



US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_SPIVEY 9-4 PAD

P_SPIVEY 37-4

P_SPIVEY 37-4

Plan: PLAN #1 4-5-10 RHS

Standard Planning Report

05 April, 2010





Project: COLORADO NORTHERN ZONE - 83
 Site: WELD_SPIVEY 9-4 PAD
 Well: P_SPIVEY 37-4
 Wellbore: P_SPIVEY 37-4
 Section: SECTION 4 T3N R66W
 SHL: 75 FSL 1400 FEL
 Design: PLAN #1 4-5-10 RHS
 Latitude: 40° 15' 6.512 N
 Longitude: 104° 46' 29.269 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	3979.09	PARKMAN
4200.00	4473.15	SUSSEX
7031.00	7423.68	NIO A
7321.00	7713.68	CODELL
7754.00	8146.68	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	
1819.06	24.38	206.58	1782.60	-228.48	-114.33	2.00	206.58	255.48	
5404.62	24.38	206.58	5048.40	-1552.14	-776.69	0.00	0.00	1735.62	
6623.68	0.00	0.00	6231.00	-1780.62	-891.01	2.00	180.00	1991.11	
8297.68	0.00	0.00	7905.00	-1780.62	-891.01	0.00	0.00	1991.11	TD at 8297.68

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

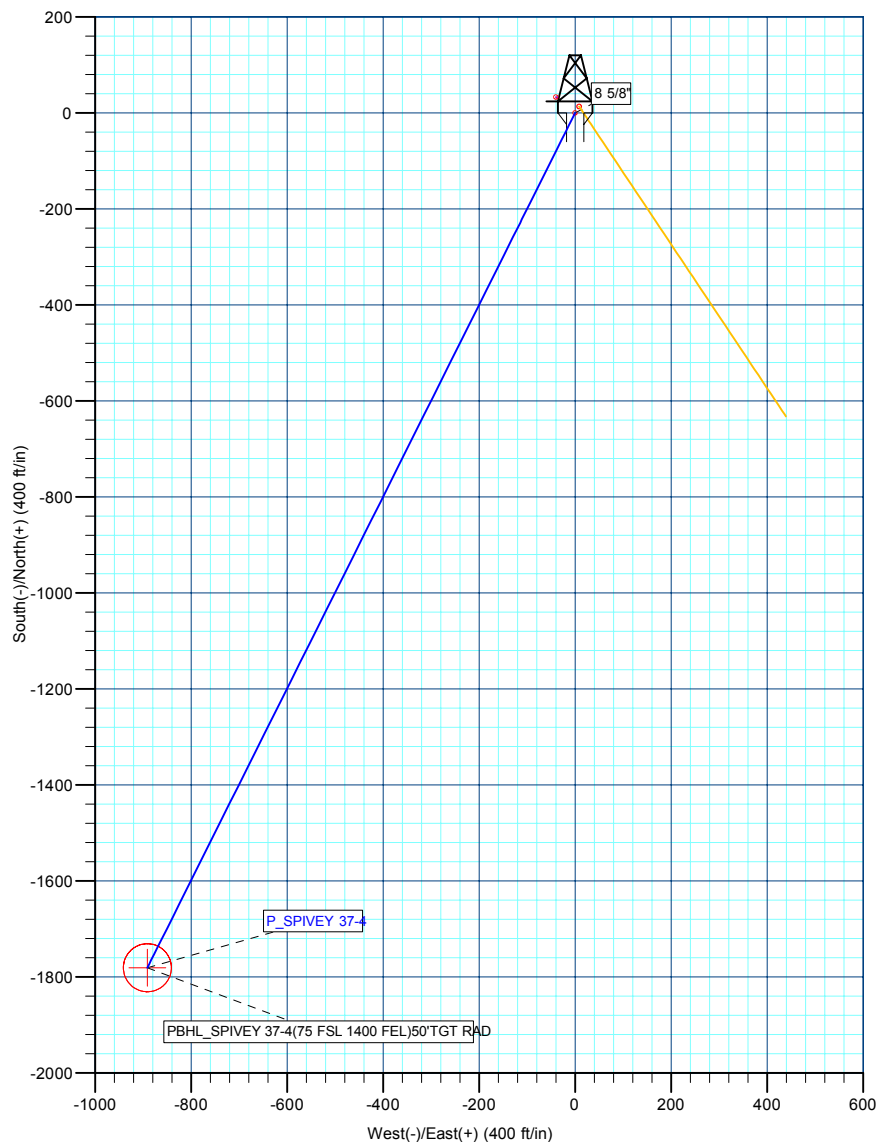
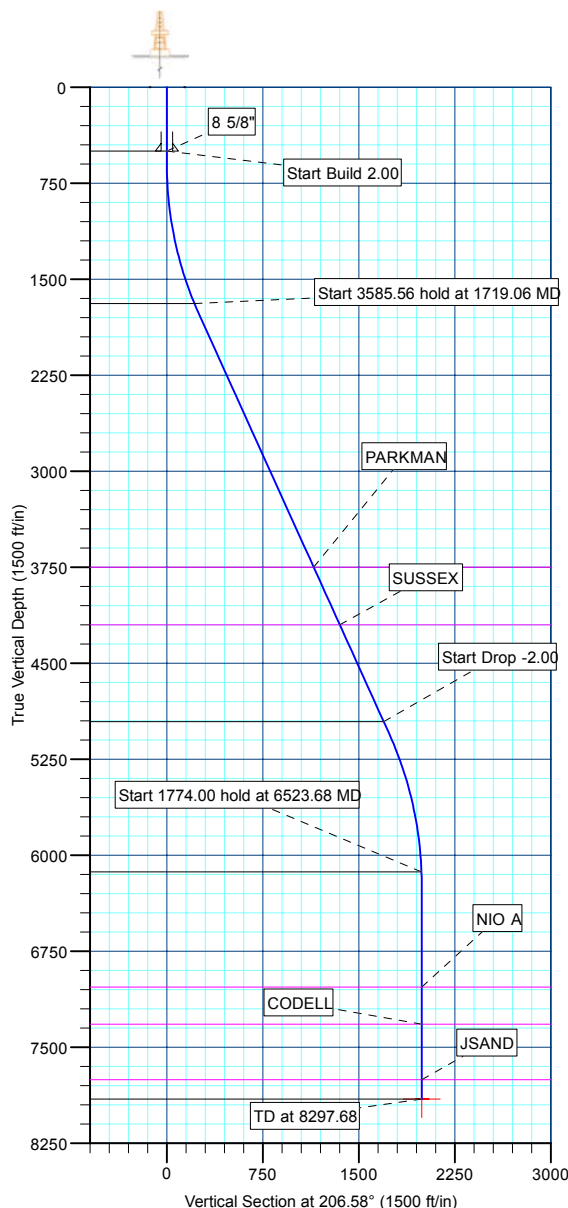
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
PBHL	7905.00	-1780.62	-891.01	40° 14' 48.916 N	104° 46' 40.760 W	Circle (Radius: 50.00)

