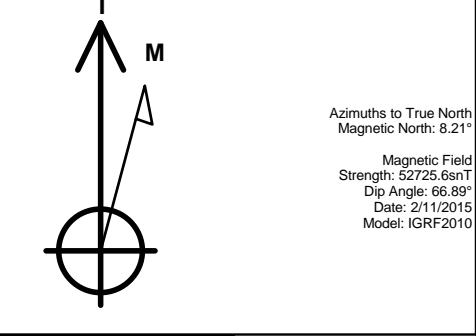


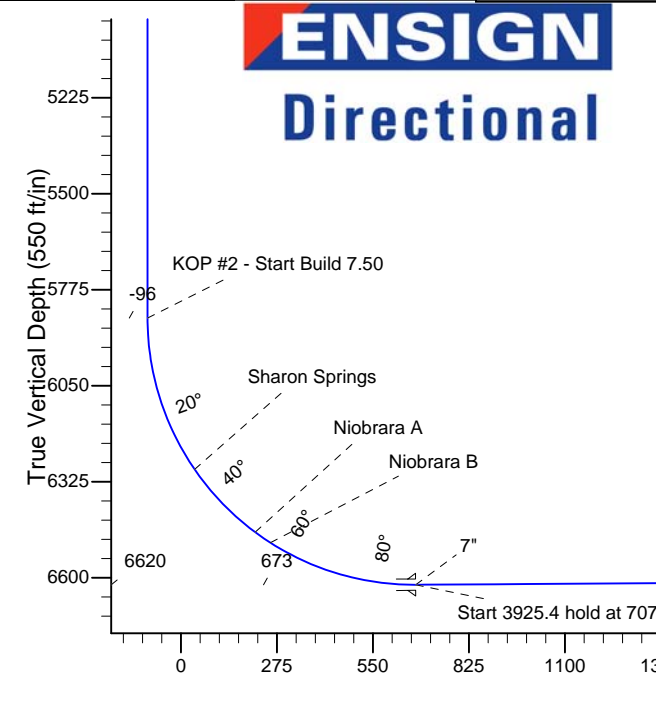
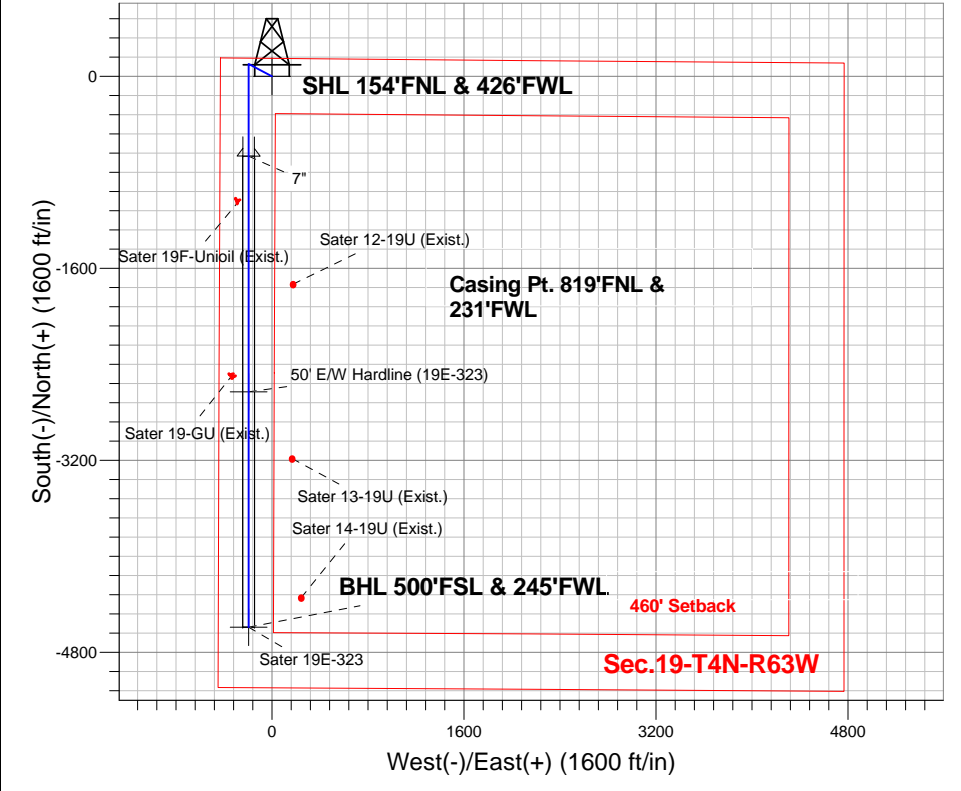
PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Sater 19E-323**  
Surface Location: Sater 4N63W19E Pad Sec.19-T4N-R63W  
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone  
Ground Elevation: 4661.0  
+N/-S +E/-W Northing Easting Latitude Longitude Slot  
0.0 0.0 1355373.15 3282198.86 40.304480 -104.488160  
RKB - 13' WELL @ 4674.0ft (RKB - 13')

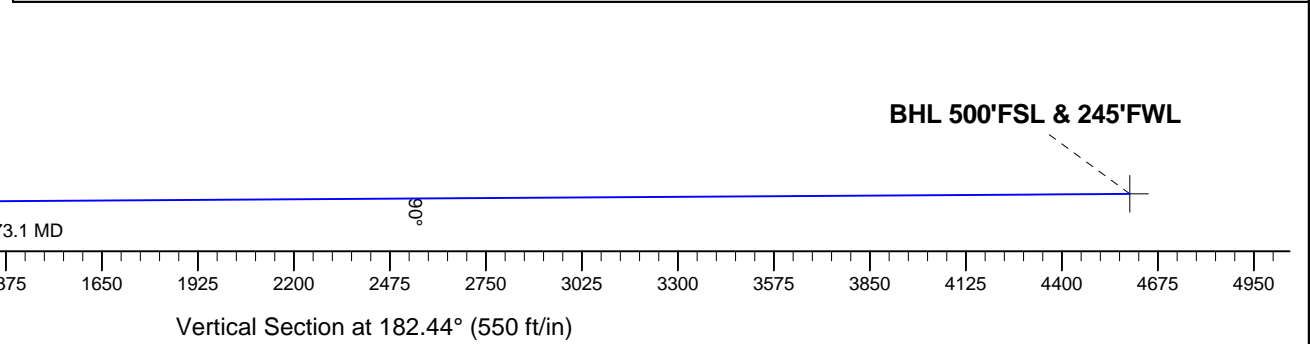
WELLBORE TARGET DETAILS				
Name	TVD	+N/-S	+E/-W	Shape
50' E/W Hardline (19E-323)	1.0	-2627.6	-195.3	Rectangle (Sides: L3925.3 W100.0)
SHL 154'FNL & 426'FWL	1.0	0.0	0.0	Point
BHL 500'FSL & 245'FWL	6595.0	-4590.2	-195.3	Point



Sater 4N63W19E Pad Sec.19-T4N-R63W Sater 19E-323 Plan #1 (2-11-15) 10:45, February 12 2015		
ANNOTATIONS		
TVD	MD	Annotation
1800.0	1800.0	KOP - Start Build 1.00
3868.9	3879.9	Start Drop -2.00
5856.4	5868.1	KOP #2 - Start Build 7.50
6620.3	7073.1	Start 3925.4 hold at 7073.1 MD
6595.0	10998.5	TD at 10998.5



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	1800.0	0.00	0.00	1800.0	0.0	0.0	0.00	0.00	0.0	
3	2463.6	6.64	298.04	2462.1	18.0	-33.9	1.00	298.04	-16.6	
4	3879.9	6.64	298.04	3869.0	95.0	-178.3	0.00	0.00	-87.3	
5	4211.7	0.00	0.00	4200.0	104.0	-195.3	2.00	180.00	-95.6	
6	5868.1	0.00	0.00	5856.4	104.0	-195.3	0.00	0.00	-95.6	
7	7073.1	90.37	180.00	6620.3	-664.9	-195.3	7.50	180.00	672.6	
8	10998.5	90.37	180.00	6595.0	-4590.2	-195.3	0.00	0.00	4594.4	BHL 500'FSL & 245'FWL





# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.19-T4N-R63W**

**Sater 4N63W19E Pad Sec.19-T4N-R63W**

**Sater 19E-323**

**Wellbore #1**

**Plan: Plan #1 (2-11-15)**

## **Standard Planning Report**

**12 February, 2015**

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Sater 19E-323
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Project:</b>	SEC.19-T4N-R63W	<b>MD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Site:</b>	Sater 4N63W19E Pad Sec.19-T4N-R63W	<b>North Reference:</b>	True
<b>Well:</b>	Sater 19E-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (2-11-15)		

<b>Project</b>	SEC.19-T4N-R63W, Weld County, CO		
<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						Sater 4N63W19E Pad Sec.19-T4N-R63W							
Site Position: From: Position Uncertainty:			Lat/Long  0.0 ft			Northing:		1,355,372.81 ft		Latitude:		40.304480	
						Easting:		3,282,168.18 ft		Longitude:		-104.488270	
						Slot Radius:		"		Grid Convergence:		0.65 °	

Well	Sater 19E-323					
Well Position	+N/-S	0.0 ft	Northing:	1,355,373.15 ft	Latitude:	40.304480
	+E/-W	30.7 ft	Easting:	3,282,198.86 ft	Longitude:	-104.488160
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,661.0 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	2/11/2015	8.21	66.89	52,726

<b>Design</b>	Plan #1 (2-11-15)			
<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	182.44

<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	
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,463.6	6.64	298.04	2,462.1	18.0	-33.9	1.00	1.00	0.00	298.04	
3,879.9	6.64	298.04	3,869.0	95.0	-178.3	0.00	0.00	0.00	0.00	
4,211.7	0.00	0.00	4,200.0	104.0	-195.3	2.00	-2.00	0.00	180.00	
5,868.1	0.00	0.00	5,856.4	104.0	-195.3	0.00	0.00	0.00	0.00	
7,073.1	90.37	180.00	6,620.3	-664.9	-195.3	7.50	7.50	0.00	180.00	
10,998.5	90.37	180.00	6,595.0	-4,590.2	-195.3	0.00	0.00	0.00	0.00	BHL 500'FSL & 245

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Sater 19E-323
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Project:</b>	SEC.19-T4N-R63W	<b>MD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Site:</b>	Sater 4N63W19E Pad Sec.19-T4N-R63W	<b>North Reference:</b>	True
<b>Well:</b>	Sater 19E-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (2-11-15)		

## 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>50' E/W Hardline (19E-323) - SHL 154'FNL &amp; 426'FWL</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
<b>KOP - Start Build 1.00</b>									
1,900.0	1.00	298.04	1,900.0	0.4	-0.8	-0.4	1.00	1.00	0.00
2,000.0	2.00	298.04	2,000.0	1.6	-3.1	-1.5	1.00	1.00	0.00
2,100.0	3.00	298.04	2,099.9	3.7	-6.9	-3.4	1.00	1.00	0.00
2,200.0	4.00	298.04	2,199.7	6.6	-12.3	-6.0	1.00	1.00	0.00
2,300.0	5.00	298.04	2,299.4	10.2	-19.2	-9.4	1.00	1.00	0.00
2,400.0	6.00	298.04	2,398.9	14.8	-27.7	-13.6	1.00	1.00	0.00
2,463.6	6.64	298.04	2,462.1	18.0	-33.9	-16.6	1.00	1.00	0.00
2,500.0	6.64	298.04	2,498.3	20.0	-37.6	-18.4	0.00	0.00	0.00
2,600.0	6.64	298.04	2,597.6	25.5	-47.8	-23.4	0.00	0.00	0.00
2,700.0	6.64	298.04	2,696.9	30.9	-58.0	-28.4	0.00	0.00	0.00
2,800.0	6.64	298.04	2,796.3	36.3	-68.2	-33.4	0.00	0.00	0.00
2,900.0	6.64	298.04	2,895.6	41.7	-78.4	-38.4	0.00	0.00	0.00
3,000.0	6.64	298.04	2,994.9	47.2	-88.6	-43.4	0.00	0.00	0.00
3,100.0	6.64	298.04	3,094.3	52.6	-98.8	-48.4	0.00	0.00	0.00
3,200.0	6.64	298.04	3,193.6	58.0	-109.0	-53.4	0.00	0.00	0.00
3,300.0	6.64	298.04	3,292.9	63.5	-119.2	-58.4	0.00	0.00	0.00
3,400.0	6.64	298.04	3,392.2	68.9	-129.4	-63.3	0.00	0.00	0.00
3,458.1	6.64	298.04	3,450.0	72.1	-135.3	-66.3	0.00	0.00	0.00
<b>Parkman</b>									
3,500.0	6.64	298.04	3,491.6	74.3	-139.6	-68.3	0.00	0.00	0.00
3,600.0	6.64	298.04	3,590.9	79.8	-149.8	-73.3	0.00	0.00	0.00
3,700.0	6.64	298.04	3,690.2	85.2	-160.0	-78.3	0.00	0.00	0.00
3,800.0	6.64	298.04	3,789.6	90.6	-170.2	-83.3	0.00	0.00	0.00
3,879.9	6.64	298.04	3,868.9	95.0	-178.3	-87.3	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
3,900.0	6.23	298.04	3,888.9	96.0	-180.3	-88.3	2.00	-2.00	0.00
4,000.0	4.23	298.04	3,988.5	100.3	-188.4	-92.2	2.00	-2.00	0.00
4,100.0	2.23	298.04	4,088.3	103.0	-193.4	-94.7	2.00	-2.00	0.00
4,111.7	2.00	298.04	4,100.0	103.2	-193.7	-94.9	2.00	-2.00	0.00
<b>Sussex</b>									
4,200.0	0.23	298.04	4,188.3	104.0	-195.3	-95.6	2.00	-2.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Sater 19E-323
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Project:</b>	SEC.19-T4N-R63W	<b>MD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Site:</b>	Sater 4N63W19E Pad Sec.19-T4N-R63W	<b>North Reference:</b>	True
<b>Well:</b>	Sater 19E-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (2-11-15)		

