



# **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83**

**WELD\_Pancost 20-2 PAD**

**P\_PANCOST 10-2**

**P\_PANCOST 10-2**

**Plan: PLAN #1 1-15-10 RHS**

## **Standard Planning Report**

**29 January, 2010**





P\_PANCOST 10-2  
COLORADO NORTHERN ZONE - 83  
SECTION 2 T2N R67W  
1408 FSL 1537 FEL  
LAT: 40° 9' 49.054 N  
LONG: 104° 51' 14.029 W



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

WELL DETAILS: P\_PANCOST 10-2

+N/-S	+E/-W	Northing	Ground Level: Easting	Latitude	Longitude	Slot
0.00	0.00	1303109.91	3180572.18	40° 9' 49.054 N	104° 51' 14.029 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	
1410.38	10.21	329.29	1407.68	38.98	-23.16	2.00	329.29	45.34	
5654.18	10.21	329.29	5584.32	685.58	-407.23	0.00	0.00	797.40	
6164.56	0.00	0.00	6092.00	724.56	-430.39	2.00	180.00	842.75	
8014.56	0.00	0.00	7942.00	724.56	-430.39	0.00	0.00	842.75	PBHL_PANCOST 10-2(2130 FSL 1975 FEL)50'TGT RAD

CASING DETAILS

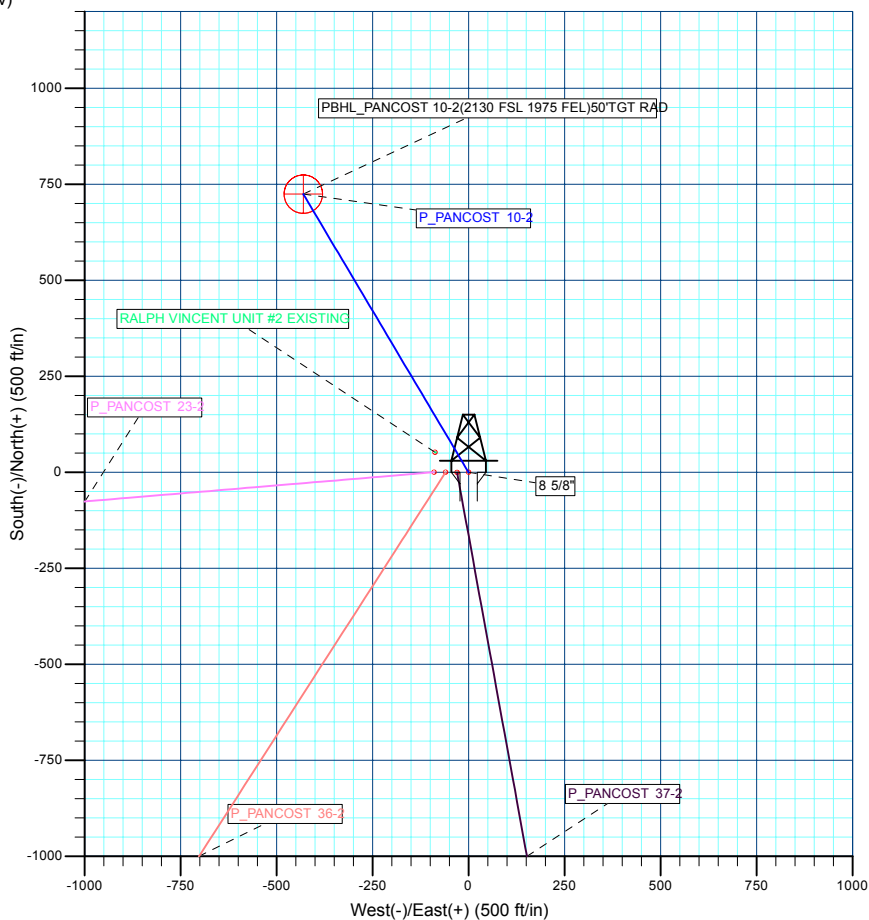
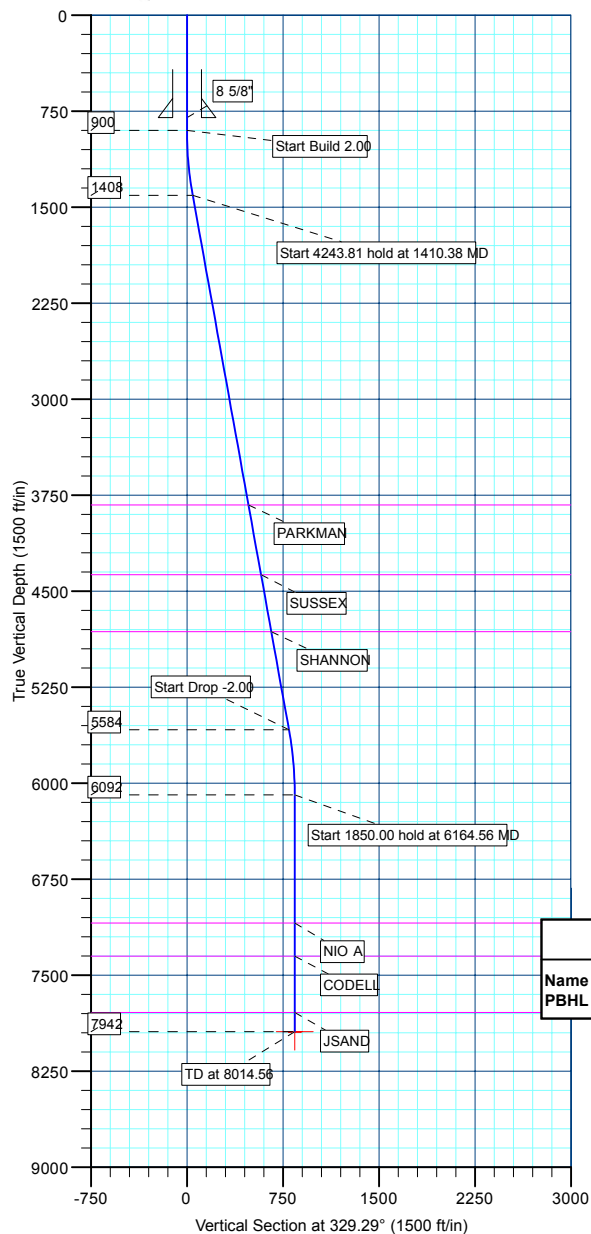
TVD	MD	Name	Size
800.00	800.00	8 5/8"	8.62

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3827.00	3868.60	PARKMAN
4372.00	4422.37	SUSSEX
4817.00	4874.52	SHANNON
7092.00	7164.56	NIO A
7352.00	7424.56	CODELL
7792.00	7864.56	JSAND



KB ELEV:WELL @ 4875.00ft (Original Well Elev)  
4860.00  
GRD ELEV:



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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL	7942.00	724.56	-430.39	1303831.31	3180136.53	40° 9' 56.214 N	104° 51' 19.573 W	Circle (Radius: 50.00)

Plan: PLAN #1 1-15-10 RHS (P\_PANCOST 10-2/P\_PANCOST 10-2)

Created By: Robert H. Scott

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

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

<b>Site</b>	WELD_Pancost 20-2 PAD, SECTION 2 T2N R67W			
<b>Site Position:</b>		<b>Northing:</b>	1,303,109.91 ft	<b>Latitude:</b> 40° 9' 49.054 N
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,180,572.18 ft	<b>Longitude:</b> 104° 51' 14.029 W
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	in	<b>Grid Convergence:</b> 0.42 °

<b>Well</b>	P_PANCOST 10-2			
<b>Well Position</b>	<b>+N/-S</b>	0.00 ft	<b>Northing:</b>	1,303,109.91 ft
	<b>+E/-W</b>	0.00 ft	<b>Easting:</b>	3,180,572.18 ft
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>	ft
			<b>Ground Level:</b>	4,860.00 ft

<b>Wellbore</b>	P_PANCOST 10-2				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	1/15/2010	9.08	66.89	53,146

<b>Design</b>	PLAN #1 1-15-10 RHS			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	329.29

<b>Plan Sections</b>										
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	
1,410.38	10.21	329.29	1,407.68	38.98	-23.16	2.00	2.00	0.00	329.29	
5,654.18	10.21	329.29	5,584.32	685.58	-407.23	0.00	0.00	0.00	0.00	
6,164.56	0.00	0.00	6,092.00	724.56	-430.39	2.00	-2.00	0.00	180.00	
8,014.56	0.00	0.00	7,942.00	724.56	-430.39	0.00	0.00	0.00	0.00	PBHL_PANCOST 1