WELL DETAILS: P_SPIVEY 37-4

+N/-S	+E/-W	Northing	Ground Level:	4834.00	Latitude	Longitude	Slot
0.00	0.00	1335403.39	Easting	3202415.79	40° 15' 6.512 N	104° 46' 29.269 W	

LEGEND

— HSR-THESING #9-4 EXISTING, HSR-THESING #9-4 EXISTING, HSR-THESING #9-4 EXISTING V0
 — P_SPIVEY 39-4, P_SPIVEY 39-4, P_SPIVEY 39-4 V0
 — PLAN #1 4-5-10 RHS



Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_SPIVEY 37-4
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 37-4	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_SPIVEY 37-4		
Design:	PLAN #1 4-5-10 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_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 37-4					
Well Position	+N/-S	0.00 ft	Northing:	1,335,403.39 ft	Latitude:	40° 15' 6.512 N
	+E/-W	0.00 ft	Easting:	3,202,415.79 ft	Longitude:	104° 46' 29.269 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,834.00 ft

Wellbore	P_SPIVEY 37-4				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/5/2010	9.02	66.97	53,178

Design	PLAN #1 4-5-10 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	206.58

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	
1,819.06	24.38	206.58	1,782.60	-228.48	-114.33	2.00	2.00	0.00	206.58	
5,404.62	24.38	206.58	5,048.40	-1,552.14	-776.69	0.00	0.00	0.00	0.00	
6,623.68	0.00	0.00	6,231.00	-1,780.62	-891.01	2.00	-2.00	0.00	180.00	
8,297.68	0.00	0.00	7,905.00	-1,780.62	-891.01	0.00	0.00	0.00	0.00	PBHL_SPIVEY 37-4

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_SPIVEY 37-4
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 37-4	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_SPIVEY 37-4		
Design:	PLAN #1 4-5-10 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)
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	2.00	206.58	699.98	-1.56	-0.78	1.75	2.00	2.00	0.00
800.00	4.00	206.58	799.84	-6.24	-3.12	6.98	2.00	2.00	0.00
900.00	6.00	206.58	899.45	-14.03	-7.02	15.69	2.00	2.00	0.00
1,000.00	8.00	206.58	998.70	-24.93	-12.48	27.88	2.00	2.00	0.00
1,100.00	10.00	206.58	1,097.47	-38.92	-19.48	43.52	2.00	2.00	0.00
1,200.00	12.00	206.58	1,195.62	-55.98	-28.01	62.60	2.00	2.00	0.00
1,300.00	14.00	206.58	1,293.06	-76.10	-38.08	85.10	2.00	2.00	0.00
1,400.00	16.00	206.58	1,389.64	-99.25	-49.66	110.98	2.00	2.00	0.00
1,500.00	18.00	206.58	1,485.27	-125.39	-62.74	140.21	2.00	2.00	0.00
1,600.00	20.00	206.58	1,579.82	-154.50	-77.31	172.77	2.00	2.00	0.00
1,700.00	22.00	206.58	1,673.17	-186.55	-93.35	208.60	2.00	2.00	0.00
Start 3585.56 hold at 1719.06 MD									
1,719.06	22.38	206.58	1,690.82	-192.99	-96.57	215.80	2.00	2.00	0.00
1,800.00	24.00	206.58	1,765.21	-221.49	-110.83	247.67	2.00	2.00	0.00
1,819.06	24.38	206.58	1,782.60	-228.48	-114.33	255.48	2.00	2.00	0.00
1,900.00	24.38	206.58	1,856.32	-258.36	-129.28	288.90	0.00	0.00	0.00
2,000.00	24.38	206.58	1,947.40	-295.27	-147.75	330.18	0.00	0.00	0.00
2,100.00	24.38	206.58	2,038.49	-332.19	-166.23	371.46	0.00	0.00	0.00
2,200.00	24.38	206.58	2,129.57	-369.11	-184.70	412.74	0.00	0.00	0.00
2,300.00	24.38	206.58	2,220.65	-406.02	-203.17	454.02	0.00	0.00	0.00
2,400.00	24.38	206.58	2,311.73	-442.94	-221.64	495.30	0.00	0.00	0.00
2,500.00	24.38	206.58	2,402.81	-479.86	-240.12	536.58	0.00	0.00	0.00
2,600.00	24.38	206.58	2,493.90	-516.77	-258.59	577.86	0.00	0.00	0.00
2,700.00	24.38	206.58	2,584.98	-553.69	-277.06	619.14	0.00	0.00	0.00
2,800.00	24.38	206.58	2,676.06	-590.61	-295.54	660.42	0.00	0.00	0.00
2,900.00	24.38	206.58	2,767.14	-627.52	-314.01	701.70	0.00	0.00	0.00
3,000.00	24.38	206.58	2,858.22	-664.44	-332.48	742.98	0.00	0.00	0.00
3,100.00	24.38	206.58	2,949.31	-701.36	-350.96	784.26	0.00	0.00	0.00
3,200.00	24.38	206.58	3,040.39	-738.27	-369.43	825.54	0.00	0.00	0.00
3,300.00	24.38	206.58	3,131.47	-775.19	-387.90	866.82	0.00	0.00	0.00
3,400.00	24.38	206.58	3,222.55	-812.10	-406.37	908.10	0.00	0.00	0.00
3,500.00	24.38	206.58	3,313.63	-849.02	-424.85	949.39	0.00	0.00	0.00
3,600.00	24.38	206.58	3,404.72	-885.94	-443.32	990.67	0.00	0.00	0.00
3,700.00	24.38	206.58	3,495.80	-922.85	-461.79	1,031.95	0.00	0.00	0.00
3,800.00	24.38	206.58	3,586.88	-959.77	-480.27	1,073.23	0.00	0.00	0.00
3,900.00	24.38	206.58	3,677.96	-996.69	-498.74	1,114.51	0.00	0.00	0.00
PARKMAN									
3,979.09	24.38	206.58	3,750.00	-1,025.89	-513.35	1,147.16	0.00	0.00	0.00
4,000.00	24.38	206.58	3,769.04	-1,033.60	-517.21	1,155.79	0.00	0.00	0.00
4,100.00	24.38	206.58	3,860.13	-1,070.52	-535.68	1,197.07	0.00	0.00	0.00
4,200.00	24.38	206.58	3,951.21	-1,107.44	-554.16	1,238.35	0.00	0.00	0.00
4,300.00	24.38	206.58	4,042.29	-1,144.35	-572.63	1,279.63	0.00	0.00	0.00
4,400.00	24.38	206.58	4,133.37	-1,181.27	-591.10	1,320.91	0.00	0.00	0.00
SUSSEX									
4,473.15	24.38	206.58	4,200.00	-1,208.28	-604.62	1,351.11	0.00	0.00	0.00
4,500.00	24.38	206.58	4,224.45	-1,218.19	-609.58	1,362.19	0.00	0.00	0.00
4,600.00	24.38	206.58	4,315.53	-1,255.10	-628.05	1,403.47	0.00	0.00	0.00
4,700.00	24.38	206.58	4,406.62	-1,292.02	-646.52	1,444.75	0.00	0.00	0.00
4,800.00	24.38	206.58	4,497.70	-1,328.94	-664.99	1,486.03	0.00	0.00	0.00
4,900.00	24.38	206.58	4,588.78	-1,365.85	-683.47	1,527.31	0.00	0.00	0.00
5,000.00	24.38	206.58	4,679.86	-1,402.77	-701.94	1,568.59	0.00	0.00	0.00
5,100.00	24.38	206.58	4,770.94	-1,439.69	-720.41	1,609.87	0.00	0.00	0.00

