



US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_Pancost 20-2 PAD

P_PANCOST 37-2

P_PANCOST 37-2

Plan: PLAN #1 1-15-10 RHS

Standard Planning Report

29 January, 2010





Azimuths to True North
 Magnetic North: 9.08°
 Magnetic Field
 Strength: 53146.0snT
 Dip Angle: 66.89°
 Date: 1/15/2010
 Model: IGRF2010

WELL DETAILS: P_PANCAST 37-2

+N/-S	+E/-W	Northing	Ground Level:	Latitude	Longitude	Slot
0.00	0.00	1303109.68	4860.00 Easting 3180542.28	40° 9' 49.053 N	104° 51' 14.414 W	

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	
1786.70	17.73	169.69	1772.61	-133.94	24.36	2.00	169.69	136.13	
5431.69	17.73	169.69	5244.39	-1226.28	223.00	0.00	0.00	1246.39	
6318.39	0.00	0.00	6117.00	-1360.21	247.36	2.00	180.00	1382.52	
7738.39	0.00	0.00	7537.00	-1360.21	247.36	0.00	0.00	1382.52	PBHL_PANCAST 37-2(50 FSL 1305 FEL)50'TGT RAD

CASING DETAILS

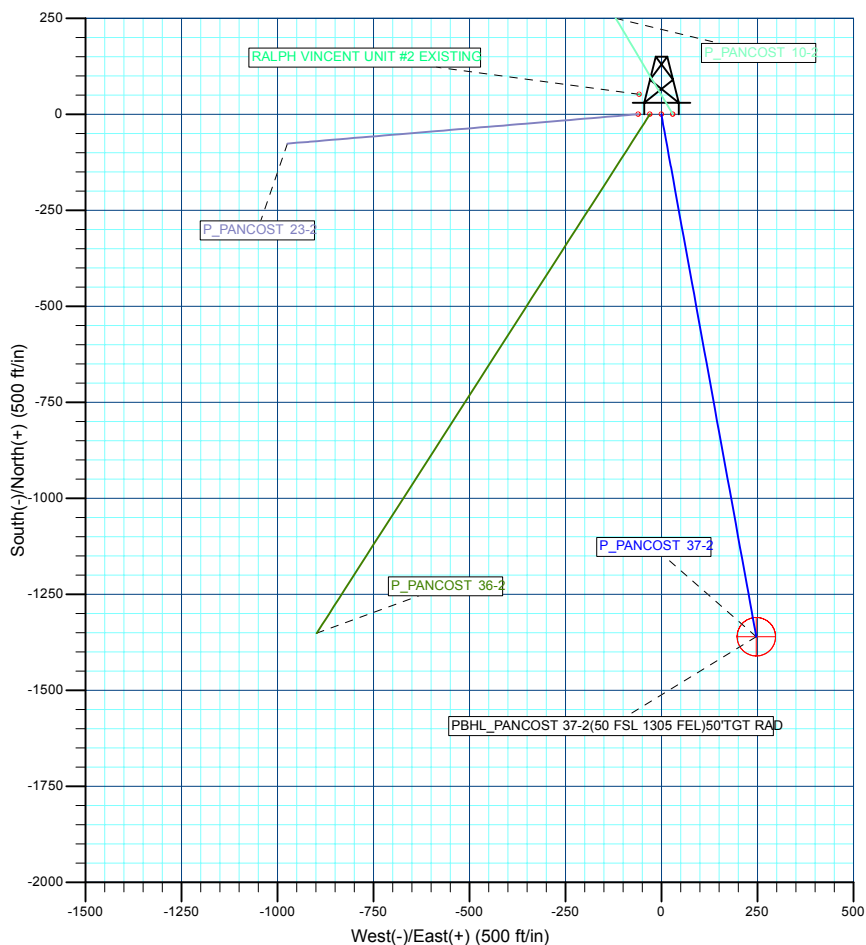
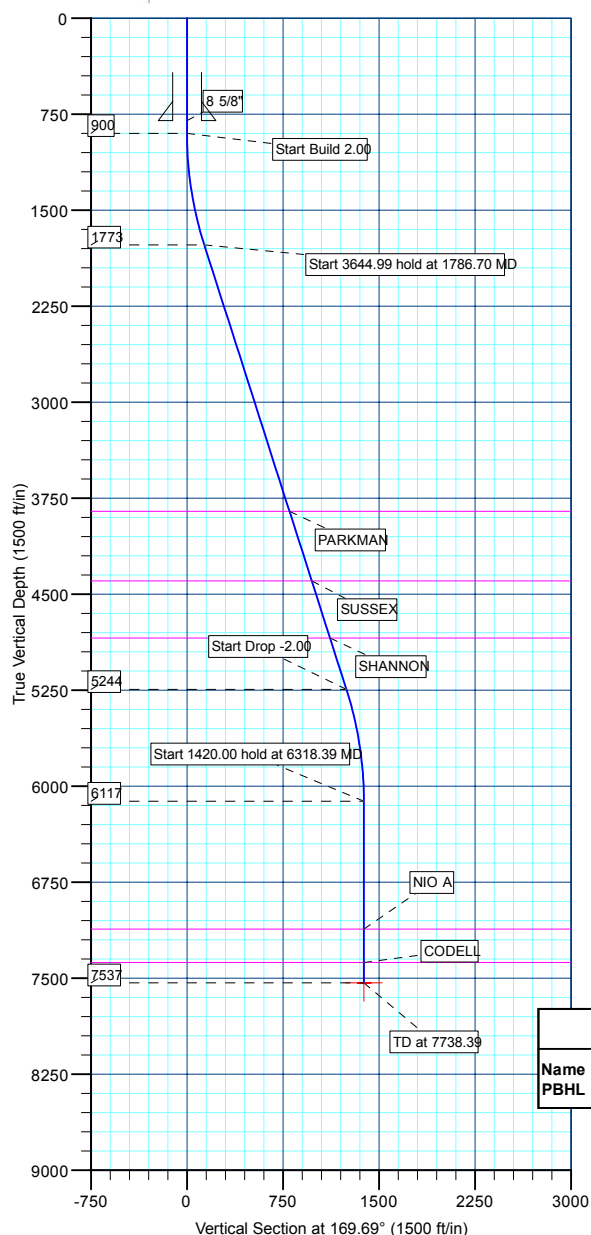
TVD	MD	Name	Size
800.00	800.00	8 5/8"	8.62

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3852.00	3969.83	PARKMAN
4397.00	4542.02	SUSSEX
4842.00	5009.22	SHANNON
7117.00	7318.39	NIO A
7377.00	7578.39	CODELL

KB ELEV:WELL @ 4875.00ft (Original Well Elev)

GRD ELEV: 4860.00



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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL	7537.00	-1360.21	247.36	1301751.30	3180799.54	40° 9' 35.611 N	104° 51' 11.228 W	Circle (Radius: 50.00)

Plan: PLAN #1 1-15-10 RHS (P_PANCAST 37-2/P_PANCAST 37-2)

Created By: Robert H. Scott

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_PANCOST 37-2
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4875.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4875.00ft (Original Well Elev)
Site:	WELD_Pancost 20-2 PAD	North Reference:	True
Well:	P_PANCOST 37-2	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_PANCOST 37-2		
Design:	PLAN #1 1-15-10 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_Pancost 20-2 PAD, SECTION 2 T2N R67W											
Site Position:			Northing:			1,303,109.91 ft			Latitude:			40° 9' 49.054 N					
From:			Lat/Long			Easting:			3,180,572.18 ft			Longitude:			104° 51' 14.029 W		
Position Uncertainty:			0.00 ft			Slot Radius:			in			Grid Convergence:			0.42 °		

Well	P_PANCOST 37-2					
Well Position	+N/-S	-0.01 ft	Northing:	1,303,109.68 ft	Latitude:	40° 9' 49.053 N
	+E/-W	-29.90 ft	Easting:	3,180,542.28 ft	Longitude:	104° 51' 14.414 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,860.00 ft

Wellbore	P_PANCOST 37-2				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/15/2010	9.08	66.89	53,146

Design	PLAN #1 1-15-10 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	169.69

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,786.70	17.73	169.69	1,772.61	-133.94	24.36	2.00	2.00	0.00	169.69	
5,431.69	17.73	169.69	5,244.39	-1,226.28	223.00	0.00	0.00	0.00	0.00	
6,318.39	0.00	0.00	6,117.00	-1,360.21	247.36	2.00	-2.00	0.00	180.00	
7,738.39	0.00	0.00	7,537.00	-1,360.21	247.36	0.00	0.00	0.00	0.00	PBHL_PANCOST 3