<b>Database:</b>	EDM 2003.21 Single User Db	<b>Local Co-ordinate Reference:</b>	Well P_PANCOST 10-2
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	WELL @ 4875.00ft (Original Well Elev)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	WELL @ 4875.00ft (Original Well Elev)
<b>Site:</b>	WELD_Pancost 20-2 PAD	<b>North Reference:</b>	True
<b>Well:</b>	P_PANCOST 10-2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	P_PANCOST 10-2		
<b>Design:</b>	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)
<b>Start Build 2.00</b>									
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	329.29	999.98	1.50	-0.89	1.75	2.00	2.00	0.00
1,100.00	4.00	329.29	1,099.84	6.00	-3.56	6.98	2.00	2.00	0.00
1,200.00	6.00	329.29	1,199.45	13.49	-8.01	15.69	2.00	2.00	0.00
1,300.00	8.00	329.29	1,298.70	23.97	-14.24	27.88	2.00	2.00	0.00
1,400.00	10.00	329.29	1,397.47	37.42	-22.23	43.52	2.00	2.00	0.00
<b>Start 4243.81 hold at 1410.38 MD</b>									
1,410.38	10.21	329.29	1,407.68	38.98	-23.16	45.34	2.00	2.00	0.00
1,500.00	10.21	329.29	1,495.89	52.64	-31.27	61.23	0.00	0.00	0.00
1,600.00	10.21	329.29	1,594.30	67.88	-40.32	78.95	0.00	0.00	0.00
1,700.00	10.21	329.29	1,692.72	83.11	-49.37	96.67	0.00	0.00	0.00
1,800.00	10.21	329.29	1,791.14	98.35	-58.42	114.39	0.00	0.00	0.00
1,900.00	10.21	329.29	1,889.55	113.58	-67.47	132.11	0.00	0.00	0.00
2,000.00	10.21	329.29	1,987.97	128.82	-76.52	149.83	0.00	0.00	0.00
2,100.00	10.21	329.29	2,086.39	144.06	-85.57	167.55	0.00	0.00	0.00
2,200.00	10.21	329.29	2,184.81	159.29	-94.62	185.28	0.00	0.00	0.00
2,300.00	10.21	329.29	2,283.22	174.53	-103.67	203.00	0.00	0.00	0.00
2,400.00	10.21	329.29	2,381.64	189.76	-112.72	220.72	0.00	0.00	0.00
2,500.00	10.21	329.29	2,480.06	205.00	-121.77	238.44	0.00	0.00	0.00
2,600.00	10.21	329.29	2,578.48	220.24	-130.82	256.16	0.00	0.00	0.00
2,700.00	10.21	329.29	2,676.89	235.47	-139.87	273.88	0.00	0.00	0.00
2,800.00	10.21	329.29	2,775.31	250.71	-148.92	291.60	0.00	0.00	0.00
2,900.00	10.21	329.29	2,873.73	265.95	-157.97	309.32	0.00	0.00	0.00
3,000.00	10.21	329.29	2,972.14	281.18	-167.02	327.05	0.00	0.00	0.00
3,100.00	10.21	329.29	3,070.56	296.42	-176.07	344.77	0.00	0.00	0.00
3,200.00	10.21	329.29	3,168.98	311.65	-185.12	362.49	0.00	0.00	0.00
3,300.00	10.21	329.29	3,267.40	326.89	-194.17	380.21	0.00	0.00	0.00
3,400.00	10.21	329.29	3,365.81	342.13	-203.22	397.93	0.00	0.00	0.00
3,500.00	10.21	329.29	3,464.23	357.36	-212.27	415.65	0.00	0.00	0.00
3,600.00	10.21	329.29	3,562.65	372.60	-221.32	433.37	0.00	0.00	0.00
3,700.00	10.21	329.29	3,661.07	387.83	-230.37	451.10	0.00	0.00	0.00
3,800.00	10.21	329.29	3,759.48	403.07	-239.42	468.82	0.00	0.00	0.00
<b>PARKMAN</b>									
3,868.60	10.21	329.29	3,827.00	413.52	-245.63	480.97	0.00	0.00	0.00
3,900.00	10.21	329.29	3,857.90	418.31	-248.47	486.54	0.00	0.00	0.00
4,000.00	10.21	329.29	3,956.32	433.54	-257.52	504.26	0.00	0.00	0.00
4,100.00	10.21	329.29	4,054.73	448.78	-266.58	521.98	0.00	0.00	0.00
4,200.00	10.21	329.29	4,153.15	464.01	-275.63	539.70	0.00	0.00	0.00
4,300.00	10.21	329.29	4,251.57	479.25	-284.68	557.42	0.00	0.00	0.00
4,400.00	10.21	329.29	4,349.99	494.49	-293.73	575.15	0.00	0.00	0.00
<b>SUSSEX</b>									
4,422.37	10.21	329.29	4,372.00	497.90	-295.75	579.11	0.00	0.00	0.00
4,500.00	10.21	329.29	4,448.40	509.72	-302.78	592.87	0.00	0.00	0.00
4,600.00	10.21	329.29	4,546.82	524.96	-311.83	610.59	0.00	0.00	0.00
4,700.00	10.21	329.29	4,645.24	540.20	-320.88	628.31	0.00	0.00	0.00
4,800.00	10.21	329.29	4,743.65	555.43	-329.93	646.03	0.00	0.00	0.00
<b>SHANNON</b>									
4,874.52	10.21	329.29	4,817.00	566.79	-336.67	659.24	0.00	0.00	0.00
4,900.00	10.21	329.29	4,842.07	570.67	-338.98	663.75	0.00	0.00	0.00
5,000.00	10.21	329.29	4,940.49	585.90	-348.03	681.47	0.00	0.00	0.00
5,100.00	10.21	329.29	5,038.91	601.14	-357.08	699.20	0.00	0.00	0.00
5,200.00	10.21	329.29	5,137.32	616.38	-366.13	716.92	0.00	0.00	0.00

<b>Database:</b>	EDM 2003.21 Single User Db	<b>Local Co-ordinate Reference:</b>	Well P_PANCOST 10-2
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	WELL @ 4875.00ft (Original Well Elev)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	WELL @ 4875.00ft (Original Well Elev)
<b>Site:</b>	WELD_Pancost 20-2 PAD	<b>North Reference:</b>	True
<b>Well:</b>	P_PANCOST 10-2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	P_PANCOST 10-2		
<b>Design:</b>	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	10.21	329.29	5,235.74	631.61	-375.18	734.64	0.00	0.00	0.00
5,400.00	10.21	329.29	5,334.16	646.85	-384.23	752.36	0.00	0.00	0.00
5,500.00	10.21	329.29	5,432.58	662.08	-393.28	770.08	0.00	0.00	0.00
5,600.00	10.21	329.29	5,530.99	677.32	-402.33	787.80	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
5,654.18	10.21	329.29	5,584.32	685.58	-407.23	797.40	0.00	0.00	0.00
5,700.00	9.29	329.29	5,629.47	692.25	-411.20	805.16	2.00	-2.00	0.00
5,800.00	7.29	329.29	5,728.42	704.64	-418.56	819.58	2.00	-2.00	0.00
5,900.00	5.29	329.29	5,827.82	714.07	-424.16	830.54	2.00	-2.00	0.00
6,000.00	3.29	329.29	5,927.53	720.50	-427.98	838.02	2.00	-2.00	0.00
6,100.00	1.29	329.29	6,027.44	723.94	-430.02	842.02	2.00	-2.00	0.00
<b>Start 1850.00 hold at 6164.56 MD</b>									
6,164.56	0.00	0.00	6,092.00	724.56	-430.39	842.75	2.00	-2.00	0.00
6,200.00	0.00	0.00	6,127.44	724.56	-430.39	842.75	0.00	0.00	0.00
6,300.00	0.00	0.00	6,227.44	724.56	-430.39	842.75	0.00	0.00	0.00
6,400.00	0.00	0.00	6,327.44	724.56	-430.39	842.75	0.00	0.00	0.00
6,500.00	0.00	0.00	6,427.44	724.56	-430.39	842.75	0.00	0.00	0.00
6,600.00	0.00	0.00	6,527.44	724.56	-430.39	842.75	0.00	0.00	0.00
6,700.00	0.00	0.00	6,627.44	724.56	-430.39	842.75	0.00	0.00	0.00
6,800.00	0.00	0.00	6,727.44	724.56	-430.39	842.75	0.00	0.00	0.00
6,900.00	0.00	0.00	6,827.44	724.56	-430.39	842.75	0.00	0.00	0.00
7,000.00	0.00	0.00	6,927.44	724.56	-430.39	842.75	0.00	0.00	0.00
7,100.00	0.00	0.00	7,027.44	724.56	-430.39	842.75	0.00	0.00	0.00
<b>NIO A</b>									
7,164.56	0.00	0.00	7,092.00	724.56	-430.39	842.75	0.00	0.00	0.00
7,200.00	0.00	0.00	7,127.44	724.56	-430.39	842.75	0.00	0.00	0.00
7,300.00	0.00	0.00	7,227.44	724.56	-430.39	842.75	0.00	0.00	0.00
7,400.00	0.00	0.00	7,327.44	724.56	-430.39	842.75	0.00	0.00	0.00
<b>CODELL</b>									
7,424.56	0.00	0.00	7,352.00	724.56	-430.39	842.75	0.00	0.00	0.00
7,500.00	0.00	0.00	7,427.44	724.56	-430.39	842.75	0.00	0.00	0.00
7,600.00	0.00	0.00	7,527.44	724.56	-430.39	842.75	0.00	0.00	0.00
7,700.00	0.00	0.00	7,627.44	724.56	-430.39	842.75	0.00	0.00	0.00
7,800.00	0.00	0.00	7,727.44	724.56	-430.39	842.75	0.00	0.00	0.00
<b>JSAND</b>									
7,864.56	0.00	0.00	7,792.00	724.56	-430.39	842.75	0.00	0.00	0.00
7,900.00	0.00	0.00	7,827.44	724.56	-430.39	842.75	0.00	0.00	0.00
8,000.00	0.00	0.00	7,927.44	724.56	-430.39	842.75	0.00	0.00	0.00
<b>PBHL_PANCOST 10-2(2130 FSL 1975 FEL)50'TGT RAD</b>									
8,014.56	0.00	0.00	7,942.00	724.56	-430.39	842.75	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 10- - plan hits target center - Circle (radius 50.00)	0.00	0.00	7,942.00	724.56	-430.39	1,303,831.31	3,180,136.53	40° 9' 56.214 N	104° 51' 19.573 W

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

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	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,868.60	3,827.00	PARKMAN				
4,422.37	4,372.00	SUSSEX				
4,874.52	4,817.00	SHANNON				
7,164.56	7,092.00	NIO A				
7,424.56	7,352.00	CODELL				
7,864.56	7,792.00	JSAND				

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	
1,410.38	1,407.68	38.98	-23.16	Start 4243.81 hold at 1410.38 MD	
5,654.18	5,584.32	685.58	-407.23	Start Drop -2.00	
6,164.56	6,092.00	724.56	-430.39	Start 1850.00 hold at 6164.56 MD	
8,014.56	7,942.00	724.56	-430.39	TD at 8014.56	



# **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83  
WELD\_Pancost 20-2 PAD  
P\_PANCOST 10-2**

**P\_PANCOST 10-2  
PLAN #1 1-15-10 RHS**

## **Anticollision Report**

**29 January, 2010**



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

<b>Reference</b>	PLAN #1 1-15-10 RHS		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	Stations	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	0.00 to 20,000.00ft	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 10,000.00ft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma		

<b>Survey Tool Program</b>	<b>Date</b>	1/29/2010		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.00	8,014.56	PLAN #1 1-15-10 RHS (P_PANCOST 10-2)	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 23-2 - P_PANCOST 23-2 - PLAN #1 1-15-	900.00	900.00	89.99	86.21	23.762	CC, ES
P_PANCOST 23-2 - P_PANCOST 23-2 - PLAN #1 1-15-	1,300.00	1,285.85	105.76	100.27	19.237	SF
P_PANCOST 36-2 - P_PANCOST 36-2 - PLAN #1 1-15-	900.00	900.00	59.81	56.02	15.792	CC
P_PANCOST 36-2 - P_PANCOST 36-2 - PLAN #1 1-15-	1,000.00	998.81	59.91	55.70	14.247	ES
P_PANCOST 36-2 - P_PANCOST 36-2 - PLAN #1 1-15-	1,200.00	1,194.39	65.54	60.51	13.048	SF
P_PANCOST 37-2 - P_PANCOST 37-2 - PLAN #1 1-15-	1,074.75	1,074.45	28.01	23.51	6.218	CC, ES
P_PANCOST 37-2 - P_PANCOST 37-2 - PLAN #1 1-15-	1,100.00	1,099.43	28.20	23.59	6.122	SF
RALPH VINCENT UNIT #2 EXISTING - RALPH VINCEN	1,661.02	1,634.36	48.43	-18.93	0.719	Level 1, CC
RALPH VINCENT UNIT #2 EXISTING - RALPH VINCEN	1,700.00	1,672.72	48.92	-20.09	0.709	Level 1, ES, SF

