



US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_SPIVEY 9-4 PAD

P_SPIVEY 39-4

P_SPIVEY 39-4

Plan: P_SPIVEY 39-4

Standard Planning Report

05 April, 2010

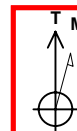




Project: COLORADO NORTHERN ZONE - 83
 Site: WELD_SPIVEY 9-4 PAD
 Well: P_SPIVEY 39-4
 Wellbore: P_SPIVEY 39-4
 Section: SECTION 4 T3N R66W
 SHL: 1853 FSL 509 FEL
 Design: P_SPIVEY 39-4
 Latitude: 40° 15' 6.645 N
 Longitude: 104° 46' 29.158 W
 GL: 4834.00
 KB: WELL @ 4849.00ft (Original Well Elev)



Weatherford®



Azimuths to True North
 Magnetic North: 9.02°
 Magnetic Field
 Strength: 53176.4nT
 Dip Angle: 66.97°
 Date: 4/5/2010
 Model: IGRF2010

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3750.00	3784.30	PARKMAN
4200.00	4239.71	SUSSEX
7034.00	7092.21	NIO A
7324.00	7382.21	CODELL
7756.00	7814.21	JSAND

CASING DETAILS

TVD	MD	Name	Size
500.00	500.00	8 5/8"	8.62

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	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	Start Build 2.00
1041.85	8.84	146.29	1040.10	-28.29	18.87	2.00	146.29	34.01	Start 4608.50 hold at 1041.85 MD
5650.35	8.84	146.29	5593.90	-617.21	411.82	0.00	0.00	741.99	Start Drop -2.00
6092.21	0.00	0.00	6034.00	-645.50	430.69	2.00	180.00	775.99	Start 1871.00 hold at 6092.21 MD
7963.21	0.00	0.00	7905.00	-645.50	430.69	0.00	0.00	775.99	TD at 7963.21

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

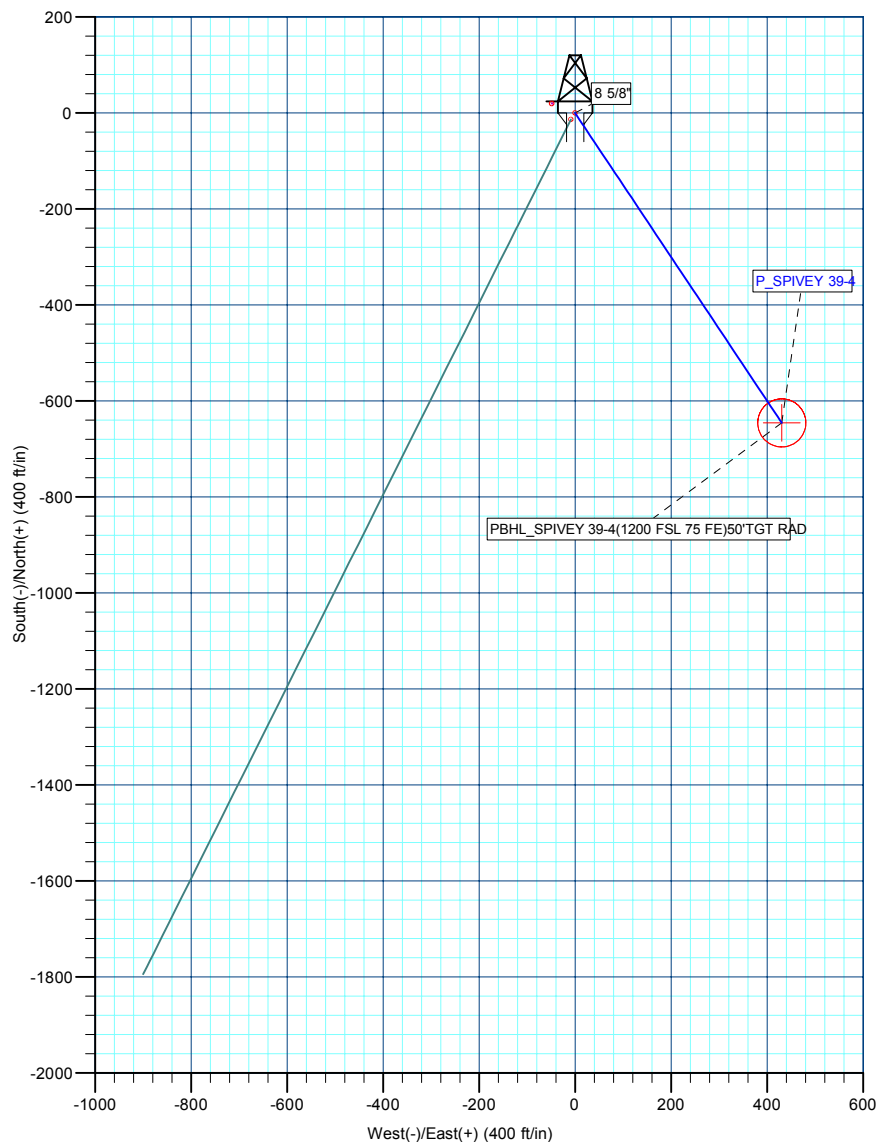
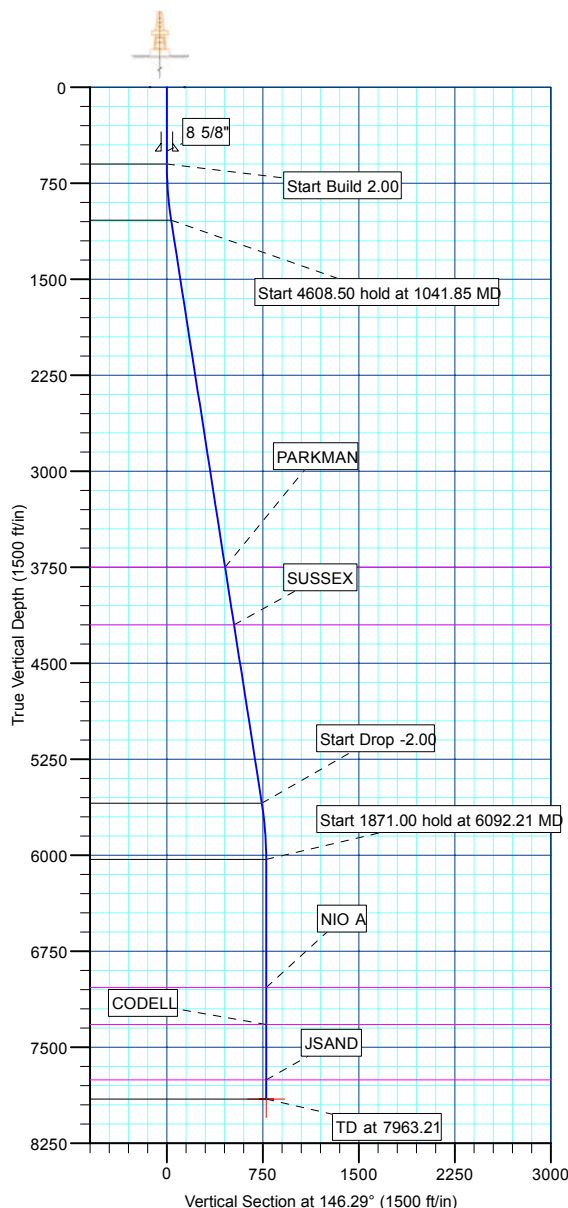
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
PBHL	7905.00	-645.50	430.69	40° 15' 0.266 N	104° 46' 23.603 W	Circle (Radius: 50.00)