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)
4,211.7	0.00	0.00	4,200.0	104.0	-195.3	-95.6	2.00	-2.00	0.00
4,300.0	0.00	0.00	4,288.3	104.0	-195.3	-95.6	0.00	0.00	0.00
4,400.0	0.00	0.00	4,388.3	104.0	-195.3	-95.6	0.00	0.00	0.00
4,500.0	0.00	0.00	4,488.3	104.0	-195.3	-95.6	0.00	0.00	0.00
4,600.0	0.00	0.00	4,588.3	104.0	-195.3	-95.6	0.00	0.00	0.00
4,700.0	0.00	0.00	4,688.3	104.0	-195.3	-95.6	0.00	0.00	0.00
4,800.0	0.00	0.00	4,788.3	104.0	-195.3	-95.6	0.00	0.00	0.00
4,876.7	0.00	0.00	4,865.0	104.0	-195.3	-95.6	0.00	0.00	0.00
<b>Shannon</b>									
4,900.0	0.00	0.00	4,888.3	104.0	-195.3	-95.6	0.00	0.00	0.00
5,000.0	0.00	0.00	4,988.3	104.0	-195.3	-95.6	0.00	0.00	0.00
5,100.0	0.00	0.00	5,088.3	104.0	-195.3	-95.6	0.00	0.00	0.00
5,200.0	0.00	0.00	5,188.3	104.0	-195.3	-95.6	0.00	0.00	0.00
5,300.0	0.00	0.00	5,288.3	104.0	-195.3	-95.6	0.00	0.00	0.00
5,400.0	0.00	0.00	5,388.3	104.0	-195.3	-95.6	0.00	0.00	0.00
5,500.0	0.00	0.00	5,488.3	104.0	-195.3	-95.6	0.00	0.00	0.00
5,600.0	0.00	0.00	5,588.3	104.0	-195.3	-95.6	0.00	0.00	0.00
5,700.0	0.00	0.00	5,688.3	104.0	-195.3	-95.6	0.00	0.00	0.00
5,800.0	0.00	0.00	5,788.3	104.0	-195.3	-95.6	0.00	0.00	0.00
5,868.1	0.00	0.00	5,856.4	104.0	-195.3	-95.6	0.00	0.00	0.00
<b>KOP #2 - Start Build 7.50</b>									
5,900.0	2.39	180.00	5,888.3	103.3	-195.3	-94.9	7.49	7.49	0.00
6,000.0	9.89	180.00	5,987.6	92.6	-195.3	-84.3	7.50	7.50	0.00
6,100.0	17.39	180.00	6,084.7	69.1	-195.3	-60.7	7.50	7.50	0.00
6,200.0	24.89	180.00	6,177.9	33.0	-195.3	-24.7	7.50	7.50	0.00
6,300.0	32.39	180.00	6,265.7	-14.9	-195.3	23.1	7.50	7.50	0.00
6,329.2	34.58	180.00	6,290.0	-31.0	-195.3	39.2	7.50	7.50	0.00
<b>Sharon Springs</b>									
6,400.0	39.89	180.00	6,346.4	-73.8	-195.3	82.0	7.50	7.50	0.00
6,500.0	47.39	180.00	6,418.7	-142.8	-195.3	150.9	7.50	7.50	0.00
6,580.6	53.43	180.00	6,470.0	-204.8	-195.3	212.9	7.50	7.50	0.00
<b>Niobrara A</b>									
6,600.0	54.89	180.00	6,481.4	-220.6	-195.3	228.7	7.50	7.50	0.00
6,633.5	57.40	180.00	6,500.0	-248.3	-195.3	256.4	7.50	7.50	0.00
<b>Niobrara B</b>									
6,700.0	62.39	180.00	6,533.4	-305.9	-195.3	313.9	7.50	7.50	0.00
6,800.0	69.89	180.00	6,573.8	-397.3	-195.3	405.2	7.50	7.50	0.00
6,870.7	75.19	180.00	6,595.0	-464.7	-195.3	472.6	7.50	7.50	0.00
<b>Niobrara C</b>									
6,900.0	77.39	180.00	6,601.9	-493.2	-195.3	501.0	7.50	7.50	0.00
7,000.0	84.89	180.00	6,617.3	-591.9	-195.3	599.7	7.50	7.50	0.00
7,073.1	90.37	180.00	6,620.3	-664.9	-195.3	672.6	7.50	7.50	0.00
<b>Start 3925.4 hold at 7073.1 MD - 7"</b>									
7,100.0	90.37	180.00	6,620.2	-691.8	-195.3	699.5	0.00	0.00	0.00
7,200.0	90.37	180.00	6,619.5	-791.8	-195.3	799.4	0.00	0.00	0.00
7,300.0	90.37	180.00	6,618.9	-891.8	-195.3	899.3	0.00	0.00	0.00
7,400.0	90.37	180.00	6,618.2	-991.8	-195.3	999.2	0.00	0.00	0.00
7,500.0	90.37	180.00	6,617.6	-1,091.8	-195.3	1,099.1	0.00	0.00	0.00
7,600.0	90.37	180.00	6,616.9	-1,191.8	-195.3	1,199.0	0.00	0.00	0.00
7,700.0	90.37	180.00	6,616.3	-1,291.8	-195.3	1,298.9	0.00	0.00	0.00
7,800.0	90.37	180.00	6,615.7	-1,391.8	-195.3	1,398.8	0.00	0.00	0.00
7,900.0	90.37	180.00	6,615.0	-1,491.8	-195.3	1,498.7	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Sater 19E-323
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Project:</b>	SEC.19-T4N-R63W	<b>MD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Site:</b>	Sater 4N63W19E Pad Sec.19-T4N-R63W	<b>North Reference:</b>	True
<b>Well:</b>	Sater 19E-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (2-11-15)		

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)
8,000.0	90.37	180.00	6,614.4	-1,591.8	-195.3	1,598.7	0.00	0.00	0.00
8,100.0	90.37	180.00	6,613.7	-1,691.8	-195.3	1,698.6	0.00	0.00	0.00
8,200.0	90.37	180.00	6,613.1	-1,791.8	-195.3	1,798.5	0.00	0.00	0.00
8,300.0	90.37	180.00	6,612.4	-1,891.8	-195.3	1,898.4	0.00	0.00	0.00
8,400.0	90.37	180.00	6,611.8	-1,991.8	-195.3	1,998.3	0.00	0.00	0.00
8,500.0	90.37	180.00	6,611.1	-2,091.8	-195.3	2,098.2	0.00	0.00	0.00
8,600.0	90.37	180.00	6,610.5	-2,191.8	-195.3	2,198.1	0.00	0.00	0.00
8,700.0	90.37	180.00	6,609.8	-2,291.8	-195.3	2,298.0	0.00	0.00	0.00
8,800.0	90.37	180.00	6,609.2	-2,391.8	-195.3	2,397.9	0.00	0.00	0.00
8,900.0	90.37	180.00	6,608.6	-2,491.8	-195.3	2,497.8	0.00	0.00	0.00
9,000.0	90.37	180.00	6,607.9	-2,591.8	-195.3	2,597.7	0.00	0.00	0.00
9,100.0	90.37	180.00	6,607.3	-2,691.8	-195.3	2,697.6	0.00	0.00	0.00
9,200.0	90.37	180.00	6,606.6	-2,791.8	-195.3	2,797.5	0.00	0.00	0.00
9,300.0	90.37	180.00	6,606.0	-2,891.8	-195.3	2,897.5	0.00	0.00	0.00
9,400.0	90.37	180.00	6,605.3	-2,991.8	-195.3	2,997.4	0.00	0.00	0.00
9,500.0	90.37	180.00	6,604.7	-3,091.8	-195.3	3,097.3	0.00	0.00	0.00
9,600.0	90.37	180.00	6,604.0	-3,191.8	-195.3	3,197.2	0.00	0.00	0.00
9,700.0	90.37	180.00	6,603.4	-3,291.8	-195.3	3,297.1	0.00	0.00	0.00
9,800.0	90.37	180.00	6,602.7	-3,391.8	-195.3	3,397.0	0.00	0.00	0.00
9,900.0	90.37	180.00	6,602.1	-3,491.8	-195.3	3,496.9	0.00	0.00	0.00
10,000.0	90.37	180.00	6,601.4	-3,591.7	-195.3	3,596.8	0.00	0.00	0.00
10,100.0	90.37	180.00	6,600.8	-3,691.7	-195.3	3,696.7	0.00	0.00	0.00
10,200.0	90.37	180.00	6,600.2	-3,791.7	-195.3	3,796.6	0.00	0.00	0.00
10,300.0	90.37	180.00	6,599.5	-3,891.7	-195.3	3,896.5	0.00	0.00	0.00
10,400.0	90.37	180.00	6,598.9	-3,991.7	-195.3	3,996.4	0.00	0.00	0.00
10,500.0	90.37	180.00	6,598.2	-4,091.7	-195.3	4,096.3	0.00	0.00	0.00
10,600.0	90.37	180.00	6,597.6	-4,191.7	-195.3	4,196.2	0.00	0.00	0.00
10,700.0	90.37	180.00	6,596.9	-4,291.7	-195.3	4,296.2	0.00	0.00	0.00
10,800.0	90.37	180.00	6,596.3	-4,391.7	-195.3	4,396.1	0.00	0.00	0.00
10,900.0	90.37	180.00	6,595.6	-4,491.7	-195.3	4,496.0	0.00	0.00	0.00
10,998.5	90.37	180.00	6,595.0	-4,590.2	-195.3	4,594.4	0.00	0.00	0.00
TD at 10998.5 - BHL 500'FSL & 245'FWL									

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
50' E/W Hardline (19E	0.00	0.00	1.0	-2,627.6	-195.3	1,352,743.61	3,282,033.56	40.297267	-104.488860
- plan misses target center by 2634.8ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)									
- Rectangle (sides W3,925.3 H100.0 D0.0)									
BHL 500'FSL & 245'F	0.00	0.00	6,595.0	-4,590.2	-195.3	1,350,781.18	3,282,055.97	40.291880	-104.488860
- plan hits target center									
- Point									
SHL 154'FNL & 426'F	0.00	0.00	1.0	0.0	0.0	1,355,373.16	3,282,198.86	40.304480	-104.488160
- plan hits target center									
- Point									

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Sater 19E-323
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Project:</b>	SEC.19-T4N-R63W	<b>MD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Site:</b>	Sater 4N63W19E Pad Sec.19-T4N-R63W	<b>North Reference:</b>	True
<b>Well:</b>	Sater 19E-323	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (2-11-15)		

#### Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,073.1	6,620.3	7"	7	7-1/2

#### Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,458.1	3,450.0	Parkman		0.00	
4,111.7	4,100.0	Sussex		0.00	
4,876.7	4,865.0	Shannon		0.00	
6,329.2	6,290.0	Sharon Springs		0.00	
6,580.6	6,470.0	Niobrara A		0.00	
6,633.5	6,500.0	Niobrara B		0.00	
6,870.7	6,595.0	Niobrara C		0.00	
	6,690.0	Ft. Hays		0.00	
	6,710.0	Codell		0.00	

#### Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,800.0	1,800.0	0.0	0.0	KOP - Start Build 1.00
3,879.9	3,868.9	95.0	-178.3	Start Drop -2.00
5,868.1	5,856.4	104.0	-195.3	KOP #2 - Start Build 7.50
7,073.1	6,620.3	-664.9	-195.3	Start 3925.4 hold at 7073.1 MD
10,998.5	6,595.0	-4,590.2	-195.3	TD at 10998.5



# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.19-T4N-R63W**

**Sater 4N63W19E Pad Sec.19-T4N-R63W**

**Sater 19E-323**

**Wellbore #1**

**Plan #1 (2-11-15)**

## **Anticollision Report**

**12 February, 2015**





<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sater 19E-323
<b>Project:</b>	SEC.19-T4N-R63W	<b>TVD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Reference Site:</b>	Sater 4N63W19E Pad Sec.19-T4N-R63W	<b>MD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sater 19E-323	<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 (2-11-15)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Plan #1 (2-11-15)		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	MD Interval 100.0ft	<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> 2/12/2015			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	10,997.9	Plan #1 (2-11-15) (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						
Existing Wells Sec.19-T4N-R63W						
Sater 12-19U (Exist.) - Wellbore #1 - Wellbore #1	8,138.7	6,625.5	371.0	202.3	2.200	CC, ES, SF
Sater 13-19U (Exist.) - Wellbore #1 - Wellbore #1	9,592.3	6,672.1	362.6	166.4	1.848	CC
Sater 13-19U (Exist.) - Wellbore #1 - Wellbore #1	9,600.0	6,672.0	362.7	166.4	1.847	ES, SF
Sater 14-19U (Exist.) - Wellbore #1 - Wellbore #1	10,750.8	6,657.6	438.0	220.2	2.011	CC, ES, SF
Sater 19F-Unioil (Exist.) - Wellbore #1 - Wellbore #1	7,437.2	6,632.6	76.4	40.9	2.154	CC, ES, SF
Sater 19-GU (Exist.) - Wellbore #1 - Wellbore #1	8,887.9	6,663.4	135.0	74.0	2.212	CC, ES, SF
Sater 4N63W19E Pad Sec.19-T4N-R63W						
Sater 19E-203 - Wellbore #1 - Plan #1 (2-10-15)	1,400.0	1,400.0	30.7	24.6	5.056	CC, ES
Sater 19E-203 - Wellbore #1 - Plan #1 (2-10-15)	10,998.5	10,941.1	225.6	54.1	1.315	Level 3, SF
Sater 19E-223 - Wellbore #1 - Plan #1 (2-11-15)	1,800.0	1,799.0	30.7	22.8	3.901	CC, ES
Sater 19E-223 - Wellbore #1 - Plan #1 (2-11-15)	10,998.5	10,915.9	260.2	92.4	1.551	SF
Sater 19J-443 - Wellbore #1 - Plan #1 (2-11-15)	1,600.0	1,599.0	61.4	54.4	8.809	CC, ES
Sater 19J-443 - Wellbore #1 - Plan #1 (2-11-15)	10,998.5	11,100.1	632.8	457.2	3.604	SF

Offset Design		Existing Wells Sec.19-T4N-R63W - Sater 12-19U (Exist.) - Wellbore #1 - Wellbore #1											Offset Site Error:		0.0 ft		
Survey Program: 7372-UNKNOWN														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)						
7,300.0	6,618.9	6,630.9	6,630.9	22.4	132.6	-90.84	-1,730.5	175.7	917.0	762.2	154.86	5.922					
7,400.0	6,618.2	6,630.2	6,630.2	23.9	132.6	-90.74	-1,730.5	175.7	826.6	670.2	156.36	5.286					
7,500.0	6,617.6	6,629.6	6,629.6	25.5	132.6	-90.64	-1,730.5	175.7	738.6	580.7	157.92	4.677					
7,600.0	6,616.9	6,628.9	6,628.9	27.1	132.6	-90.54	-1,730.5	175.7	654.1	494.5	159.52	4.100					
7,700.0	6,616.3	6,628.3	6,628.3	28.7	132.6	-90.44	-1,730.5	175.7	574.5	413.3	161.16	3.565					
7,800.0	6,615.7	6,627.7	6,627.7	30.4	132.6	-90.34	-1,730.5	175.7	502.3	339.5	162.83	3.085					
7,900.0	6,615.0	6,627.0	6,627.0	32.1	132.5	-90.24	-1,730.5	175.7	441.1	276.6	164.53	2.681					
8,000.0	6,614.4	6,626.4	6,626.4	33.8	132.5	-90.14	-1,730.5	175.7	396.1	229.8	166.25	2.382					
8,100.0	6,613.7	6,625.7	6,625.7	35.6	132.5	-90.04	-1,730.5	175.7	373.0	205.0	167.99	2.221					
8,138.7	6,613.5	6,625.5	6,625.5	36.3	132.5	-90.00	-1,730.5	175.7	371.0	202.3	168.66	2.200	CC, ES, SF				
8,200.0	6,613.1	6,625.1	6,625.1	37.4	132.5	-89.94	-1,730.5	175.7	376.0	206.3	169.74	2.215					
8,300.0	6,612.4	6,624.4	6,624.4	39.1	132.5	-89.84	-1,730.5	175.7	404.6	233.1	171.51	2.359					
8,400.0	6,611.8	6,623.8	6,623.8	40.9	132.5	-89.74	-1,730.5	175.7	453.8	280.5	173.29	2.619					

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 Sater 19E-323
<b>Project:</b>	SEC.19-T4N-R63W	<b>TVD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Reference Site:</b>	Sater 4N63W19E Pad Sec.19-T4N-R63W	<b>MD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sater 19E-323	<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 (2-11-15)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Existing Wells Sec.19-T4N-R63W - Sater 12-19U (Exist.) - Wellbore #1 - Wellbore #1													<b>Offset Site Error:</b>	0.0 ft
Survey Program: 7372-UNKNOWN													<b>Offset Well Error:</b>	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	Reference	Offset		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
8,500.0	6,611.1	6,623.1	6,623.1	42.7	132.5	-89.64	-1,730.5	175.7	517.9	342.8	175.08	2.958		
8,600.0	6,610.5	6,622.5	6,622.5	44.5	132.4	-89.54	-1,730.5	175.7	592.0	415.1	176.88	3.347		
8,700.0	6,609.8	6,621.8	6,621.8	46.4	132.4	-89.44	-1,730.5	175.7	672.9	494.2	178.68	3.766		
8,800.0	6,609.2	6,621.2	6,621.2	48.2	132.4	-89.34	-1,730.5	175.7	758.3	577.8	180.50	4.201		
8,900.0	6,608.6	6,620.6	6,620.6	50.0	132.4	-89.24	-1,730.5	175.7	846.9	664.6	182.32	4.645		
9,000.0	6,607.9	6,619.9	6,619.9	51.9	132.4	-89.14	-1,730.5	175.7	937.8	753.7	184.14	5.093		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sater 19E-323
<b>Project:</b>	SEC.19-T4N-R63W	<b>TVD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Reference Site:</b>	Sater 4N63W19E Pad Sec.19-T4N-R63W	<b>MD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sater 19E-323	<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 (2-11-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Existing Wells Sec.19-T4N-R63W - Sater 13-19U (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7394-UNKNOWN													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	
8,700.0	6,609.8	6,677.8	6,677.8	46.4	133.6	-90.91	-3,184.0	167.4	963.1	783.3	179.80	5.357		
8,800.0	6,609.2	6,677.2	6,677.2	48.2	133.5	-90.81	-3,184.0	167.4	871.3	689.7	181.63	4.797		
8,900.0	6,608.6	6,676.6	6,676.6	50.0	133.5	-90.71	-3,184.0	167.4	781.5	598.0	183.45	4.260		
9,000.0	6,607.9	6,675.9	6,675.9	51.9	133.5	-90.60	-3,184.0	167.4	694.5	509.2	185.29	3.748		
9,100.0	6,607.3	6,675.3	6,675.3	53.7	133.5	-90.50	-3,184.0	167.4	611.4	424.3	187.12	3.267		
9,200.0	6,606.6	6,674.6	6,674.6	55.6	133.5	-90.40	-3,184.0	167.4	534.2	345.2	188.97	2.827		
9,300.0	6,606.0	6,674.0	6,674.0	57.4	133.5	-90.30	-3,184.0	167.4	465.8	274.9	190.81	2.441		
9,400.0	6,605.3	6,673.3	6,673.3	59.3	133.5	-90.20	-3,184.0	167.4	410.5	217.8	192.66	2.130		
9,500.0	6,604.7	6,672.7	6,672.7	61.1	133.5	-90.09	-3,184.0	167.4	374.2	179.7	194.51	1.924		
9,592.3	6,604.1	6,672.1	6,672.1	62.9	133.4	-90.00	-3,184.0	167.4	362.6	166.4	196.23	1.848 CC		
9,600.0	6,604.0	6,672.0	6,672.0	63.0	133.4	-89.99	-3,184.0	167.4	362.7	166.4	196.37	1.847 ES, SF		
9,700.0	6,603.4	6,671.4	6,671.4	64.9	133.4	-89.89	-3,184.0	167.4	378.3	180.1	198.23	1.908		
9,800.0	6,602.7	6,670.7	6,670.7	66.7	133.4	-89.79	-3,184.0	167.4	417.9	217.8	200.09	2.089		
9,900.0	6,602.1	6,670.1	6,670.1	68.6	133.4	-89.69	-3,184.0	167.4	475.6	273.7	201.95	2.355		
10,000.0	6,601.4	6,669.4	6,669.4	70.5	133.4	-89.58	-3,184.0	167.4	545.7	341.9	203.81	2.677		
10,100.0	6,600.8	6,668.8	6,668.8	72.4	133.4	-89.48	-3,184.0	167.4	623.9	418.3	205.67	3.034		
10,200.0	6,600.2	6,668.2	6,668.2	74.3	133.4	-89.38	-3,184.0	167.4	707.7	500.2	207.54	3.410		
10,300.0	6,599.5	6,667.5	6,667.5	76.1	133.4	-89.28	-3,184.0	167.4	795.2	585.8	209.41	3.797		
10,400.0	6,598.9	6,666.9	6,666.9	78.0	133.3	-89.18	-3,184.0	167.4	885.4	674.1	211.27	4.191		
10,500.0	6,598.2	6,666.2	6,666.2	79.9	133.3	-89.07	-3,184.0	167.4	977.5	764.3	213.14	4.586		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sater 19E-323
<b>Project:</b>	SEC.19-T4N-R63W	<b>TVD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Reference Site:</b>	Sater 4N63W19E Pad Sec.19-T4N-R63W	<b>MD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sater 19E-323	<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 (2-11-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Existing Wells Sec.19-T4N-R63W - Sater 14-19U (Exist.) - Wellbore #1 - Wellbore #1		Offset Site Error:		0.0 ft	
Survey Program: 7424-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)						
9,900.0	6,602.1	6,663.1	6,663.1	68.6	133.3	-90.72	-4,342.5	242.7	956.9	755.1	201.80	4.742					
10,000.0	6,601.4	6,662.4	6,662.4	70.5	133.2	-90.63	-4,342.5	242.7	869.2	665.5	203.67	4.268					
10,100.0	6,600.8	6,661.8	6,661.8	72.4	133.2	-90.55	-4,342.5	242.7	784.4	578.9	205.54	3.816					
10,200.0	6,600.2	6,661.2	6,661.2	74.3	133.2	-90.47	-4,342.5	242.7	703.7	496.3	207.41	3.393					
10,300.0	6,599.5	6,660.5	6,660.5	76.1	133.2	-90.38	-4,342.5	242.7	628.5	419.2	209.29	3.003					
10,400.0	6,598.9	6,659.9	6,659.9	78.0	133.2	-90.30	-4,342.5	242.7	561.1	350.0	211.16	2.657					
10,500.0	6,598.2	6,659.2	6,659.2	79.9	133.2	-90.21	-4,342.5	242.7	504.7	291.7	213.04	2.369					
10,600.0	6,597.6	6,658.6	6,658.6	81.8	133.2	-90.13	-4,342.5	242.7	463.2	248.3	214.92	2.155					
10,700.0	6,596.9	6,657.9	6,657.9	83.7	133.2	-90.04	-4,342.5	242.7	440.9	224.1	216.79	2.034					
10,750.8	6,596.6	6,657.6	6,657.6	84.6	133.2	-90.00	-4,342.5	242.7	438.0	220.2	217.75	2.011 CC, ES, SF					
10,800.0	6,596.3	6,657.3	6,657.3	85.6	133.1	-89.96	-4,342.5	242.7	440.7	222.1	218.67	2.015					
10,900.0	6,595.6	6,656.6	6,656.6	87.5	133.1	-89.87	-4,342.5	242.7	462.7	242.1	220.55	2.098					
10,998.5	6,595.0	6,656.0	6,656.0	89.0	133.1	-89.79	-4,342.5	242.7	503.2	281.1	222.05	2.266					

