

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: Simonsen 1L-421

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

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

Ground Elevation: 4880.0

+N/-S

0.0

+E/-W

0.0

Northing

1428710.68

Easting

3182392.41

Latitude

40.508360

Longitude

-104.844060

Slot

RKB Ensign 32 - 15'

WELL @ 4895.0ft (RKB Ensign 32 - 15')

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)								
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
HARDLINE BHL 460'FNL (5)	1.0	5020.3	-400.0	1433727.71	3181955.30	40.522140	-104.845499	Polygon
SECTIONLINE 210'N OF SHL (5)	1.0	210.0	-400.0	1428917.71	3181990.88	40.508936	-104.845498	Polygon
BHL 500'FNL & 1700'FWL	7315.0	4980.3	-278.0	1433688.57	3182077.57	40.522030	-104.845060	Point

M

Azimuths to True North  
Magnetic North: 8.78°

Magnetic Field  
Strength: 53075.9snT  
Dip Angle: 67.09°  
Date: 6/7/2012  
Model: IGRF2010

ANNOTATIONS

TVD

MD

Annotation

1600.0

1600.0

KOP #1

6526.3

6544.2

KOP #2

7300.0

7854.0

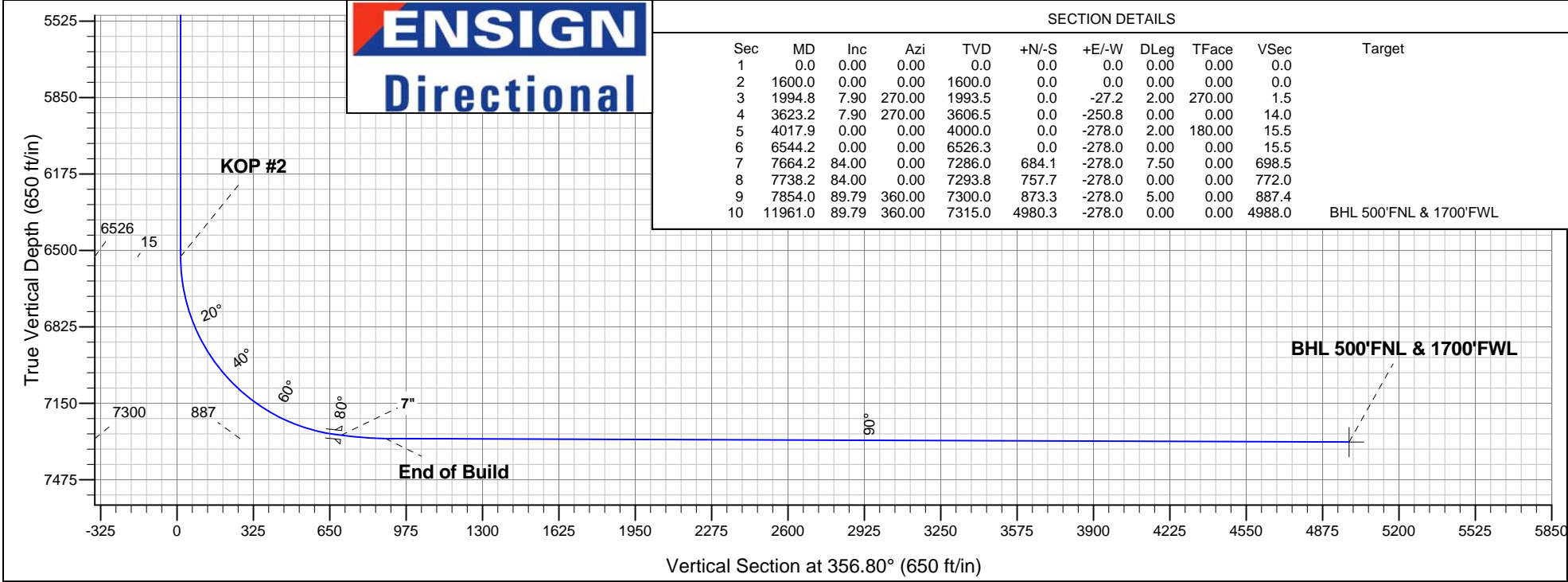
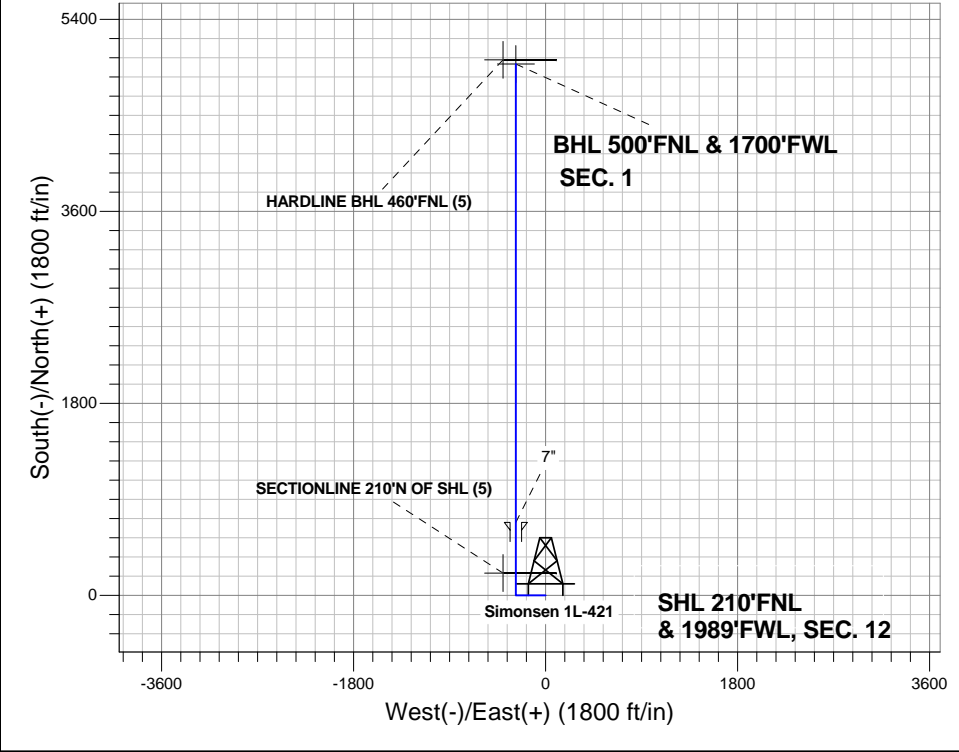
End of Build

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

Simonsen 1L-421

Plan #1 (6-7-12)

10:49, June 19 2012





# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.12-T6N-R67W**

**Simonsen NENW-12 Pad Sec.12-T6N-R67W**

**Simonsen 1L-421**

**Wellbore #1**

**Plan: Plan #1 (6-7-12)**

## **Standard Planning Report**

**19 June, 2012**

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Simonsen 1L-421
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Project:</b>	SEC.12-T6N-R67W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Simonsen NENW-12 Pad Sec.12-T6N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	Simonsen 1L-421	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (6-7-12)		

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

Site						Simonsen NENW-12 Pad Sec.12-T6N-R67W											
Site Position:						Northing:			1,428,710.69 ft			Latitude:			40.508360		
From:			Lat/Long			Easting:			3,182,392.41 ft			Longitude:			-104.844060		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.42 °		

Well	Simonsen 1L-421					
Well Position	+N-S	0.0 ft	Northing:	1,428,710.68 ft	Latitude:	40.508360
	+E-W	0.0 ft	Easting:	3,182,392.41 ft	Longitude:	-104.844060
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,880.0 ft

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

<b>Design</b>	Plan #1 (6-7-12)			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	356.80

<b>Plan Sections</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,994.8	7.90	270.00	1,993.5	0.0	-27.2	2.00	2.00	0.00	270.00	
3,623.2	7.90	270.00	3,606.5	0.0	-250.8	0.00	0.00	0.00	0.00	
4,017.9	0.00	0.00	4,000.0	0.0	-278.0	2.00	-2.00	0.00	180.00	
6,544.2	0.00	0.00	6,526.3	0.0	-278.0	0.00	0.00	0.00	0.00	
7,664.2	84.00	0.00	7,286.0	684.1	-278.0	7.50	7.50	0.00	0.00	
7,738.2	84.00	0.00	7,293.8	757.7	-278.0	0.00	0.00	0.00	0.00	
7,854.0	89.79	360.00	7,300.0	873.3	-278.0	5.00	5.00	0.00	0.00	
11,961.0	89.79	360.00	7,315.0	4,980.3	-278.0	0.00	0.00	0.00	0.00	BHL 500'FNL & 17C

