

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Simonsen 11-421**

Surface Location: Simonsen NWNW-12 Pad Sec.12-T6N-R67W

North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4848.0

+N/-S

+E/-W

Northing

Easting

Latitude

Longitude

Slot

0.0

0.0

1428709.77

3180785.16

40.508390

-104.849840

RKB - Ensign 32 - 15' WELL @ 4863.0ft (RKB - Ensign 32 - 15')

WELLBORE TARGET DETAILS				
Name	TVD	+N/-S	+E/-W	Shape
HARDLINE BHL 460'FSL (3)	1.0	4998.4	-400.0	Polygon
SECTION LINE 206'N & 380'W OF SHL (3)	1.0	206.0	-380.0	Polygon
BHL 500'FNL, 200'FWL, SEC.1	7268.0	4958.4	-169.6	Point

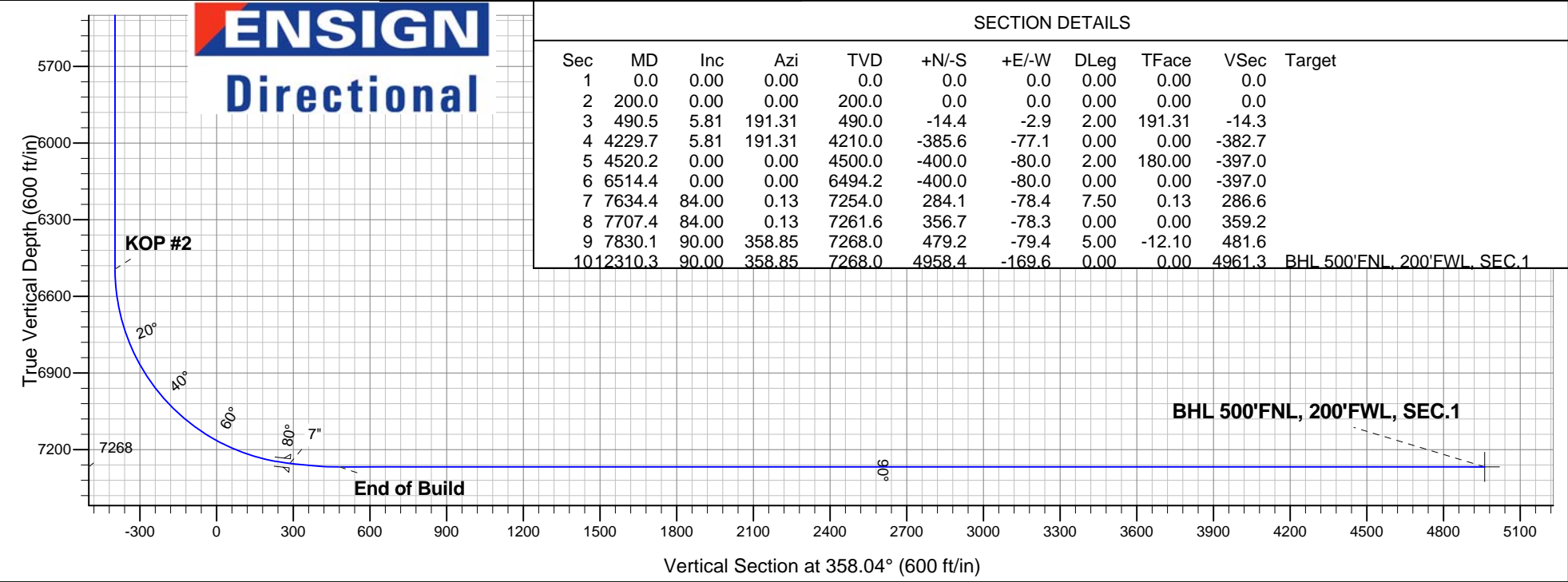
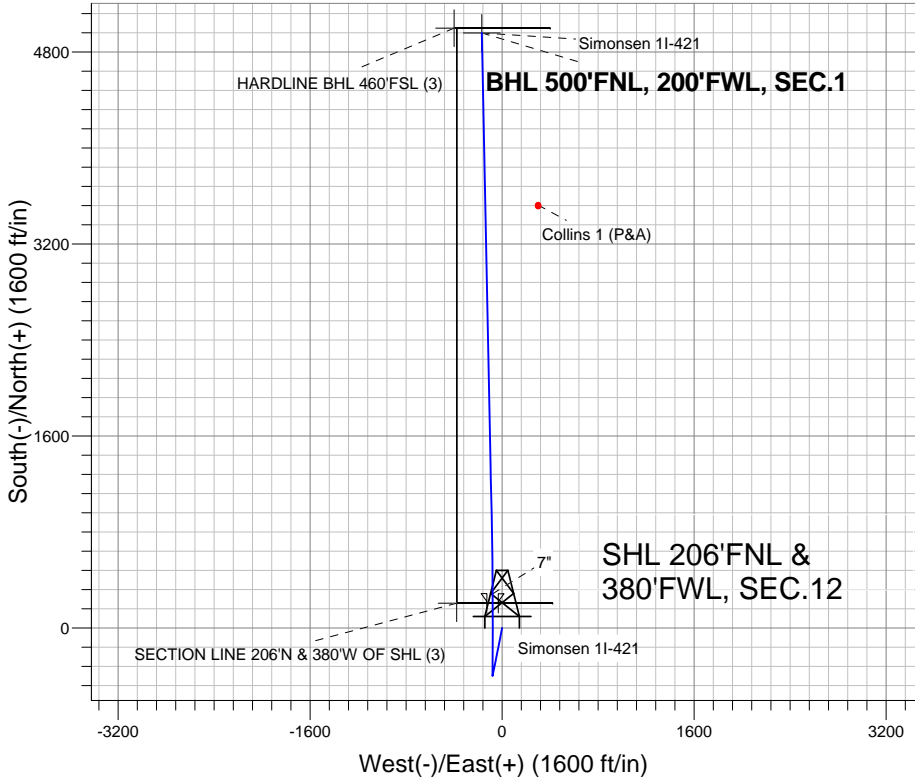
Azimuths to True North
Magnetic North: 8.79°

Magnetic Field
Strength: 53075.5nT
Dip Angle: 67.09°
Date: 6/7/2012
Model: IGRF2010

Simonsen NWNW-12 Pad Sec.12-T6N-R67W
Simonsen 11-421
Plan #1 (6-07-12)
12:35, June 25 2012

ANNOTATIONS

TVD	MD	Annotation
200.0	200.0	KOP #1
6494.2	6514.4	KOP #2
7268.0	7830.1	End of Build





PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.12-T6N-R67W

Simonsen NWNW-12 Pad Sec.12-T6N-R67W

Simonsen 1I-421

Wellbore #1

Plan: Plan #1 (6-07-12)

Standard Planning Report

25 June, 2012

Database:	Landmark	Local Co-ordinate Reference:	Well Simonsen 11-421
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Project:	SEC.12-T6N-R67W	MD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Site:	Simonsen NWNW-12 Pad Sec.12-T6N-R67W	North Reference:	True
Well:	Simonsen 11-421	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (6-07-12)		

Project	SEC.12-T6N-R67W, Weld County, Colorado		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site						Simonsen NWNW-12 Pad Sec.12-T6N-R67W											
Site Position:						Northing:			1,428,710.21 ft			Latitude:			40.508390		
From:			Lat/Long			Easting:			3,180,843.55 ft			Longitude:			-104.849630		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.42 °		

Well	Simonsen 11-421					
Well Position	+N/-S	0.0 ft	Northing:	1,428,709.77 ft	Latitude:	40.508390
	+E/-W	-58.4 ft	Easting:	3,180,785.16 ft	Longitude:	-104.849840
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,848.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/7/2012	8.79	67.09	53,076

Design	Plan #1 (6-07-12)			
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	358.04

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	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
490.5	5.81	191.31	490.0	-14.4	-2.9	2.00	2.00	0.00	191.31	
4,229.7	5.81	191.31	4,210.0	-385.6	-77.1	0.00	0.00	0.00	0.00	
4,520.2	0.00	0.00	4,500.0	-400.0	-80.0	2.00	-2.00	0.00	180.00	
6,514.4	0.00	0.00	6,494.2	-400.0	-80.0	0.00	0.00	0.00	0.00	
7,634.4	84.00	0.13	7,254.0	284.1	-78.4	7.50	7.50	0.00	0.13	
7,707.4	84.00	0.13	7,261.6	356.7	-78.3	0.00	0.00	0.00	0.00	
7,830.1	90.00	358.85	7,268.0	479.2	-79.4	5.00	4.89	-1.05	-12.10	
12,310.3	90.00	358.85	7,268.0	4,958.4	-169.6	0.00	0.00	0.00	0.00	BHL 500'FNL, 200'

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Project:	SEC.12-T6N-R67W	MD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Site:	Simonsen NWNW-12 Pad Sec.12-T6N-R67W	North Reference:	True
Well:	Simonsen 11-421	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (6-07-12)		

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
SECTION LINE 206°N & 380°W OF SHL (3) - HARDLINE BHL 460'FSL (3)									
40.0	0.00	0.00	40.0	0.0	0.0	0.0	0.00	0.00	0.00
80.0	0.00	0.00	80.0	0.0	0.0	0.0	0.00	0.00	0.00
120.0	0.00	0.00	120.0	0.0	0.0	0.0	0.00	0.00	0.00
160.0	0.00	0.00	160.0	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
KOP #1									
240.0	0.80	191.31	240.0	-0.3	-0.1	-0.3	2.00	2.00	0.00
280.0	1.60	191.31	280.0	-1.1	-0.2	-1.1	2.00	2.00	0.00
320.0	2.40	191.31	320.0	-2.5	-0.5	-2.4	2.00	2.00	0.00
360.0	3.20	191.31	359.9	-4.4	-0.9	-4.3	2.00	2.00	0.00
400.0	4.00	191.31	399.8	-6.8	-1.4	-6.8	2.00	2.00	0.00
440.0	4.80	191.31	439.7	-9.9	-2.0	-9.8	2.00	2.00	0.00
480.0	5.60	191.31	479.6	-13.4	-2.7	-13.3	2.00	2.00	0.00
490.5	5.81	191.31	490.0	-14.4	-2.9	-14.3	2.00	2.00	0.00
520.0	5.81	191.31	519.4	-17.4	-3.5	-17.2	0.00	0.00	0.00
560.0	5.81	191.31	559.1	-21.3	-4.3	-21.2	0.00	0.00	0.00
600.0	5.81	191.31	598.9	-25.3	-5.1	-25.1	0.00	0.00	0.00
640.0	5.81	191.31	638.7	-29.3	-5.9	-29.1	0.00	0.00	0.00
680.0	5.81	191.31	678.5	-33.2	-6.6	-33.0	0.00	0.00	0.00
720.0	5.81	191.31	718.3	-37.2	-7.4	-36.9	0.00	0.00	0.00
760.0	5.81	191.31	758.1	-41.2	-8.2	-40.9	0.00	0.00	0.00
800.0	5.81	191.31	797.9	-45.2	-9.0	-44.8	0.00	0.00	0.00
840.0	5.81	191.31	837.7	-49.1	-9.8	-48.8	0.00	0.00	0.00
880.0	5.81	191.31	877.5	-53.1	-10.6	-52.7	0.00	0.00	0.00
920.0	5.81	191.31	917.3	-57.1	-11.4	-56.6	0.00	0.00	0.00
960.0	5.81	191.31	957.1	-61.0	-12.2	-60.6	0.00	0.00	0.00
1,000.0	5.81	191.31	996.9	-65.0	-13.0	-64.5	0.00	0.00	0.00
1,040.0	5.81	191.31	1,036.7	-69.0	-13.8	-68.5	0.00	0.00	0.00
1,080.0	5.81	191.31	1,076.5	-72.9	-14.6	-72.4	0.00	0.00	0.00
1,120.0	5.81	191.31	1,116.3	-76.9	-15.4	-76.3	0.00	0.00	0.00
1,160.0	5.81	191.31	1,156.1	-80.9	-16.2	-80.3	0.00	0.00	0.00
1,200.0	5.81	191.31	1,195.9	-84.9	-17.0	-84.2	0.00	0.00	0.00
1,240.0	5.81	191.31	1,235.7	-88.8	-17.8	-88.2	0.00	0.00	0.00
1,280.0	5.81	191.31	1,275.4	-92.8	-18.6	-92.1	0.00	0.00	0.00
1,320.0	5.81	191.31	1,315.2	-96.8	-19.4	-96.0	0.00	0.00	0.00
1,360.0	5.81	191.31	1,355.0	-100.7	-20.1	-100.0	0.00	0.00	0.00
1,400.0	5.81	191.31	1,394.8	-104.7	-20.9	-103.9	0.00	0.00	0.00
1,440.0	5.81	191.31	1,434.6	-108.7	-21.7	-107.9	0.00	0.00	0.00
1,480.0	5.81	191.31	1,474.4	-112.6	-22.5	-111.8	0.00	0.00	0.00
1,520.0	5.81	191.31	1,514.2	-116.6	-23.3	-115.7	0.00	0.00	0.00
1,560.0	5.81	191.31	1,554.0	-120.6	-24.1	-119.7	0.00	0.00	0.00
1,600.0	5.81	191.31	1,593.8	-124.6	-24.9	-123.6	0.00	0.00	0.00
1,640.0	5.81	191.31	1,633.6	-128.5	-25.7	-127.6	0.00	0.00	0.00
1,680.0	5.81	191.31	1,673.4	-132.5	-26.5	-131.5	0.00	0.00	0.00
1,720.0	5.81	191.31	1,713.2	-136.5	-27.3	-135.5	0.00	0.00	0.00
1,760.0	5.81	191.31	1,753.0	-140.4	-28.1	-139.4	0.00	0.00	0.00
1,800.0	5.81	191.31	1,792.8	-144.4	-28.9	-143.3	0.00	0.00	0.00
1,840.0	5.81	191.31	1,832.6	-148.4	-29.7	-147.3	0.00	0.00	0.00
1,880.0	5.81	191.31	1,872.4	-152.3	-30.5	-151.2	0.00	0.00	0.00
1,920.0	5.81	191.31	1,912.2	-156.3	-31.3	-155.2	0.00	0.00	0.00

