



US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_Pancost 20-2 PAD

P_PANCOST 23-2

P_PANCOST 23-2

Plan: PLAN #1 1-15-10 RHS

Standard Planning Report

29 January, 2010





Azimuths to True North
 Magnetic North: 9.08°
 Magnetic Field
 Strength: 53145.9nT
 Dip Angle: 66.89°
 Date: 1/15/2010
 Model: IGRF2010

WELL DETAILS: P_PANCOST 23-2

+N/-S	+E/-W	Northing	Ground Level: Easting	Latitude	Longitude	Slot
0.00	0.00	1303109.60	3180482.19	40° 9' 49.057 N	104° 51' 15.188 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	
1459.53	11.19	265.22	1455.98	-4.54	-54.28	2.00	265.22	54.47	
5623.74	11.19	265.22	5541.02	-71.92	-859.63	0.00	0.00	862.63	
6183.28	0.00	0.00	6097.00	-76.46	-913.91	2.00	180.00	917.10	
7603.28	0.00	0.00	7517.00	-76.46	-913.91	0.00	0.00	917.10	PBHL_PANCOST 23-2(1325 FSL 2540 FEL)50'TGT RAD

CASING DETAILS

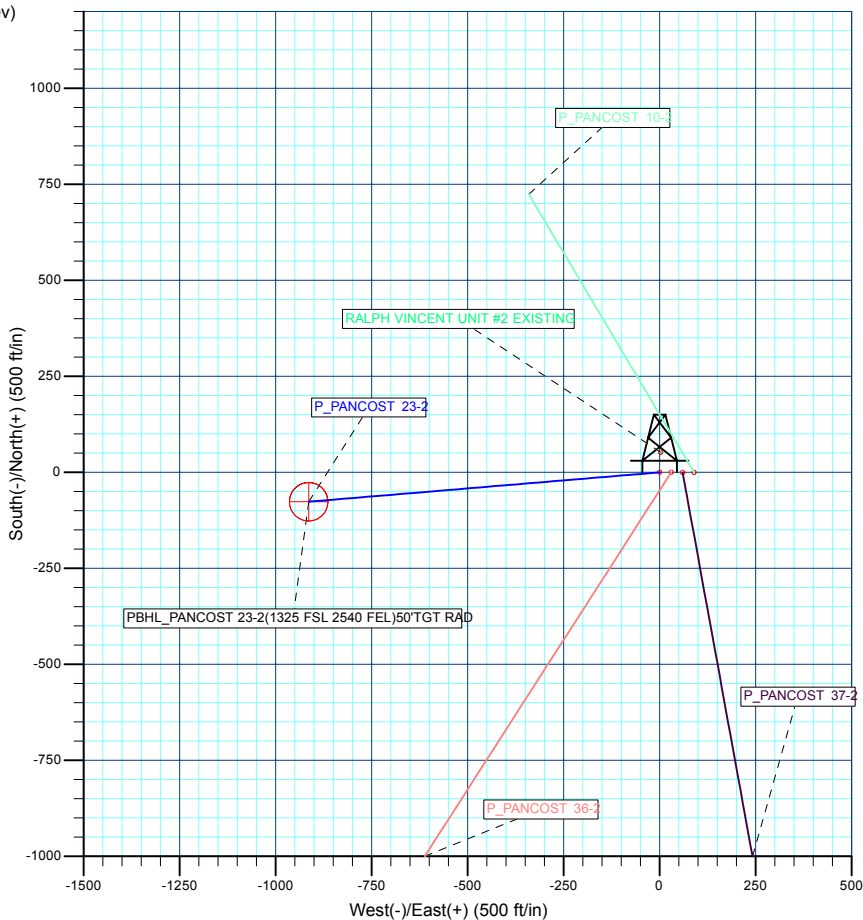
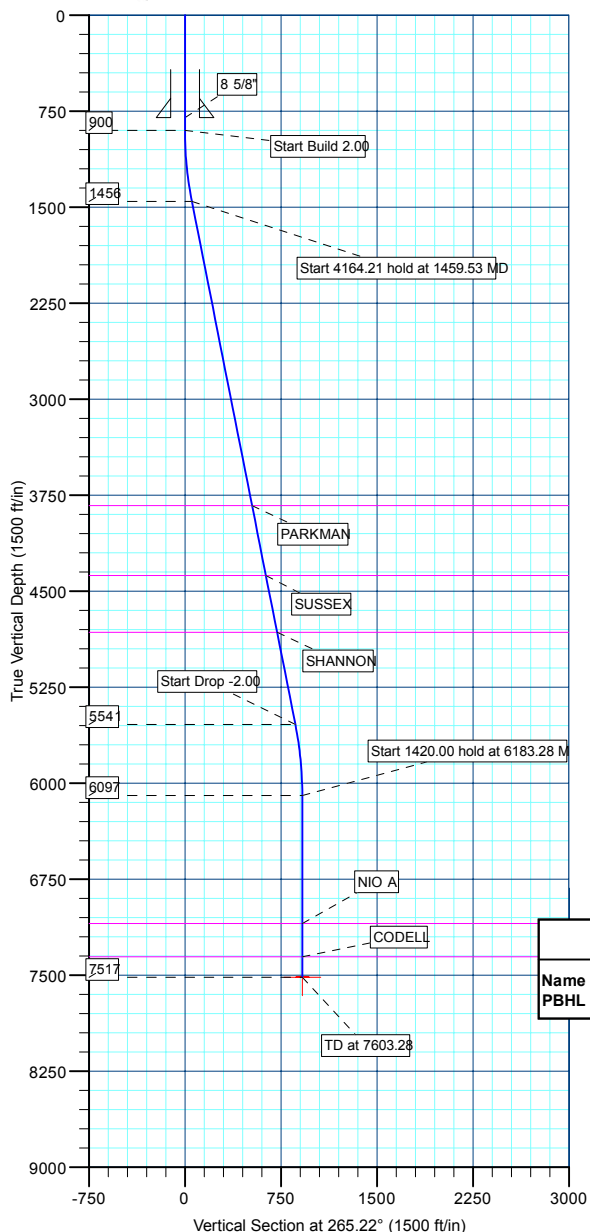
TVD	MD	Name	Size
800.00	800.00	8 5/8"	8.62

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3832.00	3881.60	PARKMAN
4377.00	4437.16	SUSSEX
4822.00	4890.79	SHANNON
7097.00	7183.28	NIO A
7357.00	7443.28	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	7517.00	-76.46	-913.91	1303026.48	3179568.86	40° 9' 48.301 N	104° 51' 26.960 W	Circle (Radius: 50.00)

Plan: PLAN #1 1-15-10 RHS (P_PANCOST 23-2/P_PANCOST 23-2)

Created By: Robert H. Scott

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_PANCOST 23-2
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 23-2	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_PANCOST 23-2		
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 23-2			
Well Position	+N/-S	0.34 ft	Northing:	1,303,109.60 ft
	+E/-W	-89.99 ft	Easting:	3,180,482.19 ft
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft
			Ground Level:	4,860.00 ft

Wellbore	P_PANCOST 23-2				
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	265.22

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	
1,459.53	11.19	265.22	1,455.98	-4.54	-54.28	2.00	2.00	0.00	265.22	
5,623.74	11.19	265.22	5,541.02	-71.92	-859.63	0.00	0.00	0.00	0.00	
6,183.28	0.00	0.00	6,097.00	-76.46	-913.91	2.00	-2.00	0.00	180.00	
7,603.28	0.00	0.00	7,517.00	-76.46	-913.91	0.00	0.00	0.00	0.00	PBHL_PANCOST 2

