



US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

BERNHARDT STATE 23-36 PAD

P_BERNHARDT STATE 23-36

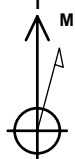
P_BERNHARDT STATE 23-36

Plan: PLAN #1 11-04-09 RHS

Standard Planning Report

04 November, 2009





Azimuths to True North
Magnetic North: 9.08°

Magnetic Field
Strength: 53287.6snT
Dip Angle: 67.06°
Date: 11/4/2009
Model: IGRF200510

WELL DETAILS: P_BERNHARDT STATE 23-36

+N/-S	+E/-W	Northing	Ground Level:	4834.00	Longitude	Slot
0.00	0.00	1372527.51	Easting	3182972.45	40° 21' 14.868 N	104° 50' 36.492 W

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
2671.00	2692.49	PARKMAN TOP
4399.00	4447.25	SUSSEX TOP
4782.00	4836.18	SHANNON TOP
6993.00	7060.77	NIO A TOP
7316.00	7383.77	CODELL TOP
7766.00	7833.77	JSAND TOP

SECTION DETAILS

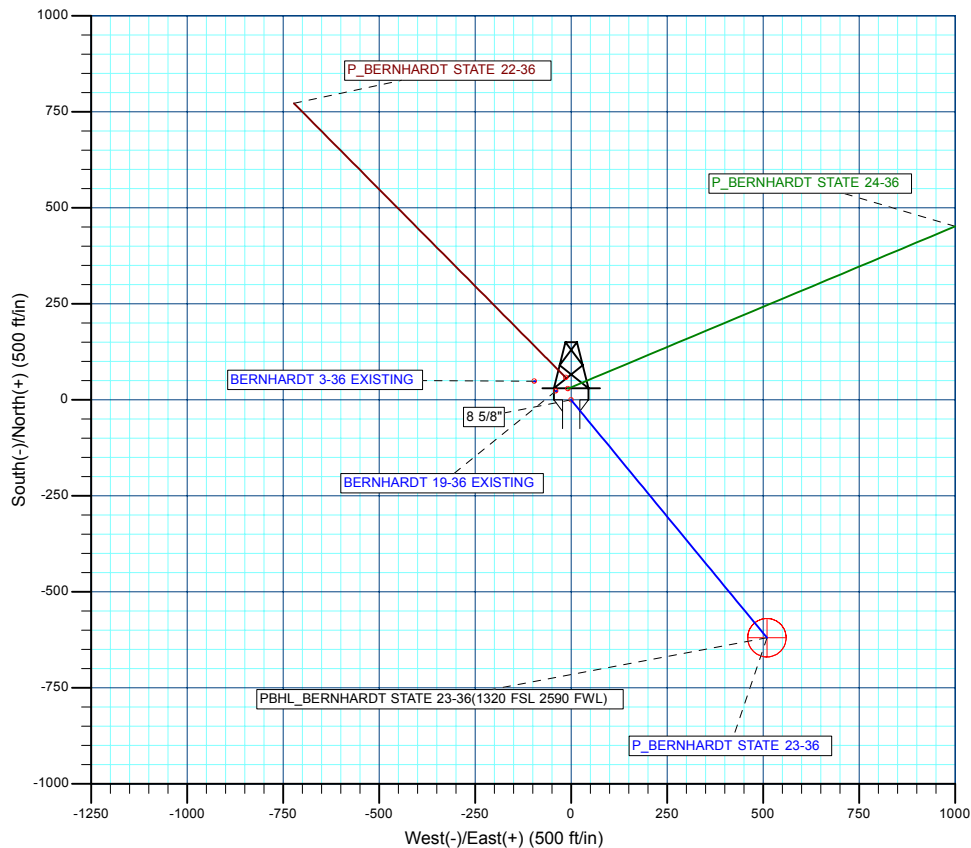
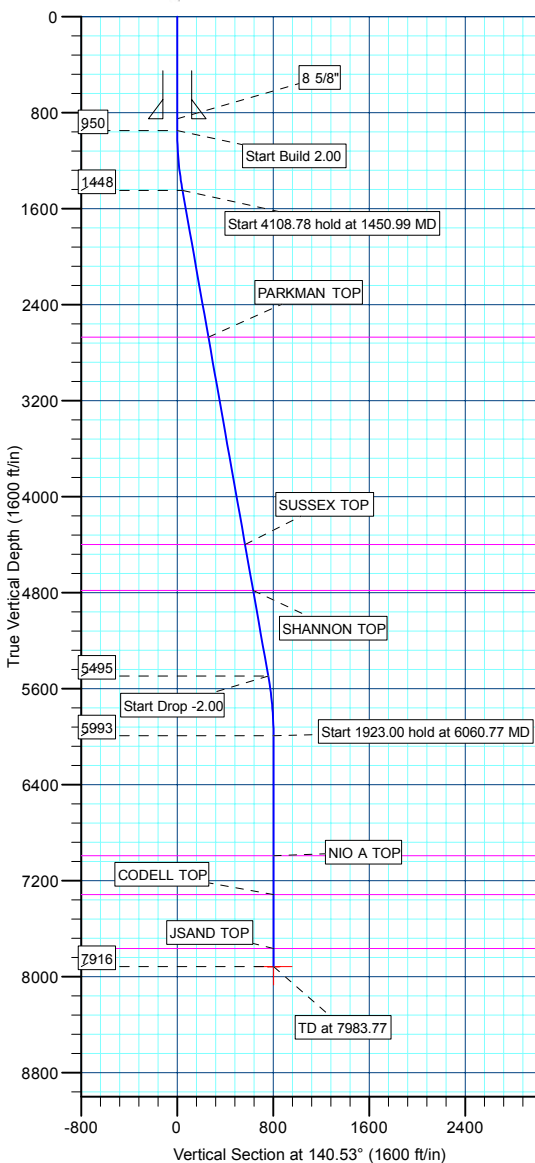
MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
950.00	0.00	0.00	950.00	0.00	0.00	0.00	0.00	0.00	
1450.99	10.02	140.53	1448.44	-33.73	27.78	2.00	140.53	43.70	
5559.78	10.02	140.53	5494.56	-585.55	482.25	0.00	0.00	758.58	
6060.77	0.00	0.00	5993.00	-619.28	510.03	2.00	180.00	802.27	
7983.77	0.00	0.00	7916.00	-619.28	510.03	0.00	0.00	802.27	PBHL_BERNHARDT STATE 23-36(1320 FSL 2590 FWL)

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	7916.00	-619.28	510.03	1371912.02	3183487.05	40° 21' 8.748 N	104° 50' 29.904 W	Circle (Radius: 50.00)

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_BERNHARDT STATE 23-36
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 23-36	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_BERNHARDT STATE 23-36		
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 23-36			
Well Position	+N/-S	-58.30 ft	Northing:	1,372,527.51 ft
	+E/-W	13.93 ft	Easting:	3,182,972.45 ft
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft
			Ground Level:	4,834.00 ft

Wellbore	P_BERNHARDT STATE 23-36				
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	140.53