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Site:	Simonsen NWNW-12 Pad Sec.12-T6N-R67W	North Reference:	True
Well:	Simonsen 11-421	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (6-07-12)		

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)
1,960.0	5.81	191.31	1,952.0	-160.3	-32.1	-159.1	0.00	0.00	0.00
2,000.0	5.81	191.31	1,991.7	-164.3	-32.9	-163.0	0.00	0.00	0.00
2,040.0	5.81	191.31	2,031.5	-168.2	-33.6	-167.0	0.00	0.00	0.00
2,080.0	5.81	191.31	2,071.3	-172.2	-34.4	-170.9	0.00	0.00	0.00
2,120.0	5.81	191.31	2,111.1	-176.2	-35.2	-174.9	0.00	0.00	0.00
2,160.0	5.81	191.31	2,150.9	-180.1	-36.0	-178.8	0.00	0.00	0.00
2,200.0	5.81	191.31	2,190.7	-184.1	-36.8	-182.7	0.00	0.00	0.00
2,240.0	5.81	191.31	2,230.5	-188.1	-37.6	-186.7	0.00	0.00	0.00
2,280.0	5.81	191.31	2,270.3	-192.0	-38.4	-190.6	0.00	0.00	0.00
2,320.0	5.81	191.31	2,310.1	-196.0	-39.2	-194.6	0.00	0.00	0.00
2,360.0	5.81	191.31	2,349.9	-200.0	-40.0	-198.5	0.00	0.00	0.00
2,400.0	5.81	191.31	2,389.7	-204.0	-40.8	-202.4	0.00	0.00	0.00
2,440.0	5.81	191.31	2,429.5	-207.9	-41.6	-206.4	0.00	0.00	0.00
2,480.0	5.81	191.31	2,469.3	-211.9	-42.4	-210.3	0.00	0.00	0.00
2,520.0	5.81	191.31	2,509.1	-215.9	-43.2	-214.3	0.00	0.00	0.00
2,560.0	5.81	191.31	2,548.9	-219.8	-44.0	-218.2	0.00	0.00	0.00
2,600.0	5.81	191.31	2,588.7	-223.8	-44.8	-222.2	0.00	0.00	0.00
2,640.0	5.81	191.31	2,628.5	-227.8	-45.6	-226.1	0.00	0.00	0.00
2,680.0	5.81	191.31	2,668.3	-231.8	-46.4	-230.0	0.00	0.00	0.00
2,720.0	5.81	191.31	2,708.1	-235.7	-47.1	-234.0	0.00	0.00	0.00
2,760.0	5.81	191.31	2,747.8	-239.7	-47.9	-237.9	0.00	0.00	0.00
2,800.0	5.81	191.31	2,787.6	-243.7	-48.7	-241.9	0.00	0.00	0.00
2,840.0	5.81	191.31	2,827.4	-247.6	-49.5	-245.8	0.00	0.00	0.00
2,880.0	5.81	191.31	2,867.2	-251.6	-50.3	-249.7	0.00	0.00	0.00
2,920.0	5.81	191.31	2,907.0	-255.6	-51.1	-253.7	0.00	0.00	0.00
2,960.0	5.81	191.31	2,946.8	-259.5	-51.9	-257.6	0.00	0.00	0.00
3,000.0	5.81	191.31	2,986.6	-263.5	-52.7	-261.6	0.00	0.00	0.00
3,040.0	5.81	191.31	3,026.4	-267.5	-53.5	-265.5	0.00	0.00	0.00
3,080.0	5.81	191.31	3,066.2	-271.5	-54.3	-269.4	0.00	0.00	0.00
3,120.0	5.81	191.31	3,106.0	-275.4	-55.1	-273.4	0.00	0.00	0.00
3,160.0	5.81	191.31	3,145.8	-279.4	-55.9	-277.3	0.00	0.00	0.00
3,200.0	5.81	191.31	3,185.6	-283.4	-56.7	-281.3	0.00	0.00	0.00
3,240.0	5.81	191.31	3,225.4	-287.3	-57.5	-285.2	0.00	0.00	0.00
3,280.0	5.81	191.31	3,265.2	-291.3	-58.3	-289.1	0.00	0.00	0.00
3,320.0	5.81	191.31	3,305.0	-295.3	-59.1	-293.1	0.00	0.00	0.00
3,360.0	5.81	191.31	3,344.8	-299.2	-59.8	-297.0	0.00	0.00	0.00
3,400.0	5.81	191.31	3,384.6	-303.2	-60.6	-301.0	0.00	0.00	0.00
3,440.0	5.81	191.31	3,424.4	-307.2	-61.4	-304.9	0.00	0.00	0.00
3,480.0	5.81	191.31	3,464.1	-311.2	-62.2	-308.8	0.00	0.00	0.00
3,520.0	5.81	191.31	3,503.9	-315.1	-63.0	-312.8	0.00	0.00	0.00
3,560.0	5.81	191.31	3,543.7	-319.1	-63.8	-316.7	0.00	0.00	0.00
3,600.0	5.81	191.31	3,583.5	-323.1	-64.6	-320.7	0.00	0.00	0.00
3,640.0	5.81	191.31	3,623.3	-327.0	-65.4	-324.6	0.00	0.00	0.00
3,680.0	5.81	191.31	3,663.1	-331.0	-66.2	-328.6	0.00	0.00	0.00
3,720.0	5.81	191.31	3,702.9	-335.0	-67.0	-332.5	0.00	0.00	0.00
3,760.0	5.81	191.31	3,742.7	-338.9	-67.8	-336.4	0.00	0.00	0.00
3,800.0	5.81	191.31	3,782.5	-342.9	-68.6	-340.4	0.00	0.00	0.00
3,840.0	5.81	191.31	3,822.3	-346.9	-69.4	-344.3	0.00	0.00	0.00
3,880.0	5.81	191.31	3,862.1	-350.9	-70.2	-348.3	0.00	0.00	0.00
3,920.0	5.81	191.31	3,901.9	-354.8	-71.0	-352.2	0.00	0.00	0.00
3,960.0	5.81	191.31	3,941.7	-358.8	-71.8	-356.1	0.00	0.00	0.00
4,000.0	5.81	191.31	3,981.5	-362.8	-72.6	-360.1	0.00	0.00	0.00
4,040.0	5.81	191.31	4,021.3	-366.7	-73.3	-364.0	0.00	0.00	0.00

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Site:	Simonsen NWNW-12 Pad Sec.12-T6N-R67W	North Reference:	True
Well:	Simonsen 11-421	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (6-07-12)		

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)
4,080.0	5.81	191.31	4,061.1	-370.7	-74.1	-368.0	0.00	0.00	0.00
4,120.0	5.81	191.31	4,100.9	-374.7	-74.9	-371.9	0.00	0.00	0.00
4,160.0	5.81	191.31	4,140.7	-378.7	-75.7	-375.8	0.00	0.00	0.00
4,200.0	5.81	191.31	4,180.4	-382.6	-76.5	-379.8	0.00	0.00	0.00
4,229.7	5.81	191.31	4,210.0	-385.6	-77.1	-382.7	0.00	0.00	0.00
4,240.0	5.60	191.31	4,220.2	-386.6	-77.3	-383.7	2.00	-2.00	0.00
4,280.0	4.80	191.31	4,260.1	-390.1	-78.0	-387.2	2.00	-2.00	0.00
4,320.0	4.00	191.31	4,300.0	-393.1	-78.6	-390.2	2.00	-2.00	0.00
4,360.0	3.20	191.31	4,339.9	-395.6	-79.1	-392.7	2.00	-2.00	0.00
4,400.0	2.40	191.31	4,379.8	-397.5	-79.5	-394.6	2.00	-2.00	0.00
4,440.0	1.60	191.31	4,419.8	-398.9	-79.8	-395.9	2.00	-2.00	0.00
4,480.0	0.80	191.31	4,459.8	-399.7	-79.9	-396.8	2.00	-2.00	0.00
4,520.0	0.00	191.31	4,499.8	-400.0	-80.0	-397.0	2.00	-2.00	0.00
4,520.2	0.00	0.00	4,500.0	-400.0	-80.0	-397.0	2.00	-2.00	0.00
4,560.0	0.00	0.00	4,539.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,579.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
4,640.0	0.00	0.00	4,619.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
4,680.0	0.00	0.00	4,659.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
4,720.0	0.00	0.00	4,699.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
4,760.0	0.00	0.00	4,739.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,779.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
4,840.0	0.00	0.00	4,819.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
4,880.0	0.00	0.00	4,859.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
4,920.0	0.00	0.00	4,899.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
4,960.0	0.00	0.00	4,939.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
5,000.0	0.00	0.00	4,979.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
5,040.0	0.00	0.00	5,019.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
5,080.0	0.00	0.00	5,059.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
5,120.0	0.00	0.00	5,099.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
5,160.0	0.00	0.00	5,139.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,179.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
5,240.0	0.00	0.00	5,219.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
5,280.0	0.00	0.00	5,259.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
5,320.0	0.00	0.00	5,299.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
5,360.0	0.00	0.00	5,339.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
5,400.0	0.00	0.00	5,379.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
5,440.0	0.00	0.00	5,419.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
5,480.0	0.00	0.00	5,459.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
5,520.0	0.00	0.00	5,499.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
5,560.0	0.00	0.00	5,539.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,579.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
5,640.0	0.00	0.00	5,619.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
5,680.0	0.00	0.00	5,659.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
5,720.0	0.00	0.00	5,699.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
5,760.0	0.00	0.00	5,739.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,779.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
5,840.0	0.00	0.00	5,819.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
5,880.0	0.00	0.00	5,859.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
5,920.0	0.00	0.00	5,899.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
5,960.0	0.00	0.00	5,939.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
6,000.0	0.00	0.00	5,979.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
6,040.0	0.00	0.00	6,019.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
6,080.0	0.00	0.00	6,059.8	-400.0	-80.0	-397.0	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Simonsen 11-421
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Project:	SEC.12-T6N-R67W	MD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Site:	Simonsen NWNW-12 Pad Sec.12-T6N-R67W	North Reference:	True
Well:	Simonsen 11-421	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (6-07-12)		