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Simonsen 1L-421
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Project:</b>	SEC.12-T6N-R67W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Simonsen NENW-12 Pad Sec.12-T6N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	Simonsen 1L-421	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (6-7-12)		

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
HARDLINE BHL 460'FNL (5) - SECTIONLINE 210'N OF SHL (5)									
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
240.0	0.00	0.00	240.0	0.0	0.0	0.0	0.00	0.00	0.00
280.0	0.00	0.00	280.0	0.0	0.0	0.0	0.00	0.00	0.00
320.0	0.00	0.00	320.0	0.0	0.0	0.0	0.00	0.00	0.00
360.0	0.00	0.00	360.0	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
440.0	0.00	0.00	440.0	0.0	0.0	0.0	0.00	0.00	0.00
480.0	0.00	0.00	480.0	0.0	0.0	0.0	0.00	0.00	0.00
520.0	0.00	0.00	520.0	0.0	0.0	0.0	0.00	0.00	0.00
560.0	0.00	0.00	560.0	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
640.0	0.00	0.00	640.0	0.0	0.0	0.0	0.00	0.00	0.00
680.0	0.00	0.00	680.0	0.0	0.0	0.0	0.00	0.00	0.00
720.0	0.00	0.00	720.0	0.0	0.0	0.0	0.00	0.00	0.00
760.0	0.00	0.00	760.0	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
840.0	0.00	0.00	840.0	0.0	0.0	0.0	0.00	0.00	0.00
880.0	0.00	0.00	880.0	0.0	0.0	0.0	0.00	0.00	0.00
920.0	0.00	0.00	920.0	0.0	0.0	0.0	0.00	0.00	0.00
960.0	0.00	0.00	960.0	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
1,040.0	0.00	0.00	1,040.0	0.0	0.0	0.0	0.00	0.00	0.00
1,080.0	0.00	0.00	1,080.0	0.0	0.0	0.0	0.00	0.00	0.00
1,120.0	0.00	0.00	1,120.0	0.0	0.0	0.0	0.00	0.00	0.00
1,160.0	0.00	0.00	1,160.0	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
1,240.0	0.00	0.00	1,240.0	0.0	0.0	0.0	0.00	0.00	0.00
1,280.0	0.00	0.00	1,280.0	0.0	0.0	0.0	0.00	0.00	0.00
1,320.0	0.00	0.00	1,320.0	0.0	0.0	0.0	0.00	0.00	0.00
1,360.0	0.00	0.00	1,360.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,440.0	0.00	0.00	1,440.0	0.0	0.0	0.0	0.00	0.00	0.00
1,480.0	0.00	0.00	1,480.0	0.0	0.0	0.0	0.00	0.00	0.00
1,520.0	0.00	0.00	1,520.0	0.0	0.0	0.0	0.00	0.00	0.00
1,560.0	0.00	0.00	1,560.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP #1									
1,640.0	0.80	270.00	1,640.0	0.0	-0.3	0.0	2.00	2.00	0.00
1,680.0	1.60	270.00	1,680.0	0.0	-1.1	0.1	2.00	2.00	0.00
1,720.0	2.40	270.00	1,720.0	0.0	-2.5	0.1	2.00	2.00	0.00
1,760.0	3.20	270.00	1,759.9	0.0	-4.5	0.2	2.00	2.00	0.00
1,800.0	4.00	270.00	1,799.8	0.0	-7.0	0.4	2.00	2.00	0.00
1,840.0	4.80	270.00	1,839.7	0.0	-10.0	0.6	2.00	2.00	0.00
1,880.0	5.60	270.00	1,879.6	0.0	-13.7	0.8	2.00	2.00	0.00
1,920.0	6.40	270.00	1,919.3	0.0	-17.9	1.0	2.00	2.00	0.00
1,960.0	7.20	270.00	1,959.1	0.0	-22.6	1.3	2.00	2.00	0.00

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<b>Project:</b>	SEC.12-T6N-R67W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Simonsen NENW-12 Pad Sec.12-T6N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	Simonsen 1L-421	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (6-7-12)		

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)	
1,994.8	7.90	270.00	1,993.5	0.0	-27.2	1.5	2.00	2.00	0.00	
2,000.0	7.90	270.00	1,998.7	0.0	-27.9	1.6	0.00	0.00	0.00	
2,040.0	7.90	270.00	2,038.3	0.0	-33.4	1.9	0.00	0.00	0.00	
2,080.0	7.90	270.00	2,077.9	0.0	-38.9	2.2	0.00	0.00	0.00	
2,120.0	7.90	270.00	2,117.6	0.0	-44.4	2.5	0.00	0.00	0.00	
2,160.0	7.90	270.00	2,157.2	0.0	-49.9	2.8	0.00	0.00	0.00	
2,200.0	7.90	270.00	2,196.8	0.0	-55.3	3.1	0.00	0.00	0.00	
2,240.0	7.90	270.00	2,236.4	0.0	-60.8	3.4	0.00	0.00	0.00	
2,280.0	7.90	270.00	2,276.0	0.0	-66.3	3.7	0.00	0.00	0.00	
2,320.0	7.90	270.00	2,315.7	0.0	-71.8	4.0	0.00	0.00	0.00	
2,360.0	7.90	270.00	2,355.3	0.0	-77.3	4.3	0.00	0.00	0.00	
2,400.0	7.90	270.00	2,394.9	0.0	-82.8	4.6	0.00	0.00	0.00	
2,440.0	7.90	270.00	2,434.5	0.0	-88.3	4.9	0.00	0.00	0.00	
2,480.0	7.90	270.00	2,474.2	0.0	-93.8	5.2	0.00	0.00	0.00	
2,520.0	7.90	270.00	2,513.8	0.0	-99.3	5.5	0.00	0.00	0.00	
2,560.0	7.90	270.00	2,553.4	0.0	-104.8	5.8	0.00	0.00	0.00	
2,600.0	7.90	270.00	2,593.0	0.0	-110.3	6.1	0.00	0.00	0.00	
2,640.0	7.90	270.00	2,632.6	0.0	-115.8	6.5	0.00	0.00	0.00	
2,680.0	7.90	270.00	2,672.3	0.0	-121.3	6.8	0.00	0.00	0.00	
2,720.0	7.90	270.00	2,711.9	0.0	-126.8	7.1	0.00	0.00	0.00	
2,760.0	7.90	270.00	2,751.5	0.0	-132.3	7.4	0.00	0.00	0.00	
2,800.0	7.90	270.00	2,791.1	0.0	-137.8	7.7	0.00	0.00	0.00	
2,840.0	7.90	270.00	2,830.7	0.0	-143.3	8.0	0.00	0.00	0.00	
2,880.0	7.90	270.00	2,870.4	0.0	-148.8	8.3	0.00	0.00	0.00	
2,920.0	7.90	270.00	2,910.0	0.0	-154.3	8.6	0.00	0.00	0.00	
2,960.0	7.90	270.00	2,949.6	0.0	-159.7	8.9	0.00	0.00	0.00	
3,000.0	7.90	270.00	2,989.2	0.0	-165.2	9.2	0.00	0.00	0.00	
3,040.0	7.90	270.00	3,028.8	0.0	-170.7	9.5	0.00	0.00	0.00	
3,080.0	7.90	270.00	3,068.5	0.0	-176.2	9.8	0.00	0.00	0.00	
3,120.0	7.90	270.00	3,108.1	0.0	-181.7	10.1	0.00	0.00	0.00	
3,160.0	7.90	270.00	3,147.7	0.0	-187.2	10.4	0.00	0.00	0.00	
3,200.0	7.90	270.00	3,187.3	0.0	-192.7	10.7	0.00	0.00	0.00	
3,240.0	7.90	270.00	3,226.9	0.0	-198.2	11.0	0.00	0.00	0.00	
3,280.0	7.90	270.00	3,266.6	0.0	-203.7	11.4	0.00	0.00	0.00	
3,320.0	7.90	270.00	3,306.2	0.0	-209.2	11.7	0.00	0.00	0.00	
3,360.0	7.90	270.00	3,345.8	0.0	-214.7	12.0	0.00	0.00	0.00	
3,400.0	7.90	270.00	3,385.4	0.0	-220.2	12.3	0.00	0.00	0.00	
3,440.0	7.90	270.00	3,425.1	0.0	-225.7	12.6	0.00	0.00	0.00	
3,480.0	7.90	270.00	3,464.7	0.0	-231.2	12.9	0.00	0.00	0.00	
3,520.0	7.90	270.00	3,504.3	0.0	-236.7	13.2	0.00	0.00	0.00	
3,560.0	7.90	270.00	3,543.9	0.0	-242.2	13.5	0.00	0.00	0.00	
3,600.0	7.90	270.00	3,583.5	0.0	-247.7	13.8	0.00	0.00	0.00	
3,623.2	7.90	270.00	3,606.5	0.0	-250.8	14.0	0.00	0.00	0.00	
3,640.0	7.56	270.00	3,623.2	0.0	-253.1	14.1	2.00	-2.00	0.00	
3,680.0	6.76	270.00	3,662.9	0.0	-258.1	14.4	2.00	-2.00	0.00	
3,720.0	5.96	270.00	3,702.6	0.0	-262.5	14.6	2.00	-2.00	0.00	
3,760.0	5.16	270.00	3,742.4	0.0	-266.4	14.8	2.00	-2.00	0.00	
3,800.0	4.36	270.00	3,782.3	0.0	-269.7	15.0	2.00	-2.00	0.00	
3,840.0	3.56	270.00	3,822.2	0.0	-272.5	15.2	2.00	-2.00	0.00	
3,880.0	2.76	270.00	3,862.1	0.0	-274.7	15.3	2.00	-2.00	0.00	
3,920.0	1.96	270.00	3,902.1	0.0	-276.3	15.4	2.00	-2.00	0.00	
3,960.0	1.16	270.00	3,942.1	0.0	-277.4	15.5	2.00	-2.00	0.00	
4,000.0	0.36	270.00	3,982.1	0.0	-277.9	15.5	2.00	-2.00	0.00	

