	9.76	15.843		
2,100.00	2,083.06	2,075.14	2,059.41	5.58	5.39	109.21	186.13	62.44	175.76	165.27	10.49	16.754		
2,200.00	2,180.53	2,172.79	2,154.72	6.01	5.79	110.41	205.87	70.30	196.98	185.74	11.24	17.530		
2,300.00	2,278.00	2,270.44	2,250.03	6.44	6.20	111.37	225.60	78.16	218.26	206.27	11.99	18.197		
2,400.00	2,375.47	2,368.09	2,345.34	6.88	6.61	112.17	245.34	86.01	239.59	226.83	12.76	18.772		
2,500.00	2,472.94	2,465.74	2,440.65	7.33	7.03	112.83	265.08	93.87	260.96	247.42	13.54	19.273		
2,600.00	2,570.41	2,563.38	2,535.96	7.78	7.45	113.39	284.81	101.72	282.36	268.03	14.32	19.713		
2,700.00	2,667.88	2,661.03	2,631.28	8.23	7.87	113.88	304.55	109.58	303.77	288.66	15.11	20.100		
2,800.00	2,765.35	2,758.68	2,726.59	8.68	8.30	114.30	324.29	117.43	325.21	309.30	15.91	20.443		
2,900.00	2,862.82	2,856.33	2,821.90	9.14	8.73	114.67	344.03	125.29	346.66	329.95	16.71	20.749		
3,000.00	2,960.29	2,953.98	2,917.21	9.60	9.16	114.99	363.76	133.15	368.12	350.61	17.51	21.023		
3,100.00	3,057.76	3,051.63	3,012.52	10.06	9.59	115.28	383.50	141.00	389.60	371.28	18.32	21.271		
3,200.00	3,155.23	3,149.28	3,107.83	10.52	10.02	115.54	403.24	148.86	411.08	391.95	19.13	21.494		
3,300.00	3,252.70	3,246.93	3,203.14	10.99	10.46	115.77	422.98	156.71	432.57	412.63	19.94	21.697		
3,400.00	3,350.17	3,344.58	3,298.45	11.45	10.89	115.99	442.71	164.57	454.06	433.31	20.75	21.883		
3,500.00	3,447.64	3,442.23	3,393.76	11.92	11.33	116.18	462.45	172.43	475.56	454.00	21.57	22.052		
3,600.00	3,545.11	3,539.88	3,489.07	12.38	11.77	116.35	482.19	180.28	497.07	474.69	22.38	22.208		
3,700.00	3,642.58	3,637.53	3,584.38	12.85	12.21	116.51	501.93	188.14	518.58	495.38	23.20	22.351		
3,800.00	3,740.05	3,735.18	3,679.69	13.32	12.64	116.66	521.66	195.99	540.09	516.07	24.02	22.484		
3,900.00	3,837.53	3,832.83	3,775.00	13.79	13.08	116.80	541.40	203.85	561.61	536.76	24.84	22.607		
4,000.00	3,935.00	3,930.48	3,870.31	14.26	13.52	116.93	561.14	211.70	583.13	557.46	25.66	22.721		
4,108.49	4,040.74	4,036.41	3,973.71	14.77	14.00	117.05	582.55	220.23	606.47	579.92	26.56	22.836		
4,200.00	4,130.25	4,125.92	4,061.08	15.13	14.41	117.38	600.64	227.43	625.52	598.22	27.30	22.915		
4,300.00	4,228.70	4,223.98	4,156.79	15.45	14.85	117.44	620.46	235.32	644.83	616.80	28.03	23.006		
4,400.00	4,327.70	4,322.19	4,252.65	15.72	15.30	117.21	640.31	243.22	662.60	633.87	28.72	23.068		
4,500.00	4,427.13	4,420.43	4,348.54	15.96	15.74	116.72	660.17	251.12	678.88	649.51	29.37	23.111		
4,600.00	4,526.87	4,518.59	4,444.34	16.15	16.19	115.99	680.01	259.02	693.78	663.81	29.98	23.143		
4,700.00	4,626.80	4,616.53	4,539.94	16.31	16.63	115.03	699.81	266.90	707.43	676.90	30.53	23.172		
4,754.20	4,681.00	4,669.49	4,591.63	16.37	16.87	77.25	710.51	271.16	714.36	683.56	30.80	23.190		
4,800.00	4,726.80	4,714.19	4,635.26	16.43	17.08	76.61	719.55	274.75	720.14	689.11	31.03	23.209		
4,900.00	4,826.80	4,811.80	4,730.53	16.57	17.52	75.24	739.27	282.61	733.06	701.55	31.52	23.257		

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 12-8
