



US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_HIGHWAY 160 17-2 pad

P_HIGHWAY 160 1-2S

P_HIGHWAY 160 1-2S

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 1-2S
 Wellbore: P_HIGHWAY 160 1-2S
 Section: SECTION 2 T1N R66W
 SHL: 1496 FNL 1599 FEL
 Design: PLAN #1 3-17-10 RHS
 Latitude: 40° 4' 59.711 N
 Longitude: 104° 44' 25.991 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	
2537.66	20.06	43.14	2510.49	169.16	158.54	1.50	43.14	231.84	Start 2688.71 hold at 2537.66 MD	
5226.37	20.06	43.14	5036.00	842.24	789.32	0.00	0.00	1154.29	TD at 5226.37	

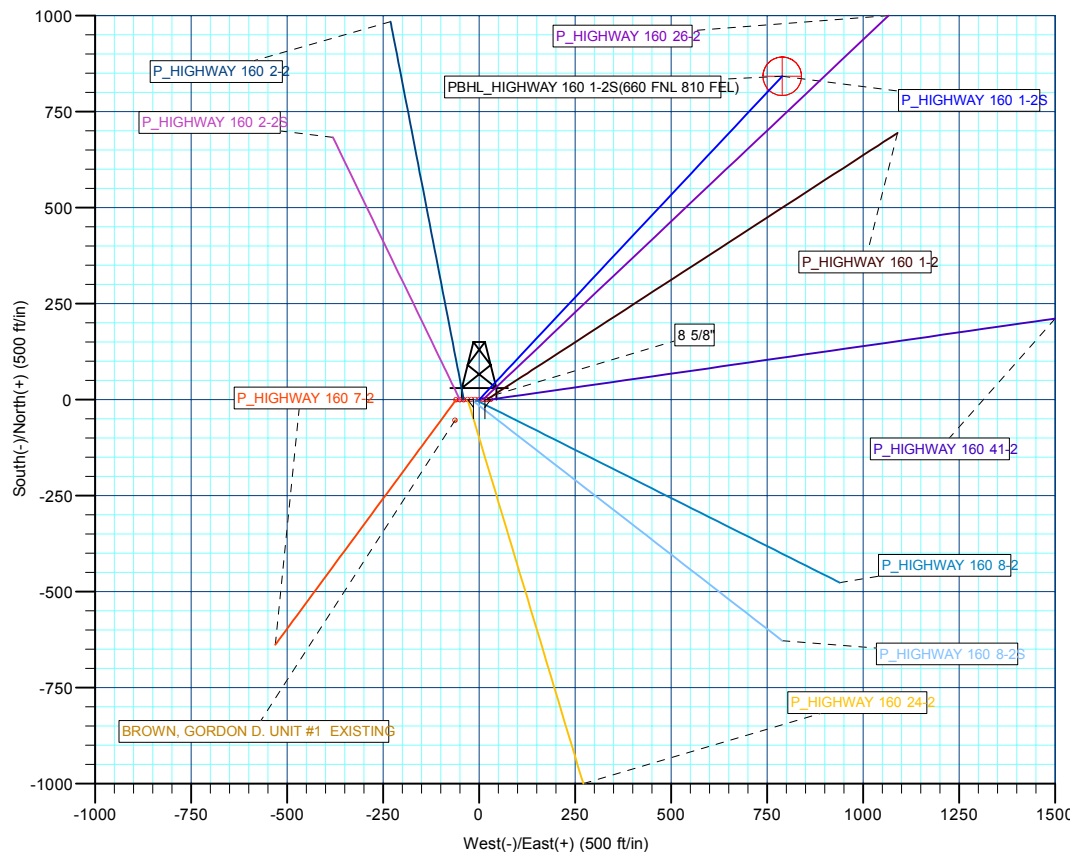
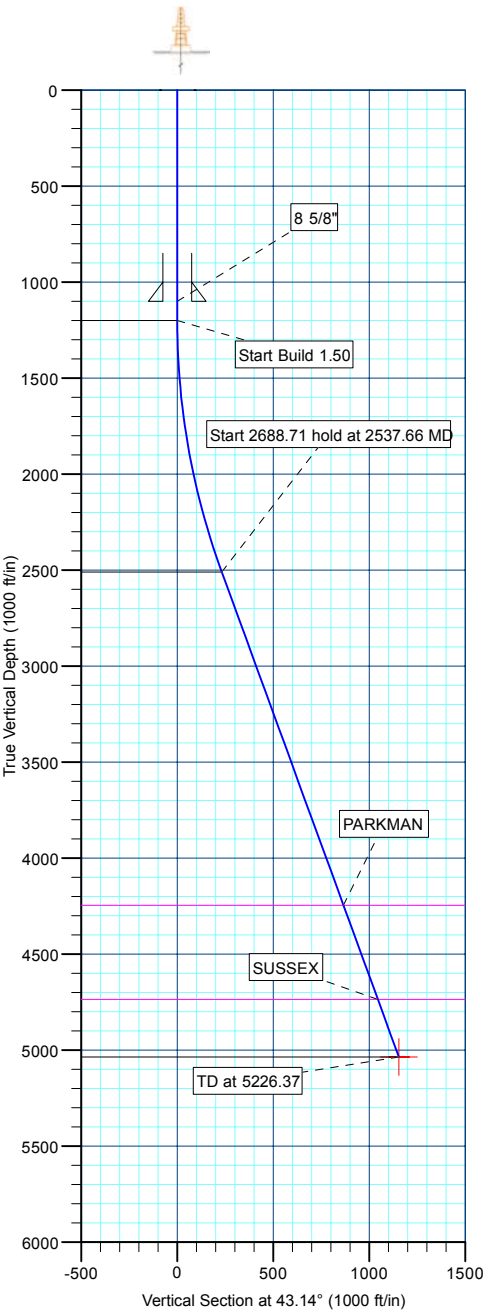
FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
4246.00	4385.32	PARKMAN
4736.00	4906.98	SUSSEX

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	5036.00	842.24	789.32	40° 5' 8.034 N	104° 44' 15.835 W	Circle (Radius: 50.00)

WELL DETAILS: P_HIGHWAY 160 1-2S						
+N/-S	+E/-W	Northing	Ground Level: Easting	5104.00 Latitude	Longitude	Slot
0.00	0.00	1274083.82	3212499.47	40° 4' 59.711 N	104° 44' 25.991 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 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 24-2, P_HIGHWAY 160 24-2, PLAN #1 3-17-10 RHS V0
—	P_HIGHWAY 160 26-2, P_HIGHWAY 160 26-2, PLAN #1 3-17-10 RHS V0
—	P_HIGHWAY 160 41-2, P_HIGHWAY 160 41-2, 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 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 1-2S/P_HIGHWAY 160 1-2S)
 Created By: Robert H. Scott Date: 14:33, March 17 2010



Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_HIGHWAY 160 1-2S
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 1-2S	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_HIGHWAY 160 1-2S		
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:	1,274,084.36 ft	Latitude:	40° 4' 59.714 N
From:	Lat/Long	Easting:	3,212,519.34 ft	Longitude:	104° 44' 25.735 W
Position Uncertainty:	0.00 ft	Slot Radius:	in	Grid Convergence:	0.49 °

Well	P_HIGHWAY 160 1-2S					
Well Position	+N/-S	-0.38 ft	Northing:	1,274,083.82 ft	Latitude:	40° 4' 59.711 N
	+E/-W	-19.87 ft	Easting:	3,212,499.47 ft	Longitude:	104° 44' 25.991 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	5,104.00 ft

Wellbore	P_HIGHWAY 160 1-2S				
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	43.14

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	
2,537.66	20.06	43.14	2,510.49	169.16	158.54	1.50	1.50	0.00	43.14	
5,226.37	20.06	43.14	5,036.00	842.24	789.32	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 1-2S
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 1-2S	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_HIGHWAY 160 1-2S		
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	43.14	1,299.99	0.96	0.90	1.31	1.50	1.50	0.00
1,400.00	3.00	43.14	1,399.91	3.82	3.58	5.23	1.50	1.50	0.00
1,500.00	4.50	43.14	1,499.69	8.59	8.05	11.77	1.50	1.50	0.00
1,600.00	6.00	43.14	1,599.27	15.27	14.31	20.92	1.50	1.50	0.00
1,700.00	7.50	43.14	1,698.57	23.84	22.35	32.68	1.50	1.50	0.00
1,800.00	9.00	43.14	1,797.54	34.31	32.16	47.03	1.50	1.50	0.00
1,900.00	10.50	43.14	1,896.09	46.67	43.74	63.96	1.50	1.50	0.00
2,000.00	12.00	43.14	1,994.16	60.90	57.08	83.47	1.50	1.50	0.00
2,100.00	13.50	43.14	2,091.70	77.01	72.17	105.54	1.50	1.50	0.00
2,200.00	15.00	43.14	2,188.62	94.97	89.00	130.15	1.50	1.50	0.00
2,300.00	16.50	43.14	2,284.86	114.77	107.56	157.30	1.50	1.50	0.00
2,400.00	18.00	43.14	2,380.36	136.41	127.84	186.95	1.50	1.50	0.00
2,500.00	19.50	43.14	2,475.05	159.86	149.82	219.09	1.50	1.50	0.00
Start 2688.71 hold at 2537.66 MD									
2,537.66	20.06	43.14	2,510.49	169.16	158.54	231.84	1.50	1.50	0.00
2,600.00	20.06	43.14	2,569.04	184.77	173.16	253.23	0.00	0.00	0.00
2,700.00	20.06	43.14	2,662.97	209.80	196.62	287.54	0.00	0.00	0.00
2,800.00	20.06	43.14	2,756.90	234.84	220.08	321.84	0.00	0.00	0.00
2,900.00	20.06	43.14	2,850.83	259.87	243.54	356.15	0.00	0.00	0.00
3,000.00	20.06	43.14	2,944.76	284.90	267.00	390.46	0.00	0.00	0.00
3,100.00	20.06	43.14	3,038.69	309.94	290.46	424.77	0.00	0.00	0.00
3,200.00	20.06	43.14	3,132.62	334.97	313.92	459.08	0.00	0.00	0.00
3,300.00	20.06	43.14	3,226.56	360.00	337.39	493.39	0.00	0.00	0.00
3,400.00	20.06	43.14	3,320.49	385.04	360.85	527.69	0.00	0.00	0.00
3,500.00	20.06	43.14	3,414.42	410.07	384.31	562.00	0.00	0.00	0.00
3,600.00	20.06	43.14	3,508.35	435.10	407.77	596.31	0.00	0.00	0.00
3,700.00	20.06	43.14	3,602.28	460.14	431.23	630.62	0.00	0.00	0.00
3,800.00	20.06	43.14	3,696.21	485.17	454.69	664.93	0.00	0.00	0.00
3,900.00	20.06	43.14	3,790.14	510.20	478.15	699.24	0.00	0.00	0.00
4,000.00	20.06	43.14	3,884.07	535.24	501.61	733.55	0.00	0.00	0.00
4,100.00	20.06	43.14	3,978.00	560.27	525.07	767.85	0.00	0.00	0.00
4,200.00	20.06	43.14	4,071.93	585.30	548.53	802.16	0.00	0.00	0.00
4,300.00	20.06	43.14	4,165.86	610.34	571.99	836.47	0.00	0.00	0.00
PARKMAN									
4,385.32	20.06	43.14	4,246.00	631.69	592.01	865.74	0.00	0.00	0.00
4,400.00	20.06	43.14	4,259.79	635.37	595.45	870.78	0.00	0.00	0.00
4,500.00	20.06	43.14	4,353.72	660.40	618.91	905.09	0.00	0.00	0.00
4,600.00	20.06	43.14	4,447.65	685.44	642.37	939.40	0.00	0.00	0.00
4,700.00	20.06	43.14	4,541.58	710.47	665.83	973.70	0.00	0.00	0.00
4,800.00	20.06	43.14	4,635.51	735.50	689.29	1,008.01	0.00	0.00	0.00
4,900.00	20.06	43.14	4,729.44	760.54	712.76	1,042.32	0.00	0.00	0.00
SUSSEX									
4,906.98	20.06	43.14	4,736.00	762.28	714.39	1,044.72	0.00	0.00	0.00
5,000.00	20.06	43.14	4,823.37	785.57	736.22	1,076.63	0.00	0.00	0.00
5,100.00	20.06	43.14	4,917.30	810.60	759.68	1,110.94	0.00	0.00	0.00
5,200.00	20.06	43.14	5,011.23	835.64	783.14	1,145.25	0.00	0.00	0.00
TD at 5226.37 - PBHL_HIGHWAY 160 1-2S(660 FNL 810 FEL)									
5,226.37	20.06	43.14	5,036.00	842.24	789.32	1,154.29	0.00	0.00	0.00

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_HIGHWAY 160 1-2S
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 1-2S	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_HIGHWAY 160 1-2S		
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	5,036.00	842.24	789.32	1,274,932.78	3,213,281.55	40° 5' 8.034 N	104° 44' 15.835 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 (°)
4,385.32	4,246.00	PARKMAN			
4,906.98	4,736.00	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
2,537.66	2,510.49	169.16	158.54	Start 2688.71 hold at 2537.66 MD
5,226.37	5,036.00	842.24	789.32	TD at 5226.37



