



US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_BALLINGER PAD

P_BALLINGER 22-18

P_BALLINGER 22-18

Plan: PLAN #1 1-13-10 RHS

Standard Planning Report

13 January, 2010





Azimuths to True North
Magnetic North: 9.13°
Magnetic Field
Strength: 53171.6nT
Dip Angle: 66.93°
Date: 1/13/2010
Model: IGRF2010

WELL DETAILS: P_BALLINGER 22-18

+N/-S	+E/-W	Northing	Easting	Ground Level:	Latitude	Longitude	Slot
0.00	0.00	1326729.54	3156891.10	4866.00	40° 13' 44.062 N	104° 56' 17.131 W	

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3500.00	3548.14	PARKMAN
3930.00	3986.68	SUSSEX
4490.00	4557.81	SHANNON
6920.00	7008.73	NIO A
7188.00	7276.73	CODELL
7620.00	7708.73	JSAND

SECTION DETAILS

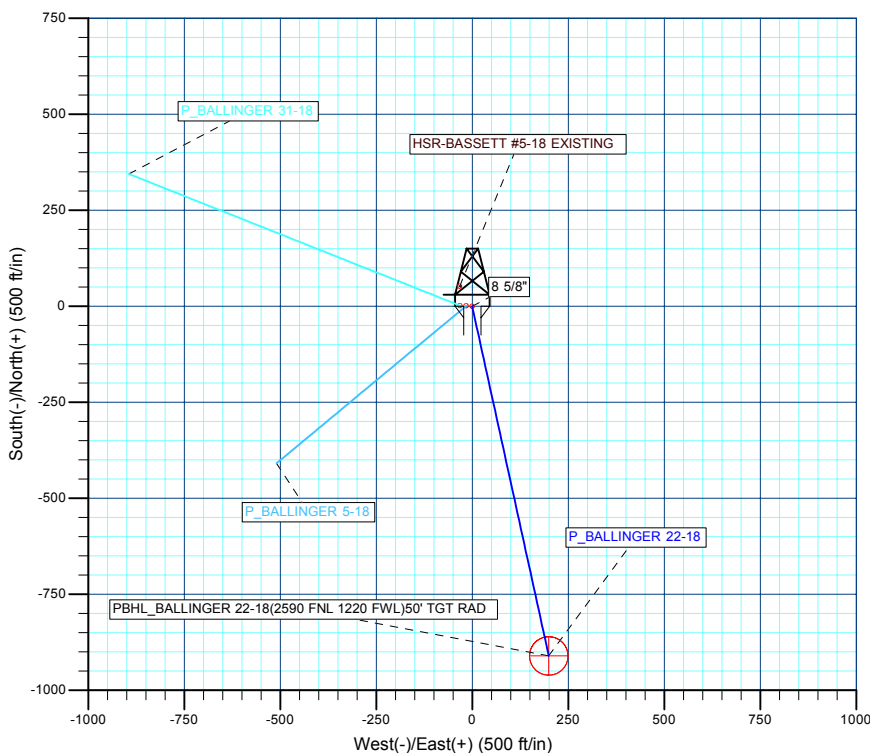
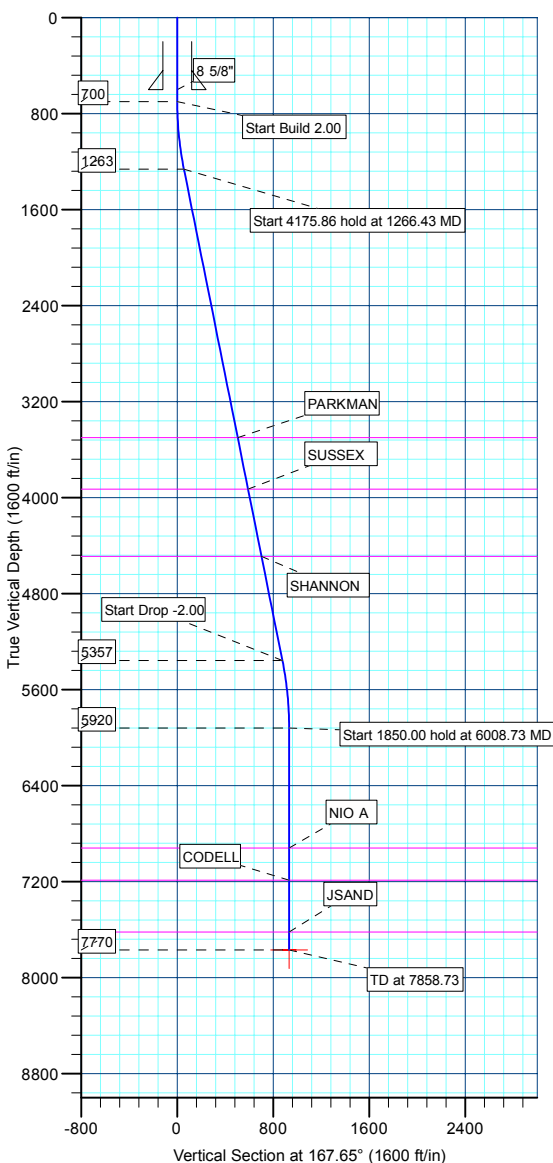
MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	
1266.43	11.33	167.65	1262.75	-54.52	11.94	2.00	167.65	55.82	
5442.29	11.33	167.65	5357.25	-855.82	187.43	0.00	0.00	876.11	
6008.73	0.00	0.00	5920.00	-910.35	199.37	2.00	180.00	931.92	
7858.73	0.00	0.00	7770.00	-910.35	199.37	0.00	0.00	931.92	PBHL_BALLINGER 22-18(2590 FNL 1220 FWL)50' TGT RAD

CASING DETAILS

TVD	MD	Name	Size
600.00	600.00	8 5/8"	8.62



KB ELEV:WELL @ 4881.00ft (Original Well Elev)
4866.00
GRD ELEV:



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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL	7770.00	-910.35	199.37	1325820.48	3157096.2340	40° 13' 35.065 N	104° 56' 14.561 W	Circle (Radius: 50.00)

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_BALLINGER 22-18
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4881.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4881.00ft (Original Well Elev)
Site:	WELD_BALLINGER PAD	North Reference:	True
Well:	P_BALLINGER 22-18	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_BALLINGER 22-18		
Design:	PLAN #1 1-13-10 RHS		

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

Site						WELD_BALLINGER PAD, SECTION 18 T3N R67W											
Site Position:						Northing:			1,326,729.54 ft			Latitude:			40° 13' 44.062 N		
From:			Lat/Long			Easting:			3,156,891.10 ft			Longitude:			104° 56' 17.131 W		
Position Uncertainty:			0.00 ft			Slot Radius:			in			Grid Convergence:			0.36 °		

Well	P_BALLINGER 22-18					
Well Position	+N/-S	0.00 ft	Northing:	1,326,729.54 ft	Latitude:	40° 13' 44.062 N
	+E/-W	0.00 ft	Easting:	3,156,891.10 ft	Longitude:	104° 56' 17.131 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,866.00 ft

Wellbore	P_BALLINGER 22-18				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/13/2010	9.13	66.93	53,172

Design	PLAN #1 1-13-10 RHS			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	167.65

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	
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,266.43	11.33	167.65	1,262.75	-54.52	11.94	2.00	2.00	0.00	167.65	
5,442.29	11.33	167.65	5,357.25	-855.82	187.43	0.00	0.00	0.00	0.00	
6,008.73	0.00	0.00	5,920.00	-910.35	199.37	2.00	-2.00	0.00	180.00	
7,858.73	0.00	0.00	7,770.00	-910.35	199.37	0.00	0.00	0.00	0.00	PBHL_BALLINGER