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	
1,450.99	10.02	140.53	1,448.44	-33.73	27.78	2.00	2.00	0.00	140.53	
5,559.78	10.02	140.53	5,494.56	-585.55	482.25	0.00	0.00	0.00	0.00	
6,060.77	0.00	0.00	5,993.00	-619.28	510.03	2.00	-2.00	0.00	180.00	
7,983.77	0.00	0.00	7,916.00	-619.28	510.03	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 23-36
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 23-36	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_BERNHARDT STATE 23-36		
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	140.53	1,000.00	-0.34	0.28	0.44	2.00	2.00	0.00
1,100.00	3.00	140.53	1,099.93	-3.03	2.50	3.93	2.00	2.00	0.00
1,200.00	5.00	140.53	1,199.68	-8.41	6.93	10.90	2.00	2.00	0.00
1,300.00	7.00	140.53	1,299.13	-16.48	13.58	21.35	2.00	2.00	0.00
1,400.00	9.00	140.53	1,398.15	-27.23	22.42	35.27	2.00	2.00	0.00
Start 4108.78 hold at 1450.99 MD									
1,450.99	10.02	140.53	1,448.44	-33.73	27.78	43.70	2.00	2.00	0.00
1,500.00	10.02	140.53	1,496.70	-40.31	33.20	52.22	0.00	0.00	0.00
1,600.00	10.02	140.53	1,595.18	-53.74	44.26	69.62	0.00	0.00	0.00
1,700.00	10.02	140.53	1,693.65	-67.17	55.32	87.02	0.00	0.00	0.00
1,800.00	10.02	140.53	1,792.13	-80.60	66.38	104.42	0.00	0.00	0.00
1,900.00	10.02	140.53	1,890.60	-94.03	77.44	121.82	0.00	0.00	0.00
2,000.00	10.02	140.53	1,989.08	-107.46	88.50	139.22	0.00	0.00	0.00
2,100.00	10.02	140.53	2,087.55	-120.89	99.57	156.62	0.00	0.00	0.00
2,200.00	10.02	140.53	2,186.03	-134.32	110.63	174.01	0.00	0.00	0.00
2,300.00	10.02	140.53	2,284.50	-147.75	121.69	191.41	0.00	0.00	0.00
2,400.00	10.02	140.53	2,382.98	-161.18	132.75	208.81	0.00	0.00	0.00
2,500.00	10.02	140.53	2,481.45	-174.61	143.81	226.21	0.00	0.00	0.00
2,600.00	10.02	140.53	2,579.93	-188.04	154.87	243.61	0.00	0.00	0.00
PARKMAN TOP									
2,692.49	10.02	140.53	2,671.00	-200.47	165.10	259.70	0.00	0.00	0.00
2,700.00	10.02	140.53	2,678.40	-201.48	165.93	261.01	0.00	0.00	0.00
2,800.00	10.02	140.53	2,776.87	-214.91	176.99	278.41	0.00	0.00	0.00
2,900.00	10.02	140.53	2,875.35	-228.34	188.05	295.81	0.00	0.00	0.00
3,000.00	10.02	140.53	2,973.82	-241.77	199.12	313.21	0.00	0.00	0.00
3,100.00	10.02	140.53	3,072.30	-255.20	210.18	330.60	0.00	0.00	0.00
3,200.00	10.02	140.53	3,170.77	-268.63	221.24	348.00	0.00	0.00	0.00
3,300.00	10.02	140.53	3,269.25	-282.06	232.30	365.40	0.00	0.00	0.00
3,400.00	10.02	140.53	3,367.72	-295.49	243.36	382.80	0.00	0.00	0.00
3,500.00	10.02	140.53	3,466.20	-308.92	254.42	400.20	0.00	0.00	0.00
3,600.00	10.02	140.53	3,564.67	-322.35	265.48	417.60	0.00	0.00	0.00
3,700.00	10.02	140.53	3,663.15	-335.78	276.54	435.00	0.00	0.00	0.00
3,800.00	10.02	140.53	3,761.62	-349.21	287.60	452.40	0.00	0.00	0.00
3,900.00	10.02	140.53	3,860.10	-362.64	298.67	469.80	0.00	0.00	0.00
4,000.00	10.02	140.53	3,958.57	-376.07	309.73	487.19	0.00	0.00	0.00
4,100.00	10.02	140.53	4,057.05	-389.50	320.79	504.59	0.00	0.00	0.00
4,200.00	10.02	140.53	4,155.52	-402.93	331.85	521.99	0.00	0.00	0.00
4,300.00	10.02	140.53	4,254.00	-416.36	342.91	539.39	0.00	0.00	0.00
4,400.00	10.02	140.53	4,352.47	-429.79	353.97	556.79	0.00	0.00	0.00
SUSSEX TOP									
4,447.25	10.02	140.53	4,399.00	-436.14	359.20	565.01	0.00	0.00	0.00
4,500.00	10.02	140.53	4,450.95	-443.22	365.03	574.19	0.00	0.00	0.00
4,600.00	10.02	140.53	4,549.42	-456.65	376.09	591.59	0.00	0.00	0.00
4,700.00	10.02	140.53	4,647.89	-470.08	387.15	608.99	0.00	0.00	0.00
4,800.00	10.02	140.53	4,746.37	-483.51	398.21	626.39	0.00	0.00	0.00
SHANNON TOP									
4,836.18	10.02	140.53	4,782.00	-488.37	402.22	632.68	0.00	0.00	0.00
4,900.00	10.02	140.53	4,844.84	-496.94	409.28	643.79	0.00	0.00	0.00
5,000.00	10.02	140.53	4,943.32	-510.37	420.34	661.18	0.00	0.00	0.00
5,100.00	10.02	140.53	5,041.79	-523.80	431.40	678.58	0.00	0.00	0.00
5,200.00	10.02	140.53	5,140.27	-537.23	442.46	695.98	0.00	0.00	0.00
5,300.00	10.02	140.53	5,238.74	-550.66	453.52	713.38	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 23-36	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_BERNHARDT STATE 23-36		
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	10.02	140.53	5,337.22	-564.10	464.58	730.78	0.00	0.00	0.00
5,500.00	10.02	140.53	5,435.69	-577.53	475.64	748.18	0.00	0.00	0.00
Start Drop -2.00									
5,559.78	10.02	140.53	5,494.56	-585.55	482.25	758.58	0.00	0.00	0.00
5,600.00	9.22	140.53	5,534.22	-590.74	486.53	765.30	2.00	-2.00	0.00
5,700.00	7.22	140.53	5,633.18	-601.77	495.61	779.59	2.00	-2.00	0.00
5,800.00	5.22	140.53	5,732.59	-610.13	502.49	790.41	2.00	-2.00	0.00
5,900.00	3.22	140.53	5,832.32	-615.80	507.17	797.76	2.00	-2.00	0.00
6,000.00	1.22	140.53	5,932.24	-618.78	509.62	801.63	2.00	-2.00	0.00
Start 1923.00 hold at 6060.77 MD									
6,060.77	0.00	0.00	5,993.00	-619.28	510.03	802.27	2.00	-2.00	-231.25
6,100.00	0.00	0.00	6,032.23	-619.28	510.03	802.27	0.00	0.00	0.00
6,200.00	0.00	0.00	6,132.23	-619.28	510.03	802.27	0.00	0.00	0.00
6,300.00	0.00	0.00	6,232.23	-619.28	510.03	802.27	0.00	0.00	0.00
6,400.00	0.00	0.00	6,332.23	-619.28	510.03	802.27	0.00	0.00	0.00
6,500.00	0.00	0.00	6,432.23	-619.28	510.03	802.27	0.00	0.00	0.00
6,600.00	0.00	0.00	6,532.23	-619.28	510.03	802.27	0.00	0.00	0.00
6,700.00	0.00	0.00	6,632.23	-619.28	510.03	802.27	0.00	0.00	0.00
6,800.00	0.00	0.00	6,732.23	-619.28	510.03	802.27	0.00	0.00	0.00
6,900.00	0.00	0.00	6,832.23	-619.28	510.03	802.27	0.00	0.00	0.00
7,000.00	0.00	0.00	6,932.23	-619.28	510.03	802.27	0.00	0.00	0.00
NIO A TOP									
7,060.77	0.00	0.00	6,993.00	-619.28	510.03	802.27	0.00	0.00	0.00
7,100.00	0.00	0.00	7,032.23	-619.28	510.03	802.27	0.00	0.00	0.00
7,200.00	0.00	0.00	7,132.23	-619.28	510.03	802.27	0.00	0.00	0.00
7,300.00	0.00	0.00	7,232.23	-619.28	510.03	802.27	0.00	0.00	0.00
CODELL TOP									
7,383.77	0.00	0.00	7,316.00	-619.28	510.03	802.27	0.00	0.00	0.00
7,400.00	0.00	0.00	7,332.23	-619.28	510.03	802.27	0.00	0.00	0.00
7,500.00	0.00	0.00	7,432.23	-619.28	510.03	802.27	0.00	0.00	0.00
7,600.00	0.00	0.00	7,532.23	-619.28	510.03	802.27	0.00	0.00	0.00
7,700.00	0.00	0.00	7,632.23	-619.28	510.03	802.27	0.00	0.00	0.00
7,800.00	0.00	0.00	7,732.23	-619.28	510.03	802.27	0.00	0.00	0.00
JSAND TOP									
7,833.77	0.00	0.00	7,766.00	-619.28	510.03	802.27	0.00	0.00	0.00
7,900.00	0.00	0.00	7,832.23	-619.28	510.03	802.27	0.00	0.00	0.00
PBHL_BERNHARDT STATE 23-36(1320 FSL 2590 FWL)									
7,983.77	0.00	0.00	7,916.00	-619.28	510.03	802.27	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	7,916.00	-619.28	510.03	1,371,912.02	3,183,487.05	40° 21' 8.748 N	104° 50' 29.904 W
- plan hits target center									
- Circle (radius 50.00)									

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_BERNHARDT STATE 23-36
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 23-36	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_BERNHARDT STATE 23-36		
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 (°)	
2,692.49	2,671.00	PARKMAN TOP				
4,447.25	4,399.00	SUSSEX TOP				
4,836.18	4,782.00	SHANNON TOP				
7,060.77	6,993.00	NIO A TOP				
7,383.77	7,316.00	CODELL TOP				
7,833.77	7,766.00	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	
1,450.99	1,448.44	-33.73	27.78	Start 4108.78 hold at 1450.99 MD	
5,559.78	5,494.56	-585.55	482.25	Start Drop -2.00	
6,060.77	5,993.00	-619.28	510.03	Start 1923.00 hold at 6060.77 MD	
7,983.77	7,916.00	-619.28	510.03	TD at 7983.77	



US ROCKIES REGION PLANNING

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

**P_BERNHARDT STATE 23-36
PLAN #1 11-04-09 RHS**

Anticollision Report

04 November, 2009



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_BERNHARDT STATE 23-36
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 23-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BERNHARDT STATE 23-36	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	7,983.77	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
Offet Well - Wellbore - Design						
BERNHARDT STATE 23-36 PAD						
BERNHARDT 19-36 EXISTING - BERNHARDT 19-36 E	950.00	950.00	46.17	8.47	1.225	Level 2, CC
BERNHARDT 19-36 EXISTING - BERNHARDT 19-36 E	1,100.00	1,099.93	49.88	5.94	1.135	Level 2, ES, SF
BERNHARDT 3-36 EXISTING - BERNHARDT 3-36 EXIS	950.00	950.00	107.59	69.88	2.853	CC
BERNHARDT 3-36 EXISTING - BERNHARDT 3-36 EXIS	1,100.00	1,099.93	111.20	67.26	2.531	ES
BERNHARDT 3-36 EXISTING - BERNHARDT 3-36 EXIS	1,300.00	1,299.13	127.45	75.44	2.450	SF
P_BERNHARDT STATE 22-36 - P_BERNHARDT STATI	950.00	950.00	59.95	55.93	14.941	CC, ES
P_BERNHARDT STATE 22-36 - P_BERNHARDT STATI	1,000.00	999.11	60.71	56.49	14.386	SF
P_BERNHARDT STATE 24-36 - P_BERNHARDT STATI	950.00	950.00	30.33	26.31	7.559	CC, ES
P_BERNHARDT STATE 24-36 - P_BERNHARDT STATI	1,000.00	999.93	30.78	26.56	7.295	SF