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 19-8 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 12-8	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 12-8	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-20-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_NRC 19-8 PAD - P_NRC 22-8 - P_NRC 22-8 - PLAN #1 1-20-10 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	4,926.80	4,909.40	4,825.79	16.71	17.96	73.91	759.00	290.46	746.40	714.40	32.00	23.326	
5,100.00	5,026.80	5,007.01	4,921.06	16.85	18.41	72.64	778.73	298.31	760.12	727.66	32.47	23.412	
5,200.00	5,126.80	5,104.61	5,016.33	16.99	18.85	71.40	798.46	306.16	774.21	741.29	32.93	23.514	
5,300.00	5,226.80	5,202.22	5,111.60	17.13	19.30	70.21	818.19	314.02	788.65	755.28	33.38	23.630	
5,400.00	5,326.80	5,299.82	5,206.86	17.28	19.74	69.07	837.92	321.87	803.42	769.61	33.82	23.758	
5,500.00	5,426.80	5,397.43	5,302.13	17.43	20.19	67.96	857.65	329.72	818.50	784.25	34.25	23.896	
5,600.00	5,526.80	5,495.03	5,397.40	17.58	20.63	66.89	877.37	337.57	833.88	799.20	34.68	24.044	
5,700.00	5,626.80	5,592.64	5,492.66	17.73	21.08	65.86	897.10	345.42	849.53	814.43	35.10	24.200	
5,800.00	5,726.80	5,690.24	5,587.93	17.88	21.52	64.87	916.83	353.28	865.45	829.93	35.52	24.364	
5,900.00	5,826.80	5,787.85	5,683.20	18.03	21.97	63.91	936.56	361.13	881.62	845.68	35.94	24.533	
6,000.00	5,926.80	5,898.47	5,791.28	18.19	22.44	62.89	958.44	369.84	897.72	861.36	36.36	24.690	
6,100.00	6,026.80	6,028.15	5,918.91	18.35	22.84	61.94	979.73	378.31	911.21	874.46	36.75	24.798	
6,200.00	6,126.80	6,159.69	6,049.30	18.50	23.19	61.24	995.81	384.71	921.34	884.22	37.12	24.821	
6,300.00	6,226.80	6,292.57	6,181.68	18.66	23.47	60.79	1,006.39	388.92	927.99	890.51	37.48	24.757	
6,400.00	6,326.80	6,426.22	6,315.21	18.82	23.67	60.59	1,011.27	390.86	931.05	893.21	37.83	24.611	
6,500.00	6,426.80	6,537.81	6,426.80	18.99	23.81	60.57	1,011.61	391.00	931.26	893.10	38.15	24.408	
6,600.00	6,526.80	6,637.81	6,526.80	19.15	23.94	60.57	1,011.61	391.00	931.26	892.78	38.47	24.205	
6,700.00	6,626.80	6,737.81	6,626.80	19.32	24.07	60.57	1,011.61	391.00	931.26	892.46	38.80	24.003	
6,800.00	6,726.80	6,837.81	6,726.80	19.48	24.20	60.57	1,011.61	391.00	931.26	892.14	39.12	23.804	
6,900.00	6,826.80	6,937.81	6,826.80	19.65	24.33	60.57	1,011.61	391.00	931.26	891.81	39.45	23.606	
7,000.00	6,926.80	7,037.81	6,926.80	19.82	24.46	60.57	1,011.61	391.00	931.26	891.48	39.78	23.411	
7,100.00	7,026.80	7,137.81	7,026.80	19.99	24.59	60.57	1,011.61	391.00	931.26	891.15	40.11	23.217	
7,200.00	7,126.80	7,237.81	7,126.80	20.16	24.73	60.57	1,011.61	391.00	931.26	890.81	40.45	23.025	
7,300.00	7,226.80	7,337.81	7,226.80	20.33	24.86	60.57	1,011.61	391.00	931.26	890.48	40.78	22.835	
7,400.00	7,326.80	7,437.81	7,326.80	20.50	25.00	60.57	1,011.61	391.00	931.26	890.14	41.12	22.647	
7,500.00	7,426.80	7,537.81	7,426.80	20.67	25.14	60.57	1,011.61	391.00	931.26	889.80	41.46	22.460	
7,600.00	7,526.80	7,637.81	7,526.80	20.85	25.28	60.57	1,011.61	391.00	931.26	889.45	41.81	22.276	
7,700.00	7,626.80	7,737.81	7,626.80	21.02	25.42	60.57	1,011.61	391.00	931.26	889.11	42.15	22.094	
7,800.00	7,726.80	7,837.81	7,726.80	21.20	25.56	60.57	1,011.61	391.00	931.26	888.76	42.50	21.913	
7,900.00	7,826.80	7,937.81	7,826.80	21.38	25.71	60.57	1,011.61	391.00	931.26	888.41	42.85	21.735	
7,944.20	7,871.00	7,982.01	7,871.00	21.46	25.77	60.57	1,011.61	391.00	931.26	888.26	43.00	21.657	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_NRC 12-8
