

# PETROLEUM DEVELOPMENT CORP Weld County CO

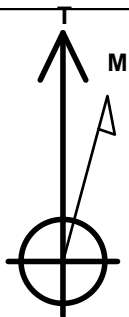
Well Name: **Suden 34R-243**

Surface Location: Suden 34R-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	1376257.16	3269603.70	40.362190	-104.532500	
RKB - 15' WELL @ 4683.0ft (RKB - 15')						

## WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 327'FNL & 1717'FEL	1.0	0.0	0.0	Point
BHL 500'FSL & 1714'FEL	6626.0	-4455.5	36.1	Point



Azimuths to True North  
Magnetic North: 8.37°

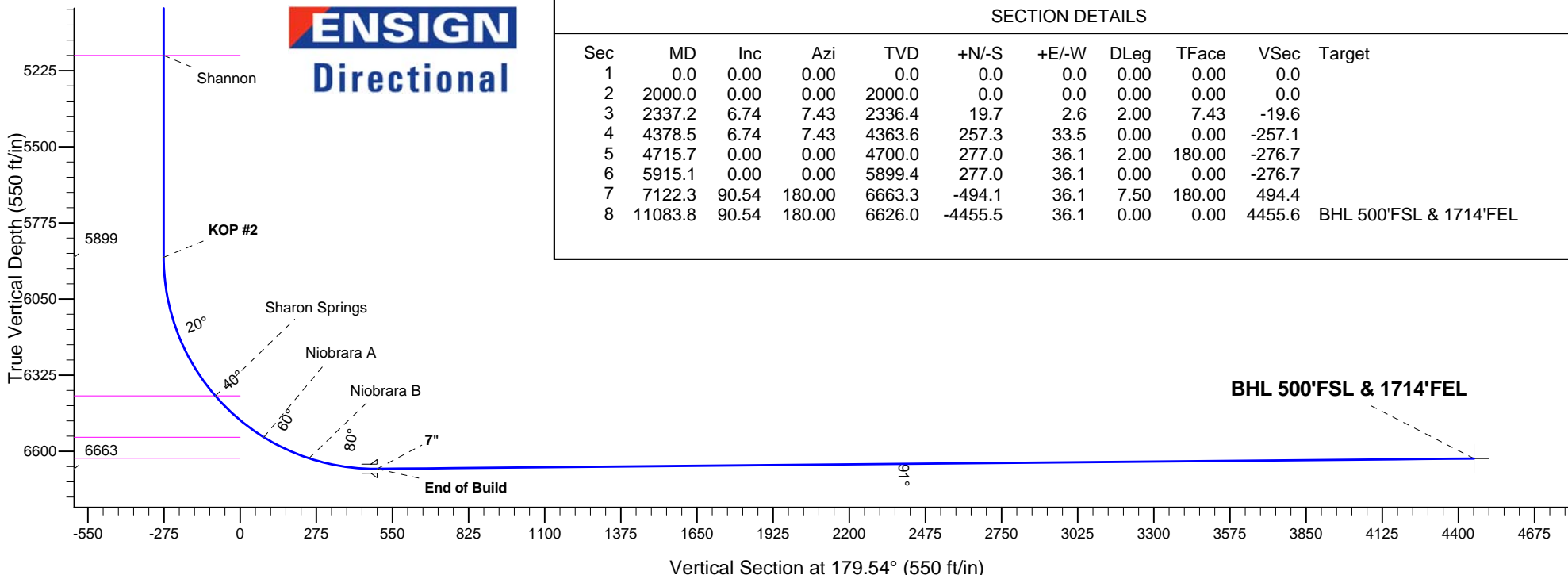
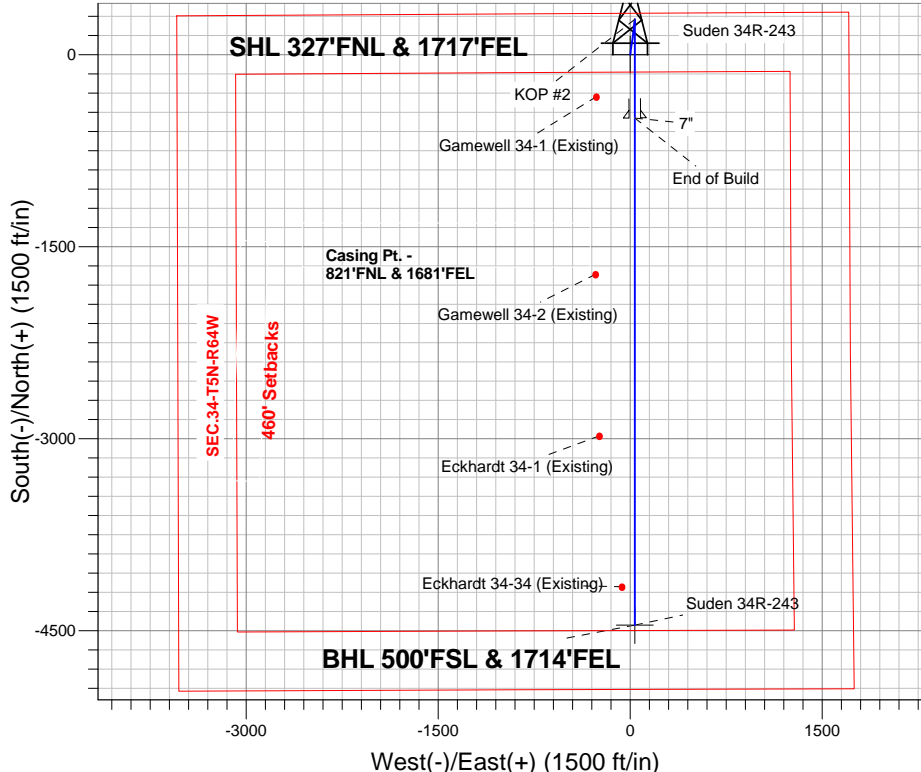
Magnetic Field  
Strength: 52853.0srT  
Dip Angle: 66.96°  
Date: 2/24/2014  
Model: IGRF2010

## ANNOTATIONS

TVD	MD	Annotation
2000.0	2000.0	KOP #1
5899.4	5915.1	KOP #2
6663.3	7122.3	End of Build

Suden 34R-HZ Pad Sec.34-T5N-R64W  
Suden 34R-243  
Plan #1 (2-24-14)  
15:53, February 28 2014

South(-)/North(+) (1500 ft/in)



## 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	2000.0	0.00	0.00	2000.0	0.0	0.0	0.00	0.00	0.0	
3	2337.2	6.74	7.43	2336.4	19.7	2.6	2.00	7.43	-19.6	
4	4378.5	6.74	7.43	4363.6	257.3	33.5	0.00	0.00	-257.1	
5	4715.7	0.00	0.00	4700.0	277.0	36.1	2.00	180.00	-276.7	
6	5915.1	0.00	0.00	5899.4	277.0	36.1	0.00	0.00	-276.7	
7	7122.3	90.54	180.00	6663.3	-494.1	36.1	7.50	180.00	494.4	
8	11083.8	90.54	180.00	6626.0	-4455.5	36.1	0.00	0.00	4455.6	BHL 500'FSL & 1714'FEL



# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.34-T5N-R64W**

**Suden 34R-HZ Pad Sec.34-T5N-R64W**

**Suden 34R-243**

**Wellbore #1**

**Plan: Plan #1 (2-24-14)**

## **Standard Planning Report**

**04 March, 2014**

<b>Database:</b>	landmark	<b>Local Co-ordinate Reference:</b>	Well Suden 34R-243
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Project:</b>	SEC.34-T5N-R64W	<b>MD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Site:</b>	Suden 34R-HZ Pad Sec.34-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Suden 34R-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (2-24-14)		

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

Site Suden 34R-HZ Pad Sec.34-T5N-R64W					
Site Position:		Northing:	1,376,256.50 ft	Latitude:	40.362190
From:	Lat/Long	Easting:	3,269,542.40 ft	Longitude:	-104.532720
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.62 °

Well	Suden 34R-243					
Well Position	+N/-S	0.0 ft	Northing:	1,376,257.16 ft	Latitude:	40.362190
	+E/-W	61.3 ft	Easting:	3,269,603.70 ft	Longitude:	-104.532500
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,668.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	2/24/2014	8.37	66.96	52,853

<b>Design</b>	Plan #1 (2-24-14)			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	179.54

<b>Plan Sections</b>										
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	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,337.2	6.74	7.43	2,336.4	19.7	2.6	2.00	2.00	0.00	7.43	
4,378.5	6.74	7.43	4,363.6	257.3	33.5	0.00	0.00	0.00	0.00	
4,715.7	0.00	0.00	4,700.0	277.0	36.1	2.00	-2.00	0.00	180.00	
5,915.1	0.00	0.00	5,899.4	277.0	36.1	0.00	0.00	0.00	0.00	
7,122.3	90.54	180.00	6,663.3	-494.1	36.1	7.50	7.50	0.00	180.00	
11,083.8	90.54	180.00	6,626.0	-4,455.5	36.1	0.00	0.00	0.00	0.00	BHL 500'FSL & 171

<b>Database:</b>	landmark	<b>Local Co-ordinate Reference:</b>	Well Suden 34R-243
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Project:</b>	SEC.34-T5N-R64W	<b>MD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Site:</b>	Suden 34R-HZ Pad Sec.34-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Suden 34R-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (2-24-14)		

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
1.0	0.00	0.00	1.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>SHL 327'FNL &amp; 1717'FEL</b>									
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
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>KOP #1</b>									
2,100.0	2.00	7.43	2,100.0	1.7	0.2	-1.7	2.00	2.00	0.00
2,200.0	4.00	7.43	2,199.8	6.9	0.9	-6.9	2.00	2.00	0.00
2,300.0	6.00	7.43	2,299.5	15.6	2.0	-15.5	2.00	2.00	0.00
2,337.2	6.74	7.43	2,336.4	19.7	2.6	-19.6	2.00	2.00	0.00
2,400.0	6.74	7.43	2,398.8	27.0	3.5	-26.9	0.00	0.00	0.00
2,500.0	6.74	7.43	2,498.1	38.6	5.0	-38.6	0.00	0.00	0.00
2,600.0	6.74	7.43	2,597.4	50.3	6.5	-50.2	0.00	0.00	0.00
2,700.0	6.74	7.43	2,696.7	61.9	8.1	-61.8	0.00	0.00	0.00
2,800.0	6.74	7.43	2,796.0	73.5	9.6	-73.5	0.00	0.00	0.00
2,900.0	6.74	7.43	2,895.3	85.2	11.1	-85.1	0.00	0.00	0.00
3,000.0	6.74	7.43	2,994.6	96.8	12.6	-96.7	0.00	0.00	0.00
3,100.0	6.74	7.43	3,093.9	108.5	14.1	-108.4	0.00	0.00	0.00
3,200.0	6.74	7.43	3,193.3	120.1	15.7	-120.0	0.00	0.00	0.00
3,300.0	6.74	7.43	3,292.6	131.8	17.2	-131.6	0.00	0.00	0.00
3,400.0	6.74	7.43	3,391.9	143.4	18.7	-143.3	0.00	0.00	0.00
3,500.0	6.74	7.43	3,491.2	155.1	20.2	-154.9	0.00	0.00	0.00
3,508.9	6.74	7.43	3,500.0	156.1	20.3	-155.9	0.00	0.00	0.00
<b>Parkman</b>									
3,600.0	6.74	7.43	3,590.5	166.7	21.7	-166.5	0.00	0.00	0.00
3,700.0	6.74	7.43	3,689.8	178.3	23.2	-178.1	0.00	0.00	0.00
3,800.0	6.74	7.43	3,789.1	190.0	24.8	-189.8	0.00	0.00	0.00
3,900.0	6.74	7.43	3,888.4	201.6	26.3	-201.4	0.00	0.00	0.00
4,000.0	6.74	7.43	3,987.7	213.3	27.8	-213.0	0.00	0.00	0.00
4,100.0	6.74	7.43	4,087.0	224.9	29.3	-224.7	0.00	0.00	0.00
4,200.0	6.74	7.43	4,186.3	236.6	30.8	-236.3	0.00	0.00	0.00
4,264.1	6.74	7.43	4,250.0	244.0	31.8	-243.8	0.00	0.00	0.00
<b>Sussex</b>									
4,300.0	6.74	7.43	4,285.6	248.2	32.3	-247.9	0.00	0.00	0.00
4,378.5	6.74	7.43	4,363.6	257.3	33.5	-257.1	0.00	0.00	0.00

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<b>Project:</b>	SEC.34-T5N-R64W	<b>MD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Site:</b>	Suden 34R-HZ Pad Sec.34-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Suden 34R-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (2-24-14)		