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<b>Site:</b>	Simonsen NENW-12 Pad Sec.12-T6N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	Simonsen 1L-421	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (6-7-12)		

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)
4,017.9	0.00	0.00	4,000.0	0.0	-278.0	15.5	2.00	-2.00	0.00
4,040.0	0.00	0.00	4,022.1	0.0	-278.0	15.5	0.00	0.00	0.00
4,080.0	0.00	0.00	4,062.1	0.0	-278.0	15.5	0.00	0.00	0.00
4,120.0	0.00	0.00	4,102.1	0.0	-278.0	15.5	0.00	0.00	0.00
4,160.0	0.00	0.00	4,142.1	0.0	-278.0	15.5	0.00	0.00	0.00
4,200.0	0.00	0.00	4,182.1	0.0	-278.0	15.5	0.00	0.00	0.00
4,240.0	0.00	0.00	4,222.1	0.0	-278.0	15.5	0.00	0.00	0.00
4,280.0	0.00	0.00	4,262.1	0.0	-278.0	15.5	0.00	0.00	0.00
4,320.0	0.00	0.00	4,302.1	0.0	-278.0	15.5	0.00	0.00	0.00
4,360.0	0.00	0.00	4,342.1	0.0	-278.0	15.5	0.00	0.00	0.00
4,400.0	0.00	0.00	4,382.1	0.0	-278.0	15.5	0.00	0.00	0.00
4,440.0	0.00	0.00	4,422.1	0.0	-278.0	15.5	0.00	0.00	0.00
4,480.0	0.00	0.00	4,462.1	0.0	-278.0	15.5	0.00	0.00	0.00
4,520.0	0.00	0.00	4,502.1	0.0	-278.0	15.5	0.00	0.00	0.00
4,560.0	0.00	0.00	4,542.1	0.0	-278.0	15.5	0.00	0.00	0.00
4,600.0	0.00	0.00	4,582.1	0.0	-278.0	15.5	0.00	0.00	0.00
4,640.0	0.00	0.00	4,622.1	0.0	-278.0	15.5	0.00	0.00	0.00
4,680.0	0.00	0.00	4,662.1	0.0	-278.0	15.5	0.00	0.00	0.00
4,720.0	0.00	0.00	4,702.1	0.0	-278.0	15.5	0.00	0.00	0.00
4,760.0	0.00	0.00	4,742.1	0.0	-278.0	15.5	0.00	0.00	0.00
4,800.0	0.00	0.00	4,782.1	0.0	-278.0	15.5	0.00	0.00	0.00
4,840.0	0.00	0.00	4,822.1	0.0	-278.0	15.5	0.00	0.00	0.00
4,880.0	0.00	0.00	4,862.1	0.0	-278.0	15.5	0.00	0.00	0.00
4,920.0	0.00	0.00	4,902.1	0.0	-278.0	15.5	0.00	0.00	0.00
4,960.0	0.00	0.00	4,942.1	0.0	-278.0	15.5	0.00	0.00	0.00
5,000.0	0.00	0.00	4,982.1	0.0	-278.0	15.5	0.00	0.00	0.00
5,040.0	0.00	0.00	5,022.1	0.0	-278.0	15.5	0.00	0.00	0.00
5,080.0	0.00	0.00	5,062.1	0.0	-278.0	15.5	0.00	0.00	0.00
5,120.0	0.00	0.00	5,102.1	0.0	-278.0	15.5	0.00	0.00	0.00
5,160.0	0.00	0.00	5,142.1	0.0	-278.0	15.5	0.00	0.00	0.00
5,200.0	0.00	0.00	5,182.1	0.0	-278.0	15.5	0.00	0.00	0.00
5,240.0	0.00	0.00	5,222.1	0.0	-278.0	15.5	0.00	0.00	0.00
5,280.0	0.00	0.00	5,262.1	0.0	-278.0	15.5	0.00	0.00	0.00
5,320.0	0.00	0.00	5,302.1	0.0	-278.0	15.5	0.00	0.00	0.00
5,360.0	0.00	0.00	5,342.1	0.0	-278.0	15.5	0.00	0.00	0.00
5,400.0	0.00	0.00	5,382.1	0.0	-278.0	15.5	0.00	0.00	0.00
5,440.0	0.00	0.00	5,422.1	0.0	-278.0	15.5	0.00	0.00	0.00
5,480.0	0.00	0.00	5,462.1	0.0	-278.0	15.5	0.00	0.00	0.00
5,520.0	0.00	0.00	5,502.1	0.0	-278.0	15.5	0.00	0.00	0.00
5,560.0	0.00	0.00	5,542.1	0.0	-278.0	15.5	0.00	0.00	0.00
5,600.0	0.00	0.00	5,582.1	0.0	-278.0	15.5	0.00	0.00	0.00
5,640.0	0.00	0.00	5,622.1	0.0	-278.0	15.5	0.00	0.00	0.00
5,680.0	0.00	0.00	5,662.1	0.0	-278.0	15.5	0.00	0.00	0.00
5,720.0	0.00	0.00	5,702.1	0.0	-278.0	15.5	0.00	0.00	0.00
5,760.0	0.00	0.00	5,742.1	0.0	-278.0	15.5	0.00	0.00	0.00
5,800.0	0.00	0.00	5,782.1	0.0	-278.0	15.5	0.00	0.00	0.00
5,840.0	0.00	0.00	5,822.1	0.0	-278.0	15.5	0.00	0.00	0.00
5,880.0	0.00	0.00	5,862.1	0.0	-278.0	15.5	0.00	0.00	0.00
5,920.0	0.00	0.00	5,902.1	0.0	-278.0	15.5	0.00	0.00	0.00
5,960.0	0.00	0.00	5,942.1	0.0	-278.0	15.5	0.00	0.00	0.00
6,000.0	0.00	0.00	5,982.1	0.0	-278.0	15.5	0.00	0.00	0.00
6,040.0	0.00	0.00	6,022.1	0.0	-278.0	15.5	0.00	0.00	0.00
6,080.0	0.00	0.00	6,062.1	0.0	-278.0	15.5	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Simonsen 1L-421
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Project:</b>	SEC.12-T6N-R67W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Simonsen NENW-12 Pad Sec.12-T6N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	Simonsen 1L-421	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (6-7-12)		

