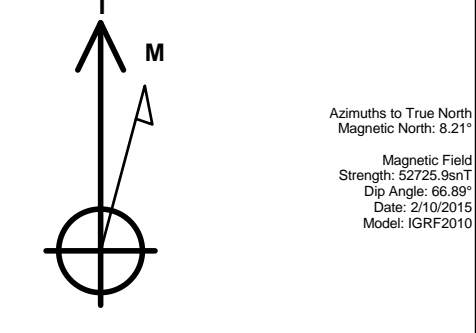


PETROLEUM DEVELOPMENT CORP Weld County CO

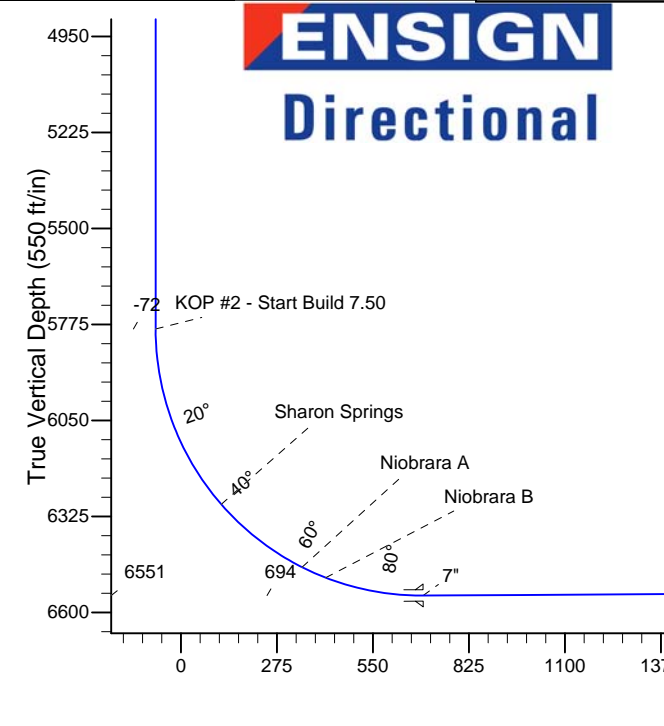
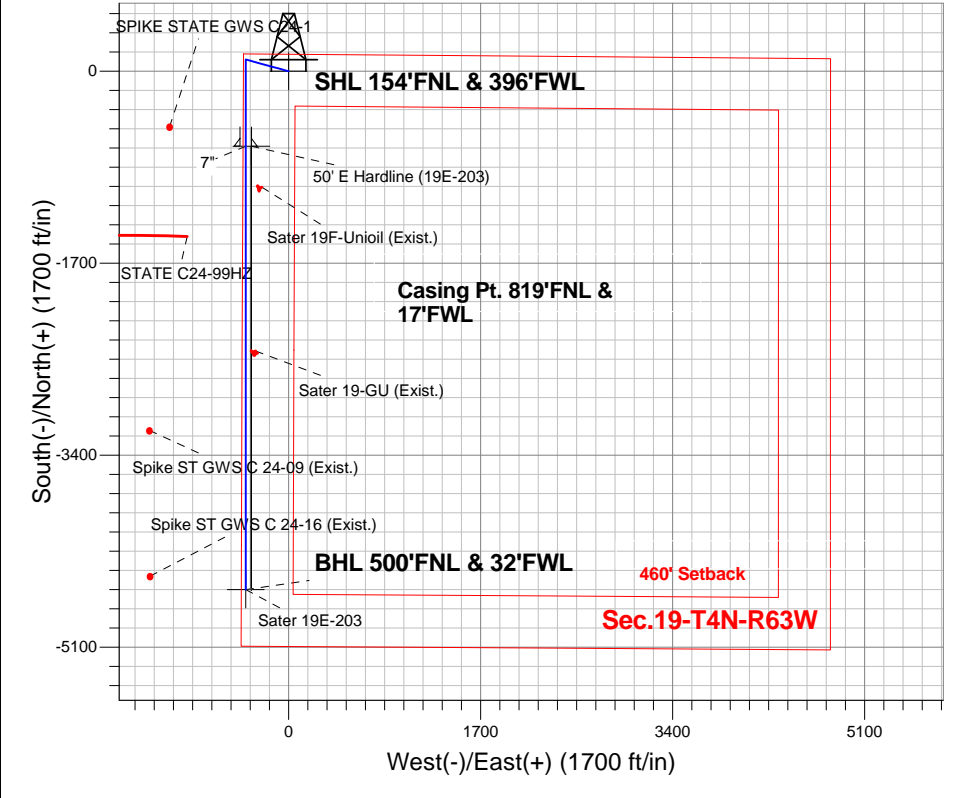
Well Name: **Sater 19E-203**
Surface Location: Sater 4N63W19E Pad Sec.19-T4N-R63W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4661.0
+N/-S +E/-W Northing Easting Latitude Longitude Slot
0.0 0.0 1355372.80 3282168.18 40.304480 -104.488270
RKB - 13' WELL @ 4674.0ft (RKB - 13')

WELLBORE TARGET DETAILS				
Name	TVD	+N/-S	+E/-W	Shape
50' E Hardline (19E-203)	1.0	-664.9	-329.4	Polygon
SHL 154'FNL & 396'FWL	1.0	0.0	0.0	Point
BHL 500'FNL & 32'FWL	6526.0	-4590.2	-379.4	Point

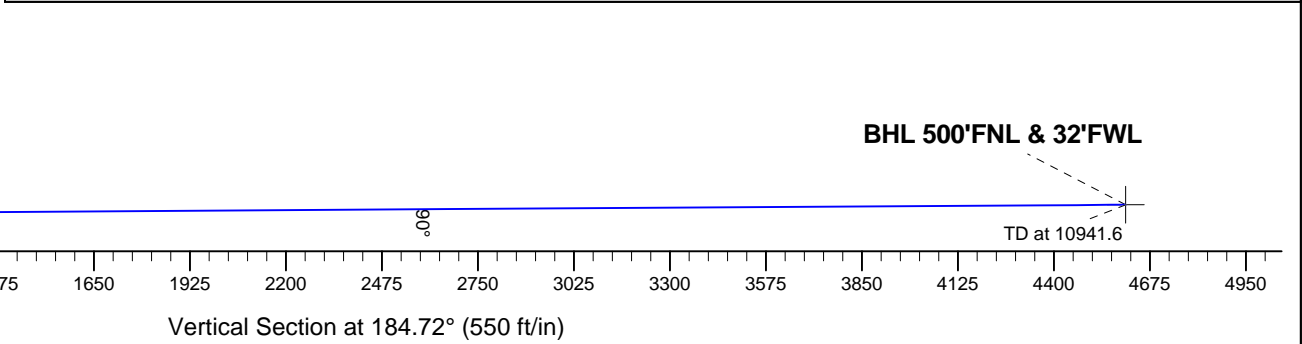


Sater 4N63W19E Pad Sec.19-T4N-R63W
Sater 19E-203
Plan #1 (2-10-15)
10:25, February 12 2015

ANNOTATIONS		
TVD	MD	Annotation
1400.0	1400.0	KOP - Start Build 1.00
4633.2	4656.0	Start Drop -2.00
5787.4	5811.2	KOP #2 - Start Build 7.50
6551.3	7016.1	Start 3925.4 hold at 7016.1 MD
6526.0	10941.6	TD at 10941.6



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	1400.0	0.00	0.00	1400.0	0.0	0.0	0.00	0.00	0.0	
3	2135.5	7.36	285.33	2133.5	12.5	-45.5	1.00	285.33	-8.7	
4	4656.0	7.36	285.33	4633.2	97.8	-356.7	0.00	0.00	-68.1	
5	5023.8	0.00	0.00	5000.0	104.0	-379.4	2.00	180.00	-72.4	
6	5811.2	0.00	0.00	5787.4	104.0	-379.4	0.00	0.00	-72.4	
7	7016.1	90.37	180.00	6551.3	-664.9	-379.4	7.50	180.00	693.9	
8	10941.6	90.37	180.00	6526.0	-4590.2	-379.4	0.00	0.00	4605.9	BHL 500'FNL & 32'FWL





PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.19-T4N-R63W

Sater 4N63W19E Pad Sec.19-T4N-R63W

Sater 19E-203

Wellbore #1

Plan: Plan #1 (2-10-15)

Standard Planning Report

12 February, 2015

Database:	Landmark	Local Co-ordinate Reference:	Well Sater 19E-203
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4674.0ft (RKB - 13')
Project:	SEC.19-T4N-R63W	MD Reference:	WELL @ 4674.0ft (RKB - 13')
Site:	Sater 4N63W19E Pad Sec.19-T4N-R63W	North Reference:	True
Well:	Sater 19E-203	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (2-10-15)		

Project	SEC.19-T4N-R63W, Weld County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

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

Well	Sater 19E-203		
Well Position	+N/-S	0.0 ft	Northing:
	+E/-W	0.0 ft	Easting:
Position Uncertainty		0.0 ft	Wellhead Elevation:
			Latitude:
			Longitude:
			Ground Level:

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/10/2015	8.21	66.89	52,726

Design	Plan #1 (2-10-15)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	184.72

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,135.5	7.36	285.33	2,133.5	12.5	-45.5	1.00	1.00	0.00	285.33	
4,656.0	7.36	285.33	4,633.2	97.8	-356.7	0.00	0.00	0.00	0.00	
5,023.8	0.00	0.00	5,000.0	104.0	-379.4	2.00	-2.00	0.00	180.00	
5,811.2	0.00	0.00	5,787.4	104.0	-379.4	0.00	0.00	0.00	0.00	
7,016.1	90.37	180.00	6,551.3	-664.9	-379.4	7.50	7.50	0.00	180.00	
10,941.6	90.37	180.00	6,526.0	-4,590.2	-379.4	0.00	0.00	0.00	0.00	BHL 500'FNL & 32'I

Database:	Landmark	Local Co-ordinate Reference:	Well Sater 19E-203
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4674.0ft (RKB - 13')
Project:	SEC.19-T4N-R63W	MD Reference:	WELL @ 4674.0ft (RKB - 13')
Site:	Sater 4N63W19E Pad Sec.19-T4N-R63W	North Reference:	True
Well:	Sater 19E-203	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (2-10-15)		

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
SHL 154'FNL & 396'FWL - 50' E Hardline (19E-203)									
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
KOP - Start Build 1.00									
1,500.0	1.00	285.33	1,500.0	0.2	-0.8	-0.2	1.00	1.00	0.00
1,600.0	2.00	285.33	1,600.0	0.9	-3.4	-0.6	1.00	1.00	0.00
1,700.0	3.00	285.33	1,699.9	2.1	-7.6	-1.4	1.00	1.00	0.00
1,800.0	4.00	285.33	1,799.7	3.7	-13.5	-2.6	1.00	1.00	0.00
1,900.0	5.00	285.33	1,899.4	5.8	-21.0	-4.0	1.00	1.00	0.00
2,000.0	6.00	285.33	1,998.9	8.3	-30.3	-5.8	1.00	1.00	0.00
2,100.0	7.00	285.33	2,098.3	11.3	-41.2	-7.9	1.00	1.00	0.00
2,135.5	7.36	285.33	2,133.5	12.5	-45.5	-8.7	1.00	1.00	0.00
2,200.0	7.36	285.33	2,197.5	14.6	-53.4	-10.2	0.00	0.00	0.00
2,300.0	7.36	285.33	2,296.6	18.0	-65.8	-12.6	0.00	0.00	0.00
2,400.0	7.36	285.33	2,395.8	21.4	-78.1	-14.9	0.00	0.00	0.00
2,500.0	7.36	285.33	2,495.0	24.8	-90.5	-17.3	0.00	0.00	0.00
2,600.0	7.36	285.33	2,594.2	28.2	-102.8	-19.6	0.00	0.00	0.00
2,700.0	7.36	285.33	2,693.3	31.6	-115.2	-22.0	0.00	0.00	0.00
2,800.0	7.36	285.33	2,792.5	35.0	-127.5	-24.3	0.00	0.00	0.00
2,900.0	7.36	285.33	2,891.7	38.3	-139.9	-26.7	0.00	0.00	0.00
3,000.0	7.36	285.33	2,990.9	41.7	-152.2	-29.0	0.00	0.00	0.00
3,100.0	7.36	285.33	3,090.0	45.1	-164.5	-31.4	0.00	0.00	0.00
3,200.0	7.36	285.33	3,189.2	48.5	-176.9	-33.8	0.00	0.00	0.00
3,300.0	7.36	285.33	3,288.4	51.9	-189.2	-36.1	0.00	0.00	0.00
3,400.0	7.36	285.33	3,387.6	55.3	-201.6	-38.5	0.00	0.00	0.00
3,462.9	7.36	285.33	3,450.0	57.4	-209.4	-39.9	0.00	0.00	0.00
Parkman									
3,500.0	7.36	285.33	3,486.8	58.6	-213.9	-40.8	0.00	0.00	0.00
3,600.0	7.36	285.33	3,585.9	62.0	-226.3	-43.2	0.00	0.00	0.00
3,700.0	7.36	285.33	3,685.1	65.4	-238.6	-45.5	0.00	0.00	0.00
3,800.0	7.36	285.33	3,784.3	68.8	-251.0	-47.9	0.00	0.00	0.00
3,900.0	7.36	285.33	3,883.5	72.2	-263.3	-50.2	0.00	0.00	0.00
4,000.0	7.36	285.33	3,982.6	75.6	-275.7	-52.6	0.00	0.00	0.00
4,100.0	7.36	285.33	4,081.8	79.0	-288.0	-55.0	0.00	0.00	0.00
4,118.3	7.36	285.33	4,100.0	79.6	-290.3	-55.4	0.00	0.00	0.00
Sussex									
4,200.0	7.36	285.33	4,181.0	82.3	-300.4	-57.3	0.00	0.00	0.00
4,300.0	7.36	285.33	4,280.2	85.7	-312.7	-59.7	0.00	0.00	0.00
4,400.0	7.36	285.33	4,379.3	89.1	-325.1	-62.0	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Sater 19E-203
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4674.0ft (RKB - 13')
Project:	SEC.19-T4N-R63W	MD Reference:	WELL @ 4674.0ft (RKB - 13')
Site:	Sater 4N63W19E Pad Sec.19-T4N-R63W	North Reference:	True
Well:	Sater 19E-203	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (2-10-15)		