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)
4,400.0	6.31	7.43	4,385.0	259.8	33.9	-259.5	2.00	-2.00	0.00
4,500.0	4.31	7.43	4,484.5	269.0	35.1	-268.7	2.00	-2.00	0.00
4,600.0	2.31	7.43	4,584.4	274.7	35.8	-274.4	2.00	-2.00	0.00
4,700.0	0.31	7.43	4,684.3	277.0	36.1	-276.7	2.00	-2.00	0.00
4,715.7	0.00	0.00	4,700.0	277.0	36.1	-276.7	2.00	-2.00	0.00
4,800.0	0.00	0.00	4,784.3	277.0	36.1	-276.7	0.00	0.00	0.00
4,900.0	0.00	0.00	4,884.3	277.0	36.1	-276.7	0.00	0.00	0.00
5,000.0	0.00	0.00	4,984.3	277.0	36.1	-276.7	0.00	0.00	0.00
5,100.0	0.00	0.00	5,084.3	277.0	36.1	-276.7	0.00	0.00	0.00
5,185.7	0.00	0.00	5,170.0	277.0	36.1	-276.7	0.00	0.00	0.00
<b>Shannon</b>									
5,200.0	0.00	0.00	5,184.3	277.0	36.1	-276.7	0.00	0.00	0.00
5,300.0	0.00	0.00	5,284.3	277.0	36.1	-276.7	0.00	0.00	0.00
5,400.0	0.00	0.00	5,384.3	277.0	36.1	-276.7	0.00	0.00	0.00
5,500.0	0.00	0.00	5,484.3	277.0	36.1	-276.7	0.00	0.00	0.00
5,600.0	0.00	0.00	5,584.3	277.0	36.1	-276.7	0.00	0.00	0.00
5,700.0	0.00	0.00	5,684.3	277.0	36.1	-276.7	0.00	0.00	0.00
5,800.0	0.00	0.00	5,784.3	277.0	36.1	-276.7	0.00	0.00	0.00
5,900.0	0.00	0.00	5,884.3	277.0	36.1	-276.7	0.00	0.00	0.00
5,915.1	0.00	0.00	5,899.4	277.0	36.1	-276.7	0.00	0.00	0.00
<b>KOP #2</b>									
6,000.0	6.37	180.00	5,984.1	272.3	36.1	-272.0	7.50	7.50	0.00
6,100.0	13.87	180.00	6,082.5	254.7	36.1	-254.4	7.50	7.50	0.00
6,200.0	21.37	180.00	6,177.8	224.5	36.1	-224.2	7.50	7.50	0.00
6,300.0	28.87	180.00	6,268.2	182.1	36.1	-181.8	7.50	7.50	0.00
6,400.0	36.37	180.00	6,352.4	128.2	36.1	-127.9	7.50	7.50	0.00
6,461.0	40.94	180.00	6,400.0	90.1	36.1	-89.9	7.50	7.50	0.00
<b>Sharon Springs</b>									
6,500.0	43.87	180.00	6,428.8	63.8	36.1	-63.5	7.50	7.50	0.00
6,600.0	51.37	180.00	6,496.2	-10.0	36.1	10.3	7.50	7.50	0.00
6,691.7	58.24	180.00	6,549.0	-84.9	36.1	85.2	7.50	7.50	0.00
<b>Niobrara A</b>									
6,700.0	58.87	180.00	6,553.3	-92.0	36.1	92.3	7.50	7.50	0.00
6,800.0	66.37	180.00	6,599.3	-180.7	36.1	181.0	7.50	7.50	0.00
6,872.0	71.76	180.00	6,625.0	-247.9	36.1	248.2	7.50	7.50	0.00
<b>Niobrara B</b>									
6,900.0	73.87	180.00	6,633.3	-274.7	36.1	275.0	7.50	7.50	0.00
7,000.0	81.37	180.00	6,654.7	-372.3	36.1	372.6	7.50	7.50	0.00
7,100.0	88.87	180.00	6,663.2	-471.8	36.1	472.1	7.50	7.50	0.00
7,122.3	90.54	180.00	6,663.3	-494.1	36.1	494.4	7.50	7.50	0.00
<b>End of Build - 7"</b>									
7,200.0	90.54	180.00	6,662.6	-571.8	36.1	572.1	0.00	0.00	0.00
7,300.0	90.54	180.00	6,661.7	-671.8	36.1	672.1	0.00	0.00	0.00
7,400.0	90.54	180.00	6,660.7	-771.8	36.1	772.1	0.00	0.00	0.00
7,500.0	90.54	180.00	6,659.8	-871.8	36.1	872.1	0.00	0.00	0.00
7,600.0	90.54	180.00	6,658.8	-971.8	36.1	972.1	0.00	0.00	0.00
7,700.0	90.54	180.00	6,657.9	-1,071.8	36.1	1,072.1	0.00	0.00	0.00
7,800.0	90.54	180.00	6,656.9	-1,171.8	36.1	1,172.1	0.00	0.00	0.00
7,900.0	90.54	180.00	6,656.0	-1,271.8	36.1	1,272.1	0.00	0.00	0.00
8,000.0	90.54	180.00	6,655.1	-1,371.8	36.1	1,372.0	0.00	0.00	0.00
8,100.0	90.54	180.00	6,654.1	-1,471.8	36.1	1,472.0	0.00	0.00	0.00
8,200.0	90.54	180.00	6,653.2	-1,571.8	36.1	1,572.0	0.00	0.00	0.00

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<b>Project:</b>	SEC.34-T5N-R64W	<b>MD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Site:</b>	Suden 34R-HZ Pad Sec.34-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Suden 34R-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (2-24-14)		

#### 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)
8,300.0	90.54	180.00	6,652.2	-1,671.8	36.1	1,672.0	0.00	0.00	0.00
8,400.0	90.54	180.00	6,651.3	-1,771.8	36.1	1,772.0	0.00	0.00	0.00
8,500.0	90.54	180.00	6,650.4	-1,871.8	36.1	1,872.0	0.00	0.00	0.00
8,600.0	90.54	180.00	6,649.4	-1,971.8	36.1	1,972.0	0.00	0.00	0.00
8,700.0	90.54	180.00	6,648.5	-2,071.8	36.1	2,072.0	0.00	0.00	0.00
8,800.0	90.54	180.00	6,647.5	-2,171.8	36.1	2,172.0	0.00	0.00	0.00
8,900.0	90.54	180.00	6,646.6	-2,271.8	36.1	2,272.0	0.00	0.00	0.00
9,000.0	90.54	180.00	6,645.6	-2,371.8	36.1	2,372.0	0.00	0.00	0.00
9,100.0	90.54	180.00	6,644.7	-2,471.8	36.1	2,472.0	0.00	0.00	0.00
9,200.0	90.54	180.00	6,643.8	-2,571.7	36.1	2,572.0	0.00	0.00	0.00
9,300.0	90.54	180.00	6,642.8	-2,671.7	36.1	2,671.9	0.00	0.00	0.00
9,400.0	90.54	180.00	6,641.9	-2,771.7	36.1	2,771.9	0.00	0.00	0.00
9,500.0	90.54	180.00	6,640.9	-2,871.7	36.1	2,871.9	0.00	0.00	0.00
9,600.0	90.54	180.00	6,640.0	-2,971.7	36.1	2,971.9	0.00	0.00	0.00
9,700.0	90.54	180.00	6,639.0	-3,071.7	36.1	3,071.9	0.00	0.00	0.00
9,800.0	90.54	180.00	6,638.1	-3,171.7	36.1	3,171.9	0.00	0.00	0.00
9,900.0	90.54	180.00	6,637.2	-3,271.7	36.1	3,271.9	0.00	0.00	0.00
10,000.0	90.54	180.00	6,636.2	-3,371.7	36.1	3,371.9	0.00	0.00	0.00
10,100.0	90.54	180.00	6,635.3	-3,471.7	36.1	3,471.9	0.00	0.00	0.00
10,200.0	90.54	180.00	6,634.3	-3,571.7	36.1	3,571.9	0.00	0.00	0.00
10,300.0	90.54	180.00	6,633.4	-3,671.7	36.1	3,671.9	0.00	0.00	0.00
10,400.0	90.54	180.00	6,632.4	-3,771.7	36.1	3,771.9	0.00	0.00	0.00
10,500.0	90.54	180.00	6,631.5	-3,871.7	36.1	3,871.9	0.00	0.00	0.00
10,600.0	90.54	180.00	6,630.6	-3,971.7	36.1	3,971.8	0.00	0.00	0.00
10,700.0	90.54	180.00	6,629.6	-4,071.7	36.1	4,071.8	0.00	0.00	0.00
10,800.0	90.54	180.00	6,628.7	-4,171.7	36.1	4,171.8	0.00	0.00	0.00
10,900.0	90.54	180.00	6,627.7	-4,271.7	36.1	4,271.8	0.00	0.00	0.00
11,000.0	90.54	180.00	6,626.8	-4,371.7	36.1	4,371.8	0.00	0.00	0.00
11,083.8	90.54	180.00	6,626.0	-4,455.5	36.1	4,455.6	0.00	0.00	0.00
BHL 500'FSL & 1714'FEL									

#### Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,122.3	6,663.3	7"	7	7-1/2

#### Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,508.9	3,500.0	Parkman		0.00	
4,264.1	4,250.0	Sussex		0.00	
5,185.7	5,170.0	Shannon		0.00	
6,461.0	6,400.0	Sharon Springs		0.00	
6,691.7	6,549.0	Niobrara A		0.00	
6,872.0	6,625.0	Niobrara B		0.00	

<b>Database:</b>	landmark	<b>Local Co-ordinate Reference:</b>	Well Suden 34R-243
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Project:</b>	SEC.34-T5N-R64W	<b>MD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Site:</b>	Suden 34R-HZ Pad Sec.34-T5N-R64W	<b>North Reference:</b>	True
<b>Well:</b>	Suden 34R-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (2-24-14)		

#### Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2,000.0	2,000.0	0.0	0.0	KOP #1
5,915.1	5,899.4	277.0	36.1	KOP #2
7,122.3	6,663.3	-494.1	36.1	End of Build



## **Directional**

# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.34-T5N-R64W**

**Suden 34R-HZ Pad Sec.34-T5N-R64W**

**Suden 34R-243**

**Wellbore #1**

**Plan #1 (2-24-14)**

## **Anticollision Report**

**28 February, 2014**





<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Suden 34R-243
<b>Project:</b>	SEC.34-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Reference Site:</b>	Suden 34R-HZ Pad Sec.34-T5N-R64W	<b>MD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Suden 34R-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (2-24-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Plan #1 (2-24-14)		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	Stations	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 1,000.0ft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma		

<b>Survey Tool Program</b>	<b>Date</b> 2/28/2014			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	11,083.7	Plan #1 (2-24-14) (Wellbore #1)	MWD	MWD - Standard

<b>Summary</b>						
<b>Site Name</b>	<b>Reference Measured Depth (ft)</b>	<b>Offset Measured Depth (ft)</b>	<b>Distance Between Centres (ft)</b>	<b>Distance Between Ellipses (ft)</b>	<b>Separation Factor</b>	<b>Warning</b>
<b>Offset Well - Wellbore - Design</b>						
Suden (Existing) Pad Sec.34-T5N-R64W						
Eckhardt 34-1 (Existing) - Wellbore #1 - Wellbore #1	9,604.7	6,593.9	275.8	83.9	1.438	Level 3, CC, ES, SF
Eckhardt 34-34 (Existing) - Wellbore #1 - Wellbore #1	10,785.1	6,580.8	100.2	-113.6	0.469	Level 1, CC, ES, SF
Gamewell 34-1 (Existing) - Wellbore #1 - Wellbore #1	6,954.9	6,647.6	300.8	151.7	2.017	CC, ES, SF
Gamewell 34-2 (Existing) - Wellbore #1 - Wellbore #1	8,344.1	6,640.8	306.4	136.7	1.805	CC, ES, SF
Suden 34R-HZ Pad Sec.34-T5N-R64W						
Suden 34M-323 - Wellbore #1 - Plan #1 (2-24-14)	966.3	967.3	61.3	57.2	14.876	CC
Suden 34M-323 - Wellbore #1 - Plan #1 (2-24-14)	1,000.0	1,001.0	61.3	57.0	14.349	ES
Suden 34M-323 - Wellbore #1 - Plan #1 (2-24-14)	11,083.8	11,189.8	675.3	500.7	3.867	SF
Suden 34M-423 - Wellbore #1 - Plan #1 (2-24-14)	1,500.0	1,500.0	30.7	24.1	4.703	CC, ES
Suden 34M-423 - Wellbore #1 - Plan #1 (2-24-14)	11,083.8	11,246.9	447.4	285.6	2.764	SF
Suden 34R-403 - Wellbore #1 - Plan #1 (2-24-14)	1,500.0	1,500.0	30.7	24.1	4.703	CC, ES
Suden 34R-403 - Wellbore #1 - Plan #1 (2-24-14)	11,083.8	11,239.7	321.7	173.6	2.172	SF

Offset Design		Suden (Existing) Pad Sec.34-T5N-R64W - Eckhardt 34-1 (Existing) - Wellbore #1 - Wellbore #1										Offset Site Error:		0.0 ft			
Survey Program: 6886-UNKNOWN														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)						
8,700.0	6,648.5	6,602.5	6,602.5	43.3	132.0	91.77	-2,976.4	-239.7	945.7	770.5	175.29	5.395					
8,800.0	6,647.5	6,601.5	6,601.5	45.1	132.0	91.58	-2,976.4	-239.7	850.6	673.5	177.10	4.803					
8,900.0	6,646.6	6,600.6	6,600.6	47.0	132.0	91.38	-2,976.4	-239.7	756.7	577.8	178.92	4.229					
9,000.0	6,645.6	6,599.6	6,599.6	48.8	132.0	91.18	-2,976.4	-239.7	664.6	483.8	180.74	3.677					
9,100.0	6,644.7	6,598.7	6,598.7	50.6	132.0	90.99	-2,976.4	-239.7	575.1	392.5	182.57	3.150					
9,200.0	6,643.8	6,597.8	6,597.8	52.5	132.0	90.79	-2,976.4	-239.7	489.7	305.3	184.40	2.656					
9,300.0	6,642.8	6,596.8	6,596.8	54.3	131.9	90.60	-2,976.4	-239.7	411.0	224.7	186.24	2.207					
9,400.0	6,641.9	6,595.9	6,595.9	56.2	131.9	90.40	-2,976.4	-239.7	343.4	155.4	188.08	1.826					
9,500.0	6,640.9	6,594.9	6,594.9	58.0	131.9	90.20	-2,976.4	-239.7	295.0	105.1	189.92	1.553					
9,600.0	6,640.0	6,594.0	6,594.0	59.9	131.9	90.01	-2,976.4	-239.7	275.8	84.1	191.76	1.438	Level 3				
9,604.7	6,639.9	6,593.9	6,593.9	60.0	131.9	90.00	-2,976.4	-239.7	275.8	83.9	191.85	1.438	Level 3, CC, ES, SF				
9,700.0	6,639.0	6,593.0	6,593.0	61.8	131.9	89.81	-2,976.4	-239.7	291.8	98.2	193.61	1.507					
9,800.0	6,638.1	6,592.1	6,592.1	63.6	131.8	89.62	-2,976.4	-239.7	337.9	142.5	195.45	1.729					
9,900.0	6,637.2	6,591.2	6,591.2	65.5	131.8	89.42	-2,976.4	-239.7	404.1	206.8	197.30	2.048					

