



US ROCKIES REGION PLANNING

COLORADO NOTHERN ZONE - 83

BERNHARDT STATE 23-36 PAD

P_BERNHARDT STATE 24-36

P_BERNHARDT STATE 24-36

Plan: PLAN #1 11-04-09 RHS

Standard Planning Report

04 November, 2009





Azimuths to True North
Magnetic North: 9.08°

Magnetic Field
Strength: 53287.7nT
Dip Angle: 67.06°
Date: 11/4/2009
Model: IGRF200510

WELL DETAILS: P_BERNHARDT STATE 24-36

+N/-S	+E/-W	Northing	Ground Level:	4834.00	Longitude	Slot
0.00	0.00	1372556.60	Easting	3182963.88	40° 21' 15.156 N	104° 50' 36.600 W

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
2676.00	2767.93	PARKMAN TOP
4404.00	4672.47	SUSSEX TOP
4787.00	5094.60	SHANNON TOP
6998.00	7388.54	NIO A TOP
7321.00	7711.54	CODELL TOP
7771.00	8161.54	JSAND TOP

SECTION DETAILS

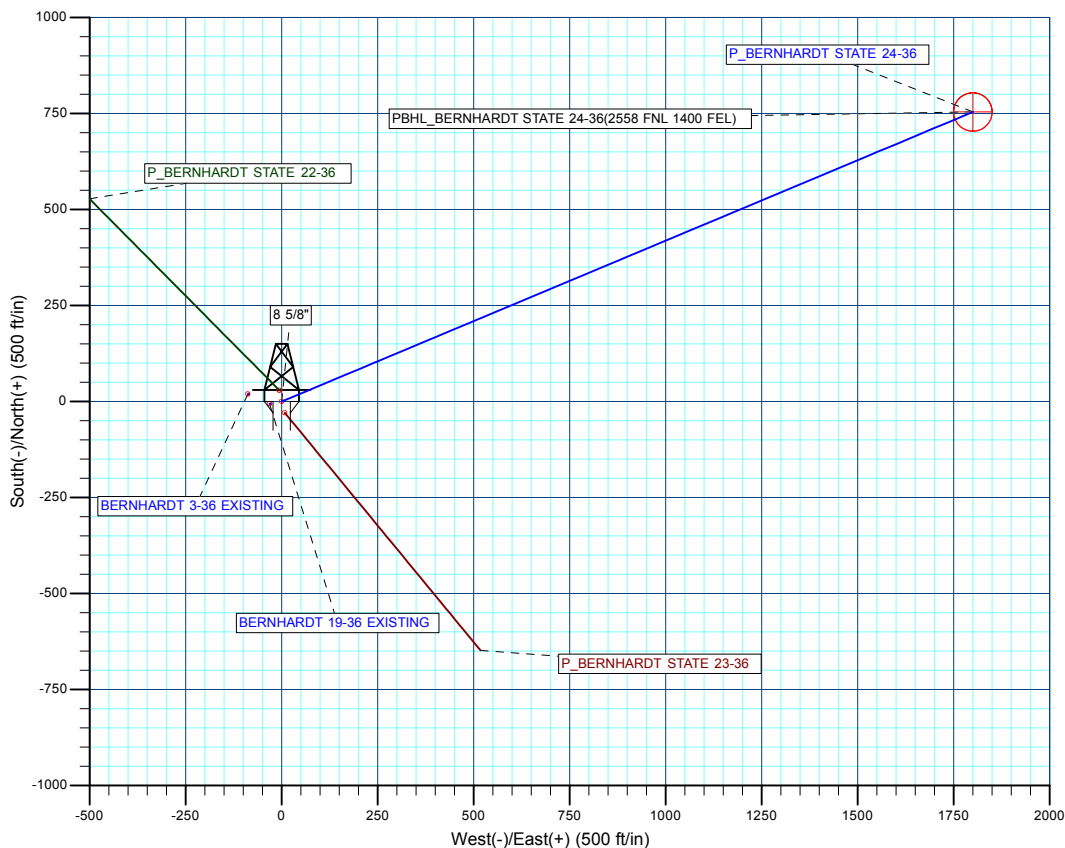
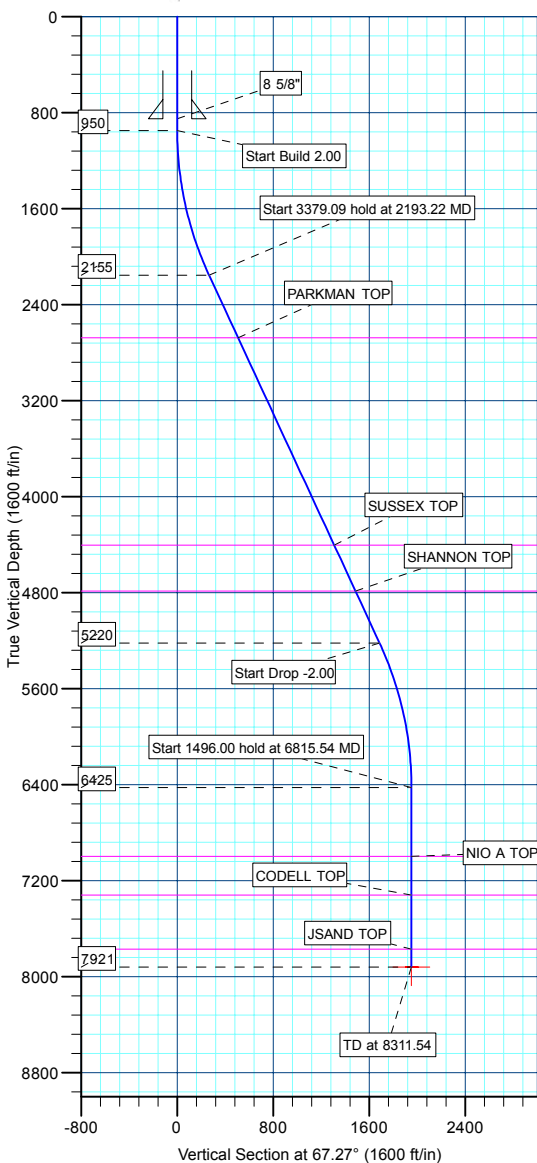
MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
950.00	0.00	0.00	950.00	0.00	0.00	0.00	0.00	0.00	
2193.22	24.86	67.27	2154.57	102.60	244.93	2.00	67.27	265.55	
5572.31	24.86	67.27	5220.43	651.56	1555.41	0.00	0.00	1686.37	
6815.54	0.00	0.00	6425.00	754.16	1800.34	2.00	180.00	1951.92	
8311.54	0.00	0.00	7921.00	754.16	1800.34	0.00	0.00	1951.92	PBHL_BERNHARDT STATE 24-36(2558 FNL 1400 FEL)

CASING DETAILS

TVD	MD	Name	Size
850.00	850.00	8 5/8"	8.62



KB ELEV_{WELL} @ 4849.00ft (Original Well Elev)
iRD ELEV: 4834.00



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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL	7921.00	754.16	1800.34	1373324.07	3184758.5840	40° 21' 22.608 N	104° 50' 13.344 W	Circle (Radius: 50.00)

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_BERNHARDT STATE 24-36
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4849.00ft (Original Well Elev)
Project:	COLORADO NOTHERN ZONE - 83	MD Reference:	WELL @ 4849.00ft (Original Well Elev)
Site:	BERNHARDT STATE 23-36 PAD	North Reference:	True
Well:	P_BERNHARDT STATE 24-36	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_BERNHARDT STATE 24-36		
Design:	PLAN #1 11-04-09 RHS		

Project	COLORADO NOTHERN 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						BERNHARDT STATE 23-36 PAD, SECTION 36 T5N R67W					
Site Position:				Northing:		1,372,585.71 ft		Latitude:		40° 21' 15.444 N	
From:		Lat/Long		Easting:		3,182,958.09 ft		Longitude:		104° 50' 36.672 W	
Position Uncertainty:		0.00 ft		Slot Radius:		in		Grid Convergence:		0.42 °	

Well	P_BERNHARDT STATE 24-36					
Well Position	+N/-S	-29.15 ft	Northing:	1,372,556.60 ft	Latitude:	40° 21' 15.156 N
	+E/-W	5.57 ft	Easting:	3,182,963.88 ft	Longitude:	104° 50' 36.600 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,834.00 ft

Wellbore	P_BERNHARDT STATE 24-36				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	11/4/2009	9.08	67.06	53,288

Design	PLAN #1 11-04-09 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	67.27

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	
950.00	0.00	0.00	950.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,193.22	24.86	67.27	2,154.57	102.60	244.93	2.00	2.00	0.00	67.27	
5,572.31	24.86	67.27	5,220.43	651.56	1,555.41	0.00	0.00	0.00	0.00	
6,815.54	0.00	0.00	6,425.00	754.16	1,800.34	2.00	-2.00	0.00	180.00	
8,311.54	0.00	0.00	7,921.00	754.16	1,800.34	0.00	0.00	0.00	0.00	PBHL_BERNHARD