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 19-8 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 12-8	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 12-8	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-20-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_NRC 19-8 PAD - P_NRC 35-8 - P_NRC 35-8 - PLAN #1 1-20-10 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	-177.95	-15.66	-0.56	15.67				
100.00	100.00	100.00	100.00	0.10	0.10	-177.95	-15.66	-0.56	15.67	15.48	0.19	82.040	
200.00	200.00	200.00	200.00	0.32	0.32	-177.95	-15.66	-0.56	15.67	15.03	0.64	24.468	
300.00	300.00	300.00	300.00	0.55	0.55	-177.95	-15.66	-0.56	15.67	14.58	1.09	14.378	
400.00	400.00	400.00	400.00	0.77	0.77	-177.95	-15.66	-0.56	15.67	14.13	1.54	10.180	
500.00	500.00	500.00	500.00	0.99	0.99	-177.95	-15.66	-0.56	15.67	13.68	1.99	7.880	
600.00	600.00	600.00	600.00	1.22	1.22	-177.95	-15.66	-0.56	15.67	13.24	2.44	6.427	
700.00	700.00	700.00	700.00	1.44	1.44	-177.95	-15.66	-0.56	15.67	12.79	2.89	5.427	
800.00	800.00	800.00	800.00	1.67	1.67	-177.95	-15.66	-0.56	15.67	12.34	3.34	4.696	
900.00	900.00	900.00	900.00	1.89	1.89	-177.95	-15.66	-0.56	15.67	11.89	3.79	4.139	
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	-177.95	-15.66	-0.56	15.67	11.44	4.24	3.699 CC, ES, SF	
1,100.00	1,099.98	1,099.36	1,099.34	2.34	2.31	-145.58	-17.33	-0.14	18.76	14.10	4.65	4.031	
1,200.00	1,199.84	1,198.03	1,197.88	2.56	2.49	-153.50	-22.30	1.12	28.43	23.39	5.04	5.641	
1,300.00	1,299.45	1,295.35	1,294.83	2.79	2.68	-158.94	-30.41	3.18	44.98	39.55	5.43	8.288	
1,400.00	1,398.70	1,390.67	1,389.46	3.04	2.88	-162.05	-41.45	5.98	68.26	62.44	5.81	11.745	
1,500.00	1,497.47	1,483.43	1,481.14	3.32	3.11	-163.83	-55.11	9.44	98.01	91.82	6.19	15.827	
1,600.00	1,595.62	1,573.11	1,569.30	3.63	3.37	-164.88	-71.05	13.48	133.98	127.41	6.57	20.391	
1,645.72	1,640.26	1,612.96	1,608.30	3.78	3.49	-165.21	-78.99	15.50	152.41	145.67	6.74	22.609	
1,700.00	1,693.17	1,659.49	1,653.68	3.98	3.65	-165.60	-88.92	18.01	175.43	168.46	6.97	25.167	
1,800.00	1,790.64	1,743.36	1,735.05	4.35	3.97	-166.00	-108.63	23.01	219.88	212.48	7.40	29.721	
1,900.00	1,888.11	1,824.82	1,813.47	4.75	4.32	-166.17	-129.97	28.42	266.85	259.02	7.83	34.079	
2,000.00	1,985.58	1,900.00	1,885.27	5.16	4.67	-166.21	-151.58	33.90	316.27	308.01	8.26	38.301	
2,100.00	2,083.06	1,980.45	1,961.42	5.58	5.10	-166.17	-176.71	40.27	367.95	359.24	8.71	42.257	
2,200.00	2,180.53	2,064.42	2,040.46	6.01	5.58	-166.10	-204.19	47.24	420.95	411.78	9.17	45.881	
2,300.00	2,278.00	2,149.21	2,120.27	6.44	6.08	-166.05	-231.95	54.28	473.96	464.31	9.65	49.113	
2,400.00	2,375.47	2,234.00	2,200.08	6.88	6.60	-166.01	-259.71	61.32	526.97	516.84	10.13	52.007	
2,500.00	2,472.94	2,318.79	2,279.89	7.33	7.13	-165.97	-287.47	68.36	579.99	569.36	10.62	54.610	
2,600.00	2,570.41	2,403.59	2,359.70	7.78	7.66	-165.94	-315.23	75.40	633.00	621.88	11.11	56.957	
2,700.00	2,667.88	2,488.38	2,439.51	8.23	8.20	-165.92	-342.99	82.44	686.01	674.40	11.61	59.080	
2,800.00	2,765.35	2,573.17	2,519.32	8.68	8.75	-165.90	-370.75	89.47	739.02	726.91	12.11	61.009	
2,900.00	2,862.82	2,657.96	2,599.12	9.14	9.30	-165.88	-398.51	96.51	792.03	779.41	12.62	62.767	
