



US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_HIGHWAY 160 17-2 pad

P_HIGHWAY 160 2-2S

P_HIGHWAY 160 2-2S

Plan: PLAN #1 3-17-10 RHS

Standard Planning Report

17 March, 2010





Project: COLORADO NORTHERN ZONE - 83
 Site: WELD_HIGHWAY 160 17-2 pad
 Well: P_HIGHWAY 160 2-2S
 Wellbore: P_HIGHWAY 160 2-2S
 Section: SECTION 2 T1N R66W
 SHL: 1496 FNL 1649 FEL
 Design: PLAN #1 3-17-10 RHS
 Latitude: 40° 4' 59.707 N
 Longitude: 104° 44' 26.635 W
 GL: 5104.00
 KB: WELL @ 5119.00ft (Original Well Elev)



Weatherford®



Azimuths to True North
 Magnetic North: 8.99°
 Magnetic Field
 Strength: 53096.4nT
 Dip Angle: 66.84°
 Date: 3/17/2010
 Model: IGRF2010

SECTION DETAILS										
MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Annotation	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
1200.00	0.00	0.00	1200.00	0.00	0.00	0.00	0.00	0.00	Start Build 1.50	
2041.56	12.62	334.19	2034.77	83.12	-40.19	1.50	334.19	92.33	Start 3050.98 hold at 2041.56 MD	
5092.54	12.62	334.19	5012.00	683.40	-330.45	0.00	0.00	759.10	TD at 5092.54	

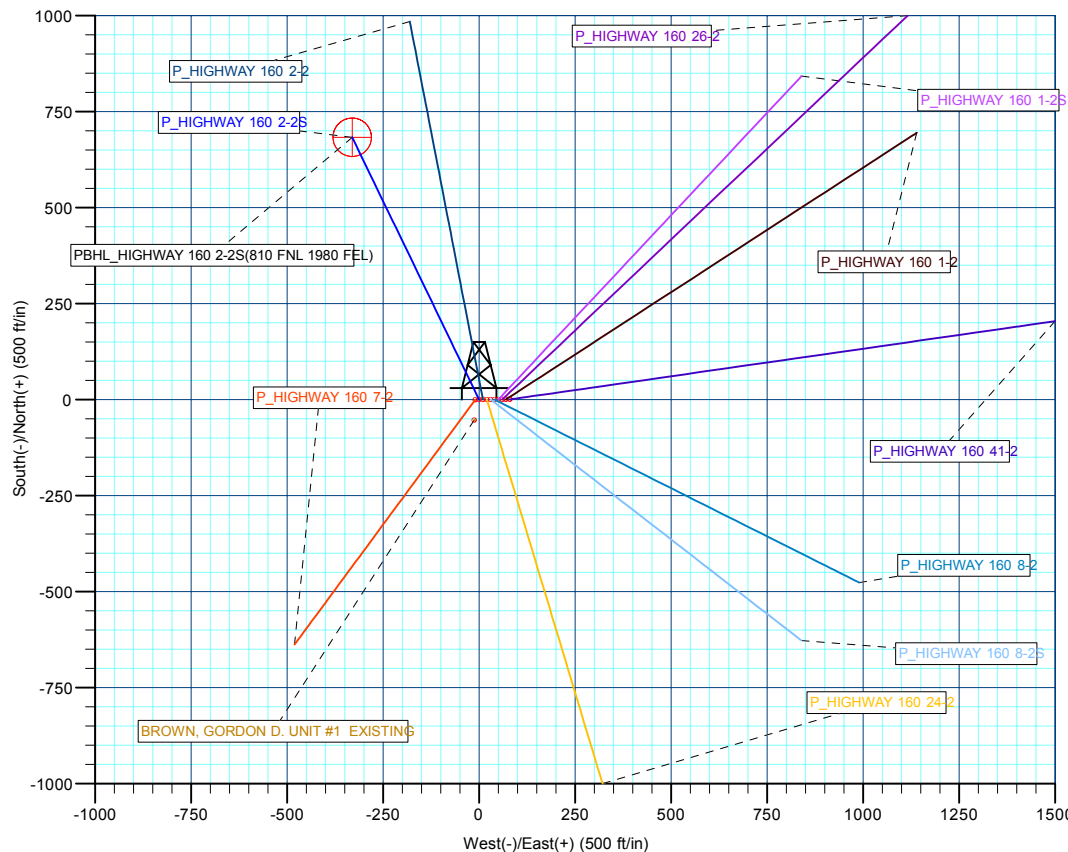
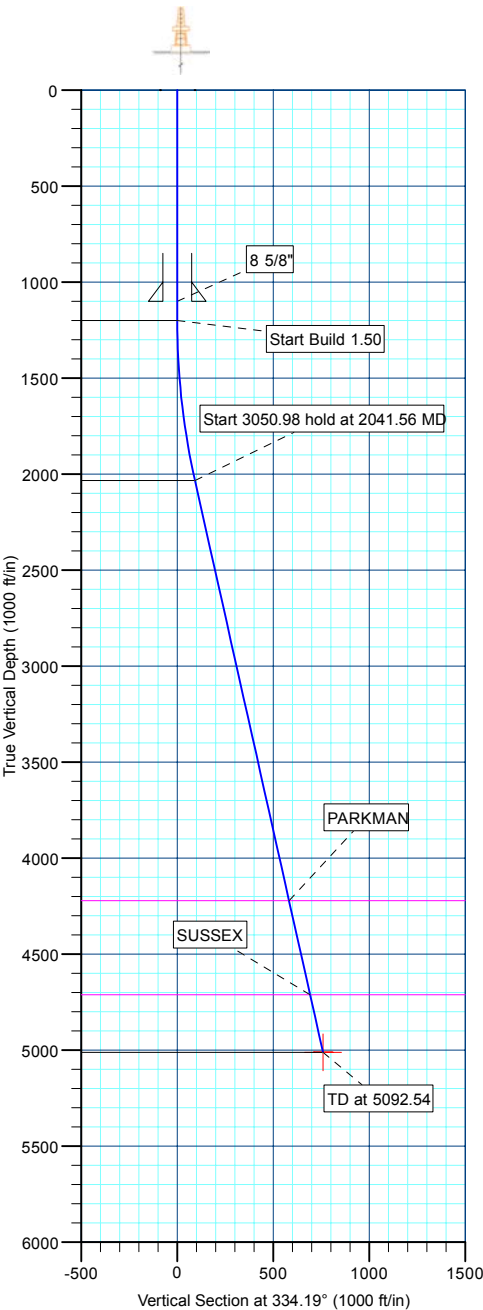
FORMATION TOP DETAILS			
TVDPath	MDPath	Formation	
4222.00	4282.97	PARKMAN	
4712.00	4785.11	SUSSEX	

CASING DETAILS			
TVD	MD	Name	Size
1100.00	1100.00	8 5/8"	8.62

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)						
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
PBHL	5012.00	683.40	-330.45	40° 5' 6.461 N	104° 44' 30.887 W	Circle (Radius: 50.00)

WELL DETAILS: P_HIGHWAY 160 2-2S						
+N/-S	+E/-W	Northing	Ground Level: Easting	5104.00 Latitude	Longitude	Slot
0.00	0.00	1274083.02	3212449.39	40° 4' 59.707 N	104° 44' 26.635 W	

LEGEND	
—	BROWN, GORDON D. UNIT #1 EXISTING, BROWN, GORDON D. UNIT #1 EXISTING, BROWN, GORDON D. UNIT #1 EXISTING V0
—	P_HIGHWAY 160 1-2, P_HIGHWAY 160 1-2, PLAN #1 3-17-10 RHS V0
—	P_HIGHWAY 160 1-2S, P_HIGHWAY 160 1-2S, PLAN #1 3-17-10 RHS V0
—	P_HIGHWAY 160 2-2, P_HIGHWAY 160 2-2, PLAN #1 3-17-10 RHS V0
—	P_HIGHWAY 160 2-2S, P_HIGHWAY 160 2-2S, PLAN #1 3-17-10 RHS V0
—	P_HIGHWAY 160 2-4, P_HIGHWAY 160 2-4, PLAN #1 3-17-10 RHS V0
—	P_HIGHWAY 160 2-4S, P_HIGHWAY 160 2-4S, PLAN #1 3-17-10 RHS V0
—	P_HIGHWAY 160 2-6, P_HIGHWAY 160 2-6, PLAN #1 3-17-10 RHS V0
—	P_HIGHWAY 160 2-6S, P_HIGHWAY 160 2-6S, PLAN #1 3-17-10 RHS V0
—	P_HIGHWAY 160 4-2, P_HIGHWAY 160 4-2, PLAN #1 3-17-10 RHS V0
—	P_HIGHWAY 160 4-2S, P_HIGHWAY 160 4-2S, PLAN #1 3-17-10 RHS V0
—	P_HIGHWAY 160 7-2, P_HIGHWAY 160 7-2, PLAN #1 3-17-10 RHS V0
—	P_HIGHWAY 160 7-2S, P_HIGHWAY 160 7-2S, PLAN #1 3-17-10 RHS V0
—	P_HIGHWAY 160 8-2, P_HIGHWAY 160 8-2, PLAN #1 3-17-10 RHS V0
—	P_HIGHWAY 160 8-2S, P_HIGHWAY 160 8-2S, PLAN #1 3-17-10 RHS V0
—	PLAN #1 3-17-10 RHS



Plan: PLAN #1 3-17-10 RHS (P_HIGHWAY 160 2-2S/P_HIGHWAY 160 2-2S)
 Created By: Robert H. Scott Date: 14:45, March 17 2010

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_HIGHWAY 160 2-2S
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 5119.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 5119.00ft (Original Well Elev)
Site:	WELD_HIGHWAY 160 17-2 pad	North Reference:	True
Well:	P_HIGHWAY 160 2-2S	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_HIGHWAY 160 2-2S		
Design:	PLAN #1 3-17-10 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_HIGHWAY 160 17-2 pad, SECTION 2 T1N R66W				
Site Position:		Northing:	1,274,084.36ft	Latitude:	40° 4' 59.714 N
From:	Lat/Long	Easting:	3,212,519.34ft	Longitude:	104° 44' 25.735 W
Position Uncertainty:	0.00 ft	Slot Radius:	in	Grid Convergence:	0.49 °

Well	P_HIGHWAY 160 2-2S					
Well Position	+N/-S	-0.74 ft	Northing:	1,274,083.02 ft	Latitude:	40° 4' 59.707 N
	+E/-W	-69.95 ft	Easting:	3,212,449.39 ft	Longitude:	104° 44' 26.635 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	5,104.00 ft

Wellbore	P_HIGHWAY 160 2-2S				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/17/2010	8.99	66.84	53,096

Design	PLAN #1 3-17-10 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	334.19

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	
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,041.56	12.62	334.19	2,034.77	83.12	-40.19	1.50	1.50	0.00	334.19	
5,092.54	12.62	334.19	5,012.00	683.40	-330.45	0.00	0.00	0.00	0.00	PBHL_HIGHWAY 1

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_HIGHWAY 160 2-2S
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 5119.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 5119.00ft (Original Well Elev)
Site:	WELD_HIGHWAY 160 17-2 pad	North Reference:	True
Well:	P_HIGHWAY 160 2-2S	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_HIGHWAY 160 2-2S		
Design:	PLAN #1 3-17-10 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 1.50									
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	1.50	334.19	1,299.99	1.18	-0.57	1.31	1.50	1.50	0.00
1,400.00	3.00	334.19	1,399.91	4.71	-2.28	5.23	1.50	1.50	0.00
1,500.00	4.50	334.19	1,499.69	10.60	-5.13	11.77	1.50	1.50	0.00
1,600.00	6.00	334.19	1,599.27	18.84	-9.11	20.92	1.50	1.50	0.00
1,700.00	7.50	334.19	1,698.57	29.42	-14.23	32.68	1.50	1.50	0.00
1,800.00	9.00	334.19	1,797.54	42.34	-20.47	47.03	1.50	1.50	0.00
1,900.00	10.50	334.19	1,896.09	57.58	-27.84	63.96	1.50	1.50	0.00
2,000.00	12.00	334.19	1,994.16	75.15	-36.34	83.47	1.50	1.50	0.00
Start 3050.98 hold at 2041.56 MD									
2,041.56	12.62	334.19	2,034.77	83.12	-40.19	92.33	1.50	1.50	0.00
2,100.00	12.62	334.19	2,091.80	94.62	-45.75	105.10	0.00	0.00	0.00
2,200.00	12.62	334.19	2,189.38	114.30	-55.27	126.96	0.00	0.00	0.00
2,300.00	12.62	334.19	2,286.96	133.97	-64.78	148.81	0.00	0.00	0.00
2,400.00	12.62	334.19	2,384.54	153.65	-74.29	170.67	0.00	0.00	0.00
2,500.00	12.62	334.19	2,482.13	173.32	-83.81	192.52	0.00	0.00	0.00
2,600.00	12.62	334.19	2,579.71	193.00	-93.32	214.37	0.00	0.00	0.00
2,700.00	12.62	334.19	2,677.29	212.67	-102.83	236.23	0.00	0.00	0.00
2,800.00	12.62	334.19	2,774.87	232.35	-112.35	258.08	0.00	0.00	0.00
2,900.00	12.62	334.19	2,872.46	252.02	-121.86	279.94	0.00	0.00	0.00
3,000.00	12.62	334.19	2,970.04	271.70	-131.37	301.79	0.00	0.00	0.00
3,100.00	12.62	334.19	3,067.62	291.37	-140.89	323.65	0.00	0.00	0.00
3,200.00	12.62	334.19	3,165.21	311.05	-150.40	345.50	0.00	0.00	0.00
3,300.00	12.62	334.19	3,262.79	330.72	-159.92	367.35	0.00	0.00	0.00
3,400.00	12.62	334.19	3,360.37	350.40	-169.43	389.21	0.00	0.00	0.00
3,500.00	12.62	334.19	3,457.95	370.07	-178.94	411.06	0.00	0.00	0.00
3,600.00	12.62	334.19	3,555.54	389.74	-188.46	432.92	0.00	0.00	0.00
3,700.00	12.62	334.19	3,653.12	409.42	-197.97	454.77	0.00	0.00	0.00
3,800.00	12.62	334.19	3,750.70	429.09	-207.48	476.63	0.00	0.00	0.00
3,900.00	12.62	334.19	3,848.29	448.77	-217.00	498.48	0.00	0.00	0.00
4,000.00	12.62	334.19	3,945.87	468.44	-226.51	520.33	0.00	0.00	0.00
4,100.00	12.62	334.19	4,043.45	488.12	-236.02	542.19	0.00	0.00	0.00
4,200.00	12.62	334.19	4,141.03	507.79	-245.54	564.04	0.00	0.00	0.00
PARKMAN									
4,282.97	12.62	334.19	4,222.00	524.12	-253.43	582.17	0.00	0.00	0.00
4,300.00	12.62	334.19	4,238.62	527.47	-255.05	585.90	0.00	0.00	0.00
4,400.00	12.62	334.19	4,336.20	547.14	-264.56	607.75	0.00	0.00	0.00
4,500.00	12.62	334.19	4,433.78	566.82	-274.08	629.60	0.00	0.00	0.00
4,600.00	12.62	334.19	4,531.36	586.49	-283.59	651.46	0.00	0.00	0.00
4,700.00	12.62	334.19	4,628.95	606.17	-293.10	673.31	0.00	0.00	0.00
SUSSEX									
4,785.11	12.62	334.19	4,712.00	622.91	-301.20	691.91	0.00	0.00	0.00
4,800.00	12.62	334.19	4,726.53	625.84	-302.62	695.17	0.00	0.00	0.00
4,900.00	12.62	334.19	4,824.11	645.52	-312.13	717.02	0.00	0.00	0.00
5,000.00	12.62	334.19	4,921.70	665.19	-321.65	738.88	0.00	0.00	0.00
TD at 5092.54 - PBHL_HIGHWAY 160 2-2S(810 FNL 1980 FEL)									
5,092.54	12.62	334.19	5,012.00	683.40	-330.45	759.10	0.00	0.00	0.00