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)
4,500.0	7.36	285.33	4,478.5	92.5	-337.4	-64.4	0.00	0.00	0.00
4,600.0	7.36	285.33	4,577.7	95.9	-349.7	-66.7	0.00	0.00	0.00
4,656.0	7.36	285.33	4,633.2	97.8	-356.7	-68.1	0.00	0.00	0.00
Start Drop -2.00									
4,700.0	6.48	285.33	4,676.9	99.2	-361.8	-69.0	2.00	-2.00	0.00
4,800.0	4.48	285.33	4,776.5	101.7	-371.0	-70.8	2.00	-2.00	0.00
4,888.7	2.70	285.33	4,865.0	103.2	-376.3	-71.8	2.00	-2.00	0.00
Shannon									
4,900.0	2.48	285.33	4,876.3	103.3	-376.8	-71.9	2.00	-2.00	0.00
5,000.0	0.48	285.33	4,976.2	104.0	-379.3	-72.4	2.00	-2.00	0.00
5,023.8	0.00	0.00	5,000.0	104.0	-379.4	-72.4	2.00	-2.00	0.00
5,100.0	0.00	0.00	5,076.2	104.0	-379.4	-72.4	0.00	0.00	0.00
5,200.0	0.00	0.00	5,176.2	104.0	-379.4	-72.4	0.00	0.00	0.00
5,300.0	0.00	0.00	5,276.2	104.0	-379.4	-72.4	0.00	0.00	0.00
5,400.0	0.00	0.00	5,376.2	104.0	-379.4	-72.4	0.00	0.00	0.00
5,500.0	0.00	0.00	5,476.2	104.0	-379.4	-72.4	0.00	0.00	0.00
5,600.0	0.00	0.00	5,576.2	104.0	-379.4	-72.4	0.00	0.00	0.00
5,700.0	0.00	0.00	5,676.2	104.0	-379.4	-72.4	0.00	0.00	0.00
5,800.0	0.00	0.00	5,776.2	104.0	-379.4	-72.4	0.00	0.00	0.00
5,811.2	0.00	0.00	5,787.4	104.0	-379.4	-72.4	0.00	0.00	0.00
KOP #2 - Start Build 7.50									
5,900.0	6.66	180.00	5,876.0	98.8	-379.4	-67.3	7.50	7.50	0.00
6,000.0	14.16	180.00	5,974.3	80.8	-379.4	-49.3	7.50	7.50	0.00
6,100.0	21.66	180.00	6,069.4	50.1	-379.4	-18.6	7.50	7.50	0.00
6,200.0	29.16	180.00	6,159.7	7.2	-379.4	24.1	7.50	7.50	0.00
6,300.0	36.66	180.00	6,243.6	-47.1	-379.4	78.2	7.50	7.50	0.00
6,359.7	41.14	180.00	6,290.0	-84.6	-379.4	115.6	7.50	7.50	0.00
Sharon Springs									
6,400.0	44.16	180.00	6,319.6	-111.9	-379.4	142.8	7.50	7.50	0.00
6,500.0	51.66	180.00	6,386.6	-186.1	-379.4	216.7	7.50	7.50	0.00
6,600.0	59.16	180.00	6,443.4	-268.3	-379.4	298.7	7.50	7.50	0.00
6,655.4	63.32	180.00	6,470.0	-316.9	-379.4	347.1	7.50	7.50	0.00
Niobrara A									
6,700.0	66.66	180.00	6,488.9	-357.3	-379.4	387.3	7.50	7.50	0.00
6,729.5	68.87	180.00	6,500.0	-384.6	-379.4	414.5	7.50	7.50	0.00
Niobrara B									
6,800.0	74.16	180.00	6,522.4	-451.4	-379.4	481.2	7.50	7.50	0.00
6,900.0	81.66	180.00	6,543.3	-549.1	-379.4	578.5	7.50	7.50	0.00
7,000.0	89.16	180.00	6,551.3	-648.8	-379.4	677.8	7.50	7.50	0.00
7,016.1	90.37	180.00	6,551.3	-664.9	-379.4	693.8	7.50	7.50	0.00
Start 3925.4 hold at 7016.1 MD - 7"									
7,100.0	90.37	180.00	6,550.8	-748.8	-379.4	777.5	0.00	0.00	0.00
7,200.0	90.37	180.00	6,550.2	-848.8	-379.4	877.1	0.00	0.00	0.00
7,300.0	90.37	180.00	6,549.5	-948.7	-379.4	976.8	0.00	0.00	0.00
7,400.0	90.37	180.00	6,548.9	-1,048.7	-379.4	1,076.4	0.00	0.00	0.00
7,500.0	90.37	180.00	6,548.2	-1,148.7	-379.4	1,176.1	0.00	0.00	0.00
7,600.0	90.37	180.00	6,547.6	-1,248.7	-379.4	1,275.8	0.00	0.00	0.00
7,700.0	90.37	180.00	6,546.9	-1,348.7	-379.4	1,375.4	0.00	0.00	0.00
7,800.0	90.37	180.00	6,546.3	-1,448.7	-379.4	1,475.1	0.00	0.00	0.00
7,900.0	90.37	180.00	6,545.6	-1,548.7	-379.4	1,574.7	0.00	0.00	0.00
8,000.0	90.37	180.00	6,545.0	-1,648.7	-379.4	1,674.4	0.00	0.00	0.00
8,100.0	90.37	180.00	6,544.3	-1,748.7	-379.4	1,774.0	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Sater 19E-203
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4674.0ft (RKB - 13')
Project:	SEC.19-T4N-R63W	MD Reference:	WELL @ 4674.0ft (RKB - 13')
Site:	Sater 4N63W19E Pad Sec.19-T4N-R63W	North Reference:	True
Well:	Sater 19E-203	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (2-10-15)		

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)
8,200.0	90.37	180.00	6,543.7	-1,848.7	-379.4	1,873.7	0.00	0.00	0.00
8,300.0	90.37	180.00	6,543.1	-1,948.7	-379.4	1,973.4	0.00	0.00	0.00
8,400.0	90.37	180.00	6,542.4	-2,048.7	-379.4	2,073.0	0.00	0.00	0.00
8,500.0	90.37	180.00	6,541.8	-2,148.7	-379.4	2,172.7	0.00	0.00	0.00
8,600.0	90.37	180.00	6,541.1	-2,248.7	-379.4	2,272.3	0.00	0.00	0.00
8,700.0	90.37	180.00	6,540.5	-2,348.7	-379.4	2,372.0	0.00	0.00	0.00
8,800.0	90.37	180.00	6,539.8	-2,448.7	-379.4	2,471.6	0.00	0.00	0.00
8,900.0	90.37	180.00	6,539.2	-2,548.7	-379.4	2,571.3	0.00	0.00	0.00
9,000.0	90.37	180.00	6,538.5	-2,648.7	-379.4	2,671.0	0.00	0.00	0.00
9,100.0	90.37	180.00	6,537.9	-2,748.7	-379.4	2,770.6	0.00	0.00	0.00
9,200.0	90.37	180.00	6,537.2	-2,848.7	-379.4	2,870.3	0.00	0.00	0.00
9,300.0	90.37	180.00	6,536.6	-2,948.7	-379.4	2,969.9	0.00	0.00	0.00
9,400.0	90.37	180.00	6,536.0	-3,048.7	-379.4	3,069.6	0.00	0.00	0.00
9,500.0	90.37	180.00	6,535.3	-3,148.7	-379.4	3,169.3	0.00	0.00	0.00
9,600.0	90.37	180.00	6,534.7	-3,248.7	-379.4	3,268.9	0.00	0.00	0.00
9,700.0	90.37	180.00	6,534.0	-3,348.7	-379.4	3,368.6	0.00	0.00	0.00
9,800.0	90.37	180.00	6,533.4	-3,448.7	-379.4	3,468.2	0.00	0.00	0.00
9,900.0	90.37	180.00	6,532.7	-3,548.7	-379.4	3,567.9	0.00	0.00	0.00
10,000.0	90.37	180.00	6,532.1	-3,648.7	-379.4	3,667.5	0.00	0.00	0.00
10,100.0	90.37	180.00	6,531.4	-3,748.7	-379.4	3,767.2	0.00	0.00	0.00
10,200.0	90.37	180.00	6,530.8	-3,848.7	-379.4	3,866.9	0.00	0.00	0.00
10,300.0	90.37	180.00	6,530.1	-3,948.7	-379.4	3,966.5	0.00	0.00	0.00
10,400.0	90.37	180.00	6,529.5	-4,048.7	-379.4	4,066.2	0.00	0.00	0.00
10,500.0	90.37	180.00	6,528.9	-4,148.7	-379.4	4,165.8	0.00	0.00	0.00
10,600.0	90.37	180.00	6,528.2	-4,248.7	-379.4	4,265.5	0.00	0.00	0.00
10,700.0	90.37	180.00	6,527.6	-4,348.7	-379.4	4,365.2	0.00	0.00	0.00
10,800.0	90.37	180.00	6,526.9	-4,448.7	-379.4	4,464.8	0.00	0.00	0.00
10,900.0	90.37	180.00	6,526.3	-4,548.7	-379.4	4,564.5	0.00	0.00	0.00
10,941.6	90.37	180.00	6,526.0	-4,590.2	-379.4	4,605.9	0.00	0.00	0.00
BHL 500'FNL & 32'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									
BHL 500'FNL & 32'FV	0.00	0.00	6,526.0	-4,590.2	-379.4	1,350,778.74	3,281,841.19	40.291880	-104.489630
- plan hits target center									
- Point									
SHL 154'FNL & 396'F	0.00	0.00	1.0	0.0	0.0	1,355,372.81	3,282,168.18	40.304480	-104.488270
- plan hits target center									
- Point									
50' E Hardline (19E-203)	0.00	0.00	1.0	-664.9	-329.4	1,354,704.21	3,281,846.40	40.302655	-104.489451
- plan misses target center by 742.0ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)									
- Polygon									
Point 1			1.0	0.0	0.0	1,354,704.21	3,281,846.40		
Point 2			1.0	-3,925.3	0.0	1,350,779.35	3,281,891.18		

Database:	Landmark	Local Co-ordinate Reference:	Well Sater 19E-203
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4674.0ft (RKB - 13')
Project:	SEC.19-T4N-R63W	MD Reference:	WELL @ 4674.0ft (RKB - 13')
Site:	Sater 4N63W19E Pad Sec.19-T4N-R63W	North Reference:	True
Well:	Sater 19E-203	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (2-10-15)		

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,016.1	6,551.3	7"	7	7-1/2

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,462.9	3,450.0	Parkman		0.00	
4,118.3	4,100.0	Sussex		0.00	
4,888.7	4,865.0	Shannon		0.00	
6,359.7	6,290.0	Sharon Springs		0.00	
6,655.4	6,470.0	Niobrara A		0.00	
6,729.5	6,500.0	Niobrara B		0.00	
	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)	
1,400.0	1,400.0	0.0	0.0	KOP - Start Build 1.00
4,656.0	4,633.2	97.8	-356.7	Start Drop -2.00
5,811.2	5,787.4	104.0	-379.4	KOP #2 - Start Build 7.50
7,016.1	6,551.3	-664.9	-379.4	Start 3925.4 hold at 7016.1 MD
10,941.6	6,526.0	-4,590.3	-379.4	TD at 10941.6



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.19-T4N-R63W

Sater 4N63W19E Pad Sec.19-T4N-R63W

Sater 19E-203

Wellbore #1

Plan #1 (2-10-15)

Anticollision Report

12 February, 2015



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sater 19E-203
Project:	SEC.19-T4N-R63W	TVD Reference:	WELL @ 4674.0ft (RKB - 13')
Reference Site:	Sater 4N63W19E Pad Sec.19-T4N-R63W	MD Reference:	WELL @ 4674.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sater 19E-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (2-10-15)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (2-10-15)
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	MD Interval 100.0ft
Depth Range:	Unlimited
Results Limited by:	Maximum center-center distance of 1,000.0ft
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	ISCWSA
Scan Method:	Closest Approach 3D
Error Surface:	Elliptical Conic

