



# **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83**

**WELD\_OLIN 18-31 PAD**

**P\_OLIN 21-31**

**P\_OLIN 21-31**

**Plan: PLAN #1 4-5-10 RHS**

## **Standard Planning Report**

**05 April, 2010**

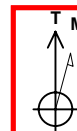




Project: COLORADO NORTHERN ZONE - 83  
 Site: WELD\_OLIN 18-31 PAD  
 Well: P\_OLIN 21-31  
 Wellbore: P\_OLIN 21-31  
 Section: SECTION 31 T3N R66W  
 SHL: 1473 FNL 1258 FWL  
 Design: PLAN #1 4-5-10 RHS  
 Latitude: 40° 11' 3.365 N  
 Longitude: 104° 49' 30.857 W  
 GL: 4829.00  
 KB: WELL @ 4844.00ft (Original Well Elev)



**Weatherford®**



Azimuths to True North  
 Magnetic North: 9.04°  
 Magnetic Field  
 Strength: 53137.2snT  
 Dip Angle: 66.91°  
 Date: 4/5/2010  
 Model: IGRF2010

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3815.00	3911.91	PARKMAN
4250.00	4363.83	SUSSEX
7012.00	7174.00	NIO A
7296.00	7458.00	CODELL
7738.00	7900.00	JSAND

#### CASING DETAILS

TVD	MD	Name	Size
700.00	700.00	8 5/8"	8.62

#### SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	Start Build 2.00
1586.40	15.73	76.68	1576.57	24.70	104.38	2.00	76.68	107.26	Start 3801.19 hold at 1586.40 MD
5387.59	15.73	76.68	5235.43	262.02	1107.07	0.00	0.00	1137.66	Start Drop -2.00
6174.00	0.00	0.00	6012.00	286.72	1211.45	2.00	180.00	1244.92	Start 1878.00 hold at 6174.00 MD
8052.00	0.00	0.00	7890.00	286.72	1211.45	0.00	0.00	1244.92	TD at 8052.00

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

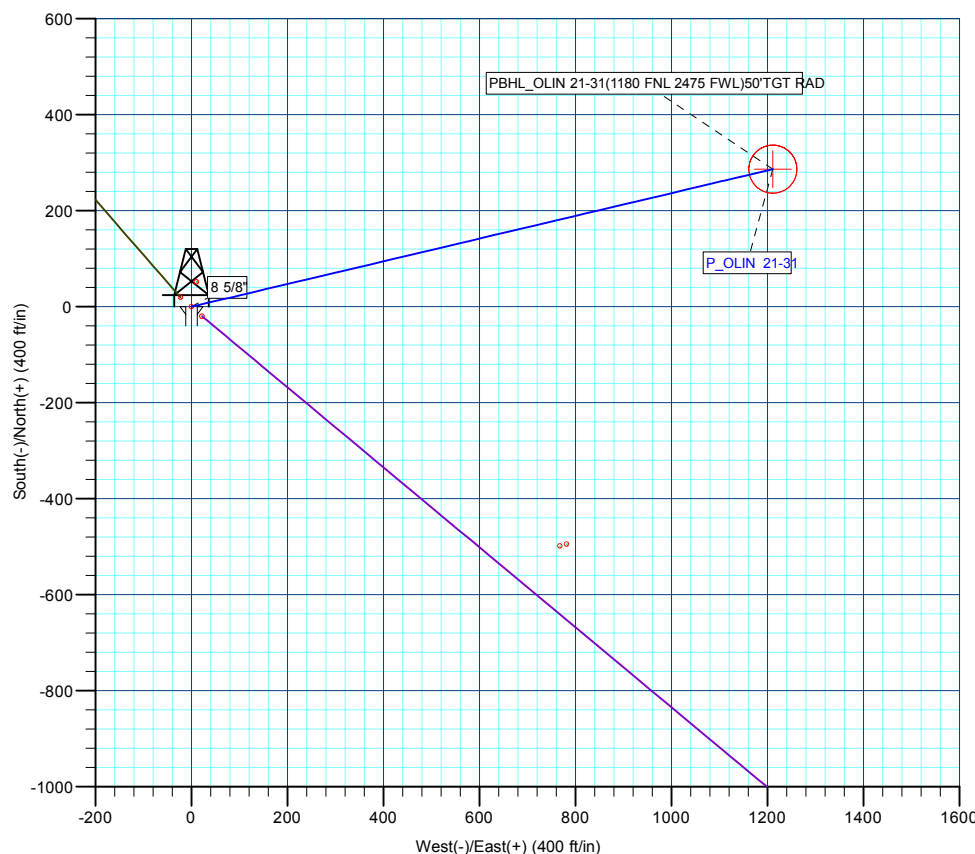
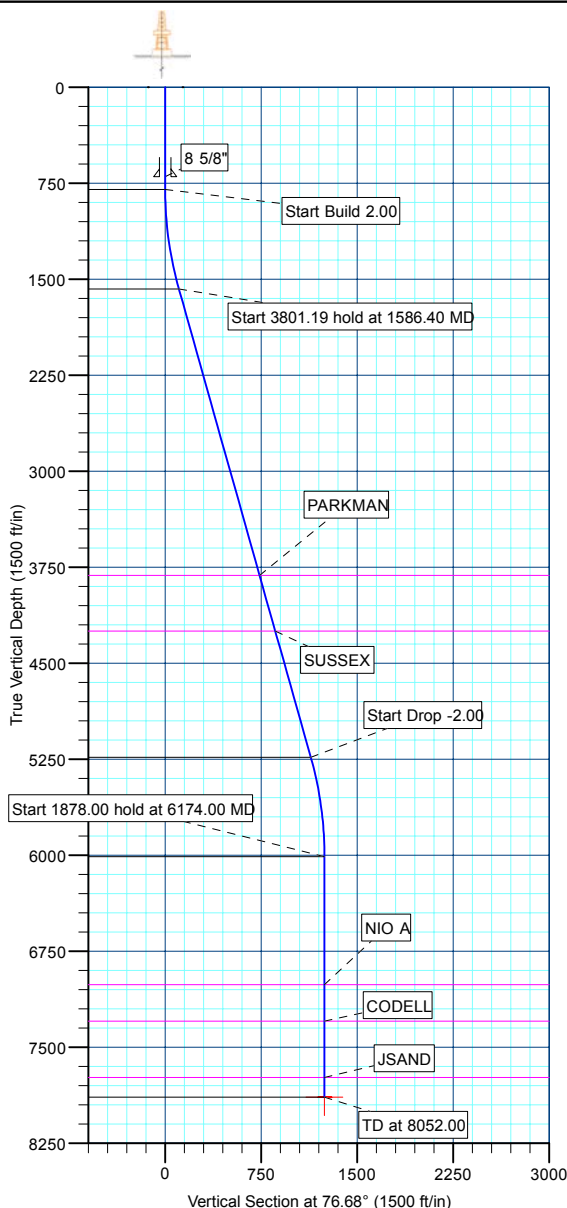
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
PBHL	7890.00	286.72	1211.45	40° 11' 6.198 N	104° 49' 15.247 W	Circle (Radius: 50.00)

#### WELL DETAILS: P\_OLIN 21-31

+N/-S	+E/-W	Northing	Ground Level:	4829.00	Latitude	Longitude	Slot
0.00	0.00	1310688.85	Easting	3188524.40	40° 11' 3.365 N	104° 49' 30.857 W	

#### LEGEND

— HSR CAROL MILLER #6-31 EXISTING, HSR CAROL MILLER #6-31 EXISTING, HSR CAROL MILLER #6-31 EXISTING V0  
 — MILLER FEDERAL #6-31A EXISTING, MILLER FEDERAL #6-31A EXISTING, MILLER FEDERAL #6-31A EXISTING V0  
 — P\_OLIN 25-31, P\_OLIN 25-31, PLAN #1 4-5-10 RHS V0  
 — P\_OLIN 30-31, P\_OLIN 30-31, PLAN #1 4-5-10 RHS V0  
 — UPRR 42 PAN AM UNIT X TRUE #1 EXISTING, UPRR 42 PAN AM UNIT X TRUE #1 EXISTING, UPRR 42 PAN AM UNIT X TRUE #1 EXISTING V0  
 — PLAN #1 4-5-10 RHS



Plan: PLAN #1 4-5-10 RHS (P\_OLIN 21-31/P\_OLIN 21-31)

Created By: Robert H. Scott Date: 15:57, April 05 2010

<b>Database:</b>	EDM 2003.21 Single User Db	<b>Local Co-ordinate Reference:</b>	Well P_OLIN 21-31
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Site:</b>	WELD_OLIN 18-31 PAD	<b>North Reference:</b>	True
<b>Well:</b>	P_OLIN 21-31	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	P_OLIN 21-31		
<b>Design:</b>	PLAN #1 4-5-10 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		

Site						WELD_OLIN 18-31 PAD, SECTION 31 T3N R66W											
Site Position:						Northing:			1,310,688.85ft			Latitude:			40° 11' 3.365 N		
From:			Lat/Long			Easting:			3,188,524.40ft			Longitude:			104° 49' 30.857 W		
Position Uncertainty:			0.00 ft			Slot Radius:			in			Grid Convergence:			0.44 °		

Well	P_OLIN 21-31					
Well Position	+N/-S	0.00 ft	Northing:	1,310,688.85 ft	Latitude:	40° 11' 3.365 N
	+E/-W	0.00 ft	Easting:	3,188,524.40 ft	Longitude:	104° 49' 30.857 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,829.00 ft

<b>Wellbore</b>	P_OLIN 21-31				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	4/5/2010	9.04	66.91	53,137

<b>Design</b>	PLAN #1 4-5-10 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	76.68

<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	
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,586.40	15.73	76.68	1,576.57	24.70	104.38	2.00	2.00	0.00	76.68	
5,387.59	15.73	76.68	5,235.43	262.02	1,107.07	0.00	0.00	0.00	0.00	
6,174.00	0.00	0.00	6,012.00	286.72	1,211.45	2.00	-2.00	0.00	180.00	
8,052.00	0.00	0.00	7,890.00	286.72	1,211.45	0.00	0.00	0.00	0.00	PBHL_OLIN 21-31(

<b>Database:</b>	EDM 2003.21 Single User Db	<b>Local Co-ordinate Reference:</b>	Well P_OLIN 21-31
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Site:</b>	WELD_OLIN 18-31 PAD	<b>North Reference:</b>	True
<b>Well:</b>	P_OLIN 21-31	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	P_OLIN 21-31		
<b>Design:</b>	PLAN #1 4-5-10 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>									
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	2.00	76.68	899.98	0.40	1.70	1.75	2.00	2.00	0.00
1,000.00	4.00	76.68	999.84	1.61	6.79	6.98	2.00	2.00	0.00
1,100.00	6.00	76.68	1,099.45	3.61	15.27	15.69	2.00	2.00	0.00
1,200.00	8.00	76.68	1,198.70	6.42	27.13	27.88	2.00	2.00	0.00
1,300.00	10.00	76.68	1,297.47	10.02	42.35	43.52	2.00	2.00	0.00
1,400.00	12.00	76.68	1,395.62	14.42	60.92	62.60	2.00	2.00	0.00
1,500.00	14.00	76.68	1,493.06	19.60	82.81	85.10	2.00	2.00	0.00
<b>Start 3801.19 hold at 1586.40 MD</b>									
1,586.40	15.73	76.68	1,576.57	24.70	104.38	107.26	2.00	2.00	0.00
1,600.00	15.73	76.68	1,589.65	25.55	107.96	110.95	0.00	0.00	0.00
1,700.00	15.73	76.68	1,685.91	31.80	134.34	138.05	0.00	0.00	0.00
1,800.00	15.73	76.68	1,782.16	38.04	160.72	165.16	0.00	0.00	0.00
1,900.00	15.73	76.68	1,878.42	44.28	187.10	192.27	0.00	0.00	0.00
2,000.00	15.73	76.68	1,974.68	50.52	213.48	219.38	0.00	0.00	0.00
2,100.00	15.73	76.68	2,070.93	56.77	239.86	246.48	0.00	0.00	0.00
2,200.00	15.73	76.68	2,167.19	63.01	266.23	273.59	0.00	0.00	0.00
2,300.00	15.73	76.68	2,263.44	69.25	292.61	300.70	0.00	0.00	0.00
2,400.00	15.73	76.68	2,359.70	75.50	318.99	327.80	0.00	0.00	0.00
2,500.00	15.73	76.68	2,455.95	81.74	345.37	354.91	0.00	0.00	0.00
2,600.00	15.73	76.68	2,552.21	87.98	371.75	382.02	0.00	0.00	0.00
2,700.00	15.73	76.68	2,648.47	94.23	398.13	409.13	0.00	0.00	0.00
2,800.00	15.73	76.68	2,744.72	100.47	424.51	436.23	0.00	0.00	0.00
2,900.00	15.73	76.68	2,840.98	106.71	450.88	463.34	0.00	0.00	0.00
3,000.00	15.73	76.68	2,937.23	112.96	477.26	490.45	0.00	0.00	0.00
3,100.00	15.73	76.68	3,033.49	119.20	503.64	517.55	0.00	0.00	0.00
3,200.00	15.73	76.68	3,129.75	125.44	530.02	544.66	0.00	0.00	0.00
3,300.00	15.73	76.68	3,226.00	131.69	556.40	571.77	0.00	0.00	0.00
3,400.00	15.73	76.68	3,322.26	137.93	582.78	598.88	0.00	0.00	0.00
3,500.00	15.73	76.68	3,418.51	144.17	609.16	625.98	0.00	0.00	0.00
3,600.00	15.73	76.68	3,514.77	150.41	635.53	653.09	0.00	0.00	0.00
3,700.00	15.73	76.68	3,611.03	156.66	661.91	680.20	0.00	0.00	0.00
3,800.00	15.73	76.68	3,707.28	162.90	688.29	707.31	0.00	0.00	0.00
3,900.00	15.73	76.68	3,803.54	169.14	714.67	734.41	0.00	0.00	0.00
<b>PARKMAN</b>									
3,911.91	15.73	76.68	3,815.00	169.89	717.81	737.64	0.00	0.00	0.00
4,000.00	15.73	76.68	3,899.79	175.39	741.05	761.52	0.00	0.00	0.00
4,100.00	15.73	76.68	3,996.05	181.63	767.43	788.63	0.00	0.00	0.00
4,200.00	15.73	76.68	4,092.30	187.87	793.81	815.73	0.00	0.00	0.00
4,300.00	15.73	76.68	4,188.56	194.12	820.18	842.84	0.00	0.00	0.00
<b>SUSSEX</b>									
4,363.83	15.73	76.68	4,250.00	198.10	837.02	860.14	0.00	0.00	0.00
4,400.00	15.73	76.68	4,284.82	200.36	846.56	869.95	0.00	0.00	0.00
4,500.00	15.73	76.68	4,381.07	206.60	872.94	897.06	0.00	0.00	0.00
4,600.00	15.73	76.68	4,477.33	212.85	899.32	924.16	0.00	0.00	0.00
4,700.00	15.73	76.68	4,573.58	219.09	925.70	951.27	0.00	0.00	0.00
4,800.00	15.73	76.68	4,669.84	225.33	952.08	978.38	0.00	0.00	0.00
4,900.00	15.73	76.68	4,766.10	231.58	978.45	1,005.49	0.00	0.00	0.00
5,000.00	15.73	76.68	4,862.35	237.82	1,004.83	1,032.59	0.00	0.00	0.00
5,100.00	15.73	76.68	4,958.61	244.06	1,031.21	1,059.70	0.00	0.00	0.00
5,200.00	15.73	76.68	5,054.86	250.31	1,057.59	1,086.81	0.00	0.00	0.00
5,300.00	15.73	76.68	5,151.12	256.55	1,083.97	1,113.91	0.00	0.00	0.00