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	6,102.1	0.0	-278.0	15.5	0.00	0.00	0.00
6,160.0	0.00	0.00	6,142.1	0.0	-278.0	15.5	0.00	0.00	0.00
6,200.0	0.00	0.00	6,182.1	0.0	-278.0	15.5	0.00	0.00	0.00
6,240.0	0.00	0.00	6,222.1	0.0	-278.0	15.5	0.00	0.00	0.00
6,280.0	0.00	0.00	6,262.1	0.0	-278.0	15.5	0.00	0.00	0.00
6,320.0	0.00	0.00	6,302.1	0.0	-278.0	15.5	0.00	0.00	0.00
6,360.0	0.00	0.00	6,342.1	0.0	-278.0	15.5	0.00	0.00	0.00
6,400.0	0.00	0.00	6,382.1	0.0	-278.0	15.5	0.00	0.00	0.00
6,440.0	0.00	0.00	6,422.1	0.0	-278.0	15.5	0.00	0.00	0.00
6,480.0	0.00	0.00	6,462.1	0.0	-278.0	15.5	0.00	0.00	0.00
6,520.0	0.00	0.00	6,502.1	0.0	-278.0	15.5	0.00	0.00	0.00
6,544.2	0.00	0.00	6,526.3	0.0	-278.0	15.5	0.00	0.00	0.00
<b>KOP #2</b>									
6,560.0	1.18	0.00	6,542.1	0.2	-278.0	15.7	7.50	7.50	0.00
6,600.0	4.18	0.00	6,582.0	2.0	-278.0	17.5	7.50	7.50	0.00
6,640.0	7.18	0.00	6,621.8	6.0	-278.0	21.5	7.50	7.50	0.00
6,680.0	10.18	0.00	6,661.4	12.0	-278.0	27.5	7.50	7.50	0.00
6,720.0	13.18	0.00	6,700.5	20.1	-278.0	35.6	7.50	7.50	0.00
6,760.0	16.18	0.00	6,739.2	30.3	-278.0	45.7	7.50	7.50	0.00
6,800.0	19.18	0.00	6,777.3	42.4	-278.0	57.9	7.50	7.50	0.00
6,840.0	22.18	0.00	6,814.7	56.6	-278.0	72.0	7.50	7.50	0.00
6,880.0	25.18	0.00	6,851.4	72.6	-278.0	88.0	7.50	7.50	0.00
6,920.0	28.18	0.00	6,887.1	90.6	-278.0	105.9	7.50	7.50	0.00
6,960.0	31.18	0.00	6,921.8	110.4	-278.0	125.7	7.50	7.50	0.00
7,000.0	34.18	0.00	6,955.5	132.0	-278.0	147.3	7.50	7.50	0.00
7,040.0	37.18	0.00	6,988.0	155.3	-278.0	170.6	7.50	7.50	0.00
7,080.0	40.18	0.00	7,019.2	180.3	-278.0	195.5	7.50	7.50	0.00
7,120.0	43.18	0.00	7,049.1	206.9	-278.0	222.1	7.50	7.50	0.00
7,160.0	46.18	0.00	7,077.5	235.0	-278.0	250.2	7.50	7.50	0.00
7,200.0	49.18	0.00	7,104.4	264.6	-278.0	279.7	7.50	7.50	0.00
7,240.0	52.18	0.00	7,129.8	295.6	-278.0	310.6	7.50	7.50	0.00
7,280.0	55.18	0.00	7,153.5	327.8	-278.0	342.8	7.50	7.50	0.00
7,320.0	58.18	0.00	7,175.4	361.2	-278.0	376.1	7.50	7.50	0.00
7,360.0	61.18	0.00	7,195.6	395.7	-278.0	410.6	7.50	7.50	0.00
7,400.0	64.18	0.00	7,214.0	431.3	-278.0	446.1	7.50	7.50	0.00
7,440.0	67.18	0.00	7,230.4	467.7	-278.0	482.5	7.50	7.50	0.00
7,480.0	70.18	0.00	7,245.0	505.0	-278.0	519.7	7.50	7.50	0.00
7,520.0	73.18	0.00	7,257.5	542.9	-278.0	557.6	7.50	7.50	0.00
7,560.0	76.18	0.00	7,268.1	581.5	-278.0	596.1	7.50	7.50	0.00
7,600.0	79.18	0.00	7,276.6	620.6	-278.0	635.1	7.50	7.50	0.00
7,640.0	82.18	0.00	7,283.1	660.1	-278.0	674.5	7.50	7.50	0.00
7,664.2	84.00	0.00	7,286.0	684.1	-278.0	698.5	7.50	7.50	0.00
<b>7"</b>									
7,680.0	84.00	0.00	7,287.7	699.8	-278.0	714.2	0.00	0.00	0.00
7,720.0	84.00	0.00	7,291.9	739.6	-278.0	753.9	0.00	0.00	0.00
7,738.2	84.00	0.00	7,293.8	757.7	-278.0	772.0	0.00	0.00	0.00
7,760.0	85.09	360.00	7,295.8	779.4	-278.0	793.7	5.00	5.00	0.00
7,800.0	87.09	360.00	7,298.6	819.3	-278.0	833.5	5.00	5.00	0.00
7,840.0	89.09	360.00	7,299.9	859.3	-278.0	873.4	5.00	5.00	0.00
7,854.0	89.79	360.00	7,300.0	873.3	-278.0	887.4	5.00	5.00	0.00
<b>End of Build</b>									
7,880.0	89.79	360.00	7,300.1	899.3	-278.0	913.4	0.01	0.01	0.00
7,920.0	89.79	360.00	7,300.3	939.3	-278.0	953.3	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Simonsen 1L-421
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Project:</b>	SEC.12-T6N-R67W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Simonsen NENW-12 Pad Sec.12-T6N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	Simonsen 1L-421	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (6-7-12)		