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_PANCOST 23-2
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 23-2	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_PANCOST 23-2		
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	265.22	999.98	-0.15	-1.74	1.75	2.00	2.00	0.00
1,100.00	4.00	265.22	1,099.84	-0.58	-6.95	6.98	2.00	2.00	0.00
1,200.00	6.00	265.22	1,199.45	-1.31	-15.64	15.69	2.00	2.00	0.00
1,300.00	8.00	265.22	1,298.70	-2.32	-27.78	27.88	2.00	2.00	0.00
1,400.00	10.00	265.22	1,397.47	-3.63	-43.37	43.52	2.00	2.00	0.00
Start 4164.21 hold at 1459.53 MD									
1,459.53	11.19	265.22	1,455.98	-4.54	-54.28	54.47	2.00	2.00	0.00
1,500.00	11.19	265.22	1,495.68	-5.20	-62.11	62.32	0.00	0.00	0.00
1,600.00	11.19	265.22	1,593.78	-6.81	-81.45	81.73	0.00	0.00	0.00
1,700.00	11.19	265.22	1,691.88	-8.43	-100.79	101.14	0.00	0.00	0.00
1,800.00	11.19	265.22	1,789.98	-10.05	-120.12	120.54	0.00	0.00	0.00
1,900.00	11.19	265.22	1,888.07	-11.67	-139.46	139.95	0.00	0.00	0.00
2,000.00	11.19	265.22	1,986.17	-13.29	-158.80	159.36	0.00	0.00	0.00
2,100.00	11.19	265.22	2,084.27	-14.90	-178.14	178.77	0.00	0.00	0.00
2,200.00	11.19	265.22	2,182.37	-16.52	-197.48	198.17	0.00	0.00	0.00
2,300.00	11.19	265.22	2,280.47	-18.14	-216.82	217.58	0.00	0.00	0.00
2,400.00	11.19	265.22	2,378.57	-19.76	-236.16	236.99	0.00	0.00	0.00
2,500.00	11.19	265.22	2,476.67	-21.38	-255.50	256.40	0.00	0.00	0.00
2,600.00	11.19	265.22	2,574.77	-22.99	-274.84	275.80	0.00	0.00	0.00
2,700.00	11.19	265.22	2,672.86	-24.61	-294.18	295.21	0.00	0.00	0.00
2,800.00	11.19	265.22	2,770.96	-26.23	-313.52	314.62	0.00	0.00	0.00
2,900.00	11.19	265.22	2,869.06	-27.85	-332.86	334.03	0.00	0.00	0.00
3,000.00	11.19	265.22	2,967.16	-29.47	-352.20	353.43	0.00	0.00	0.00
3,100.00	11.19	265.22	3,065.26	-31.08	-371.54	372.84	0.00	0.00	0.00
3,200.00	11.19	265.22	3,163.36	-32.70	-390.88	392.25	0.00	0.00	0.00
3,300.00	11.19	265.22	3,261.46	-34.32	-410.22	411.66	0.00	0.00	0.00
3,400.00	11.19	265.22	3,359.56	-35.94	-429.56	431.06	0.00	0.00	0.00
3,500.00	11.19	265.22	3,457.65	-37.56	-448.90	450.47	0.00	0.00	0.00
3,600.00	11.19	265.22	3,555.75	-39.18	-468.24	469.88	0.00	0.00	0.00
3,700.00	11.19	265.22	3,653.85	-40.79	-487.58	489.28	0.00	0.00	0.00
3,800.00	11.19	265.22	3,751.95	-42.41	-506.92	508.69	0.00	0.00	0.00
PARKMAN									
3,881.60	11.19	265.22	3,832.00	-43.73	-522.70	524.53	0.00	0.00	0.00
3,900.00	11.19	265.22	3,850.05	-44.03	-526.26	528.10	0.00	0.00	0.00
4,000.00	11.19	265.22	3,948.15	-45.65	-545.60	547.51	0.00	0.00	0.00
4,100.00	11.19	265.22	4,046.25	-47.27	-564.94	566.91	0.00	0.00	0.00
4,200.00	11.19	265.22	4,144.34	-48.88	-584.28	586.32	0.00	0.00	0.00
4,300.00	11.19	265.22	4,242.44	-50.50	-603.62	605.73	0.00	0.00	0.00
4,400.00	11.19	265.22	4,340.54	-52.12	-622.96	625.14	0.00	0.00	0.00
SUSSEX									
4,437.16	11.19	265.22	4,377.00	-52.72	-630.15	632.35	0.00	0.00	0.00
4,500.00	11.19	265.22	4,438.64	-53.74	-642.30	644.54	0.00	0.00	0.00
4,600.00	11.19	265.22	4,536.74	-55.36	-661.64	663.95	0.00	0.00	0.00
4,700.00	11.19	265.22	4,634.84	-56.97	-680.98	683.36	0.00	0.00	0.00
4,800.00	11.19	265.22	4,732.94	-58.59	-700.32	702.77	0.00	0.00	0.00
SHANNON									
4,890.79	11.19	265.22	4,822.00	-60.06	-717.88	720.39	0.00	0.00	0.00
4,900.00	11.19	265.22	4,831.04	-60.21	-719.66	722.17	0.00	0.00	0.00
5,000.00	11.19	265.22	4,929.13	-61.83	-739.00	741.58	0.00	0.00	0.00
5,100.00	11.19	265.22	5,027.23	-63.45	-758.34	760.99	0.00	0.00	0.00
5,200.00	11.19	265.22	5,125.33	-65.06	-777.68	780.40	0.00	0.00	0.00

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_PANCOST 23-2
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 23-2	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_PANCOST 23-2		
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	11.19	265.22	5,223.43	-66.68	-797.02	799.80	0.00	0.00	0.00
5,400.00	11.19	265.22	5,321.53	-68.30	-816.36	819.21	0.00	0.00	0.00
5,500.00	11.19	265.22	5,419.63	-69.92	-835.70	838.62	0.00	0.00	0.00
5,600.00	11.19	265.22	5,517.73	-71.54	-855.04	858.03	0.00	0.00	0.00
Start Drop -2.00									
5,623.74	11.19	265.22	5,541.02	-71.92	-859.63	862.63	0.00	0.00	0.00
5,700.00	9.67	265.22	5,616.01	-73.07	-873.38	876.44	2.00	-2.00	0.00
5,800.00	7.67	265.22	5,714.87	-74.33	-888.40	891.50	2.00	-2.00	0.00
5,900.00	5.67	265.22	5,814.19	-75.29	-899.96	903.11	2.00	-2.00	0.00
6,000.00	3.67	265.22	5,913.85	-75.97	-908.07	911.24	2.00	-2.00	0.00
6,100.00	1.67	265.22	6,013.74	-76.36	-912.70	915.89	2.00	-2.00	0.00
Start 1420.00 hold at 6183.28 MD									
6,183.28	0.00	0.00	6,097.00	-76.46	-913.91	917.10	2.00	-2.00	0.00
6,200.00	0.00	0.00	6,113.72	-76.46	-913.91	917.10	0.00	0.00	0.00
6,300.00	0.00	0.00	6,213.72	-76.46	-913.91	917.10	0.00	0.00	0.00
6,400.00	0.00	0.00	6,313.72	-76.46	-913.91	917.10	0.00	0.00	0.00
6,500.00	0.00	0.00	6,413.72	-76.46	-913.91	917.10	0.00	0.00	0.00
6,600.00	0.00	0.00	6,513.72	-76.46	-913.91	917.10	0.00	0.00	0.00
6,700.00	0.00	0.00	6,613.72	-76.46	-913.91	917.10	0.00	0.00	0.00
6,800.00	0.00	0.00	6,713.72	-76.46	-913.91	917.10	0.00	0.00	0.00
6,900.00	0.00	0.00	6,813.72	-76.46	-913.91	917.10	0.00	0.00	0.00
7,000.00	0.00	0.00	6,913.72	-76.46	-913.91	917.10	0.00	0.00	0.00
7,100.00	0.00	0.00	7,013.72	-76.46	-913.91	917.10	0.00	0.00	0.00
NIO A									
7,183.28	0.00	0.00	7,097.00	-76.46	-913.91	917.10	0.00	0.00	0.00
7,200.00	0.00	0.00	7,113.72	-76.46	-913.91	917.10	0.00	0.00	0.00
7,300.00	0.00	0.00	7,213.72	-76.46	-913.91	917.10	0.00	0.00	0.00
7,400.00	0.00	0.00	7,313.72	-76.46	-913.91	917.10	0.00	0.00	0.00
CODELL									
7,443.28	0.00	0.00	7,357.00	-76.46	-913.91	917.10	0.00	0.00	0.00
7,500.00	0.00	0.00	7,413.72	-76.46	-913.91	917.10	0.00	0.00	0.00
7,600.00	0.00	0.00	7,513.72	-76.46	-913.91	917.10	0.00	0.00	0.00
PBHL_PANCOST 23-2(1325 FSL 2540 FEL)50'TGT RAD									
7,603.28	0.00	0.00	7,517.00	-76.46	-913.91	917.10	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 23- - plan hits target center - Circle (radius 50.00)	0.00	0.00	7,517.00	-76.46	-913.91	1,303,026.48	3,179,568.86	40° 9' 48.301 N	104° 51' 26.960 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 23-2
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 23-2	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_PANCOST 23-2		
Design:	PLAN #1 1-15-10 RHS		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,881.60	3,832.00	PARKMAN				
4,437.16	4,377.00	SUSSEX				
4,890.79	4,822.00	SHANNON				
7,183.28	7,097.00	NIO A				
7,443.28	7,357.00	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	
1,459.53	1,455.98	-4.54	-54.28	Start 4164.21 hold at 1459.53 MD	
5,623.74	5,541.02	-71.92	-859.63	Start Drop -2.00	
6,183.28	6,097.00	-76.46	-913.91	Start 1420.00 hold at 6183.28 MD	
7,603.28	7,517.00	-76.46	-913.91	TD at 7603.28	



US ROCKIES REGION PLANNING

**COLORADO NORTHERN ZONE - 83
WELD_Pancost 20-2 PAD
P_PANCOST 23-2**

**P_PANCOST 23-2
PLAN #1 1-15-10 RHS**

Anticollision Report

29 January, 2010



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_PANCOST 23-2
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 23-2	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_PANCOST 23-2	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	7,603.28	PLAN #1 1-15-10 RHS (P_PANCOST 23-2)	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
Offset Well - Wellbore - Design						
WELD_Pancost 20-2 PAD						
P_PANCOST 10-2 - P_PANCOST 10-2 - PLAN #1 1-15-	900.00	900.00	89.99	86.21	23.762	CC, ES
P_PANCOST 10-2 - P_PANCOST 10-2 - PLAN #1 1-15-	1,300.00	1,304.30	106.65	101.15	19.390	SF
P_PANCOST 36-2 - P_PANCOST 36-2 - PLAN #1 1-15-	900.00	900.00	30.18	26.40	7.970	CC, ES
P_PANCOST 36-2 - P_PANCOST 36-2 - PLAN #1 1-15-	1,000.00	1,000.55	31.00	26.81	7.393	SF
P_PANCOST 37-2 - P_PANCOST 37-2 - PLAN #1 1-15-	900.00	900.00	60.09	56.30	15.866	CC, ES
P_PANCOST 37-2 - P_PANCOST 37-2 - PLAN #1 1-15-	1,000.00	999.55	62.17	57.98	14.839	SF
RALPH VINCENT UNIT #2 EXISTING - RALPH VINCEN	900.00	880.00	52.16	17.06	1.486	Level 3, CC
RALPH VINCENT UNIT #2 EXISTING - RALPH VINCEN	1,200.00	1,179.45	56.41	8.74	1.183	Level 2, ES, SF

