

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Suden 34R-323**

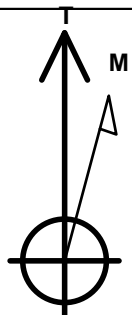
Surface Location: Suden 34U-HZ Pad Sec.34-T5N-R64W
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
 Ground Elevation: 4668.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1376383.62	3270176.41	40.362520	-104.530440	

Ensign Rig # 14 - RKB - 15' WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 212'FNL & 1142'FEL	1.0	0.0	0.0	Point
BHL 500'FSL & 898'FEL	6687.0	-4572.0	277.9	Point



Azimuths to True North
 Magnetic North: 8.28°

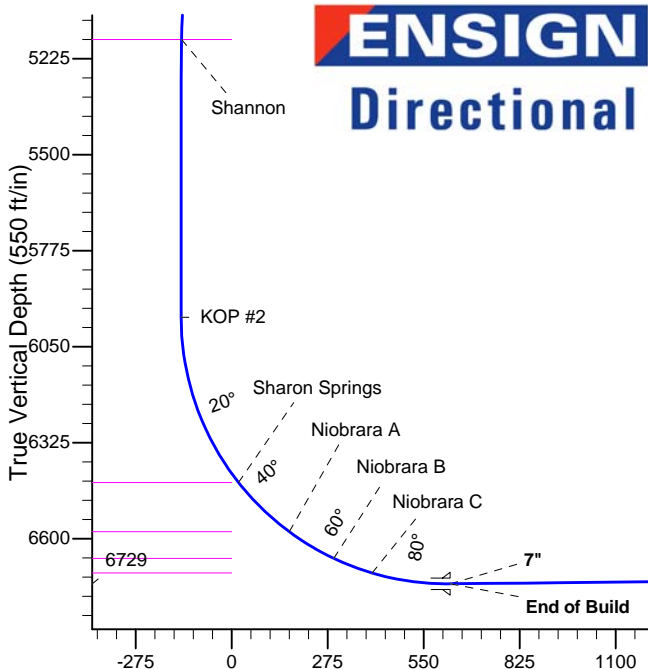
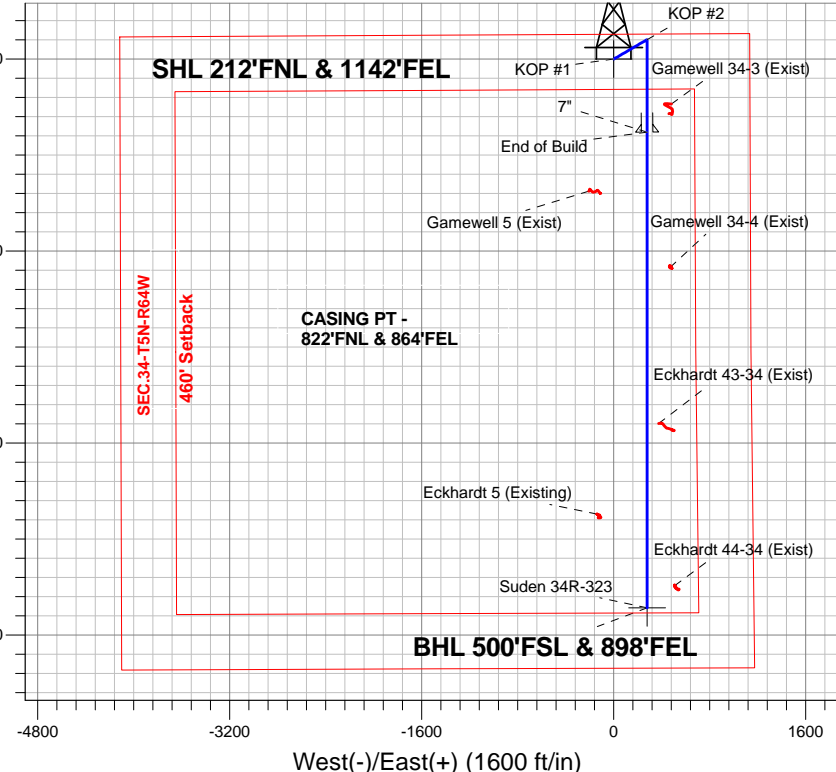
Magnetic Field
 Strength: 52781.9nT
 Dip Angle: 66.94°
 Date: 10/29/2014
 Model: IGRF2010

Suden 34U-HZ Pad Sec.34-T5N-R64W
 Suden 34R-323
 Plan #3 (10-29-14)

ANNOTATIONS

TVD	MD	Annotation
1500.0	1500.0	KOP #1
5965.3	5979.5	KOP #2
6729.2	7187.6	End of Build

South(-)/North(+) (1600 ft/in)



ENSIGN
 Directional

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1500.0	0.00	0.00	1500.0	0.0	0.0	0.00	0.00	0.0	
3	1759.6	5.19	59.76	1759.2	5.9	10.2	2.00	59.76	-5.3	
4	5054.6	5.19	59.76	5040.8	156.1	267.7	0.00	0.00	-139.6	
5	5314.2	0.00	0.00	5300.0	162.0	277.9	2.00	180.00	-144.8	
6	5979.5	0.00	0.00	5965.3	162.0	277.9	0.00	0.00	-144.8	
7	7187.6	90.61	180.00	6729.2	-610.1	277.9	7.50	180.00	625.8	
8	11149.8	90.61	180.00	6687.0	-4572.0	277.9	0.00	0.00	4580.5	BHL 500'FSL & 898'FEL

BHL 500'FSL & 898'FEL

Vertical Section at 176.52° (550 ft/in)



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.34-T5N-R64W

Suden 34U-HZ Pad Sec.34-T5N-R64W

Suden 34R-323

Wellbore #1

Plan: Plan #3 (10-29-14)

Standard Planning Report

30 October, 2014

Database:	landmark	Local Co-ordinate Reference:	Well Suden 34R-323
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Project:	SEC.34-T5N-R64W	MD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Site:	Suden 34U-HZ Pad Sec.34-T5N-R64W	North Reference:	True
Well:	Suden 34R-323	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 (10-29-14)		

Project	SEC.34-T5N-R64W, Weld County, Colorado		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site						Suden 34U-HZ Pad Sec.34-T5N-R64W											
Site Position:						Northing:			1,376,383.32 ft			Latitude:			40.362520		
From:			Lat/Long			Easting:			3,270,145.76 ft			Longitude:			-104.530550		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.63 °		

Well	Suden 34R-323					
Well Position	+N/-S	0.0 ft	Northing:	1,376,383.62 ft	Latitude:	40.362520
	+E/-W	30.7 ft	Easting:	3,270,176.41 ft	Longitude:	-104.530440
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,668.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/29/2014	8.28	66.94	52,782

Design	Plan #3 (10-29-14)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	176.52

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
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,759.6	5.19	59.76	1,759.2	5.9	10.2	2.00	2.00	0.00	59.76	
5,054.6	5.19	59.76	5,040.8	156.1	267.7	0.00	0.00	0.00	0.00	
5,314.2	0.00	0.00	5,300.0	162.0	277.9	2.00	-2.00	0.00	180.00	
5,979.5	0.00	0.00	5,965.3	162.0	277.9	0.00	0.00	0.00	0.00	
7,187.6	90.61	180.00	6,729.2	-610.1	277.9	7.50	7.50	0.00	180.00	
11,149.8	90.61	180.00	6,687.0	-4,572.0	277.9	0.00	0.00	0.00	0.00	BHL 500'FSL & 89°

Database:	landmark	Local Co-ordinate Reference:	Well Suden 34R-323
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Project:	SEC.34-T5N-R64W	MD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Site:	Suden 34U-HZ Pad Sec.34-T5N-R64W	North Reference:	True
Well:	Suden 34R-323	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 (10-29-14)		

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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP #1									
1,600.0	2.00	59.76	1,600.0	0.9	1.5	-0.8	2.00	2.00	0.00
1,700.0	4.00	59.76	1,699.8	3.5	6.0	-3.1	2.00	2.00	0.00
1,759.6	5.19	59.76	1,759.2	5.9	10.2	-5.3	2.00	2.00	0.00
1,800.0	5.19	59.76	1,799.5	7.8	13.3	-6.9	0.00	0.00	0.00
1,900.0	5.19	59.76	1,899.1	12.3	21.1	-11.0	0.00	0.00	0.00
2,000.0	5.19	59.76	1,998.7	16.9	28.9	-15.1	0.00	0.00	0.00
2,100.0	5.19	59.76	2,098.2	21.4	36.8	-19.2	0.00	0.00	0.00
2,200.0	5.19	59.76	2,197.8	26.0	44.6	-23.2	0.00	0.00	0.00
2,300.0	5.19	59.76	2,297.4	30.5	52.4	-27.3	0.00	0.00	0.00
2,400.0	5.19	59.76	2,397.0	35.1	60.2	-31.4	0.00	0.00	0.00
2,500.0	5.19	59.76	2,496.6	39.7	68.0	-35.5	0.00	0.00	0.00
2,600.0	5.19	59.76	2,596.2	44.2	75.9	-39.5	0.00	0.00	0.00
2,700.0	5.19	59.76	2,695.8	48.8	83.7	-43.6	0.00	0.00	0.00
2,800.0	5.19	59.76	2,795.4	53.3	91.5	-47.7	0.00	0.00	0.00
2,900.0	5.19	59.76	2,895.0	57.9	99.3	-51.8	0.00	0.00	0.00
3,000.0	5.19	59.76	2,994.6	62.4	107.1	-55.8	0.00	0.00	0.00
3,100.0	5.19	59.76	3,094.1	67.0	114.9	-59.9	0.00	0.00	0.00
3,200.0	5.19	59.76	3,193.7	71.6	122.8	-64.0	0.00	0.00	0.00
3,300.0	5.19	59.76	3,293.3	76.1	130.6	-68.1	0.00	0.00	0.00
3,400.0	5.19	59.76	3,392.9	80.7	138.4	-72.1	0.00	0.00	0.00
3,500.0	5.19	59.76	3,492.5	85.2	146.2	-76.2	0.00	0.00	0.00
3,507.5	5.19	59.76	3,500.0	85.6	146.8	-76.5	0.00	0.00	0.00
Parkman									
3,600.0	5.19	59.76	3,592.1	89.8	154.0	-80.3	0.00	0.00	0.00
3,700.0	5.19	59.76	3,691.7	94.3	161.8	-84.4	0.00	0.00	0.00
3,800.0	5.19	59.76	3,791.3	98.9	169.7	-88.4	0.00	0.00	0.00
3,900.0	5.19	59.76	3,890.9	103.5	177.5	-92.5	0.00	0.00	0.00
4,000.0	5.19	59.76	3,990.5	108.0	185.3	-96.6	0.00	0.00	0.00
4,100.0	5.19	59.76	4,090.0	112.6	193.1	-100.7	0.00	0.00	0.00
4,200.0	5.19	59.76	4,189.6	117.1	200.9	-104.7	0.00	0.00	0.00
4,260.6	5.19	59.76	4,250.0	119.9	205.7	-107.2	0.00	0.00	0.00
Sussex									
4,300.0	5.19	59.76	4,289.2	121.7	208.8	-108.8	0.00	0.00	0.00
4,400.0	5.19	59.76	4,388.8	126.3	216.6	-112.9	0.00	0.00	0.00
4,500.0	5.19	59.76	4,488.4	130.8	224.4	-117.0	0.00	0.00	0.00

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Project:	SEC.34-T5N-R64W	MD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Site:	Suden 34U-HZ Pad Sec.34-T5N-R64W	North Reference:	True
Well:	Suden 34R-323	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 (10-29-14)		