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_BERNHARDT STATE 24-36
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4849.00ft (Original Well Elev)
Project:	COLORADO NOTHERN ZONE - 83	MD Reference:	WELL @ 4849.00ft (Original Well Elev)
Site:	BERNHARDT STATE 23-36 PAD	North Reference:	True
Well:	P_BERNHARDT STATE 24-36	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_BERNHARDT STATE 24-36		
Design:	PLAN #1 11-04-09 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									
950.00	0.00	0.00	950.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	1.00	67.27	1,000.00	0.17	0.40	0.44	2.00	2.00	0.00
1,100.00	3.00	67.27	1,099.93	1.52	3.62	3.93	2.00	2.00	0.00
1,200.00	5.00	67.27	1,199.68	4.21	10.05	10.90	2.00	2.00	0.00
1,300.00	7.00	67.27	1,299.13	8.25	19.70	21.35	2.00	2.00	0.00
1,400.00	9.00	67.27	1,398.15	13.63	32.53	35.27	2.00	2.00	0.00
1,500.00	11.00	67.27	1,496.63	20.34	48.55	52.63	2.00	2.00	0.00
1,600.00	13.00	67.27	1,594.44	28.37	67.72	73.42	2.00	2.00	0.00
1,700.00	15.00	67.27	1,691.46	37.72	90.03	97.62	2.00	2.00	0.00
1,800.00	17.00	67.27	1,787.58	48.36	115.46	125.18	2.00	2.00	0.00
1,900.00	19.00	67.27	1,882.68	60.30	143.96	156.08	2.00	2.00	0.00
2,000.00	21.00	67.27	1,976.65	73.52	175.50	190.28	2.00	2.00	0.00
2,100.00	23.00	67.27	2,069.36	87.99	210.05	227.74	2.00	2.00	0.00
Start 3379.09 hold at 2193.22 MD									
2,193.22	24.86	67.27	2,154.57	102.60	244.93	265.55	2.00	2.00	0.00
2,200.00	24.86	67.27	2,160.72	103.70	247.56	268.40	0.00	0.00	0.00
2,300.00	24.86	67.27	2,251.45	119.95	286.34	310.45	0.00	0.00	0.00
2,400.00	24.86	67.27	2,342.18	136.19	325.12	352.50	0.00	0.00	0.00
2,500.00	24.86	67.27	2,432.91	152.44	363.90	394.54	0.00	0.00	0.00
2,600.00	24.86	67.27	2,523.64	168.69	402.69	436.59	0.00	0.00	0.00
2,700.00	24.86	67.27	2,614.37	184.93	441.47	478.64	0.00	0.00	0.00
PARKMAN TOP									
2,767.93	24.86	67.27	2,676.00	195.97	467.81	507.20	0.00	0.00	0.00
2,800.00	24.86	67.27	2,705.10	201.18	480.25	520.68	0.00	0.00	0.00
2,900.00	24.86	67.27	2,795.83	217.42	519.03	562.73	0.00	0.00	0.00
3,000.00	24.86	67.27	2,886.56	233.67	557.81	604.78	0.00	0.00	0.00
3,100.00	24.86	67.27	2,977.29	249.91	596.60	646.83	0.00	0.00	0.00
3,200.00	24.86	67.27	3,068.02	266.16	635.38	688.87	0.00	0.00	0.00
3,300.00	24.86	67.27	3,158.75	282.41	674.16	730.92	0.00	0.00	0.00
3,400.00	24.86	67.27	3,249.48	298.65	712.94	772.97	0.00	0.00	0.00
3,500.00	24.86	67.27	3,340.21	314.90	751.72	815.02	0.00	0.00	0.00
3,600.00	24.86	67.27	3,430.94	331.14	790.51	857.06	0.00	0.00	0.00
3,700.00	24.86	67.27	3,521.67	347.39	829.29	899.11	0.00	0.00	0.00
3,800.00	24.86	67.27	3,612.40	363.63	868.07	941.16	0.00	0.00	0.00
3,900.00	24.86	67.27	3,703.13	379.88	906.85	983.20	0.00	0.00	0.00
4,000.00	24.86	67.27	3,793.86	396.13	945.64	1,025.25	0.00	0.00	0.00
4,100.00	24.86	67.27	3,884.60	412.37	984.42	1,067.30	0.00	0.00	0.00
4,200.00	24.86	67.27	3,975.33	428.62	1,023.20	1,109.35	0.00	0.00	0.00
4,300.00	24.86	67.27	4,066.06	444.86	1,061.98	1,151.39	0.00	0.00	0.00
4,400.00	24.86	67.27	4,156.79	461.11	1,100.76	1,193.44	0.00	0.00	0.00
4,500.00	24.86	67.27	4,247.52	477.36	1,139.55	1,235.49	0.00	0.00	0.00
4,600.00	24.86	67.27	4,338.25	493.60	1,178.33	1,277.54	0.00	0.00	0.00
SUSSEX TOP									
4,672.47	24.86	67.27	4,404.00	505.37	1,206.43	1,308.01	0.00	0.00	0.00
4,700.00	24.86	67.27	4,428.98	509.85	1,217.11	1,319.58	0.00	0.00	0.00
4,800.00	24.86	67.27	4,519.71	526.09	1,255.89	1,361.63	0.00	0.00	0.00
4,900.00	24.86	67.27	4,610.44	542.34	1,294.67	1,403.68	0.00	0.00	0.00
5,000.00	24.86	67.27	4,701.17	558.58	1,333.46	1,445.73	0.00	0.00	0.00
SHANNON TOP									
5,094.60	24.86	67.27	4,787.00	573.95	1,370.14	1,485.50	0.00	0.00	0.00
5,100.00	24.86	67.27	4,791.90	574.83	1,372.24	1,487.77	0.00	0.00	0.00
5,200.00	24.86	67.27	4,882.63	591.08	1,411.02	1,529.82	0.00	0.00	0.00
5,300.00	24.86	67.27	4,973.36	607.32	1,449.80	1,571.87	0.00	0.00	0.00

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Project:	COLORADO NOTHERN ZONE - 83	MD Reference:	WELL @ 4849.00ft (Original Well Elev)
Site:	BERNHARDT STATE 23-36 PAD	North Reference:	True
Well:	P_BERNHARDT STATE 24-36	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_BERNHARDT STATE 24-36		
Design:	PLAN #1 11-04-09 RHS		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
5,400.00	24.86	67.27	5,064.09	623.57	1,488.58	1,613.91	0.00	0.00	0.00
5,500.00	24.86	67.27	5,154.82	639.81	1,527.37	1,655.96	0.00	0.00	0.00
Start Drop -2.00									
5,572.31	24.86	67.27	5,220.43	651.56	1,555.41	1,686.37	0.00	0.00	0.00
5,600.00	24.31	67.27	5,245.61	656.01	1,566.04	1,697.89	2.00	-2.00	0.00
5,700.00	22.31	67.27	5,337.44	671.30	1,602.53	1,737.46	2.00	-2.00	0.00
5,800.00	20.31	67.27	5,430.60	685.34	1,636.05	1,773.80	2.00	-2.00	0.00
5,900.00	18.31	67.27	5,524.97	698.12	1,666.55	1,806.87	2.00	-2.00	0.00
6,000.00	16.31	67.27	5,620.43	709.61	1,693.99	1,836.62	2.00	-2.00	0.00
6,100.00	14.31	67.27	5,716.88	719.82	1,718.35	1,863.02	2.00	-2.00	0.00
6,200.00	12.31	67.27	5,814.19	728.71	1,739.58	1,886.05	2.00	-2.00	0.00
6,300.00	10.31	67.27	5,912.24	736.29	1,757.67	1,905.66	2.00	-2.00	0.00
6,400.00	8.31	67.27	6,010.92	742.54	1,772.59	1,921.84	2.00	-2.00	0.00
6,500.00	6.31	67.27	6,110.10	747.46	1,784.33	1,934.56	2.00	-2.00	0.00
6,600.00	4.31	67.27	6,209.67	751.03	1,792.87	1,943.81	2.00	-2.00	0.00
6,700.00	2.31	67.27	6,309.49	753.26	1,798.19	1,949.59	2.00	-2.00	0.00
6,800.00	0.31	67.27	6,409.46	754.15	1,800.30	1,951.88	2.00	-2.00	0.00
Start 1496.00 hold at 6815.54 MD									
6,815.54	0.00	0.00	6,425.00	754.16	1,800.34	1,951.92	2.00	-2.00	0.00
6,900.00	0.00	0.00	6,509.46	754.16	1,800.34	1,951.92	0.00	0.00	0.00
7,000.00	0.00	0.00	6,609.46	754.16	1,800.34	1,951.92	0.00	0.00	0.00
7,100.00	0.00	0.00	6,709.46	754.16	1,800.34	1,951.92	0.00	0.00	0.00
7,200.00	0.00	0.00	6,809.46	754.16	1,800.34	1,951.92	0.00	0.00	0.00
7,300.00	0.00	0.00	6,909.46	754.16	1,800.34	1,951.92	0.00	0.00	0.00
NIO A TOP									
7,388.54	0.00	0.00	6,998.00	754.16	1,800.34	1,951.92	0.00	0.00	0.00
7,400.00	0.00	0.00	7,009.46	754.16	1,800.34	1,951.92	0.00	0.00	0.00
7,500.00	0.00	0.00	7,109.46	754.16	1,800.34	1,951.92	0.00	0.00	0.00
7,600.00	0.00	0.00	7,209.46	754.16	1,800.34	1,951.92	0.00	0.00	0.00
7,700.00	0.00	0.00	7,309.46	754.16	1,800.34	1,951.92	0.00	0.00	0.00
CODELL TOP									
7,711.54	0.00	0.00	7,321.00	754.16	1,800.34	1,951.92	0.00	0.00	0.00
7,800.00	0.00	0.00	7,409.46	754.16	1,800.34	1,951.92	0.00	0.00	0.00
7,900.00	0.00	0.00	7,509.46	754.16	1,800.34	1,951.92	0.00	0.00	0.00
8,000.00	0.00	0.00	7,609.46	754.16	1,800.34	1,951.92	0.00	0.00	0.00
8,100.00	0.00	0.00	7,709.46	754.16	1,800.34	1,951.92	0.00	0.00	0.00
JSAND TOP									
8,161.54	0.00	0.00	7,771.00	754.16	1,800.34	1,951.92	0.00	0.00	0.00
8,200.00	0.00	0.00	7,809.46	754.16	1,800.34	1,951.92	0.00	0.00	0.00
8,300.00	0.00	0.00	7,909.46	754.16	1,800.34	1,951.92	0.00	0.00	0.00
PBHL_BERNHARDT STATE 24-36(2558 FNL 1400 FEL)									
8,311.54	0.00	0.00	7,921.00	754.16	1,800.34	1,951.92	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_BERNHARDT	0.00	0.00	7,921.00	754.16	1,800.34	1,373,324.07	3,184,758.58	40° 21' 22.608 N	104° 50' 13.344 W
- plan hits target center									
- Circle (radius 50.00)									

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_BERNHARDT STATE 24-36
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4849.00ft (Original Well Elev)
Project:	COLORADO NOTHERN ZONE - 83	MD Reference:	WELL @ 4849.00ft (Original Well Elev)
Site:	BERNHARDT STATE 23-36 PAD	North Reference:	True
Well:	P_BERNHARDT STATE 24-36	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_BERNHARDT STATE 24-36		
Design:	PLAN #1 11-04-09 RHS		

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
850.00	850.00	8 5/8"	8.62	11.00	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,767.93	2,676.00	PARKMAN TOP				
4,672.47	4,404.00	SUSSEX TOP				
5,094.60	4,787.00	SHANNON TOP				
7,388.54	6,998.00	NIO A TOP				
7,711.54	7,321.00	CODELL TOP				
8,161.54	7,771.00	JSAND TOP				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
950.00	950.00	0.00	0.00	Start Build 2.00	
2,193.22	2,154.57	102.60	244.93	Start 3379.09 hold at 2193.22 MD	
5,572.31	5,220.43	651.56	1,555.41	Start Drop -2.00	
6,815.54	6,425.00	754.16	1,800.34	Start 1496.00 hold at 6815.54 MD	
8,311.54	7,921.00	754.16	1,800.34	TD at 8311.54	



US ROCKIES REGION PLANNING

**COLORADO NOTHERN ZONE - 83
BERNHARDT STATE 23-36 PAD
P_BERNHARDT STATE 24-36**

**P_BERNHARDT STATE 24-36
PLAN #1 11-04-09 RHS**

Anticollision Report

04 November, 2009



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_BERNHARDT STATE 24-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4849.00ft (Original Well Elev)
Reference Site:	BERNHARDT STATE 23-36 PAD	MD Reference:	WELL @ 4849.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_BERNHARDT STATE 24-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BERNHARDT STATE 24-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 11-04-09 RHS	Offset TVD Reference:	Offset Datum

Reference	PLAN #1 11-04-09 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 11/4/2009			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	8,311.54	PLAN #1 11-04-09 RHS (P_BERNHARDT	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						
BERNHARDT STATE 23-36 PAD						
BERNHARDT 19-36 EXISTING - BERNHARDT 19-36 E	950.00	950.00	32.03	-5.68	0.849	Level 1, CC
BERNHARDT 19-36 EXISTING - BERNHARDT 19-36 E	1,000.00	1,000.00	32.46	-7.36	0.815	Level 1, SF
BERNHARDT 19-36 EXISTING - BERNHARDT 19-36 E	1,100.00	1,099.93	35.88	-8.09	0.816	Level 1, ES
BERNHARDT 3-36 EXISTING - BERNHARDT 3-36 EXIS	950.00	950.00	89.69	51.99	2.379	CC
BERNHARDT 3-36 EXISTING - BERNHARDT 3-36 EXIS	1,100.00	1,099.93	92.92	48.94	2.113	ES
BERNHARDT 3-36 EXISTING - BERNHARDT 3-36 EXIS	1,200.00	1,199.68	98.78	50.68	2.054	SF
P_BERNHARDT STATE 22-36 - P_BERNHARDT STATI	950.00	950.00	29.68	25.67	7.398	CC, ES
P_BERNHARDT STATE 22-36 - P_BERNHARDT STATI	1,100.00	1,098.44	32.65	27.99	7.012	SF
P_BERNHARDT STATE 23-36 - P_BERNHARDT STATI	950.00	950.00	30.33	26.31	7.559	CC, ES
P_BERNHARDT STATE 23-36 - P_BERNHARDT STATI	1,000.00	999.51	30.78	26.56	7.295	SF

