



US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_COTTONWOOD 15-33 PAD

P_COTTONWOOD 14-33

P_COTTONWOOD 14-33

Plan: PLAN #1 2-18-10 RHS

Standard Planning Report

19 February, 2010

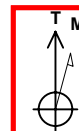




Project: COLORADO NORTHERN ZONE - 83
 Site: WELD_COTTONWOOD 15-33 PAD
 Well: P_COTTONWOOD 14-33
 Wellbore: P_COTTONWOOD 14-33
 Section: SECTION 33 T2N R66W
 SHL: 721 FSL 1865 FEL
 Design: PLAN #1 2-18-10 RHS
 Latitude: 40° 5' 21.628 N
 Longitude: 104° 46' 45.700 W
 GL: 4982.00
 KB: WELL @ 4997.00ft (Original Well Elev)



Weatherford®



Azimuths to True North
 Magnetic North: 9.02°
 Magnetic Field
 Strength: 53104.1snT
 Dip Angle: 66.84°
 Date: 2/18/2010
 Model: IGRF2010

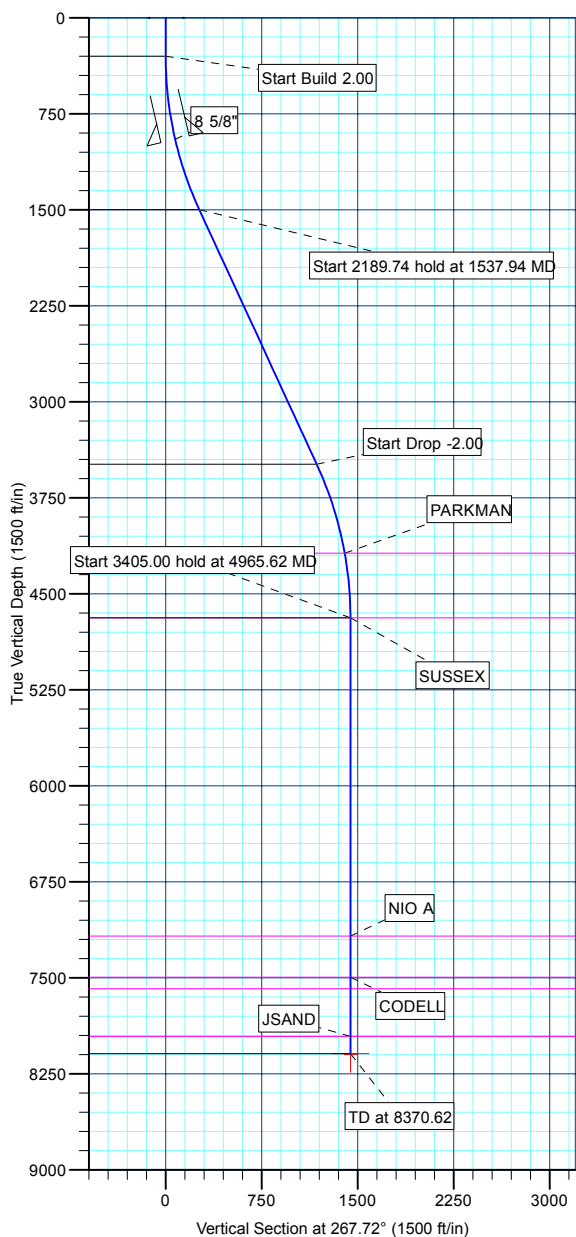
FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
4182.00	4456.95	PARKMAN
4688.00	4965.62	SUSSEX
7174.00	7451.62	NIO A
7494.00	7771.62	CODELL
7584.00	7861.62	GRNHRN
7958.00	8235.62	JSAND

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	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	Start Build 2.00
1537.94	24.76	267.72	1499.77	-10.49	-263.13	2.00	267.72	263.34	Start 2189.74 hold at 1537.94 MD
3727.68	24.76	267.72	3488.23	-47.02	-1179.46	0.00	0.00	1180.40	Start Drop -2.00
4965.62	0.00	0.00	4688.00	-57.51	-1442.59	2.00	180.00	1443.73	Start 3405.00 hold at 4965.62 MD
8370.62	0.00	0.00	8093.00	-57.51	-1442.59	0.00	0.00	1443.73	TD at 8370.62

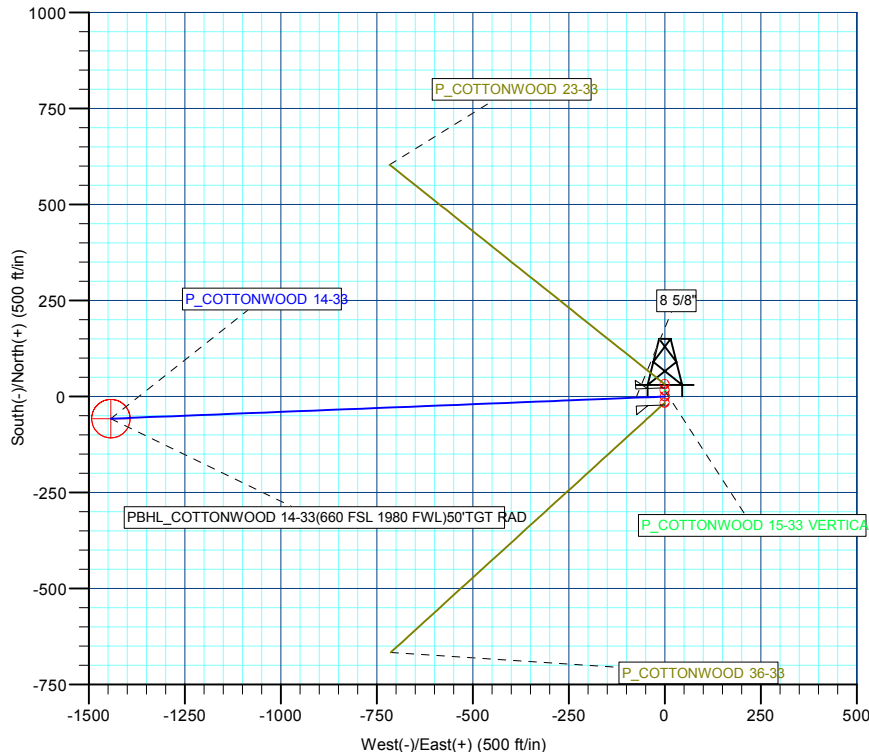
CASING DETAILS			
TVD	MD	Name	Size
950.00	955.71		8 5/8" 8.62

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)							
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape	
PBHL	8093.00	-57.51	-1442.59	40° 5' 21.059 N	104° 47' 4.261 W	Circle (Radius: 50.00)	

WELL DETAILS: P_COTTONWOOD 14-33						
+N/-S	+E/-W	Northing	Ground Level: Easting	4982.00 Latitude	Longitude	Slot
0.00	0.00	1276210.85	3201622.90	40° 5' 21.628 N	104° 46' 45.700 W	



LEGEND	
P_COTTONWOOD 15-33 VERTICAL, P_COTTONWOOD 15-33 VERTICAL, PLAN #1 2-18-10 RHS V0	
P_COTTONWOOD 23-33, P_COTTONWOOD 23-33, PLAN #1 2-18-10 RHS V0	
P_COTTONWOOD 36-33, P_COTTONWOOD 36-33, PLAN #1 2-18-10 RHS V0	
PLAN #1 2-18-10 RHS	



Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_COTTONWOOD 14-33
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4997.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4997.00ft (Original Well Elev)
Site:	WELD_COTTONWOOD 15-33 PAD	North Reference:	True
Well:	P_COTTONWOOD 14-33	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_COTTONWOOD 14-33		
Design:	PLAN #1 2-18-10 RHS		

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

Site						WELD_COTTONWOOD 15-33 PAD, SECTION 33 T2N R66W											
Site Position:						Northing:			1,276,210.85 ft			Latitude:			40° 5' 21.628 N		
From:			Lat/Long			Easting:			3,201,622.90 ft			Longitude:			104° 46' 45.700 W		
Position Uncertainty:			0.00 ft			Slot Radius:			in			Grid Convergence:			0.47 °		

Well	P_COTTONWOOD 14-33					
Well Position	+N/-S	0.00 ft	Northing:	1,276,210.85 ft	Latitude:	40° 5' 21.628 N
	+E/-W	0.00 ft	Easting:	3,201,622.90 ft	Longitude:	104° 46' 45.700 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,982.00 ft

Wellbore	P_COTTONWOOD 14-33				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/18/2010	9.02	66.84	53,104

Design	PLAN #1 2-18-10 RHS			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	267.72

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,537.94	24.76	267.72	1,499.77	-10.49	-263.13	2.00	2.00	0.00	267.72	
3,727.68	24.76	267.72	3,488.23	-47.02	-1,179.46	0.00	0.00	0.00	0.00	
4,965.62	0.00	0.00	4,688.00	-57.51	-1,442.59	2.00	-2.00	0.00	180.00	
8,370.62	0.00	0.00	8,093.00	-57.51	-1,442.59	0.00	0.00	0.00	0.00	PBHL_COTTONW