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)
4,600.0	5.19	59.76	4,588.0	135.4	232.2	-121.0	0.00	0.00	0.00
4,700.0	5.19	59.76	4,687.6	139.9	240.0	-125.1	0.00	0.00	0.00
4,800.0	5.19	59.76	4,787.2	144.5	247.8	-129.2	0.00	0.00	0.00
4,900.0	5.19	59.76	4,886.8	149.0	255.7	-133.3	0.00	0.00	0.00
5,000.0	5.19	59.76	4,986.4	153.6	263.5	-137.3	0.00	0.00	0.00
5,054.6	5.19	59.76	5,040.8	156.1	267.7	-139.6	0.00	0.00	0.00
5,100.0	4.28	59.76	5,086.0	158.0	271.0	-141.2	2.00	-2.00	0.00
5,184.2	2.60	59.76	5,170.0	160.5	275.4	-143.5	2.00	-2.00	0.00
Shannon									
5,200.0	2.28	59.76	5,185.8	160.9	275.9	-143.8	2.00	-2.00	0.00
5,300.0	0.28	59.76	5,285.8	162.0	277.9	-144.8	2.00	-2.00	0.00
5,314.2	0.00	0.00	5,300.0	162.0	277.9	-144.8	2.00	-2.00	0.00
5,400.0	0.00	0.00	5,385.8	162.0	277.9	-144.8	0.00	0.00	0.00
5,500.0	0.00	0.00	5,485.8	162.0	277.9	-144.8	0.00	0.00	0.00
5,600.0	0.00	0.00	5,585.8	162.0	277.9	-144.8	0.00	0.00	0.00
5,700.0	0.00	0.00	5,685.8	162.0	277.9	-144.8	0.00	0.00	0.00
5,800.0	0.00	0.00	5,785.8	162.0	277.9	-144.8	0.00	0.00	0.00
5,900.0	0.00	0.00	5,885.8	162.0	277.9	-144.8	0.00	0.00	0.00
5,979.5	0.00	0.00	5,965.3	162.0	277.9	-144.8	0.00	0.00	0.00
KOP #2									
6,000.0	1.54	180.00	5,985.8	161.7	277.9	-144.6	7.50	7.50	0.00
6,100.0	9.04	180.00	6,085.3	152.5	277.9	-135.4	7.50	7.50	0.00
6,200.0	16.54	180.00	6,182.7	130.4	277.9	-113.3	7.50	7.50	0.00
6,300.0	24.04	180.00	6,276.5	95.8	277.9	-78.7	7.50	7.50	0.00
6,400.0	31.54	180.00	6,364.9	49.2	277.9	-32.2	7.50	7.50	0.00
6,490.5	38.32	180.00	6,439.0	-2.6	277.9	19.5	7.50	7.50	0.00
Sharon Springs									
6,500.0	39.04	180.00	6,446.4	-8.6	277.9	25.4	7.50	7.50	0.00
6,600.0	46.54	180.00	6,519.8	-76.4	277.9	93.1	7.50	7.50	0.00
6,693.9	53.58	180.00	6,580.0	-148.4	277.9	164.9	7.50	7.50	0.00
Niobrara A									
6,700.0	54.04	180.00	6,583.6	-153.3	277.9	169.9	7.50	7.50	0.00
6,800.0	61.54	180.00	6,636.9	-237.8	277.9	254.3	7.50	7.50	0.00
6,842.3	64.71	180.00	6,656.0	-275.6	277.9	291.9	7.50	7.50	0.00
Niobrara B									
6,900.0	69.04	180.00	6,678.7	-328.6	277.9	344.9	7.50	7.50	0.00
6,960.3	73.56	180.00	6,698.0	-385.8	277.9	401.9	7.50	7.50	0.00
Niobrara C									
7,000.0	76.54	180.00	6,708.2	-424.1	277.9	440.2	7.50	7.50	0.00
7,100.0	84.04	180.00	6,725.1	-522.6	277.9	538.5	7.50	7.50	0.00
7,187.6	90.61	180.00	6,729.2	-610.0	277.9	625.8	7.50	7.50	0.00
End of Build - 7"									
7,200.0	90.61	180.00	6,729.1	-622.4	277.9	638.1	0.03	0.03	0.00
7,300.0	90.61	180.00	6,728.0	-722.4	277.9	738.0	0.00	0.00	0.00
7,400.0	90.61	180.00	6,726.9	-822.4	277.9	837.8	0.00	0.00	0.00
7,500.0	90.61	180.00	6,725.9	-922.4	277.9	937.6	0.00	0.00	0.00
7,600.0	90.61	180.00	6,724.8	-1,022.4	277.9	1,037.4	0.00	0.00	0.00
7,700.0	90.61	180.00	6,723.7	-1,122.4	277.9	1,137.2	0.00	0.00	0.00
7,800.0	90.61	180.00	6,722.7	-1,222.4	277.9	1,237.0	0.00	0.00	0.00
7,900.0	90.61	180.00	6,721.6	-1,322.4	277.9	1,336.8	0.00	0.00	0.00
8,000.0	90.61	180.00	6,720.5	-1,422.4	277.9	1,436.6	0.00	0.00	0.00

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Site:	Suden 34U-HZ Pad Sec.34-T5N-R64W	North Reference:	True
Well:	Suden 34R-323	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 (10-29-14)		

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)
8,100.0	90.61	180.00	6,719.5	-1,522.4	277.9	1,536.4	0.00	0.00	0.00
8,200.0	90.61	180.00	6,718.4	-1,622.4	277.9	1,636.2	0.00	0.00	0.00
8,300.0	90.61	180.00	6,717.3	-1,722.4	277.9	1,736.1	0.00	0.00	0.00
8,400.0	90.61	180.00	6,716.3	-1,822.4	277.9	1,835.9	0.00	0.00	0.00
8,500.0	90.61	180.00	6,715.2	-1,922.4	277.9	1,935.7	0.00	0.00	0.00
8,600.0	90.61	180.00	6,714.1	-2,022.3	277.9	2,035.5	0.00	0.00	0.00
8,700.0	90.61	180.00	6,713.1	-2,122.3	277.9	2,135.3	0.00	0.00	0.00
8,800.0	90.61	180.00	6,712.0	-2,222.3	277.9	2,235.1	0.00	0.00	0.00
8,900.0	90.61	180.00	6,711.0	-2,322.3	277.9	2,334.9	0.00	0.00	0.00
9,000.0	90.61	180.00	6,709.9	-2,422.3	277.9	2,434.7	0.00	0.00	0.00
9,100.0	90.61	180.00	6,708.8	-2,522.3	277.9	2,534.5	0.00	0.00	0.00
9,200.0	90.61	180.00	6,707.8	-2,622.3	277.9	2,634.3	0.00	0.00	0.00
9,300.0	90.61	180.00	6,706.7	-2,722.3	277.9	2,734.2	0.00	0.00	0.00
9,400.0	90.61	180.00	6,705.6	-2,822.3	277.9	2,834.0	0.00	0.00	0.00
9,500.0	90.61	180.00	6,704.6	-2,922.3	277.9	2,933.8	0.00	0.00	0.00
9,600.0	90.61	180.00	6,703.5	-3,022.3	277.9	3,033.6	0.00	0.00	0.00
9,700.0	90.61	180.00	6,702.4	-3,122.3	277.9	3,133.4	0.00	0.00	0.00
9,800.0	90.61	180.00	6,701.4	-3,222.3	277.9	3,233.2	0.00	0.00	0.00
9,900.0	90.61	180.00	6,700.3	-3,322.3	277.9	3,333.0	0.00	0.00	0.00
10,000.0	90.61	180.00	6,699.2	-3,422.3	277.9	3,432.8	0.00	0.00	0.00
10,100.0	90.61	180.00	6,698.2	-3,522.3	277.9	3,532.6	0.00	0.00	0.00
10,200.0	90.61	180.00	6,697.1	-3,622.3	277.9	3,632.4	0.00	0.00	0.00
10,300.0	90.61	180.00	6,696.0	-3,722.3	277.9	3,732.3	0.00	0.00	0.00
10,400.0	90.61	180.00	6,695.0	-3,822.2	277.9	3,832.1	0.00	0.00	0.00
10,500.0	90.61	180.00	6,693.9	-3,922.2	277.9	3,931.9	0.00	0.00	0.00
10,600.0	90.61	180.00	6,692.9	-4,022.2	277.9	4,031.7	0.00	0.00	0.00
10,700.0	90.61	180.00	6,691.8	-4,122.2	277.9	4,131.5	0.00	0.00	0.00
10,800.0	90.61	180.00	6,690.7	-4,222.2	277.9	4,231.3	0.00	0.00	0.00
10,900.0	90.61	180.00	6,689.7	-4,322.2	277.9	4,331.1	0.00	0.00	0.00
11,000.0	90.61	180.00	6,688.6	-4,422.2	277.9	4,430.9	0.00	0.00	0.00
11,100.0	90.61	180.00	6,687.5	-4,522.2	277.9	4,530.7	0.00	0.00	0.00
11,149.8	90.61	180.00	6,687.0	-4,572.0	277.9	4,580.5	0.00	0.00	0.00

Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
BHL 500'FSL & 898'F - plan hits target - Point	0.00	0.00	6,687.0	-4,572.0	277.9	1,371,815.08	3,270,504.27	40.349970	-104.529443
SHL 212'FNL & 1142' - plan hits target - Point	0.00	0.00	1.0	0.0	0.0	1,376,383.65	3,270,176.41	40.362520	-104.530440

Database:	landmark	Local Co-ordinate Reference:	Well Suden 34R-323
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Project:	SEC.34-T5N-R64W	MD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Site:	Suden 34U-HZ Pad Sec.34-T5N-R64W	North Reference:	True
Well:	Suden 34R-323	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #3 (10-29-14)		

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
7,187.6	6,729.2	7"	7	7-1/2	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,507.5	3,500.0	Parkman		0.00		
4,260.6	4,250.0	Sussex		0.00		
5,184.2	5,170.0	Shannon		0.00		
6,490.5	6,439.0	Sharon Springs		0.00		
6,693.9	6,580.0	Niobrara A		0.00		
6,842.3	6,656.0	Niobrara B		0.00		
6,960.3	6,698.0	Niobrara C		0.00		

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
1,500.0	1,500.0	0.0	0.0	KOP #1	
5,979.5	5,965.3	5.9	10.2	KOP #2	
7,187.6	6,729.2	156.1	267.7	End of Build	



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.34-T5N-R64W

Suden 34U-HZ Pad Sec.34-T5N-R64W

Suden 34R-323

Wellbore #1

Plan #3 (10-29-14)

Anticollision Report

30 October, 2014



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Suden 34R-323
Project:	SEC.34-T5N-R64W	TVD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Reference Site:	Suden 34U-HZ Pad Sec.34-T5N-R64W	MD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Suden 34R-323	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #3 (10-29-14)	Offset TVD Reference:	Offset Datum

Reference	Plan #3 (10-29-14)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,000.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date 10/30/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	11,149.8	Plan #3 (10-29-14) (Wellbore #1)	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						
Suden (Existing) Pad Sec.34-T5N-R64W						
Eckhardt 43-34 (Exist) - Wellbore #1 - Wellbore #1	9,613.9	6,625.0	100.0	26.3	1.357	Level 3, CC, ES, SF
Eckhardt 44-34 (Exist) - Wellbore #1 - Wellbore #1	10,963.0	6,636.3	228.7	130.4	2.328	CC, ES, SF
Eckhardt 5 (Existing) - Wellbore #1 - Wellbore #1	10,370.0	6,639.6	417.8	331.7	4.849	CC, ES
Eckhardt 5 (Existing) - Wellbore #1 - Wellbore #1	10,400.0	6,639.3	418.9	332.2	4.830	SF
Gamewell 34-3 (Exist) - Wellbore #1 - Wellbore #1	6,943.4	6,680.8	186.6	157.4	6.401	CC, ES, SF
Gamewell 34-4 (Exist) - Wellbore #1 - Wellbore #1	8,309.5	6,710.3	188.5	139.7	3.861	CC, ES, SF
Gamewell 5 (Exist) - Wellbore #1 - Wellbore #1	7,677.5	6,693.9	483.1	444.0	12.373	CC, ES
Gamewell 5 (Exist) - Wellbore #1 - Wellbore #1	7,800.0	6,693.3	498.4	457.3	12.151	SF
Suden 34U-HZ Pad Sec.34-T5N-R64W						
Suden 34R-423 - Wellbore #1 - Plan #2 (10-29-14)	1,500.0	1,499.0	30.7	24.1	4.705	CC, ES
Suden 34R-423 - Wellbore #1 - Plan #2 (10-29-14)	11,150.2	11,219.5	204.0	52.1	1.343	Level 3, SF
Suden 34U-243 - Wellbore #1 - Plan #1 (10-29-14)	1,000.0	1,000.0	30.7	26.4	7.178	CC, ES
Suden 34U-243 - Wellbore #1 - Plan #1 (10-29-14)	11,150.2	11,127.8	497.8	319.7	2.795	SF
Suden 34U-403 - Wellbore #1 - Plan #1 (10-29-14)	466.3	467.3	58.5	56.6	31.232	CC
Suden 34U-403 - Wellbore #1 - Plan #1 (10-29-14)	500.0	500.0	58.5	56.5	28.934	ES
Suden 34U-403 - Wellbore #1 - Plan #1 (10-29-14)	11,150.2	11,320.7	831.3	654.4	4.699	SF

Offset Design Suden (Existing) Pad Sec.34-T5N-R64W - Eckhardt 43-34 (Exist) - Wellbore #1 - Wellbore #1												Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS												Offset Well Error:	0.0 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	
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)		
8,700.0	6,713.1	6,625.0	6,621.6	43.8	15.0	-76.26	-3,035.9	375.0	919.3	862.0	57.29	16.046	
8,800.0	6,712.0	6,625.0	6,621.6	45.6	15.0	-76.26	-3,035.9	375.0	820.0	760.9	59.06	13.884	
8,900.0	6,711.0	6,625.0	6,621.6	47.5	15.0	-76.26	-3,035.9	375.0	720.8	660.0	60.84	11.848	
9,000.0	6,709.9	6,625.0	6,621.6	49.3	15.0	-76.26	-3,035.9	375.0	621.9	559.3	62.62	9.932	
9,100.0	6,708.8	6,625.0	6,621.6	51.1	15.0	-76.26	-3,035.9	375.0	523.5	459.1	64.42	8.127	
9,200.0	6,707.8	6,625.0	6,621.6	53.0	15.0	-76.26	-3,035.9	375.0	425.8	359.6	66.21	6.430	
9,300.0	6,706.7	6,625.0	6,621.6	54.8	15.0	-76.26	-3,035.9	375.0	329.4	261.4	68.02	4.843	
9,400.0	6,705.6	6,625.0	6,621.6	56.6	15.0	-76.26	-3,035.9	375.0	236.1	166.3	69.82	3.381	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Suden 34R-323
Project:	SEC.34-T5N-R64W	TVD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Reference Site:	Suden 34U-HZ Pad Sec.34-T5N-R64W	MD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Suden 34R-323	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #3 (10-29-14)	Offset TVD Reference:	Offset Datum

Offset Design Suden (Existing) Pad Sec.34-T5N-R64W - Eckhardt 43-34 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.0 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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
9,500.0	6,704.6	6,625.0	6,621.6	58.5	15.0	-76.26	-3,035.9	375.0	151.5	79.9	71.63	2.115		
9,600.0	6,703.5	6,625.0	6,621.6	60.4	15.0	-76.26	-3,035.9	375.0	101.0	27.5	73.45	1.374	Level 3	
9,613.9	6,703.4	6,625.0	6,621.6	60.6	15.0	-76.26	-3,035.9	375.0	100.0	26.3	73.70	1.357	Level 3, CC, ES, SF	
9,700.0	6,702.4	6,625.0	6,621.6	62.2	15.0	-76.26	-3,035.9	375.0	132.0	56.7	75.27	1.754		
9,800.0	6,701.4	6,625.0	6,621.6	64.1	15.0	-76.26	-3,035.9	375.0	211.3	134.2	77.09	2.741		
9,900.0	6,700.3	6,625.0	6,621.6	65.9	15.0	-76.26	-3,035.9	375.0	303.1	224.2	78.92	3.841		
10,000.0	6,699.2	6,625.0	6,621.6	67.8	15.0	-76.26	-3,035.9	375.0	398.9	318.1	80.75	4.940		
10,100.0	6,698.2	6,625.0	6,621.6	69.7	15.0	-76.26	-3,035.9	375.0	496.3	413.7	82.58	6.011		
10,200.0	6,697.1	6,625.0	6,621.6	71.6	15.0	-76.26	-3,035.9	375.0	594.6	510.2	84.41	7.044		
10,300.0	6,696.0	6,625.0	6,621.6	73.4	15.0	-76.26	-3,035.9	375.0	693.4	607.1	86.24	8.040		
10,400.0	6,695.0	6,625.0	6,621.6	75.3	15.0	-76.26	-3,035.9	375.0	792.5	704.4	88.08	8.997		
10,500.0	6,693.9	6,625.0	6,621.6	77.2	15.0	-76.26	-3,035.9	375.0	891.8	801.8	89.92	9.918		
10,600.0	6,692.9	6,625.0	6,621.6	79.1	15.0	-76.26	-3,035.9	375.0	991.2	899.4	91.76	10.802		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Suden 34R-323
Project:	SEC.34-T5N-R64W	TVD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Reference Site:	Suden 34U-HZ Pad Sec.34-T5N-R64W	MD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Suden 34R-323	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #3 (10-29-14)	Offset TVD Reference:	Offset Datum