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			
0.00	0.00	0.00	0.00	0.00	0.00	90.22	-0.34	89.99	89.99							
100.00	100.00	100.00	100.00	0.10	0.10	90.22	-0.34	89.99	89.99	89.80	0.19	471.045				
200.00	200.00	200.00	200.00	0.32	0.32	90.22	-0.34	89.99	89.99	89.35	0.64	140.487				
300.00	300.00	300.00	300.00	0.55	0.55	90.22	-0.34	89.99	89.99	88.90	1.09	82.554				
400.00	400.00	400.00	400.00	0.77	0.77	90.22	-0.34	89.99	89.99	88.45	1.54	58.451				
500.00	500.00	500.00	500.00	0.99	0.99	90.22	-0.34	89.99	89.99	88.00	1.99	45.242				
600.00	600.00	600.00	600.00	1.22	1.22	90.22	-0.34	89.99	89.99	87.56	2.44	36.902				
700.00	700.00	700.00	700.00	1.44	1.44	90.22	-0.34	89.99	89.99	87.11	2.89	31.159				
800.00	800.00	800.00	800.00	1.67	1.67	90.22	-0.34	89.99	89.99	86.66	3.34	26.962				
900.00	900.00	900.00	900.00	1.89	1.89	90.22	-0.34	89.99	89.99	86.21	3.79	23.762	CC, ES			
1,000.00	999.98	1,001.61	1,001.58	2.10	2.12	-176.07	1.21	89.07	90.84	86.62	4.22	21.524				
1,100.00	1,099.84	1,103.00	1,102.83	2.31	2.35	-179.15	5.84	86.32	93.54	88.91	4.64	20.176				
1,200.00	1,199.45	1,203.96	1,203.39	2.53	2.58	176.13	13.51	81.77	98.60	93.54	5.06	19.488				
1,300.00	1,298.70	1,304.30	1,302.96	2.77	2.83	170.36	24.14	75.45	106.65	101.15	5.50	19.390	SF			
1,400.00	1,397.47	1,403.81	1,401.21	3.05	3.11	164.21	37.65	67.43	118.30	112.32	5.97	19.805				
1,459.53	1,455.98	1,462.29	1,458.78	3.24	3.29	160.83	46.55	62.14	127.17	120.89	6.28	20.262				
1,500.00	1,495.68	1,501.97	1,497.83	3.37	3.41	158.89	52.60	58.55	133.80	127.30	6.50	20.584				
1,600.00	1,593.78	1,600.02	1,594.33	3.72	3.73	154.82	67.54	49.67	150.73	143.65	7.08	21.289				
1,700.00	1,691.88	1,698.07	1,690.82	4.08	4.06	151.59	82.47	40.80	168.26	160.57	7.69	21.883				
1,800.00	1,789.98	1,796.12	1,787.32	4.46	4.40	148.97	97.41	31.93	186.21	177.89	8.32	22.380				

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 23-2
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 23-2	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_PANCOST 23-2	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)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
1,900.00	1,888.07	1,894.17	1,883.82	4.84	4.75	146.80	112.35	23.05	204.48	195.51	8.97	22.796	
2,000.00	1,986.17	1,992.22	1,980.32	5.24	5.10	145.00	127.29	14.18	222.98	213.34	9.63	23.145	
2,100.00	2,084.27	2,090.27	2,076.82	5.64	5.46	143.47	142.23	5.30	241.66	231.35	10.31	23.441	
2,200.00	2,182.37	2,188.32	2,173.31	6.05	5.83	142.16	157.17	-3.57	260.49	249.49	10.99	23.693	
2,300.00	2,280.47	2,286.37	2,269.81	6.46	6.19	141.03	172.11	-12.44	279.43	267.74	11.69	23.909	
2,400.00	2,378.57	2,384.42	2,366.31	6.87	6.56	140.04	187.05	-21.32	298.46	286.07	12.39	24.096	
2,500.00	2,476.67	2,482.47	2,462.81	7.29	6.94	139.17	201.99	-30.19	317.57	304.48	13.09	24.259	
2,600.00	2,574.77	2,580.52	2,559.30	7.71	7.31	138.40	216.93	-39.06	336.74	322.94	13.80	24.403	
2,700.00	2,672.86	2,678.57	2,655.80	8.13	7.69	137.71	231.86	-47.94	355.96	341.45	14.51	24.529	
2,800.00	2,770.96	2,776.62	2,752.30	8.55	8.06	137.09	246.80	-56.81	375.23	360.00	15.23	24.641	
2,900.00	2,869.06	2,874.67	2,848.80	8.97	8.44	136.53	261.74	-65.69	394.53	378.59	15.95	24.741	
3,000.00	2,967.16	2,972.72	2,945.30	9.40	8.82	136.03	276.68	-74.56	413.87	397.20	16.67	24.831	
3,100.00	3,065.26	3,070.77	3,041.79	9.82	9.20	135.56	291.62	-83.43	433.24	415.85	17.39	24.912	
3,200.00	3,163.36	3,168.82	3,138.29	10.25	9.59	135.14	306.56	-92.31	452.63	434.51	18.12	24.986	
3,300.00	3,261.46	3,266.87	3,234.79	10.68	9.97	134.76	321.50	-101.18	472.04	453.20	18.84	25.053	
3,400.00	3,359.56	3,364.92	3,331.29	11.11	10.35	134.40	336.44	-110.06	491.48	471.91	19.57	25.114	
3,500.00	3,457.65	3,462.97	3,427.79	11.54	10.73	134.07	351.38	-118.93	510.92	490.63	20.30	25.170	
3,600.00	3,555.75	3,561.02	3,524.28	11.97	11.12	133.77	366.32	-127.80	530.39	509.36	21.03	25.221	
3,700.00	3,653.85	3,659.07	3,620.78	12.40	11.50	133.48	381.25	-136.68	549.87	528.10	21.76	25.269	
3,800.00	3,751.95	3,757.12	3,717.28	12.83	11.89	133.22	396.19	-145.55	569.36	546.86	22.49	25.312	
3,900.00	3,850.05	3,855.17	3,813.78	13.26	12.27	132.97	411.13	-154.42	588.86	565.63	23.23	25.353	
4,000.00	3,948.15	3,953.22	3,910.28	13.69	12.66	132.74	426.07	-163.30	608.37	584.41	23.96	25.391	
4,100.00	4,046.25	4,051.27	4,006.77	14.12	13.05	132.53	441.01	-172.17	627.88	603.19	24.69	25.426	
4,200.00	4,144.34	4,149.32	4,103.27	14.56	13.43	132.32	455.95	-181.05	647.41	621.98	25.43	25.459	
4,300.00	4,242.44	4,247.37	4,199.77	14.99	13.82	132.13	470.89	-189.92	666.95	640.78	26.17	25.490	
4,400.00	4,340.54	4,345.42	4,296.27	15.42	14.21	131.95	485.83	-198.79	686.49	659.59	26.90	25.519	
4,500.00	4,438.64	4,443.47	4,392.77	15.86	14.59	131.78	500.77	-207.67	706.04	678.40	27.64	25.546	
4,600.00	4,536.74	4,541.52	4,489.26	16.29	14.98	131.62	515.71	-216.54	725.59	697.21	28.37	25.572	
4,700.00	4,634.84	4,639.57	4,585.76	16.72	15.37	131.47	530.64	-225.41	745.15	716.03	29.11	25.596	
4,800.00	4,732.94	4,737.62	4,682.26	17.16	15.76	131.32	545.58	-234.29	764.71	734.86	29.85	25.619	
4,900.00	4,831.04	4,835.67	4,778.76	17.59	16.15	131.18	560.52	-243.16	784.28	753.69	30.59	25.640	
5,000.00	4,929.13	4,933.72	4,875.25	18.03	16.53	131.05	575.46	-252.04	803.85	772.52	31.33	25.661	
5,100.00	5,027.23	5,031.77	4,971.75	18.46	16.92	130.93	590.40	-260.91	823.43	791.36	32.06	25.680	
5,200.00	5,125.33	5,129.82	5,068.25	18.89	17.31	130.81	605.34	-269.78	843.00	810.20	32.80	25.698	
5,300.00	5,223.43	5,227.87	5,164.75	19.33	17.70	130.69	620.28	-278.66	862.59	829.04	33.54	25.716	
5,400.00	5,321.53	5,325.92	5,261.25	19.76	18.09	130.59	635.22	-287.53	882.17	847.89	34.28	25.733	
5,500.00	5,419.63	5,423.97	5,357.74	20.20	18.48	130.48	650.16	-296.40	901.76	866.74	35.02	25.748	
5,600.00	5,517.73	5,522.02	5,454.24	20.63	18.87	130.38	665.10	-305.28	921.35	885.59	35.76	25.764	
5,623.74	5,541.02	5,545.30	5,477.16	20.74	18.96	130.36	668.64	-307.39	926.01	890.07	35.94	25.767	
5,700.00	5,616.01	5,620.17	5,550.85	21.01	19.26	130.46	680.05	-314.16	940.30	903.79	36.51	25.754	
5,800.00	5,714.87	5,728.43	5,657.55	21.29	19.63	130.44	695.73	-323.48	956.77	919.59	37.18	25.734	
5,900.00	5,814.19	5,842.81	5,770.92	21.52	19.93	130.41	708.70	-331.18	969.55	931.82	37.73	25.695	
6,000.00	5,913.85	5,958.02	5,885.64	21.72	20.18	130.40	717.82	-336.60	978.51	940.31	38.20	25.616	
6,100.00	6,013.74	6,073.77	6,001.23	21.87	20.38	130.39	722.98	-339.66	983.60	945.03	38.58	25.498	
6,183.28	6,097.00	6,169.56	6,097.00	21.98	20.51	35.61	724.22	-340.40	984.89	946.06	38.82	25.369	
6,200.00	6,113.72	6,186.28	6,113.72	22.00	20.53	35.61	724.22	-340.40	984.89	946.02	38.87	25.339	
6,300.00	6,213.72	6,286.28	6,213.72	22.13	20.67	35.61	724.22	-340.40	984.89	945.73	39.16	25.149	
6,400.00	6,313.72	6,386.28	6,313.72	22.26	20.82	35.61	724.22	-340.40	984.89	945.43	39.46	24.959	
6,500.00	6,413.72	6,486.28	6,413.72	22.39	20.96	35.61	724.22	-340.40	984.89	945.13	39.76	24.770	
6,600.00	6,513.72	6,586.28	6,513.72	22.52	21.11	35.61	724.22	-340.40	984.89	944.82	40.07	24.582	
6,700.00	6,613.72	6,686.28	6,613.72	22.65	21.26	35.61	724.22	-340.40	984.89	944.51	40.37	24.395	
6,800.00	6,713.72	6,786.28	6,713.72	22.79	21.41	35.61	724.22	-340.40	984.89	944.20	40.68	24.209	