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_HIGHWAY 160 2-2S
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 5119.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 5119.00ft (Original Well Elev)
Site:	WELD_HIGHWAY 160 17-2 pad	North Reference:	True
Well:	P_HIGHWAY 160 2-2S	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_HIGHWAY 160 2-2S		
Design:	PLAN #1 3-17-10 RHS		

Design Targets

Target Name

- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
PBHL_HIGHWAY 160 - plan hits target center - Circle (radius 50.00)	0.00	0.00	5,012.00	683.40	-330.45	1,274,763.57	3,212,113.10	40° 5' 6.461 N	104° 44' 30.887 W

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,100.00	1,100.00	8 5/8"	8.62	11.00

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,282.97	4,222.00	PARKMAN			
4,785.11	4,712.00	SUSSEX			

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,200.00	1,200.00	0.00	0.00	Start Build 1.50
2,041.56	2,034.77	83.12	-40.19	Start 3050.98 hold at 2041.56 MD
5,092.54	5,012.00	683.40	-330.45	TD at 5092.54



US ROCKIES REGION PLANNING

**COLORADO NORTHERN ZONE - 83
WELD_HIGHWAY 160 17-2 pad
P_HIGHWAY 160 2-2S**

**P_HIGHWAY 160 2-2S
PLAN #1 3-17-10 RHS**

Anticollision Report

17 March, 2010



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 2-2S
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5119.00ft (Original Well Elev)
Reference Site:	WELD_HIGHWAY 160 17-2 pad	MD Reference:	WELL @ 5119.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_HIGHWAY 160 2-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 2-2S	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 3-17-10 RHS	Offset TVD Reference:	Offset Datum

Reference	PLAN #1 3-17-10 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	3/17/2010		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	5,092.54	PLAN #1 3-17-10 RHS (P_HIGHWAY 160	MWD	MWD - Standard

Site Name Offset Well - Wellbore - Design	Reference	Offset	Distance		Separation Factor	Warning
	Measured Depth (ft)	Measured Depth (ft)	Between Centres (ft)	Between Ellipses (ft)		
WELD_HIGHWAY 160 17-2 pad						
BROWN, GORDON D. UNIT #1 EXISTING - BROWN, C	1,200.00	1,185.00	54.72	6.75	1.141	Level 2, CC
BROWN, GORDON D. UNIT #1 EXISTING - BROWN, C	1,400.00	1,384.91	58.86	2.49	1.044	Level 2, ES, SF
P_HIGHWAY 160 1-2 - P_HIGHWAY 160 1-2 - PLAN #1	1,200.00	1,200.00	69.96	64.82	13.621	CC, ES
P_HIGHWAY 160 1-2 - P_HIGHWAY 160 1-2 - PLAN #1	1,300.00	1,297.94	71.96	66.39	12.915	SF
P_HIGHWAY 160 1-2S - P_HIGHWAY 160 1-2S - PLAN #1	1,200.00	1,200.00	50.09	44.95	9.752	CC, ES
P_HIGHWAY 160 1-2S - P_HIGHWAY 160 1-2S - PLAN #1	1,300.00	1,299.08	51.54	45.97	9.243	SF
P_HIGHWAY 160 2-2 - P_HIGHWAY 160 2-2 - PLAN #1	1,200.00	1,200.00	10.07	4.94	1.961	CC
P_HIGHWAY 160 2-2 - P_HIGHWAY 160 2-2 - PLAN #1	1,300.00	1,300.06	10.33	4.74	1.850	ES, SF
P_HIGHWAY 160 24-2 - P_HIGHWAY 160 24-2 - PLAN #1	1,200.00	1,200.00	20.15	15.01	3.923	CC, ES
P_HIGHWAY 160 24-2 - P_HIGHWAY 160 24-2 - PLAN #1	1,300.00	1,299.71	21.36	15.81	3.847	SF
P_HIGHWAY 160 26-2 - P_HIGHWAY 160 26-2 - PLAN #1	300.00	300.00	60.16	59.07	55.187	CC, ES
P_HIGHWAY 160 26-2 - P_HIGHWAY 160 26-2 - PLAN #1	800.00	787.68	95.85	92.46	28.245	SF
P_HIGHWAY 160 41-2 - P_HIGHWAY 160 41-2 - PLAN #1	1,200.00	1,200.00	80.03	74.89	15.582	CC, ES
P_HIGHWAY 160 41-2 - P_HIGHWAY 160 41-2 - PLAN #1	1,300.00	1,297.24	82.28	76.71	14.785	SF
P_HIGHWAY 160 7-2 - P_HIGHWAY 160 7-2 - PLAN #1	1,200.00	1,200.00	10.07	4.94	1.961	CC, ES
P_HIGHWAY 160 7-2 - P_HIGHWAY 160 7-2 - PLAN #1	1,300.00	1,299.72	10.85	5.29	1.952	SF
P_HIGHWAY 160 8-2 - P_HIGHWAY 160 8-2 - PLAN #1	1,200.00	1,200.00	40.01	34.88	7.791	CC, ES
P_HIGHWAY 160 8-2 - P_HIGHWAY 160 8-2 - PLAN #1	1,300.00	1,298.69	42.15	36.59	7.582	SF
P_HIGHWAY 160 8-2S - P_HIGHWAY 160 8-2S - PLAN #1	1,200.00	1,200.00	30.22	25.09	5.884	CC, ES
P_HIGHWAY 160 8-2S - P_HIGHWAY 160 8-2S - PLAN #1	1,300.00	1,299.32	31.86	26.30	5.731	SF

Offset Design	WELD_HIGHWAY 160 17-2 pad - BROWN, GORDON D. UNIT #1 EXISTING - BROWN, GORDON D.											Offset Site Error:	0.00 ft
Survey Program:	0-UNKNOWN											Offset Well Error:	0.00 ft
Measured Depth (ft)	Vertical Depth (ft)	Offset		Semi Major Axis			Distance						Warning
		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	-166.40	-53.18	-12.87	56.74				
100.00	100.00	85.00	85.00	0.10	1.70	-166.40	-53.18	-12.87	54.72	52.92	1.80	30.475	
200.00	200.00	185.00	185.00	0.32	5.40	-166.40	-53.18	-12.87	54.72	49.00	5.72	9.566	
300.00	300.00	285.00	285.00	0.55	9.40	-166.40	-53.18	-12.87	54.72	44.77	9.95	5.502	
400.00	400.00	385.00	385.00	0.77	13.40	-166.40	-53.18	-12.87	54.72	40.55	14.17	3.862	
500.00	500.00	485.00	485.00	0.99	17.40	-166.40	-53.18	-12.87	54.72	36.33	18.39	2.975	
600.00	600.00	585.00	585.00	1.22	21.40	-166.40	-53.18	-12.87	54.72	32.10	22.62	2.419	
700.00	700.00	685.00	685.00	1.44	25.40	-166.40	-53.18	-12.87	54.72	27.88	26.84	2.038	

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_HIGHWAY 160 2-2S
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5119.00ft (Original Well Elev)
Reference Site:	WELD_HIGHWAY 160 17-2 pad	MD Reference:	WELL @ 5119.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_HIGHWAY 160 2-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 2-2S	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 3-17-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design													WELD_HIGHWAY 160 17-2 pad - BROWN, GORDON D. UNIT #1 EXISTING - BROWN, GORDON D.	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 Tooface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
800.00	800.00	785.00	785.00	1.67	29.40	-166.40	-53.18	-12.87	54.72	23.65	31.07	1.761			
900.00	900.00	885.00	885.00	1.89	33.40	-166.40	-53.18	-12.87	54.72	19.43	35.29	1.550			
1,000.00	1,000.00	985.00	985.00	2.12	37.40	-166.40	-53.18	-12.87	54.72	15.20	39.52	1.385	Level 3		
1,100.00	1,100.00	1,085.00	1,085.00	2.34	41.40	-166.40	-53.18	-12.87	54.72	10.98	43.74	1.251	Level 3		
1,200.00	1,200.00	1,185.00	1,185.00	2.57	45.40	-166.40	-53.18	-12.87	54.72	6.75	47.97	1.141	Level 2, CC		
1,300.00	1,299.99	1,284.99	1,284.99	2.79	49.40	-141.43	-53.18	-12.87	55.74	3.55	52.18	1.068	Level 2		
1,400.00	1,399.91	1,384.91	1,384.91	3.01	53.40	-143.79	-53.18	-12.87	58.86	2.49	56.37	1.044	Level 2, ES, SF		
1,500.00	1,499.69	1,484.69	1,484.69	3.24	57.39	-147.19	-53.18	-12.87	64.25	3.74	60.51	1.062	Level 2		
1,600.00	1,599.27	1,584.27	1,584.27	3.47	61.37	-151.07	-53.18	-12.87	72.12	7.52	64.60	1.116	Level 2		
1,700.00	1,698.57	1,683.57	1,683.57	3.72	65.34	-154.95	-53.18	-12.87	82.62	14.01	68.60	1.204	Level 2		
1,800.00	1,797.54	1,782.54	1,782.54	3.98	69.30	-158.50	-53.18	-12.87	95.82	23.31	72.52	1.321	Level 3		
1,900.00	1,896.09	1,881.09	1,881.09	4.27	73.24	-161.60	-53.18	-12.87	111.77	35.44	76.33	1.464	Level 3		
2,000.00	1,994.16	1,979.16	1,979.16	4.59	77.17	-164.23	-53.18	-12.87	130.46	50.42	80.04	1.630			
2,041.56	2,034.77	2,019.77	2,019.77	4.73	78.79	-165.19	-53.18	-12.87	139.02	57.48	81.54	1.705			
2,100.00	2,091.80	2,076.80	2,076.80	4.94	81.07	-166.42	-53.18	-12.87	151.42	67.52	83.90	1.805			
2,200.00	2,189.38	2,174.38	2,174.38	5.31	84.98	-168.12	-53.18	-12.87	172.76	84.83	87.93	1.965			
2,300.00	2,286.96	2,271.96	2,271.96	5.69	88.88	-169.45	-53.18	-12.87	194.22	102.25	91.98	2.112			
2,400.00	2,384.54	2,369.54	2,369.54	6.08	92.78	-170.51	-53.18	-12.87	215.76	119.73	96.03	2.247			
2,500.00	2,482.13	2,467.13	2,467.13	6.48	96.69	-171.38	-53.18	-12.87	237.35	137.27	100.08	2.372			
2,600.00	2,579.71	2,564.71	2,564.71	6.90	100.59	-172.10	-53.18	-12.87	258.99	154.86	104.14	2.487			
2,700.00	2,677.29	2,662.29	2,662.29	7.31	104.49	-172.72	-53.18	-12.87	280.66	172.47	108.20	2.594			
2,800.00	2,774.87	2,759.87	2,759.87	7.74	108.39	-173.24	-53.18	-12.87	302.36	190.10	112.26	2.693			
2,900.00	2,872.46	2,857.46	2,857.46	8.17	112.30	-173.70	-53.18	-12.87	324.08	207.76	116.32	2.786			
3,000.00	2,970.04	2,955.04	2,955.04	8.60	116.20	-174.09	-53.18	-12.87	345.82	225.43	120.39	2.873			
3,100.00	3,067.62	3,052.62	3,052.62	9.03	120.10	-174.44	-53.18	-12.87	367.57	243.11	124.46	2.953			
3,200.00	3,165.21	3,150.21	3,150.21	9.47	124.01	-174.75	-53.18	-12.87	389.33	260.81	128.52	3.029			
3,300.00	3,262.79	3,247.79	3,247.79	9.91	127.91	-175.03	-53.18	-12.87	411.10	278.51	132.59	3.100			
3,400.00	3,360.37	3,345.37	3,345.37	10.35	131.81	-175.28	-53.18	-12.87	432.88	296.22	136.66	3.167			
3,500.00	3,457.95	3,442.95	3,442.95	10.80	135.72	-175.51	-53.18	-12.87	454.67	313.93	140.74	3.231			
3,600.00	3,555.54	3,540.54	3,540.54	11.25	139.62	-175.72	-53.18	-12.87	476.46	331.65	144.81	3.290			
3,700.00	3,653.12	3,638.12	3,638.12	11.69	143.52	-175.90	-53.18	-12.87	498.26	349.38	148.88	3.347			
3,800.00	3,750.70	3,735.70	3,735.70	12.14	147.43	-176.08	-53.18	-12.87	520.06	367.11	152.95	3.400			
3,900.00	3,848.29	3,833.29	3,833.29	12.59	151.33	-176.23	-53.18	-12.87	541.87	384.84	157.03	3.451			
4,000.00	3,945.87	3,930.87	3,930.87	13.05	155.23	-176.38	-53.18	-12.87	563.68	402.58	161.10	3.499			
4,100.00	4,043.45	4,028.45	4,028.45	13.50	159.14	-176.51	-53.18	-12.87	585.50	420.32	165.18	3.545			
4,200.00	4,141.03	4,126.03	4,126.03	13.95	163.04	-176.64	-53.18	-12.87	607.31	438.06	169.25	3.588			
4,300.00	4,238.62	4,223.62	4,223.62	14.41	166.94	-176.76	-53.18	-12.87	629.13	455.81	173.33	3.630			
4,400.00	4,336.20	4,321.20	4,321.20	14.86	170.85	-176.87	-53.18	-12.87	650.96	473.55	177.40	3.669			
4,500.00	4,433.78	4,418.78	4,418.78	15.32	174.75	-176.97	-53.18	-12.87	672.78	491.30	181.48	3.707			
4,600.00	4,531.36	4,516.36	4,516.36	15.77	178.65	-177.06	-53.18	-12.87	694.61	509.05	185.56	3.743			
4,700.00	4,628.95	4,613.95	4,613.95	16.23	182.56	-177.15	-53.18	-12.87	716.43	526.80	189.63	3.778			
4,800.00	4,726.53	4,711.53	4,711.53	16.69	186.46	-177.24	-53.18	-12.87	738.26	544.55	193.71	3.811			
4,900.00	4,824.11	4,809.11	4,809.11	17.15	190.36	-177.32	-53.18	-12.87	760.09	562.31	197.79	3.843			
5,000.00	4,921.70	4,906.70	4,906.70	17.60	194.27	-177.39	-53.18	-12.87	781.93	580.06	201.86	3.874			
5,092.54	5,012.00	4,997.00	4,997.00	18.03	197.88	-177.46	-53.18	-12.87	802.13	596.49	205.64	3.901			