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sater 19E-323
<b>Project:</b>	SEC.19-T4N-R63W	<b>TVD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Reference Site:</b>	Sater 4N63W19E Pad Sec.19-T4N-R63W	<b>MD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sater 19E-323	<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 (2-11-15)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Existing Wells Sec.19-T4N-R63W - Sater 19F-Unioil (Exist.) - Wellbore #1 - Wellbore #1												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 600-NS-GYRO-MS												<b>Offset Well Error:</b>	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)			
6,400.0	6,346.4	6,370.9	6,369.6	14.2	10.6	6.35	-1,030.0	-276.1	959.7	939.7	20.02	47.945	
6,500.0	6,418.7	6,438.2	6,436.8	14.4	10.8	7.62	-1,029.5	-275.0	890.3	871.7	18.57	47.939	
6,600.0	6,481.4	6,500.0	6,498.6	14.8	10.9	9.68	-1,029.3	-273.9	812.5	795.4	17.09	47.553	
6,700.0	6,533.4	6,549.4	6,548.0	15.4	11.0	13.15	-1,029.2	-273.0	727.5	711.6	15.86	45.856	
6,800.0	6,573.8	6,590.1	6,588.7	16.2	11.1	19.77	-1,029.1	-272.4	636.5	620.8	15.73	40.472	
6,900.0	6,601.9	6,618.3	6,616.9	17.2	11.1	33.87	-1,029.0	-271.9	541.3	522.5	18.85	28.711	
7,000.0	6,617.3	6,633.5	6,632.0	18.4	11.1	64.63	-1,029.0	-271.7	443.7	416.6	27.11	16.365	
7,100.0	6,620.2	6,636.0	6,634.6	19.6	11.1	93.43	-1,029.0	-271.6	345.7	315.2	30.51	11.331	
7,200.0	6,619.5	6,635.0	6,633.6	21.0	11.1	92.68	-1,029.0	-271.6	249.2	217.3	31.89	7.812	
7,300.0	6,618.9	6,634.0	6,632.6	22.4	11.1	91.94	-1,029.0	-271.6	157.0	123.6	33.36	4.707	
7,400.0	6,618.2	6,633.0	6,631.6	23.9	11.1	91.20	-1,029.0	-271.7	85.0	50.1	34.88	2.435	
7,437.2	6,618.0	6,632.6	6,631.2	24.5	11.1	90.92	-1,029.0	-271.7	76.4	40.9	35.47	2.154 CC, ES, SF	
7,500.0	6,617.6	6,632.0	6,630.6	25.5	11.1	90.46	-1,029.0	-271.7	98.9	62.5	36.46	2.713	
7,600.0	6,616.9	6,631.1	6,629.6	27.1	11.1	89.72	-1,029.0	-271.7	179.9	141.8	38.08	4.723	
7,700.0	6,616.3	6,630.1	6,628.7	28.7	11.1	88.99	-1,029.0	-271.7	273.7	234.0	39.73	6.888	
7,800.0	6,615.7	6,629.1	6,627.7	30.4	11.1	88.26	-1,029.0	-271.7	370.8	329.4	41.41	8.953	
7,900.0	6,615.0	6,628.1	6,626.7	32.1	11.1	87.54	-1,029.0	-271.7	469.1	426.0	43.11	10.881	
8,000.0	6,614.4	6,627.2	6,625.7	33.8	11.1	86.82	-1,029.0	-271.8	568.0	523.2	44.82	12.672	
8,100.0	6,613.7	6,626.2	6,624.8	35.6	11.1	86.10	-1,029.0	-271.8	667.2	620.7	46.54	14.335	
8,200.0	6,613.1	6,625.2	6,623.8	37.4	11.1	85.39	-1,029.0	-271.8	766.6	718.3	48.27	15.881	
8,300.0	6,612.4	6,624.3	6,622.9	39.1	11.1	84.68	-1,029.0	-271.8	866.2	816.2	50.01	17.320	
8,400.0	6,611.8	6,623.3	6,621.9	40.9	11.1	83.98	-1,029.0	-271.8	965.8	914.1	51.75	18.664	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sater 19E-323
<b>Project:</b>	SEC.19-T4N-R63W	<b>TVD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Reference Site:</b>	Sater 4N63W19E Pad Sec.19-T4N-R63W	<b>MD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sater 19E-323	<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 (2-11-15)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Existing Wells Sec.19-T4N-R63W - Sater 19-GU (Exist.) - Wellbore #1 - Wellbore #1												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 550-NS-GYRO-MS												<b>Offset Well Error:</b>	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)					
7,900.0	6,615.0	6,678.8	6,677.1	32.1	11.4	98.23	-2,479.6	-329.7	997.0	954.1	42.87	23.257	
8,000.0	6,614.4	6,677.2	6,675.5	33.8	11.4	97.59	-2,479.6	-329.8	898.0	853.4	44.65	20.112	
8,100.0	6,613.7	6,675.7	6,674.0	35.6	11.4	96.94	-2,479.6	-329.8	799.3	752.8	46.45	17.207	
8,200.0	6,613.1	6,674.2	6,672.5	37.4	11.4	96.29	-2,479.6	-329.9	701.0	652.7	48.27	14.521	
8,300.0	6,612.4	6,672.6	6,670.9	39.1	11.4	95.63	-2,479.6	-329.9	603.1	553.0	50.10	12.038	
8,400.0	6,611.8	6,671.0	6,669.3	40.9	11.4	94.97	-2,479.6	-330.0	506.2	454.2	51.94	9.745	
8,500.0	6,611.1	6,669.5	6,667.8	42.7	11.4	94.31	-2,479.7	-330.0	410.7	356.9	53.79	7.635	
8,600.0	6,610.5	6,667.9	6,666.2	44.5	11.4	93.64	-2,479.7	-330.0	318.0	262.3	55.65	5.714	
8,700.0	6,609.8	6,666.3	6,664.6	46.4	11.4	92.98	-2,479.7	-330.1	231.3	173.8	57.51	4.023	
8,800.0	6,609.2	6,664.8	6,663.1	48.2	11.4	92.31	-2,479.7	-330.1	161.1	101.7	59.37	2.713	
8,887.9	6,608.6	6,663.4	6,661.7	49.8	11.3	91.72	-2,479.7	-330.2	135.0	74.0	61.01	2.212 CC, ES, SF	
8,900.0	6,608.6	6,663.2	6,661.5	50.0	11.3	91.64	-2,479.7	-330.2	135.5	74.3	61.23	2.213	
9,000.0	6,607.9	6,661.6	6,659.9	51.9	11.3	90.96	-2,479.7	-330.2	175.4	112.3	63.10	2.780	
9,100.0	6,607.3	6,660.0	6,658.3	53.7	11.3	90.29	-2,479.8	-330.3	251.4	186.4	64.96	3.870	
9,200.0	6,606.6	6,658.4	6,656.7	55.6	11.3	89.61	-2,479.8	-330.3	340.0	273.2	66.82	5.088	
9,300.0	6,606.0	6,656.8	6,655.1	57.4	11.3	88.93	-2,479.8	-330.4	433.6	364.9	68.67	6.314	
9,400.0	6,605.3	6,655.2	6,653.5	59.3	11.3	88.25	-2,479.8	-330.4	529.5	459.0	70.52	7.508	
9,500.0	6,604.7	6,653.6	6,651.9	61.1	11.3	87.57	-2,479.8	-330.5	626.7	554.3	72.36	8.660	
9,600.0	6,604.0	6,652.0	6,650.3	63.0	11.3	86.88	-2,479.8	-330.5	724.7	650.5	74.20	9.766	
9,700.0	6,603.4	6,650.3	6,648.6	64.9	11.3	86.20	-2,479.8	-330.6	823.1	747.1	76.03	10.826	
9,800.0	6,602.7	6,648.7	6,647.0	66.7	11.3	85.52	-2,479.9	-330.6	921.9	844.0	77.85	11.842	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sater 19E-323
<b>Project:</b>	SEC.19-T4N-R63W	<b>TVD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Reference Site:</b>	Sater 4N63W19E Pad Sec.19-T4N-R63W	<b>MD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sater 19E-323	<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 (2-11-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Sater 4N63W19E Pad Sec.19-T4N-R63W - Sater 19E-203 - Wellbore #1 - Plan #1 (2-10-15)													Offset Site Error:	0.0 ft
Survey Program: 0-MWDD													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)	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	-90.00	-90.00	0.0	-30.7	30.7				
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	-90.00	0.0	-30.7	30.7	30.5	0.22	136.501	
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	-90.00	0.0	-30.7	30.7	30.0	0.67	45.500	
300.0	300.0	300.0	300.0	0.6	0.6	-90.00	-90.00	0.0	-30.7	30.7	29.6	1.12	27.300	
400.0	400.0	400.0	400.0	0.8	0.8	-90.00	-90.00	0.0	-30.7	30.7	29.1	1.57	19.500	
500.0	500.0	500.0	500.0	1.0	1.0	-90.00	-90.00	0.0	-30.7	30.7	28.7	2.02	15.167	
600.0	600.0	600.0	600.0	1.2	1.2	-90.00	-90.00	0.0	-30.7	30.7	28.2	2.47	12.409	
700.0	700.0	700.0	700.0	1.5	1.5	-90.00	-90.00	0.0	-30.7	30.7	27.8	2.92	10.500	
800.0	800.0	800.0	800.0	1.7	1.7	-90.00	-90.00	0.0	-30.7	30.7	27.3	3.37	9.100	
900.0	900.0	900.0	900.0	1.9	1.9	-90.00	-90.00	0.0	-30.7	30.7	26.9	3.82	8.029	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-90.00	-90.00	0.0	-30.7	30.7	26.4	4.27	7.184	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-90.00	-90.00	0.0	-30.7	30.7	26.0	4.72	6.500	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-90.00	-90.00	0.0	-30.7	30.7	25.5	5.17	5.935	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-90.00	-90.00	0.0	-30.7	30.7	25.1	5.62	5.460	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-90.00	-90.00	0.0	-30.7	30.7	24.6	6.07	5.056 CC, ES	
1,500.0	1,500.0	1,499.5	1,499.5	3.3	3.2	-89.58	-89.58	0.2	-31.5	31.5	25.0	6.51	4.844	
1,600.0	1,600.0	1,598.9	1,598.9	3.5	3.5	-88.46	-88.46	0.9	-34.0	34.0	27.1	6.94	4.906	
1,700.0	1,700.0	1,698.2	1,698.1	3.7	3.7	-86.92	-86.92	2.1	-38.2	38.3	30.9	7.37	5.190	
1,800.0	1,800.0	1,797.3	1,797.0	3.9	3.9	-85.27	-85.27	3.6	-44.0	44.2	36.4	7.81	5.659	
1,900.0	1,900.0	1,896.3	1,895.6	4.2	4.1	-22.07	-22.07	5.7	-51.4	51.1	42.9	8.23	6.208	
2,000.0	2,000.0	1,995.1	1,994.0	4.4	4.3	-21.49	-21.49	8.2	-60.5	58.1	49.4	8.65	6.712	
2,100.0	2,099.9	2,093.8	2,092.1	4.6	4.6	-21.36	-21.36	11.1	-71.1	65.1	56.0	9.07	7.178	
2,200.0	2,199.7	2,193.1	2,190.6	4.8	4.8	-21.58	-21.58	14.4	-83.3	71.9	62.5	9.49	7.577	
2,300.0	2,299.4	2,292.9	2,289.6	5.0	5.1	-22.23	-22.23	17.8	-95.6	77.3	67.4	9.92	7.793	
2,400.0	2,398.9	2,392.8	2,388.7	5.3	5.4	-23.28	-23.28	21.2	-107.9	81.1	70.8	10.35	7.834	
2,500.0	2,498.3	2,492.8	2,487.8	5.5	5.7	-24.70	-24.70	24.6	-120.3	83.4	72.7	10.80	7.730	
2,600.0	2,597.6	2,592.7	2,587.0	5.8	6.0	-26.15	-26.15	27.9	-132.6	85.5	74.3	11.25	7.600	
2,700.0	2,696.9	2,692.7	2,686.1	6.0	6.2	-27.53	-27.53	31.3	-144.9	87.6	75.9	11.71	7.481	
2,800.0	2,796.3	2,792.7	2,785.2	6.3	6.5	-28.84	-28.84	34.7	-157.3	89.8	77.6	12.18	7.371	
2,900.0	2,895.6	2,892.6	2,884.4	6.5	6.8	-30.10	-30.10	38.1	-169.6	92.0	79.3	12.66	7.269	
3,000.0	2,994.9	2,992.6	2,983.5	6.8	7.1	-31.29	-31.29	41.5	-182.0	94.2	81.1	13.14	7.174	
3,100.0	3,094.3	3,092.5	3,082.6	7.1	7.4	-32.43	-32.43	44.9	-194.3	96.5	82.9	13.62	7.086	
3,200.0	3,193.6	3,192.5	3,181.8	7.4	7.7	-33.51	-33.51	48.2	-206.6	98.9	84.7	14.12	7.003	
3,300.0	3,292.9	3,292.4	3,280.9	7.6	8.1	-34.54	-34.54	51.6	-219.0	101.2	86.6	14.61	6.926	
3,400.0	3,392.2	3,392.4	3,380.0	7.9	8.4	-35.53	-35.53	55.0	-231.3	103.6	88.5	15.12	6.854	
3,500.0	3,491.6	3,492.3	3,479.2	8.2	8.7	-36.47	-36.47	58.4	-243.7	106.0	90.4	15.62	6.786	
3,600.0	3,590.9	3,592.3	3,578.3	8.5	9.0	-37.37	-37.37	61.8	-256.0	108.5	92.3	16.14	6.722	
3,700.0	3,690.2	3,692.3	3,677.4	8.8	9.3	-38.23	-38.23	65.2	-268.4	110.9	94.3	16.66	6.661	
3,800.0	3,789.6	3,792.2	3,776.6	9.1	9.6	-39.06	-39.06	68.5	-280.7	113.4	96.3	17.18	6.604	
3,900.0	3,888.9	3,892.2	3,875.7	9.3	9.9	-39.83	-39.83	71.9	-293.0	116.0	98.3	17.70	6.553	
4,000.0	3,988.5	3,992.1	3,974.8	9.6	10.2	-39.88	-39.88	75.3	-305.4	120.4	102.3	18.17	6.629	
4,100.0	4,088.3	4,091.8	4,073.7	9.8	10.6	-38.96	-38.96	78.7	-317.7	127.5	108.9	18.58	6.864	
4,200.0	4,188.3	4,191.2	4,172.3	9.9	10.9	-37.28	-37.28	82.0	-330.0	137.4	118.5	18.94	7.256	
4,300.0	4,288.3	4,290.4	4,270.6	10.1	11.2	-97.22	-97.22	85.4	-342.2	149.1	129.8	19.31	7.725	
4,400.0	4,388.3	4,389.6	4,369.0	10.3	11.5	-95.47	-95.47	88.8	-354.4	161.1	141.3	19.71	8.172	
4,500.0	4,488.3	4,488.7	4,467.4	10.5	11.8	-93.97	-93.97	92.1	-366.7	173.1	153.0	20.12	8.604	
4,600.0	4,588.3	4,587.9	4,565.7	10.7	12.2	-92.66	-92.66	95.5	-378.9	185.2	164.7	20.54	9.020	
4,700.0	4,688.3	4,689.3	4,666.3	10.9	12.5	-91.51	-91.51	98.8	-391.3	197.3	176.3	20.96	9.414	
4,800.0	4,788.3	4,796.0	4,772.5	11.1	12.7	-90.66	-90.66	101.6	-401.4	206.7	185.3	21.36	9.677	
4,900.0	4,888.3	4,903.4	4,879.7	11.3	12.9	-90.18	-90.18	103.3	-407.6	212.5	190.8	21.76	9.767	
5,000.0	4,988.3	5,011.1	4,987.4	11.6	13.1	-90.00	-90.00	104.0	-410.0	214.8	192.6	22.17	9.689	