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_PANCOST 37-2
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4875.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4875.00ft (Original Well Elev)
Site:	WELD_Pancost 20-2 PAD	North Reference:	True
Well:	P_PANCOST 37-2	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_PANCOST 37-2		
Design:	PLAN #1 1-15-10 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									
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	2.00	169.69	999.98	-1.72	0.31	1.75	2.00	2.00	0.00
1,100.00	4.00	169.69	1,099.84	-6.87	1.25	6.98	2.00	2.00	0.00
1,200.00	6.00	169.69	1,199.45	-15.44	2.81	15.69	2.00	2.00	0.00
1,300.00	8.00	169.69	1,298.70	-27.43	4.99	27.88	2.00	2.00	0.00
1,400.00	10.00	169.69	1,397.47	-42.82	7.79	43.52	2.00	2.00	0.00
1,500.00	12.00	169.69	1,495.62	-61.59	11.20	62.60	2.00	2.00	0.00
1,600.00	14.00	169.69	1,593.06	-83.72	15.23	85.10	2.00	2.00	0.00
1,700.00	16.00	169.69	1,689.64	-109.19	19.86	110.98	2.00	2.00	0.00
Start 3644.99 hold at 1786.70 MD									
1,786.70	17.73	169.69	1,772.61	-133.94	24.36	136.13	2.00	2.00	0.00
1,800.00	17.73	169.69	1,785.28	-137.92	25.08	140.18	0.00	0.00	0.00
1,900.00	17.73	169.69	1,880.53	-167.89	30.53	170.64	0.00	0.00	0.00
2,000.00	17.73	169.69	1,975.77	-197.86	35.98	201.10	0.00	0.00	0.00
2,100.00	17.73	169.69	2,071.02	-227.83	41.43	231.56	0.00	0.00	0.00
2,200.00	17.73	169.69	2,166.27	-257.79	46.88	262.02	0.00	0.00	0.00
2,300.00	17.73	169.69	2,261.52	-287.76	52.33	292.48	0.00	0.00	0.00
2,400.00	17.73	169.69	2,356.77	-317.73	57.78	322.94	0.00	0.00	0.00
2,500.00	17.73	169.69	2,452.01	-347.70	63.23	353.40	0.00	0.00	0.00
2,600.00	17.73	169.69	2,547.26	-377.67	68.68	383.86	0.00	0.00	0.00
2,700.00	17.73	169.69	2,642.51	-407.64	74.13	414.32	0.00	0.00	0.00
2,800.00	17.73	169.69	2,737.76	-437.61	79.58	444.78	0.00	0.00	0.00
2,900.00	17.73	169.69	2,833.01	-467.57	85.03	475.24	0.00	0.00	0.00
3,000.00	17.73	169.69	2,928.25	-497.54	90.48	505.70	0.00	0.00	0.00
3,100.00	17.73	169.69	3,023.50	-527.51	95.93	536.16	0.00	0.00	0.00
3,200.00	17.73	169.69	3,118.75	-557.48	101.38	566.62	0.00	0.00	0.00
3,300.00	17.73	169.69	3,214.00	-587.45	106.83	597.08	0.00	0.00	0.00
3,400.00	17.73	169.69	3,309.25	-617.42	112.28	627.54	0.00	0.00	0.00
3,500.00	17.73	169.69	3,404.50	-647.38	117.73	658.00	0.00	0.00	0.00
3,600.00	17.73	169.69	3,499.74	-677.35	123.18	688.46	0.00	0.00	0.00
3,700.00	17.73	169.69	3,594.99	-707.32	128.63	718.92	0.00	0.00	0.00
3,800.00	17.73	169.69	3,690.24	-737.29	134.08	749.38	0.00	0.00	0.00
3,900.00	17.73	169.69	3,785.49	-767.26	139.53	779.84	0.00	0.00	0.00
PARKMAN									
3,969.83	17.73	169.69	3,852.00	-788.18	143.33	801.11	0.00	0.00	0.00
4,000.00	17.73	169.69	3,880.74	-797.23	144.98	810.30	0.00	0.00	0.00
4,100.00	17.73	169.69	3,975.98	-827.19	150.43	840.76	0.00	0.00	0.00
4,200.00	17.73	169.69	4,071.23	-857.16	155.88	871.22	0.00	0.00	0.00
4,300.00	17.73	169.69	4,166.48	-887.13	161.32	901.68	0.00	0.00	0.00
4,400.00	17.73	169.69	4,261.73	-917.10	166.77	932.14	0.00	0.00	0.00
4,500.00	17.73	169.69	4,356.98	-947.07	172.22	962.60	0.00	0.00	0.00
SUSSEX									
4,542.02	17.73	169.69	4,397.00	-959.66	174.51	975.40	0.00	0.00	0.00
4,600.00	17.73	169.69	4,452.22	-977.04	177.67	993.06	0.00	0.00	0.00
4,700.00	17.73	169.69	4,547.47	-1,007.00	183.12	1,023.52	0.00	0.00	0.00
4,800.00	17.73	169.69	4,642.72	-1,036.97	188.57	1,053.98	0.00	0.00	0.00
4,900.00	17.73	169.69	4,737.97	-1,066.94	194.02	1,084.44	0.00	0.00	0.00
5,000.00	17.73	169.69	4,833.22	-1,096.91	199.47	1,114.90	0.00	0.00	0.00
SHANNON									
5,009.22	17.73	169.69	4,842.00	-1,099.67	199.98	1,117.71	0.00	0.00	0.00
5,100.00	17.73	169.69	4,928.46	-1,126.88	204.92	1,145.36	0.00	0.00	0.00
5,200.00	17.73	169.69	5,023.71	-1,156.85	210.37	1,175.82	0.00	0.00	0.00

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_PANCOST 37-2
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4875.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4875.00ft (Original Well Elev)
Site:	WELD_Pancost 20-2 PAD	North Reference:	True
Well:	P_PANCOST 37-2	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_PANCOST 37-2		
Design:	PLAN #1 1-15-10 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)
5,300.00	17.73	169.69	5,118.96	-1,186.81	215.82	1,206.28	0.00	0.00	0.00
5,400.00	17.73	169.69	5,214.21	-1,216.78	221.27	1,236.74	0.00	0.00	0.00
Start Drop -2.00									
5,431.69	17.73	169.69	5,244.39	-1,226.28	223.00	1,246.39	0.00	0.00	0.00
5,500.00	16.37	169.69	5,309.70	-1,245.99	226.58	1,266.42	2.00	-2.00	0.00
5,600.00	14.37	169.69	5,406.12	-1,272.06	231.32	1,292.92	2.00	-2.00	0.00
5,700.00	12.37	169.69	5,503.40	-1,294.80	235.46	1,316.04	2.00	-2.00	0.00
5,800.00	10.37	169.69	5,601.44	-1,314.20	238.99	1,335.75	2.00	-2.00	0.00
5,900.00	8.37	169.69	5,700.10	-1,330.21	241.90	1,352.02	2.00	-2.00	0.00
6,000.00	6.37	169.69	5,799.27	-1,342.83	244.19	1,364.85	2.00	-2.00	0.00
6,100.00	4.37	169.69	5,898.82	-1,352.03	245.87	1,374.20	2.00	-2.00	0.00
6,200.00	2.37	169.69	5,998.65	-1,357.81	246.92	1,380.08	2.00	-2.00	0.00
6,300.00	0.37	169.69	6,098.61	-1,360.16	247.34	1,382.46	2.00	-2.00	0.00
Start 1420.00 hold at 6318.39 MD									
6,318.39	0.00	0.00	6,117.00	-1,360.21	247.36	1,382.52	2.00	-2.00	-922.90
6,400.00	0.00	0.00	6,198.61	-1,360.21	247.36	1,382.52	0.00	0.00	0.00
6,500.00	0.00	0.00	6,298.61	-1,360.21	247.36	1,382.52	0.00	0.00	0.00
6,600.00	0.00	0.00	6,398.61	-1,360.21	247.36	1,382.52	0.00	0.00	0.00
6,700.00	0.00	0.00	6,498.61	-1,360.21	247.36	1,382.52	0.00	0.00	0.00
6,800.00	0.00	0.00	6,598.61	-1,360.21	247.36	1,382.52	0.00	0.00	0.00
6,900.00	0.00	0.00	6,698.61	-1,360.21	247.36	1,382.52	0.00	0.00	0.00
7,000.00	0.00	0.00	6,798.61	-1,360.21	247.36	1,382.52	0.00	0.00	0.00
7,100.00	0.00	0.00	6,898.61	-1,360.21	247.36	1,382.52	0.00	0.00	0.00
7,200.00	0.00	0.00	6,998.61	-1,360.21	247.36	1,382.52	0.00	0.00	0.00
7,300.00	0.00	0.00	7,098.61	-1,360.21	247.36	1,382.52	0.00	0.00	0.00
NIO A									
7,318.39	0.00	0.00	7,117.00	-1,360.21	247.36	1,382.52	0.00	0.00	0.00
7,400.00	0.00	0.00	7,198.61	-1,360.21	247.36	1,382.52	0.00	0.00	0.00
7,500.00	0.00	0.00	7,298.61	-1,360.21	247.36	1,382.52	0.00	0.00	0.00
CODELL									
7,578.39	0.00	0.00	7,377.00	-1,360.21	247.36	1,382.52	0.00	0.00	0.00
7,600.00	0.00	0.00	7,398.61	-1,360.21	247.36	1,382.52	0.00	0.00	0.00
7,700.00	0.00	0.00	7,498.61	-1,360.21	247.36	1,382.52	0.00	0.00	0.00
PBHL_PANCOST 37-2(50 FSL 1305 FEL)50°TGT RAD									
7,738.39	0.00	0.00	7,537.00	-1,360.21	247.36	1,382.52	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_PANCOST 37- - plan hits target center - Circle (radius 50.00)	0.00	0.00	7,537.00	-1,360.21	247.36	1,301,751.30	3,180,799.54	40° 9' 35.611 N	104° 51' 11.228 W

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

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_PANCOST 37-2
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4875.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4875.00ft (Original Well Elev)
Site:	WELD_Pancost 20-2 PAD	North Reference:	True
Well:	P_PANCOST 37-2	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_PANCOST 37-2		
Design:	PLAN #1 1-15-10 RHS		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,969.83	3,852.00	PARKMAN				
4,542.02	4,397.00	SUSSEX				
5,009.22	4,842.00	SHANNON				
7,318.39	7,117.00	NIO A				
7,578.39	7,377.00	CODELL				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
900.00	900.00	0.00	0.00	Start Build 2.00	
1,786.70	1,772.61	-133.94	24.36	Start 3644.99 hold at 1786.70 MD	
5,431.69	5,244.39	-1,226.28	223.00	Start Drop -2.00	
6,318.39	6,117.00	-1,360.21	247.36	Start 1420.00 hold at 6318.39 MD	
7,738.39	7,537.00	-1,360.21	247.36	TD at 7738.39	



US ROCKIES REGION PLANNING

**COLORADO NORTHERN ZONE - 83
WELD_Pancost 20-2 PAD
P_PANCOST 37-2**

**P_PANCOST 37-2
PLAN #1 1-15-10 RHS**

Anticollision Report

29 January, 2010



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_PANCOST 37-2
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4875.00ft (Original Well Elev)
Reference Site:	WELD_Pancost 20-2 PAD	MD Reference:	WELL @ 4875.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_PANCOST 37-2	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_PANCOST 37-2	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-15-10 RHS	Offset TVD Reference:	Offset Datum

Reference	PLAN #1 1-15-10 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 1/29/2010			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	7,738.39	PLAN #1 1-15-10 RHS (P_PANCOST 37-2)	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
WELD_Pancost 20-2 PAD						
P_PANCOST 10-2 - P_PANCOST 10-2 - PLAN #1 1-15-	1,074.45	1,074.75	28.01	23.51	6.219	CC, ES
P_PANCOST 10-2 - P_PANCOST 10-2 - PLAN #1 1-15-	1,100.00	1,100.12	28.20	23.60	6.123	SF
P_PANCOST 23-2 - P_PANCOST 23-2 - PLAN #1 1-15-	900.00	900.00	60.09	56.30	15.866	CC, ES
P_PANCOST 23-2 - P_PANCOST 23-2 - PLAN #1 1-15-	1,000.00	997.89	62.13	57.95	14.836	SF
P_PANCOST 36-2 - P_PANCOST 36-2 - PLAN #1 1-15-	900.00	900.00	29.91	26.12	7.897	CC, ES
P_PANCOST 36-2 - P_PANCOST 36-2 - PLAN #1 1-15-	1,000.00	999.43	31.16	26.98	7.454	SF
RALPH VINCENT UNIT #2 EXISTING - RALPH VINCEN	900.00	880.00	77.88	42.79	2.219	CC
RALPH VINCENT UNIT #2 EXISTING - RALPH VINCEN	1,000.00	979.98	79.28	40.00	2.018	ES
RALPH VINCENT UNIT #2 EXISTING - RALPH VINCEN	1,200.00	1,179.45	90.86	43.40	1.915	SF