Survey Tool Program		Date	2/12/2015		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	10,941.6	Plan #1 (2-10-15) (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 19F-Unioil (Exist.) - Wellbore #1 - Wellbore #1	7,380.4	6,560.1	137.2	101.9	3.880	CC, ES, SF
Sater 19-GU (Exist.) - Wellbore #1 - Wellbore #1	8,831.8	6,588.0	77.7	16.7	1.275	Level 3, CC, ES, SF
Spike ST GWS C 24-09 (Exist.) - Wellbore #1 - Wellbore	9,531.7	6,572.1	853.6	659.3	4.395	CC, ES
Spike ST GWS C 24-09 (Exist.) - Wellbore #1 - Wellbore	9,600.0	6,571.7	856.3	660.8	4.380	SF
Spike ST GWS C 24-16 (Exist.) - Wellbore #1 - Wellbore	10,821.3	6,583.8	845.3	626.5	3.864	CC, ES
Spike ST GWS C 24-16 (Exist.) - Wellbore #1 - Wellbore	10,900.0	6,583.3	848.9	628.7	3.855	SF
Sater 4N63W19E Pad Sec.19-T4N-R63W						
Sater 19E-223 - Wellbore #1 - Plan #1 (2-11-15)	1,400.0	1,399.0	61.4	55.3	10.115	CC, ES
Sater 19E-223 - Wellbore #1 - Plan #1 (2-11-15)	10,941.6	10,916.7	458.2	279.8	2.569	SF
Sater 19E-323 - Wellbore #1 - Plan #1 (2-11-15)	1,400.0	1,400.0	30.7	24.6	5.056	CC, ES
Sater 19E-323 - Wellbore #1 - Plan #1 (2-11-15)	10,941.6	10,998.5	225.6	54.1	1.315	Level 3, SF
Sater 19J-443 - Wellbore #1 - Plan #1 (2-11-15)	1,400.0	1,399.0	92.0	86.0	15.172	CC, ES
Sater 19J-443 - Wellbore #1 - Plan #1 (2-11-15)	10,941.6	11,100.1	857.1	682.0	4.895	SF
SPIKE STATE GWS C24-1						
SPIKE STATE GWS C24-1 - Wellbore #1 - Design #1	6,841.6	6,569.6	674.9	643.2	21.282	CC, ES
SPIKE STATE GWS C24-1 - Wellbore #1 - Design #1	7,000.0	6,588.3	692.9	659.3	20.614	SF
SPIKE STATE GWS C24-8J						
SPIKE STATE GWS C24-8J - Wellbore #1 - Wellbore #1						Out of range
STATE C24-99HZ PAD 24-4N-64W						
STATE C24-99HZ - Wellbore #1 - Wellbore #1	7,814.2	10,838.0	519.2	473.1	11.281	CC, ES
STATE C24-99HZ - Wellbore #1 - Wellbore #1	7,900.0	10,838.0	526.2	478.7	11.079	SF

Offset Design		Existing Wells Sec.19-T4N-R63W - Sater 19F-Unioil (Exist.) - Wellbore #1 - Wellbore #1										Offset Site Error:		0.0 ft	
Survey Program:		600-NS-GYRO-MS										Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance								
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning		
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
6,300.0	6,243.6	6,271.9	6,270.5	15.2	10.5	-9.62	-1,031.4	-247.1	993.2	971.9	21.33	46.571			
6,400.0	6,319.6	6,342.1	6,340.7	15.4	10.6	-11.56	-1,030.3	-245.9	928.1	908.1	19.96	46.504			
6,500.0	6,386.6	6,404.3	6,402.9	15.7	10.7	-14.51	-1,029.7	-244.9	854.3	835.7	18.57	46.000			
6,600.0	6,443.4	6,457.4	6,456.0	16.1	10.8	-19.17	-1,029.4	-244.0	773.0	755.5	17.53	44.098			

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sater 19E-203
Project:	SEC.19-T4N-R63W	TVD Reference:	WELL @ 4674.0ft (RKB - 13')
Reference Site:	Sater 4N63W19E Pad Sec.19-T4N-R63W	MD Reference:	WELL @ 4674.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sater 19E-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (2-10-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.19-T4N-R63W - Sater 19F-Unioil (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 600-NS-GYRO-MS													Offset Well Error:	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	
6,700.0	6,488.9	6,500.5	6,499.1	16.8	10.9	-26.95	-1,029.3	-243.2	685.6	668.0	17.62	38.913		
6,800.0	6,522.4	6,534.3	6,532.9	17.6	10.9	-40.69	-1,029.2	-242.6	593.8	573.4	20.30	29.245		
6,900.0	6,543.3	6,555.3	6,553.9	18.6	11.0	-62.63	-1,029.2	-242.3	499.2	473.5	25.78	19.363		
7,000.0	6,551.3	6,563.2	6,561.8	19.8	11.0	-87.05	-1,029.2	-242.1	404.4	374.6	29.84	13.555		
7,100.0	6,550.8	6,562.5	6,561.1	21.0	11.0	-90.04	-1,029.2	-242.1	312.2	281.0	31.25	9.990		
7,200.0	6,550.2	6,561.6	6,560.2	22.4	11.0	-89.68	-1,029.2	-242.2	226.7	194.0	32.66	6.942		
7,300.0	6,549.5	6,560.8	6,559.4	23.9	11.0	-89.32	-1,029.2	-242.2	159.1	124.9	34.13	4.660		
7,380.4	6,549.0	6,560.1	6,558.7	25.1	11.0	-89.04	-1,029.2	-242.2	137.2	101.9	35.37	3.880 CC, ES, SF		
7,400.0	6,548.9	6,559.9	6,558.5	25.4	11.0	-88.97	-1,029.2	-242.2	138.6	103.0	35.67	3.886		
7,500.0	6,548.2	6,559.1	6,557.7	26.9	11.0	-88.61	-1,029.2	-242.2	182.0	144.8	37.25	4.886		
7,600.0	6,547.6	6,558.2	6,556.8	28.5	11.0	-88.26	-1,029.2	-242.2	258.9	220.0	38.87	6.660		
7,700.0	6,546.9	6,557.4	6,556.0	30.2	11.0	-87.91	-1,029.2	-242.2	347.8	307.2	40.53	8.581		
7,800.0	6,546.3	6,556.6	6,555.2	31.8	11.0	-87.56	-1,029.2	-242.2	441.4	399.2	42.21	10.458		
7,900.0	6,545.6	6,555.7	6,554.3	33.5	11.0	-87.21	-1,029.2	-242.3	537.4	493.4	43.91	12.237		
8,000.0	6,545.0	6,554.9	6,553.5	35.3	11.0	-86.86	-1,029.2	-242.3	634.6	588.9	45.63	13.905		
8,100.0	6,544.3	6,554.1	6,552.7	37.0	11.0	-86.52	-1,029.2	-242.3	732.5	685.1	47.37	15.463		
8,200.0	6,543.7	6,553.2	6,551.8	38.8	11.0	-86.18	-1,029.2	-242.3	830.9	781.8	49.12	16.916		
8,300.0	6,543.1	6,552.4	6,551.0	40.5	11.0	-85.83	-1,029.2	-242.3	929.7	878.8	50.88	18.272		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sater 19E-203
Project:	SEC.19-T4N-R63W	TVD Reference:	WELL @ 4674.0ft (RKB - 13')
Reference Site:	Sater 4N63W19E Pad Sec.19-T4N-R63W	MD Reference:	WELL @ 4674.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sater 19E-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (2-10-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.19-T4N-R63W - Sater 19-GU (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 550-NS-GYRO-MS													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
7,900.0	6,545.6	6,603.6	6,602.0	33.5	11.3	-99.68	-2,480.3	-301.3	934.9	890.9	43.97	21.259		
8,000.0	6,545.0	6,602.0	6,600.3	35.3	11.3	-98.51	-2,480.3	-301.3	835.3	789.5	45.80	18.239		
8,100.0	6,544.3	6,600.3	6,598.6	37.0	11.3	-97.32	-2,480.3	-301.4	735.8	688.2	47.63	15.449		
8,200.0	6,543.7	6,598.6	6,597.0	38.8	11.3	-96.12	-2,480.4	-301.4	636.4	587.0	49.47	12.866		
8,300.0	6,543.1	6,597.0	6,595.3	40.5	11.3	-94.91	-2,480.4	-301.5	537.3	486.0	51.31	10.473		
8,400.0	6,542.4	6,595.3	6,593.6	42.3	11.3	-93.68	-2,480.4	-301.5	438.6	385.5	53.14	8.254		
8,500.0	6,541.8	6,593.6	6,592.0	44.1	11.2	-92.45	-2,480.4	-301.6	340.7	285.7	54.97	6.197		
8,600.0	6,541.1	6,591.9	6,590.3	45.9	11.2	-91.22	-2,480.4	-301.6	244.4	187.6	56.80	4.303		
8,700.0	6,540.5	6,590.2	6,588.6	47.7	11.2	-89.97	-2,480.4	-301.7	153.0	94.4	58.60	2.610		
8,800.0	6,539.8	6,588.5	6,586.9	49.6	11.2	-88.72	-2,480.5	-301.7	83.9	23.5	60.39	1.390 Level 3		
8,831.8	6,539.6	6,588.0	6,586.3	50.1	11.2	-88.32	-2,480.5	-301.7	77.7	16.7	60.96	1.275 Level 3, CC, ES, SF		
8,900.0	6,539.2	6,586.8	6,585.2	51.4	11.2	-87.47	-2,480.5	-301.8	103.4	41.2	62.17	1.663		
9,000.0	6,538.5	6,585.1	6,583.5	53.2	11.2	-86.21	-2,480.5	-301.8	185.3	121.4	63.91	2.899		
9,100.0	6,537.9	6,583.4	6,581.8	55.1	11.2	-84.95	-2,480.5	-301.9	279.2	213.6	65.63	4.254		
9,200.0	6,537.2	6,581.7	6,580.1	56.9	11.2	-83.69	-2,480.5	-301.9	376.3	309.0	67.33	5.589		
9,300.0	6,536.6	6,580.0	6,578.3	58.8	11.2	-82.43	-2,480.6	-302.0	474.6	405.6	68.99	6.879		
9,400.0	6,536.0	6,578.3	6,576.6	60.6	11.2	-81.17	-2,480.6	-302.0	573.4	502.8	70.62	8.120		
9,500.0	6,535.3	6,576.5	6,574.9	62.5	11.2	-79.91	-2,480.6	-302.1	672.6	600.4	72.21	9.315		
9,600.0	6,534.7	6,574.8	6,573.1	64.3	11.2	-78.66	-2,480.6	-302.1	772.0	698.3	73.76	10.466		
9,700.0	6,534.0	6,573.0	6,571.4	66.2	11.2	-77.42	-2,480.6	-302.2	871.6	796.3	75.28	11.578		
9,800.0	6,533.4	6,571.3	6,569.6	68.1	11.2	-76.18	-2,480.7	-302.2	971.2	894.4	76.75	12.654		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sater 19E-203
Project:	SEC.19-T4N-R63W	TVD Reference:	WELL @ 4674.0ft (RKB - 13')
Reference Site:	Sater 4N63W19E Pad Sec.19-T4N-R63W	MD Reference:	WELL @ 4674.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sater 19E-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (2-10-15)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Existing Wells Sec.19-T4N-R63W - Spike ST GWS C 24-09 (Exist.) - Wellbore #1 - Wellbore #1												Offset Well Error:	0.0 ft
Survey Program: 6954-UNKNOWN													
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
9,100.0	6,537.9	6,574.9	6,574.9	55.1	131.5	90.19	-3,180.4	-1,233.0	956.5	770.3	186.23	5.136	
9,200.0	6,537.2	6,574.2	6,574.2	56.9	131.5	90.14	-3,180.4	-1,233.0	915.7	727.7	188.08	4.869	
9,300.0	6,536.6	6,573.6	6,573.6	58.8	131.5	90.10	-3,180.4	-1,233.0	884.4	694.5	189.92	4.657	
9,400.0	6,536.0	6,573.0	6,573.0	60.6	131.5	90.06	-3,180.4	-1,233.0	863.7	671.9	191.78	4.503	
9,500.0	6,535.3	6,572.3	6,572.3	62.5	131.4	90.01	-3,180.4	-1,233.0	854.2	660.5	193.63	4.411	
9,531.7	6,535.1	6,572.1	6,572.1	63.1	131.4	90.00	-3,180.4	-1,233.0	853.6	659.3	194.22	4.395 CC, ES	
9,600.0	6,534.7	6,571.7	6,571.7	64.3	131.4	89.97	-3,180.4	-1,233.0	856.3	660.8	195.49	4.380 SF	
9,700.0	6,534.0	6,571.0	6,571.0	66.2	131.4	89.93	-3,180.4	-1,233.0	870.0	672.7	197.35	4.408	
9,800.0	6,533.4	6,570.4	6,570.4	68.1	131.4	89.88	-3,180.4	-1,233.0	894.8	695.5	199.21	4.491	
9,900.0	6,532.7	6,569.7	6,569.7	69.9	131.4	89.84	-3,180.4	-1,233.0	929.6	728.6	201.08	4.623	
10,000.0	6,532.1	6,569.1	6,569.1	71.8	131.4	89.80	-3,180.4	-1,233.0	973.6	770.7	202.95	4.797	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sater 19E-203
Project:	SEC.19-T4N-R63W	TVD Reference:	WELL @ 4674.0ft (RKB - 13')
Reference Site:	Sater 4N63W19E Pad Sec.19-T4N-R63W	MD Reference:	WELL @ 4674.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sater 19E-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (2-10-15)	Offset TVD Reference:	Offset Datum