US ROCKIES REGION PLANNING

**COLORADO NORTHERN ZONE - 83
WELD_HIGHWAY 160 17-2 pad
P_HIGHWAY 160 1-2S**

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

Anticollision Report

17 March, 2010



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 1-2S
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 1-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 1-2S	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	5,226.37	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	82.65	34.68	1.723	CC
BROWN, GORDON D. UNIT #1 EXISTING - BROWN, C	1,400.00	1,384.91	87.85	31.52	1.559	ES, SF
P_HIGHWAY 160 1-2 - P_HIGHWAY 160 1-2 - PLAN #1	1,200.00	1,200.00	19.87	14.73	3.869	CC, ES
P_HIGHWAY 160 1-2 - P_HIGHWAY 160 1-2 - PLAN #1	1,300.00	1,299.41	20.43	14.86	3.667	SF
P_HIGHWAY 160 2-2 - P_HIGHWAY 160 2-2 - PLAN #1	1,200.00	1,200.00	40.01	34.88	7.791	CC, ES
P_HIGHWAY 160 2-2 - P_HIGHWAY 160 2-2 - PLAN #1	1,300.00	1,299.72	41.24	35.66	7.393	SF
P_HIGHWAY 160 2-2S - P_HIGHWAY 160 2-2S - PLAN	1,200.00	1,200.00	50.09	44.95	9.752	CC, ES
P_HIGHWAY 160 2-2S - P_HIGHWAY 160 2-2S - PLAN	1,300.00	1,299.42	51.55	45.97	9.243	SF
P_HIGHWAY 160 24-2 - P_HIGHWAY 160 24-2 - PLAN	1,200.00	1,200.00	29.94	24.80	5.830	CC, ES
P_HIGHWAY 160 24-2 - P_HIGHWAY 160 24-2 - PLAN	1,300.00	1,300.23	30.44	24.89	5.484	SF
P_HIGHWAY 160 26-2 - P_HIGHWAY 160 26-2 - PLAN	300.00	300.00	10.07	8.98	9.241	CC, ES
P_HIGHWAY 160 26-2 - P_HIGHWAY 160 26-2 - PLAN	400.00	399.71	11.40	9.86	7.426	SF
P_HIGHWAY 160 41-2 - P_HIGHWAY 160 41-2 - PLAN	1,200.00	1,200.00	29.94	24.81	5.830	CC, ES
P_HIGHWAY 160 41-2 - P_HIGHWAY 160 41-2 - PLAN	1,300.00	1,298.96	30.76	25.19	5.526	SF
P_HIGHWAY 160 7-2 - P_HIGHWAY 160 7-2 - PLAN #1	1,200.00	1,200.00	60.16	55.02	11.714	CC, ES
P_HIGHWAY 160 7-2 - P_HIGHWAY 160 7-2 - PLAN #1	1,300.00	1,298.66	62.14	56.59	11.194	SF
P_HIGHWAY 160 8-2 - P_HIGHWAY 160 8-2 - PLAN #1	1,339.17	1,339.51	9.40	3.68	1.644	CC, ES, SF
P_HIGHWAY 160 8-2S - P_HIGHWAY 160 8-2S - PLAN	1,295.41	1,295.78	19.80	14.26	3.575	CC
P_HIGHWAY 160 8-2S - P_HIGHWAY 160 8-2S - PLAN	1,300.00	1,300.38	19.80	14.24	3.563	ES
P_HIGHWAY 160 8-2S - P_HIGHWAY 160 8-2S - PLAN	1,400.00	1,400.57	20.54	14.59	3.449	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			Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance		Minimum Separation (ft)	Separation Factor	Warning
		Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)			Between Centres (ft)	Between Ellipses (ft)			
0.00	0.00	0.00	0.00	0.00	0.00	-130.38	-53.55	-62.96	84.00				
100.00	100.00	85.00	85.00	0.10	1.70	-130.38	-53.55	-62.96	82.65	80.86	1.80	46.031	
200.00	200.00	185.00	185.00	0.32	5.40	-130.38	-53.55	-62.96	82.65	76.93	5.72	14.449	
300.00	300.00	285.00	285.00	0.55	9.40	-130.38	-53.55	-62.96	82.65	72.71	9.95	8.311	
400.00	400.00	385.00	385.00	0.77	13.40	-130.38	-53.55	-62.96	82.65	68.48	14.17	5.833	
500.00	500.00	485.00	485.00	0.99	17.40	-130.38	-53.55	-62.96	82.65	64.26	18.39	4.493	
600.00	600.00	585.00	585.00	1.22	21.40	-130.38	-53.55	-62.96	82.65	60.03	22.62	3.654	
700.00	700.00	685.00	685.00	1.44	25.40	-130.38	-53.55	-62.96	82.65	55.81	26.84	3.079	

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 1-2S
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 1-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 1-2S	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	-130.38	-53.55	-62.96	82.65	51.58	31.07	2.660			
900.00	900.00	885.00	885.00	1.89	33.40	-130.38	-53.55	-62.96	82.65	47.36	35.29	2.342			
1,000.00	1,000.00	985.00	985.00	2.12	37.40	-130.38	-53.55	-62.96	82.65	43.13	39.52	2.091			
1,100.00	1,100.00	1,085.00	1,085.00	2.34	41.40	-130.38	-53.55	-62.96	82.65	38.91	43.74	1.889			
1,200.00	1,200.00	1,185.00	1,185.00	2.57	45.40	-130.38	-53.55	-62.96	82.65	34.68	47.97	1.723 CC			
1,300.00	1,299.99	1,284.99	1,284.99	2.79	49.40	-173.62	-53.55	-62.96	83.95	31.78	52.18	1.609			
1,400.00	1,399.91	1,384.91	1,384.91	3.01	53.40	-173.90	-53.55	-62.96	87.85	31.52	56.34	1.559 ES, SF			
1,500.00	1,499.69	1,484.69	1,484.69	3.23	57.39	-174.31	-53.55	-62.96	94.36	33.91	60.45	1.561			
1,600.00	1,599.27	1,584.27	1,584.27	3.46	61.37	-174.80	-53.55	-62.96	103.47	38.97	64.50	1.604			
1,700.00	1,698.57	1,683.57	1,683.57	3.71	65.34	-175.32	-53.55	-62.96	115.18	46.71	68.47	1.682			
1,800.00	1,797.54	1,782.54	1,782.54	3.97	69.30	-175.82	-53.55	-62.96	129.49	57.13	72.36	1.789			
1,900.00	1,896.09	1,881.09	1,881.09	4.26	73.24	-176.29	-53.55	-62.96	146.38	70.23	76.16	1.922			
2,000.00	1,994.16	1,979.16	1,979.16	4.58	77.17	-176.71	-53.55	-62.96	165.86	86.01	79.85	2.077			
2,100.00	2,091.70	2,076.70	2,076.70	4.93	81.07	-177.08	-53.55	-62.96	187.89	104.46	83.43	2.252			
2,200.00	2,188.62	2,173.62	2,173.62	5.32	84.94	-177.40	-53.55	-62.96	212.48	125.59	86.89	2.445			
2,300.00	2,284.86	2,269.86	2,269.86	5.75	88.79	-177.68	-53.55	-62.96	239.60	149.38	90.23	2.656			
2,400.00	2,380.36	2,365.36	2,365.36	6.23	92.61	-177.91	-53.55	-62.96	269.24	175.81	93.42	2.882			
2,500.00	2,475.05	2,460.05	2,460.05	6.76	96.40	-178.12	-53.55	-62.96	301.36	204.89	96.47	3.124			
2,537.66	2,510.49	2,495.49	2,495.49	6.97	97.82	-178.19	-53.55	-62.96	314.10	216.52	97.58	3.219			
2,600.00	2,569.04	2,554.04	2,554.04	7.33	100.16	-178.31	-53.55	-62.96	335.48	235.53	99.95	3.356			
2,700.00	2,662.97	2,647.97	2,647.97	7.92	103.92	-178.46	-53.55	-62.96	369.78	266.01	103.76	3.564			
2,800.00	2,756.90	2,741.90	2,741.90	8.53	107.68	-178.59	-53.55	-62.96	404.08	296.49	107.58	3.756			
2,900.00	2,850.83	2,835.83	2,835.83	9.14	111.43	-178.70	-53.55	-62.96	438.38	326.97	111.40	3.935			
3,000.00	2,944.76	2,929.76	2,929.76	9.77	115.19	-178.80	-53.55	-62.96	472.68	357.45	115.23	4.102			
3,100.00	3,038.69	3,023.69	3,023.69	10.41	118.95	-178.88	-53.55	-62.96	506.98	387.92	119.05	4.258			
3,200.00	3,132.62	3,117.62	3,117.62	11.05	122.70	-178.95	-53.55	-62.96	541.28	418.40	122.89	4.405			
3,300.00	3,226.56	3,211.56	3,211.56	11.70	126.46	-179.01	-53.55	-62.96	575.59	448.87	126.72	4.542			
3,400.00	3,320.49	3,305.49	3,305.49	12.35	130.22	-179.07	-53.55	-62.96	609.89	479.34	130.55	4.672			
3,500.00	3,414.42	3,399.42	3,399.42	13.00	133.98	-179.12	-53.55	-62.96	644.19	509.80	134.39	4.793			
3,600.00	3,508.35	3,493.35	3,493.35	13.66	137.73	-179.16	-53.55	-62.96	678.50	540.27	138.23	4.908			
3,700.00	3,602.28	3,587.28	3,587.28	14.33	141.49	-179.20	-53.55	-62.96	712.80	570.73	142.07	5.017			
3,800.00	3,696.21	3,681.21	3,681.21	14.99	145.25	-179.24	-53.55	-62.96	747.11	601.20	145.91	5.120			
3,900.00	3,790.14	3,775.14	3,775.14	15.66	149.01	-179.27	-53.55	-62.96	781.42	631.66	149.76	5.218			
4,000.00	3,884.07	3,869.07	3,869.07	16.33	152.76	-179.30	-53.55	-62.96	815.72	662.12	153.60	5.311			
4,100.00	3,978.00	3,963.00	3,963.00	17.00	156.52	-179.33	-53.55	-62.96	850.03	692.58	157.45	5.399			
4,200.00	4,071.93	4,056.93	4,056.93	17.67	160.28	-179.36	-53.55	-62.96	884.34	723.04	161.29	5.483			
4,300.00	4,165.86	4,150.86	4,150.86	18.34	164.03	-179.38	-53.55	-62.96	918.64	753.50	165.14	5.563			
4,400.00	4,259.79	4,244.79	4,244.79	19.01	167.79	-179.40	-53.55	-62.96	952.95	783.96	168.99	5.639			
4,500.00	4,353.72	4,338.72	4,338.72	19.69	171.55	-179.42	-53.55	-62.96	987.26	814.42	172.84	5.712			
4,600.00	4,447.65	4,432.65	4,432.65	20.37	175.31	-179.44	-53.55	-62.96	1,021.56	844.88	176.69	5.782			
4,700.00	4,541.58	4,526.58	4,526.58	21.04	179.06	-179.46	-53.55	-62.96	1,055.87	875.33	180.54	5.849			
4,800.00	4,635.51	4,620.51	4,620.51	21.72	182.82	-179.48	-53.55	-62.96	1,090.18	905.79	184.39	5.912			
4,900.00	4,729.44	4,714.44	4,714.44	22.40	186.58	-179.49	-53.55	-62.96	1,124.48	936.25	188.24	5.974			
5,000.00	4,823.37	4,808.37	4,808.37	23.08	190.33	-179.51	-53.55	-62.96	1,158.79	966.70	192.09	6.033			
5,100.00	4,917.30	4,902.30	4,902.30	23.76	194.09	-179.52	-53.55	-62.96	1,193.10	997.16	195.94	6.089			
5,200.00	5,011.23	4,996.23	4,996.23	24.44	197.85	-179.54	-53.55	-62.96	1,227.41	1,027.61	199.79	6.143			
5,226.37	5,036.00	5,021.00	5,021.00	24.62	198.84	-179.54	-53.55	-62.96	1,236.45	1,035.64	200.81	6.157			