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_COTTONWOOD 14-33
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Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4997.00ft (Original Well Elev)
Site:	WELD_COTTONWOOD 15-33 PAD	North Reference:	True
Well:	P_COTTONWOOD 14-33	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_COTTONWOOD 14-33		
Design:	PLAN #1 2-18-10 RHS		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
Start Build 2.00									
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	2.00	267.72	399.98	-0.07	-1.74	1.75	2.00	2.00	0.00
500.00	4.00	267.72	499.84	-0.28	-6.97	6.98	2.00	2.00	0.00
600.00	6.00	267.72	599.45	-0.63	-15.68	15.69	2.00	2.00	0.00
700.00	8.00	267.72	698.70	-1.11	-27.86	27.88	2.00	2.00	0.00
800.00	10.00	267.72	797.47	-1.73	-43.49	43.52	2.00	2.00	0.00
900.00	12.00	267.72	895.62	-2.49	-62.55	62.60	2.00	2.00	0.00
8 5/8"									
955.71	13.11	267.72	950.00	-2.98	-74.66	74.71	2.00	2.00	0.00
1,000.00	14.00	267.72	993.06	-3.39	-85.03	85.10	2.00	2.00	0.00
1,100.00	16.00	267.72	1,089.64	-4.42	-110.89	110.98	2.00	2.00	0.00
1,200.00	18.00	267.72	1,185.27	-5.59	-140.10	140.21	2.00	2.00	0.00
1,300.00	20.00	267.72	1,279.82	-6.88	-172.63	172.77	2.00	2.00	0.00
1,400.00	22.00	267.72	1,373.17	-8.31	-208.44	208.60	2.00	2.00	0.00
1,500.00	24.00	267.72	1,465.21	-9.87	-247.48	247.67	2.00	2.00	0.00
Start 2189.74 hold at 1537.94 MD									
1,537.94	24.76	267.72	1,499.77	-10.49	-263.13	263.34	2.00	2.00	0.00
1,600.00	24.76	267.72	1,556.13	-11.53	-289.10	289.33	0.00	0.00	0.00
1,700.00	24.76	267.72	1,646.93	-13.19	-330.94	331.21	0.00	0.00	0.00
1,800.00	24.76	267.72	1,737.74	-14.86	-372.79	373.09	0.00	0.00	0.00
1,900.00	24.76	267.72	1,828.55	-16.53	-414.64	414.97	0.00	0.00	0.00
2,000.00	24.76	267.72	1,919.36	-18.20	-456.48	456.85	0.00	0.00	0.00
2,100.00	24.76	267.72	2,010.17	-19.87	-498.33	498.73	0.00	0.00	0.00
2,200.00	24.76	267.72	2,100.97	-21.54	-540.18	540.61	0.00	0.00	0.00
2,300.00	24.76	267.72	2,191.78	-23.20	-582.02	582.49	0.00	0.00	0.00
2,400.00	24.76	267.72	2,282.59	-24.87	-623.87	624.36	0.00	0.00	0.00
2,500.00	24.76	267.72	2,373.40	-26.54	-665.72	666.24	0.00	0.00	0.00
2,600.00	24.76	267.72	2,464.21	-28.21	-707.56	708.12	0.00	0.00	0.00
2,700.00	24.76	267.72	2,555.01	-29.88	-749.41	750.00	0.00	0.00	0.00
2,800.00	24.76	267.72	2,645.82	-31.55	-791.26	791.88	0.00	0.00	0.00
2,900.00	24.76	267.72	2,736.63	-33.21	-833.10	833.76	0.00	0.00	0.00
3,000.00	24.76	267.72	2,827.44	-34.88	-874.95	875.64	0.00	0.00	0.00
3,100.00	24.76	267.72	2,918.24	-36.55	-916.80	917.52	0.00	0.00	0.00
3,200.00	24.76	267.72	3,009.05	-38.22	-958.64	959.40	0.00	0.00	0.00
3,300.00	24.76	267.72	3,099.86	-39.89	-1,000.49	1,001.28	0.00	0.00	0.00
3,400.00	24.76	267.72	3,190.67	-41.56	-1,042.34	1,043.16	0.00	0.00	0.00
3,500.00	24.76	267.72	3,281.48	-43.22	-1,084.18	1,085.04	0.00	0.00	0.00
3,600.00	24.76	267.72	3,372.28	-44.89	-1,126.03	1,126.92	0.00	0.00	0.00
3,700.00	24.76	267.72	3,463.09	-46.56	-1,167.88	1,168.80	0.00	0.00	0.00
Start Drop -2.00									
3,727.68	24.76	267.72	3,488.23	-47.02	-1,179.46	1,180.40	0.00	0.00	0.00
3,800.00	23.31	267.72	3,554.28	-48.20	-1,208.89	1,209.85	2.00	-2.00	0.00
3,900.00	21.31	267.72	3,646.78	-49.71	-1,246.83	1,247.82	2.00	-2.00	0.00
4,000.00	19.31	267.72	3,740.56	-51.09	-1,281.51	1,282.53	2.00	-2.00	0.00
4,100.00	17.31	267.72	3,835.49	-52.34	-1,312.90	1,313.95	2.00	-2.00	0.00
4,200.00	15.31	267.72	3,931.46	-53.46	-1,340.97	1,342.03	2.00	-2.00	0.00
4,300.00	13.31	267.72	4,028.35	-54.45	-1,365.67	1,366.75	2.00	-2.00	0.00
4,400.00	11.31	267.72	4,126.05	-55.30	-1,386.97	1,388.08	2.00	-2.00	0.00
PARKMAN									
4,456.95	10.17	267.72	4,182.00	-55.72	-1,397.58	1,398.69	2.00	-2.00	0.00
4,500.00	9.31	267.72	4,224.43	-56.01	-1,404.86	1,405.98	2.00	-2.00	0.00
4,600.00	7.31	267.72	4,323.37	-56.59	-1,419.30	1,420.43	2.00	-2.00	0.00

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Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4997.00ft (Original Well Elev)
Site:	WELD_COTTONWOOD 15-33 PAD	North Reference:	True
Well:	P_COTTONWOOD 14-33	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_COTTONWOOD 14-33		
Design:	PLAN #1 2-18-10 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)
4,700.00	5.31	267.72	4,422.76	-57.02	-1,430.29	1,431.43	2.00	-2.00	0.00
4,800.00	3.31	267.72	4,522.47	-57.32	-1,437.80	1,438.95	2.00	-2.00	0.00
4,900.00	1.31	267.72	4,622.38	-57.48	-1,441.83	1,442.98	2.00	-2.00	0.00
Start 3405.00 hold at 4965.62 MD - SUSSEX									
4,965.62	0.00	0.00	4,688.00	-57.51	-1,442.59	1,443.73	2.00	-2.00	140.63
5,000.00	0.00	0.00	4,722.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
5,100.00	0.00	0.00	4,822.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
5,200.00	0.00	0.00	4,922.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
5,300.00	0.00	0.00	5,022.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
5,400.00	0.00	0.00	5,122.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
5,500.00	0.00	0.00	5,222.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
5,600.00	0.00	0.00	5,322.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
5,700.00	0.00	0.00	5,422.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
5,800.00	0.00	0.00	5,522.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
5,900.00	0.00	0.00	5,622.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
6,000.00	0.00	0.00	5,722.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
6,100.00	0.00	0.00	5,822.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
6,200.00	0.00	0.00	5,922.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
6,300.00	0.00	0.00	6,022.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
6,400.00	0.00	0.00	6,122.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
6,500.00	0.00	0.00	6,222.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
6,600.00	0.00	0.00	6,322.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
6,700.00	0.00	0.00	6,422.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
6,800.00	0.00	0.00	6,522.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
6,900.00	0.00	0.00	6,622.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
7,000.00	0.00	0.00	6,722.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
7,100.00	0.00	0.00	6,822.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
7,200.00	0.00	0.00	6,922.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
7,300.00	0.00	0.00	7,022.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
7,400.00	0.00	0.00	7,122.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
NIO A									
7,451.62	0.00	0.00	7,174.00	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
7,500.00	0.00	0.00	7,222.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
7,600.00	0.00	0.00	7,322.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
7,700.00	0.00	0.00	7,422.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
CODELL									
7,771.62	0.00	0.00	7,494.00	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
7,800.00	0.00	0.00	7,522.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
GRNHRN									
7,861.62	0.00	0.00	7,584.00	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
7,900.00	0.00	0.00	7,622.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
8,000.00	0.00	0.00	7,722.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00
8,100.00	0.00	0.00	7,822.38	-57.51	-1,442.59	1,443.73	0.00	0.00	0.00

Design Targets

Target Name

- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- Shape									
PBHL_COTTONWOC	0.00	0.00	8,093.00	-57.51	-1,442.59	1,276,141.62	3,200,180.83	40° 5' 21.059 N	104° 47' 4.261 W
- plan misses target center by 270.62ft at 8100.00ft MD (7822.38 TVD, -57.51 N, -1442.59 E)									
- Circle (radius 50.00)									

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_COTTONWOOD 14-33
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4997.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4997.00ft (Original Well Elev)
Site:	WELD_COTTONWOOD 15-33 PAD	North Reference:	True
Well:	P_COTTONWOOD 14-33	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_COTTONWOOD 14-33		
Design:	PLAN #1 2-18-10 RHS		