3,000.00	2,960.29	2,742.75	2,678.93	9.60	9.85	-165.86	-426.27	103.55	845.05	831.92	13.13	64.377	
3,100.00	3,057.76	2,827.55	2,758.74	10.06	10.41	-165.85	-454.03	110.59	898.06	884.42	13.64	65.853	
3,200.00	3,155.23	2,912.34	2,838.55	10.52	10.97	-165.83	-481.79	117.63	951.07	936.92	14.15	67.212	
3,300.00	3,252.70	2,997.13	2,918.36	10.99	11.54	-165.82	-509.54	124.67	1,004.08	989.42	14.67	68.465	
3,400.00	3,350.17	3,081.92	2,998.17	11.45	12.10	-165.81	-537.30	131.71	1,057.09	1,041.91	15.18	69.623	
3,500.00	3,447.64	3,166.71	3,077.98	11.92	12.67	-165.80	-565.06	138.74	1,110.11	1,094.40	15.70	70.697	
3,600.00	3,545.11	3,251.51	3,157.79	12.38	13.24	-165.80	-592.82	145.78	1,163.12	1,146.90	16.22	71.696	
3,700.00	3,642.58	3,336.30	3,237.60	12.85	13.81	-165.79	-620.58	152.82	1,216.13	1,199.39	16.74	72.627	
3,800.00	3,740.05	3,421.09	3,317.41	13.32	14.38	-165.78	-648.34	159.86	1,269.14	1,251.87	17.27	73.496	
3,900.00	3,837.53	3,505.88	3,397.22	13.79	14.95	-165.77	-676.10	166.90	1,322.16	1,304.36	17.79	74.309	
4,000.00	3,935.00	3,590.67	3,477.03	14.26	15.52	-165.77	-703.86	173.94	1,375.17	1,356.85	18.32	75.071	
4,108.49	4,040.74	3,682.66	3,563.61	14.77	16.14	-165.76	-733.97	181.57	1,432.68	1,413.79	18.89	75.844	
4,200.00	4,130.25	3,760.99	3,637.34	15.13	16.67	-166.01	-759.62	188.07	1,479.98	1,460.50	19.48	75.971	
4,300.00	4,228.70	3,848.21	3,719.44	15.45	17.26	-166.22	-788.17	195.31	1,528.87	1,508.79	20.08	76.131	
4,400.00	4,327.70	3,937.02	3,803.03	15.72	17.87	-166.38	-817.25	202.69	1,574.78	1,554.11	20.67	76.203	
4,500.00	4,427.13	4,027.32	3,888.02	15.96	18.48	-166.49	-846.81	210.18	1,617.65	1,596.42	21.23	76.201	
4,600.00	4,526.87	4,118.98	3,974.30	16.15	19.10	-166.55	-876.82	217.79	1,657.43	1,635.66	21.77	76.137	
4,700.00	4,626.80	4,211.91	4,061.76	16.31	19.73	-166.57	-907.24	225.50	1,694.09	1,671.81	22.29	76.018	
4,754.20	4,681.00	4,262.76	4,109.63	16.37	20.08	156.27	-923.89	229.73	1,712.64	1,690.09	22.55	75.933	
4,800.00	4,726.80	4,305.87	4,150.20	16.43	20.37	156.35	-938.00	233.30	1,727.92	1,705.15	22.77	75.889	
4,900.00	4,826.80	4,399.99	4,238.80	16.57	21.01	156.53	-968.81	241.12	1,761.30	1,738.04	23.26	75.733	

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 12-8
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 19-8 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 12-8	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 12-8	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-20-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_NRC 19-8 PAD - P_NRC 35-8 - P_NRC 35-8 - PLAN #1 1-20-10 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	4,926.80	4,494.12	4,327.39	16.71	21.66	156.70	-999.63	248.93	1,794.69	1,770.95	23.74	75.582	
5,100.00	5,026.80	4,588.24	4,415.98	16.85	22.30	156.87	-1,030.44	256.74	1,828.10	1,803.86	24.23	75.436	
5,200.00	5,126.80	4,682.37	4,504.57	16.99	22.94	157.03	-1,061.26	264.56	1,861.52	1,836.79	24.72	75.294	
5,300.00	5,226.80	4,776.49	4,593.17	17.13	23.58	157.18	-1,092.07	272.37	1,894.95	1,869.73	25.21	75.157	
5,400.00	5,326.80	4,870.61	4,681.76	17.28	24.23	157.33	-1,122.89	280.18	1,928.39	1,902.69	25.70	75.023	
5,500.00	5,426.80	4,964.74	4,770.35	17.43	24.87	157.48	-1,153.70	288.00	1,961.85	1,935.65	26.20	74.893	