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 2-2S
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5119.00ft (Original Well Elev)
Reference Site:	WELD_HIGHWAY 160 17-2 pad	MD Reference:	WELL @ 5119.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_HIGHWAY 160 2-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 2-2S	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 3-17-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design													WELD_HIGHWAY 160 17-2 pad - P_HIGHWAY 160 1-2 - P_HIGHWAY 160 1-2 - PLAN #1 3-17-10 RH:	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	89.39	0.74	69.95	69.96						
100.00	100.00	100.00	100.00	0.10	0.10	89.39	0.74	69.95	69.96	69.77	0.19	366.168			
200.00	200.00	200.00	200.00	0.32	0.32	89.39	0.74	69.95	69.96	69.32	0.64	109.208			
300.00	300.00	300.00	300.00	0.55	0.55	89.39	0.74	69.95	69.96	68.87	1.09	64.174			
400.00	400.00	400.00	400.00	0.77	0.77	89.39	0.74	69.95	69.96	68.42	1.54	45.437			
500.00	500.00	500.00	500.00	0.99	0.99	89.39	0.74	69.95	69.96	67.97	1.99	35.169			
600.00	600.00	600.00	600.00	1.22	1.22	89.39	0.74	69.95	69.96	67.52	2.44	28.686			
700.00	700.00	700.00	700.00	1.44	1.44	89.39	0.74	69.95	69.96	67.07	2.89	24.221			
800.00	800.00	800.00	800.00	1.67	1.67	89.39	0.74	69.95	69.96	66.62	3.34	20.959			
900.00	900.00	900.00	900.00	1.89	1.89	89.39	0.74	69.95	69.96	66.17	3.79	18.471			
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	89.39	0.74	69.95	69.96	65.72	4.24	16.512			
1,100.00	1,100.00	1,100.00	1,100.00	2.34	2.34	89.39	0.74	69.95	69.96	65.27	4.69	14.928			
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	89.39	0.74	69.95	69.96	64.82	5.14	13.621 CC, ES			
1,300.00	1,299.99	1,297.94	1,297.92	2.79	2.78	115.38	1.65	71.36	71.96	66.39	5.57	12.915 SF			
1,400.00	1,399.91	1,395.61	1,395.46	3.01	2.99	115.87	4.38	75.55	77.96	71.96	6.00	12.995			
1,500.00	1,499.69	1,492.76	1,492.25	3.24	3.21	116.52	8.88	82.49	87.95	81.52	6.43	13.679			
1,600.00	1,599.27	1,589.14	1,587.95	3.47	3.44	117.19	15.11	92.09	101.90	95.03	6.87	14.839			
1,700.00	1,698.57	1,684.51	1,682.20	3.72	3.70	117.79	23.00	104.24	119.76	112.44	7.32	16.365			
1,800.00	1,797.54	1,778.64	1,774.72	3.98	3.97	118.27	32.45	118.80	141.48	133.69	7.79	18.162			
1,900.00	1,896.09	1,871.33	1,865.20	4.27	4.28	118.62	43.37	135.63	166.97	158.68	8.29	20.146			
2,000.00	1,994.16	1,962.38	1,953.42	4.59	4.62	118.85	55.65	154.54	196.15	187.33	8.82	22.240			
2,041.56	2,034.77	2,000.00	1,989.64	4.73	4.77	118.91	61.16	163.04	209.34	200.29	9.05	23.133			
2,100.00	2,091.80	2,052.77	2,040.23	4.94	5.01	119.14	69.34	175.63	228.71	219.32	9.40	24.343			
2,200.00	2,189.38	2,145.73	2,129.11	5.31	5.44	119.35	84.18	198.50	262.56	252.54	10.02	26.196			
2,300.00	2,286.96	2,239.83	2,219.06	5.69	5.90	119.51	99.21	221.65	296.41	285.74	10.68	27.761			
2,400.00	2,384.54	2,333.92	2,309.02	6.08	6.38	119.64	114.23	244.80	330.27	318.92	11.35	29.090			
2,500.00	2,482.13	2,428.01	2,398.97	6.48	6.87	119.74	129.26	267.95	364.12	352.08	12.05	30.226			
2,600.00	2,579.71	2,522.10	2,488.92	6.90	7.38	119.83	144.28	291.09	397.98	385.23	12.76	31.201			
2,700.00	2,677.29	2,616.20	2,578.88	7.31	7.89	119.90	159.31	314.24	431.84	418.36	13.48	32.044			
2,800.00	2,774.87	2,710.29	2,668.83	7.74	8.41	119.96	174.33	337.39	465.70	451.49	14.21	32.777			
2,900.00	2,872.46	2,804.38	2,758.79	8.17	8.93	120.01	189.36	360.54	499.56	484.61	14.95	33.417			
3,000.00	2,970.04	2,898.47	2,848.74	8.60	9.46	120.06	204.39	383.69	533.41	517.72	15.70	33.981			
3,100.00	3,067.62	2,992.57	2,938.70	9.03	10.00	120.10	219.41	406.83	567.27	550.82	16.45	34.478			
3,200.00	3,165.21	3,086.66	3,028.65	9.47	10.54	120.14	234.44	429.98	601.13	583.92	17.21	34.921			
3,300.00	3,262.79	3,180.75	3,118.61	9.91	11.08	120.17	249.46	453.13	634.99	617.01	17.98	35.316			
3,400.00	3,360.37	3,274.84	3,208.56	10.35	11.62	120.20	264.49	476.28	668.85	650.10	18.75	35.670			
3,500.00	3,457.95	3,368.94	3,298.52	10.80	12.17	120.23	279.51	499.43	702.71	683.19	19.53	35.989			
3,600.00	3,555.54	3,463.03	3,388.47	11.25	12.72	120.25	294.54	522.57	736.57	716.27	20.30	36.277			
3,700.00	3,653.12	3,557.12	3,478.42	11.69	13.27	120.27	309.56	545.72	770.43	749.35	21.09	36.539			
3,800.00	3,750.70	3,651.21	3,568.38	12.14	13.82	120.29	324.59	568.87	804.29	782.42	21.87	36.777			
3,900.00	3,848.29	3,745.31	3,658.33	12.59	14.37	120.31	339.61	592.02	838.15	815.50	22.66	36.995			
4,000.00	3,945.87	3,839.40	3,748.29	13.05	14.92	120.33	354.64	615.17	872.01	848.57	23.44	37.195			
4,100.00	4,043.45	3,933.49	3,838.24	13.50	15.48	120.35	369.66	638.31	905.87	881.64	24.24	37.378			
4,200.00	4,141.03	4,027.58	3,928.20	13.95	16.03	120.36	384.69	661.46	939.74	914.71	25.03	37.548			
4,300.00	4,238.62	4,121.68	4,018.15	14.41	16.59	120.37	399.72	684.61	973.60	947.77	25.82	37.704			
4,400.00	4,336.20	4,215.77	4,108.11	14.86	17.15	120.39	414.74	707.76	1,007.46	980.84	26.62	37.849			
4,500.00	4,433.78	4,309.86	4,198.06	15.32	17.71	120.40	429.77	730.91	1,041.32	1,013.90	27.41	37.984			
4,600.00	4,531.36	4,403.95	4,288.02	15.77	18.26	120.41	444.79	754.05	1,075.18	1,046.96	28.21	38.109			
4,700.00	4,628.95	4,498.05	4,377.97	16.23	18.82	120.42	459.82	777.20	1,109.04	1,080.03	29.01	38.226			
4,800.00	4,726.53	4,592.14	4,467.92	16.69	19.38	120.43	474.84	800.35	1,142.90	1,113.09	29.81	38.336			
4,900.00	4,824.11	4,686.23	4,557.88	17.15	19.94	120.44	489.87	823.50	1,176.76	1,146.15	30.61	38.438			
5,000.00	4,921.70	4,780.33	4,647.83	17.60	20.51	120.45	504.89	846.65	1,210.62	1,179.20	31.42	38.534			

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_HIGHWAY 160 2-2S
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5119.00ft (Original Well Elev)
Reference Site:	WELD_HIGHWAY 160 17-2 pad	MD Reference:	WELL @ 5119.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_HIGHWAY 160 2-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 2-2S	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 3-17-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design	WELD_HIGHWAY 160 17-2 pad - P_HIGHWAY 160 1-2 - P_HIGHWAY 160 1-2 - PLAN #1 3-17-10 RH:											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	
5,092.54	5,012.00	4,867.40	4,731.08	18.03	21.02	120.46	518.80	868.07	1,241.96	1,209.80	32.16	38.618	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 2-2S
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5119.00ft (Original Well Elev)
Reference Site:	WELD_HIGHWAY 160 17-2 pad	MD Reference:	WELL @ 5119.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_HIGHWAY 160 2-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 2-2S	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 3-17-10 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				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	89.58	0.36	50.09	50.09						
100.00	100.00	100.00	100.00	0.10	0.10	89.58	0.36	50.09	50.09	49.90	0.19	262.169			
200.00	200.00	200.00	200.00	0.32	0.32	89.58	0.36	50.09	50.09	49.45	0.64	78.191			
300.00	300.00	300.00	300.00	0.55	0.55	89.58	0.36	50.09	50.09	49.00	1.09	45.947			
400.00	400.00	400.00	400.00	0.77	0.77	89.58	0.36	50.09	50.09	48.55	1.54	32.532			
500.00	500.00	500.00	500.00	0.99	0.99	89.58	0.36	50.09	50.09	48.10	1.99	25.180			
600.00	600.00	600.00	600.00	1.22	1.22	89.58	0.36	50.09	50.09	47.65	2.44	20.539			
700.00	700.00	700.00	700.00	1.44	1.44	89.58	0.36	50.09	50.09	47.20	2.89	17.342			
800.00	800.00	800.00	800.00	1.67	1.67	89.58	0.36	50.09	50.09	46.75	3.34	15.006			
900.00	900.00	900.00	900.00	1.89	1.89	89.58	0.36	50.09	50.09	46.30	3.79	13.225			
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	89.58	0.36	50.09	50.09	45.85	4.24	11.822			
1,100.00	1,100.00	1,100.00	1,100.00	2.34	2.34	89.58	0.36	50.09	50.09	45.40	4.69	10.688			
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	89.58	0.36	50.09	50.09	44.95	5.14	9.752 CC, ES			
1,300.00	1,299.99	1,299.08	1,299.07	2.79	2.79	115.64	1.30	50.97	51.54	45.97	5.58	9.243 SF			
1,400.00	1,399.91	1,398.04	1,397.95	3.01	3.00	116.30	4.11	53.60	55.91	49.90	6.01	9.301			
1,500.00	1,499.69	1,496.74	1,496.44	3.24	3.22	117.19	8.77	57.96	63.20	56.75	6.45	9.801			
1,600.00	1,599.27	1,595.05	1,594.35	3.47	3.45	118.12	15.26	64.04	73.41	66.51	6.89	10.649			
1,700.00	1,698.57	1,692.86	1,691.50	3.72	3.69	118.97	23.53	71.80	86.52	79.16	7.35	11.768			
1,800.00	1,797.54	1,790.05	1,787.71	3.98	3.95	119.68	33.55	81.19	102.51	94.68	7.83	13.090			
1,900.00	1,896.09	1,886.50	1,882.81	4.27	4.22	120.24	45.26	92.16	121.36	113.02	8.34	14.555			
2,000.00	1,994.16	1,982.11	1,976.65	4.59	4.52	120.66	58.58	104.65	143.03	134.15	8.88	16.108			
2,041.56	2,034.77	2,021.57	2,015.25	4.73	4.65	120.80	64.58	110.27	152.85	143.74	9.12	16.766			
2,100.00	2,091.80	2,076.82	2,069.14	4.94	4.85	121.02	73.47	118.60	167.25	157.78	9.47	17.664			
2,200.00	2,189.38	2,170.80	2,160.38	5.31	5.20	120.87	89.90	133.99	193.02	182.92	10.10	19.112			
2,300.00	2,286.96	2,263.98	2,250.27	5.69	5.60	120.26	107.79	150.76	220.21	209.44	10.77	20.456			
2,400.00	2,384.54	2,356.25	2,338.67	6.08	6.02	119.35	127.08	168.84	248.85	237.39	11.46	21.710			
2,500.00	2,482.13	2,447.53	2,425.46	6.48	6.48	118.27	147.69	188.16	278.99	266.80	12.19	22.890			
2,600.00	2,579.71	2,537.72	2,510.54	6.90	6.97	117.08	169.54	208.64	310.66	297.73	12.93	24.018			
2,700.00	2,677.29	2,632.07	2,599.17	7.31	7.52	115.91	193.16	230.77	343.19	329.46	13.73	25.004			
2,800.00	2,774.87	2,726.43	2,687.79	7.74	8.08	114.95	216.78	252.91	375.81	361.29	14.53	25.872			
2,900.00	2,872.46	2,820.78	2,776.42	8.17	8.65	114.13	240.40	275.04	408.52	393.19	15.34	26.636			
3,000.00	2,970.04	2,915.13	2,865.05	8.60	9.24	113.44	264.02	297.18	441.29	425.14	16.16	27.311			
3,100.00	3,067.62	3,009.49	2,953.67	9.03	9.83	112.85	287.64	319.32	474.12	457.13	16.99	27.912			
3,200.00	3,165.21	3,103.84	3,042.30	9.47	10.43	112.33	311.26	341.45	506.98	489.16	17.82	28.449			
3,300.00	3,262.79	3,198.19	3,130.93	9.91	11.04	111.87	334.88	363.59	539.87	521.21	18.66	28.931			
3,400.00	3,360.37	3,292.55	3,219.55	10.35	11.65	111.47	358.50	385.72	572.79	553.28	19.51	29.365			
3,500.00	3,457.95	3,386.90	3,308.18	10.80	12.26	111.11	382.12	407.86	605.73	585.38	20.36	29.758			
3,600.00	3,555.54	3,481.25	3,396.81	11.25	12.88	110.78	405.74	429.99	638.70	617.49	21.21	30.115			
3,700.00	3,653.12	3,575.61	3,485.43	11.69	13.50	110.49	429.36	452.13	671.67	649.61	22.07	30.440			
3,800.00	3,750.70	3,669.96	3,574.06	12.14	14.13	110.23	452.98	474.27	704.67	681.74	22.92	30.738			
3,900.00	3,848.29	3,764.31	3,662.69	12.59	14.75	109.99	476.60	496.40	737.67	713.88	23.79	31.011			
4,000.00	3,945.87	3,858.67	3,751.31	13.05	15.38	109.77	500.22	518.54	770.69	746.04	24.65	31.263			
4,100.00	4,043.45	3,953.02	3,839.94	13.50	16.01	109.57	523.84	540.67	803.71	778.19	25.52	31.496			
4,200.00	4,141.03	4,047.37	3,928.56	13.95	16.64	109.38	547.46	562.81	836.74	810.36	26.39	31.711			
4,300.00	4,238.62	4,141.73	4,017.19	14.41	17.28	109.21	571.08	584.95	869.78	842.53	27.26	31.911			
4,400.00	4,336.20	4,236.08	4,105.82	14.86	17.91	109.05	594.70	607.08	902.83	874.70	28.13	32.096			
4,500.00	4,433.78	4,330.43	4,194.44	15.32	18.55	108.90	618.32	629.22	935.88	906.88	29.00	32.270			
4,600.00	4,531.36	4,424.78	4,283.07	15.77	19.18	108.77	641.94	651.35	968.94	939.06	29.88	32.432			
4,700.00	4,628.95	4,519.14	4,371.70	16.23	19.82	108.64	665.56	673.49	1,002.00	971.25	30.75	32.583			
4,800.00	4,726.53	4,613.49	4,460.32	16.69	20.46	108.52	689.18	695.63	1,035.07	1,003.44	31.63	32.725			
4,900.00	4,824.11	4,707.84	4,548.95	17.15	21.10	108.40	712.80	717.76	1,068.14	1,035.63	32.51	32.859			
5,000.00	4,921.70	4,802.20	4,637.58	17.60	21.74	108.30	736.42	739.90	1,101.21	1,067.83	33.39	32.985			