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 1-2S
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 1-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 1-2S	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 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	88.91	0.38	19.87	19.87						
100.00	100.00	100.00	100.00	0.10	0.10	88.91	0.38	19.87	19.87	19.68	0.19	104.005			
200.00	200.00	200.00	200.00	0.32	0.32	88.91	0.38	19.87	19.87	19.23	0.64	31.019			
300.00	300.00	300.00	300.00	0.55	0.55	88.91	0.38	19.87	19.87	18.78	1.09	18.228			
400.00	400.00	400.00	400.00	0.77	0.77	88.91	0.38	19.87	19.87	18.33	1.54	12.906			
500.00	500.00	500.00	500.00	0.99	0.99	88.91	0.38	19.87	19.87	17.88	1.99	9.989			
600.00	600.00	600.00	600.00	1.22	1.22	88.91	0.38	19.87	19.87	17.43	2.44	8.148			
700.00	700.00	700.00	700.00	1.44	1.44	88.91	0.38	19.87	19.87	16.98	2.89	6.880			
800.00	800.00	800.00	800.00	1.67	1.67	88.91	0.38	19.87	19.87	16.53	3.34	5.953			
900.00	900.00	900.00	900.00	1.89	1.89	88.91	0.38	19.87	19.87	16.08	3.79	5.247			
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	88.91	0.38	19.87	19.87	15.63	4.24	4.690			
1,100.00	1,100.00	1,100.00	1,100.00	2.34	2.34	88.91	0.38	19.87	19.87	15.18	4.69	4.240			
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	88.91	0.38	19.87	19.87	14.73	5.14	3.869 CC, ES			
1,300.00	1,299.99	1,299.41	1,299.39	2.79	2.79	45.82	1.32	21.31	20.43	14.86	5.57	3.667 SF			
1,400.00	1,399.91	1,398.77	1,398.61	3.01	3.00	45.96	4.13	25.65	22.11	16.11	6.00	3.686			
1,500.00	1,499.69	1,498.04	1,497.51	3.23	3.23	46.15	8.81	32.86	24.90	18.48	6.43	3.875			
1,600.00	1,599.27	1,597.19	1,595.91	3.46	3.46	46.35	15.34	42.92	28.81	21.95	6.86	4.198			
1,700.00	1,698.57	1,696.15	1,693.67	3.71	3.73	46.53	23.71	55.81	33.83	26.51	7.31	4.624			
1,800.00	1,797.54	1,794.90	1,790.63	3.97	4.02	46.68	33.89	71.49	39.94	32.15	7.79	5.128			
1,900.00	1,896.09	1,893.39	1,886.64	4.26	4.36	46.80	45.84	89.91	47.14	38.85	8.29	5.687			
2,000.00	1,994.16	1,991.58	1,981.55	4.58	4.74	46.88	59.54	111.02	55.41	46.58	8.83	6.278			
2,100.00	2,091.70	2,090.12	2,075.94	4.93	5.18	47.05	74.94	134.73	64.55	55.14	9.41	6.860			
2,200.00	2,188.62	2,189.79	2,171.23	5.32	5.65	48.40	90.85	159.25	72.49	62.42	10.07	7.198			
2,300.00	2,284.86	2,289.53	2,266.58	5.75	6.15	50.94	106.78	183.79	78.80	67.97	10.83	7.275			
2,400.00	2,380.36	2,389.27	2,361.93	6.23	6.67	54.52	122.71	208.33	83.70	71.98	11.72	7.140			
2,500.00	2,475.05	2,488.95	2,457.23	6.76	7.20	59.15	138.62	232.85	87.54	74.76	12.77	6.852			
2,537.66	2,510.49	2,526.46	2,493.09	6.97	7.40	61.16	144.61	242.08	88.80	75.58	13.22	6.718			
2,600.00	2,569.04	2,588.53	2,552.43	7.33	7.74	64.57	154.53	257.35	90.98	76.99	13.99	6.501			
2,700.00	2,662.97	2,688.10	2,647.62	7.92	8.29	69.67	170.43	281.84	95.13	79.84	15.29	6.223			
2,800.00	2,756.90	2,787.67	2,742.81	8.53	8.84	74.31	186.33	306.34	99.96	83.35	16.61	6.019			
2,900.00	2,850.83	2,887.24	2,838.00	9.14	9.40	78.51	202.23	330.83	105.39	87.45	17.94	5.874			
3,000.00	2,944.76	2,986.80	2,933.19	9.77	9.97	82.27	218.13	355.33	111.33	92.06	19.27	5.777			
3,100.00	3,038.69	3,086.37	3,028.38	10.41	10.54	85.65	234.03	379.83	117.70	97.11	20.59	5.716			
3,200.00	3,132.62	3,185.94	3,123.57	11.05	11.11	88.67	249.93	404.32	124.44	102.55	21.89	5.684			
3,300.00	3,226.56	3,285.51	3,218.76	11.70	11.68	91.37	265.83	428.82	131.49	108.31	23.18	5.672			
3,400.00	3,320.49	3,385.08	3,313.95	12.35	12.26	93.80	281.73	453.31	138.80	114.35	24.45	5.677			
3,500.00	3,414.42	3,484.65	3,409.14	13.00	12.84	95.98	297.63	477.81	146.33	120.63	25.70	5.693			
3,600.00	3,508.35	3,584.22	3,504.33	13.66	13.42	97.94	313.53	502.30	154.06	127.12	26.94	5.718			
3,700.00	3,602.28	3,683.78	3,599.52	14.33	14.01	99.72	329.43	526.80	161.95	133.78	28.17	5.749			
3,800.00	3,696.21	3,783.35	3,694.71	14.99	14.59	101.33	345.32	551.29	169.97	140.59	29.38	5.785			
3,900.00	3,790.14	3,882.92	3,789.90	15.66	15.18	102.79	361.22	575.79	178.12	147.54	30.58	5.824			
4,000.00	3,884.07	3,982.49	3,885.09	16.33	15.77	104.13	377.12	600.28	186.38	154.60	31.78	5.865			
4,100.00	3,978.00	4,082.06	3,980.28	17.00	16.36	105.35	393.02	624.78	194.72	161.76	32.97	5.907			
4,200.00	4,071.93	4,181.63	4,075.47	17.67	16.95	106.47	408.92	649.27	203.15	169.01	34.14	5.950			
4,300.00	4,165.86	4,281.20	4,170.66	18.34	17.54	107.50	424.82	673.77	211.65	176.33	35.32	5.993			
4,400.00	4,259.79	4,380.77	4,265.85	19.01	18.13	108.45	440.72	698.26	220.21	183.73	36.49	6.036			
4,500.00	4,353.72	4,480.33	4,361.04	19.69	18.72	109.33	456.62	722.76	228.83	191.18	37.65	6.078			
4,600.00	4,447.65	4,579.90	4,456.23	20.37	19.31	110.15	472.52	747.25	237.50	198.69	38.81	6.120			
4,700.00	4,541.58	4,679.47	4,551.42	21.04	19.90	110.91	488.42	771.75	246.21	206.24	39.96	6.161			
4,800.00	4,635.51	4,779.04	4,646.60	21.72	20.50	111.61	504.32	796.24	254.96	213.84	41.12	6.201			
4,900.00	4,729.44	4,878.61	4,741.79	22.40	21.09	112.27	520.22	820.74	263.75	221.48	42.27	6.240			
5,000.00	4,823.37	4,978.18	4,836.98	23.08	21.69	112.89	536.12	845.24	272.57	229.16	43.41	6.279			

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 1-2S
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 1-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 1-2S	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	
5,100.00	4,917.30	5,077.75	4,932.17	23.76	22.28	113.47	552.02	869.73	281.42	236.86	44.56	6.316	
5,200.00	5,011.23	5,177.32	5,027.36	24.44	22.88	114.01	567.92	894.23	290.29	244.59	45.70	6.352	
5,226.37	5,036.00	5,203.57	5,052.46	24.62	23.03	114.15	572.12	900.68	292.64	246.64	46.00	6.362	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 1-2S
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 1-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 1-2S	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				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	-90.52	-0.36	-40.01	40.01						
100.00	100.00	100.00	100.00	0.10	0.10	-90.52	-0.36	-40.01	40.01	39.82	0.19	209.445			
200.00	200.00	200.00	200.00	0.32	0.32	-90.52	-0.36	-40.01	40.01	39.37	0.64	62.466			
300.00	300.00	300.00	300.00	0.55	0.55	-90.52	-0.36	-40.01	40.01	38.92	1.09	36.707			
400.00	400.00	400.00	400.00	0.77	0.77	-90.52	-0.36	-40.01	40.01	38.48	1.54	25.990			
500.00	500.00	500.00	500.00	0.99	0.99	-90.52	-0.36	-40.01	40.01	38.03	1.99	20.116			
600.00	600.00	600.00	600.00	1.22	1.22	-90.52	-0.36	-40.01	40.01	37.58	2.44	16.408			
700.00	700.00	700.00	700.00	1.44	1.44	-90.52	-0.36	-40.01	40.01	37.13	2.89	13.854			
800.00	800.00	800.00	800.00	1.67	1.67	-90.52	-0.36	-40.01	40.01	36.68	3.34	11.988			
900.00	900.00	900.00	900.00	1.89	1.89	-90.52	-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	-90.52	-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	-90.52	-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	-90.52	-0.36	-40.01	40.01	34.88	5.14	7.791 CC, ES			
1,300.00	1,299.99	1,299.72	1,299.70	2.79	2.79	-132.59	1.34	-40.34	41.24	35.66	5.58	7.393 SF			
1,400.00	1,399.91	1,399.30	1,399.13	3.01	3.02	-129.73	6.44	-41.33	44.99	38.98	6.02	7.480			
1,500.00	1,499.69	1,498.57	1,498.03	3.23	3.24	-125.89	14.90	-42.97	51.43	44.98	6.46	7.965			
1,600.00	1,599.27	1,597.40	1,596.13	3.46	3.48	-121.91	26.65	-45.24	60.71	53.80	6.91	8.780			
1,700.00	1,698.57	1,695.65	1,693.18	3.71	3.74	-118.28	41.63	-48.14	72.89	65.50	7.40	9.854			
1,800.00	1,797.54	1,793.18	1,788.95	3.97	4.02	-115.20	59.71	-51.64	87.98	80.07	7.91	11.116			
1,900.00	1,896.09	1,890.60	1,884.00	4.26	4.34	-112.78	80.70	-55.70	105.79	97.32	8.48	12.480			
2,000.00	1,994.16	1,988.74	1,979.61	4.58	4.69	-111.85	102.40	-59.90	124.97	115.89	9.09	13.756			
2,100.00	2,091.70	2,086.68	2,075.03	4.93	5.06	-112.06	124.06	-64.09	145.12	135.38	9.74	14.906			
2,200.00	2,188.62	2,184.36	2,170.20	5.32	5.44	-112.99	145.66	-68.27	166.26	155.83	10.43	15.942			
2,300.00	2,284.86	2,281.71	2,265.06	5.75	5.83	-114.37	167.19	-72.44	188.52	177.35	11.16	16.886			
2,400.00	2,380.36	2,378.67	2,359.53	6.23	6.23	-116.03	188.63	-76.59	212.02	200.08	11.94	17.761			
2,500.00	2,475.05	2,475.18	2,453.55	6.76	6.64	-117.85	209.97	-80.72	236.90	224.15	12.74	18.591			
2,537.66	2,510.49	2,511.39	2,488.83	6.97	6.79	-118.56	217.98	-82.27	246.65	233.60	13.05	18.896			
2,600.00	2,569.04	2,571.26	2,547.17	7.33	7.05	-119.87	231.22	-84.83	263.05	249.46	13.59	19.360			
2,700.00	2,662.97	2,667.31	2,640.75	7.92	7.46	-121.68	252.46	-88.94	289.58	275.13	14.45	20.034			
2,800.00	2,756.90	2,763.36	2,734.33	8.53	7.88	-123.18	273.70	-93.05	316.34	301.01	15.33	20.632			
2,900.00	2,850.83	2,859.41	2,827.91	9.14	8.30	-124.44	294.94	-97.16	343.27	327.05	16.22	21.164			
3,000.00	2,944.76	2,955.46	2,921.49	9.77	8.73	-125.53	316.18	-101.27	370.33	353.22	17.11	21.639			
3,100.00	3,038.69	3,051.51	3,015.07	10.41	9.16	-126.46	337.42	-105.38	397.50	379.48	18.01	22.066			
3,200.00	3,132.62	3,147.56	3,108.65	11.05	9.59	-127.28	358.66	-109.49	424.75	405.83	18.92	22.450			
3,300.00	3,226.56	3,243.60	3,202.23	11.70	10.02	-128.00	379.90	-113.60	452.08	432.25	19.83	22.798			
3,400.00	3,320.49	3,339.65	3,295.81	12.35	10.46	-128.63	401.14	-117.71	479.46	458.72	20.74	23.115			
3,500.00	3,414.42	3,435.70	3,389.39	13.00	10.90	-129.20	422.37	-121.82	506.89	485.23	21.66	23.403			
3,600.00	3,508.35	3,531.75	3,482.97	13.66	11.34	-129.71	443.61	-125.93	534.37	511.79	22.58	23.667			
3,700.00	3,602.28	3,627.80	3,576.55	14.33	11.77	-130.17	464.85	-130.04	561.88	538.38	23.50	23.909			
3,800.00	3,696.21	3,723.85	3,670.14	14.99	12.22	-130.59	486.09	-134.15	589.42	564.99	24.42	24.132			
3,900.00	3,790.14	3,819.90	3,763.72	15.66	12.66	-130.97	507.33	-138.26	616.98	591.63	25.35	24.338			
4,000.00	3,884.07	3,915.94	3,857.30	16.33	13.10	-131.32	528.57	-142.37	644.57	618.29	26.28	24.529			
4,100.00	3,978.00	4,011.99	3,950.88	17.00	13.54	-131.63	549.81	-146.48	672.18	644.97	27.21	24.706			
4,200.00	4,071.93	4,108.04	4,044.46	17.67	13.99	-131.93	571.05	-150.59	699.81	671.67	28.14	24.870			
4,300.00	4,165.86	4,204.09	4,138.04	18.34	14.43	-132.20	592.29	-154.70	727.45	698.38	29.07	25.024			
4,400.00	4,259.79	4,300.14	4,231.62	19.01	14.88	-132.45	613.53	-158.81	755.10	725.10	30.00	25.168			
4,500.00	4,353.72	4,396.19	4,325.20	19.69	15.32	-132.68	634.77	-162.92	782.77	751.84	30.94	25.302			
4,600.00	4,447.65	4,492.24	4,418.78	20.37	15.77	-132.90	656.01	-167.03	810.45	778.58	31.87	25.429			
4,700.00	4,541.58	4,588.29	4,512.36	21.04	16.22	-133.11	677.25	-171.14	838.14	805.34	32.81	25.547			
4,800.00	4,635.51	4,684.33	4,605.94	21.72	16.66	-133.30	698.49	-175.25	865.84	832.10	33.74	25.659			
4,900.00	4,729.44	4,780.38	4,699.52	22.40	17.11	-133.47	719.73	-179.36	893.55	858.87	34.68	25.765			
5,000.00	4,823.37	4,876.43	4,793.10	23.08	17.56	-133.64	740.97	-183.47	921.27	885.65	35.62	25.864			