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)
6,120.0	0.00	0.00	6,099.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
6,160.0	0.00	0.00	6,139.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,179.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
6,240.0	0.00	0.00	6,219.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
6,280.0	0.00	0.00	6,259.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
6,320.0	0.00	0.00	6,299.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
6,360.0	0.00	0.00	6,339.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,379.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
6,440.0	0.00	0.00	6,419.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
6,480.0	0.00	0.00	6,459.8	-400.0	-80.0	-397.0	0.00	0.00	0.00
6,514.4	0.00	0.00	6,494.2	-400.0	-80.0	-397.0	0.00	0.00	0.00
KOP #2									
6,520.0	0.42	0.13	6,499.8	-400.0	-80.0	-397.0	7.50	7.50	0.00
6,560.0	3.42	0.13	6,539.8	-398.6	-80.0	-395.7	7.50	7.50	0.00
6,600.0	6.42	0.13	6,579.6	-395.2	-80.0	-392.2	7.50	7.50	0.00
6,640.0	9.42	0.13	6,619.2	-389.7	-80.0	-386.7	7.50	7.50	0.00
6,680.0	12.42	0.13	6,658.5	-382.1	-80.0	-379.2	7.50	7.50	0.00
6,720.0	15.42	0.13	6,697.3	-372.5	-79.9	-369.5	7.50	7.50	0.00
6,760.0	18.42	0.13	6,735.6	-360.9	-79.9	-357.9	7.50	7.50	0.00
6,800.0	21.42	0.13	6,773.2	-347.2	-79.9	-344.3	7.50	7.50	0.00
6,840.0	24.42	0.13	6,810.0	-331.7	-79.8	-328.7	7.50	7.50	0.00
6,880.0	27.42	0.13	6,846.0	-314.2	-79.8	-311.3	7.50	7.50	0.00
6,920.0	30.42	0.13	6,881.0	-294.8	-79.8	-291.9	7.50	7.50	0.00
6,960.0	33.42	0.13	6,915.0	-273.7	-79.7	-270.8	7.50	7.50	0.00
7,000.0	36.42	0.13	6,947.8	-250.8	-79.7	-247.9	7.50	7.50	0.00
7,040.0	39.42	0.13	6,979.3	-226.2	-79.6	-223.4	7.50	7.50	0.00
7,080.0	42.42	0.13	7,009.5	-200.0	-79.5	-197.2	7.50	7.50	0.00
7,120.0	45.42	0.13	7,038.3	-172.3	-79.5	-169.5	7.50	7.50	0.00
7,160.0	48.42	0.13	7,065.7	-143.1	-79.4	-140.3	7.50	7.50	0.00
7,200.0	51.42	0.13	7,091.4	-112.5	-79.3	-109.7	7.50	7.50	0.00
7,240.0	54.42	0.13	7,115.5	-80.5	-79.3	-77.8	7.50	7.50	0.00
7,280.0	57.42	0.13	7,137.9	-47.4	-79.2	-44.7	7.50	7.50	0.00
7,320.0	60.42	0.13	7,158.6	-13.2	-79.1	-10.5	7.50	7.50	0.00
7,360.0	63.42	0.13	7,177.4	22.1	-79.0	24.8	7.50	7.50	0.00
7,400.0	66.42	0.13	7,194.4	58.3	-79.0	61.0	7.50	7.50	0.00
7,440.0	69.42	0.13	7,209.4	95.4	-78.9	98.0	7.50	7.50	0.00
7,480.0	72.42	0.13	7,222.5	133.2	-78.8	135.8	7.50	7.50	0.00
7,520.0	75.42	0.13	7,233.5	171.6	-78.7	174.2	7.50	7.50	0.00
7,560.0	78.42	0.13	7,242.6	210.6	-78.6	213.2	7.50	7.50	0.00
7,600.0	81.42	0.13	7,249.6	250.0	-78.5	252.5	7.50	7.50	0.00
7,634.4	84.00	0.13	7,254.0	284.1	-78.4	286.6	7.50	7.50	0.00
7"									
7,640.0	84.00	0.13	7,254.5	289.7	-78.4	292.2	0.00	0.00	0.00
7,680.0	84.00	0.13	7,258.7	329.4	-78.3	331.9	0.00	0.00	0.00
7,707.4	84.00	0.13	7,261.6	356.7	-78.3	359.2	0.00	0.00	0.00
7,720.0	84.62	360.00	7,262.8	369.2	-78.3	371.7	5.00	4.89	-1.05
7,760.0	86.57	359.58	7,265.9	409.1	-78.4	411.5	5.00	4.89	-1.05
7,800.0	88.53	359.16	7,267.6	449.1	-78.9	451.5	5.00	4.89	-1.04
7,830.1	90.00	358.85	7,268.0	479.2	-79.4	481.6	5.00	4.89	-1.04
End of Build									
7,840.0	90.00	358.85	7,268.0	489.1	-79.6	491.5	0.01	0.01	0.00
7,880.0	90.00	358.85	7,268.0	529.0	-80.4	531.5	0.00	0.00	0.00
7,920.0	90.00	358.85	7,268.0	569.0	-81.2	571.5	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Simonsen 11-421
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Project:	SEC.12-T6N-R67W	MD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Site:	Simonsen NWNW-12 Pad Sec.12-T6N-R67W	North Reference:	True
Well:	Simonsen 11-421	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (6-07-12)		

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)
7,960.0	90.00	358.85	7,268.0	609.0	-82.0	611.5	0.00	0.00	0.00
8,000.0	90.00	358.85	7,268.0	649.0	-82.8	651.5	0.00	0.00	0.00
8,040.0	90.00	358.85	7,268.0	689.0	-83.6	691.5	0.00	0.00	0.00
8,080.0	90.00	358.85	7,268.0	729.0	-84.4	731.5	0.00	0.00	0.00
8,120.0	90.00	358.85	7,268.0	769.0	-85.2	771.5	0.00	0.00	0.00
8,160.0	90.00	358.85	7,268.0	809.0	-86.0	811.5	0.00	0.00	0.00
8,200.0	90.00	358.85	7,268.0	849.0	-86.8	851.5	0.00	0.00	0.00
8,240.0	90.00	358.85	7,268.0	889.0	-87.6	891.4	0.00	0.00	0.00
8,280.0	90.00	358.85	7,268.0	929.0	-88.4	931.4	0.00	0.00	0.00
8,320.0	90.00	358.85	7,268.0	969.0	-89.2	971.4	0.00	0.00	0.00
8,360.0	90.00	358.85	7,268.0	1,008.9	-90.1	1,011.4	0.00	0.00	0.00
8,400.0	90.00	358.85	7,268.0	1,048.9	-90.9	1,051.4	0.00	0.00	0.00
8,440.0	90.00	358.85	7,268.0	1,088.9	-91.7	1,091.4	0.00	0.00	0.00
8,480.0	90.00	358.85	7,268.0	1,128.9	-92.5	1,131.4	0.00	0.00	0.00
8,520.0	90.00	358.85	7,268.0	1,168.9	-93.3	1,171.4	0.00	0.00	0.00
8,560.0	90.00	358.85	7,268.0	1,208.9	-94.1	1,211.4	0.00	0.00	0.00
8,600.0	90.00	358.85	7,268.0	1,248.9	-94.9	1,251.4	0.00	0.00	0.00
8,640.0	90.00	358.85	7,268.0	1,288.9	-95.7	1,291.4	0.00	0.00	0.00
8,680.0	90.00	358.85	7,268.0	1,328.9	-96.5	1,331.4	0.00	0.00	0.00
8,720.0	90.00	358.85	7,268.0	1,368.9	-97.3	1,371.4	0.00	0.00	0.00
8,760.0	90.00	358.85	7,268.0	1,408.9	-98.1	1,411.4	0.00	0.00	0.00
8,800.0	90.00	358.85	7,268.0	1,448.9	-98.9	1,451.4	0.00	0.00	0.00
8,840.0	90.00	358.85	7,268.0	1,488.9	-99.7	1,491.4	0.00	0.00	0.00
8,880.0	90.00	358.85	7,268.0	1,528.8	-100.5	1,531.4	0.00	0.00	0.00
8,920.0	90.00	358.85	7,268.0	1,568.8	-101.3	1,571.4	0.00	0.00	0.00
8,960.0	90.00	358.85	7,268.0	1,608.8	-102.1	1,611.4	0.00	0.00	0.00
9,000.0	90.00	358.85	7,268.0	1,648.8	-102.9	1,651.4	0.00	0.00	0.00
9,040.0	90.00	358.85	7,268.0	1,688.8	-103.7	1,691.4	0.00	0.00	0.00
9,080.0	90.00	358.85	7,268.0	1,728.8	-104.5	1,731.4	0.00	0.00	0.00
9,120.0	90.00	358.85	7,268.0	1,768.8	-105.4	1,771.4	0.00	0.00	0.00
9,160.0	90.00	358.85	7,268.0	1,808.8	-106.2	1,811.4	0.00	0.00	0.00
9,200.0	90.00	358.85	7,268.0	1,848.8	-107.0	1,851.4	0.00	0.00	0.00
9,240.0	90.00	358.85	7,268.0	1,888.8	-107.8	1,891.3	0.00	0.00	0.00
9,280.0	90.00	358.85	7,268.0	1,928.8	-108.6	1,931.3	0.00	0.00	0.00
9,320.0	90.00	358.85	7,268.0	1,968.8	-109.4	1,971.3	0.00	0.00	0.00
9,360.0	90.00	358.85	7,268.0	2,008.7	-110.2	2,011.3	0.00	0.00	0.00
9,400.0	90.00	358.85	7,268.0	2,048.7	-111.0	2,051.3	0.00	0.00	0.00
9,440.0	90.00	358.85	7,268.0	2,088.7	-111.8	2,091.3	0.00	0.00	0.00
9,480.0	90.00	358.85	7,268.0	2,128.7	-112.6	2,131.3	0.00	0.00	0.00
9,520.0	90.00	358.85	7,268.0	2,168.7	-113.4	2,171.3	0.00	0.00	0.00
9,560.0	90.00	358.85	7,268.0	2,208.7	-114.2	2,211.3	0.00	0.00	0.00
9,600.0	90.00	358.85	7,268.0	2,248.7	-115.0	2,251.3	0.00	0.00	0.00
9,640.0	90.00	358.85	7,268.0	2,288.7	-115.8	2,291.3	0.00	0.00	0.00
9,680.0	90.00	358.85	7,268.0	2,328.7	-116.6	2,331.3	0.00	0.00	0.00
9,720.0	90.00	358.85	7,268.0	2,368.7	-117.4	2,371.3	0.00	0.00	0.00
9,760.0	90.00	358.85	7,268.0	2,408.7	-118.2	2,411.3	0.00	0.00	0.00
9,800.0	90.00	358.85	7,268.0	2,448.7	-119.0	2,451.3	0.00	0.00	0.00
9,840.0	90.00	358.85	7,268.0	2,488.6	-119.9	2,491.3	0.00	0.00	0.00
9,880.0	90.00	358.85	7,268.0	2,528.6	-120.7	2,531.3	0.00	0.00	0.00
9,920.0	90.00	358.85	7,268.0	2,568.6	-121.5	2,571.3	0.00	0.00	0.00
9,960.0	90.00	358.85	7,268.0	2,608.6	-122.3	2,611.3	0.00	0.00	0.00
10,000.0	90.00	358.85	7,268.0	2,648.6	-123.1	2,651.3	0.00	0.00	0.00
10,040.0	90.00	358.85	7,268.0	2,688.6	-123.9	2,691.3	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Simonsen 11-421
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Project:	SEC.12-T6N-R67W	MD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Site:	Simonsen NWNW-12 Pad Sec.12-T6N-R67W	North Reference:	True
Well:	Simonsen 11-421	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (6-07-12)		