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
955.71	950.00	8 5/8"	8.62	11.00	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,456.95	4,182.00	PARKMAN				
4,965.62	4,688.00	SUSSEX				
7,451.62	7,174.00	NIO A				
7,771.62	7,494.00	CODELL				
7,861.62	7,584.00	GRNHRN				
8,235.62	7,958.00	JSAND				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
300.00	300.00	0.00	0.00	Start Build 2.00	
1,537.94	1,499.77	-10.49	-263.13	Start 2189.74 hold at 1537.94 MD	
3,727.68	3,488.23	-47.02	-1,179.46	Start Drop -2.00	
4,965.62	4,688.00	-57.51	-1,442.59	Start 3405.00 hold at 4965.62 MD	
8,370.62	8,093.00	-57.51	-1,442.59	TD at 8370.62	



US ROCKIES REGION PLANNING

**COLORADO NORTHERN ZONE - 83
WELD_COTTONWOOD 15-33 PAD
P_COTTONWOOD 14-33**

**P_COTTONWOOD 14-33
PLAN #1 2-18-10 RHS**

Anticollision Report

19 February, 2010



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_COTTONWOOD 14-33
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4997.00ft (Original Well Elev)
Reference Site:	WELD_COTTONWOOD 15-33 PAD	MD Reference:	WELL @ 4997.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_COTTONWOOD 14-33	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_COTTONWOOD 14-33	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 2-18-10 RHS	Offset TVD Reference:	Offset Datum

Reference	PLAN #1 2-18-10 RHS		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	0.00 to 20,000.00ft	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.00ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date 2/19/2010			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	8,370.62	PLAN #1 2-18-10 RHS (P_COTTONWOO	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_COTTONWOOD 15-33 PAD						
P_COTTONWOOD 15-33 VERTICAL - P_COTTONWOC	300.00	300.00	16.00	14.91	14.680	CC
P_COTTONWOOD 15-33 VERTICAL - P_COTTONWOC	400.00	399.98	16.17	14.64	10.580	ES
P_COTTONWOOD 15-33 VERTICAL - P_COTTONWOC	500.00	499.84	17.71	15.74	9.005	SF
P_COTTONWOOD 23-33 - P_COTTONWOOD 23-33 - F	300.00	300.00	32.04	30.95	29.395	CC
P_COTTONWOOD 23-33 - P_COTTONWOOD 23-33 - F	400.00	399.98	32.16	30.63	21.047	ES
P_COTTONWOOD 23-33 - P_COTTONWOOD 23-33 - F	600.00	599.45	36.24	33.81	14.938	SF
P_COTTONWOOD 36-33 - P_COTTONWOOD 36-33 - F	360.49	360.49	16.02	14.66	11.819	CC
P_COTTONWOOD 36-33 - P_COTTONWOOD 36-33 - F	400.00	399.98	16.06	14.53	10.507	ES
P_COTTONWOOD 36-33 - P_COTTONWOOD 36-33 - F	500.00	499.84	17.23	15.26	8.746	SF

Offset Design WELD_COTTONWOOD 15-33 PAD - P_COTTONWOOD 15-33 VERTICAL - P_COTTONWOOD 15-33													Offset Site Error: 0.00 ft
Survey Program: 0-MWD													Offset Well Error: 0.00 ft
Reference	Offset	Semi Major Axis		Distance									Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	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	0.00	16.00	0.00	16.00				
100.00	100.00	100.00	100.00	0.10	0.10	0.00	16.00	0.00	16.00	15.81	0.19	83.763	
200.00	200.00	200.00	200.00	0.32	0.32	0.00	16.00	0.00	16.00	15.36	0.64	24.982	
300.00	300.00	300.00	300.00	0.55	0.55	0.00	16.00	0.00	16.00	14.91	1.09	14.680	CC
302.60	302.60	302.60	302.60	0.55	0.55	92.29	16.00	0.00	16.00	14.90	1.10	14.528	
400.00	399.98	399.98	399.98	0.76	0.77	98.47	16.00	0.00	16.17	14.64	1.53	10.580	ES
500.00	499.84	499.84	499.84	0.98	0.99	115.41	16.00	0.00	17.71	15.74	1.97	9.005	SF
600.00	599.45	599.45	599.45	1.22	1.22	135.45	16.00	0.00	22.86	20.44	2.41	9.478	
700.00	698.70	698.70	698.70	1.50	1.44	150.48	16.00	0.00	32.69	29.84	2.85	11.466	
800.00	797.47	797.47	797.47	1.82	1.66	159.81	16.00	0.00	46.97	43.68	3.29	14.280	
900.00	895.62	895.62	895.62	2.20	1.88	165.51	16.00	0.00	65.23	61.50	3.73	17.502	
1,000.00	993.06	993.06	993.06	2.64	2.10	169.12	16.00	0.00	87.21	83.05	4.17	20.927	
1,100.00	1,089.64	1,089.64	1,089.64	3.13	2.32	171.52	16.00	0.00	112.75	108.14	4.61	24.459	
1,200.00	1,185.27	1,185.27	1,185.27	3.70	2.53	173.19	16.00	0.00	141.76	136.70	5.05	28.043	
1,300.00	1,279.82	1,279.82	1,279.82	4.33	2.75	174.40	16.00	0.00	174.14	168.64	5.50	31.651	
1,400.00	1,373.17	1,373.17	1,373.17	5.04	2.96	175.29	16.00	0.00	209.85	203.90	5.95	35.264	
1,500.00	1,465.21	1,465.21	1,465.21	5.81	3.16	175.97	16.00	0.00	248.83	242.42	6.40	38.871	
1,537.94	1,499.77	1,499.77	1,499.77	6.13	3.24	176.18	16.00	0.00	264.46	257.88	6.57	40.236	