Offset Design Suden (Existing) Pad Sec.34-T5N-R64W - Eckhardt 44-34 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
10,000.0	6,699.2	6,641.4	6,639.1	67.8	12.4	-91.02	-4,385.2	506.6	989.7	909.6	80.08	12.360		
10,100.0	6,698.2	6,640.8	6,638.6	69.7	12.4	-90.89	-4,385.2	506.6	892.7	810.8	81.96	10.892		
10,200.0	6,697.1	6,640.3	6,638.0	71.6	12.4	-90.76	-4,385.2	506.6	796.5	712.6	83.84	9.500		
10,300.0	6,696.0	6,639.8	6,637.5	73.4	12.4	-90.63	-4,385.2	506.6	701.3	615.6	85.73	8.181		
10,400.0	6,695.0	6,639.3	6,637.0	75.3	12.4	-90.50	-4,385.2	506.6	607.6	520.0	87.61	6.935		
10,500.0	6,693.9	6,638.7	6,636.5	77.2	12.4	-90.37	-4,385.2	506.6	516.4	426.9	89.50	5.769		
10,600.0	6,692.9	6,638.2	6,635.9	79.1	12.4	-90.24	-4,385.2	506.6	429.0	337.6	91.39	4.694		
10,700.0	6,691.8	6,637.7	6,635.4	81.0	12.4	-90.11	-4,385.2	506.6	348.5	255.2	93.28	3.736		
10,800.0	6,690.7	6,637.2	6,634.9	82.9	12.4	-89.98	-4,385.2	506.6	280.8	185.6	95.17	2.951		
10,900.0	6,689.7	6,636.7	6,634.4	84.7	12.4	-89.85	-4,385.2	506.6	237.2	140.1	97.06	2.444		
10,963.0	6,689.0	6,636.3	6,634.1	85.9	12.4	-89.76	-4,385.2	506.6	228.7	130.4	98.25	2.328 CC, ES, SF		
11,000.0	6,688.6	6,636.1	6,633.9	86.6	12.4	-89.72	-4,385.2	506.6	231.7	132.7	98.95	2.341		
11,100.0	6,687.5	6,635.6	6,633.3	88.5	12.4	-89.59	-4,385.2	506.6	266.6	165.8	100.85	2.644		
11,150.2	6,687.0	6,635.4	6,633.1	89.5	12.4	-89.52	-4,385.2	506.6	295.6	193.8	101.80	2.904		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Suden 34R-323
Project:	SEC.34-T5N-R64W	TVD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Reference Site:	Suden 34U-HZ Pad Sec.34-T5N-R64W	MD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Suden 34R-323	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #3 (10-29-14)	Offset TVD Reference:	Offset Datum

Offset Design Suden (Existing) Pad Sec.34-T5N-R64W - Eckhardt 5 (Existing) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning	
Reference	Offset	Reference	Offset	(ft)	(ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
9,500.0	6,704.6	6,649.7	6,648.4	58.5	11.5	91.25	-3,792.2	-139.9	965.1	895.2	69.89	13.808		
9,600.0	6,703.5	6,648.6	6,647.3	60.4	11.5	91.09	-3,792.2	-139.9	876.0	804.3	71.75	12.209		
9,700.0	6,702.4	6,647.4	6,646.1	62.2	11.5	90.93	-3,792.2	-139.9	789.6	715.9	73.62	10.725		
9,800.0	6,701.4	6,646.3	6,645.0	64.1	11.5	90.78	-3,792.2	-139.9	706.7	631.2	75.48	9.362		
9,900.0	6,700.3	6,645.1	6,643.8	65.9	11.5	90.62	-3,792.2	-139.9	628.8	551.5	77.35	8.130		
10,000.0	6,699.2	6,644.0	6,642.7	67.8	11.5	90.46	-3,792.2	-139.9	558.1	478.9	79.22	7.044		
10,100.0	6,698.2	6,642.8	6,641.5	69.7	11.5	90.30	-3,792.2	-139.9	497.5	416.4	81.10	6.134		
10,200.0	6,697.1	6,641.6	6,640.3	71.6	11.5	90.14	-3,792.2	-139.9	451.1	368.1	82.97	5.436		
10,300.0	6,696.0	6,640.5	6,639.1	73.4	11.5	89.98	-3,792.2	-139.9	423.6	338.8	84.85	4.993		
10,370.0	6,695.3	6,639.6	6,638.3	74.8	11.5	89.87	-3,792.2	-139.9	417.8	331.7	86.16	4.849 CC, ES		
10,400.0	6,695.0	6,639.3	6,638.0	75.3	11.5	89.82	-3,792.2	-139.9	418.9	332.2	86.73	4.830 SF		
10,500.0	6,693.9	6,638.1	6,636.8	77.2	11.5	89.65	-3,792.2	-139.9	437.6	349.0	88.60	4.938		
10,600.0	6,692.9	6,636.9	6,635.6	79.1	11.5	89.49	-3,792.2	-139.9	476.9	386.4	90.48	5.271		
10,700.0	6,691.8	6,635.7	6,634.4	81.0	11.5	89.32	-3,792.2	-139.9	532.4	440.0	92.37	5.764		
10,800.0	6,690.7	6,634.5	6,633.2	82.9	11.5	89.16	-3,792.2	-139.9	599.5	505.3	94.25	6.361		
10,900.0	6,689.7	6,633.3	6,631.9	84.7	11.5	88.99	-3,792.3	-139.9	674.8	578.7	96.13	7.020		
11,000.0	6,688.6	6,632.0	6,630.7	86.6	11.5	88.82	-3,792.3	-139.9	755.9	657.9	98.01	7.712		
11,100.0	6,687.5	6,630.8	6,629.5	88.5	11.5	88.66	-3,792.3	-139.9	841.1	741.2	99.89	8.420		
11,150.2	6,687.0	6,630.2	6,628.9	89.5	11.5	88.57	-3,792.3	-139.9	885.0	784.2	100.84	8.776		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Suden 34R-323
Project:	SEC.34-T5N-R64W	TVD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Reference Site:	Suden 34U-HZ Pad Sec.34-T5N-R64W	MD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Suden 34R-323	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #3 (10-29-14)	Offset TVD Reference:	Offset Datum

Offset Design Suden (Existing) Pad Sec.34-T5N-R64W - Gamewell 34-3 (Exist) - Wellbore #1 - Wellbore #1														Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS														Offset Well Error:	0.0 ft
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		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			
0.0	0.0	0.0	0.0	0.0	0.0	134.72	-455.4	459.8	647.2						
100.0	100.0	93.6	93.6	0.1	0.1	134.67	-455.1	460.3	647.3	647.0	0.24	2,733.148			
200.0	200.0	196.5	196.5	0.3	0.4	134.59	-454.4	461.0	647.3	646.5	0.72	902.323			
300.0	300.0	295.1	295.1	0.6	0.6	134.51	-453.7	461.5	647.1	645.9	1.20	539.891			
305.8	305.8	300.9	300.8	0.6	0.7	134.50	-453.6	461.5	647.1	645.9	1.23	527.500			
400.0	400.0	394.2	394.2	0.8	0.9	134.43	-453.0	462.2	647.2	645.5	1.68	384.776			
500.0	500.0	494.1	494.1	1.0	1.2	134.38	-452.8	462.6	647.3	645.2	2.17	298.643			
600.0	600.0	590.4	590.4	1.2	1.4	134.31	-452.5	463.5	647.7	645.1	2.64	245.562			
700.0	700.0	690.4	690.3	1.5	1.7	134.22	-452.2	464.7	648.5	645.4	3.11	208.389			
800.0	800.0	787.1	787.1	1.7	1.9	134.13	-452.2	466.1	649.4	645.8	3.57	181.683			
900.0	900.0	884.0	884.0	1.9	2.1	134.03	-452.3	467.9	650.9	646.8	4.03	161.437			
1,000.0	1,000.0	983.8	983.7	2.1	2.4	133.93	-452.7	469.9	652.6	648.1	4.49	145.215			
1,100.0	1,100.0	1,082.3	1,082.2	2.4	2.6	133.84	-453.3	471.9	654.4	649.5	4.95	132.108			
1,200.0	1,200.0	1,182.2	1,182.1	2.6	2.8	133.77	-454.0	473.9	656.4	651.0	5.41	121.330			
1,300.0	1,300.0	1,281.2	1,281.0	2.8	3.0	133.74	-455.2	475.6	658.5	652.6	5.85	112.537			
1,400.0	1,400.0	1,379.9	1,379.8	3.0	3.3	133.73	-456.6	477.3	660.7	654.4	6.29	105.036			
1,500.0	1,500.0	1,482.6	1,482.4	3.3	3.5	133.72	-458.0	479.0	662.9	656.1	6.74	98.328			
1,600.0	1,600.0	1,582.7	1,582.5	3.5	3.7	74.09	-459.4	480.2	664.2	657.0	7.17	92.627			
1,700.0	1,699.8	1,683.3	1,683.1	3.7	3.9	74.55	-461.0	481.3	664.6	657.0	7.60	87.455			
1,800.0	1,799.5	1,786.9	1,786.6	3.9	4.2	75.27	-462.0	482.5	664.0	655.9	8.07	82.315			
1,900.0	1,899.1	1,889.7	1,889.5	4.1	4.4	76.01	-462.3	483.5	662.6	654.1	8.56	77.450			
2,000.0	1,998.7	1,994.1	1,993.8	4.4	4.7	76.73	-461.9	484.4	660.9	651.8	9.04	73.129			
2,100.0	2,098.2	2,093.1	2,092.9	4.6	4.9	77.38	-461.1	485.3	658.8	649.3	9.49	69.393			
2,200.0	2,197.8	2,198.4	2,198.1	4.9	5.1	77.98	-459.2	486.8	656.5	646.6	9.96	65.899			
2,300.0	2,297.4	2,308.3	2,307.9	5.1	5.3	78.55	-455.7	488.1	653.0	642.6	10.41	62.734			
2,400.0	2,397.0	2,409.3	2,408.9	5.4	5.5	79.04	-451.6	488.9	648.8	638.0	10.83	59.900			
2,500.0	2,496.6	2,512.6	2,512.1	5.6	5.7	79.57	-447.2	489.4	644.2	632.9	11.26	57.221			
2,600.0	2,596.2	2,610.0	2,609.4	5.9	5.8	80.08	-443.0	489.8	639.6	627.9	11.68	54.759			
2,700.0	2,695.8	2,710.7	2,709.9	6.1	6.0	80.60	-438.7	490.3	635.1	623.0	12.12	52.398			
2,800.0	2,795.4	2,812.3	2,811.5	6.4	6.2	81.16	-434.4	490.5	630.5	617.9	12.56	50.187			
2,900.0	2,895.0	2,916.2	2,915.2	6.7	6.4	81.75	-429.6	490.2	625.4	612.4	13.01	48.084			
3,000.0	2,994.6	3,015.1	3,014.0	6.9	6.5	82.32	-424.7	489.9	620.0	606.6	13.45	46.115			
3,100.0	3,094.1	3,109.7	3,108.6	7.2	6.7	82.92	-420.8	489.5	615.4	601.5	13.88	44.343			
3,200.0	3,193.7	3,209.1	3,207.9	7.5	6.9	83.68	-417.9	488.2	611.1	596.8	14.29	42.762			
3,300.0	3,293.3	3,307.9	3,306.7	7.7	7.0	84.57	-415.7	486.0	607.1	592.4	14.67	41.379			
3,400.0	3,392.9	3,408.5	3,407.2	8.0	7.1	85.51	-413.7	483.4	603.1	588.1	15.05	40.068			
3,500.0	3,492.5	3,501.5	3,500.2	8.3	7.2	86.33	-411.8	481.9	599.8	584.4	15.45	38.814			
3,600.0	3,592.1	3,598.9	3,597.5	8.5	7.4	87.19	-410.3	480.7	597.4	581.5	15.87	37.648			
3,700.0	3,691.7	3,697.5	3,696.1	8.8	7.5	88.10	-409.2	479.3	595.3	579.1	16.27	36.599			
3,800.0	3,791.3	3,800.0	3,798.7	9.1	7.6	89.08	-408.0	477.6	593.3	576.6	16.67	35.586			
3,900.0	3,890.9	3,900.9	3,899.5	9.3	7.7	90.10	-406.9	475.2	591.0	573.9	17.07	34.624			
4,000.0	3,990.5	4,002.6	4,001.1	9.6	7.9	91.19	-405.7	472.3	588.6	571.1	17.47	33.697			
4,100.0	4,090.0	4,101.6	4,100.1	9.9	8.0	92.25	-404.3	469.3	586.3	568.4	17.87	32.803			
4,200.0	4,189.6	4,201.2	4,199.6	10.1	8.1	93.33	-403.0	466.3	584.1	565.8	18.28	31.947			
4,300.0	4,289.2	4,302.8	4,301.2	10.4	8.3	94.46	-401.5	463.0	582.0	563.3	18.71	31.113			
4,400.0	4,388.8	4,402.4	4,400.7	10.7	8.4	95.58	-399.9	459.6	579.9	560.7	19.13	30.310			
4,500.0	4,488.4	4,506.3	4,504.5	11.0	8.6	96.77	-398.0	455.8	577.6	558.0	19.57	29.512			
4,600.0	4,588.0	4,617.9	4,615.9	11.2	8.8	98.19	-394.7	449.7	573.9	553.8	20.03	28.649			
4,700.0	4,687.6	4,718.7	4,716.4	11.5	9.0	99.57	-391.0	443.1	569.4	548.9	20.48	27.807			