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Suden 34R-243
<b>Project:</b>	SEC.34-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Reference Site:</b>	Suden 34R-HZ Pad Sec.34-T5N-R64W	<b>MD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Suden 34R-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (2-24-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Suden (Existing) Pad Sec.34-T5N-R64W - Eckhardt 34-1 (Existing) - Wellbore #1 - Wellbore #1												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 6886-UNKNOWN												<b>Offset Well Error:</b>	0.0 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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,000.0	6,636.2	6,590.2	6,590.2	67.4	131.8	89.23	-2,976.4	-239.7	482.0	282.9	199.15	2.420	
10,100.0	6,635.3	6,589.3	6,589.3	69.2	131.8	89.03	-2,976.4	-239.7	566.9	365.9	201.00	2.820	
10,200.0	6,634.3	6,588.3	6,588.3	71.1	131.8	88.83	-2,976.4	-239.7	656.1	453.2	202.84	3.234	
10,300.0	6,633.4	6,587.4	6,587.4	73.0	131.7	88.64	-2,976.4	-239.7	748.0	543.3	204.69	3.654	
10,400.0	6,632.4	6,586.4	6,586.4	74.9	131.7	88.44	-2,976.4	-239.7	841.8	635.2	206.54	4.076	
10,500.0	6,631.5	6,585.5	6,585.5	76.8	131.7	88.25	-2,976.4	-239.7	936.8	728.4	208.38	4.496	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Suden 34R-243
<b>Project:</b>	SEC.34-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Reference Site:</b>	Suden 34R-HZ Pad Sec.34-T5N-R64W	<b>MD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Suden 34R-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (2-24-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design										Suden (Existing) Pad Sec.34-T5N-R64W - Eckhardt 34-34 (Existing) - Wellbore #1 - Wellbore #1				Offset Site Error:		0.0 ft
Survey Program: 6963-UNKNOWN														Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Minimum Separation (ft)	Separation Factor	Warning					
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)				Between Centres (ft)	Between Ellipses (ft)			
9,800.0	6,638.1	6,590.1	6,590.1	63.6	131.8	95.29	-4,156.8	-64.1	990.1	795.5	194.64	5.087				
9,900.0	6,637.2	6,589.2	6,589.2	65.5	131.8	94.76	-4,156.8	-64.1	890.7	694.1	196.64	4.530				
10,000.0	6,636.2	6,588.2	6,588.2	67.4	131.8	94.22	-4,156.8	-64.1	791.4	592.8	198.63	3.984				
10,100.0	6,635.3	6,587.3	6,587.3	69.2	131.7	93.69	-4,156.8	-64.1	692.4	491.7	200.60	3.451				
10,200.0	6,634.3	6,586.3	6,586.3	71.1	131.7	93.15	-4,156.8	-64.1	593.6	391.0	202.57	2.930				
10,300.0	6,633.4	6,585.4	6,585.4	73.0	131.7	92.61	-4,156.8	-64.1	495.3	290.8	204.52	2.422				
10,400.0	6,632.4	6,584.4	6,584.4	74.9	131.7	92.07	-4,156.8	-64.1	397.9	191.4	206.45	1.927				
10,500.0	6,631.5	6,583.5	6,583.5	76.8	131.7	91.54	-4,156.8	-64.1	302.2	93.8	208.37	1.450	Level 3			
10,600.0	6,630.6	6,582.6	6,582.6	78.7	131.7	91.00	-4,156.8	-64.1	210.5	0.2	210.28	1.001	Level 2			
10,700.0	6,629.6	6,581.6	6,581.6	80.5	131.6	90.46	-4,156.8	-64.1	131.5	-80.7	212.17	0.620	Level 1			
10,785.1	6,628.8	6,580.8	6,580.8	82.2	131.6	90.00	-4,156.8	-64.1	100.2	-113.6	213.77	0.469	Level 1, CC, ES, SF			
10,800.0	6,628.7	6,580.7	6,580.7	82.4	131.6	89.92	-4,156.8	-64.1	101.3	-112.7	214.05	0.473	Level 1			
10,900.0	6,627.7	6,579.7	6,579.7	84.3	131.6	89.38	-4,156.8	-64.1	152.5	-63.4	215.91	0.706	Level 1			
11,000.0	6,626.8	6,578.8	6,578.8	86.2	131.6	88.84	-4,156.8	-64.1	237.1	19.4	217.75	1.089	Level 2			
11,083.8	6,626.0	6,578.0	6,578.0	87.8	131.6	88.39	-4,156.8	-64.1	315.1	95.8	219.28	1.437	Level 3			

