



US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_HIGHWAY 160 17-2 pad

P_HIGHWAY 160 8-2S

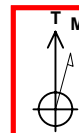
P_HIGHWAY 160 8-2S

Plan: PLAN #1 3-17-10 RHS

Standard Planning Report

17 March, 2010





Azimuths to True North
Magnetic North: 8.99°

**Magnetic Field
Strength: 53096.4snT
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
2362.58	17.44	127.80	2344.71	-107.59	138.73	1.50	127.80	175.56	Start 2831.42 hold at 2362.58 MD
5194.00	17.44	127.80	5046.00	-627.63	809.24	0.00	0.00	1024.10	TD at 5194.00












FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
4256.00	4365.95	PARKMAN
4746.00	4879.55	SUSSEX

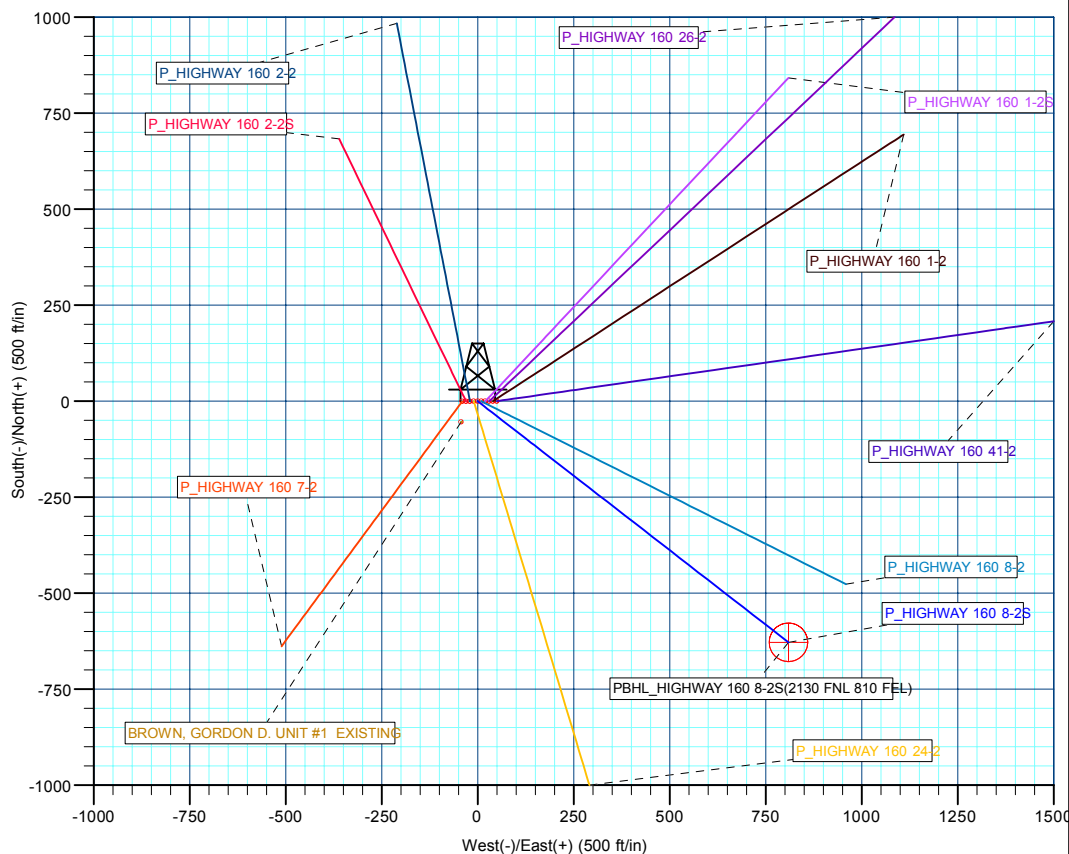
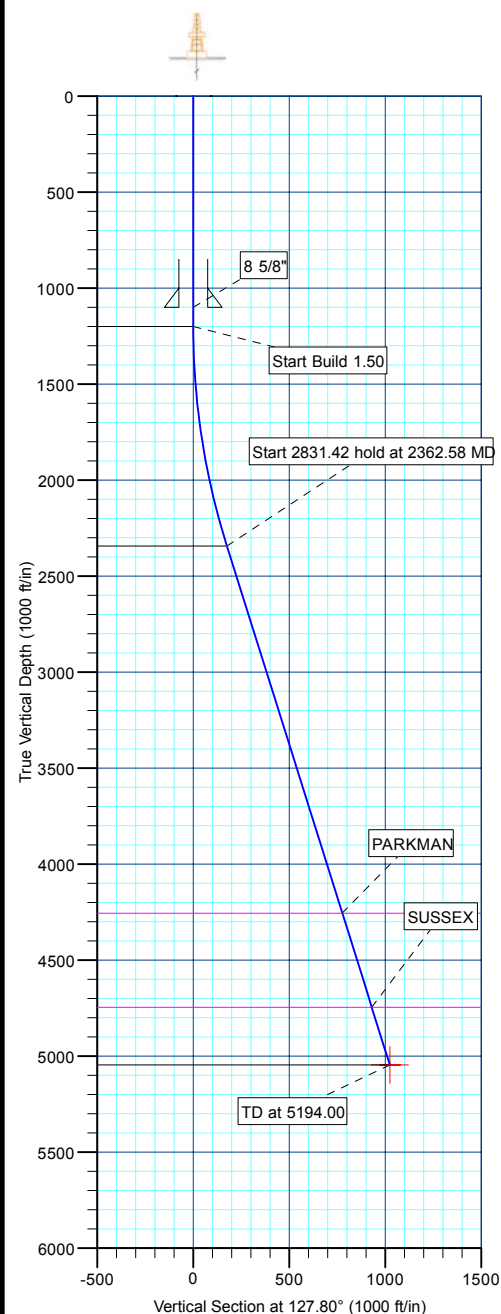
CASING DETAILS			
TVD	MD	Name	Size
1100.00	1100.00	8 5/8"	8.62

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)						
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
PBHL	5046.00	-627.63	809.24	40° 4' 53.508 N	104° 44' 15.835 W	Circle (Radius: 50.00)

WELL DETAILS: P_HIGHWAY 160 8-2S						
+N/-S	+E/-W	Northing	Ground Level: Easting	5104.00 Latitude	Longitude	Slot
0.00	0.00	1274083.65	3212479.61	40° 4' 59.711 N	104° 44' 26.246 W	

LEGEND

	BROWN, GORDON D. UNIT #1 EXISTING, BROWN, GORDON D. UNIT #1 EXISTING, BROWN, GORDON D. UNIT #1 EXISTING
	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 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
	PLAN #1 3-17-10 RHS



Plan: PLAN #1 3-17-10 RHS (P_HIGHWAY 160 8-2S/P_HIGHWAY 160 8-2S)

Created By: Robert H. Scott Date: 15:12, March 17 2010

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_HIGHWAY 160 8-2S
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 8-2S	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_HIGHWAY 160 8-2S		
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 8-2S					
Well Position	+N/-S	-0.38 ft	Northing:	1,274,083.65 ft	Latitude:	40° 4' 59.711 N
	+E/-W	-39.73 ft	Easting:	3,212,479.61 ft	Longitude:	104° 44' 26.246 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	5,104.00 ft

Wellbore	P_HIGHWAY 160 8-2S				
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	127.80

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	
2,362.58	17.44	127.80	2,344.71	-107.59	138.73	1.50	1.50	0.00	127.80	
5,194.00	17.44	127.80	5,046.00	-627.63	809.24	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 8-2S
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 8-2S	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_HIGHWAY 160 8-2S		
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	127.80	1,299.99	-0.80	1.03	1.31	1.50	1.50	0.00
1,400.00	3.00	127.80	1,399.91	-3.21	4.14	5.23	1.50	1.50	0.00
1,500.00	4.50	127.80	1,499.69	-7.22	9.30	11.77	1.50	1.50	0.00
1,600.00	6.00	127.80	1,599.27	-12.82	16.53	20.92	1.50	1.50	0.00
1,700.00	7.50	127.80	1,698.57	-20.03	25.82	32.68	1.50	1.50	0.00
1,800.00	9.00	127.80	1,797.54	-28.82	37.16	47.03	1.50	1.50	0.00
1,900.00	10.50	127.80	1,896.09	-39.20	50.54	63.96	1.50	1.50	0.00
2,000.00	12.00	127.80	1,994.16	-51.16	65.96	83.47	1.50	1.50	0.00
2,100.00	13.50	127.80	2,091.70	-64.68	83.40	105.54	1.50	1.50	0.00
2,200.00	15.00	127.80	2,188.62	-79.77	102.85	130.15	1.50	1.50	0.00
2,300.00	16.50	127.80	2,284.86	-96.40	124.30	157.30	1.50	1.50	0.00
Start 2831.42 hold at 2362.58 MD									
2,362.58	17.44	127.80	2,344.71	-107.59	138.73	175.56	1.50	1.50	0.00
2,400.00	17.44	127.80	2,380.41	-114.47	147.59	186.78	0.00	0.00	0.00
2,500.00	17.44	127.80	2,475.82	-132.83	171.27	216.74	0.00	0.00	0.00
2,600.00	17.44	127.80	2,571.22	-151.20	194.95	246.71	0.00	0.00	0.00
2,700.00	17.44	127.80	2,666.62	-169.57	218.63	276.68	0.00	0.00	0.00
2,800.00	17.44	127.80	2,762.03	-187.93	242.31	306.65	0.00	0.00	0.00
2,900.00	17.44	127.80	2,857.43	-206.30	265.99	336.62	0.00	0.00	0.00
3,000.00	17.44	127.80	2,952.84	-224.67	289.68	366.59	0.00	0.00	0.00
3,100.00	17.44	127.80	3,048.24	-243.03	313.36	396.56	0.00	0.00	0.00
3,200.00	17.44	127.80	3,143.64	-261.40	337.04	426.52	0.00	0.00	0.00
3,300.00	17.44	127.80	3,239.05	-279.76	360.72	456.49	0.00	0.00	0.00
3,400.00	17.44	127.80	3,334.45	-298.13	384.40	486.46	0.00	0.00	0.00
3,500.00	17.44	127.80	3,429.86	-316.50	408.08	516.43	0.00	0.00	0.00
3,600.00	17.44	127.80	3,525.26	-334.86	431.76	546.40	0.00	0.00	0.00
3,700.00	17.44	127.80	3,620.66	-353.23	455.44	576.37	0.00	0.00	0.00
3,800.00	17.44	127.80	3,716.07	-371.60	479.12	606.34	0.00	0.00	0.00
3,900.00	17.44	127.80	3,811.47	-389.96	502.80	636.30	0.00	0.00	0.00
4,000.00	17.44	127.80	3,906.87	-408.33	526.49	666.27	0.00	0.00	0.00
4,100.00	17.44	127.80	4,002.28	-426.70	550.17	696.24	0.00	0.00	0.00
4,200.00	17.44	127.80	4,097.68	-445.06	573.85	726.21	0.00	0.00	0.00
4,300.00	17.44	127.80	4,193.09	-463.43	597.53	756.18	0.00	0.00	0.00
PARKMAN									
4,365.95	17.44	127.80	4,256.00	-475.54	613.14	775.94	0.00	0.00	0.00
4,400.00	17.44	127.80	4,288.49	-481.79	621.21	786.15	0.00	0.00	0.00
4,500.00	17.44	127.80	4,383.89	-500.16	644.89	816.12	0.00	0.00	0.00
4,600.00	17.44	127.80	4,479.30	-518.53	668.57	846.08	0.00	0.00	0.00
4,700.00	17.44	127.80	4,574.70	-536.89	692.25	876.05	0.00	0.00	0.00
4,800.00	17.44	127.80	4,670.10	-555.26	715.93	906.02	0.00	0.00	0.00
SUSSEX									
4,879.55	17.44	127.80	4,746.00	-569.87	734.77	929.86	0.00	0.00	0.00
4,900.00	17.44	127.80	4,765.51	-573.63	739.61	935.99	0.00	0.00	0.00
5,000.00	17.44	127.80	4,860.91	-591.99	763.29	965.96	0.00	0.00	0.00
5,100.00	17.44	127.80	4,956.32	-610.36	786.98	995.93	0.00	0.00	0.00
TD at 5194.00 - PBHL_HIGHWAY 160 8-2S(2130 FNL 810 FEL)									
5,194.00	17.44	127.80	5,046.00	-627.63	809.24	1,024.10	0.00	0.00	0.00