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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 37-4	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_SPIVEY 37-4		
Design:	PLAN #1 4-5-10 RHS		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
5,200.00	24.38	206.58	4,862.03	-1,476.60	-738.89	1,651.15	0.00	0.00	0.00	
5,300.00	24.38	206.58	4,953.11	-1,513.52	-757.36	1,692.43	0.00	0.00	0.00	
Start Drop -2.00										
5,304.62	24.38	206.58	4,957.32	-1,515.23	-758.21	1,694.34	0.00	0.00	0.00	
5,400.00	24.38	206.58	5,044.19	-1,550.44	-775.83	1,733.72	0.00	0.00	0.00	
5,404.62	24.38	206.58	5,048.40	-1,552.14	-776.69	1,735.62	0.00	0.00	0.00	
5,500.00	22.47	206.58	5,135.91	-1,586.05	-793.65	1,773.54	2.00	-2.00	0.00	
5,600.00	20.47	206.58	5,228.97	-1,618.79	-810.04	1,810.15	2.00	-2.00	0.00	
5,700.00	18.47	206.58	5,323.24	-1,648.60	-824.95	1,843.48	2.00	-2.00	0.00	
5,800.00	16.47	206.58	5,418.62	-1,675.45	-838.39	1,873.51	2.00	-2.00	0.00	
5,900.00	14.47	206.58	5,514.99	-1,699.31	-850.33	1,900.19	2.00	-2.00	0.00	
6,000.00	12.47	206.58	5,612.23	-1,720.15	-860.75	1,923.49	2.00	-2.00	0.00	
6,100.00	10.47	206.58	5,710.23	-1,737.93	-869.65	1,943.38	2.00	-2.00	0.00	
6,200.00	8.47	206.58	5,808.86	-1,752.65	-877.02	1,959.83	2.00	-2.00	0.00	
6,300.00	6.47	206.58	5,908.01	-1,764.28	-882.84	1,972.84	2.00	-2.00	0.00	
6,400.00	4.47	206.58	6,007.55	-1,772.81	-887.11	1,982.38	2.00	-2.00	0.00	
6,500.00	2.47	206.58	6,107.36	-1,778.23	-889.82	1,988.44	2.00	-2.00	0.00	
Start 1774.00 hold at 6523.68 MD										
6,523.68	2.00	206.58	6,131.02	-1,779.06	-890.23	1,989.36	2.00	-2.00	0.00	
6,600.00	0.47	206.58	6,207.32	-1,780.53	-890.97	1,991.01	2.00	-2.00	0.00	
6,623.68	0.00	0.00	6,231.00	-1,780.62	-891.01	1,991.11	2.00	-2.00	0.00	
6,700.00	0.00	0.00	6,307.32	-1,780.62	-891.01	1,991.11	0.00	0.00	0.00	
6,800.00	0.00	0.00	6,407.32	-1,780.62	-891.01	1,991.11	0.00	0.00	0.00	
6,900.00	0.00	0.00	6,507.32	-1,780.62	-891.01	1,991.11	0.00	0.00	0.00	
7,000.00	0.00	0.00	6,607.32	-1,780.62	-891.01	1,991.11	0.00	0.00	0.00	
7,100.00	0.00	0.00	6,707.32	-1,780.62	-891.01	1,991.11	0.00	0.00	0.00	
7,200.00	0.00	0.00	6,807.32	-1,780.62	-891.01	1,991.11	0.00	0.00	0.00	
7,300.00	0.00	0.00	6,907.32	-1,780.62	-891.01	1,991.11	0.00	0.00	0.00	
7,400.00	0.00	0.00	7,007.32	-1,780.62	-891.01	1,991.11	0.00	0.00	0.00	
NIO A										
7,423.68	0.00	0.00	7,031.00	-1,780.62	-891.01	1,991.11	0.00	0.00	0.00	
7,500.00	0.00	0.00	7,107.32	-1,780.62	-891.01	1,991.11	0.00	0.00	0.00	
7,600.00	0.00	0.00	7,207.32	-1,780.62	-891.01	1,991.11	0.00	0.00	0.00	
7,700.00	0.00	0.00	7,307.32	-1,780.62	-891.01	1,991.11	0.00	0.00	0.00	
CODELL										
7,713.68	0.00	0.00	7,321.00	-1,780.62	-891.01	1,991.11	0.00	0.00	0.00	
7,800.00	0.00	0.00	7,407.32	-1,780.62	-891.01	1,991.11	0.00	0.00	0.00	
7,900.00	0.00	0.00	7,507.32	-1,780.62	-891.01	1,991.11	0.00	0.00	0.00	
8,000.00	0.00	0.00	7,607.32	-1,780.62	-891.01	1,991.11	0.00	0.00	0.00	
8,100.00	0.00	0.00	7,707.32	-1,780.62	-891.01	1,991.11	0.00	0.00	0.00	
JSAND										
8,146.68	0.00	0.00	7,754.00	-1,780.62	-891.01	1,991.11	0.00	0.00	0.00	
8,200.00	0.00	0.00	7,807.32	-1,780.62	-891.01	1,991.11	0.00	0.00	0.00	
PBHL_SPIVEY 37-4(75 FSL 1400 FEL)50'TGT RAD										
8,297.68	0.00	0.00	7,905.00	-1,780.62	-891.01	1,991.11	0.00	0.00	0.00	

Database:	EDM 2003.21 Single User Db	Local Co-ordinate Reference:	Well P_SPIVEY 37-4
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 37-4	Survey Calculation Method:	Minimum Curvature
Wellbore:	P_SPIVEY 37-4		
Design:	PLAN #1 4-5-10 RHS		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
PBHL_SPIVEY 37-4(7 - plan hits target center - Circle (radius 50.00)	0.00	0.00	7,905.00	-1,780.62	-891.01	1,333,615.55	3,201,539.37	40° 14' 48.916 N	104° 46' 40.760 W

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

Formations						
Measured Depth	Vertical Depth				Dip	Dip Direction
(ft)	(ft)		Name	Lithology	(°)	(°)
3,979.09	3,750.00		PARKMAN			
4,473.15	4,200.00		SUSSEX			
7,423.68	7,031.00		NIO A			
7,713.68	7,321.00		CODELL			
8,146.68	7,754.00		JSAND			