<b>Offset Design</b> WELD_Pancost 20-2 PAD - P_PANCOST 23-2 - P_PANCOST 23-2 - PLAN #1 1-15-10 RHS													<b>Offset Site Error:</b>	0.00 ft
Survey Program: 0-MWD													<b>Offset Well Error:</b>	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)	Offset Wellbore Centre +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	-89.78	0.34	-89.99	89.99					
100.00	100.00	100.00	100.00	0.10	0.10	-89.78	0.34	-89.99	89.99	89.80	0.19	471.045		
200.00	200.00	200.00	200.00	0.32	0.32	-89.78	0.34	-89.99	89.99	89.35	0.64	140.487		
300.00	300.00	300.00	300.00	0.55	0.55	-89.78	0.34	-89.99	89.99	88.90	1.09	82.554		
400.00	400.00	400.00	400.00	0.77	0.77	-89.78	0.34	-89.99	89.99	88.45	1.54	58.451		
500.00	500.00	500.00	500.00	0.99	0.99	-89.78	0.34	-89.99	89.99	88.00	1.99	45.242		
600.00	600.00	600.00	600.00	1.22	1.22	-89.78	0.34	-89.99	89.99	87.56	2.44	36.902		
700.00	700.00	700.00	700.00	1.44	1.44	-89.78	0.34	-89.99	89.99	87.11	2.89	31.159		
800.00	800.00	800.00	800.00	1.67	1.67	-89.78	0.34	-89.99	89.99	86.66	3.34	26.962		
900.00	900.00	900.00	900.00	1.89	1.89	-89.78	0.34	-89.99	89.99	86.21	3.79	23.762	CC, ES	
1,000.00	999.98	996.93	996.92	2.12	2.10	-60.06	0.21	-91.63	90.80	86.59	4.21	21.557		
1,100.00	1,099.84	1,093.68	1,093.53	2.34	2.30	-62.92	-0.20	-96.51	93.37	88.75	4.62	20.190		
1,200.00	1,199.45	1,190.05	1,189.55	2.57	2.51	-67.30	-0.88	-104.61	98.16	93.11	5.05	19.440		
1,300.00	1,298.70	1,285.85	1,284.69	2.82	2.74	-72.66	-1.82	-115.85	105.76	100.27	5.50	19.237	SF	
1,400.00	1,397.47	1,380.93	1,378.67	3.10	3.00	-78.39	-3.01	-130.13	116.75	110.76	5.98	19.510		
1,410.38	1,407.68	1,390.74	1,388.35	3.13	3.03	-78.98	-3.15	-131.78	118.10	112.06	6.04	19.563		
1,500.00	1,495.89	1,475.90	1,472.04	3.41	3.29	-83.68	-4.46	-147.44	131.62	125.11	6.51	20.207		
1,600.00	1,594.30	1,573.95	1,568.23	3.73	3.63	-87.87	-6.05	-166.40	148.46	141.38	7.09	20.944		

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



<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_PANCOST 10-2
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4875.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_Pancost 20-2 PAD	<b>MD Reference:</b>	WELL @ 4875.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_PANCOST 10-2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_PANCOST 10-2	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 1-15-10 RHS	<b>Offset TVD Reference:</b>	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
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
1,700.00	1,692.72	1,672.00	1,664.41	4.07	3.98	-91.20	-7.64	-185.36	165.92	158.23	7.69	21.573	
1,800.00	1,791.14	1,770.05	1,760.60	4.41	4.34	-93.89	-9.22	-204.33	183.83	175.51	8.32	22.103	
1,900.00	1,889.55	1,868.10	1,856.78	4.77	4.72	-96.11	-10.81	-223.29	202.06	193.10	8.96	22.549	
2,000.00	1,987.97	1,966.15	1,952.97	5.13	5.10	-97.95	-12.39	-242.25	220.53	210.91	9.62	22.924	
2,100.00	2,086.39	2,064.20	2,049.15	5.50	5.50	-99.52	-13.98	-261.21	239.19	228.90	10.29	23.243	
2,200.00	2,184.81	2,162.25	2,145.34	5.87	5.89	-100.85	-15.57	-280.18	258.00	247.03	10.97	23.514	
2,300.00	2,283.22	2,260.30	2,241.53	6.25	6.29	-102.01	-17.15	-299.14	276.93	265.27	11.66	23.748	
2,400.00	2,381.64	2,358.35	2,337.71	6.62	6.70	-103.01	-18.74	-318.10	295.95	283.59	12.36	23.949	
2,500.00	2,480.06	2,456.40	2,433.90	7.00	7.10	-103.90	-20.33	-337.06	315.05	301.99	13.06	24.125	
2,600.00	2,578.48	2,554.45	2,530.08	7.39	7.51	-104.68	-21.91	-356.03	334.21	320.45	13.77	24.279	
2,700.00	2,676.89	2,652.50	2,626.27	7.77	7.93	-105.38	-23.50	-374.99	353.43	338.95	14.48	24.415	
2,800.00	2,775.31	2,750.55	2,722.45	8.15	8.34	-106.01	-25.09	-393.95	372.69	357.50	15.19	24.536	
2,900.00	2,873.73	2,848.60	2,818.64	8.54	8.75	-106.57	-26.67	-412.92	391.99	376.08	15.91	24.644	
3,000.00	2,972.14	2,946.65	2,914.83	8.93	9.17	-107.08	-28.26	-431.88	411.32	394.70	16.63	24.741	
3,100.00	3,070.56	3,044.70	3,011.01	9.32	9.59	-107.55	-29.85	-450.84	430.69	413.34	17.35	24.828	
3,200.00	3,168.98	3,142.75	3,107.20	9.71	10.01	-107.98	-31.43	-469.80	450.08	432.01	18.07	24.907	
3,300.00	3,267.40	3,240.80	3,203.38	10.10	10.43	-108.37	-33.02	-488.77	469.49	450.69	18.80	24.979	
3,400.00	3,365.81	3,338.85	3,299.57	10.49	10.85	-108.73	-34.61	-507.73	488.92	469.39	19.52	25.044	
3,500.00	3,464.23	3,436.90	3,395.75	10.88	11.27	-109.06	-36.19	-526.69	508.36	488.11	20.25	25.104	
3,600.00	3,562.65	3,534.95	3,491.94	11.27	11.69	-109.37	-37.78	-545.65	527.83	506.85	20.98	25.159	
3,700.00	3,661.07	3,633.00	3,588.12	11.66	12.11	-109.65	-39.37	-564.62	547.30	525.59	21.71	25.210	
3,800.00	3,759.48	3,731.05	3,684.31	12.06	12.53	-109.92	-40.95	-583.58	566.79	544.35	22.44	25.257	
3,900.00	3,857.90	3,829.10	3,780.50	12.45	12.95	-110.17	-42.54	-602.54	586.29	563.11	23.17	25.301	
4,000.00	3,956.32	3,927.15	3,876.68	12.84	13.38	-110.40	-44.12	-621.50	605.80	581.89	23.91	25.341	
4,100.00	4,054.73	4,025.20	3,972.87	13.24	13.80	-110.62	-45.71	-640.47	625.31	600.68	24.64	25.379	
4,200.00	4,153.15	4,123.25	4,069.05	13.63	14.22	-110.83	-47.30	-659.43	644.84	619.47	25.37	25.414	
4,300.00	4,251.57	4,221.30	4,165.24	14.03	14.65	-111.02	-48.88	-678.39	664.37	638.27	26.11	25.447	
4,400.00	4,349.99	4,319.35	4,261.42	14.42	15.07	-111.20	-50.47	-697.36	683.91	657.07	26.84	25.478	
4,500.00	4,448.40	4,417.40	4,357.61	14.82	15.50	-111.37	-52.06	-716.32	703.46	675.88	27.58	25.507	
4,600.00	4,546.82	4,515.45	4,453.79	15.21	15.92	-111.53	-53.64	-735.28	723.01	694.70	28.32	25.534	
4,700.00	4,645.24	4,613.50	4,549.98	15.61	16.35	-111.69	-55.23	-754.24	742.57	713.52	29.05	25.560	
4,800.00	4,743.65	4,711.55	4,646.17	16.00	16.77	-111.83	-56.82	-773.21	762.13	732.34	29.79	25.584	
4,900.00	4,842.07	4,809.60	4,742.35	16.40	17.20	-111.97	-58.40	-792.17	781.70	751.17	30.53	25.607	
5,000.00	4,940.49	4,907.65	4,838.54	16.80	17.62	-112.11	-59.99	-811.13	801.27	770.01	31.26	25.629	
5,100.00	5,038.91	5,005.70	4,934.72	17.19	18.05	-112.23	-61.58	-830.09	820.85	788.85	32.00	25.649	
5,200.00	5,137.32	5,103.75	5,030.91	17.59	18.48	-112.35	-63.16	-849.06	840.43	807.69	32.74	25.669	
5,300.00	5,235.74	5,201.80	5,127.09	17.99	18.90	-112.47	-64.75	-868.02	860.01	826.53	33.48	25.688	
5,400.00	5,334.16	5,299.85	5,223.28	18.38	19.33	-112.57	-66.34	-886.98	879.59	845.38	34.22	25.705	
5,500.00	5,432.58	5,397.90	5,319.46	18.78	19.76	-112.68	-67.92	-905.94	899.18	864.23	34.96	25.722	
5,600.00	5,530.99	5,495.95	5,415.65	19.18	20.18	-112.78	-69.51	-924.91	918.77	883.08	35.70	25.738	
5,654.18	5,584.32	5,549.07	5,467.77	19.39	20.41	-112.83	-70.37	-935.18	929.39	893.29	36.10	25.747	
5,700.00	5,629.47	5,594.03	5,511.87	19.55	20.61	-113.02	-71.10	-943.88	938.23	901.79	36.44	25.746	
5,800.00	5,728.42	5,711.19	5,627.05	19.82	21.04	-113.29	-72.88	-965.23	955.86	918.73	37.13	25.743	
5,900.00	5,827.82	5,837.78	5,752.34	20.06	21.38	-113.48	-74.38	-983.17	969.45	931.74	37.71	25.709	
6,000.00	5,927.53	5,965.44	5,879.38	20.26	21.65	-113.61	-75.43	-995.65	978.81	940.61	38.20	25.624	
6,100.00	6,027.44	6,093.80	6,007.54	20.42	21.86	-113.67	-76.00	-1,002.51	983.89	945.29	38.60	25.490	
6,164.56	6,092.00	6,176.84	6,090.57	20.51	21.97	-144.39	-76.12	-1,003.89	984.88	946.08	38.81	25.379	
6,200.00	6,127.44	6,213.72	6,127.44	20.55	22.02	-144.39	-76.12	-1,003.90	984.89	945.98	38.91	25.314	
6,300.00	6,227.44	6,313.72	6,227.44	20.69	22.14	-144.39	-76.12	-1,003.90	984.89	945.68	39.20	25.123	
6,400.00	6,327.44	6,413.72	6,327.44	20.84	22.27	-144.39	-76.12	-1,003.90	984.89	945.39	39.50	24.933	
6,500.00	6,427.44	6,513.72	6,427.44	20.98	22.41	-144.39	-76.12	-1,003.90	984.89	945.08	39.80	24.744	
6,600.00	6,527.44	6,613.72	6,527.44	21.13	22.54	-144.39	-76.12	-1,003.90	984.89	944.78	40.11	24.556	