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_HIGHWAY 160 8-2S
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 8-2S	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_HIGHWAY 160 8-2S		
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
- Shape									
PBHL_HIGHWAY 160	0.00	0.00	5,046.00	-627.63	809.24	1,273,462.97	3,213,294.19	40° 4' 53.508 N	104° 44' 15.835 W
- plan hits target center									
- Circle (radius 50.00)									

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 (°)
4,365.95	4,256.00	PARKMAN			
4,879.55	4,746.00	SUSSEX			

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
1,200.00	1,200.00	0.00	0.00	Start Build 1.50
2,362.58	2,344.71	-107.59	138.73	Start 2831.42 hold at 2362.58 MD
5,194.00	5,046.00	-627.63	809.24	TD at 5194.00



US ROCKIES REGION PLANNING

**COLORADO NORTHERN ZONE - 83
WELD_HIGHWAY 160 17-2 pad
P_HIGHWAY 160 8-2S**

**P_HIGHWAY 160 8-2S
PLAN #1 3-17-10 RHS**

Anticollision Report

17 March, 2010



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 8-2S
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 8-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 8-2S	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	5,194.00	PLAN #1 3-17-10 RHS (P_HIGHWAY 160	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
WELD_HIGHWAY 160 17-2 pad						
BROWN, GORDON D. UNIT #1 EXISTING - BROWN, C	1,200.00	1,185.00	68.73	20.77	1.433	Level 3, CC
BROWN, GORDON D. UNIT #1 EXISTING - BROWN, C	1,600.00	1,584.27	72.21	7.49	1.116	Level 2, ES
BROWN, GORDON D. UNIT #1 EXISTING - BROWN, C	1,700.00	1,683.57	76.63	7.79	1.113	Level 2, SF
P_HIGHWAY 160 1-2 - P_HIGHWAY 160 1-2 - PLAN #1	1,200.00	1,200.00	39.74	34.60	7.737	CC, ES
P_HIGHWAY 160 1-2 - P_HIGHWAY 160 1-2 - PLAN #1	1,400.00	1,397.40	42.02	36.08	7.071	SF
P_HIGHWAY 160 1-2S - P_HIGHWAY 160 1-2S - PLAN	1,295.78	1,295.41	19.80	14.26	3.575	CC
P_HIGHWAY 160 1-2S - P_HIGHWAY 160 1-2S - PLAN	1,300.00	1,299.61	19.80	14.25	3.564	ES
P_HIGHWAY 160 1-2S - P_HIGHWAY 160 1-2S - PLAN	1,400.00	1,399.05	20.53	14.57	3.447	SF
P_HIGHWAY 160 2-2 - P_HIGHWAY 160 2-2 - PLAN #1	1,200.00	1,200.00	20.15	15.01	3.923	CC, ES
P_HIGHWAY 160 2-2 - P_HIGHWAY 160 2-2 - PLAN #1	1,300.00	1,299.79	21.62	16.06	3.889	SF
P_HIGHWAY 160 2-2S - P_HIGHWAY 160 2-2S - PLAN	1,200.00	1,200.00	30.22	25.09	5.884	CC, ES
P_HIGHWAY 160 2-2S - P_HIGHWAY 160 2-2S - PLAN	1,300.00	1,299.60	31.86	26.30	5.733	SF
P_HIGHWAY 160 24-2 - P_HIGHWAY 160 24-2 - PLAN	1,200.00	1,200.00	10.07	4.94	1.961	CC, ES
P_HIGHWAY 160 24-2 - P_HIGHWAY 160 24-2 - PLAN	1,300.00	1,300.09	10.64	5.11	1.923	SF
P_HIGHWAY 160 26-2 - P_HIGHWAY 160 26-2 - PLAN	300.00	300.00	29.94	28.85	27.465	CC, ES
P_HIGHWAY 160 26-2 - P_HIGHWAY 160 26-2 - PLAN	600.00	596.68	42.59	40.14	17.378	SF
P_HIGHWAY 160 41-2 - P_HIGHWAY 160 41-2 - PLAN	1,200.00	1,200.00	49.81	44.67	9.698	CC, ES
P_HIGHWAY 160 41-2 - P_HIGHWAY 160 41-2 - PLAN	1,400.00	1,396.46	52.65	46.73	8.886	SF
P_HIGHWAY 160 7-2 - P_HIGHWAY 160 7-2 - PLAN #1	1,200.00	1,200.00	40.29	35.16	7.846	CC, ES
P_HIGHWAY 160 7-2 - P_HIGHWAY 160 7-2 - PLAN #1	1,300.00	1,299.11	42.37	36.83	7.657	SF
P_HIGHWAY 160 8-2 - P_HIGHWAY 160 8-2 - PLAN #1	1,200.00	1,200.00	9.79	4.66	1.907	CC, ES
P_HIGHWAY 160 8-2 - P_HIGHWAY 160 8-2 - PLAN #1	1,300.00	1,299.69	10.31	4.77	1.862	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	
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)		
0.00	0.00	0.00	0.00	0.00	0.00	-141.18	-53.55	-43.09	70.35				
100.00	100.00	85.00	85.00	0.10	1.70	-141.18	-53.55	-43.09	68.73	66.94	1.80	38.280	
200.00	200.00	185.00	185.00	0.32	5.40	-141.18	-53.55	-43.09	68.73	63.01	5.72	12.016	
300.00	300.00	285.00	285.00	0.55	9.40	-141.18	-53.55	-43.09	68.73	58.79	9.95	6.911	
400.00	400.00	385.00	385.00	0.77	13.40	-141.18	-53.55	-43.09	68.73	54.56	14.17	4.851	
500.00	500.00	485.00	485.00	0.99	17.40	-141.18	-53.55	-43.09	68.73	50.34	18.39	3.737	