<b>Database:</b>	EDM 2003.21 Single User Db	<b>Local Co-ordinate Reference:</b>	Well P_OLIN 21-31
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Site:</b>	WELD_OLIN 18-31 PAD	<b>North Reference:</b>	True
<b>Well:</b>	P_OLIN 21-31	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	P_OLIN 21-31		
<b>Design:</b>	PLAN #1 4-5-10 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 Drop -2.00</b>									
5,387.59	15.73	76.68	5,235.43	262.02	1,107.07	1,137.66	0.00	0.00	0.00
5,400.00	15.48	76.68	5,247.38	262.79	1,110.32	1,141.00	2.00	-2.00	0.00
5,500.00	13.48	76.68	5,344.20	268.54	1,134.65	1,166.00	2.00	-2.00	0.00
5,600.00	11.48	76.68	5,441.83	273.52	1,155.68	1,187.61	2.00	-2.00	0.00
5,700.00	9.48	76.68	5,540.16	277.71	1,173.38	1,205.80	2.00	-2.00	0.00
5,800.00	7.48	76.68	5,639.06	281.11	1,187.73	1,220.54	2.00	-2.00	0.00
5,900.00	5.48	76.68	5,738.42	283.70	1,198.71	1,231.83	2.00	-2.00	0.00
6,000.00	3.48	76.68	5,838.11	285.50	1,206.31	1,239.64	2.00	-2.00	0.00
6,100.00	1.48	76.68	5,938.01	286.50	1,210.52	1,243.96	2.00	-2.00	0.00
<b>Start 1878.00 hold at 6174.00 MD</b>									
6,174.00	0.00	0.00	6,012.00	286.72	1,211.45	1,244.92	2.00	-2.00	-103.63
6,200.00	0.00	0.00	6,038.00	286.72	1,211.45	1,244.92	0.00	0.00	0.00
6,300.00	0.00	0.00	6,138.00	286.72	1,211.45	1,244.92	0.00	0.00	0.00
6,400.00	0.00	0.00	6,238.00	286.72	1,211.45	1,244.92	0.00	0.00	0.00
6,500.00	0.00	0.00	6,338.00	286.72	1,211.45	1,244.92	0.00	0.00	0.00
6,600.00	0.00	0.00	6,438.00	286.72	1,211.45	1,244.92	0.00	0.00	0.00
6,700.00	0.00	0.00	6,538.00	286.72	1,211.45	1,244.92	0.00	0.00	0.00
6,800.00	0.00	0.00	6,638.00	286.72	1,211.45	1,244.92	0.00	0.00	0.00
6,900.00	0.00	0.00	6,738.00	286.72	1,211.45	1,244.92	0.00	0.00	0.00
7,000.00	0.00	0.00	6,838.00	286.72	1,211.45	1,244.92	0.00	0.00	0.00
7,100.00	0.00	0.00	6,938.00	286.72	1,211.45	1,244.92	0.00	0.00	0.00
<b>NIO A</b>									
7,174.00	0.00	0.00	7,012.00	286.72	1,211.45	1,244.92	0.00	0.00	0.00
7,200.00	0.00	0.00	7,038.00	286.72	1,211.45	1,244.92	0.00	0.00	0.00
7,300.00	0.00	0.00	7,138.00	286.72	1,211.45	1,244.92	0.00	0.00	0.00
7,400.00	0.00	0.00	7,238.00	286.72	1,211.45	1,244.92	0.00	0.00	0.00
<b>CODELL</b>									
7,458.00	0.00	0.00	7,296.00	286.72	1,211.45	1,244.92	0.00	0.00	0.00
7,500.00	0.00	0.00	7,338.00	286.72	1,211.45	1,244.92	0.00	0.00	0.00
7,600.00	0.00	0.00	7,438.00	286.72	1,211.45	1,244.92	0.00	0.00	0.00
7,700.00	0.00	0.00	7,538.00	286.72	1,211.45	1,244.92	0.00	0.00	0.00
7,800.00	0.00	0.00	7,638.00	286.72	1,211.45	1,244.92	0.00	0.00	0.00
<b>JSAND</b>									
7,900.00	0.00	0.00	7,738.00	286.72	1,211.45	1,244.92	0.00	0.00	0.00
8,000.00	0.00	0.00	7,838.00	286.72	1,211.45	1,244.92	0.00	0.00	0.00
<b>PBHL_OLIN 21-31(1180 FNL 2475 FWL)50'TGT RAD</b>									
8,052.00	0.00	0.00	7,890.00	286.72	1,211.45	1,244.92	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_OLIN 21-31(11	0.00	0.00	7,890.00	286.72	1,211.45	1,310,984.78	3,189,733.63	40° 11' 6.198 N	104° 49' 15.247 W
- plan hits target center									
- Circle (radius 50.00)									

<b>Database:</b>	EDM 2003.21 Single User Db	<b>Local Co-ordinate Reference:</b>	Well P_OLIN 21-31
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Site:</b>	WELD_OLIN 18-31 PAD	<b>North Reference:</b>	True
<b>Well:</b>	P_OLIN 21-31	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	P_OLIN 21-31		
<b>Design:</b>	PLAN #1 4-5-10 RHS		

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
700.00	700.00	8 5/8"	8.62	11.00	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,911.91	3,815.00	PARKMAN				
4,363.83	4,250.00	SUSSEX				
7,174.00	7,012.00	NIO A				
7,458.00	7,296.00	CODELL				
7,900.00	7,738.00	JSAND				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
800.00	800.00	0.00	0.00	Start Build 2.00	
1,586.40	1,576.57	24.70	104.38	Start 3801.19 hold at 1586.40 MD	
5,387.59	5,235.43	262.02	1,107.07	Start Drop -2.00	
6,174.00	6,012.00	286.72	1,211.45	Start 1878.00 hold at 6174.00 MD	
8,052.00	7,890.00	286.72	1,211.45	TD at 8052.00	



# **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83  
WELD\_OLIN 18-31 PAD  
P\_OLIN 21-31**

**P\_OLIN 21-31  
PLAN #1 4-5-10 RHS**

## **Anticollision Report**

**05 April, 2010**



<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_OLIN 21-31
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_OLIN 18-31 PAD	<b>MD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_OLIN 21-31	<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_OLIN 21-31	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 4-5-10 RHS	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	PLAN #1 4-5-10 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> 4/5/2010			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.00	8,052.00	PLAN #1 4-5-10 RHS (P_OLIN 21-31)	INC	Inclinometer (Totco/Teledrift)

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_OLIN 18-31 PAD						
HSR CAROL MILLER #6-31 EXISTING - HSR CAROL M	3,611.15	3,517.30	662.50	-1,476.40	0.310	Level 1, CC
HSR CAROL MILLER #6-31 EXISTING - HSR CAROL M	4,700.00	4,558.80	727.12	-2,105.44	0.257	Level 1, SF
HSR CAROL MILLER #6-31 EXISTING - HSR CAROL M	7,600.00	7,423.16	891.51	-2,227.12	0.286	Level 1, ES
MILLER FEDERAL #6-31A EXISTING - MILLER FEDER	3,542.32	3,449.04	661.11	-1,418.09	0.318	Level 1, CC
MILLER FEDERAL #6-31A EXISTING - MILLER FEDER	4,700.00	4,562.46	734.60	-2,077.35	0.261	Level 1, SF
MILLER FEDERAL #6-31A EXISTING - MILLER FEDER	8,052.00	7,880.53	901.75	-2,285.39	0.283	Level 1, ES
P_OLIN 25-31 - P_OLIN 25-31 - PLAN #1 4-5-10 RHS	800.00	800.00	29.78	-1.51	0.952	Level 1, CC
P_OLIN 25-31 - P_OLIN 25-31 - PLAN #1 4-5-10 RHS	8,032.82	8,165.80	1,373.26	-6,275.38	0.180	Level 1, ES, SF
P_OLIN 30-31 - P_OLIN 30-31 - PLAN #1 4-5-10 RHS	800.00	800.00	29.97	12.66	1.731	CC
P_OLIN 30-31 - P_OLIN 30-31 - PLAN #1 4-5-10 RHS	1,900.00	1,793.51	353.96	1.85	1.005	Level 2, ES
P_OLIN 30-31 - P_OLIN 30-31 - PLAN #1 4-5-10 RHS	2,000.00	1,870.28	405.58	1.97	1.005	Level 2, SF
UPRR 42 PAN AM UNIT X TRUE #1 EXISTING - UPRR	1,154.90	1,139.08	45.13	-57.70	0.439	Level 1, CC
UPRR 42 PAN AM UNIT X TRUE #1 EXISTING - UPRR	1,300.00	1,282.53	50.08	-113.58	0.306	Level 1, SF
UPRR 42 PAN AM UNIT X TRUE #1 EXISTING - UPRR	1,400.00	1,380.67	60.89	-132.91	0.314	Level 1, ES

<b>Offset Design</b> WELD_OLIN 18-31 PAD - HSR CAROL MILLER #6-31 EXISTING - HSR CAROL MILLER #6-31 EXIST												
Survey Program: 412-INC												
Reference												
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor
0.00	0.00	0.00	0.00	0.00	0.00	122.33	-494.70	781.77	925.21			
100.00	100.00	87.76	87.76	1.13	1.68	122.34	-495.00	781.77	925.31	922.72	2.58	358.252
200.00	200.00	188.82	188.82	3.44	3.61	122.35	-495.15	781.77	925.38	918.82	6.56	141.099
300.00	300.00	289.88	289.88	5.52	5.54	122.35	-495.08	781.77	925.34	915.04	10.31	89.765
400.00	400.00	390.93	390.93	7.56	7.47	122.33	-494.79	781.77	925.19	911.17	14.02	65.985
500.00	500.00	489.70	489.70	9.59	10.00	122.32	-494.56	781.77	925.07	906.86	18.21	50.790
600.00	600.00	589.22	589.21	11.61	12.73	122.31	-494.47	781.77	925.02	902.46	22.56	41.000
644.49	644.49	633.49	633.48	12.51	13.95	122.31	-494.46	781.77	925.01	900.52	24.49	37.765
700.00	700.00	688.74	688.73	13.63	15.46	122.31	-494.47	781.77	925.02	898.12	26.91	34.380
800.00	800.00	788.26	788.25	15.65	18.19	122.32	-494.58	781.77	925.08	893.83	31.25	29.603
900.00	899.98	888.01	887.99	17.79	20.97	45.74	-494.77	781.77	923.96	887.34	36.62	25.229
1,000.00	999.84	988.15	988.13	28.17	23.82	46.03	-494.94	781.77	920.41	874.89	45.52	20.222
1,100.00	1,099.45	1,088.05	1,088.03	52.70	26.67	46.52	-495.05	781.77	914.43	849.78	64.65	14.144
1,200.00	1,198.70	1,187.58	1,187.56	89.78	29.51	47.20	-495.11	781.77	906.10	812.12	93.98	9.642