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

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

<b>Offset Design</b> WELD_Pancost 20-2 PAD - P_PANCOST 23-2 - P_PANCOST 23-2 - PLAN #1 1-15-10 RHS												<b>Offset Site Error:</b>	0.00 ft
Survey Program: 0-MWD												<b>Offset Well Error:</b>	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
6,700.00	6,627.44	6,713.72	6,627.44	21.28	22.67	-144.39	-76.12	-1,003.90	984.89	944.47	40.42	24.369	
6,800.00	6,727.44	6,813.72	6,727.44	21.43	22.81	-144.39	-76.12	-1,003.90	984.89	944.16	40.73	24.184	
6,900.00	6,827.44	6,913.72	6,827.44	21.58	22.95	-144.39	-76.12	-1,003.90	984.89	943.85	41.04	23.999	
7,000.00	6,927.44	7,013.72	6,927.44	21.73	23.09	-144.39	-76.12	-1,003.90	984.89	943.53	41.35	23.816	
7,100.00	7,027.44	7,113.72	7,027.44	21.89	23.23	-144.39	-76.12	-1,003.90	984.89	943.22	41.67	23.635	
7,200.00	7,127.44	7,213.72	7,127.44	22.04	23.37	-144.39	-76.12	-1,003.90	984.89	942.90	41.99	23.455	
7,300.00	7,227.44	7,313.72	7,227.44	22.20	23.51	-144.39	-76.12	-1,003.90	984.89	942.57	42.31	23.276	
7,400.00	7,327.44	7,413.72	7,327.44	22.36	23.65	-144.39	-76.12	-1,003.90	984.89	942.25	42.64	23.099	
7,500.00	7,427.44	7,513.72	7,427.44	22.51	23.80	-144.39	-76.12	-1,003.90	984.89	941.92	42.96	22.923	
7,562.78	7,490.22	7,576.50	7,490.22	22.61	23.89	-144.39	-76.12	-1,003.90	984.89	941.72	43.17	22.814	
7,600.00	7,527.44	7,603.28	7,517.00	22.67	23.93	-144.39	-76.12	-1,003.90	984.94	941.67	43.28	22.759	
7,700.00	7,627.44	7,603.28	7,517.00	22.83	23.93	-144.39	-76.12	-1,003.90	991.06	947.62	43.44	22.812	
7,800.00	7,727.44	7,603.28	7,517.00	23.00	23.93	-144.39	-76.12	-1,003.90	1,007.12	963.51	43.61	23.093	
7,900.00	7,827.44	7,603.28	7,517.00	23.16	23.93	-144.39	-76.12	-1,003.90	1,032.65	988.87	43.78	23.587	
8,000.00	7,927.44	7,603.28	7,517.00	23.32	23.93	-144.39	-76.12	-1,003.90	1,066.99	1,023.04	43.95	24.277	
8,014.56	7,942.00	7,603.28	7,517.00	23.35	23.93	-144.39	-76.12	-1,003.90	1,072.67	1,028.70	43.98	24.392	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_PANCOST 10-2
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4875.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_Pancost 20-2 PAD	<b>MD Reference:</b>	WELL @ 4875.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_PANCOST 10-2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_PANCOST 10-2	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 1-15-10 RHS	<b>Offset TVD Reference:</b>	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	-89.66	0.35	-59.81	59.81				
100.00	100.00	100.00	100.00	0.10	0.10	-89.66	0.35	-59.81	59.81	59.62	0.19	313.058	
200.00	200.00	200.00	200.00	0.32	0.32	-89.66	0.35	-59.81	59.81	59.17	0.64	93.368	
300.00	300.00	300.00	300.00	0.55	0.55	-89.66	0.35	-59.81	59.81	58.72	1.09	54.866	
400.00	400.00	400.00	400.00	0.77	0.77	-89.66	0.35	-59.81	59.81	58.27	1.54	38.847	
500.00	500.00	500.00	500.00	0.99	0.99	-89.66	0.35	-59.81	59.81	57.82	1.99	30.068	
600.00	600.00	600.00	600.00	1.22	1.22	-89.66	0.35	-59.81	59.81	57.37	2.44	24.525	
700.00	700.00	700.00	700.00	1.44	1.44	-89.66	0.35	-59.81	59.81	56.92	2.89	20.708	
800.00	800.00	800.00	800.00	1.67	1.67	-89.66	0.35	-59.81	59.81	56.47	3.34	17.919	
900.00	900.00	900.00	900.00	1.89	1.89	-89.66	0.35	-59.81	59.81	56.02	3.79	15.792 CC	
916.66	916.66	916.48	916.48	1.93	1.93	-59.03	0.31	-59.83	59.81	55.95	3.86	15.506	
1,000.00	999.98	998.81	998.79	2.12	2.09	-61.74	-1.08	-60.73	59.91	55.70	4.20	14.247 ES	
1,100.00	1,099.84	1,097.10	1,096.95	2.34	2.27	-69.89	-5.35	-63.47	61.04	56.44	4.60	13.258	
1,200.00	1,199.45	1,194.39	1,193.87	2.57	2.46	-82.15	-12.37	-67.97	65.54	60.51	5.02	13.048 SF	
1,300.00	1,298.70	1,290.17	1,288.97	2.82	2.68	-95.69	-21.97	-74.14	76.12	70.65	5.46	13.935	
1,400.00	1,397.47	1,384.02	1,381.72	3.10	2.92	-107.54	-33.98	-81.85	94.34	88.42	5.92	15.946	
1,410.38	1,407.68	1,393.63	1,391.19	3.13	2.94	-108.61	-35.35	-82.73	96.67	90.71	5.96	16.212	
1,500.00	1,495.89	1,475.89	1,472.02	3.41	3.19	-116.42	-48.19	-90.97	119.59	113.21	6.38	18.740	
1,600.00	1,594.30	1,566.09	1,560.10	3.73	3.50	-122.05	-64.52	-101.45	149.78	142.92	6.86	21.829	
1,700.00	1,692.72	1,654.48	1,645.79	4.07	3.85	-125.61	-82.77	-113.17	183.82	176.47	7.35	24.993	
1,800.00	1,791.14	1,740.96	1,728.94	4.41	4.24	-127.90	-102.78	-126.01	221.11	213.25	7.86	28.128	
1,900.00	1,889.55	1,825.45	1,809.43	4.77	4.67	-129.36	-124.35	-139.86	261.29	252.91	8.38	31.186	
2,000.00	1,987.97	1,907.85	1,887.19	5.13	5.13	-130.30	-147.30	-154.60	304.13	295.23	8.90	34.153	
2,100.00	2,086.39	1,991.54	1,965.38	5.50	5.64	-130.92	-172.39	-170.70	349.32	339.87	9.45	36.961	
2,200.00	2,184.81	2,080.44	2,048.28	5.87	6.21	-131.40	-199.42	-188.06	395.02	385.00	10.03	39.403	
2,300.00	2,283.22	2,169.34	2,131.18	6.25	6.80	-131.79	-226.45	-205.41	440.74	430.13	10.61	41.546	
2,400.00	2,381.64	2,258.24	2,214.07	6.62	7.40	-132.10	-253.48	-222.76	486.47	475.27	11.20	43.433	
2,500.00	2,480.06	2,347.15	2,296.97	7.00	8.00	-132.36	-280.51	-240.12	532.21	520.41	11.80	45.104	
2,600.00	2,578.48	2,436.05	2,379.87	7.39	8.61	-132.58	-307.54	-257.47	577.96	565.55	12.41	46.590	
2,700.00	2,676.89	2,524.95	2,462.77	7.77	9.23	-132.77	-334.57	-274.82	623.71	610.69	13.02	47.918	
2,800.00	2,775.31	2,613.86	2,545.66	8.15	9.85	-132.93	-361.60	-292.18	669.47	655.83	13.63	49.111	
2,900.00	2,873.73	2,702.76	2,628.56	8.54	10.48	-133.07	-388.63	-309.53	715.23	700.97	14.25	50.186	
3,000.00	2,972.14	2,791.66	2,711.46	8.93	11.11	-133.19	-415.66	-326.88	760.99	746.11	14.88	51.158	
3,100.00	3,070.56	2,880.56	2,794.35	9.32	11.74	-133.30	-442.69	-344.23	806.76	791.25	15.50	52.042	
3,200.00	3,168.98	2,969.47	2,877.25	9.71	12.37	-133.40	-469.72	-361.59	852.52	836.39	16.13	52.849	
3,300.00	3,267.40	3,058.37	2,960.15	10.10	13.00	-133.48	-496.76	-378.94	898.29	881.53	16.76	53.587	
3,400.00	3,365.81	3,147.27	3,043.05	10.49	13.64	-133.56	-523.79	-396.29	944.07	926.67	17.40	54.266	
3,500.00	3,464.23	3,236.17	3,125.94	10.88	14.28	-133.64	-550.82	-413.65	989.84	971.80	18.03	54.891	
3,600.00	3,562.65	3,325.08	3,208.84	11.27	14.92	-133.70	-577.85	-431.00	1,035.61	1,016.94	18.67	55.468	
3,700.00	3,661.07	3,413.98	3,291.74	11.66	15.56	-133.76	-604.88	-448.35	1,081.39	1,062.08	19.31	56.003	
3,800.00	3,759.48	3,502.88	3,374.63	12.06	16.20	-133.82	-631.91	-465.71	1,127.16	1,107.21	19.95	56.499	
3,900.00	3,857.90	3,591.79	3,457.53	12.45	16.84	-133.87	-658.94	-483.06	1,172.94	1,152.35	20.59	56.961	
4,000.00	3,956.32	3,680.69	3,540.43	12.84	17.48	-133.91	-685.97	-500.41	1,218.72	1,197.48	21.23	57.392	
4,100.00	4,054.73	3,769.59	3,623.32	13.24	18.12	-133.96	-713.00	-517.77	1,264.49	1,242.61	21.88	57.795	
4,200.00	4,153.15	3,858.49	3,706.22	13.63	18.77	-134.00	-740.03	-535.12	1,310.27	1,287.75	22.52	58.173	
4,300.00	4,251.57	3,947.40	3,789.12	14.03	19.41	-134.04	-767.06	-552.47	1,356.05	1,332.88	23.17	58.527	
4,400.00	4,349.99	4,036.30	3,872.02	14.42	20.06	-134.07	-794.09	-569.82	1,401.83	1,378.01	23.82	58.860	
4,500.00	4,448.40	4,125.20	3,954.91	14.82	20.70	-134.10	-821.12	-587.18	1,447.61	1,423.14	24.46	59.174	
4,600.00	4,546.82	4,214.11	4,037.81	15.21	21.35	-134.13	-848.15	-604.53	1,493.39	1,468.28	25.11	59.470	
4,700.00	4,645.24	4,303.01	4,120.71	15.61	21.99	-134.16	-875.18	-621.88	1,539.17	1,513.41	25.76	59.750	
4,800.00	4,743.65	4,391.91	4,203.60	16.00	22.64	-134.19	-902.22	-639.24	1,584.95	1,558.54	26.41	60.014	
4,900.00	4,842.07	4,480.81	4,286.50	16.40	23.28	-134.22	-929.25	-656.59	1,630.73	1,603.67	27.06	60.265	