Offset Design Existing Wells Sec.19-T4N-R63W - Spike ST GWS C 24-16 (Exist.) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 6970-UNKNOWN													Offset Well Error:	0.0 ft
Reference	Offset	Semi Major Axis		Distance		Warning								
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
10,300.0	6,530.1	6,587.1	6,587.1	77.4	131.7	90.23	-4,470.0	-1,224.7	993.1	784.1	208.95	4.753		
10,400.0	6,529.5	6,586.5	6,586.5	79.3	131.7	90.18	-4,470.0	-1,224.7	944.4	733.6	210.83	4.480		
10,500.0	6,528.9	6,585.9	6,585.9	81.2	131.7	90.14	-4,470.0	-1,224.7	904.3	691.6	212.71	4.251		
10,600.0	6,528.2	6,585.2	6,585.2	83.1	131.7	90.10	-4,470.0	-1,224.7	873.8	659.2	214.58	4.072		
10,700.0	6,527.6	6,584.6	6,584.6	85.0	131.7	90.05	-4,470.0	-1,224.7	853.9	637.5	216.46	3.945		
10,800.0	6,526.9	6,583.9	6,583.9	86.9	131.7	90.01	-4,470.0	-1,224.7	845.5	627.2	218.35	3.872		
10,821.3	6,526.8	6,583.8	6,583.8	87.3	131.7	90.00	-4,470.0	-1,224.7	845.3	626.5	218.75	3.864 CC, ES		
10,900.0	6,526.3	6,583.3	6,583.3	88.8	131.7	89.97	-4,470.0	-1,224.7	848.9	628.7	220.23	3.855 SF		
10,941.6	6,526.0	6,583.0	6,583.0	89.6	131.7	89.95	-4,470.0	-1,224.7	853.8	632.8	221.01	3.863		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sater 19E-203
Project:	SEC.19-T4N-R63W	TVD Reference:	WELL @ 4674.0ft (RKB - 13')
Reference Site:	Sater 4N63W19E Pad Sec.19-T4N-R63W	MD Reference:	WELL @ 4674.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sater 19E-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (2-10-15)	Offset TVD Reference:	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	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 CC, ES	
1,500.0	1,500.0	1,499.0	1,499.0	3.2	3.3	164.88	164.88	0.0	61.4	62.2	55.7	6.50	9.563	
1,600.0	1,600.0	1,599.0	1,599.0	3.5	3.5	165.48	165.48	0.0	61.4	64.7	57.8	6.93	9.337	
1,700.0	1,699.9	1,698.9	1,698.9	3.7	3.7	166.38	166.38	0.0	61.4	69.0	61.6	7.36	9.368	
1,800.0	1,799.7	1,798.7	1,798.7	3.9	3.9	167.46	167.46	0.0	61.4	74.9	67.1	7.79	9.616	
1,900.0	1,899.4	1,898.4	1,898.4	4.1	4.2	168.63	168.63	0.0	61.4	82.6	74.4	8.22	10.049	
2,000.0	1,998.9	1,997.9	1,997.9	4.3	4.4	169.79	169.79	0.0	61.4	92.0	83.4	8.65	10.642	
2,100.0	2,098.3	2,097.3	2,097.3	4.6	4.6	170.89	170.89	0.0	61.4	103.2	94.1	9.07	11.372	
2,200.0	2,197.5	2,196.5	2,196.5	4.9	4.8	171.88	171.88	0.0	61.4	115.7	106.2	9.51	12.171	
2,300.0	2,296.6	2,295.6	2,295.6	5.1	5.0	172.68	172.68	0.0	61.4	128.4	118.5	9.95	12.905	
2,400.0	2,395.8	2,394.8	2,394.8	5.4	5.3	173.34	173.34	0.0	61.4	141.1	130.7	10.39	13.576	
2,500.0	2,495.0	2,494.0	2,494.0	5.7	5.5	173.90	173.90	0.0	61.4	153.8	143.0	10.84	14.191	
2,600.0	2,594.2	2,593.2	2,593.2	6.0	5.7	174.37	174.37	0.0	61.4	166.6	155.3	11.29	14.756	
2,700.0	2,693.3	2,692.3	2,692.3	6.3	5.9	174.77	174.77	0.0	61.4	179.3	167.6	11.74	15.278	
2,800.0	2,792.5	2,791.5	2,791.5	6.6	6.2	175.12	175.12	0.0	61.4	192.1	179.9	12.19	15.760	
2,900.0	2,891.7	2,890.7	2,890.7	6.9	6.4	175.42	175.42	0.0	61.4	204.8	192.2	12.64	16.207	
3,000.0	2,990.9	2,989.9	2,989.9	7.2	6.6	175.69	175.69	0.0	61.4	217.6	204.5	13.09	16.622	
3,100.0	3,090.0	3,089.2	3,089.2	7.5	6.8	175.76	175.76	0.7	61.5	230.3	216.8	13.54	17.008	
3,200.0	3,189.2	3,188.5	3,188.5	7.8	7.1	175.41	175.41	3.1	61.9	243.0	229.0	14.00	17.364	
3,300.0	3,288.4	3,287.7	3,287.7	8.1	7.3	174.71	174.71	7.1	62.5	255.7	241.2	14.45	17.696	
3,400.0	3,387.6	3,386.9	3,386.6	8.4	7.5	173.70	173.70	12.9	63.4	268.4	253.5	14.90	18.008	
3,500.0	3,486.8	3,485.8	3,485.2	8.7	7.7	172.44	172.44	20.3	64.6	281.2	265.8	15.36	18.304	
3,600.0	3,585.9	3,584.6	3,583.6	9.0	7.9	170.97	170.97	29.3	66.1	294.2	278.4	15.83	18.588	
3,700.0	3,685.1	3,683.4	3,681.9	9.3	8.2	169.55	169.55	38.8	67.6	307.4	291.1	16.30	18.862	
3,800.0	3,784.3	3,782.2	3,780.3	9.6	8.4	168.24	168.24	48.2	69.1	320.8	304.0	16.77	19.125	
3,900.0	3,883.5	3,881.1	3,878.7	10.0	8.6	167.03	167.03	57.7	70.6	334.3	317.0	17.25	19.377	
4,000.0	3,982.6	3,979.9	3,977.1	10.3	8.9	165.92	165.92	67.1	72.2	348.0	330.2	17.74	19.618	
4,100.0	4,081.8	4,078.8	4,075.5	10.6	9.1	164.90	164.90	76.6	73.7	361.7	343.5	18.23	19.848	
4,200.0	4,181.0	4,177.6	4,173.8	10.9	9.4	163.95	163.95	86.0	75.2	375.6	356.9	18.72	20.068	
4,300.0	4,280.2	4,277.7	4,273.5	11.2	9.6	163.12	163.12	95.1	76.7	389.5	370.3	19.20	20.287	
4,400.0	4,379.3	4,379.4	4,375.0	11.6	9.8	162.78	162.78	101.3	77.7	402.9	383.3	19.64	20.512	
4,500.0	4,478.5	4,481.4	4,476.9	11.9	10.0	162.96	162.96	103.9	78.1	415.6	395.6	20.06	20.717	
4,600.0	4,577.7	4,581.2	4,576.7	12.2	10.2	163.45	163.45	104.0	78.1	427.9	407.4	20.49	20.886	
4,700.0	4,676.9	4,680.4	4,675.9	12.5	10.4	163.94	163.94	104.0	78.1	439.9	418.9	20.95	21.000	
4,800.0	4,776.5	4,779.9	4,775.5	12.7	10.6	164.33	164.33	104.0	78.1	449.1	427.7	21.39	20.998	
4,900.0	4,876.3	4,879.7	4,875.3	12.9	10.8	164.57	164.57	104.0	78.1	454.9	433.1	21.80	20.865	
5,000.0	4,976.2	4,979.7	4,975.2	13.1	11.0	164.67	164.67	104.0	78.1	457.4	435.2	22.19	20.609	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sater 19E-203
Project:	SEC.19-T4N-R63W	TVD Reference:	WELL @ 4674.0ft (RKB - 13')
Reference Site:	Sater 4N63W19E Pad Sec.19-T4N-R63W	MD Reference:	WELL @ 4674.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sater 19E-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (2-10-15)	Offset TVD Reference:	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
5,100.0	5,076.2	5,079.7	5,075.2	13.2	11.2	90.00	90.00	104.0	78.1	457.5	434.9	22.60	20.243	
5,200.0	5,176.2	5,179.7	5,175.2	13.4	11.5	90.00	90.00	104.0	78.1	457.5	434.5	23.03	19.868	
5,300.0	5,276.2	5,279.7	5,275.2	13.6	11.7	90.00	90.00	104.0	78.1	457.5	434.0	23.46	19.505	
5,400.0	5,376.2	5,379.7	5,375.2	13.8	11.9	90.00	90.00	104.0	78.1	457.5	433.6	23.88	19.155	
5,500.0	5,476.2	5,479.7	5,475.2	14.0	12.1	90.00	90.00	104.0	78.1	457.5	433.2	24.31	18.816	
5,600.0	5,576.2	5,579.7	5,575.2	14.2	12.4	90.00	90.00	104.0	78.1	457.5	432.8	24.74	18.489	
5,700.0	5,676.2	5,679.7	5,675.2	14.3	12.6	90.00	90.00	104.0	78.1	457.5	432.3	25.17	18.173	
5,800.0	5,776.2	5,779.7	5,775.2	14.5	12.8	90.00	90.00	104.0	78.1	457.5	431.9	25.61	17.866	
5,900.0	5,876.0	5,879.7	5,875.0	14.7	13.0	-89.93	-89.93	98.3	78.1	457.5	431.6	25.94	17.635	
6,000.0	5,974.3	5,979.5	5,973.0	14.8	13.1	-89.86	-89.86	79.7	78.1	457.5	431.3	26.21	17.457	
6,100.0	6,069.4	6,079.4	6,067.8	14.9	13.2	-89.79	-89.79	48.5	78.1	457.5	431.0	26.45	17.298	
6,200.0	6,159.7	6,179.1	6,157.6	15.1	13.4	-89.73	-89.73	5.3	78.1	457.5	430.8	26.73	17.117	
6,300.0	6,243.6	6,278.8	6,241.0	15.2	13.5	-89.67	-89.67	-49.2	78.1	457.5	430.4	27.12	16.871	
6,400.0	6,319.6	6,378.4	6,316.5	15.4	13.8	-89.61	-89.61	-114.1	78.1	457.5	429.8	27.70	16.516	
6,500.0	6,386.6	6,478.0	6,382.9	15.7	14.2	-89.57	-89.57	-188.2	78.1	457.5	429.0	28.55	16.024	
6,600.0	6,443.4	6,577.5	6,439.1	16.1	14.8	-89.53	-89.53	-270.3	78.1	457.5	427.8	29.73	15.391	
6,700.0	6,488.9	6,677.0	6,484.1	16.8	15.6	-89.49	-89.49	-358.9	78.1	457.5	426.3	31.25	14.640	
6,800.0	6,522.4	6,776.5	6,517.3	17.6	16.5	-89.47	-89.47	-452.6	78.1	457.5	424.4	33.12	13.812	
6,900.0	6,543.3	6,875.9	6,538.0	18.6	17.6	-89.45	-89.45	-549.8	78.1	457.5	422.2	35.31	12.957	
7,000.0	6,551.3	6,975.3	6,545.9	19.8	18.8	-89.45	-89.45	-648.8	78.1	457.5	419.8	37.75	12.120	
7,100.0	6,550.8	7,075.2	6,545.0	21.0	20.2	-89.39	-89.39	-748.7	78.1	457.5	417.1	40.41	11.323	
7,200.0	6,550.2	7,175.2	6,543.8	22.4	21.6	-89.33	-89.33	-848.7	78.1	457.5	414.3	43.24	10.582	
7,300.0	6,549.5	7,275.2	6,542.6	23.9	23.1	-89.26	-89.26	-948.7	78.1	457.5	411.3	46.21	9.901	
7,400.0	6,548.9	7,375.2	6,541.5	25.4	24.6	-89.20	-89.20	-1,048.7	78.1	457.5	408.2	49.31	9.279	
7,500.0	6,548.2	7,475.2	6,540.3	26.9	26.2	-89.13	-89.13	-1,148.7	78.1	457.5	405.0	52.50	8.715	
7,600.0	6,547.6	7,575.2	6,539.1	28.5	27.9	-89.07	-89.07	-1,248.7	78.1	457.6	401.8	55.77	8.204	
7,700.0	6,546.9	7,675.2	6,538.0	30.2	29.5	-89.00	-89.00	-1,348.6	78.1	457.6	398.4	59.11	7.740	
7,800.0	6,546.3	7,775.2	6,536.8	31.8	31.2	-88.93	-88.93	-1,448.6	78.1	457.6	395.1	62.51	7.320	
7,900.0	6,545.6	7,875.2	6,535.6	33.5	33.0	-88.87	-88.87	-1,548.6	78.1	457.6	391.6	65.96	6.937	
8,000.0	6,545.0	7,975.2	6,534.4	35.3	34.7	-88.80	-88.80	-1,648.6	78.1	457.6	388.1	69.44	6.589	
8,100.0	6,544.3	8,075.2	6,533.3	37.0	36.5	-88.74	-88.74	-1,748.6	78.1	457.6	384.6	72.97	6.271	
8,200.0	6,543.7	8,175.2	6,532.1	38.8	38.3	-88.67	-88.67	-1,848.6	78.1	457.6	381.1	76.52	5.981	
8,300.0	6,543.1	8,275.2	6,530.9	40.5	40.0	-88.61	-88.61	-1,948.6	78.1	457.6	377.5	80.09	5.714	
8,400.0	6,542.4	8,375.2	6,529.8	42.3	41.8	-88.54	-88.54	-2,048.6	78.1	457.6	373.9	83.69	5.468	
8,500.0	6,541.8	8,475.2	6,528.6	44.1	43.7	-88.48	-88.48	-2,148.6	78.1	457.7	370.3	87.31	5.241	
8,600.0	6,541.1	8,575.2	6,527.4	45.9	45.5	-88.41	-88.41	-2,248.6	78.1	457.7	366.7	90.95	5.032	
8,700.0	6,540.5	8,675.2	6,526.3	47.7	47.3	-88.34	-88.34	-2,348.6	78.1	457.7	363.1	94.60	4.838	
8,800.0	6,539.8	8,775.2	6,525.1	49.6	49.1	-88.28	-88.28	-2,448.6	78.1	457.7	359.4	98.27	4.658	
8,900.0	6,539.2	8,875.2	6,523.9	51.4	51.0	-88.21	-88.21	-2,548.5	78.1	457.7	355.8	101.95	4.490	
9,000.0	6,538.5	8,975.2	6,522.7	53.2	52.8	-88.15	-88.15	-2,648.5	78.1	457.7	352.1	105.63	4.333	
9,100.0	6,537.9	9,075.2	6,521.6	55.1	54.7	-88.08	-88.08	-2,748.5	78.1	457.8	348.4	109.33	4.187	
9,200.0	6,537.2	9,175.2	6,520.4	56.9	56.5	-88.02	-88.02	-2,848.5	78.1	457.8	344.7	113.04	4.050	
9,300.0	6,536.6	9,275.2	6,519.2	58.8	58.4	-87.95	-87.95	-2,948.5	78.1	457.8	341.0	116.75	3.921	
9,400.0	6,536.0	9,375.2	6,518.1	60.6	60.3	-87.89	-87.89	-3,048.5	78.1	457.8	337.3	120.47	3.800	
9,500.0	6,535.3	9,475.2	6,516.9	62.5	62.1	-87.82	-87.82	-3,148.5	78.1	457.8	333.6	124.20	3.686	
9,600.0	6,534.7	9,575.2	6,515.7	64.3	64.0	-87.76	-87.76	-3,248.5	78.1	457.8	329.9	127.93	3.579	
9,700.0	6,534.0	9,675.2	6,514.6	66.2	65.9	-87.69	-87.69	-3,348.5	78.1	457.9	326.2	131.67	3.477	
9,800.0	6,533.4	9,775.2	6,513.4	68.1	67.8	-87.62	-87.62	-3,448.5	78.1	457.9	322.5	135.42	3.381	
9,900.0	6,532.7	9,875.2	6,512.2	69.9	69.6	-87.56	-87.56	-3,548.5	78.1	457.9	318.7	139.16	3.290	
10,000.0	6,532.1	9,975.2	6,511.1	71.8	71.5	-87.49	-87.49	-3,648.5	78.1	457.9	315.0	142.91	3.204	
10,100.0	6,531.4	10,075.2	6,509.9	73.7	73.4	-87.43	-87.43	-3,748.5	78.1	458.0	311.3	146.67	3.122	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sater 19E-203
Project:	SEC.19-T4N-R63W	TVD Reference:	WELL @ 4674.0ft (RKB - 13')
Reference Site:	Sater 4N63W19E Pad Sec.19-T4N-R63W	MD Reference:	WELL @ 4674.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sater 19E-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (2-10-15)	Offset TVD Reference:	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)				
10,200.0	6,530.8	10,175.2	6,508.7	75.6	75.3	-87.36	-3,848.4	78.1	458.0	307.6	150.43	3.045			
10,300.0	6,530.1	10,275.2	6,507.5	77.4	77.2	-87.30	-3,948.4	78.1	458.0	303.8	154.19	2.970			
10,400.0	6,529.5	10,375.2	6,506.4	79.3	79.1	-87.23	-4,048.4	78.1	458.0	300.1	157.95	2.900			
10,500.0	6,528.9	10,475.2	6,505.2	81.2	80.9	-87.17	-4,148.4	78.1	458.1	296.3	161.72	2.832			
10,600.0	6,528.2	10,575.2	6,504.0	83.1	82.8	-87.10	-4,248.4	78.1	458.1	292.6	165.48	2.768			
10,700.0	6,527.6	10,675.2	6,502.9	85.0	84.7	-87.04	-4,348.4	78.1	458.1	288.9	169.25	2.707			
10,800.0	6,526.9	10,775.2	6,501.7	86.9	86.6	-86.97	-4,448.4	78.1	458.1	285.1	173.03	2.648			
10,900.0	6,526.3	10,875.2	6,500.5	88.8	88.5	-86.90	-4,548.4	78.1	458.2	281.4	176.80	2.591			
10,941.6	6,526.0	10,916.7	6,500.0	89.6	89.3	-86.88	-4,589.9	78.1	458.2	279.8	178.37	2.569 SF			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sater 19E-203
Project:	SEC.19-T4N-R63W	TVD Reference:	WELL @ 4674.0ft (RKB - 13')
Reference Site:	Sater 4N63W19E Pad Sec.19-T4N-R63W	MD Reference:	WELL @ 4674.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sater 19E-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (2-10-15)	Offset TVD Reference:	Offset Datum