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

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_COTTONWOOD 14-33
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4997.00ft (Original Well Elev)
Reference Site:	WELD_COTTONWOOD 15-33 PAD	MD Reference:	WELL @ 4997.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_COTTONWOOD 14-33	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_COTTONWOOD 14-33	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 2-18-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_COTTONWOOD 15-33 PAD - P_COTTONWOOD 15-33 VERTICAL - P_COTTONWOOD 15-33												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
1,600.00	1,556.13	1,556.13	1,556.13	6.65	3.37	176.52	16.00	0.00	290.40	283.51	6.90	42.097	
1,700.00	1,646.93	1,646.93	1,646.93	7.51	3.57	176.96	16.00	0.00	332.23	324.80	7.43	44.727	
1,800.00	1,737.74	1,737.74	1,737.74	8.37	3.78	177.30	16.00	0.00	374.06	366.10	7.96	46.980	
1,900.00	1,828.55	1,828.55	1,828.55	9.24	3.98	177.57	16.00	0.00	415.91	407.41	8.50	48.930	
2,000.00	1,919.36	1,919.36	1,919.36	10.11	4.18	177.80	16.00	0.00	457.76	448.72	9.04	50.632	
2,100.00	2,010.17	2,010.17	2,010.17	10.98	4.39	177.98	16.00	0.00	499.62	490.03	9.58	52.130	
2,200.00	2,100.97	2,100.97	2,100.97	11.86	4.59	178.14	16.00	0.00	541.48	531.35	10.13	53.457	
2,300.00	2,191.78	2,191.78	2,191.78	12.74	4.80	178.27	16.00	0.00	583.34	572.67	10.68	54.641	
2,400.00	2,282.59	2,282.59	2,282.59	13.62	5.00	178.39	16.00	0.00	625.21	613.98	11.22	55.702	
2,500.00	2,373.40	2,373.40	2,373.40	14.50	5.21	178.49	16.00	0.00	667.07	655.30	11.77	56.660	
2,600.00	2,464.21	2,464.21	2,464.21	15.39	5.41	178.58	16.00	0.00	708.94	696.62	12.32	57.528	
2,700.00	2,555.01	2,555.01	2,555.01	16.27	5.61	178.66	16.00	0.00	750.81	737.94	12.87	58.318	
2,800.00	2,645.82	2,645.82	2,645.82	17.16	5.82	178.73	16.00	0.00	792.68	779.26	13.43	59.040	
2,900.00	2,736.63	2,736.63	2,736.63	18.04	6.02	178.79	16.00	0.00	834.56	820.58	13.98	59.703	
3,000.00	2,827.44	2,827.44	2,827.44	18.93	6.23	178.85	16.00	0.00	876.43	861.90	14.53	60.312	
3,100.00	2,918.24	2,918.24	2,918.24	19.82	6.43	178.90	16.00	0.00	918.30	903.22	15.08	60.876	
3,200.00	3,009.05	3,009.05	3,009.05	20.70	6.63	178.95	16.00	0.00	960.18	944.54	15.64	61.398	
3,300.00	3,099.86	3,099.86	3,099.86	21.59	6.84	178.99	16.00	0.00	1,002.05	985.86	16.19	61.882	
3,400.00	3,190.67	3,190.67	3,190.67	22.48	7.04	179.03	16.00	0.00	1,043.92	1,027.18	16.75	62.334	
3,500.00	3,281.48	3,281.48	3,281.48	23.37	7.25	179.07	16.00	0.00	1,085.80	1,068.50	17.30	62.755	
3,600.00	3,372.28	3,372.28	3,372.28	24.26	7.45	179.11	16.00	0.00	1,127.68	1,109.82	17.86	63.149	
3,700.00	3,463.09	3,463.09	3,463.09	25.14	7.65	179.14	16.00	0.00	1,169.55	1,151.14	18.41	63.519	
3,727.68	3,488.23	3,488.23	3,488.23	25.39	7.71	179.15	16.00	0.00	1,181.14	1,162.58	18.57	63.617	
3,800.00	3,554.28	3,554.28	3,554.28	25.95	7.86	179.18	16.00	0.00	1,210.60	1,191.55	19.04	63.569	
3,900.00	3,646.78	3,646.78	3,646.78	26.59	8.07	179.21	16.00	0.00	1,248.56	1,228.89	19.66	63.498	
4,000.00	3,740.56	3,740.56	3,740.56	27.18	8.28	179.24	16.00	0.00	1,283.27	1,263.01	20.25	63.367	
4,100.00	3,835.49	3,835.49	3,835.49	27.72	8.49	179.27	16.00	0.00	1,314.68	1,293.87	20.81	63.184	
4,200.00	3,931.46	3,931.46	3,931.46	28.20	8.71	179.29	16.00	0.00	1,342.77	1,321.44	21.33	62.957	
4,300.00	4,028.35	4,028.35	4,028.35	28.63	8.93	179.31	16.00	0.00	1,367.48	1,345.67	21.81	62.689	
4,400.00	4,126.05	4,126.05	4,126.05	29.00	9.14	179.33	16.00	0.00	1,388.80	1,366.54	22.26	62.386	
4,500.00	4,224.43	4,224.43	4,224.43	29.32	9.37	179.34	16.00	0.00	1,406.70	1,384.03	22.67	62.050	
4,600.00	4,323.37	4,323.37	4,323.37	29.59	9.59	179.35	16.00	0.00	1,421.16	1,398.12	23.04	61.684	
4,700.00	4,422.76	4,422.76	4,422.76	29.80	9.81	179.36	16.00	0.00	1,432.15	1,408.79	23.37	61.290	
4,800.00	4,522.47	4,522.47	4,522.47	29.97	10.04	179.36	16.00	0.00	1,439.67	1,416.02	23.65	60.869	
4,900.00	4,622.38	4,622.38	4,622.38	30.09	10.26	179.37	16.00	0.00	1,443.71	1,419.81	23.89	60.421	
4,965.62	4,688.00	4,688.00	4,688.00	30.14	10.41	87.08	16.00	0.00	1,444.46	1,420.43	24.03	60.106	
5,000.00	4,722.38	4,722.38	4,722.38	30.16	10.49	87.08	16.00	0.00	1,444.46	1,420.30	24.16	59.793	
5,100.00	4,822.38	4,822.38	4,822.38	30.23	10.71	87.08	16.00	0.00	1,444.46	1,419.93	24.53	58.895	
5,200.00	4,922.38	4,922.38	4,922.38	30.31	10.93	87.08	16.00	0.00	1,444.46	1,419.56	24.90	58.019	
5,300.00	5,022.38	5,022.38	5,022.38	30.38	11.16	87.08	16.00	0.00	1,444.46	1,419.19	25.27	57.163	
5,400.00	5,122.38	5,122.38	5,122.38	30.46	11.38	87.08	16.00	0.00	1,444.46	1,418.81	25.64	56.329	
5,500.00	5,222.38	5,222.38	5,222.38	30.54	11.61	87.08	16.00	0.00	1,444.46	1,418.44	26.02	55.514	
5,600.00	5,322.38	5,322.38	5,322.38	30.62	11.83	87.08	16.00	0.00	1,444.46	1,418.06	26.40	54.718	
5,700.00	5,422.38	5,422.38	5,422.38	30.70	12.06	87.08	16.00	0.00	1,444.46	1,417.68	26.78	53.941	
5,800.00	5,522.38	5,522.38	5,522.38	30.79	12.28	87.08	16.00	0.00	1,444.46	1,417.30	27.16	53.183	
5,900.00	5,622.38	5,622.38	5,622.38	30.87	12.51	87.08	16.00	0.00	1,444.46	1,416.91	27.54	52.442	
6,000.00	5,722.38	5,722.38	5,722.38	30.96	12.73	87.08	16.00	0.00	1,444.46	1,416.53	27.93	51.718	
6,100.00	5,822.38	5,822.38	5,822.38	31.05	12.96	87.08	16.00	0.00	1,444.46	1,416.14	28.32	51.012	
6,200.00	5,922.38	5,922.38	5,922.38	31.13	13.18	87.08	16.00	0.00	1,444.46	1,415.75	28.70	50.321	
6,300.00	6,022.38	6,022.38	6,022.38	31.23	13.41	87.08	16.00	0.00	1,444.46	1,415.36	29.09	49.647	
6,400.00	6,122.38	6,122.38	6,122.38	31.32	13.63	87.08	16.00	0.00	1,444.46	1,414.97	29.49	48.987	
6,500.00	6,222.38	6,222.38	6,222.38	31.41	13.86	87.08	16.00	0.00	1,444.46	1,414.58	29.88	48.343	