Offset Design	BERNHARDT STATE 23-36 PAD - BERNHARDT 19-36 EXISTING - BERNHARDT 19-36 EXISTING - E												Offset Site Error:	0.00 ft
Survey Program:	0-UNKNOWN												Offset Well Error:	0.00 ft
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		Separation Factor	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	-100.49	-5.83	-31.49	32.03					
100.00	100.00	100.00	100.00	0.10	1.70	-100.49	-5.83	-31.49	32.03	30.23	1.80	17.838		
200.00	200.00	200.00	200.00	0.32	5.70	-100.49	-5.83	-31.49	32.03	26.01	6.02	5.320		
300.00	300.00	300.00	300.00	0.55	9.70	-100.49	-5.83	-31.49	32.03	21.78	10.25	3.126		
400.00	400.00	400.00	400.00	0.77	13.70	-100.49	-5.83	-31.49	32.03	17.56	14.47	2.213		
500.00	500.00	500.00	500.00	0.99	17.70	-100.49	-5.83	-31.49	32.03	13.33	18.69	1.713		
600.00	600.00	600.00	600.00	1.22	21.70	-100.49	-5.83	-31.49	32.03	9.11	22.92	1.397	Level 3	
700.00	700.00	700.00	700.00	1.44	25.70	-100.49	-5.83	-31.49	32.03	4.88	27.14	1.180	Level 2	
800.00	800.00	800.00	800.00	1.67	29.70	-100.49	-5.83	-31.49	32.03	0.66	31.37	1.021	Level 2	
900.00	900.00	900.00	900.00	1.89	33.70	-100.49	-5.83	-31.49	32.03	-3.57	35.59	0.900	Level 1	
950.00	950.00	950.00	950.00	2.01	35.70	-100.49	-5.83	-31.49	32.03	-5.68	37.71	0.849	Level 1, CC	
1,000.00	1,000.00	1,000.00	1,000.00	2.11	37.70	-167.93	-5.83	-31.49	32.46	-7.36	39.81	0.815	Level 1, SF	
1,100.00	1,099.93	1,099.93	1,099.93	2.33	41.70	-169.08	-5.83	-31.49	35.88	-8.09	43.97	0.816	Level 1, ES	
1,200.00	1,199.68	1,199.68	1,199.68	2.55	45.69	-170.83	-5.83	-31.49	42.74	-5.31	48.06	0.889	Level 1	
1,300.00	1,299.13	1,299.13	1,299.13	2.78	49.67	-172.60	-5.83	-31.49	53.09	1.04	52.06	1.020	Level 2	
1,400.00	1,398.15	1,398.15	1,398.15	3.04	53.63	-174.11	-5.83	-31.49	66.92	10.97	55.94	1.196	Level 2	
1,500.00	1,496.63	1,496.63	1,496.63	3.34	57.57	-175.29	-5.83	-31.49	84.21	24.50	59.71	1.410	Level 3	

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_BERNHARDT STATE 24-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4849.00ft (Original Well Elev)
Reference Site:	BERNHARDT STATE 23-36 PAD	MD Reference:	WELL @ 4849.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_BERNHARDT STATE 24-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BERNHARDT STATE 24-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 11-04-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 0-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
1,600.00	1,594.44	1,594.44	1,594.44	3.67	61.48	-176.19	-5.83	-31.49	104.95	41.62	63.32	1.657	
1,700.00	1,691.46	1,691.46	1,691.46	4.06	65.36	-176.88	-5.83	-31.49	129.09	62.31	66.78	1.933	
1,800.00	1,787.58	1,787.58	1,787.58	4.51	69.20	-177.40	-5.83	-31.49	156.63	86.56	70.07	2.235	
1,900.00	1,882.68	1,882.68	1,882.68	5.03	73.01	-177.81	-5.83	-31.49	187.50	114.33	73.17	2.563	
2,000.00	1,976.65	1,976.65	1,976.65	5.61	76.77	-178.12	-5.83	-31.49	221.68	145.62	76.06	2.915	
2,100.00	2,069.36	2,069.36	2,069.36	6.26	80.47	-178.37	-5.83	-31.49	259.13	180.39	78.74	3.291	
2,193.22	2,154.57	2,154.57	2,154.57	6.94	83.88	-178.56	-5.83	-31.49	296.93	215.90	81.03	3.665	
2,200.00	2,160.72	2,160.72	2,160.72	6.99	84.13	-178.57	-5.83	-31.49	299.78	218.51	81.27	3.689	
2,300.00	2,251.45	2,251.45	2,251.45	7.77	87.76	-178.75	-5.83	-31.49	341.82	256.94	84.88	4.027	
2,400.00	2,342.18	2,342.18	2,342.18	8.56	91.39	-178.88	-5.83	-31.49	383.86	295.36	88.49	4.338	
2,500.00	2,432.91	2,432.91	2,432.91	9.37	95.02	-178.99	-5.83	-31.49	425.90	333.79	92.11	4.624	
2,600.00	2,523.64	2,523.64	2,523.64	10.18	98.65	-179.08	-5.83	-31.49	467.94	372.20	95.74	4.888	
2,700.00	2,614.37	2,614.37	2,614.37	11.01	102.27	-179.16	-5.83	-31.49	509.98	410.61	99.37	5.132	
2,800.00	2,705.10	2,705.10	2,705.10	11.84	105.90	-179.22	-5.83	-31.49	552.03	449.02	103.00	5.359	
2,900.00	2,795.83	2,795.83	2,795.83	12.68	109.53	-179.28	-5.83	-31.49	594.07	487.43	106.64	5.571	
3,000.00	2,886.56	2,886.56	2,886.56	13.52	113.16	-179.33	-5.83	-31.49	636.12	525.83	110.28	5.768	
3,100.00	2,977.29	2,977.29	2,977.29	14.36	116.79	-179.37	-5.83	-31.49	678.16	564.24	113.92	5.953	
3,200.00	3,068.02	3,068.02	3,068.02	15.21	120.42	-179.40	-5.83	-31.49	720.21	602.64	117.57	6.126	
3,300.00	3,158.75	3,158.75	3,158.75	16.06	124.05	-179.44	-5.83	-31.49	762.25	641.04	121.22	6.288	
3,400.00	3,249.48	3,249.48	3,249.48	16.91	127.68	-179.47	-5.83	-31.49	804.30	679.43	124.87	6.441	
3,500.00	3,340.21	3,340.21	3,340.21	17.77	131.31	-179.49	-5.83	-31.49	846.34	717.83	128.51	6.586	
3,600.00	3,430.94	3,430.94	3,430.94	18.63	134.94	-179.52	-5.83	-31.49	888.39	756.22	132.17	6.722	
3,700.00	3,521.67	3,521.67	3,521.67	19.48	138.57	-179.54	-5.83	-31.49	930.44	794.62	135.82	6.851	
3,800.00	3,612.40	3,612.40	3,612.40	20.34	142.20	-179.56	-5.83	-31.49	972.48	833.01	139.47	6.973	
3,900.00	3,703.13	3,703.13	3,703.13	21.20	145.83	-179.58	-5.83	-31.49	1,014.53	871.40	143.13	7.088	
4,000.00	3,793.86	3,793.86	3,793.86	22.06	149.45	-179.59	-5.83	-31.49	1,056.58	909.79	146.78	7.198	
4,100.00	3,884.60	3,884.60	3,884.60	22.92	153.08	-179.61	-5.83	-31.49	1,098.62	948.19	150.44	7.303	
4,200.00	3,975.33	3,975.33	3,975.33	23.78	156.71	-179.62	-5.83	-31.49	1,140.67	986.58	154.09	7.402	
4,300.00	4,066.06	4,066.06	4,066.06	24.65	160.34	-179.64	-5.83	-31.49	1,182.71	1,024.96	157.75	7.497	
4,400.00	4,156.79	4,156.79	4,156.79	25.51	163.97	-179.65	-5.83	-31.49	1,224.76	1,063.35	161.41	7.588	
4,500.00	4,247.52	4,247.52	4,247.52	26.37	167.60	-179.66	-5.83	-31.49	1,266.81	1,101.74	165.07	7.675	
4,600.00	4,338.25	4,338.25	4,338.25	27.24	171.23	-179.67	-5.83	-31.49	1,308.85	1,140.13	168.72	7.757	
4,700.00	4,428.98	4,428.98	4,428.98	28.10	174.86	-179.68	-5.83	-31.49	1,350.90	1,178.52	172.38	7.837	
4,800.00	4,519.71	4,519.71	4,519.71	28.97	178.49	-179.69	-5.83	-31.49	1,392.95	1,216.91	176.04	7.913	
4,900.00	4,610.44	4,610.44	4,610.44	29.83	182.12	-179.70	-5.83	-31.49	1,434.99	1,255.29	179.70	7.985	
5,000.00	4,701.17	4,701.17	4,701.17	30.70	185.75	-179.71	-5.83	-31.49	1,477.04	1,293.68	183.36	8.055	
5,100.00	4,791.90	4,791.90	4,791.90	31.57	189.38	-179.72	-5.83	-31.49	1,519.09	1,332.07	187.02	8.122	
5,200.00	4,882.63	4,882.63	4,882.63	32.43	193.01	-179.73	-5.83	-31.49	1,561.14	1,370.45	190.68	8.187	
5,300.00	4,973.36	4,973.36	4,973.36	33.30	196.63	-179.73	-5.83	-31.49	1,603.18	1,408.84	194.34	8.249	
5,400.00	5,064.09	5,064.09	5,064.09	34.16	200.26	-179.74	-5.83	-31.49	1,645.23	1,447.22	198.01	8.309	
5,500.00	5,154.82	5,154.82	5,154.82	35.03	203.89	-179.75	-5.83	-31.49	1,687.28	1,485.61	201.67	8.367	
5,572.31	5,220.43	5,220.43	5,220.43	35.66	206.52	-179.75	-5.83	-31.49	1,717.68	1,513.37	204.31	8.407	
5,600.00	5,245.61	5,245.61	5,245.61	35.87	207.52	-179.75	-5.83	-31.49	1,729.20	1,523.07	206.13	8.389	
5,700.00	5,337.44	5,337.44	5,337.44	36.53	211.20	-179.76	-5.83	-31.49	1,768.77	1,556.12	212.65	8.318	
5,800.00	5,430.60	5,430.60	5,430.60	37.13	214.92	-179.77	-5.83	-31.49	1,805.11	1,585.98	219.13	8.237	
5,900.00	5,524.97	5,524.97	5,524.97	37.68	218.70	-179.78	-5.83	-31.49	1,838.18	1,612.71	225.47	8.153	
6,000.00	5,620.43	5,620.43	5,620.43	38.19	222.52	-179.78	-5.83	-31.49	1,867.93	1,636.29	231.65	8.064	
6,100.00	5,716.88	5,716.88	5,716.88	38.63	226.38	-179.79	-5.83	-31.49	1,894.34	1,656.70	237.63	7.972	
6,200.00	5,814.19	5,814.19	5,814.19	39.03	230.27	-179.79	-5.83	-31.49	1,917.36	1,673.94	243.42	7.877	
6,300.00	5,912.24	5,912.24	5,912.24	39.38	234.19	-179.80	-5.83	-31.49	1,936.97	1,688.00	248.97	7.780	
6,400.00	6,010.92	6,010.92	6,010.92	39.67	238.14	-179.80	-5.83	-31.49	1,953.15	1,698.86	254.29	7.681	
6,500.00	6,110.10	6,110.10	6,110.10	39.91	242.10	-179.80	-5.83	-31.49	1,965.87	1,706.54	259.33	7.581	