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_BALLINGER 22-18
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4881.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4881.00ft (Original Well Elev)
Site:	WELD_BALLINGER PAD	North Reference:	True
Well:	P_BALLINGER 22-18	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_BALLINGER 22-18		
Design:	PLAN #1 1-13-10 RHS		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
Start Build 2.00									
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	2.00	167.65	799.98	-1.70	0.37	1.75	2.00	2.00	0.00
900.00	4.00	167.65	899.84	-6.82	1.49	6.98	2.00	2.00	0.00
1,000.00	6.00	167.65	999.45	-15.33	3.36	15.69	2.00	2.00	0.00
1,100.00	8.00	167.65	1,098.70	-27.23	5.96	27.88	2.00	2.00	0.00
1,200.00	10.00	167.65	1,197.47	-42.51	9.31	43.52	2.00	2.00	0.00
Start 4175.86 hold at 1266.43 MD									
1,266.43	11.33	167.65	1,262.75	-54.52	11.94	55.82	2.00	2.00	0.00
1,300.00	11.33	167.65	1,295.66	-60.96	13.35	62.41	0.00	0.00	0.00
1,400.00	11.33	167.65	1,393.71	-80.15	17.55	82.05	0.00	0.00	0.00
1,500.00	11.33	167.65	1,491.77	-99.34	21.76	101.70	0.00	0.00	0.00
1,600.00	11.33	167.65	1,589.82	-118.53	25.96	121.34	0.00	0.00	0.00
1,700.00	11.33	167.65	1,687.87	-137.72	30.16	140.98	0.00	0.00	0.00
1,800.00	11.33	167.65	1,785.92	-156.91	34.36	160.63	0.00	0.00	0.00
1,900.00	11.33	167.65	1,883.97	-176.10	38.57	180.27	0.00	0.00	0.00
2,000.00	11.33	167.65	1,982.02	-195.29	42.77	199.92	0.00	0.00	0.00
2,100.00	11.33	167.65	2,080.08	-214.48	46.97	219.56	0.00	0.00	0.00
2,200.00	11.33	167.65	2,178.13	-233.66	51.17	239.20	0.00	0.00	0.00
2,300.00	11.33	167.65	2,276.18	-252.85	55.37	258.85	0.00	0.00	0.00
2,400.00	11.33	167.65	2,374.23	-272.04	59.58	278.49	0.00	0.00	0.00
2,500.00	11.33	167.65	2,472.28	-291.23	63.78	298.13	0.00	0.00	0.00
2,600.00	11.33	167.65	2,570.33	-310.42	67.98	317.78	0.00	0.00	0.00
2,700.00	11.33	167.65	2,668.39	-329.61	72.18	337.42	0.00	0.00	0.00
2,800.00	11.33	167.65	2,766.44	-348.80	76.39	357.06	0.00	0.00	0.00
2,900.00	11.33	167.65	2,864.49	-367.99	80.59	376.71	0.00	0.00	0.00
3,000.00	11.33	167.65	2,962.54	-387.18	84.79	396.35	0.00	0.00	0.00
3,100.00	11.33	167.65	3,060.59	-406.36	88.99	416.00	0.00	0.00	0.00
3,200.00	11.33	167.65	3,158.64	-425.55	93.20	435.64	0.00	0.00	0.00
3,300.00	11.33	167.65	3,256.70	-444.74	97.40	455.28	0.00	0.00	0.00
3,400.00	11.33	167.65	3,354.75	-463.93	101.60	474.93	0.00	0.00	0.00
3,500.00	11.33	167.65	3,452.80	-483.12	105.80	494.57	0.00	0.00	0.00
PARKMAN									
3,548.14	11.33	167.65	3,500.00	-492.36	107.83	504.03	0.00	0.00	0.00
3,600.00	11.33	167.65	3,550.85	-502.31	110.01	514.21	0.00	0.00	0.00
3,700.00	11.33	167.65	3,648.90	-521.50	114.21	533.86	0.00	0.00	0.00
3,800.00	11.33	167.65	3,746.95	-540.69	118.41	553.50	0.00	0.00	0.00
3,900.00	11.33	167.65	3,845.01	-559.88	122.61	573.14	0.00	0.00	0.00
SUSSEX									
3,986.68	11.33	167.65	3,930.00	-576.51	126.26	590.17	0.00	0.00	0.00
4,000.00	11.33	167.65	3,943.06	-579.06	126.81	592.79	0.00	0.00	0.00
4,100.00	11.33	167.65	4,041.11	-598.25	131.02	612.43	0.00	0.00	0.00
4,200.00	11.33	167.65	4,139.16	-617.44	135.22	632.08	0.00	0.00	0.00
4,300.00	11.33	167.65	4,237.21	-636.63	139.42	651.72	0.00	0.00	0.00
4,400.00	11.33	167.65	4,335.26	-655.82	143.62	671.36	0.00	0.00	0.00
4,500.00	11.33	167.65	4,433.32	-675.01	147.83	691.01	0.00	0.00	0.00
SHANNON									
4,557.81	11.33	167.65	4,490.00	-686.10	150.26	702.36	0.00	0.00	0.00
4,600.00	11.33	167.65	4,531.37	-694.20	152.03	710.65	0.00	0.00	0.00
4,700.00	11.33	167.65	4,629.42	-713.39	156.23	730.29	0.00	0.00	0.00
4,800.00	11.33	167.65	4,727.47	-732.58	160.43	749.94	0.00	0.00	0.00
4,900.00	11.33	167.65	4,825.52	-751.76	164.64	769.58	0.00	0.00	0.00
5,000.00	11.33	167.65	4,923.57	-770.95	168.84	789.22	0.00	0.00	0.00

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_BALLINGER 22-18
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4881.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4881.00ft (Original Well Elev)
Site:	WELD_BALLINGER PAD	North Reference:	True
Well:	P_BALLINGER 22-18	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_BALLINGER 22-18		
Design:	PLAN #1 1-13-10 RHS		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
5,100.00	11.33	167.65	5,021.63	-790.14	173.04	808.87	0.00	0.00	0.00
5,200.00	11.33	167.65	5,119.68	-809.33	177.24	828.51	0.00	0.00	0.00
5,300.00	11.33	167.65	5,217.73	-828.52	181.45	848.16	0.00	0.00	0.00
5,400.00	11.33	167.65	5,315.78	-847.71	185.65	867.80	0.00	0.00	0.00
Start Drop -2.00									
5,442.29	11.33	167.65	5,357.25	-855.82	187.43	876.11	0.00	0.00	0.00
5,500.00	10.17	167.65	5,413.94	-866.34	189.73	886.87	2.00	-2.00	0.00
5,600.00	8.17	167.65	5,512.66	-881.91	193.14	902.82	2.00	-2.00	0.00
5,700.00	6.17	167.65	5,611.87	-894.11	195.81	915.30	2.00	-2.00	0.00
5,800.00	4.17	167.65	5,711.46	-902.92	197.74	924.32	2.00	-2.00	0.00
5,900.00	2.17	167.65	5,811.30	-908.33	198.92	929.86	2.00	-2.00	0.00
6,000.00	0.17	167.65	5,911.27	-910.34	199.36	931.91	2.00	-2.00	0.00
Start 1850.00 hold at 6008.73 MD									
6,008.73	0.00	0.00	5,920.00	-910.35	199.37	931.92	2.00	-2.00	-1,920.98
6,100.00	0.00	0.00	6,011.27	-910.35	199.37	931.92	0.00	0.00	0.00
6,200.00	0.00	0.00	6,111.27	-910.35	199.37	931.92	0.00	0.00	0.00
6,300.00	0.00	0.00	6,211.27	-910.35	199.37	931.92	0.00	0.00	0.00
6,400.00	0.00	0.00	6,311.27	-910.35	199.37	931.92	0.00	0.00	0.00
6,500.00	0.00	0.00	6,411.27	-910.35	199.37	931.92	0.00	0.00	0.00
6,600.00	0.00	0.00	6,511.27	-910.35	199.37	931.92	0.00	0.00	0.00
6,700.00	0.00	0.00	6,611.27	-910.35	199.37	931.92	0.00	0.00	0.00
6,800.00	0.00	0.00	6,711.27	-910.35	199.37	931.92	0.00	0.00	0.00
6,900.00	0.00	0.00	6,811.27	-910.35	199.37	931.92	0.00	0.00	0.00
7,000.00	0.00	0.00	6,911.27	-910.35	199.37	931.92	0.00	0.00	0.00
NIO A									
7,008.73	0.00	0.00	6,920.00	-910.35	199.37	931.92	0.00	0.00	0.00
7,100.00	0.00	0.00	7,011.27	-910.35	199.37	931.92	0.00	0.00	0.00
7,200.00	0.00	0.00	7,111.27	-910.35	199.37	931.92	0.00	0.00	0.00
CODELL									
7,276.73	0.00	0.00	7,188.00	-910.35	199.37	931.92	0.00	0.00	0.00
7,300.00	0.00	0.00	7,211.27	-910.35	199.37	931.92	0.00	0.00	0.00
7,400.00	0.00	0.00	7,311.27	-910.35	199.37	931.92	0.00	0.00	0.00
7,500.00	0.00	0.00	7,411.27	-910.35	199.37	931.92	0.00	0.00	0.00
7,600.00	0.00	0.00	7,511.27	-910.35	199.37	931.92	0.00	0.00	0.00
7,700.00	0.00	0.00	7,611.27	-910.35	199.37	931.92	0.00	0.00	0.00
JSAND									
7,708.73	0.00	0.00	7,620.00	-910.35	199.37	931.92	0.00	0.00	0.00
7,800.00	0.00	0.00	7,711.27	-910.35	199.37	931.92	0.00	0.00	0.00
PBHL_BALLINGER 22-18(2590 FNL 1220 FWL)50' TGT RAD									
7,858.73	0.00	0.00	7,770.00	-910.35	199.37	931.92	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_BALLINGER 2	0.00	0.00	7,770.00	-910.35	199.37	1,325,820.48	3,157,096.23	40° 13' 35.065 N	104° 56' 14.561 W
- plan hits target center									
- Circle (radius 50.00)									