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S	+E/-W		Comment
(ft)	(ft)	(ft)	(ft)		
500.00	500.00	0.00	0.00		Start Build 2.00
1,719.06	1,690.82	-192.99	-96.57		Start 3585.56 hold at 1719.06 MD
5,304.62	4,957.32	-1,515.23	-758.21		Start Drop -2.00
6,523.68	6,131.02	-1,779.06	-890.23		Start 1774.00 hold at 6523.68 MD
8,297.68	7,905.00	-1,780.62	-891.01		TD at 8297.68



US ROCKIES REGION PLANNING

**COLORADO NORTHERN ZONE - 83
WELD_SPIVEY 9-4 PAD
P_SPIVEY 37-4**

**P_SPIVEY 37-4
PLAN #1 4-5-10 RHS**

Anticollision Report

05 April, 2010



Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_SPIVEY 37-4
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 37-4	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_SPIVEY 37-4	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 4-5-10 RHS	Offset TVD Reference:	Offset Datum

Reference	PLAN #1 4-5-10 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 4/5/2010			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	8,297.68	PLAN #1 4-5-10 RHS (P_SPIVEY 37-4)	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	298.00	298.00	51.73	44.86	7.531	CC
HSR-THESING #9-4 EXISTING - HSR-THESING #9-4 E	800.00	799.86	53.89	29.42	2.202	ES
HSR-THESING #9-4 EXISTING - HSR-THESING #9-4 E	900.00	899.48	57.50	31.29	2.193	SF
P_SPIVEY 39-4 - P_SPIVEY 39-4 - P_SPIVEY 39-4	600.00	600.00	16.01	13.57	6.564	CC, ES
P_SPIVEY 39-4 - P_SPIVEY 39-4 - P_SPIVEY 39-4	700.00	700.19	17.10	14.27	6.030	SF

Offset Design											WELD_SPIVEY 9-4 PAD - HSR-THESING #9-4 EXISTING - HSR-THESING #9-4 EXISTING - HSR-THESING #9-4 EXISTING		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)	Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning		
0.00	0.00	0.07	0.07	0.00	0.00	-50.30	33.13	-39.91	51.87						
100.00	100.00	100.00	100.00	0.10	1.38	-50.39	33.03	-39.91	51.81	50.34	1.47	35.293			
200.00	200.00	200.13	200.13	0.32	2.96	-50.34	33.10	-39.91	51.85	48.59	3.26	15.917			
298.00	298.00	298.00	298.00	0.54	6.40	-50.50	32.90	-39.91	51.73	44.86	6.87	7.531 CC			
300.00	300.00	300.00	300.00	0.55	6.47	-50.50	32.90	-39.91	51.73	44.78	6.94	7.451			
400.00	400.00	399.86	399.86	0.77	9.98	-50.32	33.11	-39.91	51.86	41.24	10.62	4.881			
500.00	500.00	500.01	500.00	0.99	14.58	-50.30	33.13	-39.91	51.87	36.52	15.36	3.378			
600.00	600.00	600.02	600.00	1.22	19.23	-50.30	33.13	-39.91	51.87	31.74	20.14	2.576			
700.00	699.98	700.00	699.98	1.42	23.88	104.97	33.13	-39.91	52.30	30.72	21.58	2.423			
800.00	799.84	799.86	799.84	1.60	28.53	110.31	33.13	-39.91	53.89	29.42	24.47	2.202 ES			
900.00	899.45	899.48	899.45	1.81	33.16	118.40	33.13	-39.91	57.50	31.29	26.22	2.193 SF			
1,000.00	998.70	998.84	998.79	2.06	38.25	127.80	32.97	-39.91	64.08	37.10	26.98	2.375			
1,100.00	1,097.47	1,097.57	1,097.51	2.34	43.37	137.09	32.88	-39.91	74.65	47.44	27.21	2.743			
1,200.00	1,195.62	1,195.66	1,195.60	2.68	48.45	145.20	32.87	-39.91	89.65	61.89	27.75	3.230			
1,300.00	1,293.06	1,292.99	1,292.92	3.07	53.49	151.73	32.94	-39.91	109.06	80.03	29.03	3.757			
1,400.00	1,389.64	1,389.43	1,389.36	3.52	58.49	156.81	33.10	-39.91	132.70	101.75	30.96	4.287			
1,500.00	1,485.27	1,485.62	1,485.51	4.04	64.46	160.75	32.99	-39.91	160.02	126.72	33.29	4.806			
1,600.00	1,579.82	1,580.06	1,579.94	4.62	70.52	163.78	32.89	-39.91	191.09	155.26	35.83	5.333			
1,700.00	1,673.17	1,673.26	1,673.13	5.27	76.50	166.13	32.87	-39.91	225.83	187.39	38.44	5.875			
1,800.00	1,765.21	1,765.09	1,764.96	5.99	82.39	167.98	32.92	-39.91	264.11	223.11	41.00	6.442			
1,819.06	1,782.60	1,782.43	1,782.30	6.13	83.51	168.28	32.94	-39.91	271.80	230.32	41.47	6.553			
1,900.00	1,856.32	1,855.92	1,855.79	6.75	88.22	169.54	33.05	-39.91	304.80	260.67	44.13	6.907			