Offset Design Sater 4N63W19E Pad Sec.19-T4N-R63W - Sater 19E-323 - 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)	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	1,500.0	1,500.0	3.2	3.3	165.09	165.09	0.0	30.7	31.5	25.0	6.51	4.844	
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	166.21	166.21	0.0	30.7	34.1	27.1	6.94	4.911	
1,700.0	1,699.9	1,699.9	1,699.9	3.7	3.7	167.76	167.76	0.0	30.7	38.3	30.9	7.36	5.202	
1,800.0	1,799.7	1,799.7	1,799.7	3.9	3.9	169.42	169.42	0.0	30.7	44.3	36.5	7.79	5.684	
1,900.0	1,899.4	1,900.2	1,900.2	4.1	4.2	170.65	170.65	0.4	29.9	51.2	43.0	8.21	6.236	
2,000.0	1,998.9	2,000.8	2,000.8	4.3	4.4	171.20	171.20	1.7	27.6	58.3	49.6	8.63	6.752	
2,100.0	2,098.3	2,101.6	2,101.5	4.6	4.6	171.31	171.31	3.7	23.7	65.4	56.3	9.04	7.229	
2,200.0	2,197.5	2,202.5	2,202.2	4.9	4.8	171.05	171.05	6.6	18.2	72.2	62.8	9.47	7.626	
2,300.0	2,296.6	2,303.6	2,302.9	5.1	5.0	170.36	170.36	10.4	11.2	77.6	67.7	9.91	7.827	
2,400.0	2,395.8	2,404.8	2,403.7	5.4	5.3	169.27	169.27	15.0	2.5	81.3	70.9	10.36	7.850	
2,500.0	2,495.0	2,505.5	2,503.7	5.7	5.5	167.83	167.83	20.3	-7.5	83.6	72.8	10.81	7.734	
2,600.0	2,594.2	2,605.5	2,603.0	6.0	5.8	166.38	166.38	25.8	-17.7	85.6	74.4	11.26	7.604	
2,700.0	2,693.3	2,705.4	2,702.3	6.3	6.0	165.00	165.00	31.2	-27.9	87.8	76.0	11.72	7.485	
2,800.0	2,792.5	2,805.4	2,801.6	6.6	6.3	163.69	163.69	36.6	-38.1	89.9	77.7	12.19	7.375	
2,900.0	2,891.7	2,905.3	2,900.9	6.9	6.6	162.44	162.44	42.0	-48.3	92.1	79.5	12.67	7.273	
3,000.0	2,990.9	3,005.3	3,000.2	7.2	6.8	161.25	161.25	47.5	-58.4	94.4	81.2	13.15	7.179	
3,100.0	3,090.0	3,105.2	3,099.5	7.5	7.1	160.12	160.12	52.9	-68.6	96.7	83.0	13.64	7.090	
3,200.0	3,189.2	3,205.2	3,198.8	7.8	7.4	159.04	159.04	58.3	-78.8	99.0	84.9	14.13	7.008	
3,300.0	3,288.4	3,305.2	3,298.0	8.1	7.7	158.01	158.01	63.8	-89.0	101.4	86.7	14.63	6.931	
3,400.0	3,387.6	3,405.1	3,397.3	8.4	7.9	157.02	157.02	69.2	-99.2	103.8	88.6	15.13	6.858	
3,500.0	3,486.8	3,505.1	3,496.6	8.7	8.2	156.08	156.08	74.6	-109.4	106.2	90.5	15.64	6.790	
3,600.0	3,585.9	3,605.0	3,595.9	9.0	8.5	155.19	155.19	80.0	-119.6	108.6	92.5	16.15	6.726	
3,700.0	3,685.1	3,705.0	3,695.2	9.3	8.8	154.33	154.33	85.5	-129.8	111.1	94.4	16.67	6.665	
3,800.0	3,784.3	3,804.9	3,794.5	9.6	9.1	153.51	153.51	90.9	-140.0	113.6	96.4	17.19	6.608	
3,900.0	3,883.5	3,904.1	3,893.0	10.0	9.4	152.76	152.76	96.2	-150.0	116.2	98.5	17.71	6.561	
4,000.0	3,982.6	4,000.0	3,988.5	10.3	9.6	152.79	152.79	100.3	-157.7	120.7	102.5	18.16	6.647	
4,100.0	4,081.8	4,097.5	4,085.8	10.6	9.8	153.76	153.76	102.9	-162.6	127.8	109.2	18.57	6.882	
4,200.0	4,181.0	4,193.4	4,181.7	10.9	9.9	155.46	155.46	104.0	-164.5	137.5	118.6	18.94	7.263	
4,300.0	4,280.2	4,291.9	4,280.2	11.2	10.1	157.47	157.47	104.0	-164.6	149.2	129.9	19.31	7.729	
4,400.0	4,379.3	4,391.1	4,379.3	11.6	10.3	159.21	159.21	104.0	-164.6	161.1	141.4	19.71	8.177	
4,500.0	4,478.5	4,490.2	4,478.5	11.9	10.5	160.71	160.71	104.0	-164.6	173.2	153.1	20.12	8.608	
4,600.0	4,577.7	4,589.4	4,577.7	12.2	10.7	162.02	162.02	104.0	-164.6	185.3	164.8	20.54	9.024	
4,700.0	4,676.9	4,688.6	4,676.9	12.5	10.9	163.17	163.17	104.0	-164.6	197.2	176.3	20.96	9.408	
4,800.0	4,776.5	4,788.2	4,776.5	12.7	11.1	163.98	163.98	104.0	-164.6	206.4	185.0	21.37	9.658	
4,900.0	4,876.3	4,888.0	4,876.3	12.9	11.3	164.47	164.47	104.0	-164.6	212.2	190.5	21.76	9.754	
5,000.0	4,976.2	4,987.9	4,976.2	13.1	11.5	164.66	164.66	104.0	-164.6	214.7	192.6	22.13	9.702	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sater 19E-203
Project:	SEC.19-T4N-R63W	TVD Reference:	WELL @ 4674.0ft (RKB - 13')
Reference Site:	Sater 4N63W19E Pad Sec.19-T4N-R63W	MD Reference:	WELL @ 4674.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sater 19E-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (2-10-15)	Offset TVD Reference:	Offset Datum