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 23-2
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 23-2	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_PANCOST 23-2	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
6,900.00	6,813.72	6,886.28	6,813.72	22.93	21.56	35.61	724.22	-340.40	984.89	943.89	40.99	24.025	
7,000.00	6,913.72	6,986.28	6,913.72	23.07	21.71	35.61	724.22	-340.40	984.89	943.58	41.31	23.842	
7,100.00	7,013.72	7,086.28	7,013.72	23.21	21.87	35.61	724.22	-340.40	984.89	943.26	41.63	23.660	
7,200.00	7,113.72	7,186.28	7,113.72	23.35	22.02	35.61	724.22	-340.40	984.89	942.94	41.95	23.479	
7,300.00	7,213.72	7,286.28	7,213.72	23.49	22.18	35.61	724.22	-340.40	984.89	942.62	42.27	23.301	
7,400.00	7,313.72	7,386.28	7,313.72	23.63	22.33	35.61	724.22	-340.40	984.89	942.29	42.59	23.123	
7,500.00	7,413.72	7,486.28	7,413.72	23.78	22.49	35.61	724.22	-340.40	984.89	941.97	42.92	22.947	
7,603.28	7,517.00	7,589.56	7,517.00	23.93	22.66	35.61	724.22	-340.40	984.89	941.63	43.26	22.767	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_PANCOST 23-2
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 23-2	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_PANCOST 23-2	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)	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	89.98	0.01	30.18	30.18				
100.00	100.00	100.00	100.00	0.10	0.10	89.98	0.01	30.18	30.18	29.99	0.19	157.989	
200.00	200.00	200.00	200.00	0.32	0.32	89.98	0.01	30.18	30.18	29.54	0.64	47.120	
300.00	300.00	300.00	300.00	0.55	0.55	89.98	0.01	30.18	30.18	29.09	1.09	27.689	
400.00	400.00	400.00	400.00	0.77	0.77	89.98	0.01	30.18	30.18	28.64	1.54	19.605	
500.00	500.00	500.00	500.00	0.99	0.99	89.98	0.01	30.18	30.18	28.19	1.99	15.174	
600.00	600.00	600.00	600.00	1.22	1.22	89.98	0.01	30.18	30.18	27.75	2.44	12.377	
700.00	700.00	700.00	700.00	1.44	1.44	89.98	0.01	30.18	30.18	27.30	2.89	10.451	
800.00	800.00	800.00	800.00	1.67	1.67	89.98	0.01	30.18	30.18	26.85	3.34	9.043	
900.00	900.00	900.00	900.00	1.89	1.89	89.98	0.01	30.18	30.18	26.40	3.79	7.970 CC, ES	
1,000.00	999.98	1,000.55	1,000.53	2.10	2.09	-172.76	-1.48	29.23	31.00	26.81	4.19	7.393 SF	
1,100.00	1,099.84	1,100.95	1,100.79	2.31	2.28	-166.11	-5.92	26.38	33.77	29.20	4.57	7.394	
1,200.00	1,199.45	1,201.07	1,200.51	2.53	2.48	-157.35	-13.29	21.65	39.18	34.21	4.96	7.893	
1,300.00	1,298.70	1,300.75	1,299.45	2.77	2.70	-148.69	-23.54	15.07	47.82	42.42	5.40	8.855	
1,400.00	1,397.47	1,399.87	1,397.34	3.05	2.96	-141.41	-36.60	6.68	59.94	54.04	5.90	10.163	
1,459.53	1,455.98	1,458.56	1,455.03	3.24	3.14	-137.85	-45.67	0.86	68.79	62.56	6.23	11.037	
1,500.00	1,495.68	1,498.32	1,493.98	3.37	3.26	-135.68	-52.38	-3.45	75.30	68.82	6.48	11.626	
1,600.00	1,593.78	1,596.12	1,589.29	3.72	3.61	-130.21	-70.81	-15.28	92.16	85.02	7.14	12.900	
1,700.00	1,691.88	1,693.10	1,683.00	4.08	4.02	-124.79	-91.79	-28.75	110.53	102.65	7.88	14.027	
1,800.00	1,789.98	1,789.05	1,774.84	4.46	4.48	-119.61	-115.15	-43.75	130.80	122.13	8.67	15.091	
1,900.00	1,888.07	1,883.77	1,864.55	4.84	4.99	-114.76	-140.74	-60.18	153.30	143.81	9.49	16.154	
2,000.00	1,986.17	1,977.69	1,952.47	5.24	5.56	-110.31	-168.52	-78.01	178.22	167.89	10.33	17.252	
2,100.00	2,084.27	2,073.42	2,041.74	5.64	6.17	-106.63	-197.63	-96.69	204.53	193.34	11.19	18.283	
2,200.00	2,182.37	2,169.16	2,131.01	6.05	6.80	-103.79	-226.74	-115.38	231.45	219.41	12.04	19.225	
2,300.00	2,280.47	2,264.90	2,220.28	6.46	7.44	-101.54	-255.85	-134.07	258.80	245.90	12.89	20.075	
2,400.00	2,378.57	2,360.64	2,309.55	6.87	8.09	-99.72	-284.96	-152.76	286.44	272.70	13.74	20.842	
2,500.00	2,476.67	2,456.38	2,398.82	7.29	8.75	-98.22	-314.07	-171.44	314.31	299.72	14.60	21.534	
2,600.00	2,574.77	2,552.12	2,488.10	7.71	9.42	-96.96	-343.17	-190.13	342.35	326.90	15.45	22.158	
2,700.00	2,672.86	2,647.86	2,577.37	8.13	10.09	-95.89	-372.28	-208.82	370.52	354.21	16.31	22.722	
2,800.00	2,770.96	2,743.59	2,666.64	8.55	10.77	-94.97	-401.39	-227.51	398.78	381.62	17.16	23.235	
2,900.00	2,869.06	2,839.33	2,755.91	8.97	11.44	-94.18	-430.50	-246.19	427.14	409.11	18.02	23.702	
3,000.00	2,967.16	2,935.07	2,845.18	9.40	12.12	-93.48	-459.61	-264.88	455.55	436.67	18.88	24.128	
3,100.00	3,065.26	3,030.81	2,934.45	9.82	12.81	-92.86	-488.72	-283.57	484.02	464.28	19.74	24.518	
3,200.00	3,163.36	3,126.55	3,023.72	10.25	13.49	-92.32	-517.83	-302.26	512.54	491.94	20.60	24.877	
3,300.00	3,261.46	3,222.29	3,112.99	10.68	14.18	-91.83	-546.94	-320.94	541.10	519.63	21.47	25.207	
3,400.00	3,359.56	3,318.03	3,202.26	11.11	14.87	-91.39	-576.05	-339.63	569.69	547.36	22.33	25.513	
3,500.00	3,457.65	3,413.77	3,291.54	11.54	15.56	-90.99	-605.16	-358.32	598.31	575.11	23.19	25.796	
3,600.00	3,555.75	3,509.50	3,380.81	11.97	16.25	-90.63	-634.27	-377.01	626.95	602.89	24.06	26.058	
3,700.00	3,653.85	3,605.24	3,470.08	12.40	16.94	-90.30	-663.37	-395.69	655.61	630.68	24.93	26.303	
3,800.00	3,751.95	3,700.98	3,559.35	12.83	17.63	-89.99	-692.48	-414.38	684.29	658.50	25.79	26.531	
3,900.00	3,850.05	3,796.72	3,648.62	13.26	18.32	-89.71	-721.59	-433.07	712.99	686.33	26.66	26.744	
4,000.00	3,948.15	3,892.46	3,737.89	13.69	19.01	-89.46	-750.70	-451.75	741.70	714.17	27.53	26.944	
4,100.00	4,046.25	3,988.20	3,827.16	14.12	19.71	-89.22	-779.81	-470.44	770.42	742.03	28.40	27.132	
4,200.00	4,144.34	4,083.94	3,916.43	14.56	20.40	-89.00	-808.92	-489.13	799.16	769.89	29.26	27.308	
4,300.00	4,242.44	4,179.67	4,005.71	14.99	21.10	-88.79	-838.03	-507.82	827.90	797.77	30.13	27.474	
4,400.00	4,340.54	4,275.41	4,094.98	15.42	21.79	-88.60	-867.14	-526.50	856.66	825.65	31.00	27.631	
4,500.00	4,438.64	4,371.15	4,184.25	15.86	22.49	-88.42	-896.25	-545.19	885.42	853.55	31.87	27.779	
4,600.00	4,536.74	4,466.89	4,273.52	16.29	23.18	-88.25	-925.36	-563.88	914.19	881.45	32.74	27.919	
4,700.00	4,634.84	4,562.63	4,362.79	16.72	23.88	-88.10	-954.47	-582.57	942.97	909.35	33.62	28.052	
4,800.00	4,732.94	4,658.37	4,452.06	17.16	24.58	-87.95	-983.57	-601.25	971.75	937.26	34.49	28.178	
4,900.00	4,831.04	4,754.11	4,541.33	17.59	25.27	-87.81	-1,012.68	-619.94	1,000.54	965.18	35.36	28.298	
5,000.00	4,929.13	4,849.85	4,630.60	18.03	25.97	-87.68	-1,041.79	-638.63	1,029.33	993.10	36.23	28.412	