Offset Design BERNHARDT STATE 23-36 PAD - BERNHARDT 19-36 EXISTING - BERNHARDT 19-36 EXISTING - E												
Survey Program: 0-UNKNOWN												
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)	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	-59.67	23.32	-39.85	46.17			
100.00	100.00	100.00	100.00	0.10	1.70	-59.67	23.32	-39.85	46.17	44.38	1.80	25.717
200.00	200.00	200.00	200.00	0.32	5.70	-59.67	23.32	-39.85	46.17	40.15	6.02	7.670
300.00	300.00	300.00	300.00	0.55	9.70	-59.67	23.32	-39.85	46.17	35.93	10.25	4.507
400.00	400.00	400.00	400.00	0.77	13.70	-59.67	23.32	-39.85	46.17	31.70	14.47	3.191
500.00	500.00	500.00	500.00	0.99	17.70	-59.67	23.32	-39.85	46.17	27.48	18.69	2.470
600.00	600.00	600.00	600.00	1.22	21.70	-59.67	23.32	-39.85	46.17	23.26	22.92	2.015
700.00	700.00	700.00	700.00	1.44	25.70	-59.67	23.32	-39.85	46.17	19.03	27.14	1.701
800.00	800.00	800.00	800.00	1.67	29.70	-59.67	23.32	-39.85	46.17	14.81	31.37	1.472 Level 3
900.00	900.00	900.00	900.00	1.89	33.70	-59.67	23.32	-39.85	46.17	10.58	35.59	1.297 Level 3
950.00	950.00	950.00	950.00	2.01	35.70	-59.67	23.32	-39.85	46.17	8.47	37.71	1.225 Level 2, CC
1,000.00	1,000.00	1,000.00	1,000.00	2.11	37.70	159.99	23.32	-39.85	46.58	6.78	39.80	1.170 Level 2
1,100.00	1,099.93	1,099.93	1,099.93	2.29	41.70	161.34	23.32	-39.85	49.88	5.94	43.93	1.135 Level 2, ES, SF
1,200.00	1,199.68	1,199.68	1,199.68	2.48	45.69	163.56	23.32	-39.85	56.53	8.53	48.01	1.178 Level 2
1,300.00	1,299.13	1,299.13	1,299.13	2.70	49.67	166.06	23.32	-39.85	66.62	14.63	51.99	1.281 Level 3
1,400.00	1,398.15	1,398.15	1,398.15	2.94	53.63	168.40	23.32	-39.85	80.21	24.34	55.87	1.436 Level 3
1,450.99	1,448.44	1,448.44	1,448.44	3.08	55.64	169.46	23.32	-39.85	88.48	30.68	57.80	1.531
1,500.00	1,496.70	1,496.70	1,496.70	3.22	57.57	170.39	23.32	-39.85	96.88	37.08	59.80	1.620

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 23-36
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 23-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BERNHARDT STATE 23-36	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	
1,600.00	1,595.18	1,595.18	1,595.18	3.53	61.51	171.85	23.32	-39.85	114.08	50.18	63.90	1.785	
1,700.00	1,693.65	1,693.65	1,693.65	3.86	65.45	172.92	23.32	-39.85	131.33	63.33	68.00	1.931	
1,800.00	1,792.13	1,792.13	1,792.13	4.20	69.39	173.75	23.32	-39.85	148.61	76.51	72.10	2.061	
1,900.00	1,890.60	1,890.60	1,890.60	4.55	73.32	174.40	23.32	-39.85	165.92	89.71	76.21	2.177	
2,000.00	1,989.08	1,989.08	1,989.08	4.91	77.26	174.93	23.32	-39.85	183.25	102.93	80.32	2.281	
2,100.00	2,087.55	2,087.55	2,087.55	5.28	81.20	175.37	23.32	-39.85	200.59	116.15	84.44	2.376	
2,200.00	2,186.03	2,186.03	2,186.03	5.65	85.14	175.74	23.32	-39.85	217.93	129.38	88.55	2.461	
2,300.00	2,284.50	2,284.50	2,284.50	6.03	89.08	176.06	23.32	-39.85	235.29	142.62	92.67	2.539	
2,400.00	2,382.98	2,382.98	2,382.98	6.41	93.02	176.33	23.32	-39.85	252.65	155.86	96.79	2.610	
2,500.00	2,481.45	2,481.45	2,481.45	6.79	96.96	176.56	23.32	-39.85	270.02	169.10	100.91	2.676	
2,600.00	2,579.93	2,579.93	2,579.93	7.18	100.90	176.77	23.32	-39.85	287.39	182.35	105.04	2.736	
2,700.00	2,678.40	2,678.40	2,678.40	7.57	104.84	176.96	23.32	-39.85	304.76	195.60	109.16	2.792	
2,800.00	2,776.87	2,776.87	2,776.87	7.96	108.77	177.12	23.32	-39.85	322.14	208.85	113.29	2.844	
2,900.00	2,875.35	2,875.35	2,875.35	8.35	112.71	177.27	23.32	-39.85	339.52	222.10	117.41	2.892	
3,000.00	2,973.82	2,973.82	2,973.82	8.74	116.65	177.40	23.32	-39.85	356.90	235.36	121.54	2.936	
3,100.00	3,072.30	3,072.30	3,072.30	9.14	120.59	177.52	23.32	-39.85	374.28	248.61	125.67	2.978	
3,200.00	3,170.77	3,170.77	3,170.77	9.53	124.53	177.63	23.32	-39.85	391.66	261.87	129.80	3.018	
3,300.00	3,269.25	3,269.25	3,269.25	9.93	128.47	177.73	23.32	-39.85	409.05	275.13	133.92	3.054	
3,400.00	3,367.72	3,367.72	3,367.72	10.33	132.41	177.82	23.32	-39.85	426.44	288.38	138.05	3.089	
3,500.00	3,466.20	3,466.20	3,466.20	10.73	136.35	177.91	23.32	-39.85	443.82	301.64	142.18	3.121	
3,600.00	3,564.67	3,564.67	3,564.67	11.12	140.29	177.99	23.32	-39.85	461.21	314.90	146.31	3.152	
3,700.00	3,663.15	3,663.15	3,663.15	11.52	144.23	178.06	23.32	-39.85	478.60	328.16	150.44	3.181	
3,800.00	3,761.62	3,761.62	3,761.62	11.92	148.16	178.13	23.32	-39.85	495.99	341.42	154.57	3.209	
3,900.00	3,860.10	3,860.10	3,860.10	12.32	152.10	178.19	23.32	-39.85	513.38	354.68	158.70	3.235	
4,000.00	3,958.57	3,958.57	3,958.57	12.72	156.04	178.25	23.32	-39.85	530.77	367.94	162.84	3.260	
4,100.00	4,057.05	4,057.05	4,057.05	13.12	159.98	178.31	23.32	-39.85	548.16	381.20	166.97	3.283	
4,200.00	4,155.52	4,155.52	4,155.52	13.53	163.92	178.36	23.32	-39.85	565.55	394.46	171.10	3.305	
4,300.00	4,254.00	4,254.00	4,254.00	13.93	167.86	178.41	23.32	-39.85	582.95	407.72	175.23	3.327	
4,400.00	4,352.47	4,352.47	4,352.47	14.33	171.80	178.46	23.32	-39.85	600.34	420.98	179.36	3.347	
4,500.00	4,450.95	4,450.95	4,450.95	14.73	175.74	178.50	23.32	-39.85	617.73	434.24	183.49	3.366	
4,600.00	4,549.42	4,549.42	4,549.42	15.13	179.68	178.54	23.32	-39.85	635.13	447.50	187.63	3.385	
4,700.00	4,647.89	4,647.89	4,647.89	15.54	183.62	178.58	23.32	-39.85	652.52	460.76	191.76	3.403	
4,800.00	4,746.37	4,746.37	4,746.37	15.94	187.55	178.62	23.32	-39.85	669.91	474.02	195.89	3.420	
4,900.00	4,844.84	4,844.84	4,844.84	16.34	191.49	178.65	23.32	-39.85	687.31	487.28	200.02	3.436	
5,000.00	4,943.32	4,943.32	4,943.32	16.75	195.43	178.68	23.32	-39.85	704.70	500.54	204.16	3.452	
5,100.00	5,041.79	5,041.79	5,041.79	17.15	199.37	178.72	23.32	-39.85	722.10	513.81	208.29	3.467	
5,200.00	5,140.27	5,140.27	5,140.27	17.55	203.31	178.75	23.32	-39.85	739.49	527.07	212.42	3.481	
5,300.00	5,238.74	5,238.74	5,238.74	17.96	207.25	178.77	23.32	-39.85	756.89	540.33	216.56	3.495	
5,400.00	5,337.22	5,337.22	5,337.22	18.36	211.19	178.80	23.32	-39.85	774.28	553.59	220.69	3.508	
5,500.00	5,435.69	5,435.69	5,435.69	18.77	215.13	178.83	23.32	-39.85	791.68	566.85	224.82	3.521	
5,559.78	5,494.56	5,494.56	5,494.56	19.01	217.48	178.84	23.32	-39.85	802.07	574.78	227.29	3.529	
5,600.00	5,534.22	5,534.22	5,534.22	19.15	219.07	178.86	23.32	-39.85	808.79	579.37	229.42	3.525	
5,700.00	5,633.18	5,633.18	5,633.18	19.41	223.03	178.88	23.32	-39.85	823.08	588.43	234.65	3.508	
5,800.00	5,732.59	5,732.59	5,732.59	19.63	227.00	178.90	23.32	-39.85	833.90	594.27	239.63	3.480	
5,900.00	5,832.32	5,832.32	5,832.32	19.82	230.99	178.91	23.32	-39.85	841.25	596.90	244.35	3.443	
6,000.00	5,932.24	5,932.24	5,932.24	19.98	234.99	178.92	23.32	-39.85	845.12	596.33	248.79	3.397	
6,060.77	5,993.00	5,993.00	5,993.00	20.06	237.42	-40.55	23.32	-39.85	845.76	594.42	251.34	3.365	
6,100.00	6,032.23	6,032.23	6,032.23	20.11	238.99	-40.55	23.32	-39.85	845.76	592.77	252.99	3.343	
6,200.00	6,132.23	6,132.23	6,132.23	20.24	242.99	-40.55	23.32	-39.85	845.76	588.60	257.16	3.289	
6,300.00	6,232.23	6,232.23	6,232.23	20.36	246.99	-40.55	23.32	-39.85	845.76	584.42	261.34	3.236	
6,400.00	6,332.23	6,332.23	6,332.23	20.49	250.99	-40.55	23.32	-39.85	845.76	580.24	265.52	3.185	
6,500.00	6,432.23	6,432.23	6,432.23	20.62	254.99	-40.55	23.32	-39.85	845.76	576.07	269.70	3.136	