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Suden 34R-243
<b>Project:</b>	SEC.34-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Reference Site:</b>	Suden 34R-HZ Pad Sec.34-T5N-R64W	<b>MD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Suden 34R-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (2-24-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 6930-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
0.0	0.0	1.0	1.0	0.0	0.0	-141.08	-327.9	-264.7	421.4	421.4	0.02	N/A		
100.0	100.0	101.0	101.0	0.1	2.0	-141.08	-327.9	-264.7	421.4	419.3	2.13	197.610		
200.0	200.0	201.0	201.0	0.3	4.0	-141.08	-327.9	-264.7	421.4	417.1	4.36	96.715		
300.0	300.0	301.0	301.0	0.6	6.0	-141.08	-327.9	-264.7	421.4	414.8	6.58	64.025		
400.0	400.0	401.0	401.0	0.8	8.0	-141.08	-327.9	-264.7	421.4	412.6	8.81	47.851		
500.0	500.0	501.0	501.0	1.0	10.0	-141.08	-327.9	-264.7	421.4	410.4	11.03	38.201		
600.0	600.0	601.0	601.0	1.2	12.0	-141.08	-327.9	-264.7	421.4	408.2	13.26	31.790		
700.0	700.0	701.0	701.0	1.5	14.0	-141.08	-327.9	-264.7	421.4	405.9	15.48	27.221		
800.0	800.0	801.0	801.0	1.7	16.0	-141.08	-327.9	-264.7	421.4	403.7	17.71	23.801		
900.0	900.0	901.0	901.0	1.9	18.0	-141.08	-327.9	-264.7	421.4	401.5	19.93	21.144		
1,000.0	1,000.0	1,001.0	1,001.0	2.1	20.0	-141.08	-327.9	-264.7	421.4	399.3	22.16	19.021		
1,100.0	1,100.0	1,101.0	1,101.0	2.4	22.0	-141.08	-327.9	-264.7	421.4	397.0	24.38	17.285		
1,200.0	1,200.0	1,201.0	1,201.0	2.6	24.0	-141.08	-327.9	-264.7	421.4	394.8	26.60	15.840		
1,300.0	1,300.0	1,301.0	1,301.0	2.8	26.0	-141.08	-327.9	-264.7	421.4	392.6	28.83	14.618		
1,400.0	1,400.0	1,401.0	1,401.0	3.0	28.0	-141.08	-327.9	-264.7	421.4	390.4	31.05	13.570		
1,500.0	1,500.0	1,501.0	1,501.0	3.3	30.0	-141.08	-327.9	-264.7	421.4	388.1	33.28	12.663		
1,600.0	1,600.0	1,601.0	1,601.0	3.5	32.0	-141.08	-327.9	-264.7	421.4	385.9	35.50	11.870		
1,700.0	1,700.0	1,701.0	1,701.0	3.7	34.0	-141.08	-327.9	-264.7	421.4	383.7	37.73	11.170		
1,800.0	1,800.0	1,801.0	1,801.0	3.9	36.0	-141.08	-327.9	-264.7	421.4	381.5	39.95	10.548		
1,900.0	1,900.0	1,901.0	1,901.0	4.2	38.0	-141.08	-327.9	-264.7	421.4	379.2	42.18	9.991		
2,000.0	2,000.0	2,001.0	2,001.0	4.4	40.0	-141.08	-327.9	-264.7	421.4	377.0	44.40	9.491		
2,100.0	2,100.0	2,101.0	2,101.0	4.6	42.0	-148.61	-327.9	-264.7	422.9	376.3	46.61	9.074		
2,200.0	2,199.8	2,200.8	2,200.8	4.8	44.0	-148.93	-327.9	-264.7	427.4	378.6	48.76	8.765		
2,300.0	2,299.5	2,300.5	2,300.5	5.1	46.0	-149.45	-327.9	-264.7	434.9	384.0	50.86	8.550		
2,337.2	2,336.4	2,337.4	2,337.4	5.1	46.7	-149.69	-327.9	-264.7	438.4	386.8	51.63	8.493		
2,400.0	2,398.8	2,399.8	2,399.8	5.3	48.0	-150.16	-327.9	-264.7	444.8	391.8	53.01	8.392		
2,500.0	2,498.1	2,499.1	2,499.1	5.5	50.0	-150.90	-327.9	-264.7	455.1	399.9	55.21	8.243		
2,600.0	2,597.4	2,598.4	2,598.4	5.8	52.0	-151.60	-327.9	-264.7	465.4	408.0	57.41	8.106		
2,700.0	2,696.7	2,697.7	2,697.7	6.0	54.0	-152.27	-327.9	-264.7	475.8	416.2	59.62	7.981		
2,800.0	2,797.0	2,797.0	2,797.0	6.3	55.9	-152.92	-327.9	-264.7	486.2	424.4	61.82	7.865		
2,900.0	2,895.3	2,896.3	2,896.3	6.5	57.9	-153.53	-327.9	-264.7	496.7	432.7	64.03	7.757		
3,000.0	2,994.6	2,995.6	2,995.6	6.8	59.9	-154.12	-327.9	-264.7	507.3	441.0	66.24	7.658		
3,100.0	3,093.9	3,094.9	3,094.9	7.1	61.9	-154.69	-327.9	-264.7	517.9	449.4	68.45	7.566		
3,200.0	3,193.3	3,194.3	3,194.3	7.3	63.9	-155.23	-327.9	-264.7	528.5	457.9	70.66	7.480		
3,300.0	3,292.6	3,293.6	3,293.6	7.6	65.9	-155.75	-327.9	-264.7	539.2	466.3	72.87	7.400		
3,400.0	3,391.9	3,392.9	3,392.9	7.9	67.9	-156.26	-327.9	-264.7	550.0	474.9	75.08	7.325		
3,500.0	3,491.2	3,492.2	3,492.2	8.2	69.8	-156.74	-327.9	-264.7	560.7	483.4	77.29	7.255		
3,600.0	3,590.5	3,591.5	3,591.5	8.5	71.8	-157.20	-327.9	-264.7	571.6	492.1	79.50	7.190		
3,700.0	3,689.8	3,690.8	3,690.8	8.7	73.8	-157.65	-327.9	-264.7	582.4	500.7	81.71	7.128		
3,800.0	3,789.1	3,790.1	3,790.1	9.0	75.8	-158.08	-327.9	-264.7	593.3	509.4	83.92	7.070		
3,900.0	3,888.4	3,889.4	3,889.4	9.3	77.8	-158.50	-327.9	-264.7	604.2	518.1	86.13	7.015		
4,000.0	3,987.7	3,988.7	3,988.7	9.6	79.8	-158.90	-327.9	-264.7	615.2	526.8	88.34	6.964		
4,100.0	4,087.0	4,088.0	4,088.0	9.9	81.8	-159.28	-327.9	-264.7	626.1	535.6	90.55	6.915		
4,200.0	4,186.3	4,187.3	4,187.3	10.2	83.7	-159.66	-327.9	-264.7	637.1	544.4	92.76	6.869		
4,300.0	4,285.6	4,286.6	4,286.6	10.5	85.7	-160.02	-327.9	-264.7	648.2	553.2	94.97	6.825		
4,378.5	4,363.6	4,364.6	4,364.6	10.7	87.3	-160.29	-327.9	-264.7	656.9	560.1	96.71	6.792		
4,400.0	4,385.0	4,386.0	4,386.0	10.8	87.7	-160.38	-327.9	-264.7	659.2	561.9	97.25	6.778		
4,500.0	4,484.5	4,485.5	4,485.5	11.0	89.7	-160.70	-327.9	-264.7	667.9	568.2	99.67	6.701		
4,600.0	4,584.4	4,585.4	4,585.4	11.2	91.7	-160.90	-327.9	-264.7	673.4	571.4	102.00	6.601		
4,700.0	4,684.3	4,685.3	4,685.3	11.4	93.7	-160.98	-327.9	-264.7	675.5	571.3	104.23	6.481		
4,715.7	4,700.0	4,701.0	4,701.0	11.4	94.0	-153.56	-327.9	-264.7	675.6	571.0	104.57	6.461		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Suden 34R-243
<b>Project:</b>	SEC.34-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Reference Site:</b>	Suden 34R-HZ Pad Sec.34-T5N-R64W	<b>MD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Suden 34R-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (2-24-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Suden (Existing) Pad Sec.34-T5N-R64W - Gamewell 34-1 (Existing) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 6930-UNKNOWN													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	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	4,784.3	4,785.3	4,785.3	11.5	95.7	-153.56	-327.9	-264.7	675.6	569.1	106.42	6.348		
4,900.0	4,884.3	4,885.3	4,885.3	11.7	97.7	-153.56	-327.9	-264.7	675.6	566.9	108.63	6.219		
5,000.0	4,984.3	4,985.3	4,985.3	11.9	99.7	-153.56	-327.9	-264.7	675.6	564.7	110.85	6.094		
5,100.0	5,084.3	5,085.3	5,085.3	12.1	101.7	-153.56	-327.9	-264.7	675.6	562.5	113.07	5.975		
5,200.0	5,184.3	5,185.3	5,185.3	12.3	103.7	-153.56	-327.9	-264.7	675.6	560.3	115.29	5.860		
5,300.0	5,284.3	5,285.3	5,285.3	12.5	105.7	-153.56	-327.9	-264.7	675.6	558.1	117.51	5.749		
5,400.0	5,384.3	5,385.3	5,385.3	12.7	107.7	-153.56	-327.9	-264.7	675.6	555.8	119.73	5.643		
5,500.0	5,484.3	5,485.3	5,485.3	12.9	109.7	-153.56	-327.9	-264.7	675.6	553.6	121.95	5.540		
5,600.0	5,584.3	5,585.3	5,585.3	13.2	111.7	-153.56	-327.9	-264.7	675.6	551.4	124.17	5.441		
5,700.0	5,684.3	5,685.3	5,685.3	13.4	113.7	-153.56	-327.9	-264.7	675.6	549.2	126.38	5.345		
5,800.0	5,784.3	5,785.3	5,785.3	13.6	115.7	-153.56	-327.9	-264.7	675.6	547.0	128.60	5.253		
5,900.0	5,884.3	5,885.3	5,885.3	13.8	117.7	-153.56	-327.9	-264.7	675.6	544.7	130.82	5.164		
5,915.1	5,899.4	5,900.4	5,900.4	13.8	118.0	-153.56	-327.9	-264.7	675.6	544.4	131.16	5.151		
5,950.0	5,934.3	5,935.3	5,935.3	13.9	118.7	26.50	-327.9	-264.7	674.8	543.1	131.80	5.120		
6,000.0	5,984.1	5,985.1	5,985.1	13.9	119.7	26.77	-327.9	-264.7	671.3	539.0	132.31	5.074		
6,050.0	6,033.6	6,034.6	6,034.6	14.0	120.7	27.26	-327.9	-264.7	664.9	532.6	132.38	5.023		
6,100.0	6,082.5	6,083.5	6,083.5	14.0	121.7	28.01	-327.9	-264.7	655.7	523.7	132.02	4.967		
6,150.0	6,130.6	6,131.6	6,131.6	14.0	122.6	29.02	-327.9	-264.7	643.7	512.4	131.27	4.904		
6,200.0	6,177.8	6,178.8	6,178.8	14.0	123.6	30.32	-327.9	-264.7	629.0	498.8	130.20	4.831		
6,250.0	6,223.7	6,224.7	6,224.7	14.0	124.5	31.96	-327.9	-264.7	611.7	482.8	128.90	4.746		
6,300.0	6,268.2	6,269.2	6,269.2	14.0	125.4	33.97	-327.9	-264.7	592.1	464.5	127.53	4.643		
6,350.0	6,311.2	6,312.2	6,312.2	14.0	126.2	36.40	-327.9	-264.7	570.2	443.9	126.27	4.516		
6,400.0	6,352.4	6,353.4	6,353.4	14.0	127.1	39.32	-327.9	-264.7	546.4	421.0	125.37	4.358		
6,450.0	6,391.7	6,392.7	6,392.7	14.0	127.9	42.78	-327.9	-264.7	520.8	395.7	125.10	4.163		
6,500.0	6,428.8	6,429.8	6,429.8	14.1	128.6	46.81	-327.9	-264.7	493.9	368.1	125.75	3.928		
6,550.0	6,463.7	6,464.7	6,464.7	14.1	129.3	51.43	-327.9	-264.7	466.0	338.5	127.50	3.655		
6,600.0	6,496.2	6,497.2	6,497.2	14.2	129.9	56.59	-327.9	-264.7	437.7	307.3	130.34	3.358		
6,650.0	6,526.1	6,527.1	6,527.1	14.4	130.5	62.16	-327.9	-264.7	409.5	275.5	134.02	3.056		
6,700.0	6,553.3	6,554.3	6,554.3	14.6	131.1	67.93	-327.9	-264.7	382.3	244.3	138.02	2.770		
6,750.0	6,577.8	6,578.8	6,578.8	14.8	131.6	73.62	-327.9	-264.7	357.1	215.3	141.77	2.519		
6,800.0	6,599.3	6,600.3	6,600.3	15.1	132.0	78.90	-327.9	-264.7	334.9	190.1	144.80	2.313		
6,850.0	6,617.8	6,618.8	6,618.8	15.4	132.4	83.50	-327.9	-264.7	317.3	170.3	146.93	2.159		
6,900.0	6,633.3	6,634.3	6,634.3	15.8	132.7	87.19	-327.9	-264.7	305.5	157.2	148.27	2.060		
6,950.0	6,645.6	6,646.6	6,646.6	16.2	132.9	89.81	-327.9	-264.7	300.9	151.8	149.10	2.018		
6,954.9	6,646.6	6,647.6	6,647.6	16.2	133.0	90.00	-327.9	-264.7	300.8	151.7	149.17	2.017 CC, ES, SF		
7,000.0	6,654.7	6,655.7	6,655.7	16.6	133.1	91.27	-327.9	-264.7	304.1	154.4	149.71	2.031		
7,050.0	6,660.6	6,661.6	6,661.6	17.1	133.2	91.52	-327.9	-264.7	315.2	164.9	150.31	2.097		
7,100.0	6,663.2	6,664.2	6,664.2	17.7	133.3	90.54	-327.9	-264.7	333.5	182.6	150.94	2.210		
7,122.3	6,663.3	6,664.3	6,664.3	17.9	133.3	89.70	-327.9	-264.7	343.7	192.5	151.19	2.274		
7,200.0	6,662.6	6,663.6	6,663.6	18.8	133.3	89.56	-327.9	-264.7	387.3	235.2	152.09	2.547		
7,300.0	6,661.7	6,662.7	6,662.7	20.1	133.3	89.38	-327.9	-264.7	457.0	303.6	153.34	2.980		
7,400.0	6,660.7	6,661.7	6,661.7	21.5	133.2	89.20	-327.9	-264.7	536.3	381.6	154.70	3.467		
7,500.0	6,659.8	6,660.8	6,660.8	22.9	133.2	89.02	-327.9	-264.7	621.6	465.5	156.12	3.981		
7,600.0	6,658.8	6,659.8	6,659.8	24.5	133.2	88.84	-327.9	-264.7	710.8	553.1	157.61	4.509		
7,700.0	6,657.9	6,658.9	6,658.9	26.0	133.2	88.66	-327.9	-264.7	802.5	643.3	159.15	5.042		
7,800.0	6,656.9	6,657.9	6,657.9	27.6	133.2	88.49	-327.9	-264.7	896.0	735.2	160.74	5.574		
7,900.0	6,656.0	6,657.0	6,657.0	29.3	133.1	88.31	-327.9	-264.7	990.7	828.4	162.36	6.102		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Suden 34R-243
<b>Project:</b>	SEC.34-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Reference Site:</b>	Suden 34R-HZ Pad Sec.34-T5N-R64W	<b>MD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Suden 34R-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (2-24-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Suden (Existing) Pad Sec.34-T5N-R64W - Gamewell 34-2 (Existing) - Wellbore #1 - Wellbore #1												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 6995-UNKNOWN												<b>Offset Well Error:</b>	0.0 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
7,400.0	6,660.7	6,649.7	6,649.7	21.5	133.0	91.66	-1,715.9	-270.3	992.6	838.1	154.41	6.428	
7,500.0	6,659.8	6,648.8	6,648.8	22.9	133.0	91.49	-1,715.9	-270.3	898.0	742.1	155.86	5.761	
7,600.0	6,658.8	6,647.8	6,647.8	24.5	133.0	91.31	-1,715.9	-270.3	804.7	647.3	157.37	5.113	
7,700.0	6,657.9	6,646.9	6,646.9	26.0	132.9	91.13	-1,715.9	-270.3	713.3	554.3	158.93	4.488	
7,800.0	6,656.9	6,645.9	6,645.9	27.6	132.9	90.96	-1,715.9	-270.3	624.5	463.9	160.54	3.890	
7,900.0	6,656.0	6,645.0	6,645.0	29.3	132.9	90.78	-1,715.9	-270.3	539.6	377.4	162.18	3.327	
8,000.0	6,655.1	6,644.1	6,644.1	31.0	132.9	90.61	-1,715.9	-270.3	460.8	296.9	163.85	2.812	
8,100.0	6,654.1	6,643.1	6,643.1	32.7	132.9	90.43	-1,715.9	-270.3	391.8	226.2	165.54	2.367	
8,200.0	6,653.2	6,642.2	6,642.2	34.4	132.8	90.25	-1,715.9	-270.3	338.6	171.4	167.26	2.025	
8,300.0	6,652.2	6,641.2	6,641.2	36.2	132.8	90.08	-1,715.9	-270.3	309.6	140.6	168.99	1.832	
8,344.1	6,651.8	6,640.8	6,640.8	37.0	132.8	90.00	-1,715.9	-270.3	306.4	136.7	169.76	1.805 CC, ES, SF	
8,400.0	6,651.3	6,640.3	6,640.3	37.9	132.8	89.90	-1,715.9	-270.3	311.5	140.7	170.74	1.824	
8,500.0	6,650.4	6,639.4	6,639.4	39.7	132.8	89.73	-1,715.9	-270.3	343.8	171.3	172.50	1.993	
8,600.0	6,649.4	6,638.4	6,638.4	41.5	132.8	89.55	-1,715.9	-270.3	399.2	224.9	174.27	2.291	
8,700.0	6,648.5	6,637.5	6,637.5	43.3	132.7	89.37	-1,715.9	-270.3	469.6	293.6	176.05	2.668	
8,800.0	6,647.5	6,636.5	6,636.5	45.1	132.7	89.20	-1,715.9	-270.3	549.3	371.4	177.84	3.089	
8,900.0	6,646.6	6,635.6	6,635.6	47.0	132.7	89.02	-1,715.9	-270.3	634.7	455.1	179.64	3.533	
9,000.0	6,645.6	6,634.6	6,634.6	48.8	132.7	88.84	-1,715.9	-270.3	723.9	542.5	181.44	3.990	
9,100.0	6,644.7	6,633.7	6,633.7	50.6	132.7	88.67	-1,715.9	-270.3	815.6	632.4	183.24	4.451	
9,200.0	6,643.8	6,632.8	6,632.8	52.5	132.7	88.49	-1,715.9	-270.3	909.1	724.0	185.05	4.912	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Suden 34R-243
<b>Project:</b>	SEC.34-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Reference Site:</b>	Suden 34R-HZ Pad Sec.34-T5N-R64W	<b>MD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Suden 34R-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (2-24-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Suden 34R-HZ Pad Sec.34-T5N-R64W - Suden 34M-323 - Wellbore #1 - Plan #1 (2-24-14)													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	Semi Major Axis	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
0.0	0.0	1.0	1.0	0.0	0.0	-90.00	-90.00	0.0	-61.3	61.3	61.3	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	-90.00	-90.00	0.0	-61.3	61.3	61.1	0.23	270.068	
200.0	200.0	201.0	201.0	0.3	0.3	-90.00	-90.00	0.0	-61.3	61.3	60.6	0.68	90.621	
300.0	300.0	301.0	301.0	0.6	0.6	-90.00	-90.00	0.0	-61.3	61.3	60.2	1.13	54.445	
400.0	400.0	401.0	401.0	0.8	0.8	-90.00	-90.00	0.0	-61.3	61.3	59.7	1.58	38.911	
500.0	500.0	501.0	501.0	1.0	1.0	-90.00	-90.00	0.0	-61.3	61.3	59.3	2.03	30.274	
600.0	600.0	601.0	601.0	1.2	1.2	-90.00	-90.00	0.0	-61.3	61.3	58.8	2.47	24.775	
700.0	700.0	701.0	701.0	1.5	1.5	-90.00	-90.00	0.0	-61.3	61.3	58.4	2.92	20.966	
800.0	800.0	801.0	801.0	1.7	1.7	-90.00	-90.00	0.0	-61.3	61.3	57.9	3.37	18.172	
900.0	900.0	901.0	901.0	1.9	1.9	-90.00	-90.00	0.0	-61.3	61.3	57.5	3.82	16.036	
966.3	966.3	967.3	967.3	2.1	2.1	-90.00	-90.00	0.0	-61.3	61.3	57.2	4.12	14.876 CC	
1,000.0	1,000.0	1,001.0	1,001.0	2.1	2.1	-90.00	-90.00	0.0	-61.3	61.3	57.0	4.27	14.349 ES	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-89.31	-89.31	0.8	-62.9	62.9	58.2	4.71	13.346	
1,200.0	1,200.0	1,196.9	1,196.7	2.6	2.6	-87.51	-87.51	2.9	-67.4	67.6	62.5	5.14	13.141	
1,300.0	1,300.0	1,294.3	1,293.8	2.8	2.8	-85.00	-85.00	6.6	-74.9	75.5	70.0	5.58	13.534	
1,400.0	1,400.0	1,391.0	1,389.8	3.0	3.0	-82.28	-82.28	11.6	-85.3	86.8	80.8	6.02	14.412	
1,500.0	1,500.0	1,489.3	1,487.1	3.3	3.3	-79.77	-79.77	17.7	-98.0	100.5	94.0	6.47	15.531	
1,600.0	1,600.0	1,588.2	1,585.0	3.5	3.6	-77.84	-77.84	23.9	-110.8	114.4	107.5	6.92	16.538	
1,700.0	1,700.0	1,687.2	1,682.9	3.7	3.9	-76.34	-76.34	30.0	-123.6	128.5	121.1	7.37	17.432	
1,800.0	1,800.0	1,786.2	1,780.9	3.9	4.2	-75.13	-75.13	36.2	-136.4	142.6	134.8	7.82	18.226	
1,900.0	1,900.0	1,885.1	1,878.8	4.2	4.5	-74.13	-74.13	42.4	-149.2	156.7	148.5	8.28	18.936	
2,000.0	2,000.0	1,984.1	1,976.7	4.4	4.8	-73.31	-73.31	48.6	-162.1	170.9	162.2	8.73	19.573	
2,100.0	2,100.0	2,083.1	2,074.7	4.6	5.1	-80.29	-80.29	54.8	-174.9	184.9	175.7	9.17	20.163	
2,200.0	2,199.8	2,182.2	2,172.7	4.8	5.4	-80.89	-80.89	61.0	-187.7	198.2	188.6	9.62	20.596	
2,300.0	2,299.5	2,281.1	2,270.7	5.1	5.7	-82.32	-82.32	67.2	-200.5	211.2	201.1	10.09	20.933	
2,337.2	2,336.4	2,317.9	2,307.0	5.1	5.9	-83.04	-83.04	69.5	-205.3	215.9	205.6	10.26	21.038	
2,400.0	2,398.8	2,380.0	2,368.5	5.3	6.1	-84.44	-84.44	73.3	-213.4	224.0	213.4	10.56	21.203	
2,500.0	2,498.1	2,478.8	2,466.2	5.5	6.4	-86.47	-86.47	79.5	-226.2	237.1	226.0	11.05	21.452	
2,600.0	2,597.4	2,577.6	2,564.0	5.8	6.7	-88.28	-88.28	85.7	-239.0	250.4	238.9	11.55	21.681	
2,700.0	2,696.7	2,676.4	2,661.8	6.0	7.1	-89.92	-89.92	91.9	-251.8	264.0	251.9	12.06	21.893	
2,800.0	2,796.0	2,775.2	2,759.6	6.3	7.4	-91.39	-91.39	98.0	-264.6	277.8	265.2	12.58	22.088	
2,900.0	2,895.3	2,874.0	2,857.4	6.5	7.7	-92.72	-92.72	104.2	-277.4	291.7	278.6	13.10	22.267	
3,000.0	2,994.6	2,972.8	2,955.1	6.8	8.1	-93.93	-93.93	110.4	-290.2	305.8	292.1	13.63	22.432	
3,100.0	3,093.9	3,071.6	3,052.9	7.1	8.4	-95.03	-95.03	116.6	-303.0	320.0	305.8	14.17	22.584	
3,200.0	3,193.3	3,170.4	3,150.7	7.3	8.8	-96.04	-96.04	122.8	-315.8	334.3	319.6	14.71	22.724	
3,300.0	3,292.6	3,269.2	3,248.5	7.6	9.1	-96.97	-96.97	128.9	-328.6	348.7	333.4	15.26	22.854	
3,400.0	3,391.9	3,368.0	3,346.3	7.9	9.4	-97.82	-97.82	135.1	-341.4	363.2	347.3	15.81	22.974	
3,500.0	3,491.2	3,466.8	3,444.0	8.2	9.8	-98.61	-98.61	141.3	-354.2	377.7	361.3	16.36	23.086	
3,600.0	3,590.5	3,565.6	3,541.8	8.5	10.1	-99.34	-99.34	147.5	-367.0	392.3	375.4	16.92	23.189	
3,700.0	3,689.8	3,664.4	3,639.6	8.7	10.5	-100.02	-100.02	153.6	-379.8	407.0	389.5	17.48	23.286	
3,800.0	3,789.1	3,763.2	3,737.4	9.0	10.8	-100.65	-100.65	159.8	-392.6	421.7	403.7	18.04	23.376	
3,900.0	3,888.4	3,862.0	3,835.2	9.3	11.1	-101.24	-101.24	166.0	-405.4	436.5	417.9	18.61	23.461	
4,000.0	3,987.7	3,960.9	3,932.9	9.6	11.5	-101.79	-101.79	172.2	-418.2	451.3	432.1	19.17	23.540	
4,100.0	4,087.0	4,059.7	4,030.7	9.9	11.8	-102.30	-102.30	178.3	-431.0	466.2	446.4	19.74	23.615	
4,200.0	4,186.3	4,158.5	4,128.5	10.2	12.2	-102.78	-102.78	184.5	-443.8	481.1	460.7	20.31	23.685	
4,300.0	4,285.6	4,257.3	4,226.3	10.5	12.5	-103.24	-103.24	190.7	-456.6	496.0	475.1	20.88	23.751	
4,378.5	4,363.6	4,334.8	4,303.0	10.7	12.8	-103.58	-103.58	195.5	-466.6	507.7	486.4	21.33	23.800	
4,400.0	4,385.0	4,356.1	4,324.1	10.8	12.9	-103.72	-103.72	196.9	-469.4	510.9	489.5	21.45	23.815	
4,500.0	4,484.5	4,455.0	4,422.0	11.0	13.2	-104.14	-104.14	203.0	-482.2	525.3	503.3	21.97	23.914	
4,600.0	4,584.4	4,554.1	4,520.0	11.2	13.5	-104.17	-104.17	209.2	-495.0	538.8	516.4	22.44	24.010	
4,700.0	4,684.3	4,653.1	4,618.0	11.4	13.9	-103.84	-103.84	215.4	-507.9	551.5	528.7	22.88	24.107	