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_BALLINGER 22-18
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4881.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4881.00ft (Original Well Elev)
Site:	WELD_BALLINGER PAD	North Reference:	True
Well:	P_BALLINGER 22-18	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_BALLINGER 22-18		
Design:	PLAN #1 1-13-10 RHS		

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
600.00	600.00	8 5/8"	8.62	11.00	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,548.14	3,500.00	PARKMAN				
3,986.68	3,930.00	SUSSEX				
4,557.81	4,490.00	SHANNON				
7,008.73	6,920.00	NIO A				
7,276.73	7,188.00	CODELL				
7,708.73	7,620.00	JSAND				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
700.00	700.00	0.00	0.00	Start Build 2.00	
1,266.43	1,262.75	-54.52	11.94	Start 4175.86 hold at 1266.43 MD	
5,442.29	5,357.25	-855.82	187.43	Start Drop -2.00	
6,008.73	5,920.00	-910.35	199.37	Start 1850.00 hold at 6008.73 MD	
7,858.73	7,770.00	-910.35	199.37	TD at 7858.73	



US ROCKIES REGION PLANNING

**COLORADO NORTHERN ZONE - 83
WELD_BALLINGER PAD
P_BALLINGER 22-18**

**P_BALLINGER 22-18
PLAN #1 1-13-10 RHS**

Anticollision Report

13 January, 2010



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_BALLINGER 22-18
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4881.00ft (Original Well Elev)
Reference Site:	WELD_BALLINGER PAD	MD Reference:	WELL @ 4881.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_BALLINGER 22-18	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BALLINGER 22-18	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-13-10 RHS	Offset TVD Reference:	Offset Datum

Reference	PLAN #1 1-13-10 RHS		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	0.00 to 20,000.00ft	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.00ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date 1/13/2010			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	7,858.73	PLAN #1 1-13-10 RHS (P_BALLINGER 22-18)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
WELD_BALLINGER PAD						
HSR-BASSETT #5-18 EXISTING - HSR-BASSETT #5-18 EXISTING	700.00	683.00	61.93	35.17	2.314	CC
HSR-BASSETT #5-18 EXISTING - HSR-BASSETT #5-18 EXISTING	800.00	782.98	63.58	32.63	2.054	ES
HSR-BASSETT #5-18 EXISTING - HSR-BASSETT #5-18 EXISTING	900.00	882.84	68.54	33.48	1.955	SF
P_BALLINGER 31-18 - P_BALLINGER - PLAN #1 1-13-10	700.00	700.00	31.88	28.99	11.038	CC, ES
P_BALLINGER 31-18 - P_BALLINGER - PLAN #1 1-13-10	800.00	798.86	34.06	30.76	10.328	SF
P_BALLINGER 5-18 - P_BALLINGER 5-18 - PLAN #1 1-13-10	700.00	700.00	15.95	13.06	5.523	CC, ES
P_BALLINGER 5-18 - P_BALLINGER 5-18 - PLAN #1 1-13-10	800.00	799.57	17.71	14.42	5.389	SF

Offset Design WELD_BALLINGER PAD - HSR-BASSETT #5-18 EXISTING - HSR-BASSETT #5-18 EXISTING - HSR-BASSETT #5-18 EXISTING - HSR-BASSETT #5-18 EXISTING												
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)	+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	-32.14	52.44	-32.95	64.22			
100.00	100.00	83.00	83.00	0.10	1.66	-32.14	52.44	-32.95	61.93	60.18	1.76	35.277
200.00	200.00	183.00	183.00	0.32	5.32	-32.14	52.44	-32.95	61.93	56.29	5.64	10.980
300.00	300.00	283.00	283.00	0.55	9.32	-32.14	52.44	-32.95	61.93	52.07	9.87	6.278
400.00	400.00	383.00	383.00	0.77	13.32	-32.14	52.44	-32.95	61.93	47.84	14.09	4.395
500.00	500.00	483.00	483.00	0.99	17.32	-32.14	52.44	-32.95	61.93	43.62	18.31	3.382
600.00	600.00	583.00	583.00	1.22	21.32	-32.14	52.44	-32.95	61.93	39.39	22.54	2.748
700.00	700.00	683.00	683.00	1.44	25.32	-32.14	52.44	-32.95	61.93	35.17	26.76	2.314 CC
800.00	799.98	782.98	782.98	1.64	29.32	160.73	52.44	-32.95	63.58	32.63	30.95	2.054 ES
900.00	899.84	882.84	882.84	1.82	33.31	162.15	52.44	-32.95	68.54	33.48	35.06	1.955 SF
1,000.00	999.45	982.45	982.45	2.02	37.30	164.09	52.44	-32.95	76.88	37.76	39.12	1.965
1,100.00	1,098.70	1,081.70	1,081.70	2.26	41.27	166.19	52.44	-32.95	88.67	45.57	43.10	2.057
1,200.00	1,197.47	1,180.47	1,180.47	2.53	45.22	168.19	52.44	-32.95	103.93	56.95	46.98	2.212
1,266.43	1,262.75	1,245.75	1,245.75	2.74	47.83	169.39	52.44	-32.95	116.00	66.50	49.50	2.344
1,300.00	1,295.66	1,278.66	1,278.66	2.85	49.15	169.95	52.44	-32.95	122.49	71.63	50.86	2.408
1,400.00	1,393.71	1,376.71	1,376.71	3.21	53.07	171.34	52.44	-32.95	141.89	86.95	54.93	2.583
1,500.00	1,491.77	1,474.77	1,474.77	3.58	56.99	172.39	52.44	-32.95	161.34	102.33	59.01	2.734
1,600.00	1,589.82	1,572.82	1,572.82	3.97	60.91	173.21	52.44	-32.95	180.84	117.74	63.09	2.866
1,700.00	1,687.87	1,670.87	1,670.87	4.36	64.83	173.88	52.44	-32.95	200.36	133.18	67.18	2.983
1,800.00	1,785.92	1,768.92	1,768.92	4.77	68.76	174.42	52.44	-32.95	219.90	148.64	71.27	3.086
1,900.00	1,883.97	1,866.97	1,866.97	5.18	72.68	174.88	52.44	-32.95	239.47	164.11	75.36	3.178