WELL DETAILS: P_SPIVEY 39-4

+N/-S	+E/-W	Northing	Ground Level:	4834.00	Latitude	Longitude	Slot
0.00	0.00	1335416.93	Easting	3202424.33	40° 15' 6.645 N	104° 46' 29.158 W	

LEGEND

— HSR-THESING #9-4 EXISTING, HSR-THESING #9-4 EXISTING, HSR-THESING #9-4 EXISTING V0
 — P_SPIVEY 37-4, P_SPIVEY 37-4, PLAN #1 4-S-10 RHS V0
 — P_SPIVEY 39-4



Plan: P_SPIVEY 39-4 (P_SPIVEY 39-4/P_SPIVEY 39-4)

Created By: Robert H. Scott Date: 14:54, April 05 2010

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_SPIVEY 39-4
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4849.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4849.00ft (Original Well Elev)
Site:	WELD_SPIVEY 9-4 PAD	North Reference:	True
Well:	P_SPIVEY 39-4	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_SPIVEY 39-4		
Design:	P_SPIVEY 39-4		

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_SPIVEY 9-4 PAD, SECTION 4 T3N R66W											
Site Position:						Northing:			1,335,403.39 ft			Latitude:			40° 15' 6.512 N		
From:			Lat/Long			Easting:			3,202,415.79 ft			Longitude:			104° 46' 29.269 W		
Position Uncertainty:			0.00 ft			Slot Radius:			in			Grid Convergence:			0.47 °		

Well	P_SPIVEY 39-4					
Well Position	+N/-S	13.47 ft	Northing:	1,335,416.93 ft	Latitude:	40° 15' 6.645 N
	+E/-W	8.65 ft	Easting:	3,202,424.33 ft	Longitude:	104° 46' 29.158 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,834.00 ft

Wellbore	P_SPIVEY 39-4				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/5/2010	9.02	66.97	53,178

Design	P_SPIVEY 39-4				
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	146.29	

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	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,041.85	8.84	146.29	1,040.10	-28.29	18.87	2.00	2.00	0.00	146.29	
5,650.35	8.84	146.29	5,593.90	-617.21	411.82	0.00	0.00	0.00	0.00	
6,092.21	0.00	0.00	6,034.00	-645.50	430.69	2.00	-2.00	0.00	180.00	
7,963.21	0.00	0.00	7,905.00	-645.50	430.69	0.00	0.00	0.00	0.00	PBHL_SPIVEY 39-4

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_SPIVEY 39-4
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4849.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4849.00ft (Original Well Elev)
Site:	WELD_SPIVEY 9-4 PAD	North Reference:	True
Well:	P_SPIVEY 39-4	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_SPIVEY 39-4		
Design:	P_SPIVEY 39-4		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
Start Build 2.00									
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	2.00	146.29	699.98	-1.45	0.97	1.75	2.00	2.00	0.00
800.00	4.00	146.29	799.84	-5.80	3.87	6.98	2.00	2.00	0.00
900.00	6.00	146.29	899.45	-13.05	8.71	15.69	2.00	2.00	0.00
1,000.00	8.00	146.29	998.70	-23.19	15.47	27.88	2.00	2.00	0.00
Start 4608.50 hold at 1041.85 MD									
1,041.85	8.84	146.29	1,040.10	-28.29	18.87	34.01	2.00	2.00	0.00
1,100.00	8.84	146.29	1,097.56	-35.72	23.83	42.94	0.00	0.00	0.00
1,200.00	8.84	146.29	1,196.37	-48.50	32.36	58.30	0.00	0.00	0.00
1,300.00	8.84	146.29	1,295.19	-61.28	40.89	73.67	0.00	0.00	0.00
1,400.00	8.84	146.29	1,394.00	-74.06	49.41	89.03	0.00	0.00	0.00
1,500.00	8.84	146.29	1,492.81	-86.84	57.94	104.39	0.00	0.00	0.00
1,600.00	8.84	146.29	1,591.62	-99.61	66.47	119.75	0.00	0.00	0.00
1,700.00	8.84	146.29	1,690.44	-112.39	74.99	135.11	0.00	0.00	0.00
1,800.00	8.84	146.29	1,789.25	-125.17	83.52	150.48	0.00	0.00	0.00
1,900.00	8.84	146.29	1,888.06	-137.95	92.04	165.84	0.00	0.00	0.00
2,000.00	8.84	146.29	1,986.88	-150.73	100.57	181.20	0.00	0.00	0.00
2,100.00	8.84	146.29	2,085.69	-163.51	109.10	196.56	0.00	0.00	0.00
2,200.00	8.84	146.29	2,184.50	-176.29	117.62	211.93	0.00	0.00	0.00
2,300.00	8.84	146.29	2,283.32	-189.07	126.15	227.29	0.00	0.00	0.00
2,400.00	8.84	146.29	2,382.13	-201.85	134.68	242.65	0.00	0.00	0.00
2,500.00	8.84	146.29	2,480.94	-214.63	143.20	258.01	0.00	0.00	0.00
2,600.00	8.84	146.29	2,579.75	-227.41	151.73	273.38	0.00	0.00	0.00
2,700.00	8.84	146.29	2,678.57	-240.18	160.26	288.74	0.00	0.00	0.00
2,800.00	8.84	146.29	2,777.38	-252.96	168.78	304.10	0.00	0.00	0.00
2,900.00	8.84	146.29	2,876.19	-265.74	177.31	319.46	0.00	0.00	0.00
3,000.00	8.84	146.29	2,975.01	-278.52	185.84	334.83	0.00	0.00	0.00
3,100.00	8.84	146.29	3,073.82	-291.30	194.36	350.19	0.00	0.00	0.00
3,200.00	8.84	146.29	3,172.63	-304.08	202.89	365.55	0.00	0.00	0.00
3,300.00	8.84	146.29	3,271.44	-316.86	211.42	380.91	0.00	0.00	0.00
3,400.00	8.84	146.29	3,370.26	-329.64	219.94	396.28	0.00	0.00	0.00
3,500.00	8.84	146.29	3,469.07	-342.42	228.47	411.64	0.00	0.00	0.00
3,600.00	8.84	146.29	3,567.88	-355.20	236.99	427.00	0.00	0.00	0.00
3,700.00	8.84	146.29	3,666.70	-367.97	245.52	442.36	0.00	0.00	0.00
PARKMAN									
3,784.30	8.84	146.29	3,750.00	-378.75	252.71	455.32	0.00	0.00	0.00
3,800.00	8.84	146.29	3,765.51	-380.75	254.05	457.73	0.00	0.00	0.00
3,900.00	8.84	146.29	3,864.32	-393.53	262.57	473.09	0.00	0.00	0.00
4,000.00	8.84	146.29	3,963.13	-406.31	271.10	488.45	0.00	0.00	0.00
4,100.00	8.84	146.29	4,061.95	-419.09	279.63	503.81	0.00	0.00	0.00
4,200.00	8.84	146.29	4,160.76	-431.87	288.15	519.18	0.00	0.00	0.00
SUSSEX									
4,239.71	8.84	146.29	4,200.00	-436.94	291.54	525.28	0.00	0.00	0.00
4,300.00	8.84	146.29	4,259.57	-444.65	296.68	534.54	0.00	0.00	0.00
4,400.00	8.84	146.29	4,358.39	-457.43	305.21	549.90	0.00	0.00	0.00
4,500.00	8.84	146.29	4,457.20	-470.21	313.73	565.26	0.00	0.00	0.00
4,600.00	8.84	146.29	4,556.01	-482.99	322.26	580.63	0.00	0.00	0.00
4,700.00	8.84	146.29	4,654.83	-495.77	330.79	595.99	0.00	0.00	0.00
4,800.00	8.84	146.29	4,753.64	-508.54	339.31	611.35	0.00	0.00	0.00
4,900.00	8.84	146.29	4,852.45	-521.32	347.84	626.71	0.00	0.00	0.00
5,000.00	8.84	146.29	4,951.26	-534.10	356.37	642.08	0.00	0.00	0.00
5,100.00	8.84	146.29	5,050.08	-546.88	364.89	657.44	0.00	0.00	0.00