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	89.79	360.00	7,300.4	979.3	-278.0	993.2	0.00	0.00	0.00
8,000.0	89.79	360.00	7,300.6	1,019.3	-278.0	1,033.2	0.00	0.00	0.00
8,040.0	89.79	360.00	7,300.7	1,059.3	-278.0	1,073.1	0.00	0.00	0.00
8,080.0	89.79	360.00	7,300.9	1,099.3	-278.0	1,113.0	0.00	0.00	0.00
8,120.0	89.79	360.00	7,301.0	1,139.3	-278.0	1,153.0	0.00	0.00	0.00
8,160.0	89.79	360.00	7,301.1	1,179.3	-278.0	1,192.9	0.00	0.00	0.00
8,200.0	89.79	360.00	7,301.3	1,219.3	-278.0	1,232.9	0.00	0.00	0.00
8,240.0	89.79	360.00	7,301.4	1,259.3	-278.0	1,272.8	0.00	0.00	0.00
8,280.0	89.79	360.00	7,301.6	1,299.3	-278.0	1,312.7	0.00	0.00	0.00
8,320.0	89.79	360.00	7,301.7	1,339.3	-278.0	1,352.7	0.00	0.00	0.00
8,360.0	89.79	360.00	7,301.9	1,379.3	-278.0	1,392.6	0.00	0.00	0.00
8,400.0	89.79	360.00	7,302.0	1,419.3	-278.0	1,432.5	0.00	0.00	0.00
8,440.0	89.79	360.00	7,302.2	1,459.3	-278.0	1,472.5	0.00	0.00	0.00
8,480.0	89.79	360.00	7,302.3	1,499.3	-278.0	1,512.4	0.00	0.00	0.00
8,520.0	89.79	360.00	7,302.5	1,539.3	-278.0	1,552.4	0.00	0.00	0.00
8,560.0	89.79	360.00	7,302.6	1,579.3	-278.0	1,592.3	0.00	0.00	0.00
8,600.0	89.79	360.00	7,302.8	1,619.3	-278.0	1,632.2	0.00	0.00	0.00
8,640.0	89.79	360.00	7,302.9	1,659.3	-278.0	1,672.2	0.00	0.00	0.00
8,680.0	89.79	360.00	7,303.0	1,699.3	-278.0	1,712.1	0.00	0.00	0.00
8,720.0	89.79	360.00	7,303.2	1,739.3	-278.0	1,752.1	0.00	0.00	0.00
8,760.0	89.79	360.00	7,303.3	1,779.3	-278.0	1,792.0	0.00	0.00	0.00
8,800.0	89.79	360.00	7,303.5	1,819.3	-278.0	1,831.9	0.00	0.00	0.00
8,840.0	89.79	360.00	7,303.6	1,859.3	-278.0	1,871.9	0.00	0.00	0.00
8,880.0	89.79	360.00	7,303.8	1,899.3	-278.0	1,911.8	0.00	0.00	0.00
8,920.0	89.79	360.00	7,303.9	1,939.3	-278.0	1,951.7	0.00	0.00	0.00
8,960.0	89.79	360.00	7,304.1	1,979.3	-278.0	1,991.7	0.00	0.00	0.00
9,000.0	89.79	360.00	7,304.2	2,019.3	-278.0	2,031.6	0.00	0.00	0.00
9,040.0	89.79	360.00	7,304.4	2,059.3	-278.0	2,071.6	0.00	0.00	0.00
9,080.0	89.79	360.00	7,304.5	2,099.3	-278.0	2,111.5	0.00	0.00	0.00
9,120.0	89.79	360.00	7,304.6	2,139.3	-278.0	2,151.4	0.00	0.00	0.00
9,160.0	89.79	360.00	7,304.8	2,179.3	-278.0	2,191.4	0.00	0.00	0.00
9,200.0	89.79	360.00	7,304.9	2,219.3	-278.0	2,231.3	0.00	0.00	0.00
9,240.0	89.79	360.00	7,305.1	2,259.3	-278.0	2,271.2	0.00	0.00	0.00
9,280.0	89.79	360.00	7,305.2	2,299.3	-278.0	2,311.2	0.00	0.00	0.00
9,320.0	89.79	360.00	7,305.4	2,339.3	-278.0	2,351.1	0.00	0.00	0.00
9,360.0	89.79	360.00	7,305.5	2,379.3	-278.0	2,391.1	0.00	0.00	0.00
9,400.0	89.79	360.00	7,305.7	2,419.3	-278.0	2,431.0	0.00	0.00	0.00
9,440.0	89.79	360.00	7,305.8	2,459.3	-278.0	2,470.9	0.00	0.00	0.00
9,480.0	89.79	360.00	7,306.0	2,499.3	-278.0	2,510.9	0.00	0.00	0.00
9,520.0	89.79	360.00	7,306.1	2,539.3	-278.0	2,550.8	0.00	0.00	0.00
9,560.0	89.79	360.00	7,306.2	2,579.3	-278.0	2,590.7	0.00	0.00	0.00
9,600.0	89.79	360.00	7,306.4	2,619.3	-278.0	2,630.7	0.00	0.00	0.00
9,640.0	89.79	360.00	7,306.5	2,659.3	-278.0	2,670.6	0.00	0.00	0.00
9,680.0	89.79	360.00	7,306.7	2,699.3	-278.0	2,710.6	0.00	0.00	0.00
9,720.0	89.79	360.00	7,306.8	2,739.3	-278.0	2,750.5	0.00	0.00	0.00
9,760.0	89.79	360.00	7,307.0	2,779.3	-278.0	2,790.4	0.00	0.00	0.00
9,800.0	89.79	360.00	7,307.1	2,819.3	-278.0	2,830.4	0.00	0.00	0.00
9,840.0	89.79	360.00	7,307.3	2,859.3	-278.0	2,870.3	0.00	0.00	0.00
9,880.0	89.79	360.00	7,307.4	2,899.3	-278.0	2,910.2	0.00	0.00	0.00
9,920.0	89.79	360.00	7,307.6	2,939.3	-278.0	2,950.2	0.00	0.00	0.00
9,960.0	89.79	360.00	7,307.7	2,979.3	-278.0	2,990.1	0.00	0.00	0.00
10,000.0	89.79	360.00	7,307.9	3,019.3	-278.0	3,030.1	0.00	0.00	0.00
10,040.0	89.79	360.00	7,308.0	3,059.2	-278.0	3,070.0	0.00	0.00	0.00



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Simonsen 1L-421
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Project:</b>	SEC.12-T6N-R67W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Simonsen NENW-12 Pad Sec.12-T6N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	Simonsen 1L-421	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (6-7-12)		

## 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	89.79	360.00	7,308.1	3,099.2	-278.0	3,109.9	0.00	0.00	0.00
10,120.0	89.79	360.00	7,308.3	3,139.2	-278.0	3,149.9	0.00	0.00	0.00
10,160.0	89.79	360.00	7,308.4	3,179.2	-278.0	3,189.8	0.00	0.00	0.00
10,200.0	89.79	360.00	7,308.6	3,219.2	-278.0	3,229.7	0.00	0.00	0.00
10,240.0	89.79	360.00	7,308.7	3,259.2	-278.0	3,269.7	0.00	0.00	0.00
10,280.0	89.79	360.00	7,308.9	3,299.2	-278.0	3,309.6	0.00	0.00	0.00
10,320.0	89.79	360.00	7,309.0	3,339.2	-278.0	3,349.6	0.00	0.00	0.00
10,360.0	89.79	360.00	7,309.2	3,379.2	-278.0	3,389.5	0.00	0.00	0.00
10,400.0	89.79	360.00	7,309.3	3,419.2	-278.0	3,429.4	0.00	0.00	0.00
10,440.0	89.79	360.00	7,309.5	3,459.2	-278.0	3,469.4	0.00	0.00	0.00
10,480.0	89.79	360.00	7,309.6	3,499.2	-278.0	3,509.3	0.00	0.00	0.00
10,520.0	89.79	360.00	7,309.7	3,539.2	-278.0	3,549.2	0.00	0.00	0.00
10,560.0	89.79	360.00	7,309.9	3,579.2	-278.0	3,589.2	0.00	0.00	0.00
10,600.0	89.79	360.00	7,310.0	3,619.2	-278.0	3,629.1	0.00	0.00	0.00
10,640.0	89.79	360.00	7,310.2	3,659.2	-278.0	3,669.1	0.00	0.00	0.00
10,680.0	89.79	360.00	7,310.3	3,699.2	-278.0	3,709.0	0.00	0.00	0.00
10,720.0	89.79	360.00	7,310.5	3,739.2	-278.0	3,748.9	0.00	0.00	0.00
10,760.0	89.79	360.00	7,310.6	3,779.2	-278.0	3,788.9	0.00	0.00	0.00
10,800.0	89.79	360.00	7,310.8	3,819.2	-278.0	3,828.8	0.00	0.00	0.00
10,840.0	89.79	360.00	7,310.9	3,859.2	-278.0	3,868.7	0.00	0.00	0.00
10,880.0	89.79	360.00	7,311.1	3,899.2	-278.0	3,908.7	0.00	0.00	0.00
10,920.0	89.79	360.00	7,311.2	3,939.2	-278.0	3,948.6	0.00	0.00	0.00
10,960.0	89.79	360.00	7,311.4	3,979.2	-278.0	3,988.6	0.00	0.00	0.00
11,000.0	89.79	360.00	7,311.5	4,019.2	-278.0	4,028.5	0.00	0.00	0.00
11,040.0	89.79	360.00	7,311.6	4,059.2	-278.0	4,068.4	0.00	0.00	0.00
11,080.0	89.79	360.00	7,311.8	4,099.2	-278.0	4,108.4	0.00	0.00	0.00
11,120.0	89.79	360.00	7,311.9	4,139.2	-278.0	4,148.3	0.00	0.00	0.00
11,160.0	89.79	360.00	7,312.1	4,179.2	-278.0	4,188.2	0.00	0.00	0.00
11,200.0	89.79	360.00	7,312.2	4,219.2	-278.0	4,228.2	0.00	0.00	0.00
11,240.0	89.79	360.00	7,312.4	4,259.2	-278.0	4,268.1	0.00	0.00	0.00
11,280.0	89.79	360.00	7,312.5	4,299.2	-278.0	4,308.1	0.00	0.00	0.00
11,320.0	89.79	360.00	7,312.7	4,339.2	-278.0	4,348.0	0.00	0.00	0.00
11,360.0	89.79	360.00	7,312.8	4,379.2	-278.0	4,387.9	0.00	0.00	0.00
11,400.0	89.79	360.00	7,313.0	4,419.2	-278.0	4,427.9	0.00	0.00	0.00
11,440.0	89.79	360.00	7,313.1	4,459.2	-278.0	4,467.8	0.00	0.00	0.00
11,480.0	89.79	360.00	7,313.2	4,499.2	-278.0	4,507.7	0.00	0.00	0.00
11,520.0	89.79	360.00	7,313.4	4,539.2	-278.0	4,547.7	0.00	0.00	0.00
11,560.0	89.79	360.00	7,313.5	4,579.2	-278.0	4,587.6	0.00	0.00	0.00
11,600.0	89.79	360.00	7,313.7	4,619.2	-278.0	4,627.6	0.00	0.00	0.00
11,640.0	89.79	360.00	7,313.8	4,659.2	-278.0	4,667.5	0.00	0.00	0.00
11,680.0	89.79	360.00	7,314.0	4,699.2	-278.0	4,707.4	0.00	0.00	0.00
11,720.0	89.79	360.00	7,314.1	4,739.2	-278.0	4,747.4	0.00	0.00	0.00
11,760.0	89.79	360.00	7,314.3	4,779.2	-278.0	4,787.3	0.00	0.00	0.00
11,800.0	89.79	360.00	7,314.4	4,819.2	-278.0	4,827.2	0.00	0.00	0.00
11,840.0	89.79	360.00	7,314.6	4,859.2	-278.0	4,867.2	0.00	0.00	0.00
11,880.0	89.79	360.00	7,314.7	4,899.2	-278.0	4,907.1	0.00	0.00	0.00
11,920.0	89.79	360.00	7,314.9	4,939.2	-278.0	4,947.1	0.00	0.00	0.00
11,960.0	89.79	360.00	7,315.0	4,979.2	-278.0	4,987.0	0.00	0.00	0.00
11,961.0	89.79	360.00	7,315.0	4,980.3	-278.0	4,988.0	0.00	0.00	0.00