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

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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 8-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 8-2S	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									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
600.00	600.00	585.00	585.00	1.22	21.40	-141.18	-53.55	-43.09	68.73	46.11	22.62	3.039	
700.00	700.00	685.00	685.00	1.44	25.40	-141.18	-53.55	-43.09	68.73	41.89	26.84	2.560	
800.00	800.00	785.00	785.00	1.67	29.40	-141.18	-53.55	-43.09	68.73	37.66	31.07	2.212	
900.00	900.00	885.00	885.00	1.89	33.40	-141.18	-53.55	-43.09	68.73	33.44	35.29	1.947	
1,000.00	1,000.00	985.00	985.00	2.12	37.40	-141.18	-53.55	-43.09	68.73	29.22	39.52	1.739	
1,100.00	1,100.00	1,085.00	1,085.00	2.34	41.40	-141.18	-53.55	-43.09	68.73	24.99	43.74	1.571	
1,200.00	1,200.00	1,185.00	1,185.00	2.57	45.40	-141.18	-53.55	-43.09	68.73	20.77	47.97	1.433 Level 3, CC	
1,300.00	1,299.99	1,284.99	1,284.99	2.77	49.40	92.12	-53.55	-43.09	68.77	16.60	52.17	1.318 Level 3	
1,400.00	1,399.91	1,384.91	1,384.91	2.96	53.40	95.37	-53.55	-43.09	69.03	12.67	56.35	1.225 Level 2	
1,500.00	1,499.69	1,484.69	1,484.69	3.15	57.39	100.69	-53.55	-43.09	69.94	9.40	60.54	1.155 Level 2	
1,600.00	1,599.27	1,584.27	1,584.27	3.36	61.37	107.78	-53.55	-43.09	72.21	7.49	64.71	1.116 Level 2, ES	
1,700.00	1,698.57	1,683.57	1,683.57	3.59	65.34	116.07	-53.55	-43.09	76.63	7.79	68.84	1.113 Level 2, SF	
1,800.00	1,797.54	1,782.54	1,782.54	3.85	69.30	124.74	-53.55	-43.09	83.98	11.10	72.87	1.152 Level 2	
1,900.00	1,896.09	1,881.09	1,881.09	4.13	73.24	133.01	-53.55	-43.09	94.73	17.96	76.77	1.234 Level 2	
2,000.00	1,994.16	1,979.16	1,979.16	4.45	77.17	140.33	-53.55	-43.09	109.07	28.56	80.52	1.355 Level 3	
2,100.00	2,091.70	2,076.70	2,076.70	4.81	81.07	146.50	-53.55	-43.09	126.98	42.87	84.11	1.510	
2,200.00	2,188.62	2,173.62	2,173.62	5.22	84.94	151.56	-53.55	-43.09	148.27	60.72	87.56	1.693	
2,300.00	2,284.86	2,269.86	2,269.86	5.67	88.79	155.67	-53.55	-43.09	172.78	81.92	90.86	1.902	
2,362.58	2,344.71	2,329.71	2,329.71	5.98	91.19	157.83	-53.55	-43.09	189.68	96.82	92.86	2.043	
2,400.00	2,380.41	2,365.41	2,365.41	6.17	92.62	159.04	-53.55	-43.09	200.17	105.91	94.27	2.123	
2,500.00	2,475.82	2,460.82	2,460.82	6.70	96.43	161.71	-53.55	-43.09	228.55	130.49	98.06	2.331	
2,600.00	2,571.22	2,556.22	2,556.22	7.25	100.25	163.80	-53.55	-43.09	257.29	155.41	101.89	2.525	
2,700.00	2,666.62	2,651.62	2,651.62	7.81	104.06	165.47	-53.55	-43.09	286.28	180.55	105.74	2.707	
2,800.00	2,762.03	2,747.03	2,747.03	8.38	107.88	166.83	-53.55	-43.09	315.46	205.85	109.61	2.878	
2,900.00	2,857.43	2,842.43	2,842.43	8.96	111.70	167.96	-53.55	-43.09	344.77	231.28	113.49	3.038	
3,000.00	2,952.84	2,937.84	2,937.84	9.54	115.51	168.92	-53.55	-43.09	374.18	256.81	117.38	3.188	
3,100.00	3,048.24	3,033.24	3,033.24	10.14	119.33	169.74	-53.55	-43.09	403.68	282.41	121.28	3.329	
3,200.00	3,143.64	3,128.64	3,128.64	10.73	123.15	170.44	-53.55	-43.09	433.24	308.06	125.18	3.461	
3,300.00	3,239.05	3,224.05	3,224.05	11.33	126.96	171.06	-53.55	-43.09	462.86	333.77	129.09	3.586	
3,400.00	3,334.45	3,319.45	3,319.45	11.94	130.78	171.60	-53.55	-43.09	492.51	359.51	133.00	3.703	
3,500.00	3,429.86	3,414.86	3,414.86	12.55	134.59	172.08	-53.55	-43.09	522.20	385.28	136.92	3.814	
3,600.00	3,525.26	3,510.26	3,510.26	13.16	138.41	172.51	-53.55	-43.09	551.93	411.09	140.84	3.919	
3,700.00	3,620.66	3,605.66	3,605.66	13.77	142.23	172.89	-53.55	-43.09	581.67	436.91	144.76	4.018	
3,800.00	3,716.07	3,701.07	3,701.07	14.38	146.04	173.24	-53.55	-43.09	611.44	462.75	148.69	4.112	
3,900.00	3,811.47	3,796.47	3,796.47	15.00	149.86	173.55	-53.55	-43.09	641.23	488.61	152.62	4.202	
4,000.00	3,906.87	3,891.87	3,891.87	15.62	153.67	173.84	-53.55	-43.09	671.03	514.49	156.54	4.287	
4,100.00	4,002.28	3,987.28	3,987.28	16.24	157.49	174.10	-53.55	-43.09	700.85	540.38	160.48	4.367	
4,200.00	4,097.68	4,082.68	4,082.68	16.86	161.31	174.34	-53.55	-43.09	730.68	566.27	164.41	4.444	
4,300.00	4,193.09	4,178.09	4,178.09	17.48	165.12	174.57	-53.55	-43.09	760.52	592.18	168.34	4.518	
4,400.00	4,288.49	4,273.49	4,273.49	18.10	168.94	174.77	-53.55	-43.09	790.37	618.10	172.27	4.588	
4,500.00	4,383.89	4,368.89	4,368.89	18.72	172.76	174.96	-53.55	-43.09	820.23	644.02	176.21	4.655	
4,600.00	4,479.30	4,464.30	4,464.30	19.35	176.57	175.14	-53.55	-43.09	850.10	669.95	180.15	4.719	
4,700.00	4,574.70	4,559.70	4,559.70	19.97	180.39	175.31	-53.55	-43.09	879.97	695.89	184.08	4.780	
4,800.00	4,670.10	4,655.10	4,655.10	20.60	184.20	175.46	-53.55	-43.09	909.85	721.83	188.02	4.839	
4,900.00	4,765.51	4,750.51	4,750.51	21.22	188.02	175.60	-53.55	-43.09	939.74	747.78	191.96	4.896	
5,000.00	4,860.91	4,845.91	4,845.91	21.85	191.84	175.74	-53.55	-43.09	969.63	773.73	195.90	4.950	
5,100.00	4,956.32	4,941.32	4,941.32	22.48	195.65	175.87	-53.55	-43.09	999.52	799.69	199.84	5.002	
5,194.00	5,046.00	5,031.00	5,031.00	23.07	199.24	175.98	-53.55	-43.09	1,027.63	824.09	203.54	5.049	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 8-2S
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 8-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 8-2S	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	89.46	0.38	39.73	39.74				
100.00	100.00	100.00	100.00	0.10	0.10	89.46	0.38	39.73	39.74	39.54	0.19	207.981	
200.00	200.00	200.00	200.00	0.32	0.32	89.46	0.38	39.73	39.74	39.09	0.64	62.030	
300.00	300.00	300.00	300.00	0.55	0.55	89.46	0.38	39.73	39.74	38.64	1.09	36.450	
400.00	400.00	400.00	400.00	0.77	0.77	89.46	0.38	39.73	39.74	38.20	1.54	25.808	
500.00	500.00	500.00	500.00	0.99	0.99	89.46	0.38	39.73	39.74	37.75	1.99	19.976	
600.00	600.00	600.00	600.00	1.22	1.22	89.46	0.38	39.73	39.74	37.30	2.44	16.293	
700.00	700.00	700.00	700.00	1.44	1.44	89.46	0.38	39.73	39.74	36.85	2.89	13.758	
800.00	800.00	800.00	800.00	1.67	1.67	89.46	0.38	39.73	39.74	36.40	3.34	11.905	
900.00	900.00	900.00	900.00	1.89	1.89	89.46	0.38	39.73	39.74	35.95	3.79	10.492	
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	89.46	0.38	39.73	39.74	35.50	4.24	9.378	
1,100.00	1,100.00	1,100.00	1,100.00	2.34	2.34	89.46	0.38	39.73	39.74	35.05	4.69	8.479	
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	89.46	0.38	39.73	39.74	34.60	5.14	7.737 CC, ES	
1,300.00	1,299.99	1,298.81	1,298.79	2.77	2.78	-40.78	1.30	41.16	40.20	34.65	5.55	7.241	
1,400.00	1,399.91	1,397.40	1,397.24	2.96	3.00	-47.70	4.08	45.44	42.02	36.08	5.94	7.071 SF	
1,500.00	1,499.69	1,495.57	1,495.04	3.15	3.22	-57.68	8.67	52.51	46.27	39.92	6.35	7.290	
1,600.00	1,599.27	1,593.10	1,591.87	3.36	3.45	-68.45	15.04	62.32	54.11	47.33	6.77	7.991	
1,700.00	1,698.57	1,689.81	1,687.43	3.59	3.71	-78.03	23.12	74.77	66.19	58.97	7.22	9.165	
1,800.00	1,797.54	1,785.50	1,781.43	3.85	3.99	-85.60	32.84	89.75	82.62	74.91	7.71	10.717	
1,900.00	1,896.09	1,880.00	1,873.64	4.13	4.31	-91.23	44.11	107.11	103.17	94.94	8.24	12.525	
2,000.00	1,994.16	1,973.15	1,963.80	4.45	4.67	-95.34	56.84	126.71	127.57	118.76	8.81	14.476	
2,100.00	2,091.70	2,065.37	2,052.28	4.81	5.06	-98.36	70.98	148.51	155.56	146.12	9.44	16.477	
2,200.00	2,188.62	2,160.41	2,143.13	5.22	5.51	-101.01	86.16	171.89	185.38	175.24	10.14	18.275	
2,300.00	2,284.86	2,255.04	2,233.60	5.67	5.98	-103.49	101.27	195.17	216.16	205.26	10.90	19.824	
2,362.58	2,344.71	2,314.02	2,289.99	5.98	6.28	-104.97	110.69	209.68	235.96	224.55	11.41	20.684	
2,400.00	2,380.41	2,349.23	2,323.66	6.17	6.46	-105.97	116.31	218.35	247.97	236.24	11.72	21.150	
2,500.00	2,475.82	2,443.33	2,413.62	6.70	6.96	-108.22	131.34	241.50	280.34	267.75	12.59	22.274	
2,600.00	2,571.22	2,537.44	2,503.58	7.25	7.46	-110.01	146.37	264.65	313.01	299.54	13.47	23.237	
2,700.00	2,666.62	2,631.54	2,593.55	7.81	7.97	-111.46	161.39	287.80	345.92	331.54	14.37	24.065	
2,800.00	2,762.03	2,725.64	2,683.51	8.38	8.49	-112.66	176.42	310.95	378.98	363.69	15.29	24.781	
2,900.00	2,857.43	2,819.74	2,773.47	8.96	9.02	-113.67	191.45	334.10	412.18	395.95	16.22	25.404	
3,000.00	2,952.84	2,913.84	2,863.43	9.54	9.55	-114.53	206.47	357.25	445.47	428.30	17.17	25.949	
3,100.00	3,048.24	3,007.94	2,953.40	10.14	10.09	-115.27	221.50	380.40	478.83	460.72	18.12	26.430	
3,200.00	3,143.64	3,102.04	3,043.36	10.73	10.63	-115.91	236.53	403.55	512.26	493.19	19.08	26.855	
3,300.00	3,239.05	3,196.14	3,133.32	11.33	11.17	-116.47	251.55	426.70	545.74	525.70	20.04	27.233	
3,400.00	3,334.45	3,290.24	3,223.28	11.94	11.71	-116.97	266.58	449.85	579.26	558.25	21.01	27.572	
3,500.00	3,429.86	3,384.35	3,313.25	12.55	12.26	-117.42	281.61	473.00	612.81	590.83	21.98	27.876	
3,600.00	3,525.26	3,478.45	3,403.21	13.16	12.81	-117.82	296.64	496.15	646.40	623.44	22.96	28.151	
3,700.00	3,620.66	3,572.55	3,493.17	13.77	13.36	-118.18	311.66	519.30	680.01	656.07	23.94	28.401	
3,800.00	3,716.07	3,666.65	3,583.13	14.38	13.91	-118.50	326.69	542.45	713.64	688.71	24.93	28.628	
3,900.00	3,811.47	3,760.75	3,673.10	15.00	14.46	-118.80	341.72	565.60	747.29	721.37	25.92	28.835	
4,000.00	3,906.87	3,854.85	3,763.06	15.62	15.01	-119.07	356.74	588.75	780.96	754.05	26.91	29.025	
4,100.00	4,002.28	3,948.95	3,853.02	16.24	15.57	-119.32	371.77	611.90	814.64	786.74	27.90	29.200	
4,200.00	4,097.68	4,043.05	3,942.98	16.86	16.13	-119.55	386.80	635.05	848.33	819.44	28.89	29.362	
4,300.00	4,193.09	4,137.15	4,032.95	17.48	16.68	-119.76	401.82	658.20	882.03	852.15	29.89	29.511	
4,400.00	4,288.49	4,231.25	4,122.91	18.10	17.24	-119.95	416.85	681.35	915.75	884.86	30.89	29.649	
4,500.00	4,383.89	4,325.36	4,212.87	18.72	17.80	-120.14	431.88	704.50	949.47	917.59	31.88	29.778	
4,600.00	4,479.30	4,419.46	4,302.84	19.35	18.36	-120.31	446.90	727.65	983.20	950.32	32.89	29.898	
4,700.00	4,574.70	4,513.56	4,392.80	19.97	18.92	-120.46	461.93	750.80	1,016.94	983.05	33.89	30.010	
4,800.00	4,670.10	4,607.66	4,482.76	20.60	19.48	-120.61	476.96	773.95	1,050.68	1,015.79	34.89	30.115	
4,900.00	4,765.51	4,701.76	4,572.72	21.22	20.04	-120.75	491.98	797.10	1,084.43	1,048.54	35.89	30.213	
5,000.00	4,860.91	4,795.86	4,662.69	21.85	20.60	-120.88	507.01	820.25	1,118.19	1,081.29	36.90	30.306	

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 8-2S
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 8-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 8-2S	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	4,956.32	4,889.96	4,752.65	22.48	21.16	-121.00	522.04	843.40	1,151.95	1,114.05	37.90	30.393		
5,194.00	5,046.00	4,978.42	4,837.22	23.07	21.69	-121.11	536.16	865.16	1,183.69	1,144.84	38.85	30.470		

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 8-2S
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 8-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 8-2S	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		
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		
1,295.78	1,295.77	1,295.41	1,295.40	2.76	2.78	-42.44	0.87	20.68	19.80	14.26	5.54	3.575 CC		
1,300.00	1,299.99	1,299.61	1,299.60	2.77	2.79	-42.86	0.95	20.75	19.80	14.25	5.56	3.564 ES		
1,400.00	1,399.91	1,399.05	1,398.96	2.96	3.01	-57.65	3.78	23.41	20.53	14.57	5.96	3.447 SF		
1,500.00	1,499.69	1,498.11	1,497.81	3.15	3.23	-77.79	8.48	27.82	24.35	17.98	6.37	3.821		
1,600.00	1,599.27	1,596.63	1,595.91	3.36	3.46	-95.14	15.01	33.94	33.00	26.19	6.80	4.849		
1,700.00	1,698.57	1,694.42	1,693.04	3.59	3.69	-106.66	23.32	41.72	46.50	39.24	7.25	6.412		
1,800.00	1,797.54	1,791.33	1,788.97	3.85	3.95	-113.77	33.33	51.10	64.27	56.55	7.72	8.328		
1,900.00	1,896.09	1,887.19	1,883.49	4.13	4.22	-118.24	44.98	62.02	85.89	77.68	8.21	10.464		
2,000.00	1,994.16	1,981.85	1,976.40	4.45	4.52	-121.14	58.18	74.39	111.09	102.36	8.73	12.727		
2,100.00	2,091.70	2,075.18	2,067.54	4.81	4.84	-123.08	72.84	88.13	139.70	130.42	9.29	15.045		
2,200.00	2,188.62	2,167.03	2,156.74	5.22	5.19	-124.40	88.84	103.13	171.60	161.71	9.88	17.365		
2,300.00	2,284.86	2,257.31	2,243.86	5.67	5.57	-125.30	106.09	119.29	206.66	196.14	10.52	19.644		
2,362.58	2,344.71	2,312.94	2,297.26	5.98	5.81	-125.71	117.47	129.96	230.18	219.24	10.94	21.038		
2,400.00	2,380.41	2,345.93	2,328.82	6.17	5.97	-126.07	124.48	136.53	244.71	233.49	11.21	21.825		
2,500.00	2,475.82	2,433.31	2,411.99	6.70	6.41	-126.62	144.02	154.84	284.59	272.63	11.96	23.800		
2,600.00	2,571.22	2,519.49	2,493.40	7.25	6.87	-126.77	164.64	174.17	325.95	313.22	12.73	25.597		
2,700.00	2,666.62	2,608.97	2,577.46	7.81	7.38	-126.73	187.01	195.13	368.31	354.75	13.56	27.168		
2,800.00	2,762.03	2,699.54	2,662.54	8.38	7.92	-126.68	209.69	216.38	410.70	396.29	14.40	28.514		
2,900.00	2,857.43	2,790.11	2,747.61	8.96	8.47	-126.65	232.36	237.63	453.08	437.82	15.27	29.676		
3,000.00	2,952.84	2,880.68	2,832.69	9.54	9.03	-126.62	255.03	258.88	495.47	479.33	16.15	30.688		
3,100.00	3,048.24	2,971.25	2,917.76	10.14	9.59	-126.60	277.70	280.13	537.86	520.83	17.03	31.575		
3,200.00	3,143.64	3,061.82	3,002.83	10.73	10.16	-126.57	300.38	301.37	580.25	562.32	17.93	32.356		
3,300.00	3,239.05	3,152.39	3,087.91	11.33	10.74	-126.56	323.05	322.62	622.64	603.80	18.84	33.047		
3,400.00	3,334.45	3,242.96	3,172.98	11.94	11.33	-126.54	345.72	343.87	665.03	645.27	19.76	33.662		
3,500.00	3,429.86	3,333.54	3,258.05	12.55	11.92	-126.53	368.40	365.12	707.42	686.74	20.68	34.213		
3,600.00	3,525.26	3,424.11	3,343.13	13.16	12.51	-126.51	391.07	386.37	749.81	728.20	21.60	34.707		
3,700.00	3,620.66	3,514.68	3,428.20	13.77	13.10	-126.50	413.74	407.62	792.20	769.66	22.54	35.153		
3,800.00	3,716.07	3,605.25	3,513.28	14.38	13.70	-126.49	436.42	428.87	834.59	811.11	23.47	35.557		
3,900.00	3,811.47	3,695.82	3,598.35	15.00	14.30	-126.48	459.09	450.11	876.97	852.56	24.41	35.924		
4,000.00	3,906.87	3,786.39	3,683.42	15.62	14.90	-126.48	481.76	471.36	919.36	894.01	25.36	36.259		
4,100.00	4,002.28	3,876.96	3,768.50	16.24	15.50	-126.47	504.43	492.61	961.75	935.45	26.30	36.566		
4,200.00	4,097.68	3,967.53	3,853.57	16.86	16.11	-126.46	527.11	513.86	1,004.14	976.89	27.25	36.848		
4,300.00	4,193.09	4,058.10	3,938.65	17.48	16.71	-126.46	549.78	535.11	1,046.53	1,018.33	28.20	37.108		
4,400.00	4,288.49	4,148.68	4,023.72	18.10	17.32	-126.45	572.45	556.36	1,088.92	1,059.76	29.16	37.348		
4,500.00	4,383.89	4,239.25	4,108.79	18.72	17.93	-126.44	595.13	577.61	1,131.31	1,101.20	30.11	37.570		
4,600.00	4,479.30	4,329.82	4,193.87	19.35	18.54	-126.44	617.80	598.85	1,173.70	1,142.63	31.07	37.776		
4,700.00	4,574.70	4,420.39	4,278.94	19.97	19.15	-126.44	640.47	620.10	1,216.09	1,184.06	32.03	37.968		
4,800.00	4,670.10	4,510.96	4,364.02	20.60	19.76	-126.43	663.15	641.35	1,258.48	1,225.49	32.99	38.147		
4,900.00	4,765.51	4,601.53	4,449.09	21.22	20.38	-126.43	685.82	662.60	1,300.87	1,266.92	33.95	38.315		