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_SPIVEY 39-4
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4849.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4849.00ft (Original Well Elev)
Site:	WELD_SPIVEY 9-4 PAD	North Reference:	True
Well:	P_SPIVEY 39-4	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_SPIVEY 39-4		
Design:	P_SPIVEY 39-4		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
5,200.00	8.84	146.29	5,148.89	-559.66	373.42	672.80	0.00	0.00	0.00
5,300.00	8.84	146.29	5,247.70	-572.44	381.95	688.16	0.00	0.00	0.00
5,400.00	8.84	146.29	5,346.52	-585.22	390.47	703.53	0.00	0.00	0.00
5,500.00	8.84	146.29	5,445.33	-598.00	399.00	718.89	0.00	0.00	0.00
5,600.00	8.84	146.29	5,544.14	-610.78	407.52	734.25	0.00	0.00	0.00
Start Drop -2.00									
5,650.35	8.84	146.29	5,593.90	-617.21	411.82	741.99	0.00	0.00	0.00
5,700.00	7.84	146.29	5,643.02	-623.20	415.81	749.19	2.00	-2.00	0.00
5,800.00	5.84	146.29	5,742.30	-633.11	422.43	761.10	2.00	-2.00	0.00
5,900.00	3.84	146.29	5,841.94	-640.14	427.12	769.55	2.00	-2.00	0.00
6,000.00	1.84	146.29	5,941.81	-644.27	429.87	774.51	2.00	-2.00	0.00
Start 1871.00 hold at 6092.21 MD									
6,092.21	0.00	0.00	6,034.00	-645.50	430.69	775.99	2.00	-2.00	0.00
6,100.00	0.00	0.00	6,041.79	-645.50	430.69	775.99	0.00	0.00	0.00
6,200.00	0.00	0.00	6,141.79	-645.50	430.69	775.99	0.00	0.00	0.00
6,300.00	0.00	0.00	6,241.79	-645.50	430.69	775.99	0.00	0.00	0.00
6,400.00	0.00	0.00	6,341.79	-645.50	430.69	775.99	0.00	0.00	0.00
6,500.00	0.00	0.00	6,441.79	-645.50	430.69	775.99	0.00	0.00	0.00
6,600.00	0.00	0.00	6,541.79	-645.50	430.69	775.99	0.00	0.00	0.00
6,700.00	0.00	0.00	6,641.79	-645.50	430.69	775.99	0.00	0.00	0.00
6,800.00	0.00	0.00	6,741.79	-645.50	430.69	775.99	0.00	0.00	0.00
6,900.00	0.00	0.00	6,841.79	-645.50	430.69	775.99	0.00	0.00	0.00
7,000.00	0.00	0.00	6,941.79	-645.50	430.69	775.99	0.00	0.00	0.00
NIO A									
7,092.21	0.00	0.00	7,034.00	-645.50	430.69	775.99	0.00	0.00	0.00
7,100.00	0.00	0.00	7,041.79	-645.50	430.69	775.99	0.00	0.00	0.00
7,200.00	0.00	0.00	7,141.79	-645.50	430.69	775.99	0.00	0.00	0.00
7,300.00	0.00	0.00	7,241.79	-645.50	430.69	775.99	0.00	0.00	0.00
CODELL									
7,382.21	0.00	0.00	7,324.00	-645.50	430.69	775.99	0.00	0.00	0.00
7,400.00	0.00	0.00	7,341.79	-645.50	430.69	775.99	0.00	0.00	0.00
7,500.00	0.00	0.00	7,441.79	-645.50	430.69	775.99	0.00	0.00	0.00
7,600.00	0.00	0.00	7,541.79	-645.50	430.69	775.99	0.00	0.00	0.00
7,700.00	0.00	0.00	7,641.79	-645.50	430.69	775.99	0.00	0.00	0.00
7,800.00	0.00	0.00	7,741.79	-645.50	430.69	775.99	0.00	0.00	0.00
JSAND									
7,814.21	0.00	0.00	7,756.00	-645.50	430.69	775.99	0.00	0.00	0.00
7,900.00	0.00	0.00	7,841.79	-645.50	430.69	775.99	0.00	0.00	0.00
PBHL_SPIVEY 39-4(1200 FSL 75 FE)50'TGT RAD									
7,963.21	0.00	0.00	7,905.00	-645.50	430.69	775.99	0.00	0.00	0.00

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL_SPIVEY 39-4(1	0.00	0.00	7,905.00	-645.50	430.69	1,334,774.97	3,202,860.29	40° 15' 0.266 N	104° 46' 23.603 W
- plan hits target center									
- Circle (radius 50.00)									

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_SPIVEY 39-4
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 4849.00ft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 4849.00ft (Original Well Elev)
Site:	WELD_SPIVEY 9-4 PAD	North Reference:	True
Well:	P_SPIVEY 39-4	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_SPIVEY 39-4		
Design:	P_SPIVEY 39-4		

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
500.00	500.00	8 5/8"	8.62	11.00	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,784.30	3,750.00	PARKMAN				
4,239.71	4,200.00	SUSSEX				
7,092.21	7,034.00	NIO A				
7,382.21	7,324.00	CODELL				
7,814.21	7,756.00	JSAND				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
600.00	600.00	0.00	0.00	Start Build 2.00	
1,041.85	1,040.10	-28.29	18.87	Start 4608.50 hold at 1041.85 MD	
5,650.35	5,593.90	-617.21	411.82	Start Drop -2.00	
6,092.21	6,034.00	-645.50	430.69	Start 1871.00 hold at 6092.21 MD	
7,963.21	7,905.00	-645.50	430.69	TD at 7963.21	



US ROCKIES REGION PLANNING

**COLORADO NORTHERN ZONE - 83
WELD_SPIVEY 9-4 PAD
P_SPIVEY 39-4**

**P_SPIVEY 39-4
P_SPIVEY 39-4**

Anticollision Report

05 April, 2010



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_SPIVEY 39-4
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4849.00ft (Original Well Elev)
Reference Site:	WELD_SPIVEY 9-4 PAD	MD Reference:	WELL @ 4849.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_SPIVEY 39-4	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_SPIVEY 39-4	Database:	EDM 2003.21 Single User Db
Reference Design:	P_SPIVEY 39-4	Offset TVD Reference:	Offset Datum

Reference	P_SPIVEY 39-4		
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 4/5/2010			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	7,963.21	P_SPIVEY 39-4 (P_SPIVEY 39-4)	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_SPIVEY 9-4 PAD						
HSR-THESING #9-4 EXISTING - HSR-THESING #9-4 E	300.00	300.00	52.31	46.34	8.755	CC
HSR-THESING #9-4 EXISTING - HSR-THESING #9-4 E	700.00	700.00	53.85	29.78	2.238	ES
HSR-THESING #9-4 EXISTING - HSR-THESING #9-4 E	900.00	899.48	65.97	34.01	2.064	SF
P_SPIVEY 37-4 - P_SPIVEY 37-4 - PLAN #1 4-5-10 RH	600.00	600.00	16.01	13.57	6.564	CC, ES
P_SPIVEY 37-4 - P_SPIVEY 37-4 - PLAN #1 4-5-10 RH	700.00	699.42	17.09	14.26	6.027	SF