5,600.00	5,526.80	5,058.86	4,858.95	17.58	25.51	157.62	-1,184.51	295.81	1,995.31	1,968.63	26.69	74.767	
5,700.00	5,626.80	5,152.99	4,947.54	17.73	26.16	157.75	-1,215.33	303.62	2,028.79	2,001.61	27.18	74.644	
5,800.00	5,726.80	5,247.11	5,036.13	17.88	26.80	157.88	-1,246.14	311.44	2,062.27	2,034.60	27.67	74.524	
5,900.00	5,826.80	5,341.23	5,124.73	18.03	27.44	158.01	-1,276.96	319.25	2,095.77	2,067.60	28.17	74.408	
6,000.00	5,926.80	5,435.36	5,213.32	18.19	28.09	158.13	-1,307.77	327.06	2,129.27	2,100.61	28.66	74.295	
6,100.00	6,026.80	5,529.48	5,301.91	18.35	28.73	158.25	-1,338.58	334.88	2,162.79	2,133.63	29.15	74.184	
6,200.00	6,126.80	5,623.61	5,390.51	18.50	29.38	158.37	-1,369.40	342.69	2,196.31	2,166.66	29.65	74.077	
6,300.00	6,226.80	6,024.63	5,776.08	18.66	31.12	158.74	-1,475.10	369.49	2,223.55	2,192.66	30.89	71.980	
6,400.00	6,326.80	6,461.56	6,208.94	18.82	32.16	158.91	-1,529.68	383.33	2,236.39	2,204.42	31.97	69.950	
6,500.00	6,426.80	6,679.49	6,426.80	18.99	32.39	158.93	-1,533.59	384.32	2,237.30	2,204.78	32.52	68.802	
6,600.00	6,526.80	6,779.49	6,526.80	19.15	32.47	158.93	-1,533.59	384.32	2,237.30	2,204.43	32.87	68.063	
6,700.00	6,626.80	6,879.49	6,626.80	19.32	32.55	158.93	-1,533.59	384.32	2,237.30	2,204.07	33.22	67.340	
6,800.00	6,726.80	6,979.49	6,726.80	19.48	32.63	158.93	-1,533.59	384.32	2,237.30	2,203.72	33.58	66.628	
6,900.00	6,826.80	7,079.49	6,826.80	19.65	32.71	158.93	-1,533.59	384.32	2,237.30	2,203.36	33.94	65.926	
7,000.00	6,926.80	7,179.49	6,926.80	19.82	32.79	158.93	-1,533.59	384.32	2,237.30	2,203.00	34.30	65.235	
7,100.00	7,026.80	7,279.49	7,026.80	19.99	32.88	158.93	-1,533.59	384.32	2,237.30	2,202.64	34.66	64.555	
7,200.00	7,126.80	7,379.49	7,126.80	20.16	32.96	158.93	-1,533.59	384.32	2,237.30	2,202.28	35.02	63.885	
7,300.00	7,226.80	7,479.49	7,226.80	20.33	33.05	158.93	-1,533.59	384.32	2,237.30	2,201.91	35.39	63.226	
7,400.00	7,326.80	7,579.49	7,326.80	20.50	33.14	158.93	-1,533.59	384.32	2,237.30	2,201.54	35.75	62.577	
7,500.00	7,426.80	7,679.49	7,426.80	20.67	33.23	158.93	-1,533.59	384.32	2,237.30	2,201.17	36.12	61.939	
7,600.00	7,526.80	7,779.49	7,526.80	20.85	33.32	158.93	-1,533.59	384.32	2,237.30	2,200.80	36.49	61.310	
7,700.00	7,626.80	7,879.49	7,626.80	21.02	33.41	158.93	-1,533.59	384.32	2,237.30	2,200.43	36.86	60.691	
7,800.00	7,726.80	7,979.49	7,726.80	21.20	33.50	158.93	-1,533.59	384.32	2,237.30	2,200.06	37.24	60.082	
7,900.00	7,826.80	8,079.49	7,826.80	21.38	33.60	158.93	-1,533.59	384.32	2,237.30	2,199.68	37.61	59.483	
7,944.20	7,871.00	8,123.69	7,871.00	21.46	33.64	158.93	-1,533.59	384.32	2,237.30	2,199.52	37.78	59.221	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_NRC 12-8
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 19-8 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 12-8	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 12-8	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-20-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 0-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	48.23	46.99	52.62	72.57				
100.00	100.00	83.00	83.00	0.10	1.66	48.23	46.99	52.62	70.55	68.79	1.76	40.186	
200.00	200.00	183.00	183.00	0.32	5.32	48.23	46.99	52.62	70.55	64.91	5.64	12.508	