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 Sater 19E-323
<b>Project:</b>	SEC.19-T4N-R63W	<b>TVD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Reference Site:</b>	Sater 4N63W19E Pad Sec.19-T4N-R63W	<b>MD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sater 19E-323	<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 (2-11-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Sater 4N63W19E Pad Sec.19-T4N-R63W - Sater 19E-203 - Wellbore #1 - Plan #1 (2-10-15)													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
5,100.0	5,088.3	5,112.1	5,088.3	11.8	13.3	-90.00		104.0	-410.1	214.8	192.2	22.58	9.514	
5,200.0	5,188.3	5,212.1	5,188.3	12.0	13.4	-90.00		104.0	-410.1	214.8	191.8	23.00	9.339	
5,300.0	5,288.3	5,312.1	5,288.3	12.2	13.6	-90.00		104.0	-410.1	214.8	191.4	23.43	9.170	
5,400.0	5,388.3	5,412.1	5,388.3	12.4	13.8	-90.00		104.0	-410.1	214.8	190.9	23.85	9.006	
5,500.0	5,488.3	5,512.1	5,488.3	12.6	14.0	-90.00		104.0	-410.1	214.8	190.5	24.28	8.848	
5,600.0	5,588.3	5,612.1	5,588.3	12.8	14.2	-90.00		104.0	-410.1	214.8	190.1	24.70	8.695	
5,700.0	5,688.3	5,712.1	5,688.3	13.0	14.4	-90.00		104.0	-410.1	214.8	189.7	25.13	8.547	
5,766.5	5,754.8	5,778.6	5,754.8	13.2	14.5	-90.00		104.0	-410.1	214.8	189.4	25.42	8.452	
5,800.0	5,788.3	5,812.1	5,788.3	13.2	14.6	-90.00		104.0	-410.1	214.8	189.2	25.56	8.404	
5,900.0	5,888.3	5,911.6	5,887.5	13.4	14.7	88.41		97.4	-410.1	214.9	188.9	25.97	8.273	
6,000.0	5,987.6	6,009.8	5,983.8	13.6	14.8	86.07		78.3	-410.1	215.3	189.0	26.31	8.184	
6,100.0	6,084.7	6,107.0	6,075.9	13.7	15.0	83.81		47.4	-410.1	216.1	189.5	26.58	8.128	
6,200.0	6,177.9	6,203.2	6,162.5	13.9	15.1	81.68		5.6	-410.1	217.1	190.3	26.83	8.093	
6,300.0	6,265.7	6,298.5	6,242.4	14.0	15.2	79.72		-46.2	-410.1	218.3	191.2	27.09	8.059	
6,400.0	6,346.4	6,393.0	6,314.6	14.2	15.4	77.94		-107.1	-410.1	219.7	192.2	27.44	8.004	
6,500.0	6,418.7	6,486.8	6,378.4	14.4	15.7	76.38		-175.8	-410.1	221.0	193.1	27.97	7.902	
6,600.0	6,481.4	6,580.0	6,432.9	14.8	16.0	75.05		-251.3	-410.1	222.3	193.6	28.76	7.731	
6,700.0	6,533.4	6,672.6	6,477.6	15.4	16.6	73.97		-332.4	-410.1	223.5	193.6	29.87	7.482	
6,800.0	6,573.8	6,764.9	6,512.0	16.2	17.3	73.14		-417.9	-410.1	224.5	193.1	31.36	7.157	
6,900.0	6,601.9	6,856.9	6,535.8	17.2	18.1	72.56		-506.7	-410.1	225.1	191.9	33.23	6.776	
7,000.0	6,617.3	6,950.0	6,548.9	18.4	19.2	72.25		-598.8	-410.1	225.5	190.1	35.46	6.359	
7,018.1	6,618.8	6,965.3	6,550.0	18.6	19.4	72.21		-614.1	-410.1	225.6	189.7	35.89	6.286	
7,100.0	6,620.2	7,042.6	6,551.2	19.6	20.3	72.19		-691.4	-410.1	225.6	187.7	37.95	5.945	
7,200.0	6,619.5	7,142.6	6,550.5	21.0	21.6	72.19		-791.4	-410.1	225.6	185.0	40.57	5.561	
7,300.0	6,618.9	7,242.6	6,549.9	22.4	23.0	72.19		-891.4	-410.1	225.6	182.3	43.35	5.205	
7,400.0	6,618.2	7,342.6	6,549.2	23.9	24.5	72.19		-991.4	-410.1	225.6	179.4	46.25	4.878	
7,500.0	6,617.6	7,442.6	6,548.6	25.5	26.0	72.19		-1,091.4	-410.1	225.6	176.4	49.26	4.580	
7,600.0	6,616.9	7,542.6	6,547.9	27.1	27.6	72.19		-1,191.4	-410.1	225.6	173.3	52.35	4.310	
7,700.0	6,616.3	7,642.6	6,547.3	28.7	29.2	72.19		-1,291.4	-410.1	225.6	170.1	55.51	4.064	
7,800.0	6,615.7	7,742.6	6,546.7	30.4	30.9	72.19		-1,391.4	-410.1	225.6	166.9	58.74	3.841	
7,900.0	6,615.0	7,842.6	6,546.0	32.1	32.6	72.19		-1,491.3	-410.1	225.6	163.6	62.01	3.638	
8,000.0	6,614.4	7,942.6	6,545.4	33.8	34.3	72.19		-1,591.3	-410.1	225.6	160.3	65.33	3.453	
8,100.0	6,613.7	8,042.6	6,544.7	35.6	36.0	72.19		-1,691.3	-410.1	225.6	156.9	68.69	3.284	
8,200.0	6,613.1	8,142.6	6,544.1	37.4	37.8	72.19		-1,791.3	-410.1	225.6	153.5	72.08	3.130	
8,300.0	6,612.4	8,242.6	6,543.4	39.1	39.5	72.19		-1,891.3	-410.1	225.6	150.1	75.49	2.989	
8,400.0	6,611.8	8,342.6	6,542.8	40.9	41.3	72.19		-1,991.3	-410.1	225.6	146.7	78.93	2.858	
8,500.0	6,611.1	8,442.6	6,542.1	42.7	43.1	72.19		-2,091.3	-410.1	225.6	143.2	82.39	2.738	
8,600.0	6,610.5	8,542.6	6,541.5	44.5	44.9	72.19		-2,191.3	-410.1	225.6	139.7	85.87	2.627	
8,700.0	6,609.8	8,642.6	6,540.8	46.4	46.7	72.19		-2,291.3	-410.1	225.6	136.2	89.37	2.525	
8,800.0	6,609.2	8,742.6	6,540.2	48.2	48.5	72.19		-2,391.3	-410.1	225.6	132.7	92.87	2.429	
8,900.0	6,608.6	8,842.6	6,539.6	50.0	50.3	72.19		-2,491.3	-410.1	225.6	129.2	96.40	2.340	
9,000.0	6,607.9	8,942.6	6,538.9	51.9	52.2	72.19		-2,591.3	-410.1	225.6	125.7	99.93	2.258	
9,100.0	6,607.3	9,042.6	6,538.3	53.7	54.0	72.19		-2,691.3	-410.1	225.6	122.1	103.47	2.180	
9,200.0	6,606.6	9,142.6	6,537.6	55.6	55.8	72.19		-2,791.3	-410.1	225.6	118.6	107.03	2.108	
9,300.0	6,606.0	9,242.6	6,537.0	57.4	57.7	72.19		-2,891.3	-410.1	225.6	115.0	110.59	2.040	
9,400.0	6,605.3	9,342.6	6,536.3	59.3	59.5	72.19		-2,991.3	-410.1	225.6	111.5	114.16	1.976	
9,500.0	6,604.7	9,442.6	6,535.7	61.1	61.4	72.19		-3,091.3	-410.1	225.6	107.9	117.73	1.916	
9,600.0	6,604.0	9,542.6	6,535.0	63.0	63.3	72.19		-3,191.3	-410.1	225.6	104.3	121.32	1.860	
9,700.0	6,603.4	9,642.6	6,534.4	64.9	65.1	72.19		-3,291.3	-410.1	225.6	100.7	124.90	1.806	
9,800.0	6,602.7	9,742.6	6,533.7	66.7	67.0	72.19		-3,391.3	-410.1	225.6	97.1	128.50	1.756	
9,900.0	6,602.1	9,842.6	6,533.1	68.6	68.9	72.19		-3,491.3	-410.1	225.6	93.5	132.10	1.708	

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 Sater 19E-323
<b>Project:</b>	SEC.19-T4N-R63W	<b>TVD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Reference Site:</b>	Sater 4N63W19E Pad Sec.19-T4N-R63W	<b>MD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sater 19E-323	<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 (2-11-15)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Sater 4N63W19E Pad Sec.19-T4N-R63W - Sater 19E-203 - Wellbore #1 - Plan #1 (2-10-15)												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 0-MWD												<b>Offset Well Error:</b>	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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,000.0	6,601.4	9,942.6	6,532.5	70.5	70.7	72.19	-3,591.3	-410.1	225.6	89.9	135.70	1.663	
10,100.0	6,600.8	10,042.6	6,531.8	72.4	72.6	72.19	-3,691.3	-410.1	225.6	86.3	139.30	1.620	
10,200.0	6,600.2	10,142.6	6,531.2	74.3	74.5	72.19	-3,791.3	-410.1	225.6	82.7	142.92	1.579	
10,300.0	6,599.5	10,242.6	6,530.5	76.1	76.4	72.19	-3,891.3	-410.1	225.6	79.1	146.53	1.540	
10,400.0	6,598.9	10,342.6	6,529.9	78.0	78.2	72.19	-3,991.3	-410.1	225.6	75.5	150.15	1.503	
10,500.0	6,598.2	10,442.6	6,529.2	79.9	80.1	72.19	-4,091.3	-410.1	225.6	71.8	153.77	1.467	Level 3
10,600.0	6,597.6	10,542.6	6,528.6	81.8	82.0	72.19	-4,191.3	-410.1	225.6	68.2	157.39	1.433	Level 3
10,700.0	6,596.9	10,642.6	6,527.9	83.7	83.9	72.19	-4,291.3	-410.1	225.6	64.6	161.02	1.401	Level 3
10,800.0	6,596.3	10,742.6	6,527.3	85.6	85.8	72.19	-4,391.3	-410.1	225.6	61.0	164.64	1.370	Level 3
10,900.0	6,595.6	10,842.6	6,526.6	87.5	87.7	72.19	-4,491.3	-410.1	225.6	57.3	168.28	1.341	Level 3
10,998.5	6,595.0	10,941.1	6,526.0	89.0	89.5	72.19	-4,589.8	-410.1	225.6	54.1	171.51	1.315	Level 3, SF