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_BALLINGER 22-18
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4881.00ft (Original Well Elev)
Reference Site:	WELD_BALLINGER PAD	MD Reference:	WELL @ 4881.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_BALLINGER 22-18	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BALLINGER 22-18	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-13-10 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
2,000.00	1,982.02	1,965.02	1,965.02	5.60	76.60	175.27	52.44	-32.95	259.04	179.58	79.46	3.260	
2,100.00	2,080.08	2,063.08	2,063.08	6.01	80.52	175.60	52.44	-32.95	278.62	195.07	83.55	3.335	
2,200.00	2,178.13	2,161.13	2,161.13	6.44	84.45	175.89	52.44	-32.95	298.22	210.57	87.65	3.402	
2,300.00	2,276.18	2,259.18	2,259.18	6.86	88.37	176.14	52.44	-32.95	317.81	226.06	91.75	3.464	
2,400.00	2,374.23	2,357.23	2,357.23	7.29	92.29	176.37	52.44	-32.95	337.42	241.57	95.85	3.520	
2,500.00	2,472.28	2,455.28	2,455.28	7.71	96.21	176.57	52.44	-32.95	357.02	257.07	99.95	3.572	
2,600.00	2,570.33	2,553.33	2,553.33	8.14	100.13	176.75	52.44	-32.95	376.64	272.58	104.05	3.620	
2,700.00	2,668.39	2,651.39	2,651.39	8.57	104.06	176.91	52.44	-32.95	396.25	288.10	108.16	3.664	
2,800.00	2,766.44	2,749.44	2,749.44	9.01	107.98	177.05	52.44	-32.95	415.87	303.61	112.26	3.705	
2,900.00	2,864.49	2,847.49	2,847.49	9.44	111.90	177.19	52.44	-32.95	435.49	319.13	116.36	3.743	
3,000.00	2,962.54	2,945.54	2,945.54	9.87	115.82	177.31	52.44	-32.95	455.11	334.64	120.47	3.778	
3,100.00	3,060.59	3,043.59	3,043.59	10.30	119.74	177.42	52.44	-32.95	474.73	350.16	124.57	3.811	
3,200.00	3,158.64	3,141.64	3,141.64	10.74	123.67	177.52	52.44	-32.95	494.36	365.68	128.68	3.842	
3,300.00	3,256.70	3,239.70	3,239.70	11.17	127.59	177.62	52.44	-32.95	513.99	381.20	132.78	3.871	
3,400.00	3,354.75	3,337.75	3,337.75	11.61	131.51	177.70	52.44	-32.95	533.61	396.72	136.89	3.898	
3,500.00	3,452.80	3,435.80	3,435.80	12.04	135.43	177.79	52.44	-32.95	553.24	412.25	140.99	3.924	
3,600.00	3,550.85	3,533.85	3,533.85	12.48	139.35	177.86	52.44	-32.95	572.87	427.77	145.10	3.948	
3,700.00	3,648.90	3,631.90	3,631.90	12.92	143.28	177.93	52.44	-32.95	592.50	443.30	149.21	3.971	
3,800.00	3,746.95	3,729.95	3,729.95	13.35	147.20	178.00	52.44	-32.95	612.14	458.82	153.31	3.993	
3,900.00	3,845.01	3,828.01	3,828.01	13.79	151.12	178.06	52.44	-32.95	631.77	474.35	157.42	4.013	
4,000.00	3,943.06	3,926.06	3,926.06	14.23	155.04	178.12	52.44	-32.95	651.40	489.87	161.53	4.033	
4,100.00	4,041.11	4,024.11	4,024.11	14.66	158.96	178.17	52.44	-32.95	671.03	505.40	165.64	4.051	
4,200.00	4,139.16	4,122.16	4,122.16	15.10	162.89	178.23	52.44	-32.95	690.67	520.92	169.74	4.069	
4,300.00	4,237.21	4,220.21	4,220.21	15.54	166.81	178.27	52.44	-32.95	710.30	536.45	173.85	4.086	
4,400.00	4,335.26	4,318.26	4,318.26	15.98	170.73	178.32	52.44	-32.95	729.94	551.98	177.96	4.102	
4,500.00	4,433.32	4,416.32	4,416.32	16.41	174.65	178.37	52.44	-32.95	749.57	567.51	182.07	4.117	
4,600.00	4,531.37	4,514.37	4,514.37	16.85	178.57	178.41	52.44	-32.95	769.21	583.03	186.18	4.132	
4,700.00	4,629.42	4,612.42	4,612.42	17.29	182.50	178.45	52.44	-32.95	788.85	598.56	190.28	4.146	
4,800.00	4,727.47	4,710.47	4,710.47	17.73	186.42	178.48	52.44	-32.95	808.48	614.09	194.39	4.159	
4,900.00	4,825.52	4,808.52	4,808.52	18.17	190.34	178.52	52.44	-32.95	828.12	629.62	198.50	4.172	
5,000.00	4,923.57	4,906.57	4,906.57	18.61	194.26	178.55	52.44	-32.95	847.76	645.15	202.61	4.184	
5,100.00	5,021.63	5,004.63	5,004.63	19.05	198.19	178.59	52.44	-32.95	867.40	660.68	206.72	4.196	
5,200.00	5,119.68	5,102.68	5,102.68	19.48	202.11	178.62	52.44	-32.95	887.03	676.21	210.83	4.207	
5,300.00	5,217.73	5,200.73	5,200.73	19.92	206.03	178.65	52.44	-32.95	906.67	691.74	214.94	4.218	
5,400.00	5,315.78	5,298.78	5,298.78	20.36	209.95	178.68	52.44	-32.95	926.31	707.27	219.04	4.229	
5,442.29	5,357.25	5,340.25	5,340.25	20.55	211.61	178.69	52.44	-32.95	934.62	713.84	220.78	4.233	
5,500.00	5,413.94	5,396.94	5,396.94	20.76	213.88	178.71	52.44	-32.95	945.38	721.46	223.92	4.222	
5,600.00	5,512.66	5,495.66	5,495.66	21.03	217.83	178.74	52.44	-32.95	961.32	732.10	229.22	4.194	
5,700.00	5,611.87	5,594.87	5,594.87	21.27	221.79	178.76	52.44	-32.95	973.81	739.51	234.29	4.156	
5,800.00	5,711.46	5,694.46	5,694.46	21.46	225.78	178.77	52.44	-32.95	982.82	743.70	239.12	4.110	
5,900.00	5,811.30	5,794.30	5,794.30	21.63	229.77	178.78	52.44	-32.95	988.36	744.69	243.67	4.056	
6,008.73	5,920.00	5,903.00	5,903.00	21.78	234.12	-13.57	52.44	-32.95	990.42	742.11	248.31	3.989	
6,100.00	6,011.27	5,994.27	5,994.27	21.89	237.77	-13.57	52.44	-32.95	990.42	738.30	252.12	3.928	
6,200.00	6,111.27	6,094.27	6,094.27	21.99	241.77	-13.57	52.44	-32.95	990.42	734.13	256.29	3.865	
6,300.00	6,211.27	6,194.27	6,194.27	22.10	245.77	-13.57	52.44	-32.95	990.42	729.97	260.45	3.803	
6,400.00	6,311.27	6,294.27	6,294.27	22.20	249.77	-13.57	52.44	-32.95	990.42	725.80	264.62	3.743	
6,500.00	6,411.27	6,394.27	6,394.27	22.32	253.77	-13.57	52.44	-32.95	990.42	721.63	268.79	3.685	
6,600.00	6,511.27	6,494.27	6,494.27	22.43	257.77	-13.57	52.44	-32.95	990.42	717.46	272.96	3.628	
6,700.00	6,611.27	6,594.27	6,594.27	22.54	261.77	-13.57	52.44	-32.95	990.42	713.29	277.13	3.574	
6,800.00	6,711.27	6,694.27	6,694.27	22.66	265.77	-13.57	52.44	-32.95	990.42	709.12	281.30	3.521	
6,900.00	6,811.27	6,794.27	6,794.27	22.77	269.77	-13.57	52.44	-32.95	990.42	704.94	285.48	3.469	
7,000.00	6,911.27	6,894.27	6,894.27	22.89	273.77	-13.57	52.44	-32.95	990.42	700.77	289.66	3.419	