Offset Design WELD_SPIVEY 9-4 PAD - HSR-THESING #9-4 EXISTING - HSR-THESING #9-4 EXISTING - HSR-THESING #9-4 EXISTING												
Survey Program: 191-INC												
Reference	Offset	Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor
0.00	0.00	0.04	0.04	0.00	0.00	-67.95	19.67	-48.57	52.40			
100.00	100.00	100.00	100.00	0.10	1.38	-68.06	19.56	-48.57	52.36	50.99	1.37	38.134
200.00	200.00	200.08	200.08	0.32	2.95	-67.99	19.63	-48.57	52.38	49.38	3.01	17.418
300.00	300.00	300.00	300.00	0.55	6.47	-68.19	19.43	-48.57	52.31	46.34	5.98	8.755 CC
300.01	300.01	300.01	300.01	0.55	6.47	-68.19	19.43	-48.57	52.31	46.34	5.98	8.754
400.00	400.00	399.91	399.91	0.77	9.98	-67.98	19.65	-48.57	52.39	43.45	8.94	5.861
500.00	500.00	500.01	500.00	0.99	14.58	-67.95	19.67	-48.57	52.40	40.06	12.34	4.247
600.00	600.00	600.02	600.00	1.22	19.23	-67.95	19.67	-48.57	52.40	36.62	15.78	3.322
700.00	699.98	700.00	699.98	1.42	23.88	146.79	19.67	-48.57	53.85	29.78	24.06	2.238 ES
800.00	799.84	799.86	799.84	1.61	28.53	149.56	19.67	-48.57	58.30	30.09	28.21	2.067
900.00	899.45	899.48	899.45	1.82	33.16	153.33	19.67	-48.57	65.97	34.01	31.96	2.064 SF
1,000.00	998.70	998.82	998.77	2.07	38.25	157.21	19.51	-48.57	76.97	41.30	35.67	2.158
1,041.85	1,040.10	1,040.21	1,040.16	2.18	40.40	158.78	19.46	-48.57	82.63	45.52	37.11	2.227
1,100.00	1,097.56	1,097.65	1,097.59	2.35	43.37	160.79	19.41	-48.57	91.00	51.87	39.13	2.326
1,200.00	1,196.37	1,196.41	1,196.35	2.66	48.49	163.53	19.40	-48.57	105.64	63.06	42.58	2.481
1,300.00	1,295.19	1,295.15	1,295.08	2.98	53.60	165.62	19.48	-48.57	120.51	74.50	46.02	2.619
1,400.00	1,394.00	1,393.86	1,393.79	3.31	58.72	167.28	19.64	-48.57	135.57	86.12	49.45	2.742
1,500.00	1,492.81	1,493.08	1,492.97	3.66	64.93	168.54	19.51	-48.57	150.51	96.89	53.62	2.807
1,600.00	1,591.62	1,591.82	1,591.70	4.00	71.27	169.57	19.41	-48.57	165.53	107.70	57.83	2.862
1,700.00	1,690.44	1,690.52	1,690.40	4.35	77.61	170.45	19.40	-48.57	180.66	118.65	62.01	2.913
1,800.00	1,789.25	1,789.20	1,789.07	4.71	83.94	171.21	19.48	-48.57	195.88	129.73	66.16	2.961
1,900.00	1,888.06	1,887.85	1,887.72	5.07	90.27	171.87	19.64	-48.57	211.20	140.92	70.28	3.005