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 1-2S
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 1-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 1-2S	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	
5,100.00	4,917.30	4,972.48	4,886.68	23.76	18.01	-133.80	762.21	-187.58	948.99	912.43	36.56	25.959	
5,200.00	5,011.23	5,068.53	4,980.26	24.44	18.46	-133.95	783.45	-191.69	976.72	939.22	37.50	26.048	
5,226.37	5,036.00	5,093.85	5,004.94	24.62	18.58	-133.99	789.05	-192.78	984.03	946.28	37.74	26.071	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 1-2S
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 1-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 1-2S	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		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	-90.42	-0.36	-50.09	50.09						
100.00	100.00	100.00	100.00	0.10	0.10	-90.42	-0.36	-50.09	50.09	49.90	0.19	262.169			
200.00	200.00	200.00	200.00	0.32	0.32	-90.42	-0.36	-50.09	50.09	49.45	0.64	78.191			
300.00	300.00	300.00	300.00	0.55	0.55	-90.42	-0.36	-50.09	50.09	49.00	1.09	45.947			
400.00	400.00	400.00	400.00	0.77	0.77	-90.42	-0.36	-50.09	50.09	48.55	1.54	32.532			
500.00	500.00	500.00	500.00	0.99	0.99	-90.42	-0.36	-50.09	50.09	48.10	1.99	25.180			
600.00	600.00	600.00	600.00	1.22	1.22	-90.42	-0.36	-50.09	50.09	47.65	2.44	20.539			
700.00	700.00	700.00	700.00	1.44	1.44	-90.42	-0.36	-50.09	50.09	47.20	2.89	17.342			
800.00	800.00	800.00	800.00	1.67	1.67	-90.42	-0.36	-50.09	50.09	46.75	3.34	15.006			
900.00	900.00	900.00	900.00	1.89	1.89	-90.42	-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	-90.42	-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	-90.42	-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	-90.42	-0.36	-50.09	50.09	44.95	5.14	9.752 CC, ES			
1,300.00	1,299.99	1,299.42	1,299.41	2.79	2.79	-133.29	0.80	-50.65	51.55	45.97	5.58	9.243 SF			
1,400.00	1,399.91	1,398.71	1,398.62	3.01	3.01	-132.57	4.29	-52.34	55.93	49.92	6.01	9.305			
1,500.00	1,499.69	1,497.74	1,497.44	3.23	3.24	-131.59	10.08	-55.14	63.24	56.80	6.45	9.811			
1,600.00	1,599.27	1,596.39	1,595.68	3.46	3.47	-130.52	18.14	-59.03	73.48	66.59	6.89	10.666			
1,700.00	1,698.57	1,694.52	1,693.14	3.71	3.71	-129.51	28.42	-64.00	86.64	79.29	7.35	11.793			
1,800.00	1,797.54	1,792.03	1,789.67	3.97	3.96	-128.59	40.86	-70.02	102.69	94.86	7.82	13.125			
1,900.00	1,896.09	1,888.80	1,885.07	4.26	4.24	-127.78	55.40	-77.05	121.60	113.27	8.33	14.599			
2,000.00	1,994.16	1,984.71	1,979.20	4.58	4.54	-127.08	71.95	-85.05	143.34	134.47	8.87	16.160			
2,100.00	2,091.70	2,080.52	2,072.79	4.93	4.87	-126.51	90.43	-93.99	167.77	158.31	9.45	17.750			
2,200.00	2,188.62	2,177.03	2,166.97	5.32	5.22	-126.52	109.41	-103.17	193.92	183.85	10.07	19.250			
2,300.00	2,284.86	2,273.08	2,260.69	5.75	5.58	-126.99	128.31	-112.31	221.61	210.88	10.73	20.655			
2,400.00	2,380.36	2,368.60	2,353.90	6.23	5.96	-127.75	147.10	-121.39	250.86	239.45	11.41	21.978			
2,500.00	2,475.05	2,463.53	2,446.53	6.76	6.34	-128.70	165.78	-130.42	281.75	269.62	12.13	23.232			
2,537.66	2,510.49	2,499.11	2,481.26	6.97	6.48	-129.08	172.78	-133.81	293.82	281.42	12.40	23.691			
2,600.00	2,569.04	2,557.93	2,538.65	7.33	6.72	-129.92	184.35	-139.40	314.04	301.15	12.89	24.370			
2,700.00	2,662.97	2,652.28	2,630.73	7.92	7.11	-131.07	202.92	-148.38	346.57	332.90	13.67	25.345			
2,800.00	2,756.90	2,746.63	2,722.80	8.53	7.51	-132.02	221.48	-157.36	379.21	364.74	14.48	26.194			
2,900.00	2,850.83	2,840.99	2,814.87	9.14	7.91	-132.81	240.05	-166.33	411.93	396.64	15.29	26.940			
3,000.00	2,944.76	2,935.34	2,906.94	9.77	8.32	-133.49	258.61	-175.31	444.70	428.59	16.11	27.597			
3,100.00	3,038.69	3,029.69	2,999.02	10.41	8.73	-134.08	277.17	-184.29	477.53	460.58	16.95	28.179			
3,200.00	3,132.62	3,124.05	3,091.09	11.05	9.14	-134.59	295.74	-193.26	510.39	492.61	17.78	28.698			
3,300.00	3,226.56	3,218.40	3,183.16	11.70	9.55	-135.04	314.30	-202.24	543.29	524.66	18.63	29.163			
3,400.00	3,320.49	3,312.75	3,275.23	12.35	9.97	-135.44	332.87	-211.22	576.21	556.74	19.48	29.581			
3,500.00	3,414.42	3,407.11	3,367.31	13.00	10.39	-135.80	351.43	-220.19	609.16	588.83	20.33	29.959			
3,600.00	3,508.35	3,501.46	3,459.38	13.66	10.81	-136.12	369.99	-229.17	642.12	620.93	21.19	30.301			
3,700.00	3,602.28	3,595.81	3,551.45	14.33	11.23	-136.41	388.56	-238.14	675.10	653.05	22.05	30.613			
3,800.00	3,696.21	3,690.17	3,643.52	14.99	11.65	-136.67	407.12	-247.12	708.10	685.18	22.92	30.898			
3,900.00	3,790.14	3,784.52	3,735.60	15.66	12.07	-136.90	425.68	-256.10	741.10	717.32	23.78	31.159			
4,000.00	3,884.07	3,878.87	3,827.67	16.33	12.50	-137.12	444.25	-265.07	774.12	749.47	24.65	31.399			
4,100.00	3,978.00	3,973.23	3,919.74	17.00	12.92	-137.32	462.81	-274.05	807.15	781.62	25.53	31.621			
4,200.00	4,071.93	4,067.58	4,011.81	17.67	13.35	-137.51	481.38	-283.03	840.18	813.78	26.40	31.826			
4,300.00	4,165.86	4,161.93	4,103.89	18.34	13.78	-137.68	499.94	-292.00	873.22	845.95	27.27	32.016			
4,400.00	4,259.79	4,256.29	4,195.96	19.01	14.21	-137.83	518.50	-300.98	906.27	878.12	28.15	32.193			
4,500.00	4,353.72	4,350.64	4,288.03	19.69	14.64	-137.98	537.07	-309.95	939.32	910.29	29.03	32.357			
4,600.00	4,447.65	4,444.99	4,380.10	20.37	15.07	-138.12	555.63	-318.93	972.38	942.47	29.91	32.511			
4,700.00	4,541.58	4,539.35	4,472.18	21.04	15.50	-138.25	574.20	-327.91	1,005.44	974.65	30.79	32.655			
4,800.00	4,635.51	4,633.70	4,564.25	21.72	15.93	-138.37	592.76	-336.88	1,038.51	1,006.83	31.67	32.790			
4,900.00	4,729.44	4,728.05	4,656.32	22.40	16.36	-138.48	611.32	-345.86	1,071.58	1,039.02	32.55	32.917			
5,000.00	4,823.37	4,822.40	4,748.39	23.08	16.79	-138.58	629.89	-354.84	1,104.65	1,071.21	33.44	33.036			