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 8-2S
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 8-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 8-2S	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									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.00	4,860.91	4,692.10	4,534.16	21.85	20.99	-126.42	708.49	683.85	1,343.26	1,308.34	34.92	38.471	
5,100.00	4,956.32	4,782.67	4,619.24	22.48	21.60	-126.42	731.16	705.10	1,385.65	1,349.77	35.88	38.618	
5,194.00	5,046.00	4,867.82	4,699.21	23.07	22.18	-126.42	752.48	725.07	1,425.49	1,388.71	36.79	38.749	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 8-2S
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 8-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 8-2S	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: Survey Program: 0-MWD													Offset Site Error: 0.00 ft
Reference Offset Semi Major Axis Distance													Offset Well Error: 0.00 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-91.04	-0.36	-20.15	20.15				
100.00	100.00	100.00	100.00	0.10	0.10	-91.04	-0.36	-20.15	20.15	19.96	0.19	105.468	
200.00	200.00	200.00	200.00	0.32	0.32	-91.04	-0.36	-20.15	20.15	19.51	0.64	31.455	
300.00	300.00	300.00	300.00	0.55	0.55	-91.04	-0.36	-20.15	20.15	19.06	1.09	18.484	
400.00	400.00	400.00	400.00	0.77	0.77	-91.04	-0.36	-20.15	20.15	18.61	1.54	13.087	
500.00	500.00	500.00	500.00	0.99	0.99	-91.04	-0.36	-20.15	20.15	18.16	1.99	10.130	
600.00	600.00	600.00	600.00	1.22	1.22	-91.04	-0.36	-20.15	20.15	17.71	2.44	8.262	
700.00	700.00	700.00	700.00	1.44	1.44	-91.04	-0.36	-20.15	20.15	17.26	2.89	6.976	
800.00	800.00	800.00	800.00	1.67	1.67	-91.04	-0.36	-20.15	20.15	16.81	3.34	6.037	
900.00	900.00	900.00	900.00	1.89	1.89	-91.04	-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	-91.04	-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	-91.04	-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	-91.04	-0.36	-20.15	20.15	15.01	5.14	3.923 CC, ES	
1,300.00	1,299.99	1,299.79	1,299.77	2.77	2.79	147.88	1.34	-20.48	21.62	16.06	5.56	3.889 SF	
1,400.00	1,399.91	1,399.07	1,398.91	2.96	3.02	162.77	6.42	-21.46	27.37	21.41	5.96	4.593	
1,500.00	1,499.69	1,497.34	1,496.80	3.15	3.24	176.35	14.77	-23.08	39.25	32.89	6.36	6.174	
1,600.00	1,599.27	1,594.11	1,592.86	3.36	3.47	-174.68	26.21	-25.29	57.57	50.81	6.76	8.521	
1,700.00	1,698.57	1,688.94	1,686.57	3.59	3.72	-169.17	40.50	-28.05	81.92	74.76	7.16	11.448	
1,800.00	1,797.54	1,781.43	1,777.45	3.85	3.99	-165.69	57.36	-31.32	111.90	104.34	7.56	14.810	
1,900.00	1,896.09	1,872.17	1,866.04	4.13	4.28	-163.37	76.63	-35.05	147.12	139.16	7.96	18.489	
2,000.00	1,994.16	1,964.43	1,955.92	4.45	4.61	-161.96	97.03	-38.99	185.57	177.19	8.37	22.168	
2,100.00	2,091.70	2,055.71	2,044.87	4.81	4.94	-161.17	117.21	-42.90	226.34	217.55	8.79	25.754	
2,200.00	2,188.62	2,145.98	2,132.81	5.22	5.29	-160.74	137.17	-46.76	269.37	260.16	9.21	29.247	
2,300.00	2,284.86	2,235.15	2,219.69	5.67	5.65	-160.52	156.89	-50.58	314.62	304.98	9.64	32.649	
2,362.58	2,344.71	2,290.37	2,273.50	5.98	5.87	-160.45	169.10	-52.94	344.05	334.15	9.91	34.735	
2,400.00	2,380.41	2,323.26	2,305.53	6.17	6.00	-160.52	176.38	-54.35	361.90	351.81	10.09	35.859	
2,500.00	2,475.82	2,411.13	2,391.15	6.70	6.37	-160.68	195.81	-58.11	409.62	399.02	10.60	38.646	
2,600.00	2,571.22	2,499.01	2,476.77	7.25	6.74	-160.80	215.24	-61.87	457.34	446.22	11.12	41.144	
2,700.00	2,666.62	2,586.89	2,562.39	7.81	7.11	-160.90	234.67	-65.63	505.05	493.41	11.64	43.390	
2,800.00	2,762.03	2,674.77	2,648.01	8.38	7.49	-160.99	254.11	-69.39	552.77	540.60	12.17	45.416	
2,900.00	2,857.43	2,762.64	2,733.63	8.96	7.88	-161.06	273.54	-73.15	600.49	587.78	12.71	47.252	
3,000.00	2,952.84	2,850.52	2,819.25	9.54	8.27	-161.12	292.97	-76.91	648.21	634.96	13.25	48.919	
3,100.00	3,048.24	2,938.40	2,904.87	10.14	8.66	-161.17	312.40	-80.67	695.93	682.13	13.80	50.438	
3,200.00	3,143.64	3,026.28	2,990.49	10.73	9.05	-161.21	331.84	-84.43	743.65	729.30	14.35	51.827	
3,300.00	3,239.05	3,114.15	3,076.11	11.33	9.44	-161.25	351.27	-88.19	791.37	776.47	14.90	53.101	
3,400.00	3,334.45	3,202.03	3,161.73	11.94	9.84	-161.29	370.70	-91.95	839.10	823.64	15.46	54.273	
3,500.00	3,429.86	3,289.91	3,247.35	12.55	10.23	-161.32	390.14	-95.71	886.82	870.80	16.02	55.352	
3,600.00	3,525.26	3,377.79	3,332.97	13.16	10.63	-161.35	409.57	-99.47	934.54	917.96	16.58	56.351	
3,700.00	3,620.66	3,465.66	3,418.59	13.77	11.03	-161.37	429.00	-103.23	982.26	965.11	17.15	57.276	
3,800.00	3,716.07	3,553.54	3,504.21	14.38	11.43	-161.39	448.43	-106.99	1,029.98	1,012.27	17.72	58.135	
3,900.00	3,811.47	3,641.42	3,589.82	15.00	11.84	-161.42	467.87	-110.76	1,077.71	1,059.42	18.29	58.935	
4,000.00	3,906.87	3,729.30	3,675.44	15.62	12.24	-161.44	487.30	-114.52	1,125.43	1,106.57	18.86	59.682	
4,100.00	4,002.28	3,817.17	3,761.06	16.24	12.64	-161.45	506.73	-118.28	1,173.15	1,153.72	19.43	60.380	
4,200.00	4,097.68	3,905.05	3,846.68	16.86	13.05	-161.47	526.16	-122.04	1,220.87	1,200.87	20.00	61.034	
4,300.00	4,193.09	3,992.93	3,932.30	17.48	13.45	-161.48	545.60	-125.80	1,268.60	1,248.02	20.58	61.647	
4,400.00	4,288.49	4,080.81	4,017.92	18.10	13.86	-161.50	565.03	-129.56	1,316.32	1,295.17	21.15	62.223	
4,500.00	4,383.89	4,168.68	4,103.54	18.72	14.27	-161.51	584.46	-133.32	1,364.04	1,342.31	21.73	62.766	
4,600.00	4,479.30	4,256.56	4,189.16	19.35	14.68	-161.52	603.89	-137.08	1,411.77	1,389.46	22.31	63.278	
4,700.00	4,574.70	4,344.44	4,274.78	19.97	15.08	-161.53	623.33	-140.84	1,459.49	1,436.60	22.89	63.762	
4,800.00	4,670.10	4,432.32	4,360.40	20.60	15.49	-161.54	642.76	-144.60	1,507.21	1,483.74	23.47	64.219	
4,900.00	4,765.51	4,520.19	4,446.02	21.22	15.90	-161.55	662.19	-148.36	1,554.93	1,530.88	24.05	64.653	
5,000.00	4,860.91	4,608.07	4,531.64	21.85	16.31	-161.56	681.63	-152.12	1,602.66	1,578.03	24.63	65.064	

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 8-2S
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 8-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 8-2S	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	4,956.32	4,695.95	4,617.26	22.48	16.72	-161.57	701.06	-155.88	1,650.38	1,625.17	25.21	65.454		
5,194.00	5,046.00	4,778.56	4,697.74	23.07	17.10	-161.58	719.33	-159.42	1,695.24	1,669.48	25.76	65.803		