300.00	300.00	283.00	283.00	0.55	9.32	48.23	46.99	52.62	70.55	60.68	9.87	7.151	
400.00	400.00	383.00	383.00	0.77	13.32	48.23	46.99	52.62	70.55	56.46	14.09	5.007	
500.00	500.00	483.00	483.00	0.99	17.32	48.23	46.99	52.62	70.55	52.23	18.31	3.852	
600.00	600.00	583.00	583.00	1.22	21.32	48.23	46.99	52.62	70.55	48.01	22.54	3.130	
700.00	700.00	683.00	683.00	1.44	25.32	48.23	46.99	52.62	70.55	43.78	26.76	2.636	
800.00	800.00	783.00	783.00	1.67	29.32	48.23	46.99	52.62	70.55	39.56	30.99	2.277	
900.00	900.00	883.00	883.00	1.89	33.32	48.23	46.99	52.62	70.55	35.34	35.21	2.003	
1,000.00	1,000.00	983.00	983.00	2.12	37.32	48.23	46.99	52.62	70.55	31.11	39.44	1.789	
1,100.00	1,099.98	1,082.98	1,082.98	2.34	41.32	86.82	46.99	52.62	70.43	26.77	43.66	1.613	
1,179.99	1,179.87	1,162.87	1,162.87	2.52	44.51	90.00	46.99	52.62	70.32	23.29	47.03	1.495 Level 3, CC	
1,200.00	1,199.84	1,182.84	1,182.84	2.56	45.31	91.08	46.99	52.62	70.33	22.46	47.88	1.469 Level 3	
1,300.00	1,299.45	1,282.45	1,282.45	2.79	49.30	98.08	46.99	52.62	71.04	18.95	52.08	1.364 Level 3	
1,400.00	1,398.70	1,381.70	1,381.70	3.04	53.27	107.38	46.99	52.62	73.75	17.50	56.25	1.311 Level 3, ES, SF	
1,500.00	1,497.47	1,480.47	1,480.47	3.32	57.22	117.94	46.99	52.62	79.87	19.56	60.31	1.324 Level 3	
1,600.00	1,595.62	1,578.62	1,578.62	3.63	61.14	128.38	46.99	52.62	90.49	26.33	64.16	1.410 Level 3	
1,645.72	1,640.26	1,623.26	1,623.26	3.78	62.93	132.80	46.99	52.62	97.00	31.16	65.84	1.473 Level 3	
1,700.00	1,693.17	1,676.17	1,676.17	3.98	65.05	137.58	46.99	52.62	105.72	37.79	67.93	1.556	
1,800.00	1,790.64	1,773.64	1,773.64	4.35	68.95	144.54	46.99	52.62	123.31	51.50	71.81	1.717	
1,900.00	1,888.11	1,871.11	1,871.11	4.75	72.84	149.74	46.99	52.62	142.24	66.50	75.74	1.878	
2,000.00	1,985.58	1,968.58	1,968.58	5.16	76.74	153.70	46.99	52.62	162.05	82.34	79.70	2.033	
2,100.00	2,083.06	2,066.06	2,066.06	5.58	80.64	156.80	46.99	52.62	182.44	98.75	83.69	2.180	
2,200.00	2,180.53	2,163.53	2,163.53	6.01	84.54	159.28	46.99	52.62	203.24	115.56	87.69	2.318	
2,300.00	2,278.00	2,261.00	2,261.00	6.44	88.44	161.29	46.99	52.62	224.35	132.64	91.70	2.446	
2,400.00	2,375.47	2,358.47	2,358.47	6.88	92.34	162.96	46.99	52.62	245.67	149.94	95.73	2.566	
2,500.00	2,472.94	2,455.94	2,455.94	7.33	96.24	164.36	46.99	52.62	267.16	167.40	99.76	2.678	
2,600.00	2,570.41	2,553.41	2,553.41	7.78	100.14	165.56	46.99	52.62	288.78	184.98	103.80	2.782	
2,700.00	2,667.88	2,650.88	2,650.88	8.23	104.04	166.58	46.99	52.62	310.50	202.66	107.84	2.879	
2,800.00	2,765.35	2,748.35	2,748.35	8.68	107.93	167.48	46.99	52.62	332.31	220.42	111.89	2.970	
2,900.00	2,862.82	2,845.82	2,845.82	9.14	111.83	168.26	46.99	52.62	354.19	238.25	115.94	3.055	
3,000.00	2,960.29	2,943.29	2,943.29	9.60	115.73	168.95	46.99	52.62	376.12	256.13	119.99	3.135	
3,100.00	3,057.76	3,040.76	3,040.76	10.06	119.63	169.57	46.99	52.62	398.09	274.05	124.05	3.209	
3,200.00	3,155.23	3,138.23	3,138.23	10.52	123.53	170.12	46.99	52.62	420.11	292.01	128.10	3.279	
3,300.00	3,252.70	3,235.70	3,235.70	10.99	127.43	170.62	46.99	52.62	442.16	310.00	132.16	3.346	
3,400.00	3,350.17	3,333.17	3,333.17	11.45	131.33	171.06	46.99	52.62	464.24	328.02	136.22	3.408	