Offset Design WELD_Pancost 20-2 PAD - P_PANCOST 10-2 - P_PANCOST 10-2 - PLAN #1 1-15-10 RHS											
Survey Program: 0-MWD											
Offset Site Error: 0.00 ft											
Offset Well Error: 0.00 ft											
Reference Measured Depth (ft)	Offset Measured Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	89.98	0.01	29.90	29.90				
100.00	100.00	100.00	100.00	89.98	0.01	29.90	29.90	29.71	0.19	156.526	
200.00	200.00	200.00	200.00	89.98	0.01	29.90	29.90	29.26	0.64	46.683	
300.00	300.00	300.00	300.00	89.98	0.01	29.90	29.90	28.81	1.09	27.432	
400.00	400.00	400.00	400.00	89.98	0.01	29.90	29.90	28.36	1.54	19.423	
500.00	500.00	500.00	500.00	89.98	0.01	29.90	29.90	27.92	1.99	15.034	
600.00	600.00	600.00	600.00	89.98	0.01	29.90	29.90	27.47	2.44	12.262	
700.00	700.00	700.00	700.00	89.98	0.01	29.90	29.90	27.02	2.89	10.354	
800.00	800.00	800.00	800.00	89.98	0.01	29.90	29.90	26.57	3.34	8.959	
900.00	900.00	900.00	900.00	89.98	0.01	29.90	29.90	26.12	3.79	7.896	
1,000.00	999.98	1,000.42	1,000.40	-86.17	1.53	29.01	28.88	24.67	4.21	6.865	
1,074.45	1,074.34	1,074.75	1,074.64	-100.23	4.59	27.18	28.01	23.51	4.50	6.219	CC, ES
1,100.00	1,099.84	1,100.12	1,099.96	-106.86	6.02	26.34	28.20	23.60	4.61	6.123	SF
1,200.00	1,199.45	1,198.43	1,197.89	-135.71	13.36	21.97	34.63	29.62	5.01	6.907	
1,300.00	1,298.70	1,294.68	1,293.43	-156.89	23.35	16.04	52.24	46.83	5.41	9.661	
1,400.00	1,397.47	1,388.29	1,385.93	-168.56	35.70	8.70	79.37	73.58	5.79	13.715	
1,500.00	1,495.62	1,481.20	1,477.38	-174.98	49.79	0.34	113.38	107.22	6.17	18.386	
1,600.00	1,593.06	1,573.35	1,568.08	-178.54	63.83	-8.00	151.44	144.89	6.55	23.129	

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_PANCOST 37-2
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4875.00ft (Original Well Elev)
Reference Site:	WELD_Pancost 20-2 PAD	MD Reference:	WELL @ 4875.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_PANCOST 37-2	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_PANCOST 37-2	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-15-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_Pancost 20-2 PAD - P_PANCOST 10-2 - P_PANCOST 10-2 - PLAN #1 1-15-10 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
1,700.00	1,689.64	1,664.11	1,657.40	4.02	3.94	179.32	77.66	-16.22	193.00	186.08	6.93	27.860	
1,786.70	1,772.61	1,741.59	1,733.65	4.43	4.21	178.09	89.46	-23.23	231.71	224.45	7.26	31.932	
1,800.00	1,785.28	1,753.38	1,745.26	4.50	4.25	177.94	91.26	-24.29	237.83	230.51	7.32	32.506	
1,900.00	1,880.53	1,842.06	1,832.54	5.02	4.56	177.03	104.77	-32.32	283.89	276.12	7.78	36.509	
2,000.00	1,975.77	1,930.74	1,919.81	5.56	4.88	176.37	118.28	-40.35	330.00	321.76	8.25	40.023	
2,100.00	2,071.02	2,019.43	2,007.09	6.12	5.20	175.87	131.79	-48.37	376.13	367.41	8.72	43.121	
2,200.00	2,166.27	2,108.11	2,094.37	6.69	5.53	175.48	145.30	-56.40	422.29	413.08	9.21	45.866	
2,300.00	2,261.52	2,196.79	2,181.65	7.28	5.86	175.17	158.82	-64.42	468.45	458.75	9.70	48.310	
2,400.00	2,356.77	2,285.47	2,268.92	7.86	6.19	174.92	172.33	-72.45	514.62	504.43	10.19	50.496	
2,500.00	2,452.01	2,374.15	2,356.20	8.46	6.53	174.70	185.84	-80.48	560.80	550.11	10.69	52.460	
2,600.00	2,547.26	2,462.83	2,443.48	9.05	6.86	174.52	199.35	-88.50	606.98	595.79	11.19	54.234	
2,700.00	2,642.51	2,551.51	2,530.76	9.66	7.20	174.36	212.86	-96.53	653.17	641.47	11.70	55.841	
2,800.00	2,737.76	2,640.20	2,618.03	10.26	7.54	174.23	226.37	-104.55	699.36	687.16	12.20	57.304	
2,900.00	2,833.01	2,728.88	2,705.31	10.87	7.88	174.11	239.89	-112.58	745.56	732.84	12.71	58.639	
3,000.00	2,928.25	2,817.56	2,792.59	11.48	8.22	174.01	253.40	-120.61	791.75	778.53	13.23	59.863	
3,100.00	3,023.50	2,906.24	2,879.87	12.09	8.57	173.91	266.91	-128.63	837.95	824.21	13.74	60.988	
3,200.00	3,118.75	2,994.92	2,967.15	12.70	8.91	173.83	280.42	-136.66	884.15	869.89	14.25	62.026	
3,300.00	3,214.00	3,083.60	3,054.42	13.31	9.25	173.75	293.93	-144.68	930.35	915.58	14.77	62.985	
3,400.00	3,309.25	3,172.28	3,141.70	13.93	9.60	173.69	307.44	-152.71	976.55	961.26	15.29	63.874	
3,500.00	3,404.50	3,260.96	3,228.98	14.54	9.94	173.62	320.95	-160.74	1,022.75	1,006.95	15.81	64.701	
3,600.00	3,499.74	3,349.65	3,316.26	15.16	10.29	173.57	334.47	-168.76	1,068.96	1,052.63	16.33	65.471	
3,700.00	3,594.99	3,438.33	3,403.53	15.78	10.64	173.52	347.98	-176.79	1,115.16	1,098.31	16.85	66.190	
3,800.00	3,690.24	3,527.01	3,490.81	16.40	10.99	173.47	361.49	-184.81	1,161.37	1,144.00	17.37	66.863	
3,900.00	3,785.49	3,615.69	3,578.09	17.01	11.33	173.42	375.00	-192.84	1,207.57	1,189.68	17.89	67.495	
4,000.00	3,880.74	3,704.37	3,665.37	17.63	11.68	173.38	388.51	-200.86	1,253.78	1,235.37	18.41	68.087	
4,100.00	3,975.98	3,793.05	3,752.64	18.25	12.03	173.35	402.02	-208.89	1,299.99	1,281.05	18.94	68.645	
4,200.00	4,071.23	3,881.73	3,839.92	18.87	12.38	173.31	415.54	-216.92	1,346.19	1,326.73	19.46	69.171	
4,300.00	4,166.48	3,970.41	3,927.20	19.49	12.73	173.28	429.05	-224.94	1,392.40	1,372.42	19.99	69.668	
4,400.00	4,261.73	4,059.10	4,014.48	20.11	13.08	173.25	442.56	-232.97	1,438.61	1,418.10	20.51	70.137	
4,500.00	4,356.98	4,147.78	4,101.76	20.74	13.43	173.22	456.07	-240.99	1,484.82	1,463.78	21.04	70.582	
4,600.00	4,452.22	4,236.46	4,189.03	21.36	13.78	173.19	469.58	-249.02	1,531.03	1,509.46	21.56	71.003	
4,700.00	4,547.47	4,325.14	4,276.31	21.98	14.13	173.16	483.09	-257.05	1,577.24	1,555.15	22.09	71.404	
4,800.00	4,642.72	4,413.82	4,363.59	22.60	14.48	173.14	496.61	-265.07	1,623.44	1,600.83	22.62	71.784	
4,900.00	4,737.97	4,502.50	4,450.87	23.22	14.83	173.12	510.12	-273.10	1,669.65	1,646.51	23.14	72.147	
5,000.00	4,833.22	4,591.18	4,538.14	23.85	15.18	173.10	523.63	-281.12	1,715.86	1,692.19	23.67	72.492	
5,100.00	4,928.46	4,679.86	4,625.42	24.47	15.53	173.08	537.14	-289.15	1,762.07	1,737.88	24.20	72.821	
5,200.00	5,023.71	4,768.55	4,712.70	25.09	15.88	173.06	550.65	-297.18	1,808.28	1,783.56	24.72	73.136	
5,300.00	5,118.96	4,857.23	4,799.98	25.72	16.23	173.04	564.16	-305.20	1,854.49	1,829.24	25.25	73.437	
5,400.00	5,214.21	4,945.91	4,887.25	26.34	16.58	173.02	577.68	-313.23	1,900.70	1,874.92	25.78	73.724	
5,431.69	5,244.39	4,974.01	4,914.91	26.54	16.69	173.02	581.96	-315.77	1,915.34	1,889.40	25.95	73.813	
5,500.00	5,309.70	5,034.96	4,974.89	26.89	16.94	173.08	591.24	-321.29	1,946.19	1,919.77	26.42	73.653	
5,600.00	5,406.12	5,125.45	5,063.95	27.29	17.29	173.17	605.03	-329.48	1,988.73	1,961.65	27.07	73.456	
5,700.00	5,503.40	5,217.36	5,154.40	27.65	17.66	173.22	619.03	-337.79	2,028.10	2,000.41	27.69	73.245	
5,800.00	5,601.44	5,310.56	5,246.14	27.98	18.03	173.26	633.23	-346.23	2,064.27	2,036.00	28.27	73.023	
5,900.00	5,700.10	5,404.96	5,339.04	28.26	18.40	173.28	647.62	-354.77	2,097.18	2,068.37	28.81	72.794	
6,000.00	5,799.27	5,500.43	5,433.00	28.50	18.78	173.28	662.16	-363.41	2,126.81	2,097.50	29.31	72.560	
6,100.00	5,898.82	5,596.86	5,527.90	28.69	19.16	173.26	676.85	-372.14	2,153.11	2,123.34	29.77	72.323	
6,200.00	5,998.65	5,696.88	5,625.25	28.85	19.54	173.13	705.40	-389.10	2,175.02	2,144.62	30.40	71.551	
6,300.00	6,098.61	5,797.17	5,725.61	28.96	20.51	173.04	724.57	-400.49	2,183.07	2,151.93	31.14	70.102	
6,318.39	6,117.00	5,819.56	5,747.00	28.97	20.54	-17.26	724.57	-400.49	2,183.13	2,151.93	31.19	69.992	
6,400.00	6,198.61	5,901.17	5,829.61	29.05	20.65	-17.26	724.57	-400.49	2,183.13	2,151.65	31.48	69.350	
6,500.00	6,298.61	5,971.17	5,898.61	29.13	20.80	-17.26	724.57	-400.49	2,183.13	2,151.30	31.83	68.593	