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_BALLINGER 22-18
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4881.00ft (Original Well Elev)
Reference Site:	WELD_BALLINGER PAD	MD Reference:	WELL @ 4881.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_BALLINGER 22-18	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BALLINGER 22-18	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-13-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_BALLINGER PAD - HSR-BASSETT #5-18 EXISTING - HSR-BASSETT #5-18 EXISTING - HSR-													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		
7,100.00	7,011.27	6,994.27	6,994.27	23.01	277.77	-13.57	52.44	-32.95	990.42	696.59	293.83	3.371		
7,200.00	7,111.27	7,094.27	7,094.27	23.13	281.77	-13.57	52.44	-32.95	990.42	692.41	298.01	3.323		
7,300.00	7,211.27	7,194.27	7,194.27	23.26	285.77	-13.57	52.44	-32.95	990.42	688.23	302.19	3.277		
7,400.00	7,311.27	7,294.27	7,294.27	23.38	289.77	-13.57	52.44	-32.95	990.42	684.05	306.37	3.233		
7,500.00	7,411.27	7,394.27	7,394.27	23.51	293.77	-13.57	52.44	-32.95	990.42	679.87	310.55	3.189		
7,600.00	7,511.27	7,494.27	7,494.27	23.63	297.77	-13.57	52.44	-32.95	990.42	675.69	314.73	3.147		
7,700.00	7,611.27	7,594.27	7,594.27	23.76	301.77	-13.57	52.44	-32.95	990.42	671.50	318.92	3.106		
7,800.00	7,711.27	7,694.27	7,694.27	23.89	305.77	-13.57	52.44	-32.95	990.42	667.32	323.10	3.065		
7,858.73	7,770.00	7,753.00	7,753.00	23.97	308.12	-13.57	52.44	-32.95	990.42	664.86	325.56	3.042		

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_BALLINGER 22-18
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4881.00ft (Original Well Elev)
Reference Site:	WELD_BALLINGER PAD	MD Reference:	WELL @ 4881.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_BALLINGER 22-18	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BALLINGER 22-18	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-13-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_BALLINGER PAD - P_BALLINGER 31-18 - P_BALLINGER - PLAN #1 1-13-10 RHS													Offset Site Error: 0.00 ft
Survey Program: 0-MWD													Offset Well Error: 0.00 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-86.75	1.80	-31.83	31.88				
100.00	100.00	100.00	100.00	0.10	0.10	-86.75	1.80	-31.83	31.88	31.69	0.19	166.874	
200.00	200.00	200.00	200.00	0.32	0.32	-86.75	1.80	-31.83	31.88	31.24	0.64	49.769	
300.00	300.00	300.00	300.00	0.55	0.55	-86.75	1.80	-31.83	31.88	30.79	1.09	29.246	
400.00	400.00	400.00	400.00	0.77	0.77	-86.75	1.80	-31.83	31.88	30.34	1.54	20.707	
500.00	500.00	500.00	500.00	0.99	0.99	-86.75	1.80	-31.83	31.88	29.89	1.99	16.027	
600.00	600.00	600.00	600.00	1.22	1.22	-86.75	1.80	-31.83	31.88	29.44	2.44	13.073	
700.00	700.00	700.00	700.00	1.44	1.44	-86.75	1.80	-31.83	31.88	28.99	2.89	11.038 CC, ES	
800.00	799.98	798.86	798.84	1.64	1.66	109.26	2.44	-33.42	34.06	30.76	3.30	10.328 SF	
900.00	899.84	897.17	897.02	1.82	1.87	117.74	4.31	-38.13	41.26	37.57	3.68	11.202	
1,000.00	999.45	994.39	993.87	2.02	2.10	126.48	7.39	-45.87	54.51	50.42	4.08	13.352	
1,100.00	1,098.70	1,089.99	1,088.79	2.26	2.34	133.17	11.60	-56.46	74.18	69.69	4.50	16.500	
1,200.00	1,197.47	1,183.52	1,181.22	2.53	2.61	137.74	16.85	-69.66	100.12	95.19	4.93	20.328	
1,266.43	1,262.75	1,244.28	1,241.01	2.74	2.80	139.89	20.86	-79.73	120.66	115.44	5.22	23.118	
1,300.00	1,295.66	1,275.25	1,271.40	2.85	2.90	140.89	23.06	-85.28	131.82	126.44	5.38	24.506	
1,400.00	1,393.71	1,369.30	1,363.67	3.21	3.24	143.11	29.81	-102.23	165.35	159.48	5.88	28.144	
1,500.00	1,491.77	1,463.36	1,455.94	3.58	3.58	144.58	36.55	-119.18	199.03	192.64	6.39	31.160	
1,600.00	1,589.82	1,557.42	1,548.21	3.97	3.94	145.62	43.29	-136.14	232.79	225.88	6.91	33.675	
1,700.00	1,687.87	1,651.47	1,640.48	4.36	4.31	146.40	50.04	-153.09	266.61	259.16	7.45	35.792	
1,800.00	1,785.92	1,745.53	1,732.75	4.77	4.68	147.00	56.78	-170.04	300.45	292.46	7.99	37.590	
1,900.00	1,883.97	1,839.58	1,825.02	5.18	5.06	147.48	63.52	-187.00	334.32	325.78	8.54	39.131	
2,000.00	1,982.02	1,933.64	1,917.28	5.60	5.45	147.88	70.27	-203.95	368.21	359.11	9.10	40.463	
2,100.00	2,080.08	2,027.70	2,009.55	6.01	5.83	148.20	77.01	-220.90	402.11	392.45	9.66	41.624	
2,200.00	2,178.13	2,121.75	2,101.82	6.44	6.22	148.48	83.75	-237.86	436.02	425.80	10.22	42.643	
2,300.00	2,276.18	2,215.81	2,194.09	6.86	6.61	148.72	90.49	-254.81	469.94	459.15	10.79	43.543	
2,400.00	2,374.23	2,309.86	2,286.36	7.29	7.01	148.92	97.24	-271.77	503.86	492.50	11.36	44.343	
2,500.00	2,472.28	2,403.92	2,378.63	7.71	7.40	149.10	103.98	-288.72	537.79	525.86	11.94	45.058	
2,600.00	2,570.33	2,497.98	2,470.90	8.14	7.80	149.26	110.72	-305.67	571.72	559.21	12.51	45.701	
2,700.00	2,668.39	2,592.03	2,563.17	8.57	8.19	149.40	117.47	-322.63	605.66	592.57	13.09	46.282	
2,800.00	2,766.44	2,686.09	2,655.44	9.01	8.59	149.52	124.21	-339.58	639.60	625.94	13.66	46.809	
2,900.00	2,864.49	2,780.14	2,747.71	9.44	8.99	149.64	130.95	-356.53	673.54	659.30	14.24	47.288	
3,000.00	2,962.54	2,874.20	2,839.98	9.87	9.39	149.74	137.70	-373.49	707.48	692.66	14.82	47.727	
3,100.00	3,060.59	2,968.26	2,932.25	10.30	9.79	149.83	144.44	-390.44	741.43	726.02	15.40	48.129	
3,200.00	3,158.64	3,062.31	3,024.52	10.74	10.19	149.91	151.18	-407.40	775.38	759.39	15.99	48.500	
3,300.00	3,256.70	3,156.37	3,116.78	11.17	10.59	149.99	157.93	-424.35	809.32	792.75	16.57	48.842	
3,400.00	3,354.75	3,250.42	3,209.05	11.61	10.99	150.06	164.67	-441.30	843.27	826.12	17.15	49.159	
3,500.00	3,452.80	3,344.48	3,301.32	12.04	11.39	150.13	171.41	-458.26	877.22	859.49	17.74	49.453	
3,600.00	3,550.85	3,438.53	3,393.59	12.48	11.80	150.19	178.16	-475.21	911.18	892.85	18.32	49.727	
3,700.00	3,648.90	3,532.59	3,485.86	12.92	12.20	150.24	184.90	-492.16	945.13	926.22	18.91	49.983	
3,800.00	3,746.95	3,626.65	3,578.13	13.35	12.60	150.30	191.64	-509.12	979.08	959.59	19.50	50.222	
3,900.00	3,845.01	3,720.70	3,670.40	13.79	13.00	150.34	198.39	-526.07	1,013.04	992.95	20.08	50.446	
4,000.00	3,943.06	3,814.76	3,762.67	14.23	13.41	150.39	205.13	-543.03	1,046.99	1,026.32	20.67	50.656	
4,100.00	4,041.11	3,908.81	3,854.94	14.66	13.81	150.43	211.87	-559.98	1,080.94	1,059.69	21.26	50.854	
4,200.00	4,139.16	4,002.87	3,947.21	15.10	14.22	150.47	218.62	-576.93	1,114.90	1,093.06	21.84	51.040	
4,300.00	4,237.21	4,096.93	4,039.48	15.54	14.62	150.51	225.36	-593.89	1,148.86	1,126.42	22.43	51.216	
4,400.00	4,335.26	4,190.98	4,131.75	15.98	15.02	150.55	232.10	-610.84	1,182.81	1,159.79	23.02	51.382	
4,500.00	4,433.32	4,285.04	4,224.02	16.41	15.43	150.58	238.85	-627.79	1,216.77	1,193.16	23.61	51.539	
4,600.00	4,531.37	4,379.09	4,316.28	16.85	15.83	150.61	245.59	-644.75	1,250.73	1,226.53	24.20	51.688	
4,700.00	4,629.42	4,473.15	4,408.55	17.29	16.24	150.64	252.33	-661.70	1,284.68	1,259.90	24.79	51.830	
4,800.00	4,727.47	4,567.21	4,500.82	17.73	16.64	150.67	259.08	-678.65	1,318.64	1,293.26	25.38	51.964	
4,900.00	4,825.52	4,661.26	4,593.09	18.17	17.05	150.70	265.82	-695.61	1,352.60	1,326.63	25.97	52.092	
5,000.00	4,923.57	4,755.32	4,685.36	18.61	17.45	150.72	272.56	-712.56	1,386.56	1,360.00	26.56	52.214	