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_HIGHWAY 160 2-2S
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5119.00ft (Original Well Elev)
Reference Site:	WELD_HIGHWAY 160 17-2 pad	MD Reference:	WELL @ 5119.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_HIGHWAY 160 2-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 2-2S	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 3-17-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design	WELD_HIGHWAY 160 17-2 pad - P_HIGHWAY 160 1-2S - P_HIGHWAY 160 1-2S - PLAN #1 3-17-10 f											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	
5,092.54	5,012.00	4,889.51	4,719.59	18.03	22.33	108.21	758.27	760.38	1,131.82	1,097.62	34.20	33.095	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 2-2S
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5119.00ft (Original Well Elev)
Reference Site:	WELD_HIGHWAY 160 17-2 pad	MD Reference:	WELL @ 5119.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_HIGHWAY 160 2-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 2-2S	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 3-17-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design													WELD_HIGHWAY 160 17-2 pad - P_HIGHWAY 160 2-2 - P_HIGHWAY 160 2-2 - PLAN #1 3-17-10 RH:	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 Tooface (°)	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	90.00	0.00	10.07	10.07						
100.00	100.00	100.00	100.00	0.10	0.10	90.00	0.00	10.07	10.07	9.88	0.19	52.725			
200.00	200.00	200.00	200.00	0.32	0.32	90.00	0.00	10.07	10.07	9.43	0.64	15.725			
300.00	300.00	300.00	300.00	0.55	0.55	90.00	0.00	10.07	10.07	8.98	1.09	9.241			
400.00	400.00	400.00	400.00	0.77	0.77	90.00	0.00	10.07	10.07	8.53	1.54	6.543			
500.00	500.00	500.00	500.00	0.99	0.99	90.00	0.00	10.07	10.07	8.08	1.99	5.064			
600.00	600.00	600.00	600.00	1.22	1.22	90.00	0.00	10.07	10.07	7.63	2.44	4.131			
700.00	700.00	700.00	700.00	1.44	1.44	90.00	0.00	10.07	10.07	7.18	2.89	3.488			
800.00	800.00	800.00	800.00	1.67	1.67	90.00	0.00	10.07	10.07	6.74	3.34	3.018			
900.00	900.00	900.00	900.00	1.89	1.89	90.00	0.00	10.07	10.07	6.29	3.79	2.660			
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	90.00	0.00	10.07	10.07	5.84	4.24	2.378			
1,100.00	1,100.00	1,100.00	1,100.00	2.34	2.34	90.00	0.00	10.07	10.07	5.39	4.69	2.149			
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	90.00	0.00	10.07	10.07	4.94	5.14	1.961 CC			
1,300.00	1,299.99	1,300.06	1,300.04	2.79	2.79	112.82	1.72	9.74	10.33	4.74	5.58	1.850 ES, SF			
1,400.00	1,399.91	1,400.07	1,399.91	3.01	3.02	104.78	6.86	8.75	11.23	5.20	6.03	1.864			
1,500.00	1,499.69	1,500.00	1,499.45	3.24	3.25	94.23	15.41	7.09	13.13	6.65	6.48	2.026			
1,600.00	1,599.27	1,599.76	1,598.47	3.47	3.49	84.08	27.34	4.78	16.31	9.35	6.96	2.343			
1,700.00	1,698.57	1,699.35	1,696.83	3.72	3.75	75.88	42.62	1.83	20.85	13.40	7.46	2.796			
1,800.00	1,797.54	1,798.71	1,794.36	3.98	4.04	69.78	61.20	-1.77	26.75	18.76	7.99	3.349			
1,900.00	1,896.09	1,898.14	1,891.34	4.27	4.37	65.85	82.73	-5.94	33.69	25.14	8.55	3.940			
2,000.00	1,994.16	1,997.94	1,988.58	4.59	4.73	66.09	104.80	-10.21	39.92	30.75	9.17	4.352			
2,041.56	2,034.77	2,039.44	2,029.01	4.73	4.88	67.13	113.98	-11.98	42.20	32.75	9.45	4.464			
2,100.00	2,091.80	2,097.78	2,085.85	4.94	5.10	68.82	126.88	-14.48	45.32	35.45	9.87	4.593			
2,200.00	2,189.38	2,197.61	2,183.12	5.31	5.49	71.22	148.96	-18.75	50.73	40.13	10.61	4.784			
2,300.00	2,286.96	2,297.44	2,280.38	5.69	5.90	73.16	171.03	-23.02	56.22	44.84	11.37	4.943			
2,400.00	2,384.54	2,397.28	2,377.65	6.08	6.31	74.76	193.11	-27.30	61.75	49.59	12.16	5.077			
2,500.00	2,482.13	2,497.11	2,474.92	6.48	6.73	76.09	215.18	-31.57	67.33	54.36	12.97	5.190			
2,600.00	2,579.71	2,596.94	2,572.19	6.90	7.16	77.22	237.26	-35.84	72.94	59.14	13.80	5.287			
2,700.00	2,677.29	2,696.78	2,669.46	7.31	7.59	78.18	259.34	-40.11	78.57	63.94	14.63	5.369			
2,800.00	2,774.87	2,796.61	2,766.72	7.74	8.03	79.02	281.41	-44.38	84.22	68.74	15.48	5.439			
2,900.00	2,872.46	2,896.44	2,863.99	8.17	8.47	79.75	303.49	-48.66	89.89	73.55	16.34	5.501			
3,000.00	2,970.04	2,996.28	2,961.26	8.60	8.91	80.39	325.57	-52.93	95.57	78.36	17.21	5.554			
3,100.00	3,067.62	3,096.11	3,058.53	9.03	9.36	80.97	347.64	-57.20	101.26	83.18	18.08	5.601			
3,200.00	3,165.21	3,195.94	3,155.79	9.47	9.81	81.48	369.72	-61.47	106.96	88.00	18.96	5.642			
3,300.00	3,262.79	3,295.78	3,253.06	9.91	10.26	81.94	391.80	-65.74	112.66	92.82	19.84	5.679			
3,400.00	3,360.37	3,395.61	3,350.33	10.35	10.71	82.35	413.87	-70.02	118.38	97.65	20.73	5.712			
3,500.00	3,457.95	3,495.44	3,447.60	10.80	11.17	82.73	435.95	-74.29	124.10	102.48	21.62	5.741			
3,600.00	3,555.54	3,595.27	3,544.87	11.25	11.63	83.07	458.03	-78.56	129.82	107.31	22.51	5.767			
3,700.00	3,653.12	3,695.11	3,642.13	11.69	12.08	83.39	480.10	-82.83	135.55	112.14	23.41	5.791			
3,800.00	3,750.70	3,794.94	3,739.40	12.14	12.54	83.67	502.18	-87.11	141.28	116.97	24.30	5.813			
3,900.00	3,848.29	3,894.77	3,836.67	12.59	13.00	83.94	524.26	-91.38	147.01	121.81	25.21	5.833			
4,000.00	3,945.87	3,994.61	3,933.94	13.05	13.46	84.19	546.33	-95.65	152.75	126.64	26.11	5.851			
4,100.00	4,043.45	4,094.44	4,031.21	13.50	13.92	84.42	568.41	-99.92	158.49	131.48	27.01	5.867			
4,200.00	4,141.03	4,194.27	4,128.47	13.95	14.39	84.63	590.49	-104.19	164.24	136.32	27.92	5.882			
4,300.00	4,238.62	4,294.11	4,225.74	14.41	14.85	84.83	612.56	-108.47	169.98	141.15	28.83	5.896			
4,400.00	4,336.20	4,393.94	4,323.01	14.86	15.31	85.01	634.64	-112.74	175.73	145.99	29.74	5.909			
4,500.00	4,433.78	4,493.77	4,420.28	15.32	15.78	85.19	656.71	-117.01	181.48	150.83	30.65	5.921			
4,600.00	4,531.36	4,593.61	4,517.54	15.77	16.24	85.35	678.79	-121.28	187.23	155.67	31.56	5.932			
4,700.00	4,628.95	4,693.44	4,614.81	16.23	16.71	85.50	700.87	-125.55	192.98	160.51	32.47	5.943			
4,800.00	4,726.53	4,793.27	4,712.08	16.69	17.17	85.65	722.94	-129.83	198.73	165.34	33.39	5.952			
4,900.00	4,824.11	4,893.11	4,809.35	17.15	17.64	85.78	745.02	-134.10	204.49	170.18	34.30	5.961			
5,000.00	4,921.70	4,992.94	4,906.62	17.60	18.10	85.91	767.10	-138.37	210.24	175.02	35.22	5.970			

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_HIGHWAY 160 2-2S
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5119.00ft (Original Well Elev)
Reference Site:	WELD_HIGHWAY 160 17-2 pad	MD Reference:	WELL @ 5119.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_HIGHWAY 160 2-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 2-2S	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 3-17-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_HIGHWAY 160 17-2 pad - P_HIGHWAY 160 2-2 - P_HIGHWAY 160 2-2 - PLAN #1 3-17-10 RH:													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		
5,092.54	5,012.00	5,085.33	4,996.63	18.03	18.54	86.02	787.53	-142.32	215.57	179.50	36.07	5.977		