Offset Design Sater 4N63W19E Pad Sec.19-T4N-R63W - Sater 19E-323 - 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	5,076.2	5,087.9	5,076.2	13.2	11.7	90.00		104.0	-164.6	214.8	192.3	22.53	9.535	
5,200.0	5,176.2	5,187.9	5,176.2	13.4	12.0	90.00		104.0	-164.6	214.8	191.8	22.95	9.360	
5,300.0	5,276.2	5,287.9	5,276.2	13.6	12.2	90.00		104.0	-164.6	214.8	191.4	23.37	9.190	
5,400.0	5,376.2	5,387.9	5,376.2	13.8	12.4	90.00		104.0	-164.6	214.8	191.0	23.80	9.026	
5,500.0	5,476.2	5,487.9	5,476.2	14.0	12.6	90.00		104.0	-164.6	214.8	190.6	24.22	8.867	
5,600.0	5,576.2	5,587.9	5,576.2	14.2	12.8	90.00		104.0	-164.6	214.8	190.1	24.65	8.714	
5,700.0	5,676.2	5,687.9	5,676.2	14.3	13.0	90.00		104.0	-164.6	214.8	189.7	25.08	8.565	
5,800.0	5,776.2	5,787.9	5,776.2	14.5	13.2	90.00		104.0	-164.6	214.8	189.3	25.51	8.421	
5,821.5	5,797.7	5,809.4	5,797.7	14.6	13.3	-90.07		104.0	-164.6	214.8	189.2	25.59	8.393	
5,900.0	5,876.0	5,887.9	5,876.2	14.7	13.4	-91.30		103.7	-164.6	214.9	188.9	25.93	8.287	
6,000.0	5,974.3	5,988.7	5,976.5	14.8	13.6	-93.69		94.5	-164.6	215.2	189.0	26.28	8.191	
6,100.0	6,069.4	6,090.8	6,075.9	14.9	13.7	-96.01		71.8	-164.6	216.0	189.4	26.56	8.132	
6,200.0	6,159.7	6,194.1	6,172.5	15.1	13.8	-98.22		35.5	-164.6	217.0	190.2	26.81	8.096	
6,300.0	6,243.6	6,298.6	6,264.4	15.2	14.0	-100.28		-14.1	-164.6	218.3	191.2	27.08	8.063	
6,400.0	6,319.6	6,404.2	6,349.6	15.4	14.2	-102.15		-76.5	-164.6	219.7	192.3	27.45	8.004	
6,500.0	6,386.6	6,510.9	6,426.0	15.7	14.4	-103.79		-150.9	-164.6	221.2	193.2	28.04	7.888	
6,600.0	6,443.4	6,618.6	6,491.9	16.1	14.9	-105.18		-235.9	-164.6	222.6	193.6	28.95	7.688	
6,700.0	6,488.9	6,727.2	6,545.5	16.8	15.6	-106.29		-330.2	-164.6	223.8	193.5	30.27	7.394	
6,800.0	6,522.4	6,836.3	6,585.5	17.6	16.6	-107.11		-431.7	-164.6	224.7	192.7	32.03	7.017	
6,900.0	6,543.3	6,946.0	6,610.6	18.6	17.7	-107.61		-538.3	-164.6	225.4	191.1	34.23	6.583	
7,000.0	6,551.3	7,055.8	6,620.3	19.8	19.1	-107.81		-647.6	-164.6	225.6	188.8	36.83	6.126	
7,100.0	6,550.8	7,157.4	6,619.8	21.0	20.4	-107.81		-749.2	-164.6	225.6	186.2	39.44	5.721	
7,200.0	6,550.2	7,257.4	6,619.2	22.4	21.8	-107.81		-849.2	-164.6	225.6	183.5	42.15	5.353	
7,300.0	6,549.5	7,357.4	6,618.5	23.9	23.3	-107.81		-949.2	-164.6	225.6	180.6	45.00	5.014	
7,400.0	6,548.9	7,457.4	6,617.9	25.4	24.8	-107.81		-1,049.2	-164.6	225.6	177.6	47.96	4.704	
7,500.0	6,548.2	7,557.4	6,617.2	26.9	26.4	-107.81		-1,149.2	-164.6	225.6	174.6	51.02	4.422	
7,600.0	6,547.6	7,657.4	6,616.6	28.5	28.0	-107.81		-1,249.2	-164.6	225.6	171.5	54.16	4.166	
7,700.0	6,546.9	7,757.4	6,615.9	30.2	29.7	-107.81		-1,349.2	-164.6	225.6	168.3	57.36	3.933	
7,800.0	6,546.3	7,857.4	6,615.3	31.8	31.4	-107.81		-1,449.2	-164.6	225.6	165.0	60.61	3.722	
7,900.0	6,545.6	7,957.4	6,614.6	33.5	33.1	-107.81		-1,549.2	-164.6	225.6	161.7	63.91	3.530	
8,000.0	6,545.0	8,057.4	6,614.0	35.3	34.8	-107.81		-1,649.2	-164.6	225.6	158.4	67.26	3.355	
8,100.0	6,544.3	8,157.4	6,613.3	37.0	36.6	-107.81		-1,749.2	-164.6	225.6	155.0	70.63	3.194	
8,200.0	6,543.7	8,257.4	6,612.7	38.8	38.4	-107.81		-1,849.2	-164.6	225.6	151.6	74.03	3.047	
8,300.0	6,543.1	8,357.4	6,612.1	40.5	40.2	-107.81		-1,949.2	-164.6	225.6	148.1	77.46	2.912	
8,400.0	6,542.4	8,457.4	6,611.4	42.3	42.0	-107.81		-2,049.2	-164.6	225.6	144.7	80.91	2.788	
8,500.0	6,541.8	8,557.4	6,610.8	44.1	43.8	-107.81		-2,149.2	-164.6	225.6	141.2	84.39	2.674	
8,600.0	6,541.1	8,657.4	6,610.1	45.9	45.6	-107.81		-2,249.2	-164.6	225.6	137.7	87.87	2.567	
8,700.0	6,540.5	8,757.4	6,609.5	47.7	47.4	-107.81		-2,349.2	-164.6	225.6	134.2	91.38	2.469	
8,800.0	6,539.8	8,857.4	6,608.8	49.6	49.2	-107.81		-2,449.2	-164.6	225.6	130.7	94.89	2.377	
8,900.0	6,539.2	8,957.4	6,608.2	51.4	51.1	-107.81		-2,549.2	-164.6	225.6	127.2	98.42	2.292	
9,000.0	6,538.5	9,057.4	6,607.5	53.2	52.9	-107.81		-2,649.2	-164.6	225.6	123.6	101.96	2.213	
9,100.0	6,537.9	9,157.4	6,606.9	55.1	54.8	-107.81		-2,749.2	-164.6	225.6	120.1	105.51	2.138	
9,200.0	6,537.2	9,257.4	6,606.2	56.9	56.6	-107.81		-2,849.2	-164.6	225.6	116.5	109.07	2.068	
9,300.0	6,536.6	9,357.4	6,605.6	58.8	58.5	-107.81		-2,949.2	-164.6	225.6	113.0	112.64	2.003	
9,400.0	6,536.0	9,457.4	6,605.0	60.6	60.3	-107.81		-3,049.2	-164.6	225.6	109.4	116.21	1.941	
9,500.0	6,535.3	9,557.4	6,604.3	62.5	62.2	-107.81		-3,149.1	-164.6	225.6	105.8	119.79	1.883	
9,600.0	6,534.7	9,657.4	6,603.7	64.3	64.1	-107.81		-3,249.1	-164.6	225.6	102.2	123.37	1.829	
9,700.0	6,534.0	9,757.4	6,603.0	66.2	65.9	-107.81		-3,349.1	-164.6	225.6	98.6	126.97	1.777	
9,800.0	6,533.4	9,857.4	6,602.4	68.1	67.8	-107.81		-3,449.1	-164.6	225.6	95.0	130.56	1.728	
9,900.0	6,532.7	9,957.4	6,601.7	69.9	69.7	-107.81		-3,549.1	-164.6	225.6	91.4	134.16	1.682	
10,000.0	6,532.1	10,057.4	6,601.1	71.8	71.6	-107.81		-3,649.1	-164.6	225.6	87.8	137.77	1.638	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sater 19E-203
Project:	SEC.19-T4N-R63W	TVD Reference:	WELL @ 4674.0ft (RKB - 13')
Reference Site:	Sater 4N63W19E Pad Sec.19-T4N-R63W	MD Reference:	WELL @ 4674.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sater 19E-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (2-10-15)	Offset TVD Reference:	Offset Datum

Offset Design Sater 4N63W19E Pad Sec.19-T4N-R63W - Sater 19E-323 - 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 Reference	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,100.0	6,531.4	10,157.4	6,600.4	73.7	73.5	-107.81	-107.81	-3,749.1	-164.6	225.6	84.2	141.38	1.596	
10,200.0	6,530.8	10,257.4	6,599.8	75.6	75.3	-107.81	-107.81	-3,849.1	-164.6	225.6	80.6	144.99	1.556	
10,300.0	6,530.1	10,357.4	6,599.1	77.4	77.2	-107.81	-107.81	-3,949.1	-164.6	225.6	77.0	148.61	1.518	
10,400.0	6,529.5	10,457.4	6,598.5	79.3	79.1	-107.81	-107.81	-4,049.1	-164.6	225.6	73.4	152.22	1.482	Level 3
10,500.0	6,528.9	10,557.4	6,597.8	81.2	81.0	-107.81	-107.81	-4,149.1	-164.6	225.6	69.8	155.85	1.448	Level 3
10,600.0	6,528.2	10,657.4	6,597.2	83.1	82.9	-107.81	-107.81	-4,249.1	-164.6	225.6	66.1	159.47	1.415	Level 3
10,700.0	6,527.6	10,757.4	6,596.6	85.0	84.8	-107.81	-107.81	-4,349.1	-164.6	225.6	62.5	163.10	1.383	Level 3
10,800.0	6,526.9	10,857.4	6,595.9	86.9	86.7	-107.81	-107.81	-4,449.1	-164.6	225.6	58.9	166.73	1.353	Level 3
10,900.0	6,526.3	10,957.4	6,595.3	88.8	88.4	-107.81	-107.81	-4,549.1	-164.6	225.6	55.4	170.16	1.326	Level 3
10,932.6	6,526.1	10,990.0	6,595.1	89.4	88.9	-107.81	-107.81	-4,581.7	-164.6	225.6	54.4	171.23	1.318	Level 3
10,941.6	6,526.0	10,998.5	6,595.0	89.6	89.0	-107.81	-107.81	-4,590.2	-164.6	225.6	54.1	171.52	1.315	Level 3, SF