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)
10,080.0	90.00	358.85	7,268.0	2,728.6	-124.7	2,731.3	0.00	0.00	0.00
10,120.0	90.00	358.85	7,268.0	2,768.6	-125.5	2,771.3	0.00	0.00	0.00
10,160.0	90.00	358.85	7,268.0	2,808.6	-126.3	2,811.3	0.00	0.00	0.00
10,200.0	90.00	358.85	7,268.0	2,848.6	-127.1	2,851.3	0.00	0.00	0.00
10,240.0	90.00	358.85	7,268.0	2,888.6	-127.9	2,891.3	0.00	0.00	0.00
10,280.0	90.00	358.85	7,268.0	2,928.6	-128.7	2,931.2	0.00	0.00	0.00
10,320.0	90.00	358.85	7,268.0	2,968.6	-129.5	2,971.2	0.00	0.00	0.00
10,360.0	90.00	358.85	7,268.0	3,008.5	-130.3	3,011.2	0.00	0.00	0.00
10,400.0	90.00	358.85	7,268.0	3,048.5	-131.1	3,051.2	0.00	0.00	0.00
10,440.0	90.00	358.85	7,268.0	3,088.5	-131.9	3,091.2	0.00	0.00	0.00
10,480.0	90.00	358.85	7,268.0	3,128.5	-132.7	3,131.2	0.00	0.00	0.00
10,520.0	90.00	358.85	7,268.0	3,168.5	-133.5	3,171.2	0.00	0.00	0.00
10,560.0	90.00	358.85	7,268.0	3,208.5	-134.3	3,211.2	0.00	0.00	0.00
10,600.0	90.00	358.85	7,268.0	3,248.5	-135.2	3,251.2	0.00	0.00	0.00
10,640.0	90.00	358.85	7,268.0	3,288.5	-136.0	3,291.2	0.00	0.00	0.00
10,680.0	90.00	358.85	7,268.0	3,328.5	-136.8	3,331.2	0.00	0.00	0.00
10,720.0	90.00	358.85	7,268.0	3,368.5	-137.6	3,371.2	0.00	0.00	0.00
10,760.0	90.00	358.85	7,268.0	3,408.5	-138.4	3,411.2	0.00	0.00	0.00
10,800.0	90.00	358.85	7,268.0	3,448.5	-139.2	3,451.2	0.00	0.00	0.00
10,840.0	90.00	358.85	7,268.0	3,488.4	-140.0	3,491.2	0.00	0.00	0.00
10,880.0	90.00	358.85	7,268.0	3,528.4	-140.8	3,531.2	0.00	0.00	0.00
10,920.0	90.00	358.85	7,268.0	3,568.4	-141.6	3,571.2	0.00	0.00	0.00
10,960.0	90.00	358.85	7,268.0	3,608.4	-142.4	3,611.2	0.00	0.00	0.00
11,000.0	90.00	358.85	7,268.0	3,648.4	-143.2	3,651.2	0.00	0.00	0.00
11,040.0	90.00	358.85	7,268.0	3,688.4	-144.0	3,691.2	0.00	0.00	0.00
11,080.0	90.00	358.85	7,268.0	3,728.4	-144.8	3,731.2	0.00	0.00	0.00
11,120.0	90.00	358.85	7,268.0	3,768.4	-145.6	3,771.2	0.00	0.00	0.00
11,160.0	90.00	358.85	7,268.0	3,808.4	-146.4	3,811.2	0.00	0.00	0.00
11,200.0	90.00	358.85	7,268.0	3,848.4	-147.2	3,851.2	0.00	0.00	0.00
11,240.0	90.00	358.85	7,268.0	3,888.4	-148.0	3,891.2	0.00	0.00	0.00
11,280.0	90.00	358.85	7,268.0	3,928.4	-148.8	3,931.1	0.00	0.00	0.00
11,320.0	90.00	358.85	7,268.0	3,968.3	-149.7	3,971.1	0.00	0.00	0.00
11,360.0	90.00	358.85	7,268.0	4,008.3	-150.5	4,011.1	0.00	0.00	0.00
11,400.0	90.00	358.85	7,268.0	4,048.3	-151.3	4,051.1	0.00	0.00	0.00
11,440.0	90.00	358.85	7,268.0	4,088.3	-152.1	4,091.1	0.00	0.00	0.00
11,480.0	90.00	358.85	7,268.0	4,128.3	-152.9	4,131.1	0.00	0.00	0.00
11,520.0	90.00	358.85	7,268.0	4,168.3	-153.7	4,171.1	0.00	0.00	0.00
11,560.0	90.00	358.85	7,268.0	4,208.3	-154.5	4,211.1	0.00	0.00	0.00
11,600.0	90.00	358.85	7,268.0	4,248.3	-155.3	4,251.1	0.00	0.00	0.00
11,640.0	90.00	358.85	7,268.0	4,288.3	-156.1	4,291.1	0.00	0.00	0.00
11,680.0	90.00	358.85	7,268.0	4,328.3	-156.9	4,331.1	0.00	0.00	0.00
11,720.0	90.00	358.85	7,268.0	4,368.3	-157.7	4,371.1	0.00	0.00	0.00
11,760.0	90.00	358.85	7,268.0	4,408.3	-158.5	4,411.1	0.00	0.00	0.00
11,800.0	90.00	358.85	7,268.0	4,448.3	-159.3	4,451.1	0.00	0.00	0.00
11,840.0	90.00	358.85	7,268.0	4,488.2	-160.1	4,491.1	0.00	0.00	0.00
11,880.0	90.00	358.85	7,268.0	4,528.2	-160.9	4,531.1	0.00	0.00	0.00
11,920.0	90.00	358.85	7,268.0	4,568.2	-161.7	4,571.1	0.00	0.00	0.00
11,960.0	90.00	358.85	7,268.0	4,608.2	-162.5	4,611.1	0.00	0.00	0.00
12,000.0	90.00	358.85	7,268.0	4,648.2	-163.3	4,651.1	0.00	0.00	0.00
12,040.0	90.00	358.85	7,268.0	4,688.2	-164.1	4,691.1	0.00	0.00	0.00
12,080.0	90.00	358.85	7,268.0	4,728.2	-165.0	4,731.1	0.00	0.00	0.00
12,120.0	90.00	358.85	7,268.0	4,768.2	-165.8	4,771.1	0.00	0.00	0.00
12,160.0	90.00	358.85	7,268.0	4,808.2	-166.6	4,811.1	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Simonsen 11-421
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Project:	SEC.12-T6N-R67W	MD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Site:	Simonsen NWNW-12 Pad Sec.12-T6N-R67W	North Reference:	True
Well:	Simonsen 11-421	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (6-07-12)		

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)
12,200.0	90.00	358.85	7,268.0	4,848.2	-167.4	4,851.1	0.00	0.00	0.00
12,240.0	90.00	358.85	7,268.0	4,888.2	-168.2	4,891.1	0.00	0.00	0.00
12,280.0	90.00	358.85	7,268.0	4,928.2	-169.0	4,931.0	0.00	0.00	0.00
12,310.3	90.00	358.85	7,268.0	4,958.4	-169.6	4,961.3	0.00	0.00	0.00
BHL 500'FNL, 200'FWL, SEC.1									

Targets

Target Name	- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
SECTION LINE 206'N	- plan misses target center by 432.2ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)	0.00	0.00	1.0	206.0	-380.0	1,428,912.97	3,180,403.67	40.508955	-104.851207
- Polygon										
Point 1				1.0	0.0	0.0	1,428,912.97	3,180,403.67		
Point 2				1.0	4,790.0	0.0	1,433,702.67	3,180,368.55		
Point 3				1.0	0.0	0.0	1,428,912.97	3,180,403.67		
Point 4				1.0	0.0	800.0	1,428,918.83	3,181,203.62		
HARDLINE BHL 460'F	- plan misses target center by 5014.4ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)	0.00	0.00	1.0	4,998.4	-400.0	1,433,704.93	3,180,348.54	40.522110	-104.851279
- Polygon										
Point 1				1.0	0.0	0.0	1,433,704.93	3,180,348.54		
Point 2				1.0	0.0	800.0	1,433,710.79	3,181,148.49		
BHL 500'FNL, 200'FWL	- plan hits target center	0.00	0.00	7,268.0	4,958.4	-169.6	1,433,666.62	3,180,579.23	40.522000	-104.850450
- Point										

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,634.4	7,254.0	7"	7	7-1/2

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates	Comment
200.0	200.0	0.0	KOP #1
6,514.4	6,494.2	-400.0	KOP #2
7,830.1	7,268.0	479.2	End of Build



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.12-T6N-R67W

Simonsen NWNW-12 Pad Sec.12-T6N-R67W

Simonsen 1I-421

Wellbore #1

Plan #1 (6-07-12)

Anticollision Report

25 June, 2012



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Simonsen 11-421
Project:	SEC.12-T6N-R67W	TVD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Reference Site:	Simonsen NWNW-12 Pad Sec.12-T6N-R67W	MD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Simonsen 11-421	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 (6-07-12)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (6-07-12)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,000.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date 6/25/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	12,310.2	Plan #1 (6-07-12) (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						
Simonsen NWNW-12 Pad Sec.12-T6N-R67W						
Collins 1 (P&A) - Wellbore #1 - Wellbore #1	10,866.4	7,268.0	440.3	223.5	2.031	CC, ES
Collins 1 (P&A) - Wellbore #1 - Wellbore #1	10,900.0	7,268.0	441.6	224.1	2.031	SF
Simonsen 12E-223 - Wellbore #1 - Plan #1 (6-07-12)	385.5	385.4	30.0	28.5	20.414	CC
Simonsen 12E-223 - Wellbore #1 - Plan #1 (6-07-12)	400.0	399.8	30.0	28.5	19.590	ES
Simonsen 12E-223 - Wellbore #1 - Plan #1 (6-07-12)	7,041.2	7,131.5	101.7	70.3	3.241	SF
Simonsen 12J-243 - Wellbore #1 - Plan #1 (6-07-12)	200.0	200.0	58.4	57.7	86.602	CC
Simonsen 12J-243 - Wellbore #1 - Plan #1 (6-07-12)	300.0	300.0	58.8	57.7	53.402	ES
Simonsen 12J-243 - Wellbore #1 - Plan #1 (6-07-12)	7,042.4	7,195.5	927.3	895.2	28.847	SF
Simonsen 1L-241 - Wellbore #1 - Plan #1 (6-07-12)	200.0	200.0	30.6	29.9	45.363	CC
Simonsen 1L-241 - Wellbore #1 - Plan #1 (6-07-12)	300.0	300.0	31.0	29.9	28.149	ES
Simonsen 1L-241 - Wellbore #1 - Plan #1 (6-07-12)	12,310.3	12,178.8	764.5	569.8	3.926	SF

Offset Design												Offset Site Error:		0.0 ft
Simonsen NWNW-12 Pad Sec.12-T6N-R67W - Collins 1 (P&A) - Wellbore #1 - Wellbore #1												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)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
10,000.0	7,268.0	7,268.0	7,268.0	55.7	145.4	86.48	3,523.7	298.9	971.9	771.2	200.66	4.843		
10,100.0	7,268.0	7,268.0	7,268.0	57.5	145.4	86.48	3,523.7	298.9	883.9	681.4	202.51	4.365		
10,200.0	7,268.0	7,268.0	7,268.0	59.4	145.4	86.48	3,523.7	298.9	798.7	594.4	204.36	3.908		
10,300.0	7,268.0	7,268.0	7,268.0	61.3	145.4	86.48	3,523.7	298.9	717.4	511.2	206.22	3.479		
10,400.0	7,268.0	7,268.0	7,268.0	63.1	145.4	86.48	3,523.7	298.9	641.4	433.3	208.09	3.082		
10,500.0	7,268.0	7,268.0	7,268.0	65.0	145.4	86.48	3,523.7	298.9	572.8	362.9	209.95	2.728		
10,600.0	7,268.0	7,268.0	7,268.0	66.9	145.4	86.48	3,523.7	298.9	514.6	302.8	211.83	2.430		
10,700.0	7,268.0	7,268.0	7,268.0	68.7	145.4	86.48	3,523.7	298.9	470.7	257.0	213.70	2.203		
10,800.0	7,268.0	7,268.0	7,268.0	70.6	145.4	86.48	3,523.7	298.9	445.3	229.7	215.58	2.066		
10,866.4	7,268.0	7,268.0	7,268.0	71.9	145.4	86.48	3,523.7	298.9	440.3	223.5	216.83	2.031	CC, ES	
10,900.0	7,268.0	7,268.0	7,268.0	72.5	145.4	86.48	3,523.7	298.9	441.6	224.1	217.46	2.031	SF	
11,000.0	7,268.0	7,268.0	7,268.0	74.4	145.4	86.48	3,523.7	298.9	460.1	240.8	219.34	2.098		
11,100.0	7,268.0	7,268.0	7,268.0	76.3	145.4	86.48	3,523.7	298.9	498.4	277.2	221.22	2.253		
11,200.0	7,268.0	7,268.0	7,268.0	78.2	145.4	86.48	3,523.7	298.9	552.4	329.3	223.11	2.476		
11,300.0	7,268.0	7,268.0	7,268.0	80.1	145.4	86.48	3,523.7	298.9	618.0	393.0	225.00	2.747		
11,400.0	7,268.0	7,268.0	7,268.0	81.9	145.4	86.48	3,523.7	298.9	691.8	464.9	226.89	3.049		

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 Simonsen 11-421
Project:	SEC.12-T6N-R67W	TVD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Reference Site:	Simonsen NWNW-12 Pad Sec.12-T6N-R67W	MD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Simonsen 11-421	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 (6-07-12)	Offset TVD Reference:	Offset Datum