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

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_PANCOST 10-2
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4875.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_Pancost 20-2 PAD	<b>MD Reference:</b>	WELL @ 4875.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_PANCOST 10-2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_PANCOST 10-2	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 1-15-10 RHS	<b>Offset TVD Reference:</b>	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
5,000.00	4,940.49	4,569.72	4,369.40	16.80	23.93	-134.24	-956.28	-673.94	1,676.51	1,648.80	27.71	60.503	
5,100.00	5,038.91	4,658.62	4,452.30	17.19	24.58	-134.27	-983.31	-691.30	1,722.29	1,693.93	28.36	60.729	
5,200.00	5,137.32	4,747.52	4,535.19	17.59	25.22	-134.29	-1,010.34	-708.65	1,768.07	1,739.06	29.01	60.944	
5,300.00	5,235.74	4,836.43	4,618.09	17.99	25.87	-134.31	-1,037.37	-726.00	1,813.85	1,784.19	29.66	61.149	
5,400.00	5,334.16	4,925.33	4,700.99	18.38	26.52	-134.33	-1,064.40	-743.35	1,859.64	1,829.32	30.31	61.344	
5,500.00	5,432.58	5,014.23	4,783.88	18.78	27.17	-134.35	-1,091.43	-760.71	1,905.42	1,874.45	30.97	61.531	
5,600.00	5,530.99	5,103.13	4,866.78	19.18	27.81	-134.36	-1,118.46	-778.06	1,951.20	1,919.58	31.62	61.709	
5,654.18	5,584.32	5,151.31	4,911.70	19.39	28.17	-134.37	-1,133.11	-787.46	1,976.01	1,944.03	31.97	61.802	
5,700.00	5,629.47	5,192.15	4,949.79	19.55	28.46	-134.71	-1,145.53	-795.44	1,996.75	1,964.39	32.36	61.707	
5,800.00	5,728.42	5,282.09	5,033.64	19.82	29.12	-135.33	-1,172.87	-812.99	2,040.43	2,007.30	33.13	61.581	
5,900.00	5,827.82	5,458.15	5,198.75	20.06	30.18	-135.72	-1,224.27	-845.99	2,081.06	2,046.96	34.11	61.014	
6,000.00	5,927.53	5,765.49	5,494.60	20.26	31.46	-135.83	-1,293.89	-890.68	2,111.70	2,076.43	35.27	59.870	
6,100.00	6,027.44	6,091.99	5,816.64	20.42	32.38	-135.85	-1,338.18	-919.12	2,129.79	2,093.53	36.25	58.749	
6,164.56	6,092.00	6,308.58	6,032.69	20.51	32.73	-166.54	-1,350.43	-926.98	2,134.41	2,097.65	36.75	58.079	
6,200.00	6,127.44	6,403.34	6,127.44	20.55	32.82	-166.53	-1,351.47	-927.65	2,134.75	2,097.82	36.93	57.798	
6,300.00	6,227.44	6,503.34	6,227.44	20.69	32.89	-166.53	-1,351.47	-927.65	2,134.75	2,097.52	37.23	57.334	
6,400.00	6,327.44	6,603.34	6,327.44	20.84	32.97	-166.53	-1,351.47	-927.65	2,134.75	2,097.22	37.54	56.873	
6,500.00	6,427.44	6,703.34	6,427.44	20.98	33.05	-166.53	-1,351.47	-927.65	2,134.75	2,096.91	37.84	56.416	
6,600.00	6,527.44	6,803.34	6,527.44	21.13	33.13	-166.53	-1,351.47	-927.65	2,134.75	2,096.61	38.15	55.961	
6,700.00	6,627.44	6,903.34	6,627.44	21.28	33.21	-166.53	-1,351.47	-927.65	2,134.75	2,096.30	38.46	55.510	
6,800.00	6,727.44	7,003.34	6,727.44	21.43	33.29	-166.53	-1,351.47	-927.65	2,134.75	2,095.98	38.77	55.062	
6,900.00	6,827.44	7,103.34	6,827.44	21.58	33.37	-166.53	-1,351.47	-927.65	2,134.75	2,095.67	39.09	54.618	
7,000.00	6,927.44	7,203.34	6,927.44	21.73	33.45	-166.53	-1,351.47	-927.65	2,134.75	2,095.35	39.40	54.177	
7,100.00	7,027.44	7,303.34	7,027.44	21.89	33.54	-166.53	-1,351.47	-927.65	2,134.75	2,095.03	39.72	53.740	
7,200.00	7,127.44	7,403.34	7,127.44	22.04	33.63	-166.53	-1,351.47	-927.65	2,134.75	2,094.71	40.05	53.307	
7,300.00	7,227.44	7,503.34	7,227.44	22.20	33.71	-166.53	-1,351.47	-927.65	2,134.75	2,094.38	40.37	52.877	
7,400.00	7,327.44	7,603.34	7,327.44	22.36	33.80	-166.53	-1,351.47	-927.65	2,134.75	2,094.05	40.70	52.452	
7,500.00	7,427.44	7,703.34	7,427.44	22.51	33.89	-166.53	-1,351.47	-927.65	2,134.75	2,093.72	41.03	52.030	
7,600.00	7,527.44	7,803.34	7,527.44	22.67	33.99	-166.53	-1,351.47	-927.65	2,134.75	2,093.39	41.36	51.612	
7,700.00	7,627.44	7,812.90	7,537.00	22.83	33.99	-166.53	-1,351.47	-927.65	2,136.67	2,095.11	41.56	51.414	
7,800.00	7,727.44	7,812.90	7,537.00	23.00	33.99	-166.53	-1,351.47	-927.65	2,143.23	2,101.49	41.74	51.346	
7,900.00	7,827.44	7,812.90	7,537.00	23.16	33.99	-166.53	-1,351.47	-927.65	2,154.42	2,112.50	41.92	51.388	
8,000.00	7,927.44	7,812.90	7,537.00	23.32	33.99	-166.53	-1,351.47	-927.65	2,170.16	2,128.06	42.11	51.537	
8,014.56	7,942.00	7,812.90	7,537.00	23.35	33.99	-166.53	-1,351.47	-927.65	2,172.83	2,130.70	42.14	51.568	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_PANCOST 10-2
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4875.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_Pancost 20-2 PAD	<b>MD Reference:</b>	WELL @ 4875.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_PANCOST 10-2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_PANCOST 10-2	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 1-15-10 RHS	<b>Offset TVD Reference:</b>	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	-90.02	-0.01	-29.90	29.90				
100.00	100.00	100.00	100.00	0.10	0.10	-90.02	-0.01	-29.90	29.90	29.71	0.19	156.526	
200.00	200.00	200.00	200.00	0.32	0.32	-90.02	-0.01	-29.90	29.90	29.26	0.64	46.683	
300.00	300.00	300.00	300.00	0.55	0.55	-90.02	-0.01	-29.90	29.90	28.81	1.09	27.432	
400.00	400.00	400.00	400.00	0.77	0.77	-90.02	-0.01	-29.90	29.90	28.36	1.54	19.423	
500.00	500.00	500.00	500.00	0.99	0.99	-90.02	-0.01	-29.90	29.90	27.92	1.99	15.034	
600.00	600.00	600.00	600.00	1.22	1.22	-90.02	-0.01	-29.90	29.90	27.47	2.44	12.262	
700.00	700.00	700.00	700.00	1.44	1.44	-90.02	-0.01	-29.90	29.90	27.02	2.89	10.354	
800.00	800.00	800.00	800.00	1.67	1.67	-90.02	-0.01	-29.90	29.90	26.57	3.34	8.959	
900.00	900.00	900.00	900.00	1.89	1.89	-90.02	-0.01	-29.90	29.90	26.12	3.79	7.896	
1,000.00	999.98	1,000.07	1,000.05	2.12	2.09	-65.73	-1.73	-29.59	28.88	24.68	4.21	6.868	
1,074.75	1,074.64	1,074.45	1,074.34	2.28	2.22	-79.79	-5.24	-28.95	28.01	23.51	4.50	6.218 CC, ES	
1,100.00	1,099.84	1,099.43	1,099.27	2.34	2.27	-86.31	-6.84	-28.66	28.20	23.59	4.61	6.122 SF	
1,200.00	1,199.45	1,197.40	1,196.87	2.57	2.46	-115.06	-15.19	-27.15	34.57	29.55	5.02	6.885	
1,300.00	1,298.70	1,293.34	1,292.10	2.82	2.67	-136.19	-26.54	-25.08	52.08	46.66	5.42	9.603	
1,400.00	1,397.47	1,386.65	1,384.31	3.10	2.91	-147.78	-40.58	-22.53	79.10	73.29	5.81	13.612	
1,410.38	1,407.68	1,396.16	1,393.68	3.13	2.93	-148.62	-42.18	-22.24	82.37	76.52	5.85	14.078	
1,500.00	1,495.89	1,477.31	1,473.41	3.41	3.18	-154.13	-57.05	-19.53	112.58	106.36	6.22	18.097	
1,600.00	1,594.30	1,565.80	1,559.82	3.73	3.48	-157.61	-75.79	-16.12	149.71	143.07	6.64	22.541	
1,700.00	1,692.72	1,652.04	1,643.44	4.07	3.82	-159.69	-96.57	-12.34	189.96	182.90	7.07	26.875	
1,800.00	1,791.14	1,735.97	1,724.16	4.41	4.19	-161.01	-119.17	-8.24	233.06	225.56	7.50	31.077	
1,900.00	1,889.55	1,820.53	1,804.83	4.77	4.60	-161.91	-144.09	-3.70	278.64	270.69	7.94	35.090	
2,000.00	1,987.97	1,909.21	1,889.30	5.13	5.07	-162.60	-170.66	1.13	324.74	316.34	8.40	38.665	
2,100.00	2,086.39	1,997.89	1,973.77	5.50	5.55	-163.11	-197.24	5.96	370.87	362.01	8.86	41.839	
2,200.00	2,184.81	2,086.58	2,058.24	5.87	6.05	-163.51	-223.82	10.79	417.02	407.68	9.34	44.666	
2,300.00	2,283.22	2,175.26	2,142.70	6.25	6.55	-163.83	-250.39	15.63	463.18	453.37	9.81	47.198	
2,400.00	2,381.64	2,263.94	2,227.17	6.62	7.07	-164.09	-276.97	20.46	509.35	499.06	10.29	49.476	
2,500.00	2,480.06	2,352.62	2,311.64	7.00	7.58	-164.31	-303.55	25.29	555.53	544.75	10.78	51.532	
2,600.00	2,578.48	2,441.30	2,396.10	7.39	8.11	-164.49	-330.12	30.13	601.71	590.44	11.27	53.396	
2,700.00	2,676.89	2,529.98	2,480.57	7.77	8.64	-164.65	-356.70	34.96	647.90	636.14	11.76	55.091	
2,800.00	2,775.31	2,618.66	2,565.04	8.15	9.17	-164.79	-383.27	39.79	694.09	681.84	12.25	56.639	
2,900.00	2,873.73	2,707.34	2,649.51	8.54	9.70	-164.91	-409.85	44.62	740.28	727.53	12.75	58.057	
3,000.00	2,972.14	2,796.03	2,733.97	8.93	10.24	-165.01	-436.43	49.46	786.48	773.23	13.25	59.359	
3,100.00	3,070.56	2,884.71	2,818.44	9.32	10.77	-165.11	-463.00	54.29	832.68	818.93	13.75	60.559	
3,200.00	3,168.98	2,973.39	2,902.91	9.71	11.31	-165.19	-489.58	59.12	878.88	864.62	14.25	61.667	
3,300.00	3,267.40	3,062.07	2,987.38	10.10	11.85	-165.27	-516.16	63.96	925.08	910.32	14.76	62.695	
3,400.00	3,365.81	3,150.75	3,071.84	10.49	12.40	-165.34	-542.73	68.79	971.28	956.02	15.26	63.649	
3,500.00	3,464.23	3,239.43	3,156.31	10.88	12.94	-165.40	-569.31	73.62	1,017.48	1,001.72	15.77	64.538	
3,600.00	3,562.65	3,328.11	3,240.78	11.27	13.49	-165.46	-595.88	78.45	1,063.69	1,047.41	16.27	65.367	
3,700.00	3,661.07	3,416.80	3,325.24	11.66	14.03	-165.51	-622.46	83.29	1,109.89	1,093.11	16.78	66.143	
3,800.00	3,759.48	3,505.48	3,409.71	12.06	14.58	-165.56	-649.04	88.12	1,156.10	1,138.81	17.29	66.869	
3,900.00	3,857.90	3,594.16	3,494.18	12.45	15.12	-165.60	-675.61	92.95	1,202.30	1,184.50	17.80	67.551	
4,000.00	3,956.32	3,682.84	3,578.65	12.84	15.67	-165.64	-702.19	97.79	1,248.51	1,230.20	18.31	68.192	
4,100.00	4,054.73	3,771.52	3,663.11	13.24	16.22	-165.68	-728.77	102.62	1,294.71	1,275.89	18.82	68.796	
4,200.00	4,153.15	3,860.20	3,747.58	13.63	16.77	-165.72	-755.34	107.45	1,340.92	1,321.59	19.33	69.366	
4,300.00	4,251.57	3,948.88	3,832.05	14.03	17.32	-165.75	-781.92	112.29	1,387.13	1,367.29	19.84	69.905	
4,400.00	4,349.99	4,037.56	3,916.51	14.42	17.87	-165.78	-808.50	117.12	1,433.34	1,412.98	20.36	70.414	
4,500.00	4,448.40	4,126.25	4,000.98	14.82	18.42	-165.81	-835.07	121.95	1,479.54	1,458.68	20.87	70.898	
4,600.00	4,546.82	4,214.93	4,085.45	15.21	18.97	-165.84	-861.65	126.78	1,525.75	1,504.37	21.38	71.356	
4,700.00	4,645.24	4,303.61	4,169.92	15.61	19.52	-165.86	-888.22	131.62	1,571.96	1,550.07	21.90	71.792	
4,800.00	4,743.65	4,392.29	4,254.38	16.00	20.07	-165.89	-914.80	136.45	1,618.17	1,595.76	22.41	72.206	
4,900.00	4,842.07	4,480.97	4,338.85	16.40	20.62	-165.91	-941.38	141.28	1,664.38	1,641.45	22.93	72.600	