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

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Site Error:	0.00ft	North Reference:	True
Reference Well:	P_SPIVEY 37-4	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_SPIVEY 37-4	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 4-5-10 RHS	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	1,947.40	1,947.02	1,946.81	7.52	94.06	170.77	33.23	-39.91	345.75	298.39	47.36	7.301	
2,100.00	2,038.49	2,038.30	2,038.08	8.31	99.90	171.75	33.36	-39.91	386.76	336.21	50.54	7.652	
2,200.00	2,129.57	2,129.64	2,129.42	9.10	105.74	172.54	33.42	-39.91	427.78	374.05	53.72	7.963	
2,300.00	2,220.65	2,221.04	2,220.81	9.90	111.59	173.20	33.42	-39.91	468.79	411.89	56.90	8.238	
2,400.00	2,311.73	2,312.50	2,312.26	10.70	117.43	173.75	33.36	-39.91	509.79	449.71	60.08	8.485	
2,500.00	2,402.81	2,404.01	2,403.77	11.50	123.29	174.22	33.22	-39.91	550.76	487.50	63.26	8.706	
2,600.00	2,493.90	2,491.22	2,490.91	12.31	127.84	174.60	33.39	-39.91	592.03	525.93	66.10	8.956	
2,700.00	2,584.98	2,583.54	2,583.22	13.12	131.50	174.95	33.77	-39.91	633.53	564.68	68.85	9.202	
2,800.00	2,676.06	2,676.06	2,675.74	13.93	135.16	175.25	33.93	-39.91	674.83	603.25	71.58	9.428	
2,900.00	2,767.14	2,768.76	2,768.44	14.74	138.84	175.53	33.87	-39.91	715.94	641.64	74.30	9.636	
3,000.00	2,858.22	2,861.67	2,861.33	15.55	142.52	175.79	33.57	-39.91	756.85	679.84	77.01	9.828	
3,100.00	2,949.31	2,952.71	2,952.36	16.37	146.05	176.02	33.08	-39.91	797.59	717.96	79.63	10.016	
3,200.00	3,040.39	3,042.72	3,042.37	17.18	149.02	176.22	32.78	-39.91	838.51	756.48	82.03	10.222	
3,300.00	3,131.47	3,132.61	3,132.27	18.00	151.98	176.40	32.62	-39.91	879.58	795.17	84.40	10.421	
3,400.00	3,222.55	3,222.39	3,222.04	18.81	154.95	176.56	32.61	-39.91	920.78	834.03	86.75	10.614	
3,500.00	3,313.63	3,312.05	3,311.70	19.63	157.90	176.70	32.73	-39.91	962.11	873.03	89.08	10.801	
3,600.00	3,404.72	3,401.58	3,401.23	20.45	160.86	176.83	33.00	-39.91	1,003.59	912.20	91.39	10.981	
3,700.00	3,495.80	3,496.17	3,495.80	21.27	164.77	176.96	33.13	-39.91	1,044.94	950.89	94.05	11.111	
3,800.00	3,586.88	3,587.25	3,586.88	22.08	168.95	177.07	33.13	-39.91	1,086.17	989.43	96.74	11.228	
3,900.00	3,677.96	3,678.33	3,677.96	22.90	173.12	177.18	33.13	-39.91	1,127.41	1,027.98	99.43	11.339	
4,000.00	3,769.04	3,769.42	3,769.04	23.72	177.30	177.28	33.13	-39.91	1,168.65	1,066.53	102.12	11.444	
4,100.00	3,860.13	3,860.50	3,860.13	24.54	181.48	177.37	33.13	-39.91	1,209.89	1,105.09	104.80	11.545	
4,200.00	3,951.21	3,965.27	3,964.84	25.36	191.89	177.50	31.57	-39.91	1,249.79	1,140.42	109.37	11.427	
4,300.00	4,042.29	4,049.13	4,048.70	26.18	200.47	177.59	30.85	-39.91	1,290.32	1,177.14	113.18	11.401	
4,400.00	4,133.37	4,132.50	4,132.07	27.00	208.99	177.66	30.67	-39.91	1,331.39	1,214.43	116.96	11.383	
4,500.00	4,224.45	4,215.38	4,214.95	27.82	217.47	177.72	31.03	-39.91	1,373.01	1,252.28	120.73	11.373	
4,600.00	4,315.53	4,297.75	4,297.33	28.64	225.90	177.76	31.92	-39.91	1,415.16	1,290.70	124.46	11.370	
4,700.00	4,406.62	4,370.00	4,369.29	29.46	233.29	177.79	33.13	-39.91	1,457.87	1,330.10	127.78	11.410	
4,800.00	4,497.70	4,495.00	4,494.09	30.28	254.90	177.88	33.13	-39.91	1,498.66	1,362.77	135.88	11.029	
4,900.00	4,588.78	4,587.00	4,585.95	31.10	270.88	177.93	33.13	-39.91	1,539.91	1,397.87	142.05	10.841	
5,000.00	4,679.86	4,682.63	4,681.53	31.92	285.71	177.99	33.18	-39.91	1,581.22	1,433.24	147.98	10.685	
5,100.00	4,770.94	4,712.00	4,710.79	32.74	290.27	178.01	33.13	-39.91	1,623.54	1,473.48	150.07	10.819	
5,200.00	4,862.03	4,837.00	4,835.67	33.57	307.28	178.08	33.13	-39.91	1,663.90	1,506.83	157.07	10.593	
5,300.00	4,953.11	4,956.33	4,954.97	34.39	321.22	178.14	33.19	-39.91	1,705.01	1,541.91	163.09	10.454	
5,404.62	5,048.40	5,043.88	5,042.44	35.25	330.08	178.17	33.41	-39.91	1,748.38	1,581.17	167.21	10.456	
5,500.00	5,135.91	5,139.46	5,138.00	35.90	338.78	178.24	33.52	-39.91	1,786.38	1,612.62	173.76	10.281	
5,600.00	5,228.97	5,241.53	5,240.04	36.43	348.06	178.31	33.12	-39.91	1,822.64	1,642.00	180.64	10.090	
5,700.00	5,323.24	5,322.27	5,320.72	36.92	353.24	178.35	33.29	-39.91	1,856.08	1,670.33	185.75	9.992	
5,800.00	5,418.62	5,418.97	5,417.42	37.38	359.52	178.40	33.39	-39.91	1,886.19	1,694.99	191.20	9.865	
5,900.00	5,514.99	5,516.74	5,515.18	37.79	365.87	178.43	33.42	-39.91	1,912.88	1,716.41	196.48	9.736	
6,000.00	5,612.23	5,615.42	5,613.86	38.16	372.28	178.47	33.37	-39.91	1,936.13	1,734.56	201.57	9.605	
6,100.00	5,710.23	5,714.91	5,713.33	38.48	378.74	178.49	33.24	-39.91	1,955.89	1,749.45	206.45	9.474	
6,200.00	5,808.86	5,820.53	5,818.89	38.76	386.28	178.52	32.81	-39.91	1,971.99	1,760.47	211.52	9.323	
6,300.00	5,908.01	5,916.69	5,915.03	38.99	393.76	178.54	32.36	-39.91	1,984.56	1,768.37	216.19	9.180	
6,400.00	6,007.55	6,013.17	6,011.50	39.18	401.27	178.56	32.07	-39.91	1,993.83	1,773.22	220.60	9.038	
6,500.00	6,107.36	6,109.87	6,108.20	39.32	408.80	178.57	31.94	-39.91	1,999.76	1,775.05	224.72	8.899	
6,600.00	6,207.32	6,206.69	6,205.01	39.41	416.33	178.57	31.98	-39.91	2,002.37	1,773.85	228.52	8.762	
6,623.68	6,231.00	6,229.62	6,227.95	39.43	418.12	25.15	32.01	-39.91	2,002.50	1,773.12	229.38	8.730	
6,700.00	6,307.32	6,303.53	6,301.85	39.48	423.87	25.15	32.19	-39.91	2,002.66	1,770.42	232.24	8.623	
6,800.00	6,407.32	6,400.35	6,398.68	39.54	431.40	25.15	32.56	-39.91	2,003.01	1,767.03	235.98	8.488	
6,900.00	6,507.32	6,502.00	6,500.14	39.61	439.32	25.14	33.13	-39.91	2,003.53	1,763.64	239.89	8.352	
7,000.00	6,607.32	6,621.15	6,619.26	39.67	454.11	25.15	32.22	-39.91	2,002.73	1,756.13	246.60	8.121	