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_BERNHARDT STATE 24-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4849.00ft (Original Well Elev)
Reference Site:	BERNHARDT STATE 23-36 PAD	MD Reference:	WELL @ 4849.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_BERNHARDT STATE 24-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BERNHARDT STATE 24-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 11-04-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 0-UNKNOWN												Offset Well Error:	0.00 ft
Reference	Offset	Semi Major Axis		Distance									
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	6,209.67	6,209.67	6,209.67	40.10	246.09	-179.80	-5.83	-31.49	1,975.13	1,711.04	264.09	7.479	
6,700.00	6,309.49	6,309.49	6,309.49	40.25	250.08	-179.80	-5.83	-31.49	1,980.90	1,712.36	268.54	7.377	
6,800.00	6,409.46	6,409.46	6,409.46	40.35	254.08	-179.80	-5.83	-31.49	1,983.19	1,710.52	272.67	7.273	
6,815.54	6,425.00	6,425.00	6,425.00	40.36	254.70	-112.53	-5.83	-31.49	1,983.23	1,709.95	273.28	7.257	
6,900.00	6,509.46	6,509.46	6,509.46	40.41	258.08	-112.53	-5.83	-31.49	1,983.23	1,706.46	276.78	7.165	
7,000.00	6,609.46	6,609.46	6,609.46	40.49	262.08	-112.53	-5.83	-31.49	1,983.23	1,702.30	280.93	7.060	
7,100.00	6,709.46	6,709.46	6,709.46	40.57	266.08	-112.53	-5.83	-31.49	1,983.23	1,698.15	285.08	6.957	
7,200.00	6,809.46	6,809.46	6,809.46	40.65	270.08	-112.53	-5.83	-31.49	1,983.23	1,694.00	289.23	6.857	
7,300.00	6,909.46	6,909.46	6,909.46	40.73	274.08	-112.53	-5.83	-31.49	1,983.23	1,689.84	293.39	6.760	
7,400.00	7,009.46	7,009.46	7,009.46	40.81	278.08	-112.53	-5.83	-31.49	1,983.23	1,685.69	297.54	6.665	
7,500.00	7,109.46	7,109.46	7,109.46	40.89	282.08	-112.53	-5.83	-31.49	1,983.23	1,681.53	301.70	6.573	
7,600.00	7,209.46	7,209.46	7,209.46	40.98	286.08	-112.53	-5.83	-31.49	1,983.23	1,677.37	305.86	6.484	
7,700.00	7,309.46	7,309.46	7,309.46	41.06	290.08	-112.53	-5.83	-31.49	1,983.23	1,673.21	310.02	6.397	
7,800.00	7,409.46	7,409.46	7,409.46	41.15	294.08	-112.53	-5.83	-31.49	1,983.23	1,669.05	314.18	6.312	
7,900.00	7,509.46	7,509.46	7,509.46	41.23	298.08	-112.53	-5.83	-31.49	1,983.23	1,664.89	318.35	6.230	
7,952.74	7,562.21	7,562.21	7,562.21	41.28	300.19	-112.53	-5.83	-31.49	1,983.23	1,662.69	320.54	6.187	
8,000.00	7,609.46	7,580.00	7,580.00	41.32	300.90	-112.53	-5.83	-31.49	1,983.45	1,662.12	321.33	6.173	
8,100.00	7,709.46	7,580.00	7,580.00	41.41	300.90	-112.53	-5.83	-31.49	1,987.45	1,665.96	321.50	6.182	
8,200.00	7,809.46	7,580.00	7,580.00	41.50	300.90	-112.53	-5.83	-31.49	1,996.46	1,674.80	321.66	6.207	
8,300.00	7,909.46	7,580.00	7,580.00	41.59	300.90	-112.53	-5.83	-31.49	2,010.41	1,688.58	321.83	6.247	
8,311.54	7,921.00	7,580.00	7,580.00	41.60	300.90	-112.53	-5.83	-31.49	2,012.33	1,690.49	321.85	6.252	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_BERNHARDT STATE 24-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4849.00ft (Original Well Elev)
Reference Site:	BERNHARDT STATE 23-36 PAD	MD Reference:	WELL @ 4849.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_BERNHARDT STATE 24-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BERNHARDT STATE 24-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 11-04-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 0-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						
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	-77.33	19.67	-87.51	89.69				
100.00	100.00	100.00	100.00	0.10	1.70	-77.33	19.67	-87.51	89.69	87.90	1.80	49.954	
200.00	200.00	200.00	200.00	0.32	5.70	-77.33	19.67	-87.51	89.69	83.67	6.02	14.899	
300.00	300.00	300.00	300.00	0.55	9.70	-77.33	19.67	-87.51	89.69	79.45	10.25	8.755	
400.00	400.00	400.00	400.00	0.77	13.70	-77.33	19.67	-87.51	89.69	75.22	14.47	6.199	
500.00	500.00	500.00	500.00	0.99	17.70	-77.33	19.67	-87.51	89.69	71.00	18.69	4.798	
600.00	600.00	600.00	600.00	1.22	21.70	-77.33	19.67	-87.51	89.69	66.77	22.92	3.913	
700.00	700.00	700.00	700.00	1.44	25.70	-77.33	19.67	-87.51	89.69	62.55	27.14	3.304	
800.00	800.00	800.00	800.00	1.67	29.70	-77.33	19.67	-87.51	89.69	58.33	31.37	2.859	
900.00	900.00	900.00	900.00	1.89	33.70	-77.33	19.67	-87.51	89.69	54.10	35.59	2.520	
950.00	950.00	950.00	950.00	2.01	35.70	-77.33	19.67	-87.51	89.69	51.99	37.71	2.379 CC	
1,000.00	1,000.00	1,000.00	1,000.00	2.11	37.70	-144.76	19.67	-87.51	90.05	50.24	39.81	2.262	
1,100.00	1,099.93	1,099.93	1,099.93	2.33	41.70	-145.97	19.67	-87.51	92.92	48.94	43.98	2.113 ES	
1,200.00	1,199.68	1,199.68	1,199.68	2.55	45.69	-148.17	19.67	-87.51	98.78	50.68	48.10	2.054 SF	
1,300.00	1,299.13	1,299.13	1,299.13	2.78	49.67	-151.01	19.67	-87.51	107.81	55.68	52.14	2.068	
1,400.00	1,398.15	1,398.15	1,398.15	3.04	53.63	-154.11	19.67	-87.51	120.19	64.13	56.07	2.144	
1,500.00	1,496.63	1,496.63	1,496.63	3.34	57.57	-157.18	19.67	-87.51	136.06	76.20	59.86	2.273	
1,600.00	1,594.44	1,594.44	1,594.44	3.67	61.48	-160.01	19.67	-87.51	155.48	91.97	63.51	2.448	
1,700.00	1,691.46	1,691.46	1,691.46	4.06	65.36	-162.51	19.67	-87.51	178.46	111.47	66.99	2.664	
1,800.00	1,787.58	1,787.58	1,787.58	4.51	69.20	-164.68	19.67	-87.51	204.99	134.70	70.29	2.916	
1,900.00	1,882.68	1,882.68	1,882.68	5.03	73.01	-166.52	19.67	-87.51	235.01	161.62	73.39	3.202	
2,000.00	1,976.65	1,976.65	1,976.65	5.61	76.77	-168.07	19.67	-87.51	268.47	192.19	76.28	3.519	
2,100.00	2,069.36	2,069.36	2,069.36	6.26	80.47	-169.38	19.67	-87.51	305.31	226.35	78.96	3.867	
2,193.22	2,154.57	2,154.57	2,154.57	6.94	83.88	-170.40	19.67	-87.51	342.63	261.39	81.24	4.217	
2,200.00	2,160.72	2,160.72	2,160.72	6.99	84.13	-170.48	19.67	-87.51	345.45	263.96	81.48	4.239	
2,300.00	2,251.45	2,251.45	2,251.45	7.77	87.76	-171.51	19.67	-87.51	387.07	302.02	85.05	4.551	
2,400.00	2,342.18	2,342.18	2,342.18	8.56	91.39	-172.34	19.67	-87.51	428.77	340.14	88.63	4.838	
2,500.00	2,432.91	2,432.91	2,432.91	9.37	95.02	-173.02	19.67	-87.51	470.54	378.31	92.22	5.102	
2,600.00	2,523.64	2,523.64	2,523.64	10.18	98.65	-173.59	19.67	-87.51	512.35	416.52	95.83	5.347	
2,700.00	2,614.37	2,614.37	2,614.37	11.01	102.27	-174.08	19.67	-87.51	554.19	454.75	99.44	5.573	
2,800.00	2,705.10	2,705.10	2,705.10	11.84	105.90	-174.49	19.67	-87.51	596.07	493.01	103.06	5.784	
2,900.00	2,795.83	2,795.83	2,795.83	12.68	109.53	-174.85	19.67	-87.51	637.97	531.28	106.68	5.980	
3,000.00	2,886.56	2,886.56	2,886.56	13.52	113.16	-175.17	19.67	-87.51	679.88	569.57	110.31	6.163	
3,100.00	2,977.29	2,977.29	2,977.29	14.36	116.79	-175.45	19.67	-87.51	721.82	607.87	113.95	6.335	
3,200.00	3,068.02	3,068.02	3,068.02	15.21	120.42	-175.70	19.67	-87.51	763.76	646.18	117.58	6.496	
3,300.00	3,158.75	3,158.75	3,158.75	16.06	124.05	-175.93	19.67	-87.51	805.71	684.49	121.22	6.647	
3,400.00	3,249.48	3,249.48	3,249.48	16.91	127.68	-176.13	19.67	-87.51	847.68	722.82	124.86	6.789	
3,500.00	3,340.21	3,340.21	3,340.21	17.77	131.31	-176.31	19.67	-87.51	889.65	761.14	128.51	6.923	
3,600.00	3,430.94	3,430.94	3,430.94	18.63	134.94	-176.48	19.67	-87.51	931.63	799.48	132.15	7.050	
3,700.00	3,521.67	3,521.67	3,521.67	19.48	138.57	-176.63	19.67	-87.51	973.61	837.81	135.80	7.169	
3,800.00	3,612.40	3,612.40	3,612.40	20.34	142.20	-176.77	19.67	-87.51	1,015.60	876.16	139.45	7.283	
3,900.00	3,703.13	3,703.13	3,703.13	21.20	145.83	-176.90	19.67	-87.51	1,057.60	914.50	143.10	7.391	
4,000.00	3,793.86	3,793.86	3,793.86	22.06	149.45	-177.02	19.67	-87.51	1,099.60	952.85	146.75	7.493	
4,100.00	3,884.60	3,884.60	3,884.60	22.92	153.08	-177.13	19.67	-87.51	1,141.60	991.20	150.40	7.590	
4,200.00	3,975.33	3,975.33	3,975.33	23.78	156.71	-177.23	19.67	-87.51	1,183.60	1,029.55	154.05	7.683	
4,300.00	4,066.06	4,066.06	4,066.06	24.65	160.34	-177.32	19.67	-87.51	1,225.61	1,067.90	157.71	7.771	
4,400.00	4,156.79	4,156.79	4,156.79	25.51	163.97	-177.41	19.67	-87.51	1,267.62	1,106.26	161.36	7.856	
4,500.00	4,247.52	4,247.52	4,247.52	26.37	167.60	-177.49	19.67	-87.51	1,309.64	1,144.62	165.02	7.936	
4,600.00	4,338.25	4,338.25	4,338.25	27.24	171.23	-177.57	19.67	-87.51	1,351.65	1,182.98	168.67	8.013	
4,700.00	4,428.98	4,428.98	4,428.98	28.10	174.86	-177.65	19.67	-87.51	1,393.67	1,221.34	172.33	8.087	
4,800.00	4,519.71	4,519.71	4,519.71	28.97	178.49	-177.71	19.67	-87.51	1,435.69	1,259.70	175.99	8.158	
4,900.00	4,610.44	4,610.44	4,610.44	29.83	182.12	-177.78	19.67	-87.51	1,477.71	1,298.06	179.65	8.226	