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 2-2S
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5119.00ft (Original Well Elev)
Reference Site:	WELD_HIGHWAY 160 17-2 pad	MD Reference:	WELL @ 5119.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_HIGHWAY 160 2-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 2-2S	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 3-17-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design													WELD_HIGHWAY 160 17-2 pad - P_HIGHWAY 160 24-2 - P_HIGHWAY 160 24-2 - PLAN #1 3-17-10 F	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 Tooface (°)	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	88.96	0.36	20.15	20.15						
100.00	100.00	100.00	100.00	0.10	0.10	88.96	0.36	20.15	20.15	19.96	0.19	105.468			
200.00	200.00	200.00	200.00	0.32	0.32	88.96	0.36	20.15	20.15	19.51	0.64	31.455			
300.00	300.00	300.00	300.00	0.55	0.55	88.96	0.36	20.15	20.15	19.06	1.09	18.484			
400.00	400.00	400.00	400.00	0.77	0.77	88.96	0.36	20.15	20.15	18.61	1.54	13.087			
500.00	500.00	500.00	500.00	0.99	0.99	88.96	0.36	20.15	20.15	18.16	1.99	10.130			
600.00	600.00	600.00	600.00	1.22	1.22	88.96	0.36	20.15	20.15	17.71	2.44	8.262			
700.00	700.00	700.00	700.00	1.44	1.44	88.96	0.36	20.15	20.15	17.26	2.89	6.976			
800.00	800.00	800.00	800.00	1.67	1.67	88.96	0.36	20.15	20.15	16.81	3.34	6.037			
900.00	900.00	900.00	900.00	1.89	1.89	88.96	0.36	20.15	20.15	16.36	3.79	5.320			
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	88.96	0.36	20.15	20.15	15.91	4.24	4.756			
1,100.00	1,100.00	1,100.00	1,100.00	2.34	2.34	88.96	0.36	20.15	20.15	15.46	4.69	4.300			
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	88.96	0.36	20.15	20.15	15.01	5.14	3.923 CC, ES			
1,300.00	1,299.99	1,299.71	1,299.69	2.79	2.76	122.43	-1.30	20.65	21.36	15.81	5.55	3.847 SF			
1,400.00	1,399.91	1,398.85	1,398.69	3.01	2.94	139.84	-6.24	22.14	26.79	20.84	5.94	4.507			
1,500.00	1,499.69	1,496.85	1,496.32	3.24	3.12	155.61	-14.35	24.58	38.94	32.60	6.33	6.148			
1,600.00	1,599.27	1,593.17	1,591.94	3.47	3.32	165.63	-25.43	27.91	58.17	51.45	6.72	8.655			
1,700.00	1,698.57	1,687.34	1,684.99	3.72	3.55	171.56	-39.23	32.07	83.91	76.80	7.11	11.809			
1,800.00	1,797.54	1,778.89	1,774.96	3.98	3.80	175.17	-55.45	36.95	115.63	108.14	7.49	15.446			
1,900.00	1,896.09	1,867.46	1,861.44	4.27	4.08	177.50	-73.75	42.46	152.95	145.09	7.86	19.458			
2,000.00	1,994.16	1,956.65	1,948.06	4.59	4.40	179.09	-94.13	48.60	194.92	186.68	8.24	23.665			
2,041.56	2,034.77	1,993.97	1,984.29	4.73	4.54	179.59	-102.70	51.18	213.14	204.75	8.39	25.397			
2,100.00	2,091.80	2,046.31	2,035.09	4.94	4.75	-179.84	-114.72	54.80	239.06	230.42	8.64	27.660			
2,200.00	2,189.38	2,135.86	2,122.03	5.31	5.11	-179.10	-135.30	61.00	283.46	274.38	9.08	31.233			
2,300.00	2,286.96	2,225.42	2,208.97	5.69	5.49	-178.56	-155.87	67.19	327.88	318.37	9.52	34.458			
2,400.00	2,384.54	2,314.97	2,295.91	6.08	5.88	-178.15	-176.44	73.38	372.32	362.36	9.96	37.376			
2,500.00	2,482.13	2,404.53	2,382.85	6.48	6.28	-177.83	-197.02	79.58	416.77	406.36	10.41	40.026			
2,600.00	2,579.71	2,494.08	2,469.79	6.90	6.68	-177.57	-217.59	85.77	461.23	450.37	10.87	42.436			
2,700.00	2,677.29	2,583.64	2,556.73	7.31	7.10	-177.36	-238.16	91.97	505.70	494.37	11.33	44.636			
2,800.00	2,774.87	2,673.19	2,643.67	7.74	7.52	-177.18	-258.73	98.16	550.17	538.38	11.79	46.651			
2,900.00	2,872.46	2,762.75	2,730.61	8.17	7.94	-177.03	-279.31	104.36	594.65	582.39	12.26	48.501			
3,000.00	2,970.04	2,852.30	2,817.55	8.60	8.37	-176.89	-299.88	110.55	639.13	626.40	12.73	50.204			
3,100.00	3,067.62	2,941.86	2,904.49	9.03	8.80	-176.78	-320.45	116.75	683.61	670.40	13.20	51.776			
3,200.00	3,165.21	3,031.41	2,991.43	9.47	9.23	-176.68	-341.03	122.94	728.09	714.41	13.68	53.231			
3,300.00	3,262.79	3,120.97	3,078.36	9.91	9.67	-176.59	-361.60	129.14	772.57	758.42	14.15	54.580			
3,400.00	3,360.37	3,210.52	3,165.30	10.35	10.11	-176.51	-382.17	135.33	817.06	802.43	14.63	55.834			
3,500.00	3,457.95	3,300.08	3,252.24	10.80	10.55	-176.44	-402.75	141.53	861.55	846.43	15.11	57.003			
3,600.00	3,555.54	3,389.63	3,339.18	11.25	10.99	-176.38	-423.32	147.72	906.03	890.44	15.60	58.093			
3,700.00	3,653.12	3,479.19	3,426.12	11.69	11.44	-176.32	-443.89	153.92	950.52	934.44	16.08	59.113			
3,800.00	3,750.70	3,568.74	3,513.06	12.14	11.88	-176.27	-464.46	160.11	995.01	978.45	16.56	60.069			
3,900.00	3,848.29	3,658.30	3,600.00	12.59	12.33	-176.22	-485.04	166.31	1,039.50	1,022.45	17.05	60.966			
4,000.00	3,945.87	3,747.85	3,686.94	13.05	12.78	-176.17	-505.61	172.50	1,083.99	1,066.45	17.54	61.810			
4,100.00	4,043.45	3,837.41	3,773.88	13.50	13.22	-176.13	-526.18	178.70	1,128.48	1,110.46	18.03	62.605			
4,200.00	4,141.03	3,926.96	3,860.82	13.95	13.67	-176.09	-546.76	184.89	1,172.97	1,154.46	18.51	63.355			
4,300.00	4,238.62	4,016.52	3,947.76	14.41	14.12	-176.06	-567.33	191.08	1,217.46	1,198.46	19.00	64.064			
4,400.00	4,336.20	4,106.07	4,034.70	14.86	14.57	-176.03	-587.90	197.28	1,261.96	1,242.46	19.49	64.734			
4,500.00	4,433.78	4,195.63	4,121.64	15.32	15.02	-176.00	-608.47	203.47	1,306.45	1,286.46	19.99	65.369			
4,600.00	4,531.36	4,285.18	4,208.58	15.77	15.48	-175.97	-629.05	209.67	1,350.94	1,330.46	20.48	65.972			
4,700.00	4,628.95	4,374.74	4,295.52	16.23	15.93	-175.94	-649.62	215.86	1,395.43	1,374.46	20.97	66.544			
4,800.00	4,726.53	4,464.29	4,382.46	16.69	16.38	-175.92	-670.19	222.06	1,439.93	1,418.46	21.46	67.088			
4,900.00	4,824.11	4,553.85	4,469.40	17.15	16.83	-175.89	-690.77	228.25	1,484.42	1,462.46	21.96	67.606			
5,000.00	4,921.70	4,643.40	4,556.33	17.60	17.29	-175.87	-711.34	234.45	1,528.91	1,506.46	22.45	68.100			

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_HIGHWAY 160 2-2S
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5119.00ft (Original Well Elev)
Reference Site:	WELD_HIGHWAY 160 17-2 pad	MD Reference:	WELL @ 5119.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_HIGHWAY 160 2-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 2-2S	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 3-17-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design	WELD_HIGHWAY 160 17-2 pad - P_HIGHWAY 160 24-2 - P_HIGHWAY 160 24-2 - PLAN #1 3-17-10 F											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	
5,092.54	5,012.00	4,726.28	4,636.79	18.03	17.71	-175.85	-730.38	240.18	1,570.09	1,547.18	22.91	68.537	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 2-2S
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5119.00ft (Original Well Elev)
Reference Site:	WELD_HIGHWAY 160 17-2 pad	MD Reference:	WELL @ 5119.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_HIGHWAY 160 2-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 2-2S	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 3-17-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design													WELD_HIGHWAY 160 17-2 pad - P_HIGHWAY 160 26-2 - P_HIGHWAY 160 26-2 - PLAN #1 3-17-10 F	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	89.65	0.36	60.16	60.16						
100.00	100.00	100.00	100.00	0.10	0.10	89.65	0.36	60.16	60.16	59.97	0.19	314.893			
200.00	200.00	200.00	200.00	0.32	0.32	89.65	0.36	60.16	60.16	59.52	0.64	93.916			
300.00	300.00	300.00	300.00	0.55	0.55	89.65	0.36	60.16	60.16	59.07	1.09	55.187 CC, ES			
400.00	400.00	398.45	398.43	0.77	0.76	88.57	1.53	61.39	61.43	59.89	1.53	40.090			
500.00	500.00	496.67	496.52	0.99	0.99	85.60	5.01	65.06	65.34	63.37	1.98	33.058			
600.00	600.00	594.43	593.91	1.22	1.22	81.40	10.76	71.13	72.20	69.77	2.43	29.674			
700.00	700.00	691.50	690.29	1.44	1.49	76.75	18.73	79.55	82.30	79.40	2.91	28.328			
800.00	800.00	787.68	785.33	1.67	1.79	72.27	28.84	90.22	95.85	92.46	3.39	28.245 SF			
900.00	900.00	882.77	878.75	1.89	2.13	68.31	40.99	103.04	112.91	109.02	3.90	28.978			
1,000.00	1,000.00	976.56	970.29	2.12	2.52	64.97	55.05	117.89	133.46	129.05	4.41	30.241			
1,100.00	1,100.00	1,068.91	1,059.71	2.34	2.94	62.23	70.90	134.62	157.40	152.46	4.94	31.847			
1,200.00	1,200.00	1,159.64	1,146.80	2.57	3.42	60.00	88.40	153.10	184.62	179.13	5.48	33.670			
1,300.00	1,299.99	1,248.74	1,231.50	2.79	3.93	83.86	107.42	173.17	214.86	209.21	5.65	38.024			
1,400.00	1,399.91	1,336.20	1,313.76	3.01	4.48	82.71	127.84	194.73	247.78	241.66	6.12	40.471			
1,500.00	1,499.69	1,421.92	1,393.46	3.24	5.07	82.07	149.52	217.62	283.20	276.59	6.60	42.882			
1,600.00	1,599.27	1,505.80	1,470.51	3.47	5.69	81.77	172.32	241.69	320.99	313.89	7.10	45.221			
1,700.00	1,698.57	1,595.87	1,552.53	3.72	6.39	81.79	197.92	268.71	360.24	352.61	7.64	47.160			
1,800.00	1,797.54	1,687.76	1,636.18	3.98	7.13	82.09	224.07	296.32	399.27	391.06	8.21	48.603			
1,900.00	1,896.09	1,779.61	1,719.79	4.27	7.86	82.59	250.21	323.91	438.08	429.26	8.83	49.636			
2,000.00	1,994.16	1,871.34	1,803.30	4.59	8.60	83.25	276.31	351.47	476.75	467.27	9.48	50.301			
2,041.56	2,034.77	1,909.41	1,837.96	4.73	8.91	83.56	287.15	362.91	492.80	483.04	9.76	50.482			
2,100.00	2,091.80	1,962.93	1,886.68	4.94	9.34	84.33	302.38	378.99	515.40	505.22	10.18	50.619			
2,200.00	2,189.38	2,054.51	1,970.05	5.31	10.09	85.52	328.44	406.50	554.25	543.32	10.92	50.746			
2,300.00	2,286.96	2,146.08	2,053.42	5.69	10.83	86.55	354.50	434.01	593.27	581.58	11.69	50.769			
2,400.00	2,384.54	2,237.66	2,136.79	6.08	11.58	87.45	380.56	461.52	632.43	619.97	12.47	50.723			
2,500.00	2,482.13	2,329.24	2,220.15	6.48	12.33	88.25	406.62	489.03	671.72	658.45	13.27	50.630			
2,600.00	2,579.71	2,420.81	2,303.52	6.90	13.08	88.96	432.69	516.54	711.10	697.02	14.08	50.507			
2,700.00	2,677.29	2,512.39	2,386.89	7.31	13.84	89.60	458.75	544.06	750.57	735.67	14.90	50.367			
2,800.00	2,774.87	2,603.97	2,470.26	7.74	14.59	90.17	484.81	571.57	790.11	774.37	15.73	50.216			
2,900.00	2,872.46	2,695.54	2,553.63	8.17	15.34	90.69	510.87	599.08	829.71	813.13	16.57	50.060			
3,000.00	2,970.04	2,787.12	2,636.99	8.60	16.10	91.16	536.93	626.59	869.36	851.94	17.42	49.903			
3,100.00	3,067.62	2,878.70	2,720.36	9.03	16.85	91.59	562.99	654.10	909.06	890.78	18.27	49.747			
3,200.00	3,165.21	2,970.27	2,803.73	9.47	17.61	91.99	589.05	681.62	948.79	929.66	19.13	49.595			
3,300.00	3,262.79	3,061.85	2,887.10	9.91	18.36	92.35	615.11	709.13	988.56	968.57	19.99	49.447			
3,400.00	3,360.37	3,153.43	2,970.46	10.35	19.12	92.69	641.18	736.64	1,028.37	1,007.51	20.86	49.303			
3,500.00	3,457.95	3,245.00	3,053.83	10.80	19.88	93.00	667.24	764.15	1,068.20	1,046.47	21.73	49.165			
3,600.00	3,555.54	3,336.58	3,137.20	11.25	20.63	93.29	693.30	791.66	1,108.05	1,085.46	22.60	49.033			
3,700.00	3,653.12	3,428.16	3,220.57	11.69	21.39	93.55	719.36	819.17	1,147.93	1,124.46	23.47	48.906			
3,800.00	3,750.70	3,519.73	3,303.94	12.14	22.15	93.80	745.42	846.69	1,187.83	1,163.48	24.35	48.784			
3,900.00	3,848.29	3,611.31	3,387.30	12.59	22.90	94.04	771.48	874.20	1,227.74	1,202.52	25.23	48.668			
4,000.00	3,945.87	3,702.89	3,470.67	13.05	23.66	94.26	797.54	901.71	1,267.67	1,241.57	26.11	48.556			
4,100.00	4,043.45	3,794.46	3,554.04	13.50	24.42	94.46	823.60	929.22	1,307.62	1,280.63	26.99	48.450			
4,200.00	4,141.03	3,886.04	3,637.41	13.95	25.18	94.66	849.66	956.73	1,347.58	1,319.71	27.87	48.348			
4,300.00	4,238.62	3,977.62	3,720.77	14.41	25.93	94.84	875.73	984.25	1,387.55	1,358.79	28.76	48.251			
4,400.00	4,336.20	4,069.19	3,804.14	14.86	26.69	95.01	901.79	1,011.76	1,427.53	1,397.89	29.64	48.158			
4,500.00	4,433.78	4,160.77	3,887.51	15.32	27.45	95.18	927.85	1,039.27	1,467.53	1,437.00	30.53	48.068			
4,600.00	4,531.36	4,252.34	3,970.88	15.77	28.21	95.33	953.91	1,066.78	1,507.53	1,476.11	31.42	47.983			
4,700.00	4,628.95	4,343.92	4,054.25	16.23	28.97	95.48	979.97	1,094.29	1,547.54	1,515.23	32.31	47.901			
4,800.00	4,726.53	4,435.50	4,137.61	16.69	29.73	95.62	1,006.03	1,121.80	1,587.56	1,554.36	33.20	47.823			
4,900.00	4,824.11	4,527.07	4,220.98	17.15	30.48	95.75	1,032.09	1,149.32	1,627.59	1,593.50	34.09	47.748			
5,000.00	4,921.70	4,618.65	4,304.35	17.60	31.24	95.87	1,058.15	1,176.83	1,667.62	1,632.64	34.98	47.676			