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

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_COTTONWOOD 14-33
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4997.00ft (Original Well Elev)
Reference Site:	WELD_COTTONWOOD 15-33 PAD	MD Reference:	WELL @ 4997.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_COTTONWOOD 14-33	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_COTTONWOOD 14-33	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 2-18-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_COTTONWOOD 15-33 PAD - P_COTTONWOOD 15-33 VERTICAL - P_COTTONWOOD 15-33												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
6,600.00	6,322.38	6,322.38	6,322.38	31.50	14.08	87.08	16.00	0.00	1,444.46	1,414.18	30.27	47.714	
6,700.00	6,422.38	6,422.38	6,422.38	31.60	14.31	87.08	16.00	0.00	1,444.46	1,413.79	30.67	47.098	
6,800.00	6,522.38	6,522.38	6,522.38	31.70	14.53	87.08	16.00	0.00	1,444.46	1,413.39	31.07	46.497	
6,900.00	6,622.38	6,622.38	6,622.38	31.80	14.76	87.08	16.00	0.00	1,444.46	1,412.99	31.46	45.908	
7,000.00	6,722.38	6,722.38	6,722.38	31.90	14.98	87.08	16.00	0.00	1,444.46	1,412.59	31.86	45.333	
7,100.00	6,822.38	6,822.38	6,822.38	32.00	15.21	87.08	16.00	0.00	1,444.46	1,412.19	32.26	44.770	
7,200.00	6,922.38	6,922.38	6,922.38	32.10	15.43	87.08	16.00	0.00	1,444.46	1,411.79	32.67	44.220	
7,300.00	7,022.38	7,022.38	7,022.38	32.20	15.65	87.08	16.00	0.00	1,444.46	1,411.39	33.07	43.681	
7,400.00	7,122.38	7,122.38	7,122.38	32.31	15.88	87.08	16.00	0.00	1,444.46	1,410.99	33.47	43.154	
7,500.00	7,222.38	7,222.38	7,222.38	32.41	16.10	87.08	16.00	0.00	1,444.46	1,410.58	33.88	42.638	
7,600.00	7,322.38	7,322.38	7,322.38	32.52	16.33	87.08	16.00	0.00	1,444.46	1,410.17	34.28	42.133	
7,700.00	7,422.38	7,422.38	7,422.38	32.63	16.55	87.08	16.00	0.00	1,444.46	1,409.77	34.69	41.639	
7,800.00	7,522.38	7,522.38	7,522.38	32.74	16.78	87.08	16.00	0.00	1,444.46	1,409.36	35.10	41.155	
7,900.00	7,622.38	7,622.38	7,622.38	32.85	17.00	87.08	16.00	0.00	1,444.46	1,408.95	35.51	40.682	
8,000.00	7,722.38	7,722.38	7,722.38	32.96	17.23	87.08	16.00	0.00	1,444.46	1,408.54	35.92	40.218	
8,100.00	7,822.38	7,822.38	7,822.38	33.07	17.45	87.08	16.00	0.00	1,444.46	1,408.13	36.33	39.763	
8,200.00	7,922.38	7,922.38	7,922.38	33.19	17.68	87.08	16.00	0.00	1,444.46	1,407.72	36.74	39.318	
8,300.00	8,022.38	8,022.38	8,022.38	33.30	17.90	87.08	16.00	0.00	1,444.46	1,407.31	37.15	38.882	
8,370.62	8,093.00	8,093.00	8,093.00	33.38	18.06	87.08	16.00	0.00	1,444.46	1,407.02	37.44	38.579	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_COTTONWOOD 14-33
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4997.00ft (Original Well Elev)
Reference Site:	WELD_COTTONWOOD 15-33 PAD	MD Reference:	WELL @ 4997.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_COTTONWOOD 14-33	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_COTTONWOOD 14-33	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 2-18-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_COTTONWOOD 15-33 PAD - P_COTTONWOOD 23-33 - P_COTTONWOOD 23-33 - PLAN #1													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	0.00	32.04	0.00	32.04				
100.00	100.00	100.00	100.00	0.10	0.10	0.00	32.04	0.00	32.04	31.85	0.19	167.724	
200.00	200.00	200.00	200.00	0.32	0.32	0.00	32.04	0.00	32.04	31.40	0.64	50.023	
300.00	300.00	300.00	300.00	0.55	0.55	0.00	32.04	0.00	32.04	30.95	1.09	29.395 CC	
400.00	399.98	399.98	399.98	0.76	0.77	95.39	32.04	0.00	32.16	30.63	1.53	21.047 ES	
500.00	499.84	499.84	499.84	0.98	0.99	104.42	32.04	0.00	33.07	31.10	1.97	16.795	
600.00	599.45	599.45	599.45	1.22	1.22	117.79	32.04	0.00	36.24	33.81	2.43	14.938 SF	
700.00	698.70	698.70	698.70	1.50	1.44	132.04	32.04	0.00	43.30	40.42	2.89	15.004	
800.00	797.47	797.47	797.47	1.82	1.66	144.03	32.04	0.00	55.06	51.73	3.34	16.498	
900.00	895.62	895.62	895.62	2.20	1.88	152.87	32.04	0.00	71.45	67.67	3.78	18.899	
1,000.00	993.06	993.06	993.06	2.64	2.10	159.09	32.04	0.00	92.12	87.90	4.22	21.825	
1,100.00	1,089.64	1,090.55	1,090.54	3.13	2.32	163.39	32.22	-0.22	116.58	111.92	4.66	25.009	
1,200.00	1,185.27	1,189.35	1,189.29	3.70	2.53	165.60	34.16	-2.65	143.14	138.03	5.11	28.003	
1,300.00	1,279.82	1,288.50	1,288.22	4.33	2.76	166.42	38.23	-7.76	171.14	165.56	5.58	30.654	
1,400.00	1,373.17	1,387.92	1,387.14	5.04	2.99	166.38	44.46	-15.56	200.45	194.37	6.08	32.951	
1,500.00	1,465.21	1,487.53	1,485.83	5.81	3.25	165.80	52.84	-26.07	231.04	224.42	6.62	34.886	
1,537.94	1,499.77	1,525.36	1,523.18	6.13	3.35	165.48	56.59	-30.76	242.99	236.15	6.84	35.517	
1,600.00	1,556.13	1,587.47	1,584.32	6.65	3.53	164.94	63.40	-39.29	262.31	255.06	7.25	36.166	
1,700.00	1,646.93	1,684.47	1,679.45	7.51	3.84	163.90	75.24	-54.14	292.40	284.45	7.95	36.768	
1,800.00	1,737.74	1,779.75	1,772.84	8.37	4.17	163.05	86.99	-68.86	322.45	313.78	8.68	37.161	
1,900.00	1,828.55	1,875.02	1,866.24	9.24	4.51	162.34	98.74	-83.59	352.56	343.14	9.42	37.410	
2,000.00	1,919.36	1,970.30	1,959.63	10.11	4.86	161.74	110.49	-98.31	382.71	372.52	10.19	37.561	
2,100.00	2,010.17	2,065.58	2,053.03	10.98	5.22	161.23	122.24	-113.03	412.90	401.93	10.97	37.643	
2,200.00	2,100.97	2,160.85	2,146.43	11.86	5.59	160.79	133.98	-127.76	443.10	431.34	11.76	37.678	
2,300.00	2,191.78	2,256.13	2,239.82	12.74	5.97	160.41	145.73	-142.48	473.33	460.77	12.56	37.681	
2,400.00	2,282.59	2,351.41	2,333.22	13.62	6.35	160.07	157.48	-157.20	503.58	490.21	13.37	37.662	
2,500.00	2,373.40	2,446.68	2,426.61	14.50	6.73	159.77	169.23	-171.93	533.84	519.65	14.19	37.628	
2,600.00	2,464.21	2,541.96	2,520.01	15.39	7.12	159.50	180.97	-186.65	564.11	549.10	15.01	37.583	
2,700.00	2,555.01	2,637.24	2,613.41	16.27	7.51	159.26	192.72	-201.37	594.39	578.56	15.84	37.532	
2,800.00	2,645.82	2,732.51	2,708.80	17.16	7.90	159.04	204.47	-216.10	624.69	608.02	16.67	37.478	
2,900.00	2,736.63	2,827.79	2,800.20	18.04	8.30	158.85	216.22	-230.82	654.98	637.48	17.50	37.421	
3,000.00	2,827.44	2,923.07	2,893.60	18.93	8.70	158.67	227.96	-245.54	685.29	666.95	18.34	37.363	
3,100.00	2,918.24	3,018.34	2,986.99	19.82	9.09	158.50	239.71	-260.27	715.60	696.42	19.18	37.305	
3,200.00	3,009.05	3,113.62	3,080.39	20.70	9.49	158.35	251.46	-274.99	745.91	725.89	20.03	37.247	
3,300.00	3,099.86	3,208.90	3,173.78	21.59	9.90	158.21	263.21	-289.71	776.23	755.36	20.87	37.191	
3,400.00	3,190.67	3,304.17	3,267.18	22.48	10.30	158.08	274.96	-304.43	806.56	784.84	21.72	37.136	
3,500.00	3,281.48	3,399.45	3,360.58	23.37	10.70	157.96	286.70	-319.16	836.88	814.31	22.57	37.082	
3,600.00	3,372.28	3,494.73	3,453.97	24.26	11.11	157.85	298.45	-333.88	867.21	843.79	23.42	37.030	
3,700.00	3,463.09	3,590.00	3,547.37	25.14	11.51	157.75	310.20	-348.60	897.55	873.27	24.27	36.980	
3,727.68	3,488.23	3,616.38	3,573.22	25.39	11.62	157.72	313.45	-352.68	905.94	881.43	24.51	36.966	
3,800.00	3,554.28	3,685.52	3,641.00	25.95	11.92	157.80	321.98	-363.36	927.07	901.92	25.15	36.862	
3,900.00	3,646.78	3,781.88	3,735.46	26.59	12.33	157.81	333.86	-378.26	953.63	927.62	26.01	36.668	
4,000.00	3,740.56	3,879.00	3,830.66	27.18	12.75	157.74	345.83	-393.26	977.06	950.21	26.86	36.383	
4,100.00	3,835.49	3,976.75	3,926.48	27.72	13.16	157.57	357.89	-408.37	997.37	969.68	27.69	36.015	
4,200.00	3,931.46	4,075.02	4,022.82	28.20	13.59	157.31	370.00	-423.55	1,014.55	986.03	28.52	35.574	
4,300.00	4,028.35	4,173.70	4,119.54	28.63	14.01	156.96	382.17	-438.80	1,028.60	999.27	29.33	35.067	
4,400.00	4,126.05	4,272.65	4,216.55	29.00	14.43	156.53	394.37	-454.09	1,039.55	1,009.41	30.13	34.498	
4,500.00	4,224.43	4,371.77	4,313.70	29.32	14.86	156.01	406.59	-469.41	1,047.39	1,016.47	30.92	33.872	
4,600.00	4,323.37	4,470.92	4,410.90	29.59	15.29	155.40	418.82	-484.73	1,052.19	1,020.49	31.70	33.192	
4,700.00	4,422.76	4,569.99	4,508.02	29.80	15.71	154.69	431.03	-500.04	1,053.96	1,021.49	32.47	32.461	
4,800.00	4,522.47	4,668.86	4,604.93	29.97	16.14	153.88	443.22	-515.32	1,052.77	1,019.54	33.23	31.682	
4,900.00	4,622.38	4,767.40	4,701.53	30.09	16.56	152.95	455.37	-530.55	1,048.68	1,014.69	33.99	30.856	