BHL 500'FNL & 1700'FWL

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Simonsen 1L-421
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Project:</b>	SEC.12-T6N-R67W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Simonsen NENW-12 Pad Sec.12-T6N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	Simonsen 1L-421	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (6-7-12)		

Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
- Shape									
BHL 500'FNL & 1700'	0.00	0.00	7,315.0	4,980.3	-278.0	1,433,688.57	3,182,077.57	40.522030	-104.845060
- plan hits target center									
- Point									
HARDLINE BHL 460'f	0.00	0.00	1.0	5,020.3	-400.0	1,433,727.71	3,181,955.30	40.522140	-104.845499
- plan misses target center by 5036.2ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)									
- Polygon									
Point 1			1.0	0.0	0.0	1,433,727.71	3,181,955.30		
Point 2			1.0	0.0	500.0	1,433,731.41	3,182,455.27		
SECTIONLINE 210'N	0.00	0.00	1.0	210.0	-400.0	1,428,917.71	3,181,990.88	40.508936	-104.845498
- plan misses target center by 451.8ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)									
- Polygon									
Point 1			1.0	0.0	0.0	1,428,917.71	3,181,990.88		
Point 2			1.0	0.0	500.0	1,428,921.41	3,182,490.85		

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,664.2	7,286.0	7"	7	7-1/2

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
1,600.0	1,600.0	0.0	0.0	KOP #1
6,544.2	6,526.3	0.0	-278.0	KOP #2
7,854.0	7,300.0	873.3	-278.0	End of Build



# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.12-T6N-R67W**

**Simonsen NENW-12 Pad Sec.12-T6N-R67W**

**Simonsen 1L-421**

**Wellbore #1**

**Plan #1 (6-7-12)**

## **Anticollision Report**

**19 June, 2012**



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Simonsen 1L-421
<b>Project:</b>	SEC.12-T6N-R67W	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Simonsen NENW-12 Pad Sec.12-T6N-R67W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Simonsen 1L-421	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (6-7-12)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Plan #1 (6-7-12)
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria
<b>Interpolation Method:</b>	MD Interval 100.0ft
<b>Depth Range:</b>	Unlimited
<b>Results Limited by:</b>	Maximum center-center distance of 1,000.0ft
<b>Warning Levels Evaluated at:</b>	2.00 Sigma
<b>Error Model:</b>	ISCWSA
<b>Scan Method:</b>	Closest Approach 3D
<b>Error Surface:</b>	Elliptical Conic

Survey Tool Program		Date	6/8/2012		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	11,961.0	Plan #1 (6-7-12) (Wellbore #1)	MWD	MWD - Standard	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Simonsen NENW-12 Pad Sec.12-T6N-R67W						
Simonsen 1Q-241 - Wellbore #1 - Plan #1 (6-6-12)	600.0	599.0	30.6	28.1	12.383	CC, ES
Simonsen 1Q-241 - Wellbore #1 - Plan #1 (6-6-12)	11,961.0	11,823.0	767.5	577.6	4.042	SF