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 23-2
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 23-2	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_PANCOST 23-2	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
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	5,027.23	4,945.58	4,719.87	18.46	26.67	-87.55	-1,070.90	-657.32	1,058.13	1,021.03	37.10	28.520	
5,200.00	5,125.33	5,041.32	4,809.15	18.89	27.36	-87.43	-1,100.01	-676.00	1,086.93	1,048.96	37.97	28.624	
5,300.00	5,223.43	5,137.06	4,898.42	19.33	28.06	-87.32	-1,129.12	-694.69	1,115.74	1,076.90	38.85	28.723	
5,400.00	5,321.53	5,232.80	4,987.69	19.76	28.76	-87.21	-1,158.23	-713.38	1,144.55	1,104.83	39.72	28.817	
5,500.00	5,419.63	5,328.54	5,076.96	20.20	29.46	-87.11	-1,187.34	-732.06	1,173.37	1,132.78	40.59	28.907	
5,600.00	5,517.73	5,470.66	5,210.61	20.63	30.24	-87.07	-1,227.97	-758.15	1,200.44	1,158.86	41.57	28.876	
5,623.74	5,541.02	5,505.51	5,243.74	20.74	30.41	-87.09	-1,237.08	-764.00	1,206.28	1,164.48	41.80	28.856	
5,700.00	5,616.01	5,618.51	5,352.01	21.01	30.90	-87.51	-1,264.27	-781.46	1,223.56	1,181.00	42.57	28.746	
5,800.00	5,714.87	5,768.99	5,498.01	21.29	31.47	-87.96	-1,294.87	-801.10	1,242.73	1,199.32	43.41	28.629	
5,900.00	5,814.19	5,921.65	5,647.88	21.52	31.96	-88.29	-1,319.27	-816.76	1,257.80	1,213.67	44.13	28.503	
6,000.00	5,913.85	6,076.03	5,800.78	21.72	32.35	-88.52	-1,337.08	-828.20	1,268.68	1,223.97	44.72	28.370	
6,100.00	6,013.74	6,231.59	5,955.78	21.87	32.62	-88.63	-1,347.99	-835.20	1,275.31	1,230.14	45.17	28.232	
6,183.28	6,097.00	6,361.64	6,085.74	21.98	32.78	176.57	-1,351.67	-837.56	1,277.54	1,232.09	45.45	28.107	
6,200.00	6,113.72	6,387.78	6,111.88	22.00	32.81	176.58	-1,351.81	-837.65	1,277.63	1,232.12	45.50	28.077	
6,300.00	6,213.72	6,489.62	6,213.72	22.13	32.88	176.58	-1,351.81	-837.65	1,277.63	1,231.89	45.74	27.931	
6,400.00	6,313.72	6,589.62	6,313.72	22.26	32.96	176.58	-1,351.81	-837.65	1,277.63	1,231.65	45.98	27.786	
6,500.00	6,413.72	6,689.62	6,413.72	22.39	33.04	176.58	-1,351.81	-837.65	1,277.63	1,231.41	46.22	27.640	
6,600.00	6,513.72	6,789.62	6,513.72	22.52	33.11	176.58	-1,351.81	-837.65	1,277.63	1,231.16	46.47	27.494	
6,700.00	6,613.72	6,889.62	6,613.72	22.65	33.19	176.58	-1,351.81	-837.65	1,277.63	1,230.91	46.72	27.348	
6,800.00	6,713.72	6,989.62	6,713.72	22.79	33.28	176.58	-1,351.81	-837.65	1,277.63	1,230.66	46.97	27.201	
6,900.00	6,813.72	7,089.62	6,813.72	22.93	33.36	176.58	-1,351.81	-837.65	1,277.63	1,230.41	47.22	27.055	
7,000.00	6,913.72	7,189.62	6,913.72	23.07	33.44	176.58	-1,351.81	-837.65	1,277.63	1,230.15	47.48	26.908	
7,100.00	7,013.72	7,289.62	7,013.72	23.21	33.53	176.58	-1,351.81	-837.65	1,277.63	1,229.89	47.74	26.762	
7,200.00	7,113.72	7,389.62	7,113.72	23.35	33.61	176.58	-1,351.81	-837.65	1,277.63	1,229.63	48.00	26.615	
7,300.00	7,213.72	7,489.62	7,213.72	23.49	33.70	176.58	-1,351.81	-837.65	1,277.63	1,229.36	48.27	26.469	
7,400.00	7,313.72	7,589.62	7,313.72	23.63	33.79	176.58	-1,351.81	-837.65	1,277.63	1,229.09	48.54	26.323	
7,500.00	7,413.72	7,689.62	7,413.72	23.78	33.88	176.58	-1,351.81	-837.65	1,277.63	1,228.82	48.81	26.177	
7,603.28	7,517.00	7,792.90	7,517.00	23.93	33.98	176.58	-1,351.81	-837.65	1,277.63	1,228.54	49.09	26.026	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_PANCOST 23-2
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 23-2	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_PANCOST 23-2	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 37-2 - P_PANCOST 37-2 - 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	90.34	-0.36	60.09	60.09				
100.00	100.00	100.00	100.00	0.10	0.10	90.34	-0.36	60.09	60.09	59.90	0.19	314.521	
200.00	200.00	200.00	200.00	0.32	0.32	90.34	-0.36	60.09	60.09	59.45	0.64	93.805	
300.00	300.00	300.00	300.00	0.55	0.55	90.34	-0.36	60.09	60.09	59.00	1.09	55.122	
400.00	400.00	400.00	400.00	0.77	0.77	90.34	-0.36	60.09	60.09	58.55	1.54	39.028	
500.00	500.00	500.00	500.00	0.99	0.99	90.34	-0.36	60.09	60.09	58.10	1.99	30.208	
600.00	600.00	600.00	600.00	1.22	1.22	90.34	-0.36	60.09	60.09	57.65	2.44	24.640	
700.00	700.00	700.00	700.00	1.44	1.44	90.34	-0.36	60.09	60.09	57.20	2.89	20.805	
800.00	800.00	800.00	800.00	1.67	1.67	90.34	-0.36	60.09	60.09	56.75	3.34	18.003	
900.00	900.00	900.00	900.00	1.89	1.89	90.34	-0.36	60.09	60.09	56.30	3.79	15.866 CC, ES	
1,000.00	999.98	999.55	999.53	2.10	2.09	-173.45	-2.06	60.40	62.17	57.98	4.19	14.839 SF	
1,100.00	1,099.84	1,098.70	1,098.54	2.31	2.27	-169.70	-7.13	61.32	68.60	64.04	4.56	15.056	
1,200.00	1,199.45	1,197.07	1,196.54	2.53	2.46	-164.83	-15.50	62.84	79.81	74.87	4.94	16.160	
1,300.00	1,298.70	1,294.28	1,293.04	2.77	2.67	-159.97	-27.01	64.94	96.11	90.77	5.34	17.989	
1,400.00	1,397.47	1,389.99	1,387.60	3.05	2.92	-155.70	-41.48	67.57	117.63	111.86	5.78	20.358	
1,459.53	1,455.98	1,446.11	1,442.81	3.24	3.08	-153.53	-51.41	69.37	132.89	126.83	6.06	21.930	
1,500.00	1,495.68	1,483.92	1,479.89	3.37	3.20	-152.25	-58.70	70.70	144.05	137.78	6.27	22.985	
1,600.00	1,593.78	1,576.36	1,570.10	3.72	3.52	-149.22	-78.55	74.31	173.10	166.29	6.82	25.396	
1,700.00	1,691.88	1,667.27	1,658.13	4.08	3.88	-146.39	-100.84	78.36	204.38	196.98	7.41	27.600	
1,800.00	1,789.98	1,756.51	1,743.81	4.46	4.29	-143.78	-125.39	82.83	237.96	229.93	8.03	29.646	
1,900.00	1,888.07	1,847.73	1,830.74	4.84	4.75	-141.38	-152.58	87.77	273.46	264.77	8.69	31.476	
2,000.00	1,986.17	1,940.60	1,919.19	5.24	5.24	-139.47	-180.41	92.83	309.42	300.04	9.37	33.017	
2,100.00	2,084.27	2,033.46	2,007.65	5.64	5.75	-137.96	-208.24	97.89	345.61	335.55	10.07	34.335	
2,200.00	2,182.37	2,126.33	2,096.10	6.05	6.27	-136.73	-236.07	102.95	381.98	371.21	10.77	35.469	
2,300.00	2,280.47	2,219.20	2,184.56	6.46	6.81	-135.71	-263.90	108.01	418.47	406.99	11.48	36.453	
2,400.00	2,378.57	2,312.07	2,273.01	6.87	7.35	-134.86	-291.74	113.08	455.06	442.87	12.20	37.313	
2,500.00	2,476.67	2,404.94	2,361.47	7.29	7.89	-134.13	-319.57	118.14	491.73	478.81	12.92	38.070	
2,600.00	2,574.77	2,497.80	2,449.92	7.71	8.44	-133.51	-347.40	123.20	528.45	514.81	13.64	38.741	
2,700.00	2,672.86	2,590.67	2,538.38	8.13	9.00	-132.96	-375.23	128.26	565.22	550.85	14.37	39.339	
2,800.00	2,770.96	2,683.54	2,626.83	8.55	9.56	-132.48	-403.06	133.32	602.03	586.93	15.10	39.876	
2,900.00	2,869.06	2,776.41	2,715.29	8.97	10.12	-132.06	-430.89	138.38	638.87	623.04	15.83	40.360	
3,000.00	2,967.16	2,869.28	2,803.74	9.40	10.68	-131.68	-458.72	143.44	675.74	659.18	16.56	40.799	
3,100.00	3,065.26	2,962.14	2,892.20	9.82	11.25	-131.35	-486.55	148.50	712.64	695.34	17.30	41.199	
3,200.00	3,163.36	3,055.01	2,980.65	10.25	11.81	-131.04	-514.38	153.56	749.55	731.51	18.03	41.565	
3,300.00	3,261.46	3,147.88	3,069.11	10.68	12.38	-130.76	-542.21	158.63	786.47	767.71	18.77	41.902	
3,400.00	3,359.56	3,240.75	3,157.56	11.11	12.95	-130.51	-570.05	163.69	823.42	803.91	19.51	42.212	
3,500.00	3,457.65	3,333.62	3,246.02	11.54	13.52	-130.28	-597.88	168.75	860.37	840.13	20.24	42.500	
3,600.00	3,555.75	3,426.48	3,334.47	11.97	14.09	-130.07	-625.71	173.81	897.34	876.36	20.98	42.767	
3,700.00	3,653.85	3,519.35	3,422.93	12.40	14.66	-129.88	-653.54	178.87	934.31	912.59	21.72	43.016	
3,800.00	3,751.95	3,612.22	3,511.38	12.83	15.24	-129.70	-681.37	183.93	971.30	948.84	22.46	43.249	
3,900.00	3,850.05	3,705.09	3,599.84	13.26	15.81	-129.53	-709.20	188.99	1,008.29	985.09	23.20	43.467	
4,000.00	3,948.15	3,797.96	3,688.29	13.69	16.38	-129.38	-737.03	194.05	1,045.29	1,021.35	23.93	43.672	
4,100.00	4,046.25	3,890.82	3,776.75	14.12	16.96	-129.23	-764.86	199.11	1,082.29	1,057.62	24.67	43.865	
4,200.00	4,144.34	3,983.69	3,865.20	14.56	17.53	-129.10	-792.69	204.18	1,119.30	1,093.89	25.41	44.048	
4,300.00	4,242.44	4,076.56	3,953.66	14.99	18.11	-128.97	-820.53	209.24	1,156.32	1,130.17	26.15	44.221	
4,400.00	4,340.54	4,169.43	4,042.11	15.42	18.68	-128.85	-848.36	214.30	1,193.34	1,166.45	26.89	44.385	
4,500.00	4,438.64	4,262.30	4,130.57	15.86	19.26	-128.74	-876.19	219.36	1,230.36	1,202.74	27.62	44.541	
4,600.00	4,536.74	4,355.16	4,219.02	16.29	19.84	-128.64	-904.02	224.42	1,267.39	1,239.02	28.37	44.677	
4,700.00	4,634.84	4,448.03	4,307.48	16.72	20.41	-128.54	-931.85	229.48	1,304.42	1,275.30	29.12	44.798	
4,800.00	4,732.94	4,540.90	4,395.93	17.16	20.99	-128.45	-959.68	234.54	1,341.45	1,311.59	29.87	44.913	
4,900.00	4,831.04	4,633.77	4,484.39	17.59	21.57	-128.36	-987.51	239.60	1,378.49	1,347.87	30.62	45.021	
5,000.00	4,929.13	4,726.64	4,572.84	18.03	22.15	-128.28	-1,015.34	244.66	1,415.53	1,384.16	31.37	45.123	