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_SPIVEY 39-4
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4849.00ft (Original Well Elev)
Reference Site:	WELD_SPIVEY 9-4 PAD	MD Reference:	WELL @ 4849.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_SPIVEY 39-4	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_SPIVEY 39-4	Database:	EDM 2003.21 Single User Db
Reference Design:	P_SPIVEY 39-4	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Survey Program: 191-INC												Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
2,000.00	1,986.88	1,986.83	1,986.62	5.43	96.61	172.46	19.83	-48.57	226.57	152.22	74.35	3.047	
2,100.00	2,085.69	2,085.77	2,085.55	5.79	102.93	172.95	19.94	-48.57	241.89	163.48	78.41	3.085	
2,200.00	2,184.50	2,184.74	2,184.51	6.15	109.26	173.38	19.97	-48.57	257.17	174.69	82.48	3.118	
2,300.00	2,283.32	2,283.73	2,283.50	6.52	115.60	173.74	19.92	-48.57	272.40	185.85	86.56	3.147	
2,400.00	2,382.13	2,382.75	2,382.51	6.88	121.93	174.06	19.79	-48.57	287.58	196.94	90.64	3.173	
2,500.00	2,480.94	2,479.91	2,479.60	7.25	127.39	174.36	19.86	-48.57	302.92	208.70	94.22	3.215	
2,600.00	2,579.75	2,579.30	2,578.98	7.62	131.33	174.69	20.29	-48.57	318.55	221.62	96.93	3.286	
2,700.00	2,678.57	2,678.77	2,678.44	7.99	135.27	174.95	20.47	-48.57	333.99	234.29	99.70	3.350	
2,800.00	2,777.38	2,778.31	2,777.99	8.36	139.22	175.17	20.38	-48.57	349.22	246.69	102.53	3.406	
2,900.00	2,876.19	2,877.94	2,877.60	8.72	143.16	175.34	20.03	-48.57	364.26	258.85	105.41	3.456	
3,000.00	2,975.01	2,976.47	2,976.12	9.09	146.83	175.48	19.52	-48.57	379.18	271.02	108.16	3.506	
3,100.00	3,073.82	3,074.79	3,074.45	9.46	150.08	175.63	19.24	-48.57	394.27	283.65	110.62	3.564	
3,200.00	3,172.63	3,173.07	3,172.72	9.83	153.32	175.78	19.13	-48.57	409.51	296.44	113.07	3.622	
3,300.00	3,271.44	3,271.30	3,270.95	10.20	156.56	175.94	19.19	-48.57	424.88	309.37	115.51	3.678	
3,400.00	3,370.26	3,369.48	3,369.13	10.58	159.80	176.10	19.42	-48.57	440.39	322.45	117.93	3.734	
3,500.00	3,469.07	3,469.44	3,469.07	10.95	163.54	176.25	19.67	-48.57	455.91	335.26	120.65	3.779	
3,600.00	3,567.88	3,568.25	3,567.88	11.32	168.07	176.37	19.67	-48.57	471.24	347.40	123.85	3.805	
3,700.00	3,666.70	3,667.07	3,666.70	11.69	172.61	176.48	19.67	-48.57	486.57	359.53	127.04	3.830	
3,800.00	3,765.51	3,765.88	3,765.51	12.06	177.14	176.59	19.67	-48.57	501.91	371.67	130.24	3.854	
3,900.00	3,864.32	3,864.70	3,864.32	12.43	181.67	176.69	19.67	-48.57	517.25	383.81	133.44	3.876	
4,000.00	3,963.13	3,968.59	3,968.16	12.80	192.23	176.69	18.06	-48.57	531.33	391.34	139.99	3.795	
4,100.00	4,061.95	4,064.31	4,063.88	13.18	202.02	176.73	17.31	-48.57	546.04	400.03	146.01	3.740	
4,200.00	4,160.76	4,159.78	4,159.34	13.55	211.78	176.81	17.26	-48.57	561.34	409.42	151.92	3.695	
4,300.00	4,259.57	4,254.98	4,254.55	13.92	221.52	176.94	17.93	-48.57	577.23	419.52	157.72	3.660	
4,400.00	4,358.39	4,349.91	4,349.49	14.29	231.23	177.09	19.29	-48.57	593.72	430.33	163.39	3.634	
4,500.00	4,457.20	4,457.10	4,456.35	14.67	248.35	177.19	19.55	-48.57	609.20	436.04	173.16	3.518	
4,600.00	4,556.01	4,557.76	4,556.81	15.04	265.80	177.27	19.75	-48.57	624.71	441.60	183.11	3.412	
4,700.00	4,654.83	4,656.03	4,654.94	15.41	281.59	177.33	19.73	-48.57	640.04	447.82	192.22	3.330	
4,800.00	4,753.64	4,754.11	4,752.88	15.78	296.00	177.40	19.79	-48.57	655.43	454.84	200.59	3.267	
4,900.00	4,852.45	4,837.00	4,835.67	16.16	307.28	177.44	19.67	-48.57	670.89	463.63	207.26	3.237	
5,000.00	4,951.26	4,953.24	4,951.88	16.53	320.86	177.51	19.73	-48.57	686.08	470.81	215.27	3.187	
5,100.00	5,050.08	5,049.55	5,048.11	16.90	330.60	177.58	19.96	-48.57	701.61	480.52	221.10	3.173	
5,200.00	5,148.89	5,151.47	5,150.01	17.28	339.87	177.63	20.04	-48.57	717.02	490.30	226.73	3.162	
5,300.00	5,247.70	5,239.00	5,237.46	17.65	347.83	177.66	19.67	-48.57	732.15	500.47	231.68	3.160	
5,400.00	5,346.52	5,347.28	5,345.73	18.02	354.86	177.72	19.86	-48.57	747.58	511.45	236.13	3.166	
5,500.00	5,445.33	5,446.59	5,445.03	18.40	361.31	177.77	19.94	-48.57	763.00	522.76	240.24	3.176	
5,600.00	5,544.14	5,545.92	5,544.36	18.77	367.77	177.81	19.95	-48.57	778.35	533.98	244.37	3.185	
5,650.35	5,593.90	5,595.95	5,594.38	18.96	371.02	177.84	19.92	-48.57	786.06	539.60	246.46	3.189	
5,700.00	5,643.02	5,645.35	5,643.78	19.11	374.22	177.86	19.87	-48.57	793.22	544.16	249.05	3.185	
5,800.00	5,742.30	5,745.20	5,743.62	19.34	380.71	177.89	19.71	-48.57	805.00	550.81	254.19	3.167	
5,900.00	5,841.94	5,846.99	5,845.34	19.54	388.34	177.90	19.21	-48.57	813.03	553.26	259.77	3.130	
6,000.00	5,941.81	5,945.74	5,944.08	19.70	396.02	177.90	18.79	-48.57	817.65	552.53	265.11	3.084	
6,092.21	6,034.00	6,036.86	6,035.20	19.84	403.12	-35.82	18.55	-48.57	818.94	549.14	269.80	3.035	
6,100.00	6,041.79	6,044.57	6,042.90	19.85	403.72	-35.82	18.54	-48.57	818.93	548.74	270.19	3.031	
6,191.51	6,133.30	6,135.00	6,133.33	19.96	410.75	-35.82	18.47	-48.57	818.87	544.15	274.72	2.981	
6,200.00	6,141.79	6,143.39	6,141.72	19.97	411.41	-35.82	18.47	-48.57	818.87	543.73	275.14	2.976	
6,300.00	6,241.79	6,242.20	6,240.53	20.09	419.10	-35.82	18.57	-48.57	818.95	538.90	280.05	2.924	
6,400.00	6,341.79	6,341.00	6,339.32	20.22	426.79	-35.81	18.85	-48.57	819.18	534.25	284.92	2.875	
6,500.00	6,441.79	6,439.78	6,438.10	20.34	434.47	-35.79	19.30	-48.57	819.55	529.78	289.76	2.828	
6,600.00	6,541.79	6,548.92	6,547.05	20.47	445.14	-35.79	19.28	-48.57	819.54	523.15	296.39	2.765	
6,700.00	6,641.79	6,647.80	6,645.90	20.60	457.42	-35.82	18.59	-48.57	818.98	514.98	304.00	2.694	
6,800.00	6,741.79	6,746.65	6,744.73	20.73	469.69	-35.84	18.08	-48.57	818.56	506.98	311.58	2.627	

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_SPIVEY 39-4
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4849.00ft (Original Well Elev)
Reference Site:	WELD_SPIVEY 9-4 PAD	MD Reference:	WELL @ 4849.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_SPIVEY 39-4	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_SPIVEY 39-4	Database:	EDM 2003.21 Single User Db
Reference Design:	P_SPIVEY 39-4	Offset TVD Reference:	Offset Datum

Offset Design WELD_SPIVEY 9-4 PAD - HSR-THESING #9-4 EXISTING - HSR-THESING #9-4 EXISTING - HSR-THI												Offset Site Error:	0.00 ft
Survey Program: 191-INC												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	
6,900.00	6,841.79	6,845.48	6,843.54	20.86	481.96	-35.85	17.75	-48.57	818.28	499.16	319.13	2.564	
7,000.00	6,941.79	6,944.29	6,942.33	21.00	494.23	-35.86	17.59	-48.57	818.16	491.51	326.64	2.505	
7,037.56	6,979.35	6,981.39	6,979.43	21.05	498.84	-35.86	17.58	-48.57	818.15	488.69	329.45	2.483	
7,100.00	7,041.79	7,043.07	7,041.11	21.13	506.50	-35.86	17.61	-48.57	818.17	484.06	334.12	2.449	
7,200.00	7,141.79	7,141.84	7,139.86	21.27	518.76	-35.85	17.81	-48.57	818.34	476.79	341.55	2.396	
7,300.00	7,241.79	7,240.57	7,238.58	21.41	531.02	-35.83	18.19	-48.57	818.65	469.72	348.93	2.346	
7,400.00	7,341.79	7,339.29	7,337.29	21.55	543.28	-35.81	18.74	-48.57	819.10	462.84	356.26	2.299	
7,500.00	7,441.79	7,437.97	7,435.97	21.69	555.53	-35.78	19.48	-48.57	819.71	456.17	363.54	2.255	
7,600.00	7,541.79	7,461.00	7,458.39	21.83	558.39	-35.77	19.67	-48.57	824.07	458.70	365.37	2.255	
7,700.00	7,641.79	7,461.00	7,458.39	21.98	558.39	-35.77	19.67	-48.57	840.10	474.54	365.56	2.298	
7,800.00	7,741.79	7,461.00	7,458.39	22.12	558.39	-35.77	19.67	-48.57	867.44	501.69	365.75	2.372	
7,900.00	7,841.79	7,461.00	7,458.39	22.27	558.39	-35.77	19.67	-48.57	905.06	539.12	365.94	2.473	
7,963.21	7,905.00	7,461.00	7,458.39	22.36	558.39	-35.77	19.67	-48.57	933.59	567.54	366.06	2.550	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_SPIVEY 39-4
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4849.00ft (Original Well Elev)
Reference Site:	WELD_SPIVEY 9-4 PAD	MD Reference:	WELL @ 4849.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_SPIVEY 39-4	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_SPIVEY 39-4	Database:	EDM 2003.21 Single User Db
Reference Design:	P_SPIVEY 39-4	Offset TVD Reference:	Offset Datum