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_PANCOST 37-2
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4875.00ft (Original Well Elev)
Reference Site:	WELD_Pancost 20-2 PAD	MD Reference:	WELL @ 4875.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_PANCOST 37-2	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_PANCOST 37-2	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-15-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_Pancost 20-2 PAD - P_PANCOST 10-2 - P_PANCOST 10-2 - PLAN #1 1-15-10 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
6,600.00	6,398.61	6,471.17	6,398.61	29.22	20.94	-17.26	724.57	-400.49	2,183.13	2,150.95	32.18	67.847	
6,700.00	6,498.61	6,571.17	6,498.61	29.30	21.09	-17.26	724.57	-400.49	2,183.13	2,150.60	32.53	67.112	
6,800.00	6,598.61	6,671.17	6,598.61	29.39	21.24	-17.26	724.57	-400.49	2,183.13	2,150.24	32.88	66.388	
6,900.00	6,698.61	6,771.17	6,698.61	29.48	21.39	-17.26	724.57	-400.49	2,183.13	2,149.88	33.24	65.675	
7,000.00	6,798.61	6,871.17	6,798.61	29.57	21.54	-17.26	724.57	-400.49	2,183.13	2,149.53	33.60	64.974	
7,100.00	6,898.61	6,971.17	6,898.61	29.66	21.69	-17.26	724.57	-400.49	2,183.13	2,149.16	33.96	64.283	
7,200.00	6,998.61	7,071.17	6,998.61	29.75	21.84	-17.26	724.57	-400.49	2,183.13	2,148.80	34.32	63.603	
7,300.00	7,098.61	7,171.17	7,098.61	29.84	22.00	-17.26	724.57	-400.49	2,183.13	2,148.44	34.69	62.934	
7,400.00	7,198.61	7,271.17	7,198.61	29.94	22.15	-17.26	724.57	-400.49	2,183.13	2,148.07	35.06	62.275	
7,500.00	7,298.61	7,371.17	7,298.61	30.04	22.31	-17.26	724.57	-400.49	2,183.13	2,147.70	35.43	61.627	
7,600.00	7,398.61	7,471.17	7,398.61	30.13	22.47	-17.26	724.57	-400.49	2,183.13	2,147.33	35.80	60.989	
7,700.00	7,498.61	7,571.17	7,498.61	30.23	22.63	-17.26	724.57	-400.49	2,183.13	2,146.96	36.17	60.361	
7,738.39	7,537.00	7,609.56	7,537.00	30.27	22.69	-17.26	724.57	-400.49	2,183.13	2,146.81	36.31	60.123	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_PANCOST 37-2
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4875.00ft (Original Well Elev)
Reference Site:	WELD_Pancost 20-2 PAD	MD Reference:	WELL @ 4875.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_PANCOST 37-2	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_PANCOST 37-2	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-15-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_Pancost 20-2 PAD - P_PANCOST 23-2 - P_PANCOST 23-2 - PLAN #1 1-15-10 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	-89.66	0.36	-60.09	60.09				
100.00	100.00	100.00	100.00	0.10	0.10	-89.66	0.36	-60.09	60.09	59.90	0.19	314.521	
200.00	200.00	200.00	200.00	0.32	0.32	-89.66	0.36	-60.09	60.09	59.45	0.64	93.805	
300.00	300.00	300.00	300.00	0.55	0.55	-89.66	0.36	-60.09	60.09	59.00	1.09	55.122	
400.00	400.00	400.00	400.00	0.77	0.77	-89.66	0.36	-60.09	60.09	58.55	1.54	39.028	
500.00	500.00	500.00	500.00	0.99	0.99	-89.66	0.36	-60.09	60.09	58.10	1.99	30.208	
600.00	600.00	600.00	600.00	1.22	1.22	-89.66	0.36	-60.09	60.09	57.65	2.44	24.640	
700.00	700.00	700.00	700.00	1.44	1.44	-89.66	0.36	-60.09	60.09	57.20	2.89	20.805	
800.00	800.00	800.00	800.00	1.67	1.67	-89.66	0.36	-60.09	60.09	56.75	3.34	18.003	
900.00	900.00	900.00	900.00	1.89	1.89	-89.66	0.36	-60.09	60.09	56.30	3.79	15.866 CC, ES	
1,000.00	999.98	997.89	997.87	2.09	2.10	102.02	0.22	-61.76	62.13	57.95	4.19	14.836 SF	
1,100.00	1,099.84	1,095.40	1,095.25	2.27	2.30	105.61	-0.20	-66.73	68.46	63.90	4.56	15.019	
1,200.00	1,199.45	1,192.16	1,191.65	2.46	2.51	110.25	-0.88	-74.92	79.46	74.52	4.95	16.066	
1,300.00	1,298.70	1,287.80	1,286.62	2.68	2.74	114.84	-1.83	-86.20	95.49	90.13	5.36	17.820	
1,400.00	1,397.47	1,381.99	1,379.72	2.94	3.00	118.78	-3.02	-100.40	116.63	110.83	5.80	20.104	
1,500.00	1,495.62	1,475.06	1,471.22	3.24	3.29	121.92	-4.44	-117.37	142.80	136.52	6.29	22.717	
1,600.00	1,593.06	1,570.22	1,564.57	3.60	3.61	124.79	-5.98	-135.78	172.21	165.39	6.82	25.243	
1,700.00	1,689.64	1,664.49	1,657.04	4.02	3.95	127.45	-7.50	-154.01	204.04	196.64	7.40	27.583	
1,786.70	1,772.61	1,745.41	1,736.43	4.43	4.25	129.58	-8.81	-169.66	233.68	225.76	7.92	29.488	
1,800.00	1,785.28	1,757.76	1,748.54	4.50	4.30	129.96	-9.01	-172.04	238.38	230.37	8.01	29.755	
1,900.00	1,880.53	1,850.63	1,839.64	5.02	4.65	132.43	-10.51	-190.01	274.00	265.32	8.68	31.585	
2,000.00	1,975.77	1,943.50	1,930.75	5.56	5.02	134.33	-12.02	-207.97	309.96	300.60	9.36	33.131	
2,100.00	2,071.02	2,036.37	2,021.85	6.12	5.38	135.84	-13.52	-225.93	346.16	336.11	10.05	34.448	
2,200.00	2,166.27	2,129.23	2,112.95	6.69	5.76	137.07	-15.02	-243.89	382.53	371.78	10.75	35.578	
2,300.00	2,261.52	2,222.10	2,204.05	7.28	6.14	138.08	-16.52	-261.85	419.02	407.56	11.46	36.556	
2,400.00	2,356.77	2,314.97	2,295.16	7.86	6.52	138.93	-18.03	-279.81	455.61	443.43	12.18	37.408	
2,500.00	2,452.01	2,407.84	2,386.26	8.46	6.90	139.66	-19.53	-297.77	492.28	479.38	12.90	38.158	
2,600.00	2,547.26	2,500.71	2,477.36	9.05	7.29	140.28	-21.03	-315.73	529.00	515.38	13.63	38.820	
2,700.00	2,642.51	2,593.57	2,568.46	9.66	7.68	140.82	-22.53	-333.69	565.78	551.42	14.36	39.410	
2,800.00	2,737.76	2,686.44	2,659.56	10.26	8.07	141.30	-24.04	-351.65	602.59	587.50	15.09	39.939	
2,900.00	2,833.01	2,779.31	2,750.67	10.87	8.46	141.72	-25.54	-369.61	639.43	623.61	15.82	40.416	
3,000.00	2,928.25	2,872.18	2,841.77	11.48	8.85	142.10	-27.04	-387.57	676.30	659.74	16.56	40.848	
3,100.00	3,023.50	2,965.05	2,932.87	12.09	9.25	142.44	-28.55	-405.53	713.19	695.90	17.29	41.241	
3,200.00	3,118.75	3,057.92	3,023.97	12.70	9.64	142.74	-30.05	-423.49	750.10	732.07	18.03	41.600	
3,300.00	3,214.00	3,150.78	3,115.08	13.31	10.04	143.02	-31.55	-441.45	787.03	768.26	18.77	41.930	
3,400.00	3,309.25	3,243.65	3,206.18	13.93	10.44	143.27	-33.05	-459.41	823.97	804.46	19.51	42.235	
3,500.00	3,404.50	3,336.52	3,297.28	14.54	10.84	143.50	-34.56	-477.37	860.93	840.68	20.25	42.517	
3,600.00	3,499.74	3,429.39	3,388.38	15.16	11.23	143.71	-36.06	-495.33	897.89	876.90	20.99	42.778	
3,700.00	3,594.99	3,522.26	3,479.49	15.78	11.63	143.90	-37.56	-513.29	934.87	913.14	21.73	43.022	
3,800.00	3,690.24	3,615.12	3,570.59	16.40	12.03	144.08	-39.06	-531.26	971.85	949.38	22.47	43.250	
3,900.00	3,785.49	3,707.99	3,661.69	17.01	12.43	144.25	-40.57	-549.22	1,008.85	985.63	23.21	43.464	
4,000.00	3,880.74	3,800.86	3,752.79	17.63	12.83	144.40	-42.07	-567.18	1,045.84	1,021.89	23.95	43.665	
4,100.00	3,975.98	3,893.73	3,843.90	18.25	13.23	144.55	-43.57	-585.14	1,082.85	1,058.16	24.69	43.854	
4,200.00	4,071.23	3,986.60	3,935.00	18.87	13.63	144.68	-45.07	-603.10	1,119.86	1,094.42	25.44	44.026	
4,300.00	4,166.48	4,079.46	4,026.10	19.49	14.04	144.81	-46.58	-621.06	1,156.87	1,130.69	26.19	44.175	
4,400.00	4,261.73	4,172.33	4,117.20	20.11	14.44	144.93	-48.08	-639.02	1,193.89	1,166.95	26.94	44.314	
4,500.00	4,356.98	4,265.20	4,208.30	20.74	14.84	145.04	-49.58	-656.98	1,230.92	1,203.22	27.70	44.445	
4,600.00	4,452.22	4,358.07	4,299.41	21.36	15.24	145.14	-51.08	-674.94	1,267.95	1,239.50	28.45	44.569	
4,700.00	4,547.47	4,450.94	4,390.51	21.98	15.64	145.24	-52.59	-692.90	1,304.98	1,275.77	29.20	44.685	
4,800.00	4,642.72	4,543.80	4,481.61	22.60	16.05	145.33	-54.09	-710.86	1,342.01	1,312.05	29.96	44.796	
4,900.00	4,737.97	4,636.67	4,572.71	23.22	16.45	145.42	-55.59	-728.82	1,379.05	1,348.33	30.71	44.900	
5,000.00	4,833.22	4,729.54	4,663.82	23.85	16.85	145.50	-57.10	-746.78	1,416.09	1,384.62	31.47	44.999	