<b>Offset Design</b> Simonsen NENW-12 Pad Sec.12-T6N-R67W - Simonsen 1Q-241 - Wellbore #1 - Plan #1 (6-6-12)													<b>Offset Site Error:</b> 0.0ft
Survey Program: 0-MWD													<b>Offset Well Error:</b> 0.0ft
Reference Measured Depth (ft)	Vertical Depth (ft)	Offset Measured Depth (ft)	Vertical Depth (ft)	Semi Major Axis Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Distance 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	99.0	99.0	0.1	0.1	90.00	0.0	30.6	30.6	30.4	0.22	136.772	
200.0	200.0	199.0	199.0	0.3	0.3	90.00	0.0	30.6	30.6	29.9	0.67	45.515	
300.0	300.0	299.0	299.0	0.6	0.6	90.00	0.0	30.6	30.6	29.5	1.12	27.272	
400.0	400.0	399.0	399.0	0.8	0.8	90.00	0.0	30.6	30.6	29.0	1.57	19.469	
500.0	500.0	499.0	499.0	1.0	1.0	90.00	0.0	30.6	30.6	28.6	2.02	15.138	
600.0	600.0	599.0	599.0	1.2	1.2	90.00	0.0	30.6	30.6	28.1	2.47	12.383	CC, ES
700.0	700.0	697.9	697.9	1.5	1.4	90.00	0.0	32.3	32.3	29.4	2.91	11.111	
800.0	800.0	796.6	796.4	1.7	1.7	90.00	0.0	37.3	37.4	34.1	3.34	11.213	
900.0	900.0	894.8	894.3	1.9	1.9	90.00	0.0	45.7	46.0	42.2	3.79	12.146	
1,000.0	1,000.0	993.1	991.9	2.1	2.1	90.00	0.0	57.3	57.7	53.4	4.26	13.548	
1,100.0	1,100.0	1,092.3	1,090.3	2.4	2.4	90.00	0.0	69.5	70.1	65.3	4.75	14.740	
1,200.0	1,200.0	1,191.5	1,188.8	2.6	2.7	90.00	0.0	81.8	82.5	77.2	5.26	15.673	
1,300.0	1,300.0	1,290.8	1,287.3	2.8	3.0	90.00	0.0	94.1	94.8	89.1	5.78	16.419	
1,400.0	1,400.0	1,390.0	1,385.7	3.0	3.3	90.00	0.0	106.4	107.2	100.9	6.30	17.027	
1,500.0	1,500.0	1,489.2	1,484.2	3.3	3.6	90.00	0.0	118.7	119.6	112.8	6.82	17.530	
1,600.0	1,600.0	1,588.4	1,582.7	3.5	3.9	90.00	0.0	131.0	132.0	124.6	7.35	17.953	
1,700.0	1,700.0	1,687.4	1,680.9	3.7	4.2	180.00	0.0	143.2	146.1	138.7	7.34	19.908	
1,800.0	1,799.8	1,785.9	1,778.6	3.9	4.5	180.00	0.0	155.4	163.6	155.9	7.75	21.114	
1,900.0	1,899.5	1,883.7	1,875.6	4.1	4.8	180.00	0.0	167.5	184.6	176.5	8.15	22.642	
2,000.0	1,998.7	1,980.6	1,971.8	4.3	5.1	180.00	0.0	179.5	209.0	200.4	8.55	24.444	
2,100.0	2,097.8	2,077.2	2,067.7	4.6	5.4	180.00	0.0	191.5	234.9	225.9	8.98	26.162	
2,200.0	2,196.8	2,173.8	2,163.5	4.9	5.7	180.00	0.0	203.4	260.8	251.4	9.41	27.711	
2,300.0	2,295.9	2,270.4	2,259.4	5.1	6.0	180.00	0.0	215.4	286.7	276.8	9.85	29.114	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Simonsen 1L-421
<b>Project:</b>	SEC.12-T6N-R67W	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Simonsen NENW-12 Pad Sec.12-T6N-R67W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Simonsen 1L-421	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (6-7-12)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Simonsen NENW-12 Pad Sec.12-T6N-R67W - Simonsen 1Q-241 - Wellbore #1 - Plan #1 (6-6-12)													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
2,400.0	2,394.9	2,367.0	2,355.2	5.4	6.3	180.00		0.0	227.3	312.5	302.3	10.29	30.388	
2,500.0	2,494.0	2,463.6	2,451.1	5.7	6.6	180.00		0.0	239.3	338.4	327.7	10.73	31.550	
2,600.0	2,593.0	2,560.2	2,546.9	6.0	6.9	180.00		0.0	251.2	364.3	353.2	11.17	32.612	
2,700.0	2,692.1	2,656.8	2,642.8	6.3	7.2	180.00		0.0	263.2	390.2	378.6	11.62	33.587	
2,800.0	2,791.1	2,753.4	2,738.6	6.6	7.6	180.00		0.0	275.1	416.1	404.0	12.07	34.484	
2,900.0	2,890.2	2,849.9	2,834.5	6.9	7.9	180.00		0.0	287.1	442.0	429.5	12.52	35.312	
3,000.0	2,989.2	2,946.5	2,930.3	7.2	8.2	180.00		0.0	299.0	467.9	454.9	12.97	36.078	
3,100.0	3,088.3	3,043.1	3,026.2	7.5	8.5	180.00		0.0	311.0	493.8	480.4	13.42	36.789	
3,200.0	3,187.3	3,139.7	3,122.0	7.8	8.8	180.00		0.0	323.0	519.7	505.8	13.88	37.449	
3,300.0	3,286.4	3,236.3	3,217.9	8.1	9.1	180.00		0.0	334.9	545.6	531.2	14.33	38.065	
3,400.0	3,385.4	3,332.9	3,313.7	8.5	9.4	180.00		0.0	346.9	571.5	556.7	14.79	38.640	
3,500.0	3,484.5	3,429.5	3,409.5	8.8	9.7	180.00		0.0	358.8	597.3	582.1	15.25	39.178	
3,600.0	3,583.5	3,526.1	3,505.4	9.1	10.0	180.00		0.0	370.8	623.2	607.5	15.71	39.683	
3,700.0	3,682.7	3,622.9	3,601.5	9.4	10.4	180.00		0.0	382.8	648.1	631.9	16.20	40.003	
3,800.0	3,782.3	3,720.6	3,698.4	9.6	10.7	180.00		0.0	394.9	669.7	653.0	16.68	40.149	
3,900.0	3,882.1	3,818.9	3,796.0	9.8	11.0	180.00		0.0	407.0	687.9	670.7	17.14	40.127	
4,000.0	3,982.1	3,917.8	3,894.1	10.0	11.3	180.00		0.0	419.3	702.6	685.0	17.59	39.953	
4,100.0	4,082.1	4,017.0	3,992.6	10.2	11.6	90.00		0.0	431.5	715.0	697.0	18.02	39.679	
4,200.0	4,182.1	4,116.2	4,091.0	10.4	11.9	90.00		0.0	443.8	727.4	709.0	18.47	39.386	
4,300.0	4,282.1	4,230.9	4,204.9	10.6	12.3	90.00		0.0	457.4	739.3	720.4	18.93	39.055	
4,400.0	4,382.1	4,365.6	4,339.1	10.7	12.5	90.00		0.0	468.1	747.3	727.9	19.39	38.543	
4,500.0	4,482.1	4,500.9	4,474.3	10.9	12.8	90.00		0.0	472.5	750.6	730.7	19.84	37.831	
4,600.0	4,582.1	4,607.6	4,581.1	11.1	12.9	90.00		0.0	472.6	750.6	730.4	20.25	37.061	
4,700.0	4,682.1	4,707.6	4,681.1	11.3	13.1	90.00		0.0	472.6	750.6	730.0	20.66	36.327	
4,800.0	4,782.1	4,807.6	4,781.1	11.5	13.3	90.00		0.0	472.6	750.6	729.6	21.07	35.618	
4,900.0	4,882.1	4,907.6	4,881.1	11.7	13.4	90.00		0.0	472.6	750.6	729.2	21.49	34.934	
5,000.0	4,982.1	5,007.6	4,981.1	11.9	13.6	90.00		0.0	472.6	750.6	728.7	21.90	34.274	
5,100.0	5,082.1	5,107.6	5,081.1	12.1	13.8	90.00		0.0	472.6	750.6	728.3	22.32	33.636	
5,200.0	5,182.1	5,207.6	5,181.1	12.3	13.9	90.00		0.0	472.6	750.6	727.9	22.73	33.019	
5,300.0	5,282.1	5,307.6	5,281.1	12.5	14.1	90.00		0.0	472.6	750.6	727.5	23.15	32.423	
5,400.0	5,382.1	5,407.6	5,381.1	12.7	14.3	90.00		0.0	472.6	750.6	727.1	23.57	31.847	
5,500.0	5,482.1	5,507.6	5,481.1	12.9	14.5	90.00		0.0	472.6	750.6	726.6	23.99	31.289	
5,600.0	5,582.1	5,607.6	5,581.1	13.1	14.6	90.00		0.0	472.6	750.6	726.2	24.41	30.749	
5,700.0	5,682.1	5,707.6	5,681.1	13.3	14.8	90.00		0.0	472.6	750.6	725.8	24.83	30.226	
5,800.0	5,782.1	5,807.6	5,781.1	13.5	15.0	90.00		0.0	472.6	750.6	725.4	25.26	29.720	
5,900.0	5,882.1	5,907.6	5,881.1	13.7	15.2	90.00		0.0	472.6	750.6	725.0	25.68	29.229	
6,000.0	5,982.1	6,007.6	5,981.1	13.9	15.4	90.00		0.0	472.6	750.6	724.5	26.11	28.754	
6,100.0	6,082.1	6,107.6	6,081.1	14.2	15.5	90.00		0.0	472.6	750.6	724.1	26.53	28.293	
6,200.0	6,182.1	6,207.6	6,181.1	14.4	15.7	90.00		0.0	472.6	750.6	723.7	26.96	27.845	
6,300.0	6,282.1	6,307.6	6,281.1	14.6	15.9	90.00		0.0	472.6	750.6	723.3	27.38	27.411	
6,366.4	6,348.5	6,374.1	6,347.5	14.7	16.0	90.00		0.0	472.6	750.6	723.0	27.67	27.129	
6,400.0	6,382.1	6,407.6	6,381.1	14.8	16.1	90.00		0.0	472.6	750.6	722.8	27.81	26.989	
6,426.6	6,408.6	6,434.2	6,407.6	14.8	16.1	89.96		0.5	472.6	750.6	722.7	27.93	26.879	
6,500.0	6,482.1	6,507.0	6,480.2	15.0	16.3	89.49		6.6	472.6	750.7	722.4	28.24	26.582	
6,600.0	6,582.0	6,603.6	6,574.9	15.2	16.5	88.19		25.3	472.6	751.0	722.4	28.66	26.204	