Offset Design WELD_SPIVEY 9-4 PAD - P_SPIVEY 37-4 - P_SPIVEY 37-4 - PLAN #1 4-5-10 RHS												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	-147.28	-13.47	-8.65	16.01				
100.00	100.00	100.00	100.00	0.10	0.10	-147.28	-13.47	-8.65	16.01	15.82	0.19	83.781	
200.00	200.00	200.00	200.00	0.32	0.32	-147.28	-13.47	-8.65	16.01	15.37	0.64	24.987	
300.00	300.00	300.00	300.00	0.55	0.55	-147.28	-13.47	-8.65	16.01	14.92	1.09	14.683	
400.00	400.00	400.00	400.00	0.77	0.77	-147.28	-13.47	-8.65	16.01	14.47	1.54	10.396	
500.00	500.00	500.00	500.00	0.99	0.99	-147.28	-13.47	-8.65	16.01	14.02	1.99	8.047	
600.00	600.00	600.00	600.00	1.22	1.22	-147.28	-13.47	-8.65	16.01	13.57	2.44	6.564 CC, ES	
700.00	699.98	699.42	699.40	1.42	1.42	71.13	-15.01	-9.42	17.09	14.26	2.84	6.027 SF	
800.00	799.84	798.65	798.49	1.61	1.60	81.95	-19.62	-11.73	20.89	17.68	3.21	6.515	
900.00	899.45	897.53	896.99	1.82	1.81	92.81	-27.27	-15.56	28.23	24.62	3.61	7.811	
1,000.00	998.70	995.87	994.61	2.07	2.05	100.77	-37.89	-20.87	39.42	35.34	4.08	9.670	
1,041.85	1,040.10	1,036.83	1,035.14	2.18	2.16	103.24	-43.19	-23.53	45.22	40.93	4.29	10.535	
1,100.00	1,097.56	1,093.55	1,091.11	2.35	2.32	105.57	-51.39	-27.63	54.18	49.58	4.60	11.771	
1,200.00	1,196.37	1,190.58	1,186.40	2.66	2.64	106.58	-67.71	-35.80	71.51	66.33	5.18	13.798	
1,300.00	1,295.19	1,286.75	1,280.19	2.98	3.02	105.65	-86.73	-45.31	91.12	85.31	5.81	15.694	
1,400.00	1,394.00	1,381.88	1,372.21	3.31	3.44	103.88	-108.29	-56.10	113.05	106.59	6.46	17.493	
1,500.00	1,492.81	1,475.77	1,462.20	3.66	3.91	101.77	-132.25	-68.09	137.42	130.27	7.14	19.234	
1,600.00	1,591.62	1,568.25	1,549.92	4.00	4.44	99.58	-158.41	-81.18	164.30	156.46	7.84	20.951	
1,700.00	1,690.44	1,659.16	1,635.20	4.35	5.01	97.45	-186.58	-95.28	193.77	185.22	8.55	22.665	
1,800.00	1,789.25	1,748.37	1,717.86	4.71	5.62	95.45	-216.56	-110.28	225.84	216.58	9.26	24.388	
1,900.00	1,888.06	1,837.01	1,798.95	5.07	6.27	93.56	-248.57	-126.30	260.48	250.51	9.97	26.118	
2,000.00	1,986.88	1,930.15	1,883.78	5.43	6.98	91.94	-282.95	-143.50	296.11	285.40	10.71	27.644	
2,100.00	2,085.69	2,023.29	1,968.62	5.79	7.71	90.66	-317.34	-160.71	331.91	320.46	11.45	28.984	
2,200.00	2,184.50	2,116.44	2,053.46	6.15	8.44	89.62	-351.72	-177.92	367.82	355.63	12.19	30.165	
2,300.00	2,283.32	2,209.58	2,138.29	6.52	9.18	88.78	-386.11	-195.12	403.82	390.88	12.94	31.214	
2,400.00	2,382.13	2,302.72	2,223.13	6.88	9.92	88.07	-420.49	-212.33	439.89	426.20	13.68	32.149	
2,500.00	2,480.94	2,395.87	2,307.97	7.25	10.66	87.46	-454.88	-229.53	476.00	461.57	14.43	32.987	
2,600.00	2,579.75	2,489.01	2,392.80	7.62	11.41	86.95	-489.26	-246.74	512.15	496.97	15.18	33.743	
2,700.00	2,678.57	2,582.15	2,477.64	7.99	12.16	86.50	-523.65	-263.95	548.34	532.41	15.93	34.428	
2,800.00	2,777.38	2,675.30	2,562.48	8.36	12.92	86.10	-558.03	-281.15	584.55	567.87	16.68	35.051	
2,900.00	2,876.19	2,768.44	2,647.31	8.72	13.67	85.76	-592.42	-298.36	620.78	603.35	17.43	35.622	
3,000.00	2,975.01	2,861.58	2,732.15	9.09	14.43	85.45	-626.81	-315.57	657.03	638.85	18.18	36.145	
3,100.00	3,073.82	2,954.72	2,816.99	9.46	15.18	85.17	-661.19	-332.77	693.29	674.36	18.93	36.627	
3,200.00	3,172.63	3,047.87	2,901.82	9.83	15.94	84.92	-695.58	-349.98	729.57	709.89	19.68	37.073	
3,300.00	3,271.44	3,141.01	2,986.66	10.20	16.70	84.69	-729.96	-367.18	765.85	745.42	20.43	37.486	
3,400.00	3,370.26	3,234.15	3,071.50	10.58	17.46	84.49	-764.35	-384.39	802.15	780.97	21.18	37.871	
3,500.00	3,469.07	3,327.30	3,156.33	10.95	18.22	84.30	-798.73	-401.60	838.46	816.52	21.93	38.230	
3,600.00	3,567.88	3,420.44	3,241.17	11.32	18.98	84.13	-833.12	-418.80	874.77	852.09	22.68	38.565	
3,700.00	3,666.70	3,513.58	3,326.01	11.69	19.74	83.97	-867.50	-436.01	911.09	887.65	23.43	38.880	
3,800.00	3,765.51	3,606.73	3,410.84	12.06	20.50	83.82	-901.89	-453.22	947.41	923.23	24.18	39.176	
3,900.00	3,864.32	3,699.87	3,495.68	12.43	21.26	83.69	-936.27	-470.42	983.74	958.80	24.94	39.446	
4,000.00	3,963.13	3,793.01	3,580.52	12.80	22.03	83.56	-970.66	-487.63	1,020.07	994.37	25.70	39.690	
4,100.00	4,061.95	3,886.16	3,665.35	13.18	22.79	83.45	-1,005.04	-504.83	1,056.41	1,029.95	26.46	39.919	
4,200.00	4,160.76	3,979.30	3,750.19	13.55	23.55	83.34	-1,039.43	-522.04	1,092.75	1,065.53	27.23	40.134	
4,300.00	4,259.57	4,072.44	3,835.03	13.92	24.31	83.23	-1,073.81	-539.25	1,129.10	1,101.11	27.99	40.338	
4,400.00	4,358.39	4,165.59	3,919.86	14.29	25.08	83.14	-1,108.20	-556.45	1,165.45	1,136.69	28.75	40.531	
4,500.00	4,457.20	4,258.73	4,004.70	14.67	25.84	83.05	-1,142.58	-573.66	1,201.80	1,172.28	29.52	40.713	
4,600.00	4,556.01	4,351.87	4,089.54	15.04	26.61	82.96	-1,176.97	-590.87	1,238.15	1,207.86	30.28	40.886	
4,700.00	4,654.83	4,445.02	4,174.37	15.41	27.37	82.88	-1,211.36	-608.07	1,274.50	1,243.45	31.05	41.050	
4,800.00	4,753.64	4,538.16	4,259.21	15.78	28.13	82.81	-1,245.74	-625.28	1,310.86	1,279.05	31.81	41.205	
4,900.00	4,852.45	4,631.30	4,344.05	16.16	28.90	82.74	-1,280.13	-642.48	1,347.22	1,314.64	32.58	41.354	
5,000.00	4,951.26	4,724.45	4,428.88	16.53	29.66	82.67	-1,314.51	-659.69	1,383.58	1,350.24	33.34	41.495	