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_PANCOST 37-2
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4875.00ft (Original Well Elev)
Reference Site:	WELD_Pancost 20-2 PAD	MD Reference:	WELL @ 4875.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_PANCOST 37-2	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_PANCOST 37-2	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-15-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_Pancost 20-2 PAD - P_PANCOST 23-2 - P_PANCOST 23-2 - PLAN #1 1-15-10 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
5,100.00	4,928.46	4,822.41	4,754.92	24.47	17.25	145.58	-58.60	-764.74	1,453.13	1,420.91	32.22	45.093	
5,200.00	5,023.71	4,915.28	4,846.02	25.09	17.66	145.66	-60.10	-782.70	1,490.17	1,457.19	32.98	45.183	
5,300.00	5,118.96	5,008.14	4,937.12	25.72	18.06	145.73	-61.60	-800.66	1,527.22	1,493.48	33.74	45.268	
5,400.00	5,214.21	5,101.01	5,028.23	26.34	18.46	145.80	-63.11	-818.62	1,564.27	1,529.78	34.49	45.349	
5,431.69	5,244.39	5,130.44	5,057.09	26.54	18.59	145.82	-63.58	-824.31	1,576.01	1,541.28	34.73	45.374	
5,500.00	5,309.70	5,194.13	5,119.58	26.89	18.87	146.14	-64.61	-836.63	1,600.69	1,565.39	35.30	45.344	
5,600.00	5,406.12	5,288.22	5,211.88	27.29	19.28	146.52	-66.14	-854.83	1,634.54	1,598.47	36.06	45.323	
5,700.00	5,503.40	5,383.23	5,305.08	27.65	19.69	146.78	-67.67	-873.20	1,665.63	1,628.83	36.80	45.260	
5,800.00	5,601.44	5,479.03	5,399.06	27.98	20.11	146.95	-69.22	-891.73	1,693.94	1,656.43	37.51	45.161	
5,900.00	5,700.10	5,575.51	5,493.70	28.26	20.53	147.02	-70.78	-910.39	1,719.45	1,681.27	38.18	45.032	
6,000.00	5,799.27	5,702.24	5,618.23	28.50	21.02	146.93	-72.75	-933.85	1,741.74	1,702.85	38.89	44.789	
6,100.00	5,898.82	5,861.25	5,775.65	28.69	21.43	146.81	-74.60	-955.98	1,758.25	1,718.77	39.48	44.533	
6,200.00	5,998.65	6,022.89	5,936.70	28.85	21.75	146.74	-75.73	-969.52	1,768.41	1,728.46	39.95	44.262	
6,300.00	6,098.61	6,184.89	6,098.61	28.96	21.98	146.74	-76.11	-974.00	1,772.14	1,731.84	40.30	43.977	
6,318.39	6,117.00	6,203.28	6,117.00	28.97	22.00	-43.57	-76.11	-974.00	1,772.18	1,731.85	40.34	43.933	
6,400.00	6,198.61	6,284.89	6,198.61	29.05	22.11	-43.57	-76.11	-974.00	1,772.18	1,731.63	40.55	43.698	
6,500.00	6,298.61	6,384.89	6,298.61	29.13	22.24	-43.57	-76.11	-974.00	1,772.18	1,731.37	40.81	43.424	
6,600.00	6,398.61	6,484.89	6,398.61	29.22	22.37	-43.57	-76.11	-974.00	1,772.18	1,731.11	41.07	43.149	
6,700.00	6,498.61	6,584.89	6,498.61	29.30	22.50	-43.57	-76.11	-974.00	1,772.18	1,730.85	41.33	42.874	
6,800.00	6,598.61	6,684.89	6,598.61	29.39	22.63	-43.57	-76.11	-974.00	1,772.18	1,730.58	41.60	42.600	
6,900.00	6,698.61	6,784.89	6,698.61	29.48	22.77	-43.57	-76.11	-974.00	1,772.18	1,730.31	41.87	42.326	
7,000.00	6,798.61	6,884.89	6,798.61	29.57	22.91	-43.57	-76.11	-974.00	1,772.18	1,730.04	42.14	42.052	
7,100.00	6,898.61	6,984.89	6,898.61	29.66	23.05	-43.57	-76.11	-974.00	1,772.18	1,729.77	42.42	41.779	
7,200.00	6,998.61	7,084.89	6,998.61	29.75	23.19	-43.57	-76.11	-974.00	1,772.18	1,729.49	42.70	41.506	
7,300.00	7,098.61	7,184.89	7,098.61	29.84	23.33	-43.57	-76.11	-974.00	1,772.18	1,729.21	42.98	41.235	
7,400.00	7,198.61	7,284.89	7,198.61	29.94	23.47	-43.57	-76.11	-974.00	1,772.18	1,728.92	43.26	40.964	
7,500.00	7,298.61	7,384.89	7,298.61	30.04	23.61	-43.57	-76.11	-974.00	1,772.18	1,728.64	43.55	40.694	
7,600.00	7,398.61	7,484.89	7,398.61	30.13	23.76	-43.57	-76.11	-974.00	1,772.18	1,728.35	43.84	40.425	
7,700.00	7,498.61	7,584.89	7,498.61	30.23	23.90	-43.57	-76.11	-974.00	1,772.18	1,728.05	44.13	40.157	
7,711.67	7,510.29	7,596.56	7,510.29	30.24	23.92	-43.57	-76.11	-974.00	1,772.18	1,728.02	44.17	40.126	
7,738.39	7,537.00	7,603.28	7,517.00	30.27	23.93	-43.57	-76.11	-974.00	1,772.30	1,728.09	44.21	40.086	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_PANCOST 37-2
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4875.00ft (Original Well Elev)
Reference Site:	WELD_Pancost 20-2 PAD	MD Reference:	WELL @ 4875.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_PANCOST 37-2	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_PANCOST 37-2	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-15-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_Pancost 20-2 PAD - P_PANCOST 36-2 - P_PANCOST 36-2 - PLAN #1 1-15-10 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)	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	-89.30	0.36	-29.90	29.91				
100.00	100.00	100.00	100.00	0.10	0.10	-89.30	0.36	-29.90	29.91	29.72	0.19	156.538	
200.00	200.00	200.00	200.00	0.32	0.32	-89.30	0.36	-29.90	29.91	29.27	0.64	46.687	
300.00	300.00	300.00	300.00	0.55	0.55	-89.30	0.36	-29.90	29.91	28.82	1.09	27.435	
400.00	400.00	400.00	400.00	0.77	0.77	-89.30	0.36	-29.90	29.91	28.37	1.54	19.424	
500.00	500.00	500.00	500.00	0.99	0.99	-89.30	0.36	-29.90	29.91	27.92	1.99	15.035	
600.00	600.00	600.00	600.00	1.22	1.22	-89.30	0.36	-29.90	29.91	27.47	2.44	12.263	
700.00	700.00	700.00	700.00	1.44	1.44	-89.30	0.36	-29.90	29.91	27.02	2.89	10.355	
800.00	800.00	800.00	800.00	1.67	1.67	-89.30	0.36	-29.90	29.91	26.57	3.34	8.960	
900.00	900.00	900.00	900.00	1.89	1.89	-89.30	0.36	-29.90	29.91	26.12	3.79	7.897 CC, ES	
1,000.00	999.98	999.43	999.41	2.09	2.09	101.42	-1.09	-30.84	31.16	26.98	4.18	7.454 SF	
1,100.00	1,099.84	1,098.77	1,098.61	2.27	2.27	102.49	-5.44	-33.63	34.93	30.39	4.54	7.700	
1,200.00	1,199.45	1,197.92	1,197.38	2.46	2.47	103.81	-12.66	-38.27	41.22	36.30	4.92	8.372	
1,300.00	1,298.70	1,296.78	1,295.51	2.68	2.69	105.08	-22.72	-44.72	50.04	44.68	5.36	9.338	
1,400.00	1,397.47	1,395.26	1,392.80	2.94	2.95	106.13	-35.57	-52.97	61.37	55.51	5.86	10.478	
1,500.00	1,495.62	1,493.28	1,489.05	3.24	3.25	106.95	-51.15	-62.97	75.19	68.76	6.44	11.684	
1,600.00	1,593.06	1,590.76	1,584.08	3.60	3.59	107.53	-69.38	-74.68	91.48	84.37	7.11	12.868	
1,700.00	1,689.64	1,687.60	1,677.72	4.02	3.99	107.93	-90.17	-88.03	110.19	102.30	7.89	13.971	
1,786.70	1,772.61	1,771.00	1,757.65	4.43	4.39	108.16	-110.20	-100.89	128.35	119.69	8.65	14.830	
1,800.00	1,785.28	1,783.75	1,769.80	4.50	4.45	108.23	-113.44	-102.96	131.28	122.50	8.78	14.955	
1,900.00	1,880.53	1,879.27	1,860.31	5.02	4.97	108.03	-139.12	-119.45	154.05	144.27	9.77	15.765	
2,000.00	1,975.77	1,974.47	1,949.47	5.56	5.53	106.93	-167.19	-137.47	178.09	167.26	10.83	16.441	
2,100.00	2,071.02	2,071.33	2,039.79	6.12	6.16	105.78	-196.64	-156.37	202.67	190.72	11.95	16.955	
2,200.00	2,166.27	2,168.19	2,130.10	6.69	6.79	104.88	-226.09	-175.28	227.31	214.21	13.10	17.357	
2,300.00	2,261.52	2,265.05	2,220.42	7.28	7.44	104.15	-255.54	-194.19	251.99	237.73	14.26	17.675	
2,400.00	2,356.77	2,361.91	2,310.74	7.86	8.10	103.55	-284.99	-213.09	276.70	261.27	15.43	17.931	
2,500.00	2,452.01	2,458.78	2,401.06	8.46	8.77	103.05	-314.44	-232.00	301.44	284.82	16.62	18.140	
2,600.00	2,547.26	2,555.64	2,491.38	9.05	9.45	102.63	-343.89	-250.91	326.19	308.38	17.81	18.313	
2,700.00	2,642.51	2,652.50	2,581.70	9.66	10.12	102.26	-373.34	-269.81	350.96	331.94	19.01	18.459	
2,800.00	2,737.76	2,749.36	2,672.01	10.26	10.81	101.95	-402.79	-288.72	375.74	355.52	20.22	18.583	
2,900.00	2,833.01	2,846.22	2,762.33	10.87	11.49	101.67	-432.24	-307.63	400.53	379.10	21.43	18.690	
3,000.00	2,928.25	2,943.08	2,852.65	11.48	12.18	101.43	-461.69	-326.53	425.32	402.68	22.64	18.783	
3,100.00	3,023.50	3,039.95	2,942.97	12.09	12.87	101.21	-491.14	-345.44	450.13	426.26	23.86	18.864	
3,200.00	3,118.75	3,136.81	3,033.29	12.70	13.57	101.01	-520.59	-364.35	474.94	449.85	25.08	18.935	
3,300.00	3,214.00	3,233.67	3,123.61	13.31	14.26	100.84	-550.04	-383.25	499.75	473.44	26.30	18.999	
3,400.00	3,309.25	3,330.53	3,213.92	13.93	14.96	100.68	-579.49	-402.16	524.57	497.04	27.53	19.055	
3,500.00	3,404.50	3,427.39	3,304.24	14.54	15.65	100.53	-608.94	-421.07	549.39	520.63	28.75	19.107	
3,600.00	3,499.74	3,524.25	3,394.56	15.16	16.35	100.40	-638.39	-439.97	574.21	544.23	29.98	19.153	
3,700.00	3,594.99	3,621.12	3,484.88	15.78	17.05	100.28	-667.84	-458.88	599.04	567.83	31.21	19.195	
3,800.00	3,690.24	3,717.98	3,575.20	16.40	17.75	100.17	-697.30	-477.79	623.87	591.43	32.44	19.234	
3,900.00	3,785.49	3,814.84	3,665.52	17.01	18.45	100.07	-726.75	-496.69	648.70	615.03	33.66	19.270	
4,000.00	3,880.74	3,911.70	3,755.83	17.63	19.15	99.97	-756.20	-515.60	673.53	638.64	34.89	19.302	
4,100.00	3,975.98	4,008.56	3,846.15	18.25	19.85	99.88	-785.65	-534.51	698.36	662.24	36.12	19.333	
4,200.00	4,071.23	4,105.43	3,936.47	18.87	20.56	99.80	-815.10	-553.41	723.20	685.85	37.35	19.361	
4,300.00	4,166.48	4,202.29	4,026.79	19.49	21.26	99.72	-844.55	-572.32	748.04	709.45	38.58	19.388	
4,400.00	4,261.73	4,299.15	4,117.11	20.11	21.96	99.65	-874.00	-591.23	772.88	733.06	39.81	19.412	
4,500.00	4,356.98	4,396.01	4,207.43	20.74	22.67	99.58	-903.45	-610.13	797.71	756.67	41.04	19.436	
4,600.00	4,452.22	4,492.87	4,297.74	21.36	23.37	99.52	-932.90	-629.04	822.56	780.28	42.27	19.457	
4,700.00	4,547.47	4,589.73	4,388.06	21.98	24.08	99.46	-962.35	-647.95	847.40	803.89	43.50	19.478	
4,800.00	4,642.72	4,686.60	4,478.38	22.60	24.78	99.40	-991.80	-666.85	872.24	827.50	44.74	19.498	
4,900.00	4,737.97	4,783.46	4,568.70	23.22	25.49	99.35	-1,021.25	-685.76	897.08	851.12	45.97	19.516	
5,000.00	4,833.22	4,880.32	4,659.02	23.85	26.19	99.30	-1,050.70	-704.66	921.93	874.73	47.20	19.534	