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_HIGHWAY 160 2-2S
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5119.00ft (Original Well Elev)
Reference Site:	WELD_HIGHWAY 160 17-2 pad	MD Reference:	WELL @ 5119.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_HIGHWAY 160 2-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 2-2S	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 3-17-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design	WELD_HIGHWAY 160 17-2 pad - P_HIGHWAY 160 26-2 - P_HIGHWAY 160 26-2 - PLAN #1 3-17-10 F											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	
5,092.54	5,012.00	4,703.40	4,381.50	18.03	31.95	95.99	1,082.27	1,202.29	1,704.67	1,668.87	35.80	47.612	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 2-2S
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5119.00ft (Original Well Elev)
Reference Site:	WELD_HIGHWAY 160 17-2 pad	MD Reference:	WELL @ 5119.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_HIGHWAY 160 2-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 2-2S	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 3-17-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design													WELD_HIGHWAY 160 17-2 pad - P_HIGHWAY 160 41-2 - P_HIGHWAY 160 41-2 - PLAN #1 3-17-10 F	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 Tooface (°)	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	89.48	0.73	80.03	80.03						
100.00	100.00	100.00	100.00	0.10	0.10	89.48	0.73	80.03	80.03	79.84	0.19	418.890			
200.00	200.00	200.00	200.00	0.32	0.32	89.48	0.73	80.03	80.03	79.39	0.64	124.932			
300.00	300.00	300.00	300.00	0.55	0.55	89.48	0.73	80.03	80.03	78.94	1.09	73.414			
400.00	400.00	400.00	400.00	0.77	0.77	89.48	0.73	80.03	80.03	78.49	1.54	51.979			
500.00	500.00	500.00	500.00	0.99	0.99	89.48	0.73	80.03	80.03	78.04	1.99	40.232			
600.00	600.00	600.00	600.00	1.22	1.22	89.48	0.73	80.03	80.03	77.59	2.44	32.816			
700.00	700.00	700.00	700.00	1.44	1.44	89.48	0.73	80.03	80.03	77.14	2.89	27.709			
800.00	800.00	800.00	800.00	1.67	1.67	89.48	0.73	80.03	80.03	76.69	3.34	23.977			
900.00	900.00	900.00	900.00	1.89	1.89	89.48	0.73	80.03	80.03	76.24	3.79	21.131			
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	89.48	0.73	80.03	80.03	75.79	4.24	18.889			
1,100.00	1,100.00	1,100.00	1,100.00	2.34	2.34	89.48	0.73	80.03	80.03	75.34	4.69	17.077			
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	89.48	0.73	80.03	80.03	74.89	5.14	15.582 CC, ES			
1,300.00	1,299.99	1,297.24	1,297.23	2.79	2.78	115.90	0.96	81.66	82.28	76.71	5.56	14.785 SF			
1,400.00	1,399.91	1,394.12	1,393.97	3.01	2.98	117.56	1.66	86.53	89.06	83.08	5.98	14.891			
1,500.00	1,499.69	1,490.27	1,489.77	3.24	3.19	119.81	2.81	94.57	100.49	94.09	6.40	15.705			
1,600.00	1,599.27	1,585.34	1,584.18	3.47	3.41	122.17	4.40	105.64	116.63	109.82	6.82	17.103			
1,700.00	1,698.57	1,679.00	1,676.77	3.72	3.66	124.34	6.40	119.57	137.50	130.26	7.25	18.974			
1,800.00	1,797.54	1,770.95	1,767.18	3.98	3.93	126.18	8.78	136.16	163.04	155.35	7.68	21.217			
1,900.00	1,896.09	1,860.92	1,855.08	4.27	4.23	127.65	11.50	155.16	193.12	184.98	8.14	23.738			
2,000.00	1,994.16	1,948.66	1,940.17	4.59	4.56	128.80	14.54	176.31	227.61	219.01	8.60	26.456			
2,041.56	2,034.77	1,984.42	1,974.66	4.73	4.70	129.18	15.88	185.67	243.21	234.40	8.80	27.627			
2,100.00	2,091.80	2,034.08	2,022.35	4.94	4.92	129.87	17.84	199.37	266.09	256.99	9.10	29.230			
2,200.00	2,189.38	2,117.58	2,101.97	5.31	5.32	130.63	21.41	224.25	307.24	297.61	9.63	31.903			
2,300.00	2,286.96	2,200.00	2,179.82	5.69	5.76	131.03	25.25	251.04	350.78	340.60	10.18	34.466			
2,400.00	2,384.54	2,280.46	2,255.04	6.08	6.23	131.18	29.31	279.29	396.55	385.81	10.74	36.916			
2,500.00	2,482.13	2,368.98	2,337.52	6.48	6.79	131.26	33.87	311.10	443.07	431.72	11.35	39.040			
2,600.00	2,579.71	2,457.50	2,420.00	6.90	7.37	131.33	38.43	342.92	489.59	477.62	11.97	40.900			
2,700.00	2,677.29	2,546.01	2,502.48	7.31	7.96	131.38	42.99	374.73	536.11	523.51	12.61	42.531			
2,800.00	2,774.87	2,634.53	2,584.96	7.74	8.56	131.43	47.56	406.54	582.63	569.38	13.25	43.970			
2,900.00	2,872.46	2,723.05	2,667.44	8.17	9.17	131.47	52.12	438.35	629.16	615.25	13.91	45.243			
3,000.00	2,970.04	2,811.57	2,749.91	8.60	9.79	131.50	56.68	470.17	675.68	661.11	14.57	46.376			
3,100.00	3,067.62	2,900.09	2,832.39	9.03	10.42	131.53	61.24	501.98	722.20	706.96	15.24	47.387			
3,200.00	3,165.21	2,988.61	2,914.87	9.47	11.05	131.56	65.80	533.79	768.72	752.80	15.92	48.292			
3,300.00	3,262.79	3,077.13	2,997.35	9.91	11.69	131.58	70.37	565.61	815.24	798.64	16.60	49.107			
3,400.00	3,360.37	3,165.65	3,079.83	10.35	12.33	131.60	74.93	597.42	861.77	844.48	17.29	49.844			
3,500.00	3,457.95	3,254.17	3,162.31	10.80	12.97	131.62	79.49	629.23	908.29	890.31	17.98	50.512			
3,600.00	3,555.54	3,342.69	3,244.79	11.25	13.61	131.63	84.05	661.04	954.81	936.13	18.68	51.120			
3,700.00	3,653.12	3,431.21	3,327.27	11.69	14.26	131.65	88.62	692.86	1,001.33	981.96	19.38	51.676			
3,800.00	3,750.70	3,519.72	3,409.74	12.14	14.91	131.66	93.18	724.67	1,047.85	1,027.78	20.08	52.184			
3,900.00	3,848.29	3,608.24	3,492.22	12.59	15.56	131.67	97.74	756.48	1,094.38	1,073.59	20.79	52.652			
4,000.00	3,945.87	3,696.76	3,574.70	13.05	16.22	131.68	102.30	788.30	1,140.90	1,119.41	21.49	53.082			
4,100.00	4,043.45	3,785.28	3,657.18	13.50	16.87	131.70	106.87	820.11	1,187.42	1,165.22	22.20	53.479			
4,200.00	4,141.03	3,873.80	3,739.66	13.95	17.53	131.71	111.43	851.92	1,233.95	1,211.03	22.92	53.847			
4,300.00	4,238.62	3,962.32	3,822.14	14.41	18.18	131.71	115.99	883.73	1,280.47	1,256.84	23.63	54.189			
4,400.00	4,336.20	4,050.84	3,904.62	14.86	18.84	131.72	120.55	915.55	1,326.99	1,302.64	24.35	54.506			
4,500.00	4,433.78	4,139.36	3,987.10	15.32	19.50	131.73	125.12	947.36	1,373.51	1,348.45	25.06	54.802			
4,600.00	4,531.36	4,227.88	4,069.57	15.77	20.16	131.74	129.68	979.17	1,420.04	1,394.25	25.78	55.079			
4,700.00	4,628.95	4,316.40	4,152.05	16.23	20.82	131.74	134.24	1,010.98	1,466.56	1,440.06	26.50	55.338			
4,800.00	4,726.53	4,404.91	4,234.53	16.69	21.48	131.75	138.80	1,042.80	1,513.08	1,485.86	27.22	55.581			
4,900.00	4,824.11	4,493.43	4,317.01	17.15	22.14	131.76	143.37	1,074.61	1,559.60	1,531.66	27.95	55.809			
5,000.00	4,921.70	4,581.95	4,399.49	17.60	22.80	131.76	147.93	1,106.42	1,606.13	1,577.46	28.67	56.023			

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_HIGHWAY 160 2-2S
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5119.00ft (Original Well Elev)
Reference Site:	WELD_HIGHWAY 160 17-2 pad	MD Reference:	WELL @ 5119.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_HIGHWAY 160 2-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 2-2S	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 3-17-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design	WELD_HIGHWAY 160 17-2 pad - P_HIGHWAY 160 41-2 - P_HIGHWAY 160 41-2 - PLAN #1 3-17-10 F											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	
5,092.54	5,012.00	4,663.87	4,475.82	18.03	23.42	131.77	152.15	1,135.86	1,649.18	1,619.84	29.34	56.210	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 2-2S
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5119.00ft (Original Well Elev)
Reference Site:	WELD_HIGHWAY 160 17-2 pad	MD Reference:	WELL @ 5119.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_HIGHWAY 160 2-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 2-2S	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 3-17-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design													WELD_HIGHWAY 160 17-2 pad - P_HIGHWAY 160 7-2 - P_HIGHWAY 160 7-2 - PLAN #1 3-17-10 RH:	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 Tooface (°)	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	-90.02	0.00	-10.07	10.07						
100.00	100.00	100.00	100.00	0.10	0.10	-90.02	0.00	-10.07	10.07	9.88	0.19	52.725			
200.00	200.00	200.00	200.00	0.32	0.32	-90.02	0.00	-10.07	10.07	9.43	0.64	15.725			
300.00	300.00	300.00	300.00	0.55	0.55	-90.02	0.00	-10.07	10.07	8.98	1.09	9.241			
400.00	400.00	400.00	400.00	0.77	0.77	-90.02	0.00	-10.07	10.07	8.53	1.54	6.543			
500.00	500.00	500.00	500.00	0.99	0.99	-90.02	0.00	-10.07	10.07	8.08	1.99	5.064			
600.00	600.00	600.00	600.00	1.22	1.22	-90.02	0.00	-10.07	10.07	7.63	2.44	4.131			
700.00	700.00	700.00	700.00	1.44	1.44	-90.02	0.00	-10.07	10.07	7.18	2.89	3.488			
800.00	800.00	800.00	800.00	1.67	1.67	-90.02	0.00	-10.07	10.07	6.74	3.34	3.018			
900.00	900.00	900.00	900.00	1.89	1.89	-90.02	0.00	-10.07	10.07	6.29	3.79	2.660			
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	-90.02	0.00	-10.07	10.07	5.84	4.24	2.378			
1,100.00	1,100.00	1,100.00	1,100.00	2.34	2.34	-90.02	0.00	-10.07	10.07	5.39	4.69	2.149			
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	-90.02	0.00	-10.07	10.07	4.94	5.14	1.961 CC, ES			
1,300.00	1,299.99	1,299.72	1,299.70	2.79	2.77	-77.92	-1.40	-11.10	10.85	5.29	5.56	1.952 SF			
1,400.00	1,399.91	1,399.00	1,398.84	3.01	2.95	-104.80	-5.56	-14.18	15.76	9.80	5.96	2.646			
1,500.00	1,499.69	1,497.42	1,496.89	3.24	3.14	-122.22	-12.42	-19.23	27.14	20.78	6.36	4.267			
1,600.00	1,599.27	1,594.57	1,593.33	3.47	3.35	-130.65	-21.83	-26.18	44.51	37.74	6.77	6.574			
1,700.00	1,698.57	1,690.07	1,687.69	3.72	3.58	-134.93	-33.65	-34.90	67.26	60.07	7.19	9.357			
1,800.00	1,797.54	1,786.28	1,782.46	3.98	3.84	-137.65	-46.98	-44.73	93.77	86.15	7.62	12.305			
1,900.00	1,896.09	1,882.00	1,876.75	4.27	4.12	-139.88	-60.24	-54.52	122.34	114.28	8.06	15.170			
2,000.00	1,994.16	1,977.05	1,970.38	4.59	4.41	-141.77	-73.41	-64.24	153.01	144.49	8.52	17.957			
2,041.56	2,034.77	2,016.34	2,009.08	4.73	4.54	-142.49	-78.85	-68.25	166.38	157.67	8.71	19.094			
2,100.00	2,091.80	2,071.48	2,063.40	4.94	4.72	-143.53	-86.49	-73.89	185.47	176.46	9.01	20.593			
2,200.00	2,189.38	2,165.86	2,156.37	5.31	5.03	-144.90	-99.56	-83.54	218.23	208.72	9.52	22.930			
2,300.00	2,286.96	2,260.23	2,249.33	5.69	5.36	-145.90	-112.64	-93.19	251.08	241.04	10.04	25.009			
2,400.00	2,384.54	2,354.60	2,342.29	6.08	5.69	-146.68	-125.71	-102.83	283.98	273.41	10.57	26.866			
2,500.00	2,482.13	2,448.97	2,435.25	6.48	6.02	-147.29	-138.79	-112.48	316.91	305.80	11.11	28.527			
2,600.00	2,579.71	2,543.35	2,528.22	6.90	6.36	-147.79	-151.86	-122.13	349.87	338.22	11.65	30.021			
2,700.00	2,677.29	2,637.72	2,621.18	7.31	6.71	-148.20	-164.94	-131.78	382.85	370.65	12.21	31.368			
2,800.00	2,774.87	2,732.09	2,714.14	7.74	7.06	-148.55	-178.01	-141.43	415.85	403.09	12.76	32.587			
2,900.00	2,872.46	2,826.46	2,807.10	8.17	7.41	-148.85	-191.09	-151.07	448.85	435.53	13.32	33.695			
3,000.00	2,970.04	2,920.83	2,900.07	8.60	7.76	-149.10	-204.16	-160.72	481.87	467.98	13.89	34.704			
3,100.00	3,067.62	3,015.21	2,993.03	9.03	8.12	-149.32	-217.24	-170.37	514.89	500.44	14.45	35.627			
3,200.00	3,165.21	3,109.58	3,085.99	9.47	8.48	-149.52	-230.31	-180.02	547.92	532.90	15.02	36.473			
3,300.00	3,262.79	3,203.95	3,178.96	9.91	8.84	-149.69	-243.39	-189.67	580.96	565.36	15.60	37.252			
3,400.00	3,360.37	3,298.32	3,271.92	10.35	9.20	-149.85	-256.46	-199.31	614.00	597.83	16.17	37.970			
3,500.00	3,457.95	3,392.69	3,364.88	10.80	9.56	-149.99	-269.54	-208.96	647.04	630.29	16.75	38.634			
3,600.00	3,555.54	3,487.07	3,457.84	11.25	9.93	-150.11	-282.61	-218.61	680.08	662.76	17.33	39.250			
3,700.00	3,653.12	3,581.44	3,550.81	11.69	10.29	-150.23	-295.69	-228.26	713.13	695.23	17.91	39.823			
3,800.00	3,750.70	3,675.81	3,643.77	12.14	10.66	-150.33	-308.76	-237.91	746.18	727.69	18.49	40.356			
3,900.00	3,848.29	3,770.18	3,736.73	12.59	11.03	-150.43	-321.83	-247.55	779.24	760.16	19.07	40.854			
4,000.00	3,945.87	3,864.56	3,829.69	13.05	11.40	-150.51	-334.91	-257.20	812.29	792.63	19.66	41.319			
4,100.00	4,043.45	3,958.93	3,922.66	13.50	11.76	-150.59	-347.98	-266.85	845.35	825.10	20.25	41.756			
4,200.00	4,141.03	4,053.30	4,015.62	13.95	12.13	-150.67	-361.06	-276.50	878.40	857.57	20.83	42.166			
4,300.00	4,238.62	4,147.67	4,108.58	14.41	12.50	-150.74	-374.13	-286.14	911.46	890.04	21.42	42.551			
4,400.00	4,336.20	4,242.04	4,201.55	14.86	12.87	-150.80	-387.21	-295.79	944.52	922.51	22.01	42.914			
4,500.00	4,433.78	4,336.42	4,294.51	15.32	13.25	-150.86	-400.28	-305.44	977.58	954.98	22.60	43.257			
4,600.00	4,531.36	4,430.79	4,387.47	15.77	13.62	-150.92	-413.36	-315.09	1,010.64	987.45	23.19	43.581			
4,700.00	4,628.95	4,525.16	4,480.43	16.23	13.99	-150.97	-426.43	-324.74	1,043.71	1,019.92	23.78	43.887			
4,800.00	4,726.53	4,619.53	4,573.40	16.69	14.36	-151.02	-439.51	-334.38	1,076.77	1,052.40	24.37	44.178			
4,900.00	4,824.11	4,713.90	4,666.36	17.15	14.73	-151.07	-452.58	-344.03	1,109.83	1,084.87	24.97	44.453			
5,000.00	4,921.70	4,808.28	4,759.32	17.60	15.11	-151.11	-465.66	-353.68	1,142.90	1,117.34	25.56	44.715			