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 23-36
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 23-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BERNHARDT STATE 23-36	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	6,532.23	6,532.23	6,532.23	20.75	258.99	-40.55	23.32	-39.85	845.76	571.89	273.88	3.088	
6,700.00	6,632.23	6,632.23	6,632.23	20.88	262.99	-40.55	23.32	-39.85	845.76	567.70	278.06	3.042	
6,800.00	6,732.23	6,732.23	6,732.23	21.01	266.99	-40.55	23.32	-39.85	845.76	563.52	282.24	2.997	
6,900.00	6,832.23	6,832.23	6,832.23	21.15	270.99	-40.55	23.32	-39.85	845.76	559.34	286.42	2.953	
7,000.00	6,932.23	6,932.23	6,932.23	21.28	274.99	-40.55	23.32	-39.85	845.76	555.15	290.61	2.910	
7,100.00	7,032.23	7,032.23	7,032.23	21.42	278.99	-40.55	23.32	-39.85	845.76	550.97	294.79	2.869	
7,200.00	7,132.23	7,132.23	7,132.23	21.56	282.99	-40.55	23.32	-39.85	845.76	546.78	298.98	2.829	
7,300.00	7,232.23	7,232.23	7,232.23	21.70	286.99	-40.55	23.32	-39.85	845.76	542.59	303.17	2.790	
7,400.00	7,332.23	7,332.23	7,332.23	21.84	290.99	-40.55	23.32	-39.85	845.76	538.40	307.36	2.752	
7,500.00	7,432.23	7,432.23	7,432.23	21.99	294.99	-40.55	23.32	-39.85	845.76	534.21	311.55	2.715	
7,600.00	7,532.23	7,532.23	7,532.23	22.13	298.99	-40.55	23.32	-39.85	845.76	530.02	315.74	2.679	
7,630.19	7,562.43	7,562.43	7,562.43	22.18	300.20	-40.55	23.32	-39.85	845.76	528.76	317.00	2.668	
7,700.00	7,632.23	7,580.00	7,580.00	22.28	300.90	-40.55	23.32	-39.85	847.37	529.53	317.84	2.666	
7,800.00	7,732.23	7,580.00	7,580.00	22.43	300.90	-40.55	23.32	-39.85	859.35	541.32	318.03	2.702	
7,900.00	7,832.23	7,580.00	7,580.00	22.57	300.90	-40.55	23.32	-39.85	882.57	564.35	318.23	2.773	
7,983.77	7,916.00	7,580.00	7,580.00	22.70	300.90	-40.55	23.32	-39.85	910.06	591.67	318.39	2.858	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_BERNHARDT STATE 23-36
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 23-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BERNHARDT STATE 23-36	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	
0.00	0.00	0.00	0.00	0.00	0.00	-63.01	48.82	-95.87	107.59				
100.00	100.00	100.00	100.00	0.10	1.70	-63.01	48.82	-95.87	107.59	105.79	1.80	59.919	
200.00	200.00	200.00	200.00	0.32	5.70	-63.01	48.82	-95.87	107.59	101.57	6.02	17.871	
300.00	300.00	300.00	300.00	0.55	9.70	-63.01	48.82	-95.87	107.59	97.34	10.25	10.501	
400.00	400.00	400.00	400.00	0.77	13.70	-63.01	48.82	-95.87	107.59	93.12	14.47	7.435	
500.00	500.00	500.00	500.00	0.99	17.70	-63.01	48.82	-95.87	107.59	88.89	18.69	5.755	
600.00	600.00	600.00	600.00	1.22	21.70	-63.01	48.82	-95.87	107.59	84.67	22.92	4.694	
700.00	700.00	700.00	700.00	1.44	25.70	-63.01	48.82	-95.87	107.59	80.44	27.14	3.964	
800.00	800.00	800.00	800.00	1.67	29.70	-63.01	48.82	-95.87	107.59	76.22	31.37	3.430	
900.00	900.00	900.00	900.00	1.89	33.70	-63.01	48.82	-95.87	107.59	71.99	35.59	3.023	
950.00	950.00	950.00	950.00	2.01	35.70	-63.01	48.82	-95.87	107.59	69.88	37.71	2.853 CC	
1,000.00	1,000.00	1,000.00	1,000.00	2.11	37.70	156.55	48.82	-95.87	107.99	68.18	39.80	2.713	
1,100.00	1,099.93	1,099.93	1,099.93	2.29	41.70	157.24	48.82	-95.87	111.20	67.26	43.94	2.531 ES	
1,200.00	1,199.68	1,199.68	1,199.68	2.48	45.69	158.51	48.82	-95.87	117.66	69.65	48.02	2.451	
1,300.00	1,299.13	1,299.13	1,299.13	2.70	49.67	160.16	48.82	-95.87	127.45	75.44	52.01	2.450 SF	
1,400.00	1,398.15	1,398.15	1,398.15	2.94	53.63	162.00	48.82	-95.87	140.63	84.72	55.91	2.515	
1,450.99	1,448.44	1,448.44	1,448.44	3.08	55.64	162.96	48.82	-95.87	148.67	90.82	57.85	2.570	
1,500.00	1,496.70	1,496.70	1,496.70	3.22	57.57	163.87	48.82	-95.87	156.86	97.00	59.86	2.621	
1,600.00	1,595.18	1,595.18	1,595.18	3.53	61.51	165.46	48.82	-95.87	173.65	109.70	63.95	2.715	
1,700.00	1,693.65	1,693.65	1,693.65	3.86	65.45	166.77	48.82	-95.87	190.56	122.51	68.05	2.800	
1,800.00	1,792.13	1,792.13	1,792.13	4.20	69.39	167.87	48.82	-95.87	207.55	135.39	72.16	2.876	
1,900.00	1,890.60	1,890.60	1,890.60	4.55	73.32	168.80	48.82	-95.87	224.60	148.33	76.27	2.945	
2,000.00	1,989.08	1,989.08	1,989.08	4.91	77.26	169.60	48.82	-95.87	241.70	161.32	80.38	3.007	
2,100.00	2,087.55	2,087.55	2,087.55	5.28	81.20	170.30	48.82	-95.87	258.84	174.35	84.49	3.063	
2,200.00	2,186.03	2,186.03	2,186.03	5.65	85.14	170.91	48.82	-95.87	276.01	187.40	88.61	3.115	
2,300.00	2,284.50	2,284.50	2,284.50	6.03	89.08	171.44	48.82	-95.87	293.21	200.48	92.73	3.162	
2,400.00	2,382.98	2,382.98	2,382.98	6.41	93.02	171.92	48.82	-95.87	310.43	213.58	96.85	3.205	
2,500.00	2,481.45	2,481.45	2,481.45	6.79	96.96	172.35	48.82	-95.87	327.67	226.70	100.97	3.245	
2,600.00	2,579.93	2,579.93	2,579.93	7.18	100.90	172.73	48.82	-95.87	344.93	239.84	105.09	3.282	
2,700.00	2,678.40	2,678.40	2,678.40	7.57	104.84	173.08	48.82	-95.87	362.20	252.98	109.22	3.316	
2,800.00	2,776.87	2,776.87	2,776.87	7.96	108.77	173.40	48.82	-95.87	379.48	266.14	113.34	3.348	
2,900.00	2,875.35	2,875.35	2,875.35	8.35	112.71	173.69	48.82	-95.87	396.77	279.30	117.47	3.378	
3,000.00	2,973.82	2,973.82	2,973.82	8.74	116.65	173.95	48.82	-95.87	414.07	292.48	121.60	3.405	
3,100.00	3,072.30	3,072.30	3,072.30	9.14	120.59	174.20	48.82	-95.87	431.38	305.66	125.72	3.431	
3,200.00	3,170.77	3,170.77	3,170.77	9.53	124.53	174.42	48.82	-95.87	448.70	318.85	129.85	3.456	
3,300.00	3,269.25	3,269.25	3,269.25	9.93	128.47	174.63	48.82	-95.87	466.02	332.04	133.98	3.478	
3,400.00	3,367.72	3,367.72	3,367.72	10.33	132.41	174.82	48.82	-95.87	483.35	345.24	138.11	3.500	
3,500.00	3,466.20	3,466.20	3,466.20	10.73	136.35	175.00	48.82	-95.87	500.68	358.44	142.24	3.520	
3,600.00	3,564.67	3,564.67	3,564.67	11.12	140.29	175.17	48.82	-95.87	518.02	371.65	146.37	3.539	
3,700.00	3,663.15	3,663.15	3,663.15	11.52	144.23	175.33	48.82	-95.87	535.36	384.86	150.50	3.557	
3,800.00	3,761.62	3,761.62	3,761.62	11.92	148.16	175.47	48.82	-95.87	552.70	398.08	154.63	3.574	
3,900.00	3,860.10	3,860.10	3,860.10	12.32	152.10	175.61	48.82	-95.87	570.05	411.29	158.76	3.591	
4,000.00	3,958.57	3,958.57	3,958.57	12.72	156.04	175.74	48.82	-95.87	587.40	424.51	162.89	3.606	
4,100.00	4,057.05	4,057.05	4,057.05	13.12	159.98	175.86	48.82	-95.87	604.76	437.74	167.02	3.621	
4,200.00	4,155.52	4,155.52	4,155.52	13.53	163.92	175.98	48.82	-95.87	622.11	450.96	171.15	3.635	
4,300.00	4,254.00	4,254.00	4,254.00	13.93	167.86	176.09	48.82	-95.87	639.47	464.19	175.28	3.648	
4,400.00	4,352.47	4,352.47	4,352.47	14.33	171.80	176.19	48.82	-95.87	656.83	477.42	179.41	3.661	
4,500.00	4,450.95	4,450.95	4,450.95	14.73	175.74	176.29	48.82	-95.87	674.19	490.65	183.54	3.673	
4,600.00	4,549.42	4,549.42	4,549.42	15.13	179.68	176.38	48.82	-95.87	691.56	503.88	187.68	3.685	
4,700.00	4,647.89	4,647.89	4,647.89	15.54	183.62	176.47	48.82	-95.87	708.92	517.12	191.81	3.696	
4,800.00	4,746.37	4,746.37	4,746.37	15.94	187.55	176.56	48.82	-95.87	726.29	530.35	195.94	3.707	
4,900.00	4,844.84	4,844.84	4,844.84	16.34	191.49	176.64	48.82	-95.87	743.66	543.59	200.07	3.717	