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sater 19E-203
Project:	SEC.19-T4N-R63W	TVD Reference:	WELL @ 4674.0ft (RKB - 13')
Reference Site:	Sater 4N63W19E Pad Sec.19-T4N-R63W	MD Reference:	WELL @ 4674.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sater 19E-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (2-10-15)	Offset TVD Reference:	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	92.0	92.0				
100.0	100.0	99.0	99.0	0.1	0.1	90.00	90.00	0.0	92.0	92.0	91.8	0.22	411.556	
200.0	200.0	199.0	199.0	0.3	0.3	90.00	90.00	0.0	92.0	92.0	91.4	0.67	136.957	
300.0	300.0	299.0	299.0	0.6	0.6	90.00	90.00	0.0	92.0	92.0	90.9	1.12	82.064	
400.0	400.0	399.0	399.0	0.8	0.8	90.00	90.00	0.0	92.0	92.0	90.5	1.57	58.584	
500.0	500.0	499.0	499.0	1.0	1.0	90.00	90.00	0.0	92.0	92.0	90.0	2.02	45.551	
600.0	600.0	599.0	599.0	1.2	1.2	90.00	90.00	0.0	92.0	92.0	89.6	2.47	37.261	
700.0	700.0	699.0	699.0	1.5	1.5	90.00	90.00	0.0	92.0	92.0	89.1	2.92	31.524	
800.0	800.0	799.0	799.0	1.7	1.7	90.00	90.00	0.0	92.0	92.0	88.7	3.37	27.318	
900.0	900.0	899.0	899.0	1.9	1.9	90.00	90.00	0.0	92.0	92.0	88.2	3.82	24.103	
1,000.0	1,000.0	999.0	999.0	2.1	2.1	90.00	90.00	0.0	92.0	92.0	87.8	4.27	21.564	
1,100.0	1,100.0	1,099.0	1,099.0	2.4	2.4	90.00	90.00	0.0	92.0	92.0	87.3	4.72	19.509	
1,200.0	1,200.0	1,199.0	1,199.0	2.6	2.6	90.00	90.00	0.0	92.0	92.0	86.9	5.17	17.812	
1,300.0	1,300.0	1,299.0	1,299.0	2.8	2.8	90.00	90.00	0.0	92.0	92.0	86.4	5.62	16.387	
1,400.0	1,400.0	1,399.0	1,399.0	3.0	3.0	90.00	90.00	0.0	92.0	92.0	86.0	6.07	15.172 CC, ES	
1,500.0	1,500.0	1,499.0	1,499.0	3.2	3.3	164.81	164.81	0.0	92.0	92.9	86.4	6.50	14.279	
1,600.0	1,600.0	1,599.0	1,599.0	3.5	3.5	165.22	165.22	0.0	92.0	95.4	88.5	6.93	13.762	
1,700.0	1,699.9	1,697.2	1,697.2	3.7	3.7	165.70	165.70	0.2	92.8	100.4	93.1	7.35	13.667	
1,800.0	1,799.7	1,795.2	1,795.1	3.9	3.9	166.07	166.07	0.9	95.2	108.8	101.0	7.76	14.026	
1,900.0	1,899.4	1,892.6	1,892.5	4.1	4.1	166.33	166.33	2.0	99.2	120.5	112.3	8.17	14.752	
2,000.0	1,998.9	1,989.4	1,989.1	4.3	4.3	166.49	166.49	3.6	104.8	135.4	126.8	8.57	15.791	
2,100.0	2,098.3	2,085.5	2,084.9	4.6	4.5	166.56	166.56	5.6	111.8	153.6	144.6	8.98	17.098	
2,200.0	2,197.5	2,180.6	2,179.6	4.9	4.7	166.57	166.57	8.0	120.3	174.7	165.3	9.40	18.579	
2,300.0	2,296.6	2,275.1	2,273.5	5.1	5.0	166.46	166.46	10.9	130.3	197.4	187.6	9.83	20.086	
2,400.0	2,395.8	2,369.0	2,366.6	5.4	5.2	166.24	166.24	14.1	141.6	221.6	211.4	10.26	21.609	
2,500.0	2,495.0	2,465.8	2,462.6	5.7	5.5	166.01	166.01	17.6	154.0	246.6	235.9	10.69	23.062	
2,600.0	2,594.2	2,562.6	2,558.6	6.0	5.7	165.82	165.82	21.2	166.4	271.5	260.4	11.13	24.391	
2,700.0	2,693.3	2,659.4	2,654.5	6.3	6.0	165.66	165.66	24.7	178.8	296.5	284.9	11.58	25.615	
2,800.0	2,792.5	2,756.3	2,750.5	6.6	6.3	165.53	165.53	28.2	191.3	321.5	309.4	12.02	26.742	
2,900.0	2,891.7	2,853.1	2,846.5	6.9	6.5	165.41	165.41	31.8	203.7	346.4	334.0	12.47	27.782	
3,000.0	2,990.9	2,949.9	2,942.5	7.2	6.8	165.31	165.31	35.3	216.1	371.4	358.5	12.92	28.744	
3,100.0	3,090.0	3,046.8	3,038.4	7.5	7.1	165.23	165.23	38.8	228.5	396.4	383.0	13.37	29.636	
3,200.0	3,189.2	3,143.6	3,134.4	7.8	7.4	165.15	165.15	42.4	240.9	421.3	407.5	13.83	30.466	
3,300.0	3,288.4	3,240.4	3,230.4	8.1	7.7	165.08	165.08	45.9	253.3	446.3	432.0	14.29	31.238	
3,400.0	3,387.6	3,337.3	3,326.3	8.4	8.0	165.02	165.02	49.4	265.8	471.3	456.5	14.75	31.959	
3,500.0	3,486.8	3,434.1	3,422.3	8.7	8.3	164.97	164.97	53.0	278.2	496.2	481.0	15.21	32.633	
3,600.0	3,585.9	3,530.9	3,518.3	9.0	8.6	164.92	164.92	56.5	290.6	521.2	505.5	15.67	33.264	
3,700.0	3,685.1	3,627.8	3,614.2	9.3	8.9	164.87	164.87	60.0	303.0	546.2	530.0	16.13	33.857	
3,800.0	3,784.3	3,724.6	3,710.2	9.6	9.2	164.83	164.83	63.6	315.4	571.1	554.5	16.60	34.414	
3,900.0	3,883.5	3,821.4	3,806.2	10.0	9.5	164.79	164.79	67.1	327.8	596.1	579.0	17.06	34.938	
4,000.0	3,982.6	3,918.3	3,902.1	10.3	9.8	164.76	164.76	70.6	340.3	621.1	603.5	17.53	35.433	
4,100.0	4,081.8	4,015.1	3,998.1	10.6	10.1	164.73	164.73	74.2	352.7	646.0	628.0	18.00	35.900	
4,200.0	4,181.0	4,111.9	4,094.1	10.9	10.4	164.70	164.70	77.7	365.1	671.0	652.5	18.46	36.341	
4,300.0	4,280.2	4,208.8	4,190.0	11.2	10.7	164.67	164.67	81.2	377.5	696.0	677.0	18.93	36.760	
4,400.0	4,379.3	4,305.6	4,286.0	11.6	11.0	164.65	164.65	84.8	389.9	720.9	701.5	19.40	37.156	
4,500.0	4,478.5	4,402.4	4,382.0	11.9	11.4	164.62	164.62	88.3	402.3	745.9	726.0	19.87	37.533	
4,600.0	4,577.7	4,499.3	4,477.9	12.2	11.7	164.60	164.60	91.8	414.8	770.9	750.5	20.34	37.890	
4,700.0	4,676.9	4,596.2	4,574.0	12.5	12.0	164.63	164.63	95.4	427.2	795.5	774.7	20.84	38.180	
4,800.0	4,776.5	4,713.8	4,690.7	12.7	12.3	164.66	164.66	99.4	441.4	816.8	795.4	21.34	38.268	
4,900.0	4,876.3	4,850.7	4,827.0	12.9	12.6	164.67	164.67	102.6	452.5	830.7	808.9	21.82	38.061	
5,000.0	4,976.2	4,989.3	4,965.6	13.1	12.9	164.67	164.67	103.9	457.3	836.6	814.4	22.27	37.563	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sater 19E-203
Project:	SEC.19-T4N-R63W	TVD Reference:	WELL @ 4674.0ft (RKB - 13')
Reference Site:	Sater 4N63W19E Pad Sec.19-T4N-R63W	MD Reference:	WELL @ 4674.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sater 19E-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (2-10-15)	Offset TVD Reference:	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	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	5,076.2	5,099.0	5,075.2	13.2	13.1	90.00	104.0	457.5	836.9	814.2	22.67	36.915	
5,200.0	5,176.2	5,199.0	5,175.2	13.4	13.2	90.00	104.0	457.5	836.9	813.8	23.08	36.254	
5,300.0	5,276.2	5,299.0	5,275.2	13.6	13.4	90.00	104.0	457.5	836.9	813.4	23.50	35.614	
5,400.0	5,376.2	5,399.0	5,375.2	13.8	13.6	90.00	104.0	457.5	836.9	813.0	23.91	34.994	
5,500.0	5,476.2	5,499.0	5,475.2	14.0	13.8	90.00	104.0	457.5	836.9	812.6	24.33	34.394	
5,600.0	5,576.2	5,599.0	5,575.2	14.2	14.0	90.00	104.0	457.5	836.9	812.1	24.75	33.813	
5,700.0	5,676.2	5,699.0	5,675.2	14.3	14.2	90.00	104.0	457.5	836.9	811.7	25.17	33.249	
5,800.0	5,776.2	5,799.0	5,775.2	14.5	14.4	90.00	104.0	457.5	836.9	811.3	25.59	32.703	
5,834.4	5,810.7	5,833.4	5,809.7	14.6	14.4	-90.05	104.0	457.5	836.9	811.2	25.72	32.533	
5,900.0	5,876.0	5,898.8	5,875.0	14.7	14.6	-90.35	104.0	457.5	836.9	810.9	25.98	32.217	
6,000.0	5,974.3	5,997.9	5,974.2	14.8	14.7	-91.52	103.5	457.5	837.2	810.9	26.32	31.811	
6,100.0	6,069.4	6,100.1	6,075.8	14.9	14.9	-92.91	92.9	457.5	838.0	811.4	26.59	31.510	
6,200.0	6,159.7	6,205.5	6,178.0	15.1	15.0	-94.27	67.9	457.5	839.3	812.4	26.86	31.247	
6,300.0	6,243.6	6,314.0	6,278.8	15.2	15.2	-95.57	27.7	457.5	841.0	813.8	27.18	30.947	
6,400.0	6,319.6	6,425.9	6,375.6	15.4	15.3	-96.80	-28.2	457.5	843.0	815.4	27.62	30.522	
6,500.0	6,386.6	6,541.1	6,465.6	15.7	15.5	-97.90	-99.9	457.5	845.1	816.8	28.29	29.871	
6,600.0	6,443.4	6,659.4	6,545.8	16.1	15.9	-98.87	-186.7	457.5	847.2	817.9	29.29	28.922	
6,700.0	6,488.9	6,780.6	6,613.0	16.8	16.4	-99.67	-287.4	457.5	849.1	818.4	30.70	27.657	
6,800.0	6,522.4	6,904.2	6,664.3	17.6	17.3	-100.27	-399.6	457.5	850.6	818.0	32.55	26.134	
6,900.0	6,543.3	7,029.4	6,697.1	18.6	18.5	-100.65	-520.4	457.5	851.6	816.7	34.83	24.446	
7,000.0	6,551.3	7,155.6	6,709.9	19.8	19.9	-100.80	-645.8	457.5	852.0	814.5	37.49	22.728	
7,100.0	6,550.8	7,258.6	6,710.0	21.0	21.2	-100.84	-748.8	457.5	852.1	812.0	40.12	21.238	
7,200.0	6,550.2	7,358.6	6,710.0	22.4	22.6	-100.88	-848.8	457.5	852.2	809.3	42.88	19.873	
7,300.0	6,549.5	7,458.6	6,710.0	23.9	24.0	-100.92	-948.7	457.5	852.3	806.5	45.79	18.614	
7,400.0	6,548.9	7,558.6	6,710.0	25.4	25.5	-100.96	-1,048.7	457.5	852.4	803.6	48.81	17.463	
7,500.0	6,548.2	7,658.6	6,710.0	26.9	27.0	-101.01	-1,148.7	457.5	852.6	800.6	51.94	16.416	
7,600.0	6,547.6	7,758.6	6,710.0	28.5	28.6	-101.05	-1,248.7	457.5	852.7	797.6	55.14	15.464	
7,700.0	6,546.9	7,858.6	6,710.0	30.2	30.3	-101.09	-1,348.7	457.5	852.8	794.4	58.41	14.601	
7,800.0	6,546.3	7,958.6	6,710.0	31.8	31.9	-101.13	-1,448.7	457.5	852.9	791.2	61.74	13.816	
7,900.0	6,545.6	8,058.6	6,710.0	33.5	33.6	-101.18	-1,548.7	457.5	853.1	788.0	65.11	13.102	
8,000.0	6,545.0	8,158.6	6,710.0	35.3	35.3	-101.22	-1,648.7	457.5	853.2	784.7	68.52	12.451	
8,100.0	6,544.3	8,258.6	6,710.0	37.0	37.1	-101.26	-1,748.7	457.5	853.3	781.3	71.97	11.856	
8,200.0	6,543.7	8,358.6	6,710.0	38.8	38.8	-101.30	-1,848.7	457.5	853.4	778.0	75.45	11.311	
8,300.0	6,543.1	8,458.6	6,710.0	40.5	40.6	-101.35	-1,948.7	457.5	853.6	774.6	78.96	10.811	
8,400.0	6,542.4	8,558.6	6,710.0	42.3	42.4	-101.39	-2,048.7	457.5	853.7	771.2	82.48	10.350	
8,500.0	6,541.8	8,658.6	6,710.0	44.1	44.2	-101.43	-2,148.7	457.5	853.8	767.8	86.03	9.925	
8,600.0	6,541.1	8,758.6	6,710.0	45.9	46.0	-101.47	-2,248.7	457.5	854.0	764.4	89.59	9.532	
8,700.0	6,540.5	8,858.6	6,710.0	47.7	47.8	-101.52	-2,348.7	457.5	854.1	760.9	93.17	9.167	
8,800.0	6,539.8	8,958.6	6,710.0	49.6	49.6	-101.56	-2,448.7	457.5	854.2	757.5	96.76	8.828	
8,900.0	6,539.2	9,058.6	6,710.0	51.4	51.4	-101.60	-2,548.7	457.5	854.3	754.0	100.36	8.513	
9,000.0	6,538.5	9,158.6	6,710.0	53.2	53.3	-101.64	-2,648.7	457.5	854.5	750.5	103.97	8.219	
9,100.0	6,537.9	9,258.6	6,710.0	55.1	55.1	-101.69	-2,748.7	457.5	854.6	747.0	107.59	7.943	
9,200.0	6,537.2	9,358.6	6,710.0	56.9	56.9	-101.73	-2,848.7	457.5	854.7	743.5	111.22	7.685	
9,300.0	6,536.6	9,458.5	6,710.0	58.8	58.8	-101.77	-2,948.7	457.5	854.9	740.0	114.85	7.443	
9,400.0	6,536.0	9,558.5	6,710.0	60.6	60.6	-101.81	-3,048.7	457.5	855.0	736.5	118.50	7.215	
9,500.0	6,535.3	9,658.5	6,710.0	62.5	62.5	-101.86	-3,148.7	457.5	855.1	733.0	122.14	7.001	
9,600.0	6,534.7	9,758.5	6,710.0	64.3	64.4	-101.90	-3,248.7	457.5	855.3	729.5	125.80	6.799	
9,700.0	6,534.0	9,858.5	6,710.0	66.2	66.2	-101.94	-3,348.7	457.5	855.4	725.9	129.46	6.608	
9,800.0	6,533.4	9,958.5	6,710.0	68.1	68.1	-101.98	-3,448.7	457.5	855.5	722.4	133.12	6.427	
9,900.0	6,532.7	10,058.5	6,710.0	69.9	70.0	-102.03	-3,548.7	457.5	855.7	718.9	136.78	6.256	
10,000.0	6,532.1	10,158.5	6,710.0	71.8	71.8	-102.07	-3,648.7	457.5	855.8	715.3	140.45	6.093	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sater 19E-203
Project:	SEC.19-T4N-R63W	TVD Reference:	WELL @ 4674.0ft (RKB - 13')
Reference Site:	Sater 4N63W19E Pad Sec.19-T4N-R63W	MD Reference:	WELL @ 4674.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sater 19E-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (2-10-15)	Offset TVD Reference:	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)	Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning	
Reference	Offset	Reference	Offset	(ft)	(ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
10,100.0	6,531.4	10,258.5	6,710.0	73.7	73.7	-102.11	-3,748.7	457.5	855.9	711.8	144.12	5.939		
10,200.0	6,530.8	10,358.5	6,710.0	75.6	75.6	-102.15	-3,848.7	457.5	856.1	708.3	147.80	5.792		
10,300.0	6,530.1	10,458.5	6,710.0	77.4	77.5	-102.19	-3,948.7	457.5	856.2	704.7	151.48	5.652		
10,400.0	6,529.5	10,558.5	6,710.0	79.3	79.3	-102.24	-4,048.7	457.5	856.3	701.2	155.16	5.519		
10,500.0	6,528.9	10,658.5	6,710.0	81.2	81.2	-102.28	-4,148.7	457.5	856.5	697.6	158.84	5.392		
10,600.0	6,528.2	10,758.5	6,710.0	83.1	83.1	-102.32	-4,248.7	457.5	856.6	694.1	162.52	5.271		
10,700.0	6,527.6	10,858.5	6,710.0	85.0	85.0	-102.36	-4,348.7	457.5	856.8	690.5	166.20	5.155		
10,800.0	6,526.9	10,958.5	6,710.0	86.9	86.9	-102.41	-4,448.7	457.5	856.9	687.0	169.89	5.044		
10,900.0	6,526.3	11,058.5	6,710.0	88.8	88.8	-102.45	-4,548.7	457.5	857.0	683.5	173.58	4.937		
10,941.6	6,526.0	11,100.1	6,710.0	89.6	89.6	-102.46	-4,590.2	457.5	857.1	682.0	175.11	4.895 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sater 19E-203
Project:	SEC.19-T4N-R63W	TVD Reference:	WELL @ 4674.0ft (RKB - 13')
Reference Site:	Sater 4N63W19E Pad Sec.19-T4N-R63W	MD Reference:	WELL @ 4674.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sater 19E-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (2-10-15)	Offset TVD Reference:	Offset Datum