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Suden 34R-323
Project:	SEC.34-T5N-R64W	TVD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Reference Site:	Suden 34U-HZ Pad Sec.34-T5N-R64W	MD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Suden 34R-323	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #3 (10-29-14)	Offset TVD Reference:	Offset Datum

Offset Design Suden (Existing) Pad Sec.34-T5N-R64W - Gamewell 34-3 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Reference Depth (ft)	Measured Depth (ft)	Vertical Offset Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
4,800.0	4,787.2	4,818.4	4,815.8	11.8	9.2	100.98	-387.1	436.3	565.0	544.1	20.93	27.001		
4,900.0	4,886.8	4,915.7	4,912.9	12.1	9.4	102.32	-383.2	430.2	561.0	539.7	21.38	26.246		
5,000.0	4,986.4	5,009.1	5,006.0	12.3	9.5	103.51	-379.8	425.6	558.0	536.2	21.83	25.564		
5,100.0	5,086.0	5,100.0	5,096.9	12.6	9.7	104.49	-377.4	422.8	556.7	534.4	22.27	25.002		
5,200.0	5,185.8	5,192.3	5,189.2	12.8	9.9	105.05	-375.8	421.8	556.2	533.5	22.66	24.543		
5,300.0	5,285.8	5,286.3	5,283.2	13.0	10.1	105.14	-374.6	422.7	555.8	532.8	23.04	24.126		
5,400.0	5,385.8	5,390.0	5,386.8	13.1	10.4	164.69	-373.5	424.5	555.2	531.7	23.44	23.687		
5,498.8	5,484.6	5,482.8	5,479.6	13.3	10.6	164.55	-372.5	425.7	554.6	530.7	23.83	23.275		
5,500.0	5,485.8	5,483.9	5,480.7	13.3	10.6	164.54	-372.5	425.7	554.6	530.7	23.83	23.270		
5,600.0	5,585.8	5,583.9	5,580.6	13.5	10.8	164.38	-372.2	427.2	554.7	530.5	24.22	22.900		
5,700.0	5,685.8	5,683.1	5,679.9	13.7	10.9	164.19	-371.7	429.1	554.7	530.1	24.61	22.537		
5,800.0	5,785.8	5,781.7	5,778.5	13.9	11.1	163.98	-371.5	431.0	555.0	530.0	25.00	22.199		
5,900.0	5,885.8	5,883.2	5,879.9	14.1	11.3	163.77	-371.2	433.1	555.4	530.0	25.40	21.864		
6,000.0	5,985.8	5,979.3	5,976.0	14.3	11.5	-16.46	-371.0	435.3	555.5	529.7	25.76	21.562		
6,100.0	6,085.3	6,078.2	6,074.8	14.5	11.7	-17.17	-371.2	437.9	547.7	521.9	25.79	21.233		
6,200.0	6,182.7	6,178.4	6,175.1	14.6	11.9	-18.70	-371.2	440.9	527.4	501.9	25.48	20.699		
6,300.0	6,276.5	6,269.5	6,266.1	14.7	12.1	-21.14	-370.9	443.5	495.2	470.3	24.84	19.932		
6,400.0	6,364.9	6,356.3	6,352.8	14.7	12.2	-25.04	-370.9	446.9	452.8	428.8	24.03	18.848		
6,500.0	6,446.4	6,435.4	6,431.8	14.8	12.4	-30.95	-371.0	450.3	401.5	378.2	23.30	17.230		
6,600.0	6,519.8	6,505.1	6,501.5	15.0	12.5	-39.65	-371.5	454.1	343.9	320.7	23.19	14.830		
6,700.0	6,583.6	6,569.6	6,565.9	15.3	12.6	-52.33	-372.2	457.8	283.6	259.2	24.39	11.628		
6,800.0	6,636.9	6,624.1	6,620.3	15.7	12.7	-67.83	-372.8	460.8	227.6	200.9	26.66	8.538		
6,900.0	6,678.7	6,666.5	6,662.6	16.4	12.8	-81.93	-373.1	463.2	190.9	162.3	28.57	6.682		
6,943.4	6,693.0	6,680.8	6,676.9	16.8	12.9	-86.40	-373.1	464.1	186.6	157.4	29.14	6.401 CC, ES, SF		
7,000.0	6,708.2	6,695.8	6,691.8	17.3	12.9	-90.22	-373.1	465.0	194.2	164.5	29.70	6.540		
7,100.0	6,725.1	6,712.5	6,708.5	18.3	12.9	-91.21	-373.1	466.0	240.5	209.8	30.77	7.816		
7,200.0	6,729.1	6,716.5	6,712.5	19.5	12.9	-85.69	-373.1	466.3	312.7	280.7	31.99	9.774		
7,300.0	6,728.0	6,715.4	6,711.4	20.8	12.9	-85.36	-373.1	466.2	397.0	363.7	33.28	11.930		
7,400.0	6,726.9	6,714.3	6,710.3	22.1	12.9	-85.02	-373.1	466.1	487.3	452.6	34.65	14.063		
7,500.0	6,725.9	6,713.2	6,709.2	23.6	12.9	-84.68	-373.1	466.1	580.7	544.6	36.10	16.088		
7,600.0	6,724.8	6,712.0	6,708.0	25.1	12.9	-84.33	-373.1	466.0	676.1	638.5	37.60	17.979		
7,700.0	6,723.7	6,710.9	6,706.9	26.6	12.9	-83.97	-373.1	465.9	772.6	733.4	39.16	19.730		
7,800.0	6,722.7	6,709.6	6,705.6	28.2	12.9	-83.61	-373.1	465.8	869.9	829.1	40.75	21.347		
7,900.0	6,721.6	6,708.4	6,704.4	29.9	12.9	-83.23	-373.1	465.8	967.8	925.4	42.38	22.837		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Suden 34R-323
Project:	SEC.34-T5N-R64W	TVD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Reference Site:	Suden 34U-HZ Pad Sec.34-T5N-R64W	MD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Suden 34R-323	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #3 (10-29-14)	Offset TVD Reference:	Offset Datum

Offset Design Suden (Existing) Pad Sec.34-T5N-R64W - Gamewell 34-4 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
7,400.0	6,726.9	6,705.0	6,704.2	22.1	12.2	-87.56	-1,731.7	466.3	928.8	894.9	33.93	27.373		
7,500.0	6,725.9	6,705.5	6,704.8	23.6	12.2	-87.74	-1,731.7	466.4	831.1	795.7	35.40	23.481		
7,600.0	6,724.8	6,706.1	6,705.4	25.1	12.2	-87.92	-1,731.8	466.4	734.1	697.2	36.92	19.881		
7,700.0	6,723.7	6,706.7	6,706.0	26.6	12.2	-88.10	-1,731.8	466.4	638.0	599.5	38.50	16.569		
7,800.0	6,722.7	6,707.3	6,706.6	28.2	12.2	-88.27	-1,731.8	466.4	543.2	503.1	40.12	13.539		
7,900.0	6,721.6	6,707.9	6,707.1	29.9	12.2	-88.45	-1,731.8	466.4	450.8	409.0	41.78	10.789		
8,000.0	6,720.5	6,708.5	6,707.7	31.6	12.2	-88.63	-1,731.8	466.4	362.4	318.9	43.47	8.337		
8,100.0	6,719.5	6,709.1	6,708.3	33.3	12.2	-88.81	-1,731.8	466.4	281.8	236.7	45.18	6.238		
8,200.0	6,718.4	6,709.7	6,708.9	35.0	12.2	-88.99	-1,731.8	466.4	218.0	171.1	46.92	4.647		
8,300.0	6,717.3	6,710.2	6,709.5	36.7	12.2	-89.17	-1,731.8	466.4	188.8	140.1	48.67	3.879		
8,309.5	6,717.2	6,710.3	6,709.6	36.9	12.2	-89.18	-1,731.8	466.4	188.5	139.7	48.84	3.861 CC, ES, SF		
8,400.0	6,716.3	6,710.8	6,710.1	38.5	12.2	-89.34	-1,731.8	466.4	209.1	158.7	50.44	4.147		
8,500.0	6,715.2	6,711.4	6,710.7	40.3	12.2	-89.52	-1,731.8	466.4	268.0	215.8	52.22	5.133		
8,600.0	6,714.1	6,712.0	6,711.3	42.0	12.2	-89.70	-1,731.8	466.4	346.3	292.3	54.01	6.412		
8,700.0	6,713.1	6,712.6	6,711.8	43.8	12.2	-89.88	-1,731.9	466.5	433.6	377.8	55.82	7.769		
8,800.0	6,712.0	6,713.2	6,712.4	45.6	12.2	-90.06	-1,731.9	466.5	525.5	467.9	57.63	9.118		
8,900.0	6,711.0	6,713.8	6,713.0	47.5	12.2	-90.24	-1,731.9	466.5	619.9	560.4	59.45	10.426		
9,000.0	6,709.9	6,714.4	6,713.6	49.3	12.2	-90.41	-1,731.9	466.5	715.8	654.5	61.28	11.680		
9,100.0	6,708.8	6,714.9	6,714.2	51.1	12.2	-90.59	-1,731.9	466.5	812.7	749.6	63.11	12.876		
9,200.0	6,707.8	6,715.5	6,714.8	53.0	12.2	-90.77	-1,731.9	466.5	910.2	845.3	64.95	14.014		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Suden 34R-323
Project:	SEC.34-T5N-R64W	TVD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Reference Site:	Suden 34U-HZ Pad Sec.34-T5N-R64W	MD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Suden 34R-323	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #3 (10-29-14)	Offset TVD Reference:	Offset Datum

Offset Design Suden (Existing) Pad Sec.34-T5N-R64W - Gamewell 5 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning	
Reference	Offset	Reference	Offset	(ft)	(ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
6,800.0	6,636.9	6,602.4	6,599.7	15.7	12.9	49.03	-1,099.4	-204.3	987.3	963.5	23.83	41.433		
6,900.0	6,678.7	6,644.6	6,642.0	16.4	13.0	59.53	-1,099.6	-204.7	909.6	883.6	25.99	34.996		
7,000.0	6,708.2	6,674.7	6,672.0	17.3	13.1	71.10	-1,099.8	-205.0	830.5	802.0	28.53	29.113		
7,100.0	6,725.1	6,692.0	6,689.4	18.3	13.1	82.03	-1,099.9	-205.1	752.8	722.1	30.66	24.554		
7,200.0	6,729.1	6,696.5	6,693.9	19.5	13.1	89.75	-1,099.9	-205.2	679.2	647.1	32.16	21.123		
7,300.0	6,728.0	6,696.0	6,693.3	20.8	13.1	89.69	-1,099.9	-205.2	613.1	579.6	33.45	18.328		
7,400.0	6,726.9	6,695.4	6,692.8	22.1	13.1	89.62	-1,099.9	-205.2	557.1	522.3	34.84	15.993		
7,500.0	6,725.9	6,694.9	6,692.3	23.6	13.1	89.56	-1,099.9	-205.2	514.7	478.4	36.30	14.179		
7,600.0	6,724.8	6,694.3	6,691.7	25.1	13.1	89.49	-1,099.9	-205.2	489.3	451.4	37.82	12.936		
7,677.5	6,724.0	6,693.9	6,691.3	26.3	13.1	89.44	-1,099.9	-205.1	483.1	444.0	39.04	12.373 CC, ES		
7,700.0	6,723.7	6,693.8	6,691.2	26.6	13.1	89.43	-1,099.9	-205.1	483.6	444.2	39.40	12.275		
7,800.0	6,722.7	6,693.3	6,690.6	28.2	13.1	89.37	-1,099.9	-205.1	498.4	457.3	41.02	12.151 SF		
7,900.0	6,721.6	6,692.7	6,690.1	29.9	13.1	89.30	-1,099.9	-205.1	531.8	489.2	42.67	12.464		
8,000.0	6,720.5	6,692.2	6,689.5	31.6	13.1	89.24	-1,099.9	-205.1	580.8	536.5	44.35	13.095		
8,100.0	6,719.5	6,691.6	6,689.0	33.3	13.1	89.17	-1,099.9	-205.1	641.7	595.7	46.06	13.932		
8,200.0	6,718.4	6,691.1	6,688.4	35.0	13.1	89.11	-1,099.9	-205.1	711.6	663.8	47.79	14.888		
8,300.0	6,717.3	6,690.5	6,687.9	36.7	13.1	89.04	-1,099.9	-205.1	787.9	738.4	49.54	15.903		
8,400.0	6,716.3	6,690.0	6,687.4	38.5	13.1	88.98	-1,099.9	-205.1	869.1	817.8	51.31	16.938		
8,500.0	6,715.2	6,689.4	6,686.8	40.3	13.1	88.91	-1,099.8	-205.1	953.8	900.8	53.09	17.967		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Suden 34R-323
Project:	SEC.34-T5N-R64W	TVD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Reference Site:	Suden 34U-HZ Pad Sec.34-T5N-R64W	MD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Suden 34R-323	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #3 (10-29-14)	Offset TVD Reference:	Offset Datum