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_BALLINGER 22-18
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4881.00ft (Original Well Elev)
Reference Site:	WELD_BALLINGER PAD	MD Reference:	WELL @ 4881.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_BALLINGER 22-18	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BALLINGER 22-18	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-13-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						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	
5,100.00	5,021.63	4,849.37	4,777.63	19.05	17.86	150.75	279.31	-729.52	1,420.51	1,393.37	27.14	52.331	
5,200.00	5,119.68	4,943.43	4,869.90	19.48	18.26	150.77	286.05	-746.47	1,454.47	1,426.74	27.73	52.442	
5,300.00	5,217.73	5,037.48	4,962.17	19.92	18.67	150.79	292.79	-763.42	1,488.43	1,460.11	28.33	52.548	
5,400.00	5,315.78	5,131.54	5,054.44	20.36	19.07	150.82	299.54	-780.38	1,522.39	1,493.47	28.92	52.650	
5,442.29	5,357.25	5,171.32	5,093.46	20.55	19.24	150.82	302.39	-787.55	1,536.75	1,507.59	29.17	52.691	
5,500.00	5,413.94	5,225.77	5,146.87	20.76	19.48	151.02	306.29	-797.36	1,555.87	1,526.31	29.56	52.632	
5,600.00	5,512.66	5,320.88	5,240.18	21.03	19.89	151.29	313.11	-814.50	1,586.72	1,556.53	30.19	52.563	
5,700.00	5,611.87	5,416.85	5,334.33	21.27	20.30	151.45	319.99	-831.80	1,614.64	1,583.87	30.78	52.462	
5,800.00	5,711.46	5,548.20	5,463.33	21.46	20.79	151.48	329.11	-854.74	1,639.27	1,607.88	31.39	52.230	
5,900.00	5,811.30	5,749.52	5,662.75	21.63	21.32	151.38	339.22	-880.15	1,656.16	1,624.15	32.01	51.742	
6,008.73	5,920.00	5,973.10	5,885.84	21.78	21.71	-41.04	344.35	-893.04	1,663.97	1,631.38	32.58	51.072	
6,100.00	6,011.27	6,098.54	6,011.27	21.89	21.86	-41.06	344.63	-893.75	1,664.29	1,631.38	32.91	50.566	
6,200.00	6,111.27	6,198.54	6,111.27	21.99	21.99	-41.06	344.63	-893.75	1,664.29	1,631.07	33.22	50.094	
6,300.00	6,211.27	6,298.54	6,211.27	22.10	22.13	-41.06	344.63	-893.75	1,664.29	1,630.76	33.54	49.626	
6,400.00	6,311.27	6,398.54	6,311.27	22.20	22.26	-41.06	344.63	-893.75	1,664.29	1,630.44	33.85	49.162	
6,500.00	6,411.27	6,498.54	6,411.27	22.32	22.40	-41.06	344.63	-893.75	1,664.29	1,630.12	34.17	48.703	
6,600.00	6,511.27	6,598.54	6,511.27	22.43	22.54	-41.06	344.63	-893.75	1,664.29	1,629.80	34.49	48.248	
6,700.00	6,611.27	6,698.54	6,611.27	22.54	22.67	-41.06	344.63	-893.75	1,664.29	1,629.47	34.82	47.798	
6,800.00	6,711.27	6,798.54	6,711.27	22.66	22.81	-41.06	344.63	-893.75	1,664.29	1,629.15	35.15	47.352	
6,900.00	6,811.27	6,898.54	6,811.27	22.77	22.96	-41.06	344.63	-893.75	1,664.29	1,628.82	35.48	46.911	
7,000.00	6,911.27	6,998.54	6,911.27	22.89	23.10	-41.06	344.63	-893.75	1,664.29	1,628.48	35.81	46.475	
7,100.00	7,011.27	7,098.54	7,011.27	23.01	23.24	-41.06	344.63	-893.75	1,664.29	1,628.15	36.15	46.044	
7,200.00	7,111.27	7,198.54	7,111.27	23.13	23.39	-41.06	344.63	-893.75	1,664.29	1,627.81	36.48	45.617	
7,300.00	7,211.27	7,298.54	7,211.27	23.26	23.54	-41.06	344.63	-893.75	1,664.29	1,627.47	36.82	45.195	
7,400.00	7,311.27	7,398.54	7,311.27	23.38	23.68	-41.06	344.63	-893.75	1,664.29	1,627.13	37.17	44.779	
7,500.00	7,411.27	7,498.54	7,411.27	23.51	23.83	-41.06	344.63	-893.75	1,664.29	1,626.78	37.51	44.367	
7,600.00	7,511.27	7,598.54	7,511.27	23.63	23.98	-41.06	344.63	-893.75	1,664.29	1,626.44	37.86	43.960	
7,700.00	7,611.27	7,698.54	7,611.27	23.76	24.14	-41.06	344.63	-893.75	1,664.29	1,626.09	38.21	43.559	
7,800.00	7,711.27	7,798.54	7,711.27	23.89	24.29	-41.06	344.63	-893.75	1,664.29	1,625.73	38.56	43.162	
7,858.73	7,770.00	7,857.27	7,770.00	23.97	24.38	-41.06	344.63	-893.75	1,664.29	1,625.53	38.77	42.931	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_BALLINGER 22-18
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4881.00ft (Original Well Elev)
Reference Site:	WELD_BALLINGER PAD	MD Reference:	WELL @ 4881.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_BALLINGER 22-18	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BALLINGER 22-18	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-13-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_BALLINGER PAD - P_BALLINGER 5-18 - P_BALLINGER 5-18 - PLAN #1 1-13-10 RHS												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-86.12	1.08	-15.92	15.95				
100.00	100.00	100.00	100.00	0.10	0.10	-86.12	1.08	-15.92	15.95	15.76	0.19	83.495	
200.00	200.00	200.00	200.00	0.32	0.32	-86.12	1.08	-15.92	15.95	15.31	0.64	24.902	
300.00	300.00	300.00	300.00	0.55	0.55	-86.12	1.08	-15.92	15.95	14.86	1.09	14.633	
400.00	400.00	400.00	400.00	0.77	0.77	-86.12	1.08	-15.92	15.95	14.41	1.54	10.361	