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

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_COTTONWOOD 14-33
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4997.00ft (Original Well Elev)
Reference Site:	WELD_COTTONWOOD 15-33 PAD	MD Reference:	WELL @ 4997.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_COTTONWOOD 14-33	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_COTTONWOOD 14-33	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 2-18-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_COTTONWOOD 15-33 PAD - P_COTTONWOOD 23-33 - P_COTTONWOOD 23-33 - PLAN #1												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Reference	Offset	Semi Major Axis		Distance									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,965.62	4,688.00	4,831.84	4,764.69	30.14	16.84	60.00	463.32	-540.51	1,044.46	1,009.98	34.48	30.289	
5,000.00	4,722.38	4,865.54	4,797.73	30.16	16.99	59.66	467.47	-545.71	1,041.96	1,007.18	34.77	29.964	
5,100.00	4,822.38	4,963.56	4,893.82	30.23	17.41	58.65	479.56	-560.86	1,034.89	999.26	35.63	29.048	
5,200.00	4,922.38	5,061.59	4,989.91	30.31	17.83	57.64	491.65	-576.01	1,028.15	991.66	36.49	28.179	
5,300.00	5,022.38	5,159.62	5,086.00	30.38	18.26	56.61	503.73	-591.16	1,021.75	984.40	37.35	27.354	
5,400.00	5,122.38	5,257.64	5,182.10	30.46	18.68	55.57	515.82	-606.31	1,015.70	977.47	38.23	26.571	
5,500.00	5,222.38	5,355.67	5,278.19	30.54	19.10	54.51	527.91	-621.45	1,010.00	970.89	39.10	25.830	
5,600.00	5,322.38	5,453.69	5,374.28	30.62	19.53	53.45	539.99	-636.60	1,004.65	964.67	39.98	25.128	
5,700.00	5,422.38	5,551.72	5,470.37	30.70	19.95	52.37	552.08	-651.75	999.67	958.80	40.86	24.463	
5,800.00	5,522.38	5,649.75	5,566.46	30.79	20.38	51.29	564.17	-666.90	995.05	953.30	41.75	23.835	
5,900.00	5,622.38	5,743.72	5,658.69	30.87	20.72	50.27	575.41	-680.98	990.93	948.40	42.53	23.299	
6,000.00	5,722.38	5,836.09	5,749.83	30.96	20.99	49.42	584.75	-692.70	987.72	944.53	43.19	22.869	
6,100.00	5,822.38	5,929.35	5,842.29	31.05	21.23	48.73	592.33	-702.19	985.33	941.57	43.76	22.515	
6,200.00	5,922.38	6,023.31	5,935.79	31.13	21.44	48.20	598.05	-709.37	983.65	939.39	44.25	22.228	
6,300.00	6,022.38	6,117.77	6,030.06	31.23	21.62	47.85	601.88	-714.16	982.58	937.93	44.65	22.005	
6,400.00	6,122.38	6,212.54	6,124.77	31.32	21.76	47.67	603.77	-716.53	982.07	937.10	44.97	21.840	
6,462.39	6,184.77	6,272.54	6,184.77	31.37	21.83	47.65	603.98	-716.80	982.01	936.89	45.12	21.764	
6,500.00	6,222.38	6,310.15	6,222.38	31.41	21.88	47.65	603.98	-716.80	982.01	936.80	45.21	21.719	
6,600.00	6,322.38	6,410.15	6,322.38	31.50	22.01	47.65	603.98	-716.80	982.01	936.54	45.47	21.596	
6,700.00	6,422.38	6,510.15	6,422.38	31.60	22.15	47.65	603.98	-716.80	982.01	936.28	45.73	21.472	
6,800.00	6,522.38	6,610.15	6,522.38	31.70	22.29	47.65	603.98	-716.80	982.01	936.01	46.00	21.349	
6,900.00	6,622.38	6,710.15	6,622.38	31.80	22.43	47.65	603.98	-716.80	982.01	935.75	46.27	21.226	
7,000.00	6,722.38	6,810.15	6,722.38	31.90	22.58	47.65	603.98	-716.80	982.01	935.48	46.54	21.103	
7,100.00	6,822.38	6,910.15	6,822.38	32.00	22.72	47.65	603.98	-716.80	982.01	935.20	46.81	20.980	
7,200.00	6,922.38	7,010.15	6,922.38	32.10	22.87	47.65	603.98	-716.80	982.01	934.93	47.08	20.857	
7,300.00	7,022.38	7,110.15	7,022.38	32.20	23.01	47.65	603.98	-716.80	982.01	934.65	47.36	20.735	
7,400.00	7,122.38	7,210.15	7,122.38	32.31	23.16	47.65	603.98	-716.80	982.01	934.37	47.64	20.613	
7,500.00	7,222.38	7,310.15	7,222.38	32.41	23.31	47.65	603.98	-716.80	982.01	934.09	47.92	20.491	
7,600.00	7,322.38	7,410.15	7,322.38	32.52	23.46	47.65	603.98	-716.80	982.01	933.80	48.21	20.370	
7,700.00	7,422.38	7,510.15	7,422.38	32.63	23.61	47.65	603.98	-716.80	982.01	933.51	48.50	20.249	
7,800.00	7,522.38	7,610.15	7,522.38	32.74	23.76	47.65	603.98	-716.80	982.01	933.22	48.79	20.128	
7,900.00	7,622.38	7,710.15	7,622.38	32.85	23.92	47.65	603.98	-716.80	982.01	932.93	49.08	20.008	
8,000.00	7,722.38	7,810.15	7,722.38	32.96	24.07	47.65	603.98	-716.80	982.01	932.64	49.38	19.888	
8,100.00	7,822.38	7,910.15	7,822.38	33.07	24.23	47.65	603.98	-716.80	982.01	932.34	49.67	19.769	
8,200.00	7,922.38	8,010.15	7,922.38	33.19	24.39	47.65	603.98	-716.80	982.01	932.04	49.97	19.650	
8,300.00	8,022.38	8,110.15	8,022.38	33.30	24.54	47.65	603.98	-716.80	982.01	931.74	50.28	19.532	
8,345.29	8,067.67	8,155.44	8,067.67	33.35	24.62	47.65	603.98	-716.80	982.01	931.60	50.41	19.479	
8,370.62	8,093.00	8,175.77	8,088.00	33.38	24.65	47.65	603.98	-716.80	982.03	931.54	50.48	19.453	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_COTTONWOOD 14-33
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4997.00ft (Original Well Elev)
Reference Site:	WELD_COTTONWOOD 15-33 PAD	MD Reference:	WELL @ 4997.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_COTTONWOOD 14-33	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_COTTONWOOD 14-33	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 2-18-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Tooface (°)	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	-180.00	-16.03	0.00	16.03				
100.00	100.00	100.00	100.00	0.10	0.10	-180.00	-16.03	0.00	16.03	15.84	0.19	83.917	
200.00	200.00	200.00	200.00	0.32	0.32	-180.00	-16.03	0.00	16.03	15.39	0.64	25.028	
300.00	300.00	300.00	300.00	0.55	0.55	-180.00	-16.03	0.00	16.03	14.94	1.09	14.707	
360.49	360.49	360.49	360.49	0.67	0.68	-90.00	-16.03	0.00	16.02	14.66	1.36	11.819 CC	
400.00	399.98	399.98	399.98	0.76	0.77	-93.95	-16.03	0.00	16.06	14.53	1.53	10.507 ES	
500.00	499.84	499.84	499.84	0.98	0.99	-111.54	-16.03	0.00	17.23	15.26	1.97	8.746 SF	
600.00	599.45	599.45	599.45	1.22	1.22	-133.06	-16.03	0.00	21.98	19.56	2.42	9.081	
700.00	698.70	698.70	698.70	1.50	1.44	-149.30	-16.03	0.00	31.60	28.74	2.87	11.029	
800.00	797.47	797.47	797.47	1.82	1.66	-159.23	-16.03	0.00	45.78	42.47	3.30	13.853	
900.00	895.62	895.62	895.62	2.20	1.88	-165.19	-16.03	0.00	64.00	60.26	3.74	17.100	
1,000.00	993.06	993.06	993.06	2.64	2.10	-168.94	-16.03	0.00	85.96	81.78	4.18	20.553	
1,100.00	1,089.64	1,090.69	1,090.69	3.13	2.31	-171.32	-16.23	-0.21	111.31	106.69	4.62	24.095	
1,200.00	1,185.27	1,189.87	1,189.82	3.70	2.50	-172.12	-18.33	-2.52	138.24	133.20	5.04	27.422	
1,300.00	1,279.82	1,289.43	1,289.15	4.33	2.69	-171.90	-22.77	-7.39	166.26	160.78	5.49	30.307	
1,400.00	1,373.17	1,389.29	1,388.50	5.04	2.90	-171.08	-29.55	-14.84	195.37	189.40	5.96	32.761	
1,500.00	1,465.21	1,489.38	1,487.66	5.81	3.14	-169.89	-38.68	-24.86	225.59	219.11	6.48	34.788	
1,537.94	1,499.77	1,527.39	1,525.19	6.13	3.24	-169.38	-42.76	-29.34	237.37	230.67	6.70	35.436	
1,600.00	1,556.13	1,589.82	1,586.63	6.65	3.41	-168.53	-50.18	-37.49	256.38	249.27	7.11	36.066	
1,700.00	1,646.93	1,688.83	1,683.60	7.51	3.73	-167.00	-63.64	-52.26	285.57	277.75	7.83	36.494	
1,800.00	1,737.74	1,784.33	1,777.00	8.37	4.06	-165.71	-77.05	-66.98	314.53	305.95	8.58	36.670	
1,900.00	1,828.55	1,879.82	1,870.40	9.24	4.42	-164.63	-90.45	-81.69	343.61	334.25	9.36	36.711	
2,000.00	1,919.36	1,975.32	1,963.80	10.11	4.78	-163.72	-103.86	-96.41	372.78	362.61	10.17	36.667	
2,100.00	2,010.17	2,070.81	2,057.19	10.98	5.16	-162.94	-117.26	-111.12	402.03	391.03	10.99	36.571	
2,200.00	2,100.97	2,166.31	2,150.59	11.86	5.55	-162.27	-130.67	-125.84	431.33	419.50	11.84	36.445	
2,300.00	2,191.78	2,261.80	2,243.99	12.74	5.95	-161.69	-144.07	-140.55	460.68	447.99	12.69	36.303	
2,400.00	2,282.59	2,357.30	2,337.39	13.62	6.35	-161.17	-157.48	-155.27	490.08	476.52	13.56	36.154	
2,500.00	2,373.40	2,452.80	2,430.78	14.50	6.76	-160.71	-170.89	-169.98	519.50	505.07	14.43	36.003	
2,600.00	2,464.21	2,548.29	2,524.18	15.39	7.17	-160.31	-184.29	-184.70	548.95	533.64	15.31	35.855	
2,700.00	2,555.01	2,643.79	2,617.58	16.27	7.58	-159.94	-197.70	-199.41	578.42	562.23	16.20	35.712	
2,800.00	2,645.82	2,739.28	2,710.98	17.16	8.00	-159.61	-211.10	-214.13	607.91	590.83	17.09	35.575	
2,900.00	2,736.63	2,834.78	2,804.38	18.04	8.42	-159.31	-224.51	-228.85	637.42	619.44	17.98	35.444	
3,000.00	2,827.44	2,930.27	2,897.77	18.93	8.84	-159.03	-237.91	-243.56	666.95	648.07	18.88	35.320	
3,100.00	2,918.24	3,025.77	2,991.17	19.82	9.27	-158.78	-251.32	-258.28	696.49	676.70	19.79	35.202	
3,200.00	3,009.05	3,121.27	3,084.57	20.70	9.69	-158.55	-264.72	-272.99	726.03	705.34	20.69	35.092	
3,300.00	3,099.86	3,216.76	3,177.97	21.59	10.12	-158.34	-278.13	-287.71	755.59	734.00	21.60	34.987	
3,400.00	3,190.67	3,312.26	3,271.37	22.48	10.55	-158.14	-291.53	-302.42	785.16	762.65	22.50	34.889	
3,500.00	3,281.48	3,407.75	3,364.76	23.37	10.98	-157.96	-304.94	-317.14	814.73	791.32	23.41	34.797	
3,600.00	3,372.28	3,503.25	3,458.16	24.26	11.41	-157.79	-318.35	-331.85	844.32	819.99	24.32	34.710	
3,700.00	3,463.09	3,598.74	3,551.56	25.14	11.84	-157.63	-331.75	-346.57	873.90	848.67	25.24	34.628	
3,727.68	3,488.23	3,625.18	3,577.41	25.39	11.96	-157.59	-335.46	-350.64	882.09	856.61	25.49	34.607	
3,800.00	3,554.28	3,694.47	3,645.19	25.95	12.28	-157.62	-345.19	-361.32	902.69	876.54	26.15	34.516	
3,900.00	3,646.78	3,791.01	3,739.60	26.59	12.71	-157.59	-358.74	-376.19	928.50	901.47	27.03	34.356	
4,000.00	3,740.56	3,888.26	3,834.72	27.18	13.16	-157.45	-372.39	-391.18	951.20	923.31	27.90	34.098	
4,100.00	3,835.49	3,986.12	3,930.43	27.72	13.60	-157.23	-386.13	-406.26	970.79	942.03	28.76	33.754	
4,200.00	3,931.46	4,084.46	4,026.61	28.20	14.05	-156.91	-399.94	-421.41	987.26	957.64	29.62	33.332	
4,300.00	4,028.35	4,183.17	4,123.15	28.63	14.50	-156.51	-413.79	-436.62	1,000.62	970.15	30.47	32.839	
4,400.00	4,126.05	4,282.12	4,219.93	29.00	14.95	-156.02	-427.68	-451.87	1,010.89	979.57	31.32	32.279	
4,500.00	4,224.43	4,381.20	4,316.83	29.32	15.40	-155.43	-441.59	-467.14	1,018.10	985.94	32.16	31.659	
4,600.00	4,323.37	4,480.28	4,413.73	29.59	15.86	-154.75	-455.50	-482.41	1,022.29	989.29	33.00	30.982	
4,700.00	4,422.76	4,579.24	4,510.51	29.80	16.31	-153.97	-469.39	-497.66	1,023.50	989.67	33.83	30.251	
4,800.00	4,522.47	4,677.96	4,607.07	29.97	16.76	-153.08	-483.25	-512.87	1,021.80	987.13	34.67	29.470	