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sater 19E-323
<b>Project:</b>	SEC.19-T4N-R63W	<b>TVD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Reference Site:</b>	Sater 4N63W19E Pad Sec.19-T4N-R63W	<b>MD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sater 19E-323	<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 (2-11-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Sater 4N63W19E Pad Sec.19-T4N-R63W - Sater 19E-223 - Wellbore #1 - Plan #1 (2-11-15)													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	0.0	0.0	0.0	0.0	90.00	90.00	0.0	30.7	30.7				
100.0	100.0	99.0	99.0	0.1	0.1	90.00	90.00	0.0	30.7	30.7	30.5	0.22	137.185	
200.0	200.0	199.0	199.0	0.3	0.3	90.00	90.00	0.0	30.7	30.7	30.0	0.67	45.652	
300.0	300.0	299.0	299.0	0.6	0.6	90.00	90.00	0.0	30.7	30.7	29.6	1.12	27.355	
400.0	400.0	399.0	399.0	0.8	0.8	90.00	90.00	0.0	30.7	30.7	29.1	1.57	19.528	
500.0	500.0	499.0	499.0	1.0	1.0	90.00	90.00	0.0	30.7	30.7	28.7	2.02	15.184	
600.0	600.0	599.0	599.0	1.2	1.2	90.00	90.00	0.0	30.7	30.7	28.2	2.47	12.420	
700.0	700.0	699.0	699.0	1.5	1.5	90.00	90.00	0.0	30.7	30.7	27.8	2.92	10.508	
800.0	800.0	799.0	799.0	1.7	1.7	90.00	90.00	0.0	30.7	30.7	27.3	3.37	9.106	
900.0	900.0	899.0	899.0	1.9	1.9	90.00	90.00	0.0	30.7	30.7	26.9	3.82	8.034	
1,000.0	1,000.0	999.0	999.0	2.1	2.1	90.00	90.00	0.0	30.7	30.7	26.4	4.27	7.188	
1,100.0	1,100.0	1,099.0	1,099.0	2.4	2.4	90.00	90.00	0.0	30.7	30.7	26.0	4.72	6.503	
1,200.0	1,200.0	1,199.0	1,199.0	2.6	2.6	90.00	90.00	0.0	30.7	30.7	25.5	5.17	5.937	
1,300.0	1,300.0	1,299.0	1,299.0	2.8	2.8	90.00	90.00	0.0	30.7	30.7	25.1	5.62	5.462	
1,400.0	1,400.0	1,399.0	1,399.0	3.0	3.0	90.00	90.00	0.0	30.7	30.7	24.6	6.07	5.057	
1,500.0	1,500.0	1,499.0	1,499.0	3.3	3.3	90.00	90.00	0.0	30.7	30.7	24.2	6.52	4.709	
1,600.0	1,600.0	1,599.0	1,599.0	3.5	3.5	90.00	90.00	0.0	30.7	30.7	23.7	6.97	4.405	
1,700.0	1,700.0	1,699.0	1,699.0	3.7	3.7	90.00	90.00	0.0	30.7	30.7	23.3	7.42	4.138	
1,800.0	1,800.0	1,799.0	1,799.0	3.9	3.9	90.00	90.00	0.0	30.7	30.7	22.8	7.86	3.901 CC, ES	
1,900.0	1,900.0	1,899.0	1,899.0	4.2	4.2	152.70	152.70	0.0	30.7	31.5	23.1	8.31	3.787	
2,000.0	2,000.0	1,999.0	1,999.0	4.4	4.4	154.73	154.73	0.0	30.7	33.8	25.1	8.74	3.868	
2,100.0	2,099.9	2,098.9	2,098.9	4.6	4.6	157.54	157.54	0.0	30.7	37.8	28.6	9.17	4.121	
2,200.0	2,199.7	2,198.7	2,198.7	4.8	4.8	160.59	160.59	0.0	30.7	43.5	33.9	9.60	4.531	
2,300.0	2,299.4	2,298.4	2,298.4	5.0	5.1	163.50	163.50	0.0	30.7	51.0	40.9	10.03	5.083	
2,400.0	2,398.9	2,397.9	2,397.9	5.3	5.3	166.07	166.07	0.0	30.7	60.2	49.8	10.45	5.761	
2,500.0	2,498.3	2,497.3	2,497.3	5.5	5.5	168.23	168.23	0.0	30.7	71.1	60.3	10.88	6.538	
2,600.0	2,597.6	2,596.6	2,596.6	5.8	5.7	169.87	169.87	0.0	30.7	82.5	71.2	11.32	7.285	
2,700.0	2,696.9	2,695.9	2,695.9	6.0	5.9	171.11	171.11	0.0	30.7	93.9	82.1	11.77	7.980	
2,800.0	2,796.3	2,795.3	2,795.3	6.3	6.2	172.08	172.08	0.0	30.7	105.3	93.1	12.21	8.626	
2,900.0	2,895.6	2,894.6	2,894.6	6.5	6.4	172.86	172.86	0.0	30.7	116.8	104.1	12.66	9.227	
3,000.0	2,994.9	2,993.9	2,993.9	6.8	6.6	173.50	173.50	0.0	30.7	128.3	115.2	13.10	9.789	
3,100.0	3,094.3	3,093.8	3,093.8	7.1	6.8	173.73	173.73	0.8	30.8	139.6	126.0	13.55	10.300	
3,200.0	3,193.6	3,193.7	3,193.7	7.4	7.1	173.28	173.28	3.2	31.2	150.5	136.5	14.00	10.752	
3,300.0	3,292.9	3,293.7	3,293.5	7.6	7.3	172.28	172.28	7.4	31.9	161.1	146.7	14.45	11.151	
3,400.0	3,392.2	3,393.6	3,393.2	7.9	7.5	170.82	170.82	13.3	32.8	171.5	156.6	14.90	11.507	
3,500.0	3,491.6	3,493.4	3,492.7	8.2	7.7	168.99	168.99	21.0	34.1	181.7	166.3	15.36	11.829	
3,600.0	3,590.9	3,592.9	3,591.8	8.5	8.0	166.89	166.89	30.1	35.5	191.9	176.0	15.82	12.127	
3,700.0	3,690.2	3,692.1	3,690.6	8.8	8.2	164.90	164.90	39.6	37.1	202.3	186.0	16.29	12.416	
3,800.0	3,789.6	3,791.3	3,789.3	9.1	8.4	163.11	163.11	49.1	38.6	212.9	196.1	16.76	12.698	
3,900.0	3,888.9	3,890.5	3,888.1	9.3	8.7	161.50	161.50	58.6	40.1	223.6	206.3	17.25	12.964	
4,000.0	3,988.5	3,989.9	3,987.0	9.6	8.9	159.89	159.89	68.1	41.6	232.3	214.5	17.72	13.108	
4,100.0	4,088.3	4,089.5	4,086.1	9.8	9.1	158.07	158.07	77.6	43.2	237.9	219.7	18.18	13.087	
4,200.0	4,188.3	4,189.0	4,185.2	9.9	9.4	155.98	155.98	87.1	44.7	240.6	221.9	18.62	12.919	
4,300.0	4,288.3	4,289.2	4,285.0	10.1	9.6	91.89	91.89	96.0	46.1	241.6	222.5	19.06	12.672	
4,400.0	4,388.3	4,390.3	4,385.8	10.3	9.8	90.53	90.53	101.8	47.1	242.3	222.9	19.48	12.441	
4,500.0	4,488.3	4,491.6	4,487.1	10.5	10.0	90.01	90.01	104.0	47.4	242.7	222.8	19.88	12.209	
4,600.0	4,588.3	4,591.7	4,587.3	10.7	10.2	90.00	90.00	104.0	47.4	242.7	222.4	20.29	11.964	
4,700.0	4,688.3	4,691.7	4,687.3	10.9	10.4	90.00	90.00	104.0	47.4	242.7	222.0	20.72	11.713	
4,800.0	4,788.3	4,791.7	4,787.3	11.1	10.6	90.00	90.00	104.0	47.4	242.7	221.5	21.16	11.472	
4,900.0	4,888.3	4,891.7	4,887.3	11.3	10.8	90.00	90.00	104.0	47.4	242.7	221.1	21.59	11.240	
5,000.0	4,988.3	4,991.7	4,987.3	11.6	11.1	90.00	90.00	104.0	47.4	242.7	220.7	22.03	11.017	

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 Sater 19E-323
<b>Project:</b>	SEC.19-T4N-R63W	<b>TVD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Reference Site:</b>	Sater 4N63W19E Pad Sec.19-T4N-R63W	<b>MD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sater 19E-323	<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 (2-11-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Sater 4N63W19E Pad Sec.19-T4N-R63W - Sater 19E-223 - Wellbore #1 - Plan #1 (2-11-15)													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
5,100.0	5,088.3	5,091.7	5,087.3	11.8	11.3	90.00	90.00	104.0	47.4	242.7	220.2	22.47	10.802	
5,200.0	5,188.3	5,191.7	5,187.3	12.0	11.5	90.00	90.00	104.0	47.4	242.7	219.8	22.91	10.596	
5,300.0	5,288.3	5,291.7	5,287.3	12.2	11.7	90.00	90.00	104.0	47.4	242.7	219.4	23.34	10.396	
5,400.0	5,388.3	5,391.7	5,387.3	12.4	11.9	90.00	90.00	104.0	47.4	242.7	218.9	23.78	10.205	
5,500.0	5,488.3	5,491.7	5,487.3	12.6	12.2	90.00	90.00	104.0	47.4	242.7	218.5	24.22	10.019	
5,600.0	5,588.3	5,591.7	5,587.3	12.8	12.4	90.00	90.00	104.0	47.4	242.7	218.0	24.66	9.841	
5,700.0	5,688.3	5,691.7	5,687.3	13.0	12.6	90.00	90.00	104.0	47.4	242.7	217.6	25.10	9.668	
5,765.8	5,754.1	5,757.5	5,753.1	13.2	12.7	90.00	90.00	104.0	47.4	242.7	217.3	25.39	9.558	
5,800.0	5,788.3	5,791.7	5,787.3	13.2	12.8	90.00	90.00	104.0	47.4	242.7	217.2	25.54	9.502	
5,900.0	5,888.3	5,891.2	5,886.4	13.4	13.0	-88.46	96.8	96.8	47.4	242.8	216.9	25.89	9.377	
6,000.0	5,987.6	5,989.3	5,982.4	13.6	13.1	-86.25	77.2	77.2	47.4	243.2	217.1	26.15	9.303	
6,100.0	6,084.7	6,086.3	6,074.2	13.7	13.2	-84.13	45.9	45.9	47.4	244.0	217.6	26.36	9.254	
6,200.0	6,177.9	6,182.2	6,160.3	13.9	13.4	-82.13	3.8	3.8	47.4	245.0	218.4	26.59	9.213	
6,300.0	6,265.7	6,272.2	6,239.7	14.0	13.5	-80.28	-48.3	-48.3	47.4	246.3	219.4	26.89	9.169	
6,400.0	6,346.4	6,371.3	6,311.4	14.2	13.8	-78.60	-109.1	-109.1	47.4	247.6	220.3	27.30	9.069	
6,500.0	6,418.7	6,464.7	6,374.6	14.4	14.2	-77.13	-177.8	-177.8	47.4	249.0	221.1	27.90	8.923	
6,600.0	6,481.4	6,557.4	6,428.6	14.8	14.7	-75.88	-253.1	-253.1	47.4	250.3	221.5	28.74	8.708	
6,700.0	6,533.4	6,650.0	6,473.0	15.4	15.4	-74.85	-334.3	-334.3	47.4	251.4	221.6	29.86	8.421	
6,800.0	6,573.8	6,741.5	6,507.0	16.2	16.2	-74.07	-419.1	-419.1	47.4	252.4	221.1	31.28	8.069	
6,900.0	6,601.9	6,833.0	6,530.6	17.2	17.1	-73.52	-507.5	-507.5	47.4	253.1	220.1	33.01	7.668	
7,000.0	6,617.3	6,924.3	6,543.4	18.4	18.2	-73.23	-597.8	-597.8	47.4	253.5	218.5	35.01	7.240	
7,100.0	6,620.2	7,017.5	6,545.6	19.6	19.4	-73.14	-691.0	-691.0	47.4	253.6	216.3	37.30	6.799	
7,200.0	6,619.5	7,117.5	6,544.5	21.0	20.8	-73.03	-790.9	-790.9	47.4	253.7	213.8	39.90	6.359	
7,300.0	6,618.9	7,217.5	6,543.3	22.4	22.2	-72.92	-890.9	-890.9	47.4	253.9	211.2	42.66	5.951	
7,400.0	6,618.2	7,317.5	6,542.1	23.9	23.7	-72.80	-990.9	-990.9	47.4	254.1	208.5	45.55	5.578	
7,500.0	6,617.6	7,417.5	6,541.0	25.5	25.3	-72.69	-1,090.9	-1,090.9	47.4	254.2	205.7	48.54	5.237	
7,600.0	6,616.9	7,517.5	6,539.8	27.1	26.9	-72.58	-1,190.9	-1,190.9	47.4	254.4	202.8	51.61	4.928	
7,700.0	6,616.3	7,617.5	6,538.6	28.7	28.6	-72.47	-1,290.9	-1,290.9	47.4	254.5	199.8	54.76	4.648	
7,800.0	6,615.7	7,717.5	6,537.5	30.4	30.3	-72.35	-1,390.9	-1,390.9	47.4	254.7	196.7	57.96	4.394	
7,900.0	6,615.0	7,817.5	6,536.3	32.1	32.0	-72.24	-1,490.9	-1,490.9	47.4	254.8	193.6	61.21	4.163	
8,000.0	6,614.4	7,917.5	6,535.1	33.8	33.7	-72.13	-1,590.9	-1,590.9	47.4	255.0	190.5	64.50	3.954	
8,100.0	6,613.7	8,017.5	6,533.9	35.6	35.5	-72.02	-1,690.9	-1,690.9	47.4	255.2	187.3	67.82	3.762	
8,200.0	6,613.1	8,117.5	6,532.8	37.4	37.2	-71.91	-1,790.9	-1,790.9	47.4	255.3	184.2	71.17	3.587	
8,300.0	6,612.4	8,217.5	6,531.6	39.1	39.0	-71.79	-1,890.9	-1,890.9	47.4	255.5	180.9	74.55	3.427	
8,400.0	6,611.8	8,317.5	6,530.4	40.9	40.8	-71.68	-1,990.8	-1,990.8	47.4	255.6	177.7	77.94	3.280	
8,500.0	6,611.1	8,417.5	6,529.3	42.7	42.6	-71.57	-2,090.8	-2,090.8	47.4	255.8	174.5	81.35	3.145	
8,600.0	6,610.5	8,517.5	6,528.1	44.5	44.4	-71.46	-2,190.8	-2,190.8	47.4	256.0	171.2	84.78	3.019	
8,700.0	6,609.8	8,617.5	6,526.9	46.4	46.2	-71.35	-2,290.8	-2,290.8	47.4	256.1	167.9	88.21	2.904	
8,800.0	6,609.2	8,717.5	6,525.8	48.2	48.1	-71.24	-2,390.8	-2,390.8	47.4	256.3	164.7	91.66	2.796	
8,900.0	6,608.6	8,817.4	6,524.6	50.0	49.9	-71.13	-2,490.8	-2,490.8	47.4	256.5	161.4	95.12	2.696	
9,000.0	6,607.9	8,917.4	6,523.4	51.9	51.8	-71.02	-2,590.8	-2,590.8	47.4	256.7	158.1	98.58	2.603	
9,100.0	6,607.3	9,017.4	6,522.3	53.7	53.6	-70.91	-2,690.8	-2,690.8	47.4	256.8	154.8	102.05	2.517	
9,200.0	6,606.6	9,117.4	6,521.1	55.6	55.5	-70.80	-2,790.8	-2,790.8	47.4	257.0	151.5	105.53	2.435	
9,300.0	6,606.0	9,217.4	6,519.9	57.4	57.3	-70.69	-2,890.8	-2,890.8	47.4	257.2	148.2	109.00	2.359	
9,400.0	6,605.3	9,317.4	6,518.7	59.3	59.2	-70.58	-2,990.8	-2,990.8	47.4	257.3	144.9	112.48	2.288	
9,500.0	6,604.7	9,417.4	6,517.6	61.1	61.1	-70.47	-3,090.8	-3,090.8	47.4	257.5	141.5	115.97	2.221	
9,600.0	6,604.0	9,517.4	6,516.4	63.0	62.9	-70.36	-3,190.7	-3,190.7	47.4	257.7	138.2	119.45	2.157	
9,700.0	6,603.4	9,617.4	6,515.2	64.9	64.8	-70.25	-3,290.7	-3,290.7	47.4	257.9	134.9	122.94	2.097	
9,800.0	6,602.7	9,717.4	6,514.1	66.7	66.7	-70.14	-3,390.7	-3,390.7	47.4	258.0	131.6	126.43	2.041	
9,900.0	6,602.1	9,817.4	6,512.9	68.6	68.5	-70.03	-3,490.7	-3,490.7	47.4	258.2	128.3	129.92	1.988	
10,000.0	6,601.4	9,917.4	6,511.7	70.5	70.4	-69.92	-3,590.7	-3,590.7	47.4	258.4	125.0	133.41	1.937	