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 1-2S
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 1-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 1-2S	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 2-2S - P_HIGHWAY 160 2-2S - 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	
5,100.00	4,917.30	4,916.76	4,840.47	23.76	17.22	-138.68	648.45	-363.81	1,137.73	1,103.41	34.32	33.148	
5,200.00	5,011.23	5,011.11	4,932.54	24.44	17.66	-138.78	667.01	-372.79	1,170.81	1,135.60	35.21	33.254	
5,226.37	5,036.00	5,035.99	4,956.81	24.62	17.77	-138.80	671.91	-375.16	1,179.53	1,144.09	35.44	33.281	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 1-2S
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 1-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 1-2S	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	-90.00	0.00	-29.94	29.94						
100.00	100.00	100.00	100.00	0.10	0.10	-90.00	0.00	-29.94	29.94	29.75	0.19	156.711			
200.00	200.00	200.00	200.00	0.32	0.32	-90.00	0.00	-29.94	29.94	29.30	0.64	46.738			
300.00	300.00	300.00	300.00	0.55	0.55	-90.00	0.00	-29.94	29.94	28.85	1.09	27.465			
400.00	400.00	400.00	400.00	0.77	0.77	-90.00	0.00	-29.94	29.94	28.40	1.54	19.446			
500.00	500.00	500.00	500.00	0.99	0.99	-90.00	0.00	-29.94	29.94	27.95	1.99	15.051			
600.00	600.00	600.00	600.00	1.22	1.22	-90.00	0.00	-29.94	29.94	27.50	2.44	12.277			
700.00	700.00	700.00	700.00	1.44	1.44	-90.00	0.00	-29.94	29.94	27.05	2.89	10.366			
800.00	800.00	800.00	800.00	1.67	1.67	-90.00	0.00	-29.94	29.94	26.60	3.34	8.970			
900.00	900.00	900.00	900.00	1.89	1.89	-90.00	0.00	-29.94	29.94	26.15	3.79	7.905			
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	-90.00	0.00	-29.94	29.94	25.70	4.24	7.067			
1,100.00	1,100.00	1,100.00	1,100.00	2.34	2.34	-90.00	0.00	-29.94	29.94	25.25	4.69	6.389			
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	-90.00	0.00	-29.94	29.94	24.80	5.14	5.830 CC, ES			
1,300.00	1,299.99	1,300.23	1,300.21	2.79	2.77	-138.10	-1.68	-29.43	30.44	24.89	5.55	5.484 SF			
1,400.00	1,399.91	1,400.00	1,399.84	3.01	2.94	-151.54	-6.68	-27.93	33.21	27.27	5.94	5.592			
1,500.00	1,499.69	1,498.89	1,498.35	3.23	3.13	-168.13	-14.92	-25.45	40.95	34.61	6.33	6.464			
1,600.00	1,599.27	1,596.46	1,595.20	3.46	3.33	178.05	-26.23	-22.04	55.32	48.58	6.74	8.208			
1,700.00	1,698.57	1,692.32	1,689.90	3.71	3.56	168.57	-40.41	-17.77	76.24	69.09	7.15	10.658			
1,800.00	1,797.54	1,786.12	1,782.04	3.97	3.82	162.36	-57.21	-12.71	103.10	95.53	7.58	13.608			
1,900.00	1,896.09	1,877.52	1,871.22	4.26	4.12	158.19	-76.36	-6.95	135.36	127.35	8.01	16.898			
2,000.00	1,994.16	1,969.77	1,960.79	4.58	4.45	155.40	-97.50	-0.58	171.85	163.39	8.46	20.307			
2,100.00	2,091.70	2,061.80	2,050.13	4.93	4.81	153.77	-118.65	5.79	210.75	201.82	8.93	23.602			
2,200.00	2,188.62	2,152.92	2,138.59	5.32	5.18	152.83	-139.58	12.09	251.85	242.45	9.41	26.770			
2,300.00	2,284.86	2,243.09	2,226.13	5.75	5.56	152.30	-160.29	18.33	295.08	285.18	9.90	29.809			
2,400.00	2,380.36	2,332.23	2,312.67	6.23	5.95	152.03	-180.77	24.49	340.39	329.99	10.40	32.724			
2,500.00	2,475.05	2,420.29	2,398.15	6.76	6.35	151.91	-201.00	30.58	387.75	376.84	10.92	35.522			
2,537.66	2,510.49	2,453.16	2,430.06	6.97	6.50	151.90	-208.55	32.86	406.12	395.00	11.11	36.545			
2,600.00	2,569.04	2,507.43	2,482.75	7.33	6.74	152.12	-221.02	36.61	436.76	425.27	11.49	38.023			
2,700.00	2,662.97	2,594.49	2,567.26	7.92	7.15	152.42	-241.02	42.63	485.91	473.82	12.10	40.166			
2,800.00	2,756.90	2,681.55	2,651.78	8.53	7.56	152.66	-261.02	48.66	535.08	522.36	12.72	42.068			
2,900.00	2,850.83	2,768.61	2,736.30	9.14	7.97	152.86	-281.02	54.68	584.25	570.90	13.35	43.763			
3,000.00	2,944.76	2,855.67	2,820.81	9.77	8.39	153.03	-301.02	60.70	633.42	619.44	13.99	45.280			
3,100.00	3,038.69	2,942.73	2,905.33	10.41	8.80	153.18	-321.02	66.72	682.60	667.97	14.63	46.643			
3,200.00	3,132.62	3,029.79	2,989.85	11.05	9.23	153.30	-341.02	72.74	731.79	716.50	15.29	47.872			
3,300.00	3,226.56	3,116.85	3,074.36	11.70	9.65	153.41	-361.02	78.77	780.97	765.03	15.94	48.986			
3,400.00	3,320.49	3,203.90	3,158.88	12.35	10.08	153.51	-381.02	84.79	830.16	813.55	16.60	49.997			
3,500.00	3,414.42	3,290.96	3,243.40	13.00	10.51	153.59	-401.02	90.81	879.34	862.07	17.27	50.919			
3,600.00	3,508.35	3,378.02	3,327.91	13.66	10.94	153.67	-421.02	96.83	928.53	910.59	17.94	51.762			
3,700.00	3,602.28	3,465.08	3,412.43	14.33	11.37	153.74	-441.02	102.85	977.72	959.11	18.61	52.536			
3,800.00	3,696.21	3,552.14	3,496.95	14.99	11.80	153.80	-461.01	108.88	1,026.91	1,007.63	19.29	53.248			
3,900.00	3,790.14	3,639.20	3,581.46	15.66	12.23	153.86	-481.01	114.90	1,076.11	1,056.14	19.96	53.905			
4,000.00	3,884.07	3,726.26	3,665.98	16.33	12.67	153.91	-501.01	120.92	1,125.30	1,104.66	20.64	54.513			
4,100.00	3,978.00	3,813.32	3,750.50	17.00	13.10	153.96	-521.01	126.94	1,174.49	1,153.17	21.32	55.076			
4,200.00	4,071.93	3,900.38	3,835.01	17.67	13.54	154.00	-541.01	132.96	1,223.69	1,201.68	22.01	55.600			
4,300.00	4,165.86	3,987.44	3,919.53	18.34	13.98	154.04	-561.01	138.99	1,272.88	1,250.19	22.69	56.089			
4,400.00	4,259.79	4,074.50	4,004.05	19.01	14.41	154.08	-581.01	145.01	1,322.08	1,298.70	23.38	56.545			
4,500.00	4,353.72	4,161.56	4,088.56	19.69	14.85	154.12	-601.01	151.03	1,371.27	1,347.20	24.07	56.971			
4,600.00	4,447.65	4,248.62	4,173.08	20.37	15.29	154.15	-621.01	157.05	1,420.47	1,395.71	24.76	57.371			
4,700.00	4,541.58	4,335.67	4,257.60	21.04	15.73	154.18	-641.01	163.08	1,469.66	1,444.21	25.45	57.746			
4,800.00	4,635.51	4,422.73	4,342.11	21.72	16.17	154.21	-661.01	169.10	1,518.86	1,492.72	26.14	58.099			
4,900.00	4,729.44	4,509.79	4,426.63	22.40	16.61	154.23	-681.01	175.12	1,568.06	1,541.22	26.84	58.432			
5,000.00	4,823.37	4,596.85	4,511.15	23.08	17.05	154.26	-701.01	181.14	1,617.25	1,589.72	27.53	58.746			

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 1-2S
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 1-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 1-2S	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	
5,100.00	4,917.30	4,683.91	4,595.66	23.76	17.49	154.28	-721.01	187.16	1,666.45	1,638.23	28.22	59.043	
5,200.00	5,011.23	4,770.97	4,680.18	24.44	17.93	154.30	-741.01	193.19	1,715.65	1,686.73	28.92	59.324	
5,226.37	5,036.00	4,793.93	4,702.46	24.62	18.05	154.31	-746.28	194.77	1,728.62	1,699.52	29.10	59.395	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 1-2S
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 1-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 1-2S	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	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 CC, ES			
400.00	400.00	399.71	399.68	0.77	0.77	83.99	1.19	11.33	11.40	9.86	1.54	7.426 SF			
500.00	500.00	499.17	499.01	0.99	0.99	72.50	4.76	15.10	15.86	13.88	1.98	8.009			
600.00	600.00	598.15	597.62	1.22	1.23	63.44	10.66	21.33	23.96	21.53	2.43	9.845			
700.00	700.00	696.43	695.17	1.44	1.50	57.84	18.83	29.95	35.71	32.81	2.90	12.302			
800.00	800.00	793.78	791.34	1.67	1.81	54.48	29.19	40.89	50.98	47.59	3.39	15.025			
900.00	900.00	889.99	885.83	1.89	2.16	52.38	41.63	54.02	69.66	65.75	3.91	17.821			
1,000.00	1,000.00	984.87	978.36	2.12	2.55	51.01	56.03	69.22	91.65	87.20	4.45	20.582			
1,100.00	1,100.00	1,078.24	1,068.70	2.34	2.99	50.08	72.25	86.34	116.85	111.83	5.03	23.247			
1,200.00	1,200.00	1,169.94	1,156.63	2.57	3.47	49.42	90.14	105.23	145.19	139.56	5.63	25.788			
1,300.00	1,299.99	1,260.24	1,242.36	2.79	4.00	5.78	109.64	125.82	175.33	169.68	5.65	31.036			
1,400.00	1,399.91	1,349.49	1,326.18	3.01	4.57	5.46	130.73	148.08	205.97	199.84	6.13	33.612			
1,500.00	1,499.69	1,437.71	1,408.04	3.23	5.19	5.25	153.33	171.94	237.08	230.47	6.61	35.849			
1,600.00	1,599.27	1,525.16	1,488.16	3.46	5.84	5.11	177.43	197.38	268.63	261.52	7.11	37.806			
1,700.00	1,698.57	1,620.42	1,574.88	3.71	6.59	5.02	204.54	226.00	299.05	291.41	7.63	39.168			
1,800.00	1,797.54	1,716.44	1,662.29	3.97	7.35	4.99	231.87	254.85	326.97	318.80	8.17	40.004			
1,900.00	1,896.09	1,813.16	1,750.33	4.26	8.13	5.00	259.39	283.90	352.38	343.66	8.72	40.402			
2,000.00	1,994.16	1,910.50	1,838.95	4.58	8.92	5.04	287.09	313.15	375.27	365.99	9.28	40.443			
2,100.00	2,091.70	2,008.40	1,928.08	4.93	9.71	5.11	314.96	342.56	395.60	385.76	9.84	40.185			
2,200.00	2,188.62	2,106.80	2,017.66	5.32	10.51	5.21	342.96	372.12	413.38	402.96	10.42	39.680			
2,300.00	2,284.86	2,205.63	2,107.63	5.75	11.32	5.33	371.08	401.81	428.59	417.59	11.00	38.967			
2,400.00	2,380.36	2,304.82	2,197.93	6.23	12.13	5.48	399.31	431.61	441.22	429.63	11.59	38.078			
2,500.00	2,475.05	2,404.30	2,288.49	6.76	12.95	5.66	427.62	461.50	451.27	439.08	12.18	37.040			
2,537.66	2,510.49	2,441.83	2,322.65	6.97	13.26	5.73	438.30	472.77	454.38	441.97	12.41	36.615			
2,600.00	2,569.04	2,503.97	2,379.22	7.33	13.77	5.86	455.99	491.44	459.23	446.42	12.81	35.846			
2,700.00	2,662.97	2,603.65	2,469.97	7.92	14.59	6.07	484.35	521.39	467.01	453.55	13.46	34.693			
2,800.00	2,756.90	2,703.33	2,560.72	8.53	15.41	6.27	512.72	551.33	474.80	460.68	14.12	33.631			
2,900.00	2,850.83	2,803.02	2,651.47	9.14	16.23	6.46	541.09	581.28	482.60	467.82	14.78	32.650			
3,000.00	2,944.76	2,902.70	2,742.21	9.77	17.05	6.65	569.46	611.23	490.40	474.95	15.45	31.742			
3,100.00	3,038.69	3,002.38	2,832.96	10.41	17.87	6.83	597.83	641.18	498.20	482.08	16.12	30.900			
3,200.00	3,132.62	3,102.07	2,923.71	11.05	18.69	7.00	626.19	671.12	506.01	489.21	16.80	30.118			
3,300.00	3,226.56	3,201.75	3,014.46	11.70	19.52	7.17	654.56	701.07	513.83	496.34	17.48	29.389			
3,400.00	3,320.49	3,301.43	3,105.20	12.35	20.34	7.33	682.93	731.02	521.65	503.48	18.17	28.710			
3,500.00	3,414.42	3,401.11	3,195.95	13.00	21.17	7.49	711.30	760.96	529.47	510.61	18.86	28.075			
3,600.00	3,508.35	3,500.80	3,286.70	13.66	21.99	7.65	739.67	790.91	537.30	517.74	19.55	27.480			
3,700.00	3,602.28	3,600.48	3,377.45	14.33	22.81	7.80	768.03	820.86	545.13	524.88	20.25	26.922			
3,800.00	3,696.21	3,700.16	3,468.19	14.99	23.64	7.95	796.40	850.81	552.96	532.01	20.95	26.398			
3,900.00	3,790.14	3,799.85	3,558.94	15.66	24.46	8.09	824.77	880.75	560.80	539.15	21.65	25.904			
4,000.00	3,884.07	3,899.53	3,649.69	16.33	25.29	8.23	853.14	910.70	568.64	546.29	22.35	25.439			
4,100.00	3,978.00	3,999.21	3,740.44	17.00	26.11	8.36	881.51	940.65	576.48	553.43	23.06	25.000			
4,200.00	4,071.93	4,098.89	3,831.18	17.67	26.94	8.49	909.88	970.59	584.33	560.56	23.77	24.584			
4,300.00	4,165.86	4,198.58	3,921.93	18.34	27.76	8.62	938.24	1,000.54	592.18	567.70	24.48	24.191			
4,400.00	4,259.79	4,298.26	4,012.68	19.01	28.59	8.74	966.61	1,030.49	600.04	574.84	25.19	23.818			
4,500.00	4,353.72	4,397.94	4,103.42	19.69	29.41	8.86	994.98	1,060.44	607.89	581.98	25.91	23.464			
4,600.00	4,447.65	4,497.63	4,194.17	20.37	30.24	8.98	1,023.35	1,090.38	615.75	589.13	26.62	23.127			
4,700.00	4,541.58	4,597.31	4,284.92	21.04	31.07	9.10	1,051.72	1,120.33	623.61	596.27	27.34	22.807			
4,800.00	4,635.51	4,696.99	4,375.67	21.72	31.89	9.21	1,080.08	1,150.28	631.47	603.41	28.06	22.501			
4,900.00	4,729.44	4,796.67	4,466.41	22.40	32.72	9.32	1,108.45	1,180.22	639.34	610.55	28.79	22.210			
5,000.00	4,823.37	4,896.36	4,557.16	23.08	33.54	9.42	1,136.82	1,210.17	647.21	617.70	29.51	21.932			