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Reference Wellbore	P_SPIVEY 37-4	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 4-5-10 RHS	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									
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
7,100.00	6,707.32	6,718.01	6,716.10	39.74	466.14	25.16	31.68	-39.91	2,002.21	1,750.14	252.08	7.943	
7,200.00	6,807.32	6,814.85	6,812.92	39.80	478.16	25.16	31.30	-39.91	2,001.86	1,744.31	257.55	7.773	
7,300.00	6,907.32	6,911.66	6,909.72	39.87	490.18	25.16	31.09	-39.91	2,001.66	1,738.64	263.02	7.610	
7,372.03	6,979.35	6,981.39	6,979.43	39.92	498.84	25.16	31.04	-39.91	2,001.62	1,734.67	266.95	7.498	
7,400.00	7,007.32	7,008.46	7,006.50	39.94	502.20	25.16	31.05	-39.91	2,001.63	1,733.15	268.48	7.455	
7,500.00	7,107.32	7,105.23	7,103.26	40.01	514.22	25.16	31.18	-39.91	2,001.75	1,727.82	273.93	7.307	
7,600.00	7,207.32	7,201.98	7,199.99	40.08	526.23	25.16	31.49	-39.91	2,002.04	1,722.66	279.38	7.166	
7,700.00	7,307.32	7,298.71	7,296.71	40.15	538.24	25.15	31.96	-39.91	2,002.48	1,717.67	284.81	7.031	
7,800.00	7,407.32	7,395.41	7,393.40	40.22	550.25	25.14	32.61	-39.91	2,003.08	1,712.85	290.23	6.902	
7,900.00	7,507.32	7,461.00	7,458.39	40.30	558.39	25.14	33.13	-39.91	2,004.11	1,710.16	293.95	6.818	
8,000.00	7,607.32	7,461.00	7,458.39	40.37	558.39	25.14	33.13	-39.91	2,009.04	1,714.94	294.10	6.831	
8,100.00	7,707.32	7,461.00	7,458.39	40.45	558.39	25.14	33.13	-39.91	2,018.92	1,724.66	294.25	6.861	
8,200.00	7,807.32	7,461.00	7,458.39	40.53	558.39	25.14	33.13	-39.91	2,033.67	1,739.26	294.41	6.908	
8,297.68	7,905.00	7,461.00	7,458.39	40.60	558.39	25.14	33.13	-39.91	2,052.69	1,758.13	294.56	6.969	

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Reference Site:	WELD_SPIVEY 9-4 PAD	MD Reference:	WELL @ 4849.00ft (Original Well Elev)
Site Error:	0.00ft	North Reference:	True
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Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_SPIVEY 37-4	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 4-5-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_SPIVEY 9-4 PAD - P_SPIVEY 39-4 - P_SPIVEY 39-4 - P_SPIVEY 39-4												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	32.72	13.47	8.65	16.01				
100.00	100.00	100.00	100.00	0.10	0.10	32.72	13.47	8.65	16.01	15.82	0.19	83.781	
200.00	200.00	200.00	200.00	0.32	0.32	32.72	13.47	8.65	16.01	15.37	0.64	24.987	
300.00	300.00	300.00	300.00	0.55	0.55	32.72	13.47	8.65	16.01	14.92	1.09	14.683	
400.00	400.00	400.00	400.00	0.77	0.77	32.72	13.47	8.65	16.01	14.47	1.54	10.396	
500.00	500.00	500.00	500.00	0.99	0.99	32.72	13.47	8.65	16.01	14.02	1.99	8.047	
600.00	600.00	600.00	600.00	1.22	1.22	32.72	13.47	8.65	16.01	13.57	2.44	6.564 CC, ES	
700.00	699.98	700.19	700.17	1.42	1.42	-169.10	12.01	9.63	17.10	14.27	2.84	6.030 SF	
800.00	799.84	800.20	800.04	1.60	1.61	-158.13	7.65	12.53	20.93	17.73	3.20	6.534	
900.00	899.45	899.84	899.29	1.81	1.82	-147.10	0.43	17.35	28.34	24.73	3.61	7.855	
1,000.00	998.70	998.94	997.65	2.06	2.06	-138.94	-9.60	24.04	39.62	35.55	4.07	9.743	
1,100.00	1,097.47	1,097.61	1,095.19	2.34	2.34	-134.00	-21.95	32.28	54.52	49.93	4.59	11.876	
1,200.00	1,195.62	1,196.05	1,192.47	2.68	2.64	-132.91	-34.53	40.68	72.03	66.87	5.16	13.948	
1,300.00	1,293.06	1,294.04	1,289.30	3.07	2.96	-133.75	-47.05	49.03	91.90	86.13	5.78	15.906	
1,400.00	1,389.64	1,391.45	1,385.55	3.52	3.29	-135.43	-59.50	57.34	114.22	107.79	6.42	17.781	
1,500.00	1,485.27	1,488.17	1,481.12	4.04	3.61	-137.43	-71.86	65.58	139.11	132.02	7.09	19.618	
1,600.00	1,579.82	1,584.07	1,575.88	4.62	3.95	-139.51	-84.11	73.76	166.71	158.94	7.77	21.447	
1,700.00	1,673.17	1,679.04	1,669.73	5.27	4.28	-141.52	-96.25	81.86	197.14	188.67	8.46	23.292	
1,800.00	1,765.21	1,772.97	1,762.54	5.99	4.61	-143.41	-108.25	89.87	230.46	221.30	9.16	25.164	
1,819.06	1,782.60	1,790.74	1,780.10	6.13	4.68	-143.75	-110.52	91.38	237.14	227.85	9.29	25.525	
1,900.00	1,856.32	1,866.13	1,854.60	6.75	4.95	-145.36	-120.16	97.81	265.84	255.95	9.89	26.879	
2,000.00	1,947.40	1,959.28	1,946.64	7.52	5.28	-146.92	-132.06	105.75	301.50	290.87	10.64	28.349	
2,100.00	2,038.49	2,052.42	2,038.67	8.31	5.62	-148.16	-143.96	113.69	337.32	325.93	11.38	29.630	
2,200.00	2,129.57	2,145.56	2,130.71	9.10	5.96	-149.16	-155.87	121.64	373.25	361.11	12.14	30.755	
2,300.00	2,220.65	2,238.71	2,222.75	9.90	6.30	-149.99	-167.77	129.58	409.26	396.37	12.89	31.748	
2,400.00	2,311.73	2,331.85	2,314.79	10.70	6.64	-150.68	-179.67	137.52	445.33	431.68	13.65	32.631	
2,500.00	2,402.81	2,424.99	2,406.83	11.50	6.98	-151.27	-191.57	145.46	481.45	467.04	14.41	33.422	
2,600.00	2,493.90	2,518.14	2,498.86	12.31	7.32	-151.77	-203.48	153.40	517.61	502.44	15.16	34.133	
2,700.00	2,584.98	2,611.28	2,590.90	13.12	7.66	-152.21	-215.38	161.34	553.80	537.87	15.92	34.776	
2,800.00	2,676.06	2,704.42	2,682.94	13.93	8.00	-152.60	-227.28	169.29	590.01	573.32	16.69	35.360	
2,900.00	2,767.14	2,797.57	2,774.98	14.74	8.35	-152.94	-239.19	177.23	626.24	608.80	17.45	35.894	
3,000.00	2,858.22	2,890.71	2,867.01	15.55	8.69	-153.24	-251.09	185.17	662.49	644.29	18.21	36.383	
3,100.00	2,949.31	2,983.85	2,959.05	16.37	9.03	-153.52	-262.99	193.11	698.76	679.79	18.97	36.834	
3,200.00	3,040.39	3,077.00	3,051.09	17.18	9.38	-153.76	-274.89	201.05	735.04	715.31	19.73	37.250	
3,300.00	3,131.47	3,170.14	3,143.13	18.00	9.72	-153.98	-286.80	209.00	771.33	750.83	20.49	37.636	
3,400.00	3,222.55	3,263.28	3,235.16	18.81	10.07	-154.19	-298.70	216.94	807.63	786.37	21.26	37.995	
3,500.00	3,313.63	3,356.43	3,327.20	19.63	10.41	-154.37	-310.60	224.88	843.93	821.91	22.02	38.329	
3,600.00	3,404.72	3,449.57	3,419.24	20.45	10.76	-154.54	-322.51	232.82	880.25	857.47	22.78	38.642	
3,700.00	3,495.80	3,542.71	3,511.28	21.27	11.11	-154.70	-334.41	240.76	916.57	893.02	23.55	38.920	
3,800.00	3,586.88	3,635.86	3,603.31	22.08	11.45	-154.84	-346.31	248.70	952.89	928.57	24.32	39.175	
3,900.00	3,677.96	3,729.00	3,695.35	22.90	11.80	-154.98	-358.21	256.65	989.22	964.12	25.10	39.414	
4,000.00	3,769.04	3,822.14	3,787.39	23.72	12.14	-155.10	-370.12	264.59	1,025.55	999.68	25.87	39.638	
4,100.00	3,860.13	3,915.29	3,879.43	24.54	12.49	-155.22	-382.02	272.53	1,061.89	1,035.24	26.65	39.848	
4,200.00	3,951.21	4,008.43	3,971.46	25.36	12.84	-155.33	-393.92	280.47	1,098.23	1,070.81	27.42	40.046	
4,300.00	4,042.29	4,101.57	4,063.50	26.18	13.18	-155.43	-405.83	288.41	1,134.58	1,106.38	28.20	40.233	
4,400.00	4,133.37	4,194.72	4,155.54	27.00	13.53	-155.52	-417.73	296.36	1,170.93	1,141.95	28.98	40.410	
4,500.00	4,224.45	4,287.86	4,247.58	27.82	13.88	-155.61	-429.63	304.30	1,207.28	1,177.53	29.75	40.577	
4,600.00	4,315.53	4,381.00	4,339.61	28.64	14.22	-155.70	-441.53	312.24	1,243.63	1,213.10	30.53	40.735	
4,700.00	4,406.62	4,474.14	4,431.65	29.46	14.57	-155.78	-453.44	320.18	1,279.99	1,248.68	31.31	40.886	
4,800.00	4,497.70	4,567.29	4,523.69	30.28	14.92	-155.85	-465.34	328.12	1,316.34	1,284.26	32.08	41.029	
4,900.00	4,588.78	4,660.43	4,615.73	31.10	15.26	-155.92	-477.24	336.07	1,352.70	1,319.84	32.86	41.164	
5,000.00	4,679.86	4,753.57	4,707.76	31.92	15.61	-155.99	-489.15	344.01	1,389.06	1,355.42	33.64	41.294	