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



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Suden 34R-243
<b>Project:</b>	SEC.34-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Reference Site:</b>	Suden 34R-HZ Pad Sec.34-T5N-R64W	<b>MD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Suden 34R-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (2-24-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Suden 34R-HZ Pad Sec.34-T5N-R64W - Suden 34M-323 - Wellbore #1 - Plan #1 (2-24-14)													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	Semi Major Axis	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
4,715.7	4,700.0	4,668.6	4,633.4	11.4	13.9	-96.33		216.4	-509.9	553.5	530.5	22.94	24.123	
4,800.0	4,784.3	4,752.1	4,715.9	11.5	14.2	-95.68		221.6	-520.7	563.8	540.5	23.29	24.204	
4,900.0	4,884.3	4,851.0	4,813.9	11.7	14.6	-94.94		227.8	-533.5	576.2	552.4	23.73	24.280	
5,000.0	4,984.3	4,950.0	4,911.8	11.9	14.9	-94.22		234.0	-546.3	588.6	564.5	24.17	24.357	
5,100.0	5,084.3	5,049.0	5,009.7	12.1	15.3	-93.54		240.2	-559.1	601.2	576.6	24.60	24.435	
5,200.0	5,184.3	5,147.9	5,107.7	12.3	15.6	-92.89		246.3	-572.0	613.8	588.7	25.04	24.513	
5,300.0	5,284.3	5,246.9	5,205.6	12.5	16.0	-92.26		252.5	-584.8	626.5	601.0	25.47	24.592	
5,400.0	5,384.3	5,345.8	5,303.5	12.7	16.3	-91.65		258.7	-597.6	639.2	613.3	25.91	24.670	
5,500.0	5,484.3	5,448.3	5,404.9	12.9	16.7	-91.05		265.1	-610.8	652.0	625.7	26.35	24.743	
5,600.0	5,584.3	5,573.3	5,529.1	13.2	17.0	-90.48		271.4	-623.9	662.4	635.6	26.80	24.722	
5,700.0	5,684.3	5,699.4	5,654.8	13.4	17.2	-90.14		275.4	-632.2	669.0	641.7	27.22	24.575	
5,800.0	5,784.3	5,826.0	5,781.4	13.6	17.4	-90.00		277.0	-635.4	671.5	643.9	27.64	24.297	
5,900.0	5,884.3	5,930.0	5,885.3	13.8	17.6	-90.00		277.0	-635.5	671.6	643.6	28.03	23.958	
5,915.1	5,899.4	5,945.1	5,900.4	13.8	17.6	-90.00		277.0	-635.5	671.6	643.5	28.09	23.906	
5,921.3	5,905.6	5,951.3	5,906.6	13.8	17.6	-90.00		277.0	-635.5	671.6	643.5	28.11	23.887	
5,950.0	5,934.3	5,980.0	5,935.3	13.9	17.7	-90.07		277.0	-635.5	671.6	643.4	28.22	23.802	
6,000.0	5,984.1	6,029.9	5,985.2	13.9	17.7	-90.39		276.9	-635.5	671.6	643.3	28.35	23.690	
6,050.0	6,033.6	6,080.1	6,035.4	14.0	17.8	-90.81		274.7	-635.5	671.7	643.2	28.44	23.616	
6,100.0	6,082.5	6,130.6	6,085.6	14.0	17.9	-91.23		269.0	-635.5	671.7	643.2	28.50	23.572	
6,150.0	6,130.6	6,181.5	6,135.7	14.0	17.9	-91.64		260.0	-635.5	671.9	643.3	28.53	23.553	
6,200.0	6,177.8	6,232.8	6,185.4	14.0	17.9	-92.04		247.6	-635.5	672.0	643.5	28.53	23.555	
6,250.0	6,223.7	6,284.3	6,234.4	14.0	17.9	-92.44		231.8	-635.5	672.2	643.7	28.52	23.570	
6,300.0	6,268.2	6,336.2	6,282.6	14.0	17.9	-92.83		212.6	-635.5	672.4	643.9	28.50	23.593	
6,350.0	6,311.2	6,388.5	6,329.7	14.0	17.9	-93.21		190.0	-635.5	672.6	644.2	28.48	23.614	
6,400.0	6,352.4	6,441.0	6,375.4	14.0	17.9	-93.57		164.0	-635.5	672.9	644.4	28.48	23.626	
6,450.0	6,391.7	6,493.9	6,419.5	14.0	17.9	-93.92		134.8	-635.5	673.2	644.7	28.50	23.617	
6,500.0	6,428.8	6,547.1	6,461.7	14.1	17.9	-94.25		102.4	-635.5	673.5	644.9	28.56	23.579	
6,550.0	6,463.7	6,600.6	6,501.7	14.1	17.9	-94.56		67.0	-635.5	673.7	645.1	28.67	23.501	
6,600.0	6,496.2	6,654.4	6,539.4	14.2	17.9	-94.85		28.6	-635.5	674.0	645.2	28.84	23.372	
6,650.0	6,526.1	6,708.4	6,574.4	14.4	17.9	-95.13		-12.6	-635.5	674.3	645.2	29.08	23.185	
6,700.0	6,553.3	6,762.8	6,606.6	14.6	17.9	-95.37		-56.3	-635.5	674.6	645.2	29.40	22.944	
6,750.0	6,577.8	6,817.3	6,635.7	14.8	18.0	-95.60		-102.4	-635.5	674.8	645.0	29.82	22.630	
6,800.0	6,599.3	6,872.0	6,661.6	15.1	18.0	-95.80		-150.7	-635.5	675.0	644.7	30.33	22.257	
6,850.0	6,617.8	6,927.0	6,684.0	15.4	18.2	-95.97		-200.8	-635.5	675.3	644.3	30.94	21.825	
6,900.0	6,633.3	6,982.1	6,702.7	15.8	18.4	-96.11		-252.6	-635.5	675.4	643.8	31.65	21.342	
6,950.0	6,645.6	7,037.3	6,717.8	16.2	18.6	-96.22		-305.7	-635.5	675.6	643.1	32.45	20.816	
7,000.0	6,654.7	7,092.7	6,728.9	16.6	19.0	-96.31		-359.9	-635.5	675.7	642.3	33.35	20.259	
7,050.0	6,660.6	7,148.1	6,736.1	17.1	19.4	-96.36		-414.9	-635.5	675.8	641.4	34.34	19.680	
7,100.0	6,663.2	7,203.5	6,739.4	17.7	19.9	-96.39		-470.2	-635.5	675.8	640.4	35.40	19.090	
7,122.3	6,663.3	7,228.2	6,739.5	17.9	20.1	-96.39		-494.9	-635.5	675.8	639.9	35.90	18.825	
7,200.0	6,662.6	7,305.9	6,738.7	18.8	20.9	-96.38		-572.6	-635.5	675.8	638.1	37.69	17.931	
7,300.0	6,661.7	7,405.9	6,737.7	20.1	22.0	-96.37		-672.6	-635.5	675.8	635.6	40.20	16.812	
7,400.0	6,660.7	7,505.9	6,736.6	21.5	23.3	-96.36		-772.6	-635.5	675.8	632.9	42.90	15.753	
7,500.0	6,659.8	7,605.9	6,735.6	22.9	24.7	-96.35		-872.6	-635.5	675.7	630.0	45.76	14.768	
7,600.0	6,658.8	7,705.9	6,734.5	24.5	26.1	-96.35		-972.6	-635.5	675.7	627.0	48.75	13.861	
7,700.0	6,657.9	7,805.9	6,733.5	26.0	27.6	-96.34		-1,072.6	-635.5	675.7	623.9	51.85	13.031	
7,800.0	6,656.9	7,905.9	6,732.4	27.6	29.1	-96.33		-1,172.6	-635.5	675.7	620.7	55.05	12.275	
7,900.0	6,656.0	8,005.9	6,731.4	29.3	30.7	-96.32		-1,272.6	-635.5	675.7	617.4	58.31	11.587	
8,000.0	6,655.1	8,105.9	6,730.3	31.0	32.3	-96.31		-1,372.6	-635.5	675.7	614.0	61.65	10.960	
8,100.0	6,654.1	8,205.9	6,729.3	32.7	33.9	-96.30		-1,472.6	-635.5	675.7	610.6	65.03	10.390	
8,200.0	6,653.2	8,305.9	6,728.2	34.4	35.6	-96.29		-1,572.6	-635.5	675.7	607.2	68.47	9.868	