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 Sater 19E-323
<b>Project:</b>	SEC.19-T4N-R63W	<b>TVD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Reference Site:</b>	Sater 4N63W19E Pad Sec.19-T4N-R63W	<b>MD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sater 19E-323	<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 (2-11-15)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Sater 4N63W19E Pad Sec.19-T4N-R63W - Sater 19E-223 - Wellbore #1 - Plan #1 (2-11-15)													<b>Offset Site Error:</b>	0.0 ft
Survey Program: 0-MWD													<b>Offset Well Error:</b>	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	
10,100.0	6,600.8	10,017.4	6,510.6	72.4	72.3	-69.81	-3,690.7	47.4	258.6	121.7	136.89	1.889		
10,200.0	6,600.2	10,117.4	6,509.4	74.3	74.2	-69.70	-3,790.7	47.4	258.8	118.4	140.38	1.843		
10,300.0	6,599.5	10,217.4	6,508.2	76.1	76.1	-69.59	-3,890.7	47.4	258.9	115.1	143.87	1.800		
10,400.0	6,598.9	10,317.4	6,507.1	78.0	78.0	-69.48	-3,990.7	47.4	259.1	111.8	147.35	1.759		
10,500.0	6,598.2	10,417.4	6,505.9	79.9	79.9	-69.38	-4,090.7	47.4	259.3	108.5	150.83	1.719		
10,600.0	6,597.6	10,517.4	6,504.7	81.8	81.7	-69.27	-4,190.7	47.4	259.5	105.2	154.32	1.682		
10,700.0	6,596.9	10,617.4	6,503.5	83.7	83.6	-69.16	-4,290.7	47.4	259.7	101.9	157.79	1.646		
10,800.0	6,596.3	10,717.4	6,502.4	85.6	85.5	-69.05	-4,390.6	47.4	259.9	98.6	161.27	1.611		
10,900.0	6,595.6	10,817.4	6,501.2	87.5	87.4	-68.94	-4,490.6	47.4	260.1	95.3	164.75	1.579		
10,998.5	6,595.0	10,915.9	6,500.1	89.0	89.3	-68.84	-4,589.1	47.4	260.2	92.4	167.82	1.551 SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sater 19E-323
<b>Project:</b>	SEC.19-T4N-R63W	<b>TVD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Reference Site:</b>	Sater 4N63W19E Pad Sec.19-T4N-R63W	<b>MD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sater 19E-323	<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 (2-11-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Sater 4N63W19E Pad Sec.19-T4N-R63W - Sater 19J-443 - Wellbore #1 - Plan #1 (2-11-15)													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	0.0	0.0	0.0	0.0	90.00	90.00	0.0	61.4	61.4				
100.0	100.0	99.0	99.0	0.1	0.1	90.00	90.00	0.0	61.4	61.4	61.1	0.22	274.370	
200.0	200.0	199.0	199.0	0.3	0.3	90.00	90.00	0.0	61.4	61.4	60.7	0.67	91.305	
300.0	300.0	299.0	299.0	0.6	0.6	90.00	90.00	0.0	61.4	61.4	60.2	1.12	54.710	
400.0	400.0	399.0	399.0	0.8	0.8	90.00	90.00	0.0	61.4	61.4	59.8	1.57	39.056	
500.0	500.0	499.0	499.0	1.0	1.0	90.00	90.00	0.0	61.4	61.4	59.3	2.02	30.367	
600.0	600.0	599.0	599.0	1.2	1.2	90.00	90.00	0.0	61.4	61.4	58.9	2.47	24.841	
700.0	700.0	699.0	699.0	1.5	1.5	90.00	90.00	0.0	61.4	61.4	58.4	2.92	21.016	
800.0	800.0	799.0	799.0	1.7	1.7	90.00	90.00	0.0	61.4	61.4	58.0	3.37	18.212	
900.0	900.0	899.0	899.0	1.9	1.9	90.00	90.00	0.0	61.4	61.4	57.5	3.82	16.068	
1,000.0	1,000.0	999.0	999.0	2.1	2.1	90.00	90.00	0.0	61.4	61.4	57.1	4.27	14.376	
1,100.0	1,100.0	1,099.0	1,099.0	2.4	2.4	90.00	90.00	0.0	61.4	61.4	56.6	4.72	13.006	
1,200.0	1,200.0	1,199.0	1,199.0	2.6	2.6	90.00	90.00	0.0	61.4	61.4	56.2	5.17	11.875	
1,300.0	1,300.0	1,299.0	1,299.0	2.8	2.8	90.00	90.00	0.0	61.4	61.4	55.7	5.62	10.924	
1,400.0	1,400.0	1,399.0	1,399.0	3.0	3.0	90.00	90.00	0.0	61.4	61.4	55.3	6.07	10.115	
1,500.0	1,500.0	1,499.0	1,499.0	3.3	3.3	90.00	90.00	0.0	61.4	61.4	54.8	6.52	9.417	
1,600.0	1,600.0	1,599.0	1,599.0	3.5	3.5	90.00	90.00	0.0	61.4	61.4	54.4	6.97	8.809 CC, ES	
1,700.0	1,700.0	1,698.0	1,698.0	3.7	3.7	89.79	89.79	0.2	62.2	62.2	54.8	7.40	8.399	
1,800.0	1,800.0	1,796.9	1,796.9	3.9	3.9	89.18	89.18	0.9	64.6	64.7	56.8	7.83	8.255	
1,900.0	1,900.0	1,895.7	1,895.5	4.2	4.1	150.55	150.55	2.1	68.7	69.6	61.3	8.25	8.430	
2,000.0	2,000.0	1,994.1	1,993.8	4.4	4.3	150.35	150.35	3.7	74.4	77.7	69.0	8.67	8.959	
2,100.0	2,099.9	2,092.1	2,091.5	4.6	4.5	150.45	150.45	5.8	81.7	88.9	79.8	9.09	9.788	
2,200.0	2,199.7	2,189.5	2,188.4	4.8	4.8	150.74	150.74	8.3	90.5	103.3	93.8	9.50	10.875	
2,300.0	2,299.4	2,286.1	2,284.4	5.0	5.0	151.12	151.12	11.2	100.8	120.9	111.0	9.92	12.186	
2,400.0	2,398.9	2,382.2	2,379.8	5.3	5.2	151.53	151.53	14.6	112.6	141.5	131.1	10.34	13.687	
2,500.0	2,498.3	2,479.6	2,476.3	5.5	5.5	152.06	152.06	18.1	125.1	164.1	153.3	10.76	15.245	
2,600.0	2,597.6	2,576.9	2,572.8	5.8	5.8	152.57	152.57	21.7	137.6	186.9	175.7	11.20	16.695	
2,700.0	2,696.9	2,674.3	2,669.2	6.0	6.0	152.97	152.97	25.2	150.1	209.8	198.2	11.64	18.031	
2,800.0	2,796.3	2,771.6	2,765.7	6.3	6.3	153.29	153.29	28.8	162.5	232.7	220.7	12.08	19.264	
2,900.0	2,895.6	2,868.9	2,862.2	6.5	6.6	153.56	153.56	32.3	175.0	255.7	243.1	12.53	20.404	
3,000.0	2,994.9	2,966.3	2,958.6	6.8	6.9	153.77	153.77	35.9	187.5	278.6	265.6	12.98	21.460	
3,100.0	3,094.3	3,063.6	3,055.1	7.1	7.2	153.96	153.96	39.5	200.0	301.5	288.1	13.44	22.440	
3,200.0	3,193.6	3,160.9	3,151.5	7.4	7.5	154.12	154.12	43.0	212.5	324.4	310.5	13.89	23.352	
3,300.0	3,292.9	3,258.3	3,248.0	7.6	7.8	154.26	154.26	46.6	224.9	347.3	333.0	14.35	24.202	
3,400.0	3,392.2	3,355.6	3,344.5	7.9	8.1	154.38	154.38	50.1	237.4	370.3	355.5	14.81	24.996	
3,500.0	3,491.6	3,452.9	3,440.9	8.2	8.4	154.49	154.49	53.7	249.9	393.2	377.9	15.28	25.739	
3,600.0	3,590.9	3,550.3	3,537.4	8.5	8.7	154.58	154.58	57.2	262.4	416.1	400.4	15.74	26.435	
3,700.0	3,690.2	3,647.6	3,633.9	8.8	9.0	154.67	154.67	60.8	274.9	439.1	422.8	16.21	27.089	
3,800.0	3,789.6	3,744.9	3,730.3	9.1	9.3	154.75	154.75	64.3	287.4	462.0	445.3	16.68	27.703	
3,900.0	3,888.9	3,842.3	3,826.8	9.3	9.6	154.85	154.85	67.9	299.8	484.8	467.7	17.15	28.269	
4,000.0	3,988.5	3,940.1	3,923.8	9.6	9.9	154.98	154.98	71.4	312.4	505.6	488.0	17.62	28.696	
4,100.0	4,088.3	4,038.5	4,021.3	9.8	10.2	154.91	154.91	75.0	325.0	523.3	505.2	18.07	28.956	
4,200.0	4,188.3	4,137.4	4,119.3	9.9	10.5	154.67	154.67	78.6	337.7	537.9	519.3	18.51	29.065	
4,300.0	4,288.3	4,236.5	4,217.5	10.1	10.8	92.28	92.28	82.3	350.4	550.5	531.6	18.94	29.071	
4,400.0	4,388.3	4,335.6	4,315.7	10.3	11.1	91.86	91.86	85.9	363.1	563.2	543.8	19.39	29.047	
4,500.0	4,488.3	4,434.7	4,413.9	10.5	11.5	91.46	91.46	89.5	375.8	576.0	556.1	19.84	29.025	
4,600.0	4,588.3	4,533.8	4,512.2	10.7	11.8	91.07	91.07	93.1	388.5	588.7	568.4	20.30	29.005	
4,700.0	4,688.3	4,632.9	4,610.4	10.9	12.1	90.70	90.70	96.7	401.2	601.5	580.7	20.75	28.987	
4,800.0	4,788.3	4,755.6	4,732.3	11.1	12.4	90.32	90.32	100.6	414.8	612.5	591.3	21.22	28.864	
4,900.0	4,888.3	4,881.4	4,857.7	11.3	12.7	90.09	90.09	103.0	423.4	619.4	597.7	21.67	28.577	
5,000.0	4,988.3	5,007.7	4,983.9	11.6	12.9	90.00	90.00	104.0	426.8	622.1	599.9	22.12	28.121	