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_OLIN 21-31
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_OLIN 18-31 PAD	<b>MD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_OLIN 21-31	<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_OLIN 21-31	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 4-5-10 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 412-INC												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
1,300.00	1,297.47	1,286.63	1,286.61	138.32	32.34	48.09	-495.11	781.77	895.49	762.51	132.98	6.734	
1,400.00	1,395.62	1,385.07	1,385.05	197.92	35.14	49.20	-495.05	781.77	882.72	700.86	181.85	4.854	
1,500.00	1,493.06	1,482.79	1,482.77	268.37	37.93	50.53	-494.94	781.77	867.93	626.77	241.16	3.599	
1,586.40	1,576.57	1,566.55	1,566.54	337.87	40.32	51.88	-494.81	781.77	853.67	552.25	301.42	2.832	
1,600.00	1,589.65	1,579.68	1,579.66	349.43	40.69	52.07	-494.78	781.77	851.33	539.82	311.51	2.733	
1,700.00	1,685.91	1,672.88	1,672.85	434.51	44.32	53.47	-494.92	781.77	834.62	446.95	387.68	2.153	
1,800.00	1,782.16	1,769.55	1,769.51	519.62	48.82	54.98	-495.26	781.77	818.61	351.33	467.27	1.752	
1,900.00	1,878.42	1,866.22	1,866.18	604.75	53.33	56.54	-495.53	781.77	803.14	253.77	549.36	1.462 Level 3	
2,000.00	1,974.68	1,962.90	1,962.86	689.90	57.83	58.16	-495.72	781.77	788.25	154.38	633.87	1.244 Level 2	
2,100.00	2,070.93	2,059.58	2,059.54	775.05	62.33	59.83	-495.83	781.77	773.97	53.29	720.68	1.074 Level 2	
2,200.00	2,167.19	2,156.27	2,156.23	860.21	66.83	61.55	-495.86	781.77	760.34	-49.34	809.67	0.939 Level 1	
2,300.00	2,263.44	2,252.97	2,252.93	945.37	71.34	63.33	-495.82	781.77	747.38	-153.29	900.67	0.830 Level 1	
2,400.00	2,359.70	2,349.68	2,349.63	1,030.54	75.84	65.16	-495.69	781.77	735.14	-258.36	993.49	0.740 Level 1	
2,500.00	2,455.95	2,446.39	2,446.34	1,115.71	80.34	67.05	-495.50	781.77	723.64	-364.25	1,087.89	0.665 Level 1	
2,600.00	2,552.21	2,543.11	2,543.06	1,200.88	84.85	68.99	-495.22	781.77	712.92	-470.66	1,183.58	0.602 Level 1	
2,700.00	2,648.47	2,639.83	2,639.79	1,286.05	89.35	70.98	-494.87	781.77	703.01	-577.26	1,280.27	0.549 Level 1	
2,800.00	2,744.72	2,730.35	2,730.22	1,371.23	95.01	72.90	-495.01	781.77	694.44	-682.70	1,377.13	0.504 Level 1	
2,900.00	2,840.98	2,827.34	2,827.20	1,456.40	102.36	75.02	-495.52	781.77	687.15	-788.60	1,475.75	0.466 Level 1	
3,000.00	2,937.23	2,924.34	2,924.19	1,541.58	109.72	77.18	-495.91	781.77	680.77	-893.18	1,573.95	0.433 Level 1	
3,100.00	3,033.49	3,021.35	3,021.19	1,626.76	117.07	79.37	-496.19	781.77	675.32	-995.95	1,671.27	0.404 Level 1	
3,200.00	3,129.75	3,118.36	3,118.20	1,711.93	124.43	81.58	-496.34	781.77	670.81	-1,096.46	1,767.28	0.380 Level 1	
3,300.00	3,226.00	3,215.39	3,215.22	1,797.11	131.78	83.82	-496.37	781.77	667.27	-1,194.25	1,861.52	0.358 Level 1	
3,400.00	3,322.26	3,312.41	3,312.24	1,882.29	139.14	86.07	-496.28	781.77	664.70	-1,288.86	1,953.56	0.340 Level 1	
3,500.00	3,418.51	3,409.44	3,409.27	1,967.47	146.49	88.33	-496.08	781.77	663.11	-1,379.89	2,043.00	0.325 Level 1	
3,600.00	3,514.77	3,506.48	3,506.31	2,052.65	153.85	90.60	-495.75	781.77	662.51	-1,466.95	2,129.46	0.311 Level 1	
3,611.15	3,525.50	3,517.30	3,517.12	2,062.15	154.67	90.85	-495.70	781.77	662.50	-1,476.40	2,138.90	0.310 Level 1, CC	
3,700.00	3,611.03	3,603.52	3,603.35	2,137.83	161.21	92.87	-495.30	781.77	662.89	-1,549.73	2,212.62	0.300 Level 1	
3,800.00	3,707.28	3,705.00	3,704.57	2,223.01	168.90	95.22	-494.70	781.77	664.26	-1,627.64	2,291.90	0.290 Level 1	
3,900.00	3,803.54	3,797.66	3,797.22	2,308.19	175.41	97.37	-493.97	781.77	666.51	-1,701.29	2,367.80	0.281 Level 1	
4,000.00	3,899.79	3,892.83	3,892.38	2,393.37	182.10	99.55	-493.37	781.77	670.01	-1,769.66	2,439.66	0.275 Level 1	
4,100.00	3,996.05	3,987.99	3,987.53	2,478.55	188.79	101.71	-492.93	781.77	674.72	-1,832.85	2,507.57	0.269 Level 1	
4,200.00	4,092.30	4,083.15	4,082.68	2,563.73	195.47	103.84	-492.65	781.77	680.63	-1,890.83	2,571.47	0.265 Level 1	
4,300.00	4,188.56	4,178.30	4,177.81	2,648.91	202.16	105.94	-492.53	781.77	687.72	-1,943.64	2,631.37	0.261 Level 1	
4,400.00	4,284.82	4,273.44	4,272.94	2,734.10	208.84	107.99	-492.57	781.77	695.95	-1,991.36	2,687.31	0.259 Level 1	
4,500.00	4,381.07	4,368.57	4,368.05	2,819.28	215.53	109.99	-492.77	781.77	705.29	-2,034.12	2,739.41	0.257 Level 1	
4,600.00	4,477.33	4,463.69	4,463.15	2,904.46	222.21	111.93	-493.12	781.77	715.69	-2,072.08	2,787.77	0.257 Level 1	
4,700.00	4,573.58	4,558.80	4,558.24	2,989.64	228.89	113.83	-493.63	781.77	727.12	-2,105.44	2,832.56	0.257 Level 1, SF	
4,800.00	4,669.84	4,653.89	4,653.32	3,074.82	235.57	115.66	-494.30	781.77	739.53	-2,134.42	2,873.96	0.257 Level 1	
4,900.00	4,766.10	4,754.37	4,753.69	3,160.01	241.66	117.53	-494.81	781.77	752.54	-2,157.17	2,909.71	0.259 Level 1	
5,000.00	4,862.35	4,850.94	4,850.25	3,245.19	246.66	119.28	-494.98	781.77	765.99	-2,177.43	2,943.42	0.260 Level 1	
5,100.00	4,958.61	4,947.51	4,946.83	3,330.37	251.66	120.98	-495.10	781.77	780.12	-2,193.82	2,973.94	0.262 Level 1	
5,200.00	5,054.86	5,044.09	5,043.40	3,415.55	256.66	122.61	-495.18	781.77	794.88	-2,206.57	3,001.45	0.265 Level 1	
5,300.00	5,151.12	5,140.67	5,139.98	3,500.73	261.66	124.19	-495.22	781.77	810.24	-2,215.89	3,026.12	0.268 Level 1	
5,387.59	5,235.43	5,225.27	5,224.58	3,575.35	266.04	125.53	-495.22	781.77	824.16	-2,221.40	3,045.56	0.271 Level 1	
5,400.00	5,247.38	5,237.26	5,236.57	3,585.83	266.66	125.74	-495.22	781.77	826.15	-2,221.01	3,047.15	0.271 Level 1	
5,500.00	5,344.20	5,334.42	5,333.72	3,664.40	271.69	127.35	-495.18	781.77	841.31	-2,216.26	3,057.57	0.275 Level 1	
5,600.00	5,441.83	5,432.39	5,431.69	3,732.31	276.76	128.70	-495.09	781.77	854.73	-2,209.88	3,064.62	0.279 Level 1	
5,700.00	5,540.16	5,531.06	5,530.35	3,789.48	281.87	129.81	-494.96	781.77	866.24	-2,203.19	3,069.43	0.282 Level 1	
5,800.00	5,639.06	5,630.30	5,629.60	3,835.83	287.01	130.70	-494.78	781.77	875.67	-2,197.21	3,072.88	0.285 Level 1	
5,900.00	5,738.42	5,732.93	5,732.13	3,871.32	291.51	131.39	-494.29	781.77	882.69	-2,191.84	3,074.53	0.287 Level 1	
6,000.00	5,838.11	5,832.06	5,831.26	3,895.91	295.40	131.86	-493.72	781.77	887.38	-2,189.06	3,076.44	0.288 Level 1	
6,100.00	5,938.01	5,931.39	5,930.59	3,909.55	299.31	132.12	-493.23	781.77	889.84	-2,188.57	3,078.41	0.289 Level 1	

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_OLIN 21-31
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_OLIN 18-31 PAD	<b>MD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_OLIN 21-31	<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_OLIN 21-31	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 4-5-10 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		WELD_OLIN 18-31 PAD - HSR CAROL MILLER #6-31 EXISTING - HSR CAROL MILLER #6-31 EXIST										Offset Site Error:		0.00 ft		
Survey Program: 412-INC														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				
6,174.00	6,012.00	6,004.97	6,004.16	3,912.58	302.20	-151.14	-492.91	781.77	890.20	-2,189.79	3,079.99	0.289	Level 1			
6,200.00	6,038.00	6,030.82	6,030.01	3,912.58	303.21	-151.14	-492.80	781.77	890.11	-2,190.41	3,080.52	0.289	Level 1			
6,300.00	6,138.00	6,130.26	6,129.45	3,912.61	307.12	-151.12	-492.45	781.77	889.80	-2,192.81	3,082.61	0.289	Level 1			
6,400.00	6,238.00	6,229.69	6,228.88	3,912.63	311.03	-151.12	-492.17	781.77	889.55	-2,195.25	3,084.80	0.288	Level 1			
6,500.00	6,338.00	6,329.14	6,328.32	3,912.65	314.94	-151.11	-491.96	781.77	889.37	-2,197.73	3,087.09	0.288	Level 1			
6,600.00	6,438.00	6,428.58	6,427.76	3,912.68	318.85	-151.11	-491.82	781.77	889.24	-2,200.23	3,089.48	0.288	Level 1			
6,700.00	6,538.00	6,528.03	6,527.20	3,912.71	322.75	-151.10	-491.76	781.77	889.19	-2,202.78	3,091.96	0.288	Level 1			
6,742.13	6,580.13	6,569.92	6,569.10	3,912.72	324.40	-151.10	-491.75	781.77	889.18	-2,203.86	3,093.04	0.287	Level 1			
6,800.00	6,638.00	6,627.48	6,626.65	3,912.74	326.66	-151.10	-491.76	781.77	889.19	-2,205.35	3,094.54	0.287	Level 1			
6,900.00	6,738.00	6,726.93	6,726.10	3,912.76	330.57	-151.11	-491.84	781.77	889.26	-2,207.96	3,097.22	0.287	Level 1			
7,000.00	6,838.00	6,826.38	6,825.55	3,912.79	334.48	-151.11	-491.99	781.77	889.39	-2,210.60	3,099.99	0.287	Level 1			
7,100.00	6,938.00	6,925.84	6,925.00	3,912.83	338.39	-151.12	-492.21	781.77	889.59	-2,213.28	3,102.86	0.287	Level 1			
7,200.00	7,038.00	7,025.30	7,024.45	3,912.86	342.29	-151.13	-492.50	781.77	889.84	-2,215.98	3,105.83	0.287	Level 1			
7,300.00	7,138.00	7,124.76	7,123.91	3,912.89	346.20	-151.14	-492.87	781.77	890.16	-2,218.72	3,108.89	0.286	Level 1			
7,400.00	7,238.00	7,224.23	7,223.36	3,912.92	350.11	-151.15	-493.30	781.77	890.55	-2,221.49	3,112.04	0.286	Level 1			
7,500.00	7,338.00	7,323.69	7,322.82	3,912.96	354.02	-151.17	-493.81	781.77	891.00	-2,224.29	3,115.29	0.286	Level 1			
7,600.00	7,438.00	7,423.16	7,422.28	3,913.00	357.93	-151.19	-494.39	781.77	891.51	-2,227.12	3,118.63	0.286	Level 1, ES			
7,700.00	7,538.00	7,472.00	7,471.09	3,913.03	359.85	-151.19	-494.70	781.77	893.52	-2,226.81	3,120.33	0.286	Level 1			
7,800.00	7,638.00	7,472.00	7,471.09	3,913.07	359.85	-151.19	-494.70	781.77	905.29	-2,215.09	3,120.38	0.290	Level 1			
7,900.00	7,738.00	7,472.00	7,471.09	3,913.11	359.85	-151.19	-494.70	781.77	927.76	-2,192.67	3,120.43	0.297	Level 1			
8,000.00	7,838.00	7,472.00	7,471.09	3,913.15	359.85	-151.19	-494.70	781.77	960.17	-2,160.32	3,120.48	0.308	Level 1			
8,052.00	7,890.00	7,472.00	7,471.09	3,913.17	359.85	-151.19	-494.70	781.77	980.63	-2,139.88	3,120.51	0.314	Level 1			