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



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Suden 34R-243
<b>Project:</b>	SEC.34-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Reference Site:</b>	Suden 34R-HZ Pad Sec.34-T5N-R64W	<b>MD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Suden 34R-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (2-24-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Suden 34R-HZ Pad Sec.34-T5N-R64W - Suden 34M-323 - Wellbore #1 - Plan #1 (2-24-14)											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)			
8,300.0	6,652.2	8,405.9	6,727.2	36.2	37.3	96.28	-1,672.6	-635.5	675.6	603.7	71.94	9.392		
8,400.0	6,651.3	8,505.9	6,726.1	37.9	39.0	96.27	-1,772.6	-635.5	675.6	600.2	75.44	8.955		
8,500.0	6,650.4	8,605.9	6,725.1	39.7	40.7	96.27	-1,872.6	-635.5	675.6	596.6	78.98	8.554		
8,600.0	6,649.4	8,705.9	6,724.0	41.5	42.5	96.26	-1,972.5	-635.5	675.6	593.1	82.54	8.185		
8,700.0	6,648.5	8,805.9	6,723.0	43.3	44.3	96.25	-2,072.5	-635.5	675.6	589.5	86.13	7.844		
8,800.0	6,647.5	8,905.9	6,721.9	45.1	46.0	96.24	-2,172.5	-635.5	675.6	585.9	89.73	7.529		
8,900.0	6,646.6	9,005.9	6,720.9	47.0	47.8	96.23	-2,272.5	-635.5	675.6	582.2	93.35	7.237		
9,000.0	6,645.6	9,105.9	6,719.9	48.8	49.6	96.22	-2,372.5	-635.5	675.6	578.6	96.99	6.966		
9,100.0	6,644.7	9,205.9	6,718.8	50.6	51.4	96.21	-2,472.5	-635.5	675.6	574.9	100.64	6.713		
9,200.0	6,643.8	9,305.9	6,717.8	52.5	53.2	96.20	-2,572.5	-635.5	675.5	571.2	104.30	6.477		
9,300.0	6,642.8	9,405.9	6,716.7	54.3	55.1	96.20	-2,672.5	-635.5	675.5	567.6	107.98	6.256		
9,400.0	6,641.9	9,505.9	6,715.7	56.2	56.9	96.19	-2,772.5	-635.5	675.5	563.9	111.66	6.050		
9,500.0	6,640.9	9,605.9	6,714.6	58.0	58.7	96.18	-2,872.5	-635.5	675.5	560.2	115.35	5.856		
9,600.0	6,640.0	9,705.9	6,713.6	59.9	60.6	96.17	-2,972.5	-635.5	675.5	556.4	119.06	5.674		
9,700.0	6,639.0	9,805.9	6,712.5	61.8	62.4	96.16	-3,072.5	-635.5	675.5	552.7	122.77	5.502		
9,800.0	6,638.1	9,905.9	6,711.5	63.6	64.2	96.15	-3,172.5	-635.5	675.5	549.0	126.48	5.340		
9,900.0	6,637.2	10,005.9	6,710.4	65.5	66.1	96.14	-3,272.5	-635.5	675.5	545.3	130.21	5.188		
10,000.0	6,636.2	10,105.9	6,709.4	67.4	67.9	96.13	-3,372.5	-635.5	675.5	541.5	133.94	5.043		
10,100.0	6,635.3	10,205.9	6,708.3	69.2	69.8	96.12	-3,472.5	-635.5	675.4	537.8	137.67	4.906		
10,200.0	6,634.3	10,305.9	6,707.3	71.1	71.7	96.12	-3,572.5	-635.5	675.4	534.0	141.41	4.776		
10,300.0	6,633.4	10,405.9	6,706.2	73.0	73.5	96.11	-3,672.5	-635.5	675.4	530.3	145.15	4.653		
10,400.0	6,632.4	10,505.9	6,705.2	74.9	75.4	96.10	-3,772.4	-635.5	675.4	526.5	148.90	4.536		
10,500.0	6,631.5	10,605.9	6,704.1	76.8	77.3	96.09	-3,872.4	-635.5	675.4	522.7	152.65	4.424		
10,600.0	6,630.6	10,705.9	6,703.1	78.7	79.1	96.08	-3,972.4	-635.5	675.4	519.0	156.41	4.318		
10,700.0	6,629.6	10,805.9	6,702.0	80.5	81.0	96.07	-4,072.4	-635.5	675.4	515.2	160.17	4.217		
10,800.0	6,628.7	10,905.9	6,701.0	82.4	82.9	96.06	-4,172.4	-635.5	675.4	511.4	163.93	4.120		
10,900.0	6,627.7	11,005.9	6,700.0	84.3	84.8	96.05	-4,272.4	-635.5	675.4	507.7	167.69	4.027		
11,000.0	6,626.8	11,105.9	6,698.9	86.2	86.7	96.05	-4,372.4	-635.5	675.3	503.9	171.46	3.939		
11,083.8	6,626.0	11,189.8	6,698.0	87.8	88.2	96.04	-4,456.2	-635.5	675.3	500.7	174.62	3.867 SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Suden 34R-243
<b>Project:</b>	SEC.34-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Reference Site:</b>	Suden 34R-HZ Pad Sec.34-T5N-R64W	<b>MD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Suden 34R-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (2-24-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Suden 34R-HZ Pad Sec.34-T5N-R64W - Suden 34M-423 - Wellbore #1 - Plan #1 (2-24-14)													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 (ft)	Offset (ft)	Semi Major Axis (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-90.01	-90.01	0.0	-30.7	30.7				
100.0	100.0	100.0	100.0	0.1	0.1	-90.01	-90.01	0.0	-30.7	30.7	30.4	0.22	136.384	
200.0	200.0	200.0	200.0	0.3	0.3	-90.01	-90.01	0.0	-30.7	30.7	30.0	0.67	45.461	
300.0	300.0	300.0	300.0	0.6	0.6	-90.01	-90.01	0.0	-30.7	30.7	29.5	1.12	27.277	
400.0	400.0	400.0	400.0	0.8	0.8	-90.01	-90.01	0.0	-30.7	30.7	29.1	1.57	19.483	
500.0	500.0	500.0	500.0	1.0	1.0	-90.01	-90.01	0.0	-30.7	30.7	28.6	2.02	15.154	
600.0	600.0	600.0	600.0	1.2	1.2	-90.01	-90.01	0.0	-30.7	30.7	28.2	2.47	12.399	
700.0	700.0	700.0	700.0	1.5	1.5	-90.01	-90.01	0.0	-30.7	30.7	27.7	2.92	10.491	
800.0	800.0	800.0	800.0	1.7	1.7	-90.01	-90.01	0.0	-30.7	30.7	27.3	3.37	9.092	
900.0	900.0	900.0	900.0	1.9	1.9	-90.01	-90.01	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	-90.01	-90.01	0.0	-30.7	30.7	26.4	4.27	7.178	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-90.01	-90.01	0.0	-30.7	30.7	25.9	4.72	6.494	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-90.01	-90.01	0.0	-30.7	30.7	25.5	5.17	5.930	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-90.01	-90.01	0.0	-30.7	30.7	25.0	5.62	5.455	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-90.01	-90.01	0.0	-30.7	30.7	24.6	6.07	5.051	
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	-90.01	-90.01	0.0	-30.7	30.7	24.1	6.52	4.703 CC, ES	
1,600.0	1,600.0	1,599.1	1,599.1	3.5	3.5	-88.07	-88.07	1.1	-32.0	32.0	25.1	6.96	4.600	
1,700.0	1,700.0	1,698.0	1,697.9	3.7	3.7	-83.16	-83.16	4.3	-36.0	36.3	28.9	7.40	4.904	
1,800.0	1,800.0	1,796.5	1,795.9	3.9	3.9	-77.19	-77.19	9.7	-42.5	43.8	36.0	7.84	5.589	
1,900.0	1,900.0	1,894.9	1,893.7	4.2	4.2	-71.77	-71.77	17.0	-51.5	54.6	46.3	8.28	6.588	
2,000.0	2,000.0	1,994.2	1,992.2	4.4	4.4	-67.97	-67.97	24.7	-60.9	66.2	57.5	8.73	7.585	
2,100.0	2,100.0	2,093.5	2,090.8	4.6	4.7	-73.76	-73.76	32.4	-70.4	77.5	68.3	9.17	8.455	
2,200.0	2,199.8	2,193.0	2,189.5	4.8	4.9	-74.69	-74.69	40.1	-79.9	87.9	78.3	9.61	9.144	
2,300.0	2,299.5	2,292.4	2,288.2	5.1	5.2	-77.39	-77.39	47.8	-89.3	97.5	87.4	10.07	9.688	
2,337.2	2,336.4	2,329.3	2,324.8	5.1	5.3	-78.75	-78.75	50.6	-92.8	101.0	90.7	10.24	9.862	
2,400.0	2,398.8	2,391.7	2,386.8	5.3	5.5	-81.16	-81.16	55.5	-98.8	106.9	96.3	10.53	10.146	
2,500.0	2,498.1	2,491.0	2,485.3	5.5	5.7	-84.49	-84.49	63.2	-108.2	116.6	105.6	11.01	10.586	
2,600.0	2,597.4	2,590.3	2,583.9	5.8	6.0	-87.30	-87.30	70.9	-117.7	126.7	115.1	11.51	11.007	
2,700.0	2,696.7	2,689.7	2,682.4	6.0	6.3	-89.70	-89.70	78.6	-127.1	137.0	125.0	12.01	11.405	
2,800.0	2,796.0	2,789.0	2,781.0	6.3	6.6	-91.75	-91.75	86.3	-136.6	147.5	135.0	12.52	11.778	
2,900.0	2,895.3	2,888.3	2,879.6	6.5	6.9	-93.53	-93.53	93.9	-146.0	158.2	145.1	13.04	12.128	
3,000.0	2,994.6	2,987.6	2,978.1	6.8	7.2	-95.09	-95.09	101.6	-155.5	169.0	155.4	13.57	12.454	
3,100.0	3,093.9	3,086.9	3,076.7	7.1	7.5	-96.46	-96.46	109.3	-165.0	179.9	165.8	14.10	12.758	
3,200.0	3,193.3	3,186.2	3,175.3	7.3	7.8	-97.67	-97.67	117.0	-174.4	190.9	176.3	14.64	13.042	
3,300.0	3,292.6	3,285.6	3,273.8	7.6	8.1	-98.74	-98.74	124.7	-183.9	202.0	186.8	15.18	13.306	
3,400.0	3,391.9	3,384.9	3,372.4	7.9	8.4	-99.71	-99.71	132.4	-193.3	213.2	197.4	15.73	13.552	
3,500.0	3,491.2	3,484.2	3,471.0	8.2	8.7	-100.58	-100.58	140.1	-202.8	224.4	208.1	16.28	13.783	
3,600.0	3,590.5	3,583.5	3,569.5	8.5	9.0	-101.37	-101.37	147.8	-212.2	235.6	218.8	16.83	13.998	
3,700.0	3,689.8	3,682.8	3,668.1	8.7	9.3	-102.08	-102.08	155.5	-221.7	246.9	229.5	17.39	14.200	
3,800.0	3,789.1	3,782.1	3,766.6	9.0	9.6	-102.73	-102.73	163.2	-231.1	258.3	240.3	17.95	14.389	
3,900.0	3,888.4	3,881.4	3,865.2	9.3	9.9	-103.33	-103.33	170.9	-240.6	269.6	251.1	18.51	14.566	
4,000.0	3,987.7	3,980.8	3,963.8	9.6	10.2	-103.88	-103.88	178.6	-250.0	281.0	261.9	19.07	14.733	
4,100.0	4,087.0	4,080.1	4,062.3	9.9	10.5	-104.39	-104.39	186.3	-259.5	292.4	272.8	19.64	14.890	
4,200.0	4,186.3	4,179.4	4,160.9	10.2	10.8	-104.86	-104.86	194.0	-268.9	303.8	283.6	20.21	15.038	
4,300.0	4,285.6	4,278.7	4,259.5	10.5	11.1	-105.29	-105.29	201.7	-278.4	315.3	294.5	20.77	15.177	
4,378.5	4,363.6	4,356.7	4,336.8	10.7	11.4	-105.61	-105.61	207.8	-285.8	324.3	303.1	21.22	15.282	
4,400.0	4,385.0	4,378.0	4,358.0	10.8	11.5	-105.73	-105.73	209.4	-287.8	326.7	305.4	21.34	15.312	
4,500.0	4,484.5	4,477.4	4,456.7	11.0	11.8	-105.90	-105.90	217.1	-297.3	337.5	315.7	21.84	15.454	
4,600.0	4,584.4	4,576.9	4,555.4	11.2	12.1	-105.51	-105.51	224.8	-306.8	347.4	325.1	22.31	15.572	
4,700.0	4,684.3	4,676.2	4,654.0	11.4	12.4	-104.59	-104.59	232.5	-316.2	356.4	333.7	22.74	15.674	
4,715.7	4,700.0	4,691.8	4,669.4	11.4	12.4	-96.97	-96.97	233.7	-317.7	357.8	335.0	22.80	15.689	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Suden 34R-243
<b>Project:</b>	SEC.34-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Reference Site:</b>	Suden 34R-HZ Pad Sec.34-T5N-R64W	<b>MD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Suden 34R-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (2-24-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Suden 34R-HZ Pad Sec.34-T5N-R64W - Suden 34M-423 - Wellbore #1 - Plan #1 (2-24-14)													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	Semi Major Axis	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	4,784.3	4,775.5	4,752.5	11.5	12.7	-95.81		240.2	-325.7	365.0	341.9	23.16	15.764	
4,900.0	4,884.3	4,874.7	4,851.0	11.7	13.0	-94.48		247.9	-335.1	373.9	350.3	23.59	15.847	
5,000.0	4,984.3	4,974.0	4,949.5	11.9	13.3	-93.22		255.6	-344.6	382.9	358.8	24.03	15.935	
5,100.0	5,084.3	5,073.2	5,048.0	12.1	13.6	-92.01		263.3	-354.0	392.0	367.6	24.46	16.028	
5,200.0	5,184.3	5,184.3	5,158.5	12.3	13.9	-90.93		270.6	-362.9	399.9	375.1	24.87	16.083	
5,300.0	5,284.3	5,296.2	5,270.1	12.5	14.1	-90.26		275.1	-368.6	404.9	379.7	25.26	16.028	
5,400.0	5,384.3	5,408.5	5,382.4	12.7	14.3	-90.01		277.0	-370.8	406.9	381.3	25.65	15.861	
5,500.0	5,484.3	5,510.5	5,484.3	12.9	14.5	-90.00		277.0	-370.9	407.0	380.9	26.04	15.626	
5,600.0	5,584.3	5,610.5	5,584.3	13.2	14.7	-90.00		277.0	-370.9	407.0	380.5	26.45	15.388	
5,700.0	5,684.3	5,710.5	5,684.3	13.4	14.8	-90.00		277.0	-370.9	407.0	380.1	26.85	15.155	
5,800.0	5,784.3	5,810.5	5,784.3	13.6	15.0	-90.00		277.0	-370.9	407.0	379.7	27.26	14.929	
5,900.0	5,884.3	5,910.5	5,884.3	13.8	15.2	-90.00		277.0	-370.9	407.0	379.3	27.67	14.709	
5,915.1	5,899.4	5,925.6	5,899.4	13.8	15.2	-90.00		277.0	-370.9	407.0	379.2	27.73	14.676	
5,921.3	5,905.6	5,931.8	5,905.6	13.8	15.3	90.00		277.0	-370.9	407.0	379.2	27.75	14.664	
5,950.0	5,934.3	5,960.4	5,934.3	13.9	15.3	90.11		277.0	-370.9	407.0	379.1	27.86	14.610	
6,000.0	5,984.1	6,010.3	5,984.1	13.9	15.4	90.66		277.0	-370.9	407.0	379.0	28.00	14.536	
6,050.0	6,033.6	6,059.8	6,033.6	14.0	15.5	91.65		277.0	-370.9	407.1	379.0	28.11	14.485	
6,100.0	6,082.5	6,109.6	6,083.4	14.0	15.6	92.98		276.3	-370.9	407.5	379.4	28.18	14.464	
6,150.0	6,130.6	6,160.3	6,134.0	14.0	15.6	94.35		272.5	-370.9	408.2	380.0	28.20	14.473	
6,200.0	6,177.8	6,211.8	6,185.0	14.0	15.7	95.70		265.3	-370.9	409.1	380.9	28.20	14.505	
6,250.0	6,223.7	6,264.0	6,236.0	14.0	15.7	97.03		254.4	-370.9	410.2	382.0	28.17	14.558	
6,300.0	6,268.2	6,317.0	6,287.0	14.0	15.7	98.34		239.9	-370.9	411.5	383.3	28.13	14.627	
6,350.0	6,311.2	6,370.7	6,337.4	14.0	15.7	99.61		221.5	-370.9	412.9	384.9	28.07	14.709	
6,400.0	6,352.4	6,425.2	6,387.2	14.0	15.7	100.84		199.4	-370.9	414.6	386.6	28.02	14.798	
6,450.0	6,391.7	6,480.5	6,435.9	14.0	15.7	102.02		173.3	-370.9	416.4	388.4	27.97	14.887	
6,500.0	6,428.8	6,536.5	6,483.3	14.1	15.7	103.15		143.4	-370.9	418.2	390.3	27.94	14.970	
6,550.0	6,463.7	6,593.3	6,529.0	14.1	15.7	104.22		109.6	-370.9	420.1	392.2	27.94	15.038	
6,600.0	6,496.2	6,650.9	6,572.5	14.2	15.7	105.23		71.9	-370.9	422.1	394.1	27.99	15.082	
6,650.0	6,526.1	6,709.3	6,613.6	14.4	15.7	106.16		30.6	-370.9	424.0	395.9	28.10	15.091	
6,700.0	6,553.3	6,768.3	6,651.9	14.6	15.7	107.01		-14.4	-370.9	425.9	397.6	28.28	15.057	
6,750.0	6,577.8	6,828.0	6,687.0	14.8	15.7	107.78		-62.7	-370.9	427.6	399.1	28.55	14.979	
6,800.0	6,599.3	6,888.3	6,718.4	15.1	15.8	108.46		-114.1	-370.9	429.2	400.3	28.92	14.845	
6,850.0	6,617.8	6,949.1	6,746.0	15.4	16.0	109.05		-168.3	-370.9	430.7	401.3	29.39	14.655	
6,900.0	6,633.3	7,010.5	6,769.3	15.8	16.3	109.54		-225.0	-370.9	432.0	402.0	29.98	14.406	
6,950.0	6,645.6	7,072.2	6,788.1	16.2	16.7	109.94		-283.8	-370.9	433.0	402.3	30.69	14.107	
7,000.0	6,654.7	7,134.3	6,802.2	16.6	17.2	110.23		-344.2	-370.9	433.8	402.2	31.52	13.763	
7,050.0	6,660.6	7,196.5	6,811.3	17.1	17.7	110.42		-405.8	-370.9	434.3	401.8	32.45	13.383	
7,100.0	6,663.2	7,246.7	6,816.5	17.7	18.3	110.68		-455.7	-370.9	435.2	401.8	33.35	13.050	
7,122.3	6,663.3	7,268.9	6,818.9	17.9	18.5	110.90		-477.8	-370.9	436.0	402.2	33.74	12.923	
7,200.0	6,662.6	7,358.4	6,825.0	18.8	19.5	111.74		-567.1	-370.9	438.2	402.8	35.39	12.380	
7,300.0	6,661.7	7,463.7	6,825.2	20.1	20.8	111.89		-672.4	-370.9	438.6	400.8	37.79	11.607	
7,400.0	6,660.7	7,563.7	6,824.9	21.5	22.2	111.97		-772.4	-370.9	438.8	398.5	40.32	10.884	
7,500.0	6,659.8	7,663.7	6,824.5	22.9	23.6	112.04		-872.4	-370.9	439.0	396.0	43.00	10.210	
7,600.0	6,658.8	7,763.7	6,824.2	24.5	25.1	112.11		-972.4	-370.9	439.3	393.5	45.80	9.590	
7,700.0	6,657.9	7,863.7	6,823.8	26.0	26.6	112.18		-1,072.4	-370.9	439.5	390.8	48.71	9.023	
7,800.0	6,656.9	7,963.7	6,823.5	27.6	28.2	112.25		-1,172.4	-370.9	439.7	388.0	51.69	8.506	
7,900.0	6,656.0	8,063.7	6,823.1	29.3	29.8	112.32		-1,272.4	-370.9	439.9	385.2	54.75	8.035	
8,000.0	6,655.1	8,163.7	6,822.8	31.0	31.5	112.40		-1,372.4	-370.9	440.2	382.3	57.86	7.607	