Offset Design Suden 34U-HZ Pad Sec.34-T5N-R64W - Suden 34R-423 - Wellbore #1 - Plan #2 (10-29-14)														Offset Site Error:	0.0 ft
Survey Program: 0-MWD														Offset Well Error:	0.0 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			
0.0	0.0	0.0	0.0	0.0	0.0	-90.01	0.0	-30.7	30.7						
100.0	100.0	99.0	99.0	0.1	0.1	-90.01	0.0	-30.7	30.7	30.4	0.22	137.068			
200.0	200.0	199.0	199.0	0.3	0.3	-90.01	0.0	-30.7	30.7	30.0	0.67	45.613			
300.0	300.0	299.0	299.0	0.6	0.6	-90.01	0.0	-30.7	30.7	29.5	1.12	27.331			
400.0	400.0	399.0	399.0	0.8	0.8	-90.01	0.0	-30.7	30.7	29.1	1.57	19.511			
500.0	500.0	499.0	499.0	1.0	1.0	-90.01	0.0	-30.7	30.7	28.6	2.02	15.171			
600.0	600.0	599.0	599.0	1.2	1.2	-90.01	0.0	-30.7	30.7	28.2	2.47	12.410			
700.0	700.0	699.0	699.0	1.5	1.5	-90.01	0.0	-30.7	30.7	27.7	2.92	10.499			
800.0	800.0	799.0	799.0	1.7	1.7	-90.01	0.0	-30.7	30.7	27.3	3.37	9.098			
900.0	900.0	899.0	899.0	1.9	1.9	-90.01	0.0	-30.7	30.7	26.8	3.82	8.027			
1,000.0	1,000.0	999.0	999.0	2.1	2.1	-90.01	0.0	-30.7	30.7	26.4	4.27	7.182			
1,100.0	1,100.0	1,099.0	1,099.0	2.4	2.4	-90.01	0.0	-30.7	30.7	25.9	4.72	6.498			
1,200.0	1,200.0	1,199.0	1,199.0	2.6	2.6	-90.01	0.0	-30.7	30.7	25.5	5.17	5.932			
1,300.0	1,300.0	1,299.0	1,299.0	2.8	2.8	-90.01	0.0	-30.7	30.7	25.0	5.62	5.458			
1,400.0	1,400.0	1,399.0	1,399.0	3.0	3.0	-90.01	0.0	-30.7	30.7	24.6	6.07	5.053			
1,500.0	1,500.0	1,499.0	1,499.0	3.3	3.3	-90.01	0.0	-30.7	30.7	24.1	6.52	4.705 CC, ES			
1,600.0	1,600.0	1,599.0	1,599.0	3.5	3.5	-151.32	0.0	-30.7	32.2	25.2	6.96	4.625			
1,700.0	1,699.8	1,698.8	1,698.8	3.7	3.7	-155.19	0.0	-30.7	36.9	29.5	7.38	4.991			
1,800.0	1,799.5	1,798.5	1,798.5	3.9	3.9	-159.70	0.0	-30.7	44.6	36.8	7.81	5.716			
1,900.0	1,899.1	1,898.1	1,898.1	4.1	4.2	-163.08	0.0	-30.7	53.2	45.0	8.25	6.453			
2,000.0	1,998.7	1,997.7	1,997.7	4.4	4.4	-165.51	0.0	-30.7	61.9	53.3	8.69	7.129			
2,100.0	2,098.2	2,097.2	2,097.2	4.6	4.6	-167.35	0.0	-30.7	70.7	61.6	9.13	7.748			
2,200.0	2,197.8	2,196.8	2,196.8	4.9	4.8	-168.77	0.0	-30.7	79.6	70.0	9.57	8.315			
2,300.0	2,297.4	2,296.4	2,296.4	5.1	5.0	-169.91	0.0	-30.7	88.5	78.5	10.02	8.834			
2,400.0	2,397.0	2,396.0	2,396.0	5.4	5.3	-170.85	0.0	-30.7	97.4	87.0	10.46	9.310			
2,500.0	2,496.6	2,495.6	2,495.6	5.6	5.5	-171.62	0.0	-30.7	106.4	95.5	10.91	9.749			
2,600.0	2,596.2	2,595.2	2,595.2	5.9	5.7	-171.92	1.3	-29.5	113.9	102.5	11.36	10.022			
2,700.0	2,695.8	2,694.8	2,694.8	6.1	6.0	-171.38	5.4	-25.9	118.1	106.3	11.81	10.004			
2,800.0	2,795.4	2,794.4	2,794.4	6.4	6.2	-170.09	12.1	-20.0	119.3	107.1	12.26	9.736			
2,900.0	2,895.0	2,894.0	2,894.0	6.7	6.4	-168.64	19.3	-13.7	119.8	107.1	12.70	9.430			
3,000.0	2,994.6	2,993.6	2,993.6	6.9	6.6	-167.20	26.6	-7.3	120.3	107.2	13.15	9.147			
3,100.0	3,094.1	3,093.1	3,093.1	7.2	6.9	-165.78	33.8	-0.9	120.9	107.3	13.61	8.887			
3,200.0	3,193.7	3,192.7	3,192.7	7.5	7.1	-164.37	41.1	5.4	121.6	107.6	14.07	8.646			
3,300.0	3,293.3	3,292.3	3,292.3	7.7	7.4	-162.97	48.3	11.8	122.4	107.8	14.53	8.423			
3,400.0	3,392.9	3,391.9	3,391.9	8.0	7.6	-161.60	55.6	18.1	123.2	108.2	15.00	8.216			
3,500.0	3,492.5	3,491.5	3,491.5	8.3	7.8	-160.24	62.8	24.5	124.1	108.6	15.47	8.024			
3,600.0	3,592.1	3,591.1	3,591.1	8.5	8.1	-158.91	70.1	30.9	125.1	109.1	15.94	7.845			
3,700.0	3,691.7	3,690.7	3,690.7	8.8	8.4	-157.59	77.3	37.2	126.1	109.7	16.42	7.679			
3,800.0	3,791.3	3,790.3	3,790.3	9.1	8.6	-156.30	84.6	43.6	127.2	110.3	16.91	7.524			
3,900.0	3,890.9	3,889.9	3,889.9	9.3	8.9	-155.03	91.8	50.0	128.4	111.0	17.39	7.379			
4,000.0	3,990.5	3,989.5	3,989.5	9.6	9.1	-153.78	99.1	56.3	129.6	111.7	17.89	7.244			
4,100.0	4,090.0	4,089.0	4,089.0	9.9	9.4	-152.56	106.3	62.7	130.9	112.5	18.38	7.118			
4,200.0	4,189.6	4,188.6	4,188.6	10.1	9.6	-151.36	113.6	69.1	132.2	113.3	18.88	7.001			
4,300.0	4,289.2	4,288.2	4,288.2	10.4	9.9	-150.19	120.8	75.4	133.6	114.2	19.39	6.890			
4,400.0	4,388.8	4,387.8	4,387.8	10.7	10.2	-149.04	128.1	81.8	135.1	115.2	19.90	6.787			
4,500.0	4,488.4	4,487.4	4,487.4	11.0	10.4	-147.91	135.3	88.2	136.6	116.2	20.41	6.690			
4,600.0	4,588.0	4,587.0	4,587.0	11.2	10.7	-146.82	142.6	94.5	138.1	117.2	20.93	6.600			
4,700.0	4,687.6	4,686.6	4,686.6	11.5	11.0	-145.74	149.8	100.9	139.7	118.3	21.45	6.514			
4,800.0	4,787.2	4,786.2	4,786.2	11.8	11.2	-144.98	156.3	106.6	141.9	120.0	21.94	6.467			

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Suden 34R-323
Project:	SEC.34-T5N-R64W	TVD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Reference Site:	Suden 34U-HZ Pad Sec.34-T5N-R64W	MD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Suden 34R-323	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #3 (10-29-14)	Offset TVD Reference:	Offset Datum

Offset Design Suden 34U-HZ Pad Sec.34-T5N-R64W - Suden 34R-423 - Wellbore #1 - Plan #2 (10-29-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 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		
4,900.0	4,886.8	4,900.0	4,890.0	12.1	11.4	-145.27	160.4	110.2	146.0	123.6	22.36	6.529		
5,000.0	4,986.4	4,995.8	4,985.8	12.3	11.6	-146.51	162.0	111.5	152.2	129.4	22.74	6.692		
5,100.0	5,086.0	5,095.0	5,085.0	12.6	11.7	-148.24	162.0	111.5	159.5	136.4	23.12	6.898		
5,200.0	5,185.8	5,194.8	5,184.8	12.8	12.0	-149.34	162.0	111.5	164.4	140.9	23.50	6.997		
5,300.0	5,285.8	5,294.8	5,284.8	13.0	12.2	-149.76	162.0	111.5	166.3	142.5	23.87	6.969		
5,400.0	5,385.8	5,394.8	5,384.8	13.1	12.4	-90.00	162.0	111.5	166.4	142.1	24.27	6.855		
5,500.0	5,485.8	5,494.8	5,484.8	13.3	12.6	-90.00	162.0	111.5	166.4	141.7	24.69	6.738		
5,600.0	5,585.8	5,594.8	5,584.8	13.5	12.8	-90.00	162.0	111.5	166.4	141.2	25.11	6.624		
5,700.0	5,685.8	5,694.8	5,684.8	13.7	13.0	-90.00	162.0	111.5	166.4	140.8	25.54	6.514		
5,800.0	5,785.8	5,794.8	5,784.8	13.9	13.2	-90.00	162.0	111.5	166.4	140.4	25.97	6.407		
5,900.0	5,885.8	5,894.8	5,884.8	14.1	13.4	-90.00	162.0	111.5	166.4	140.0	26.39	6.303		
5,963.0	5,948.8	5,957.8	5,947.8	14.3	13.6	90.18	162.0	111.5	166.4	139.7	26.66	6.239		
6,000.0	5,985.8	5,994.8	5,984.8	14.3	13.7	90.09	162.0	111.5	166.4	139.5	26.82	6.203		
6,100.0	6,085.3	6,094.8	6,084.8	14.5	13.9	92.79	160.6	111.5	166.6	139.3	27.23	6.117		
6,200.0	6,182.7	6,196.0	6,185.1	14.6	14.0	96.11	148.0	111.5	167.3	139.8	27.53	6.077		
6,300.0	6,276.5	6,298.6	6,284.2	14.7	14.1	99.31	121.7	111.5	168.6	140.9	27.73	6.081		
6,400.0	6,364.9	6,402.6	6,380.1	14.7	14.2	102.31	81.8	111.5	170.3	142.5	27.84	6.117		
6,500.0	6,446.4	6,507.8	6,470.8	14.8	14.3	105.06	28.5	111.5	172.3	144.4	27.93	6.170		
6,600.0	6,519.8	6,614.3	6,554.2	15.0	14.4	107.51	-37.6	111.5	174.5	146.4	28.09	6.212		
6,700.0	6,583.6	6,722.0	6,628.4	15.3	14.7	109.61	-115.5	111.5	176.6	148.2	28.43	6.214		
6,800.0	6,636.9	6,830.7	6,691.4	15.7	15.1	111.34	-203.9	111.5	178.6	149.6	29.07	6.144		
6,900.0	6,678.7	6,940.3	6,741.6	16.4	15.9	112.68	-301.2	111.5	180.3	150.2	30.13	5.985		
7,000.0	6,708.2	7,050.5	6,777.6	17.3	16.8	113.63	-405.3	111.5	181.6	149.9	31.66	5.736		
7,100.0	6,725.1	7,161.2	6,798.2	18.3	17.9	114.16	-514.0	111.5	182.3	148.7	33.66	5.416		
7,200.0	6,729.1	7,269.8	6,803.3	19.5	19.2	114.34	-622.4	111.5	182.6	146.6	36.04	5.067		
7,300.0	6,728.0	7,369.8	6,803.3	20.8	20.5	114.65	-722.4	111.5	183.0	144.7	38.37	4.771		
7,400.0	6,726.9	7,469.8	6,803.3	22.1	21.9	114.96	-822.4	111.5	183.5	142.6	40.85	4.492		
7,500.0	6,725.9	7,569.8	6,803.4	23.6	23.3	115.26	-922.4	111.5	184.0	140.5	43.46	4.233		
7,600.0	6,724.8	7,669.8	6,803.4	25.1	24.9	115.56	-1,022.4	111.5	184.4	138.3	46.17	3.995		
7,700.0	6,723.7	7,769.8	6,803.4	26.6	26.4	115.87	-1,122.4	111.5	184.9	135.9	48.96	3.776		
7,800.0	6,722.7	7,869.8	6,803.4	28.2	28.0	116.17	-1,222.4	111.5	185.4	133.6	51.82	3.577		
7,900.0	6,721.6	7,969.8	6,803.4	29.9	29.7	116.47	-1,322.4	111.5	185.9	131.1	54.73	3.396		
8,000.0	6,720.5	8,069.8	6,803.5	31.6	31.4	116.76	-1,422.4	111.5	186.3	128.7	57.68	3.231		
8,100.0	6,719.5	8,169.8	6,803.5	33.3	33.1	117.06	-1,522.4	111.5	186.8	126.2	60.66	3.080		
8,200.0	6,718.4	8,269.8	6,803.5	35.0	34.8	117.36	-1,622.4	111.5	187.3	123.6	63.67	2.942		
8,300.0	6,717.3	8,369.8	6,803.5	36.7	36.6	117.65	-1,722.3	111.5	187.8	121.1	66.70	2.816		
8,400.0	6,716.3	8,469.8	6,803.5	38.5	38.3	117.94	-1,822.3	111.5	188.3	118.6	69.75	2.700		
8,500.0	6,715.2	8,569.7	6,803.5	40.3	40.1	118.23	-1,922.3	111.5	188.8	116.0	72.80	2.594		
8,600.0	6,714.1	8,669.7	6,803.6	42.0	41.9	118.52	-2,022.3	111.5	189.4	113.5	75.87	2.496		
8,700.0	6,713.1	8,769.7	6,803.6	43.8	43.7	118.80	-2,122.3	111.5	189.9	110.9	78.93	2.406		
8,800.0	6,712.0	8,869.7	6,803.6	45.6	45.5	119.09	-2,222.3	111.5	190.4	108.4	82.00	2.322		
8,900.0	6,711.0	8,969.7	6,803.6	47.5	47.3	119.37	-2,322.3	111.5	190.9	105.9	85.07	2.244		
9,000.0	6,709.9	9,069.7	6,803.6	49.3	49.1	119.66	-2,422.3	111.5	191.5	103.3	88.14	2.172		
9,100.0	6,708.8	9,169.7	6,803.6	51.1	51.0	119.94	-2,522.3	111.5	192.0	100.8	91.20	2.105		
9,200.0	6,707.8	9,269.7	6,803.7	53.0	52.8	120.21	-2,622.3	111.5	192.5	98.3	94.26	2.043		
9,300.0	6,706.7	9,369.7	6,803.7	54.8	54.7	120.49	-2,722.3	111.5	193.1	95.8	97.31	1.984		
9,400.0	6,705.6	9,469.7	6,803.7	56.6	56.5	120.77	-2,822.3	111.5	193.6	93.3	100.36	1.930		
9,500.0	6,704.6	9,569.7	6,803.7	58.5	58.4	121.04	-2,922.3	111.5	194.2	90.8	103.39	1.878		
9,600.0	6,703.5	9,669.7	6,803.7	60.4	60.2	121.31	-3,022.3	111.5	194.8	88.3	106.42	1.830		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Suden 34R-323
Project:	SEC.34-T5N-R64W	TVD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Reference Site:	Suden 34U-HZ Pad Sec.34-T5N-R64W	MD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Suden 34R-323	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #3 (10-29-14)	Offset TVD Reference:	Offset Datum