3,500.00	3,447.64	3,430.64	3,430.64	11.92	135.23	171.47	46.99	52.62	486.34	346.06	140.28	3.467	
3,600.00	3,545.11	3,528.11	3,528.11	12.38	139.12	171.85	46.99	52.62	508.47	364.12	144.34	3.523	
3,700.00	3,642.58	3,625.58	3,625.58	12.85	143.02	172.19	46.99	52.62	530.61	382.20	148.41	3.575	
3,800.00	3,740.05	3,723.05	3,723.05	13.32	146.92	172.50	46.99	52.62	552.77	400.30	152.47	3.625	
3,900.00	3,837.53	3,820.53	3,820.53	13.79	150.82	172.79	46.99	52.62	574.95	418.41	156.54	3.673	
4,000.00	3,935.00	3,918.00	3,918.00	14.26	154.72	173.06	46.99	52.62	597.13	436.53	160.60	3.718	
4,108.49	4,040.74	4,023.74	4,023.74	14.77	158.95	173.33	46.99	52.62	621.22	456.20	165.02	3.765	
4,200.00	4,130.25	4,113.25	4,113.25	15.13	162.53	173.57	46.99	52.62	640.12	470.32	169.80	3.770	
4,300.00	4,228.70	4,211.70	4,211.70	15.45	166.47	173.78	46.99	52.62	657.53	482.65	174.88	3.760	
4,400.00	4,327.70	4,310.70	4,310.70	15.72	170.43	173.94	46.99	52.62	671.51	491.70	179.81	3.735	
4,500.00	4,427.13	4,410.13	4,410.13	15.96	174.41	174.06	46.99	52.62	682.05	497.49	184.56	3.696	
4,600.00	4,526.87	4,509.87	4,509.87	16.15	178.39	174.13	46.99	52.62	689.14	500.02	189.12	3.644	
4,700.00	4,626.80	4,609.80	4,609.80	16.31	182.39	174.17	46.99	52.62	692.75	499.29	193.46	3.581	
4,754.20	4,681.00	4,664.00	4,664.00	16.37	184.56	137.01	46.99	52.62	693.26	497.54	195.72	3.542	
4,800.00	4,726.80	4,709.80	4,709.80	16.43	186.39	137.01	46.99	52.62	693.26	495.63	197.64	3.508	

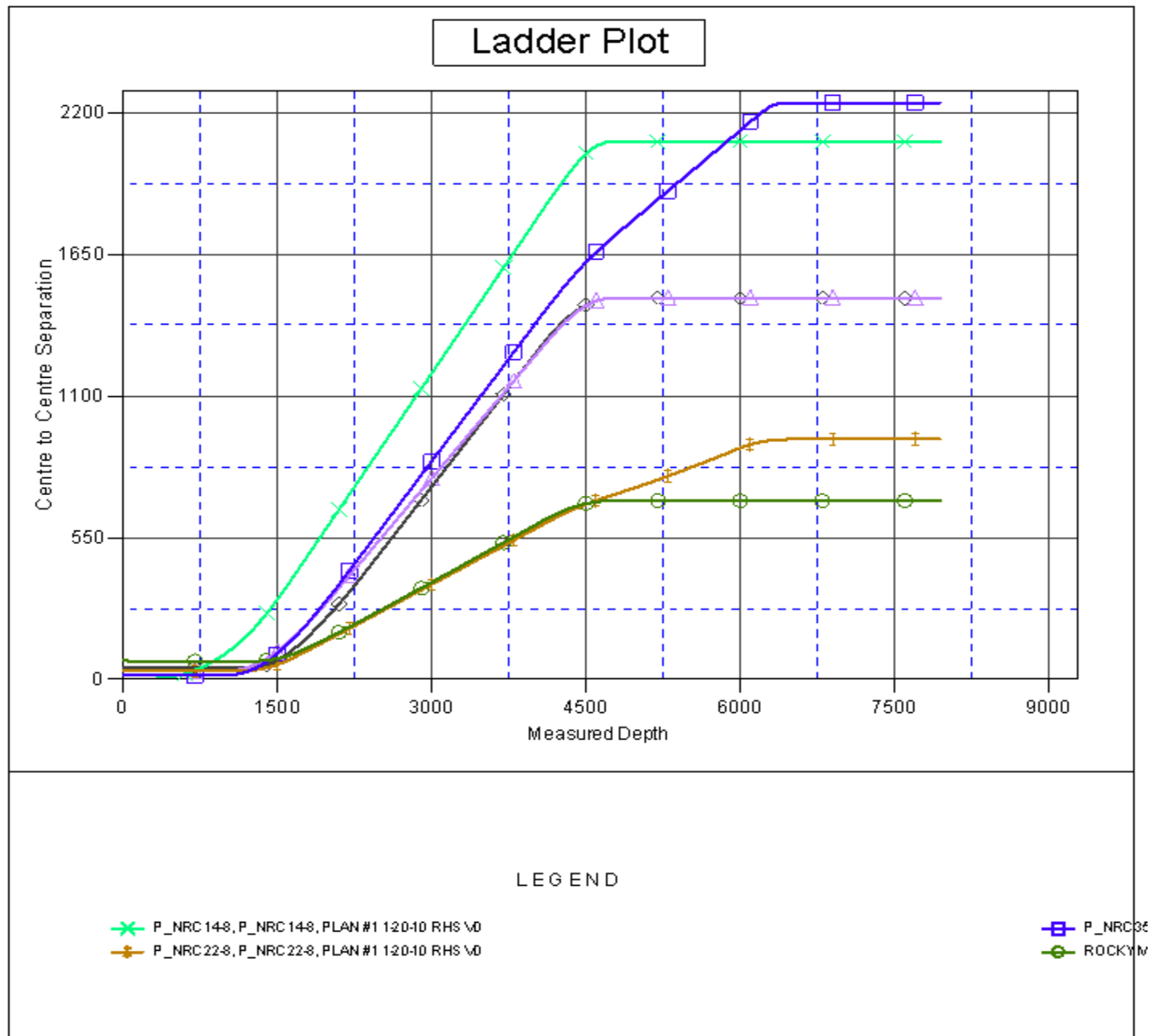
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_NRC 12-8
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 19-8 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 12-8	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 12-8	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-20-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_NRC 19-8 PAD - ROCKY MOUNTAIN FUEL CO #1 EXISTING - ROCKY MOUNTAIN FUEL CO												Offset Site Error:	0.00 ft
Survey Program: 0-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,900.00	4,826.80	4,809.80	4,809.80	16.57	190.39	137.01	46.99	52.62	693.26	491.43	201.83	3.435	
5,000.00	4,926.80	4,909.80	4,909.80	16.71	194.39	137.01	46.99	52.62	693.26	487.24	206.03	3.365	
5,100.00	5,026.80	5,009.80	5,009.80	16.85	198.39	137.01	46.99	52.62	693.26	483.04	210.23	3.298	
5,200.00	5,126.80	5,109.80	5,109.80	16.99	202.39	137.01	46.99	52.62	693.26	478.84	214.43	3.233	
5,300.00	5,226.80	5,209.80	5,209.80	17.13	206.39	137.01	46.99	52.62	693.26	474.64	218.63	3.171	
5,400.00	5,326.80	5,309.80	5,309.80	17.28	210.39	137.01	46.99	52.62	693.26	470.44	222.83	3.111	
5,500.00	5,426.80	5,409.80	5,409.80	17.43	214.39	137.01	46.99	52.62	693.26	466.24	227.03	3.054	
5,600.00	5,526.80	5,509.80	5,509.80	17.58	218.39	137.01	46.99	52.62	693.26	462.03	231.23	2.998	
5,700.00	5,626.80	5,609.80	5,609.80	17.73	222.39	137.01	46.99	52.62	693.26	457.83	235.43	2.945	
5,800.00	5,726.80	5,709.80	5,709.80	17.88	226.39	137.01	46.99	52.62	693.26	453.63	239.64	2.893	
5,900.00	5,826.80	5,809.80	5,809.80	18.03	230.39	137.01	46.99	52.62	693.26	449.42	243.84	2.843	
6,000.00	5,926.80	5,909.80	5,909.80	18.19	234.39	137.01	46.99	52.62	693.26	445.22	248.05	2.795	
6,100.00	6,026.80	6,009.80	6,009.80	18.35	238.39	137.01	46.99	52.62	693.26	441.01	252.25	2.748	