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 8-2S
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 8-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 8-2S	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	
0.00	0.00	0.00	0.00	0.00	0.00	-90.69	-0.36	-30.22	30.22				
100.00	100.00	100.00	100.00	0.10	0.10	-90.69	-0.36	-30.22	30.22	30.03	0.19	158.187	
200.00	200.00	200.00	200.00	0.32	0.32	-90.69	-0.36	-30.22	30.22	29.58	0.64	47.179	
300.00	300.00	300.00	300.00	0.55	0.55	-90.69	-0.36	-30.22	30.22	29.13	1.09	27.724	
400.00	400.00	400.00	400.00	0.77	0.77	-90.69	-0.36	-30.22	30.22	28.68	1.54	19.629	
500.00	500.00	500.00	500.00	0.99	0.99	-90.69	-0.36	-30.22	30.22	28.23	1.99	15.193	
600.00	600.00	600.00	600.00	1.22	1.22	-90.69	-0.36	-30.22	30.22	27.78	2.44	12.393	
700.00	700.00	700.00	700.00	1.44	1.44	-90.69	-0.36	-30.22	30.22	27.33	2.89	10.464	
800.00	800.00	800.00	800.00	1.67	1.67	-90.69	-0.36	-30.22	30.22	26.88	3.34	9.055	
900.00	900.00	900.00	900.00	1.89	1.89	-90.69	-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	-90.69	-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	-90.69	-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	-90.69	-0.36	-30.22	30.22	25.09	5.14	5.884 CC, ES	
1,300.00	1,299.99	1,299.60	1,299.59	2.77	2.79	145.07	0.80	-30.78	31.86	26.30	5.56	5.733 SF	
1,400.00	1,399.91	1,398.82	1,398.73	2.96	3.01	153.71	4.29	-32.47	37.39	31.43	5.96	6.278	
1,500.00	1,499.69	1,497.27	1,496.97	3.15	3.23	163.26	10.04	-35.25	47.86	41.51	6.35	7.534	
1,600.00	1,599.27	1,594.59	1,593.89	3.36	3.46	171.05	17.97	-39.08	63.80	57.05	6.75	9.455	
1,700.00	1,698.57	1,690.43	1,689.08	3.59	3.70	176.65	27.94	-43.91	85.17	78.03	7.14	11.928	
1,800.00	1,797.54	1,784.46	1,782.18	3.85	3.94	-179.45	39.81	-49.65	111.72	104.19	7.53	14.838	
1,900.00	1,896.09	1,876.38	1,872.85	4.13	4.20	-176.70	53.41	-56.22	143.23	135.31	7.92	18.095	
2,000.00	1,994.16	1,965.93	1,960.80	4.45	4.48	-174.73	68.54	-63.54	179.47	171.17	8.30	21.627	
2,100.00	2,091.70	2,053.47	2,046.39	4.81	4.77	-173.25	85.10	-71.55	220.22	211.54	8.68	25.378	
2,200.00	2,188.62	2,143.23	2,133.98	5.22	5.10	-172.17	102.76	-80.09	264.13	255.07	9.07	29.133	
2,300.00	2,284.86	2,231.83	2,220.44	5.67	5.43	-171.43	120.20	-88.51	310.41	300.95	9.45	32.833	
2,362.58	2,344.71	2,286.67	2,273.95	5.98	5.64	-171.08	130.98	-93.73	340.54	330.84	9.70	35.120	
2,400.00	2,380.41	2,319.31	2,305.80	6.17	5.76	-170.95	137.41	-96.84	358.82	348.95	9.87	36.358	
2,500.00	2,475.82	2,406.54	2,390.92	6.70	6.11	-170.66	154.57	-105.14	407.68	397.35	10.34	39.445	
2,600.00	2,571.22	2,493.77	2,476.05	7.25	6.46	-170.44	171.73	-113.43	456.56	445.75	10.81	42.233	
2,700.00	2,666.62	2,581.00	2,561.17	7.81	6.82	-170.25	188.89	-121.73	505.43	494.14	11.29	44.758	
2,800.00	2,762.03	2,668.23	2,646.29	8.38	7.18	-170.10	206.06	-130.03	554.31	542.53	11.78	47.054	
2,900.00	2,857.43	2,755.46	2,731.41	8.96	7.55	-169.97	223.22	-138.33	603.20	590.92	12.27	49.147	
3,000.00	2,952.84	2,842.69	2,816.54	9.54	7.92	-169.87	240.38	-146.63	652.08	639.31	12.77	51.060	
3,100.00	3,048.24	2,929.92	2,901.66	10.14	8.29	-169.77	257.54	-154.93	700.97	687.69	13.27	52.814	
3,200.00	3,143.64	3,017.16	2,986.78	10.73	8.67	-169.69	274.71	-163.23	749.85	736.07	13.78	54.426	
3,300.00	3,239.05	3,104.39	3,071.90	11.33	9.05	-169.62	291.87	-171.53	798.74	784.45	14.29	55.912	
3,400.00	3,334.45	3,191.62	3,157.03	11.94	9.43	-169.56	309.03	-179.82	847.63	832.83	14.80	57.284	
3,500.00	3,429.86	3,278.85	3,242.15	12.55	9.82	-169.50	326.19	-188.12	896.52	881.21	15.31	58.554	
3,600.00	3,525.26	3,366.08	3,327.27	13.16	10.20	-169.45	343.36	-196.42	945.41	929.58	15.83	59.734	
3,700.00	3,620.66	3,453.31	3,412.39	13.77	10.59	-169.41	360.52	-204.72	994.30	977.95	16.35	60.831	
3,800.00	3,716.07	3,540.54	3,497.52	14.38	10.98	-169.37	377.68	-213.02	1,043.19	1,026.32	16.87	61.854	
3,900.00	3,811.47	3,627.77	3,582.64	15.00	11.37	-169.33	394.85	-221.32	1,092.08	1,074.69	17.39	62.810	
4,000.00	3,906.87	3,715.01	3,667.76	15.62	11.76	-169.30	412.01	-229.62	1,140.97	1,123.06	17.91	63.704	
4,100.00	4,002.28	3,802.24	3,752.89	16.24	12.15	-169.27	429.17	-237.92	1,189.86	1,171.43	18.44	64.543	
4,200.00	4,097.68	3,889.47	3,838.01	16.86	12.55	-169.24	446.33	-246.21	1,238.76	1,219.79	18.96	65.331	
4,300.00	4,193.09	3,976.70	3,923.13	17.48	12.94	-169.21	463.50	-254.51	1,287.65	1,268.16	19.49	66.072	
4,400.00	4,288.49	4,063.93	4,008.25	18.10	13.34	-169.19	480.66	-262.81	1,336.54	1,316.52	20.02	66.770	
4,500.00	4,383.89	4,151.16	4,093.38	18.72	13.73	-169.16	497.82	-271.11	1,385.43	1,364.89	20.55	67.430	
4,600.00	4,479.30	4,238.39	4,178.50	19.35	14.13	-169.14	514.98	-279.41	1,434.33	1,413.25	21.08	68.053	
4,700.00	4,574.70	4,325.62	4,263.62	19.97	14.52	-169.12	532.15	-287.71	1,483.22	1,461.61	21.61	68.643	
4,800.00	4,670.10	4,412.86	4,348.74	20.60	14.92	-169.10	549.31	-296.01	1,532.11	1,509.97	22.14	69.202	
4,900.00	4,765.51	4,500.09	4,433.87	21.22	15.32	-169.09	566.47	-304.31	1,581.01	1,558.33	22.67	69.733	
5,000.00	4,860.91	4,587.32	4,518.99	21.85	15.72	-169.07	583.63	-312.60	1,629.90	1,606.69	23.21	70.237	

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 8-2S
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 8-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 8-2S	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	4,956.32	4,674.55	4,604.11	22.48	16.11	-169.05	600.80	-320.90	1,678.79	1,655.05	23.74	70.716	
5,194.00	5,046.00	4,756.55	4,684.13	23.07	16.49	-169.04	616.93	-328.70	1,724.75	1,700.51	24.24	71.146	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 8-2S
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 8-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 8-2S	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									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-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, ES	
1,300.00	1,299.99	1,300.09	1,300.07	2.77	2.77	137.50	-1.67	-9.57	10.64	5.11	5.53	1.923 SF	
1,400.00	1,399.91	1,400.08	1,399.92	2.96	2.94	126.24	-6.69	-8.06	12.68	6.79	5.89	2.153	
1,500.00	1,499.69	1,499.90	1,499.36	3.15	3.13	114.35	-15.02	-5.55	16.78	10.51	6.27	2.675	
1,600.00	1,599.27	1,599.46	1,598.17	3.36	3.34	105.26	-26.62	-2.06	23.18	16.49	6.69	3.463	
1,700.00	1,698.57	1,698.67	1,696.15	3.59	3.58	99.10	-41.45	2.41	31.83	24.67	7.16	4.448	
1,800.00	1,797.54	1,797.44	1,793.12	3.85	3.85	94.98	-59.44	7.82	42.63	34.97	7.67	5.561	
1,900.00	1,896.09	1,895.73	1,888.91	4.13	4.18	92.16	-80.50	14.16	55.50	47.26	8.24	6.739	
2,000.00	1,994.16	1,994.75	1,985.04	4.45	4.54	91.35	-103.24	21.01	69.40	60.53	8.87	7.820	
2,100.00	2,091.70	2,093.75	2,081.15	4.81	4.94	92.55	-125.99	27.86	83.39	73.80	9.58	8.700	
2,200.00	2,188.62	2,192.65	2,177.16	5.22	5.35	94.89	-148.71	34.70	97.61	87.23	10.37	9.409	
2,300.00	2,284.86	2,291.39	2,273.01	5.67	5.77	97.91	-171.39	41.53	112.31	101.06	11.24	9.989	
2,362.58	2,344.71	2,353.06	2,332.89	5.98	6.05	100.01	-185.56	45.80	121.88	110.05	11.82	10.310	
2,400.00	2,380.41	2,389.91	2,368.66	6.17	6.21	101.33	-194.02	48.35	127.73	115.56	12.18	10.491	
2,500.00	2,475.82	2,488.39	2,464.26	6.70	6.66	104.32	-216.64	55.16	143.66	130.53	13.14	10.936	
2,600.00	2,571.22	2,586.86	2,559.86	7.25	7.11	106.71	-239.27	61.97	159.90	145.79	14.11	11.332	
2,700.00	2,666.62	2,685.33	2,655.46	7.81	7.57	108.66	-261.89	68.78	176.36	161.26	15.10	11.683	
2,800.00	2,762.03	2,783.81	2,751.05	8.38	8.04	110.27	-284.51	75.60	192.98	176.89	16.09	11.995	
2,900.00	2,857.43	2,882.28	2,846.65	8.96	8.51	111.63	-307.13	82.41	209.73	192.64	17.09	12.274	
3,000.00	2,952.84	2,980.76	2,942.25	9.54	8.99	112.79	-329.75	89.22	226.58	208.49	18.09	12.523	
3,100.00	3,048.24	3,079.23	3,037.85	10.14	9.47	113.79	-352.38	96.03	243.50	224.40	19.10	12.747	
3,200.00	3,143.64	3,177.71	3,133.45	10.73	9.95	114.65	-375.00	102.84	260.49	240.38	20.12	12.949	
3,300.00	3,239.05	3,276.18	3,229.05	11.33	10.43	115.42	-397.62	109.65	277.53	256.40	21.13	13.132	
3,400.00	3,334.45	3,374.66	3,324.65	11.94	10.92	116.09	-420.24	116.47	294.61	272.46	22.15	13.299	
3,500.00	3,429.86	3,473.13	3,420.25	12.55	11.41	116.69	-442.86	123.28	311.73	288.55	23.18	13.451	
3,600.00	3,525.26	3,571.61	3,515.84	13.16	11.90	117.23	-465.49	130.09	328.87	304.67	24.20	13.590	
3,700.00	3,620.66	3,670.08	3,611.44	13.77	12.39	117.71	-488.11	136.90	346.04	320.82	25.23	13.718	
3,800.00	3,716.07	3,768.56	3,707.04	14.38	12.88	118.15	-510.73	143.71	363.24	336.98	26.25	13.836	
3,900.00	3,811.47	3,867.03	3,802.64	15.00	13.37	118.55	-533.35	150.52	380.45	353.17	27.28	13.946	
4,000.00	3,906.87	3,965.51	3,898.24	15.62	13.87	118.91	-555.98	157.34	397.67	369.36	28.31	14.047	
4,100.00	4,002.28	4,063.98	3,993.84	16.24	14.36	119.24	-578.60	164.15	414.92	385.58	29.34	14.142	
4,200.00	4,097.68	4,162.46	4,089.44	16.86	14.86	119.55	-601.22	170.96	432.17	401.80	30.37	14.230	
4,300.00	4,193.09	4,260.93	4,185.04	17.48	15.35	119.84	-623.84	177.77	449.44	418.03	31.40	14.312	
4,400.00	4,288.49	4,359.41	4,280.63	18.10	15.85	120.10	-646.46	184.58	466.71	434.28	32.44	14.389	
4,500.00	4,383.89	4,457.88	4,376.23	18.72	16.35	120.34	-669.09	191.40	484.00	450.53	33.47	14.461	
4,600.00	4,479.30	4,556.36	4,471.83	19.35	16.85	120.57	-691.71	198.21	501.29	466.79	34.50	14.529	
4,700.00	4,574.70	4,654.83	4,567.43	19.97	17.35	120.78	-714.33	205.02	518.59	483.05	35.53	14.594	
4,800.00	4,670.10	4,753.30	4,663.03	20.60	17.84	120.98	-736.95	211.83	535.89	499.32	36.57	14.654	
4,900.00	4,765.51	4,851.78	4,758.63	21.22	18.34	121.17	-759.57	218.64	553.20	515.60	37.60	14.712	
5,000.00	4,860.91	4,950.25	4,854.23	21.85	18.84	121.34	-782.20	225.45	570.52	531.88	38.64	14.766	