Offset Design Suden 34U-HZ Pad Sec.34-T5N-R64W - Suden 34R-423 - Wellbore #1 - Plan #2 (10-29-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
9,700.0	6,702.4	9,769.7	6,803.7	62.2	62.1	121.59	-3,122.3	111.5	195.3	85.9	109.44	1.785		
9,800.0	6,701.4	9,869.7	6,803.8	64.1	64.0	121.86	-3,222.3	111.5	195.9	83.4	112.45	1.742		
9,900.0	6,700.3	9,969.7	6,803.8	65.9	65.8	122.12	-3,322.3	111.5	196.5	81.0	115.45	1.702		
10,000.0	6,699.2	10,069.7	6,803.8	67.8	67.7	122.39	-3,422.2	111.5	197.0	78.6	118.44	1.664		
10,100.0	6,698.2	10,169.7	6,803.8	69.7	69.6	122.65	-3,522.2	111.5	197.6	76.2	121.42	1.628		
10,200.0	6,697.1	10,269.6	6,803.8	71.6	71.5	122.92	-3,622.2	111.5	198.2	73.8	124.39	1.594		
10,300.0	6,696.0	10,369.6	6,803.9	73.4	73.3	123.18	-3,722.2	111.5	198.8	71.5	127.34	1.561		
10,400.0	6,695.0	10,469.6	6,803.9	75.3	75.2	123.44	-3,822.2	111.5	199.4	69.1	130.28	1.531		
10,500.0	6,693.9	10,569.6	6,803.9	77.2	77.1	123.70	-3,922.2	111.5	200.0	66.8	133.21	1.501		
10,600.0	6,692.9	10,669.6	6,803.9	79.1	79.0	123.95	-4,022.2	111.5	200.6	64.5	136.13	1.474	Level 3	
10,700.0	6,691.8	10,769.6	6,803.9	81.0	80.9	124.21	-4,122.2	111.5	201.2	62.2	139.03	1.447	Level 3	
10,800.0	6,690.7	10,869.6	6,803.9	82.9	82.8	124.46	-4,222.2	111.5	201.8	59.9	141.92	1.422	Level 3	
10,900.0	6,689.7	10,969.6	6,804.0	84.7	84.7	124.72	-4,322.2	111.5	202.4	57.6	144.80	1.398	Level 3	
11,000.0	6,688.6	11,069.6	6,804.0	86.6	86.5	124.97	-4,422.2	111.5	203.1	55.4	147.67	1.375	Level 3	
11,100.0	6,687.5	11,169.6	6,804.0	88.5	88.4	125.22	-4,522.2	111.5	203.7	53.2	150.52	1.353	Level 3	
11,150.2	6,687.0	11,219.5	6,804.0	89.5	89.4	125.34	-4,572.1	111.5	204.0	52.1	151.94	1.343	Level 3, SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Suden 34R-323
Project:	SEC.34-T5N-R64W	TVD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Reference Site:	Suden 34U-HZ Pad Sec.34-T5N-R64W	MD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Suden 34R-323	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #3 (10-29-14)	Offset TVD Reference:	Offset Datum

Offset Design Suden 34U-HZ Pad Sec.34-T5N-R64W - Suden 34U-243 - Wellbore #1 - Plan #1 (10-29-14)														Offset Site Error:	0.0 ft
Survey Program: 0-MWD														Offset Well Error:	0.0 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			
0.0	0.0	0.0	0.0	0.0	0.0	89.98	0.0	30.7	30.7						
100.0	100.0	100.0	100.0	0.1	0.1	89.98	0.0	30.7	30.7	30.4	0.22	136.384			
200.0	200.0	200.0	200.0	0.3	0.3	89.98	0.0	30.7	30.7	30.0	0.67	45.461			
300.0	300.0	300.0	300.0	0.6	0.6	89.98	0.0	30.7	30.7	29.5	1.12	27.277			
400.0	400.0	400.0	400.0	0.8	0.8	89.98	0.0	30.7	30.7	29.1	1.57	19.483			
500.0	500.0	500.0	500.0	1.0	1.0	89.98	0.0	30.7	30.7	28.6	2.02	15.154			
600.0	600.0	600.0	600.0	1.2	1.2	89.98	0.0	30.7	30.7	28.2	2.47	12.399			
700.0	700.0	700.0	700.0	1.5	1.5	89.98	0.0	30.7	30.7	27.7	2.92	10.491			
800.0	800.0	800.0	800.0	1.7	1.7	89.98	0.0	30.7	30.7	27.3	3.37	9.092			
900.0	900.0	900.0	900.0	1.9	1.9	89.98	0.0	30.7	30.7	26.8	3.82	8.023			
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	89.98	0.0	30.7	30.7	26.4	4.27	7.178 CC, ES			
1,100.0	1,100.0	1,098.9	1,098.9	2.4	2.3	89.34	0.4	32.3	32.3	27.6	4.71	6.870			
1,200.0	1,200.0	1,197.6	1,197.5	2.6	2.6	87.76	1.5	37.3	37.4	32.3	5.14	7.280			
1,300.0	1,300.0	1,295.8	1,295.3	2.8	2.8	85.90	3.3	45.6	45.9	40.3	5.58	8.225			
1,400.0	1,400.0	1,393.4	1,392.1	3.0	3.0	84.23	5.8	57.0	57.8	51.8	6.04	9.574			
1,500.0	1,500.0	1,490.0	1,487.6	3.3	3.3	82.88	8.9	71.5	73.1	66.6	6.52	11.220			
1,600.0	1,600.0	1,588.1	1,584.1	3.5	3.6	22.41	12.6	88.5	89.2	82.3	6.88	12.958			
1,700.0	1,699.8	1,687.2	1,681.7	3.7	3.9	22.64	16.4	105.8	102.2	94.9	7.31	13.987			
1,800.0	1,799.5	1,786.7	1,779.5	3.9	4.2	23.48	20.2	123.1	112.3	104.6	7.74	14.505			
1,900.0	1,899.1	1,886.2	1,877.5	4.1	4.6	24.35	24.0	140.5	121.8	113.6	8.19	14.874			
2,000.0	1,998.7	1,985.7	1,975.4	4.4	4.9	25.09	27.8	157.8	131.4	122.8	8.65	15.196			
2,100.0	2,098.2	2,085.3	2,073.3	4.6	5.3	25.73	31.6	175.2	141.0	131.9	9.11	15.479			
2,200.0	2,197.8	2,184.8	2,171.3	4.9	5.7	26.29	35.4	192.5	150.6	141.0	9.58	15.728			
2,300.0	2,297.4	2,284.3	2,269.2	5.1	6.0	26.78	39.2	209.9	160.2	150.2	10.05	15.949			
2,400.0	2,397.0	2,383.8	2,367.1	5.4	6.4	27.22	43.0	227.2	169.8	159.3	10.52	16.145			
2,500.0	2,496.6	2,483.4	2,465.1	5.6	6.8	27.61	46.7	244.6	179.5	168.5	11.00	16.320			
2,600.0	2,596.2	2,582.9	2,563.0	5.9	7.2	27.96	50.5	261.9	189.1	177.6	11.48	16.477			
2,700.0	2,695.8	2,682.4	2,660.9	6.1	7.6	28.27	54.3	279.3	198.8	186.8	11.96	16.618			
2,800.0	2,795.4	2,781.9	2,758.8	6.4	7.9	28.56	58.1	296.6	208.4	196.0	12.45	16.746			
2,900.0	2,895.0	2,881.5	2,856.8	6.7	8.3	28.82	61.9	314.0	218.1	205.1	12.93	16.861			
3,000.0	2,994.6	2,981.0	2,954.7	6.9	8.7	29.06	65.7	331.3	227.7	214.3	13.42	16.966			
3,100.0	3,094.1	3,080.5	3,052.6	7.2	9.1	29.28	69.5	348.7	237.4	223.5	13.91	17.062			
3,200.0	3,193.7	3,180.1	3,150.6	7.5	9.5	29.48	73.3	366.0	247.1	232.7	14.41	17.149			
3,300.0	3,293.3	3,279.6	3,248.5	7.7	9.9	29.67	77.1	383.4	256.7	241.8	14.90	17.229			
3,400.0	3,392.9	3,379.1	3,346.4	8.0	10.3	29.84	80.9	400.7	266.4	251.0	15.40	17.303			
3,500.0	3,492.5	3,478.6	3,444.4	8.3	10.7	30.00	84.7	418.1	276.1	260.2	15.89	17.371			
3,600.0	3,592.1	3,578.2	3,542.3	8.5	11.1	30.15	88.5	435.4	285.8	269.4	16.39	17.434			
3,700.0	3,691.7	3,677.7	3,640.2	8.8	11.5	30.29	92.2	452.8	295.5	278.6	16.89	17.492			
3,800.0	3,791.3	3,777.2	3,738.1	9.1	11.9	30.43	96.0	470.1	305.1	287.8	17.39	17.546			
3,900.0	3,890.9	3,876.8	3,836.1	9.3	12.3	30.55	99.8	487.5	314.8	296.9	17.89	17.596			
4,000.0	3,990.5	3,976.3	3,934.0	9.6	12.7	30.67	103.6	504.8	324.5	306.1	18.39	17.643			
4,100.0	4,090.0	4,075.8	4,031.9	9.9	13.1	30.78	107.4	522.2	334.2	315.3	18.90	17.687			
4,200.0	4,189.6	4,175.3	4,129.9	10.1	13.5	30.88	111.2	539.5	343.9	324.5	19.40	17.727			
4,300.0	4,289.2	4,274.9	4,227.8	10.4	13.9	30.98	115.0	556.9	353.6	333.7	19.90	17.766			
4,400.0	4,388.8	4,374.4	4,325.7	10.7	14.3	31.07	118.8	574.2	363.3	342.9	20.41	17.802			
4,500.0	4,488.4	4,473.9	4,423.7	11.0	14.7	31.16	122.6	591.6	373.0	352.0	20.91	17.835			
4,600.0	4,588.0	4,573.4	4,521.6	11.2	15.1	31.24	126.4	608.9	382.6	361.2	21.42	17.867			
4,700.0	4,687.6	4,673.0	4,619.5	11.5	15.5	31.32	130.2	626.3	392.3	370.4	21.92	17.897			
4,800.0	4,787.2	4,772.5	4,717.5	11.8	15.9	31.39	133.9	643.6	402.0	379.6	22.43	17.925			

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Suden 34R-323
Project:	SEC.34-T5N-R64W	TVD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Reference Site:	Suden 34U-HZ Pad Sec.34-T5N-R64W	MD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Suden 34R-323	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #3 (10-29-14)	Offset TVD Reference:	Offset Datum