500.00	500.00	500.00	500.00	0.99	0.99	-86.12	1.08	-15.92	15.95	13.96	1.99	8.019	
600.00	600.00	600.00	600.00	1.22	1.22	-86.12	1.08	-15.92	15.95	13.51	2.44	6.541	
700.00	700.00	700.00	700.00	1.44	1.44	-86.12	1.08	-15.92	15.95	13.06	2.89	5.523 CC, ES	
800.00	799.98	799.57	799.55	1.64	1.65	107.74	-0.02	-17.25	17.71	14.42	3.29	5.389 SF	
900.00	899.84	898.94	898.78	1.82	1.84	110.86	-3.33	-21.23	23.01	19.36	3.65	6.301	
1,000.00	999.45	997.92	997.38	2.02	2.05	113.70	-8.80	-27.83	31.93	27.87	4.05	7.876	
1,100.00	1,098.70	1,096.51	1,095.26	2.26	2.28	115.78	-16.37	-36.94	44.40	39.89	4.50	9.861	
1,200.00	1,197.47	1,195.37	1,193.26	2.53	2.55	119.01	-24.62	-46.90	59.14	54.13	5.00	11.819	
1,266.43	1,262.75	1,260.83	1,258.16	2.74	2.73	121.69	-30.09	-53.49	69.99	64.63	5.36	13.052	
1,300.00	1,295.66	1,293.86	1,290.91	2.85	2.82	123.07	-32.85	-56.81	75.74	70.18	5.55	13.642	
1,400.00	1,393.71	1,392.25	1,388.45	3.21	3.11	126.17	-41.07	-66.72	93.04	86.91	6.14	15.166	
1,500.00	1,491.77	1,490.63	1,485.99	3.58	3.41	128.30	-49.29	-76.63	110.53	103.80	6.74	16.405	
1,600.00	1,589.82	1,589.02	1,583.54	3.97	3.71	129.85	-57.51	-86.53	128.13	120.78	7.35	17.422	
1,700.00	1,687.87	1,687.41	1,681.08	4.36	4.02	131.02	-65.73	-96.44	145.80	137.81	7.98	18.267	
1,800.00	1,785.92	1,785.80	1,778.62	4.77	4.33	131.94	-73.95	-106.34	163.51	154.89	8.62	18.976	
1,900.00	1,883.97	1,884.19	1,876.16	5.18	4.65	132.68	-82.16	-116.25	181.25	171.99	9.26	19.578	
2,000.00	1,982.02	1,982.58	1,973.71	5.60	4.97	133.28	-90.38	-126.16	199.02	189.12	9.90	20.095	
2,100.00	2,080.08	2,080.97	2,071.25	6.01	5.29	133.79	-98.60	-136.06	216.81	206.25	10.55	20.542	
2,200.00	2,178.13	2,179.36	2,168.79	6.44	5.61	134.22	-106.82	-145.97	234.61	223.40	11.21	20.933	
2,300.00	2,276.18	2,277.74	2,266.34	6.86	5.93	134.59	-115.04	-155.88	252.42	240.56	11.86	21.278	
2,400.00	2,374.23	2,376.13	2,363.88	7.29	6.25	134.91	-123.26	-165.78	270.24	257.72	12.52	21.583	
2,500.00	2,472.28	2,474.52	2,461.42	7.71	6.58	135.20	-131.48	-175.69	288.07	274.89	13.18	21.856	
2,600.00	2,570.33	2,572.91	2,558.97	8.14	6.91	135.44	-139.70	-185.59	305.90	292.06	13.84	22.101	
2,700.00	2,668.39	2,671.30	2,656.51	8.57	7.23	135.66	-147.92	-195.50	323.74	309.24	14.50	22.322	
2,800.00	2,766.44	2,769.69	2,754.05	9.01	7.56	135.86	-156.14	-205.41	341.58	326.42	15.17	22.523	
2,900.00	2,864.49	2,868.08	2,851.60	9.44	7.89	136.04	-164.35	-215.31	359.43	343.60	15.83	22.706	
3,000.00	2,962.54	2,966.47	2,949.14	9.87	8.22	136.20	-172.57	-225.22	377.28	360.79	16.49	22.874	
3,100.00	3,060.59	3,064.85	3,046.68	10.30	8.55	136.35	-180.79	-235.13	395.13	377.97	17.16	23.028	
3,200.00	3,158.64	3,163.24	3,144.23	10.74	8.88	136.48	-189.01	-245.03	412.99	395.16	17.82	23.171	
3,300.00	3,256.70	3,261.63	3,241.77	11.17	9.21	136.61	-197.23	-254.94	430.84	412.36	18.49	23.303	
3,400.00	3,354.75	3,360.02	3,339.31	11.61	9.54	136.72	-205.45	-264.85	448.70	429.55	19.15	23.426	
3,500.00	3,452.80	3,458.41	3,436.85	12.04	9.87	136.83	-213.67	-274.75	466.56	446.74	19.82	23.540	
3,600.00	3,550.85	3,556.80	3,534.40	12.48	10.20	136.92	-221.89	-284.66	484.42	463.94	20.49	23.647	
3,700.00	3,648.90	3,655.19	3,631.94	12.92	10.53	137.01	-230.11	-294.56	502.29	481.14	21.15	23.747	
3,800.00	3,746.95	3,753.58	3,729.48	13.35	10.86	137.10	-238.32	-304.47	520.15	498.33	21.82	23.842	
3,900.00	3,845.01	3,851.96	3,827.03	13.79	11.19	137.17	-246.54	-314.38	538.01	515.53	22.48	23.930	
4,000.00	3,943.06	3,950.35	3,924.57	14.23	11.52	137.25	-254.76	-324.28	555.88	532.73	23.15	24.013	
4,100.00	4,041.11	4,048.74	4,022.11	14.66	11.85	137.32	-262.98	-334.19	573.75	549.92	23.82	24.085	
4,200.00	4,139.16	4,147.13	4,119.66	15.10	12.19	137.38	-271.20	-344.10	591.61	567.12	24.49	24.153	
4,300.00	4,237.21	4,245.52	4,217.20	15.54	12.52	137.44	-279.42	-354.00	609.48	584.31	25.17	24.216	
4,400.00	4,335.26	4,343.91	4,314.74	15.98	12.85	137.50	-287.64	-363.91	627.35	601.51	25.84	24.277	
4,500.00	4,433.32	4,442.30	4,412.29	16.41	13.18	137.55	-295.86	-373.81	645.22	618.70	26.52	24.334	
4,600.00	4,531.37	4,540.69	4,509.83	16.85	13.51	137.60	-304.08	-383.72	663.09	635.90	27.19	24.388	
4,700.00	4,629.42	4,639.07	4,607.37	17.29	13.85	137.65	-312.29	-393.63	680.96	653.10	27.86	24.439	
4,800.00	4,727.47	4,737.46	4,704.92	17.73	14.18	137.70	-320.51	-403.53	698.83	670.29	28.54	24.488	
4,900.00	4,825.52	4,835.85	4,802.46	18.17	14.51	137.74	-328.73	-413.44	716.70	687.49	29.21	24.534	
5,000.00	4,923.57	4,934.24	4,900.00	18.61	14.85	137.78	-336.95	-423.35	734.57	704.68	29.89	24.578	