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 23-36
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 23-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BERNHARDT STATE 23-36	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	4,943.32	4,943.32	4,943.32	16.75	195.43	176.71	48.82	-95.87	761.03	556.83	204.21	3.727		
5,100.00	5,041.79	5,041.79	5,041.79	17.15	199.37	176.79	48.82	-95.87	778.40	570.06	208.34	3.736		
5,200.00	5,140.27	5,140.27	5,140.27	17.55	203.31	176.86	48.82	-95.87	795.78	583.31	212.47	3.745		
5,300.00	5,238.74	5,238.74	5,238.74	17.96	207.25	176.92	48.82	-95.87	813.15	596.55	216.60	3.754		
5,400.00	5,337.22	5,337.22	5,337.22	18.36	211.19	176.99	48.82	-95.87	830.53	609.79	220.74	3.763		
5,500.00	5,435.69	5,435.69	5,435.69	18.77	215.13	177.05	48.82	-95.87	847.90	623.03	224.87	3.771		
5,559.78	5,494.56	5,494.56	5,494.56	19.01	217.48	177.09	48.82	-95.87	858.29	630.95	227.34	3.775		
5,600.00	5,534.22	5,534.22	5,534.22	19.15	219.07	177.12	48.82	-95.87	865.00	635.55	229.45	3.770		
5,700.00	5,633.18	5,633.18	5,633.18	19.41	223.03	177.18	48.82	-95.87	879.27	644.60	234.67	3.747		
5,800.00	5,732.59	5,732.59	5,732.59	19.63	227.00	177.22	48.82	-95.87	890.09	650.43	239.65	3.714		
5,900.00	5,832.32	5,832.32	5,832.32	19.82	230.99	177.25	48.82	-95.87	897.43	653.06	244.37	3.672		
6,000.00	5,932.24	5,932.24	5,932.24	19.98	234.99	177.27	48.82	-95.87	901.29	652.48	248.81	3.622		
6,060.77	5,993.00	5,993.00	5,993.00	20.06	237.42	-42.21	48.82	-95.87	901.93	650.57	251.36	3.588		
6,100.00	6,032.23	6,032.23	6,032.23	20.11	238.99	-42.21	48.82	-95.87	901.93	648.93	253.01	3.565		
6,200.00	6,132.23	6,132.23	6,132.23	20.24	242.99	-42.21	48.82	-95.87	901.93	644.75	257.18	3.507		
6,300.00	6,232.23	6,232.23	6,232.23	20.36	246.99	-42.21	48.82	-95.87	901.93	640.57	261.36	3.451		
6,400.00	6,332.23	6,332.23	6,332.23	20.49	250.99	-42.21	48.82	-95.87	901.93	636.40	265.53	3.397		
6,500.00	6,432.23	6,432.23	6,432.23	20.62	254.99	-42.21	48.82	-95.87	901.93	632.22	269.71	3.344		
6,600.00	6,532.23	6,532.23	6,532.23	20.75	258.99	-42.21	48.82	-95.87	901.93	628.04	273.89	3.293		
6,700.00	6,632.23	6,632.23	6,632.23	20.88	262.99	-42.21	48.82	-95.87	901.93	623.86	278.07	3.243		
6,800.00	6,732.23	6,732.23	6,732.23	21.01	266.99	-42.21	48.82	-95.87	901.93	619.68	282.26	3.195		
6,900.00	6,832.23	6,832.23	6,832.23	21.15	270.99	-42.21	48.82	-95.87	901.93	615.49	286.44	3.149		
7,000.00	6,932.23	6,932.23	6,932.23	21.28	274.99	-42.21	48.82	-95.87	901.93	611.31	290.62	3.103		
7,100.00	7,032.23	7,032.23	7,032.23	21.42	278.99	-42.21	48.82	-95.87	901.93	607.12	294.81	3.059		
7,200.00	7,132.23	7,132.23	7,132.23	21.56	282.99	-42.21	48.82	-95.87	901.93	602.94	299.00	3.017		
7,300.00	7,232.23	7,232.23	7,232.23	21.70	286.99	-42.21	48.82	-95.87	901.93	598.75	303.18	2.975		
7,400.00	7,332.23	7,332.23	7,332.23	21.84	290.99	-42.21	48.82	-95.87	901.93	594.56	307.37	2.934		
7,500.00	7,432.23	7,432.23	7,432.23	21.99	294.99	-42.21	48.82	-95.87	901.93	590.37	311.56	2.895		
7,557.14	7,489.37	7,489.37	7,489.37	22.07	297.27	-42.21	48.82	-95.87	901.93	587.98	313.96	2.873		
7,600.00	7,532.23	7,510.00	7,510.00	22.13	298.10	-42.21	48.82	-95.87	902.21	587.34	314.86	2.865		
7,700.00	7,632.23	7,510.00	7,510.00	22.28	298.10	-42.21	48.82	-95.87	910.18	595.12	315.05	2.889		
7,800.00	7,732.23	7,510.00	7,510.00	22.43	298.10	-42.21	48.82	-95.87	928.91	613.66	315.25	2.947		
7,900.00	7,832.23	7,510.00	7,510.00	22.57	298.10	-42.21	48.82	-95.87	957.77	642.33	315.44	3.036		
7,983.77	7,916.00	7,510.00	7,510.00	22.70	298.10	-42.21	48.82	-95.87	989.10	673.50	315.60	3.134		

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_BERNHARDT STATE 23-36
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 23-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BERNHARDT STATE 23-36	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	-13.44	58.30	-13.93	59.95					
100.00	100.00	100.00	100.00	0.10	0.10	-13.44	58.30	-13.93	59.95	59.75	0.19	313.767		
200.00	200.00	200.00	200.00	0.32	0.32	-13.44	58.30	-13.93	59.95	59.31	0.64	93.580		
300.00	300.00	300.00	300.00	0.55	0.55	-13.44	58.30	-13.93	59.95	58.86	1.09	54.990		
400.00	400.00	400.00	400.00	0.77	0.77	-13.44	58.30	-13.93	59.95	58.41	1.54	38.935		
500.00	500.00	500.00	500.00	0.99	0.99	-13.44	58.30	-13.93	59.95	57.96	1.99	30.136		
600.00	600.00	600.00	600.00	1.22	1.22	-13.44	58.30	-13.93	59.95	57.51	2.44	24.581		
700.00	700.00	700.00	700.00	1.44	1.44	-13.44	58.30	-13.93	59.95	57.06	2.89	20.755		
800.00	800.00	800.00	800.00	1.67	1.67	-13.44	58.30	-13.93	59.95	56.61	3.34	17.960		
900.00	900.00	900.00	900.00	1.89	1.89	-13.44	58.30	-13.93	59.95	56.16	3.79	15.828		
950.00	950.00	950.00	950.00	2.01	2.01	-13.44	58.30	-13.93	59.95	55.93	4.01	14.941 CC, ES		
1,000.00	1,000.00	999.11	999.10	2.11	2.11	-154.34	58.60	-14.23	60.71	56.49	4.22	14.386 SF		
1,100.00	1,099.93	1,096.97	1,096.91	2.29	2.33	-157.05	60.98	-16.59	66.86	62.25	4.61	14.508		
1,200.00	1,199.68	1,193.80	1,193.50	2.48	2.55	-161.15	65.67	-21.23	79.49	74.49	5.00	15.899		
1,300.00	1,299.13	1,288.92	1,288.13	2.70	2.77	-165.28	72.52	-28.03	98.87	93.48	5.39	18.347		
1,400.00	1,398.15	1,381.74	1,380.11	2.94	3.01	-168.74	81.36	-36.80	125.00	119.22	5.77	21.659		
1,450.99	1,448.44	1,428.00	1,425.79	3.08	3.14	-170.20	86.56	-41.95	140.87	134.90	5.96	23.622		
1,500.00	1,496.70	1,471.84	1,468.96	3.22	3.27	-171.46	91.96	-47.30	157.31	151.15	6.16	25.523		
1,600.00	1,595.18	1,559.75	1,555.16	3.53	3.56	-173.47	104.21	-59.45	193.15	186.57	6.57	29.377		
1,700.00	1,693.65	1,649.53	1,642.72	3.86	3.88	-175.02	118.30	-73.41	231.44	224.44	7.00	33.072		
1,800.00	1,792.13	1,741.65	1,732.51	4.20	4.23	-176.17	132.91	-87.89	270.08	262.64	7.43	36.333		
1,900.00	1,890.60	1,833.77	1,822.31	4.55	4.60	-177.03	147.51	-102.38	308.78	300.90	7.88	39.210		
2,000.00	1,989.08	1,925.89	1,912.10	4.91	4.98	-177.70	162.12	-116.86	347.53	339.20	8.32	41.758		
2,100.00	2,087.55	2,018.01	2,001.89	5.28	5.37	-178.23	176.73	-131.34	386.31	377.53	8.77	44.026		
2,200.00	2,186.03	2,110.13	2,091.69	5.65	5.76	-178.67	191.34	-145.82	425.11	415.88	9.23	46.054		
2,300.00	2,284.50	2,202.25	2,181.48	6.03	6.17	-179.04	205.94	-160.30	463.93	454.24	9.69	47.876		
2,400.00	2,382.98	2,294.37	2,271.28	6.41	6.57	-179.35	220.55	-174.79	502.77	492.62	10.15	49.517		
2,500.00	2,481.45	2,386.49	2,361.07	6.79	6.99	-179.61	235.16	-189.27	541.61	531.00	10.62	51.004		
2,600.00	2,579.93	2,478.61	2,450.86	7.18	7.40	-179.84	249.77	-203.75	580.47	569.38	11.09	52.356		
2,700.00	2,678.40	2,570.73	2,540.66	7.57	7.82	-179.96	264.38	-218.23	619.33	607.77	11.56	53.589		
2,800.00	2,776.87	2,662.85	2,630.45	7.96	8.24	-179.79	278.98	-232.71	658.20	646.17	12.03	54.719		
2,900.00	2,875.35	2,754.97	2,720.25	8.35	8.66	-179.63	293.59	-247.19	697.07	684.57	12.50	55.756		
3,000.00	2,973.82	2,847.09	2,810.04	8.74	9.09	-179.49	308.20	-261.68	735.95	722.97	12.98	56.712		
3,100.00	3,072.30	2,939.21	2,899.83	9.14	9.51	-179.36	322.81	-276.16	774.82	761.37	13.45	57.596		
3,200.00	3,170.77	3,031.33	2,989.63	9.53	9.94	-179.25	337.41	-290.64	813.71	799.78	13.93	58.414		
3,300.00	3,269.25	3,123.45	3,079.42	9.93	10.37	-179.14	352.02	-305.12	852.59	838.18	14.41	59.174		
3,400.00	3,367.72	3,215.57	3,169.22	10.33	10.80	-179.05	366.63	-319.60	891.48	876.59	14.89	59.882		
3,500.00	3,466.20	3,307.69	3,259.01	10.73	11.23	-178.96	381.24	-334.09	930.37	915.00	15.37	60.542		
3,600.00	3,564.67	3,399.81	3,348.80	11.12	11.66	-178.88	395.84	-348.57	969.26	953.41	15.85	61.159		
3,700.00	3,663.15	3,491.93	3,438.60	11.52	12.09	-178.81	410.45	-363.05	1,008.15	991.82	16.33	61.738		
3,800.00	3,761.62	3,584.05	3,528.39	11.92	12.53	-178.74	425.06	-377.53	1,047.04	1,030.23	16.81	62.280		
3,900.00	3,860.10	3,676.17	3,618.19	12.32	12.96	-178.68	439.67	-392.01	1,085.93	1,068.64	17.29	62.791		
4,000.00	3,958.57	3,768.29	3,707.98	12.72	13.39	-178.62	454.28	-406.50	1,124.83	1,107.05	17.78	63.272		
4,100.00	4,057.05	3,860.41	3,797.77	13.12	13.83	-178.56	468.88	-420.98	1,163.73	1,145.46	18.26	63.726		
4,200.00	4,155.52	3,952.53	3,887.57	13.53	14.26	-178.51	483.49	-435.46	1,202.62	1,183.88	18.75	64.154		
4,300.00	4,254.00	4,044.65	3,977.36	13.93	14.70	-178.46	498.10	-449.94	1,241.52	1,222.29	19.23	64.560		
4,400.00	4,352.47	4,136.77	4,067.16	14.33	15.14	-178.42	512.71	-464.42	1,280.42	1,260.70	19.72	64.945		
4,500.00	4,450.95	4,228.89	4,156.95	14.73	15.57	-178.38	527.31	-478.90	1,319.32	1,299.12	20.20	65.310		
4,600.00	4,549.42	4,321.01	4,246.74	15.13	16.01	-178.34	541.92	-493.39	1,358.22	1,337.53	20.69	65.657		
4,700.00	4,647.89	4,413.13	4,336.54	15.54	16.44	-178.30	556.53	-507.87	1,397.12	1,375.95	21.17	65.987		
4,800.00	4,746.37	4,505.25	4,426.33	15.94	16.88	-178.26	571.14	-522.35	1,436.02	1,414.36	21.66	66.301		
4,900.00	4,844.84	4,597.37	4,516.13	16.34	17.32	-178.23	585.74	-536.83	1,474.92	1,452.77	22.15	66.601		