Offset Design Suden 34U-HZ Pad Sec.34-T5N-R64W - Suden 34U-243 - Wellbore #1 - Plan #1 (10-29-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 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		
4,900.0	4,886.8	4,872.0	4,815.4	12.1	16.3	31.47	137.7	661.0	411.7	388.8	22.93	17.952		
5,000.0	4,986.4	4,971.6	4,913.3	12.3	16.7	31.53	141.5	678.3	421.4	398.0	23.44	17.978		
5,100.0	5,086.0	5,071.1	5,011.2	12.6	17.1	31.62	145.3	695.7	431.4	407.5	23.93	18.027		
5,200.0	5,185.8	5,170.3	5,108.8	12.8	17.5	31.59	149.1	713.0	443.9	419.6	24.35	18.232		
5,300.0	5,285.8	5,272.2	5,209.2	13.0	17.9	31.36	153.0	730.7	459.3	434.6	24.73	18.576		
5,400.0	5,385.8	5,389.7	5,325.3	13.1	18.2	90.64	156.8	748.0	474.0	448.9	25.13	18.862		
5,500.0	5,485.8	5,508.5	5,443.4	13.3	18.5	90.29	159.5	760.8	484.8	459.2	25.55	18.972		
5,600.0	5,585.8	5,628.2	5,562.8	13.5	18.7	90.08	161.3	768.9	491.5	465.5	25.97	18.927		
5,700.0	5,685.8	5,748.4	5,682.9	13.7	18.9	90.00	162.0	772.0	494.1	467.7	26.38	18.730		
5,800.0	5,785.8	5,851.3	5,785.8	13.9	19.1	90.00	162.0	772.1	494.2	467.4	26.78	18.453		
5,900.0	5,885.8	5,951.3	5,885.8	14.1	19.2	90.00	162.0	772.1	494.2	467.0	27.18	18.182		
5,916.5	5,902.3	5,967.8	5,902.3	14.2	19.2	-90.00	161.9	772.1	494.2	466.9	27.24	18.140		
6,000.0	5,985.8	6,050.8	5,985.1	14.3	19.3	-89.37	156.3	772.1	494.2	466.6	27.58	17.920		
6,100.0	6,085.3	6,149.1	6,081.6	14.5	19.4	-88.29	138.1	772.1	494.4	466.5	27.90	17.723		
6,200.0	6,182.7	6,246.2	6,173.9	14.6	19.5	-87.24	108.2	772.1	494.8	466.6	28.13	17.585		
6,300.0	6,276.5	6,342.3	6,260.7	14.7	19.5	-86.24	67.2	772.1	495.2	466.9	28.33	17.482		
6,400.0	6,364.9	6,437.4	6,341.0	14.7	19.6	-85.31	16.3	772.1	495.8	467.3	28.53	17.377		
6,500.0	6,446.4	6,531.6	6,413.6	14.8	19.7	-84.46	-43.7	772.1	496.5	467.7	28.83	17.222		
6,600.0	6,519.8	6,625.1	6,477.9	15.0	19.8	-83.70	-111.5	772.1	497.2	467.9	29.29	16.973		
6,700.0	6,583.6	6,718.0	6,533.0	15.3	20.0	-83.05	-186.1	772.1	497.8	467.8	30.01	16.589		
6,800.0	6,636.9	6,810.3	6,578.5	15.7	20.3	-82.51	-266.4	772.1	498.4	467.4	31.05	16.051		
6,900.0	6,678.7	6,902.1	6,613.8	16.4	20.8	-82.09	-351.2	772.1	498.9	466.5	32.46	15.372		
7,000.0	6,708.2	6,993.7	6,638.6	17.3	21.3	-81.79	-439.3	772.1	499.3	465.1	34.24	14.584		
7,100.0	6,725.1	7,085.1	6,652.6	18.3	22.0	-81.62	-529.5	772.1	499.5	463.2	36.35	13.741		
7,200.0	6,729.1	7,177.6	6,656.0	19.5	22.9	-81.59	-621.9	772.1	499.5	460.8	38.73	12.897		
7,300.0	6,728.0	7,277.6	6,655.2	20.8	23.9	-81.62	-721.9	772.1	499.5	458.2	41.29	12.098		
7,400.0	6,726.9	7,377.6	6,654.5	22.1	25.1	-81.66	-821.9	772.1	499.5	455.4	44.02	11.347		
7,500.0	6,725.9	7,477.6	6,653.8	23.6	26.4	-81.70	-921.9	772.1	499.4	452.5	46.90	10.649		
7,600.0	6,724.8	7,577.6	6,653.0	25.1	27.7	-81.74	-1,021.9	772.1	499.4	449.5	49.90	10.007		
7,700.0	6,723.7	7,677.6	6,652.3	26.6	29.1	-81.77	-1,121.9	772.1	499.3	446.3	53.01	9.419		
7,800.0	6,722.7	7,777.6	6,651.6	28.2	30.6	-81.81	-1,221.9	772.1	499.3	443.1	56.20	8.883		
7,900.0	6,721.6	7,877.6	6,650.8	29.9	32.1	-81.85	-1,321.9	772.1	499.2	439.7	59.47	8.394		
8,000.0	6,720.5	7,977.6	6,650.1	31.6	33.7	-81.89	-1,421.9	772.1	499.2	436.4	62.80	7.948		
8,100.0	6,719.5	8,077.6	6,649.4	33.3	35.2	-81.92	-1,521.9	772.1	499.1	432.9	66.18	7.541		
8,200.0	6,718.4	8,177.6	6,648.6	35.0	36.9	-81.96	-1,621.9	772.1	499.1	429.5	69.61	7.170		
8,300.0	6,717.3	8,277.6	6,647.9	36.7	38.5	-82.00	-1,721.9	772.1	499.0	426.0	73.08	6.829		
8,400.0	6,716.3	8,377.6	6,647.2	38.5	40.2	-82.04	-1,821.9	772.1	499.0	422.4	76.57	6.516		
8,500.0	6,715.2	8,477.6	6,646.4	40.3	41.9	-82.08	-1,921.9	772.1	498.9	418.8	80.10	6.229		
8,600.0	6,714.1	8,577.6	6,645.7	42.0	43.6	-82.11	-2,021.8	772.1	498.9	415.2	83.66	5.964		
8,700.0	6,713.1	8,677.6	6,645.0	43.8	45.4	-82.15	-2,121.8	772.1	498.8	411.6	87.23	5.719		
8,800.0	6,712.0	8,777.6	6,644.2	45.6	47.1	-82.19	-2,221.8	772.1	498.8	408.0	90.83	5.492		
8,900.0	6,711.0	8,877.6	6,643.5	47.5	48.9	-82.23	-2,321.8	772.1	498.8	404.3	94.44	5.281		
9,000.0	6,709.9	8,977.6	6,642.8	49.3	50.6	-82.26	-2,421.8	772.1	498.7	400.6	98.07	5.085		
9,100.0	6,708.8	9,077.6	6,642.0	51.1	52.4	-82.30	-2,521.8	772.1	498.7	397.0	101.71	4.903		
9,200.0	6,707.8	9,177.6	6,641.3	53.0	54.2	-82.34	-2,621.8	772.1	498.6	393.2	105.37	4.732		
9,300.0	6,706.7	9,277.6	6,640.6	54.8	56.0	-82.38	-2,721.8	772.1	498.6	389.5	109.04	4.572		
9,400.0	6,705.6	9,377.6	6,639.8	56.6	57.8	-82.42	-2,821.8	772.1	498.5	385.8	112.72	4.423		
9,500.0	6,704.6	9,477.6	6,639.1	58.5	59.6	-82.45	-2,921.8	772.1	498.5	382.1	116.40	4.282		
9,600.0	6,703.5	9,577.6	6,638.4	60.4	61.5	-82.49	-3,021.8	772.1	498.4	378.3	120.10	4.150		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Suden 34R-323
Project:	SEC.34-T5N-R64W	TVD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Reference Site:	Suden 34U-HZ Pad Sec.34-T5N-R64W	MD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Suden 34R-323	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #3 (10-29-14)	Offset TVD Reference:	Offset Datum

Offset Design Suden 34U-HZ Pad Sec.34-T5N-R64W - Suden 34U-243 - Wellbore #1 - Plan #1 (10-29-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
9,700.0	6,702.4	9,677.6	6,637.6	62.2	63.3	-82.53	-3,121.8	772.1	498.4	374.6	123.81	4.026		
9,800.0	6,701.4	9,777.6	6,636.9	64.1	65.1	-82.57	-3,221.8	772.1	498.4	370.8	127.52	3.908		
9,900.0	6,700.3	9,877.6	6,636.2	65.9	67.0	-82.60	-3,321.8	772.1	498.3	367.1	131.24	3.797		
10,000.0	6,699.2	9,977.6	6,635.4	67.8	68.8	-82.64	-3,421.8	772.1	498.3	363.3	134.96	3.692		
10,100.0	6,698.2	10,077.6	6,634.7	69.7	70.7	-82.68	-3,521.8	772.1	498.2	359.5	138.69	3.592		
10,200.0	6,697.1	10,177.6	6,634.0	71.6	72.5	-82.72	-3,621.8	772.1	498.2	355.8	142.43	3.498		
10,300.0	6,696.0	10,277.6	6,633.2	73.4	74.4	-82.76	-3,721.8	772.1	498.1	352.0	146.17	3.408		
10,400.0	6,695.0	10,377.6	6,632.5	75.3	76.2	-82.79	-3,821.8	772.1	498.1	348.2	149.91	3.323		
10,500.0	6,693.9	10,477.6	6,631.8	77.2	78.1	-82.83	-3,921.8	772.1	498.1	344.4	153.66	3.241		
10,600.0	6,692.9	10,577.6	6,631.0	79.1	79.9	-82.87	-4,021.8	772.1	498.0	340.6	157.41	3.164		
10,700.0	6,691.8	10,677.6	6,630.3	81.0	81.8	-82.91	-4,121.8	772.1	498.0	336.8	161.17	3.090		
10,800.0	6,690.7	10,777.6	6,629.6	82.9	83.7	-82.94	-4,221.8	772.1	497.9	333.0	164.93	3.019		
10,900.0	6,689.7	10,877.6	6,628.8	84.7	85.5	-82.98	-4,321.8	772.1	497.9	329.2	168.70	2.951		
11,000.0	6,688.6	10,977.6	6,628.1	86.6	87.4	-83.02	-4,421.8	772.1	497.9	325.4	172.46	2.887		
11,100.0	6,687.5	11,077.6	6,627.4	88.5	89.3	-83.06	-4,521.8	772.1	497.8	321.6	176.23	2.825		
11,150.2	6,687.0	11,127.8	6,627.0	89.5	90.2	-83.08	-4,572.0	772.1	497.8	319.7	178.13	2.795 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Suden 34R-323
Project:	SEC.34-T5N-R64W	TVD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Reference Site:	Suden 34U-HZ Pad Sec.34-T5N-R64W	MD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Suden 34R-323	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #3 (10-29-14)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Suden 34U-HZ Pad Sec.34-T5N-R64W - Suden 34U-403 - Wellbore #1 - Plan #1 (10-29-14)													Offset Well Error:	0.0 ft
Survey Program: 0-MWD														
Reference														
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning	
				Reference (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
0.0	0.0	1.0	1.0	0.0	0.0	89.99	0.0	58.5	58.5	58.5	0.00	N/A		
100.0	100.0	101.0	101.0	0.1	0.1	89.99	0.0	58.5	58.5	58.3	0.23	257.791		
200.0	200.0	201.0	201.0	0.3	0.3	89.99	0.0	58.5	58.5	57.8	0.68	86.501		
300.0	300.0	301.0	301.0	0.6	0.6	89.99	0.0	58.5	58.5	57.4	1.13	51.970		
400.0	400.0	401.0	401.0	0.8	0.8	89.99	0.0	58.5	58.5	56.9	1.58	37.142		
466.3	466.3	467.3	467.3	0.9	0.9	89.99	0.0	58.5	58.5	56.6	1.87	31.232 CC		
500.0	500.0	500.0	500.0	1.0	1.0	89.99	0.0	58.5	58.5	56.5	2.02	28.934 ES		
600.0	600.0	599.0	598.9	1.2	1.2	89.74	0.3	60.2	60.2	57.8	2.46	24.487		
700.0	700.0	696.7	696.6	1.5	1.4	89.08	1.0	65.2	65.4	62.5	2.90	22.570		
800.0	800.0	794.0	793.5	1.7	1.7	88.18	2.3	73.4	73.8	70.5	3.34	22.074		
900.0	900.0	890.6	889.4	1.9	1.9	87.23	4.1	84.8	85.7	81.9	3.81	22.465		
1,000.0	1,000.0	986.4	984.0	2.1	2.2	86.35	6.3	99.2	100.9	96.6	4.31	23.408		
1,100.0	1,100.0	1,081.0	1,077.0	2.4	2.5	85.57	9.0	116.5	119.3	114.5	4.83	24.681		
1,200.0	1,200.0	1,176.9	1,170.7	2.6	2.9	84.92	12.2	136.7	140.5	135.1	5.40	26.035		
1,300.0	1,300.0	1,274.6	1,266.1	2.8	3.3	84.42	15.4	157.5	162.1	156.1	5.99	27.076		
1,400.0	1,400.0	1,372.2	1,361.4	3.0	3.7	84.04	18.6	178.3	183.6	177.0	6.59	27.879		
1,500.0	1,500.0	1,469.8	1,456.8	3.3	4.1	83.73	21.9	199.1	205.2	198.0	7.20	28.509		
1,600.0	1,600.0	1,567.8	1,552.4	3.5	4.6	23.75	25.1	220.0	225.2	218.2	6.99	32.220		
1,700.0	1,699.8	1,666.4	1,648.7	3.7	5.0	23.90	28.4	241.0	242.0	234.6	7.45	32.502		
1,800.0	1,799.5	1,765.4	1,745.3	3.9	5.5	24.37	31.7	262.1	256.0	248.1	7.91	32.360		
1,900.0	1,899.1	1,864.4	1,842.1	4.1	5.9	24.92	34.9	283.3	269.4	261.0	8.38	32.132		
2,000.0	1,998.7	1,963.5	1,938.8	4.4	6.4	25.41	38.2	304.4	282.9	274.0	8.86	31.916		
2,100.0	2,098.2	2,062.6	2,035.5	4.6	6.8	25.86	41.5	325.5	296.4	287.0	9.35	31.709		
2,200.0	2,197.8	2,161.6	2,132.3	4.9	7.3	26.27	44.8	346.6	309.9	300.0	9.83	31.514		
2,300.0	2,297.4	2,260.7	2,229.0	5.1	7.8	26.64	48.1	367.7	323.4	313.0	10.32	31.329		
2,400.0	2,397.0	2,359.7	2,325.7	5.4	8.2	26.99	51.3	388.9	336.9	326.1	10.81	31.153		
2,500.0	2,496.6	2,458.8	2,422.4	5.6	8.7	27.31	54.6	410.0	350.4	339.1	11.31	30.987		
2,600.0	2,596.2	2,557.9	2,519.2	5.9	9.1	27.60	57.9	431.1	364.0	352.2	11.81	30.830		
2,700.0	2,695.8	2,656.9	2,615.9	6.1	9.6	27.88	61.2	452.2	377.5	365.2	12.30	30.681		
2,800.0	2,795.4	2,756.0	2,712.6	6.4	10.1	28.13	64.5	473.3	391.1	378.3	12.81	30.540		
2,900.0	2,895.0	2,855.0	2,809.4	6.7	10.5	28.37	67.8	494.5	404.6	391.3	13.31	30.406		
3,000.0	2,994.6	2,954.1	2,906.1	6.9	11.0	28.59	71.0	515.6	418.2	404.4	13.81	30.279		
3,100.0	3,094.1	3,053.2	3,002.8	7.2	11.5	28.80	74.3	536.7	431.8	417.5	14.32	30.158		
3,200.0	3,193.7	3,152.2	3,099.5	7.5	11.9	28.99	77.6	557.8	445.4	430.6	14.82	30.044		
3,300.0	3,293.3	3,251.3	3,196.3	7.7	12.4	29.18	80.9	578.9	459.0	443.6	15.33	29.934		
3,400.0	3,392.9	3,350.4	3,293.0	8.0	12.9	29.35	84.2	600.0	472.6	456.7	15.84	29.831		
3,500.0	3,492.5	3,449.4	3,389.7	8.3	13.3	29.52	87.4	621.2	486.2	469.8	16.35	29.731		
3,600.0	3,592.1	3,548.5	3,486.5	8.5	13.8	29.67	90.7	642.3	499.8	482.9	16.86	29.637		
3,700.0	3,691.7	3,647.5	3,583.2	8.8	14.3	29.82	94.0	663.4	513.4	496.0	17.37	29.547		
3,800.0	3,791.3	3,746.6	3,679.9	9.1	14.7	29.96	97.3	684.5	527.0	509.1	17.89	29.461		
3,900.0	3,890.9	3,845.7	3,776.6	9.3	15.2	30.09	100.6	705.6	540.6	522.2	18.40	29.378		
4,000.0	3,990.5	3,944.7	3,873.4	9.6	15.7	30.21	103.9	726.8	554.2	535.3	18.92	29.299		
4,100.0	4,090.0	4,043.8	3,970.1	9.9	16.1	30.33	107.1	747.9	567.8	548.4	19.43	29.224		
4,200.0	4,189.6	4,142.9	4,066.8	10.1	16.6	30.45	110.4	769.0	581.4	561.5	19.95	29.152		
4,300.0	4,289.2	4,241.9	4,163.6	10.4	17.1	30.56	113.7	790.1	595.1	574.6	20.46	29.082		
4,400.0	4,388.8	4,341.0	4,260.3	10.7	17.5	30.66	117.0	811.2	608.7	587.7	20.98	29.015		
4,500.0	4,488.4	4,440.0	4,357.0	11.0	18.0	30.76	120.3	832.4	622.3	600.8	21.49	28.951		
4,600.0	4,588.0	4,539.1	4,453.7	11.2	18.5	30.85	123.6	853.5	635.9	613.9	22.01	28.890		
4,700.0	4,687.6	4,638.2	4,550.5	11.5	18.9	30.95	126.8	874.6	649.6	627.0	22.53	28.831		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Suden 34R-323
Project:	SEC.34-T5N-R64W	TVD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Reference Site:	Suden 34U-HZ Pad Sec.34-T5N-R64W	MD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Suden 34R-323	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #3 (10-29-14)	Offset TVD Reference:	Offset Datum