6,700.0	6,681.0	6,697.9	6,664.3	15.4	16.6	86.83		55.0	472.6	751.8	722.7	29.08	25.850	
6,800.0	6,777.3	6,790.2	6,747.7	15.6	16.8	85.54		94.5	472.6	753.0	723.5	29.53	25.497	
6,900.0	6,869.3	6,880.9	6,824.4	15.8	17.0	84.33		142.8	472.6	754.4	724.4	30.04	25.112	
7,000.0	6,955.5	6,970.1	6,893.7	16.1	17.3	83.21		198.8	472.6	756.0	725.4	30.66	24.662	
7,100.0	7,034.3	7,058.0	6,955.3	16.4	17.6	82.20		261.6	472.6	757.8	726.3	31.42	24.115	
7,200.0	7,104.4	7,144.9	7,008.5	16.8	18.0	81.32		330.1	472.6	759.4	727.1	32.39	23.449	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Simonsen 1L-421
<b>Project:</b>	SEC.12-T6N-R67W	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Simonsen NENW-12 Pad Sec.12-T6N-R67W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Simonsen 1L-421	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (6-7-12)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (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		
7,300.0	7,164.7	7,230.9	7,053.3	17.3	18.5	80.57	403.4	472.6	761.0	727.4	33.59	22.656		
7,400.0	7,214.0	7,316.1	7,089.2	18.1	19.1	79.96	480.7	472.6	762.4	727.3	35.05	21.753		
7,500.0	7,251.5	7,400.0	7,116.0	18.9	19.9	79.50	560.2	472.6	763.5	726.7	36.75	20.772		
7,600.0	7,276.6	7,485.1	7,134.1	20.0	20.8	79.19	643.2	472.6	764.2	725.5	38.74	19.729		
7,700.0	7,289.8	7,569.1	7,142.8	21.1	21.7	79.00	726.8	472.6	764.7	723.8	40.92	18.690		
7,800.0	7,298.6	7,662.0	7,143.8	22.4	22.9	78.44	819.7	472.6	766.2	722.9	43.34	17.680		
7,900.0	7,300.2	7,762.0	7,144.1	23.8	24.2	78.32	919.6	472.6	766.5	720.5	46.05	16.645		
8,000.0	7,300.6	7,862.0	7,144.3	25.2	25.7	78.31	1,019.6	472.6	766.5	717.6	48.91	15.673		
8,100.0	7,300.9	7,962.0	7,144.5	26.7	27.1	78.31	1,119.6	472.6	766.6	714.7	51.88	14.775		
8,200.0	7,301.3	8,062.0	7,144.8	28.2	28.7	78.30	1,219.6	472.6	766.6	711.6	54.96	13.949		
8,300.0	7,301.7	8,162.0	7,145.0	29.8	30.2	78.29	1,319.6	472.6	766.6	708.5	58.11	13.192		
8,400.0	7,302.0	8,262.0	7,145.3	31.4	31.8	78.28	1,419.6	472.6	766.6	705.3	61.34	12.498		
8,500.0	7,302.4	8,362.0	7,145.5	33.1	33.5	78.27	1,519.6	472.6	766.7	702.0	64.63	11.863		
8,600.0	7,302.8	8,462.0	7,145.8	34.8	35.2	78.26	1,619.6	472.6	766.7	698.7	67.96	11.281		
8,700.0	7,303.1	8,562.0	7,146.0	36.5	36.9	78.25	1,719.6	472.6	766.7	695.4	71.35	10.746		
8,800.0	7,303.5	8,662.0	7,146.3	38.2	38.6	78.24	1,819.6	472.6	766.7	692.0	74.76	10.255		
8,900.0	7,303.8	8,762.0	7,146.5	40.0	40.3	78.23	1,919.6	472.6	766.8	688.5	78.22	9.803		
9,000.0	7,304.2	8,862.0	7,146.7	41.7	42.1	78.23	2,019.6	472.6	766.8	685.1	81.70	9.386		
9,100.0	7,304.6	8,962.0	7,147.0	43.5	43.9	78.22	2,119.6	472.6	766.8	681.6	85.20	9.000		
9,200.0	7,304.9	9,062.0	7,147.2	45.3	45.6	78.21	2,219.6	472.6	766.8	678.1	88.73	8.642		
9,300.0	7,305.3	9,162.0	7,147.5	47.1	47.4	78.20	2,319.6	472.6	766.9	674.6	92.28	8.310		
9,400.0	7,305.7	9,262.0	7,147.7	48.9	49.2	78.19	2,419.6	472.6	766.9	671.0	95.84	8.001		
9,500.0	7,306.0	9,362.0	7,148.0	50.7	51.0	78.18	2,519.6	472.6	766.9	667.5	99.42	7.713		
9,600.0	7,306.4	9,462.0	7,148.2	52.5	52.9	78.17	2,619.6	472.6	766.9	663.9	103.02	7.445		
9,700.0	7,306.8	9,562.0	7,148.5	54.4	54.7	78.16	2,719.6	472.6	767.0	660.3	106.62	7.193		
9,800.0	7,307.1	9,662.0	7,148.7	56.2	56.5	78.16	2,819.6	472.6	767.0	656.7	110.24	6.957		
9,900.0	7,307.5	9,762.0	7,148.9	58.1	58.4	78.15	2,919.6	472.6	767.0	653.1	113.87	6.736		
10,000.0	7,307.9	9,862.0	7,149.2	59.9	60.2	78.14	3,019.6	472.6	767.0	649.5	117.51	6.528		
10,100.0	7,308.2	9,962.0	7,149.4	61.8	62.0	78.13	3,119.6	472.6	767.1	645.9	121.15	6.331		
10,200.0	7,308.6	10,062.0	7,149.7	63.6	63.9	78.12	3,219.6	472.6	767.1	642.3	124.80	6.146		
10,300.0	7,308.9	10,162.0	7,149.9	65.5	65.8	78.11	3,319.6	472.6	767.1	638.6	128.46	5.971		
10,400.0	7,309.3	10,262.0	7,150.2	67.3	67.6	78.10	3,419.6	472.6	767.1	635.0	132.13	5.806		
10,500.0	7,309.7	10,362.0	7,150.4	69.2	69.5	78.09	3,519.6	472.6	767.2	631.4	135.80	5.649		
10,600.0	7,310.0	10,462.0	7,150.7	71.1	71.3	78.09	3,619.6	472.6	767.2	627.7	139.48	5.500		
10,700.0	7,310.4	10,562.0	7,150.9	72.9	73.2	78.08	3,719.6	472.6	767.2	624.0	143.16	5.359		
10,800.0	7,310.8	10,662.0	7,151.1	74.8	75.1	78.07	3,819.6	472.6	767.2	620.4	146.85	5.225		
10,900.0	7,311.1	10,762.0	7,151.4	76.7	77.0	78.06	3,919.6	472.6	767.3	616.7	150.54	5.097		
11,000.0	7,311.5	10,862.0	7,151.6	78.6	78.8	78.05	4,019.6	472.6	767.3	613.0	154.23	4.975		
11,100.0	7,311.9	10,962.0	7,151.9	80.5	80.7	78.04	4,119.6	472.6	767.3	609.4	157.93	4.859		
11,200.0	7,312.2	11,062.0	7,152.1	82.3	82.6	78.03	4,219.6	472.6	767.3	605.7	161.63	4.747		
11,300.0	7,312.6	11,162.0	7,152.4	84.2	84.5	78.02	4,319.6	472.6	767.4	602.0	165.33	4.641		
11,400.0	7,313.0	11,262.0	7,152.6	86.1	86.4	78.02	4,419.6	472.6	767.4	598.3	169.04	4.540		
11,500.0	7,313.3	11,362.0	7,152.9	88.0	88.3	78.01	4,519.6	472.6	767.4	594.7	172.75	4.442		
11,600.0	7,313.7	11,462.0	7,153.1	89.9	90.2	78.00	4,619.6	472.6	767.4	591.0	176.46	4.349		
11,700.0	7,314.0	11,562.0	7,153.3	91.8	92.0	77.99	4,719.6	472.6	767.5	587.3	180.18	4.260		
11,800.0	7,314.4	11,662.0	7,153.6	93.7	93.9	77.98	4,819.6	472.6	767.5	583.6	183.89	4.174		
11,900.0	7,314.8	11,762.0	7,153.8	95.6	95.8	77.97	4,919.6	472.6	767.5	579.9	187.61	4.091		
11,961.0	7,315.0	11,823.0	7,154.0	96.7	97.0	77.97	4,980.6	472.6	767.5	577.6	189.88	4.042 SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Simonsen 1L-421
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<b>Reference Site:</b>	Simonsen NENW-12 Pad Sec.12-T6N-R67W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Simonsen 1L-421	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (6-7-12)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4895.0ft (RKB Ensign 32 - 1 Coordinates are relative to: Simonsen 1L-421  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000 °  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.42°



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Simonsen 1L-421
<b>Project:</b>	SEC.12-T6N-R67W	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Simonsen NENW-12 Pad Sec.12-T6N-R67W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Simonsen 1L-421	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (6-7-12)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4895.0ft (RKB Ensign 32 - 1 Coordinates are relative to: Simonsen 1L-421  
Offset Depths are relative to Offset Datum  
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Coordinate System is US State Plane 1983, Colorado Northern Zone  
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