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 1-2S
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 1-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 1-2S	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	
5,100.00	4,917.30	4,996.04	4,647.91	23.76	34.37	9.53	1,165.19	1,240.12	655.08	624.84	30.23	21.666	
5,200.00	5,011.23	5,095.72	4,738.66	24.44	35.20	9.63	1,193.56	1,270.07	662.95	631.99	30.96	21.412	
5,226.37	5,036.00	5,122.01	4,762.58	24.62	35.41	9.65	1,201.04	1,277.96	665.03	633.87	31.15	21.347	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 1-2S
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 1-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 1-2S	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			
0.00	0.00	0.00	0.00	0.00	0.00	89.30	0.36	29.94	29.94						
100.00	100.00	100.00	100.00	0.10	0.10	89.30	0.36	29.94	29.94	29.75	0.19	156.723			
200.00	200.00	200.00	200.00	0.32	0.32	89.30	0.36	29.94	29.94	29.30	0.64	46.742			
300.00	300.00	300.00	300.00	0.55	0.55	89.30	0.36	29.94	29.94	28.85	1.09	27.467			
400.00	400.00	400.00	400.00	0.77	0.77	89.30	0.36	29.94	29.94	28.40	1.54	19.447			
500.00	500.00	500.00	500.00	0.99	0.99	89.30	0.36	29.94	29.94	27.95	1.99	15.052			
600.00	600.00	600.00	600.00	1.22	1.22	89.30	0.36	29.94	29.94	27.50	2.44	12.278			
700.00	700.00	700.00	700.00	1.44	1.44	89.30	0.36	29.94	29.94	27.05	2.89	10.367			
800.00	800.00	800.00	800.00	1.67	1.67	89.30	0.36	29.94	29.94	26.60	3.34	8.971			
900.00	900.00	900.00	900.00	1.89	1.89	89.30	0.36	29.94	29.94	26.15	3.79	7.906			
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	89.30	0.36	29.94	29.94	25.71	4.24	7.067			
1,100.00	1,100.00	1,100.00	1,100.00	2.34	2.34	89.30	0.36	29.94	29.94	25.26	4.69	6.389			
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	89.30	0.36	29.94	29.94	24.81	5.14	5.830 CC, ES			
1,300.00	1,299.99	1,298.96	1,298.94	2.79	2.78	47.48	0.61	31.63	30.76	25.19	5.57	5.526 SF			
1,400.00	1,399.91	1,397.82	1,397.67	3.01	2.99	51.03	1.33	36.70	33.29	27.31	5.98	5.565			
1,500.00	1,499.69	1,496.50	1,495.97	3.23	3.20	55.84	2.54	45.11	37.74	31.33	6.40	5.894			
1,600.00	1,599.27	1,594.90	1,593.65	3.46	3.44	60.88	4.22	56.84	44.30	37.46	6.84	6.478			
1,700.00	1,698.57	1,692.92	1,690.49	3.71	3.70	65.44	6.37	71.81	53.08	45.78	7.30	7.274			
1,800.00	1,797.54	1,790.50	1,786.32	3.97	3.99	69.26	8.97	89.97	64.11	56.32	7.79	8.228			
1,900.00	1,896.09	1,887.53	1,880.95	4.26	4.32	72.30	12.02	111.21	77.35	69.02	8.33	9.282			
2,000.00	1,994.16	1,983.94	1,974.20	4.58	4.70	74.68	15.50	135.46	92.76	83.82	8.93	10.383			
2,100.00	2,091.70	2,079.67	2,065.91	4.93	5.13	76.52	19.39	162.58	110.27	100.67	9.60	11.484			
2,200.00	2,188.62	2,174.64	2,155.94	5.32	5.62	77.94	23.67	192.48	129.84	119.49	10.35	12.550			
2,300.00	2,284.86	2,268.95	2,244.32	5.75	6.16	79.02	28.35	225.07	151.39	140.23	11.17	13.557			
2,400.00	2,380.36	2,366.33	2,335.06	6.23	6.78	80.32	33.37	260.07	173.65	161.55	12.10	14.350			
2,500.00	2,475.05	2,463.67	2,425.75	6.76	7.41	82.02	38.38	295.05	195.65	182.52	13.13	14.898			
2,537.66	2,510.49	2,500.30	2,459.88	6.97	7.65	82.73	40.27	308.21	203.90	190.36	13.55	15.053			
2,600.00	2,569.04	2,560.92	2,516.37	7.33	8.06	84.07	43.40	330.00	217.62	203.36	14.26	15.262			
2,700.00	2,662.97	2,658.17	2,606.97	7.92	8.72	85.90	48.41	364.95	239.83	224.40	15.43	15.542			
2,800.00	2,756.90	2,755.41	2,697.58	8.53	9.40	87.42	53.42	399.90	262.23	245.60	16.63	15.767			
2,900.00	2,850.83	2,852.65	2,788.19	9.14	10.08	88.70	58.43	434.84	284.77	266.92	17.85	15.951			
3,000.00	2,944.76	2,949.89	2,878.80	9.77	10.77	89.79	63.44	469.79	307.44	288.34	19.09	16.102			
3,100.00	3,038.69	3,047.14	2,969.40	10.41	11.47	90.73	68.46	504.74	330.19	309.84	20.35	16.227			
3,200.00	3,132.62	3,144.38	3,060.01	11.05	12.17	91.55	73.47	539.69	353.02	331.41	21.61	16.333			
3,300.00	3,226.56	3,241.62	3,150.62	11.70	12.88	92.27	78.48	574.64	375.91	353.02	22.89	16.423			
3,400.00	3,320.49	3,338.86	3,241.23	12.35	13.59	92.91	83.49	609.58	398.85	374.68	24.17	16.500			
3,500.00	3,414.42	3,436.11	3,331.83	13.00	14.30	93.48	88.50	644.53	421.83	396.37	25.46	16.567			
3,600.00	3,508.35	3,533.35	3,422.44	13.66	15.01	93.99	93.52	679.48	444.85	418.09	26.76	16.624			
3,700.00	3,602.28	3,630.59	3,513.05	14.33	15.73	94.45	98.53	714.43	467.89	439.83	28.06	16.675			
3,800.00	3,696.21	3,727.83	3,603.65	14.99	16.45	94.87	103.54	749.38	490.96	461.60	29.36	16.720			
3,900.00	3,790.14	3,825.08	3,694.26	15.66	17.17	95.25	108.55	784.32	514.06	483.39	30.67	16.760			
4,000.00	3,884.07	3,922.32	3,784.87	16.33	17.89	95.59	113.56	819.27	537.17	505.19	31.98	16.795			
4,100.00	3,978.00	4,019.56	3,875.48	17.00	18.61	95.91	118.58	854.22	560.31	527.01	33.30	16.827			
4,200.00	4,071.93	4,116.81	3,966.08	17.67	19.33	96.20	123.59	889.17	583.45	548.84	34.61	16.856			
4,300.00	4,165.86	4,214.05	4,056.69	18.34	20.06	96.47	128.60	924.12	606.61	570.68	35.93	16.881			
4,400.00	4,259.79	4,311.29	4,147.30	19.01	20.78	96.72	133.61	959.06	629.78	592.53	37.25	16.905			
4,500.00	4,353.72	4,408.53	4,237.90	19.69	21.51	96.96	138.63	994.01	652.97	614.39	38.58	16.926			
4,600.00	4,447.65	4,505.78	4,328.51	20.37	22.23	97.17	143.64	1,028.96	676.16	636.26	39.90	16.946			
4,700.00	4,541.58	4,603.02	4,419.12	21.04	22.96	97.38	148.65	1,063.91	699.36	658.13	41.23	16.964			
4,800.00	4,635.51	4,700.26	4,509.73	21.72	23.69	97.57	153.66	1,098.86	722.57	680.01	42.55	16.981			
4,900.00	4,729.44	4,797.50	4,600.33	22.40	24.42	97.74	158.67	1,133.80	745.78	701.90	43.88	16.996			
5,000.00	4,823.37	4,894.75	4,690.94	23.08	25.15	97.91	163.69	1,168.75	769.00	723.79	45.21	17.010			

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 1-2S
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 1-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 1-2S	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	
5,100.00	4,917.30	4,991.99	4,781.55	23.76	25.88	98.07	168.70	1,203.70	792.23	745.69	46.54	17.023	
5,200.00	5,011.23	5,089.23	4,872.15	24.44	26.61	98.22	173.71	1,238.65	815.46	767.59	47.87	17.035	
5,226.37	5,036.00	5,114.87	4,896.04	24.62	26.80	98.26	175.03	1,247.86	821.59	773.37	48.22	17.038	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 1-2S
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 1-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 1-2S	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	-90.35	-0.37	-60.16	60.16						
100.00	100.00	100.00	100.00	0.10	0.10	-90.35	-0.37	-60.16	60.16	59.97	0.19	314.893			
200.00	200.00	200.00	200.00	0.32	0.32	-90.35	-0.37	-60.16	60.16	59.52	0.64	93.916			
300.00	300.00	300.00	300.00	0.55	0.55	-90.35	-0.37	-60.16	60.16	59.07	1.09	55.187			
400.00	400.00	400.00	400.00	0.77	0.77	-90.35	-0.37	-60.16	60.16	58.62	1.54	39.074			
500.00	500.00	500.00	500.00	0.99	0.99	-90.35	-0.37	-60.16	60.16	58.17	1.99	30.244			
600.00	600.00	600.00	600.00	1.22	1.22	-90.35	-0.37	-60.16	60.16	57.72	2.44	24.669			
700.00	700.00	700.00	700.00	1.44	1.44	-90.35	-0.37	-60.16	60.16	57.27	2.89	20.830			
800.00	800.00	800.00	800.00	1.67	1.67	-90.35	-0.37	-60.16	60.16	56.82	3.34	18.024			
900.00	900.00	900.00	900.00	1.89	1.89	-90.35	-0.37	-60.16	60.16	56.37	3.79	15.885			
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	-90.35	-0.37	-60.16	60.16	55.92	4.24	14.199			
1,100.00	1,100.00	1,100.00	1,100.00	2.34	2.34	-90.35	-0.37	-60.16	60.16	55.47	4.69	12.837			
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	-90.35	-0.37	-60.16	60.16	55.02	5.14	11.714 CC, ES			
1,300.00	1,299.99	1,298.66	1,298.64	2.79	2.76	-135.59	-1.74	-61.17	62.14	56.59	5.55	11.194 SF			
1,400.00	1,399.91	1,396.76	1,396.61	3.01	2.94	-141.10	-5.80	-64.17	68.51	62.57	5.94	11.536			
1,500.00	1,499.69	1,493.75	1,493.23	3.23	3.13	-148.15	-12.48	-69.09	80.23	73.90	6.33	12.677			
1,600.00	1,599.27	1,589.10	1,587.90	3.46	3.33	-154.97	-21.60	-75.82	98.04	91.32	6.72	14.593			
1,700.00	1,698.57	1,682.33	1,680.05	3.71	3.56	-160.67	-32.96	-84.21	122.17	115.06	7.10	17.196			
1,800.00	1,797.54	1,776.84	1,773.16	3.97	3.81	-165.11	-46.03	-93.85	151.42	143.93	7.49	20.209			
1,900.00	1,896.09	1,871.02	1,865.94	4.26	4.09	-168.29	-59.08	-103.48	183.76	175.88	7.88	23.321			
2,000.00	1,994.16	1,964.30	1,957.82	4.58	4.37	-170.62	-72.00	-113.02	218.90	210.64	8.26	26.490			
2,100.00	2,091.70	2,056.60	2,048.74	4.93	4.67	-172.37	-84.79	-122.46	256.72	248.07	8.64	29.697			
2,200.00	2,188.62	2,147.86	2,138.64	5.32	4.97	-173.72	-97.44	-131.79	297.09	288.07	9.02	32.928			
2,300.00	2,284.86	2,238.03	2,227.46	5.75	5.28	-174.79	-109.93	-141.00	339.96	330.56	9.40	36.176			
2,400.00	2,380.36	2,327.03	2,315.13	6.23	5.59	-175.64	-122.26	-150.10	385.25	375.48	9.77	39.435			
2,500.00	2,475.05	2,414.81	2,401.60	6.76	5.90	-176.33	-134.42	-159.08	432.91	422.77	10.14	42.703			
2,537.66	2,510.49	2,447.54	2,433.84	6.97	6.02	-176.56	-138.95	-162.42	451.47	441.19	10.28	43.933			
2,600.00	2,569.04	2,501.56	2,487.06	7.33	6.21	-176.93	-146.44	-167.95	482.47	471.91	10.56	45.691			
2,700.00	2,662.97	2,588.22	2,572.43	7.92	6.53	-177.44	-158.44	-176.80	532.21	521.19	11.02	48.294			
2,800.00	2,756.90	2,674.89	2,657.79	8.53	6.85	-177.85	-170.45	-185.66	581.99	570.50	11.49	50.664			
2,900.00	2,850.83	2,761.55	2,743.16	9.14	7.17	-178.20	-182.46	-194.52	631.78	619.82	11.96	52.827			
3,000.00	2,944.76	2,848.21	2,828.53	9.77	7.49	-178.50	-194.46	-203.38	681.59	669.16	12.44	54.807			
3,100.00	3,038.69	2,934.87	2,913.89	10.41	7.82	-178.76	-206.47	-212.24	731.41	718.50	12.92	56.623			
3,200.00	3,132.62	3,021.53	2,999.26	11.05	8.14	-178.99	-218.48	-221.10	781.24	767.84	13.40	58.294			
3,300.00	3,226.56	3,108.19	3,084.63	11.70	8.47	-179.19	-230.48	-229.96	831.08	817.19	13.89	59.835			
3,400.00	3,320.49	3,194.85	3,169.99	12.35	8.80	-179.37	-242.49	-238.82	880.93	866.55	14.38	61.259			
3,500.00	3,414.42	3,281.51	3,255.36	13.00	9.14	-179.52	-254.50	-247.68	930.78	915.91	14.87	62.578			
3,600.00	3,508.35	3,368.17	3,340.73	13.66	9.47	-179.67	-266.50	-256.54	980.64	965.27	15.37	63.803			
3,700.00	3,602.28	3,454.83	3,426.09	14.33	9.80	-179.79	-278.51	-265.40	1,030.50	1,014.63	15.87	64.943			
3,800.00	3,696.21	3,541.50	3,511.46	14.99	10.14	-179.91	-290.52	-274.26	1,080.36	1,064.00	16.37	66.007			
3,900.00	3,790.14	3,628.16	3,596.83	15.66	10.47	179.98	-302.52	-283.12	1,130.23	1,113.36	16.87	67.000			
4,000.00	3,884.07	3,714.82	3,682.19	16.33	10.81	179.89	-314.53	-291.98	1,180.10	1,162.73	17.37	67.931			
4,100.00	3,978.00	3,801.48	3,767.56	17.00	11.15	179.80	-326.53	-300.84	1,229.97	1,212.10	17.88	68.803			
4,200.00	4,071.93	3,888.14	3,852.93	17.67	11.49	179.71	-338.54	-309.70	1,279.85	1,261.46	18.38	69.623			
4,300.00	4,165.86	3,974.80	3,938.29	18.34	11.83	179.64	-350.55	-318.56	1,329.72	1,310.83	18.89	70.394			
4,400.00	4,259.79	4,061.46	4,023.66	19.01	12.17	179.57	-362.55	-327.42	1,379.60	1,360.20	19.40	71.121			
4,500.00	4,353.72	4,148.12	4,109.03	19.69	12.51	179.50	-374.56	-336.28	1,429.48	1,409.57	19.91	71.807			
4,600.00	4,447.65	4,234.78	4,194.39	20.37	12.85	179.44	-386.57	-345.14	1,479.36	1,458.94	20.42	72.456			
4,700.00	4,541.58	4,321.44	4,279.76	21.04	13.19	179.38	-398.57	-354.00	1,529.24	1,508.31	20.93	73.070			
4,800.00	4,635.51	4,408.10	4,365.13	21.72	13.53	179.33	-410.58	-362.86	1,579.12	1,557.68	21.44	73.652			
4,900.00	4,729.44	4,494.77	4,450.49	22.40	13.87	179.28	-422.59	-371.72	1,629.01	1,607.05	21.95	74.204			
5,000.00	4,823.37	4,581.43	4,535.86	23.08	14.21	179.23	-434.59	-380.57	1,678.89	1,656.43	22.47	74.729			