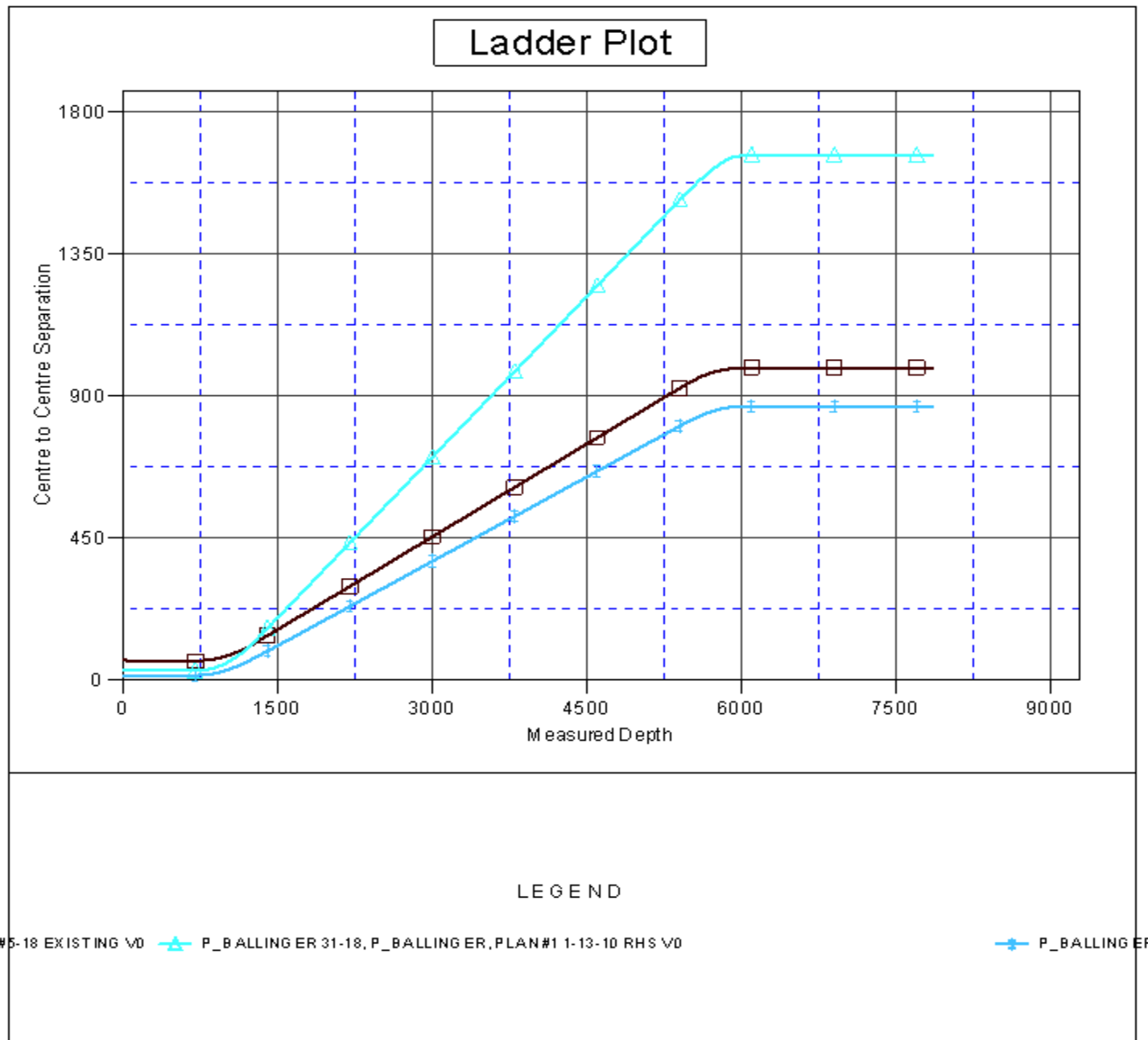
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_BALLINGER 22-18
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4881.00ft (Original Well Elev)
Reference Site:	WELD_BALLINGER PAD	MD Reference:	WELL @ 4881.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_BALLINGER 22-18	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BALLINGER 22-18	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-13-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_BALLINGER PAD - P_BALLINGER 5-18 - P_BALLINGER 5-18 - PLAN #1 1-13-10 RHS												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Reference	Offset	Semi Major Axis		Distance									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.00	5,021.63	5,032.63	4,997.54	19.05	15.18	137.82	-345.17	-433.25	752.44	721.88	30.56	24.621	
5,200.00	5,119.68	5,131.02	5,095.09	19.48	15.51	137.86	-353.39	-443.16	770.32	739.08	31.24	24.661	
5,300.00	5,217.73	5,229.41	5,192.63	19.92	15.84	137.90	-361.61	-453.06	788.19	756.28	31.91	24.699	
5,400.00	5,315.78	5,327.80	5,290.17	20.36	16.18	137.93	-369.83	-462.97	806.06	773.47	32.59	24.736	
5,442.29	5,357.25	5,369.41	5,331.43	20.55	16.32	137.95	-373.30	-467.16	813.62	780.75	32.87	24.751	
5,500.00	5,413.94	5,426.26	5,387.79	20.76	16.51	138.07	-378.05	-472.88	823.51	790.24	33.26	24.758	
5,600.00	5,512.66	5,525.08	5,485.77	21.03	16.85	138.13	-386.31	-482.84	838.62	804.74	33.88	24.753	
5,700.00	5,611.87	5,625.72	5,585.54	21.27	17.17	138.01	-394.67	-492.91	851.16	816.69	34.47	24.694	
5,800.00	5,711.46	5,733.30	5,692.53	21.46	17.44	137.83	-401.89	-501.61	860.52	825.55	34.96	24.613	
5,900.00	5,811.30	5,841.45	5,800.42	21.63	17.64	137.71	-406.55	-507.23	866.35	831.01	35.34	24.514	
6,008.73	5,920.00	5,959.38	5,918.29	21.78	17.83	-54.72	-408.67	-509.79	868.67	832.98	35.69	24.341	
6,100.00	6,011.27	6,052.36	6,011.27	21.89	17.96	-54.73	-408.72	-509.85	868.69	832.74	35.95	24.164	
6,200.00	6,111.27	6,152.36	6,111.27	21.99	18.10	-54.73	-408.72	-509.85	868.69	832.47	36.21	23.987	
6,300.00	6,211.27	6,252.36	6,211.27	22.10	18.24	-54.73	-408.72	-509.85	868.69	832.21	36.48	23.811	
6,400.00	6,311.27	6,352.36	6,311.27	22.20	18.38	-54.73	-408.72	-509.85	868.69	831.93	36.75	23.635	
6,500.00	6,411.27	6,452.36	6,411.27	22.32	18.53	-54.73	-408.72	-509.85	868.69	831.66	37.03	23.459	
6,600.00	6,511.27	6,552.36	6,511.27	22.43	18.67	-54.73	-408.72	-509.85	868.69	831.38	37.31	23.284	
6,700.00	6,611.27	6,652.36	6,611.27	22.54	18.82	-54.73	-408.72	-509.85	868.69	831.10	37.59	23.109	
6,800.00	6,711.27	6,752.36	6,711.27	22.66	18.96	-54.73	-408.72	-509.85	868.69	830.81	37.88	22.935	
6,900.00	6,811.27	6,852.36	6,811.27	22.77	19.11	-54.73	-408.72	-509.85	868.69	830.52	38.16	22.762	
7,000.00	6,911.27	6,952.36	6,911.27	22.89	19.26	-54.73	-408.72	-509.85	868.69	830.23	38.46	22.589	
7,100.00	7,011.27	7,052.36	7,011.27	23.01	19.42	-54.73	-408.72	-509.85	868.69	829.94	38.75	22.418	
7,200.00	7,111.27	7,152.36	7,111.27	23.13	19.57	-54.73	-408.72	-509.85	868.69	829.64	39.05	22.247	
7,300.00	7,211.27	7,252.36	7,211.27	23.26	19.73	-54.73	-408.72	-509.85	868.69	829.34	39.35	22.077	
7,400.00	7,311.27	7,352.36	7,311.27	23.38	19.88	-54.73	-408.72	-509.85	868.69	829.04	39.65	21.908	
7,500.00	7,411.27	7,452.36	7,411.27	23.51	20.04	-54.73	-408.72	-509.85	868.69	828.73	39.96	21.741	
7,600.00	7,511.27	7,552.36	7,511.27	23.63	20.20	-54.73	-408.72	-509.85	868.69	828.42	40.27	21.574	
7,700.00	7,611.27	7,652.36	7,611.27	23.76	20.36	-54.73	-408.72	-509.85	868.69	828.11	40.58	21.409	
7,800.00	7,711.27	7,752.36	7,711.27	23.89	20.52	-54.73	-408.72	-509.85	868.69	827.80	40.89	21.244	
7,858.73	7,770.00	7,811.08	7,770.00	23.97	20.62	-54.73	-408.72	-509.85	868.69	827.61	41.08	21.149	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_BALLINGER 22-18
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4881.00ft (Original Well Elev)
Reference Site:	WELD_BALLINGER PAD	MD Reference:	WELL @ 4881.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_BALLINGER 22-18	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BALLINGER 22-18	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 1-13-10 RHS	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4881.00ft (Original Well Elev) Coordinates are relative to: P_BALLINGER 22-18
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: 0.36°



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_BALLINGER 22-18
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4881.00ft (Original Well Elev)
Reference Site:	WELD_BALLINGER PAD	MD Reference:	WELL @ 4881.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_BALLINGER 22-18	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_BALLINGER 22-18	Database:	EDM 2003.21 Single User Db
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