Offset Design Simonsen NWNW-12 Pad Sec.12-T6N-R67W - Collins 1 (P&A) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 7268-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		
11,500.0	7,268.0	7,268.0	7,268.0	83.8	145.4	86.48	3,523.7	298.9	771.6	542.8	228.78	3.373		
11,600.0	7,268.0	7,268.0	7,268.0	85.7	145.4	86.48	3,523.7	298.9	855.6	624.9	230.67	3.709		
11,700.0	7,268.0	7,268.0	7,268.0	87.6	145.4	86.48	3,523.7	298.9	942.7	710.2	232.57	4.054		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Simonsen 11-421
Project:	SEC.12-T6N-R67W	TVD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Reference Site:	Simonsen NWNW-12 Pad Sec.12-T6N-R67W	MD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Simonsen 11-421	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 (6-07-12)	Offset TVD Reference:	Offset Datum

Offset Design													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
0.0	0.0	0.0	0.0	0.0	0.0	-90.02		0.0	-30.6	30.6				
100.0	100.0	100.0	100.0	0.1	0.1	-90.02		0.0	-30.6	30.6	30.4	0.22	136.089	
200.0	200.0	200.0	200.0	0.3	0.3	-90.02		0.0	-30.6	30.6	29.9	0.67	45.363	
300.0	300.0	300.0	300.0	0.5	0.6	81.92		0.0	-30.6	30.3	29.2	1.10	27.536	
385.5	385.4	385.4	385.4	0.7	0.8	89.99		0.0	-30.6	30.0	28.5	1.47	20.414 CC	
400.0	399.8	399.8	399.8	0.8	0.8	91.85		0.0	-30.6	30.0	28.5	1.53	19.590 ES	
490.5	490.0	490.0	490.0	1.0	1.0	106.11		0.0	-30.6	31.2	29.3	1.95	15.986	
500.0	499.5	499.5	499.5	1.0	1.0	107.79		0.0	-30.6	31.5	29.5	2.00	15.762	
600.0	598.9	598.9	598.9	1.3	1.2	123.29		0.0	-30.6	35.9	33.5	2.48	14.518	
700.0	698.4	698.4	698.4	1.5	1.5	134.78		0.0	-30.6	42.4	39.4	2.94	14.415	
800.0	797.9	797.9	797.9	1.8	1.7	143.02		0.0	-30.6	50.0	46.6	3.39	14.745	
900.0	897.4	897.4	897.4	2.1	1.9	148.99		0.0	-30.6	58.4	54.6	3.84	15.207	
1,000.0	996.9	996.9	996.9	2.4	2.1	153.43		0.0	-30.6	67.3	63.0	4.29	15.686	
1,100.0	1,096.4	1,096.4	1,096.4	2.7	2.4	156.82		0.0	-30.6	76.5	71.8	4.74	16.137	
1,200.0	1,195.9	1,195.9	1,195.9	3.0	2.6	159.48		0.0	-30.6	85.9	80.7	5.19	16.548	
1,300.0	1,295.3	1,295.3	1,295.3	3.3	2.8	161.60		0.0	-30.6	95.5	89.8	5.64	16.917	
1,400.0	1,394.8	1,394.8	1,394.8	3.6	3.0	163.34		0.0	-30.6	105.1	99.0	6.10	17.246	
1,500.0	1,494.3	1,494.3	1,494.3	3.9	3.2	164.79		0.0	-30.6	114.9	108.3	6.55	17.540	
1,600.0	1,593.8	1,593.8	1,593.8	4.2	3.5	166.01		0.0	-30.6	124.7	117.7	7.00	17.803	
1,700.0	1,693.3	1,693.3	1,693.3	4.5	3.7	167.05		0.0	-30.6	134.5	127.1	7.46	18.039	
1,800.0	1,792.8	1,792.8	1,792.8	4.8	3.9	167.95		0.0	-30.6	144.4	136.5	7.91	18.252	
1,900.0	1,892.3	1,892.3	1,892.3	5.1	4.1	168.74		0.0	-30.6	154.3	146.0	8.37	18.445	
2,000.0	1,991.7	1,991.7	1,991.7	5.4	4.4	169.43		0.0	-30.6	164.3	155.4	8.82	18.619	
2,100.0	2,091.2	2,091.2	2,091.2	5.7	4.6	170.04		0.0	-30.6	174.2	164.9	9.28	18.779	
2,200.0	2,190.7	2,190.7	2,190.7	6.0	4.8	170.58		0.0	-30.6	184.2	174.5	9.73	18.924	
2,300.0	2,290.2	2,290.2	2,290.2	6.3	5.0	171.07		0.0	-30.6	194.2	184.0	10.19	19.058	
2,400.0	2,389.7	2,389.7	2,389.7	6.6	5.3	171.51		0.0	-30.6	204.2	193.6	10.65	19.180	
2,500.0	2,489.2	2,489.2	2,489.2	6.9	5.5	171.91		0.0	-30.6	214.2	203.1	11.10	19.294	
2,600.0	2,588.7	2,588.7	2,588.7	7.2	5.7	172.27		0.0	-30.6	224.3	212.7	11.56	19.399	
2,700.0	2,688.2	2,688.2	2,688.2	7.5	5.9	172.61		0.0	-30.6	234.3	222.3	12.02	19.496	
2,800.0	2,787.6	2,787.6	2,787.6	7.8	6.2	172.91		0.0	-30.6	244.3	231.9	12.47	19.587	
2,900.0	2,887.1	2,887.1	2,887.1	8.1	6.4	173.19		0.0	-30.6	254.4	241.4	12.93	19.672	
3,000.0	2,986.6	2,986.6	2,986.6	8.4	6.6	173.45		0.0	-30.6	264.4	251.0	13.39	19.751	
3,100.0	3,086.1	3,086.1	3,086.1	8.7	6.8	173.50		0.8	-31.4	275.3	261.5	13.83	19.900	
3,200.0	3,185.6	3,174.0	3,173.9	9.0	7.0	173.09		3.8	-34.3	288.3	274.0	14.28	20.190	
3,300.0	3,285.1	3,266.4	3,266.0	9.3	7.2	172.29		8.9	-39.2	303.4	288.7	14.73	20.604	
3,400.0	3,384.6	3,357.9	3,356.9	9.6	7.4	171.18		16.1	-46.1	320.8	305.6	15.18	21.133	
3,500.0	3,484.0	3,453.9	3,452.2	9.9	7.7	169.86		25.2	-54.8	339.9	324.3	15.65	21.715	
3,600.0	3,583.5	3,551.8	3,549.1	10.2	7.9	168.65		34.5	-63.8	359.3	343.1	16.13	22.266	
3,700.0	3,683.0	3,649.6	3,646.1	10.5	8.1	167.56		43.9	-72.8	378.7	362.1	16.62	22.791	
3,800.0	3,782.5	3,747.5	3,743.1	10.8	8.4	166.58		53.2	-81.8	398.3	381.2	17.10	23.288	
3,900.0	3,882.0	3,845.3	3,840.1	11.1	8.6	165.69		62.6	-90.8	418.0	400.4	17.59	23.760	
4,000.0	3,981.5	3,943.1	3,937.1	11.4	8.9	164.88		71.9	-99.8	437.8	419.7	18.08	24.209	
4,100.0	4,081.0	4,041.0	4,034.0	11.7	9.2	164.14		81.3	-108.7	457.7	439.1	18.58	24.636	
4,200.0	4,180.4	4,138.8	4,131.0	12.0	9.4	163.46		90.6	-117.7	477.6	458.5	19.07	25.043	
4,229.7	4,210.0	4,167.9	4,159.8	12.1	9.5	163.27		93.4	-120.4	483.5	464.3	19.22	25.160	
4,300.0	4,280.0	4,236.8	4,228.1	12.2	9.7	162.89		100.0	-126.7	496.8	477.2	19.56	25.394	
4,400.0	4,379.8	4,335.3	4,325.8	12.4	10.0	162.26		109.4	-135.8	512.9	492.9	20.01	25.633	
4,500.0	4,479.8	4,434.2	4,423.8	12.6	10.2	161.55		118.8	-144.9	525.8	505.4	20.43	25.731	
4,520.2	4,500.0	4,454.2	4,443.6	12.6	10.3	-7.30		120.7	-146.7	528.0	507.5	20.52	25.726	
4,600.0	4,579.8	4,533.3	4,522.0	12.7	10.5	-7.97		128.3	-154.0	536.6	515.7	20.89	25.690	

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 Simonsen 11-421
Project:	SEC.12-T6N-R67W	TVD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Reference Site:	Simonsen NWNW-12 Pad Sec.12-T6N-R67W	MD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Simonsen 11-421	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 (6-07-12)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,700.0	4,679.8	4,632.4	4,620.3	12.9	10.8	-8.78		137.8	-163.1	547.4	526.1	21.32	25.678	
4,800.0	4,779.8	4,750.5	4,737.6	13.0	11.1	-9.57		147.3	-172.2	556.6	534.9	21.74	25.602	
4,900.0	4,879.8	4,869.6	4,856.4	13.1	11.3	-10.05		153.4	-178.1	562.5	540.4	22.14	25.411	
5,000.0	4,979.8	4,989.1	4,975.8	13.3	11.6	-10.25		155.9	-180.5	564.9	542.4	22.52	25.084	
5,100.0	5,079.8	5,093.1	5,079.8	13.4	11.7	-10.25		156.0	-180.6	565.0	542.1	22.89	24.682	
5,200.0	5,179.8	5,193.1	5,179.8	13.6	12.0	-10.25		156.0	-180.6	565.0	541.7	23.28	24.269	
5,300.0	5,279.8	5,293.1	5,279.8	13.7	12.2	-10.25		156.0	-180.6	565.0	541.3	23.68	23.865	
5,400.0	5,379.8	5,393.1	5,379.8	13.9	12.4	-10.25		156.0	-180.6	565.0	540.9	24.07	23.472	
5,500.0	5,479.8	5,493.1	5,479.8	14.0	12.6	-10.25		156.0	-180.6	565.0	540.5	24.47	23.090	
5,600.0	5,579.8	5,593.1	5,579.8	14.2	12.8	-10.25		156.0	-180.6	565.0	540.1	24.87	22.720	
5,700.0	5,679.8	5,693.1	5,679.8	14.3	13.0	-10.25		156.0	-180.6	565.0	539.7	25.27	22.359	
5,800.0	5,779.8	5,793.1	5,779.8	14.5	13.2	-10.25		156.0	-180.6	565.0	539.3	25.67	22.008	
5,900.0	5,879.8	5,893.1	5,879.8	14.6	13.4	-10.25		156.0	-180.6	565.0	538.9	26.08	21.667	
6,000.0	5,979.8	5,993.1	5,979.8	14.8	13.7	-10.25		156.0	-180.6	565.0	538.5	26.48	21.336	
6,100.0	6,079.8	6,093.1	6,079.8	15.0	13.9	-10.25		156.0	-180.6	565.0	538.1	26.89	21.013	
6,200.0	6,179.8	6,193.1	6,179.8	15.1	14.1	-10.25		156.0	-180.6	565.0	537.7	27.30	20.698	
6,300.0	6,279.8	6,293.1	6,279.8	15.3	14.3	-10.25		156.0	-180.6	565.0	537.3	27.71	20.393	
6,400.0	6,379.8	6,393.1	6,379.8	15.5	14.7	-10.84		125.4	-180.6	556.5	528.1	28.37	19.618	
6,500.0	6,479.8	6,493.1	6,479.8	15.6	15.0	-14.27		-3.3	-180.9	511.2	482.1	29.10	17.569	
6,514.4	6,494.2	6,866.7	6,810.9	15.7	15.0	-15.00		-23.4	-180.9	502.3	473.1	29.20	17.206	
6,550.0	6,529.8	6,935.5	6,861.5	15.7	15.1	-18.00		-70.0	-181.0	478.1	448.7	29.41	16.259	
6,600.0	6,579.6	7,008.9	6,910.6	15.8	15.2	-23.69		-124.5	-181.1	439.4	409.7	29.70	14.796	
6,650.0	6,629.1	7,060.6	6,942.0	15.8	15.4	-31.89		-165.6	-181.2	397.0	366.9	30.03	13.219	
6,700.0	6,678.0	7,096.1	6,961.8	15.8	15.6	-43.09		-195.0	-181.2	352.4	321.9	30.50	11.554	
6,750.0	6,726.1	7,119.6	6,974.2	15.8	15.7	-56.82		-214.9	-181.2	306.7	275.6	31.06	9.873	
6,800.0	6,773.2	7,134.0	6,981.5	15.8	15.8	-70.85		-227.4	-181.3	260.8	229.4	31.48	8.285	
6,850.0	6,819.1	7,141.6	6,985.3	15.8	15.9	-82.32		-234.0	-181.3	216.0	184.4	31.60	6.834	
6,900.0	6,863.6	7,144.0	6,986.5	15.8	15.9	-89.74		-236.1	-181.3	173.5	142.0	31.51	5.506	
6,950.0	6,906.6	7,142.4	6,985.6	15.8	15.9	-93.07		-234.7	-181.3	136.2	104.8	31.39	4.338	
7,000.0	6,947.8	7,137.5	6,983.3	15.7	15.8	-92.75		-230.4	-181.3	109.5	78.2	31.35	3.494	
7,041.2	6,980.2	7,131.5	6,980.3	15.7	15.8	-90.02		-225.2	-181.3	101.7	70.3	31.37	3.241 SF	
7,050.0	6,987.0	7,130.1	6,979.5	15.7	15.8	-89.18		-224.0	-181.3	102.0	70.7	31.37	3.253	
7,100.0	7,024.1	7,120.5	6,974.7	15.7	15.7	-82.74		-215.7	-181.2	116.9	85.6	31.32	3.732	
7,150.0	7,059.0	7,109.2	6,968.8	15.7	15.7	-74.05		-206.1	-181.2	146.9	116.0	30.94	4.748	
7,200.0	7,091.4	7,100.0	6,963.9	15.7	15.6	-65.66		-198.3	-181.2	184.4	154.2	30.20	6.105	
7,250.0	7,121.3	7,082.5	6,954.4	15.8	15.5	-54.21		-183.7	-181.2	225.0	196.4	28.58	7.874	
7,300.0	7,148.5	7,067.6	6,946.0	15.9	15.5	-45.31		-171.3	-181.2	266.9	240.2	26.79	9.964	
7,350.0	7,172.9	7,050.0	6,935.7	16.1	15.4	-37.53		-157.0	-181.1	309.2	284.3	24.88	12.428	
7,400.0	7,194.4	7,035.2	6,926.9	16.2	15.3	-31.86		-145.1	-181.1	351.2	328.0	23.26	15.099	
7,450.0	7,212.8	7,018.0	6,916.3	16.5	15.3	-27.11		-131.6	-181.1	392.7	370.9	21.79	18.024	
7,500.0	7,228.3	7,000.0	6,904.9	16.8	15.2	-23.33		-117.6	-181.1	433.5	412.9	20.56	21.082	
7,550.0	7,240.5	6,982.0	6,893.2	17.1	15.2	-20.35		-103.9	-181.1	473.3	453.7	19.60	24.152	
7,600.0	7,249.6	6,963.3	6,880.7	17.5	15.1	-17.95		-90.0	-181.0	512.1	493.2	18.87	27.130	
7,634.4	7,254.0	6,950.0	6,871.6	17.7	15.1	-16.56		-80.4	-181.0	538.1	519.6	18.52	29.059	
7,707.4	7,261.6	6,923.4	6,852.9	18.4	15.1	-15.67		-61.5	-181.0	593.6	575.0	18.59	31.929	
7,800.0	7,267.6	6,900.0	6,835.9	19.3	15.0	-14.63		-45.4	-180.9	664.3	645.6	18.63	35.652	
7,830.1	7,268.0	6,880.5	6,821.4	19.7	15.0	-14.06		-32.4	-180.9	686.6	668.0	18.63	36.858	
7,900.0	7,268.0	6,850.0	6,798.0	20.5	15.0	-13.33		-12.8	-180.9	739.3	720.5	18.79	39.351	
8,000.0	7,268.0	6,826.3	6,779.3	21.7	14.9	-12.81		1.8	-180.9	816.9	797.7	19.18	42.595	
8,100.0	7,268.0	6,800.0	6,758.1	23.1	14.9	-12.25		17.3	-180.8	897.0	877.4	19.59	45.793	
8,200.0	7,268.0	6,773.4	6,736.0	24.5	14.9	-11.72		32.2	-180.8	979.3	959.2	20.03	48.894	