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_BERNHARDT STATE 24-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4849.00ft (Original Well Elev)
Reference Site:	BERNHARDT STATE 23-36 PAD	MD Reference:	WELL @ 4849.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_BERNHARDT STATE 24-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BERNHARDT STATE 24-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 11-04-09 RHS	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 0-UNKNOWN												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,000.00	4,701.17	4,701.17	4,701.17	30.70	185.75	-177.84	19.67	-87.51	1,519.73	1,336.43	183.30	8.291	
5,100.00	4,791.90	4,791.90	4,791.90	31.57	189.38	-177.90	19.67	-87.51	1,561.75	1,374.79	186.96	8.353	
5,200.00	4,882.63	4,882.63	4,882.63	32.43	193.01	-177.95	19.67	-87.51	1,603.78	1,413.16	190.62	8.413	
5,300.00	4,973.36	4,973.36	4,973.36	33.30	196.63	-178.01	19.67	-87.51	1,645.80	1,451.52	194.28	8.471	
5,400.00	5,064.09	5,064.09	5,064.09	34.16	200.26	-178.06	19.67	-87.51	1,687.83	1,489.89	197.94	8.527	
5,500.00	5,154.82	5,154.82	5,154.82	35.03	203.89	-178.10	19.67	-87.51	1,729.86	1,528.26	201.60	8.581	
5,572.31	5,220.43	5,220.43	5,220.43	35.66	206.52	-178.14	19.67	-87.51	1,760.25	1,556.00	204.25	8.618	
5,600.00	5,245.61	5,245.61	5,245.61	35.87	207.52	-178.16	19.67	-87.51	1,771.77	1,565.70	206.06	8.598	
5,700.00	5,337.44	5,337.44	5,337.44	36.53	211.20	-178.22	19.67	-87.51	1,811.32	1,598.65	212.67	8.517	
5,800.00	5,430.60	5,430.60	5,430.60	37.13	214.92	-178.28	19.67	-87.51	1,847.64	1,628.50	219.15	8.431	
5,900.00	5,524.97	5,524.97	5,524.97	37.68	218.70	-178.33	19.67	-87.51	1,880.70	1,655.21	225.49	8.341	
6,000.00	5,620.43	5,620.43	5,620.43	38.19	222.52	-178.38	19.67	-87.51	1,910.44	1,678.78	231.66	8.247	
6,100.00	5,716.88	5,716.88	5,716.88	38.63	226.38	-178.41	19.67	-87.51	1,936.84	1,699.19	237.64	8.150	
6,200.00	5,814.19	5,814.19	5,814.19	39.03	230.27	-178.45	19.67	-87.51	1,959.85	1,716.42	243.43	8.051	
6,300.00	5,912.24	5,912.24	5,912.24	39.38	234.19	-178.47	19.67	-87.51	1,979.46	1,730.47	248.98	7.950	
6,400.00	6,010.92	6,010.92	6,010.92	39.67	238.14	-178.49	19.67	-87.51	1,995.63	1,741.34	254.29	7.848	
6,500.00	6,110.10	6,110.10	6,110.10	39.91	242.10	-178.51	19.67	-87.51	2,008.35	1,749.01	259.34	7.744	
6,600.00	6,209.67	6,209.67	6,209.67	40.10	246.09	-178.52	19.67	-87.51	2,017.60	1,753.50	264.10	7.640	
6,700.00	6,309.49	6,309.49	6,309.49	40.25	250.08	-178.53	19.67	-87.51	2,023.37	1,754.83	268.55	7.535	
6,800.00	6,409.46	6,409.46	6,409.46	40.35	254.08	-178.53	19.67	-87.51	2,025.66	1,752.99	272.67	7.429	
6,815.54	6,425.00	6,425.00	6,425.00	40.36	254.70	-111.26	19.67	-87.51	2,025.70	1,752.42	273.28	7.412	
6,900.00	6,509.46	6,509.46	6,509.46	40.41	258.08	-111.26	19.67	-87.51	2,025.70	1,748.92	276.78	7.319	
7,000.00	6,609.46	6,609.46	6,609.46	40.49	262.08	-111.26	19.67	-87.51	2,025.70	1,744.77	280.93	7.211	
7,100.00	6,709.46	6,709.46	6,709.46	40.57	266.08	-111.26	19.67	-87.51	2,025.70	1,740.62	285.09	7.106	
7,200.00	6,809.46	6,809.46	6,809.46	40.65	270.08	-111.26	19.67	-87.51	2,025.70	1,736.46	289.24	7.004	
7,300.00	6,909.46	6,909.46	6,909.46	40.73	274.08	-111.26	19.67	-87.51	2,025.70	1,732.31	293.39	6.904	
7,400.00	7,009.46	7,009.46	7,009.46	40.81	278.08	-111.26	19.67	-87.51	2,025.70	1,728.15	297.55	6.808	
7,500.00	7,109.46	7,109.46	7,109.46	40.89	282.08	-111.26	19.67	-87.51	2,025.70	1,723.99	301.71	6.714	
7,600.00	7,209.46	7,209.46	7,209.46	40.98	286.08	-111.26	19.67	-87.51	2,025.70	1,719.84	305.87	6.623	
7,700.00	7,309.46	7,309.46	7,309.46	41.06	290.08	-111.26	19.67	-87.51	2,025.70	1,715.68	310.03	6.534	
7,800.00	7,409.46	7,409.46	7,409.46	41.15	294.08	-111.26	19.67	-87.51	2,025.70	1,711.51	314.19	6.447	
7,900.00	7,509.46	7,509.46	7,509.46	41.23	298.08	-111.26	19.67	-87.51	2,025.70	1,707.35	318.35	6.363	
8,000.00	7,609.46	7,510.00	7,510.00	41.32	298.10	-111.26	19.67	-87.51	2,028.14	1,709.61	318.54	6.367	
8,100.00	7,709.46	7,510.00	7,510.00	41.41	298.10	-111.26	19.67	-87.51	2,035.50	1,716.80	318.70	6.387	
8,200.00	7,809.46	7,510.00	7,510.00	41.50	298.10	-111.26	19.67	-87.51	2,047.72	1,728.85	318.87	6.422	
8,300.00	7,909.46	7,510.00	7,510.00	41.59	298.10	-111.26	19.67	-87.51	2,064.71	1,745.68	319.03	6.472	
8,311.54	7,921.00	7,510.00	7,510.00	41.60	298.10	-111.26	19.67	-87.51	2,066.98	1,747.92	319.05	6.478	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_BERNHARDT STATE 24-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4849.00ft (Original Well Elev)
Reference Site:	BERNHARDT STATE 23-36 PAD	MD Reference:	WELL @ 4849.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_BERNHARDT STATE 24-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BERNHARDT STATE 24-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 11-04-09 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							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	-10.82	29.15	-5.57	29.68					
100.00	100.00	100.00	100.00	0.10	0.10	-10.82	29.15	-5.57	29.68	29.49	0.19	155.350		
200.00	200.00	200.00	200.00	0.32	0.32	-10.82	29.15	-5.57	29.68	29.04	0.64	46.333		
300.00	300.00	300.00	300.00	0.55	0.55	-10.82	29.15	-5.57	29.68	28.59	1.09	27.226		
400.00	400.00	400.00	400.00	0.77	0.77	-10.82	29.15	-5.57	29.68	28.14	1.54	19.277		
500.00	500.00	500.00	500.00	0.99	0.99	-10.82	29.15	-5.57	29.68	27.69	1.99	14.921		
600.00	600.00	600.00	600.00	1.22	1.22	-10.82	29.15	-5.57	29.68	27.24	2.44	12.170		
700.00	700.00	700.00	700.00	1.44	1.44	-10.82	29.15	-5.57	29.68	26.79	2.89	10.276		
800.00	800.00	800.00	800.00	1.67	1.67	-10.82	29.15	-5.57	29.68	26.34	3.34	8.892		
900.00	900.00	900.00	900.00	1.89	1.89	-10.82	29.15	-5.57	29.68	25.89	3.79	7.837		
950.00	950.00	950.00	950.00	2.01	2.01	-10.82	29.15	-5.57	29.68	25.67	4.01	7.398 CC, ES		
1,000.00	1,000.00	999.56	999.56	2.11	2.12	-79.36	29.46	-5.88	29.96	25.73	4.23	7.082		
1,100.00	1,099.93	1,098.44	1,098.38	2.33	2.33	-88.53	31.88	-8.28	32.65	27.99	4.66	7.012 SF		
1,200.00	1,199.68	1,196.59	1,196.29	2.55	2.55	-102.23	36.68	-13.04	39.99	34.90	5.09	7.859		
1,300.00	1,299.13	1,293.54	1,292.72	2.78	2.79	-114.57	43.76	-20.06	53.69	48.17	5.52	9.725		
1,400.00	1,398.15	1,388.84	1,387.13	3.04	3.03	-123.29	52.97	-29.19	74.02	68.07	5.96	12.429		
1,500.00	1,496.63	1,482.09	1,479.03	3.34	3.30	-128.97	64.14	-40.26	100.58	94.18	6.40	15.716		
1,600.00	1,594.44	1,572.91	1,568.01	3.67	3.60	-132.62	77.06	-53.06	132.88	126.03	6.86	19.372		
1,700.00	1,691.46	1,664.51	1,657.32	4.06	3.93	-135.23	91.52	-67.41	169.85	162.50	7.35	23.117		
1,800.00	1,787.58	1,755.89	1,746.40	4.51	4.29	-137.39	106.01	-81.77	209.57	201.71	7.86	26.665		
1,900.00	1,882.68	1,846.01	1,834.23	5.03	4.65	-139.20	120.30	-95.94	251.99	243.59	8.39	30.023		
2,000.00	1,976.65	1,934.73	1,920.72	5.61	5.01	-140.76	134.37	-109.89	297.12	288.17	8.95	33.205		
2,100.00	2,069.36	2,021.97	2,005.76	6.26	5.38	-142.11	148.21	-123.60	344.96	335.44	9.52	36.227		
2,193.22	2,154.57	2,101.86	2,083.62	6.94	5.73	-143.20	160.87	-136.16	391.99	381.92	10.07	38.913		
2,200.00	2,160.72	2,107.61	2,089.23	6.99	5.75	-143.32	161.79	-137.07	395.50	385.38	10.12	39.086		
2,300.00	2,251.45	2,192.53	2,172.01	7.77	6.12	-144.90	175.25	-150.41	447.35	436.56	10.79	41.459		
2,400.00	2,342.18	2,277.45	2,254.78	8.56	6.50	-146.16	188.72	-163.76	499.41	487.93	11.48	43.520		
2,500.00	2,432.91	2,362.37	2,337.56	9.37	6.88	-147.18	202.18	-177.11	551.60	539.43	12.17	45.322		
2,600.00	2,523.64	2,447.29	2,420.33	10.18	7.26	-148.02	215.65	-190.46	603.91	591.03	12.87	46.907		
2,700.00	2,614.37	2,532.21	2,503.11	11.01	7.64	-148.73	229.11	-203.81	656.29	642.71	13.59	48.309		
2,800.00	2,705.10	2,617.13	2,585.88	11.84	8.03	-149.34	242.58	-217.16	708.74	694.44	14.30	49.556		
2,900.00	2,795.83	2,702.05	2,668.66	12.68	8.42	-149.86	256.05	-230.51	761.24	746.21	15.02	50.670		
3,000.00	2,886.56	2,786.97	2,751.43	13.52	8.81	-150.32	269.51	-243.86	813.78	798.03	15.75	51.671		
3,100.00	2,977.29	2,871.88	2,834.21	14.36	9.20	-150.72	282.98	-257.21	866.35	849.87	16.48	52.574		
3,200.00	3,068.02	2,956.80	2,916.98	15.21	9.60	-151.08	296.44	-270.56	918.95	901.73	17.21	53.393		
3,300.00	3,158.75	3,041.72	2,999.76	16.06	9.99	-151.39	309.91	-283.91	971.57	953.62	17.95	54.138		
3,400.00	3,249.48	3,126.64	3,082.53	16.91	10.38	-151.68	323.38	-297.26	1,024.21	1,005.52	18.68	54.818		
3,500.00	3,340.21	3,211.56	3,165.31	17.77	10.78	-151.93	336.84	-310.61	1,076.86	1,057.44	19.42	55.441		
3,600.00	3,430.94	3,296.48	3,248.08	18.63	11.18	-152.17	350.31	-323.96	1,129.53	1,109.37	20.16	56.015		
3,700.00	3,521.67	3,381.40	3,330.86	19.48	11.58	-152.38	363.77	-337.31	1,182.22	1,161.31	20.91	56.543		
3,800.00	3,612.40	3,466.32	3,413.63	20.34	11.97	-152.57	377.24	-350.66	1,234.91	1,213.26	21.65	57.032		
3,900.00	3,703.13	3,551.24	3,496.41	21.20	12.37	-152.75	390.71	-364.01	1,287.61	1,265.22	22.40	57.485		
4,000.00	3,793.86	3,636.16	3,579.18	22.06	12.77	-152.91	404.17	-377.36	1,340.33	1,317.18	23.15	57.907		
4,100.00	3,884.60	3,721.08	3,661.96	22.92	13.17	-153.07	417.64	-390.71	1,393.05	1,369.15	23.89	58.300		
4,200.00	3,975.33	3,805.99	3,744.73	23.78	13.57	-153.21	431.10	-404.06	1,445.77	1,421.13	24.64	58.666		
4,300.00	4,066.06	3,890.91	3,827.51	24.65	13.97	-153.34	444.57	-417.41	1,498.50	1,473.11	25.39	59.010		
4,400.00	4,156.79	3,975.83	3,910.28	25.51	14.37	-153.46	458.03	-430.76	1,551.24	1,525.09	26.15	59.332		
4,500.00	4,247.52	4,060.75	3,993.06	26.37	14.78	-153.57	471.50	-444.11	1,603.98	1,577.08	26.90	59.634		
4,600.00	4,338.25	4,145.67	4,075.83	27.24	15.18	-153.68	484.97	-457.46	1,656.73	1,629.08	27.65	59.918		
4,700.00	4,428.98	4,230.59	4,158.61	28.10	15.58	-153.78	498.43	-470.81	1,709.48	1,681.07	28.40	60.187		
4,800.00	4,519.71	4,315.51	4,241.38	28.97	15.98	-153.87	511.90	-484.16	1,762.23	1,733.07	29.16	60.440		
4,900.00	4,610.44	4,400.43	4,324.16	29.83	16.38	-153.96	525.36	-497.51	1,814.98	1,785.07	29.91	60.680		