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_HIGHWAY 160 2-2S
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5119.00ft (Original Well Elev)
Reference Site:	WELD_HIGHWAY 160 17-2 pad	MD Reference:	WELL @ 5119.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_HIGHWAY 160 2-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 2-2S	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 3-17-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design	WELD_HIGHWAY 160 17-2 pad - P_HIGHWAY 160 7-2 - P_HIGHWAY 160 7-2 - PLAN #1 3-17-10 RH:											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	
5,092.54	5,012.00	4,895.61	4,845.35	18.03	15.45	-151.15	-477.76	-362.61	1,173.50	1,147.39	26.11	44.946	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 2-2S
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5119.00ft (Original Well Elev)
Reference Site:	WELD_HIGHWAY 160 17-2 pad	MD Reference:	WELL @ 5119.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_HIGHWAY 160 2-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 2-2S	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 3-17-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design													WELD_HIGHWAY 160 17-2 pad - P_HIGHWAY 160 8-2 - P_HIGHWAY 160 8-2 - PLAN #1 3-17-10 RH:	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 Tooface (°)	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	89.48	0.36	40.01	40.01						
100.00	100.00	100.00	100.00	0.10	0.10	89.48	0.36	40.01	40.01	39.82	0.19	209.445			
200.00	200.00	200.00	200.00	0.32	0.32	89.48	0.36	40.01	40.01	39.37	0.64	62.466			
300.00	300.00	300.00	300.00	0.55	0.55	89.48	0.36	40.01	40.01	38.92	1.09	36.707			
400.00	400.00	400.00	400.00	0.77	0.77	89.48	0.36	40.01	40.01	38.48	1.54	25.990			
500.00	500.00	500.00	500.00	0.99	0.99	89.48	0.36	40.01	40.01	38.03	1.99	20.116			
600.00	600.00	600.00	600.00	1.22	1.22	89.48	0.36	40.01	40.01	37.58	2.44	16.408			
700.00	700.00	700.00	700.00	1.44	1.44	89.48	0.36	40.01	40.01	37.13	2.89	13.854			
800.00	800.00	800.00	800.00	1.67	1.67	89.48	0.36	40.01	40.01	36.68	3.34	11.988			
900.00	900.00	900.00	900.00	1.89	1.89	89.48	0.36	40.01	40.01	36.23	3.79	10.565			
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	89.48	0.36	40.01	40.01	35.78	4.24	9.444			
1,100.00	1,100.00	1,100.00	1,100.00	2.34	2.34	89.48	0.36	40.01	40.01	35.33	4.69	8.539			
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	89.48	0.36	40.01	40.01	34.88	5.14	7.791 CC, ES			
1,300.00	1,299.99	1,298.69	1,298.67	2.79	2.77	117.90	-0.40	41.53	42.15	36.59	5.56	7.582 SF			
1,400.00	1,399.91	1,396.86	1,396.71	3.01	2.96	124.29	-2.67	46.06	49.00	43.04	5.96	8.218			
1,500.00	1,499.69	1,494.03	1,493.51	3.24	3.16	131.55	-6.40	53.49	61.34	54.97	6.37	9.636			
1,600.00	1,599.27	1,589.70	1,588.50	3.47	3.38	137.73	-11.51	63.67	79.58	72.81	6.77	11.758			
1,700.00	1,698.57	1,683.45	1,681.16	3.72	3.62	142.36	-17.89	76.39	103.69	96.52	7.17	14.464			
1,800.00	1,797.54	1,774.87	1,771.02	3.98	3.88	145.65	-25.42	91.39	133.44	125.88	7.57	17.633			
1,900.00	1,896.09	1,863.60	1,857.68	4.27	4.17	147.97	-33.95	108.40	168.57	160.61	7.97	21.161			
2,000.00	1,994.16	1,953.72	1,945.23	4.59	4.51	149.72	-43.53	127.48	208.12	199.74	8.37	24.852			
2,041.56	2,034.77	1,991.48	1,981.91	4.73	4.65	150.34	-47.56	135.51	225.27	216.72	8.54	26.363			
2,100.00	2,091.80	2,044.46	2,033.37	4.94	4.87	151.28	-53.22	146.79	249.68	240.87	8.81	28.337			
2,200.00	2,189.38	2,135.11	2,121.41	5.31	5.24	152.52	-62.90	166.07	291.56	282.29	9.27	31.440			
2,300.00	2,286.96	2,225.76	2,209.46	5.69	5.63	153.45	-72.57	185.36	333.52	323.78	9.75	34.221			
2,400.00	2,384.54	2,316.42	2,297.51	6.08	6.03	154.18	-82.25	204.65	375.54	365.32	10.23	36.719			
2,500.00	2,482.13	2,407.07	2,385.55	6.48	6.44	154.75	-91.93	223.94	417.60	406.89	10.72	38.971			
2,600.00	2,579.71	2,497.72	2,473.60	6.90	6.86	155.22	-101.61	243.22	459.69	448.48	11.21	41.005			
2,700.00	2,677.29	2,588.38	2,561.65	7.31	7.28	155.62	-111.29	262.51	501.80	490.09	11.71	42.848			
2,800.00	2,774.87	2,679.03	2,649.69	7.74	7.71	155.95	-120.97	281.80	543.92	531.71	12.22	44.524			
2,900.00	2,872.46	2,769.68	2,737.74	8.17	8.15	156.23	-130.65	301.08	586.06	573.34	12.73	46.054			
3,000.00	2,970.04	2,860.33	2,825.79	8.60	8.58	156.48	-140.33	320.37	628.21	614.97	13.24	47.453			
3,100.00	3,067.62	2,950.99	2,913.83	9.03	9.02	156.70	-150.01	339.66	670.37	656.61	13.75	48.738			
3,200.00	3,165.21	3,041.64	3,001.88	9.47	9.47	156.89	-159.69	358.95	712.53	698.26	14.27	49.919			
3,300.00	3,262.79	3,132.29	3,089.93	9.91	9.91	157.05	-169.36	378.23	754.70	739.90	14.80	51.010			
3,400.00	3,360.37	3,222.94	3,177.98	10.35	10.36	157.20	-179.04	397.52	796.87	781.55	15.32	52.018			
3,500.00	3,457.95	3,313.60	3,266.02	10.80	10.81	157.34	-188.72	416.81	839.05	823.21	15.85	52.953			
3,600.00	3,555.54	3,404.25	3,354.07	11.25	11.26	157.46	-198.40	436.10	881.23	864.86	16.37	53.822			
3,700.00	3,653.12	3,494.90	3,442.12	11.69	11.71	157.57	-208.08	455.38	923.42	906.51	16.90	54.631			
3,800.00	3,750.70	3,585.56	3,530.16	12.14	12.16	157.68	-217.76	474.67	965.60	948.17	17.43	55.386			
3,900.00	3,848.29	3,676.21	3,618.21	12.59	12.62	157.77	-227.44	493.96	1,007.79	989.83	17.97	56.092			
4,000.00	3,945.87	3,766.86	3,706.26	13.05	13.07	157.85	-237.12	513.25	1,049.99	1,031.48	18.50	56.754			
4,100.00	4,043.45	3,857.51	3,794.30	13.50	13.53	157.93	-246.80	532.53	1,092.18	1,073.14	19.04	57.375			
4,200.00	4,141.03	3,948.17	3,882.35	13.95	13.99	158.01	-256.47	551.82	1,134.37	1,114.80	19.57	57.959			
4,300.00	4,238.62	4,038.82	3,970.40	14.41	14.44	158.07	-266.15	571.11	1,176.57	1,156.46	20.11	58.509			
4,400.00	4,336.20	4,129.47	4,058.44	14.86	14.90	158.14	-275.83	590.40	1,218.77	1,198.12	20.65	59.027			
4,500.00	4,433.78	4,220.13	4,146.49	15.32	15.36	158.20	-285.51	609.68	1,260.97	1,239.78	21.19	59.518			
4,600.00	4,531.36	4,310.78	4,234.54	15.77	15.82	158.25	-295.19	628.97	1,303.17	1,281.44	21.73	59.981			
4,700.00	4,628.95	4,401.43	4,322.58	16.23	16.28	158.30	-304.87	648.26	1,345.37	1,323.10	22.27	60.420			
4,800.00	4,726.53	4,492.08	4,410.63	16.69	16.74	158.35	-314.55	667.55	1,387.57	1,364.76	22.81	60.837			
4,900.00	4,824.11	4,582.74	4,498.68	17.15	17.20	158.40	-324.23	686.83	1,429.77	1,406.42	23.35	61.232			
5,000.00	4,921.70	4,673.39	4,586.72	17.60	17.66	158.44	-333.91	706.12	1,471.97	1,448.08	23.89	61.609			