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 Sater 19E-323
<b>Project:</b>	SEC.19-T4N-R63W	<b>TVD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Reference Site:</b>	Sater 4N63W19E Pad Sec.19-T4N-R63W	<b>MD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sater 19E-323	<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 (2-11-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Sater 4N63W19E Pad Sec.19-T4N-R63W - Sater 19J-443 - Wellbore #1 - Plan #1 (2-11-15)		Offset Site Error:		0.0 ft
Survey Program: 0-MWD														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)					
5,100.0	5,088.3	5,111.0	5,087.3	11.8	13.1	90.00	104.0	426.8	622.1	599.5	22.54	27.604				
5,200.0	5,188.3	5,211.0	5,187.3	12.0	13.3	90.00	104.0	426.8	622.1	599.1	22.96	27.093				
5,300.0	5,288.3	5,311.0	5,287.3	12.2	13.4	90.00	104.0	426.8	622.1	598.7	23.39	26.601				
5,400.0	5,388.3	5,411.0	5,387.3	12.4	13.6	90.00	104.0	426.8	622.1	598.3	23.81	26.124				
5,500.0	5,488.3	5,511.0	5,487.3	12.6	13.8	90.00	104.0	426.8	622.1	597.8	24.24	25.664				
5,600.0	5,588.3	5,611.0	5,587.3	12.8	14.0	90.00	104.0	426.8	622.1	597.4	24.67	25.219				
5,700.0	5,688.3	5,711.0	5,687.3	13.0	14.2	90.00	104.0	426.8	622.1	597.0	25.10	24.788				
5,800.0	5,788.3	5,811.0	5,787.3	13.2	14.4	90.00	104.0	426.8	622.1	596.6	25.53	24.371				
5,854.8	5,843.1	5,865.8	5,842.1	13.4	14.5	-90.06	104.0	426.8	622.1	596.3	25.76	24.153				
5,900.0	5,888.3	5,911.0	5,887.3	13.4	14.6	-90.06	104.0	426.8	622.1	596.1	25.95	23.976				
6,000.0	5,987.6	6,010.9	5,987.2	13.6	14.8	-90.94	102.9	426.8	622.2	595.9	26.29	23.667				
6,100.0	6,084.7	6,112.4	6,087.8	13.7	14.9	-92.01	90.7	426.8	622.5	595.9	26.56	23.439				
6,200.0	6,177.9	6,215.5	6,187.5	13.9	15.0	-93.06	64.8	426.8	623.0	596.2	26.81	23.240				
6,300.0	6,265.7	6,320.2	6,284.3	14.0	15.2	-94.07	25.0	426.8	623.7	596.6	27.09	23.020				
6,400.0	6,346.4	6,426.6	6,376.2	14.2	15.3	-95.00	-28.6	426.8	624.5	597.0	27.49	22.718				
6,500.0	6,418.7	6,534.6	6,460.8	14.4	15.5	-95.85	-95.5	426.8	625.4	597.3	28.09	22.267				
6,600.0	6,481.4	6,644.0	6,536.1	14.8	15.8	-96.60	-174.7	426.8	626.3	597.3	28.96	21.622				
6,700.0	6,533.4	6,754.8	6,600.0	15.4	16.3	-97.23	-265.0	426.8	627.1	596.9	30.19	20.769				
6,800.0	6,573.8	6,866.6	6,650.6	16.2	17.0	-97.72	-364.7	426.8	627.8	596.0	31.81	19.735				
6,900.0	6,601.9	6,979.3	6,686.4	17.2	18.0	-98.06	-471.4	426.8	628.3	594.5	33.81	18.583				
7,000.0	6,617.3	7,092.5	6,706.1	18.4	19.2	-98.25	-582.8	426.8	628.6	592.4	36.15	17.389				
7,100.0	6,620.2	7,201.6	6,710.0	19.6	20.5	-98.31	-691.8	426.8	628.7	590.0	38.72	16.238				
7,200.0	6,619.5	7,301.6	6,710.0	21.0	21.8	-98.36	-791.8	426.8	628.8	587.4	41.40	15.189				
7,300.0	6,618.9	7,401.6	6,710.0	22.4	23.2	-98.42	-891.8	426.8	628.9	584.6	44.24	14.215				
7,400.0	6,618.2	7,501.6	6,710.0	23.9	24.6	-98.48	-991.8	426.8	629.0	581.7	47.22	13.321				
7,500.0	6,617.6	7,601.6	6,710.0	25.5	26.2	-98.54	-1,091.8	426.8	629.1	578.8	50.30	12.505				
7,600.0	6,616.9	7,701.6	6,710.0	27.1	27.7	-98.60	-1,191.8	426.8	629.2	575.7	53.48	11.764				
7,700.0	6,616.3	7,801.6	6,710.0	28.7	29.3	-98.66	-1,291.8	426.8	629.3	572.5	56.73	11.091				
7,800.0	6,615.7	7,901.6	6,710.0	30.4	31.0	-98.71	-1,391.8	426.8	629.3	569.3	60.05	10.481				
7,900.0	6,615.0	8,001.6	6,710.0	32.1	32.7	-98.77	-1,491.8	426.8	629.4	566.0	63.42	9.926				
8,000.0	6,614.4	8,101.6	6,710.0	33.8	34.4	-98.83	-1,591.8	426.8	629.5	562.7	66.83	9.420				
8,100.0	6,613.7	8,201.6	6,710.0	35.6	36.1	-98.89	-1,691.8	426.8	629.6	559.4	70.28	8.959				
8,200.0	6,613.1	8,301.6	6,710.0	37.4	37.8	-98.95	-1,791.8	426.8	629.7	556.0	73.76	8.537				
8,300.0	6,612.4	8,401.6	6,710.0	39.1	39.6	-99.00	-1,891.8	426.8	629.8	552.6	77.27	8.151				
8,400.0	6,611.8	8,501.6	6,710.0	40.9	41.4	-99.06	-1,991.8	426.8	629.9	549.1	80.81	7.796				
8,500.0	6,611.1	8,601.6	6,710.0	42.7	43.1	-99.12	-2,091.8	426.8	630.0	545.7	84.36	7.468				
8,600.0	6,610.5	8,701.6	6,710.0	44.5	44.9	-99.18	-2,191.8	426.8	630.2	542.2	87.94	7.166				
8,700.0	6,609.8	8,801.6	6,710.0	46.4	46.7	-99.24	-2,291.8	426.8	630.3	538.7	91.53	6.886				
8,800.0	6,609.2	8,901.6	6,710.0	48.2	48.6	-99.29	-2,391.8	426.8	630.4	535.2	95.13	6.626				
8,900.0	6,608.6	9,001.6	6,710.0	50.0	50.4	-99.35	-2,491.8	426.8	630.5	531.7	98.74	6.385				
9,000.0	6,607.9	9,101.6	6,710.0	51.9	52.2	-99.41	-2,591.8	426.8	630.6	528.2	102.37	6.160				
9,100.0	6,607.3	9,201.6	6,710.0	53.7	54.0	-99.47	-2,691.8	426.8	630.7	524.7	106.01	5.949				
9,200.0	6,606.6	9,301.6	6,710.0	55.6	55.9	-99.53	-2,791.8	426.8	630.8	521.1	109.65	5.753				
9,300.0	6,606.0	9,401.6	6,710.0	57.4	57.7	-99.58	-2,891.8	426.8	630.9	517.6	113.30	5.568				
9,400.0	6,605.3	9,501.6	6,710.0	59.3	59.6	-99.64	-2,991.8	426.8	631.0	514.0	116.96	5.395				
9,500.0	6,604.7	9,601.6	6,710.0	61.1	61.4	-99.70	-3,091.8	426.8	631.1	510.5	120.63	5.232				
9,600.0	6,604.0	9,701.6	6,710.0	63.0	63.3	-99.76	-3,191.8	426.8	631.2	506.9	124.30	5.078				
9,700.0	6,603.4	9,801.6	6,710.0	64.9	65.2	-99.81	-3,291.8	426.8	631.3	503.4	127.97	4.933				
9,800.0	6,602.7	9,901.6	6,710.0	66.7	67.0	-99.87	-3,391.8	426.8	631.4	499.8	131.65	4.796				
9,900.0	6,602.1	10,001.6	6,710.0	68.6	68.9	-99.93	-3,491.8	426.8	631.5	496.2	135.33	4.667				
10,000.0	6,601.4	10,101.6	6,710.0	70.5	70.8	-99.99	-3,591.7	426.8	631.7	492.6	139.02	4.544				

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

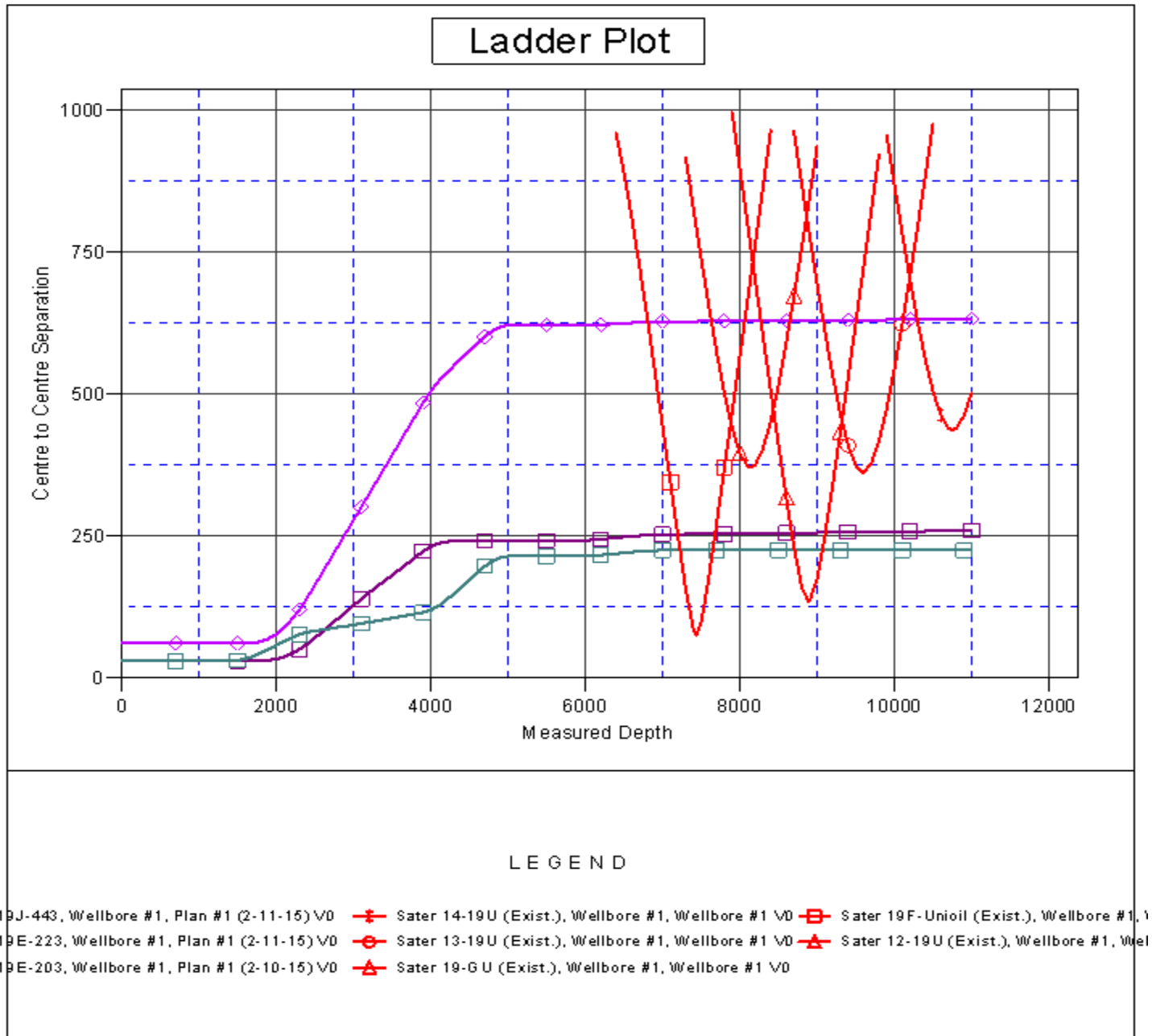
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sater 19E-323
<b>Project:</b>	SEC.19-T4N-R63W	<b>TVD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Reference Site:</b>	Sater 4N63W19E Pad Sec.19-T4N-R63W	<b>MD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sater 19E-323	<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 (2-11-15)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												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)			
10,100.0	6,600.8	10,201.6	6,710.0	72.4	72.6	-100.05	-3,691.7	426.8	631.8	489.1	142.71	4.427		
10,200.0	6,600.2	10,301.6	6,710.0	74.3	74.5	-100.10	-3,791.7	426.8	631.9	485.5	146.40	4.316		
10,300.0	6,599.5	10,401.6	6,710.0	76.1	76.4	-100.16	-3,891.7	426.8	632.0	481.9	150.10	4.211		
10,400.0	6,598.9	10,501.6	6,710.0	78.0	78.3	-100.22	-3,991.7	426.8	632.1	478.3	153.79	4.110		
10,500.0	6,598.2	10,601.6	6,710.0	79.9	80.1	-100.28	-4,091.7	426.8	632.2	474.7	157.49	4.014		
10,600.0	6,597.6	10,701.6	6,710.0	81.8	82.0	-100.33	-4,191.7	426.8	632.3	471.1	161.19	3.923		
10,700.0	6,596.9	10,801.6	6,710.0	83.7	83.9	-100.39	-4,291.7	426.8	632.5	467.6	164.89	3.836		
10,800.0	6,596.3	10,901.6	6,710.0	85.6	85.8	-100.45	-4,391.7	426.8	632.6	464.0	168.60	3.752		
10,900.0	6,595.6	11,001.6	6,710.0	87.5	87.7	-100.51	-4,491.7	426.8	632.7	460.4	172.30	3.672		
10,998.5	6,595.0	11,100.1	6,710.0	89.0	89.6	-100.56	-4,590.2	426.8	632.8	457.2	175.60	3.604 SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Sater 19E-323
<b>Project:</b>	SEC.19-T4N-R63W	<b>TVD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Reference Site:</b>	Sater 4N63W19E Pad Sec.19-T4N-R63W	<b>MD Reference:</b>	WELL @ 4674.0ft (RKB - 13')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Sater 19E-323	<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 (2-11-15)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4674.0ft (RKB - 13')  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000 °

Coordinates are relative to: Sater 19E-323  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.65°





Coordinates are relative to: Sater 19E-323  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.65°