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_PANCOST 37-2
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4875.00ft (Original Well Elev)
Reference Site:	WELD_Pancost 20-2 PAD	MD Reference:	WELL @ 4875.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_PANCOST 37-2	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_PANCOST 37-2	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-15-10 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						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.00	4,928.46	4,977.18	4,749.34	24.47	26.90	99.25	-1,080.15	-723.57	946.77	898.34	48.43	19.551	
5,200.00	5,023.71	5,074.04	4,839.65	25.09	27.60	99.21	-1,109.60	-742.48	971.61	921.96	49.65	19.567	
5,300.00	5,118.96	5,170.90	4,929.97	25.72	28.31	99.16	-1,139.05	-761.38	996.46	945.58	50.88	19.583	
5,400.00	5,214.21	5,267.77	5,020.29	26.34	29.01	99.12	-1,168.50	-780.29	1,021.30	969.19	52.11	19.598	
5,431.69	5,244.39	5,298.46	5,048.91	26.54	29.24	99.11	-1,177.84	-786.28	1,029.18	976.68	52.50	19.603	
5,500.00	5,309.70	5,371.98	5,117.55	26.89	29.73	99.38	-1,199.99	-800.50	1,045.92	992.57	53.35	19.606	
5,600.00	5,406.12	5,492.95	5,231.78	27.29	30.35	99.71	-1,233.48	-822.01	1,068.36	1,013.99	54.37	19.650	
5,700.00	5,503.40	5,615.34	5,348.96	27.65	30.89	99.98	-1,263.20	-841.09	1,088.03	1,032.76	55.27	19.685	
5,800.00	5,601.44	5,738.99	5,468.76	27.98	31.37	100.21	-1,288.93	-857.60	1,104.87	1,048.79	56.08	19.702	
5,900.00	5,700.10	5,863.72	5,590.83	28.26	31.79	100.40	-1,310.45	-871.41	1,118.84	1,062.05	56.78	19.703	
6,000.00	5,799.27	5,989.34	5,714.78	28.50	32.14	100.55	-1,327.58	-882.41	1,129.87	1,072.49	57.38	19.690	
6,100.00	5,898.82	6,115.66	5,840.20	28.69	32.43	100.65	-1,340.18	-890.50	1,137.94	1,080.07	57.87	19.664	
6,200.00	5,998.65	6,242.46	5,966.63	28.85	32.64	100.72	-1,348.13	-895.61	1,143.02	1,084.77	58.24	19.625	
6,300.00	6,098.61	6,369.52	6,093.63	28.96	32.79	100.74	-1,351.38	-897.69	1,145.08	1,086.56	58.52	19.569	
6,318.39	6,117.00	6,392.90	6,117.00	28.97	32.81	-89.56	-1,351.46	-897.74	1,145.13	1,086.57	58.56	19.555	
6,400.00	6,198.61	6,474.51	6,198.61	29.05	32.87	-89.56	-1,351.46	-897.74	1,145.13	1,086.43	58.70	19.507	
6,500.00	6,298.61	6,574.51	6,298.61	29.13	32.95	-89.56	-1,351.46	-897.74	1,145.13	1,086.26	58.87	19.452	
6,600.00	6,398.61	6,674.51	6,398.61	29.22	33.02	-89.56	-1,351.46	-897.74	1,145.13	1,086.09	59.04	19.397	
6,700.00	6,498.61	6,774.51	6,498.61	29.30	33.10	-89.56	-1,351.46	-897.74	1,145.13	1,085.92	59.21	19.341	
6,800.00	6,598.61	6,874.51	6,598.61	29.39	33.18	-89.56	-1,351.46	-897.74	1,145.13	1,085.75	59.38	19.284	
6,900.00	6,698.61	6,974.51	6,698.61	29.48	33.26	-89.56	-1,351.46	-897.74	1,145.13	1,085.57	59.56	19.227	
7,000.00	6,798.61	7,074.51	6,798.61	29.57	33.35	-89.56	-1,351.46	-897.74	1,145.13	1,085.39	59.74	19.169	
7,100.00	6,898.61	7,174.51	6,898.61	29.66	33.43	-89.56	-1,351.46	-897.74	1,145.13	1,085.21	59.92	19.110	
7,200.00	6,998.61	7,274.51	6,998.61	29.75	33.51	-89.56	-1,351.46	-897.74	1,145.13	1,085.02	60.11	19.051	
7,300.00	7,098.61	7,374.51	7,098.61	29.84	33.60	-89.56	-1,351.46	-897.74	1,145.13	1,084.83	60.30	18.991	
7,400.00	7,198.61	7,474.51	7,198.61	29.94	33.69	-89.56	-1,351.46	-897.74	1,145.13	1,084.64	60.49	18.931	
7,500.00	7,298.61	7,574.51	7,298.61	30.04	33.78	-89.56	-1,351.46	-897.74	1,145.13	1,084.45	60.68	18.871	
7,600.00	7,398.61	7,674.51	7,398.61	30.13	33.87	-89.56	-1,351.46	-897.74	1,145.13	1,084.25	60.88	18.810	
7,700.00	7,498.61	7,774.51	7,498.61	30.23	33.96	-89.56	-1,351.46	-897.74	1,145.13	1,084.05	61.08	18.748	
7,738.39	7,537.00	7,812.90	7,537.00	30.27	33.99	-89.56	-1,351.46	-897.74	1,145.13	1,083.97	61.16	18.724	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_PANCOST 37-2
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4875.00ft (Original Well Elev)
Reference Site:	WELD_Pancost 20-2 PAD	MD Reference:	WELL @ 4875.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_PANCOST 37-2	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_PANCOST 37-2	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-15-10 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						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	-47.66	52.45	-57.57	80.41				
100.00	100.00	80.00	80.00	0.10	1.60	-47.66	52.45	-57.57	77.88	76.19	1.70	45.934	
200.00	200.00	180.00	180.00	0.32	5.20	-47.66	52.45	-57.57	77.88	72.36	5.52	14.109	
300.00	300.00	280.00	280.00	0.55	9.20	-47.66	52.45	-57.57	77.88	68.14	9.75	7.992	
400.00	400.00	380.00	380.00	0.77	13.20	-47.66	52.45	-57.57	77.88	63.91	13.97	5.575	
500.00	500.00	480.00	480.00	0.99	17.20	-47.66	52.45	-57.57	77.88	59.69	18.19	4.281	
600.00	600.00	580.00	580.00	1.22	21.20	-47.66	52.45	-57.57	77.88	55.46	22.42	3.474	
700.00	700.00	680.00	680.00	1.44	25.20	-47.66	52.45	-57.57	77.88	51.24	26.64	2.923	
800.00	800.00	780.00	780.00	1.67	29.20	-47.66	52.45	-57.57	77.88	47.02	30.87	2.523	
900.00	900.00	880.00	880.00	1.89	33.20	-47.66	52.45	-57.57	77.88	42.79	35.09	2.219 CC	
1,000.00	999.98	979.98	979.98	2.09	37.20	143.39	52.45	-57.57	79.28	40.00	39.28	2.018 ES	
1,100.00	1,099.84	1,079.84	1,079.84	2.27	41.19	145.48	52.45	-57.57	83.54	40.14	43.40	1.925	
1,200.00	1,199.45	1,179.45	1,179.45	2.46	45.18	148.52	52.45	-57.57	90.86	43.40	47.46	1.915 SF	
1,300.00	1,298.70	1,278.70	1,278.70	2.68	49.15	152.01	52.45	-57.57	101.46	50.03	51.44	1.973	
1,400.00	1,397.47	1,377.47	1,377.47	2.94	53.10	155.53	52.45	-57.57	115.54	60.24	55.30	2.089	
1,500.00	1,495.62	1,475.62	1,475.62	3.24	57.02	158.79	52.45	-57.57	133.18	74.14	59.03	2.256	
1,600.00	1,593.06	1,573.06	1,573.06	3.60	60.92	161.67	52.45	-57.57	154.41	91.80	62.61	2.466	
1,700.00	1,689.64	1,669.64	1,669.64	4.02	64.79	164.13	52.45	-57.57	179.23	113.21	66.02	2.715	
1,786.70	1,772.61	1,752.61	1,752.61	4.43	68.10	165.93	52.45	-57.57	203.60	134.77	68.83	2.958	
1,800.00	1,785.28	1,765.28	1,765.28	4.50	68.61	166.21	52.45	-57.57	207.54	138.20	69.34	2.993	
1,900.00	1,880.53	1,860.53	1,860.53	5.02	72.42	167.96	52.45	-57.57	237.30	164.10	73.20	3.242	
2,000.00	1,975.77	1,955.77	1,955.77	5.56	76.23	169.32	52.45	-57.57	267.22	190.15	77.07	3.467	
2,100.00	2,071.02	2,051.02	2,051.02	6.12	80.04	170.40	52.45	-57.57	297.25	216.30	80.96	3.672	
2,200.00	2,166.27	2,146.27	2,146.27	6.69	83.85	171.29	52.45	-57.57	327.36	242.51	84.85	3.858	
2,300.00	2,261.52	2,241.52	2,241.52	7.28	87.66	172.03	52.45	-57.57	357.53	268.78	88.75	4.029	
2,400.00	2,356.77	2,336.77	2,336.77	7.86	91.47	172.65	52.45	-57.57	387.74	295.09	92.65	4.185	
2,500.00	2,452.01	2,432.01	2,432.01	8.46	95.28	173.19	52.45	-57.57	417.99	321.43	96.56	4.329	
2,600.00	2,547.26	2,527.26	2,527.26	9.05	99.09	173.65	52.45	-57.57	448.27	347.79	100.47	4.462	
2,700.00	2,642.51	2,622.51	2,622.51	9.66	102.90	174.05	52.45	-57.57	478.57	374.18	104.39	4.585	
2,800.00	2,737.76	2,717.76	2,717.76	10.26	106.71	174.41	52.45	-57.57	508.89	400.58	108.31	4.699	
2,900.00	2,833.01	2,813.01	2,813.01	10.87	110.52	174.72	52.45	-57.57	539.22	427.00	112.23	4.805	
3,000.00	2,928.25	2,908.25	2,908.25	11.48	114.33	175.00	52.45	-57.57	569.57	453.42	116.15	4.904	
3,100.00	3,023.50	3,003.50	3,003.50	12.09	118.14	175.26	52.45	-57.57	599.93	479.86	120.07	4.996	
3,200.00	3,118.75	3,098.75	3,098.75	12.70	121.95	175.49	52.45	-57.57	630.30	506.31	124.00	5.083	
3,300.00	3,214.00	3,194.00	3,194.00	13.31	125.76	175.69	52.45	-57.57	660.68	532.76	127.92	5.165	
3,400.00	3,309.25	3,289.25	3,289.25	13.93	129.57	175.88	52.45	-57.57	691.07	559.21	131.85	5.241	
3,500.00	3,404.50	3,384.50	3,384.50	14.54	133.38	176.06	52.45	-57.57	721.46	585.68	135.78	5.313	
3,600.00	3,499.74	3,479.74	3,479.74	15.16	137.19	176.22	52.45	-57.57	751.85	612.15	139.71	5.382	
3,700.00	3,594.99	3,574.99	3,574.99	15.78	141.00	176.36	52.45	-57.57	782.26	638.62	143.64	5.446	
3,800.00	3,690.24	3,670.24	3,670.24	16.40	144.81	176.50	52.45	-57.57	812.66	665.09	147.57	5.507	
3,900.00	3,785.49	3,765.49	3,765.49	17.01	148.62	176.63	52.45	-57.57	843.07	691.57	151.50	5.565	
4,000.00	3,880.74	3,860.74	3,860.74	17.63	152.43	176.74	52.45	-57.57	873.49	718.05	155.43	5.620	
4,100.00	3,975.98	3,955.98	3,955.98	18.25	156.24	176.85	52.45	-57.57	903.90	744.54	159.37	5.672	
4,200.00	4,071.23	4,051.23	4,051.23	18.87	160.05	176.96	52.45	-57.57	934.32	771.02	163.30	5.722	
4,300.00	4,166.48	4,146.48	4,146.48	19.49	163.86	177.05	52.45	-57.57	964.74	797.51	167.23	5.769	
4,400.00	4,261.73	4,241.73	4,241.73	20.11	167.67	177.14	52.45	-57.57	995.17	824.00	171.17	5.814	
4,500.00	4,356.98	4,336.98	4,336.98	20.74	171.48	177.23	52.45	-57.57	1,025.60	850.49	175.10	5.857	
4,600.00	4,452.22	4,432.22	4,432.22	21.36	175.29	177.31	52.45	-57.57	1,056.02	876.99	179.04	5.898	
4,700.00	4,547.47	4,527.47	4,527.47	21.98	179.10	177.38	52.45	-57.57	1,086.45	903.48	182.97	5.938	
4,800.00	4,642.72	4,622.72	4,622.72	22.60	182.91	177.45	52.45	-57.57	1,116.89	929.98	186.91	5.976	
4,900.00	4,737.97	4,717.97	4,717.97	23.22	186.72	177.52	52.45	-57.57	1,147.32	956.48	190.84	6.012	
5,000.00	4,833.22	4,813.22	4,813.22	23.85	190.53	177.59	52.45	-57.57	1,177.75	982.97	194.78	6.047	