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 23-2
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 23-2	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_PANCOST 23-2	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 37-2 - P_PANCOST 37-2 - 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	5,027.23	4,819.50	4,661.30	18.46	22.72	-128.20	-1,043.17	249.73	1,452.57	1,420.45	32.12	45.221	
5,200.00	5,125.33	4,912.37	4,749.75	18.89	23.30	-128.12	-1,071.00	254.79	1,489.62	1,456.74	32.87	45.313	
5,300.00	5,223.43	5,005.24	4,838.21	19.33	23.88	-128.05	-1,098.84	259.85	1,526.66	1,493.04	33.63	45.402	
5,400.00	5,321.53	5,098.11	4,926.66	19.76	24.46	-127.98	-1,126.67	264.91	1,563.71	1,529.33	34.38	45.486	
5,500.00	5,419.63	5,190.98	5,015.12	20.20	25.04	-127.92	-1,154.50	269.97	1,600.76	1,565.63	35.13	45.566	
5,600.00	5,517.73	5,283.85	5,103.57	20.63	25.62	-127.85	-1,182.33	275.03	1,637.81	1,601.93	35.88	45.643	
5,623.74	5,541.02	5,305.90	5,124.58	20.74	25.75	-127.84	-1,188.94	276.23	1,646.61	1,610.55	36.06	45.660	
5,700.00	5,616.01	5,376.92	5,192.23	21.01	26.20	-128.23	-1,210.22	280.10	1,674.29	1,637.56	36.73	45.583	
5,800.00	5,714.87	5,509.05	5,318.38	21.29	26.93	-128.56	-1,248.84	287.13	1,708.37	1,670.75	37.62	45.414	
5,900.00	5,814.19	5,701.40	5,504.78	21.52	27.66	-128.70	-1,295.46	295.60	1,736.06	1,697.57	38.49	45.101	
6,000.00	5,913.85	5,900.69	5,700.79	21.72	28.26	-128.77	-1,330.66	302.01	1,756.11	1,716.86	39.25	44.743	
6,100.00	6,013.74	6,104.88	5,903.69	21.87	28.70	-128.80	-1,352.75	306.02	1,768.21	1,728.34	39.86	44.358	
6,183.28	6,097.00	6,276.96	6,075.57	21.98	28.93	136.43	-1,360.28	307.39	1,772.06	1,731.81	40.26	44.018	
6,200.00	6,113.72	6,311.60	6,110.21	22.00	28.97	136.43	-1,360.56	307.44	1,772.18	1,731.86	40.32	43.948	
6,300.00	6,213.72	6,415.11	6,213.72	22.13	29.06	136.43	-1,360.57	307.44	1,772.18	1,731.59	40.59	43.657	
6,400.00	6,313.72	6,515.11	6,313.72	22.26	29.14	136.43	-1,360.57	307.44	1,772.18	1,731.33	40.85	43.382	
6,500.00	6,413.72	6,615.11	6,413.72	22.39	29.23	136.43	-1,360.57	307.44	1,772.18	1,731.07	41.11	43.107	
6,600.00	6,513.72	6,715.11	6,513.72	22.52	29.31	136.43	-1,360.57	307.44	1,772.18	1,730.81	41.37	42.833	
6,700.00	6,613.72	6,815.11	6,613.72	22.65	29.40	136.43	-1,360.57	307.44	1,772.18	1,730.54	41.64	42.558	
6,800.00	6,713.72	6,915.11	6,713.72	22.79	29.49	136.43	-1,360.57	307.44	1,772.18	1,730.27	41.91	42.284	
6,900.00	6,813.72	7,015.11	6,813.72	22.93	29.58	136.43	-1,360.57	307.44	1,772.18	1,730.00	42.18	42.010	
7,000.00	6,913.72	7,115.11	6,913.72	23.07	29.67	136.43	-1,360.57	307.44	1,772.18	1,729.72	42.46	41.737	
7,100.00	7,013.72	7,215.11	7,013.72	23.21	29.76	136.43	-1,360.57	307.44	1,772.18	1,729.45	42.74	41.465	
7,200.00	7,113.72	7,315.11	7,113.72	23.35	29.86	136.43	-1,360.57	307.44	1,772.18	1,729.16	43.02	41.194	
7,300.00	7,213.72	7,415.11	7,213.72	23.49	29.95	136.43	-1,360.57	307.44	1,772.18	1,728.88	43.31	40.923	
7,400.00	7,313.72	7,515.11	7,313.72	23.63	30.05	136.43	-1,360.57	307.44	1,772.18	1,728.59	43.59	40.653	
7,500.00	7,413.72	7,615.11	7,413.72	23.78	30.15	136.43	-1,360.57	307.44	1,772.18	1,728.30	43.88	40.384	
7,603.28	7,517.00	7,718.39	7,517.00	23.93	30.25	136.43	-1,360.57	307.44	1,772.18	1,728.00	44.19	40.108	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_PANCOST 23-2
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 23-2	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_PANCOST 23-2	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	2.76	52.10	2.52	55.86				
100.00	100.00	80.00	80.00	0.10	1.60	2.76	52.10	2.52	52.16	50.46	1.70	30.761	
200.00	200.00	180.00	180.00	0.32	5.20	2.76	52.10	2.52	52.16	46.64	5.52	9.448	
300.00	300.00	280.00	280.00	0.55	9.20	2.76	52.10	2.52	52.16	42.41	9.75	5.352	
400.00	400.00	380.00	380.00	0.77	13.20	2.76	52.10	2.52	52.16	38.19	13.97	3.734	
500.00	500.00	480.00	480.00	0.99	17.20	2.76	52.10	2.52	52.16	33.96	18.19	2.867	
600.00	600.00	580.00	580.00	1.22	21.20	2.76	52.10	2.52	52.16	29.74	22.42	2.326	
700.00	700.00	680.00	680.00	1.44	25.20	2.76	52.10	2.52	52.16	25.51	26.64	1.958	
800.00	800.00	780.00	780.00	1.67	29.20	2.76	52.10	2.52	52.16	21.29	30.87	1.690	
900.00	900.00	880.00	880.00	1.89	33.20	2.76	52.10	2.52	52.16	17.06	35.09	1.486 Level 3, CC	
1,000.00	999.98	979.98	979.98	2.10	37.20	99.43	52.10	2.52	52.41	13.11	39.30	1.334 Level 3	
1,100.00	1,099.84	1,079.84	1,079.84	2.31	41.19	104.94	52.10	2.52	53.52	10.03	43.50	1.231 Level 2	
1,200.00	1,199.45	1,179.45	1,179.45	2.53	45.18	113.44	52.10	2.52	56.41	8.74	47.66	1.183 Level 2, ES, SF	
1,300.00	1,298.70	1,278.70	1,278.70	2.77	49.15	123.63	52.10	2.52	62.29	10.53	51.75	1.204 Level 2	
1,400.00	1,397.47	1,377.47	1,377.47	3.05	53.10	133.81	52.10	2.52	72.19	16.49	55.69	1.296 Level 3	
1,459.53	1,455.98	1,435.98	1,435.98	3.24	55.44	139.32	52.10	2.52	80.21	22.26	57.95	1.384 Level 3	
1,500.00	1,495.68	1,475.68	1,475.68	3.37	57.03	142.69	52.10	2.52	86.36	26.81	59.55	1.450 Level 3	
1,600.00	1,593.78	1,573.78	1,573.78	3.72	60.95	149.25	52.10	2.52	102.57	39.03	63.54	1.614	
1,700.00	1,691.88	1,671.88	1,671.88	4.08	64.88	153.98	52.10	2.52	119.73	52.17	67.55	1.772	
1,800.00	1,789.98	1,769.98	1,769.98	4.46	68.80	157.52	52.10	2.52	137.49	65.90	71.59	1.920	
1,900.00	1,888.07	1,868.07	1,868.07	4.84	72.72	160.25	52.10	2.52	155.64	80.00	75.64	2.058	
2,000.00	1,986.17	1,966.17	1,966.17	5.24	76.65	162.41	52.10	2.52	174.07	94.36	79.71	2.184	
2,100.00	2,084.27	2,064.27	2,064.27	5.64	80.57	164.15	52.10	2.52	192.68	108.90	83.78	2.300	
2,200.00	2,182.37	2,162.37	2,162.37	6.05	84.49	165.58	52.10	2.52	211.44	123.59	87.86	2.407	
2,300.00	2,280.47	2,260.47	2,260.47	6.46	88.42	166.78	52.10	2.52	230.31	138.37	91.94	2.505	
2,400.00	2,378.57	2,358.57	2,358.57	6.87	92.34	167.80	52.10	2.52	249.26	153.23	96.03	2.596	
2,500.00	2,476.67	2,456.67	2,456.67	7.29	96.27	168.68	52.10	2.52	268.28	168.16	100.12	2.680	
2,600.00	2,574.77	2,554.77	2,554.77	7.71	100.19	169.44	52.10	2.52	287.34	183.13	104.21	2.757	
2,700.00	2,672.86	2,652.86	2,652.86	8.13	104.11	170.10	52.10	2.52	306.45	198.15	108.31	2.830	
2,800.00	2,770.96	2,750.96	2,750.96	8.55	108.04	170.69	52.10	2.52	325.60	213.20	112.40	2.897	
2,900.00	2,869.06	2,849.06	2,849.06	8.97	111.96	171.21	52.10	2.52	344.77	228.28	116.50	2.959	
3,000.00	2,967.16	2,947.16	2,947.16	9.40	115.89	171.68	52.10	2.52	363.97	243.38	120.60	3.018	
3,100.00	3,065.26	3,045.26	3,045.26	9.82	119.81	172.10	52.10	2.52	383.19	258.50	124.70	3.073	
3,200.00	3,163.36	3,143.36	3,143.36	10.25	123.73	172.48	52.10	2.52	402.43	273.63	128.80	3.124	
3,300.00	3,261.46	3,241.46	3,241.46	10.68	127.66	172.82	52.10	2.52	421.69	288.78	132.90	3.173	
3,400.00	3,359.56	3,339.56	3,339.56	11.11	131.58	173.14	52.10	2.52	440.95	303.95	137.01	3.218	
3,500.00	3,457.65	3,437.65	3,437.65	11.54	135.51	173.43	52.10	2.52	460.23	319.12	141.11	3.262	
3,600.00	3,555.75	3,535.75	3,535.75	11.97	139.43	173.69	52.10	2.52	479.52	334.31	145.22	3.302	
3,700.00	3,653.85	3,633.85	3,633.85	12.40	143.35	173.94	52.10	2.52	498.82	349.50	149.32	3.341	
3,800.00	3,751.95	3,731.95	3,731.95	12.83	147.28	174.16	52.10	2.52	518.13	364.70	153.43	3.377	
3,900.00	3,850.05	3,830.05	3,830.05	13.26	151.20	174.37	52.10	2.52	537.44	379.91	157.53	3.412	
4,000.00	3,948.15	3,928.15	3,928.15	13.69	155.13	174.57	52.10	2.52	556.76	395.12	161.64	3.444	
4,100.00	4,046.25	4,026.25	4,026.25	14.12	159.05	174.75	52.10	2.52	576.09	410.34	165.75	3.476	
4,200.00	4,144.34	4,124.34	4,124.34	14.56	162.97	174.92	52.10	2.52	595.42	425.57	169.85	3.506	
4,300.00	4,242.44	4,222.44	4,222.44	14.99	166.90	175.08	52.10	2.52	614.76	440.80	173.96	3.534	
4,400.00	4,340.54	4,320.54	4,320.54	15.42	170.82	175.23	52.10	2.52	634.10	456.03	178.07	3.561	
4,500.00	4,438.64	4,418.64	4,418.64	15.86	174.75	175.37	52.10	2.52	653.44	471.27	182.18	3.587	
4,600.00	4,536.74	4,516.74	4,516.74	16.29	178.67	175.51	52.10	2.52	672.79	486.51	186.28	3.612	
4,700.00	4,634.84	4,614.84	4,614.84	16.72	182.59	175.63	52.10	2.52	692.14	501.75	190.39	3.635	
4,800.00	4,732.94	4,712.94	4,712.94	17.16	186.52	175.75	52.10	2.52	711.50	516.99	194.50	3.658	
4,900.00	4,831.04	4,811.04	4,811.04	17.59	190.44	175.86	52.10	2.52	730.85	532.24	198.61	3.680	
5,000.00	4,929.13	4,909.13	4,909.13	18.03	194.37	175.97	52.10	2.52	750.21	547.49	202.72	3.701	