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 23-36
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 23-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BERNHARDT STATE 23-36	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	4,943.32	4,689.49	4,605.92	16.75	17.76	178.20	600.35	-551.31	1,513.82	1,491.19	22.63	66.887	
5,100.00	5,041.79	4,781.61	4,695.71	17.15	18.19	178.17	614.96	-565.80	1,552.72	1,529.60	23.12	67.160	
5,200.00	5,140.27	4,873.73	4,785.51	17.55	18.63	178.14	629.57	-580.28	1,591.63	1,568.02	23.61	67.421	
5,300.00	5,238.74	4,965.85	4,875.30	17.96	19.07	178.11	644.18	-594.76	1,630.53	1,606.43	24.09	67.672	
5,400.00	5,337.22	5,057.97	4,965.10	18.36	19.51	178.08	658.78	-609.24	1,669.43	1,644.85	24.58	67.911	
5,500.00	5,435.69	5,150.08	5,054.89	18.77	19.95	178.06	673.39	-623.72	1,708.33	1,683.26	25.07	68.141	
5,559.78	5,494.56	5,205.15	5,108.56	19.01	20.21	178.04	682.12	-632.38	1,731.59	1,706.23	25.36	68.274	
5,600.00	5,534.22	5,242.31	5,144.79	19.15	20.38	178.04	688.02	-638.22	1,746.98	1,721.36	25.62	68.201	
5,700.00	5,633.18	5,335.61	5,235.73	19.41	20.83	178.04	702.81	-652.89	1,782.96	1,756.76	26.20	68.043	
5,800.00	5,732.59	5,430.10	5,327.83	19.63	21.28	178.04	717.79	-667.74	1,815.67	1,788.91	26.76	67.847	
5,900.00	5,832.32	5,561.43	5,554.87	19.82	22.08	177.99	749.05	-698.73	1,842.28	1,814.74	27.54	66.906	
6,000.00	5,932.24	5,940.01	5,831.88	19.98	22.71	177.96	769.35	-718.85	1,856.37	1,828.09	28.29	65.627	
6,060.77	5,993.00	6,101.21	5,993.00	20.06	22.93	-41.51	772.33	-721.81	1,858.50	1,829.82	28.68	64.792	
6,100.00	6,032.23	6,140.44	6,032.23	20.11	22.98	-41.51	772.33	-721.81	1,858.50	1,829.67	28.83	64.461	
6,200.00	6,132.23	6,240.44	6,132.23	20.24	23.11	-41.51	772.33	-721.81	1,858.50	1,829.30	29.20	63.654	
6,300.00	6,232.23	6,340.44	6,232.23	20.36	23.24	-41.51	772.33	-721.81	1,858.50	1,828.93	29.56	62.862	
6,400.00	6,332.23	6,440.44	6,332.23	20.49	23.36	-41.51	772.33	-721.81	1,858.50	1,828.56	29.93	62.085	
6,500.00	6,432.23	6,540.44	6,432.23	20.62	23.50	-41.51	772.33	-721.81	1,858.50	1,828.19	30.31	61.323	
6,600.00	6,532.23	6,640.44	6,532.23	20.75	23.63	-41.51	772.33	-721.81	1,858.50	1,827.82	30.68	60.574	
6,700.00	6,632.23	6,740.44	6,632.23	20.88	23.76	-41.51	772.33	-721.81	1,858.50	1,827.44	31.06	59.841	
6,800.00	6,732.23	6,840.44	6,732.23	21.01	23.90	-41.51	772.33	-721.81	1,858.50	1,827.06	31.44	59.121	
6,900.00	6,832.23	6,940.44	6,832.23	21.15	24.03	-41.51	772.33	-721.81	1,858.50	1,826.68	31.82	58.414	
7,000.00	6,932.23	7,040.44	6,932.23	21.28	24.17	-41.51	772.33	-721.81	1,858.50	1,826.30	32.20	57.721	
7,100.00	7,032.23	7,140.44	7,032.23	21.42	24.31	-41.51	772.33	-721.81	1,858.50	1,825.92	32.58	57.042	
7,200.00	7,132.23	7,240.44	7,132.23	21.56	24.45	-41.51	772.33	-721.81	1,858.50	1,825.53	32.97	56.375	
7,300.00	7,232.23	7,340.44	7,232.23	21.70	24.59	-41.51	772.33	-721.81	1,858.50	1,825.15	33.35	55.721	
7,400.00	7,332.23	7,440.44	7,332.23	21.84	24.73	-41.51	772.33	-721.81	1,858.50	1,824.76	33.74	55.080	
7,500.00	7,432.23	7,540.44	7,432.23	21.99	24.88	-41.51	772.33	-721.81	1,858.50	1,824.37	34.13	54.451	
7,600.00	7,532.23	7,640.44	7,532.23	22.13	25.02	-41.51	772.33	-721.81	1,858.50	1,823.98	34.52	53.833	
7,700.00	7,632.23	7,740.44	7,632.23	22.28	25.17	-41.51	772.33	-721.81	1,858.50	1,823.58	34.92	53.228	
7,800.00	7,732.23	7,840.44	7,732.23	22.43	25.31	-41.51	772.33	-721.81	1,858.50	1,823.19	35.31	52.633	
7,900.00	7,832.23	7,940.44	7,832.23	22.57	25.46	-41.51	772.33	-721.81	1,858.50	1,822.79	35.71	52.050	
7,953.69	7,885.92	7,994.13	7,885.92	22.66	25.54	-41.51	772.33	-721.81	1,858.50	1,822.58	35.92	51.742	
7,983.77	7,916.00	8,018.21	7,910.00	22.70	25.58	-41.51	772.33	-721.81	1,858.51	1,822.48	36.03	51.588	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_BERNHARDT STATE 23-36
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 23-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BERNHARDT STATE 23-36	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	-16.00	29.15	-8.36	30.33					
100.00	100.00	100.00	100.00	0.10	0.10	-16.00	29.15	-8.36	30.33	30.14	0.19	158.738		
200.00	200.00	200.00	200.00	0.32	0.32	-16.00	29.15	-8.36	30.33	29.69	0.64	47.343		
300.00	300.00	300.00	300.00	0.55	0.55	-16.00	29.15	-8.36	30.33	29.24	1.09	27.820		
400.00	400.00	400.00	400.00	0.77	0.77	-16.00	29.15	-8.36	30.33	28.79	1.54	19.697		
500.00	500.00	500.00	500.00	0.99	0.99	-16.00	29.15	-8.36	30.33	28.34	1.99	15.246		
600.00	600.00	600.00	600.00	1.22	1.22	-16.00	29.15	-8.36	30.33	27.89	2.44	12.436		
700.00	700.00	700.00	700.00	1.44	1.44	-16.00	29.15	-8.36	30.33	27.44	2.89	10.500		
800.00	800.00	800.00	800.00	1.67	1.67	-16.00	29.15	-8.36	30.33	26.99	3.34	9.086		
900.00	900.00	900.00	900.00	1.89	1.89	-16.00	29.15	-8.36	30.33	26.54	3.79	8.008		
950.00	950.00	950.00	950.00	2.01	2.01	-16.00	29.15	-8.36	30.33	26.31	4.01	7.559 CC, ES		
1,000.00	1,000.00	999.93	999.93	2.11	2.11	-156.04	29.32	-7.96	30.78	26.56	4.22	7.295 SF		
1,100.00	1,099.93	1,099.67	1,099.60	2.29	2.33	-152.63	30.66	-4.76	34.47	29.86	4.61	7.482		
1,200.00	1,199.68	1,199.02	1,198.70	2.48	2.54	-147.62	33.33	1.62	42.09	37.09	5.01	8.405		
1,300.00	1,299.13	1,297.73	1,296.88	2.70	2.78	-142.80	37.30	11.08	53.88	48.45	5.43	9.918		
1,400.00	1,398.15	1,395.56	1,393.77	2.94	3.03	-138.89	42.51	23.53	69.88	63.99	5.89	11.862		
1,450.99	1,448.44	1,445.03	1,442.57	3.08	3.17	-137.27	45.64	30.99	79.65	73.50	6.14	12.961		
1,500.00	1,496.70	1,492.33	1,489.10	3.22	3.31	-135.87	48.93	38.85	89.74	83.34	6.40	14.015		
1,600.00	1,595.18	1,588.15	1,582.88	3.53	3.63	-132.71	56.50	56.92	111.64	104.67	6.97	16.014		
1,700.00	1,693.65	1,682.86	1,674.90	3.86	4.00	-129.44	65.17	77.63	135.52	127.93	7.58	17.867		
1,800.00	1,792.13	1,776.30	1,764.89	4.20	4.41	-126.24	74.88	100.79	161.55	153.31	8.24	19.612		
1,900.00	1,890.60	1,868.28	1,852.63	4.55	4.86	-123.20	85.53	126.22	189.90	180.98	8.92	21.285		
2,000.00	1,989.08	1,958.65	1,937.94	4.91	5.37	-120.38	97.05	153.73	220.67	211.04	9.63	22.912		
2,100.00	2,087.55	2,047.29	2,020.66	5.28	5.92	-117.78	109.36	183.11	253.91	243.55	10.36	24.512		
2,200.00	2,186.03	2,134.08	2,100.65	5.65	6.51	-115.41	122.36	214.14	289.64	278.54	11.10	26.100		
2,300.00	2,284.50	2,221.15	2,179.91	6.03	7.16	-113.20	136.29	247.40	327.76	315.90	11.85	27.655		
2,400.00	2,382.98	2,312.61	2,262.88	6.41	7.87	-111.29	151.15	282.87	366.75	354.12	12.64	29.023		
2,500.00	2,481.45	2,404.06	2,345.86	6.79	8.59	-109.74	166.01	318.34	406.04	392.61	13.42	30.247		
2,600.00	2,579.93	2,495.52	2,428.84	7.18	9.33	-108.47	180.86	353.80	445.53	431.31	14.21	31.347		
2,700.00	2,678.40	2,586.97	2,511.81	7.57	10.08	-107.40	195.72	389.27	485.18	470.17	15.00	32.340		
2,800.00	2,776.87	2,678.42	2,594.79	7.96	10.83	-106.49	210.58	424.74	524.95	509.15	15.80	33.232		
2,900.00	2,875.35	2,769.88	2,677.77	8.35	11.59	-105.70	225.44	460.21	564.81	548.22	16.59	34.039		
3,000.00	2,973.82	2,861.33	2,760.75	8.74	12.35	-105.02	240.29	495.68	604.76	587.37	17.39	34.773		
3,100.00	3,072.30	2,952.79	2,843.72	9.14	13.12	-104.43	255.15	531.14	644.76	626.57	18.19	35.442		
3,200.00	3,170.77	3,044.24	2,926.70	9.53	13.89	-103.90	270.01	566.61	684.82	665.83	18.99	36.054		
3,300.00	3,269.25	3,135.70	3,009.68	9.93	14.67	-103.43	284.87	602.08	724.92	705.13	19.80	36.616		
3,400.00	3,367.72	3,227.15	3,092.65	10.33	15.44	-103.02	299.72	637.55	765.06	744.46	20.60	37.133		
3,500.00	3,466.20	3,318.61	3,175.63	10.73	16.22	-102.64	314.58	673.02	805.23	783.82	21.41	37.611		
3,600.00	3,564.67	3,410.06	3,258.61	11.12	17.00	-102.30	329.44	708.48	845.43	823.21	22.22	38.053		
3,700.00	3,663.15	3,501.51	3,341.59	11.52	17.78	-101.99	344.30	743.95	885.65	862.62	23.03	38.463		
3,800.00	3,761.62	3,592.97	3,424.56	11.92	18.57	-101.70	359.15	779.42	925.89	902.05	23.84	38.845		
3,900.00	3,860.10	3,684.42	3,507.54	12.32	19.35	-101.44	374.01	814.89	966.14	941.50	24.65	39.201		
4,000.00	3,958.57	3,775.88	3,590.52	12.72	20.13	-101.20	388.87	850.36	1,006.42	980.96	25.46	39.533		
4,100.00	4,057.05	3,867.33	3,673.49	13.12	20.92	-100.98	403.73	885.82	1,046.70	1,020.43	26.27	39.845		
4,200.00	4,155.52	3,958.79	3,756.47	13.53	21.71	-100.78	418.58	921.29	1,087.00	1,059.92	27.08	40.137		
4,300.00	4,254.00	4,050.24	3,839.45	13.93	22.49	-100.59	433.44	956.76	1,127.31	1,099.41	27.90	40.411		
4,400.00	4,352.47	4,141.70	3,922.43	14.33	23.28	-100.41	448.30	992.23	1,167.63	1,138.92	28.71	40.670		
4,500.00	4,450.95	4,233.15	4,005.40	14.73	24.07	-100.25	463.16	1,027.69	1,207.95	1,178.43	29.52	40.914		
4,600.00	4,549.42	4,324.60	4,088.38	15.13	24.86	-100.09	478.01	1,063.16	1,248.29	1,217.95	30.34	41.144		
4,700.00	4,647.89	4,416.06	4,171.36	15.54	25.65	-99.95	492.87	1,098.63	1,288.63	1,257.47	31.16	41.362		
4,800.00	4,746.37	4,507.51	4,254.33	15.94	26.44	-99.81	507.73	1,134.10	1,328.98	1,297.01	31.97	41.568		
4,900.00	4,844.84	4,598.97	4,337.31	16.34	27.23	-99.68	522.59	1,169.57	1,369.33	1,336.54	32.79	41.764		