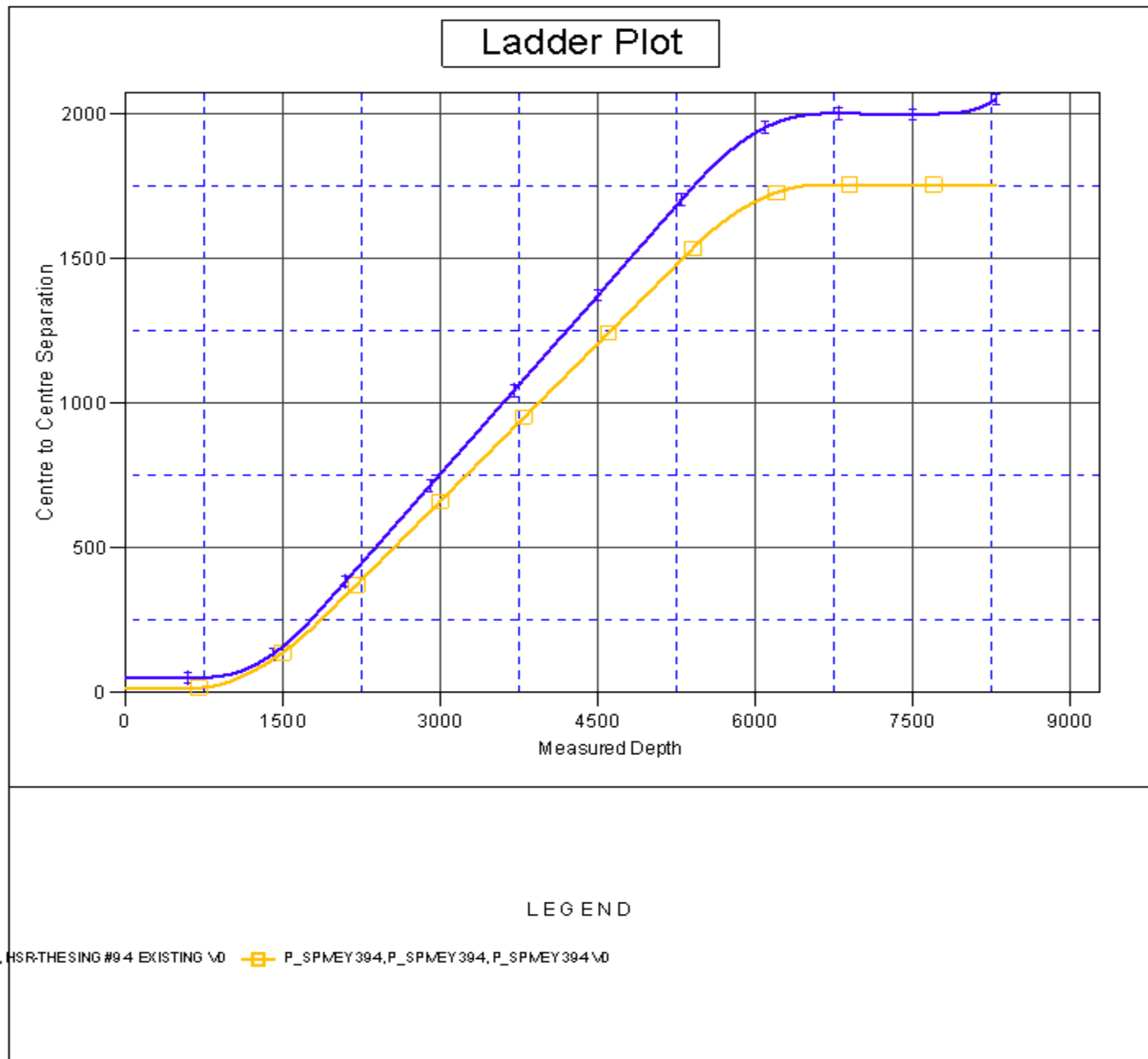
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_SPIVEY 37-4
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 37-4	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_SPIVEY 37-4	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 4-5-10 RHS	Offset TVD Reference:	Offset Datum