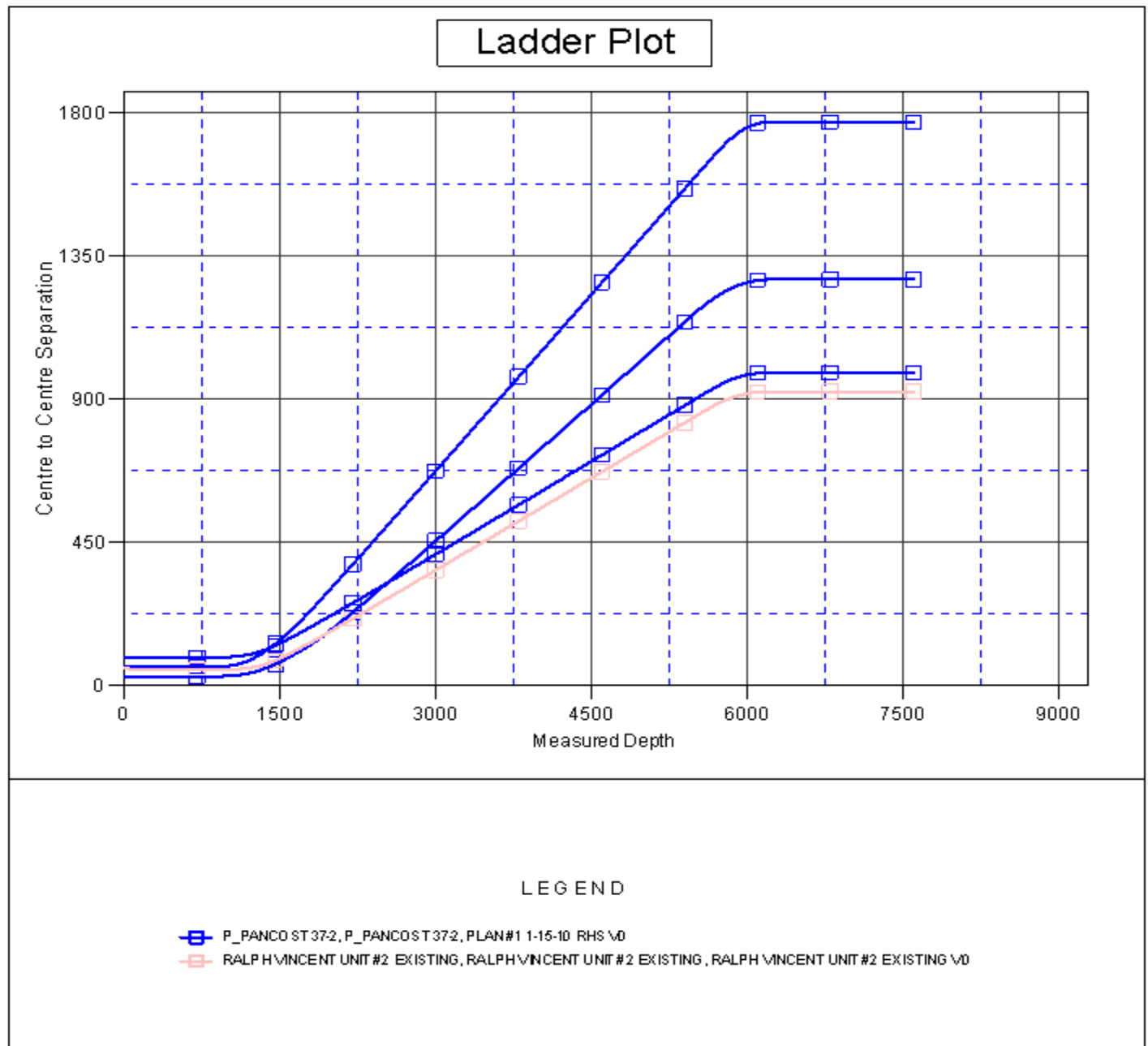
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_PANCOST 23-2
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 23-2	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_PANCOST 23-2	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	5,027.23	5,007.23	5,007.23	18.46	198.29	176.07	52.10	2.52	769.58	562.75	206.83	3.721	
5,200.00	5,125.33	5,105.33	5,105.33	18.89	202.21	176.17	52.10	2.52	788.94	578.00	210.94	3.740	
5,300.00	5,223.43	5,203.43	5,203.43	19.33	206.14	176.26	52.10	2.52	808.31	593.26	215.05	3.759	
5,400.00	5,321.53	5,301.53	5,301.53	19.76	210.06	176.35	52.10	2.52	827.68	608.52	219.16	3.777	
5,500.00	5,419.63	5,399.63	5,399.63	20.20	213.99	176.43	52.10	2.52	847.05	623.78	223.27	3.794	
5,600.00	5,517.73	5,497.73	5,497.73	20.63	217.91	176.51	52.10	2.52	866.42	639.04	227.38	3.810	
5,623.74	5,541.02	5,521.02	5,521.02	20.74	218.84	176.53	52.10	2.52	871.02	642.66	228.36	3.814	
5,700.00	5,616.01	5,596.01	5,596.01	21.01	221.84	176.60	52.10	2.52	884.80	652.25	232.55	3.805	
5,800.00	5,714.87	5,694.87	5,694.87	21.29	225.79	176.68	52.10	2.52	899.84	662.01	237.83	3.784	
5,900.00	5,814.19	5,794.19	5,794.19	21.52	229.77	176.73	52.10	2.52	911.43	668.56	242.87	3.753	
6,000.00	5,913.85	5,893.85	5,893.85	21.72	233.75	176.77	52.10	2.52	919.55	671.90	247.64	3.713	
6,100.00	6,013.74	5,993.74	5,993.74	21.87	237.75	176.79	52.10	2.52	924.19	672.05	252.13	3.665	
6,183.28	6,097.00	6,077.00	6,077.00	21.98	241.08	82.01	52.10	2.52	925.40	669.75	255.65	3.620	
6,200.00	6,113.72	6,093.72	6,093.72	22.00	241.75	82.01	52.10	2.52	925.40	669.05	256.35	3.610	
6,300.00	6,213.72	6,193.72	6,193.72	22.13	245.75	82.01	52.10	2.52	925.40	664.87	260.53	3.552	
6,400.00	6,313.72	6,293.72	6,293.72	22.26	249.75	82.01	52.10	2.52	925.40	660.68	264.72	3.496	
6,500.00	6,413.72	6,393.72	6,393.72	22.39	253.75	82.01	52.10	2.52	925.40	656.50	268.90	3.441	
6,600.00	6,513.72	6,493.72	6,493.72	22.52	257.75	82.01	52.10	2.52	925.40	652.31	273.09	3.389	
6,700.00	6,613.72	6,593.72	6,593.72	22.65	261.75	82.01	52.10	2.52	925.40	648.12	277.27	3.337	
6,800.00	6,713.72	6,693.72	6,693.72	22.79	265.75	82.01	52.10	2.52	925.40	643.94	281.46	3.288	
6,900.00	6,813.72	6,793.72	6,793.72	22.93	269.75	82.01	52.10	2.52	925.40	639.75	285.65	3.240	
7,000.00	6,913.72	6,893.72	6,893.72	23.07	273.75	82.01	52.10	2.52	925.40	635.56	289.84	3.193	
7,100.00	7,013.72	6,993.72	6,993.72	23.21	277.75	82.01	52.10	2.52	925.40	631.37	294.03	3.147	
7,200.00	7,113.72	7,093.72	7,093.72	23.35	281.75	82.01	52.10	2.52	925.40	627.18	298.22	3.103	
7,300.00	7,213.72	7,193.72	7,193.72	23.49	285.75	82.01	52.10	2.52	925.40	622.98	302.41	3.060	
7,400.00	7,313.72	7,293.72	7,293.72	23.63	289.75	82.01	52.10	2.52	925.40	618.79	306.61	3.018	
7,500.00	7,413.72	7,393.72	7,393.72	23.78	293.75	82.01	52.10	2.52	925.40	614.60	310.80	2.977	
7,603.28	7,517.00	7,497.00	7,497.00	23.93	297.88	82.01	52.10	2.52	925.40	610.26	315.13	2.937	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_PANCOST 23-2
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 23-2	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_PANCOST 23-2	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-15-10 RHS	Offset TVD Reference:	Offset Datum