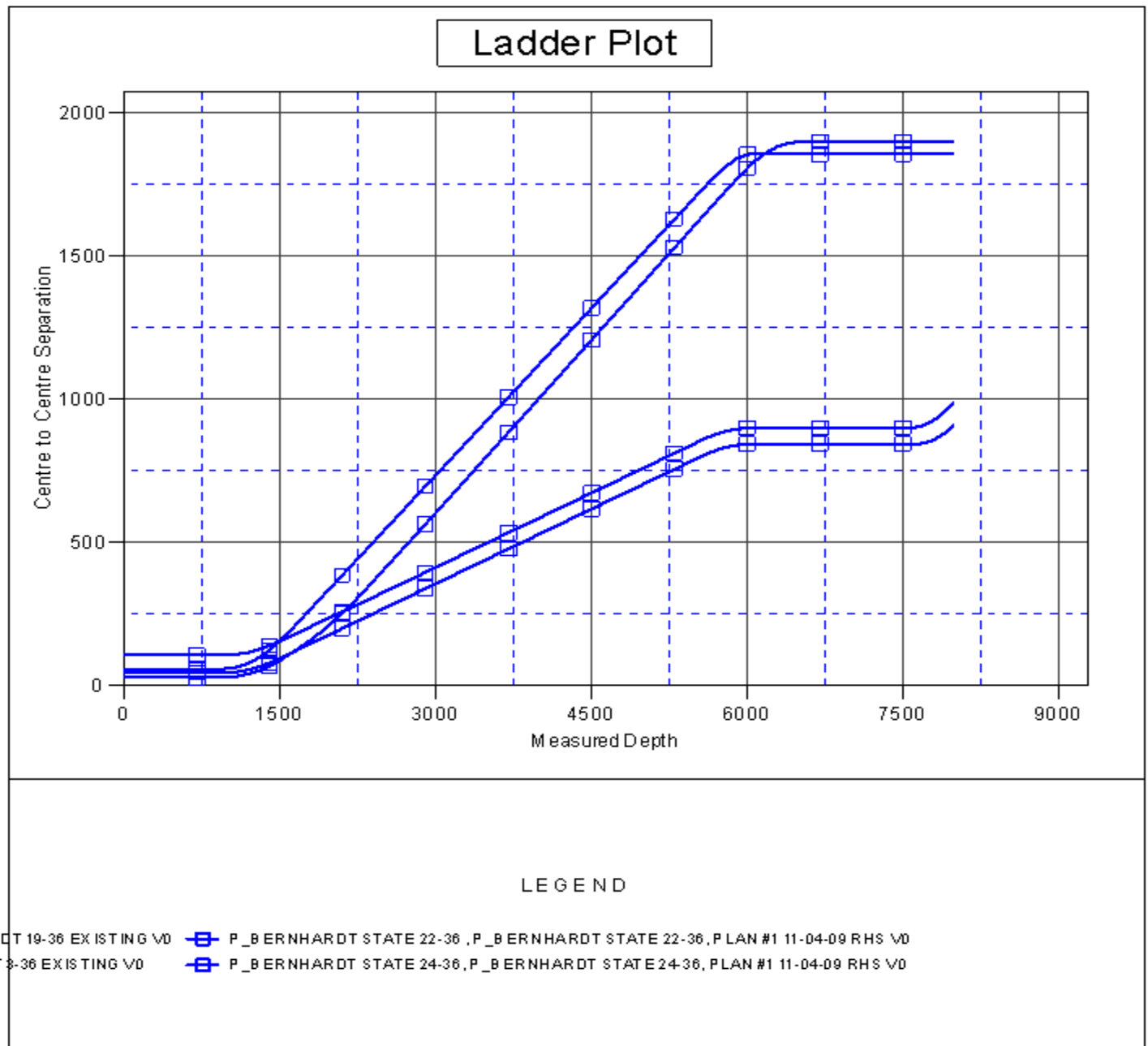
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_BERNHARDT STATE 23-36
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 23-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BERNHARDT STATE 23-36	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	4,943.32	4,690.42	4,420.29	16.75	28.02	-99.56	537.44	1,205.03	1,409.69	1,376.09	33.60	41.950	
5,100.00	5,041.79	4,781.88	4,503.27	17.15	28.81	-99.45	552.30	1,240.50	1,450.06	1,415.63	34.42	42.127	
5,200.00	5,140.27	4,873.33	4,586.24	17.55	29.60	-99.34	567.16	1,275.97	1,490.43	1,455.19	35.24	42.295	
5,300.00	5,238.74	4,964.79	4,669.22	17.96	30.39	-99.24	582.02	1,311.44	1,530.80	1,494.74	36.06	42.456	
5,400.00	5,337.22	5,056.24	4,752.20	18.36	31.19	-99.14	596.87	1,346.91	1,571.18	1,534.30	36.87	42.609	
5,500.00	5,435.69	5,147.70	4,835.17	18.77	31.98	-99.05	611.73	1,382.37	1,611.56	1,573.86	37.69	42.755	
5,559.78	5,494.56	5,202.36	4,884.78	19.01	32.45	-99.00	620.61	1,403.58	1,635.70	1,597.51	38.18	42.839	
5,600.00	5,534.22	5,239.16	4,918.16	19.15	32.77	-99.30	626.59	1,417.85	1,651.90	1,613.31	38.59	42.805	
5,700.00	5,633.18	5,330.69	5,001.20	19.41	33.56	-99.96	641.46	1,453.34	1,691.82	1,652.31	39.52	42.813	
5,800.00	5,732.59	5,422.19	5,084.22	19.63	34.36	-100.49	656.32	1,488.83	1,731.22	1,690.84	40.38	42.870	
5,900.00	5,832.32	5,513.56	5,167.13	19.82	35.15	-100.91	671.17	1,524.26	1,770.10	1,728.91	41.19	42.976	
6,000.00	5,932.24	5,646.98	5,288.58	19.98	36.18	-100.97	692.50	1,575.19	1,808.09	1,766.09	42.00	43.049	
6,060.77	5,993.00	5,778.23	5,410.21	20.06	37.00	39.85	711.54	1,620.65	1,828.72	1,786.21	42.51	43.021	
6,100.00	6,032.23	5,865.37	5,492.16	20.11	37.49	40.29	722.99	1,647.97	1,840.73	1,798.00	42.72	43.084	
6,200.00	6,132.23	6,095.67	5,712.68	20.24	38.61	41.24	748.55	1,709.00	1,866.68	1,823.42	43.26	43.151	
6,300.00	6,232.23	6,335.85	5,947.55	20.36	39.48	41.91	767.83	1,755.02	1,885.51	1,841.75	43.76	43.087	
6,400.00	6,332.23	6,583.02	6,192.74	20.49	40.07	42.31	779.67	1,783.28	1,896.76	1,852.54	44.22	42.893	
6,500.00	6,432.23	6,822.77	6,432.23	20.62	40.36	42.43	783.31	1,791.98	1,900.18	1,855.56	44.62	42.587	
6,600.00	6,532.23	6,922.77	6,532.23	20.75	40.43	42.43	783.31	1,791.98	1,900.18	1,855.31	44.86	42.354	
6,700.00	6,632.23	7,022.77	6,632.23	20.88	40.51	42.43	783.31	1,791.98	1,900.18	1,855.06	45.12	42.115	
6,800.00	6,732.23	7,122.77	6,732.23	21.01	40.59	42.43	783.31	1,791.98	1,900.18	1,854.80	45.38	41.876	
6,900.00	6,832.23	7,222.77	6,832.23	21.15	40.67	42.43	783.31	1,791.98	1,900.18	1,854.54	45.64	41.636	
7,000.00	6,932.23	7,322.77	6,932.23	21.28	40.75	42.43	783.31	1,791.98	1,900.18	1,854.27	45.90	41.397	
7,100.00	7,032.23	7,422.77	7,032.23	21.42	40.83	42.43	783.31	1,791.98	1,900.18	1,854.01	46.17	41.158	
7,200.00	7,132.23	7,522.77	7,132.23	21.56	40.91	42.43	783.31	1,791.98	1,900.18	1,853.74	46.44	40.919	
7,300.00	7,232.23	7,622.77	7,232.23	21.70	41.00	42.43	783.31	1,791.98	1,900.18	1,853.47	46.71	40.681	
7,400.00	7,332.23	7,722.77	7,332.23	21.84	41.08	42.43	783.31	1,791.98	1,900.18	1,853.19	46.98	40.443	
7,500.00	7,432.23	7,822.77	7,432.23	21.99	41.17	42.43	783.31	1,791.98	1,900.18	1,852.91	47.26	40.205	
7,600.00	7,532.23	7,922.77	7,532.23	22.13	41.25	42.43	783.31	1,791.98	1,900.18	1,852.63	47.54	39.968	
7,700.00	7,632.23	8,022.77	7,632.23	22.28	41.34	42.43	783.31	1,791.98	1,900.18	1,852.35	47.82	39.732	
7,800.00	7,732.23	8,122.77	7,732.23	22.43	41.43	42.43	783.31	1,791.98	1,900.18	1,852.07	48.11	39.496	
7,900.00	7,832.23	8,222.77	7,832.23	22.57	41.52	42.43	783.31	1,791.98	1,900.18	1,851.78	48.40	39.262	
7,983.77	7,916.00	8,306.54	7,916.00	22.70	41.59	42.43	783.31	1,791.98	1,900.18	1,851.53	48.64	39.065	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_BERNHARDT STATE 23-36
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 23-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BERNHARDT STATE 23-36	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 11-04-09 RHS	Offset TVD Reference:	Offset Datum