Offset Design WELD_SPIVEY 9-4 PAD - P_SPIVEY 39-4 - P_SPIVEY 39-4 - P_SPIVEY 39-4												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	4,770.94	4,846.72	4,799.80	32.74	15.96	-156.05	-501.05	351.95	1,425.42	1,391.01	34.42	41.417	
5,200.00	4,862.03	4,939.86	4,891.84	33.57	16.31	-156.11	-512.95	359.89	1,461.79	1,426.59	35.19	41.535	
5,300.00	4,953.11	5,033.00	4,983.88	34.39	16.65	-156.17	-524.85	367.83	1,498.15	1,462.18	35.97	41.648	
5,404.62	5,048.40	5,130.45	5,080.17	35.25	17.02	-156.23	-537.31	376.14	1,536.20	1,499.41	36.79	41.760	
5,500.00	5,135.91	5,219.81	5,168.47	35.90	17.35	-156.54	-548.73	383.76	1,569.53	1,531.94	37.59	41.759	
5,600.00	5,228.97	5,314.55	5,262.08	36.43	17.70	-156.78	-560.83	391.84	1,601.52	1,563.15	38.37	41.741	
5,700.00	5,323.24	5,410.24	5,356.64	36.92	18.06	-156.94	-573.06	400.00	1,630.46	1,591.33	39.13	41.663	
5,800.00	5,418.62	5,506.77	5,452.02	37.38	18.42	-157.03	-585.40	408.23	1,656.32	1,616.44	39.88	41.532	
5,900.00	5,514.99	5,604.03	5,548.13	37.79	18.78	-157.04	-597.83	416.52	1,679.07	1,638.46	40.60	41.352	
6,000.00	5,612.23	5,700.00	5,643.02	38.16	19.11	-157.01	-609.74	424.47	1,698.75	1,657.49	41.26	41.172	
6,100.00	5,710.23	5,790.04	5,732.39	38.48	19.32	-157.01	-618.79	430.51	1,715.63	1,673.90	41.73	41.108	
6,200.00	5,808.86	5,882.24	5,824.23	38.76	19.51	-157.05	-625.64	435.08	1,729.74	1,687.62	42.12	41.067	
6,300.00	5,908.01	5,974.81	5,916.63	38.99	19.66	-157.12	-630.03	438.01	1,741.05	1,698.64	42.41	41.054	
6,400.00	6,007.55	6,067.58	6,009.38	39.18	19.80	-157.22	-631.95	439.29	1,749.54	1,706.93	42.61	41.060	
6,500.00	6,107.36	6,165.56	6,107.36	39.32	19.93	-157.34	-632.03	439.35	1,755.12	1,712.39	42.73	41.070	
6,600.00	6,207.32	6,265.53	6,207.32	39.41	20.05	-157.39	-632.03	439.35	1,757.49	1,714.67	42.82	41.044	
6,623.68	6,231.00	6,289.21	6,231.00	39.43	20.08	49.19	-632.03	439.35	1,757.58	1,714.75	42.84	41.029	
6,700.00	6,307.32	6,365.52	6,307.32	39.48	20.17	49.19	-632.03	439.35	1,757.58	1,714.56	43.02	40.855	
6,800.00	6,407.32	6,465.52	6,407.32	39.54	20.30	49.19	-632.03	439.35	1,757.58	1,714.33	43.25	40.637	
6,900.00	6,507.32	6,565.52	6,507.32	39.61	20.43	49.19	-632.03	439.35	1,757.58	1,714.10	43.49	40.417	
7,000.00	6,607.32	6,665.52	6,607.32	39.67	20.56	49.19	-632.03	439.35	1,757.58	1,713.86	43.72	40.197	
7,100.00	6,707.32	6,765.52	6,707.32	39.74	20.69	49.19	-632.03	439.35	1,757.58	1,713.62	43.97	39.977	
7,200.00	6,807.32	6,865.52	6,807.32	39.80	20.82	49.19	-632.03	439.35	1,757.58	1,713.37	44.21	39.756	
7,300.00	6,907.32	6,965.52	6,907.32	39.87	20.95	49.19	-632.03	439.35	1,757.58	1,713.13	44.46	39.534	
7,400.00	7,007.32	7,065.52	7,007.32	39.94	21.09	49.19	-632.03	439.35	1,757.58	1,712.88	44.71	39.312	
7,500.00	7,107.32	7,165.52	7,107.32	40.01	21.22	49.19	-632.03	439.35	1,757.58	1,712.62	44.96	39.090	
7,600.00	7,207.32	7,265.52	7,207.32	40.08	21.36	49.19	-632.03	439.35	1,757.58	1,712.36	45.22	38.868	
7,700.00	7,307.32	7,365.52	7,307.32	40.15	21.50	49.19	-632.03	439.35	1,757.58	1,712.11	45.48	38.646	
7,800.00	7,407.32	7,465.52	7,407.32	40.22	21.64	49.19	-632.03	439.35	1,757.58	1,711.84	45.74	38.424	
7,900.00	7,507.32	7,565.52	7,507.32	40.30	21.78	49.19	-632.03	439.35	1,757.58	1,711.58	46.01	38.202	
8,000.00	7,607.32	7,665.52	7,607.32	40.37	21.93	49.19	-632.03	439.35	1,757.58	1,711.31	46.28	37.980	
8,100.00	7,707.32	7,765.52	7,707.32	40.45	22.07	49.19	-632.03	439.35	1,757.58	1,711.04	46.55	37.759	
8,200.00	7,807.32	7,865.52	7,807.32	40.53	22.22	49.19	-632.03	439.35	1,757.58	1,710.76	46.82	37.538	
8,297.68	7,905.00	7,963.21	7,905.00	40.60	22.36	49.19	-632.03	439.35	1,757.58	1,710.49	47.09	37.322	

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well P_SPIVEY 37-4
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 37-4	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_SPIVEY 37-4	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 4-5-10 RHS	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4849.00ft (Original Well Elev) Coordinates are relative to: P_SPIVEY 37-4
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 37-4
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 37-4	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00ft	Output errors are at	2.00 sigma
Reference Wellbore	P_SPIVEY 37-4	Database:	EDM 2003.21 Single User Db
Reference Design:	PLAN #1 4-5-10 RHS	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4849.00ft (Original Well Elev) Coordinates are relative to: P_SPIVEY 37-4
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°