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 1-2S
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 1-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 1-2S	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	
5,100.00	4,917.30	4,668.09	4,621.23	23.76	14.55	179.19	-446.60	-389.43	1,728.78	1,705.80	22.98	75.228	
5,200.00	5,011.23	4,754.75	4,706.59	24.44	14.90	179.15	-458.61	-398.29	1,778.66	1,755.17	23.50	75.704	
5,226.37	5,036.00	4,777.60	4,729.10	24.62	14.99	179.13	-461.77	-400.63	1,791.82	1,768.19	23.63	75.825	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 1-2S
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 1-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 1-2S	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			
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			
1,300.00	1,299.99	1,300.28	1,300.26	2.79	2.77	-143.66	-0.79	-8.50	9.56	4.00	5.56	1.720			
1,339.17	1,339.14	1,339.51	1,339.45	2.88	2.85	-154.19	-1.52	-7.04	9.40	3.68	5.72	1.644	CC, ES, SF		
1,400.00	1,399.91	1,400.32	1,400.15	3.01	2.97	-176.40	-3.14	-3.82	10.16	4.19	5.96	1.703			
1,500.00	1,499.69	1,499.89	1,499.34	3.23	3.17	151.47	-7.03	3.94	16.16	9.77	6.39	2.529			
1,600.00	1,599.27	1,598.77	1,597.48	3.46	3.40	135.64	-12.43	14.69	27.76	20.92	6.83	4.063			
1,700.00	1,698.57	1,696.74	1,694.25	3.71	3.65	128.14	-19.27	28.32	43.74	36.44	7.30	5.994			
1,800.00	1,797.54	1,793.59	1,789.35	3.97	3.94	124.09	-27.48	44.69	63.59	55.79	7.79	8.159			
1,900.00	1,896.09	1,889.15	1,882.53	4.26	4.26	121.61	-37.00	63.66	87.07	78.74	8.33	10.458			
2,000.00	1,994.16	1,985.73	1,976.33	4.58	4.63	120.56	-47.31	84.20	112.98	104.07	8.91	12.685			
2,100.00	2,091.70	2,081.95	2,069.78	4.93	5.02	120.71	-57.58	104.68	140.18	130.66	9.53	14.715			
2,200.00	2,188.62	2,177.75	2,162.82	5.32	5.42	121.47	-67.81	125.06	168.71	158.52	10.19	16.562			
2,300.00	2,284.86	2,273.06	2,255.39	5.75	5.84	122.55	-77.99	145.34	198.63	187.74	10.89	18.247			
2,400.00	2,380.36	2,367.82	2,347.43	6.23	6.26	123.79	-88.11	165.50	230.02	218.40	11.62	19.797			
2,500.00	2,475.05	2,461.96	2,438.86	6.76	6.69	125.11	-98.16	185.53	262.98	250.60	12.38	21.234			
2,537.66	2,510.49	2,497.24	2,473.13	6.97	6.86	125.62	-101.92	193.03	275.81	263.14	12.68	21.752			
2,600.00	2,569.04	2,555.55	2,529.77	7.33	7.13	126.65	-108.15	205.44	297.30	284.10	13.20	22.524			
2,700.00	2,662.97	2,649.10	2,620.63	7.92	7.57	128.03	-118.14	225.34	331.91	317.87	14.04	23.635			
2,800.00	2,756.90	2,742.65	2,711.49	8.53	8.02	129.15	-128.13	245.25	366.66	351.76	14.90	24.609			
2,900.00	2,850.83	2,836.20	2,802.35	9.14	8.47	130.08	-138.12	265.15	401.51	385.74	15.77	25.466			
3,000.00	2,944.76	2,929.75	2,893.21	9.77	8.92	130.86	-148.10	285.06	436.44	419.79	16.64	26.225			
3,100.00	3,038.69	3,023.30	2,984.07	10.41	9.38	131.52	-158.09	304.96	471.43	453.90	17.52	26.900			
3,200.00	3,132.62	3,116.85	3,074.93	11.05	9.84	132.09	-168.08	324.86	506.46	488.05	18.41	27.504			
3,300.00	3,226.56	3,210.40	3,165.79	11.70	10.30	132.59	-178.07	344.77	541.54	522.23	19.31	28.047			
3,400.00	3,320.49	3,303.95	3,256.65	12.35	10.76	133.03	-188.06	364.67	576.65	556.44	20.21	28.536			
3,500.00	3,414.42	3,397.50	3,347.51	13.00	11.22	133.42	-198.04	384.57	611.78	590.67	21.11	28.980			
3,600.00	3,508.35	3,491.04	3,438.37	13.66	11.69	133.76	-208.03	404.48	646.94	624.92	22.02	29.383			
3,700.00	3,602.28	3,584.59	3,529.23	14.33	12.16	134.07	-218.02	424.38	682.11	659.19	22.93	29.752			
3,800.00	3,696.21	3,678.14	3,620.09	14.99	12.63	134.35	-228.01	444.28	717.30	693.46	23.84	30.089			
3,900.00	3,790.14	3,771.69	3,710.95	15.66	13.10	134.61	-238.00	464.19	752.51	727.75	24.75	30.399			
4,000.00	3,884.07	3,865.24	3,801.81	16.33	13.57	134.84	-247.98	484.09	787.72	762.05	25.67	30.685			
4,100.00	3,978.00	3,958.79	3,892.67	17.00	14.04	135.05	-257.97	503.99	822.95	796.36	26.59	30.950			
4,200.00	4,071.93	4,052.34	3,983.53	17.67	14.51	135.24	-267.96	523.90	858.18	830.67	27.51	31.195			
4,300.00	4,165.86	4,145.89	4,074.39	18.34	14.99	135.42	-277.95	543.80	893.43	864.99	28.43	31.423			
4,400.00	4,259.79	4,239.44	4,165.25	19.01	15.46	135.59	-287.94	563.71	928.68	899.32	29.36	31.635			
4,500.00	4,353.72	4,332.99	4,256.11	19.69	15.93	135.74	-297.93	583.61	963.93	933.65	30.28	31.833			
4,600.00	4,447.65	4,426.53	4,346.97	20.37	16.41	135.88	-307.91	603.51	999.19	967.99	31.21	32.018			
4,700.00	4,541.58	4,520.08	4,437.83	21.04	16.88	136.01	-317.90	623.42	1,034.46	1,002.33	32.13	32.192			
4,800.00	4,635.51	4,613.63	4,528.68	21.72	17.36	136.14	-327.89	643.32	1,069.73	1,036.67	33.06	32.355			
4,900.00	4,729.44	4,707.18	4,619.54	22.40	17.84	136.25	-337.88	663.22	1,105.01	1,071.02	33.99	32.509			

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 1-2S
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 1-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 1-2S	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		
5,000.00	4,823.37	4,800.73	4,710.40	23.08	18.31	136.36	-347.87	683.13	1,140.29	1,105.37	34.92	32.654		
5,100.00	4,917.30	4,894.28	4,801.26	23.76	18.79	136.46	-357.85	703.03	1,175.57	1,139.72	35.85	32.790		
5,200.00	5,011.23	4,987.83	4,892.12	24.44	19.27	136.56	-367.84	722.93	1,210.86	1,174.07	36.78	32.919		
5,226.37	5,036.00	5,012.49	4,916.08	24.62	19.39	136.58	-370.48	728.18	1,220.16	1,183.13	37.03	32.952		