8,100.0	6,654.1	8,263.7	6,822.4	32.7	33.1	112.47		-1,472.4	-370.9	440.4	379.4	61.02	7.217	
8,200.0	6,653.2	8,363.7	6,822.1	34.4	34.8	112.54		-1,572.4	-370.9	440.6	376.4	64.22	6.860	
8,300.0	6,652.2	8,463.7	6,821.7	36.2	36.6	112.61		-1,672.4	-370.9	440.8	373.4	67.46	6.535	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Suden 34R-243
<b>Project:</b>	SEC.34-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Reference Site:</b>	Suden 34R-HZ Pad Sec.34-T5N-R64W	<b>MD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Suden 34R-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (2-24-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Suden 34R-HZ Pad Sec.34-T5N-R64W - Suden 34M-423 - Wellbore #1 - Plan #1 (2-24-14)													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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
8,400.0	6,651.3	8,563.7	6,821.4	37.9	38.3	112.68	-1,772.4	-370.9	441.1	370.3	70.72	6.236		
8,500.0	6,650.4	8,663.7	6,821.0	39.7	40.1	112.75	-1,872.4	-370.9	441.3	367.3	74.01	5.962		
8,600.0	6,649.4	8,763.7	6,820.7	41.5	41.9	112.82	-1,972.4	-370.9	441.5	364.2	77.32	5.710		
8,700.0	6,648.5	8,863.7	6,820.3	43.3	43.6	112.89	-2,072.4	-370.9	441.8	361.1	80.65	5.477		
8,800.0	6,647.5	8,963.7	6,820.0	45.1	45.4	112.96	-2,172.4	-370.9	442.0	358.0	84.00	5.262		
8,900.0	6,646.6	9,063.7	6,819.6	47.0	47.2	113.04	-2,272.4	-370.9	442.2	354.9	87.35	5.062		
9,000.0	6,645.6	9,163.7	6,819.3	48.8	49.1	113.11	-2,372.4	-370.9	442.4	351.7	90.72	4.877		
9,100.0	6,644.7	9,263.7	6,818.9	50.6	50.9	113.18	-2,472.4	-370.9	442.7	348.6	94.10	4.704		
9,200.0	6,643.8	9,363.7	6,818.6	52.5	52.7	113.25	-2,572.4	-370.9	442.9	345.4	97.48	4.543		
9,300.0	6,642.8	9,463.7	6,818.2	54.3	54.6	113.32	-2,672.4	-370.9	443.1	342.3	100.88	4.393		
9,400.0	6,641.9	9,563.7	6,817.9	56.2	56.4	113.39	-2,772.4	-370.9	443.4	339.1	104.28	4.252		
9,500.0	6,640.9	9,663.7	6,817.5	58.0	58.2	113.46	-2,872.4	-370.9	443.6	335.9	107.68	4.120		
9,600.0	6,640.0	9,763.7	6,817.2	59.9	60.1	113.53	-2,972.3	-370.9	443.9	332.8	111.09	3.995		
9,700.0	6,639.0	9,863.7	6,816.8	61.8	62.0	113.60	-3,072.3	-370.9	444.1	329.6	114.51	3.878		
9,800.0	6,638.1	9,963.7	6,816.5	63.6	63.8	113.67	-3,172.3	-370.9	444.3	326.4	117.92	3.768		
9,900.0	6,637.2	10,063.7	6,816.1	65.5	65.7	113.74	-3,272.3	-370.9	444.6	323.2	121.34	3.664		
10,000.0	6,636.2	10,163.7	6,815.8	67.4	67.5	113.81	-3,372.3	-370.9	444.8	320.0	124.77	3.565		
10,100.0	6,635.3	10,263.7	6,815.4	69.2	69.4	113.88	-3,472.3	-370.9	445.1	316.9	128.19	3.472		
10,200.0	6,634.3	10,363.7	6,815.1	71.1	71.3	113.95	-3,572.3	-370.9	445.3	313.7	131.61	3.383		
10,300.0	6,633.4	10,463.7	6,814.7	73.0	73.2	114.02	-3,672.3	-370.9	445.5	310.5	135.04	3.299		
10,400.0	6,632.4	10,563.7	6,814.4	74.9	75.0	114.09	-3,772.3	-370.9	445.8	307.3	138.47	3.219		
10,500.0	6,631.5	10,663.7	6,814.0	76.8	76.9	114.16	-3,872.3	-370.9	446.0	304.1	141.89	3.143		
10,600.0	6,630.6	10,763.7	6,813.7	78.7	78.8	114.23	-3,972.3	-370.9	446.3	300.9	145.32	3.071		
10,700.0	6,629.6	10,863.7	6,813.3	80.5	80.7	114.30	-4,072.3	-370.9	446.5	297.8	148.74	3.002		
10,800.0	6,628.7	10,963.7	6,813.0	82.4	82.6	114.37	-4,172.3	-370.9	446.7	294.6	152.17	2.936		
10,900.0	6,627.7	11,063.7	6,812.6	84.3	84.4	114.44	-4,272.3	-370.9	447.0	291.4	155.59	2.873		
11,000.0	6,626.8	11,163.7	6,812.3	86.2	86.3	114.50	-4,372.3	-370.9	447.2	288.2	159.02	2.812		
11,083.8	6,626.0	11,246.9	6,812.0	87.8	87.9	114.56	-4,455.5	-370.9	447.4	285.6	161.88	2.764 SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Suden 34R-243
<b>Project:</b>	SEC.34-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Reference Site:</b>	Suden 34R-HZ Pad Sec.34-T5N-R64W	<b>MD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Suden 34R-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (2-24-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Suden 34R-HZ Pad Sec.34-T5N-R64W - Suden 34R-403 - Wellbore #1 - Plan #1 (2-24-14)													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 (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	
0.0	0.0	0.0	0.0	0.0	0.0	89.99	0.0	30.7	30.7					
100.0	100.0	100.0	100.0	0.1	0.1	89.99	0.0	30.7	30.7	30.4	0.22	136.384		
200.0	200.0	200.0	200.0	0.3	0.3	89.99	0.0	30.7	30.7	30.0	0.67	45.461		
300.0	300.0	300.0	300.0	0.6	0.6	89.99	0.0	30.7	30.7	29.5	1.12	27.277		
400.0	400.0	400.0	400.0	0.8	0.8	89.99	0.0	30.7	30.7	29.1	1.57	19.483		
500.0	500.0	500.0	500.0	1.0	1.0	89.99	0.0	30.7	30.7	28.6	2.02	15.154		
600.0	600.0	600.0	600.0	1.2	1.2	89.99	0.0	30.7	30.7	28.2	2.47	12.399		
700.0	700.0	700.0	700.0	1.5	1.5	89.99	0.0	30.7	30.7	27.7	2.92	10.491		
800.0	800.0	800.0	800.0	1.7	1.7	89.99	0.0	30.7	30.7	27.3	3.37	9.092		
900.0	900.0	900.0	900.0	1.9	1.9	89.99	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	89.99	0.0	30.7	30.7	26.4	4.27	7.178		
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	89.99	0.0	30.7	30.7	25.9	4.72	6.494		
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	89.99	0.0	30.7	30.7	25.5	5.17	5.930		
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	89.99	0.0	30.7	30.7	25.0	5.62	5.455		
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	89.99	0.0	30.7	30.7	24.6	6.07	5.051		
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	89.99	0.0	30.7	30.7	24.1	6.52	4.703 CC, ES		
1,600.0	1,600.0	1,599.2	1,599.2	3.5	3.5	87.77	1.2	31.8	31.9	24.9	6.96	4.580		
1,700.0	1,700.0	1,698.2	1,698.0	3.7	3.7	82.07	4.9	35.4	35.8	28.4	7.40	4.838		
1,800.0	1,800.0	1,796.8	1,796.3	3.9	3.9	75.04	11.0	41.3	42.9	35.1	7.85	5.473		
1,900.0	1,900.0	1,896.3	1,895.3	4.2	4.2	69.31	18.2	48.3	51.8	43.5	8.29	6.252		
2,000.0	2,000.0	1,995.8	1,994.3	4.4	4.4	65.28	25.4	55.2	61.1	52.4	8.73	6.994		
2,100.0	2,100.0	2,095.4	2,093.4	4.6	4.6	55.94	32.6	62.2	69.6	60.4	9.18	7.581		
2,200.0	2,199.8	2,195.2	2,192.6	4.8	4.9	56.58	39.8	69.2	76.2	66.5	9.62	7.915		
2,300.0	2,299.5	2,295.0	2,292.0	5.1	5.1	59.21	47.1	76.2	80.9	70.8	10.07	8.035		
2,337.2	2,336.4	2,332.1	2,328.9	5.1	5.2	60.65	49.7	78.8	82.3	72.0	10.24	8.036		
2,400.0	2,398.8	2,394.8	2,391.2	5.3	5.4	63.26	54.3	83.1	84.5	74.0	10.53	8.025		
2,500.0	2,498.1	2,494.5	2,490.5	5.5	5.7	67.13	61.5	90.1	88.4	77.4	11.01	8.031		
2,600.0	2,597.4	2,594.3	2,589.7	5.8	5.9	70.65	68.7	97.1	92.7	81.2	11.50	8.061		
2,700.0	2,696.7	2,694.0	2,688.9	6.0	6.2	73.85	75.9	104.1	97.3	85.3	12.01	8.107		
2,800.0	2,796.0	2,793.8	2,788.2	6.3	6.5	76.76	83.1	111.1	102.2	89.7	12.52	8.165		
2,900.0	2,895.3	2,893.5	2,887.4	6.5	6.7	79.39	90.3	118.0	107.3	94.3	13.04	8.231		
3,000.0	2,994.6	2,993.3	2,986.7	6.8	7.0	81.79	97.6	125.0	112.7	99.1	13.57	8.303		
3,100.0	3,093.9	3,093.0	3,085.9	7.1	7.3	83.96	104.8	132.0	118.2	104.1	14.11	8.378		
3,200.0	3,193.3	3,192.8	3,185.2	7.3	7.5	85.94	112.0	139.0	123.8	109.2	14.65	8.455		
3,300.0	3,292.6	3,292.5	3,284.4	7.6	7.8	87.74	119.2	145.9	129.6	114.4	15.19	8.533		
3,400.0	3,391.9	3,392.3	3,383.7	7.9	8.1	89.38	126.4	152.9	135.5	119.8	15.74	8.610		
3,500.0	3,491.2	3,492.0	3,482.9	8.2	8.4	90.89	133.6	159.9	141.6	125.3	16.30	8.686		
3,600.0	3,590.5	3,591.8	3,582.2	8.5	8.6	92.28	140.8	166.9	147.7	130.8	16.85	8.762		
3,700.0	3,689.8	3,691.6	3,681.4	8.7	8.9	93.55	148.1	173.8	153.8	136.4	17.41	8.835		
3,800.0	3,789.1	3,791.3	3,780.7	9.0	9.2	94.73	155.3	180.8	160.1	142.1	17.97	8.907		
3,900.0	3,888.4	3,891.1	3,879.9	9.3	9.5	95.81	162.5	187.8	166.4	147.9	18.54	8.977		
4,000.0	3,987.7	3,990.8	3,979.1	9.6	9.8	96.82	169.7	194.8	172.8	153.7	19.10	9.045		
4,100.0	4,087.0	4,090.6	4,078.4	9.9	10.0	97.76	176.9	201.7	179.2	159.5	19.67	9.111		
4,200.0	4,186.3	4,190.3	4,177.6	10.2	10.3	98.63	184.1	208.7	185.7	165.4	20.24	9.175		
4,300.0	4,285.6	4,290.1	4,276.9	10.5	10.6	99.44	191.3	215.7	192.2	171.4	20.81	9.237		
4,378.5	4,363.6	4,368.4	4,354.8	10.7	10.8	100.04	197.0	221.2	197.3	176.0	21.25	9.284		
4,400.0	4,385.0	4,389.8	4,376.1	10.8	10.9	100.20	198.6	222.7	198.7	177.3	21.37	9.298		
4,500.0	4,484.5	4,489.6	4,475.4	11.0	11.2	100.34	205.8	229.7	204.8	182.9	21.86	9.368		
4,600.0	4,584.4	4,589.4	4,574.7	11.2	11.5	99.54	213.0	236.6	210.3	188.0	22.32	9.421		
4,700.0	4,684.3	4,689.1	4,673.9	11.4	11.7	97.86	220.2	243.6	215.4	192.6	22.75	9.469		
4,715.7	4,700.0	4,704.7	4,689.4	11.4	11.8	104.95	221.3	244.7	216.2	193.4	22.81	9.476		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Suden 34R-243
<b>Project:</b>	SEC.34-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Reference Site:</b>	Suden 34R-HZ Pad Sec.34-T5N-R64W	<b>MD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Suden 34R-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (2-24-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Suden 34R-HZ Pad Sec.34-T5N-R64W - Suden 34R-403 - Wellbore #1 - Plan #1 (2-24-14)											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	4,784.3	4,788.6	4,772.9	11.5	12.0	103.03	227.4	250.6	220.4	197.3	23.16	9.518			
4,900.0	4,884.3	4,888.1	4,871.8	11.7	12.3	100.85	234.6	257.5	225.8	202.2	23.59	9.573			
5,000.0	4,984.3	4,987.5	4,970.8	11.9	12.6	98.77	241.8	264.5	231.5	207.5	24.01	9.641			
5,100.0	5,084.3	5,087.0	5,069.8	12.1	12.9	96.79	249.0	271.4	237.4	213.0	24.43	9.720			
5,200.0	5,184.3	5,186.5	5,168.8	12.3	13.2	94.91	256.2	278.4	243.7	218.8	24.85	9.807			
5,300.0	5,284.3	5,286.0	5,267.8	12.5	13.4	93.13	263.4	285.4	250.2	224.9	25.26	9.903			
5,400.0	5,384.3	5,389.1	5,370.4	12.7	13.7	91.48	270.4	292.1	256.5	230.8	25.67	9.993			
5,500.0	5,484.3	5,495.5	5,476.6	12.9	13.9	90.42	275.1	296.7	260.7	234.7	26.05	10.009			
5,600.0	5,584.3	5,602.2	5,583.3	13.2	14.1	90.01	277.0	298.5	262.4	236.0	26.43	9.930			
5,700.0	5,684.3	5,703.3	5,684.3	13.4	14.3	90.00	277.0	298.6	262.5	235.6	26.82	9.787			
5,800.0	5,784.3	5,803.3	5,784.3	13.6	14.5	90.00	277.0	298.6	262.5	235.2	27.22	9.640			
5,900.0	5,884.3	5,903.3	5,884.3	13.8	14.7	90.00	277.0	298.6	262.5	234.8	27.63	9.498			
5,915.1	5,899.4	5,918.4	5,899.4	13.8	14.7	90.00	277.0	298.6	262.5	234.8	27.70	9.476			
5,921.1	5,905.4	5,924.3	5,905.4	13.8	14.7	-90.01	277.0	298.6	262.5	234.7	27.72	9.469			
5,950.0	5,934.3	5,953.3	5,934.3	13.9	14.8	-90.17	277.0	298.6	262.5	234.6	27.82	9.434			
6,000.0	5,984.1	6,003.1	5,984.1	13.9	14.9	-91.02	277.0	298.6	262.5	234.5	27.96	9.390			
6,050.0	6,033.6	6,052.6	6,033.6	14.0	15.0	-92.55	277.0	298.6	262.7	234.7	28.05	9.366			
6,100.0	6,082.5	6,102.4	6,083.4	14.0	15.0	-94.62	276.3	298.6	263.3	235.2	28.10	9.373			
6,150.0	6,130.6	6,153.1	6,134.0	14.0	15.1	-96.72	272.6	298.6	264.3	236.2	28.10	9.408			
6,200.0	6,177.8	6,204.6	6,185.0	14.0	15.1	-98.80	265.3	298.6	265.7	237.6	28.07	9.467			
6,250.0	6,223.7	6,256.8	6,236.0	14.0	15.2	-100.83	254.4	298.6	267.4	239.4	28.00	9.548			
6,300.0	6,268.2	6,309.8	6,287.0	14.0	15.2	-102.80	239.9	298.6	269.4	241.5	27.92	9.649			
6,350.0	6,311.2	6,363.5	6,337.4	14.0	15.2	-104.71	221.5	298.6	271.7	243.8	27.81	9.768			
6,400.0	6,352.4	6,418.0	6,387.2	14.0	15.2	-106.54	199.4	298.6	274.1	246.5	27.69	9.899			
6,450.0	6,391.7	6,473.3	6,435.9	14.0	15.2	-108.28	173.3	298.6	276.8	249.2	27.57	10.040			
6,500.0	6,428.8	6,529.3	6,483.3	14.1	15.2	-109.92	143.4	298.6	279.6	252.2	27.46	10.184			
6,550.0	6,463.7	6,586.2	6,529.0	14.1	15.2	-111.46	109.6	298.6	282.5	255.1	27.36	10.325			
6,600.0	6,496.2	6,643.7	6,572.5	14.2	15.2	-112.88	71.9	298.6	285.3	258.0	27.29	10.455			
6,650.0	6,526.1	6,702.1	6,613.6	14.4	15.2	-114.19	30.6	298.6	288.2	260.9	27.27	10.566			
6,700.0	6,553.3	6,761.1	6,651.9	14.6	15.2	-115.38	-14.4	298.6	290.9	263.6	27.33	10.644			
6,750.0	6,577.8	6,820.8	6,687.0	14.8	15.2	-116.44	-62.7	298.6	293.5	266.0	27.44	10.695			
6,800.0	6,599.3	6,881.1	6,718.4	15.1	15.4	-117.37	-114.1	298.6	295.8	268.2	27.66	10.695			
6,850.0	6,617.8	6,941.9	6,746.0	15.4	15.6	-118.17	-168.3	298.6	297.9	270.0	27.98	10.648			
6,900.0	6,633.3	7,003.3	6,769.3	15.8	16.0	-118.83	-225.0	298.6	299.8	271.3	28.41	10.549			
6,950.0	6,645.6	7,065.0	6,788.1	16.2	16.5	-119.36	-283.8	298.6	301.2	272.3	28.98	10.396			
7,000.0	6,654.7	7,127.1	6,802.2	16.6	17.0	-119.75	-344.2	298.6	302.3	272.7	29.66	10.194			
7,050.0	6,660.6	7,189.4	6,811.3	17.1	17.6	-120.00	-405.8	298.6	303.1	272.6	30.46	9.949			
7,100.0	6,663.2	7,239.5	6,816.5	17.7	18.1	-120.34	-455.7	298.6	304.4	273.2	31.23	9.747			
7,122.3	6,663.3	7,261.7	6,818.9	17.9	18.3	-120.63	-477.8	298.6	305.5	274.0	31.55	9.684			
7,200.0	6,662.6	7,351.3	6,825.0	18.8	19.4	-121.73	-567.1	298.6	308.7	275.7	32.94	9.369			
7,300.0	6,661.7	7,456.6	6,825.2	20.1	20.7	-121.93	-672.4	298.6	309.2	274.1	35.14	8.800			
7,400.0	6,660.7	7,556.6	6,824.9	21.5	22.0	-122.02	-772.4	298.6	309.6	272.1	37.47	8.261			
7,500.0	6,659.8	7,656.6	6,824.5	22.9	23.5	-122.11	-872.4	298.6	309.9	269.9	39.94	7.758			
7,600.0	6,658.8	7,756.6	6,824.2	24.5	24.9	-122.21	-972.4	298.6	310.2	267.7	42.52	7.294			
7,700.0	6,657.9	7,856.6	6,823.8	26.0	26.5	-122.30	-1,072.4	298.6	310.5	265.3	45.20	6.870			
7,800.0	6,656.9	7,956.6	6,823.5	27.6	28.1	-122.39	-1,172.4	298.6	310.8	262.9	47.95	6.483			
7,900.0	6,656.0	8,056.6	6,823.1	29.3	29.7	-122.48	-1,272.4	298.6	311.1	260.4	50.76	6.130			
8,000.0	6,655.1	8,156.6	6,822.8	31.0	31.4	-122.58	-1,372.4	298.6	311.5	257.8	53.62	5.809			
8,100.0	6,654.1	8,256.5	6,822.4	32.7	33.1	-122.67	-1,472.4	298.6	311.8	255.3	56.52	5.516			
8,200.0	6,653.2	8,356.5	6,822.1	34.4	34.8	-122.76	-1,572.4	298.6	312.1	252.6	59.46	5.249			
8,300.0	6,652.2	8,456.5	6,821.7	36.2	36.5	-122.85	-1,672.4	298.6	312.4	250.0	62.43	5.005			