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_OLIN 21-31
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_OLIN 18-31 PAD	<b>MD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_OLIN 21-31	<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_OLIN 21-31	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 4-5-10 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design WELD_OLIN 18-31 PAD - MILLER FEDERAL #6-31A EXISTING - MILLER FEDERAL #6-31A EXISTING													Offset Site Error:	0.00 ft
Survey Program: 302-INC													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	122.99	-498.34	767.80	915.42					
100.00	100.00	86.14	86.14	1.13	2.63	123.01	-498.88	767.80	915.64	912.45	3.19	287.110		
200.00	200.00	189.10	189.10	3.44	5.76	123.02	-498.96	767.80	915.68	907.73	7.95	115.135		
300.00	300.00	292.04	292.04	5.52	8.90	122.99	-498.42	767.80	915.40	902.91	12.49	73.297		
365.45	365.45	353.93	353.91	6.85	11.85	122.98	-498.26	767.80	915.30	899.23	16.07	56.960		
400.00	400.00	388.08	388.06	7.56	13.59	122.98	-498.24	767.80	915.29	897.20	18.10	50.582		
404.92	404.92	392.94	392.92	7.66	13.83	122.98	-498.24	767.80	915.29	896.91	18.38	49.790		
500.00	500.00	488.04	488.00	9.59	18.65	122.99	-498.34	767.80	915.35	891.37	23.98	38.173		
600.00	600.00	588.04	588.00	11.61	23.19	122.99	-498.34	767.80	915.35	885.81	29.54	30.991		
700.00	700.00	688.96	688.91	13.63	27.53	122.98	-498.26	767.80	915.30	880.33	34.97	26.173		
800.00	800.00	788.52	788.47	15.65	31.46	122.97	-498.12	767.80	915.23	875.10	40.12	22.810		
900.00	899.98	888.07	888.01	17.79	35.38	46.38	-498.07	767.80	913.99	865.86	48.13	18.989		
1,000.00	999.84	987.49	987.43	28.17	39.30	46.67	-498.11	767.80	910.41	852.54	57.87	15.731		
1,100.00	1,099.45	1,086.67	1,086.61	52.70	43.21	47.17	-498.23	767.80	904.52	826.60	77.91	11.609		
1,200.00	1,198.70	1,182.15	1,182.07	89.78	48.00	47.86	-498.75	767.80	896.56	787.72	108.84	8.238		
1,300.00	1,297.47	1,283.03	1,282.93	138.32	54.50	48.81	-499.47	767.80	886.49	735.69	150.80	5.879		
1,400.00	1,395.62	1,383.29	1,383.19	197.92	60.97	49.97	-499.77	767.80	874.11	671.58	202.53	4.316		
1,500.00	1,493.06	1,482.82	1,482.73	268.37	67.38	51.35	-499.65	767.80	859.56	595.02	264.54	3.249		
1,586.40	1,576.57	1,568.15	1,568.06	337.87	72.88	52.73	-499.23	767.80	845.37	518.44	326.93	2.586		
1,600.00	1,589.65	1,581.52	1,581.43	349.43	73.74	52.92	-499.14	767.80	843.03	505.65	337.38	2.499		
1,700.00	1,685.91	1,679.63	1,679.44	434.51	80.07	54.36	-498.23	767.80	825.97	410.40	415.57	1.988		
1,800.00	1,782.16	1,773.74	1,773.53	519.62	86.16	55.81	-497.44	767.80	809.50	313.78	495.72	1.633		
1,900.00	1,878.42	1,867.82	1,867.60	604.75	92.24	57.33	-497.03	767.80	793.87	215.68	578.19	1.373 Level 3		
2,000.00	1,974.68	1,961.88	1,961.65	689.90	98.33	58.92	-497.01	767.80	779.15	116.20	662.95	1.175 Level 2		
2,100.00	2,070.93	2,055.91	2,055.67	775.05	104.41	60.59	-497.38	767.80	765.38	15.49	749.89	1.021 Level 2		
2,200.00	2,167.19	2,149.91	2,149.65	860.21	110.50	62.33	-498.13	767.80	752.65	-86.25	838.89	0.897 Level 1		
2,300.00	2,263.44	2,249.83	2,249.52	945.37	115.44	64.22	-498.65	767.80	740.49	-189.18	929.67	0.797 Level 1		
2,400.00	2,359.70	2,346.74	2,346.44	1,030.54	119.86	66.11	-498.92	767.80	728.96	-292.43	1,021.40	0.714 Level 1		
2,500.00	2,455.95	2,443.67	2,443.36	1,115.71	124.29	68.04	-499.08	767.80	718.19	-396.31	1,114.50	0.644 Level 1		
2,600.00	2,552.21	2,540.61	2,540.30	1,200.88	128.71	70.03	-499.12	767.80	708.20	-500.48	1,208.68	0.586 Level 1		
2,700.00	2,648.47	2,637.55	2,637.25	1,286.05	133.14	72.06	-499.05	767.80	699.03	-604.58	1,303.61	0.536 Level 1		
2,800.00	2,744.72	2,734.51	2,734.20	1,371.23	137.56	74.13	-498.87	767.80	690.69	-708.23	1,398.93	0.494 Level 1		
2,900.00	2,840.98	2,831.48	2,831.17	1,456.40	141.99	76.24	-498.57	767.80	683.23	-811.01	1,494.24	0.457 Level 1		
3,000.00	2,937.23	2,925.60	2,925.23	1,541.58	146.76	78.34	-498.34	767.80	676.83	-912.19	1,589.01	0.426 Level 1		
3,100.00	3,033.49	3,021.86	3,021.49	1,626.76	152.41	80.52	-498.34	767.80	671.66	-1,011.84	1,683.50	0.399 Level 1		
3,200.00	3,129.75	3,118.12	3,117.75	1,711.93	158.06	82.73	-498.34	767.80	667.56	-1,109.08	1,776.65	0.376 Level 1		
3,300.00	3,226.00	3,214.38	3,214.00	1,797.11	163.70	84.96	-498.34	767.80	664.55	-1,203.48	1,868.02	0.356 Level 1		
3,400.00	3,322.26	3,312.93	3,312.51	1,882.29	168.46	87.26	-498.03	767.80	662.33	-1,294.74	1,957.07	0.338 Level 1		
3,500.00	3,418.51	3,408.57	3,408.14	1,967.47	172.82	89.49	-497.74	767.80	661.22	-1,382.24	2,043.47	0.324 Level 1		
3,542.32	3,459.25	3,449.04	3,448.61	2,003.51	174.67	90.44	-497.64	767.80	661.11	-1,418.09	2,079.21	0.318 Level 1, CC		
3,600.00	3,514.77	3,504.20	3,503.77	2,052.65	177.19	91.74	-497.54	767.80	661.31	-1,465.78	2,127.09	0.311 Level 1		
3,700.00	3,611.03	3,599.83	3,599.40	2,137.83	181.56	93.97	-497.43	767.80	662.61	-1,545.03	2,207.64	0.300 Level 1		
3,800.00	3,707.28	3,695.44	3,695.01	2,223.01	185.92	96.20	-497.42	767.80	665.10	-1,619.77	2,284.86	0.291 Level 1		
3,900.00	3,803.54	3,791.05	3,790.61	2,308.19	190.29	98.41	-497.51	767.80	668.77	-1,689.78	2,358.55	0.284 Level 1		
4,000.00	3,899.79	3,886.66	3,886.21	2,393.37	194.65	100.60	-497.69	767.80	673.61	-1,754.95	2,428.56	0.277 Level 1		
4,100.00	3,996.05	3,982.25	3,981.80	2,478.55	199.02	102.75	-497.96	767.80	679.60	-1,815.18	2,494.78	0.272 Level 1		
4,200.00	4,092.30	4,080.00	4,079.51	2,563.73	203.48	104.91	-498.34	767.80	686.71	-1,869.97	2,556.67	0.269 Level 1		
4,300.00	4,188.56	4,177.70	4,177.20	2,648.91	212.27	107.03	-499.25	767.80	695.35	-1,919.31	2,614.65	0.266 Level 1		
4,400.00	4,284.82	4,274.83	4,274.25	2,734.10	221.41	109.09	-498.32	767.80	703.11	-1,965.66	2,668.77	0.263 Level 1		
4,500.00	4,381.07	4,370.09	4,369.47	2,819.28	234.89	111.06	-498.20	767.80	712.60	-2,007.34	2,719.94	0.262 Level 1		
4,600.00	4,477.33	4,465.34	4,464.69	2,904.46	248.37	112.99	-498.21	767.80	723.12	-2,044.69	2,767.81	0.261 Level 1		
4,700.00	4,573.58	4,562.46	4,561.58	2,989.64	262.03	114.88	-498.34	767.80	734.60	-2,077.35	2,811.95	0.261 Level 1, SF		

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_OLIN 21-31
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_OLIN 18-31 PAD	<b>MD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_OLIN 21-31	<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_OLIN 21-31	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 4-5-10 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 302-INC												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	
4,800.00	4,669.84	4,658.75	4,657.84	3,074.82	275.12	116.71	-498.34	767.80	746.77	-2,106.42	2,853.19	0.262	Level 1
4,900.00	4,766.10	4,765.00	4,763.92	3,160.01	289.57	118.67	-498.34	767.80	759.77	-2,127.88	2,887.65	0.263	Level 1
5,000.00	4,862.35	4,851.46	4,850.35	3,245.19	301.38	120.20	-498.34	767.80	773.38	-2,153.77	2,927.14	0.264	Level 1
5,100.00	4,958.61	4,947.75	4,946.61	3,330.37	314.53	121.86	-498.34	767.80	787.75	-2,172.42	2,960.17	0.266	Level 1
5,200.00	5,054.86	5,046.82	5,045.49	3,415.55	327.68	123.51	-498.22	767.80	802.67	-2,186.77	2,989.44	0.269	Level 1
5,300.00	5,151.12	5,141.11	5,139.76	3,500.73	339.35	125.03	-498.02	767.80	818.13	-2,199.92	3,018.05	0.271	Level 1
5,387.59	5,235.43	5,223.71	5,222.33	3,575.35	349.57	126.30	-498.04	767.80	832.34	-2,209.14	3,041.48	0.274	Level 1
5,400.00	5,247.38	5,235.41	5,234.03	3,585.83	351.02	126.51	-498.06	767.80	834.39	-2,209.37	3,043.76	0.274	Level 1
5,500.00	5,344.20	5,328.79	5,327.23	3,664.40	362.59	128.04	-498.35	767.80	850.14	-2,210.35	3,060.49	0.278	Level 1
5,600.00	5,441.83	5,428.96	5,427.37	3,732.31	375.67	129.39	-498.84	767.80	864.29	-2,207.81	3,072.09	0.281	Level 1
5,700.00	5,540.16	5,529.82	5,528.21	3,789.48	388.84	130.50	-499.00	767.80	876.23	-2,205.34	3,081.57	0.284	Level 1
5,800.00	5,639.06	5,631.25	5,629.63	3,835.83	402.09	131.39	-498.83	767.80	885.80	-2,203.80	3,089.61	0.287	Level 1
5,900.00	5,738.42	5,731.00	5,729.09	3,871.32	415.12	132.05	-498.34	767.80	892.91	-2,204.11	3,097.01	0.288	Level 1
6,000.00	5,838.11	5,831.07	5,829.13	3,895.91	428.21	132.51	-497.82	767.80	897.72	-2,206.13	3,103.84	0.289	Level 1
6,100.00	5,938.01	5,928.98	5,927.01	3,909.55	441.03	132.76	-497.56	767.80	900.42	-2,210.26	3,110.68	0.289	Level 1
6,174.00	6,012.00	6,001.52	5,999.52	3,912.58	450.52	-150.50	-497.53	767.80	901.05	-2,214.51	3,115.56	0.289	Level 1
6,200.00	6,038.00	6,027.01	6,025.00	3,912.58	453.86	-150.50	-497.56	767.80	901.07	-2,216.21	3,117.28	0.289	Level 1
6,300.00	6,138.00	6,125.08	6,123.03	3,912.61	466.70	-150.51	-497.81	767.80	901.29	-2,222.79	3,124.08	0.288	Level 1
6,400.00	6,238.00	6,238.10	6,235.76	3,912.63	480.89	-150.52	-498.21	767.80	901.69	-2,230.11	3,131.79	0.288	Level 1
6,500.00	6,338.00	6,333.28	6,330.93	3,912.65	487.69	-150.50	-497.32	767.80	900.87	-2,233.59	3,134.46	0.287	Level 1
6,600.00	6,438.00	6,428.51	6,426.14	3,912.68	494.50	-150.49	-497.01	767.80	900.59	-2,237.28	3,137.86	0.287	Level 1
6,603.53	6,441.53	6,431.88	6,429.51	3,912.68	494.74	-150.49	-497.01	767.80	900.59	-2,237.41	3,137.99	0.287	Level 1
6,700.00	6,538.00	6,523.79	6,521.40	3,912.71	501.31	-150.50	-497.28	767.80	900.83	-2,241.16	3,141.99	0.287	Level 1
6,800.00	6,638.00	6,619.10	6,616.68	3,912.74	508.13	-150.52	-498.13	767.80	901.61	-2,245.24	3,146.85	0.287	Level 1
6,900.00	6,738.00	6,726.26	6,723.81	3,912.76	513.39	-150.54	-498.66	767.80	902.03	-2,248.66	3,150.69	0.286	Level 1
7,000.00	6,838.00	6,827.64	6,825.19	3,912.79	517.95	-150.54	-498.86	767.80	902.20	-2,251.55	3,153.74	0.286	Level 1
7,100.00	6,938.00	6,929.02	6,926.56	3,912.83	522.50	-150.55	-498.87	767.80	902.21	-2,254.37	3,156.58	0.286	Level 1
7,200.00	7,038.00	7,030.38	7,027.93	3,912.86	527.06	-150.54	-498.71	767.80	902.07	-2,257.13	3,159.20	0.286	Level 1
7,300.00	7,138.00	7,140.00	7,137.51	3,912.89	531.98	-150.53	-498.34	767.80	901.82	-2,259.97	3,161.79	0.285	Level 1
7,337.67	7,175.67	7,166.16	7,163.67	3,912.90	533.51	-150.53	-498.34	767.80	901.75	-2,260.94	3,162.69	0.285	Level 1
7,400.00	7,238.00	7,228.50	7,226.00	3,912.92	537.15	-150.53	-498.34	767.80	901.75	-2,263.07	3,164.82	0.285	Level 1
7,500.00	7,338.00	7,328.50	7,326.00	3,912.96	542.99	-150.53	-498.34	767.80	901.75	-2,266.49	3,168.23	0.285	Level 1
7,600.00	7,438.00	7,428.51	7,426.00	3,913.00	548.83	-150.53	-498.34	767.80	901.75	-2,269.91	3,171.66	0.284	Level 1
7,700.00	7,538.00	7,528.51	7,526.00	3,913.03	554.67	-150.53	-498.34	767.80	901.75	-2,273.33	3,175.08	0.284	Level 1
7,800.00	7,638.00	7,628.52	7,626.00	3,913.07	560.51	-150.53	-498.34	767.80	901.75	-2,276.76	3,178.50	0.284	Level 1
7,900.00	7,738.00	7,728.52	7,726.00	3,913.11	566.36	-150.53	-498.34	767.80	901.75	-2,280.18	3,181.93	0.283	Level 1
8,000.00	7,838.00	7,828.53	7,826.00	3,913.15	572.20	-150.53	-498.34	767.80	901.75	-2,283.61	3,185.36	0.283	Level 1
8,052.00	7,890.00	7,880.53	7,878.00	3,913.17	575.23	-150.53	-498.34	767.80	901.75	-2,285.39	3,187.14	0.283	Level 1, ES