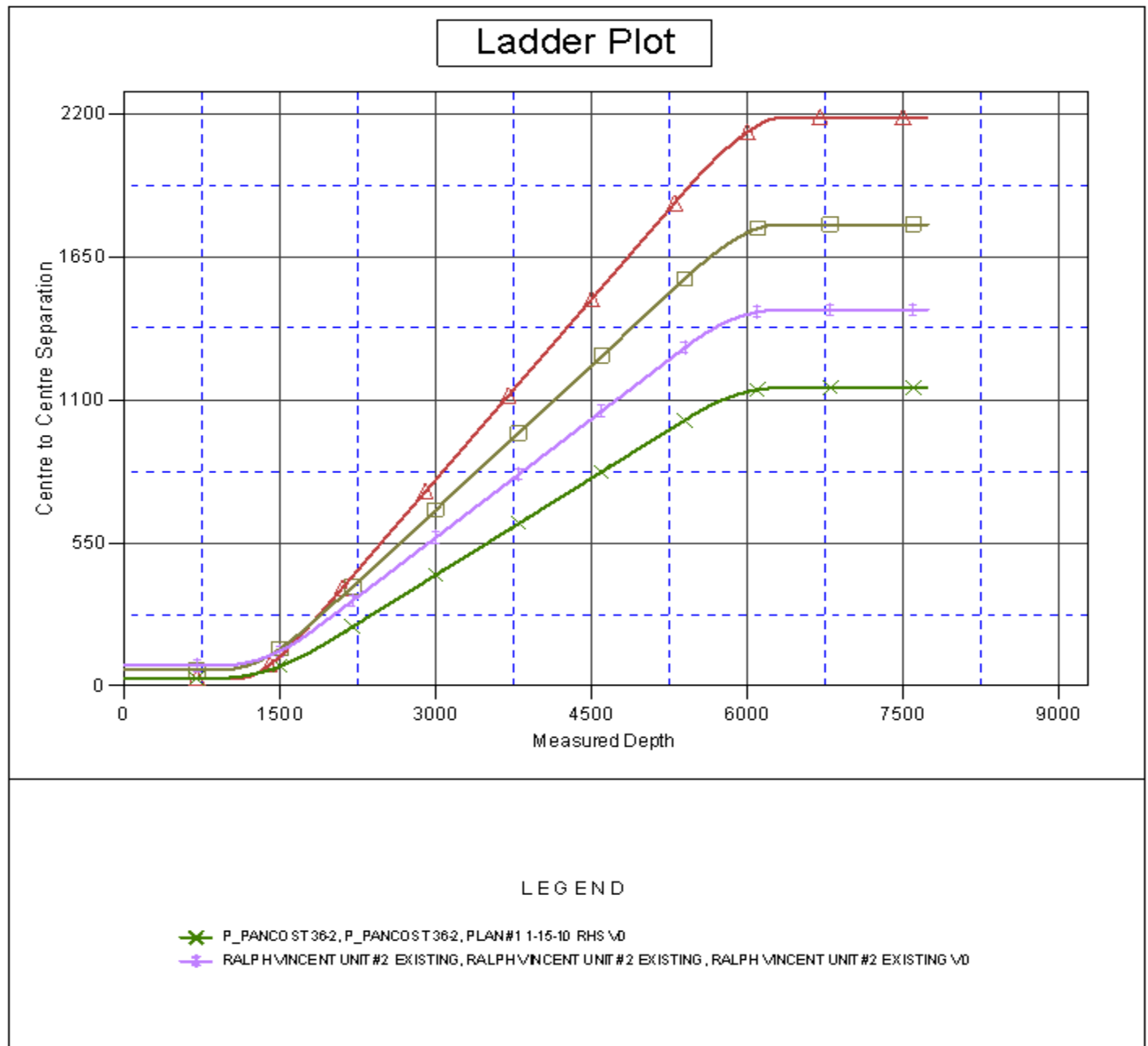
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_PANCOST 37-2
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4875.00ft (Original Well Elev)
Reference Site:	WELD_Pancost 20-2 PAD	MD Reference:	WELL @ 4875.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_PANCOST 37-2	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_PANCOST 37-2	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-15-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_Pancost 20-2 PAD - RALPH VINCENT UNIT #2 EXISTING - RALPH VINCENT UNIT #2 EXISTI												Offset Site Error:	0.00 ft
Survey Program: 0-UNKNOWN												Offset Well Error:	0.00 ft
Reference	Offset	Semi Major Axis		Distance									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.00	4,928.46	4,908.46	4,908.46	24.47	194.34	177.65	52.45	-57.57	1,208.19	1,009.47	198.72	6.080	
5,200.00	5,023.71	5,003.71	5,003.71	25.09	198.15	177.70	52.45	-57.57	1,238.63	1,035.98	202.65	6.112	
5,300.00	5,118.96	5,098.96	5,098.96	25.72	201.96	177.76	52.45	-57.57	1,269.07	1,062.48	206.59	6.143	
5,400.00	5,214.21	5,194.21	5,194.21	26.34	205.77	177.81	52.45	-57.57	1,299.50	1,088.98	210.53	6.173	
5,431.69	5,244.39	5,224.39	5,224.39	26.54	206.98	177.83	52.45	-57.57	1,309.15	1,097.38	211.77	6.182	
5,500.00	5,309.70	5,289.70	5,289.70	26.89	209.59	177.88	52.45	-57.57	1,329.17	1,113.33	215.84	6.158	
5,600.00	5,406.12	5,386.12	5,386.12	27.29	213.44	177.94	52.45	-57.57	1,355.65	1,133.89	221.76	6.113	
5,700.00	5,503.40	5,483.40	5,483.40	27.65	217.34	177.99	52.45	-57.57	1,378.76	1,151.24	227.51	6.060	
5,800.00	5,601.44	5,581.44	5,581.44	27.98	221.26	178.03	52.45	-57.57	1,398.45	1,165.39	233.06	6.000	
5,900.00	5,700.10	5,680.10	5,680.10	28.26	225.20	178.07	52.45	-57.57	1,414.72	1,176.33	238.39	5.934	
6,000.00	5,799.27	5,779.27	5,779.27	28.50	229.17	178.09	52.45	-57.57	1,427.54	1,184.06	243.47	5.863	
6,100.00	5,898.82	5,878.82	5,878.82	28.69	233.15	178.11	52.45	-57.57	1,436.89	1,188.59	248.29	5.787	
6,200.00	5,998.65	5,978.65	5,978.65	28.85	237.15	178.12	52.45	-57.57	1,442.76	1,189.93	252.83	5.706	
6,300.00	6,098.61	6,078.61	6,078.61	28.96	241.14	178.13	52.45	-57.57	1,445.14	1,188.08	257.06	5.622	
6,318.39	6,117.00	6,097.00	6,097.00	28.97	241.88	-12.18	52.45	-57.57	1,445.20	1,187.40	257.81	5.606	
6,400.00	6,198.61	6,178.61	6,178.61	29.05	245.14	-12.18	52.45	-57.57	1,445.20	1,184.00	261.20	5.533	
6,500.00	6,298.61	6,278.61	6,278.61	29.13	249.14	-12.18	52.45	-57.57	1,445.20	1,179.85	265.36	5.446	
6,600.00	6,398.61	6,378.61	6,378.61	29.22	253.14	-12.18	52.45	-57.57	1,445.20	1,175.69	269.51	5.362	
6,700.00	6,498.61	6,478.61	6,478.61	29.30	257.14	-12.18	52.45	-57.57	1,445.20	1,171.54	273.67	5.281	
6,800.00	6,598.61	6,578.61	6,578.61	29.39	261.14	-12.18	52.45	-57.57	1,445.20	1,167.38	277.82	5.202	
6,900.00	6,698.61	6,678.61	6,678.61	29.48	265.14	-12.18	52.45	-57.57	1,445.20	1,163.22	281.98	5.125	
7,000.00	6,798.61	6,778.61	6,778.61	29.57	269.14	-12.18	52.45	-57.57	1,445.20	1,159.06	286.15	5.051	
7,100.00	6,898.61	6,878.61	6,878.61	29.66	273.14	-12.18	52.45	-57.57	1,445.20	1,154.89	290.31	4.978	
7,200.00	6,998.61	6,978.61	6,978.61	29.75	277.14	-12.18	52.45	-57.57	1,445.20	1,150.73	294.47	4.908	
7,300.00	7,098.61	7,078.61	7,078.61	29.84	281.14	-12.18	52.45	-57.57	1,445.20	1,146.57	298.64	4.839	
7,400.00	7,198.61	7,178.61	7,178.61	29.94	285.14	-12.18	52.45	-57.57	1,445.20	1,142.40	302.80	4.773	
7,500.00	7,298.61	7,278.61	7,278.61	30.04	289.14	-12.18	52.45	-57.57	1,445.20	1,138.23	306.97	4.708	
7,600.00	7,398.61	7,378.61	7,378.61	30.13	293.14	-12.18	52.45	-57.57	1,445.20	1,134.06	311.14	4.645	
7,700.00	7,498.61	7,478.61	7,478.61	30.23	297.14	-12.18	52.45	-57.57	1,445.20	1,129.89	315.31	4.583	
7,738.39	7,537.00	7,517.00	7,517.00	30.27	298.68	-12.18	52.45	-57.57	1,445.20	1,128.29	316.91	4.560	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_PANCOST 37-2
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4875.00ft (Original Well Elev)
Reference Site:	WELD_Pancost 20-2 PAD	MD Reference:	WELL @ 4875.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_PANCOST 37-2	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_PANCOST 37-2	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-15-10 RHS	Offset TVD Reference:	Offset Datum