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

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_PANCOST 10-2
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4875.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_Pancost 20-2 PAD	<b>MD Reference:</b>	WELL @ 4875.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_PANCOST 10-2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_PANCOST 10-2	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 1-15-10 RHS	<b>Offset TVD Reference:</b>	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
5,000.00	4,940.49	4,569.65	4,423.32	16.80	21.17	-165.93	-967.95	146.12	1,710.59	1,687.15	23.44	72.977	
5,100.00	5,038.91	4,658.33	4,507.79	17.19	21.72	-165.95	-994.53	150.95	1,756.80	1,732.84	23.96	73.336	
5,200.00	5,137.32	4,747.01	4,592.25	17.59	22.27	-165.97	-1,021.11	155.78	1,803.01	1,778.54	24.47	73.679	
5,300.00	5,235.74	4,835.70	4,676.72	17.99	22.82	-165.99	-1,047.68	160.61	1,849.22	1,824.23	24.99	74.007	
5,400.00	5,334.16	4,924.38	4,761.19	18.38	23.38	-166.01	-1,074.26	165.45	1,895.43	1,869.93	25.50	74.321	
5,500.00	5,432.58	5,013.06	4,846.65	18.78	23.93	-166.03	-1,100.84	170.28	1,941.64	1,915.62	26.02	74.622	
5,600.00	5,530.99	5,101.74	4,930.12	19.18	24.48	-166.04	-1,127.41	175.11	1,987.85	1,961.31	26.54	74.911	
5,654.18	5,584.32	5,149.79	4,975.89	19.39	24.78	-166.05	-1,141.81	177.73	2,012.89	1,986.07	26.82	75.062	
5,700.00	5,629.47	5,190.58	5,014.74	19.55	25.03	-166.17	-1,154.04	179.95	2,033.74	2,006.61	27.13	74.961	
5,800.00	5,728.42	5,280.72	5,100.59	19.82	25.60	-166.39	-1,181.05	184.87	2,077.05	2,049.28	27.77	74.802	
5,900.00	5,827.82	5,372.26	5,187.78	20.06	26.17	-166.56	-1,208.48	189.86	2,117.27	2,088.89	28.38	74.616	
6,000.00	5,927.53	5,463.34	5,270.66	20.26	27.15	-166.63	-1,262.90	199.75	2,153.60	2,124.40	29.20	73.752	
6,100.00	6,027.44	5,553.04	5,362.64	20.42	28.39	-166.58	-1,337.34	213.29	2,176.74	2,146.39	30.35	71.718	
6,164.56	6,092.00	6,215.78	6,014.42	20.51	28.86	162.73	-1,358.42	217.12	2,182.68	2,151.70	30.98	70.445	
6,200.00	6,127.44	6,328.83	6,127.44	20.55	28.98	162.74	-1,360.23	217.45	2,183.13	2,151.90	31.23	69.913	
6,300.00	6,227.44	6,428.83	6,227.44	20.69	29.07	162.74	-1,360.23	217.45	2,183.13	2,151.55	31.58	69.131	
6,400.00	6,327.44	6,528.83	6,327.44	20.84	29.16	162.74	-1,360.23	217.45	2,183.13	2,151.20	31.93	68.377	
6,500.00	6,427.44	6,628.83	6,427.44	20.98	29.24	162.74	-1,360.23	217.45	2,183.13	2,150.85	32.28	67.634	
6,600.00	6,527.44	6,728.83	6,527.44	21.13	29.33	162.74	-1,360.23	217.45	2,183.13	2,150.49	32.63	66.902	
6,700.00	6,627.44	6,828.83	6,627.44	21.28	29.41	162.74	-1,360.23	217.45	2,183.13	2,150.14	32.99	66.181	
6,800.00	6,727.44	6,928.83	6,727.44	21.43	29.50	162.74	-1,360.23	217.45	2,183.13	2,149.78	33.34	65.472	
6,900.00	6,827.44	7,028.83	6,827.44	21.58	29.59	162.74	-1,360.23	217.45	2,183.13	2,149.42	33.70	64.773	
7,000.00	6,927.44	7,128.83	6,927.44	21.73	29.68	162.74	-1,360.23	217.45	2,183.13	2,149.06	34.07	64.086	
7,100.00	7,027.44	7,228.83	7,027.44	21.89	29.78	162.74	-1,360.23	217.45	2,183.13	2,148.70	34.43	63.409	
7,200.00	7,127.44	7,328.83	7,127.44	22.04	29.87	162.74	-1,360.23	217.45	2,183.13	2,148.33	34.79	62.743	
7,300.00	7,227.44	7,428.83	7,227.44	22.20	29.97	162.74	-1,360.23	217.45	2,183.13	2,147.96	35.16	62.087	
7,400.00	7,327.44	7,528.83	7,327.44	22.36	30.06	162.74	-1,360.23	217.45	2,183.13	2,147.59	35.53	61.442	
7,500.00	7,427.44	7,628.83	7,427.44	22.51	30.16	162.74	-1,360.23	217.45	2,183.13	2,147.22	35.90	60.807	
7,600.00	7,527.44	7,728.83	7,527.44	22.67	30.26	162.74	-1,360.23	217.45	2,183.13	2,146.85	36.28	60.182	
7,700.00	7,627.44	7,738.39	7,537.00	22.83	30.27	162.74	-1,360.23	217.45	2,185.00	2,148.50	36.50	59.868	
7,800.00	7,727.44	7,738.39	7,537.00	23.00	30.27	162.74	-1,360.23	217.45	2,191.42	2,154.71	36.70	59.707	
7,900.00	7,827.44	7,738.39	7,537.00	23.16	30.27	162.74	-1,360.23	217.45	2,202.36	2,165.45	36.91	59.671	
8,000.00	7,927.44	7,738.39	7,537.00	23.32	30.27	162.74	-1,360.23	217.45	2,217.76	2,180.65	37.12	59.754	
8,014.56	7,942.00	7,738.39	7,537.00	23.35	30.27	162.74	-1,360.23	217.45	2,220.37	2,183.23	37.15	59.775	