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 1-2S
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 1-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 1-2S	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			
0.00	0.00	0.00	0.00	0.00	0.00	-90.00	0.00	-19.87	19.87						
100.00	100.00	100.00	100.00	0.10	0.10	-90.00	0.00	-19.87	19.87	19.68	0.19	103.986			
200.00	200.00	200.00	200.00	0.32	0.32	-90.00	0.00	-19.87	19.87	19.23	0.64	31.013			
300.00	300.00	300.00	300.00	0.55	0.55	-90.00	0.00	-19.87	19.87	18.78	1.09	18.224			
400.00	400.00	400.00	400.00	0.77	0.77	-90.00	0.00	-19.87	19.87	18.33	1.54	12.903			
500.00	500.00	500.00	500.00	0.99	0.99	-90.00	0.00	-19.87	19.87	17.88	1.99	9.987			
600.00	600.00	600.00	600.00	1.22	1.22	-90.00	0.00	-19.87	19.87	17.43	2.44	8.146			
700.00	700.00	700.00	700.00	1.44	1.44	-90.00	0.00	-19.87	19.87	16.98	2.89	6.878			
800.00	800.00	800.00	800.00	1.67	1.67	-90.00	0.00	-19.87	19.87	16.53	3.34	5.952			
900.00	900.00	900.00	900.00	1.89	1.89	-90.00	0.00	-19.87	19.87	16.08	3.79	5.246			
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	-90.00	0.00	-19.87	19.87	15.63	4.24	4.689			
1,100.00	1,100.00	1,100.00	1,100.00	2.34	2.34	-90.00	0.00	-19.87	19.87	15.18	4.69	4.239			
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	-90.00	0.00	-19.87	19.87	14.73	5.14	3.868			
1,295.41	1,295.40	1,295.78	1,295.77	2.78	2.76	-137.80	-0.74	-18.92	19.80	14.26	5.54	3.575 CC			
1,300.00	1,299.99	1,300.38	1,300.37	2.79	2.77	-138.26	-0.81	-18.82	19.80	14.24	5.56	3.563 ES			
1,400.00	1,399.91	1,400.57	1,400.48	3.01	2.96	-153.22	-3.23	-15.71	20.54	14.59	5.96	3.449 SF			
1,500.00	1,499.69	1,500.39	1,500.08	3.23	3.15	-173.54	-7.24	-10.54	24.42	18.06	6.36	3.839			
1,600.00	1,599.27	1,599.66	1,598.93	3.46	3.36	168.98	-12.80	-3.36	33.17	26.39	6.78	4.890			
1,700.00	1,698.57	1,698.19	1,696.78	3.71	3.59	157.33	-19.88	5.77	46.80	39.57	7.22	6.478			
1,800.00	1,797.54	1,795.81	1,793.40	3.97	3.84	150.04	-28.42	16.78	64.72	57.04	7.69	8.420			
1,900.00	1,896.09	1,892.37	1,888.59	4.26	4.11	145.34	-38.35	29.58	86.52	78.34	8.18	10.582			
2,000.00	1,994.16	1,987.72	1,982.14	4.58	4.41	142.15	-49.60	44.09	111.91	103.22	8.70	12.870			
2,100.00	2,091.70	2,081.70	2,073.89	4.93	4.75	139.88	-62.09	60.19	140.74	131.49	9.25	15.215			
2,200.00	2,188.62	2,174.18	2,163.66	5.32	5.11	138.17	-75.72	77.77	172.87	163.03	9.84	17.562			
2,300.00	2,284.86	2,265.06	2,251.31	5.75	5.51	136.83	-90.41	96.71	208.19	197.72	10.48	19.870			
2,400.00	2,380.36	2,354.22	2,336.73	6.23	5.94	135.73	-106.06	116.89	246.61	235.46	11.15	22.116			
2,500.00	2,475.05	2,445.13	2,423.47	6.76	6.41	134.94	-122.76	138.41	287.51	275.63	11.88	24.201			
2,537.66	2,510.49	2,479.30	2,456.07	6.97	6.59	134.75	-129.03	146.50	303.36	291.19	12.16	24.942			
2,600.00	2,569.04	2,535.76	2,509.93	7.33	6.90	134.79	-139.40	159.87	329.78	317.11	12.67	26.030			
2,700.00	2,662.97	2,626.33	2,596.34	7.92	7.40	134.84	-156.04	181.32	372.17	358.67	13.50	27.569			
2,800.00	2,756.90	2,716.90	2,682.75	8.53	7.90	134.89	-172.67	202.77	414.56	400.21	14.35	28.889			
2,900.00	2,850.83	2,807.47	2,769.16	9.14	8.42	134.92	-189.30	224.22	456.95	441.73	15.22	30.030			
3,000.00	2,944.76	2,898.04	2,855.57	9.77	8.95	134.95	-205.94	245.66	499.34	483.24	16.10	31.020			
3,100.00	3,038.69	2,988.62	2,941.98	10.41	9.48	134.97	-222.57	267.11	541.73	524.74	16.99	31.886			
3,200.00	3,132.62	3,079.19	3,028.38	11.05	10.01	134.99	-239.21	288.56	584.11	566.22	17.89	32.647			
3,300.00	3,226.56	3,169.76	3,114.79	11.70	10.55	135.01	-255.84	310.01	626.50	607.70	18.80	33.320			
3,400.00	3,320.49	3,260.33	3,201.20	12.35	11.10	135.03	-272.48	331.46	668.89	649.17	19.72	33.919			
3,500.00	3,414.42	3,350.90	3,287.61	13.00	11.64	135.04	-289.11	352.91	711.28	690.64	20.64	34.454			
3,600.00	3,508.35	3,441.47	3,374.02	13.66	12.19	135.05	-305.75	374.35	753.67	732.10	21.57	34.935			
3,700.00	3,602.28	3,532.04	3,460.43	14.33	12.74	135.06	-322.38	395.80	796.06	773.55	22.51	35.368			
3,800.00	3,696.21	3,622.61	3,546.83	14.99	13.30	135.07	-339.02	417.25	838.45	815.00	23.45	35.760			
3,900.00	3,790.14	3,713.19	3,633.24	15.66	13.85	135.08	-355.65	438.70	880.84	856.45	24.39	36.117			
4,000.00	3,884.07	3,803.76	3,719.65	16.33	14.41	135.09	-372.29	460.15	923.23	897.89	25.33	36.442			
4,100.00	3,978.00	3,894.33	3,806.06	17.00	14.97	135.10	-388.92	481.59	965.62	939.33	26.28	36.740			
4,200.00	4,071.93	3,984.90	3,892.47	17.67	15.52	135.11	-405.56	503.04	1,008.01	980.77	27.23	37.013			
4,300.00	4,165.86	4,075.47	3,978.88	18.34	16.08	135.11	-422.19	524.49	1,050.39	1,022.21	28.19	37.265			
4,400.00	4,259.79	4,166.04	4,065.28	19.01	16.65	135.12	-438.83	545.94	1,092.78	1,063.64	29.14	37.497			
4,500.00	4,353.72	4,256.61	4,151.69	19.69	17.21	135.12	-455.46	567.39	1,135.17	1,105.07	30.10	37.713			
4,600.00	4,447.65	4,347.18	4,238.10	20.37	17.77	135.13	-472.09	588.84	1,177.56	1,146.50	31.06	37.913			
4,700.00	4,541.58	4,437.76	4,324.51	21.04	18.34	135.13	-488.73	610.28	1,219.95	1,187.93	32.02	38.099			
4,800.00	4,635.51	4,528.33	4,410.92	21.72	18.90	135.14	-505.36	631.73	1,262.34	1,229.36	32.98	38.272			
4,900.00	4,729.44	4,618.90	4,497.33	22.40	19.47	135.14	-522.00	653.18	1,304.73	1,270.78	33.95	38.434			

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

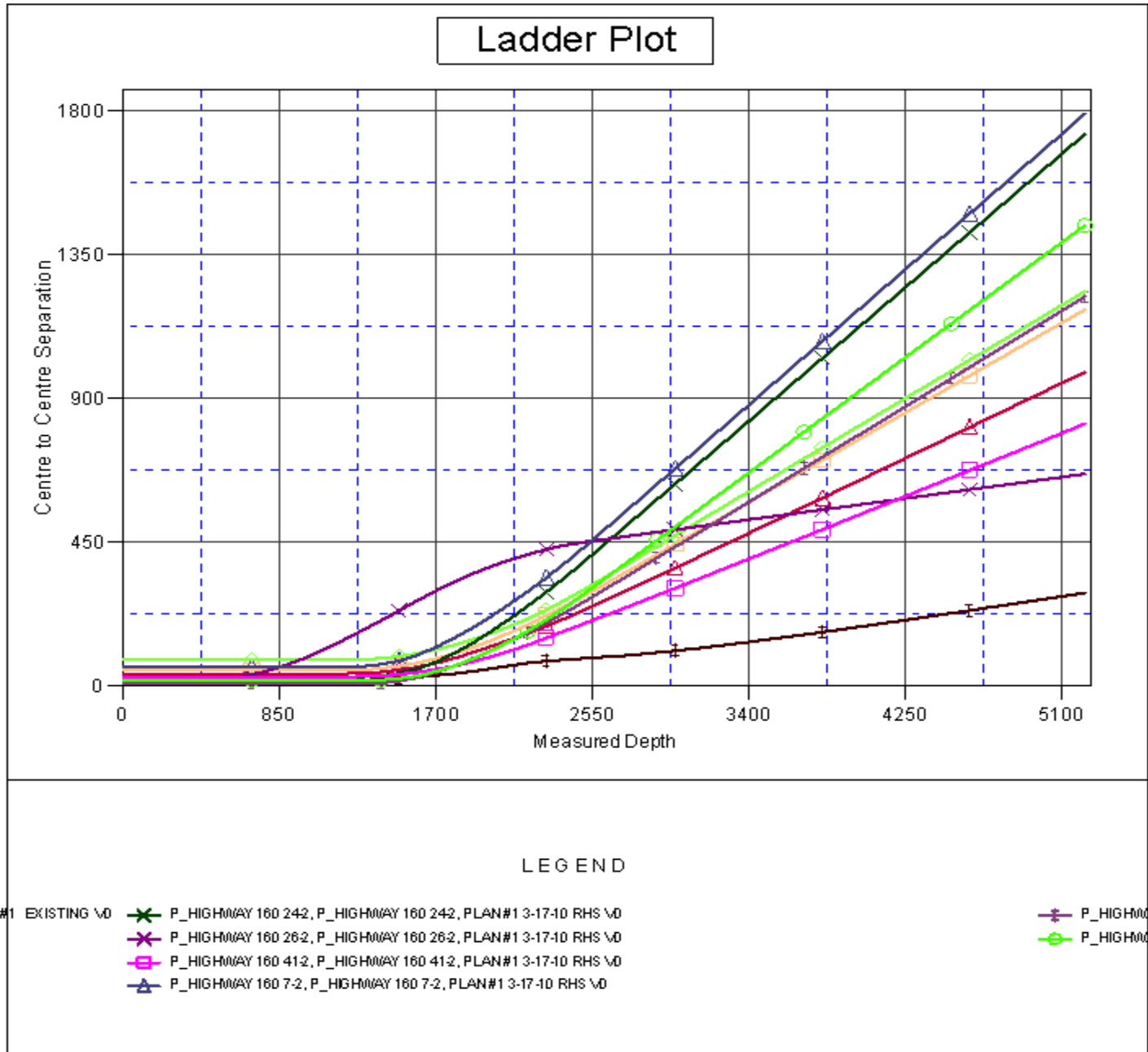


Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 1-2S
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5119.00ft (Original Well Elev)
Reference Site:	WELD_HIGHWAY 160 17-2 pad	MD Reference:	WELL @ 5119.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_HIGHWAY 160 1-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 1-2S	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	
5,000.00	4,823.37	4,709.47	4,583.73	23.08	20.03	135.14	-538.63	674.63	1,347.12	1,312.21	34.91	38.586	
5,100.00	4,917.30	4,800.04	4,670.14	23.76	20.60	135.15	-555.27	696.08	1,389.51	1,353.63	35.88	38.729	
5,200.00	5,011.23	4,890.61	4,756.55	24.44	21.17	135.15	-571.90	717.52	1,431.90	1,395.05	36.85	38.862	
5,226.37	5,036.00	4,914.49	4,779.33	24.62	21.31	135.15	-576.29	723.18	1,443.07	1,405.97	37.10	38.896	

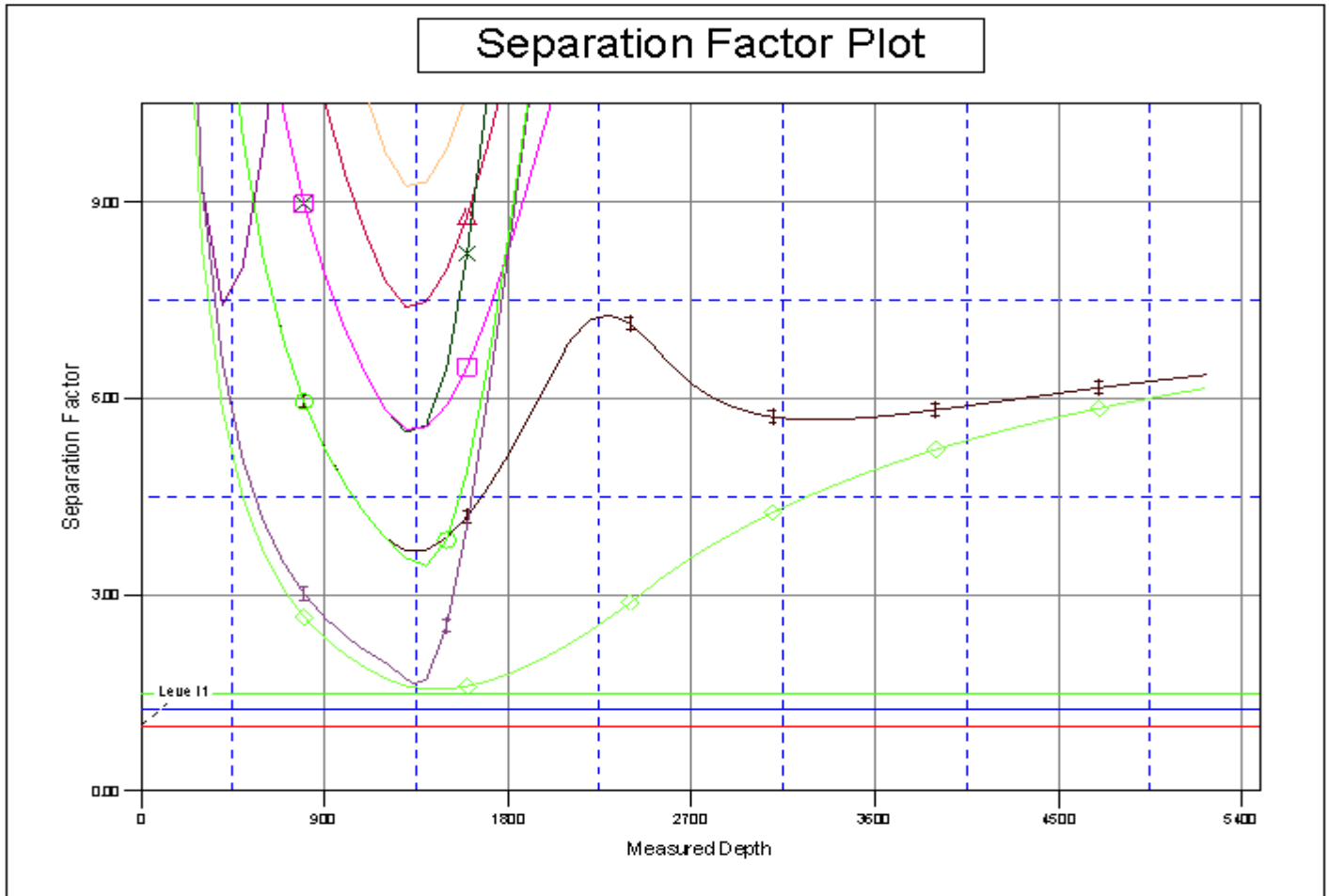
Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 1-2S
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 5119.00ft (Original Well Elev)
Reference Site:	WELD_HIGHWAY 160 17-2 pad	MD Reference:	WELL @ 5119.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_HIGHWAY 160 1-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 1-2S	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 1-2S
 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 1-2S
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 1-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 1-2S	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 1-2S
 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	