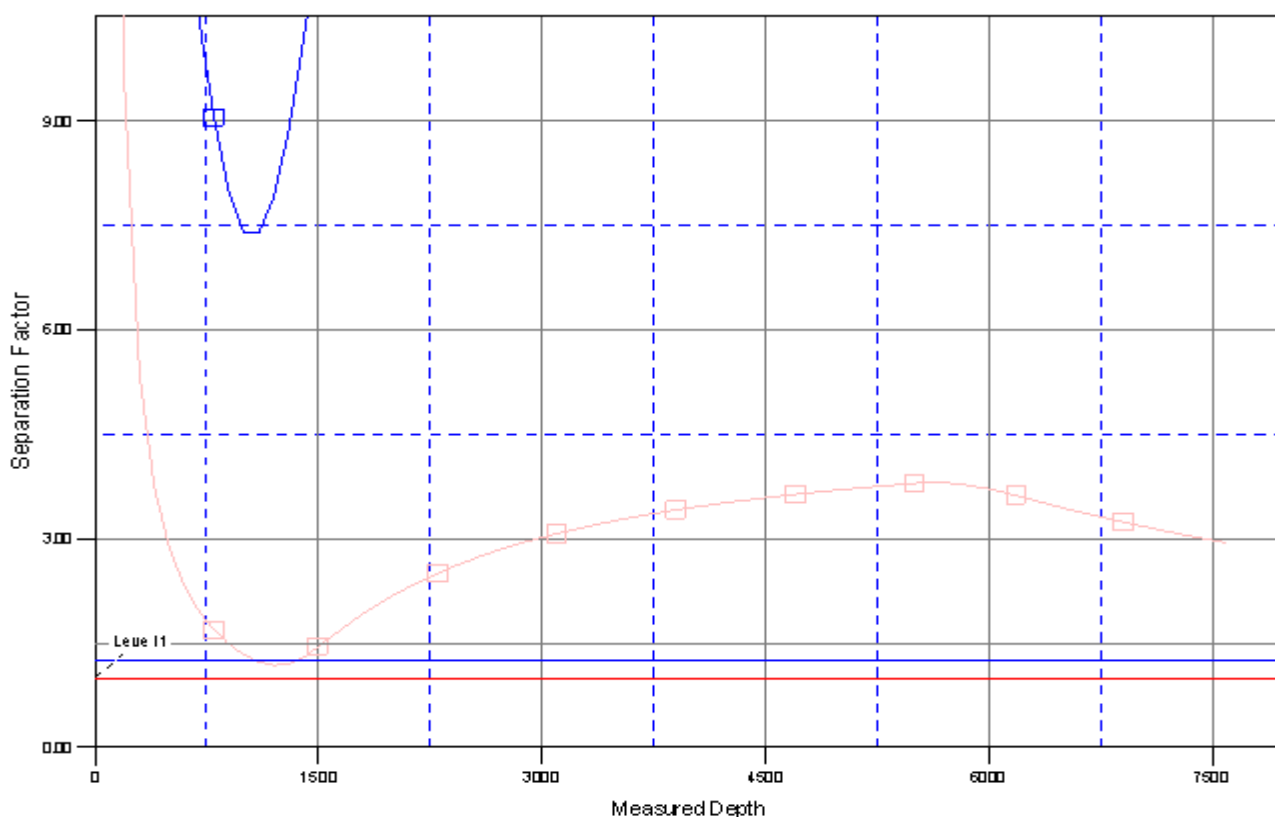
Reference Depths are relative to WELL @ 4875.00ft (Original Well Elev) Coordinates are relative to: P_PANCOST 23-2
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is 105° 30' 0.000 W ° Grid Convergence at Surface is: 0.42°



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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 23-2	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_PANCOST 23-2	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 23-2
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Central Meridian is 105° 30' 0.000 W ° Grid Convergence at Surface is: 0.42°

Separation Factor Plot



LEGEND

- P_PANCOST 23-2, P_PANCOST 23-2, PLAN #1 1-15-10 RHS \0
- RALPH VINCENT UNIT #2 EXISTING, RALPH VINCENT UNIT #2 EXISTING, RALPH VINCENT UNIT #2 EXISTING \0