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_OLIN 21-31
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_OLIN 18-31 PAD	<b>MD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_OLIN 21-31	<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_OLIN 21-31	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 4-5-10 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design WELD_OLIN 18-31 PAD - P_OLIN 25-31 - P_OLIN 25-31 - PLAN #1 4-5-10 RHS												Offset Site Error:	0.00 ft
Survey Program: 0-INC												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	131.37	-19.68	22.35	29.78				
100.00	100.00	100.00	100.00	1.13	1.13	131.37	-19.68	22.35	29.78	27.52	2.26	13.159	
200.00	200.00	200.00	200.00	3.44	3.44	131.37	-19.68	22.35	29.78	22.91	6.87	4.334	
300.00	300.00	300.00	300.00	5.52	5.52	131.37	-19.68	22.35	29.78	18.75	11.03	2.700	
400.00	400.00	400.00	400.00	7.56	7.56	131.37	-19.68	22.35	29.78	14.67	15.12	1.970	
500.00	500.00	500.00	500.00	9.59	9.59	131.37	-19.68	22.35	29.78	10.61	19.17	1.553	
600.00	600.00	600.00	600.00	11.61	11.61	131.37	-19.68	22.35	29.78	6.56	23.22	1.283 Level 3	
700.00	700.00	700.00	700.00	13.63	13.63	131.37	-19.68	22.35	29.78	2.52	27.26	1.093 Level 2	
800.00	800.00	800.00	800.00	15.65	15.65	131.37	-19.68	22.35	29.78	-1.51	31.29	0.952 Level 1, CC	
900.00	899.98	898.95	898.93	17.79	16.94	57.23	-20.78	23.66	30.53	-3.05	33.58	0.909 Level 1	
1,000.00	999.84	997.75	997.60	28.17	26.39	64.09	-24.05	27.59	33.11	-9.14	42.25	0.784 Level 1	
1,100.00	1,099.45	1,096.28	1,095.75	52.70	50.44	73.19	-29.48	34.11	38.26	-34.60	72.86	0.525 Level 1	
1,200.00	1,198.70	1,194.38	1,193.14	89.78	86.59	82.17	-37.03	43.18	46.65	-86.24	132.90	0.351 Level 1	
1,300.00	1,297.47	1,291.94	1,289.53	138.32	133.49	89.63	-46.65	54.72	58.55	-159.99	218.54	0.268 Level 1	
1,400.00	1,395.62	1,388.82	1,384.68	197.92	190.47	95.29	-58.28	68.68	73.93	-251.17	325.09	0.227 Level 1	
1,500.00	1,493.06	1,484.89	1,478.39	268.37	257.04	99.43	-71.84	84.95	92.63	-357.30	449.93	0.206 Level 1	
1,586.40	1,576.57	1,567.18	1,558.04	337.87	322.27	102.07	-85.04	100.81	111.36	-460.34	571.69	0.195 Level 1	
1,600.00	1,589.65	1,580.06	1,570.46	349.43	332.74	102.47	-87.24	103.45	114.51	-477.24	591.75	0.194 Level 1	
1,700.00	1,685.91	1,674.43	1,660.91	434.51	417.26	104.23	-104.44	124.09	138.89	-604.24	743.13	0.187 Level 1	
1,800.00	1,782.16	1,767.94	1,749.63	519.62	510.20	104.58	-123.36	146.80	165.23	-733.09	898.32	0.184 Level 1	
1,900.00	1,878.42	1,860.41	1,836.36	604.75	610.87	104.07	-143.88	171.42	193.44	-863.37	1,056.81	0.183 Level 1	
2,000.00	1,974.68	1,954.30	1,923.54	689.90	719.25	103.16	-166.19	198.21	223.19	-995.22	1,218.41	0.183 Level 1	
2,100.00	2,070.93	2,049.66	2,012.00	775.05	831.17	102.41	-188.99	225.58	253.13	-1,128.72	1,381.85	0.183 Level 1	
2,200.00	2,167.19	2,145.03	2,100.46	860.21	943.10	101.81	-211.80	252.95	283.11	-1,261.78	1,544.88	0.183 Level 1	
2,300.00	2,263.44	2,240.39	2,188.92	945.37	1,055.03	101.33	-234.60	280.32	313.10	-1,394.52	1,707.62	0.183 Level 1	
2,400.00	2,359.70	2,335.76	2,277.38	1,030.54	1,166.96	100.93	-257.40	307.69	343.11	-1,527.03	1,870.14	0.183 Level 1	
2,500.00	2,455.95	2,431.12	2,365.84	1,115.71	1,278.89	100.60	-280.21	335.07	373.14	-1,659.36	2,032.50	0.184 Level 1	
2,600.00	2,552.21	2,526.49	2,454.30	1,200.88	1,390.83	100.32	-303.01	362.44	403.18	-1,791.56	2,194.74	0.184 Level 1	
2,700.00	2,648.47	2,621.85	2,542.76	1,286.05	1,502.76	100.07	-325.82	389.81	433.22	-1,923.65	2,356.87	0.184 Level 1	
2,800.00	2,744.72	2,717.22	2,631.22	1,371.23	1,614.70	99.86	-348.62	417.18	463.27	-2,055.65	2,518.92	0.184 Level 1	
2,900.00	2,840.98	2,812.58	2,719.68	1,456.40	1,726.63	99.67	-371.42	444.55	493.32	-2,187.58	2,680.91	0.184 Level 1	
3,000.00	2,937.23	2,907.95	2,808.14	1,541.58	1,838.57	99.51	-394.23	471.93	523.38	-2,319.45	2,842.84	0.184 Level 1	
3,100.00	3,033.49	3,003.31	2,896.60	1,626.76	1,950.51	99.36	-417.03	499.30	553.44	-2,451.28	3,004.72	0.184 Level 1	
3,200.00	3,129.75	3,098.68	2,985.06	1,711.93	2,062.45	99.23	-439.83	526.67	583.51	-2,583.06	3,166.57	0.184 Level 1	
3,300.00	3,226.00	3,194.04	3,073.52	1,797.11	2,174.38	99.11	-462.64	554.04	613.58	-2,714.80	3,328.38	0.184 Level 1	
3,400.00	3,322.26	3,289.41	3,161.98	1,882.29	2,286.32	99.00	-485.44	581.41	643.65	-2,846.52	3,490.17	0.184 Level 1	
3,500.00	3,418.51	3,384.78	3,250.44	1,967.47	2,398.26	98.90	-508.25	608.79	673.72	-2,978.21	3,651.93	0.184 Level 1	
3,600.00	3,514.77	3,480.14	3,338.91	2,052.65	2,510.20	98.81	-531.05	636.16	703.79	-3,109.88	3,813.67	0.185 Level 1	
3,700.00	3,611.03	3,575.51	3,427.37	2,137.83	2,622.14	98.73	-553.85	663.53	733.87	-3,241.52	3,975.39	0.185 Level 1	
3,800.00	3,707.28	3,670.87	3,515.83	2,223.01	2,734.07	98.65	-576.66	690.90	763.94	-3,373.15	4,137.09	0.185 Level 1	
3,900.00	3,803.54	3,766.24	3,604.29	2,308.19	2,846.01	98.58	-599.46	718.27	794.02	-3,504.76	4,298.78	0.185 Level 1	
4,000.00	3,899.79	3,861.60	3,692.75	2,393.37	2,957.95	98.52	-622.26	745.65	824.10	-3,636.36	4,460.46	0.185 Level 1	
4,100.00	3,996.05	3,956.97	3,781.21	2,478.55	3,069.89	98.46	-645.07	773.02	854.18	-3,767.95	4,622.12	0.185 Level 1	
4,200.00	4,092.30	4,052.33	3,869.67	2,563.73	3,181.83	98.40	-667.87	800.39	884.26	-3,899.52	4,783.78	0.185 Level 1	
4,300.00	4,188.56	4,147.70	3,958.13	2,648.91	3,293.77	98.35	-690.68	827.76	914.34	-4,031.08	4,945.42	0.185 Level 1	
4,400.00	4,284.82	4,243.06	4,046.59	2,734.10	3,405.71	98.30	-713.48	855.13	944.42	-4,162.64	5,107.06	0.185 Level 1	
4,500.00	4,381.07	4,338.43	4,135.05	2,819.28	3,517.65	98.25	-736.28	882.51	974.50	-4,294.19	5,268.69	0.185 Level 1	
4,600.00	4,477.33	4,433.79	4,223.51	2,904.46	3,629.59	98.21	-759.09	909.88	1,004.58	-4,425.73	5,430.31	0.185 Level 1	
4,700.00	4,573.58	4,529.16	4,311.97	2,989.64	3,741.53	98.17	-781.89	937.25	1,034.67	-4,557.26	5,591.93	0.185 Level 1	
4,800.00	4,669.84	4,624.52	4,400.43	3,074.82	3,853.46	98.13	-804.69	964.62	1,064.75	-4,688.78	5,753.53	0.185 Level 1	
4,900.00	4,766.10	4,719.89	4,488.89	3,160.01	3,965.40	98.09	-827.50	991.99	1,094.83	-4,820.31	5,915.14	0.185 Level 1	
5,000.00	4,862.35	4,815.25	4,577.35	3,245.19	4,077.34	98.06	-850.30	1,019.37	1,124.92	-4,951.82	6,076.74	0.185 Level 1	

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_OLIN 21-31
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_OLIN 18-31 PAD	<b>MD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_OLIN 21-31	<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_OLIN 21-31	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 4-5-10 RHS	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> WELD_OLIN 18-31 PAD - P_OLIN 25-31 - P_OLIN 25-31 - PLAN #1 4-5-10 RHS												<b>Offset Site Error:</b>	0.00 ft
Survey Program: 0-INC												<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
5,100.00	4,958.61	4,910.62	4,665.82	3,330.37	4,189.28	98.02	-873.11	1,046.74	1,155.00	-5,083.33	6,238.33	0.185	Level 1
5,200.00	5,054.86	5,005.98	4,754.28	3,415.55	4,301.22	97.99	-895.91	1,074.11	1,185.09	-5,214.84	6,399.92	0.185	Level 1
5,300.00	5,151.12	5,101.35	4,842.74	3,500.73	4,413.16	97.96	-918.71	1,101.48	1,215.17	-5,346.34	6,561.51	0.185	Level 1
5,387.59	5,235.43	5,184.88	4,920.22	3,575.35	4,511.21	97.94	-938.69	1,125.46	1,241.53	-5,461.52	6,703.05	0.185	Level 1
5,400.00	5,247.38	5,196.72	4,931.20	3,585.83	4,525.10	98.01	-941.52	1,128.86	1,245.26	-5,481.77	6,727.02	0.185	Level 1
5,500.00	5,344.20	5,316.47	5,042.69	3,664.40	4,661.66	98.49	-969.48	1,162.42	1,274.51	-5,652.78	6,927.29	0.184	Level 1
5,600.00	5,441.83	5,455.68	5,174.35	3,732.31	4,803.02	98.86	-998.40	1,197.13	1,300.40	-5,816.00	7,116.40	0.183	Level 1
5,700.00	5,540.16	5,597.53	5,310.61	3,789.48	4,927.97	99.15	-1,023.62	1,227.40	1,322.52	-5,957.72	7,280.24	0.182	Level 1
5,800.00	5,639.06	5,741.68	5,450.89	3,835.83	5,030.73	99.37	-1,044.79	1,252.81	1,340.76	-6,073.47	7,414.23	0.181	Level 1
5,900.00	5,738.42	5,887.74	5,594.56	3,871.32	5,114.04	99.53	-1,061.61	1,273.00	1,355.02	-6,164.94	7,519.96	0.180	Level 1
6,000.00	5,838.11	6,035.29	5,740.85	3,895.91	5,173.34	99.63	-1,073.82	1,287.66	1,365.22	-6,228.62	7,593.84	0.180	Level 1
6,100.00	5,938.01	6,183.86	5,888.96	3,909.55	5,210.25	99.66	-1,081.23	1,296.55	1,371.31	-6,265.53	7,636.83	0.180	Level 1
6,174.00	6,012.00	6,294.18	5,999.21	3,912.58	5,222.09	176.33	-1,083.54	1,299.33	1,373.14	-6,274.77	7,647.91	0.180	Level 1
6,200.00	6,038.00	6,332.97	6,038.00	3,912.58	5,223.22	176.32	-1,083.71	1,299.53	1,373.26	-6,275.07	7,648.33	0.180	Level 1
6,300.00	6,138.00	6,432.97	6,138.00	3,912.61	5,223.20	176.32	-1,083.71	1,299.53	1,373.26	-6,275.07	7,648.33	0.180	Level 1
6,400.00	6,238.00	6,532.97	6,238.00	3,912.63	5,223.18	176.32	-1,083.71	1,299.53	1,373.26	-6,275.07	7,648.33	0.180	Level 1
6,500.00	6,338.00	6,632.97	6,338.00	3,912.65	5,223.17	176.32	-1,083.71	1,299.53	1,373.26	-6,275.07	7,648.33	0.180	Level 1
6,600.00	6,438.00	6,732.97	6,438.00	3,912.68	5,223.15	176.32	-1,083.71	1,299.53	1,373.26	-6,275.08	7,648.34	0.180	Level 1
6,700.00	6,538.00	6,832.97	6,538.00	3,912.71	5,223.13	176.32	-1,083.71	1,299.53	1,373.26	-6,275.09	7,648.34	0.180	Level 1
6,800.00	6,638.00	6,932.97	6,638.00	3,912.74	5,223.12	176.32	-1,083.71	1,299.53	1,373.26	-6,275.09	7,648.35	0.180	Level 1
6,900.00	6,738.00	7,032.97	6,738.00	3,912.76	5,223.10	176.32	-1,083.71	1,299.53	1,373.26	-6,275.11	7,648.36	0.180	Level 1
7,000.00	6,838.00	7,132.97	6,838.00	3,912.79	5,223.09	176.32	-1,083.71	1,299.53	1,373.26	-6,275.12	7,648.37	0.180	Level 1
7,100.00	6,938.00	7,232.97	6,938.00	3,912.83	5,223.08	176.32	-1,083.71	1,299.53	1,373.26	-6,275.13	7,648.39	0.180	Level 1
7,200.00	7,038.00	7,332.97	7,038.00	3,912.86	5,223.06	176.32	-1,083.71	1,299.53	1,373.26	-6,275.15	7,648.41	0.180	Level 1
7,300.00	7,138.00	7,432.97	7,138.00	3,912.89	5,223.05	176.32	-1,083.71	1,299.53	1,373.26	-6,275.17	7,648.43	0.180	Level 1
7,400.00	7,238.00	7,532.97	7,238.00	3,912.92	5,223.04	176.32	-1,083.71	1,299.53	1,373.26	-6,275.19	7,648.45	0.180	Level 1
7,500.00	7,338.00	7,632.97	7,338.00	3,912.96	5,223.03	176.32	-1,083.71	1,299.53	1,373.26	-6,275.21	7,648.47	0.180	Level 1
7,600.00	7,438.00	7,732.97	7,438.00	3,913.00	5,223.02	176.32	-1,083.71	1,299.53	1,373.26	-6,275.24	7,648.50	0.180	Level 1
7,700.00	7,538.00	7,832.97	7,538.00	3,913.03	5,223.01	176.32	-1,083.71	1,299.53	1,373.26	-6,275.27	7,648.53	0.180	Level 1
7,800.00	7,638.00	7,932.97	7,638.00	3,913.07	5,223.00	176.32	-1,083.71	1,299.53	1,373.26	-6,275.30	7,648.55	0.180	Level 1
7,900.00	7,738.00	8,032.97	7,738.00	3,913.11	5,223.00	176.32	-1,083.71	1,299.53	1,373.26	-6,275.33	7,648.59	0.180	Level 1
8,000.00	7,838.00	8,132.97	7,838.00	3,913.15	5,222.99	176.32	-1,083.71	1,299.53	1,373.26	-6,275.36	7,648.62	0.180	Level 1
8,032.82	7,870.82	8,165.80	7,870.82	3,913.16	5,222.99	176.32	-1,083.71	1,299.53	1,373.26	-6,275.38	7,648.63	0.180	Level 1, ES, SF
8,052.00	7,890.00	8,179.97	7,885.00	3,913.17	5,222.99	176.32	-1,083.71	1,299.53	1,373.27	-6,275.37	7,648.64	0.180	Level 1