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



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Suden 34R-243
<b>Project:</b>	SEC.34-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Reference Site:</b>	Suden 34R-HZ Pad Sec.34-T5N-R64W	<b>MD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Suden 34R-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (2-24-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Suden 34R-HZ Pad Sec.34-T5N-R64W - Suden 34R-403 - Wellbore #1 - Plan #1 (2-24-14)													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	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,400.0	6,651.3	8,556.5	6,821.4	37.9	38.2	-122.94	-122.94	-1,772.4	298.6	312.7	247.3	65.42	4.781	
8,500.0	6,650.4	8,656.5	6,821.0	39.7	40.0	-123.03	-123.03	-1,872.4	298.6	313.1	244.6	68.43	4.575	
8,600.0	6,649.4	8,756.5	6,820.7	41.5	41.8	-123.13	-123.13	-1,972.4	298.6	313.4	241.9	71.46	4.385	
8,700.0	6,648.5	8,856.5	6,820.3	43.3	43.6	-123.22	-123.22	-2,072.4	298.6	313.7	239.2	74.51	4.211	
8,800.0	6,647.5	8,956.5	6,820.0	45.1	45.4	-123.31	-123.31	-2,172.4	298.6	314.0	236.5	77.56	4.049	
8,900.0	6,646.6	9,056.5	6,819.6	47.0	47.2	-123.40	-123.40	-2,272.4	298.6	314.4	233.7	80.63	3.899	
9,000.0	6,645.6	9,156.5	6,819.3	48.8	49.0	-123.49	-123.49	-2,372.4	298.6	314.7	231.0	83.70	3.760	
9,100.0	6,644.7	9,256.5	6,818.9	50.6	50.8	-123.58	-123.58	-2,472.4	298.6	315.0	228.2	86.78	3.630	
9,200.0	6,643.8	9,356.5	6,818.6	52.5	52.7	-123.67	-123.67	-2,572.4	298.6	315.3	225.5	89.87	3.509	
9,300.0	6,642.8	9,456.5	6,818.2	54.3	54.5	-123.76	-123.76	-2,672.4	298.6	315.7	222.7	92.96	3.396	
9,400.0	6,641.9	9,556.5	6,817.9	56.2	56.4	-123.85	-123.85	-2,772.4	298.6	316.0	220.0	96.05	3.290	
9,500.0	6,640.9	9,656.5	6,817.5	58.0	58.2	-123.94	-123.94	-2,872.4	298.6	316.3	217.2	99.15	3.190	
9,600.0	6,640.0	9,756.5	6,817.2	59.9	60.1	-124.02	-124.02	-2,972.3	298.6	316.7	214.4	102.25	3.097	
9,700.0	6,639.0	9,856.5	6,816.8	61.8	61.9	-124.11	-124.11	-3,072.3	298.6	317.0	211.7	105.35	3.009	
9,800.0	6,638.1	9,956.5	6,816.5	63.6	63.8	-124.20	-124.20	-3,172.3	298.6	317.3	208.9	108.45	2.926	
9,900.0	6,637.2	10,056.5	6,816.1	65.5	65.7	-124.29	-124.29	-3,272.3	298.6	317.7	206.1	111.55	2.848	
10,000.0	6,636.2	10,156.5	6,815.8	67.4	67.5	-124.38	-124.38	-3,372.3	298.6	318.0	203.4	114.65	2.774	
10,100.0	6,635.3	10,256.5	6,815.4	69.2	69.4	-124.47	-124.47	-3,472.3	298.6	318.3	200.6	117.75	2.704	
10,200.0	6,634.3	10,356.5	6,815.1	71.1	71.3	-124.55	-124.55	-3,572.3	298.6	318.7	197.8	120.84	2.637	
10,300.0	6,633.4	10,456.5	6,814.7	73.0	73.1	-124.64	-124.64	-3,672.3	298.6	319.0	195.1	123.94	2.574	
10,400.0	6,632.4	10,556.5	6,814.4	74.9	75.0	-124.73	-124.73	-3,772.3	298.6	319.4	192.3	127.03	2.514	
10,500.0	6,631.5	10,656.5	6,814.0	76.8	76.9	-124.82	-124.82	-3,872.3	298.6	319.7	189.6	130.12	2.457	
10,600.0	6,630.6	10,756.5	6,813.7	78.7	78.8	-124.90	-124.90	-3,972.3	298.6	320.0	186.8	133.21	2.402	
10,700.0	6,629.6	10,856.5	6,813.3	80.5	80.7	-124.99	-124.99	-4,072.3	298.6	320.4	184.1	136.30	2.350	
10,800.0	6,628.7	10,956.5	6,813.0	82.4	82.6	-125.08	-125.08	-4,172.3	298.6	320.7	181.3	139.38	2.301	
10,900.0	6,627.7	11,056.5	6,812.6	84.3	84.4	-125.17	-125.17	-4,272.3	298.6	321.1	178.6	142.46	2.254	
11,000.0	6,626.8	11,156.5	6,812.3	86.2	86.3	-125.25	-125.25	-4,372.3	298.6	321.4	175.9	145.54	2.208	
11,083.8	6,626.0	11,239.7	6,812.0	87.8	87.9	-125.32	-125.32	-4,455.5	298.6	321.7	173.6	148.11	2.172 SF	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Suden 34R-243
<b>Project:</b>	SEC.34-T5N-R64W	<b>TVD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Reference Site:</b>	Suden 34R-HZ Pad Sec.34-T5N-R64W	<b>MD Reference:</b>	WELL @ 4683.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Suden 34R-243	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (2-24-14)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4683.0ft (RKB - 15')

Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Suden 34R-243





Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.63°





Coordinates are relative to: Suden 34R-243  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.63°

34M-423, Wellbore #1, Plan #1 (2-24-14) VD		Eckhardt 34-1 (Existing), Wellbore #1, Wellbore #1 VD		Gamewell 34-2 (Existing), Wellbore #1
34R-403, Wellbore #1, Plan #1 (2-24-14) VD		Eckhardt 34-34 (Existing), Wellbore #1, Wellbore #1 VD		
34M-323, Wellbore #1, Plan #1 (2-24-14) VD		Gamewell 34-1 (Existing), Wellbore #1, Wellbore #1 VD		