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 8-2S
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 8-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 8-2S	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									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.00	4,956.32	5,048.73	4,949.83	22.48	19.34	121.50	-804.82	232.27	587.84	548.17	39.67	14.818	
5,194.00	5,046.00	5,141.30	5,039.69	23.07	19.82	121.65	-826.08	238.67	604.13	563.49	40.64	14.864	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 8-2S
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 8-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 8-2S	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						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	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 CC, ES	
400.00	400.00	399.21	399.19	0.77	0.76	87.83	1.18	31.19	31.22	29.69	1.53	20.344	
500.00	500.00	498.18	498.02	0.99	0.99	82.31	4.71	34.91	35.29	33.30	1.98	17.787	
600.00	600.00	596.68	596.15	1.22	1.23	75.59	10.56	41.08	42.59	40.14	2.45	17.378 SF	
700.00	700.00	694.48	693.23	1.44	1.50	69.41	18.65	49.63	53.44	50.50	2.94	18.158	
800.00	800.00	791.36	788.95	1.67	1.80	64.44	28.91	60.46	67.92	64.45	3.47	19.597	
900.00	900.00	887.12	883.02	1.89	2.15	60.70	41.23	73.47	85.94	81.92	4.02	21.373	
1,000.00	1,000.00	981.57	975.16	2.12	2.54	57.92	55.50	88.52	107.39	102.78	4.61	23.291	
1,100.00	1,100.00	1,074.54	1,065.13	2.34	2.97	55.85	71.57	105.49	132.16	126.92	5.24	25.240	
1,200.00	1,200.00	1,165.86	1,152.73	2.57	3.45	54.29	89.30	124.21	160.12	154.22	5.90	27.155	
1,300.00	1,299.99	1,255.45	1,237.84	2.77	3.97	-74.61	108.56	144.54	190.83	185.21	5.62	33.950	
1,400.00	1,399.91	1,343.23	1,320.32	2.96	4.53	-75.93	129.19	166.32	223.98	217.93	6.05	36.999	
1,500.00	1,499.69	1,429.06	1,400.06	3.15	5.12	-77.31	151.04	189.39	259.62	253.12	6.50	39.954	
1,600.00	1,599.27	1,512.85	1,476.94	3.36	5.74	-78.66	173.94	213.56	297.77	290.81	6.96	42.806	
1,700.00	1,698.57	1,603.01	1,559.03	3.59	6.45	-80.14	199.59	240.64	337.42	329.95	7.46	45.213	
1,800.00	1,797.54	1,694.01	1,641.87	3.85	7.17	-81.60	225.48	267.98	377.07	369.06	8.00	47.107	
1,900.00	1,896.09	1,784.79	1,724.52	4.13	7.90	-83.04	251.32	295.25	416.80	408.21	8.59	48.549	
2,000.00	1,994.16	1,875.31	1,806.92	4.45	8.63	-84.46	277.08	322.44	456.71	447.50	9.21	49.585	
2,100.00	2,091.70	1,965.49	1,889.01	4.81	9.36	-85.86	302.74	349.53	496.90	487.01	9.89	50.260	
2,200.00	2,188.62	2,055.27	1,970.75	5.22	10.09	-87.23	328.29	376.51	537.47	526.85	10.62	50.618	
2,300.00	2,284.86	2,144.59	2,052.06	5.67	10.82	-88.58	353.71	403.34	578.50	567.09	11.41	50.710	
2,362.58	2,344.71	2,200.24	2,102.72	5.98	11.28	-89.41	369.55	420.06	604.46	592.53	11.93	50.655	
2,400.00	2,380.41	2,233.44	2,132.95	6.17	11.55	-90.15	379.00	430.03	620.10	607.83	12.27	50.557	
2,500.00	2,475.82	2,322.18	2,213.73	6.70	12.28	-91.94	404.25	456.69	662.28	649.10	13.18	50.260	
2,600.00	2,571.22	2,410.92	2,294.52	7.25	13.00	-93.53	429.51	483.35	704.95	690.84	14.12	49.933	
2,700.00	2,666.62	2,499.66	2,375.30	7.81	13.73	-94.94	454.76	510.01	748.03	732.95	15.08	49.599	
2,800.00	2,762.03	2,588.40	2,456.09	8.38	14.46	-96.20	480.01	536.67	791.45	775.39	16.06	49.272	
2,900.00	2,857.43	2,677.14	2,536.87	8.96	15.19	-97.33	505.27	563.33	835.16	818.10	17.06	48.960	
3,000.00	2,952.84	2,765.88	2,617.66	9.54	15.92	-98.36	530.52	589.99	879.11	861.05	18.06	48.665	
3,100.00	3,048.24	2,854.62	2,698.44	10.14	16.65	-99.28	555.77	616.65	923.28	904.20	19.08	48.391	
3,200.00	3,143.64	2,943.36	2,779.23	10.73	17.39	-100.13	581.03	643.31	967.62	947.52	20.10	48.136	
3,300.00	3,239.05	3,032.10	2,860.01	11.33	18.12	-100.90	606.28	669.97	1,012.12	990.99	21.13	47.900	
3,400.00	3,334.45	3,120.84	2,940.80	11.94	18.85	-101.61	631.54	696.63	1,056.76	1,034.59	22.16	47.682	
3,500.00	3,429.86	3,209.57	3,021.58	12.55	19.58	-102.26	656.79	723.29	1,101.51	1,078.31	23.20	47.480	
3,600.00	3,525.26	3,298.31	3,102.37	13.16	20.32	-102.86	682.04	749.95	1,146.38	1,122.14	24.24	47.294	
3,700.00	3,620.66	3,387.05	3,183.15	13.77	21.05	-103.42	707.30	776.61	1,191.34	1,166.05	25.28	47.122	
3,800.00	3,716.07	3,475.79	3,263.94	14.38	21.78	-103.93	732.55	803.27	1,236.38	1,210.05	26.33	46.963	
3,900.00	3,811.47	3,564.53	3,344.72	15.00	22.52	-104.41	757.80	829.93	1,281.50	1,254.12	27.37	46.816	
4,000.00	3,906.87	3,653.27	3,425.51	15.62	23.25	-104.86	783.06	856.59	1,326.68	1,298.26	28.42	46.679	
4,100.00	4,002.28	3,742.01	3,506.29	16.24	23.98	-105.28	808.31	883.25	1,371.93	1,342.46	29.47	46.552	
4,200.00	4,097.68	3,830.75	3,587.08	16.86	24.72	-105.67	833.57	909.90	1,417.23	1,386.71	30.52	46.434	
4,300.00	4,193.09	3,919.49	3,667.86	17.48	25.45	-106.04	858.82	936.56	1,462.58	1,431.01	31.57	46.324	
4,400.00	4,288.49	4,008.23	3,748.65	18.10	26.19	-106.39	884.07	963.22	1,507.98	1,475.35	32.63	46.221	
4,500.00	4,383.89	4,096.97	3,829.43	18.72	26.92	-106.71	909.33	989.88	1,553.42	1,519.74	33.68	46.125	
4,600.00	4,479.30	4,185.71	3,910.22	19.35	27.66	-107.02	934.58	1,016.54	1,598.89	1,564.16	34.73	46.035	
4,700.00	4,574.70	4,274.45	3,991.00	19.97	28.39	-107.31	959.84	1,043.20	1,644.41	1,608.62	35.79	45.950	
4,800.00	4,670.10	4,363.19	4,071.79	20.60	29.13	-107.58	985.09	1,069.86	1,689.95	1,653.11	36.84	45.871	
4,900.00	4,765.51	4,451.93	4,152.57	21.22	29.86	-107.85	1,010.34	1,096.52	1,735.52	1,697.63	37.90	45.797	
5,000.00	4,860.91	4,540.67	4,233.36	21.85	30.60	-108.09	1,035.60	1,123.18	1,781.12	1,742.17	38.95	45.726	

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 8-2S
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 8-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 8-2S	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	4,956.32	4,629.41	4,314.14	22.48	31.33	-108.33	1,060.85	1,149.84	1,826.75	1,786.74	40.01	45.660		
5,194.00	5,046.00	4,712.83	4,390.08	23.07	32.02	-108.54	1,084.59	1,174.90	1,869.66	1,828.66	41.00	45.601		