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 Simonsen 11-421
Project:	SEC.12-T6N-R67W	TVD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Reference Site:	Simonsen NWNW-12 Pad Sec.12-T6N-R67W	MD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Simonsen 11-421	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 (6-07-12)	Offset TVD Reference:	Offset Datum

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Simonsen 11-421
Project:	SEC.12-T6N-R67W	TVD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Reference Site:	Simonsen NWNW-12 Pad Sec.12-T6N-R67W	MD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Simonsen 11-421	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 (6-07-12)	Offset TVD Reference:	Offset Datum

Offset Design													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	89.99	89.99	0.0	58.4	58.4				
100.0	100.0	100.0	100.0	0.1	0.1	89.99	89.99	0.0	58.4	58.4	58.2	0.22	259.807	
200.0	200.0	200.0	200.0	0.3	0.3	89.99	89.99	0.0	58.4	58.4	57.7	0.67	86.602 CC	
300.0	300.0	300.0	300.0	0.5	0.6	-102.98	-102.98	0.0	58.4	58.8	57.7	1.10	53.402 ES	
400.0	399.8	399.8	399.8	0.8	0.8	-107.81	-107.81	0.0	58.4	60.2	58.6	1.53	39.250	
490.5	490.0	488.0	488.0	1.0	1.0	-114.25	-114.25	0.3	59.7	64.3	62.4	1.94	33.115	
500.0	499.5	497.3	497.2	1.0	1.0	-114.99	-114.99	0.3	60.0	65.1	63.1	1.99	32.730	
600.0	598.9	594.1	593.9	1.3	1.2	-121.67	-121.67	1.3	64.8	75.0	72.5	2.46	30.468	
700.0	698.4	690.2	689.7	1.5	1.4	-126.20	-126.20	2.9	72.8	88.9	86.0	2.94	30.233	
800.0	797.9	785.4	784.3	1.8	1.7	-128.97	-128.97	5.0	83.8	106.4	103.0	3.43	31.041	
900.0	897.4	879.6	877.3	2.1	2.0	-130.49	-130.49	7.8	97.7	127.2	123.2	3.92	32.412	
1,000.0	996.9	972.8	969.0	2.4	2.3	-131.18	-131.18	11.1	114.4	151.0	146.5	4.43	34.068	
1,100.0	1,096.4	1,069.6	1,063.9	2.7	2.7	-131.56	-131.56	14.7	133.0	176.0	171.1	4.94	35.605	
1,200.0	1,195.9	1,166.4	1,158.9	3.0	3.0	-131.85	-131.85	18.4	151.6	201.1	195.6	5.46	36.837	
1,300.0	1,295.3	1,263.2	1,253.8	3.3	3.4	-132.07	-132.07	22.1	170.2	226.2	220.2	5.98	37.817	
1,400.0	1,394.8	1,360.0	1,348.7	3.6	3.8	-132.25	-132.25	25.7	188.7	251.2	244.7	6.51	38.616	
1,500.0	1,494.3	1,456.8	1,443.6	3.9	4.2	-132.39	-132.39	29.4	207.3	276.3	269.3	7.04	39.258	
1,600.0	1,593.8	1,553.6	1,538.6	4.2	4.7	-132.51	-132.51	33.1	225.9	301.4	293.8	7.57	39.807	
1,700.0	1,693.3	1,650.4	1,633.5	4.5	5.1	-132.61	-132.61	36.8	244.5	326.4	318.3	8.11	40.269	
1,800.0	1,792.8	1,747.2	1,728.4	4.8	5.5	-132.70	-132.70	40.4	263.1	351.5	342.9	8.64	40.665	
1,900.0	1,892.3	1,844.0	1,823.4	5.1	5.9	-132.78	-132.78	44.1	281.7	376.6	367.4	9.18	41.006	
2,000.0	1,991.7	1,940.8	1,918.3	5.4	6.3	-132.84	-132.84	47.8	300.3	401.7	392.0	9.72	41.304	
2,100.0	2,091.2	2,037.6	2,013.2	5.7	6.7	-132.90	-132.90	51.4	318.9	426.8	416.5	10.27	41.566	
2,200.0	2,190.7	2,134.4	2,108.2	6.0	7.1	-132.96	-132.96	55.1	337.5	451.8	441.0	10.81	41.798	
2,300.0	2,290.2	2,231.3	2,203.1	6.3	7.6	-133.00	-133.00	58.8	356.1	476.9	465.6	11.35	42.005	
2,400.0	2,389.7	2,328.1	2,298.0	6.6	8.0	-133.04	-133.04	62.5	374.7	502.0	490.1	11.90	42.190	
2,500.0	2,489.2	2,424.9	2,393.0	6.9	8.4	-133.08	-133.08	66.1	393.3	527.1	514.6	12.44	42.356	
2,600.0	2,588.7	2,521.7	2,487.9	7.2	8.8	-133.12	-133.12	69.8	411.9	552.1	539.2	12.99	42.507	
2,700.0	2,688.2	2,618.5	2,582.8	7.5	9.2	-133.15	-133.15	73.5	430.4	577.2	563.7	13.54	42.644	
2,800.0	2,787.6	2,715.3	2,677.7	7.8	9.6	-133.18	-133.18	77.1	449.0	602.3	588.2	14.08	42.770	
2,900.0	2,887.1	2,812.1	2,772.7	8.1	10.1	-133.20	-133.20	80.8	467.6	627.4	612.8	14.63	42.884	
3,000.0	2,986.6	2,908.9	2,867.6	8.4	10.5	-133.23	-133.23	84.5	486.2	652.5	637.3	15.18	42.990	
3,100.0	3,086.1	3,005.7	2,962.5	8.7	10.9	-133.25	-133.25	88.2	504.8	677.5	661.8	15.73	43.087	
3,200.0	3,185.6	3,102.5	3,057.5	9.0	11.3	-133.27	-133.27	91.8	523.4	702.6	686.4	16.27	43.177	
3,300.0	3,285.1	3,199.3	3,152.4	9.3	11.8	-133.29	-133.29	95.5	542.0	727.7	710.9	16.82	43.260	
3,400.0	3,384.6	3,296.1	3,247.3	9.6	12.2	-133.31	-133.31	99.2	560.6	752.8	735.4	17.37	43.337	
3,500.0	3,484.0	3,392.9	3,342.3	9.9	12.6	-133.33	-133.33	102.8	579.2	777.9	759.9	17.92	43.409	
3,600.0	3,583.5	3,489.7	3,437.2	10.2	13.0	-133.34	-133.34	106.5	597.8	802.9	784.5	18.47	43.476	
3,700.0	3,683.0	3,586.5	3,532.1	10.5	13.4	-133.36	-133.36	110.2	616.4	828.0	809.0	19.02	43.539	
3,800.0	3,782.5	3,683.3	3,627.0	10.8	13.9	-133.37	-133.37	113.9	635.0	853.1	833.5	19.57	43.598	
3,900.0	3,882.0	3,780.1	3,722.0	11.1	14.3	-133.39	-133.39	117.5	653.6	878.2	858.1	20.12	43.654	
4,000.0	3,981.5	3,876.9	3,816.9	11.4	14.7	-133.40	-133.40	121.2	672.1	903.3	882.6	20.67	43.706	
4,100.0	4,081.0	3,973.7	3,911.8	11.7	15.1	-133.41	-133.41	124.9	690.7	928.3	907.1	21.22	43.755	
4,200.0	4,180.4	4,070.5	4,006.8	12.0	15.5	-133.42	-133.42	128.5	709.3	953.4	931.7	21.77	43.801	
4,229.7	4,210.0	4,099.3	4,035.0	12.1	15.7	-133.43	-133.43	129.6	714.9	960.9	939.0	21.93	43.815	
4,300.0	4,280.0	4,167.5	4,101.8	12.2	16.0	-133.45	-133.45	132.2	727.9	977.9	955.6	22.33	43.790	
6,700.0	6,678.0	7,161.5	6,963.3	15.8	21.4	83.34	83.34	-197.4	847.8	987.2	954.8	32.39	30.480	
6,750.0	6,726.1	7,184.7	6,975.5	15.8	21.4	85.92	85.92	-217.1	847.7	971.7	939.3	32.41	29.982	
6,800.0	6,773.2	7,198.9	6,982.6	15.8	21.5	87.83	87.83	-229.4	847.7	958.2	925.8	32.39	29.585	
6,850.0	6,819.1	7,206.4	6,986.3	15.8	21.5	89.15	89.15	-235.9	847.7	946.9	914.6	32.34	29.276	
6,900.0	6,863.6	7,208.6	6,987.4	15.8	21.5	89.97	89.97	-237.9	847.7	938.1	905.8	32.29	29.053	