Offset Design		Suden 34U-HZ Pad Sec.34-T5N-R64W - Suden 34U-403 - Wellbore #1 - Plan #1 (10-29-14)										Offset Site Error:		0.0 ft
Survey Program: 0-MWD												Offset Well Error:		0.0 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)			
4,800.0	4,787.2	4,737.2	4,647.2	11.8	19.4	31.03	130.1	895.7	663.2	640.1	23.05	28.774		
4,900.0	4,886.8	4,836.3	4,743.9	12.1	19.9	31.12	133.4	916.8	676.8	653.3	23.57	28.719		
5,000.0	4,986.4	4,935.3	4,840.7	12.3	20.3	31.20	136.7	938.0	690.5	666.4	24.09	28.666		
5,100.0	5,086.0	5,034.4	4,937.4	12.6	20.8	31.33	140.0	959.1	704.4	679.8	24.58	28.655		
5,200.0	5,185.8	5,133.0	5,033.7	12.8	21.3	31.44	143.2	980.1	720.8	695.8	25.00	28.833		
5,300.0	5,285.8	5,231.1	5,129.4	13.0	21.7	31.44	146.5	1,001.0	740.2	714.8	25.38	29.165		
5,400.0	5,385.8	5,328.7	5,224.8	13.1	22.2	90.95	149.7	1,021.8	761.5	735.6	25.80	29.508		
5,500.0	5,485.8	5,440.8	5,334.3	13.3	22.6	90.65	153.4	1,045.2	782.4	756.1	26.27	29.780		
5,600.0	5,585.8	5,576.2	5,467.6	13.5	23.1	90.36	157.0	1,068.5	799.6	772.8	26.75	29.889		
5,700.0	5,685.8	5,713.5	5,603.8	13.7	23.4	90.17	159.7	1,085.8	812.1	784.9	27.22	29.836		
5,800.0	5,785.8	5,852.3	5,742.1	13.9	23.7	90.05	161.3	1,096.7	820.0	792.3	27.67	29.632		
5,900.0	5,885.8	5,991.8	5,881.5	14.1	23.9	90.00	162.0	1,100.9	823.0	794.9	28.11	29.281		
6,000.0	5,985.8	6,097.0	5,986.8	14.3	24.0	-90.02	162.0	1,101.0	823.1	794.6	28.49	28.891		
6,100.0	6,085.3	6,197.0	6,086.8	14.5	24.1	-90.56	160.6	1,101.0	823.1	794.3	28.76	28.620		
6,200.0	6,182.7	6,298.3	6,187.1	14.6	24.2	-91.23	147.8	1,101.0	823.3	794.3	28.95	28.440		
6,300.0	6,276.5	6,400.8	6,286.2	14.7	24.2	-91.88	121.4	1,101.0	823.5	794.4	29.10	28.299		
6,400.0	6,364.9	6,504.7	6,382.0	14.7	24.3	-92.50	81.4	1,101.0	823.9	794.6	29.28	28.138		
6,500.0	6,446.4	6,609.9	6,472.5	14.8	24.3	-93.08	28.0	1,101.0	824.3	794.7	29.56	27.888		
6,600.0	6,519.8	6,716.4	6,555.8	15.0	24.4	-93.60	-38.1	1,101.0	824.7	794.7	30.00	27.486		
6,700.0	6,583.6	6,823.9	6,629.8	15.3	24.6	-94.07	-116.0	1,101.0	825.1	794.4	30.70	26.877		
6,800.0	6,636.9	6,932.5	6,692.7	15.7	24.8	-94.46	-204.4	1,101.0	825.6	793.9	31.70	26.042		
6,900.0	6,678.7	7,042.0	6,742.8	16.4	25.1	-94.77	-301.6	1,101.0	825.9	792.9	33.04	25.000		
7,000.0	6,708.2	7,152.0	6,778.7	17.3	25.5	-94.99	-405.6	1,101.0	826.2	791.5	34.71	23.802		
7,100.0	6,725.1	7,262.6	6,799.2	18.3	26.2	-95.11	-514.1	1,101.0	826.4	789.6	36.70	22.515		
7,200.0	6,729.1	7,371.1	6,804.3	19.5	26.9	-95.16	-622.4	1,101.0	826.4	787.5	38.95	21.220		
7,300.0	6,728.0	7,471.1	6,804.3	20.8	27.8	-95.23	-722.4	1,101.0	826.5	785.1	41.43	19.947		
7,400.0	6,726.9	7,571.1	6,804.3	22.1	28.8	-95.30	-822.4	1,101.0	826.6	782.5	44.11	18.742		
7,500.0	6,725.9	7,671.1	6,804.4	23.6	29.8	-95.38	-922.4	1,101.0	826.7	779.8	46.93	17.614		
7,600.0	6,724.8	7,771.0	6,804.4	25.1	31.0	-95.45	-1,022.4	1,101.0	826.8	776.9	49.89	16.571		
7,700.0	6,723.7	7,871.0	6,804.4	26.6	32.2	-95.53	-1,122.4	1,101.0	826.9	773.9	52.96	15.613		
7,800.0	6,722.7	7,971.0	6,804.4	28.2	33.5	-95.60	-1,222.4	1,101.0	827.0	770.9	56.12	14.736		
7,900.0	6,721.6	8,071.0	6,804.4	29.9	34.9	-95.68	-1,322.4	1,101.0	827.1	767.8	59.36	13.934		
8,000.0	6,720.5	8,171.0	6,804.5	31.6	36.3	-95.75	-1,422.4	1,101.0	827.2	764.6	62.66	13.202		
8,100.0	6,719.5	8,271.0	6,804.5	33.3	37.8	-95.83	-1,522.4	1,101.0	827.3	761.3	66.01	12.533		
8,200.0	6,718.4	8,371.0	6,804.5	35.0	39.3	-95.90	-1,622.4	1,101.0	827.5	758.0	69.41	11.920		
8,300.0	6,717.3	8,471.0	6,804.5	36.7	40.9	-95.98	-1,722.4	1,101.0	827.6	754.7	72.85	11.359		
8,400.0	6,716.3	8,571.0	6,804.5	38.5	42.5	-96.05	-1,822.3	1,101.0	827.7	751.3	76.33	10.843		
8,500.0	6,715.2	8,671.0	6,804.5	40.3	44.1	-96.12	-1,922.3	1,101.0	827.8	748.0	79.83	10.369		
8,600.0	6,714.1	8,771.0	6,804.6	42.0	45.7	-96.20	-2,022.3	1,101.0	827.9	744.5	83.36	9.931		
8,700.0	6,713.1	8,871.0	6,804.6	43.8	47.4	-96.27	-2,122.3	1,101.0	828.0	741.1	86.92	9.527		
8,800.0	6,712.0	8,971.0	6,804.6	45.6	49.0	-96.35	-2,222.3	1,101.0	828.1	737.7	90.49	9.152		
8,900.0	6,711.0	9,071.0	6,804.6	47.5	50.7	-96.42	-2,322.3	1,101.0	828.3	734.2	94.08	8.804		
9,000.0	6,709.9	9,171.0	6,804.6	49.3	52.4	-96.50	-2,422.3	1,101.0	828.4	730.7	97.68	8.480		
9,100.0	6,708.8	9,271.0	6,804.6	51.1	54.2	-96.57	-2,522.3	1,101.0	828.5	727.2	101.30	8.179		
9,200.0	6,707.8	9,371.0	6,804.7	53.0	55.9	-96.65	-2,622.3	1,101.0	828.6	723.7	104.93	7.897		
9,300.0	6,706.7	9,471.0	6,804.7	54.8	57.6	-96.72	-2,722.3	1,101.0	828.8	720.2	108.57	7.633		
9,400.0	6,705.6	9,570.9	6,804.7	56.6	59.4	-96.79	-2,822.3	1,101.0	828.9	716.7	112.22	7.386		
9,500.0	6,704.6	9,670.9	6,804.7	58.5	61.2	-96.87	-2,922.3	1,101.0	829.0	713.1	115.88	7.154		
9,600.0	6,703.5	9,770.9	6,804.7	60.4	62.9	-96.94	-3,022.3	1,101.0	829.1	709.6	119.55	6.936		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Suden 34R-323
Project:	SEC.34-T5N-R64W	TVD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Reference Site:	Suden 34U-HZ Pad Sec.34-T5N-R64W	MD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Suden 34R-323	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #3 (10-29-14)	Offset TVD Reference:	Offset Datum

Offset Design Suden 34U-HZ Pad Sec.34-T5N-R64W - Suden 34U-403 - Wellbore #1 - Plan #1 (10-29-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
9,700.0	6,702.4	9,870.9	6,804.7	62.2	64.7	-97.02	-3,122.3	1,101.0	829.3	706.1	123.22	6.730		
9,800.0	6,701.4	9,970.9	6,804.8	64.1	66.5	-97.09	-3,222.3	1,101.0	829.4	702.5	126.90	6.536		
9,900.0	6,700.3	10,070.9	6,804.8	65.9	68.3	-97.17	-3,322.3	1,101.0	829.5	699.0	130.58	6.353		
10,000.0	6,699.2	10,170.9	6,804.8	67.8	70.1	-97.24	-3,422.3	1,101.0	829.7	695.4	134.27	6.179		
10,100.0	6,698.2	10,270.9	6,804.8	69.7	72.0	-97.31	-3,522.2	1,101.0	829.8	691.9	137.96	6.015		
10,200.0	6,697.1	10,370.9	6,804.8	71.6	73.8	-97.39	-3,622.2	1,101.0	830.0	688.3	141.66	5.859		
10,300.0	6,696.0	10,470.9	6,804.9	73.4	75.6	-97.46	-3,722.2	1,101.0	830.1	684.7	145.36	5.711		
10,400.0	6,695.0	10,570.9	6,804.9	75.3	77.4	-97.54	-3,822.2	1,101.0	830.2	681.2	149.07	5.570		
10,500.0	6,693.9	10,670.9	6,804.9	77.2	79.3	-97.61	-3,922.2	1,101.0	830.4	677.6	152.77	5.435		
10,600.0	6,692.9	10,770.9	6,804.9	79.1	81.1	-97.68	-4,022.2	1,101.0	830.5	674.0	156.48	5.308		
10,700.0	6,691.8	10,870.9	6,804.9	81.0	82.9	-97.76	-4,122.2	1,101.0	830.7	670.5	160.19	5.185		
10,800.0	6,690.7	10,970.9	6,804.9	82.9	84.8	-97.83	-4,222.2	1,101.0	830.8	666.9	163.90	5.069		
10,900.0	6,689.7	11,070.9	6,805.0	84.7	86.6	-97.91	-4,322.2	1,101.0	831.0	663.3	167.62	4.957		
11,000.0	6,688.6	11,170.9	6,805.0	86.6	88.5	-97.98	-4,422.2	1,101.0	831.1	659.8	171.34	4.851		
11,100.0	6,687.5	11,270.8	6,805.0	88.5	90.3	-98.05	-4,522.2	1,101.0	831.3	656.2	175.05	4.749		
11,150.2	6,687.0	11,320.7	6,805.0	89.5	91.2	-98.09	-4,572.0	1,101.0	831.3	654.4	176.91	4.699 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Suden 34R-323
Project:	SEC.34-T5N-R64W	TVD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Reference Site:	Suden 34U-HZ Pad Sec.34-T5N-R64W	MD Reference:	WELL @ 4683.0ft (Ensign Rig # 14 - RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Suden 34R-323	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	landmark
Reference Design:	Plan #3 (10-29-14)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4683.0ft (Ensign Rig # 14 - FCoordinates are relative to: Suden 34R-323

Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.63°



Reference Depths are relative to WELL @ 4683.0ft (Ensign Rig # 14 - FCoordinates are relative to: Sudan 34R-323
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is -105.500000 ° Grid Convergence at Surface is: 0.63°