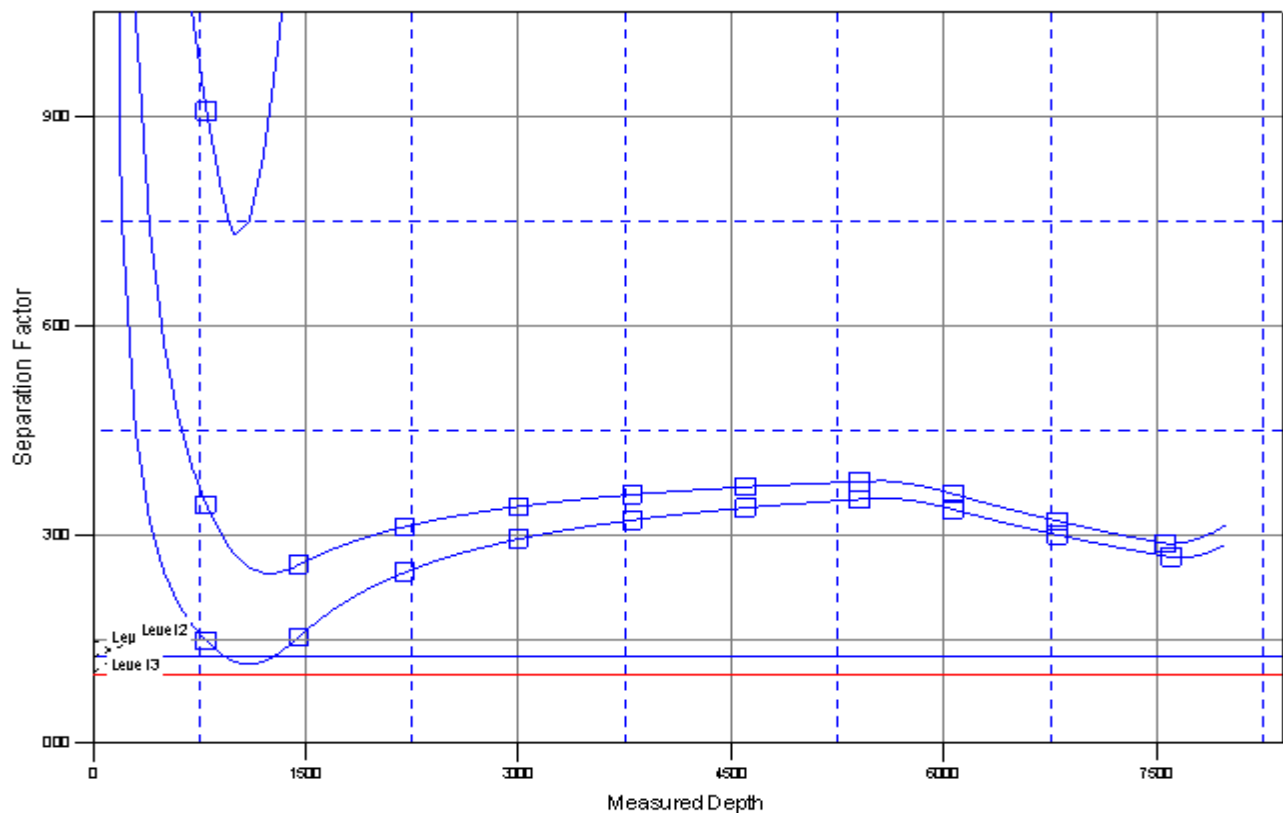
Reference Depths are relative to WELL @ 4849.00ft (Original Well Elev) Coordinates are relative to: P_BERNHARDT STATE 23-36
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is 105° 30' 0.000 W ° Grid Convergence at Surface is: 0.42°



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_BERNHARDT STATE 23-36
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 23-36	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BERNHARDT STATE 23-36	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 23-36
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

■ P_BERNHARDT STATE 22-36, P_BERNHARDT STATE 22-36, PLAN #1 11-04-09 RHS \0
■ P_BERNHARDT STATE 24-36, P_BERNHARDT STATE 24-36, PLAN #1 11-04-09 RHS \0