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 8-2S
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 8-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 8-2S	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									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	89.58	0.36	49.81	49.81				
100.00	100.00	100.00	100.00	0.10	0.10	89.58	0.36	49.81	49.81	49.62	0.19	260.704	
200.00	200.00	200.00	200.00	0.32	0.32	89.58	0.36	49.81	49.81	49.17	0.64	77.754	
300.00	300.00	300.00	300.00	0.55	0.55	89.58	0.36	49.81	49.81	48.72	1.09	45.690	
400.00	400.00	400.00	400.00	0.77	0.77	89.58	0.36	49.81	49.81	48.27	1.54	32.350	
500.00	500.00	500.00	500.00	0.99	0.99	89.58	0.36	49.81	49.81	47.82	1.99	25.039	
600.00	600.00	600.00	600.00	1.22	1.22	89.58	0.36	49.81	49.81	47.37	2.44	20.424	
700.00	700.00	700.00	700.00	1.44	1.44	89.58	0.36	49.81	49.81	46.92	2.89	17.245	
800.00	800.00	800.00	800.00	1.67	1.67	89.58	0.36	49.81	49.81	46.47	3.34	14.922	
900.00	900.00	900.00	900.00	1.89	1.89	89.58	0.36	49.81	49.81	46.02	3.79	13.151	
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	89.58	0.36	49.81	49.81	45.57	4.24	11.756	
1,100.00	1,100.00	1,100.00	1,100.00	2.34	2.34	89.58	0.36	49.81	49.81	45.12	4.69	10.628	
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	89.58	0.36	49.81	49.81	44.67	5.14	9.698 CC, ES	
1,300.00	1,299.99	1,298.29	1,298.27	2.77	2.78	-39.37	0.60	51.48	50.49	44.94	5.55	9.105	
1,400.00	1,399.91	1,396.46	1,396.31	2.96	2.98	-42.64	1.32	56.47	52.65	46.73	5.93	8.886 SF	
1,500.00	1,499.69	1,494.41	1,493.89	3.15	3.20	-47.49	2.51	64.77	56.61	50.29	6.32	8.961	
1,600.00	1,599.27	1,592.01	1,590.79	3.36	3.43	-53.16	4.17	76.31	62.72	56.00	6.73	9.325	
1,700.00	1,698.57	1,689.17	1,686.80	3.59	3.69	-58.90	6.28	91.05	71.31	64.14	7.16	9.954	
1,800.00	1,797.54	1,785.78	1,781.70	3.85	3.97	-64.18	8.84	108.88	82.54	74.90	7.64	10.801	
1,900.00	1,896.09	1,881.74	1,875.32	4.13	4.30	-68.75	11.83	129.72	96.46	88.29	8.17	11.803	
2,000.00	1,994.16	1,976.95	1,967.46	4.45	4.67	-72.53	15.23	153.46	113.03	104.27	8.77	12.893	
2,100.00	2,091.70	2,071.33	2,057.96	4.81	5.09	-75.60	19.03	179.97	132.18	122.74	9.43	14.011	
2,200.00	2,188.62	2,164.80	2,146.67	5.22	5.57	-78.05	23.21	209.11	153.80	143.62	10.18	15.106	
2,300.00	2,284.86	2,257.29	2,233.45	5.67	6.09	-80.00	27.75	240.75	177.81	166.80	11.01	16.150	
2,362.58	2,344.71	2,317.32	2,289.39	5.98	6.46	-81.15	30.84	262.32	193.65	182.06	11.59	16.710	
2,400.00	2,380.41	2,353.41	2,323.02	6.17	6.69	-81.98	32.70	275.29	203.13	191.17	11.95	16.991	
2,500.00	2,475.82	2,449.87	2,412.89	6.70	7.32	-83.84	37.67	309.96	228.62	215.66	12.96	17.640	
2,600.00	2,571.22	2,546.33	2,502.77	7.25	7.96	-85.33	42.64	344.62	254.29	240.28	14.00	18.158	
2,700.00	2,666.62	2,642.79	2,592.65	7.81	8.62	-86.55	47.62	379.29	280.09	265.01	15.08	18.577	
2,800.00	2,762.03	2,739.24	2,682.52	8.38	9.29	-87.56	52.59	413.95	305.99	289.82	16.18	18.917	
2,900.00	2,857.43	2,835.70	2,772.40	8.96	9.96	-88.41	57.56	448.62	331.97	314.68	17.29	19.198	
3,000.00	2,952.84	2,932.16	2,862.27	9.54	10.65	-89.14	62.53	483.29	358.01	339.58	18.42	19.431	
3,100.00	3,048.24	3,028.62	2,952.15	10.14	11.34	-89.77	67.50	517.95	384.09	364.52	19.57	19.626	
3,200.00	3,143.64	3,125.08	3,042.02	10.73	12.03	-90.32	72.47	552.62	410.21	389.48	20.73	19.791	
3,300.00	3,239.05	3,221.53	3,131.90	11.33	12.73	-90.81	77.45	587.28	436.36	414.47	21.89	19.932	
3,400.00	3,334.45	3,317.99	3,221.78	11.94	13.43	-91.24	82.42	621.95	462.54	439.47	23.07	20.053	
3,500.00	3,429.86	3,414.45	3,311.65	12.55	14.14	-91.62	87.39	656.61	488.74	464.49	24.25	20.158	
3,600.00	3,525.26	3,510.91	3,401.53	13.16	14.85	-91.97	92.36	691.28	514.96	489.53	25.43	20.250	
3,700.00	3,620.66	3,607.36	3,491.40	13.77	15.56	-92.28	97.33	725.95	541.19	514.57	26.62	20.330	
3,800.00	3,716.07	3,703.82	3,581.28	14.38	16.27	-92.56	102.30	760.61	567.44	539.62	27.82	20.400	
3,900.00	3,811.47	3,800.28	3,671.16	15.00	16.98	-92.82	107.27	795.28	593.70	564.68	29.01	20.463	
4,000.00	3,906.87	3,896.74	3,761.03	15.62	17.70	-93.06	112.25	829.94	619.97	589.75	30.21	20.518	
4,100.00	4,002.28	3,993.20	3,850.91	16.24	18.41	-93.27	117.22	864.61	646.24	614.82	31.42	20.568	
4,200.00	4,097.68	4,089.65	3,940.78	16.86	19.13	-93.47	122.19	899.28	672.53	639.90	32.63	20.613	
4,300.00	4,193.09	4,186.11	4,030.66	17.48	19.85	-93.66	127.16	933.94	698.82	664.99	33.84	20.654	
4,400.00	4,288.49	4,282.57	4,120.53	18.10	20.57	-93.83	132.13	968.61	725.12	690.08	35.05	20.690	
4,500.00	4,383.89	4,379.03	4,210.41	18.72	21.29	-93.99	137.10	1,003.27	751.43	715.17	36.26	20.723	
4,600.00	4,479.30	4,475.48	4,300.29	19.35	22.01	-94.14	142.08	1,037.94	777.74	740.26	37.47	20.754	
4,700.00	4,574.70	4,571.94	4,390.16	19.97	22.73	-94.28	147.05	1,072.61	804.05	765.36	38.69	20.782	
4,800.00	4,670.10	4,668.40	4,480.04	20.60	23.45	-94.41	152.02	1,107.27	830.37	790.46	39.91	20.807	
4,900.00	4,765.51	4,764.86	4,569.91	21.22	24.17	-94.53	156.99	1,141.94	856.69	815.57	41.13	20.830	
5,000.00	4,860.91	4,861.32	4,659.79	21.85	24.90	-94.64	161.96	1,176.60	883.02	840.67	42.35	20.852	

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 8-2S
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 8-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 8-2S	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									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.00	4,956.32	4,957.77	4,749.67	22.48	25.62	-94.75	166.93	1,211.27	909.35	865.78	43.57	20.872	
5,194.00	5,046.00	5,048.45	4,834.15	23.07	26.30	-94.85	171.61	1,243.86	934.10	889.38	44.72	20.889	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 8-2S
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 8-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 8-2S	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		
0.00	0.00	0.00	0.00	0.00	0.00	-90.52	-0.37	-40.29	40.29					
100.00	100.00	100.00	100.00	0.10	0.10	-90.52	-0.37	-40.29	40.29	40.10	0.19	210.910		
200.00	200.00	200.00	200.00	0.32	0.32	-90.52	-0.37	-40.29	40.29	39.65	0.64	62.903		
300.00	300.00	300.00	300.00	0.55	0.55	-90.52	-0.37	-40.29	40.29	39.20	1.09	36.964		
400.00	400.00	400.00	400.00	0.77	0.77	-90.52	-0.37	-40.29	40.29	38.75	1.54	26.171		
500.00	500.00	500.00	500.00	0.99	0.99	-90.52	-0.37	-40.29	40.29	38.31	1.99	20.257		
600.00	600.00	600.00	600.00	1.22	1.22	-90.52	-0.37	-40.29	40.29	37.86	2.44	16.523		
700.00	700.00	700.00	700.00	1.44	1.44	-90.52	-0.37	-40.29	40.29	37.41	2.89	13.951		
800.00	800.00	800.00	800.00	1.67	1.67	-90.52	-0.37	-40.29	40.29	36.96	3.34	12.072		
900.00	900.00	900.00	900.00	1.89	1.89	-90.52	-0.37	-40.29	40.29	36.51	3.79	10.639		
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	-90.52	-0.37	-40.29	40.29	36.06	4.24	9.511		
1,100.00	1,100.00	1,100.00	1,100.00	2.34	2.34	-90.52	-0.37	-40.29	40.29	35.61	4.69	8.598		
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	-90.52	-0.37	-40.29	40.29	35.16	5.14	7.846 CC, ES		
1,300.00	1,299.99	1,299.11	1,299.09	2.77	2.77	140.89	-1.75	-41.31	42.37	36.83	5.53	7.657 SF		
1,400.00	1,399.91	1,397.93	1,397.77	2.96	2.94	138.94	-5.87	-44.35	48.61	42.72	5.89	8.254		
1,500.00	1,499.69	1,496.15	1,495.62	3.15	3.13	136.59	-12.67	-49.37	59.07	52.81	6.26	9.437		
1,600.00	1,599.27	1,593.50	1,592.26	3.36	3.34	134.40	-22.08	-56.31	73.77	67.12	6.65	11.095		
1,700.00	1,698.57	1,689.70	1,687.32	3.59	3.58	132.56	-33.96	-65.08	92.65	85.59	7.06	13.120		
1,800.00	1,797.54	1,787.11	1,783.27	3.85	3.84	131.57	-47.45	-75.04	114.63	107.12	7.51	15.264		
1,900.00	1,896.09	1,884.26	1,878.97	4.13	4.13	131.64	-60.91	-84.97	138.30	130.32	7.99	17.314		
2,000.00	1,994.16	1,980.95	1,974.22	4.45	4.43	132.28	-74.31	-94.85	163.69	155.19	8.50	19.266		
2,100.00	2,091.70	2,077.11	2,068.95	4.81	4.74	133.26	-87.63	-104.69	190.84	181.80	9.03	21.124		
2,200.00	2,188.62	2,172.69	2,163.09	5.22	5.06	134.40	-100.87	-114.46	219.81	210.21	9.60	22.896		
2,300.00	2,284.86	2,267.61	2,256.59	5.67	5.38	135.62	-114.02	-124.16	250.68	240.49	10.19	24.593		
2,362.58	2,344.71	2,326.64	2,314.75	5.98	5.59	136.40	-122.20	-130.20	270.98	260.41	10.58	25.622		
2,400.00	2,380.41	2,361.85	2,349.44	6.17	5.71	136.98	-127.08	-133.80	283.37	272.54	10.82	26.183		
2,500.00	2,475.82	2,455.96	2,442.13	6.70	6.05	138.29	-140.12	-143.42	316.57	305.08	11.49	27.554		
2,600.00	2,571.22	2,550.06	2,534.83	7.25	6.39	139.36	-153.16	-153.04	349.89	337.72	12.17	28.756		
2,700.00	2,666.62	2,644.16	2,627.53	7.81	6.73	140.24	-166.19	-162.66	383.30	370.45	12.86	29.816		
2,800.00	2,762.03	2,738.27	2,720.23	8.38	7.08	140.98	-179.23	-172.28	416.78	403.23	13.55	30.755		
2,900.00	2,857.43	2,832.37	2,812.92	8.96	7.43	141.62	-192.27	-181.90	450.32	436.06	14.25	31.592		
3,000.00	2,952.84	2,926.47	2,905.62	9.54	7.78	142.16	-205.31	-191.52	483.89	468.93	14.96	32.342		
3,100.00	3,048.24	3,020.57	2,998.32	10.14	8.14	142.63	-218.34	-201.14	517.50	501.83	15.67	33.016		
3,200.00	3,143.64	3,114.68	3,091.01	10.73	8.50	143.05	-231.38	-210.76	551.14	534.75	16.39	33.626		
3,300.00	3,239.05	3,208.78	3,183.71	11.33	8.86	143.41	-244.42	-220.38	584.79	567.69	17.11	34.179		
3,400.00	3,334.45	3,302.88	3,276.41	11.94	9.22	143.74	-257.46	-230.00	618.47	600.64	17.83	34.684		
3,500.00	3,429.86	3,396.98	3,369.11	12.55	9.58	144.04	-270.49	-239.62	652.17	633.61	18.56	35.145		
3,600.00	3,525.26	3,491.09	3,461.80	13.16	9.94	144.30	-283.53	-249.24	685.87	666.59	19.28	35.570		
3,700.00	3,620.66	3,585.19	3,554.50	13.77	10.31	144.54	-296.57	-258.86	719.59	699.58	20.01	35.961		
3,800.00	3,716.07	3,679.29	3,647.20	14.38	10.67	144.76	-309.61	-268.48	753.32	732.58	20.74	36.323		
3,900.00	3,811.47	3,773.39	3,739.89	15.00	11.04	144.96	-322.64	-278.10	787.06	765.59	21.47	36.658		
4,000.00	3,906.87	3,867.50	3,832.59	15.62	11.41	145.14	-335.68	-287.72	820.81	798.61	22.20	36.970		
4,100.00	4,002.28	3,961.60	3,925.29	16.24	11.77	145.31	-348.72	-297.34	854.56	831.63	22.93	37.262		
4,200.00	4,097.68	4,055.70	4,017.99	16.86	12.14	145.47	-361.76	-306.96	888.32	864.66	23.67	37.535		
4,300.00	4,193.09	4,149.80	4,110.68	17.48	12.51	145.61	-374.79	-316.58	922.09	897.69	24.40	37.790		
4,400.00	4,288.49	4,243.91	4,203.38	18.10	12.88	145.75	-387.83	-326.20	955.86	930.72	25.13	38.031		
4,500.00	4,383.89	4,338.01	4,296.08	18.72	13.25	145.87	-400.87	-335.82	989.63	963.76	25.87	38.257		
4,600.00	4,479.30	4,432.11	4,388.77	19.35	13.62	145.99	-413.91	-345.44	1,023.41	996.81	26.60	38.471		
4,700.00	4,574.70	4,526.21	4,481.47	19.97	13.99	146.10	-426.94	-355.06	1,057.19	1,029.85	27.34	38.674		
4,800.00	4,670.10	4,620.32	4,574.17	20.60	14.36	146.20	-439.98	-364.68	1,090.97	1,062.90	28.07	38.865		
4,900.00	4,765.51	4,714.42	4,666.87	21.22	14.74	146.30	-453.02	-374.30	1,124.76	1,095.96	28.80	39.048		
5,000.00	4,860.91	4,808.52	4,759.56	21.85	15.11	146.39	-466.06	-383.92	1,158.55	1,129.01	29.54	39.221		