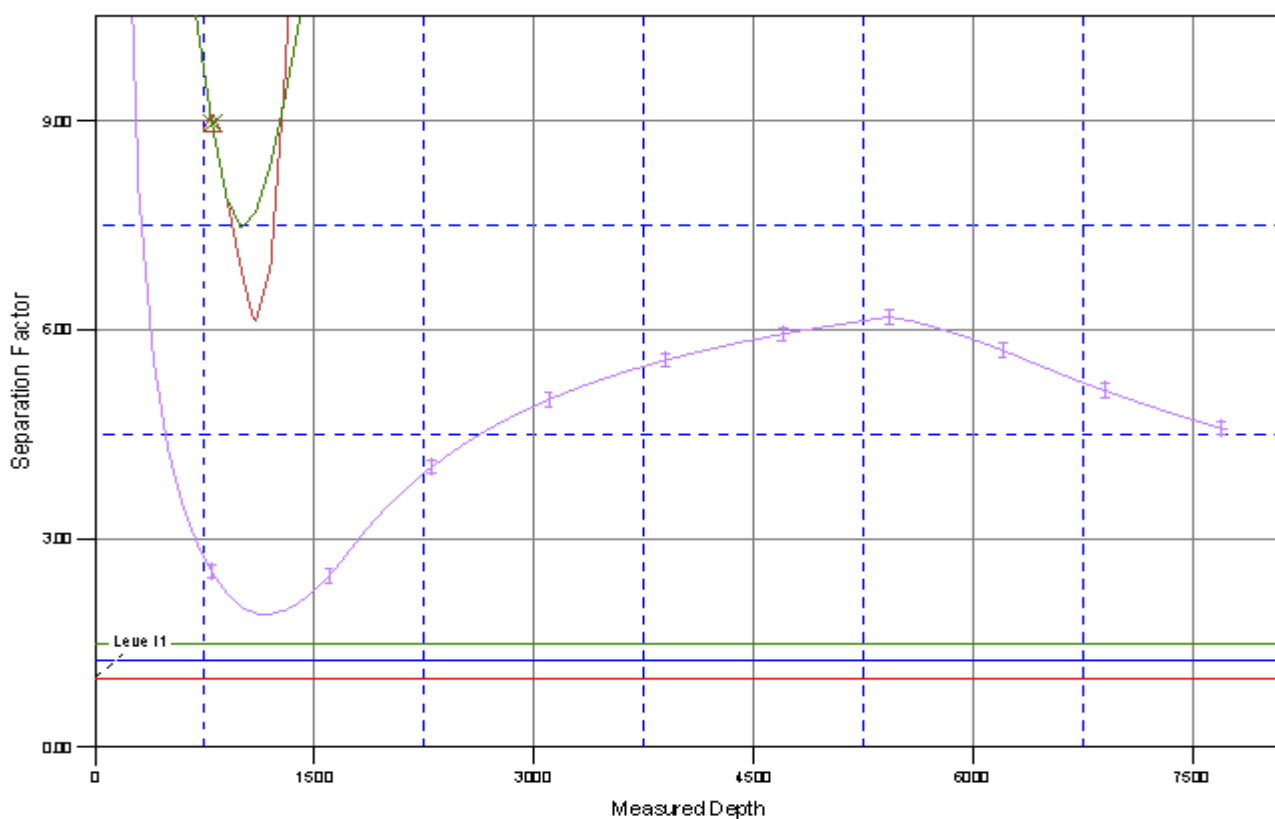
Reference Depths are relative to WELL @ 4875.00ft (Original Well Elev) Coordinates are relative to: P_PANCOST 37-2
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is 105° 30' 0.000 W ° Grid Convergence at Surface is: 0.42°





Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_PANCOST 37-2
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4875.00ft (Original Well Elev)
Reference Site:	WELD_Pancost 20-2 PAD	MD Reference:	WELL @ 4875.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_PANCOST 37-2	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_PANCOST 37-2	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-15-10 RHS	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4875.00ft (Original Well Elev) Coordinates are relative to: P_PANCOST 37-2
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: 0.42°

Separation Factor Plot



LEGEND

-  P_PANCOST 36-2, P_PANCOST 36-2, PLAN#1 1-15-10 RHS \0
-  RALPH VINCENT UNIT #2 EXISTING, RALPH VINCENT UNIT #2 EXISTING, RALPH VINCENT UNIT #2 EXISTING \0