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_HIGHWAY 160 2-2S
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5119.00ft (Original Well Elev)
Reference Site:	WELD_HIGHWAY 160 17-2 pad	MD Reference:	WELL @ 5119.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_HIGHWAY 160 2-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 2-2S	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 3-17-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design	WELD_HIGHWAY 160 17-2 pad - P_HIGHWAY 160 8-2 - P_HIGHWAY 160 8-2 - PLAN #1 3-17-10 RH:											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	
5,092.54	5,012.00	4,757.28	4,668.20	18.03	18.09	158.48	-342.86	723.97	1,511.03	1,486.63	24.39	61.941	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 2-2S
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5119.00ft (Original Well Elev)
Reference Site:	WELD_HIGHWAY 160 17-2 pad	MD Reference:	WELL @ 5119.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_HIGHWAY 160 2-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 2-2S	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 3-17-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design													WELD_HIGHWAY 160 17-2 pad - P_HIGHWAY 160 8-2S - P_HIGHWAY 160 8-2S - PLAN #1 3-17-10 f	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 Tooface (°)	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	89.31	0.36	30.22	30.22						
100.00	100.00	100.00	100.00	0.10	0.10	89.31	0.36	30.22	30.22	30.03	0.19	158.187			
200.00	200.00	200.00	200.00	0.32	0.32	89.31	0.36	30.22	30.22	29.58	0.64	47.179			
300.00	300.00	300.00	300.00	0.55	0.55	89.31	0.36	30.22	30.22	29.13	1.09	27.724			
400.00	400.00	400.00	400.00	0.77	0.77	89.31	0.36	30.22	30.22	28.68	1.54	19.629			
500.00	500.00	500.00	500.00	0.99	0.99	89.31	0.36	30.22	30.22	28.23	1.99	15.193			
600.00	600.00	600.00	600.00	1.22	1.22	89.31	0.36	30.22	30.22	27.78	2.44	12.393			
700.00	700.00	700.00	700.00	1.44	1.44	89.31	0.36	30.22	30.22	27.33	2.89	10.464			
800.00	800.00	800.00	800.00	1.67	1.67	89.31	0.36	30.22	30.22	26.88	3.34	9.055			
900.00	900.00	900.00	900.00	1.89	1.89	89.31	0.36	30.22	30.22	26.43	3.79	7.980			
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	89.31	0.36	30.22	30.22	25.99	4.24	7.133			
1,100.00	1,100.00	1,100.00	1,100.00	2.34	2.34	89.31	0.36	30.22	30.22	25.54	4.69	6.449			
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	89.31	0.36	30.22	30.22	25.09	5.14	5.884 CC, ES			
1,300.00	1,299.99	1,299.32	1,299.31	2.79	2.77	118.66	-0.43	31.24	31.86	26.30	5.56	5.731 SF			
1,400.00	1,399.91	1,398.26	1,398.17	3.01	2.95	127.25	-2.79	34.28	37.37	31.41	5.96	6.271			
1,500.00	1,499.69	1,496.44	1,496.14	3.24	3.15	136.74	-6.68	39.30	47.81	41.45	6.36	7.518			
1,600.00	1,599.27	1,593.49	1,592.79	3.47	3.35	144.47	-12.05	46.22	63.70	56.94	6.76	9.426			
1,700.00	1,698.57	1,689.07	1,687.73	3.72	3.57	150.00	-18.80	54.93	85.00	77.84	7.15	11.881			
1,800.00	1,797.54	1,782.85	1,780.59	3.98	3.80	153.80	-26.84	65.29	111.48	103.93	7.55	14.770			
1,900.00	1,896.09	1,874.54	1,871.04	4.27	4.06	156.43	-36.04	77.16	142.90	134.96	7.94	18.001			
2,000.00	1,994.16	1,963.87	1,958.79	4.59	4.34	158.26	-46.29	90.37	179.03	170.71	8.33	21.502			
2,041.56	2,034.77	2,000.00	1,994.16	4.73	4.45	158.85	-50.79	96.18	195.39	186.91	8.48	23.029			
2,100.00	2,091.80	2,050.76	2,043.75	4.94	4.63	159.67	-57.46	104.78	219.31	210.58	8.74	25.104			
2,200.00	2,189.38	2,135.84	2,126.51	5.31	4.96	160.65	-69.54	120.36	261.90	252.74	9.17	28.570			
2,300.00	2,286.96	2,219.17	2,207.12	5.69	5.30	161.30	-82.47	137.02	306.51	296.91	9.60	31.921			
2,400.00	2,384.54	2,300.00	2,284.86	6.08	5.67	161.73	-96.04	154.51	353.03	342.99	10.04	35.168			
2,500.00	2,482.13	2,382.30	2,363.52	6.48	6.08	162.03	-110.85	173.62	401.36	390.87	10.49	38.271			
2,600.00	2,579.71	2,469.53	2,446.74	6.90	6.54	162.26	-126.87	194.27	450.23	439.27	10.96	41.098			
2,700.00	2,677.29	2,556.76	2,529.97	7.31	7.01	162.45	-142.89	214.93	499.10	487.68	11.43	43.674			
2,800.00	2,774.87	2,643.99	2,613.19	7.74	7.49	162.61	-158.91	235.59	547.98	536.08	11.91	46.026			
2,900.00	2,872.46	2,731.22	2,696.41	8.17	7.99	162.73	-174.94	256.25	596.87	584.48	12.39	48.177			
3,000.00	2,970.04	2,818.45	2,779.63	8.60	8.48	162.84	-190.96	276.90	645.75	632.87	12.88	50.151			
3,100.00	3,067.62	2,905.68	2,862.85	9.03	8.99	162.94	-206.98	297.56	694.64	681.27	13.37	51.965			
3,200.00	3,165.21	2,992.91	2,946.08	9.47	9.50	163.02	-223.00	318.22	743.52	729.66	13.86	53.636			
3,300.00	3,262.79	3,080.14	3,029.30	9.91	10.02	163.09	-239.02	338.87	792.41	778.05	14.36	55.178			
3,400.00	3,360.37	3,167.38	3,112.52	10.35	10.54	163.16	-255.04	359.53	841.30	826.44	14.86	56.607			
3,500.00	3,457.95	3,254.61	3,195.74	10.80	11.06	163.21	-271.06	380.19	890.19	874.82	15.37	57.934			
3,600.00	3,555.54	3,341.84	3,278.96	11.25	11.59	163.26	-287.08	400.85	939.08	923.21	15.87	59.168			
3,700.00	3,653.12	3,429.07	3,362.19	11.69	12.12	163.31	-303.11	421.50	987.97	971.59	16.38	60.318			
3,800.00	3,750.70	3,516.30	3,445.41	12.14	12.65	163.35	-319.13	442.16	1,036.86	1,019.97	16.89	61.392			
3,900.00	3,848.29	3,603.53	3,528.63	12.59	13.18	163.39	-335.15	462.82	1,085.75	1,068.35	17.40	62.397			
4,000.00	3,945.87	3,690.76	3,611.85	13.05	13.71	163.42	-351.17	483.47	1,134.64	1,116.73	17.91	63.339			
4,100.00	4,043.45	3,777.99	3,695.07	13.50	14.25	163.45	-367.19	504.13	1,183.53	1,165.10	18.43	64.223			
4,200.00	4,141.03	3,865.23	3,778.29	13.95	14.79	163.48	-383.21	524.79	1,232.43	1,213.48	18.94	65.054			
4,300.00	4,238.62	3,952.46	3,861.52	14.41	15.32	163.51	-399.23	545.45	1,281.32	1,261.86	19.46	65.837			
4,400.00	4,336.20	4,039.69	3,944.74	14.86	15.86	163.54	-415.25	566.10	1,330.21	1,310.23	19.98	66.576			
4,500.00	4,433.78	4,126.92	4,027.96	15.32	16.40	163.56	-431.28	586.76	1,379.10	1,358.60	20.50	67.274			
4,600.00	4,531.36	4,214.15	4,111.18	15.77	16.95	163.58	-447.30	607.42	1,428.00	1,406.98	21.02	67.935			
4,700.00	4,628.95	4,301.38	4,194.40	16.23	17.49	163.60	-463.32	628.07	1,476.89	1,455.35	21.54	68.561			
4,800.00	4,726.53	4,388.61	4,277.63	16.69	18.03	163.62	-479.34	648.73	1,525.78	1,503.72	22.06	69.154			
4,900.00	4,824.11	4,475.84	4,360.85	17.15	18.57	163.64	-495.36	669.39	1,574.67	1,552.09	22.59	69.718			
5,000.00	4,921.70	4,563.08	4,444.07	17.60	19.12	163.65	-511.38	690.05	1,623.57	1,600.46	23.11	70.253			

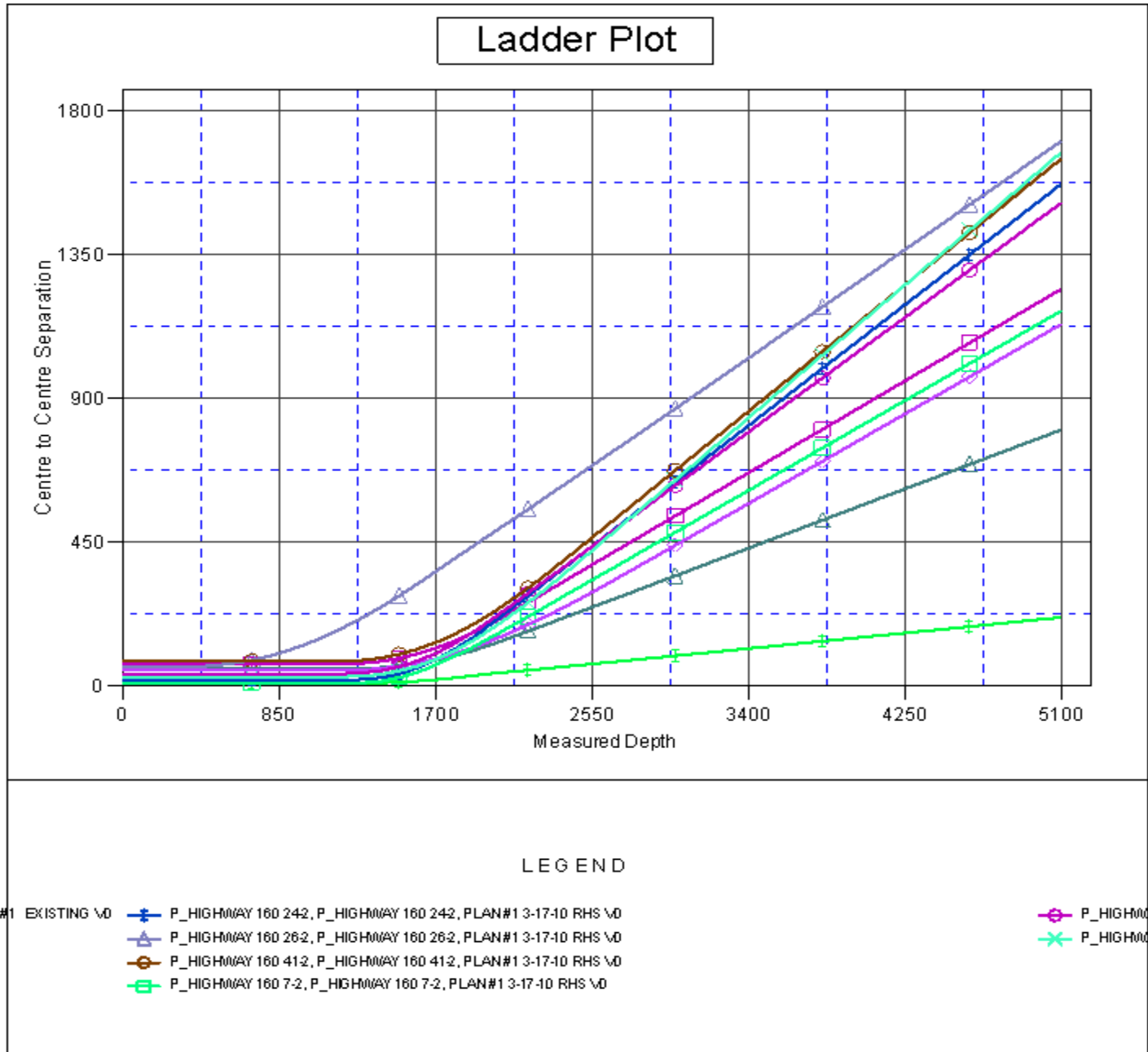
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 2-2S
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5119.00ft (Original Well Elev)
Reference Site:	WELD_HIGHWAY 160 17-2 pad	MD Reference:	WELL @ 5119.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_HIGHWAY 160 2-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 2-2S	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 3-17-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_HIGHWAY 160 17-2 pad - P_HIGHWAY 160 8-2S - P_HIGHWAY 160 8-2S - PLAN #1 3-17-10 f												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	
5,092.54	5,012.00	4,643.80	4,521.08	18.03	19.62	163.67	-526.21	709.16	1,668.82	1,645.22	23.60	70.726	

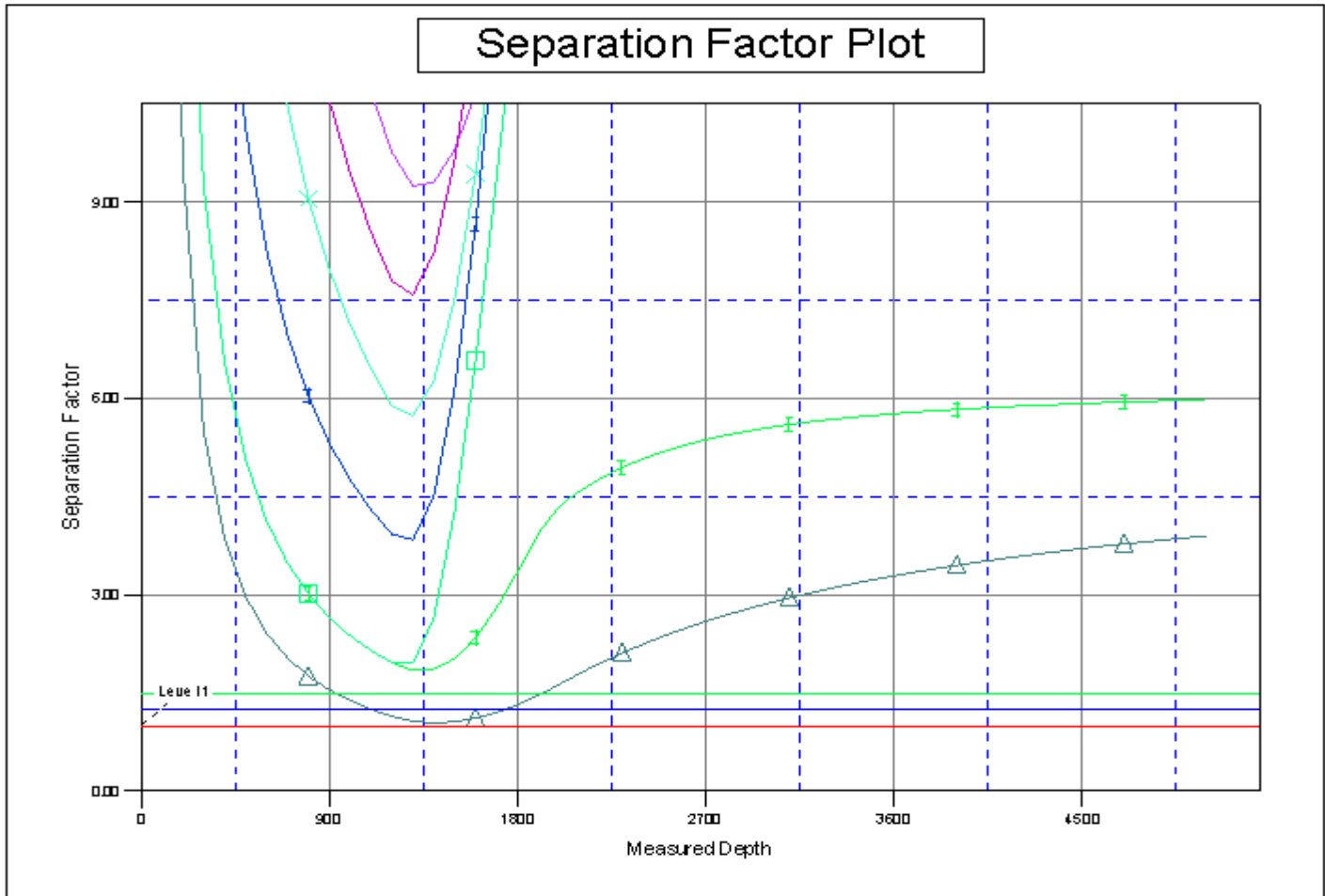
Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 2-2S
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5119.00ft (Original Well Elev)
Reference Site:	WELD_HIGHWAY 160 17-2 pad	MD Reference:	WELL @ 5119.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_HIGHWAY 160 2-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 2-2S	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 3-17-10 RHS	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 5119.00ft (Original Well Elev) Coordinates are relative to: P_HIGHWAY 160 2-2S
 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: 0.49°



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 2-2S
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5119.00ft (Original Well Elev)
Reference Site:	WELD_HIGHWAY 160 17-2 pad	MD Reference:	WELL @ 5119.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_HIGHWAY 160 2-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 2-2S	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 3-17-10 RHS	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 5119.00ft (Original Well Elev.Coordinates are relative to: P_HIGHWAY 160 2-2S
 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: 0.49°



LEGEND

- | | | |
|-----------------|---|-----------|
| T#1 EXISTING \O | P_HIGHWAY 160 242, P_HIGHWAY 160 242, PLAN#1 3-17-10 RHS \O | P_HIGHWAY |
| | P_HIGHWAY 160 262, P_HIGHWAY 160 262, PLAN#1 3-17-10 RHS \O | P_HIGHWAY |
| | P_HIGHWAY 160 412, P_HIGHWAY 160 412, PLAN#1 3-17-10 RHS \O | |
| | P_HIGHWAY 160 7-2, P_HIGHWAY 160 7-2, PLAN#1 3-17-10 RHS \O | |