Offset Design SPIKE STATE GWS C24-1 - SPIKE STATE GWS C24-1 - Wellbore #1 - Design #1												Offset Site Error:	0.0 ft
Survey Program: 0-Reference												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
3,600.0	3,585.9	3,622.9	3,622.9	9.0	8.0	-49.34	-491.8	-1,054.3	996.2	979.7	16.52	60.315	
3,700.0	3,685.1	3,722.1	3,722.1	9.3	8.3	-49.90	-491.8	-1,054.3	987.8	970.8	17.03	58.008	
3,800.0	3,784.3	3,821.3	3,821.3	9.6	8.5	-50.47	-491.8	-1,054.3	979.6	962.1	17.54	55.834	
3,900.0	3,883.5	3,920.5	3,920.5	10.0	8.7	-51.05	-491.8	-1,054.3	971.5	953.4	18.06	53.781	
4,000.0	3,982.6	4,019.6	4,019.6	10.3	8.9	-51.64	-491.8	-1,054.3	963.4	944.8	18.58	51.841	
4,100.0	4,081.8	4,118.8	4,118.8	10.6	9.1	-52.24	-491.8	-1,054.3	955.5	936.4	19.11	50.006	
4,200.0	4,181.0	4,218.0	4,218.0	10.9	9.4	-52.85	-491.8	-1,054.3	947.7	928.0	19.63	48.268	
4,300.0	4,280.2	4,317.2	4,317.2	11.2	9.6	-53.46	-491.8	-1,054.3	939.9	919.8	20.16	46.620	
4,400.0	4,379.3	4,416.3	4,416.3	11.6	9.8	-54.09	-491.8	-1,054.3	932.3	911.6	20.69	45.056	
4,500.0	4,478.5	4,515.5	4,515.5	11.9	10.0	-54.73	-491.8	-1,054.3	924.9	903.6	21.23	43.571	
4,600.0	4,577.7	4,614.7	4,614.7	12.2	10.3	-55.38	-491.8	-1,054.3	917.5	895.7	21.76	42.159	
4,700.0	4,676.9	4,713.9	4,713.9	12.5	10.5	-55.97	-491.8	-1,054.3	910.4	888.1	22.29	40.844	
4,800.0	4,776.5	4,813.5	4,813.5	12.7	10.7	-56.38	-491.8	-1,054.3	905.1	882.3	22.75	39.776	
4,900.0	4,876.3	4,913.3	4,913.3	12.9	10.9	-56.65	-491.8	-1,054.3	901.7	878.5	23.19	38.889	
5,000.0	4,976.2	5,013.2	5,013.2	13.1	11.2	-56.76	-491.8	-1,054.3	900.3	876.7	23.59	38.168	
5,048.7	5,025.0	5,062.0	5,062.0	13.2	11.3	-56.78	-491.8	-1,054.3	900.2	876.4	23.78	37.851	
5,100.0	5,076.2	5,113.2	5,113.2	13.2	11.4	-131.44	-491.8	-1,054.3	900.3	876.3	23.98	37.537	
5,200.0	5,176.2	5,213.2	5,213.2	13.4	11.6	-131.44	-491.8	-1,054.3	900.3	875.9	24.40	36.901	
5,300.0	5,276.2	5,313.2	5,313.2	13.6	11.8	-131.44	-491.8	-1,054.3	900.3	875.5	24.81	36.284	
5,400.0	5,376.2	5,413.2	5,413.2	13.8	12.1	-131.44	-491.8	-1,054.3	900.3	875.0	25.23	35.686	
5,500.0	5,476.2	5,513.2	5,513.2	14.0	12.3	-131.44	-491.8	-1,054.3	900.3	874.6	25.64	35.106	
5,600.0	5,576.2	5,613.2	5,613.2	14.2	12.5	-131.44	-491.8	-1,054.3	900.3	874.2	26.06	34.544	
5,700.0	5,676.2	5,713.2	5,713.2	14.3	12.7	-131.44	-491.8	-1,054.3	900.3	873.8	26.48	33.997	
5,800.0	5,776.2	5,813.2	5,813.2	14.5	13.0	-131.44	-491.8	-1,054.3	900.3	873.4	26.90	33.467	
5,900.0	5,876.0	5,913.0	5,913.0	14.7	13.2	-49.00	-491.8	-1,054.3	896.9	869.6	27.22	32.953	
6,000.0	5,974.3	6,011.3	6,011.3	14.8	13.4	50.56	-491.8	-1,054.3	885.1	857.8	27.28	32.448	
6,100.0	6,069.4	6,106.4	6,106.4	14.9	13.6	53.27	-491.8	-1,054.3	865.5	838.3	27.17	31.857	
6,200.0	6,159.7	6,196.7	6,196.7	15.1	13.8	57.15	-491.8	-1,054.3	839.3	812.3	27.04	31.042	
6,300.0	6,243.6	6,280.6	6,280.6	15.2	14.0	62.14	-491.8	-1,054.3	808.2	781.2	27.07	29.853	
6,400.0	6,319.6	6,356.6	6,356.6	15.4	14.2	68.01	-491.8	-1,054.3	774.5	747.1	27.43	28.233	
6,500.0	6,386.6	6,423.6	6,423.6	15.7	14.3	74.31	-491.8	-1,054.3	740.9	712.8	28.15	26.322	
6,600.0	6,443.4	6,480.4	6,480.4	16.1	14.5	80.37	-491.8	-1,054.3	711.0	681.8	29.11	24.423	
6,700.0	6,488.9	6,525.9	6,525.9	16.8	14.6	85.49	-491.8	-1,054.3	688.2	658.0	30.16	22.817	
6,800.0	6,522.4	6,559.4	6,559.4	17.6	14.6	89.07	-491.8	-1,054.3	676.1	644.9	31.24	21.646	
6,841.6	6,532.6	6,569.6	6,569.6	18.0	14.7	90.00	-491.8	-1,054.3	674.9	643.2	31.71	21.282 CC, ES	
6,900.0	6,543.3	6,580.3	6,580.3	18.6	14.7	90.71	-491.8	-1,054.3	677.4	645.0	32.37	20.928	
7,000.0	6,551.3	6,588.3	6,588.3	19.8	14.7	90.20	-491.8	-1,054.3	692.9	659.3	33.62	20.614 SF	
7,100.0	6,550.8	6,587.8	6,587.8	21.0	14.7	89.86	-491.8	-1,054.3	722.2	687.2	34.95	20.665	
7,200.0	6,550.2	6,587.2	6,587.2	22.4	14.7	89.80	-491.8	-1,054.3	763.5	727.2	36.36	20.997	
7,300.0	6,549.5	6,586.5	6,586.5	23.9	14.7	89.75	-491.8	-1,054.3	815.1	777.2	37.85	21.534	
7,400.0	6,548.9	6,585.9	6,585.9	25.4	14.7	89.69	-491.8	-1,054.3	875.1	835.7	39.40	22.211	
7,500.0	6,548.2	6,585.2	6,585.2	26.9	14.7	89.64	-491.8	-1,054.3	941.9	900.9	40.99	22.976	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sater 19E-203
Project:	SEC.19-T4N-R63W	TVD Reference:	WELL @ 4674.0ft (RKB - 13')
Reference Site:	Sater 4N63W19E Pad Sec.19-T4N-R63W	MD Reference:	WELL @ 4674.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sater 19E-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (2-10-15)	Offset TVD Reference:	Offset Datum

Offset Design STATE C24-99HZ PAD 24-4N-64W - STATE C24-99HZ - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 899-, 5796-													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	
7,000.0	6,551.3	10,838.0	6,519.8	19.8	126.3	84.88	-1,462.8	-897.7	965.7	932.2	33.50	28.822		
7,100.0	6,550.8	10,838.0	6,519.8	21.0	126.3	86.75	-1,462.8	-897.7	883.0	848.3	34.73	25.422		
7,200.0	6,550.2	10,838.0	6,519.8	22.4	126.3	86.75	-1,462.8	-897.7	804.2	768.1	36.15	22.249		
7,300.0	6,549.5	10,838.0	6,519.8	23.9	126.3	86.75	-1,462.8	-897.7	730.7	693.1	37.63	19.417		
7,400.0	6,548.9	10,838.0	6,519.8	25.4	126.3	86.75	-1,462.8	-897.7	664.2	625.0	39.18	16.952		
7,500.0	6,548.2	10,838.0	6,519.8	26.9	126.3	86.75	-1,462.8	-897.7	606.9	566.1	40.77	14.883		
7,600.0	6,547.6	10,838.0	6,519.8	28.5	126.3	86.75	-1,462.8	-897.7	561.6	519.2	42.41	13.243		
7,700.0	6,546.9	10,838.0	6,519.8	30.2	126.3	86.75	-1,462.8	-897.7	531.6	487.5	44.08	12.060		
7,800.0	6,546.3	10,838.0	6,519.8	31.8	126.3	86.75	-1,462.8	-897.7	519.3	473.6	45.77	11.346		
7,814.2	6,546.2	10,838.0	6,519.8	32.1	126.3	86.75	-1,462.8	-897.7	519.2	473.1	46.02	11.281 CC, ES		
7,900.0	6,545.6	10,838.0	6,519.8	33.5	126.3	86.75	-1,462.8	-897.7	526.2	478.7	47.50	11.079 SF		
8,000.0	6,545.0	10,838.0	6,519.8	35.3	126.3	86.75	-1,462.8	-897.7	551.4	502.1	49.24	11.199		
8,100.0	6,544.3	10,838.0	6,519.8	37.0	126.3	86.75	-1,462.8	-897.7	592.6	541.6	51.00	11.620		
8,200.0	6,543.7	10,838.0	6,519.8	38.8	126.3	86.75	-1,462.8	-897.7	646.8	594.0	52.77	12.257		
8,300.0	6,543.1	10,838.0	6,519.8	40.5	126.3	86.75	-1,462.8	-897.7	711.0	656.4	54.56	13.032		
8,400.0	6,542.4	10,838.0	6,519.8	42.3	126.3	86.75	-1,462.8	-897.7	782.7	726.3	56.36	13.889		
8,500.0	6,541.8	10,838.0	6,519.8	44.1	126.3	86.75	-1,462.8	-897.7	860.1	801.9	58.16	14.787		
8,600.0	6,541.1	10,838.0	6,519.8	45.9	126.3	86.75	-1,462.8	-897.7	941.8	881.8	59.98	15.701		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sater 19E-203
Project:	SEC.19-T4N-R63W	TVD Reference:	WELL @ 4674.0ft (RKB - 13')
Reference Site:	Sater 4N63W19E Pad Sec.19-T4N-R63W	MD Reference:	WELL @ 4674.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Sater 19E-203	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (2-10-15)	Offset TVD Reference:	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-203

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.65°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Sater 19E-203
Project:	SEC.19-T4N-R63W	TVD Reference:	WELL @ 4674.0ft (RKB - 13')
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