<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_PANCOST 10-2
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4875.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_Pancost 20-2 PAD	<b>MD Reference:</b>	WELL @ 4875.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_PANCOST 10-2	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_PANCOST 10-2	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 1-15-10 RHS	<b>Offset TVD Reference:</b>	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						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	-59.06	52.44	-87.48	103.93				
100.00	100.00	80.00	80.00	0.10	1.60	-59.06	52.44	-87.48	101.99	100.30	1.70	60.152	
200.00	200.00	180.00	180.00	0.32	5.20	-59.06	52.44	-87.48	101.99	96.47	5.52	18.476	
300.00	300.00	280.00	280.00	0.55	9.20	-59.06	52.44	-87.48	101.99	92.25	9.75	10.466	
400.00	400.00	380.00	380.00	0.77	13.20	-59.06	52.44	-87.48	101.99	88.02	13.97	7.301	
500.00	500.00	480.00	480.00	0.99	17.20	-59.06	52.44	-87.48	101.99	83.80	18.19	5.606	
600.00	600.00	580.00	580.00	1.22	21.20	-59.06	52.44	-87.48	101.99	79.57	22.42	4.549	
700.00	700.00	680.00	680.00	1.44	25.20	-59.06	52.44	-87.48	101.99	75.35	26.64	3.828	
800.00	800.00	780.00	780.00	1.67	29.20	-59.06	52.44	-87.48	101.99	71.12	30.87	3.304	
900.00	900.00	880.00	880.00	1.89	33.20	-59.06	52.44	-87.48	101.99	66.90	35.09	2.906	
1,000.00	999.98	979.98	979.98	2.12	37.20	-28.84	52.44	-87.48	100.46	61.16	39.30	2.556	
1,100.00	1,099.84	1,079.84	1,079.84	2.34	41.19	-30.39	52.44	-87.48	95.91	52.46	43.45	2.207	
1,200.00	1,199.45	1,179.45	1,179.45	2.57	45.18	-33.32	52.44	-87.48	88.49	40.94	47.56	1.861	
1,300.00	1,298.70	1,278.70	1,278.70	2.82	49.15	-38.32	52.44	-87.48	78.58	26.94	51.63	1.522	
1,400.00	1,397.47	1,377.47	1,377.47	3.10	53.10	-46.76	52.44	-87.48	66.96	11.20	55.75	1.201 Level 2	
1,410.38	1,407.68	1,387.68	1,387.68	3.13	53.51	-47.93	52.44	-87.48	65.71	9.52	56.19	1.169 Level 2	
1,500.00	1,495.89	1,475.89	1,475.89	3.41	57.04	-59.89	52.44	-87.48	56.21	-3.95	60.16	0.934 Level 1	
1,600.00	1,594.30	1,574.30	1,574.30	3.73	60.97	-77.61	52.44	-87.48	49.62	-15.05	64.67	0.767 Level 1	
1,661.02	1,654.36	1,634.36	1,634.36	3.93	63.37	-90.00	52.44	-87.48	48.43	-18.93	67.36	0.719 Level 1, CC	
1,700.00	1,692.72	1,672.72	1,672.72	4.07	64.91	-97.99	52.44	-87.48	48.92	-20.09	69.01	0.709 Level 1, ES, SF	
1,800.00	1,791.14	1,771.14	1,771.14	4.41	68.85	-116.59	52.44	-87.48	54.33	-18.71	73.05	0.744 Level 1	
1,900.00	1,889.55	1,869.55	1,869.55	4.77	72.78	-130.72	52.44	-87.48	64.33	-12.60	76.93	0.836 Level 1	
2,000.00	1,987.97	1,967.97	1,967.97	5.13	76.72	-140.68	52.44	-87.48	77.16	-3.67	80.84	0.955 Level 1	
2,100.00	2,086.39	2,066.39	2,066.39	5.50	80.66	-147.68	52.44	-87.48	91.64	6.85	84.79	1.081 Level 2	
2,200.00	2,184.81	2,164.81	2,164.81	5.87	84.59	-152.74	52.44	-87.48	107.09	18.30	88.79	1.206 Level 2	
2,300.00	2,283.22	2,263.22	2,263.22	6.25	88.53	-156.51	52.44	-87.48	123.16	30.33	92.83	1.327 Level 3	
2,400.00	2,381.64	2,361.64	2,361.64	6.62	92.47	-159.41	52.44	-87.48	139.63	42.74	96.88	1.441 Level 3	
2,500.00	2,480.06	2,460.06	2,460.06	7.00	96.40	-161.69	52.44	-87.48	156.37	55.41	100.96	1.549	
2,600.00	2,578.48	2,558.48	2,558.48	7.39	100.34	-163.53	52.44	-87.48	173.30	68.26	105.04	1.650	
2,700.00	2,676.89	2,656.89	2,656.89	7.77	104.28	-165.04	52.44	-87.48	190.38	81.24	109.14	1.744	
2,800.00	2,775.31	2,755.31	2,755.31	8.15	108.21	-166.30	52.44	-87.48	207.57	94.33	113.24	1.833	
2,900.00	2,873.73	2,853.73	2,853.73	8.54	112.15	-167.37	52.44	-87.48	224.84	107.49	117.35	1.916	
3,000.00	2,972.14	2,952.14	2,952.14	8.93	116.09	-168.28	52.44	-87.48	242.18	120.72	121.46	1.994	
3,100.00	3,070.56	3,050.56	3,050.56	9.32	120.02	-169.08	52.44	-87.48	259.56	133.99	125.57	2.067	
3,200.00	3,168.98	3,148.98	3,148.98	9.71	123.96	-169.77	52.44	-87.48	276.99	147.31	129.69	2.136	
3,300.00	3,267.40	3,247.40	3,247.40	10.10	127.90	-170.38	52.44	-87.48	294.46	160.66	133.80	2.201	
3,400.00	3,365.81	3,345.81	3,345.81	10.49	131.83	-170.93	52.44	-87.48	311.95	174.03	137.92	2.262	
3,500.00	3,464.23	3,444.23	3,444.23	10.88	135.77	-171.41	52.44	-87.48	329.47	187.43	142.04	2.320	
3,600.00	3,562.65	3,542.65	3,542.65	11.27	139.71	-171.85	52.44	-87.48	347.01	200.85	146.16	2.374	
3,700.00	3,661.07	3,641.07	3,641.07	11.66	143.64	-172.25	52.44	-87.48	364.57	214.28	150.29	2.426	
3,800.00	3,759.48	3,739.48	3,739.48	12.06	147.58	-172.60	52.44	-87.48	382.14	227.73	154.41	2.475	
3,900.00	3,857.90	3,837.90	3,837.90	12.45	151.52	-172.93	52.44	-87.48	399.72	241.19	158.53	2.521	
4,000.00	3,956.32	3,936.32	3,936.32	12.84	155.45	-173.23	52.44	-87.48	417.32	254.66	162.66	2.566	
4,100.00	4,054.73	4,034.73	4,034.73	13.24	159.39	-173.50	52.44	-87.48	434.93	268.14	166.78	2.608	
4,200.00	4,153.15	4,133.15	4,133.15	13.63	163.33	-173.76	52.44	-87.48	452.54	281.63	170.91	2.648	
4,300.00	4,251.57	4,231.57	4,231.57	14.03	167.26	-173.99	52.44	-87.48	470.16	295.13	175.04	2.686	
4,400.00	4,349.99	4,329.99	4,329.99	14.42	171.20	-174.21	52.44	-87.48	487.80	308.63	179.16	2.723	
4,500.00	4,448.40	4,428.40	4,428.40	14.82	175.14	-174.41	52.44	-87.48	505.43	322.14	183.29	2.758	
4,600.00	4,546.82	4,526.82	4,526.82	15.21	179.07	-174.60	52.44	-87.48	523.07	335.66	187.42	2.791	
4,700.00	4,645.24	4,625.24	4,625.24	15.61	183.01	-174.78	52.44	-87.48	540.72	349.18	191.54	2.823	
4,800.00	4,743.65	4,723.65	4,723.65	16.00	186.95	-174.94	52.44	-87.48	558.37	362.70	195.67	2.854	
4,900.00	4,842.07	4,822.07	4,822.07	16.40	190.88	-175.10	52.44	-87.48	576.03	376.23	199.80	2.883	

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

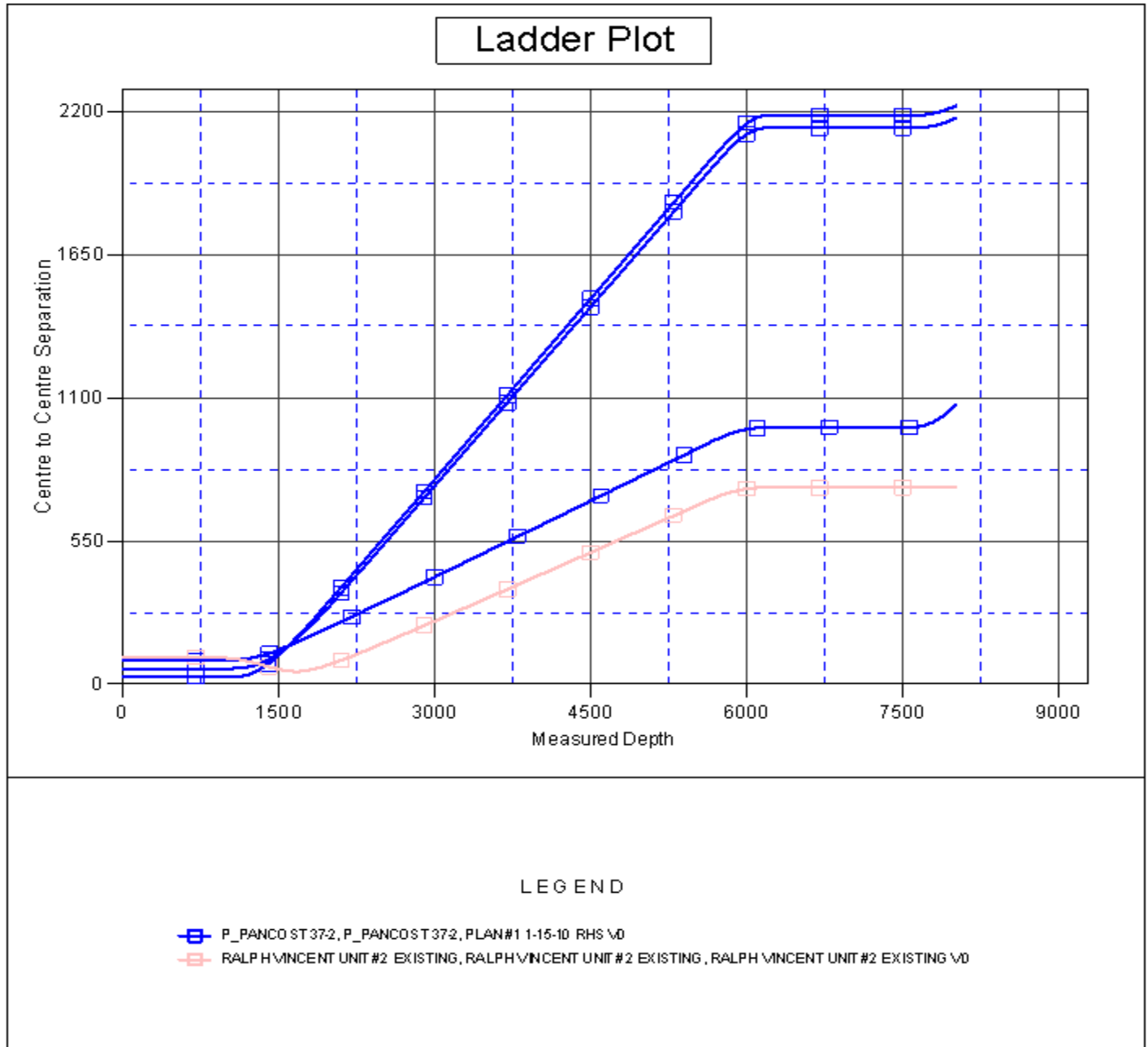
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_PANCOST 10-2
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4875.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_Pancost 20-2 PAD	<b>MD Reference:</b>	WELL @ 4875.00ft (Original Well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