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 Simonsen 11-421
Project:	SEC.12-T6N-R67W	TVD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Reference Site:	Simonsen NWNW-12 Pad Sec.12-T6N-R67W	MD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Simonsen 11-421	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 (6-07-12)	Offset TVD Reference:	Offset Datum

Offset Design		Simonsen NWNW-12 Pad Sec.12-T6N-R67W - Simonsen 12J-243 - Wellbore #1 - Plan #1 (6-07-12)										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)						
6,950.0	6,906.6	7,206.8	6,986.5	15.8	21.5	90.33	-236.3	847.7	931.8	899.6	32.23	28.913					
7,000.0	6,947.8	7,201.8	6,984.0	15.7	21.5	90.29	-231.9	847.7	928.3	896.1	32.18	28.849					
7,042.4	6,981.2	7,195.5	6,980.9	15.7	21.5	89.97	-226.5	847.7	927.3	895.2	32.15	28.847 SF					
7,050.0	6,987.0	7,194.2	6,980.3	15.7	21.5	89.89	-225.3	847.7	927.4	895.2	32.14	28.852					
7,100.0	7,024.1	7,184.6	6,975.4	15.7	21.4	89.18	-217.0	847.7	929.0	896.9	32.13	28.917					
7,150.0	7,059.0	7,173.2	6,969.5	15.7	21.4	88.19	-207.3	847.8	933.2	901.1	32.13	29.043					
7,200.0	7,091.4	7,160.4	6,962.7	15.7	21.4	86.94	-196.4	847.8	939.8	907.6	32.16	29.224					
7,250.0	7,121.3	7,150.0	6,957.0	15.8	21.3	85.67	-187.7	847.8	948.5	916.3	32.21	29.446					
7,300.0	7,148.5	7,131.3	6,946.6	15.9	21.3	83.80	-172.3	847.8	959.3	927.0	32.26	29.734					
7,350.0	7,172.9	7,115.5	6,937.4	16.1	21.3	81.96	-159.3	847.8	971.8	939.5	32.33	30.062					
7,400.0	7,194.4	7,100.0	6,928.2	16.2	21.2	80.05	-146.9	847.9	985.9	953.5	32.39	30.435					

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Simonsen 11-421
Project:	SEC.12-T6N-R67W	TVD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Reference Site:	Simonsen NWNW-12 Pad Sec.12-T6N-R67W	MD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Simonsen 11-421	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 (6-07-12)	Offset TVD Reference:	Offset Datum

Offset Design Simonsen NWNW-12 Pad Sec.12-T6N-R67W - Simonsen 1L-241 - Wellbore #1 - Plan #1 (6-07-12)													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		0.0	30.6	30.6				
100.0	100.0	100.0	100.0	0.1	0.1	90.00		0.0	30.6	30.6	30.4	0.22	136.089	
200.0	200.0	200.0	200.0	0.3	0.3	90.00		0.0	30.6	30.6	29.9	0.67	45.363 CC	
300.0	300.0	300.0	300.0	0.5	0.6	-104.47		0.0	30.6	31.0	29.9	1.10	28.149 ES	
400.0	399.8	399.8	399.8	0.8	0.8	-113.35		0.0	30.6	32.7	31.1	1.53	21.315	
490.5	490.0	490.0	490.0	1.0	1.0	-124.49		0.0	30.6	36.5	34.5	1.95	18.682	
500.0	499.5	499.5	499.5	1.0	1.0	-125.72		0.0	30.6	37.0	35.0	2.00	18.545	
600.0	598.9	598.9	598.9	1.3	1.2	-136.53		0.0	30.6	43.7	41.3	2.46	17.777	
700.0	698.4	698.4	698.4	1.5	1.5	-144.28		0.0	30.6	51.5	48.6	2.92	17.674	
800.0	797.9	797.9	797.9	1.8	1.7	-149.92		0.0	30.6	60.1	56.7	3.37	17.822	
900.0	897.4	897.4	897.4	2.1	1.9	-154.13		0.0	30.6	69.0	65.2	3.82	18.056	
1,000.0	996.9	996.9	996.9	2.4	2.1	-157.36		0.0	30.6	78.3	74.0	4.27	18.308	
1,100.0	1,096.4	1,096.4	1,096.4	2.7	2.4	-159.91		0.0	30.6	87.7	83.0	4.73	18.552	
1,200.0	1,195.9	1,195.9	1,195.9	3.0	2.6	-161.95		0.0	30.6	97.3	92.1	5.18	18.779	
1,300.0	1,295.3	1,295.3	1,295.3	3.3	2.8	-163.63		0.0	30.6	106.9	101.3	5.63	18.985	
1,400.0	1,394.8	1,394.8	1,394.8	3.6	3.0	-165.03		0.0	30.6	116.7	110.6	6.09	19.171	
1,500.0	1,494.3	1,494.3	1,494.3	3.9	3.2	-166.22		0.0	30.6	126.5	120.0	6.54	19.340	
1,600.0	1,593.8	1,594.7	1,594.7	4.2	3.5	-166.59		-0.9	31.8	136.0	129.1	6.98	19.487	
1,700.0	1,693.3	1,695.3	1,695.1	4.5	3.6	-165.55		-4.0	35.9	144.9	137.5	7.41	19.542	
1,800.0	1,792.8	1,795.7	1,795.2	4.8	3.8	-163.33		-9.1	42.8	153.2	145.3	7.87	19.469	
1,900.0	1,892.3	1,895.6	1,894.4	5.1	4.1	-160.12		-16.2	52.5	161.3	153.0	8.36	19.306	
2,000.0	1,991.7	1,994.9	1,992.5	5.4	4.3	-156.08		-25.4	64.9	169.8	160.9	8.89	19.101	
2,100.0	2,091.2	2,093.3	2,089.1	5.7	4.6	-151.39		-36.4	79.8	179.2	169.7	9.48	18.909	
2,200.0	2,190.7	2,191.6	2,185.3	6.0	4.9	-146.69		-48.4	96.0	189.9	179.8	10.11	18.787	
2,300.0	2,290.2	2,289.9	2,281.4	6.3	5.2	-142.52		-60.4	112.2	201.8	191.0	10.76	18.755	
2,400.0	2,389.7	2,388.1	2,377.6	6.6	5.5	-138.81		-72.4	128.4	214.6	203.2	11.42	18.792	
2,500.0	2,489.2	2,486.4	2,473.8	6.9	5.9	-135.53		-84.4	144.6	228.2	216.2	12.09	18.884	
2,600.0	2,588.7	2,584.6	2,569.9	7.2	6.3	-132.62		-96.4	160.8	242.5	229.8	12.75	19.018	
2,700.0	2,688.2	2,682.9	2,666.1	7.5	6.7	-130.03		-108.4	177.0	257.4	244.0	13.42	19.182	
2,800.0	2,787.6	2,781.1	2,762.3	7.8	7.0	-127.73		-120.4	193.2	272.7	258.6	14.08	19.367	
2,900.0	2,887.1	2,879.4	2,858.4	8.1	7.4	-125.68		-132.4	209.4	288.4	273.6	14.74	19.566	
3,000.0	2,986.6	2,977.6	2,954.6	8.4	7.8	-123.83		-144.4	225.6	304.4	289.0	15.39	19.773	
3,100.0	3,086.1	3,075.9	3,050.8	8.7	8.3	-122.17		-156.4	241.8	320.7	304.6	16.04	19.985	
3,200.0	3,185.6	3,174.2	3,146.9	9.0	8.7	-120.67		-168.4	258.0	337.2	320.5	16.69	20.199	
3,300.0	3,285.1	3,272.4	3,243.1	9.3	9.1	-119.31		-180.4	274.2	353.9	336.6	17.34	20.412	
3,400.0	3,384.6	3,370.7	3,339.3	9.6	9.5	-118.07		-192.4	290.4	370.8	352.9	17.98	20.623	
3,500.0	3,484.0	3,468.9	3,435.4	9.9	9.9	-116.94		-204.4	306.6	387.9	369.3	18.62	20.830	
3,600.0	3,583.5	3,567.2	3,531.6	10.2	10.4	-115.91		-216.4	322.8	405.1	385.9	19.26	21.033	
3,700.0	3,683.0	3,665.4	3,627.8	10.5	10.8	-114.96		-228.4	339.0	422.4	402.5	19.90	21.230	
3,800.0	3,782.5	3,763.7	3,723.9	10.8	11.2	-114.08		-240.4	355.1	439.9	419.3	20.53	21.422	
3,900.0	3,882.0	3,861.9	3,820.1	11.1	11.6	-113.28		-252.4	371.3	457.4	436.2	21.17	21.609	
4,000.0	3,981.5	3,960.2	3,916.3	11.4	12.1	-112.53		-264.4	387.5	475.0	453.2	21.80	21.790	
4,100.0	4,081.0	4,058.4	4,012.4	11.7	12.5	-111.83		-276.4	403.7	492.7	470.2	22.43	21.965	
4,200.0	4,180.4	4,156.7	4,108.6	12.0	13.0	-111.18		-288.4	419.9	510.4	487.3	23.06	22.134	
4,229.7	4,210.0	4,185.9	4,137.2	12.1	13.1	-111.00		-292.0	424.8	515.7	492.4	23.25	22.184	
4,300.0	4,280.0	4,255.0	4,204.8	12.2	13.4	-110.72		-300.4	436.1	527.9	504.2	23.67	22.305	
4,400.0	4,379.8	4,353.2	4,300.9	12.4	13.8	-110.06		-312.4	452.3	544.4	520.2	24.19	22.508	
4,500.0	4,479.8	4,451.2	4,396.8	12.6	14.3	-109.10		-324.4	468.5	559.8	535.2	24.66	22.705	
4,520.2	4,500.0	4,471.0	4,416.2	12.6	14.4	82.44		-326.8	471.8	562.9	538.1	24.76	22.735	
4,600.0	4,579.8	4,549.1	4,492.6	12.7	14.7	83.57		-336.3	484.6	574.9	549.7	25.11	22.896	
4,700.0	4,679.8	4,647.0	4,588.4	12.9	15.1	84.91		-348.3	500.8	590.2	564.7	25.52	23.128	

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 Simonsen 11-421
Project:	SEC.12-T6N-R67W	TVD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Reference Site:	Simonsen NWNW-12 Pad Sec.12-T6N-R67W	MD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Simonsen 11-421	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 (6-07-12)	Offset TVD Reference:	Offset Datum