<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_OLIN 21-31
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_OLIN 18-31 PAD	<b>MD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_OLIN 21-31	<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_OLIN 21-31	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 4-5-10 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design WELD_OLIN 18-31 PAD - P_OLIN 30-31 - P_OLIN 30-31 - PLAN #1 4-5-10 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	-49.03	19.65	-22.63	29.97				
100.00	100.00	100.00	100.00	1.13	0.10	-49.03	19.65	-22.63	29.97	28.75	1.23	24.426	
200.00	200.00	200.00	200.00	3.44	0.32	-49.03	19.65	-22.63	29.97	26.22	3.76	7.979	
300.00	300.00	300.00	300.00	5.52	0.55	-49.03	19.65	-22.63	29.97	23.91	6.06	4.946	
400.00	400.00	400.00	400.00	7.56	0.77	-49.03	19.65	-22.63	29.97	21.65	8.33	3.599	
500.00	500.00	500.00	500.00	9.59	0.99	-49.03	19.65	-22.63	29.97	19.39	10.58	2.833	
600.00	600.00	600.00	600.00	11.61	1.22	-49.03	19.65	-22.63	29.97	17.15	12.83	2.336	
700.00	700.00	700.00	700.00	13.63	1.44	-49.03	19.65	-22.63	29.97	14.90	15.07	1.989	
800.00	800.00	800.00	800.00	15.65	1.67	-49.03	19.65	-22.63	29.97	12.66	17.32	1.731 CC	
900.00	899.98	898.89	898.87	17.79	1.89	-127.71	20.94	-23.75	32.72	13.37	19.35	1.691	
1,000.00	999.84	997.25	997.10	28.17	2.11	-132.05	24.77	-27.09	41.13	15.01	26.12	1.575	
1,100.00	1,099.45	1,094.59	1,094.07	52.70	2.33	-136.27	31.07	-32.57	55.42	14.30	41.12	1.348 Level 3	
1,200.00	1,198.70	1,190.42	1,189.21	89.78	2.58	-139.41	39.69	-40.07	75.59	12.80	62.78	1.204 Level 2	
1,300.00	1,297.47	1,284.28	1,281.97	138.32	2.84	-141.53	50.45	-49.45	101.50	11.22	90.28	1.124 Level 2	
1,400.00	1,395.62	1,375.76	1,371.89	197.92	3.13	-142.90	63.14	-60.50	132.96	9.38	123.58	1.076 Level 2	
1,500.00	1,493.06	1,464.51	1,458.57	268.37	3.44	-143.76	77.52	-73.01	169.78	6.90	162.87	1.042 Level 2	
1,586.40	1,576.57	1,538.75	1,530.59	337.87	3.74	-144.21	91.09	-84.83	205.72	3.87	201.86	1.019 Level 2	
1,600.00	1,589.65	1,550.22	1,541.68	349.43	3.79	-144.33	93.32	-86.77	211.69	3.67	208.02	1.018 Level 2	
1,700.00	1,685.91	1,633.45	1,621.74	434.51	4.17	-144.90	110.45	-101.68	256.93	2.64	254.28	1.010 Level 2	
1,800.00	1,782.16	1,714.56	1,699.10	519.62	4.58	-145.05	128.82	-117.68	304.38	2.08	302.30	1.007 Level 2	
1,900.00	1,878.42	1,793.51	1,773.72	604.75	5.02	-144.95	148.29	-134.63	353.96	1.85	352.11	1.005 Level 2, ES	
2,000.00	1,974.68	1,870.28	1,845.56	689.90	5.49	-144.71	168.69	-152.40	405.58	1.97	403.61	1.005 Level 2, SF	
2,100.00	2,070.93	1,944.85	1,914.62	775.05	5.99	-144.38	189.89	-170.86	459.18	2.50	456.67	1.005 Level 2	
2,200.00	2,167.19	2,017.21	1,980.91	860.21	6.50	-144.00	211.76	-189.90	514.67	3.52	511.14	1.007 Level 2	
2,300.00	2,263.44	2,094.87	2,051.42	945.37	7.10	-143.57	236.33	-211.29	571.65	4.48	567.17	1.008 Level 2	
2,400.00	2,359.70	2,176.88	2,125.80	1,030.54	7.74	-143.19	262.36	-233.95	628.79	5.27	623.52	1.008 Level 2	
2,500.00	2,455.95	2,258.88	2,200.19	1,115.71	8.39	-142.87	288.39	-256.62	685.94	6.16	679.78	1.009 Level 2	
2,600.00	2,552.21	2,340.88	2,274.57	1,200.88	9.05	-142.60	314.43	-279.29	743.11	7.14	735.96	1.010 Level 2	
2,700.00	2,648.47	2,422.89	2,348.96	1,286.05	9.72	-142.37	340.46	-301.95	800.28	8.19	792.09	1.010 Level 2	
2,800.00	2,744.72	2,504.89	2,423.34	1,371.23	10.39	-142.17	366.49	-324.62	857.46	9.29	848.18	1.011 Level 2	
2,900.00	2,840.98	2,586.89	2,497.73	1,456.40	11.07	-142.00	392.52	-347.29	914.65	10.42	904.23	1.012 Level 2	
3,000.00	2,937.23	2,668.90	2,572.11	1,541.58	11.75	-141.84	418.56	-369.95	971.85	11.60	960.25	1.012 Level 2	
3,100.00	3,033.49	2,750.90	2,646.49	1,626.76	12.43	-141.71	444.59	-392.62	1,029.04	12.80	1,016.25	1.013 Level 2	
3,200.00	3,129.75	2,832.90	2,720.88	1,711.93	13.11	-141.58	470.62	-415.29	1,086.25	14.02	1,072.22	1.013 Level 2	
3,300.00	3,226.00	2,914.91	2,795.26	1,797.11	13.80	-141.47	496.66	-437.96	1,143.45	15.27	1,128.18	1.014 Level 2	
3,400.00	3,322.26	2,996.91	2,869.65	1,882.29	14.49	-141.37	522.69	-460.62	1,200.66	16.53	1,184.13	1.014 Level 2	
3,500.00	3,418.51	3,078.91	2,944.03	1,967.47	15.18	-141.28	548.72	-483.29	1,257.87	17.81	1,240.06	1.014 Level 2	
3,600.00	3,514.77	3,160.92	3,018.42	2,052.65	15.87	-141.20	574.76	-505.96	1,315.08	19.10	1,295.98	1.015 Level 2	
3,700.00	3,611.03	3,242.92	3,092.80	2,137.83	16.57	-141.13	600.79	-528.62	1,372.29	20.40	1,351.89	1.015 Level 2	
3,800.00	3,707.28	3,324.92	3,167.19	2,223.01	17.26	-141.06	626.82	-551.29	1,429.51	21.71	1,407.79	1.015 Level 2	
3,900.00	3,803.54	3,406.93	3,241.57	2,308.19	17.96	-140.99	652.85	-573.96	1,486.72	23.03	1,463.69	1.016 Level 2	
4,000.00	3,899.79	3,488.93	3,315.95	2,393.37	18.65	-140.93	678.89	-596.62	1,543.94	24.36	1,519.58	1.016 Level 2	
4,100.00	3,996.05	3,570.93	3,390.34	2,478.55	19.35	-140.88	704.92	-619.29	1,601.16	25.70	1,575.46	1.016 Level 2	
4,200.00	4,092.30	3,652.94	3,464.72	2,563.73	20.05	-140.82	730.95	-641.96	1,658.38	27.04	1,631.34	1.017 Level 2	
4,300.00	4,188.56	3,734.94	3,539.11	2,648.91	20.74	-140.78	756.99	-664.62	1,715.60	28.39	1,687.21	1.017 Level 2	
4,400.00	4,284.82	3,816.94	3,613.49	2,734.10	21.44	-140.73	783.02	-687.29	1,772.82	29.74	1,743.08	1.017 Level 2	
4,500.00	4,381.07	3,898.95	3,687.88	2,819.28	22.14	-140.69	809.05	-709.96	1,830.04	31.10	1,798.94	1.017 Level 2	
4,600.00	4,477.33	3,980.95	3,762.26	2,904.46	22.84	-140.65	835.09	-732.63	1,887.26	32.46	1,854.80	1.017 Level 2	
4,700.00	4,573.58	4,062.95	3,836.65	2,989.64	23.54	-140.61	861.12	-755.29	1,944.48	33.82	1,910.66	1.018 Level 2	
4,800.00	4,669.84	4,144.96	3,911.03	3,074.82	24.24	-140.58	887.15	-777.96	2,001.70	35.19	1,966.51	1.018 Level 2	
4,900.00	4,766.10	4,226.96	3,985.41	3,160.01	24.94	-140.54	913.18	-800.63	2,058.93	36.56	2,022.37	1.018 Level 2	
5,000.00	4,862.35	4,308.96	4,059.80	3,245.19	25.64	-140.51	939.22	-823.29	2,116.15	37.93	2,078.22	1.018 Level 2	