<b>Offset Design</b> WELD_Pancost 20-2 PAD - RALPH VINCENT UNIT #2 EXISTING - RALPH VINCENT UNIT #2 EXISTI												<b>Offset Site Error:</b>	0.00 ft
Survey Program: 0-UNKNOWN												<b>Offset Well Error:</b>	0.00 ft
Reference	Offset	Semi Major Axis					Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,000.00	4,940.49	4,920.49	4,920.49	16.80	194.82	-175.25	52.44	-87.48	593.69	389.76	203.93	2.911	
5,100.00	5,038.91	5,018.91	5,018.91	17.19	198.76	-175.38	52.44	-87.48	611.36	403.30	208.06	2.938	
5,200.00	5,137.32	5,117.32	5,117.32	17.59	202.69	-175.51	52.44	-87.48	629.02	416.84	212.19	2.964	
5,300.00	5,235.74	5,215.74	5,215.74	17.99	206.63	-175.64	52.44	-87.48	646.69	430.38	216.31	2.990	
5,400.00	5,334.16	5,314.16	5,314.16	18.38	210.57	-175.75	52.44	-87.48	664.37	443.92	220.44	3.014	
5,500.00	5,432.58	5,412.58	5,412.58	18.78	214.50	-175.86	52.44	-87.48	682.04	457.47	224.57	3.037	
5,600.00	5,530.99	5,510.99	5,510.99	19.18	218.44	-175.97	52.44	-87.48	699.72	471.02	228.70	3.060	
5,654.18	5,584.32	5,564.32	5,564.32	19.39	220.57	-176.02	52.44	-87.48	709.30	478.36	230.94	3.071	
5,700.00	5,629.47	5,609.47	5,609.47	19.55	222.38	-176.08	52.44	-87.48	717.04	483.68	233.36	3.073	
5,800.00	5,728.42	5,708.42	5,708.42	19.82	226.34	-176.17	52.44	-87.48	731.43	492.84	238.59	3.066	
5,900.00	5,827.82	5,807.82	5,807.82	20.06	230.31	-176.24	52.44	-87.48	742.36	498.79	243.57	3.048	
6,000.00	5,927.53	5,907.53	5,907.53	20.26	234.30	-176.29	52.44	-87.48	749.83	501.53	248.30	3.020	
6,100.00	6,027.44	6,007.44	6,007.44	20.42	238.30	-176.32	52.44	-87.48	753.82	501.08	252.73	2.983	
6,164.56	6,092.00	6,072.00	6,072.00	20.51	240.88	152.97	52.44	-87.48	754.54	499.10	255.44	2.954	
6,200.00	6,127.44	6,107.44	6,107.44	20.55	242.30	152.97	52.44	-87.48	754.54	497.62	256.92	2.937	
6,300.00	6,227.44	6,207.44	6,207.44	20.69	246.30	152.97	52.44	-87.48	754.54	493.42	261.12	2.890	
6,400.00	6,327.44	6,307.44	6,307.44	20.84	250.30	152.97	52.44	-87.48	754.54	489.22	265.32	2.844	
6,500.00	6,427.44	6,407.44	6,407.44	20.98	254.30	152.97	52.44	-87.48	754.54	485.02	269.52	2.800	
6,600.00	6,527.44	6,507.44	6,507.44	21.13	258.30	152.97	52.44	-87.48	754.54	480.82	273.73	2.757	
6,700.00	6,627.44	6,607.44	6,607.44	21.28	262.30	152.97	52.44	-87.48	754.54	476.61	277.93	2.715	
6,800.00	6,727.44	6,707.44	6,707.44	21.43	266.30	152.97	52.44	-87.48	754.54	472.41	282.13	2.674	
6,900.00	6,827.44	6,807.44	6,807.44	21.58	270.30	152.97	52.44	-87.48	754.54	468.20	286.34	2.635	
7,000.00	6,927.44	6,907.44	6,907.44	21.73	274.30	152.97	52.44	-87.48	754.54	464.00	290.54	2.597	
7,100.00	7,027.44	7,007.44	7,007.44	21.89	278.30	152.97	52.44	-87.48	754.54	459.79	294.75	2.560	
7,200.00	7,127.44	7,107.44	7,107.44	22.04	282.30	152.97	52.44	-87.48	754.54	455.59	298.96	2.524	
7,300.00	7,227.44	7,207.44	7,207.44	22.20	286.30	152.97	52.44	-87.48	754.54	451.38	303.16	2.489	
7,400.00	7,327.44	7,307.44	7,307.44	22.36	290.30	152.97	52.44	-87.48	754.54	447.17	307.37	2.455	
7,500.00	7,427.44	7,407.44	7,407.44	22.51	294.30	152.97	52.44	-87.48	754.54	442.97	311.58	2.422	
7,600.00	7,527.44	7,507.44	7,507.44	22.67	298.30	152.97	52.44	-87.48	754.54	438.76	315.78	2.389	
7,700.00	7,627.44	7,607.44	7,607.44	22.83	302.30	152.97	52.44	-87.48	754.54	434.55	319.99	2.358	
7,800.00	7,727.44	7,707.44	7,707.44	23.00	306.30	152.97	52.44	-87.48	754.54	430.34	324.20	2.327	
7,900.00	7,827.44	7,807.44	7,807.44	23.16	310.30	152.97	52.44	-87.48	754.54	426.13	328.41	2.298	
8,000.00	7,927.44	7,907.44	7,907.44	23.32	314.30	152.97	52.44	-87.48	754.54	421.92	332.62	2.268	
8,014.56	7,942.00	7,922.00	7,922.00	23.35	314.88	152.97	52.44	-87.48	754.54	421.31	333.23	2.264	



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

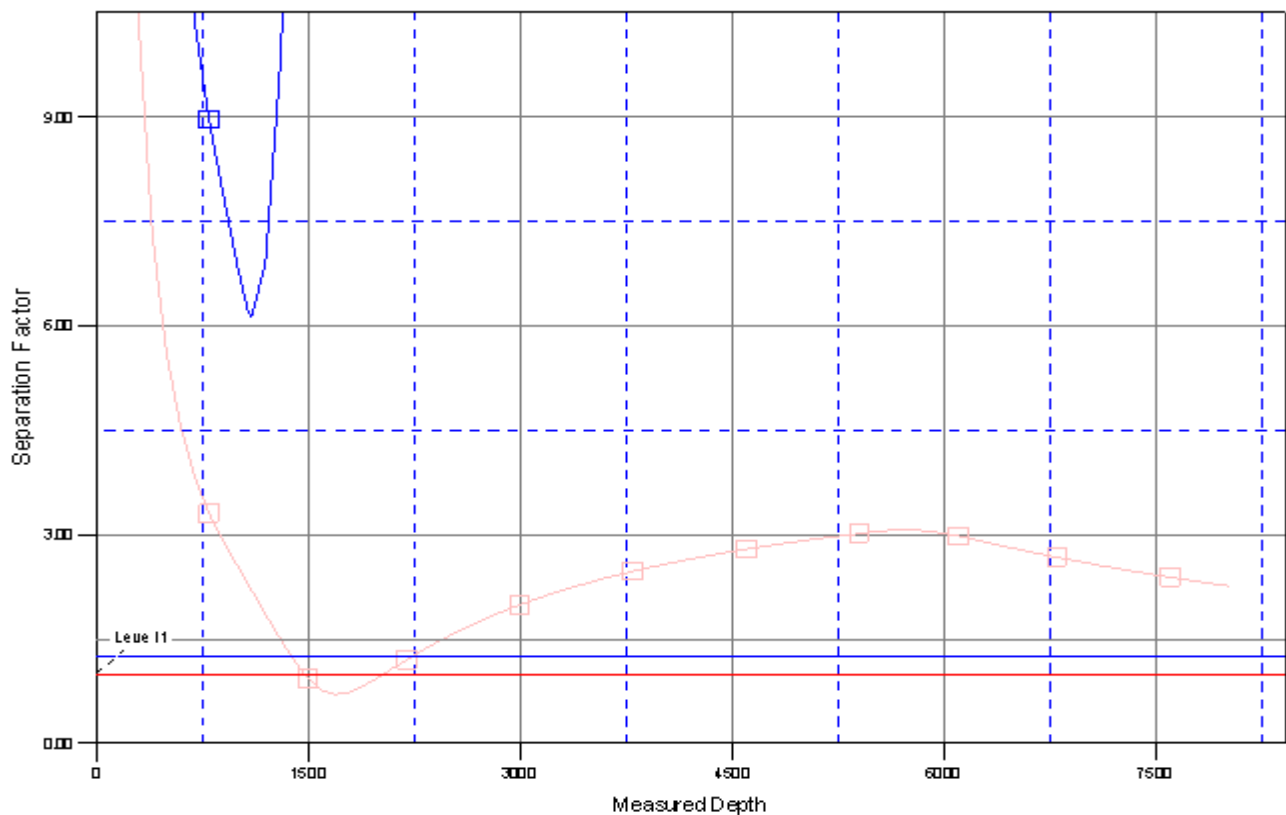
Reference Depths are relative to WELL @ 4875.00ft (Original Well Elev) Coordinates are relative to: P\_PANCOST 10-2  
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone  
Central Meridian is 105° 30' 0.000 W ° Grid Convergence at Surface is: 0.42°



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

Reference Depths are relative to WELL @ 4875.00ft (Original Well Elev) Coordinates are relative to: P\_PANCOST 10-2  
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 37-2, P\_PANCOST 37-2, PLAN #1 1-15-10 RHS V0
- RALPH VINCENT UNIT #2 EXISTING, RALPH VINCENT UNIT #2 EXISTING, RALPH VINCENT UNIT #2 EXISTING V0