6,200.00	6,126.80	6,109.80	6,109.80	18.50	242.39	137.01	46.99	52.62	693.26	436.80	256.46	2.703	
6,300.00	6,226.80	6,209.80	6,209.80	18.66	246.39	137.01	46.99	52.62	693.26	432.60	260.67	2.660	
6,400.00	6,326.80	6,309.80	6,309.80	18.82	250.39	137.01	46.99	52.62	693.26	428.39	264.87	2.617	
6,500.00	6,426.80	6,409.80	6,409.80	18.99	254.39	137.01	46.99	52.62	693.26	424.18	269.08	2.576	
6,600.00	6,526.80	6,509.80	6,509.80	19.15	258.39	137.01	46.99	52.62	693.26	419.97	273.29	2.537	
6,700.00	6,626.80	6,609.80	6,609.80	19.32	262.39	137.01	46.99	52.62	693.26	415.76	277.50	2.498	
6,800.00	6,726.80	6,709.80	6,709.80	19.48	266.39	137.01	46.99	52.62	693.26	411.55	281.71	2.461	
6,900.00	6,826.80	6,809.80	6,809.80	19.65	270.39	137.01	46.99	52.62	693.26	407.34	285.92	2.425	
7,000.00	6,926.80	6,909.80	6,909.80	19.82	274.39	137.01	46.99	52.62	693.26	403.13	290.13	2.389	
7,100.00	7,026.80	7,009.80	7,009.80	19.99	278.39	137.01	46.99	52.62	693.26	398.92	294.34	2.355	
7,200.00	7,126.80	7,109.80	7,109.80	20.16	282.39	137.01	46.99	52.62	693.26	394.71	298.55	2.322	
7,300.00	7,226.80	7,209.80	7,209.80	20.33	286.39	137.01	46.99	52.62	693.26	390.50	302.76	2.290	
7,400.00	7,326.80	7,309.80	7,309.80	20.50	290.39	137.01	46.99	52.62	693.26	386.29	306.97	2.258	
7,500.00	7,426.80	7,409.80	7,409.80	20.67	294.39	137.01	46.99	52.62	693.26	382.08	311.19	2.228	
7,600.00	7,526.80	7,509.80	7,509.80	20.85	298.39	137.01	46.99	52.62	693.26	377.87	315.40	2.198	
7,700.00	7,626.80	7,609.80	7,609.80	21.02	302.39	137.01	46.99	52.62	693.26	373.65	319.61	2.169	
7,800.00	7,726.80	7,709.80	7,709.80	21.20	306.39	137.01	46.99	52.62	693.26	369.44	323.82	2.141	
7,900.00	7,826.80	7,809.80	7,809.80	21.38	310.39	137.01	46.99	52.62	693.26	365.23	328.04	2.113	
7,944.20	7,871.00	7,854.00	7,854.00	21.46	312.16	137.01	46.99	52.62	693.26	363.36	329.90	2.101	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_NRC 12-8
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 19-8 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 12-8	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 12-8	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-20-10 RHS	Offset TVD Reference:	Offset Datum

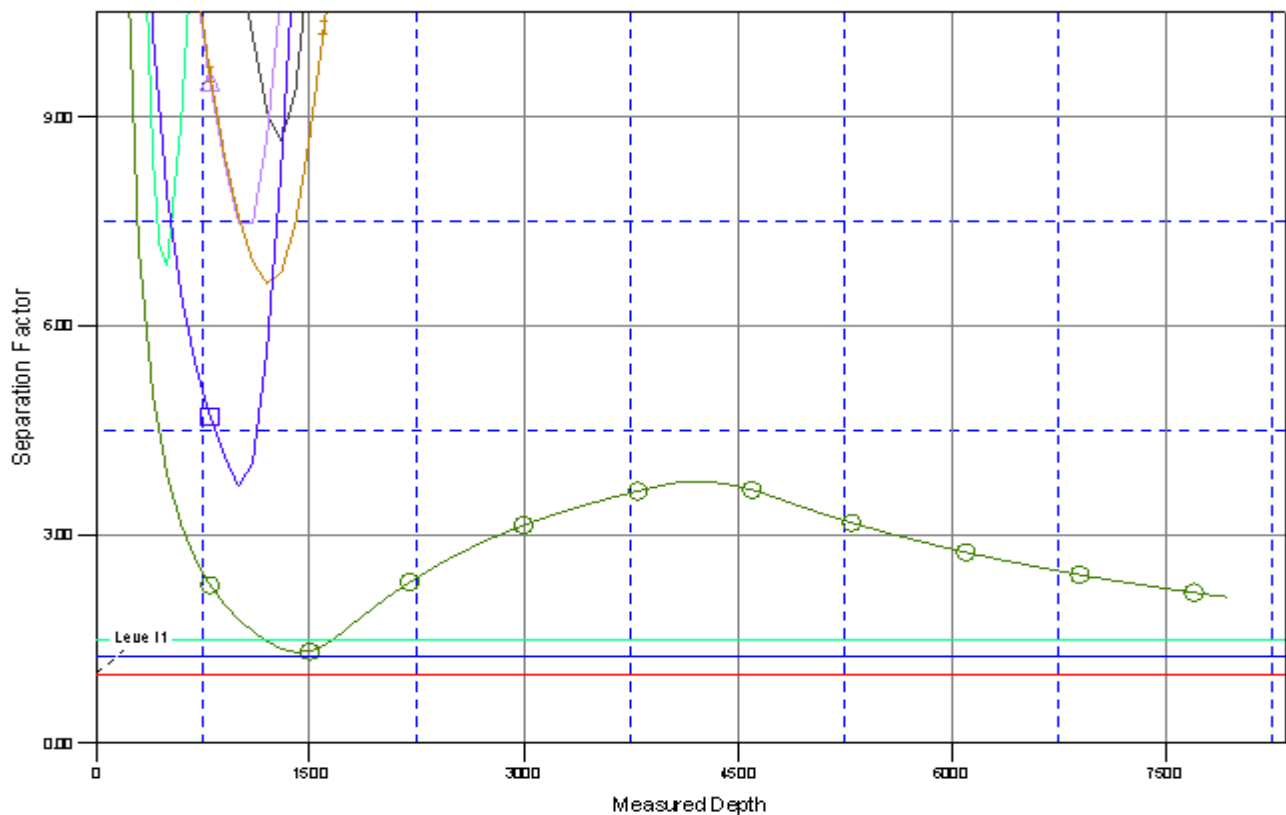
Reference Depths are relative to WELL @ 5039.00ft (Original Well Elev) Coordinates are relative to: P_NRC 12-8
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is 105° 30' 0.000 W ° Grid Convergence at Surface is: 0.37°



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_NRC 12-8
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5039.00ft (Original Well Elev)
Reference Site:	WELD_NRC 19-8 PAD	MD Reference:	WELL @ 5039.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_NRC 12-8	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_NRC 12-8	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-20-10 RHS	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 5039.00ft (Original Well Elev) Coordinates are relative to: P_NRC 12-8
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: 0.37°

Separation Factor Plot



LEGEND

✕ P_NRC 148, P_NRC 148, PLAN #1 1-20-10 RHS \0
✕ P_NRC 22-8, P_NRC 22-8, PLAN #1 1-20-10 RHS \0

✕ P_NRC 34
○ ROCKY M