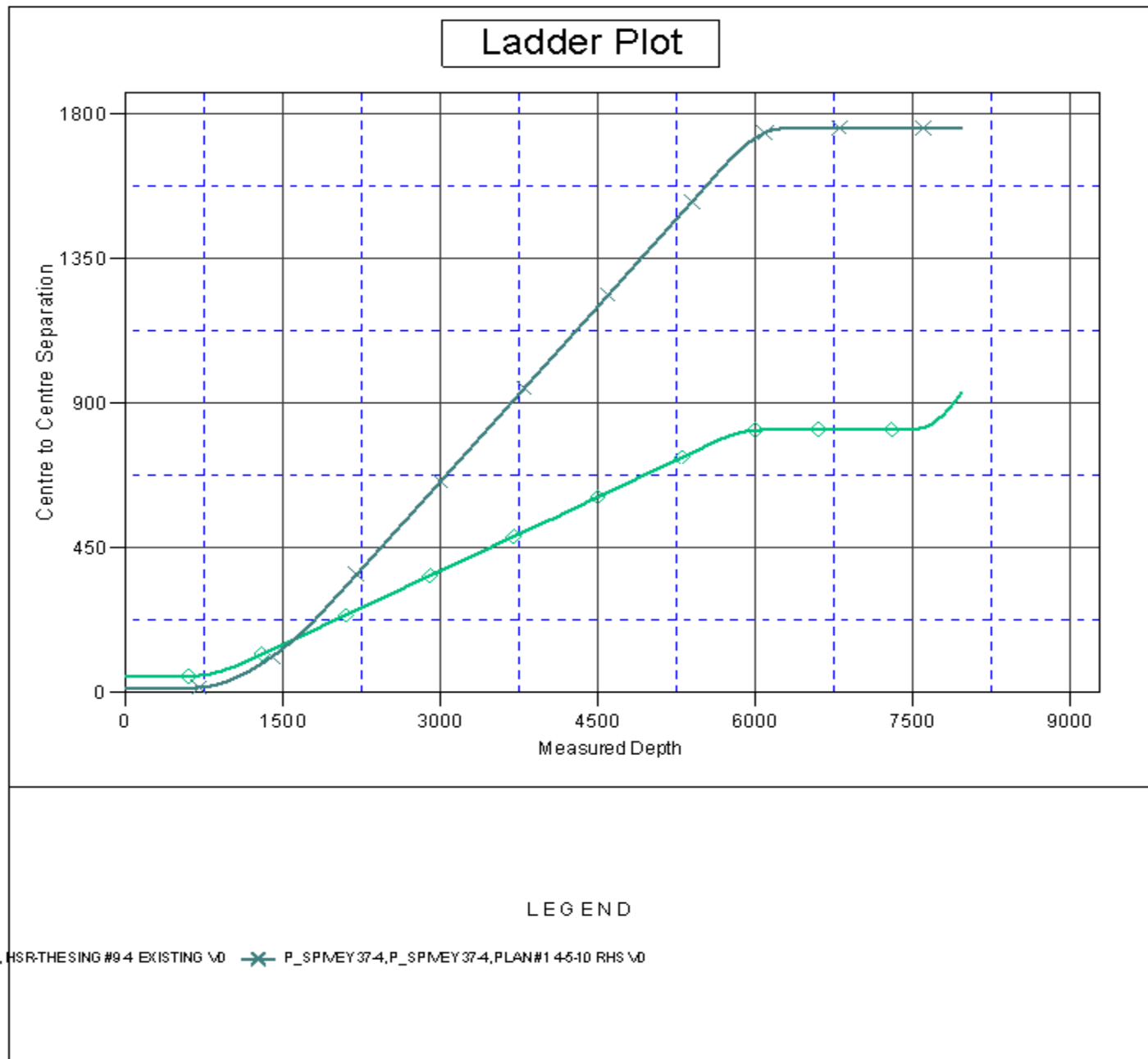
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_SPIVEY 39-4
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4849.00ft (Original Well Elev)
Reference Site:	WELD_SPIVEY 9-4 PAD	MD Reference:	WELL @ 4849.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_SPIVEY 39-4	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_SPIVEY 39-4	Database:	EDM 2003.21 Single User Db
Reference Design:	P_SPIVEY 39-4	Offset TVD Reference:	Offset Datum