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_BERNHARDT STATE 24-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4849.00ft (Original Well Elev)
Reference Site:	BERNHARDT STATE 23-36 PAD	MD Reference:	WELL @ 4849.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_BERNHARDT STATE 24-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BERNHARDT STATE 24-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 11-04-09 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						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,000.00	4,701.17	4,485.35	4,406.93	30.70	16.79	-154.05	538.83	-510.86	1,867.74	1,837.08	30.67	60.907	
5,100.00	4,791.90	4,570.27	4,489.71	31.57	17.19	-154.13	552.30	-524.21	1,920.51	1,889.08	31.42	61.122	
5,200.00	4,882.63	4,655.18	4,572.48	32.43	17.59	-154.20	565.76	-537.56	1,973.27	1,941.09	32.18	61.326	
5,300.00	4,973.36	4,740.10	4,655.26	33.30	18.00	-154.27	579.23	-550.91	2,026.04	1,993.10	32.93	61.520	
5,400.00	5,064.09	4,825.02	4,738.03	34.16	18.40	-154.34	592.69	-564.26	2,078.81	2,045.12	33.69	61.705	
5,500.00	5,154.82	4,909.94	4,820.81	35.03	18.80	-154.40	606.16	-577.61	2,131.58	2,097.13	34.45	61.881	
5,572.31	5,220.43	4,971.35	4,880.67	35.66	19.10	-154.45	615.90	-587.26	2,169.74	2,134.75	34.99	62.004	
5,600.00	5,245.61	4,994.93	4,903.65	35.87	19.21	-154.61	619.64	-590.97	2,184.25	2,149.00	35.24	61.979	
5,700.00	5,337.44	5,081.13	4,987.67	36.53	19.62	-155.13	633.30	-604.52	2,234.92	2,198.82	36.10	61.912	
5,800.00	5,430.60	5,168.89	5,073.22	37.13	20.04	-155.57	647.22	-618.32	2,282.84	2,245.91	36.93	61.809	
5,900.00	5,524.97	5,258.11	5,160.18	37.68	20.46	-155.92	661.37	-632.34	2,327.95	2,290.20	37.74	61.677	
6,000.00	5,620.43	5,348.67	5,248.46	38.19	20.89	-156.21	675.73	-646.58	2,370.19	2,331.67	38.52	61.525	
6,100.00	5,716.88	5,440.47	5,337.94	38.63	21.33	-156.42	690.29	-661.01	2,409.53	2,370.26	39.27	61.356	
6,200.00	5,814.19	5,539.51	5,432.98	39.03	22.08	-156.47	719.69	-690.17	2,443.77	2,403.49	40.28	60.672	
6,300.00	5,912.24	5,634.29	5,529.22	39.38	22.65	-156.69	738.66	-708.97	2,469.37	2,428.27	41.10	60.077	
6,400.00	6,010.92	5,733.13	5,628.92	39.67	22.95	-157.04	743.18	-713.45	2,486.04	2,444.39	41.65	59.694	
6,500.00	6,110.10	5,831.31	5,730.10	39.91	23.08	-157.25	743.18	-713.45	2,497.78	2,455.81	41.98	59.505	
6,600.00	6,209.67	5,929.88	5,828.67	40.10	23.21	-157.39	743.18	-713.45	2,506.33	2,464.07	42.26	59.313	
6,700.00	6,309.49	6,027.70	5,926.49	40.25	23.34	-157.48	743.18	-713.45	2,511.66	2,469.17	42.49	59.118	
6,800.00	6,409.46	6,125.67	6,026.46	40.35	23.47	-157.52	743.18	-713.45	2,513.77	2,471.11	42.67	58.917	
6,815.54	6,425.00	6,141.21	6,042.00	40.36	23.49	-90.25	743.18	-713.45	2,513.81	2,471.12	42.69	58.885	
6,900.00	6,509.46	6,217.67	6,116.46	40.41	23.60	-90.25	743.18	-713.45	2,513.81	2,470.90	42.92	58.574	
7,000.00	6,609.46	6,317.67	6,216.46	40.49	23.73	-90.25	743.18	-713.45	2,513.81	2,470.62	43.19	58.202	
7,100.00	6,709.46	6,417.67	6,316.46	40.57	23.86	-90.25	743.18	-713.45	2,513.81	2,470.34	43.47	57.831	
7,200.00	6,809.46	6,517.67	6,416.46	40.65	24.00	-90.25	743.18	-713.45	2,513.81	2,470.06	43.75	57.460	
7,300.00	6,909.46	6,617.67	6,516.46	40.73	24.14	-90.25	743.18	-713.45	2,513.81	2,469.78	44.03	57.091	
7,400.00	7,009.46	6,717.67	6,616.46	40.81	24.28	-90.25	743.18	-713.45	2,513.81	2,469.50	44.32	56.723	
7,500.00	7,109.46	6,817.67	6,716.46	40.89	24.42	-90.25	743.18	-713.45	2,513.81	2,469.21	44.61	56.356	
7,600.00	7,209.46	6,917.67	6,816.46	40.98	24.56	-90.25	743.18	-713.45	2,513.81	2,468.92	44.90	55.991	
7,700.00	7,309.46	7,017.67	6,916.46	41.06	24.70	-90.25	743.18	-713.45	2,513.81	2,468.62	45.19	55.627	
7,800.00	7,409.46	7,117.67	7,016.46	41.15	24.84	-90.25	743.18	-713.45	2,513.81	2,468.33	45.49	55.265	
7,900.00	7,509.46	7,217.67	7,116.46	41.23	24.99	-90.25	743.18	-713.45	2,513.81	2,468.03	45.79	54.905	
8,000.00	7,609.46	7,317.67	7,216.46	41.32	25.13	-90.25	743.18	-713.45	2,513.81	2,467.73	46.09	54.546	
8,100.00	7,709.46	7,417.67	7,316.46	41.41	25.28	-90.25	743.18	-713.45	2,513.81	2,467.42	46.39	54.189	
8,200.00	7,809.46	7,517.67	7,416.46	41.50	25.43	-90.25	743.18	-713.45	2,513.81	2,467.12	46.70	53.835	
8,300.00	7,909.46	7,617.67	7,516.46	41.59	25.58	-90.25	743.18	-713.45	2,513.81	2,466.81	47.00	53.482	
8,311.54	7,921.00	7,629.21	7,528.00	41.60	25.58	-90.25	743.18	-713.45	2,513.84	2,466.82	47.02	53.463	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_BERNHARDT STATE 24-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4849.00ft (Original Well Elev)
Reference Site:	BERNHARDT STATE 23-36 PAD	MD Reference:	WELL @ 4849.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_BERNHARDT STATE 24-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BERNHARDT STATE 24-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 11-04-09 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						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	164.00	-29.15	8.36	30.33				
100.00	100.00	100.00	100.00	0.10	0.10	164.00	-29.15	8.36	30.33	30.14	0.19	158.738	
200.00	200.00	200.00	200.00	0.32	0.32	164.00	-29.15	8.36	30.33	29.69	0.64	47.343	
300.00	300.00	300.00	300.00	0.55	0.55	164.00	-29.15	8.36	30.33	29.24	1.09	27.820	
400.00	400.00	400.00	400.00	0.77	0.77	164.00	-29.15	8.36	30.33	28.79	1.54	19.697	
500.00	500.00	500.00	500.00	0.99	0.99	164.00	-29.15	8.36	30.33	28.34	1.99	15.246	
600.00	600.00	600.00	600.00	1.22	1.22	164.00	-29.15	8.36	30.33	27.89	2.44	12.436	
700.00	700.00	700.00	700.00	1.44	1.44	164.00	-29.15	8.36	30.33	27.44	2.89	10.500	
800.00	800.00	800.00	800.00	1.67	1.67	164.00	-29.15	8.36	30.33	26.99	3.34	9.086	
900.00	900.00	900.00	900.00	1.89	1.89	164.00	-29.15	8.36	30.33	26.54	3.79	8.008	
950.00	950.00	950.00	950.00	2.01	2.01	164.00	-29.15	8.36	30.33	26.31	4.01	7.559 CC, ES	
1,000.00	1,000.00	999.51	999.51	2.11	2.10	97.20	-29.48	8.63	30.78	26.56	4.22	7.295 SF	
1,100.00	1,099.93	1,098.41	1,098.35	2.33	2.28	100.52	-32.12	10.80	34.43	29.82	4.61	7.471	
1,200.00	1,199.68	1,196.94	1,196.63	2.55	2.47	105.37	-37.36	15.12	41.99	36.98	5.02	8.373	
1,300.00	1,299.13	1,294.83	1,294.00	2.78	2.68	109.98	-45.15	21.54	53.68	48.23	5.45	9.857	
1,400.00	1,398.15	1,391.87	1,390.12	3.04	2.92	113.62	-55.40	29.98	69.54	63.63	5.91	11.767	
1,500.00	1,496.63	1,488.64	1,485.51	3.34	3.19	116.39	-67.94	40.30	89.35	82.93	6.42	13.921	
1,600.00	1,594.44	1,586.00	1,581.39	3.67	3.49	119.39	-81.01	51.07	111.41	104.43	6.98	15.971	
1,700.00	1,691.46	1,682.76	1,676.67	4.06	3.80	122.52	-94.01	61.77	135.53	127.95	7.57	17.892	
1,800.00	1,787.58	1,778.79	1,771.24	4.51	4.13	125.59	-106.91	72.40	161.96	153.75	8.21	19.724	
1,900.00	1,882.68	1,873.99	1,864.99	5.03	4.46	128.48	-119.69	82.93	190.88	182.00	8.88	21.486	
2,000.00	1,976.65	1,968.24	1,957.80	5.61	4.80	131.16	-132.35	93.35	222.45	212.86	9.59	23.200	
2,100.00	2,069.36	2,061.42	2,049.56	6.26	5.14	133.60	-144.86	103.66	256.77	246.46	10.32	24.891	
2,193.22	2,154.57	2,147.22	2,134.05	6.94	5.46	135.68	-156.39	113.15	291.31	280.30	11.01	26.456	
2,200.00	2,160.72	2,153.41	2,140.15	6.99	5.48	135.86	-157.22	113.83	293.91	282.85	11.06	26.563	
2,300.00	2,251.45	2,244.87	2,230.21	7.77	5.82	138.20	-169.50	123.95	332.57	320.71	11.86	28.038	
2,400.00	2,342.18	2,336.32	2,320.27	8.56	6.17	140.06	-181.78	134.07	371.61	358.95	12.66	29.349	
2,500.00	2,432.91	2,427.78	2,410.33	9.37	6.52	141.57	-194.07	144.18	410.92	397.45	13.47	30.516	
2,600.00	2,523.64	2,519.23	2,500.39	10.18	6.87	142.82	-206.35	154.30	450.43	436.16	14.27	31.560	
2,700.00	2,614.37	2,610.69	2,590.45	11.01	7.22	143.87	-218.63	164.41	490.10	475.02	15.08	32.498	
2,800.00	2,705.10	2,702.14	2,680.51	11.84	7.58	144.76	-230.91	174.53	529.88	513.99	15.89	33.343	
2,900.00	2,795.83	2,793.60	2,770.57	12.68	7.93	145.53	-243.20	184.65	569.76	553.05	16.70	34.109	
3,000.00	2,886.56	2,885.05	2,860.63	13.52	8.29	146.20	-255.48	194.76	609.71	592.19	17.52	34.806	
3,100.00	2,977.29	2,976.50	2,950.69	14.36	8.65	146.79	-267.76	204.88	649.72	631.39	18.33	35.442	
3,200.00	3,068.02	3,067.96	3,040.75	15.21	9.01	147.30	-280.04	214.99	689.79	670.64	19.15	36.025	
3,300.00	3,158.75	3,159.41	3,130.81	16.06	9.37	147.77	-292.33	225.11	729.90	709.93	19.96	36.562	
3,400.00	3,249.48	3,250.87	3,220.87	16.91	9.74	148.18	-304.61	235.23	770.04	749.26	20.78	37.057	
3,500.00	3,340.21	3,342.32	3,310.93	17.77	10.10	148.55	-316.89	245.34	810.21	788.61	21.60	37.516	
3,600.00	3,430.94	3,433.78	3,400.98	18.63	10.46	148.89	-329.18	255.46	850.41	828.00	22.41	37.942	
3,700.00	3,521.67	3,525.23	3,491.04	19.48	10.83	149.20	-341.46	265.57	890.63	867.40	23.23	38.339	
3,800.00	3,612.40	3,616.69	3,581.10	20.34	11.19	149.48	-353.74	275.69	930.87	906.83	24.05	38.709	
3,900.00	3,703.13	3,708.14	3,671.16	21.20	11.56	149.73	-366.02	285.80	971.13	946.27	24.86	39.057	
4,000.00	3,793.86	3,799.59	3,761.22	22.06	11.92	149.97	-378.31	295.92	1,011.41	985.72	25.68	39.383	
4,100.00	3,884.60	3,891.05	3,851.28	22.92	12.29	150.19	-390.59	306.04	1,051.69	1,025.19	26.50	39.689	
4,200.00	3,975.33	3,982.50	3,941.34	23.78	12.65	150.39	-402.87	316.15	1,091.99	1,064.68	27.31	39.979	
4,300.00	4,066.06	4,073.96	4,031.40	24.65	13.02	150.58	-415.15	326.27	1,132.30	1,104.17	28.13	40.247	
4,400.00	4,156.79	4,165.41	4,121.46	25.51	13.39	150.76	-427.44	336.38	1,172.62	1,143.66	28.96	40.485	
4,500.00	4,247.52	4,256.87	4,211.52	26.37	13.75	150.92	-439.72	346.50	1,212.95	1,183.15	29.80	40.709	
4,600.00	4,338.25	4,348.32	4,301.58	27.24	14.12	151.07	-452.00	356.62	1,253.28	1,222.66	30.63	40.921	
4,700.00	4,428.98	4,439.78	4,391.64	28.10	14.49	151.22	-464.29	366.73	1,293.63	1,262.17	31.46	41.121	
4,800.00	4,519.71	4,531.23	4,481.70	28.97	14.86	151.35	-476.57	376.85	1,333.98	1,301.69	32.29	41.311	
4,900.00	4,610.44	4,622.69	4,571.76	29.83	15.23	151.48	-488.85	386.96	1,374.33	1,341.21	33.12	41.491	