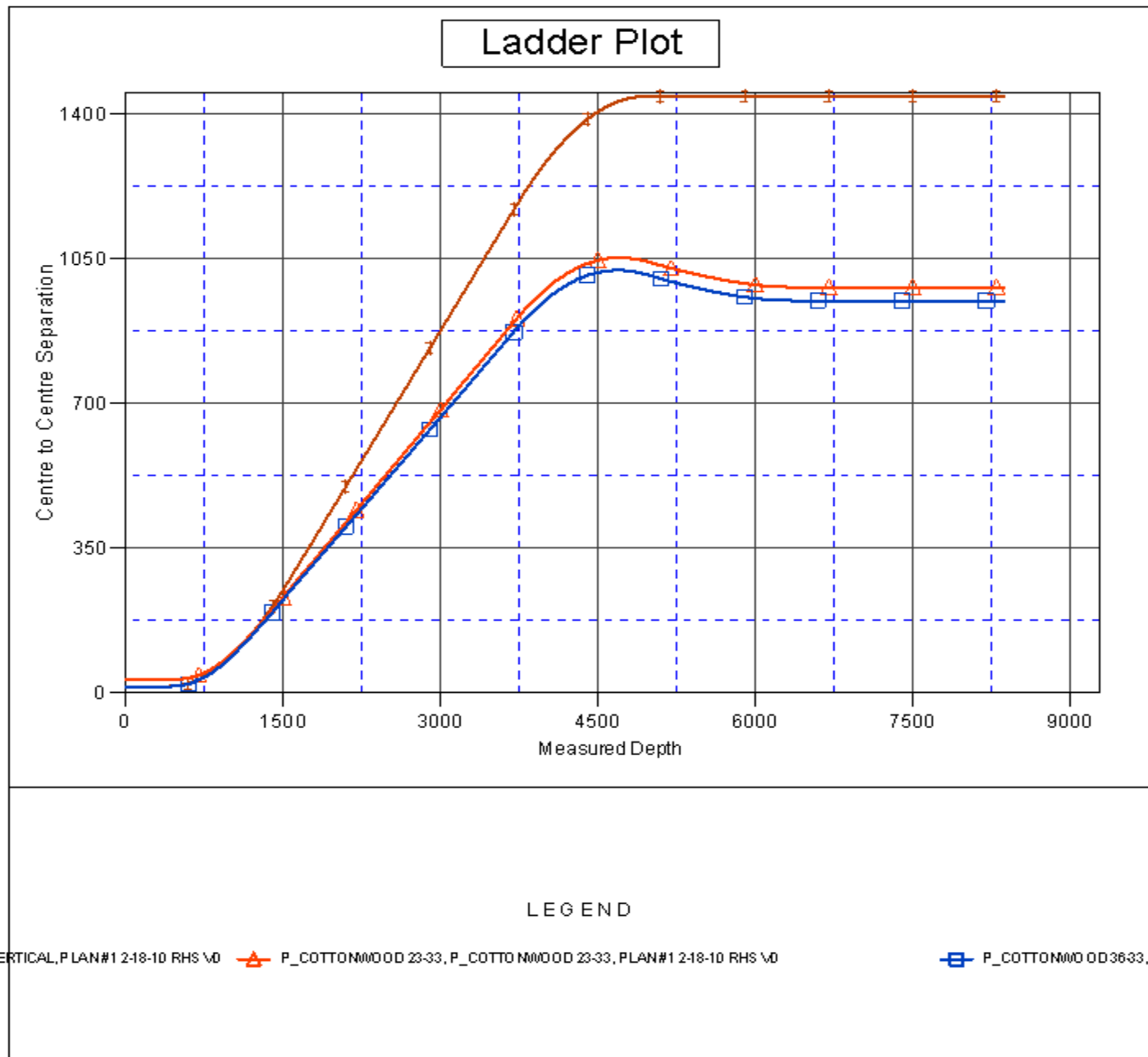
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_COTTONWOOD 14-33
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4997.00ft (Original Well Elev)
Reference Site:	WELD_COTTONWOOD 15-33 PAD	MD Reference:	WELL @ 4997.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_COTTONWOOD 14-33	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_COTTONWOOD 14-33	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 2-18-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_COTTONWOOD 15-33 PAD - P_COTTONWOOD 36-33 - P_COTTONWOOD 36-33 - PLAN #1												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,900.00	4,622.38	4,776.32	4,703.27	30.09	17.21	-152.07	-497.06	-528.02	1,017.26	981.74	35.52	28.641	
4,965.62	4,688.00	4,840.61	4,766.15	30.14	17.51	116.37	-506.08	-537.93	1,012.78	976.70	36.08	28.071	
5,000.00	4,722.38	4,874.24	4,799.03	30.16	17.66	116.75	-510.80	-543.11	1,010.15	973.74	36.40	27.748	
5,100.00	4,822.38	4,972.04	4,894.69	30.23	18.11	117.84	-524.53	-558.18	1,002.75	965.39	37.35	26.845	
5,200.00	4,922.38	5,069.84	4,990.34	30.31	18.56	118.94	-538.26	-573.26	995.73	957.42	38.31	25.991	
5,300.00	5,022.38	5,167.65	5,086.00	30.38	19.01	120.06	-551.99	-588.33	989.10	949.83	39.27	25.187	
5,400.00	5,122.38	5,265.45	5,181.65	30.46	19.45	121.20	-565.72	-603.40	982.87	942.63	40.23	24.428	
5,500.00	5,222.38	5,363.25	5,277.31	30.54	19.90	122.35	-579.45	-618.47	977.04	935.84	41.20	23.714	
5,600.00	5,322.38	5,461.06	5,372.96	30.62	20.35	123.51	-593.18	-633.54	971.62	929.45	42.17	23.041	
5,700.00	5,422.38	5,558.86	5,468.62	30.70	20.80	124.68	-606.91	-648.61	966.63	923.49	43.14	22.409	
5,800.00	5,522.38	5,656.66	5,564.27	30.79	21.25	125.87	-620.64	-663.68	962.06	917.96	44.10	21.815	
5,900.00	5,622.38	5,750.03	5,655.76	30.87	21.59	126.96	-633.17	-677.44	958.09	913.18	44.92	21.330	
6,000.00	5,722.38	5,843.01	5,747.41	30.96	21.86	127.88	-643.72	-689.02	955.05	909.45	45.60	20.942	
6,100.00	5,822.38	5,936.92	5,840.44	31.05	22.10	128.64	-652.33	-698.47	952.81	906.60	46.20	20.622	
6,200.00	5,922.38	6,031.58	5,934.59	31.13	22.31	129.22	-658.93	-705.71	951.22	904.51	46.71	20.364	
6,300.00	6,022.38	6,126.79	6,029.56	31.23	22.48	129.62	-663.45	-710.68	950.21	903.08	47.13	20.163	
6,400.00	6,122.38	6,222.35	6,125.04	31.32	22.62	129.83	-665.85	-713.31	949.70	902.24	47.45	20.014	
6,486.53	6,208.91	6,306.22	6,208.91	31.40	22.73	129.87	-666.25	-713.76	949.61	901.94	47.67	19.921	
6,500.00	6,222.38	6,319.69	6,222.38	31.41	22.75	129.87	-666.25	-713.76	949.61	901.91	47.70	19.909	
6,600.00	6,322.38	6,419.69	6,322.38	31.50	22.86	129.87	-666.25	-713.76	949.61	901.68	47.93	19.813	
6,700.00	6,422.38	6,519.69	6,422.38	31.60	22.98	129.87	-666.25	-713.76	949.61	901.45	48.16	19.717	
6,800.00	6,522.38	6,619.69	6,522.38	31.70	23.09	129.87	-666.25	-713.76	949.61	901.21	48.40	19.621	
6,900.00	6,622.38	6,719.69	6,622.38	31.80	23.21	129.87	-666.25	-713.76	949.61	900.97	48.64	19.525	
7,000.00	6,722.38	6,819.69	6,722.38	31.90	23.33	129.87	-666.25	-713.76	949.61	900.73	48.88	19.428	
7,100.00	6,822.38	6,919.69	6,822.38	32.00	23.46	129.87	-666.25	-713.76	949.61	900.49	49.12	19.331	
7,200.00	6,922.38	7,019.69	6,922.38	32.10	23.58	129.87	-666.25	-713.76	949.61	900.24	49.37	19.234	
7,300.00	7,022.38	7,119.69	7,022.38	32.20	23.70	129.87	-666.25	-713.76	949.61	899.99	49.62	19.137	
7,400.00	7,122.38	7,219.69	7,122.38	32.31	23.83	129.87	-666.25	-713.76	949.61	899.73	49.87	19.040	
7,500.00	7,222.38	7,319.69	7,222.38	32.41	23.96	129.87	-666.25	-713.76	949.61	899.48	50.13	18.942	
7,600.00	7,322.38	7,419.69	7,322.38	32.52	24.09	129.87	-666.25	-713.76	949.61	899.22	50.39	18.845	
7,700.00	7,422.38	7,519.69	7,422.38	32.63	24.22	129.87	-666.25	-713.76	949.61	898.96	50.65	18.748	
7,800.00	7,522.38	7,619.69	7,522.38	32.74	24.35	129.87	-666.25	-713.76	949.61	898.69	50.92	18.650	
7,900.00	7,622.38	7,719.69	7,622.38	32.85	24.49	129.87	-666.25	-713.76	949.61	898.43	51.18	18.553	
8,000.00	7,722.38	7,819.69	7,722.38	32.96	24.62	129.87	-666.25	-713.76	949.61	898.16	51.45	18.456	
8,100.00	7,822.38	7,919.69	7,822.38	33.07	24.76	129.87	-666.25	-713.76	949.61	897.88	51.73	18.359	
8,200.00	7,922.38	8,019.69	7,922.38	33.19	24.89	129.87	-666.25	-713.76	949.61	897.61	52.00	18.262	
8,300.00	8,022.38	8,119.69	8,022.38	33.30	25.03	129.87	-666.25	-713.76	949.61	897.33	52.28	18.165	
8,370.62	8,093.00	8,190.31	8,093.00	33.38	25.13	129.87	-666.25	-713.76	949.61	897.13	52.47	18.096	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_COTTONWOOD 14-33
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4997.00ft (Original Well Elev)
Reference Site:	WELD_COTTONWOOD 15-33 PAD	MD Reference:	WELL @ 4997.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_COTTONWOOD 14-33	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_COTTONWOOD 14-33	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 2-18-10 RHS	Offset TVD Reference:	Offset Datum