Offset Design WELD_SPIVEY 9-4 PAD - P_SPIVEY 37-4 - P_SPIVEY 37-4 - PLAN #1 4-5-10 RHS												Offset Site Error:	0.00 ft
Survey Program: 0-MWD												Offset Well Error:	0.00 ft
Reference	Offset	Semi Major Axis		Distance									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.00	5,050.08	4,817.59	4,513.72	16.90	30.43	82.60	-1,348.90	-676.90	1,419.94	1,385.83	34.11	41.630	
5,200.00	5,148.89	4,910.73	4,598.56	17.28	31.19	82.54	-1,383.28	-694.10	1,456.30	1,421.43	34.87	41.759	
5,300.00	5,247.70	5,003.88	4,683.39	17.65	31.96	82.48	-1,417.67	-711.31	1,492.67	1,457.03	35.64	41.882	
5,400.00	5,346.52	5,097.02	4,768.23	18.02	32.72	82.43	-1,452.05	-728.52	1,529.03	1,492.63	36.41	42.000	
5,500.00	5,445.33	5,190.16	4,853.07	18.40	33.49	82.38	-1,486.44	-745.72	1,565.40	1,528.23	37.17	42.112	
5,600.00	5,544.14	5,283.31	4,937.90	18.77	34.25	82.33	-1,520.82	-762.93	1,601.77	1,563.83	37.94	42.221	
5,650.35	5,593.90	5,330.21	4,980.62	18.96	34.64	82.30	-1,538.14	-771.59	1,620.08	1,581.76	38.32	42.273	
5,700.00	5,643.02	5,376.42	5,022.71	19.11	35.01	82.65	-1,555.20	-780.13	1,638.19	1,599.42	38.78	42.247	
5,800.00	5,742.30	5,544.16	5,176.85	19.34	36.13	83.13	-1,614.33	-809.72	1,673.54	1,633.75	39.79	42.059	
5,900.00	5,841.94	5,752.10	5,372.80	19.54	37.16	83.37	-1,676.43	-840.79	1,703.40	1,662.69	40.71	41.838	
6,000.00	5,941.81	5,968.09	5,581.12	19.70	38.04	83.44	-1,727.29	-866.24	1,727.12	1,685.64	41.48	41.634	
6,092.21	6,034.00	6,173.14	5,782.32	19.84	38.68	-130.35	-1,762.47	-883.85	1,743.26	1,701.22	42.05	41.460	
6,100.00	6,041.79	6,190.69	5,799.66	19.85	38.73	-130.39	-1,764.88	-885.05	1,744.37	1,702.29	42.08	41.451	
6,200.00	6,141.79	6,418.32	6,025.82	19.97	39.20	-130.71	-1,787.50	-896.37	1,754.63	1,712.14	42.49	41.290	
6,300.00	6,241.79	6,634.48	6,241.79	20.09	39.44	-130.81	-1,794.08	-899.67	1,757.58	1,714.72	42.86	41.004	
6,400.00	6,341.79	6,734.48	6,341.79	20.22	39.50	-130.81	-1,794.08	-899.67	1,757.58	1,714.48	43.10	40.780	
6,500.00	6,441.79	6,834.48	6,441.79	20.34	39.57	-130.81	-1,794.08	-899.67	1,757.58	1,714.25	43.33	40.561	
6,600.00	6,541.79	6,934.48	6,541.79	20.47	39.63	-130.81	-1,794.08	-899.67	1,757.58	1,714.02	43.57	40.342	
6,700.00	6,641.79	7,034.48	6,641.79	20.60	39.69	-130.81	-1,794.08	-899.67	1,757.58	1,713.78	43.81	40.121	
6,800.00	6,741.79	7,134.48	6,741.79	20.73	39.76	-130.81	-1,794.08	-899.67	1,757.58	1,713.53	44.05	39.901	
6,900.00	6,841.79	7,234.48	6,841.79	20.86	39.82	-130.81	-1,794.08	-899.67	1,757.58	1,713.29	44.29	39.679	
7,000.00	6,941.79	7,334.48	6,941.79	21.00	39.89	-130.81	-1,794.08	-899.67	1,757.58	1,713.04	44.54	39.458	
7,100.00	7,041.79	7,434.48	7,041.79	21.13	39.96	-130.81	-1,794.08	-899.67	1,757.58	1,712.79	44.80	39.236	
7,200.00	7,141.79	7,534.48	7,141.79	21.27	40.03	-130.81	-1,794.08	-899.67	1,757.58	1,712.53	45.05	39.014	
7,300.00	7,241.79	7,634.48	7,241.79	21.41	40.10	-130.81	-1,794.08	-899.67	1,757.58	1,712.28	45.31	38.792	
7,400.00	7,341.79	7,734.48	7,341.79	21.55	40.18	-130.81	-1,794.08	-899.67	1,757.58	1,712.01	45.57	38.569	
7,500.00	7,441.79	7,834.48	7,441.79	21.69	40.25	-130.81	-1,794.08	-899.67	1,757.58	1,711.75	45.83	38.347	
7,600.00	7,541.79	7,934.48	7,541.79	21.83	40.32	-130.81	-1,794.08	-899.67	1,757.58	1,711.48	46.10	38.125	
7,700.00	7,641.79	8,034.48	7,641.79	21.98	40.40	-130.81	-1,794.08	-899.67	1,757.58	1,711.21	46.37	37.904	
7,800.00	7,741.79	8,134.48	7,741.79	22.12	40.48	-130.81	-1,794.08	-899.67	1,757.58	1,710.94	46.64	37.683	
7,900.00	7,841.79	8,234.48	7,841.79	22.27	40.55	-130.81	-1,794.08	-899.67	1,757.58	1,710.67	46.92	37.462	
7,963.21	7,905.00	8,297.68	7,905.00	22.36	40.60	-130.81	-1,794.08	-899.67	1,757.58	1,710.49	47.09	37.322	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_SPIVEY 39-4
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4849.00ft (Original Well Elev)
Reference Site:	WELD_SPIVEY 9-4 PAD	MD Reference:	WELL @ 4849.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_SPIVEY 39-4	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_SPIVEY 39-4	Database:	EDM 2003.21 Single User Db
Reference Design:	P_SPIVEY 39-4	Offset TVD Reference:	Offset Datum

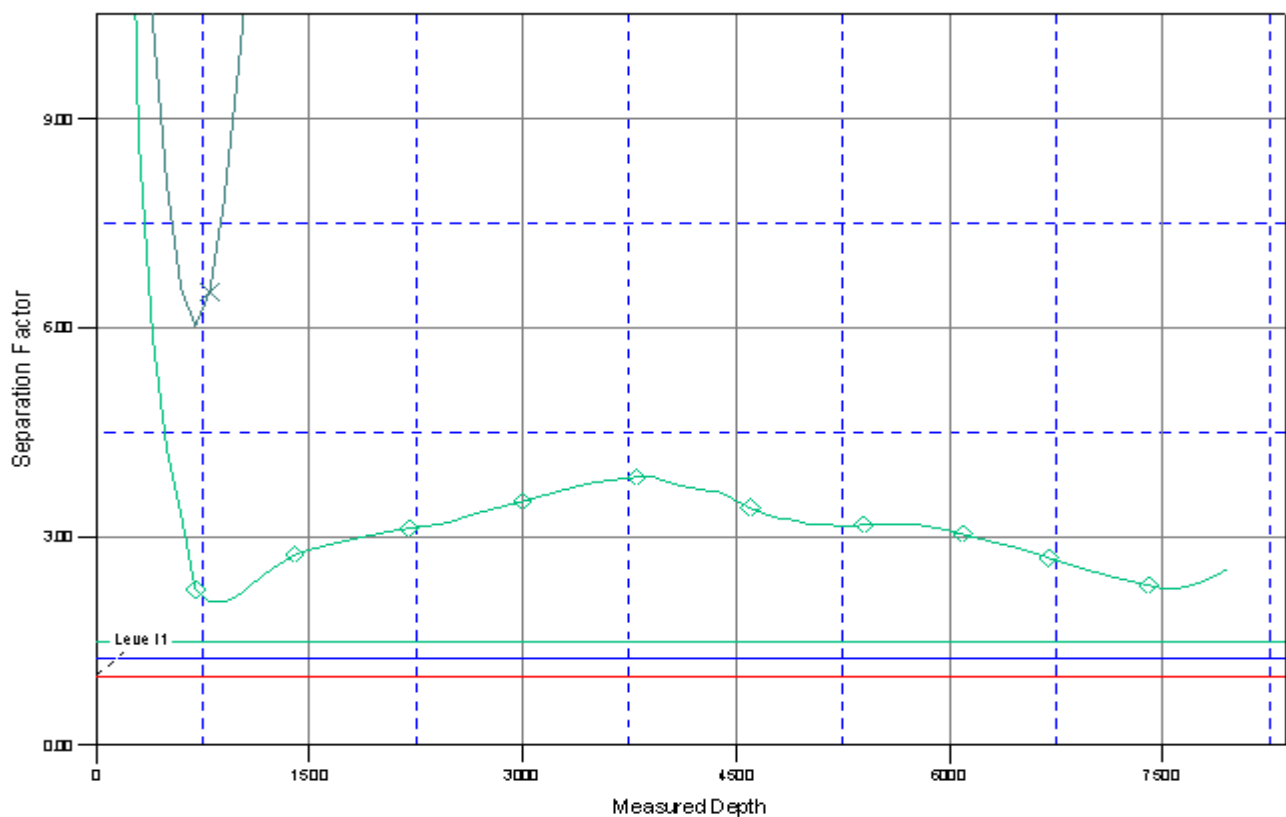
Reference Depths are relative to WELL @ 4849.00ft (Original Well Elev) Coordinates are relative to: P_SPIVEY 39-4
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is 105° 30' 0.000 W ° Grid Convergence at Surface is: 0.47°




Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_SPIVEY 39-4
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	WELL @ 4849.00ft (Original Well Elev)
Reference Site:	WELD_SPIVEY 9-4 PAD	MD Reference:	WELL @ 4849.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
Reference Well:	P_SPIVEY 39-4	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_SPIVEY 39-4	Database:	EDM 2003.21 Single User Db
Reference Design:	P_SPIVEY 39-4	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4849.00ft (Original Well Elev) Coordinates are relative to: P_SPIVEY 39-4
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: 0.47°

Separation Factor Plot



LEGEND

3, HSR-THEISING #9-4 EXISTING WD  P_SPIVEY 39-4, P_SPIVEY 39-4, PLAN#1 4-5-10 RHS WD