Offset Design													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
4,800.0	4,779.8	4,744.9	4,684.2	13.0	15.6	86.19		-360.2	516.9	605.8	579.9	25.92	23.369	
4,900.0	4,879.8	4,856.9	4,794.1	13.1	16.0	87.50		-373.2	534.4	620.9	594.6	26.31	23.604	
5,000.0	4,979.8	4,976.2	4,911.9	13.3	16.3	88.57		-384.3	549.4	633.2	606.5	26.66	23.748	
5,100.0	5,079.8	5,096.9	5,031.8	13.4	16.6	89.33		-392.5	560.5	642.3	615.3	27.02	23.774	
5,200.0	5,179.8	5,218.5	5,153.2	13.6	16.9	89.80		-397.8	567.6	648.1	620.8	27.36	23.686	
5,300.0	5,279.8	5,340.7	5,275.3	13.7	17.1	89.99		-399.9	570.5	650.5	622.8	27.71	23.480	
5,400.0	5,379.8	5,445.2	5,379.8	13.9	17.2	90.00		-400.0	570.6	650.6	622.6	28.03	23.214	
5,500.0	5,479.8	5,545.2	5,479.8	14.0	17.4	90.00		-400.0	570.6	650.6	622.2	28.34	22.956	
5,600.0	5,579.8	5,645.2	5,579.8	14.2	17.5	90.00		-400.0	570.6	650.6	621.9	28.66	22.701	
5,700.0	5,679.8	5,745.2	5,679.8	14.3	17.6	90.00		-400.0	570.6	650.6	621.6	28.98	22.449	
5,800.0	5,779.8	5,845.2	5,779.8	14.5	17.8	90.00		-400.0	570.6	650.6	621.3	29.31	22.199	
5,900.0	5,879.8	5,945.2	5,879.8	14.6	17.9	90.00		-400.0	570.6	650.6	621.0	29.64	21.953	
6,000.0	5,979.8	6,045.2	5,979.8	14.8	18.1	90.00		-400.0	570.6	650.6	620.6	29.97	21.710	
6,100.0	6,079.8	6,145.2	6,079.8	15.0	18.2	90.00		-400.0	570.6	650.6	620.3	30.30	21.470	
6,200.0	6,179.8	6,245.2	6,179.8	15.1	18.4	90.00		-400.0	570.6	650.6	619.9	30.64	21.233	
6,300.0	6,279.8	6,345.2	6,279.8	15.3	18.5	90.00		-400.0	570.6	650.6	619.6	30.98	21.000	
6,338.5	6,318.3	6,383.7	6,318.3	15.4	18.6	90.00		-400.0	570.6	650.6	619.5	31.11	20.911	
6,400.0	6,379.8	6,445.0	6,379.5	15.5	18.7	89.79		-397.6	570.6	650.6	619.3	31.32	20.773	
6,500.0	6,479.8	6,542.7	6,476.1	15.6	18.7	88.56		-383.6	570.6	650.8	619.2	31.64	20.571	
6,514.4	6,494.2	6,556.4	6,489.5	15.7	18.7	88.30		-380.7	570.6	650.9	619.2	31.68	20.545	
6,550.0	6,529.8	6,590.0	6,522.1	15.7	18.7	87.49		-372.5	570.6	651.2	619.5	31.78	20.495	
6,600.0	6,579.6	6,636.7	6,566.7	15.8	18.7	86.55		-358.7	570.7	651.8	619.9	31.88	20.444	
6,650.0	6,629.1	6,682.8	6,609.8	15.8	18.7	85.63		-342.4	570.7	652.6	620.6	31.95	20.423	
6,700.0	6,678.0	6,728.3	6,651.4	15.8	18.7	84.73		-323.8	570.7	653.4	621.5	31.98	20.430	
6,750.0	6,726.1	6,773.4	6,691.4	15.8	18.7	83.86		-303.0	570.8	654.5	622.5	31.99	20.461	
6,800.0	6,773.2	6,818.0	6,729.6	15.8	18.6	83.01		-280.2	570.8	655.6	623.6	31.96	20.513	
6,850.0	6,819.1	6,862.1	6,766.1	15.8	18.6	82.20		-255.4	570.9	656.8	624.9	31.91	20.581	
6,900.0	6,863.6	6,905.9	6,800.8	15.8	18.5	81.42		-228.8	570.9	658.1	626.3	31.85	20.661	
6,950.0	6,906.6	6,950.0	6,834.3	15.8	18.5	80.66		-200.0	571.0	659.5	627.7	31.79	20.748	
7,000.0	6,947.8	6,992.2	6,864.6	15.7	18.4	79.97		-170.6	571.0	660.9	629.1	31.72	20.833	
7,050.0	6,987.0	7,034.9	6,893.6	15.7	18.4	79.30		-139.3	571.1	662.3	630.6	31.67	20.912	
7,100.0	7,024.1	7,077.3	6,920.6	15.7	18.3	78.68		-106.7	571.2	663.7	632.0	31.64	20.976	
7,150.0	7,059.0	7,119.4	6,945.7	15.7	18.3	78.10		-72.8	571.2	665.0	633.4	31.64	21.019	
7,200.0	7,091.4	7,161.3	6,968.6	15.7	18.2	77.56		-37.8	571.3	666.3	634.6	31.68	21.033	
7,250.0	7,121.3	7,200.0	6,988.2	15.8	18.2	77.10		-4.4	571.4	667.6	635.8	31.77	21.015	
7,300.0	7,148.5	7,244.4	7,008.4	15.9	18.1	76.63		35.1	571.4	668.7	636.8	31.93	20.945	
7,350.0	7,172.9	7,285.6	7,025.2	16.1	18.1	76.24		72.8	571.5	669.8	637.6	32.15	20.830	
7,400.0	7,194.4	7,326.8	7,039.8	16.2	18.1	75.90		111.2	571.6	670.7	638.3	32.46	20.666	
7,450.0	7,212.8	7,367.8	7,052.3	16.5	18.0	75.61		150.3	571.7	671.6	638.7	32.84	20.452	
7,500.0	7,228.3	7,408.7	7,062.7	16.8	18.1	75.36		189.8	571.7	672.3	639.0	33.31	20.183	
7,550.0	7,240.5	7,450.0	7,071.0	17.1	18.1	75.17		230.3	571.8	672.8	639.0	33.86	19.869	
7,600.0	7,249.6	7,490.2	7,077.0	17.5	18.3	75.03		270.1	571.9	673.2	638.7	34.50	19.513	
7,634.4	7,254.0	7,518.2	7,080.0	17.7	18.5	74.97		297.9	572.0	673.4	638.4	34.99	19.245	
7,707.4	7,261.6	7,577.6	7,082.8	18.4	18.9	74.69		357.3	572.1	674.5	638.4	36.09	18.686	
7,800.0	7,267.6	7,669.8	7,083.6	19.3	19.8	74.24		449.4	572.2	676.6	638.8	37.84	17.880	
7,830.1	7,268.0	7,699.9	7,083.8	19.7	20.2	74.22		479.5	572.3	677.2	638.8	38.46	17.610	
7,900.0	7,268.0	7,769.7	7,084.5	20.5	21.0	74.30		549.4	572.4	678.5	638.5	40.02	16.955	
8,000.0	7,268.0	7,869.7	7,085.3	21.7	22.2	74.42		649.3	572.6	680.4	638.0	42.42	16.039	
8,100.0	7,268.0	7,969.7	7,086.2	23.1	23.5	74.54		749.3	572.8	682.3	637.3	45.01	15.159	
8,200.0	7,268.0	8,069.7	7,087.1	24.5	24.9	74.66		849.3	573.0	684.2	636.5	47.76	14.327	
8,300.0	7,268.0	8,169.6	7,087.9	26.0	26.4	74.78		949.2	573.2	686.1	635.5	50.63	13.551	

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 Simonsen 11-421
Project:	SEC.12-T6N-R67W	TVD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Reference Site:	Simonsen NWNW-12 Pad Sec.12-T6N-R67W	MD Reference:	WELL @ 4863.0ft (RKB - Ensign 32 - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Simonsen 11-421	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 (6-07-12)	Offset TVD Reference:	Offset Datum

Offset Design Simonsen NWNW-12 Pad Sec.12-T6N-R67W - Simonsen 1L-241 - Wellbore #1 - Plan #1 (6-07-12)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,400.0	7,268.0	8,269.6	7,088.8	27.6	27.9	74.90	1,049.2	573.4	688.0	634.4	53.62	12.832		
8,500.0	7,268.0	8,369.6	7,089.7	29.1	29.4	75.02	1,149.2	573.6	689.9	633.2	56.70	12.168		
8,600.0	7,268.0	8,469.5	7,090.6	30.8	31.0	75.14	1,249.1	573.8	691.8	632.0	59.86	11.557		
8,700.0	7,268.0	8,569.5	7,091.4	32.4	32.7	75.25	1,349.1	574.0	693.7	630.7	63.09	10.996		
8,800.0	7,268.0	8,669.5	7,092.3	34.1	34.3	75.37	1,449.1	574.2	695.7	629.3	66.38	10.480		
8,900.0	7,268.0	8,769.5	7,093.2	35.9	36.0	75.48	1,549.0	574.4	697.6	627.9	69.72	10.005		
9,000.0	7,268.0	8,869.4	7,094.1	37.6	37.7	75.60	1,649.0	574.6	699.5	626.4	73.11	9.568		
9,100.0	7,268.0	8,969.4	7,094.9	39.4	39.4	75.71	1,749.0	574.8	701.4	624.9	76.53	9.165		
9,200.0	7,268.0	9,069.4	7,095.8	41.1	41.2	75.83	1,848.9	575.0	703.4	623.4	79.99	8.793		
9,300.0	7,268.0	9,169.4	7,096.7	42.9	42.9	75.94	1,948.9	575.2	705.3	621.8	83.48	8.449		
9,400.0	7,268.0	9,269.3	7,097.5	44.7	44.7	76.05	2,048.9	575.4	707.2	620.2	86.99	8.129		
9,500.0	7,268.0	9,369.3	7,098.4	46.5	46.5	76.16	2,148.9	575.6	709.1	618.6	90.53	7.833		
9,600.0	7,268.0	9,469.3	7,099.3	48.3	48.3	76.27	2,248.8	575.8	711.1	617.0	94.10	7.557		
9,700.0	7,268.0	9,569.2	7,100.2	50.2	50.1	76.38	2,348.8	576.0	713.0	615.3	97.68	7.300		
9,800.0	7,268.0	9,669.2	7,101.0	52.0	51.9	76.49	2,448.8	576.2	715.0	613.7	101.28	7.060		
9,900.0	7,268.0	9,769.2	7,101.9	53.8	53.7	76.60	2,548.7	576.3	716.9	612.0	104.89	6.835		
10,000.0	7,268.0	9,869.2	7,102.8	55.7	55.5	76.71	2,648.7	576.5	718.9	610.3	108.52	6.624		
10,100.0	7,268.0	9,969.1	7,103.7	57.5	57.3	76.82	2,748.7	576.7	720.8	608.6	112.17	6.426		
10,200.0	7,268.0	10,069.1	7,104.5	59.4	59.2	76.92	2,848.6	576.9	722.8	606.9	115.82	6.240		
10,300.0	7,268.0	10,169.1	7,105.4	61.3	61.0	77.03	2,948.6	577.1	724.7	605.2	119.49	6.065		
10,400.0	7,268.0	10,269.0	7,106.3	63.1	62.9	77.14	3,048.6	577.3	726.7	603.5	123.17	5.900		
10,500.0	7,268.0	10,369.0	7,107.1	65.0	64.7	77.24	3,148.5	577.5	728.6	601.8	126.86	5.744		
10,600.0	7,268.0	10,469.0	7,108.0	66.9	66.6	77.35	3,248.5	577.7	730.6	600.0	130.55	5.596		
10,700.0	7,268.0	10,569.0	7,108.9	68.7	68.4	77.45	3,348.5	577.9	732.6	598.3	134.26	5.456		
10,800.0	7,268.0	10,668.9	7,109.8	70.6	70.3	77.56	3,448.4	578.1	734.5	596.6	137.97	5.324		
10,900.0	7,268.0	10,768.9	7,110.6	72.5	72.1	77.66	3,548.4	578.3	736.5	594.8	141.69	5.198		
11,000.0	7,268.0	10,868.9	7,111.5	74.4	74.0	77.76	3,648.4	578.5	738.5	593.1	145.42	5.078		
11,100.0	7,268.0	10,968.8	7,112.4	76.3	75.9	77.86	3,748.3	578.7	740.5	591.3	149.16	4.964		
11,200.0	7,268.0	11,068.8	7,113.2	78.2	77.8	77.97	3,848.3	578.9	742.4	589.5	152.90	4.856		
11,300.0	7,268.0	11,168.8	7,114.1	80.1	79.6	78.07	3,948.3	579.1	744.4	587.8	156.64	4.752		
11,400.0	7,268.0	11,268.8	7,115.0	81.9	81.5	78.17	4,048.2	579.3	746.4	586.0	160.39	4.653		
11,500.0	7,268.0	11,368.7	7,115.9	83.8	83.4	78.27	4,148.2	579.5	748.4	584.2	164.15	4.559		
11,600.0	7,268.0	11,468.7	7,116.7	85.7	85.3	78.37	4,248.2	579.7	750.4	582.4	167.91	4.469		
11,700.0	7,268.0	11,568.7	7,117.6	87.6	87.1	78.47	4,348.1	579.9	752.3	580.7	171.68	4.382		
11,800.0	7,268.0	11,668.6	7,118.5	89.5	89.0	78.57	4,448.1	580.1	754.3	578.9	175.45	4.299		
11,900.0	7,268.0	11,768.6	7,119.4	91.4	90.9	78.66	4,548.1	580.3	756.3	577.1	179.23	4.220		
12,000.0	7,268.0	11,868.6	7,120.2	93.3	92.8	78.76	4,648.0	580.4	758.3	575.3	183.01	4.144		
12,100.0	7,268.0	11,968.6	7,121.1	95.2	94.7	78.86	4,748.0	580.6	760.3	573.5	186.79	4.070		
12,200.0	7,268.0	12,068.5	7,122.0	97.1	96.6	78.95	4,848.0	580.8	762.3	571.7	190.58	4.000		
12,300.0	7,268.0	12,168.5	7,122.8	99.1	98.5	79.05	4,948.0	581.0	764.3	570.0	194.37	3.932		
12,310.3	7,268.0	12,178.8	7,122.9	99.2	98.7	79.06	4,958.2	581.1	764.5	569.8	194.76	3.926 SF		

Reference Depths are relative to WELL @ 4863.0ft (RKB - Ensign 32 - Coordinates are relative to: Simonsen 11-421
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is -105.500000 ° Grid Convergence at Surface is: 0.42°



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