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 8-2S
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 8-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 8-2S	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									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.00	4,956.32	4,902.62	4,852.26	22.48	15.48	146.48	-479.09	-393.54	1,192.35	1,162.07	30.27	39.386	
5,194.00	5,046.00	4,991.09	4,939.40	23.07	15.83	146.55	-491.35	-402.59	1,224.11	1,193.15	30.96	39.534	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 8-2S
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 8-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 8-2S	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	90.00	0.00	9.79	9.79				
100.00	100.00	100.00	100.00	0.10	0.10	90.00	0.00	9.79	9.79	9.60	0.19	51.261	
200.00	200.00	200.00	200.00	0.32	0.32	90.00	0.00	9.79	9.79	9.15	0.64	15.288	
300.00	300.00	300.00	300.00	0.55	0.55	90.00	0.00	9.79	9.79	8.70	1.09	8.984	
400.00	400.00	400.00	400.00	0.77	0.77	90.00	0.00	9.79	9.79	8.25	1.54	6.361	
500.00	500.00	500.00	500.00	0.99	0.99	90.00	0.00	9.79	9.79	7.80	1.99	4.923	
600.00	600.00	600.00	600.00	1.22	1.22	90.00	0.00	9.79	9.79	7.35	2.44	4.016	
700.00	700.00	700.00	700.00	1.44	1.44	90.00	0.00	9.79	9.79	6.91	2.89	3.391	
800.00	800.00	800.00	800.00	1.67	1.67	90.00	0.00	9.79	9.79	6.46	3.34	2.934	
900.00	900.00	900.00	900.00	1.89	1.89	90.00	0.00	9.79	9.79	6.01	3.79	2.586	
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	90.00	0.00	9.79	9.79	5.56	4.24	2.311	
1,100.00	1,100.00	1,100.00	1,100.00	2.34	2.34	90.00	0.00	9.79	9.79	5.11	4.69	2.090	
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	90.00	0.00	9.79	9.79	4.66	5.14	1.907 CC, ES	
1,300.00	1,299.99	1,299.69	1,299.67	2.77	2.77	-37.91	-0.78	11.34	10.31	4.77	5.54	1.862 SF	
1,400.00	1,399.91	1,399.33	1,399.17	2.96	2.96	-38.20	-3.11	15.99	11.88	5.97	5.91	2.010	
1,500.00	1,499.69	1,498.90	1,498.35	3.15	3.17	-38.53	-6.99	23.72	14.48	8.19	6.29	2.302	
1,600.00	1,599.27	1,598.33	1,597.05	3.36	3.40	-38.83	-12.40	34.50	18.11	11.43	6.68	2.710	
1,700.00	1,698.57	1,697.60	1,695.10	3.59	3.65	-39.07	-19.33	48.32	22.78	15.68	7.10	3.208	
1,800.00	1,797.54	1,796.66	1,792.35	3.85	3.95	-39.25	-27.77	65.13	28.46	20.92	7.54	3.773	
1,900.00	1,896.09	1,895.54	1,888.73	4.13	4.28	-39.37	-37.68	84.88	35.15	27.13	8.02	4.383	
2,000.00	1,994.16	1,995.36	1,985.68	4.45	4.67	-40.78	-48.34	106.12	41.14	32.59	8.55	4.812	
2,100.00	2,091.70	2,095.24	2,082.69	4.81	5.07	-44.04	-59.00	127.37	45.24	36.08	9.17	4.935	
2,200.00	2,188.62	2,195.12	2,179.70	5.22	5.50	-49.05	-69.67	148.62	47.72	37.80	9.91	4.813	
2,300.00	2,284.86	2,294.94	2,276.64	5.67	5.94	-56.00	-80.32	169.86	49.01	38.17	10.84	4.522	
2,362.58	2,344.71	2,357.34	2,337.25	5.98	6.22	-61.45	-86.99	183.13	49.52	37.99	11.53	4.296	
2,400.00	2,380.41	2,394.63	2,373.47	6.17	6.39	-64.96	-90.97	191.07	49.91	37.94	11.97	4.169	
2,500.00	2,475.82	2,494.29	2,470.27	6.70	6.84	-73.96	-101.61	212.27	51.84	38.65	13.19	3.930	
2,600.00	2,571.22	2,593.95	2,567.06	7.25	7.31	-82.13	-112.25	233.48	54.94	40.55	14.39	3.819	
2,700.00	2,666.62	2,693.61	2,663.86	7.81	7.78	-89.31	-122.89	254.68	59.04	43.51	15.53	3.803	
2,800.00	2,762.03	2,793.27	2,760.65	8.38	8.26	-95.47	-133.53	275.88	63.94	47.35	16.59	3.853	
2,900.00	2,857.43	2,892.93	2,857.45	8.96	8.74	-100.71	-144.17	297.09	69.47	51.88	17.60	3.948	
3,000.00	2,952.84	2,992.59	2,954.25	9.54	9.23	-105.15	-154.81	318.29	75.50	56.95	18.55	4.071	
3,100.00	3,048.24	3,092.25	3,051.04	10.14	9.71	-108.91	-165.45	339.50	81.91	62.45	19.46	4.210	
3,200.00	3,143.64	3,191.92	3,147.84	10.73	10.21	-112.12	-176.09	360.70	88.62	68.28	20.34	4.357	
3,300.00	3,239.05	3,291.58	3,244.63	11.33	10.70	-114.87	-186.74	381.90	95.57	74.37	21.20	4.508	
3,400.00	3,334.45	3,391.24	3,341.43	11.94	11.19	-117.24	-197.38	403.11	102.71	80.67	22.05	4.659	
3,500.00	3,429.86	3,490.90	3,438.22	12.55	11.69	-119.31	-208.02	424.31	110.01	87.12	22.88	4.807	
3,600.00	3,525.26	3,590.56	3,535.02	13.16	12.19	-121.11	-218.66	445.52	117.42	93.71	23.71	4.952	
3,700.00	3,620.66	3,690.22	3,631.82	13.77	12.69	-122.70	-229.30	466.72	124.94	100.40	24.54	5.092	
3,800.00	3,716.07	3,789.88	3,728.61	14.38	13.19	-124.11	-239.94	487.92	132.55	107.19	25.36	5.226	
3,900.00	3,811.47	3,889.54	3,825.41	15.00	13.69	-125.36	-250.58	509.13	140.22	114.04	26.18	5.356	
4,000.00	3,906.87	3,989.20	3,922.20	15.62	14.19	-126.48	-261.22	530.33	147.96	120.96	27.00	5.480	
4,100.00	4,002.28	4,088.86	4,019.00	16.24	14.70	-127.49	-271.86	551.54	155.74	127.92	27.82	5.598	
4,200.00	4,097.68	4,188.52	4,115.79	16.86	15.20	-128.41	-282.50	572.74	163.57	134.93	28.64	5.712	
4,300.00	4,193.09	4,288.18	4,212.59	17.48	15.71	-129.24	-293.14	593.94	171.44	141.98	29.46	5.820	
4,400.00	4,288.49	4,387.84	4,309.39	18.10	16.21	-130.00	-303.78	615.15	179.34	149.06	30.28	5.923	
4,500.00	4,383.89	4,487.50	4,406.18	18.72	16.72	-130.69	-314.42	636.35	187.27	156.17	31.10	6.022	
4,600.00	4,479.30	4,587.16	4,502.98	19.35	17.23	-131.33	-325.06	657.56	195.22	163.30	31.92	6.117	
4,700.00	4,574.70	4,686.82	4,599.77	19.97	17.73	-131.92	-335.70	678.76	203.19	170.46	32.74	6.207	
4,800.00	4,670.10	4,786.49	4,696.57	20.60	18.24	-132.46	-346.35	699.96	211.19	177.63	33.56	6.293	
4,900.00	4,765.51	4,886.15	4,793.36	21.22	18.75	-132.97	-356.99	721.17	219.20	184.82	34.38	6.376	
5,000.00	4,860.91	4,985.81	4,890.16	21.85	19.26	-133.44	-367.63	742.37	227.23	192.03	35.20	6.455	

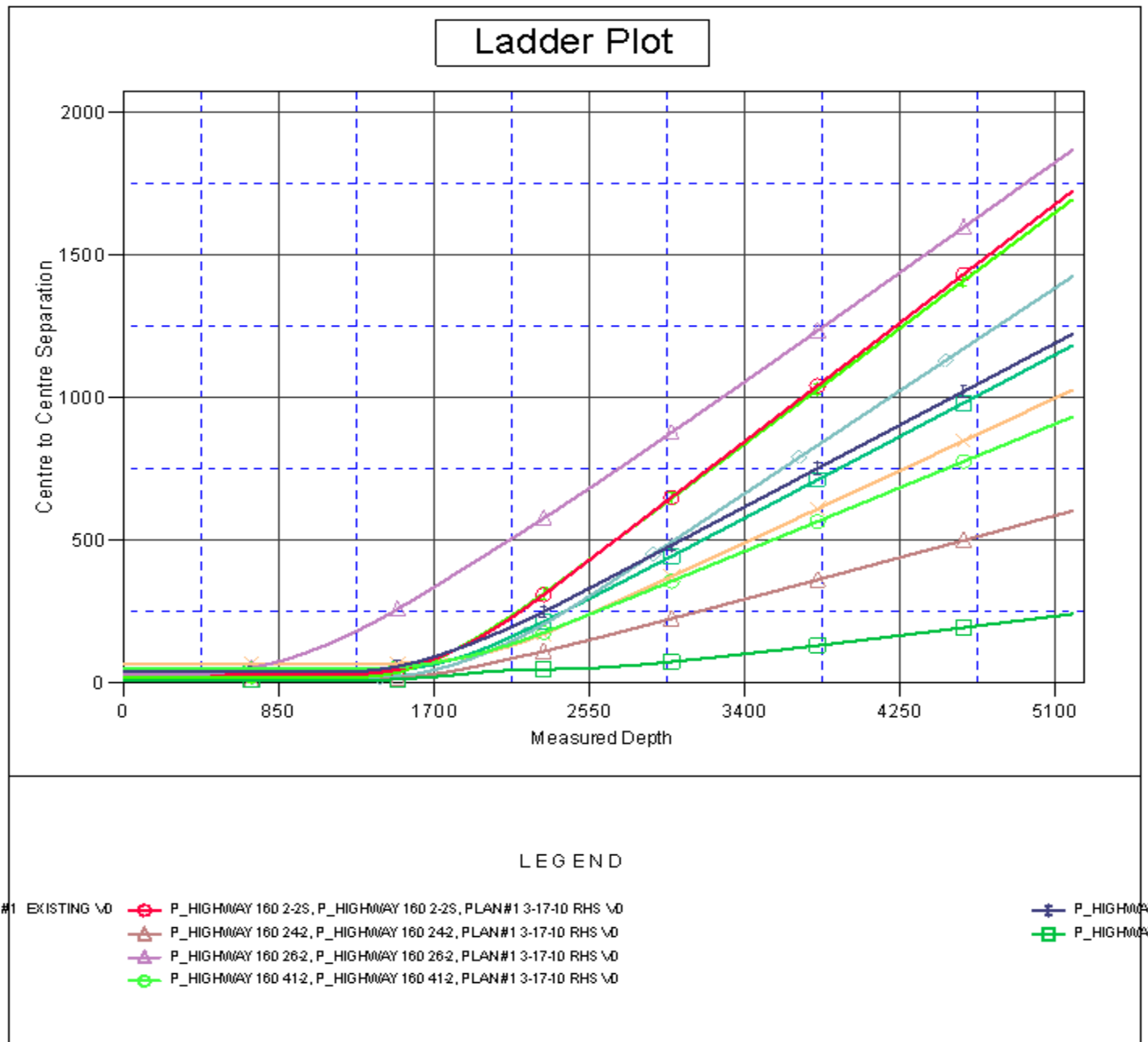
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 8-2S
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 8-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 8-2S	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									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.00	4,956.32	5,085.47	4,986.96	22.48	19.77	-133.87	-378.27	763.57	235.27	199.25	36.02	6.531	
5,194.00	5,046.00	5,179.15	5,077.95	23.07	20.24	-134.26	-388.27	783.51	242.84	206.05	36.80	6.599	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_HIGHWAY 160 8-2S
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 8-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 8-2S	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 8-2S
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 8-2S
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 8-2S	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_HIGHWAY 160 8-2S	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 3-17-10 RHS	Offset TVD Reference:	Offset Datum

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