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_OLIN 21-31
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_OLIN 18-31 PAD	<b>MD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_OLIN 21-31	<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_OLIN 21-31	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 4-5-10 RHS	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> WELD_OLIN 18-31 PAD - P_OLIN 30-31 - P_OLIN 30-31 - PLAN #1 4-5-10 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
5,100.00	4,958.61	4,390.97	4,134.18	3,330.37	26.35	-140.48	965.25	-845.96	2,173.38	39.31	2,134.06	1.018	Level 2
5,200.00	5,054.86	4,472.97	4,208.57	3,415.55	27.05	-140.45	991.28	-868.63	2,230.60	40.69	2,189.91	1.019	Level 2
5,300.00	5,151.12	4,554.97	4,282.95	3,500.73	27.75	-140.43	1,017.32	-891.29	2,287.83	42.07	2,245.75	1.019	Level 2
5,387.59	5,235.43	4,626.80	4,348.11	3,575.35	28.36	-140.40	1,040.12	-911.15	2,337.95	43.28	2,294.67	1.019	Level 2
5,400.00	5,247.38	4,636.99	4,357.35	3,585.83	28.45	-140.51	1,043.35	-913.96	2,345.03	48.70	2,296.33	1.021	Level 2
5,500.00	5,344.20	4,719.92	4,432.57	3,664.40	29.16	-141.30	1,069.68	-936.89	2,400.87	92.68	2,308.18	1.040	Level 2
5,600.00	5,441.83	4,804.24	4,509.06	3,732.31	29.88	-141.96	1,096.45	-960.20	2,454.43	136.94	2,317.49	1.059	Level 2
5,700.00	5,540.16	4,889.87	4,586.73	3,789.48	30.62	-142.52	1,123.63	-983.86	2,505.66	181.23	2,324.42	1.078	Level 2
5,800.00	5,639.06	4,976.70	4,665.49	3,835.83	31.36	-142.97	1,151.20	-1,007.86	2,554.51	225.42	2,329.09	1.097	Level 2
5,900.00	5,738.42	5,064.61	4,745.24	3,871.32	32.11	-143.34	1,179.11	-1,032.16	2,600.95	269.42	2,331.53	1.116	Level 2
6,000.00	5,838.11	5,232.83	4,898.47	3,895.91	33.42	-143.35	1,231.44	-1,077.73	2,644.72	298.12	2,346.61	1.127	Level 2
6,100.00	5,938.01	5,845.99	5,484.12	3,909.55	36.39	-142.36	1,365.40	-1,194.37	2,674.61	264.29	2,410.31	1.110	Level 2
6,174.00	6,012.00	6,342.21	5,977.20	3,912.58	37.42	-65.40	1,403.03	-1,227.13	2,682.17	254.56	2,427.61	1.105	Level 2
6,200.00	6,038.00	6,403.01	6,038.00	3,912.58	37.47	-65.40	1,403.25	-1,227.32	2,682.21	254.39	2,427.83	1.105	Level 2
6,300.00	6,138.00	6,503.01	6,138.00	3,912.61	37.55	-65.40	1,403.25	-1,227.32	2,682.21	254.23	2,427.98	1.105	Level 2
6,400.00	6,238.00	6,603.01	6,238.00	3,912.63	37.62	-65.40	1,403.25	-1,227.32	2,682.21	254.07	2,428.14	1.105	Level 2
6,500.00	6,338.00	6,703.01	6,338.00	3,912.65	37.70	-65.40	1,403.25	-1,227.32	2,682.21	253.90	2,428.31	1.105	Level 2
6,600.00	6,438.00	6,803.01	6,438.00	3,912.68	37.78	-65.40	1,403.25	-1,227.32	2,682.21	253.74	2,428.48	1.104	Level 2
6,700.00	6,538.00	6,903.01	6,538.00	3,912.71	37.86	-65.40	1,403.25	-1,227.32	2,682.21	253.57	2,428.65	1.104	Level 2
6,800.00	6,638.00	7,003.01	6,638.00	3,912.74	37.94	-65.40	1,403.25	-1,227.32	2,682.21	253.39	2,428.82	1.104	Level 2
6,900.00	6,738.00	7,103.01	6,738.00	3,912.76	38.03	-65.40	1,403.25	-1,227.32	2,682.21	253.21	2,429.00	1.104	Level 2
7,000.00	6,838.00	7,203.01	6,838.00	3,912.79	38.11	-65.40	1,403.25	-1,227.32	2,682.21	253.03	2,429.18	1.104	Level 2
7,100.00	6,938.00	7,303.01	6,938.00	3,912.83	38.19	-65.40	1,403.25	-1,227.32	2,682.21	252.85	2,429.36	1.104	Level 2
7,200.00	7,038.00	7,403.01	7,038.00	3,912.86	38.28	-65.40	1,403.25	-1,227.32	2,682.21	252.67	2,429.55	1.104	Level 2
7,300.00	7,138.00	7,503.01	7,138.00	3,912.89	38.37	-65.40	1,403.25	-1,227.32	2,682.21	252.48	2,429.74	1.104	Level 2
7,400.00	7,238.00	7,603.01	7,238.00	3,912.92	38.46	-65.40	1,403.25	-1,227.32	2,682.21	252.28	2,429.93	1.104	Level 2
7,500.00	7,338.00	7,703.01	7,338.00	3,912.96	38.55	-65.40	1,403.25	-1,227.32	2,682.21	252.09	2,430.12	1.104	Level 2
7,600.00	7,438.00	7,803.01	7,438.00	3,913.00	38.64	-65.40	1,403.25	-1,227.32	2,682.21	251.89	2,430.32	1.104	Level 2
7,700.00	7,538.00	7,903.01	7,538.00	3,913.03	38.73	-65.40	1,403.25	-1,227.32	2,682.21	251.69	2,430.52	1.104	Level 2
7,800.00	7,638.00	8,003.01	7,638.00	3,913.07	38.82	-65.40	1,403.25	-1,227.32	2,682.21	251.48	2,430.73	1.103	Level 2
7,900.00	7,738.00	8,103.01	7,738.00	3,913.11	38.91	-65.40	1,403.25	-1,227.32	2,682.21	251.28	2,430.94	1.103	Level 2
8,000.00	7,838.00	8,203.01	7,838.00	3,913.15	39.01	-65.40	1,403.25	-1,227.32	2,682.21	251.07	2,431.15	1.103	Level 2
8,052.00	7,890.00	8,255.01	7,890.00	3,913.17	39.06	-65.40	1,403.25	-1,227.32	2,682.21	250.96	2,431.26	1.103	Level 2



<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_OLIN 21-31
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_OLIN 18-31 PAD	<b>MD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_OLIN 21-31	<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_OLIN 21-31	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 4-5-10 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 90-INC												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	11.60	51.72	10.62	54.88				
100.00	100.00	84.90	84.90	1.13	1.27	11.60	51.71	10.62	52.78	50.40	2.38	22.187	
200.00	200.00	185.22	185.22	3.44	4.97	11.69	51.31	10.62	52.40	44.19	8.21	6.384	
300.00	300.00	285.21	285.20	5.52	8.78	11.78	50.92	10.62	52.02	38.11	13.91	3.740	
400.00	400.00	385.20	385.19	7.56	12.58	11.86	50.57	10.62	51.67	32.10	19.57	2.640	
500.00	500.00	485.19	485.18	9.59	16.39	11.93	50.24	10.62	51.35	26.13	25.22	2.036	
600.00	600.00	585.18	585.17	11.61	20.20	12.00	49.94	10.62	51.06	20.20	30.86	1.654	
700.00	700.00	685.16	685.15	13.63	24.00	12.06	49.68	10.62	50.80	14.31	36.50	1.392 Level 3	
800.00	800.00	785.15	785.14	15.65	27.81	12.12	49.45	10.62	50.58	8.45	42.13	1.201 Level 2	
900.00	899.98	885.12	885.10	17.79	31.61	-66.35	49.25	10.62	49.66	9.42	40.24	1.234 Level 2	
1,000.00	999.84	984.96	984.94	28.17	35.41	-72.13	49.08	10.62	47.63	-4.66	52.29	0.911 Level 1	
1,100.00	1,099.45	1,084.55	1,084.54	52.70	39.20	-82.60	48.95	10.62	45.57	-34.40	79.97	0.570 Level 1	
1,154.90	1,153.99	1,139.08	1,139.07	73.05	41.28	-90.47	48.88	10.62	45.13	-57.70	102.82	0.439 Level 1, CC	
1,200.00	1,198.70	1,183.79	1,183.77	89.78	42.98	-97.89	48.84	10.62	45.52	-75.52	121.04	0.376 Level 1	
1,300.00	1,297.47	1,282.53	1,282.52	138.32	46.74	-115.67	48.77	10.62	50.08	-113.58	163.66	0.306 Level 1, SF	
1,400.00	1,395.62	1,380.67	1,380.66	197.92	50.48	-131.76	48.73	10.62	60.89	-132.91	193.80	0.314 Level 1, ES	
1,500.00	1,493.06	1,478.09	1,478.08	268.37	54.18	-143.90	48.72	10.62	77.84	-132.28	210.12	0.370 Level 1	
1,586.40	1,576.57	1,561.59	1,561.58	337.87	57.36	-151.40	48.73	10.62	96.79	-120.92	217.71	0.445 Level 1	
1,600.00	1,589.65	1,574.68	1,574.67	349.43	57.86	-152.40	48.74	10.62	100.07	-118.43	218.50	0.458 Level 1	
1,700.00	1,685.91	1,670.93	1,670.91	434.51	61.52	-158.12	48.78	10.62	124.89	-97.99	222.87	0.560 Level 1	
1,800.00	1,782.16	1,767.18	1,767.16	519.62	65.19	-161.93	48.86	10.62	150.49	-75.72	226.22	0.665 Level 1	
1,900.00	1,878.42	1,863.43	1,863.42	604.75	68.85	-164.61	48.97	10.62	176.54	-52.86	229.40	0.770 Level 1	
2,000.00	1,974.68	1,959.69	1,959.67	689.90	72.51	-166.60	49.10	10.62	202.87	-29.84	232.70	0.872 Level 1	
2,100.00	2,070.93	2,055.95	2,055.93	775.05	76.18	-168.13	49.27	10.62	229.36	-6.84	236.20	0.971 Level 1	
2,200.00	2,167.19	2,152.21	2,152.20	860.21	79.84	-169.33	49.47	10.62	255.98	16.07	239.91	1.067 Level 2	
2,300.00	2,263.44	2,248.47	2,248.46	945.37	83.51	-170.30	49.69	10.62	282.67	38.85	243.83	1.159 Level 2	
2,400.00	2,359.70	2,344.74	2,344.73	1,030.54	87.17	-171.09	49.94	10.62	309.43	61.48	247.95	1.248 Level 2	
2,500.00	2,455.95	2,441.01	2,441.00	1,115.71	90.84	-171.76	50.23	10.62	336.23	83.98	252.25	1.333 Level 3	
2,600.00	2,552.21	2,537.29	2,537.28	1,200.88	94.50	-172.32	50.54	10.62	363.07	106.34	256.73	1.414 Level 3	
2,700.00	2,648.47	2,633.56	2,633.55	1,286.05	98.16	-172.80	50.88	10.62	389.93	128.56	261.37	1.492 Level 3	
2,800.00	2,744.72	2,729.84	2,729.83	1,371.23	101.83	-173.21	51.25	10.62	416.80	150.64	266.17	1.566	
2,900.00	2,840.98	2,826.12	2,826.11	1,456.40	105.49	-173.57	51.66	10.62	443.70	172.58	271.11	1.637	
3,000.00	2,937.23	2,922.13	2,922.01	1,541.58	110.50	-173.98	51.38	10.62	470.69	195.46	275.23	1.710	
3,100.00	3,033.49	3,018.42	3,018.29	1,626.76	115.76	-174.34	51.04	10.62	497.71	218.30	279.41	1.781	
3,200.00	3,129.75	3,114.71	3,114.58	1,711.93	121.01	-174.67	50.77	10.62	524.74	240.90	283.84	1.849	
3,300.00	3,226.00	3,211.01	3,210.88	1,797.11	126.27	-174.95	50.55	10.62	551.78	263.26	288.52	1.912	
3,400.00	3,322.26	3,307.31	3,307.18	1,882.29	131.52	-175.20	50.40	10.62	578.82	285.38	293.44	1.973	
3,500.00	3,418.51	3,403.62	3,403.48	1,967.47	136.78	-175.43	50.31	10.62	605.85	307.26	298.59	2.029	
3,600.00	3,514.77	3,499.94	3,499.79	2,052.65	142.03	-175.63	50.28	10.62	632.89	328.91	303.98	2.082	
3,700.00	3,611.03	3,596.25	3,596.11	2,137.83	147.29	-175.80	50.31	10.62	659.92	350.33	309.59	2.132	
3,800.00	3,707.28	3,692.57	3,692.43	2,223.01	152.54	-175.96	50.40	10.62	686.95	371.53	315.42	2.178	
3,900.00	3,803.54	3,788.90	3,788.75	2,308.19	157.80	-176.10	50.55	10.62	713.97	392.51	321.46	2.221	
4,000.00	3,899.79	3,885.23	3,885.08	2,393.37	163.05	-176.23	50.77	10.62	740.99	413.27	327.72	2.261	
4,100.00	3,996.05	3,981.56	3,981.41	2,478.55	168.31	-176.34	51.04	10.62	767.99	433.81	334.19	2.298	
4,200.00	4,092.30	4,077.90	4,077.75	2,563.73	173.56	-176.44	51.38	10.62	794.99	454.14	340.85	2.332	
4,300.00	4,188.56	4,174.03	4,173.71	2,648.91	178.97	-176.53	51.73	10.62	821.99	474.26	347.73	2.364	
4,400.00	4,284.82	4,270.28	4,269.95	2,734.10	185.29	-176.63	51.83	10.62	849.04	494.31	354.73	2.393	
4,500.00	4,381.07	4,366.53	4,366.20	2,819.28	191.62	-176.73	51.91	10.62	876.09	514.37	361.71	2.422	
4,600.00	4,477.33	4,462.78	4,462.44	2,904.46	197.95	-176.83	51.99	10.62	903.14	534.45	368.69	2.450	
4,700.00	4,573.58	4,559.03	4,558.68	2,989.64	204.28	-176.91	52.06	10.62	930.20	554.53	375.67	2.476	
4,800.00	4,669.84	4,655.28	4,654.92	3,074.82	210.61	-177.00	52.11	10.62	957.26	574.62	382.64	2.502	
4,900.00	4,766.10	4,751.53	4,751.16	3,160.01	216.94	-177.08	52.16	10.62	984.33	594.73	389.60	2.527	