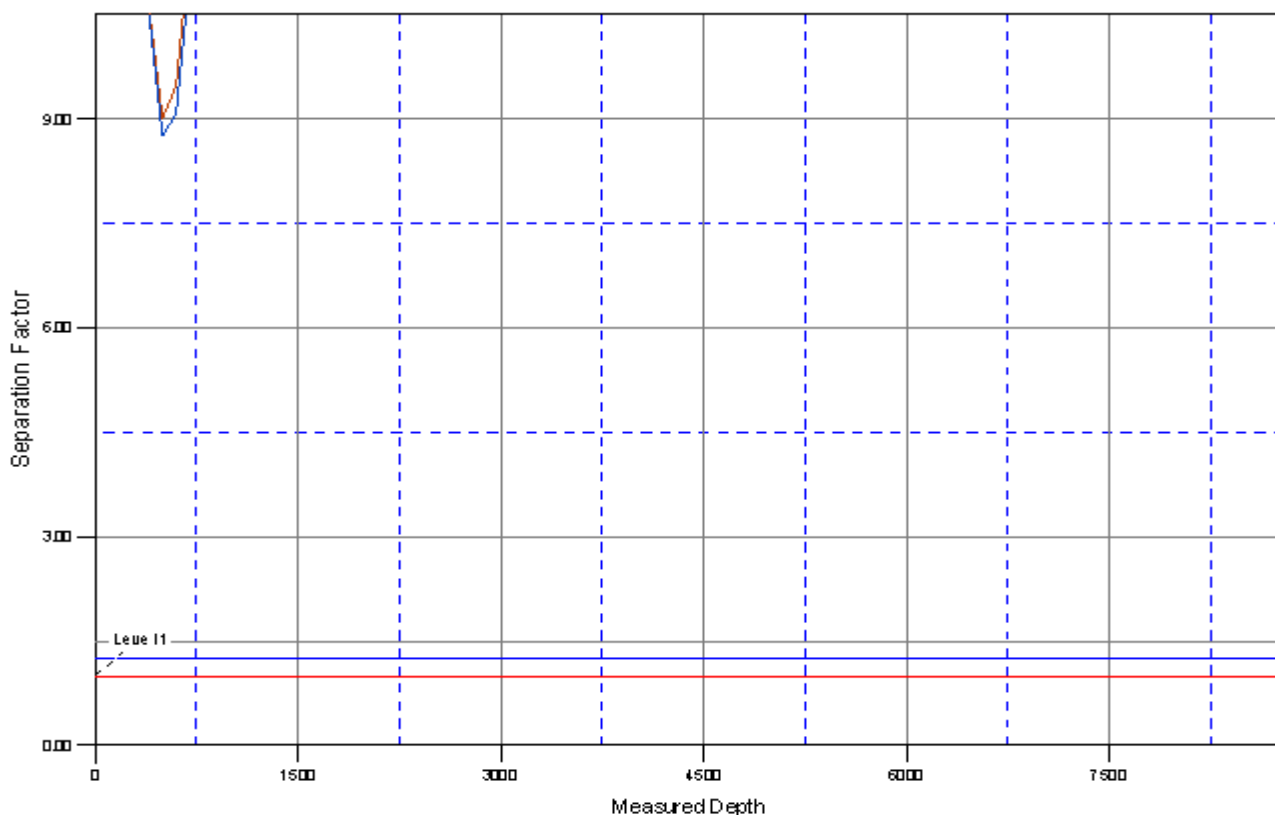
Reference Depths are relative to WELL @ 4997.00ft (Original Well Elev) Coordinates are relative to: P_COTTONWOOD 14-33
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is 105° 30' 0.000 W ° Grid Convergence at Surface is: 0.47°




Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_COTTONWOOD 14-33
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4997.00ft (Original Well Elev)
Reference Site:	WELD_COTTONWOOD 15-33 PAD	MD Reference:	WELL @ 4997.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_COTTONWOOD 14-33	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_COTTONWOOD 14-33	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 2-18-10 RHS	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4997.00ft (Original Well Elev) Coordinates are relative to: P_COTTONWOOD 14-33
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: 0.47°

Separation Factor Plot



LEGEND

VERTICAL, PLAN#1 2-18-10 RHS WD  P_COTTONWOOD 23-33, P_COTTONWOOD 23-33, PLAN#1 2-18-10 RHS WD

 P_COTTONWOOD 36-33, P_