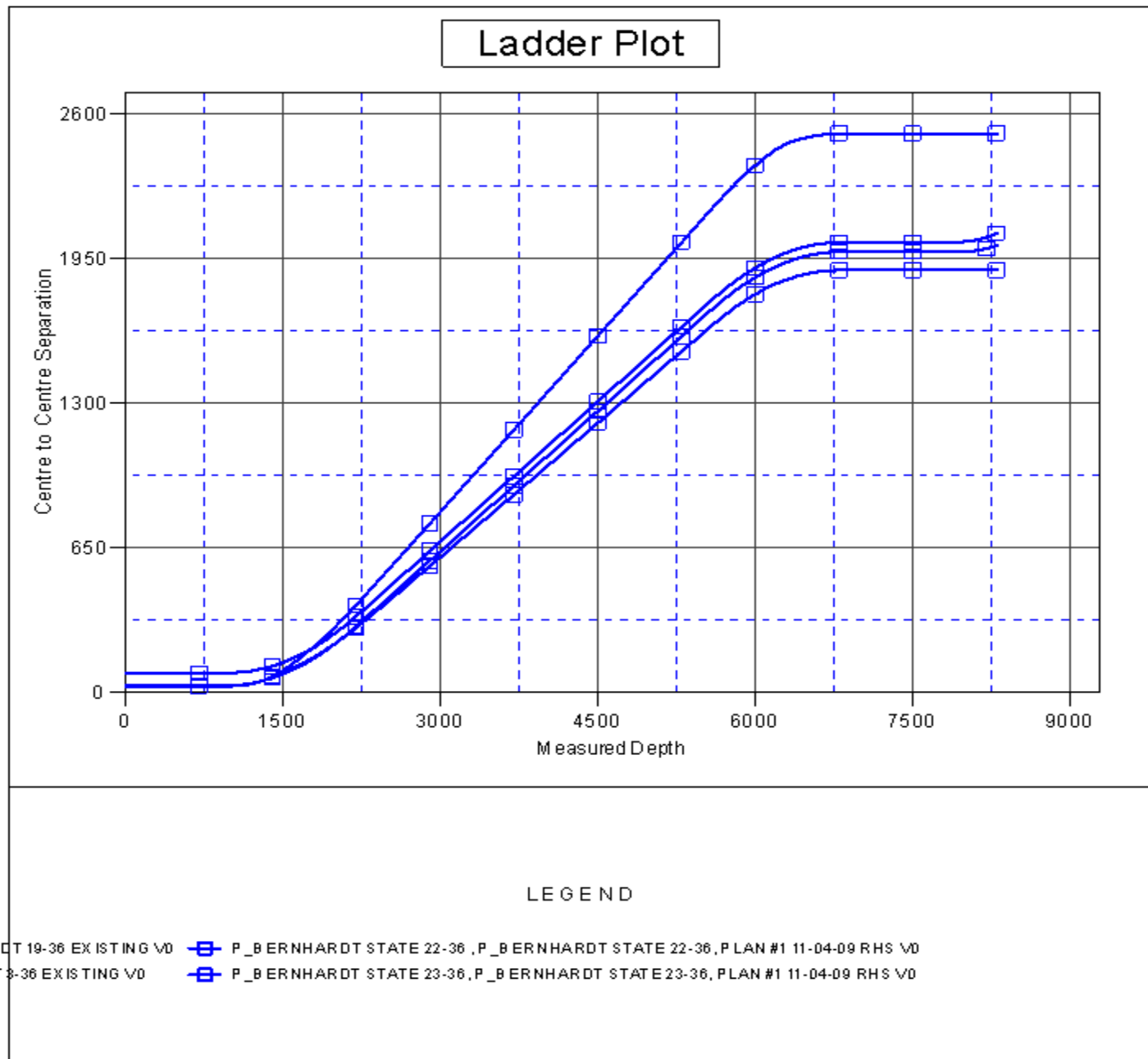
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_BERNHARDT STATE 24-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4849.00ft (Original Well Elev)
Reference Site:	BERNHARDT STATE 23-36 PAD	MD Reference:	WELL @ 4849.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_BERNHARDT STATE 24-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BERNHARDT STATE 24-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 11-04-09 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						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,000.00	4,701.17	4,714.14	4,661.82	30.70	15.59	151.60	-501.13	397.08	1,414.69	1,380.73	33.96	41.661	
5,100.00	4,791.90	4,805.59	4,751.88	31.57	15.96	151.71	-513.42	407.19	1,455.06	1,420.27	34.79	41.824	
5,200.00	4,882.63	4,897.05	4,841.94	32.43	16.33	151.82	-525.70	417.31	1,495.43	1,459.80	35.62	41.978	
5,300.00	4,973.36	4,988.50	4,932.00	33.30	16.70	151.92	-537.98	427.43	1,535.80	1,499.34	36.46	42.125	
5,400.00	5,064.09	5,079.96	5,022.06	34.16	17.07	152.02	-550.26	437.54	1,576.18	1,538.89	37.29	42.265	
5,500.00	5,154.82	5,171.41	5,112.12	35.03	17.44	152.11	-562.55	447.66	1,616.56	1,578.43	38.13	42.399	
5,572.31	5,220.43	5,237.55	5,177.24	35.66	17.71	152.17	-571.43	454.97	1,645.76	1,607.03	38.73	42.493	
5,600.00	5,245.61	5,262.92	5,202.22	35.87	17.81	152.31	-574.84	457.78	1,656.84	1,617.86	38.98	42.506	
5,700.00	5,337.44	5,355.33	5,293.23	36.53	18.18	152.72	-587.25	468.00	1,695.01	1,655.19	39.82	42.564	
5,800.00	5,430.60	5,448.89	5,385.36	37.13	18.56	153.05	-599.81	478.35	1,730.30	1,689.65	40.65	42.564	
5,900.00	5,524.97	5,543.48	5,478.51	37.68	18.94	153.28	-612.52	488.81	1,762.67	1,721.20	41.46	42.512	
6,000.00	5,620.43	5,647.37	5,581.03	38.19	19.27	153.46	-625.45	499.46	1,791.88	1,749.70	42.19	42.474	
6,100.00	5,716.88	5,754.33	5,687.14	38.63	19.53	153.67	-635.79	507.98	1,817.57	1,774.78	42.79	42.481	
6,200.00	5,814.19	5,862.39	5,794.78	39.03	19.75	153.93	-643.13	514.03	1,839.65	1,796.37	43.28	42.507	
6,300.00	5,912.24	5,971.25	5,903.50	39.38	19.93	154.21	-647.35	517.50	1,858.11	1,814.44	43.66	42.556	
6,400.00	6,010.92	6,078.69	6,010.92	39.67	20.09	154.53	-648.43	518.39	1,872.92	1,828.97	43.94	42.620	
6,500.00	6,110.10	6,177.87	6,110.10	39.91	20.21	154.80	-648.43	518.39	1,884.44	1,840.28	44.16	42.674	
6,600.00	6,209.67	6,277.43	6,209.67	40.10	20.33	154.99	-648.43	518.39	1,892.82	1,848.49	44.34	42.693	
6,700.00	6,309.49	6,377.26	6,309.49	40.25	20.46	155.11	-648.43	518.39	1,898.06	1,853.58	44.48	42.674	
6,800.00	6,409.46	6,477.23	6,409.46	40.35	20.59	155.15	-648.43	518.39	1,900.14	1,855.55	44.59	42.616	
6,815.54	6,425.00	6,492.77	6,425.00	40.36	20.61	-137.57	-648.43	518.39	1,900.18	1,855.57	44.60	42.603	
6,900.00	6,509.46	6,577.23	6,509.46	40.41	20.72	-137.57	-648.43	518.39	1,900.18	1,855.37	44.81	42.409	
7,000.00	6,609.46	6,677.23	6,609.46	40.49	20.85	-137.57	-648.43	518.39	1,900.18	1,855.11	45.06	42.170	
7,100.00	6,709.46	6,777.23	6,709.46	40.57	20.98	-137.57	-648.43	518.39	1,900.18	1,854.86	45.32	41.930	
7,200.00	6,809.46	6,877.23	6,809.46	40.65	21.12	-137.57	-648.43	518.39	1,900.18	1,854.60	45.58	41.691	
7,300.00	6,909.46	6,977.23	6,909.46	40.73	21.25	-137.57	-648.43	518.39	1,900.18	1,854.33	45.84	41.452	
7,400.00	7,009.46	7,077.23	7,009.46	40.81	21.39	-137.57	-648.43	518.39	1,900.18	1,854.07	46.11	41.213	
7,500.00	7,109.46	7,177.23	7,109.46	40.89	21.53	-137.57	-648.43	518.39	1,900.18	1,853.80	46.38	40.974	
7,600.00	7,209.46	7,277.23	7,209.46	40.98	21.67	-137.57	-648.43	518.39	1,900.18	1,853.53	46.65	40.735	
7,700.00	7,309.46	7,377.23	7,309.46	41.06	21.81	-137.57	-648.43	518.39	1,900.18	1,853.25	46.92	40.497	
7,800.00	7,409.46	7,477.23	7,409.46	41.15	21.95	-137.57	-648.43	518.39	1,900.18	1,852.98	47.20	40.259	
7,900.00	7,509.46	7,577.23	7,509.46	41.23	22.10	-137.57	-648.43	518.39	1,900.18	1,852.70	47.48	40.022	
8,000.00	7,609.46	7,677.23	7,609.46	41.32	22.25	-137.57	-648.43	518.39	1,900.18	1,852.42	47.76	39.786	
8,100.00	7,709.46	7,777.23	7,709.46	41.41	22.39	-137.57	-648.43	518.39	1,900.18	1,852.13	48.04	39.550	
8,200.00	7,809.46	7,877.23	7,809.46	41.50	22.54	-137.57	-648.43	518.39	1,900.18	1,851.84	48.33	39.315	
8,300.00	7,909.46	7,977.23	7,909.46	41.59	22.69	-137.57	-648.43	518.39	1,900.18	1,851.55	48.62	39.081	
8,300.75	7,910.21	7,977.98	7,910.21	41.59	22.69	-137.57	-648.43	518.39	1,900.18	1,851.55	48.62	39.079	
8,311.54	7,921.00	7,983.77	7,916.00	41.60	22.70	-137.57	-648.43	518.39	1,900.18	1,851.53	48.65	39.060	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_BERNHARDT STATE 24-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4849.00ft (Original Well Elev)
Reference Site:	BERNHARDT STATE 23-36 PAD	MD Reference:	WELL @ 4849.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_BERNHARDT STATE 24-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BERNHARDT STATE 24-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 11-04-09 RHS	Offset TVD Reference:	Offset Datum