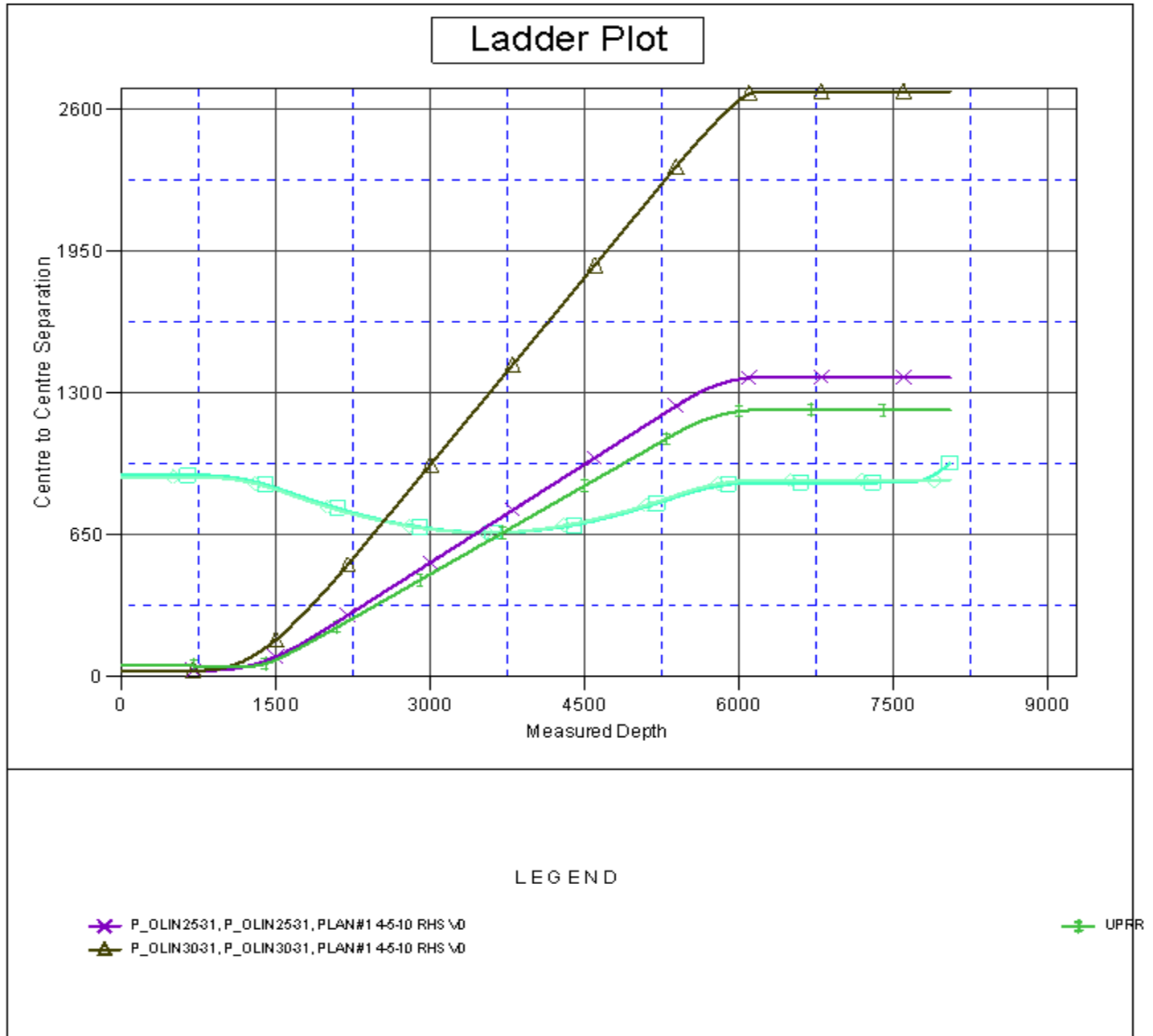
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_OLIN 21-31
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_OLIN 18-31 PAD	<b>MD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_OLIN 21-31	<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_OLIN 21-31	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 4-5-10 RHS	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> WELD_OLIN 18-31 PAD - UPRR 42 PAN AM UNIT X TRUE #1 EXISTING - UPRR 42 PAN AM UNIT X												<b>Offset Site Error:</b>	0.00 ft
Survey Program: 90-INC												<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
5,000.00	4,862.35	4,847.78	4,847.41	3,245.19	223.26	-177.15	52.20	10.62	1,011.39	614.84	396.55	2.550	
5,100.00	4,958.61	4,944.02	4,943.65	3,330.37	229.59	-177.23	52.23	10.62	1,038.47	634.97	403.50	2.574	
5,200.00	5,054.86	5,040.27	5,039.89	3,415.55	235.92	-177.30	52.26	10.62	1,065.54	655.10	410.44	2.596	
5,300.00	5,151.12	5,136.52	5,136.12	3,500.73	242.25	-177.36	52.27	10.62	1,092.62	675.24	417.37	2.618	
5,387.59	5,235.43	5,220.82	5,220.42	3,575.35	247.79	-177.42	52.27	10.62	1,116.34	692.90	423.44	2.636	
5,400.00	5,247.38	5,232.77	5,232.37	3,585.83	248.57	-177.43	52.27	10.62	1,119.67	695.25	424.42	2.638	
5,500.00	5,344.20	5,329.58	5,329.17	3,664.40	254.94	-177.51	52.27	10.62	1,144.65	712.30	432.35	2.648	
5,600.00	5,441.83	5,427.20	5,426.78	3,732.31	261.36	-177.57	52.25	10.62	1,166.25	725.97	440.28	2.649	
5,700.00	5,540.16	5,525.52	5,525.09	3,789.48	267.82	-177.63	52.23	10.62	1,184.42	736.27	448.16	2.643	
5,800.00	5,639.06	5,624.41	5,623.97	3,835.83	274.32	-177.67	52.19	10.62	1,199.16	743.23	455.93	2.630	
5,900.00	5,738.42	5,723.75	5,723.31	3,871.32	280.86	-177.70	52.15	10.62	1,210.45	746.88	463.57	2.611	
6,000.00	5,838.11	5,823.43	5,822.98	3,895.91	287.41	-177.73	52.10	10.62	1,218.26	747.23	471.03	2.586	
6,100.00	5,938.01	5,923.32	5,922.87	3,909.55	293.98	-177.74	52.03	10.62	1,222.60	744.34	478.26	2.556	
6,174.00	6,012.00	5,997.31	5,996.85	3,912.58	298.84	-101.06	51.98	10.62	1,223.56	740.38	483.18	2.532	
6,200.00	6,038.00	6,023.31	6,022.84	3,912.58	300.55	-101.06	51.96	10.62	1,223.57	738.64	484.92	2.523	
6,300.00	6,138.00	6,123.30	6,122.83	3,912.61	307.12	-101.07	51.88	10.62	1,223.58	731.95	491.63	2.489	
6,400.00	6,238.00	6,223.29	6,222.81	3,912.63	313.70	-101.07	51.78	10.62	1,223.60	725.27	498.33	2.455	
6,500.00	6,338.00	6,323.01	6,322.43	3,912.65	319.80	-101.06	51.90	10.62	1,223.58	718.43	505.15	2.422	
6,600.00	6,438.00	6,424.85	6,424.06	3,912.68	324.70	-101.04	52.40	10.62	1,223.48	711.71	511.77	2.391	
6,700.00	6,538.00	6,524.69	6,523.90	3,912.71	329.60	-101.02	52.83	10.62	1,223.40	705.16	518.24	2.361	
6,800.00	6,638.00	6,624.53	6,623.74	3,912.74	334.51	-101.01	53.19	10.62	1,223.33	698.78	524.56	2.332	
6,900.00	6,738.00	6,724.38	6,723.58	3,912.76	339.41	-100.99	53.49	10.62	1,223.28	692.55	530.72	2.305	
7,000.00	6,838.00	6,824.23	6,823.42	3,912.79	344.31	-100.98	53.72	10.62	1,223.23	686.49	536.74	2.279	
7,100.00	6,938.00	6,924.08	6,923.27	3,912.83	349.21	-100.97	53.89	10.62	1,223.20	680.60	542.60	2.254	
7,200.00	7,038.00	7,023.94	7,023.12	3,912.86	354.11	-100.97	53.99	10.62	1,223.18	674.86	548.32	2.231	
7,293.55	7,131.55	7,117.36	7,116.54	3,912.89	358.70	-100.97	54.03	10.62	1,223.17	669.64	553.53	2.210	
7,300.00	7,138.00	7,123.80	7,122.98	3,912.89	359.01	-100.97	54.03	10.62	1,223.17	669.29	553.88	2.208	
7,400.00	7,238.00	7,223.66	7,222.84	3,912.92	363.92	-100.97	54.00	10.62	1,223.18	663.88	559.30	2.187	
7,500.00	7,338.00	7,323.53	7,322.69	3,912.96	368.82	-100.97	53.91	10.62	1,223.20	658.63	564.57	2.167	
7,600.00	7,438.00	7,423.40	7,422.56	3,913.00	373.72	-100.98	53.75	10.62	1,223.23	653.53	569.69	2.147	
7,700.00	7,538.00	7,523.27	7,522.42	3,913.03	378.62	-100.99	53.52	10.62	1,223.27	648.59	574.67	2.129	
7,800.00	7,638.00	7,623.15	7,622.29	3,913.07	383.53	-101.00	53.24	10.62	1,223.32	643.81	579.51	2.111	
7,900.00	7,738.00	7,723.02	7,722.16	3,913.11	388.43	-101.02	52.88	10.62	1,223.39	639.18	584.22	2.094	
8,000.00	7,838.00	7,822.90	7,822.03	3,913.15	393.33	-101.04	52.46	10.62	1,223.47	634.69	588.78	2.078	
8,052.00	7,890.00	7,874.84	7,873.96	3,913.17	395.88	-101.05	52.22	10.62	1,223.52	632.42	591.10	2.070	

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_OLIN 21-31
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<b>Reference Site:</b>	WELD_OLIN 18-31 PAD	<b>MD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_OLIN 21-31	<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_OLIN 21-31	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 4-5-10 RHS	<b>Offset TVD Reference:</b>	Offset Datum

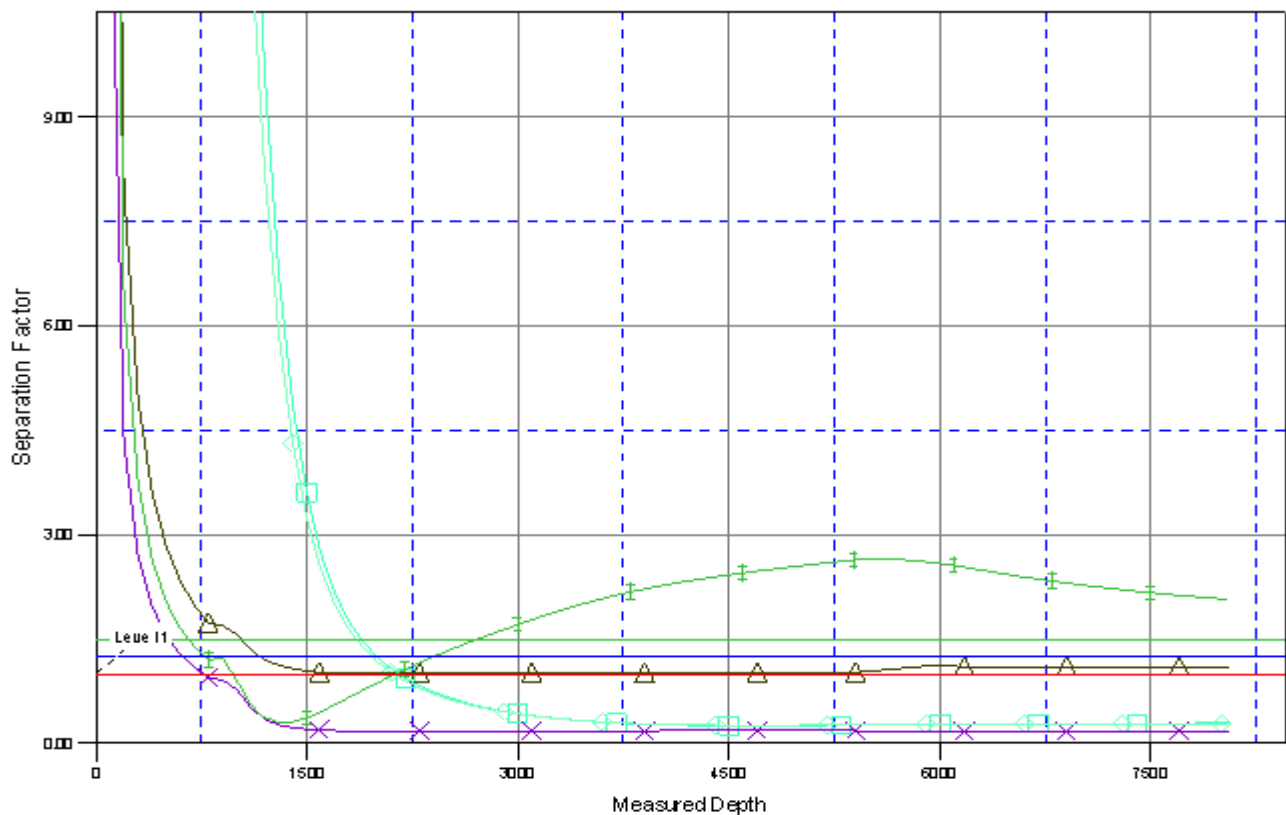
Reference Depths are relative to WELL @ 4844.00ft (Original Well Elev) Coordinates are relative to: P\_OLIN 21-31  
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone  
Central Meridian is 105° 30' 0.000 W ° Grid Convergence at Surface is: 0.44°



<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_OLIN 21-31
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_OLIN 18-31 PAD	<b>MD Reference:</b>	WELL @ 4844.00ft (Original Well Elev)
<b>Site Error:</b>	0.00ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_OLIN 21-31	<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_OLIN 21-31	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 4-5-10 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4844.00ft (Original Well Elev) Coordinates are relative to: P\_OLIN 21-31  
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: 0.44°

## Separation Factor Plot



### LEGEND

\* P\_OLIN2531, P\_OLIN2531, PLAN#1 4-5-10 RHS \0  
▲ P\_OLIN3031, P\_OLIN3031, PLAN#1 4-5-10 RHS \0

UPFR