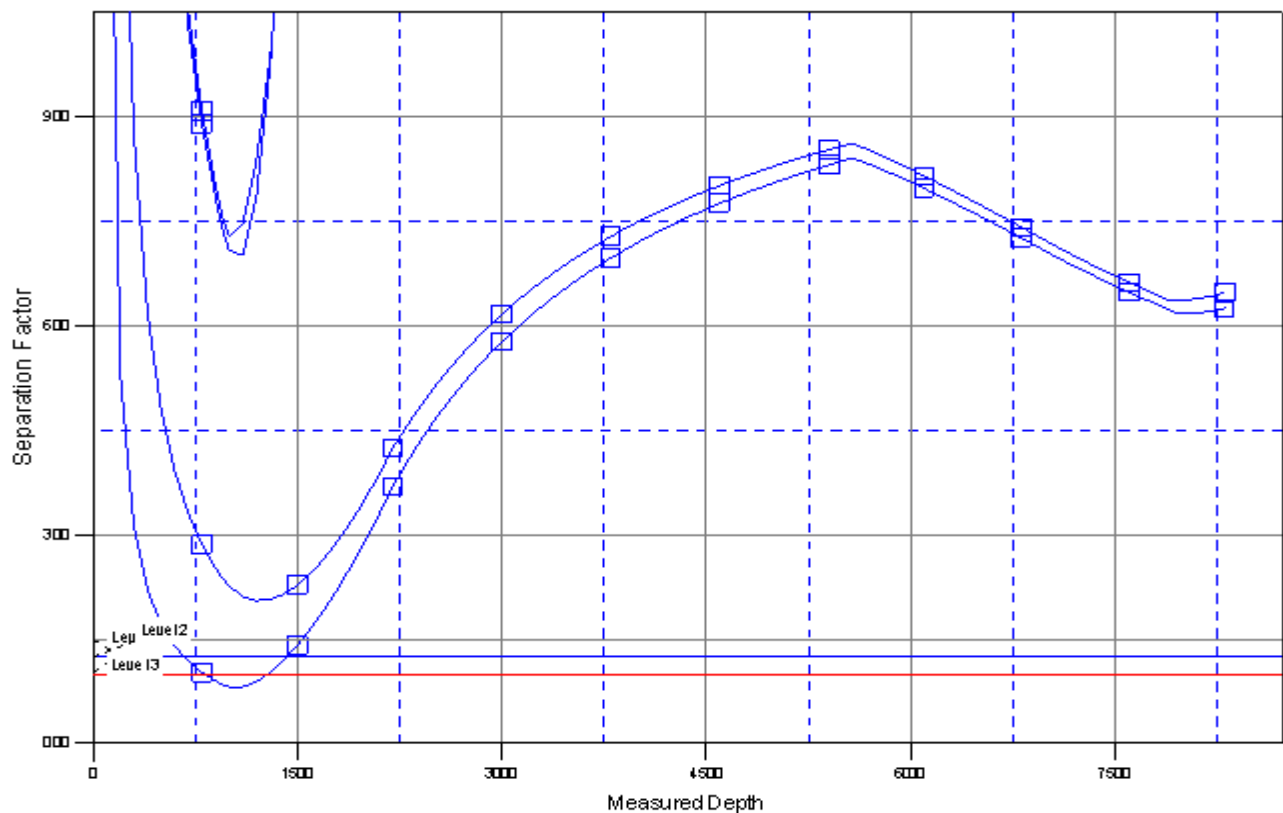
Reference Depths are relative to WELL @ 4849.00ft (Original Well Elev) Coordinates are relative to: P_BERNHARDT STATE 24-36
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is 105° 30' 0.000 W ° Grid Convergence at Surface is: 0.42°





Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_BERNHARDT STATE 24-36
Project:	COLORADO NOTHERN ZONE - 83	TVD Reference:	WELL @ 4849.00ft (Original Well Elev)
Reference Site:	BERNHARDT STATE 23-36 PAD	MD Reference:	WELL @ 4849.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_BERNHARDT STATE 24-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BERNHARDT STATE 24-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 11-04-09 RHS	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4849.00ft (Original Well Elev) Coordinates are relative to: P_BERNHARDT STATE 24-36
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is 105° 30' 0.000 W ° Grid Convergence at Surface is: 0.42°

Separation Factor Plot



LEGEND

RCT 19-36 EXISTING V0  P_BERNHARDT STATE 22-36, P_BERNHARDT STATE 22-36, PLAN #1 11-04-09 RHS V0
 T3-36 EXISTING V0  P_BERNHARDT STATE 23-36, P_BERNHARDT STATE 23-36, PLAN #1 11-04-09 RHS V0